

*AIR CONDITIONER (MULTI TYPE)*  
**Installation Manual**



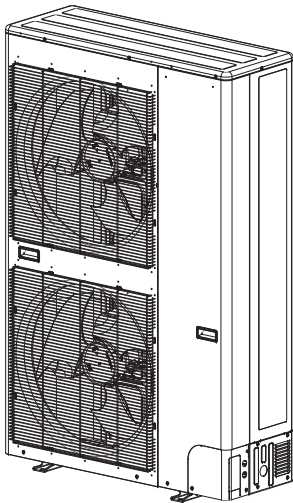
**Outdoor Unit**

Model name:

Heat Pump Model

**MCY-MAP0367HS-UL**  
**MCY-MAP0487HS-UL**  
**MCY-MAP0607HS-UL**

For OUTDOOR USE only  
Pour une UTILISATION EN  
EXTÉRIEUR uniquement  
Solo para USO EXTERIOR



Installation Manual	1	English
Manuel d'installation	28	Français
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## ADOPTION OF NEW REFRIGERANT

This Air Conditioner uses R410A an environmentally friendly refrigerant.

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Installing, starting up, and servicing air--conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).


Only trained, qualified installers and service mechanics should install, start--up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as replace the indoor unit air filter. All other operations should be performed by trained service personnel.

Before working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep a quenching cloth and a fire extinguisher nearby during brazing. Use care in handling, rigging, and setting bulky equipment.

Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit.

Consult a local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. This is the safety--alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: DANGER, WARNING, and CAUTION. These words are used with the safety--alert symbol.

DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies hazards which could result in personal injury or death. CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

# 1 Precautions for Safety

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

## WARNING

### General

- Carefully read Owner's Manual before starting the air conditioner. There are many important things to keep in mind for daily operation.
- Ask for installation to be performed by the dealer or a professional. Only a qualified installer is able to install an air conditioner. If a non-qualified person installs an air conditioner, it may result in problems such as fire, electric shock, injury, water leakage, noise and vibration.
- Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
- Before opening the service panel of the outdoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts.
- Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breakers for both the indoor and outdoor units to the OFF position. Otherwise, electric shock may result.
- Wear protective gloves and safety work clothing during installation, servicing and removal.
- Do not touch the outdoor unit's aluminium fin. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.
- Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off of the outdoor unit and result in injury.
- Before cleaning the filter or other parts of the outdoor unit, set the circuit breaker to OFF without fail, and place a "Work in progress" sign near the circuit breaker before proceeding with the work.
- The refrigerant used by this air conditioner is the R410A.
- The air conditioner must be transported in stable condition. If any part of the product are broken, contact your distributor.
- We do not take any responsibility on the local design.

### Selection of installation location

- Do not install in a location where flammable gas leaks are possible. If the gas should leak and accumulate around the unit, it may ignite and cause a fire.
- During transporting the air conditioner, wear shoes with protective toe caps, protective gloves, and other protective clothing.
- To transport the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
- Places where the operation sound of the outdoor unit may cause a disturbance. (Especially at the boundary line with a neighbour, install the air conditioner while considering the noise.)

### Installation

- The designated bolts (M10) and nuts (M10) for securing the outdoor unit must be used when installing the unit.
- Install the outdoor unit properly in a location that is durable enough to support the outdoor unit's weight. Insufficient durability may cause the outdoor unit to fall, which may result in injury.
- Install the unit in the prescribed manner for protection against strong wind and earthquake. Incorrect installation may result in the unit falling down, or other accidents.
- Put the screws back which have been removed for installation or other purposes.

### Refrigerant piping

- Install the refrigerant pipe securely during the installation work before operating the air conditioner. If the compressor is operated with the valve open and without refrigerant pipe, the compressor draws air and the refrigeration cycle is over pressurized, which may cause a injury.
- Tighten the flare nut with a torque wrench in the specified manner. Excessive tightening of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage.
- When the air conditioner has been installed or relocated, follow the instructions in the Installation Manual and purge the air completely so that no gases other than the refrigerant will be mixed in the refrigerating cycle. Failure to purge the air completely may cause the air conditioner to malfunction.
- Nitrogen gas must be used for the airtight test.

### Electrical wiring

- Only a certified installer or qualified service person is allowed to carry out the electrical work of the air conditioner.
- When connecting the electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians and from heat, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- When executing an address setting, test run, or troubleshooting through the checking window on the electric parts box, put on insulated heat-proof gloves, insulated shoes and other clothing to provide protection from electric shock.
- Use wiring that meets the specifications in the Installation Manual, NEC and the local codes.
- Check that the product is properly grounded.
- Do not connect the ground line to a gas pipe, lightning conductor, or a telephone ground line.
- After completing the repair or relocation work, check that the ground wires are connected properly.
- Install a circuit breaker that meets the specifications in the installation manual, NEC and local codes.
- Under no circumstances must the power cable be extended. Connection trouble in the places where the cable is extended may give rise to smoke and/or a fire.
- Do not supply power from the power terminal block equipped on the outdoor unit to another outdoor unit. Capacity overflow may occur on the terminal block and may result in fire.
- Outdoor unit should have its own power supply.

### Test run

- Before operating the air conditioner after having completed the work, check that the indoor unit's electrical parts box cover and outdoor unit's service panel are closed. Set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks.
- If there is any kind of trouble (such as when a check code display appears, there is a burning smell, abnormal sounds, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself. Set the circuit breaker to the OFF position and contact a qualified service person. Take steps to ensure that the power will not be turned on (by placing an "out of order" sign near the circuit breaker, for instance) until a qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other failure.
- Upon completion of the installation work, check for refrigerant leaks and check the insulation resistance and water drainage. Then conduct a test run to check that the air conditioner is operating properly.

### Explanations given to user

- Upon completion of the installation work, tell the user where the circuit breaker is located. If the user does not know where the circuit breaker is, he or she will not be able to turn it off in the event the unit has a problem.
- If the fan grille is damaged, do not approach the outdoor unit. Instead, set the circuit breaker to the OFF position and contact a qualified service person to have the repairs done. Do not set the circuit breaker to the ON position until the repairs are completed.
- After the installation work, follow the Owner's Manual to explain to the customer how to use and maintain the unit.

### Relocation

- Only a certified installer or service person is allowed to relocate the air conditioner.
- When the pump-down work is carried out shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air or other gas to be drawn in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in rupture, injury or other trouble.
- Do not recover the refrigerant into the outdoor unit. Use a refrigerant recovery machine to recover the refrigerant after moving or repairing. It is impossible to recover the refrigerant into the outdoor unit. Refrigerant recovery into the outdoor unit may result in serious accidents such as explosion of the unit, injury or other accidents.

### Disposal



- Relieve pressure and recover all refrigerant before system repair or final unit disposal.

## ⚠ CAUTION

### R410A Air Conditioner Installation

- This air conditioner uses the environmentally friendly HFC refrigerant (R410A).

## 2 Accessory Parts

Part name	Q'ty	Shape	Usage
Owner's Manual	1	—	(Be sure to present it to the customers.)
Installation Manual	1	—	This manual for installer.
Edge Guard	1		Protects piping against sharp edges
Protection busing	1		Protects communication wires

## 3 Installation of R410A Air Conditioner

This air conditioner adopts the HFC refrigerant (R410A) which does not deplete the ozone layer.

- To prevent mixing of refrigerant or refrigerating oil, the size of the main unit's charge port or installation tool's connecting section differs to that of an air conditioner for the former refrigerant. Accordingly, exclusive tools are required for the refrigerant (R410A) as shown in the following table.
- For connecting pipes, use new and clean piping materials so that water or dust does not enter.

### ■ Required Tools and Cautions on handling

Prepare the tools and equipment listed in the following table before starting the installation work.

△ : R410A exclusive

◎ : Generic

Tools/equipment	Use	Note
Manifold gauge*	Vacuuming/charging refrigerant and operation check	△
Charging hose		△
Gas leak detector	Gas leak check	△
Vacuum pump with backflow prevention function	Vacuum drying	◎
Flare tool	Flare machining of pipes	◎ Usable if dimensions are adjusted.
Bender	Bending pipes	◎
Refrigerant recovery equipment	Refrigerant recovery	△
Torque wrench	Tightening flare nuts	△ Ø1/2" (12.7 mm) and Ø5/8" (15.9 mm)
Pipe cutter	Cutting pipes	◎
Brazing torch and nitrogen cylinder	Braze pipes	◎
Refrigerant charging scales	Charging refrigerant	◎
4 mm hexagon wrench	Opening liquid valve	

# 4 Installation Conditions

## ■ Before installation

Follow these steps prior to installation.

### Airtight test

- 1** Before starting an airtight test, further tighten the spindle valves on the gas and liquid sides.
- 2** Pressurize the pipe with nitrogen gas charged from the service port to the design pressure to conduct an airtight test.
- 3** After the airtight test is complete, evacuate the nitrogen gas.

### Air purge

- To purge air, use a vacuum pump.
- Do not use refrigerant charged in the outdoor unit to purge air. (The air purge refrigerant is not contained in the outdoor unit.)

### Electrical wiring

Be sure to fix the power wires, indoor / outdoor connecting wires and remote control wires with clamps so that they do not come into contact with the cabinet, etc.

### Grounding

#### WARNING

**Make sure that proper grounding is provided.**

Improper grounding may cause an electric shock. For details on how to check grounding, contact the dealer who installed the air conditioner.

- Proper grounding can prevent charging of electricity on the outdoor unit surface due to the presence of a high frequency in the frequency converter (inverter) of the outdoor unit, as well as prevent electric shock. If the outdoor unit is not properly grounded you may be exposed to an electric shock.
- **Be sure to connect the ground wire (grounding work).**  
Incomplete grounding can cause an electric shock.  
Do not connect ground wires to gas pipes, water pipes, lightning rods or ground wires for telephone wires.

### Test run

Turn on the leakage breaker at least 12 hours before starting a test run to protect the compressor.

#### CAUTION

Incorrect installation work may result in a malfunction or complaints from customers.

## ■ Installation location

#### WARNING

**Install the outdoor unit properly in a location that is durable enough to support the outdoor unit's weight.**  
Insufficient durability may cause the outdoor unit to fall, which may result in injury.  
This outdoor unit has a weight of about 311 lbs (141 kg). Pay special attention when installing the unit onto a wall surface.

#### CAUTION

**Do not install the outdoor unit in a location that is subject to combustible gas leaks.**  
Accumulation of combustible gas around the outdoor unit may cause a fire.

**Install the outdoor unit in a location that meets the following conditions after the customer's consent is obtained.**

- A well-ventilated location free from obstacles near the air intake and air discharge
- A location that is not exposed to rain or direct sunlight
- A location that does not increase the operating noise or vibration of the outdoor unit
- A location that does not produce any drainage problems from discharged water

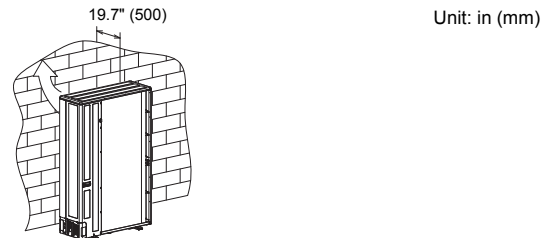
**Do not install the outdoor unit in the following locations.**

- A location with a saline atmosphere (coastal area) or one that is full of sulfide gas (hot-spring area) (Special maintenance is required.)
- A location subject to oil, vapor, oily smoke, or corrosive gases
- A location in which organic solvent is used
- Places where iron or other metal dust is present. If iron or other metal dust adheres to or collects on the interior of the air conditioner, it may spontaneously combust and start a fire.
- A location where high-frequency equipment (including inverter equipment, private power generator, medical equipment, and communication equipment) is used  
(Installation in such a location may cause malfunction of the air conditioner, abnormal control or problems due to noise from such equipment.)
- A location in which the outdoor unit's discharged air blows against the window of a neighboring house
- A location where the outdoor unit's operating noise is transmitted
- When the outdoor unit is installed in an elevated position, be sure to secure its fixing leg.
- A location where drain water does not negatively impact the area and neighbors.
- Places with poor ventilation.

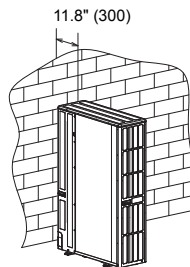
When collectively draining discharged water completely, use a drain pan.

**CAUTION**

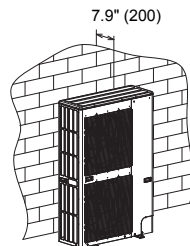
1. Install the outdoor unit in a location where the discharge air is not blocked.
2. When an outdoor unit is installed in a location that is always exposed to strong winds like a coast or on the high stories of a building, secure normal fan operation by using a duct or wind shield.
3. When installing the outdoor unit in a location that is constantly exposed to strong winds such as on the upper floors or rooftop of a building, apply the wind-proofing measures referred to in the following examples.
  - 1) Install the unit so that its discharge port faces the wall of the building.



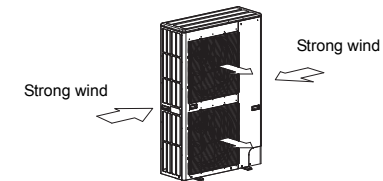
- 2) Leave a clearance of at least 11.8" (300) between the right side panel and wall or other surface of the building for installation and servicing purposes.



- 3) Leave a clearance of at least 7.9" (200) between the rear panel and wall or other surface of the building to maintain the air conditioner's performance.



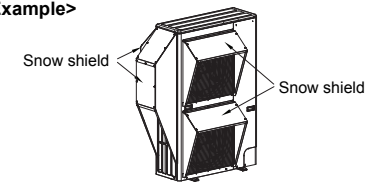
- 4) Consider the wind direction during the operational season of the air conditioner, and install the unit so that the discharge port is set at a right angle relative to the wind direction.



When installing the unit in an area where snowfalls may be heavy, take steps to prevent the unit from being adversely affected by the fallen or accumulated snow.

- Either make the foundation higher or install a stand (which is high enough to ensure that the unit will be above the fallen or accumulated snow) and place the unit on it.
- Attach a snow shield (field supplied).

**<Example>**

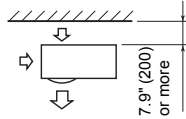


■ **Necessary space for installation**  
(Unit: in (mm))

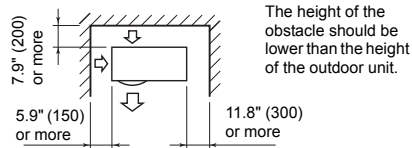
### Obstacle at rear side

**Upper side is free**

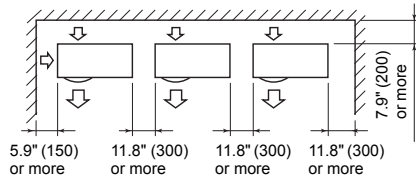
- ### 1. Single unit installation



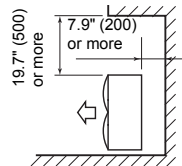
- ## 2. Obstacles on both right and left sides



3. Serial installation of two or more units  
The height of the obstacle should be lower than the height of the outdoor unit.



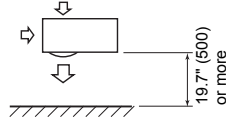
### Obstacle also above unit



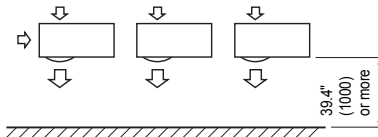
### Obstacle in front

**Above unit is free**

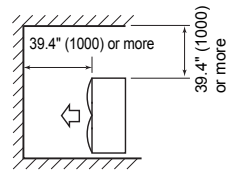
- ### 1. Single unit installation



- ## 2. Serial installation of two or more units



**Obstacle also above unit**



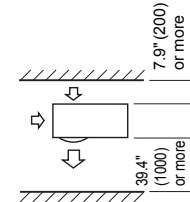
### Obstacles in both front and rear of unit

Open above and to the right and left of the unit.

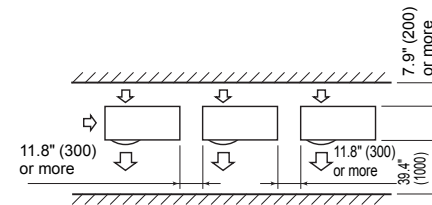
The height of an obstacle in both the front and rear of the unit, should be lower than the height of the outdoor unit.

## Standard installation

- ### 1. Single unit installation



- ## 2. Serial installation of two or more units

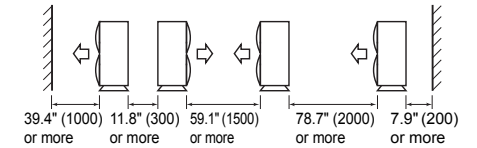


### Serial installation in front and rear

Open above and to the right and left of the unit.

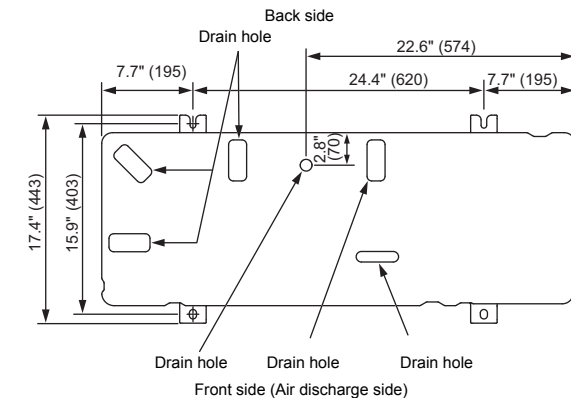
The height of an obstacle in both the front and rear of the unit should be lower than the height of the outdoor unit.

## Standard installation



## ■ Installation of outdoor unit

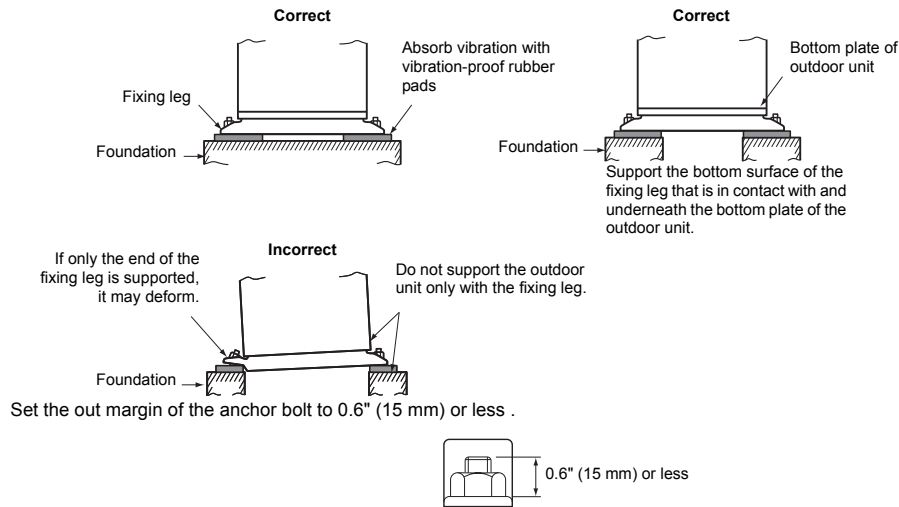
- Before installation, check the strength and leveling of the base so that abnormal sounds do not emit from the unit.
- According to the following base diagram, secure the base firmly with the anchor bolts.  
(Anchor bolt, nut: 0.4" (M10) x 4 pairs)



- As shown in the figure below, install vibration-proof rubber pads to directly support the bottom surface of the fixing leg.
- \* When installing the foundation for an outdoor unit with downward piping, consider the piping work.

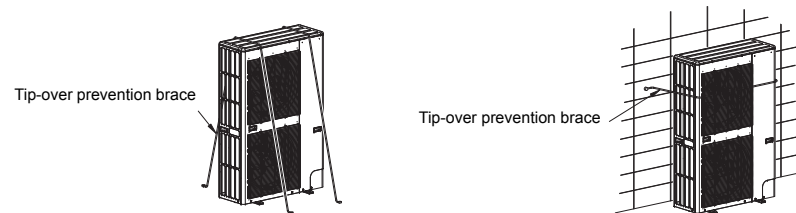
## 5 Refrigerant Piping

### ■ Leading out the pipes



Set the out margin of the anchor bolt to 0.6" (15 mm) or less .

- When the unit is to be installed in a location where it is likely to be exposed to strong winds or where the foundation is unstable, additional measures must be taken to prevent tip-over as shown in the figure below.



### ⚠ CAUTION

- Carry out the installation work by following the prescribed procedure to help prevent the unit from shaking in the event of strong winds, earthquakes, etc.
- Failure to carry out the installation work as prescribed may lead to the unit tipping over, in turn causing an accident.

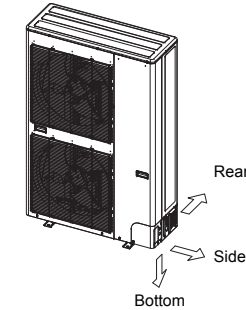
### ■ For reference

If a heating operation is to be continuously performed for a long time under the condition that the outdoor temperature is 32 °F (0 °C) or lower, draining defrosted water may be difficult due to the bottom plate freezing, resulting in trouble with the cabinet or fan.

Attach a snow stand, snow hood, etc. to the outdoor unit for use in snowfall areas.

It is recommended to procure an anti-freeze heater locally to safely install the air conditioner.

For details, contact the dealer.



- The indoor/outdoor unit connecting pipes can be connected in any of 3 directions. Use a screwdriver to punch out the knockout part of the piping/wiring panel or base. Wear heavy work gloves to protect yourself from injury while doing this work. After punching out the knockout hole in a manner which ensures that the pipes and wires will not be damaged in any way, remove the burrs from around the hole. Use the protective edge guard around the opening.

### ■ Optional installation parts (field supplied)

	Part name	Quantity
A	Refrigerant piping Liquid side: Ø3/8" (Ø9.52 mm) Gas side: Ø5/8" (Ø15.88 mm) or Ø3/4" (Ø19.05 mm)	One each
B	Pipe insulating material (polyethylene foam, 0.4" (10 mm) thick)	1
C	Putty, PVC tape	One each

### REQUIREMENT

Follow the instructions in the installation manual provided with the branch pipe kit and the instructions in the indoor unit's installation manual to connect the refrigerant pipe between the branch pipe and indoor unit.



## ■ Refrigerant piping connection

### ⚠ CAUTION

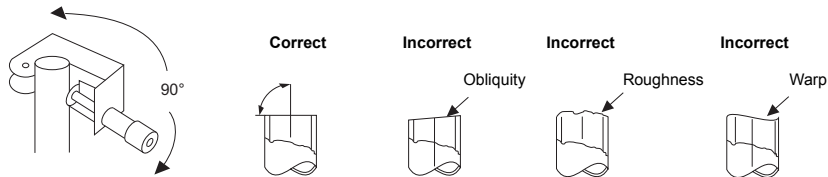
#### TAKE NOTE OF THESE 4 IMPORTANT POINTS BELOW FOR PIPING WORK

1. Keep dust and moisture away from inside the connecting pipes.
2. Tightly connect the connection between pipes and the unit.
3. Evacuate the air in the connecting pipes using a VACUUM PUMP.
4. Check for gas leaks at connection points.

## Pipe connection method

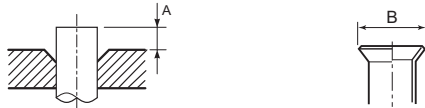
### Flaring

1. Cut the pipe with a pipe cutter.



2. Remove the burr inside the pipe.  
When removing the burr, be careful that the chips do not fall into the pipe.
3. Remove the flare nuts attached to the outdoor / indoor unit, then insert them into each of the pipes.
4. Flare the pipes.

See the following table for the projection margin (A) and flaring size (B).



Pipe		A		B	Flare Nut		
Outside diameter	Thickness	Rigid (clutch type) R410A tool	Imperial (wing nut type) R410A tool		Width across flat	Tighten torque	
						lbf·ft	N·m
						kgf·m	
in	1/4"	0.03"	0 to 0.02"	0.04" to 0.06"	0.39"	0.67"	
mm	6.35	0.8	0 to 0.5	1.0 to 1.5	9.9	17	10.3 to 13.3
in	3/8"	0.03"	0 to 0.02"	0.04" to 0.06"	0.52"	0.87"	14 to 18
mm	9.52	0.8	0 to 0.5	1.0 to 1.5	13.2	22	24.3 to 31.0
in	1/2"	0.03"	0 to 0.02"	0.04" to 0.06"	0.65"	1.02"	33 to 42
mm	12.7	0.8	0 to 0.5	1.0 to 1.5	16.6	26	36.1 to 45.0
in	5/8"	0.04"	0 to 0.02"	0.04" to 0.06"	0.78"	1.14"	49 to 61
mm	15.88	1.0	0 to 0.5	1.0 to 1.5	19.7	29	63 to 77
in	3/4"	0.05"	0 to 0.02"	0.04" to 0.06"	0.94"	1.42"	73.8 to 88.5
mm	19.05	1.2	0 to 0.5	1.0 to 1.5	24.0	36	100 to 120

- \* In case of flaring for R410A with the conventional flare tool, pull the tool out approx. 0.02" (0.5 mm) more than that for R22 to adjust it to the specified flare size.  
The copper pipe gauge is useful for adjusting the projection margin size.

## REQUIREMENT

- When brazing the refrigerant pipes, be sure to use nitrogen gas to prevent oxidation of the inside of the pipes; otherwise clogging of the refrigerating cycle due to oxidized scale may occur.
- Use clean and new pipes for the refrigerant pipes and perform the piping work so that water or dust does not contaminate the refrigerant.
- \* **Remove all flux after brazing.**
- Be sure to use a double spanner to loosen or tighten the flare nut. If a single spanner is used, the required level of tightening cannot be obtained. Tighten the flare nut with the specified torque.
- **Do not apply refrigerant oil to the surface of the flare.**

## Coupling size of brazed pipe

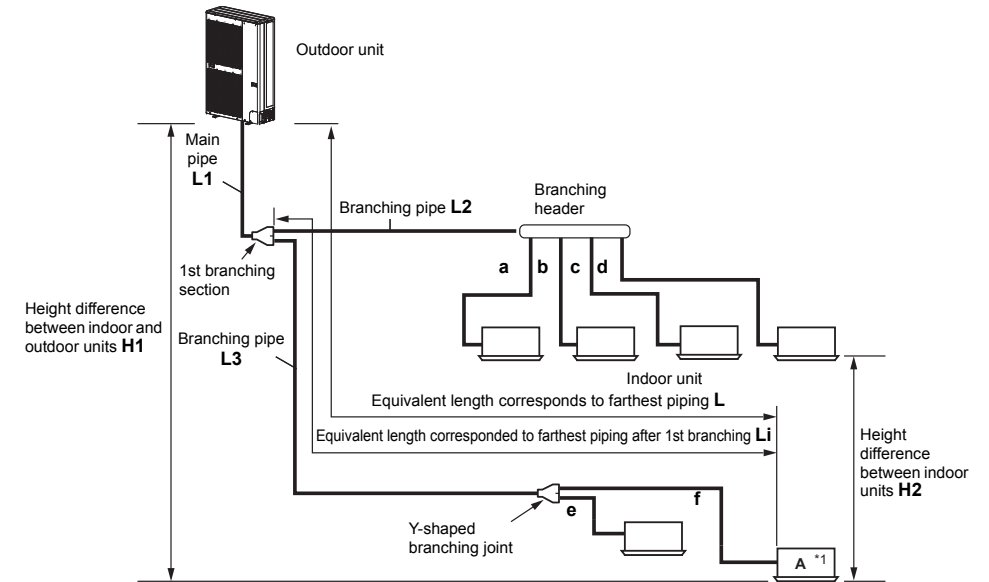
Connected section	
External size	Internal size

	Standard outer dia. of connected copper pipe	Connected section					Min. thickness of coupling
		External size	Internal size	Min. depth of insertion		Oval value	
		Standard outer dia.					
		C	F	K	G		
in	1/4"	1/4"±0.001	0.25" <sup>+0.002 -0.001</sup>	0.28"	0.24"	0.002" or less	0.02"
mm	6.35	6.35±0.03	6.45 <sup>+0.04 -0.02</sup>	7	6	0.06 or less	0.5
in	3/8"	3/8"±0.001	0.38" <sup>+0.002 -0.001</sup>	0.31"	0.28"	0.003" or less	0.02"
mm	9.52	9.52±0.03	9.62 <sup>+0.04 -0.02</sup>	8	7	0.08 or less	0.6
in	1/2"	1/2"±0.001	0.50" <sup>+0.002 -0.001</sup>	0.35"	0.31"	0.004" or less	0.03"
mm	12.7	12.7±0.03	12.81 <sup>+0.04 -0.02</sup>	9	8	0.10 or less	0.7
in	5/8"	5/8"±0.001	0.63" <sup>+0.002 -0.001</sup>	0.35"	0.31"	0.005" or less	0.03"
mm	15.88	15.88±0.03	16.00 <sup>+0.04 -0.02</sup>	9	8	0.13 or less	0.8
in	3/4"	3/4"±0.001	0.76" <sup>+0.002 -0.001</sup>	0.43"	0.39"	0.006" or less	0.03"
mm	19.05	19.05±0.03	19.19 <sup>+0.04 -0.02</sup>	11	10	0.15 or less	0.8



(3)	Branching section ↓ Indoor unit	Indoor unit connecting pipe	Connecting pipe size of indoor unit			
			Capacity rank		Gas pipe	Liquid pipe
			007 to 012 type		Ø3/8"	Ø1/4"
			015 to 018 type		Ø1/2"	Ø1/4"
			021 to 048 type		Ø5/8"	Ø3/8"
(4)	Branching section	Y-shaped branching joint	Selection of branching section (Y-shaped branching joint)			
					Model name	
			Y-shape branch joint		RBM-BY55UL	
(5)	Branching section	Branching header	Selection of branching section (Branching header)			
					Model name	
			Branching header*	For 4 branches	RBM-HY1043UL	
				For 8 branches	RBM-HY1083UL	
						* A capacity code up to a maximum of 57 is connectable to one line after branching from the header.

### Allowable length / height difference of the refrigerant piping



		Allowable value (ft (m))	Pipes
Piping Length	Total extension of pipe (liquid pipe, real length)	591 (180)	$L1 + L2 + L3 + a + b + c + d + e + f$
	Furthest piping length L (*1)	Real length	328 (100)
		Equivalent length	410 (125)
	Max. equivalent length of main pipe	213 (65)	L1
	Max. equivalent length of furthest piping from 1st branching Li (*1)	115 (35)	$L3 + f$
	Max. real length of indoor unit connecting pipe	49 (15)	a, b, c, d, e, f
Height Difference	Height between indoor and outdoor units H1	Upper outdoor unit	164 (50)
		Lower outdoor unit	131 (40)
	Height between indoor units H2	49 (15)	

\*1 Furthest indoor unit from 1st branch to be named "A".

## ■ Airtight test

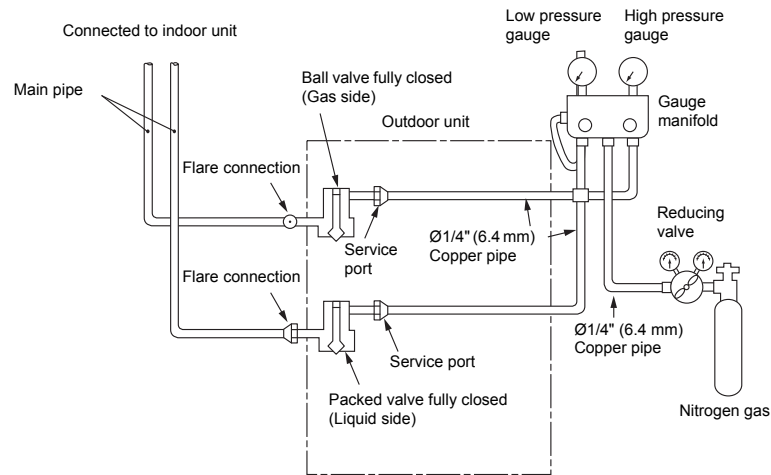
Before starting an airtight test, tighten the spindle valves further on the gas side and liquid side.  
Pressurize the pipe with nitrogen gas charged from the service port to the design pressure to conduct the airtight test. After the airtight test is completed, evacuate the nitrogen gas.

- Apply pressure from the service ports of the packed valves (or ball valves) at the liquid side and gas side.
- An air tight test can be only performed to the service ports at the liquid side and gas side of the outdoor unit.
- Fully close the valves at the liquid side and gas side. There is a possibility that nitrogen gas may enter the refrigerant cycle, re-tighten the valve rods before applying pressure.  
(Re-tightening of the valve rods are unnecessary for valves at the gas side because they are ball valves.)
- For each refrigerant line, apply pressure gradually with the following steps at the liquid side and gas side.

**Apply pressure to the gas side and liquid side.**

### REQUIREMENT

Do not use "Oxygen", "Flammable gas" and "Noxious gas" in an airtight test.



#### To detect a gross leakage

1. Apply pressure 44 psi for 3 minutes or more.
2. Apply pressure 218 psi for 3 minutes or more.

#### To detect a slow leakage

3. Apply pressure 602 psi for approx. 24 hours.

- Check pressure down.  
No pressure down: Accepted  
Pressure down: Check the leaked position.

### NOTE

If the environmental temperature changes from the moment pressure is applied to 24 hours after that, the pressure will change by about 1.45 psi per 1.8 °F (1 °C). Consider the pressure change when checking the test result.

### REQUIREMENT

When a pressure decrease is detected in steps 1-3, check the leakage at the connecting points.  
Check the leakage using a foaming agent or other measures and seal the leak with re-brazing, flare retightening or other methods. After sealing, execute an airtight test again.

## Air purge

### NOTE

For the air purge at installation time (discharge of air in the connecting pipes), use the "Vacuum pump method".

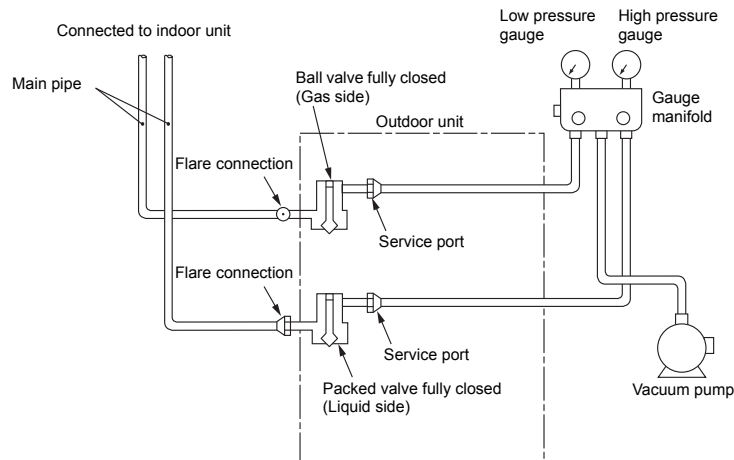
- For protection of the earth's environment, do not discharge the refrigerant gas into the air.
- Eliminate the remaining air (nitrogen gas, etc.) in the unit with a vacuum pump.

If gas remains, performance and reliability of the unit may be reduced.

After the airtight test, discharge the nitrogen gas. Then connect the gauge manifold to the service ports at the gas side and liquid side, and connect the vacuum pump as shown in the following figure.

Perform vacuuming for gas side and liquid side.

- Perform the vacuuming method from both the liquid and gas sides.
- Use a vacuum pump with the counter-flow preventive function so that oil in the pump does not back up in the air conditioner pipe when the pump has been stopped. (If oil in the vacuum pump enters into the air conditioner with R410A refrigerant, a problem may occur in the refrigeration cycle.)



- Use a vacuum pump that has a high vacuum (below -14.6 psi) and a large exhaust gas amount (over 40 L /minute).
- Perform vacuuming for 2 or 3 hours (time differs due to pipe length).  
In this time, check all valves at the liquid and gas sides are fully closed.
- If the vacuuming valve amount is not decreased to below -14.6 psi even after vacuuming for 2 hours or more, continue vacuuming for 1 hour or more.  
If -14.6 psi or less cannot be obtained by 3 hours or more of vacuuming, detect and repair the leak.
- When the vacuuming valve has reached -14.6 psi or less after vacuuming for 2 hours or more, close valves VL and VH on the gauge manifold fully. Stop the vacuum pump, leave it as it is for 1 hour and then check that the vacuum does not change. If it does change, then there may be a leak within the system.
- After the above procedure for vacuuming has finished, exchange the vacuum pump with a refrigerant cylinder and advance to the additional charging of refrigerant.

## Adding refrigerant

After vacuuming is complete, exchange the vacuum pump with a refrigerant canister and start the additional charging of refrigerant.

### Calculation of additional refrigerant charge amount

The default refrigerant amount does not include the refrigerant for pipes at the local site.

For refrigerant to be charged in pipes at the local site, calculate the amount and charge it additionally.

Outdoor unit type	MAP0367	MAP0487	MAP0607
Charging amount (lbs (kg))	14.8 (6.7)	14.8 (6.7)	14.8 (6.7)

Additional refrigerant charge amount at local site	=	Real length of liquid pipe	×	Additional refrigerant charge amount per 1 ft liquid pipe (Table 1)	×	1.2	+	Compensation by outdoor HP (Table 2)
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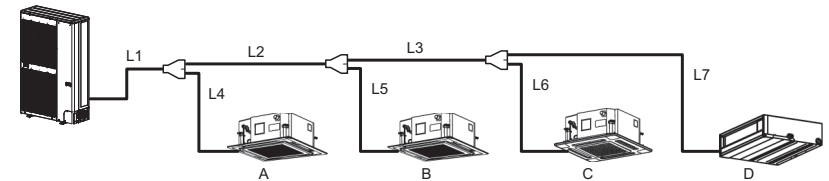
Table 1

Liquid pipe dia. (in)	Ø1/4"	Ø3/8"
Additional refrigerant amount / 1 ft liquid pipe (lbs/ft)	0.017	0.038

Table 2

Outdoor unit type	MAP0367	MAP0487	MAP0607
Compensation by outdoor capacity (lbs (kg))	0 (0)	0.88 (0.4)	1.76 (0.8)

Example: (060 type)



L1	Ø3/8": 32.8 ft	L2	Ø3/8": 32.8 ft	L3	Ø3/8": 16.4 ft	L4	Ø3/8": 9.8 ft
L5	Ø1/4": 9.8 ft	L6	Ø1/4": 13.1 ft	L7	Ø1/4": 16.4 ft		

Additional charge amount R (kg)

Lx: Real total length of liquid pipe diameter 1/4" (ft)

Ly: Real total length of liquid pipe diameter 3/8" (ft)

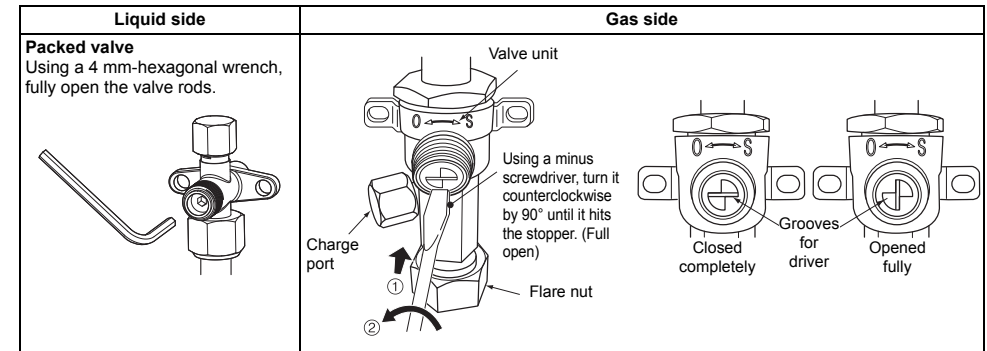
$$\begin{aligned}
 &= \{ (Lx \times 0.017 \text{ lbs/ft}) + (Ly \times 0.038 \text{ lbs/ft}) \} \times 1.2 + (1.76 \text{ lbs}) \\
 &= \{ (39.3 \times 0.017 \text{ lbs}) + (91.8 \times 0.038 \text{ lbs}) \} \times 1.2 + (1.76 \text{ lbs}) \\
 &= 6.75 \text{ lbs}
 \end{aligned}$$

### Charging of refrigerant

- Keep the outdoor unit's valve closed, be sure to charge the liquid refrigerant into the service port at the liquid side.
- If the specified amount of refrigerant cannot be charged, fully open the outdoor unit's valves at the liquid and gas sides, operate the air conditioner in the COOL mode, and then charge the refrigerant into the service port at the gas side. In this time, choke the refrigerant slightly by operating the valve of the canister to charge the liquid refrigerant.
- The liquid refrigerant may be charged suddenly, therefore be sure to charge refrigerant gradually.

### Full opening of the valve

Open the valves of the outdoor unit fully.



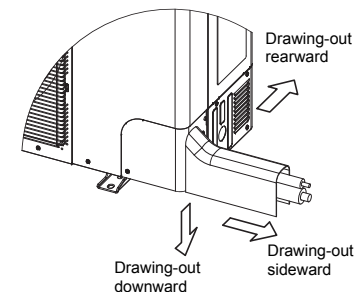
### Heat insulation for pipe

- Apply the pipe's heat insulation separately at the liquid and gas sides.
- Be sure to use a thermal insulator resistant up to 248 °F (120 °C) or higher for pipes at the gas side.

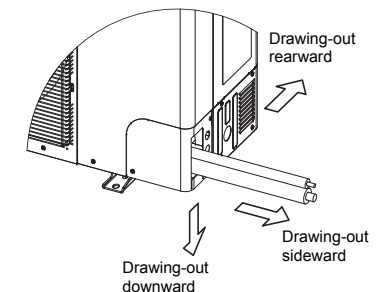
### Finishing after connecting pipes

- After the piping connection work has been finished, cover the opening of the piping / wiring panel with the piping cover, or fill silicon or putty in the space between the pipes.
- In case of drawing-out the pipes downward or sideward, also close the openings of the base plate and the side plate.
- Under the opened condition, a problem may be caused due to the entering of water or dust.

When using the piping cover



When not using the piping cover



### Pipe holding bracket

Attach the pipe holding brackets following the table below.

Diameter of pipe in (mm)	Interval
Ø3/4" (Ø19.05) or less	78.7" (2 m)

# 6 Electric Wiring

## ⚠ WARNING

The equipment shall be installed in compliance with NEC and local codes.  
Capacity shortages of the power circuit or an incomplete installation may cause an electric shock or fire.

## ⚠ CAUTION

- All field wiring insulation rating must comply with NEC and local codes.
- Do not connect 208/230 V power to the terminal blocks for control cables (U1, U2, U3, U4); otherwise, the unit may break down.
- Be sure that electric wiring does not come into contact with high-temperature parts of piping; otherwise, the cable coating may melt and cause an accident.
- After connecting wires to the terminal block, take off the traps and fix the wires with cord clamps.
- Do not conduct power to indoor units until vacuuming of the refrigerant pipes has finished.
- For the wiring of power to indoor units and that between the indoor and outdoor units, follow the instructions in the installation manual of each indoor unit.
- Prepare an exclusive power supply for the air conditioner.

## NOTE

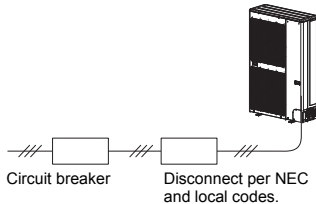
- Use copper supply wires.
- Use UL wires rated 600 V for the system interconnection wires.
- Use UL wires rated 300 V for remote control wires.

## ■ Power supply specifications

### Standard model

MCA: Maximum Circuit Amps  
MOCP: Maximum Overcurrent Protection (Amps)

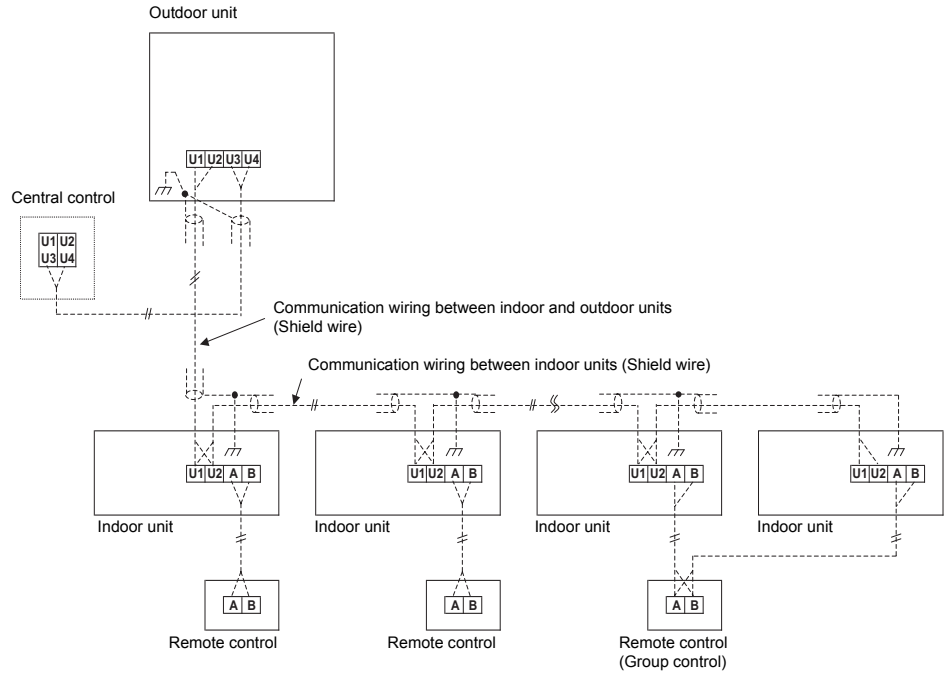
Model	Power Supply Nominal Voltage, Phase and frequency	MCA (A)	MOCP (A)
MCY-MAP0367HS-UL	208/230 V -1- 60 Hz	36.3	60
MCY-MAP0487HS-UL		36.3	60
MCY-MAP0607HS-UL		36.3	60



## ■ Communication Wiring Specifications

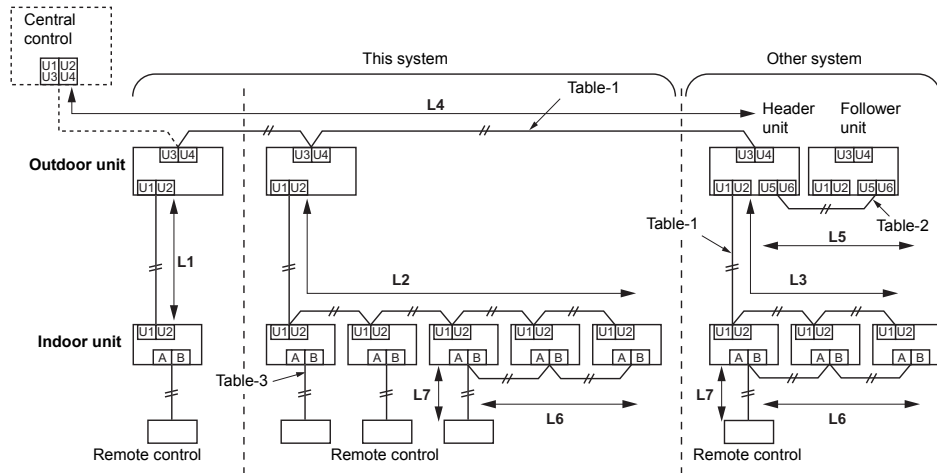
### Communication Wiring Design

### Communication Wiring Summary



Communication wiring and central control wiring use 2-core non-polarity wires.  
Use a 2-core shield wires to prevent noise trouble.  
In this case, for the system grounding, close (connect) the end of shield wires, and isolate the end of terminal.  
Use a 2-core non-polarity wire for remote control. (A, B terminals)  
Use a 2-core non-polarity wire for wiring of group control. (A, B terminals)

Keep the rule of the following tables about size and length of communication wiring.



**Table-1 Control wiring between indoor and outdoor units (L1, L2, L3), Central control wiring (L4)**

Wiring	2-core, non-polarity
Type	Shield wire
Size / Length *1	AWG16: Up to 3280 ft (1000 m) AWG14: Up to 6560 ft (2000 m) (*1)

\*1 Total of control wiring length for all refrigerant circuits ( L1 + L2 + L3 + L4 )

**Table-2 Control wiring between outdoor units (L5) (Other system)**

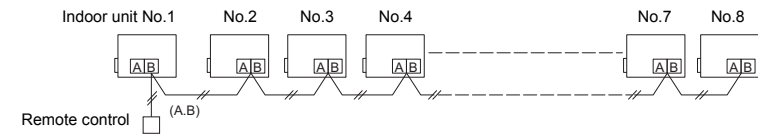
Wiring	2-core, non-polarity
Type	Shield wire
Size / Length	AWG16 to AWG14 / Up to 330 ft (100 m) (L5)

**Table-3 Remote control wiring (L6, L7)**

Wiring	2-core
Size	AWG20 to AWG14
Length	<ul style="list-style-type: none"> <li>Up to 1640 ft (500 m) (L6 + L7)</li> <li>Up to 1310 ft (400 m) in case of wireless remote control in group control.</li> <li>Up to 660 ft (200 m) total length of control wiring between indoor units (L6)</li> </ul>

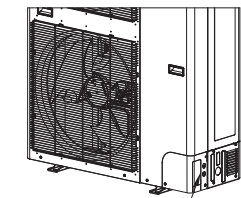
## Group control through a remote control

Group control of multiple indoor units (8 units) through a single remote control



## ■ Connection of power wires and communication wires

Remove knockouts on the piping / wiring panel or the base and insert the power wires and communication wires through the holes with the refrigerant piping.



Knockout for the refrigerant piping

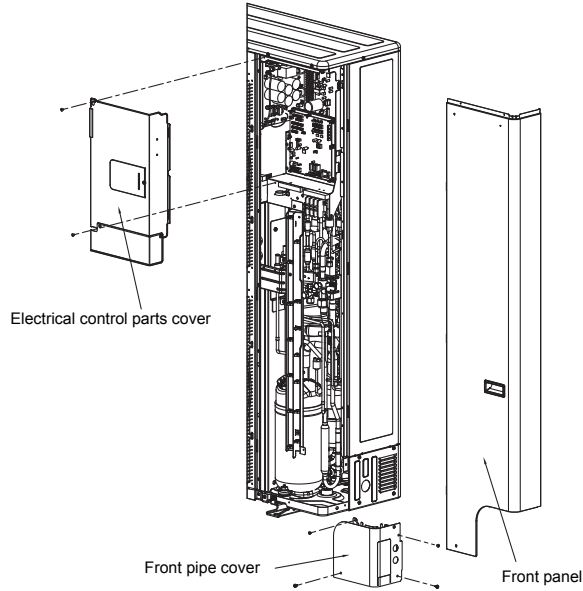
## NOTE

Separate the power wire and communication wires.

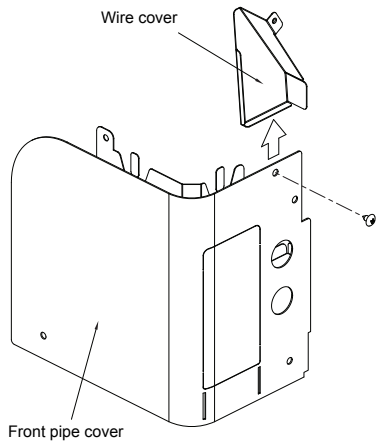


Power supply wire connection

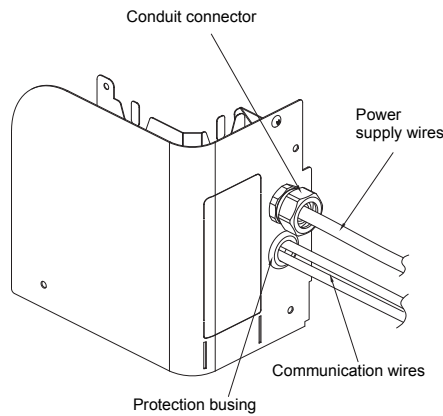
1. After removing the front panel, remove the electrical control parts cover and the front pipe cover.



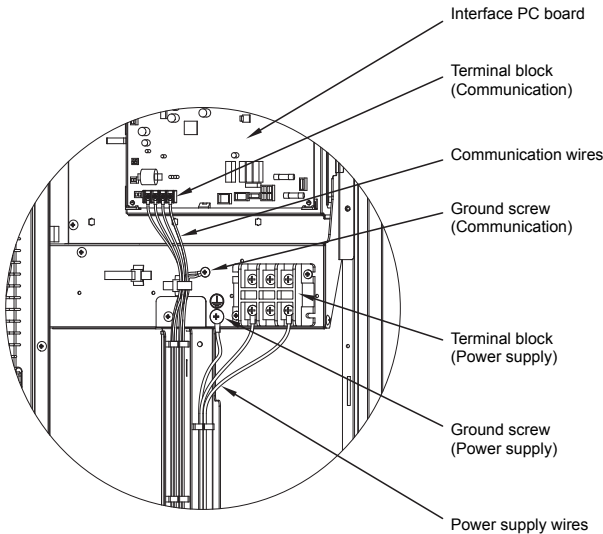
2. Remove the wire cover from the front pipe cover.



3. Install the conduit connector to the front pipe cover and insert the power supply wires and the communication wires.



4. Connect the power supply wires and the communication wires to each terminal blocks.



Use the ring terminals on the field power wires if required by NEC and local codes.

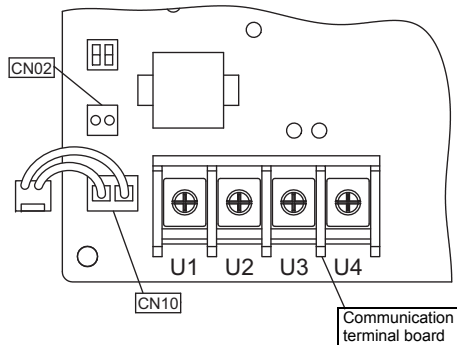
Screw size and tightening torque

	Screw size	Tightening torque lbf·ft (N·m)
Power supply terminal	M6	1.8 to 2.2 (2.5 to 3.0)
Ground screw	M6	1.8 to 2.2 (2.5 to 3.0)

## Communication wire connection

Connect the communication wires to the communication wire terminals from under the electrical control box, and secure them with the communication cable clamps.

[U1, U2] and [U3, U4] not connected

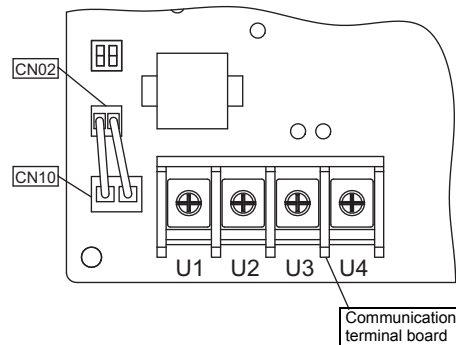


U1	U2	U3	U4
TO INDOOR UNIT		TO CENTRAL CONTROLLER	

U3, U4: Central control device

U1, U2: Communication wiring between Indoor / Outdoor unit

[U1, U2] and [U3, U4] connected



U1	U2	U3	U4
TO INDOOR UNIT		TO CENTRAL CONTROLLER	

## Screw size and tightening torque

	Screw size	Tightening torque lbf·ft (N·m)
Communication wire terminal	M4	0.9 to 1.0 (1.2 to 1.4)

# 7 Address Setting

On this unit, it is required to set the addresses of the indoor units before starting the air conditioner. Set the addresses following the steps below.

## CAUTION

- Be sure to complete the electric wiring before setting the addresses.
- If you turn on the outdoor unit before turning on the indoor units, the CODE No. [E19] is indicated on the 7-segment display on the interface P.C. board of the outdoor unit until the indoor units are turned on. This is not a malfunction.
- It may take up to ten minutes (normally about five minutes) to address one refrigerant line automatically.
- Settings on the outdoor unit are required for automatic addressing. (Address setting is not started simply by turning on the power.)
- Running the unit is not required for address setting.
- The addresses can be set manually.

Automatic addressing:

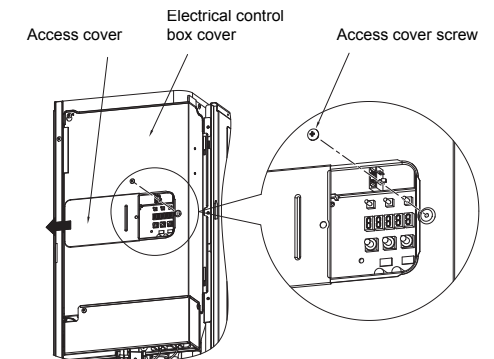
Manual addressing:

setting addresses using SW15 on the interface P.C. board on the outdoor unit  
setting addresses on the wired remote control.

\* When setting an address manually, the wired remote control must temporarily be paired with an indoor unit one-to-one. (when the system is organized for group operation and no remote control)

## WARNING

- Electrical shock hazard - the electrical control box contains high voltage parts. All adjustments for address setting should be made through the access cover.
- Do not remove the electrical control box cover.
- After completing the address setting the access cover should be closed and secured using the screw provided.



## ■ Automatic address setting

No central control (single refrigerant line):

go to Address setting procedure 1

Central control of 2 or more refrigerant lines:

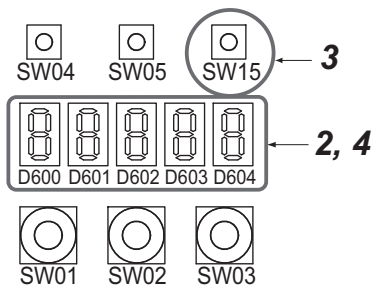
go to Address setting procedure 2

(Example)	When controlling a single refrigerant line centrally	When controlling 2 or more refrigerant lines centrally
Address setting procedure	To procedure 1	To procedure 2
System wiring diagram		

### Address setting procedure 1

- 1 Turn on the indoor units first, and then turn on the outdoor units.
- 2 About one minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the outdoor unit indicates **U. 1. L08 (U. 1. flash)**.
- 3 Press SW 15 to start the automatic address setting.  
It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.
- 4 The 7-segment display indicates **Auto 1 → Auto 2 → Auto 3**.  
After the indication, **U. 1. --- (U. 1. flash)** starts flashing on the display.  
When the flashing stops and **U. 1. --- (U. 1. light)** remains lit on the display, the setting is complete.

Interface P.C. board on the outdoor unit



## REQUIREMENT

- When 2 or more refrigerant lines are controlled as a group, be sure to turn on all the indoor units in the group before setting the addresses.
- If you set the unit addresses of each line separately, each line's header indoor unit is set separately. In that case, the CODE No. "L03" (Indoor header unit overlap) is indicated as running starts. Change the group address to make one unit the header unit using the wired remote control.

(Example)	Controlling 2 or more refrigerant lines as a group
System wiring diagram	

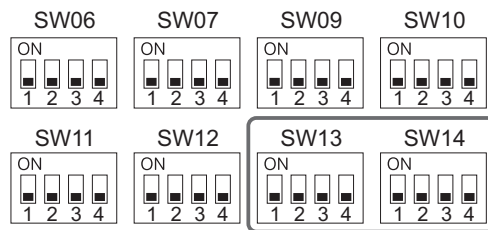
## Address setting procedure 2

- 1** Set a system address for each system using SW 13 and 14 on the interface P.C. board on the outdoor unit of each system.  
(Factory default: Address 1)

### NOTE

Be sure to set a unique address on each system. Do not use a same address as another system (refrigerant line) or a custom side.

#### Interface P.C. board on the outdoor unit



#### Switch settings for a line (system) address on the interface P.C. board on the outdoor unit

(O: switch ON, x: switch OFF)

Line (system) address	SW13				SW14			
	1	2	3	4	1	2	3	4
1	–	–	–	x	x	x	x	x
2	–	–	–	x	O	x	x	x
3	–	–	–	x	x	O	x	x
4	–	–	–	x	O	O	x	x
5	–	–	–	x	x	x	O	x
6	–	–	–	x	O	x	O	x
7	–	–	–	x	x	O	O	x
8	–	–	–	x	O	O	O	x
9	–	–	–	x	x	x	x	O
10	–	–	–	x	O	x	x	O
11	–	–	–	x	x	O	x	O
12	–	–	–	x	O	O	x	O
13	–	–	–	x	x	x	O	O
14	–	–	–	x	O	x	O	O
15	–	–	–	x	x	O	O	O
16	–	–	–	x	O	O	O	O
17	–	–	–	O	x	x	x	x
18	–	–	–	O	O	x	x	x
19	–	–	–	O	x	O	x	x
20	–	–	–	O	O	O	x	x
21	–	–	–	O	x	x	O	x
22	–	–	–	O	O	x	O	x
23	–	–	–	O	x	O	O	x
24	–	–	–	O	O	O	O	x
25	–	–	–	O	x	x	x	O
26	–	–	–	O	O	x	x	O
27	–	–	–	O	x	O	x	O
28	–	–	–	O	O	O	x	O

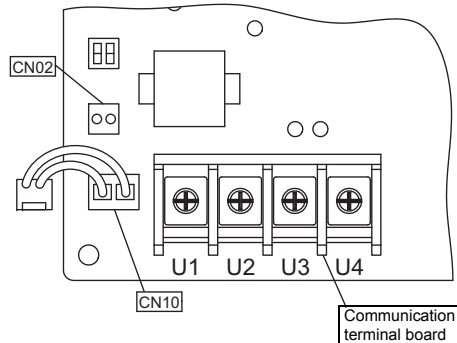
"–": not used for system address setting (Do not change their positions.)

- 2** In all the outdoor units connected to the central control, make sure the relay connector of the interface P.C. board “CN10” has not been connected to the “CN02”.

**NOTE**

If you connect a relay connector “CN10” to “CN02”, the communication line [U1, U2] will be connected to [U3, U4].  
If [U1, U2] is connected to the [U3, U4], refrigerant line address cannot be set correctly.

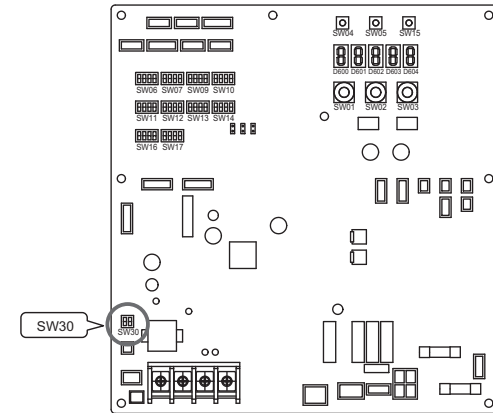
[U1, U2] and [U3, U4] not connected



U1	U2	U3	U4
TO INDOOR UNIT		TO CENTRAL CONTROLLER	

- 3** Turn on the indoor units first, and then turn on the outdoor units.
- 4** About 1 minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the outdoor unit indicates **U. 1. L08 (U. 1. flash)**.
- 5** Press SW 15 to start the automatic address setting.  
(It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)
- 6** The 7-segment display indicates **Auto 1 → Auto 2 → Auto 3**.  
After the indication, **U. 1. --- (U. 1. flash)** starts flashing on the display.  
When the flashing stops and **U. 1. --- (U. 1. light)** remains lit on the display, the setting is complete.
- 7** Repeat steps 4 to 6 for other refrigerant lines.
- 8** After completing the address setting of all systems, turn off dip switch 2 of SW30 on the interface P.C. boards of all the outdoor units connected to the same central control, except the unit that has the lowest address.  
(For unifying the termination of the wiring for the central control of indoor and outdoor units)

Header unit interface P.C. board

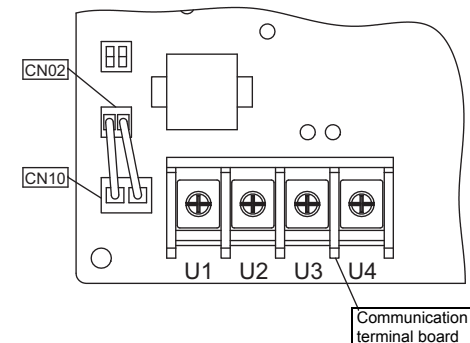


- 9** Connect the relay connectors “CN10” to “CN02”, which are mounted on the interface P.C. boards of all the outdoor units connected to the central control.

**NOTE**

Ensure that before you perform this task, address that the setting of the refrigerant line have all been completed.

[U1, U2] and [U3, U4] connected



U1	U2	U3	U4
TO INDOOR UNIT		TO CENTRAL CONTROLLER	

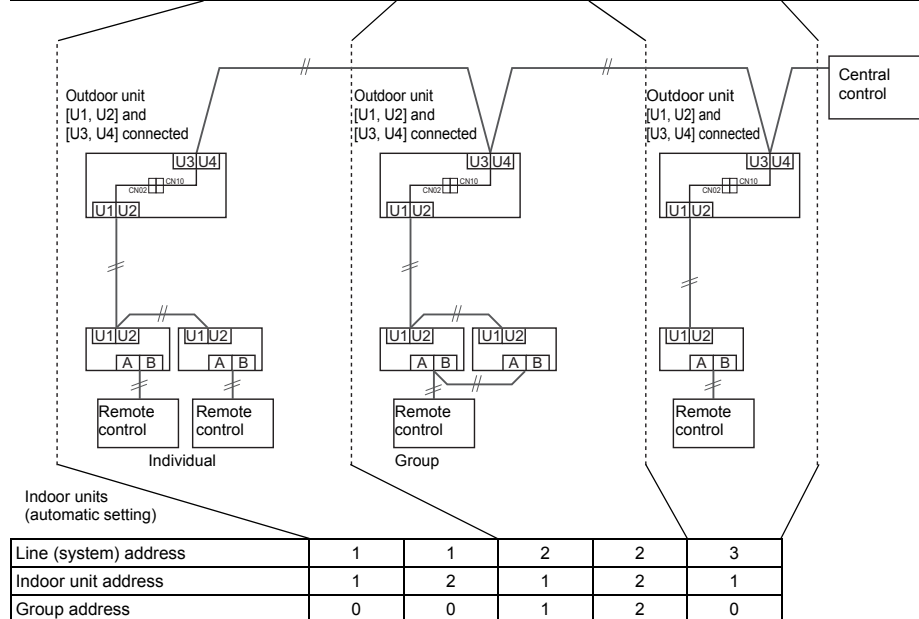
- 10** Set the central control address.  
(For the setting of the central control address, refer to the installation manuals of the central control devices.)

### Switch setting (setting example when controlling 2 or more refrigerant lines centrally)

#### Outdoor units (setting manually)

\*The items in bold font must be set manually.

Outdoor unit's interface P.C. board	Outdoor unit	Outdoor unit	Outdoor unit	Factory default
SW13, 14 (Line (system) address)	1	2	3	1
Dip switch 2 of SW30 (Terminator of indoor / outdoor communication line and central control line)	ON	<b>Set to OFF after setting addresses.</b>	<b>Set to OFF after setting addresses.</b>	ON
Relay connector	<b>Connect after setting addresses.</b>	<b>Connect after setting addresses.</b>	<b>Connect after setting addresses.</b>	Open



#### CAUTION

##### Relay connector connection

Never connect relay connectors between the [U1, U2] and [U3, U4] terminals before completing the address setting of all the refrigerant lines. Otherwise, the addresses cannot be set correctly.

### Manual address setting using a remote control

This procedure should be used if the indoor unit wiring is completed and the outdoor unit wiring has not been started. For this procedure, the group remote control should not be connected. One individual remote control should be used to set the address on each individual indoor unit (one unit at a time), by wiring the remote control directly to the indoor unit that is to be addressed.

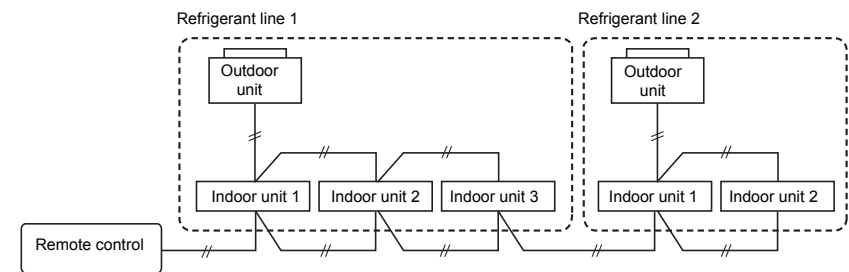
When the address setting procedure is completed for the individual indoor units, the group remote control should be connected as shown in the following figure.

#### CAUTION

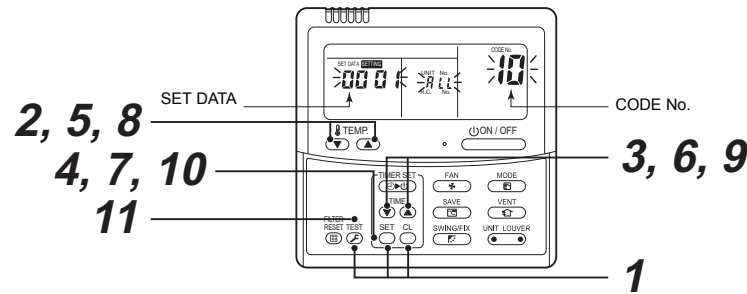
##### Connector

Do not close the connectors between the (U1, U2) and (U3, U4) terminals before completing all the refrigerant line address settings. If a connector is closed, the address cannot be set correctly.

#### Wiring example for 2 refrigerant lines



Line (system) address	1	1	1	2	2
Indoor unit address	1	2	3	1	2
Group address	1 Header unit	2 Follower unit	2 Follower unit	2 Follower unit	2 Follower unit



Turn on the power.

- 1** Push and hold the **SET**, **ON/OFF**, and **TEST** buttons at the same time for more than 4 seconds. The LCD display will start flashing.

#### To set-line (system) address

- 2** Push the **TEMP** (TEMP) buttons repeatedly to set the **CODE No.** to **12**.
- 3** Push the **TIME** (TIME) buttons repeatedly to set a **system address**. (Match the address with the address on the interface P.C. board of the header outdoor unit in the same refrigerant line.)
- 4** Push **SET** button. (This saves the setting.)

#### To set-indoor unit address

- 5** Push the **TEMP** (TEMP) buttons repeatedly to set the **CODE No.** to **13**.
- 6** Push the **TIME** (TIME) buttons repeatedly to set an indoor unit address.
- 7** Push the **SET** button. (This saves the setting.)

#### To set-group address

- 8** Push the **TEMP** (TEMP) buttons repeatedly to set the **CODE No.** to **14**.
- 9** Push the **TIME** (TIME) buttons repeatedly to set a group address. If the indoor unit is individual, set the address to **0000**; header unit, **0001**; follower unit, **0002**.

Individual	: 0000	} In case of group control
Header unit	: 0001	
Follower unit	: 0002	

- 10** Push the **SET** button. (This saves the setting.)
- 11** Push the **TEST** button. The address setting is complete. (**SETTING** flashes. The unit can be controlled after **SETTING** has disappeared.)

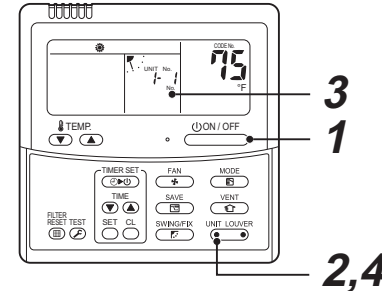
#### NOTE

1. Do not use address numbers **29** or **30** when setting system addresses using the remote control. These 2 address numbers cannot be used on the outdoor units and the **CODE No.** **[E04]** (Indoor/outdoor communication trouble) will appear if they are mistakenly used.
2. If addresses to the indoor units are set in 2 or more refrigerate lines manually by using the remote control and will control them centrally, set the header outdoor unit of each line as below.
  - Set a system address for the header outdoor unit of each line with SW13 and 14 of their interface P.C. boards.
  - Turn off dip switch 2 of SW30 on the interface P.C. boards of all the header outdoor units connected to the same central control, except the unit that has the lowest address. (To unify the termination of the wiring for the central control of indoor and outdoor units.)
  - Connect the relay connectors between the [U1, U2] and [U3, U4] terminals on the header outdoor unit of each refrigerate line.
  - After finishing all the settings above, set the address of the central control devices. For the setting of the central control address, refer to the installation manuals of the central control devices.

### ■ Using the remote control to review the address and position of an indoor unit

#### How to determine an indoor unit address if the unit position is known.

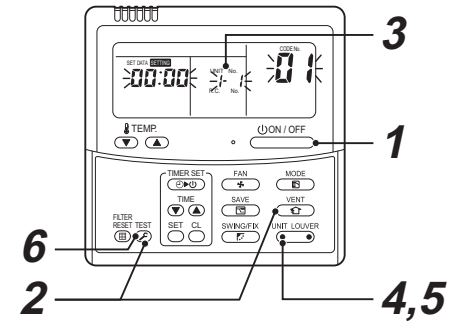
This instruction works for indoor units that have individual, or group control. These steps must be performed while the units are operating.



- 1** If the unit is "OFF" turn it "ON" (ON/OFF).
- 2** Push the left end of the "UNIT LOUVER" (UNIT LOUVER) button.
- 3** The unit number will be indicated on the control LCD as shown above. The numbers disappear after a few seconds. The numbers indicate the system address and the unit address for the indoor unit in question.
- 4** If 2 or more indoor units are connected to a group control, the address for the next consecutive unit appears each time the left end of the "UNIT LOUVER" (UNIT LOUVER) button is pushed.

#### How to determine an indoor unit position if the unit address is known.

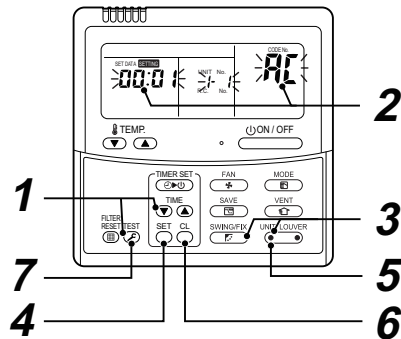
This instruction works for group controlled units only. These steps must be performed while the units are not operating.



- 1** If the unit is "ON" turn it "OFF" (ON/OFF).
- 2** Simultaneously push and hold the "VENT" (VENT) and "TEST" (TEST) buttons for more than 4 seconds.
- 3** "ALL ALL" appears on the control LCD display. The fans and louvers of all the indoor units in the control group will be activated.
- 4** Push the left end of the "UNIT LOUVER" (UNIT LOUVER) button.
- 5** Each time the left side of the button is pushed, the next consecutive indoor unit address (in the group) will be displayed. While the address is displayed, the fan and louvers for that indoor unit will operate. For all other units in the group the fan and louvers will stop.
- 6** Push the "TEST" (TEST) button to finish the procedure. All the indoor units in the control group will stop.

▼ How to use a single remote control to check all the indoor unit address when 2 or more refrigerant lines are connected to a central control.

This must be done while the units are not operating. Use this method to check the indoor unit address and position for each indoor unit on a single refrigerant line.

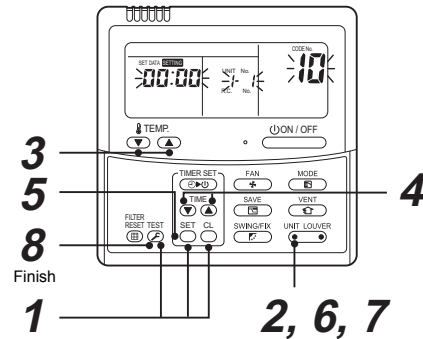


- 1 Simultaneously push and hold the "TIME" and "TEST" buttons for more than 4 seconds.
- 2 The LCD will display "LINE 0001" and "CODE No. AC".
- 3 Push the left end of the "UNIT LOUVER" button and the "SWING/FIX" repeatedly to select a system address.
- 4 Push the "SET" button to confirm the address selection.  
The address of an indoor unit that is connected to the selected refrigerant line will be displayed on the LCD. The fan and louvers for that unit will be energized.
- 5 Each time the left end of the "UNIT LOUVER" button is pushed the indoor unit numbers of the selected refrigerant line are displayed consecutively. The fan and louvers of the selected unit will be energized.
- 6 Push the "CL" button to return to step 3 and select another refrigerant line and follow steps 3 to 5 to check indoor unit addresses for that line.
- 7 Push the "TEST" button to finish the procedure.

■ How to change an indoor unit address by using a wired remote control

Use this method to change the address of the indoor units (one to one or group control) that have had the original address set automatically.

These steps must be performed while the units are not operating.

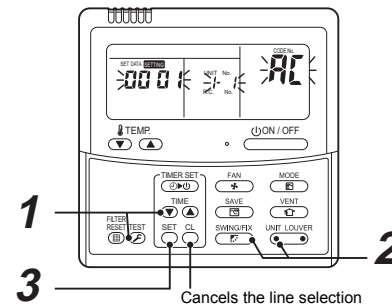


- 1 Simultaneously push and hold the "SET", "CL", and "TEST" buttons for more than 4 seconds. If there are 2 or more units in a group, the first "UNIT No." indicated is the header unit.
- 2 Push the left end of the "UNIT LOUVER" button repeatedly to select an indoor unit address to change. If 2 or more units are controlled in a group the fan and louvers of the selected unit will be energized.
- 3 Push the TEMP. buttons repeatedly to select 3 for CODE No..
- 4 Push the TIME buttons repeatedly to change the value indicated in the SET DATA section.
- 5 Push the "SET" button, to save the address.
- 6 Push left end of the "UNIT LOUVER" button repeatedly to select another indoor unit's address to change. Repeat steps 4 through 6 to continue changing the indoor unit address and make each of them unique.

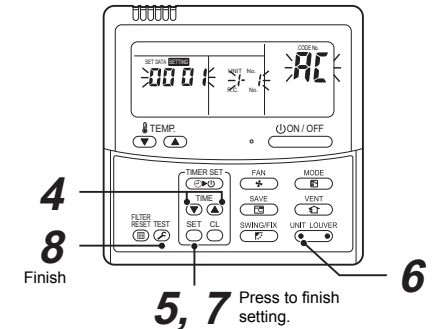
- 7 Push the left end of the "UNIT LOUVER" button to review/confirm the revised addresses.
- 8 If the addresses have been changed correctly, push the "TEST" button to finish the procedure.

▼ How to change indoor unit address for 2 or more refrigerant lines (that are interconnected for central control), when the original addresses were set automatically, by using single wired remote control.

These steps must be performed while the units are not operating.



- 1 Simultaneously push and hold the "TIME" and "TEST" for more than 4 seconds. "LINE 0001" and "CODE No. AC" appear on the LCD.
- 2 Push the left end of the "UNIT LOUVER" button and the "SWING/FIX" repeatedly to select a system address.
- 3 Push the "SET" button and the address of one of the indoor units on the selected refrigerant line will be displayed on the LCD in the "SET DATA" field. The fan and louvers of the addressed unit will operate.



- 4 Push the "TIME" buttons repeatedly to change the value of the indoor unit address in SET DATA.  
Change the value in SET DATA to that of a new address.
- 5 Push the "SET" button to confirm the new address in SET DATA.
- 6 Push the left end of the "UNIT LOUVER" button repeatedly to an address to change. Each push of the button indicates another indoor unit address in the selected refrigerant line. When an indoor unit address is selected for change, the fan and louvers of that unit will operate. Repeat steps 4, 5 and 6 to change an indoor unit address.  
Each address must be unique.
- 7 Push the "SET" button to save the changed addresses.
- 8 Push the "TEST" button to finish the procedure.



## Resetting to factory default address

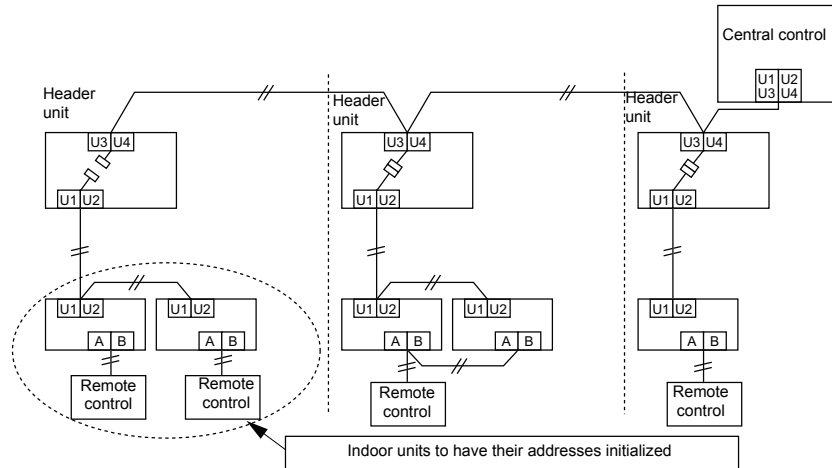
### Method 1

Follow steps 1 through 11 by using a direct wired remote control (page 22) to reset the line (system) address, indoor unit addresses and group addresses to "0099".

### Method 2

Clearing all the indoor unit addresses on a single refrigerant line and reset all addresses to the factory default settings follow the steps below:

- On the header outdoor unit, open the connector between (U1, U2) and (U3, U4) terminals.
- On the header outdoor, interface PC board, SW30 dip switch 2, set to ON.



- Turn on the indoor and outdoor units of the refrigerant line for the addresses to be initialized. About one minute after turning on the power, confirm that the 7-segment display on the header outdoor unit indicates "U.1. --" and operate the interface P.C. board on the header outdoor unit of the refrigerant line as follows:

SW01	SW02	SW03	SW04	Clearable addresses
2	1	2	Confirm that the 7-segment display indicates "A.d.buS" and turn SW04 ON for more than five seconds.	System/indoor unit/group address
2	2	2	Confirm that the 7-segment display indicates "A.d.nEt" and turn SW04 ON for more than five seconds.	Central control address

- Confirm that the 7-segment display indicates "A.d. c.L." and set SW01, SW02 and SW03 to 1, 1, 1 respectively.
- After a time "U.1.L08" appears on the 7-segment display if the address clearing has been completed successfully.
- Set the addresses again after finishing the clearance.

## 8 Test Run

### CAUTION

- Turn on the power and turn on the case heater of the compressor.  
To save the compressor when it is activated, leave the power on for more than 12 hours.

### Methods of test run

#### A test run is executed by using a remote control

Operate the system normally to check the running condition using the wired remote control. Follow the instructions in the supplied owner's manual when operating the unit.

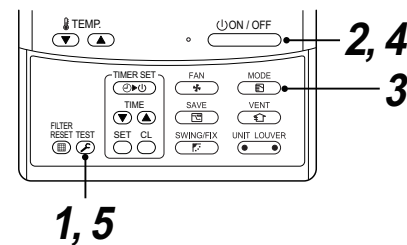
If a wireless remote control is used for operations, follow the instructions in the installation manual supplied with the indoor unit.

To execute a test run forcibly under the condition that the thermostat automatically turns the unit off due to the indoor temperature, follow the procedure below.

The forcible test run automatically stops after 60 minutes to prevent continuous forcible running and return to normal running.

### CAUTION

Do not use forcible running except for a test run as it overloads the unit.



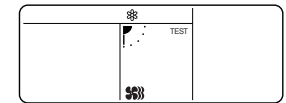
- Push and hold the <sup>TEST</sup> button for more than 4 seconds. TEST appears on the LCD and the unit enters the TEST mode.



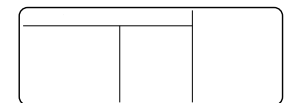
- Push the <sup>ON/OFF</sup> button.
- Push the <sup>MODE</sup> button to switch the running mode to COOL or HEAT.

### NOTE

- Do not run the unit in any mode other than COOL or HEAT.
- The temperature setting cannot be changed during the test run.
- Trouble is detected as usual.



- Push the <sup>ON/OFF</sup> button to stop running after finishing the test run. The indication on the LCD display returns to the status of procedure 1.
- Push the <sup>TEST</sup> button to exit the test mode. (TEST disappears on the LCD display and the status changes to normal stopped mode.)



## When a test run is executed by using the interface P.C. board on the outdoor unit

A test run can be executed by operating switches on the interface P.C. board of the header outdoor unit.  
“Individual test”, which tests each indoor unit separately, and “collective test”, which tests all the indoor units connected, are available.

### <Individual test operation>

#### ▼ Starting operation

- 1 Set the running mode to “COOL” or “HEAT” on the remote control of the indoor unit to be tested.  
(The unit runs in the current mode unless the mode is set otherwise.)

7-segment display	
[A] [U1]	[B] [ ]]

- 2 Set the rotary switches on the interface P.C. board of the header outdoor unit: SW01 to [16], SW02 and SW03 to the address of the indoor unit to be tested.

SW02	SW03	Indoor unit address	
1 to 16	1	1 to 16	Set number of SW02
1 to 16	2	17 to 32	Set number of SW02 + 16
1 to 16	3	33 to 48	Set number of SW02 + 32
1 to 16	4	49 to 64	Set number of SW02 + 48

7-segment display	
[A] ↓ Address display of the corresponding indoor unit	[B] [ ]]

- 3 Push and hold SW04 for more than 10 seconds.

7-segment display	
[A] ↓ Address display of the corresponding indoor unit	[B] ↓ [FF] is displayed for 5 seconds.

#### NOTE

- The running mode follows the mode setting on the remote control of the target indoor unit.
- The temperature setting cannot be changed during the test run.
- Trouble is detected as usual.
- The unit does not perform a test run for 3 minutes after energized or terminating the operation.

#### ▼ Finishing operation

- 1 Set the rotary switches on the interface P.C. board of the header unit back: SW01 to [1], SW02 to [1] and SW03 to [1].

7-segment display	
[A] [U1]	[B] [ ]]

## Collective test operation

#### ▼ Start operation

- 1 Set the rotary switches on the interface P.C. board of the header outdoor unit as below.  
When in “COOL” mode: SW01=[2], SW02=[5], SW03=[1].  
When in “HEAT” mode: SW01=[2], SW02=[6], SW03=[1].

7-segment display	
[A] [C ] [H ]	[B] [ ] [ ]]

- 2 Push and hold SW04 for more than 2 seconds.

#### NOTE

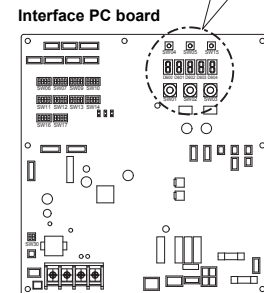
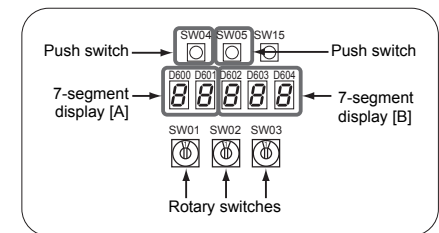
- The temperature setting cannot be changed during the test run.
- Trouble is detected as usual.
- The unit does not perform a test run for 3 minutes after turning the power on or stopping running.

7-segment display	
[A] [C ] [H ]	[B] [ - C ] [ - H ]

#### ▼ Stop operation

- 1 Set the rotary switches on the interface P.C. board of the header unit back: SW01 to [1], SW02 to [1] and SW03 to [1].

7-segment display	
[A] [U1]	[B] [ ]]



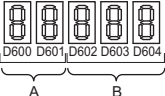
# 9 Troubleshooting

In addition to the CODE No. on the remote control of an indoor unit, you can diagnose trouble of an outdoor unit by checking the 7-segment display on the interface P.C. board.

Use the function for various checks.

Set every dip switch to OFF after checking.

## 7-Segment display and check code

Rotary switch setting value			Indication	LED	
SW01	SW02	SW03			
1	1	1	Outdoor unit check code	A B	Outdoor unit number (U1) Check code display*

\* If a check code has an auxiliary code, the display indicates the check code for three seconds and the auxiliary code for one second alternately.

### Check code (indicated on the 7-segment display on the outdoor unit)

Indicated when SW01 = [1], SW02 = [1], and SW03 = [1].

Check code		Check code name
Indication on 7-segment display on the outdoor unit		
	Auxiliary code	
E06	Number of indoor units which received normally	Decrease of number of indoor units
E07	—	Indoor / Outdoor communication circuit trouble
E08	Duplicated indoor addresses	Duplication of indoor addresses
E15	—	No indoor unit during automatic addressing
E16	00: Capacity over 01 or more: No. of connected units	Number of connected capacity over / indoor units
E20	01: Other line outdoor connected 02: Other line indoor connected	Other line connected during automatic addressing
E31	IPDU quantity information*1	IPDU communication trouble
F04	—	TD sensor trouble
F06	—	TE sensor trouble
F07	—	TL sensor trouble
F08	—	TO sensor trouble
F12	—	TS sensor trouble
F13	—	TH sensor (Board installed) trouble
F15	—	Outdoor temp. sensor miswiring (TE, TL)
F16	—	Outdoor pressure sensor miswiring (Pd, Ps)
F23	—	Ps sensor trouble
F24	—	Pd sensor trouble
F31	—	Outdoor EEPROM trouble
H01	—	Compressor breakdown

Check code		Check code name
Indication on 7-segment display on the outdoor unit		
	Auxiliary code	
H02	—	Compressor trouble (Lock)
H03	—	Current detective circuit system trouble
H06	—	Low-pressure protective operation
L04	—	Outdoor system address duplicated
L06	Number of indoor units with priority	Duplication of indoor units with priority
L08	—	Indoor group / Address unset
L10	—	Outdoor capacity unset
L29	IPDU quantity information *1	IPDU quantity trouble
L30	Detected indoor unit address	External interlock of indoor unit
P03	—	Discharge temp TD trouble
P04	—	High-pressure switch trouble
P05	00	Phase missing detection
	*E (*: Fan motor number)	Fan motor Vdc trouble
	—	Compressor Vdc trouble
P07	—	Heat sink overheat trouble
P10	Detected indoor unit address	Indoor overflow trouble
P13	—	Outdoor liquid back detection trouble
P15	01: TS condition    02: TD condition	Gas leak detection
P19	—	4-way valve operation trouble
P20	—	High-pressure protective operation
P22	*0: Elemental device short *1: Position detective circuit trouble *2: Input current sensor trouble *3: Fan motor lock trouble    *4: Motor current trouble *5: Synchronize, step out trouble *C: Sensor temperature trouble (No TH sensor) *D: Sensor short, free trouble (No TH sensor) (*: Fan motor number)	Outdoor fan IPDU trouble
P26	—	G-TR short protection trouble
P29	—	Compressor position detective circuit system trouble

\*1 IPDU number information

01: Compressor 02: Fan 1 03: Compressor and Fan 1  
 04: Fan 2 05: Compressor and Fan 2 06: Fan 1 and Fan 2  
 07: Compressor, Fan 1 and Fan 2 09: Compressor  
 0A: Fan 1 0B: Compressor, Fan 1 0C: Fan 2  
 0D: Compressor, Fan 2 0E: Fan 1, Fan 2  
 0F: Compressor, Fan 1, Fan 2

## Warnings on refrigerant leakage

### Concentration Limit Check

The room in which the air conditioner is to be installed requires a design that in the event of a refrigerant gas leak, its concentration will not exceed a set limit.

The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R410A is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its concentration does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

In a room where the concentration may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.

Use the following calculation to determine the correct amount.

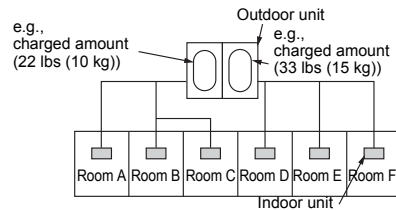
$$\frac{\text{Total amount of refrigerant (lbs (kg))}}{\text{Min. volume of the indoor unit installed room (ft}^3 \text{ (m}^3\text{))}} \leq \text{Concentration limit (lbs/ft}^3 \text{ (kg/m}^3\text{))}$$

### Concentration limit

Compliance to the local applicable regulations and standards for the concentration limit is required.

#### NOTE 1 :

If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device



For the amount of charge in this example:

The possible amount of leaked refrigerant gas in rooms A, B and C is 22 lbs (10 kg).

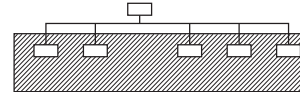
The possible amount of leaked refrigerant gas in rooms D, E and F is 33 lbs (15 kg).

### Important

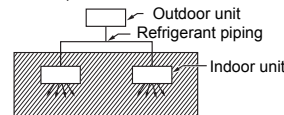
#### NOTE 2 :

The standards for minimum room volume are as follows.

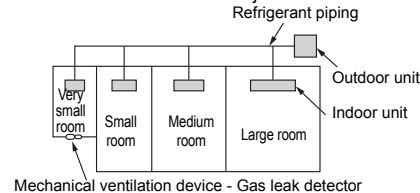
(1) No partition (shaded portion)



(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



(3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room becomes the object. However when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



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