

# **TOSHIBA**

## *Carrier*

AIR CONDITIONER (MULTI TYPE)

# Installation Manual



## Indoor Unit

Model name:

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High Wall Type

**MMK-AP0073H2UL**

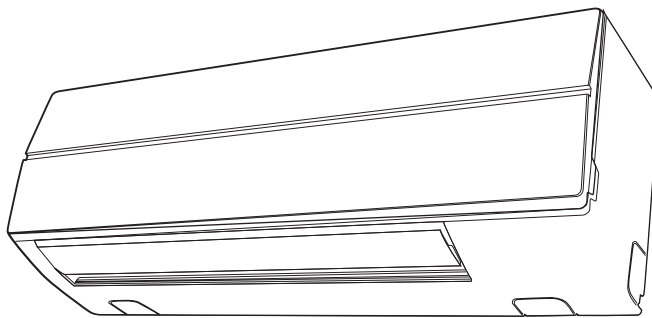
**MMK-AP0093H2UL**

**MMK-AP0123H2UL**

**MMK-AP0153H2UL**

**MMK-AP0183H2UL**

**MMK-AP0243H2UL**



Installation Manual 1 English

Manuel d'installation 32 Français

Please read this Installation Manual carefully before installing the Air Conditioner.

- This Manual describes the installation method of the indoor unit.
- For installation of the outdoor unit, refer to the Installation Manual attached to the outdoor unit.

## ADOPTION OF NEW REFRIGERANT

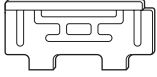


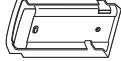




This Air Conditioner uses R410A an environmentally friendly refrigerant.

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# 1 Accessory Parts

## ■ Accessory parts

Part name	Q'ty	Shape
Installation plate	1	
Wireless remote control	1	
Battery	2	
Remote control holder	1	
Mounting screw $\varnothing 0.16''$ (4 mm) $\times$ 1.0'' (25 mm)	6	
Pan head wood screw $\varnothing 1/8''$ (3.1 mm) $\times$ 0.6'' (16 mm)	2	
Screw $\varnothing 0.16''$ (4 mm) $\times$ 0.4'' (10 mm)	2	
Heat insulator	1	

### <Others>

Name
Owner's manual
Installation manual

## 2 Precautions for Safety


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 cleaning heat exchanger. 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 quenching cloth and 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 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.

### WARNING

- **Only a qualified installer or service person is allowed to do installation work.**  
Inappropriate installation may result in water leakage, electric shock or fire.
- **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.**
- **Connect ground wire. (grounding work)**  
Incomplete grounding may cause an electric shock.  
Do not connect ground wires to gas pipes, water pipes, lightning rods or ground wires for telephone wires.
- **Turn off all the circuit breaker before attempting any electrical work.**  
Failure to do so may cause electric shock.
- **Install the refrigerant pipe securely during the installation work before operating the air conditioner.**  
If the air conditioner is operated with the valve open and without the refrigerant pipe, the compressor sucks air and the refrigeration cycle is overpressurized, which may cause a burst or injury.
- **When moving the air conditioner for the installation into another place, do not enter any gaseous matter other than the specified refrigerant into the refrigeration cycle.**  
If air or any other gas is mixed in the refrigerant, the gas pressure in the refrigeration cycle becomes abnormally high and it resultingly causes pipe burst and injuries on persons.
- **Perform installation work properly according to the Installation Manual.**  
Inappropriate installation may result in water leakage, electric shock or fire.
- **When the air conditioner is installed in a small room, provide appropriate measures to ensure that the concentration of refrigerant leakage occur in the room does not exceed the critical level.**
- **Install the air conditioner securely in a location where the base can sustain the weight adequately.**
- **Perform the specified installation work to guard against an earthquake.**  
If the air conditioner is not installed appropriately, accidents may occur due to the falling unit.

- **If refrigerant gas has leaked during the installation work, ventilate the room immediately.**  
If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.
- **After the installation work, confirm that refrigerant gas does not leak.**  
If refrigerant gas leaks into the room and flows near a fire source, such as a cooking range, noxious gas might generate.
- **Electrical work must be performed by a qualified electrician in accordance with the Installation Manual. Use an exclusive power supply for the air conditioner at the rated voltage.**  
An insufficient power supply capacity or inappropriate installation may cause fire.
- **Use the specified wires for wiring connect the terminals. Securely fix them to prevent external forces applied to the terminals from affecting the terminals.**
- **Conform to the regulations of the local electric company when wiring the power supply.**
- **For the refrigerant recovery work (collection of refrigerant from the pipe to the compressor), stop the compressor before disconnecting the refrigerant pipe.**  
If the refrigerant pipe is disconnected while the compressor is working with the valve open, the compressor sucks air and the refrigeration cycle is overpressurized, which may cause a burst or injury.

 **CAUTION**

- **THIS AIR CONDITIONER ADOPTS THE NEW HFC REFRIGERANT (R410A) WHICH DOES NOT DESTROY OZONE LAYER.**
- The characteristics of R410A refrigerant are; easy to absorb water, oxidizing membrane or oil, and its pressure is approx. 1.6 times higher than that of refrigerant R22. Accompanied with the new refrigerant, refrigerating oil has also been changed. Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigerating oil does not enter the refrigerating cycle.
- To prevent charging an incorrect refrigerant and refrigerating oil, the sizes of connecting sections of charging port of the main unit and installation tools are changed from those for the conventional refrigerant.
- Accordingly the exclusive tools are required for the new refrigerant (R410A).
- For connecting pipes, use new and clean piping designed for R410A, and please care so that water or dust does not enter.
- **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.
- **Wear heavy gloves during the installation work to avoid injury.**

### 3 Selection of Installation Place

#### WARNING

- **Install the air conditioner securely in a location where the base can sustain the weight adequately.**  
If the strength is not enough, the unit may fall down resulting in injury.

#### CAUTION

- **Do not install in a location where flammable gas leaks are possible.**  
If the gas leak and accumulate around the unit, it may ignite and cause a fire.

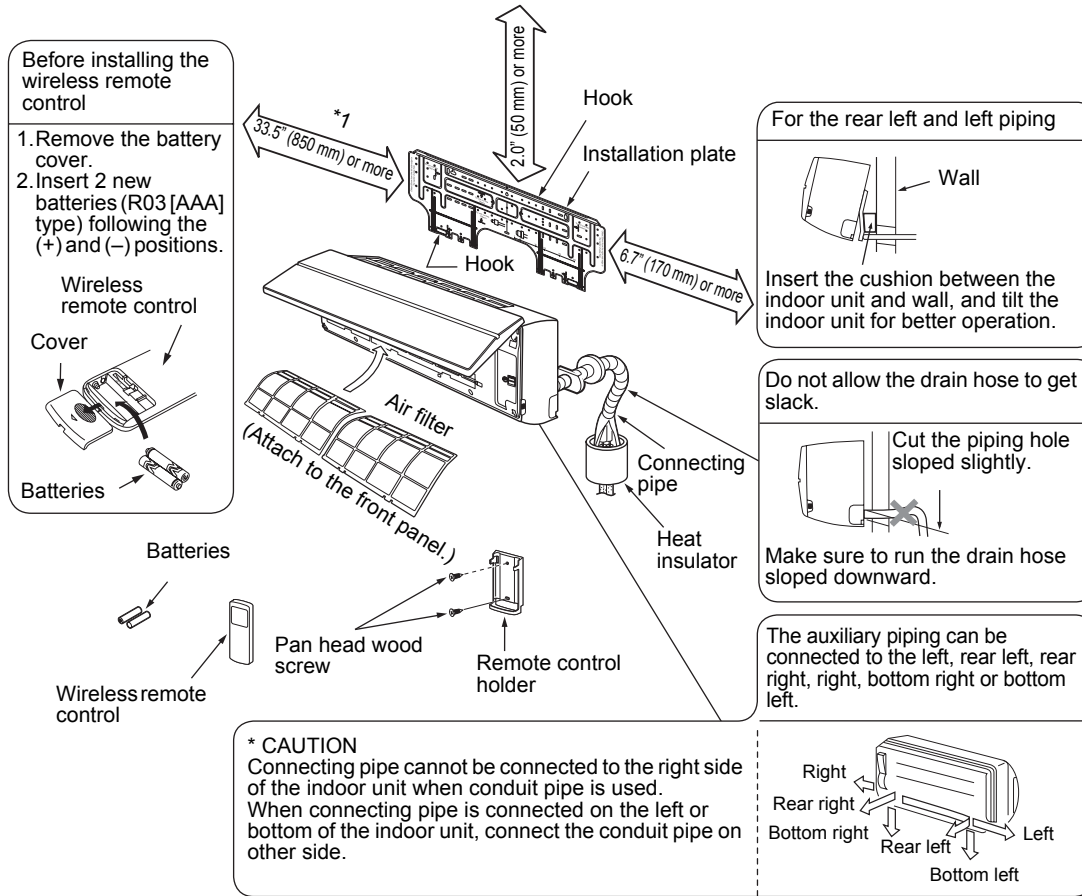
**Upon approval of the customer, install the air conditioner in a place that satisfies the following conditions.**

- Place where the unit can be installed horizontally.
- Place where a sufficient servicing space can be ensured for safety maintenance and check.
- Place where drained water will not cause any problem.

**Avoid installing in the following places.**

- Place exposed to air with high salt content (seaside area), or place exposed to large quantities of sulfide gas (hot spring).  
(Should the unit be used in these places, special protective measures are needed.)
- A restaurant kitchen where a lot of oil is used or place near machines in a factory (Oil adhering to the heat exchanger and resin part (turbo fan) in the indoor unit may reduce the performance, generate mist or dew drop, or deform or damage resin parts.)
- Place close to a machine generating high frequency.
- Place where the discharged air blows directly into the window of the neighbor house. (Outdoor unit)
- Place where noise of the outdoor unit is easily transmitted.  
(When the outdoor unit is installed on the boundary with the neighbor, pay due attention to the level of noise.)
- Place with poor ventilation. (Before air duct work, check whether value of fan speed, static pressure and duct resistance are correct.)
- Do not use the air conditioner for special purposes such as preserving food, precision instruments, or art objects, or where breeding animals or growing plants are kept. (This may degrade the quality of preserved materials.)
- Place where any of high-frequency appliances (including inverter devices, private power generators, medical equipment, and communication equipment) and inverter-type fluorescent light is installed.  
(A malfunction of the air conditioner, abnormal control, or problems due to noise to such appliances/ equipment may occur.)
- When the wireless remote control is used in a room equipped with an inverter-type fluorescent light or at a place exposed to direct sunlight, signals from the remote control may not be received correctly.
- Place where organic solvent is used.
- Place near a door or window exposed to humid outside air (Dew drop may form.).
- Place where special spray is used frequently.

## ■ Installation diagram of Indoor and outdoor units



## ■ Installation space

The indoor unit shall be installed so that its top surface comes at a height of 6'7" (2 m) or more. Also it must be avoided to put anything on top of the indoor unit.

\*1 Provide a space as shown for service clearance for the cross flow fan.

## ■ Installation place

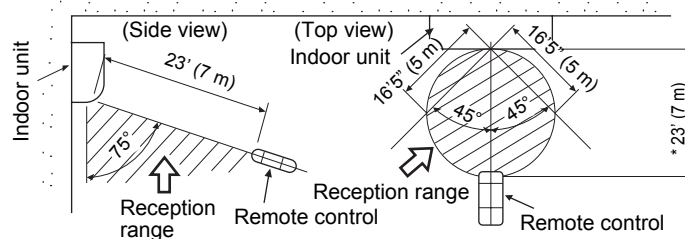
- A place which provides the spaces around the indoor unit as shown in the above diagram.
- A place where there is no obstacle near the air inlet and outlet.
- A place that allows easy installation of the piping to the outdoor unit.
- A place which allows the front panel to be opened.

### ⚠ CAUTION

- Direct sunlight to the indoor unit's wireless receiver should be avoided.
- The microprocessor in the indoor unit should not be too close to RF (Radio Frequency) noise sources. (For details, see the owner's manual.)

### ■ Wireless remote control

- A place where there are no obstacles such as a curtain that may block the signal from the indoor unit.
- Do not install the remote control in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Keep the remote control at least 3'3" (1 m) apart from the nearest TV set or stereo equipment. (This is necessary to prevent image disturb-bounces or noise interference.)
- The location of the remote control should be determined as shown below.



\*: Axial distance

## 4 Installation of Indoor Unit

### ⚠ WARNING

Install the air conditioner certainly to sufficiently withstand the weight.  
 If the strength is insufficient, the unit may fall down resulting in human injury.  
 Perform a specified installation work to guard against strong wind or earthquake.  
 An incomplete installation can cause accidents by the units falling and dropping.

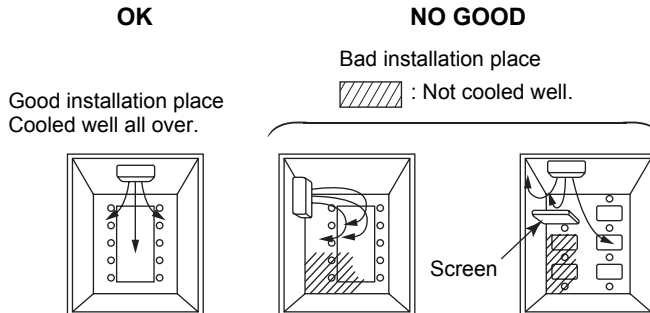
### REQUIREMENT

Strictly comply with the following rules to prevent damage of the indoor units and human injury.

- Do not put a heavy article on the indoor unit. (Even units are packaged)
- Carry in the indoor unit as it is packaged if possible. If carrying in the indoor unit unpacked by necessity, use buffering cloth to not damage the unit.
- To move the indoor unit, do not apply force to the refrigerant pipe, drain pan, foamed parts, or resin parts.
- Carry the package by two or more persons, and do not bundle it with plastic band at positions other than specified.

Following item shall be considered to install the unit.

- Considering air discharge direction, select an installation place where discharge air can circulate evenly in a room. Avoid to install the unit at place with "NO GOOD" mark in the right figure.



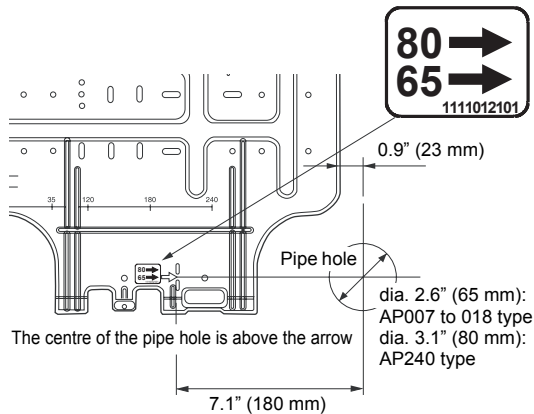


## ■ Cutting a hole and mounting installation plate

### Cutting a hole

In case of installing the refrigerant pipes from the rear:

1. Decide the hole position for piping at 7.1" (180 mm) from the arrow mark (⇒) on the installation plate and drill a hole at a slight downward slant toward outdoor side.  
Pipe hole; dia.2.6" (65 mm): MMK-AP007 to 018 type  
Pipe hole; dia.3.1" (80 mm): MMK-AP024 type

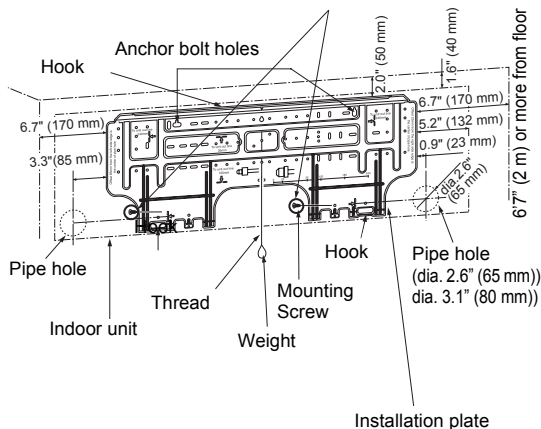


### NOTE

- To drill a wall that contains a metal lath, wire lath or metal plate, use a pipe hole brim ring sold separately.

### Mounting the installation plate

Fix the installation plate to the wall with screws to make the indoor unit fit to the wall.

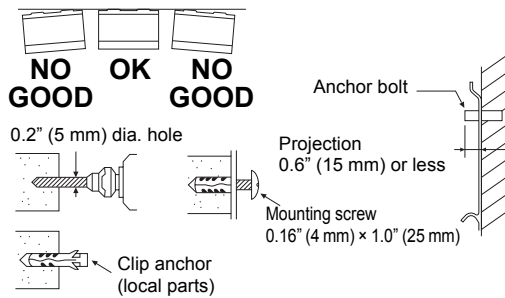


### When the installation plate is directly mounted on the wall

1. Securely fit the installation plate onto the wall by screwing it in the upper and lower parts to hook up the indoor unit.
2. To mount the installation plate on a concrete wall with anchor bolts, utilize the anchor bolt holes as illustrated in the above figure.
3. Install the installation plate horizontally in the wall.

### CAUTION

When the installation plate is installed with a mounting screw, do not use the anchor bolt hole. Otherwise the unit may fall down and result in personal injury and property damage.



### CAUTION

Failure to firmly install the unit may result in personal injury and property damage if the unit falls.

- In case of block, brick, concrete or similar type walls, make 0.2" (5 mm) dia. holes in the wall.
- Insert clip anchors for appropriate mounting screws.

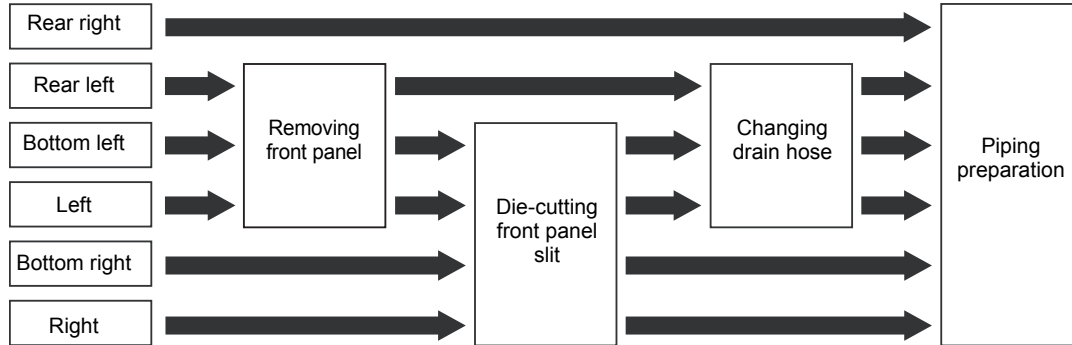
### NOTE

- Secure four corners and lower parts of the installation plate with 6 mounting screws to install it.

## 5 Drain Piping Work

### ■ Piping and drain hose forming

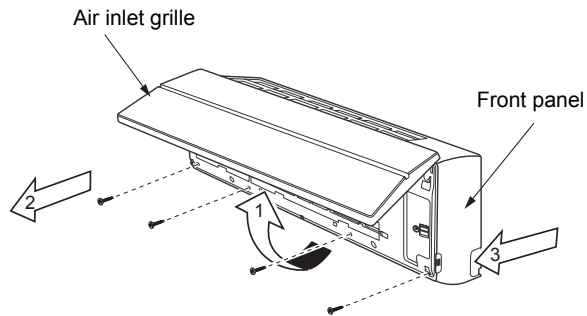
\* Apply heat-insulation for both refrigerant pipe and drain hose surely so that no dew generates inside of the equipment. (Use polyethylene foam for insulating material.)



#### 1. Remove the front panel

The front panel must be removed for piping connections in the left, bottom left, and rear left directions.

- Open the air inlet grille upward.
- Remove the four screws securing the front panel.
- Slightly open the lower part of the front panel, and then pull the upper part of the front panel toward you to remove it from the rear plate.



#### 2. Die-cutting front panel slit

Cut out the slit on the leftward or right side of the front panel for the left or right connection and the slit on the bottom left or right side of the front panel for the bottom left or right connection with a pair of nippers.

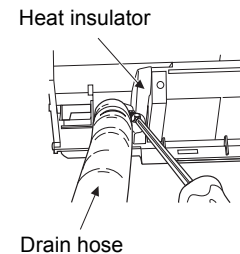
#### 3. Changing drain hose

For leftward connection, bottom-leftward connection and rear leftward connection's piping, it is necessary to change the drain hose and drain cap.

Without changing the drain hose position, the indoor unit will not fit to the wall.

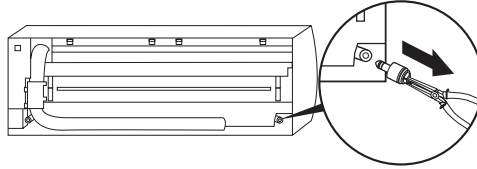
#### Remove the drain hose

- The drain hose can be removed by removing the screw securing the drain hose and then pulling out the drain hose.
- To remove the drain hose, be careful of any sharp edges of steel plate. The edges can injure.
- To install the drain hose, insert the drain hose firmly until the connection part contacts with heat insulator, and then secure it with original screw.



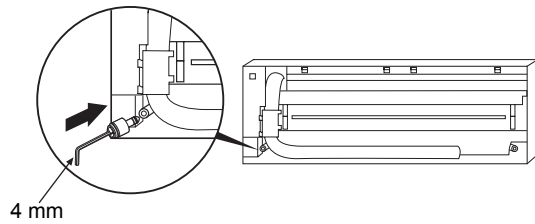
### Remove the drains cap

Clip the drain cap by needle-nose pliers and pull out.

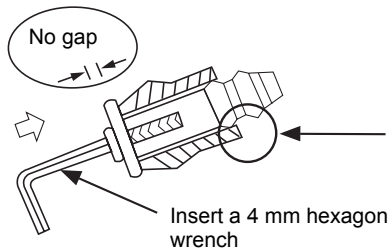


### Fix the drains cap

1) Insert a 4 mm hexagonal wrench in a centre head.



2) Firmly insert drains cap.



Do not apply lubricating oil (refrigerant machine oil) when inserting the drain cap. Application causes deterioration and drain leakage from the plug.

## ⚠ CAUTION

Firmly insert the drain hose and drain cap; otherwise, water may leak.

### Remove the drain hose

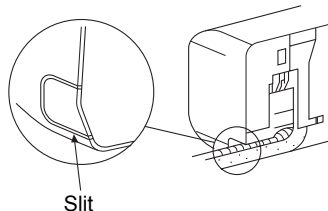
- 1) Remove the front panel.
- 2) Remove the screws of drain hose.
- 3) Pull out the drain hose.

### Fix the drain hose

- 1) Put the drain hose.
- 2) Screw the drain hose to the indoor unit.
- 3) Install the front panel.

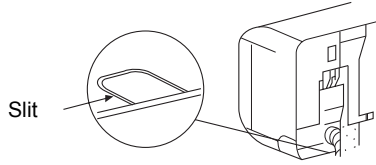
#### ▼ Right or left piping

- After scribing slits of the front panel with a knife or a marking-off pin, cut them with a pair of nippers or an equivalent tool.



### ▼ Bottom right or bottom left piping

- After scribing slits of the front panel with a knife or a marking-off pin, cut them with a pair of nippers or an equivalent tool.

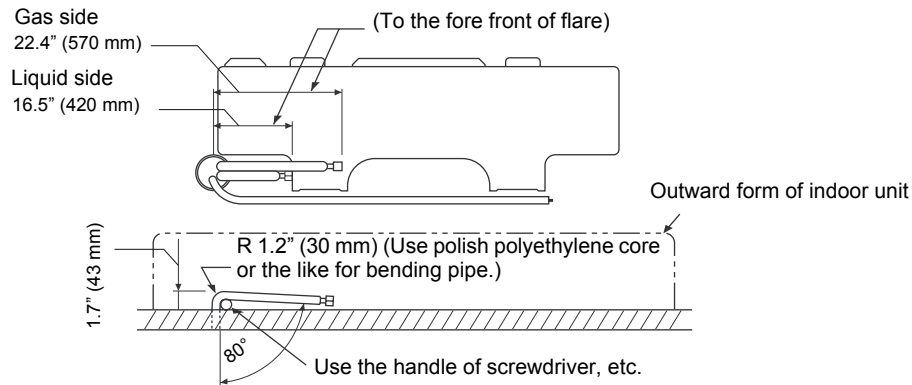


### ▼ Left-hand connection with piping

Bend the connecting pipe so that it is laid within 1.7" (43 mm) above the wall surface. If the connecting pipe is laid exceeding 1.7" (43 mm) above the wall surface, the indoor unit may unstably be set on the wall. To bend the connecting pipe, use a spring bender so as not to crush the pipe.

#### Bend the connection pipe within a radius of 1.2" (30 mm).

To connect the pipe after installation of the unit (figure)

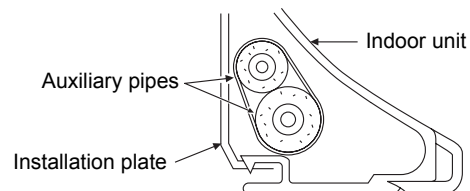


### NOTE

If the pipe is bent incorrectly, the indoor unit may be unsteadily set on the wall. After passing the connecting pipe through the pipe hole, connect the connecting pipe to the auxiliary pipes and wrap the facing tape around them.

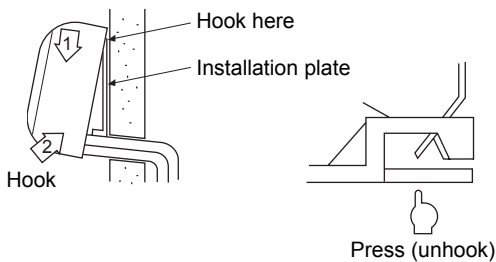
### CAUTION

- Arrange pipes so that any pipe does not stick out of the rear plate of the indoor unit.
- Connect the auxiliary pipes and connecting pipes to one another and cut off the insulating tape wound on the connecting pipe to avoid double-taping at the joint, moreover, seal the joint with the vinyl tape, etc.
- Since dew results in a machine trouble, make sure to insulate both the connecting pipes. (Use polyethylene foam as insulating material.)
- To bend a pipe, carefully do it, not to crush it.

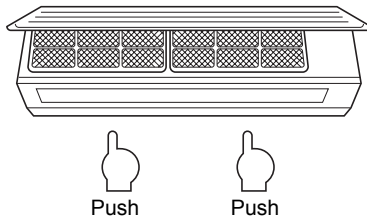


## 6 Indoor Unit Fixing

1. Pass the pipe through the hole in the wall, and hook the indoor unit on the installation plate at the upper hooks.
2. Swing the indoor unit to right and left to confirm that it is firmly hooked up on the installation plate.
3. While pressing the indoor unit onto the wall, hook it at the lower part on the installation plate. Pull the indoor unit toward you to confirm that it is firmly hooked up on the installation plate.

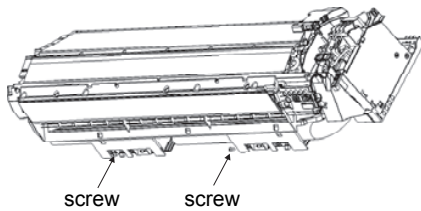


- For detaching the indoor unit from the installation plate, pull the indoor unit toward you while pushing its bottom up at the specified parts.



### REQUIREMENT

The lower part of indoor unit may float, due to the condition of piping and cannot be fixed it to the installation plate. In that case, use the screws provided to fix the unit and the installation plate. **Especially when the pipes are pulled out from the left side, the unit must be screwed to the installation plate.**

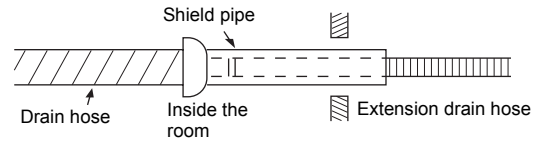
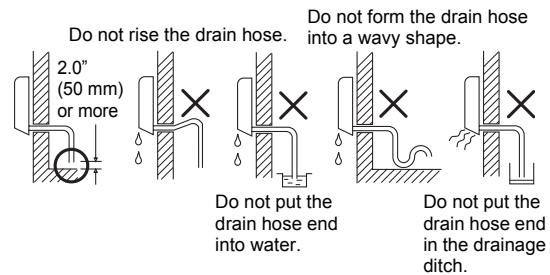


## 7 Drainage

1. Run the drain hose sloped downwards.

### NOTE

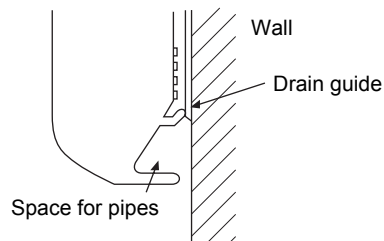
- Hole should be made at a slight downward slant on the outdoor side.
2. Put water in the drain pan and make sure that the water is drained out of doors.
  3. When extension drain hose is connected, insulate the connecting part of extension drain hose with shield pipe.



### CAUTION

Arrange the drain pipe for proper drainage from the unit. Improper drainage can result in dew-dropping.

This air conditioner has the structure designed to drain water collected from dew, which forms on the back of the indoor unit, to the drain pan. Therefore, do not store the power cord and other parts at a height above the drain guide.



# 8 Refrigerant Piping

## Refrigerant Piping

1. Use copper pipe with 0.03" (0.8 mm) or more thickness. (In case pipe size is dia. 5/8" (15.9 mm), with 0.04" (1.0 mm) or more.)
2. Flare nut and flare works are also different from those of the conventional refrigerant. Take out the flare nut attached to the main unit of the air conditioner, and use it.

### REQUIREMENT

When the refrigerant pipe is long, provide support brackets at intervals of 8'2" - 9'10" (2.5 - 3 m) to clamp the refrigerant pipe. Otherwise, abnormal sound may be generated.

### CAUTION

#### IMPORTANT 4 POINTS FOR PIPING WORK

1. Remove dust and moisture from the inside of the connecting pipes.
2. Tight connection (between pipes and unit)
3. Evacuate the air in the connecting pipes using VACUUM PUMP.
4. Check the gas leakage. (Connected points)

## Pipe size

dia.: in (mm)

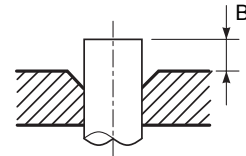
MMK-	AP007 to AP012 type	AP015 to AP018 type	AP024 type
Gas side	3/8" (9.5)	1/2" (12.7)	5/8" (15.9)
Liquid side	1/4" (6.4)	1/4" (6.4)	3/8" (9.5)

## Permissible Piping Length and Height Difference

They vary according to the outdoor unit. For details, refer to the Installation Manual attached to the outdoor unit.

### Flaring

- Cut the pipe with a pipe cutter. Remove burrs completely. Remaining burrs may cause gas leakage.
- Insert a flare nut into the pipe, and flare the pipe. As the flaring sizes of R410A differ from those of refrigerant R22, the flare tools newly manufactured for R410A are recommended. However, the conventional tools can be used by adjusting projection margin of the copper pipe.



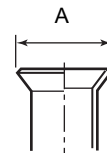
#### Projection margin in flaring: B (Unit: in (mm)) Rigid (Clutch type)

Outer dia. of copper pipe	R410A tool used	Conventional tool used
	R410A	R410A
1/4" (6.4), 3/8" (9.5)	0 - 0.02" (0 - 0.5)	0.04" - 0.06" (1.0 - 1.5)
1/2" (12.7), 5/8" (15.9)		

#### Flaring dia. meter size: A (Unit: in (mm))

Outer dia. of copper pipe	A <sup>+0</sup> <sub>-0.02" (-0.4)</sub>
	R410A
1/4" (6.4)	0.36" (9.1)
3/8" (9.5)	0.52" (13.2)
1/2" (12.7)	0.65" (16.6)
5/8" (15.9)	0.78" (19.7)

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



**Tightening connection****CAUTION**

- Do not apply excessive torque. Otherwise, the nut may crack depending on the conditions.

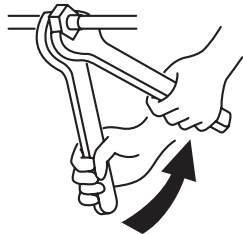
Unit: ft•lbs (N•m)

Outer dia. of copper pipe	Tightening torque
1/4" (6.4 mm)	10 - 13 (14 - 18)
3/8" (9.5 mm)	24 - 31 (33 - 42)
1/2" (12.7 mm)	37 - 46 (50 - 62)
5/8" (15.9 mm)	50 - 60 (68 - 82)

**▼ Tightening torque of flare pipe connections**

Pressure of R410A is higher than that of R22. (Approx. 1.6 times) Therefore, using a torque wrench, tighten the flare pipe connecting sections which connect the indoor and outdoor units of the specified tightening torque.

Incorrect connections may cause not only a gas leak, but also a trouble of the refrigeration cycle. Align the centres of the connecting pipes and tighten the flare nut as far as possible with your fingers. Then tighten the nut with a spanner and torque wrench as shown in the figure.



Work using double spanner

**REQUIREMENT**

Tightening with an excessive torque may crack the nut depending on installation conditions. Tighten the nut within the specified tightening torque.

**Piping with outdoor unit**

- Shape of valve differs according to the outdoor unit. For details of installation, refer to the Installation Manual of the outdoor unit.

**Leak check test, evacuation and other procedure**

For leak check test, evacuation, addition of refrigerant, and gas leak check, refer to the Installation Manual attached to the outdoor unit.

**REQUIREMENT**

Do not supply power to the indoor unit until the leak check test and evacuation are completed. (If the indoor unit is powered on, the pulse motor valve is fully closed, which extends the time for vacuuming.)

**Open the valve fully**

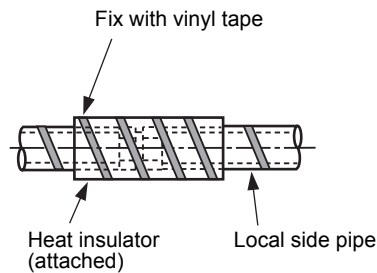
Open the valve of the outdoor unit fully.

For details, refer to the Installation Manual attached to the outdoor unit.

**Heat insulation**

Heat insulation for the pipes should be done separately for the liquid side and gas side. Because both of the liquid and gas side pipes become a low temperature during cooling operation, sufficient heat insulation should be done to prevent condensation.


- Heat insulator with a heat resistance of 248 °F (120 °C) or more must be used for the gas side pipe.
- The pipe connection section of the indoor unit must be heat insulated securely and compactly with the attached heat insulator.

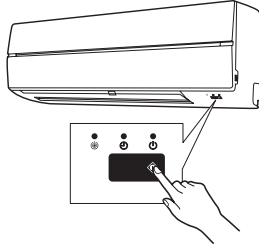


## ■ Wireless remote control A-B selection

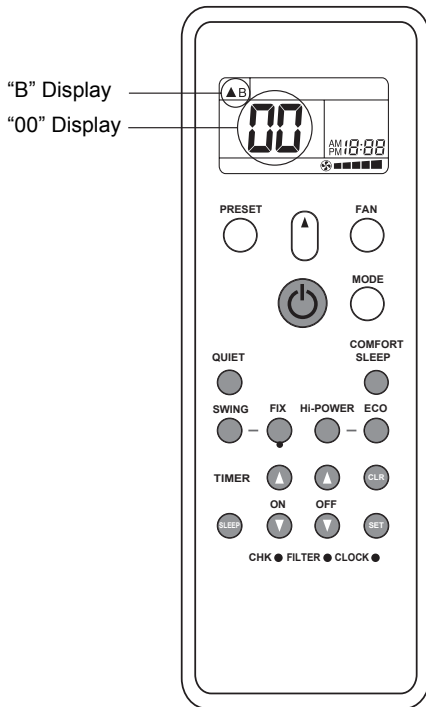
To use 2 wireless remote controls for the respective air conditioners, when the 2 air conditioners are closely installed.

### Wireless remote control B setup

1. Push  button on the indoor unit to turn the air conditioner ON.



2. Point the wireless remote control at the indoor unit.
3. Push and hold **CHK** button on the wireless remote control by the tip of the pencil.  
"00" will be shown on the display.
4. Push **MODE** during pushing **CHK**. "B" will be shown on the display and "00" will be disappear and the air conditioner will turn OFF. The wireless remote control B is memorized.



### NOTE

- Repeat above step to reset wireless remote control to be A.
- The wireless remote controls do not display "A".
- The factory default of the wireless remote controls is "A".



## 9 Electrical Connection

### WARNING

- Use predefined wire and connect them certainly. Keep the connecting terminal free from external force.**  
Improper wire connection or clamping may result in exothermic, fire or malfunction.
- Connect ground wire. (grounding work)**  
Incomplete grounding cause an electric shock.  
Do not connect ground wires to gas pipes, water pipes, lightning rods or ground wires for telephone wires.
- Install appliance in accordance with national wiring regulations.**  
Capacity shortage of circuit breaker or incomplete installation may cause an electric shock or a fire.

### CAUTION

- Consult local building codes, NEC (National Electrical Code) or CEC (Canadian Electrical Code) for special requirements.
- If incorrect/incomplete wiring is carried out, it will cause an electrical fire or smoke.
- Install circuit breaker is not tripped by shock waves.  
If circuit breaker is not installed, an electric shock may be caused.
- Use the cord clamps attached to the product.
- Do not damage or scratch the conductive core and inner insulator of power and control wires when peeling them.
- Use the power cord and control wire of specified thickness, type, and protective devices required.
- Do not connect 208/230 V power to the terminal blocks (U1, U2, A, B etc.) for control wiring. (Otherwise, the system will fail.)
- Perform the electric wiring so that it does not come to contact with the high-temperature part of the pipe.  
The coating may melt resulting in an accident.
- Do not turn on the circuit breaker of the indoor unit until vacuuming of the refrigerant pipes completes.

### REQUIREMENT

- For power supply wiring, strictly conform to the Local Regulation in each country.
- Run the refrigerant piping line and control wiring line in the same line.

### ■ Power supply wire and control wires specifications

Power supply wire and control wires are procured locally.

For the power supply specifications, follow to the table below. If capacity is little, it is dangerous because overheat or seizure may be caused.

#### Indoor unit power supply

- For the power supply of the indoor unit, prepare the exclusive power supply separated from that of the outdoor unit.

#### ▼ Power supply

Power supply	208/230-1-60
--------------	--------------

#### Control wiring, Central control wiring

- 2-core with non-polarity wires are used for the control wiring between indoor unit and outdoor unit and Central control wiring.
- To prevent noise trouble, use 2-core shielded wire.
- The length of the communication line means the total length of the control wire length between indoor and outdoor units added with the central control wire length.

**Power supply wire**

- Recommended wire diameter and wire length for power supply wire.

Power supply wiring	Wire size: 2 × AWG12 Ground 1 × AWG12 or thicker	Up to 164'1" (50m)
---------------------	---	--------------------

**Electric characteristics**

MCA : Minimum Circuit Amps

MOCP : Maximum Overcurrent Protection (Amps)

Model	Power Supply	Voltage Range (V)		MCA	MOCP
		Min	Max	(A)	(A)
MMK-AP0073H2UL	208/230V-1-60Hz	187	253	0.3	15
MMK-AP0093H2UL				0.3	15
MMK-AP0123H2UL				0.3	15
MMK-AP0153H2UL				0.5	15
MMK-AP0183H2UL				0.5	15
MMK-AP0243H2UL				0.5	15

**Control wire**

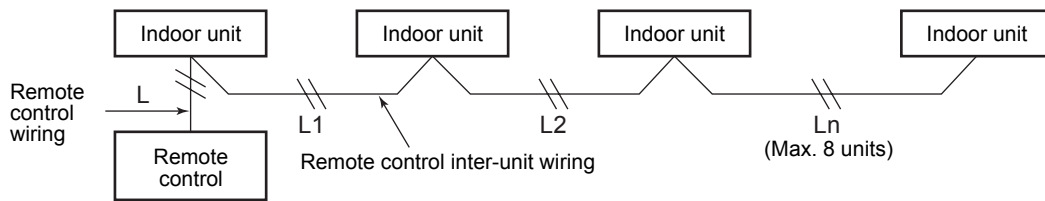
Control wiring between indoor units, and outdoor unit (2-core shielded wire)	Wire size	(Up to 3280'10" (1000m)) AWG16 (Up to 6561'8" (2000m)) AWG14
--	-----------	---

**Remote control wiring**

- 2-core with non-polarity wire is used for wiring of the remote control wiring and group remote controls wiring.

Remote control wiring, remote control inter-unit wiring	Wire size: AWG20
---	------------------

Total wire length of remote control wiring and remote control inter-unit wiring = L + L1 + L2 + ... Ln	In case of wired type only	Up to 1640'5" (500m)
	In case of wireless type included	Up to 1312'4" (400m)
Total wire length of remote control inter-unit wiring = L1 + L2 + ... Ln		Up to 656'2" (200m)



**NOTE**

- Use copper supply wire.
- Use UL wire rated 600V for the power supply.
- Use UL wire rated 300V for the remote control wires and control wires.

**CAUTION**

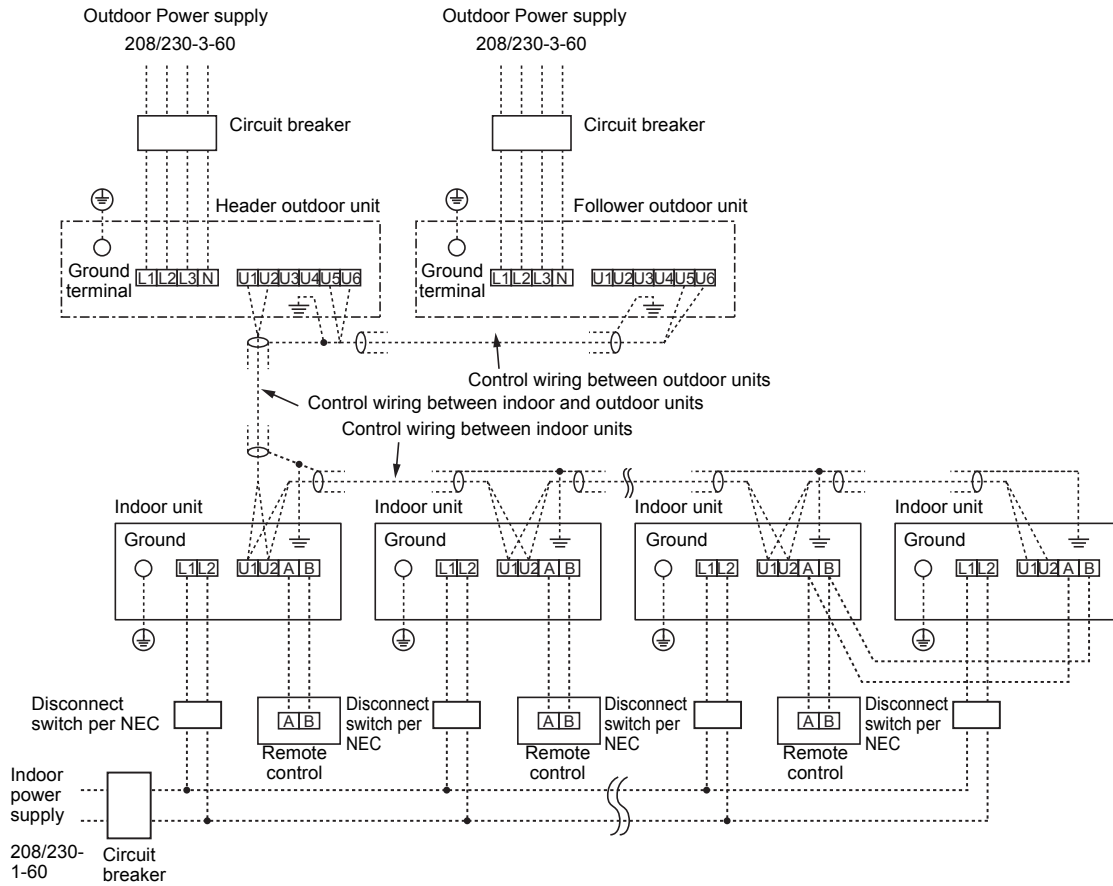
The remote control wire (Communication line) and AC208/230V wires cannot be parallel to contact each other and cannot be stored in the same conduits. If doing so, a trouble may be caused on the control system due to noise or other factor.

### ■ Wiring between indoor and outdoor units

#### NOTE

An outdoor unit connected with control wiring between indoor and outdoor units wire becomes automatically the header unit.

#### ▼ Wiring example

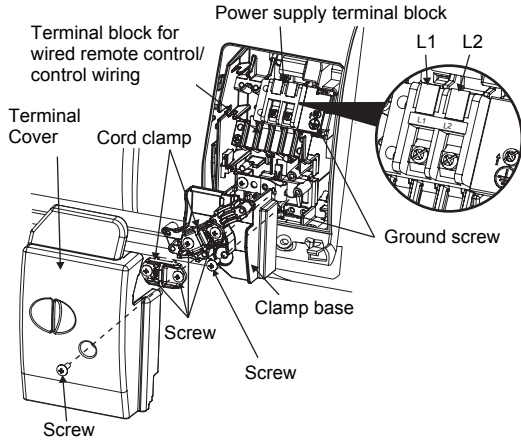


## ■ Wire Connection

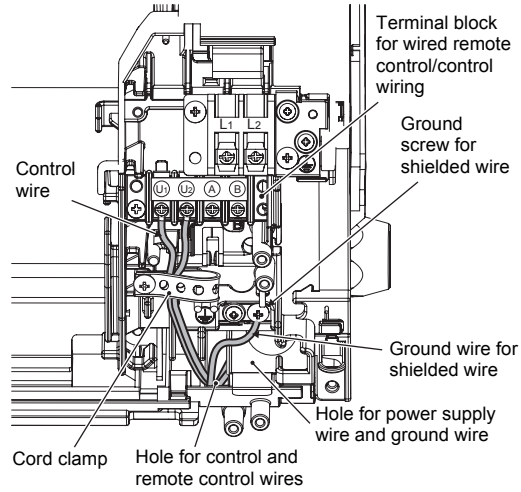
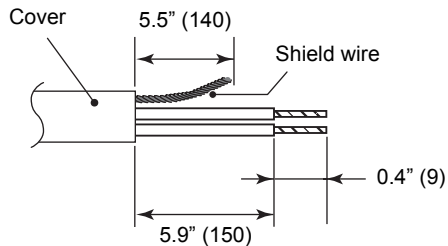
### REQUIREMENT

- Connect the wires matching the terminal numbers.  
Incorrect connection causes a trouble.
- The low-voltage circuit is provided for the wired remote control and control wire.  
(Do not connect the high-voltage circuit)

1. Remove the air inlet grille.  
Open the air inlet grille upward and pull it toward you.
2. Remove the front panel.
3. Remove the terminal cover and the clamp base.



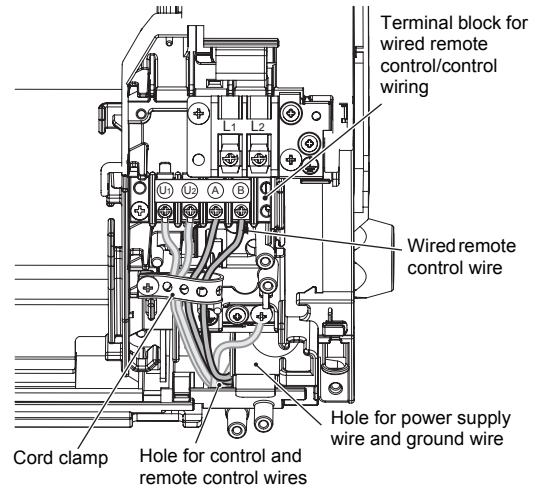
4. Insert the control wire fully into the wired remote control/control terminal block, (U<sub>1</sub>), (U<sub>2</sub>), and secure then tightly with screws.
  - Cover of control wires (2-core shielded wire) should be removed up to 5.9" (150mm)



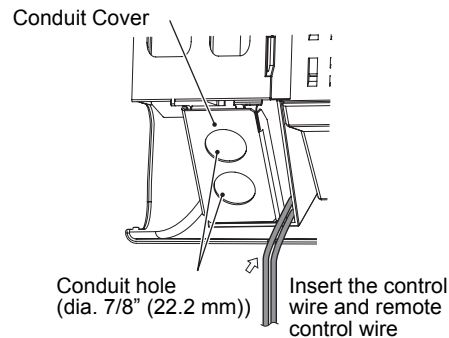
### <Connecting control wire>

- ▼ To use optional wired remote control  
Insert the wired remote control wire fully into the wired remote control/control terminal block, (A), (B), and secure then tightly with screws.

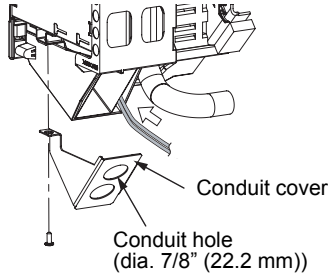
- Strip off the wire approx. 0.4" (9 mm) to connect.



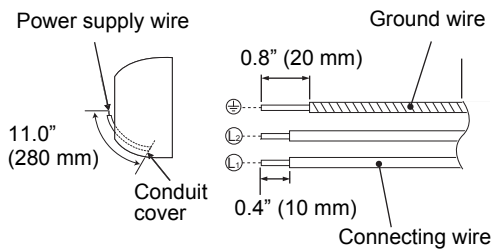
### Remote control wire and control wire



5. Clamp the wires with the cord clamp.
6. Install the clamp base with a screw.
7. Remove the conduit cover.



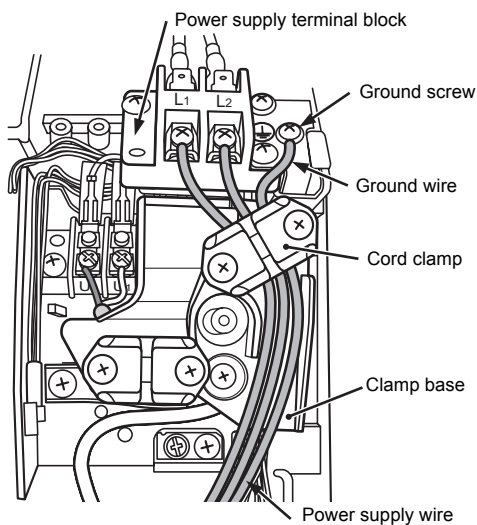
8. Attach a conduit to the conduit cover with a lock nut.
9. Take the power supply wire and the ground wire out of the cable slot on the rear panel so that it protrudes about 11.0" (280 mm) from the conduit cover.



10. Insert the power supply wire fully into the terminal block, L<sub>1</sub>, L<sub>2</sub>, and secure it tightly with screws.

Tightening torque: 0.9 ft•lbs (1.2 N•m)  
Secure the ground wire with the ground screw.

11. Clamp the power supply wire with the cord clamp.



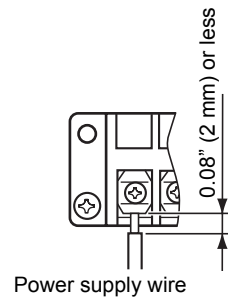
<Connecting power supply wire>

12. Attach the conduit cover.
13. Attach the terminal cover, the front panel and the air inlet grille to the indoor unit.

### CAUTION

- Refer to the wiring diagram attached inside the front panel.
- Check local electrical cords and also any specific wiring instructions and limitations.
- Do not catch the control and wired remote control wires when installing the clamp base
- Beware of the metal plate edge when working on the unit. The edge can be sharp and may cut your hand.
- Firmly tighten the screws of the terminal block.

Keep the wire length as shown in figure below when it is connected to the terminal block.



### Address setup

Set up the addresses as per the Installation Manual supplied with the outdoor unit.

# 10 Applicable Controls

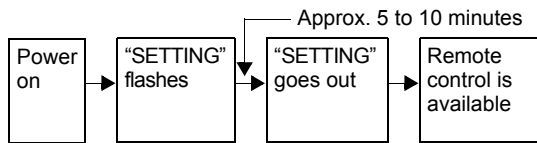
A wired remote control is necessary for this function. This function cannot be operate with a wireless remote control.

## REQUIREMENT

- When this air conditioner is used for the first time, it takes approx. 5 minutes until the remote control becomes available after power-on. This is normal.

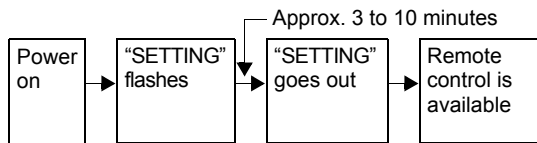
### <When power is turned on for the first time after installation>

It takes **approx. 5 to 10 minutes** until the remote control becomes available.



### <When power is turned on for the second (or later) time>

It takes **approx. 3 to 10 minute** until the remote control becomes available.



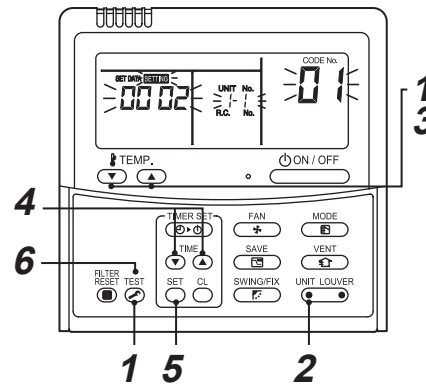
- Normal settings were made as factory default. Change the indoor unit settings as required.
- Use the wired remote control to change the settings.
  - \* The settings cannot be changed using the wireless remote control, simple wired remote control, or central control system. Therefore, install the wired remote control to change the settings.

## Changing applicable control setting

### Basic procedure for changing settings

Change the settings while the air conditioner is not working.

(Stop the air conditioner before making settings.)



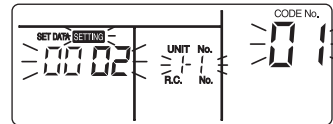
### Procedure 1

Push **TEST** button and temp. setup **TEMP.** button simultaneously for 4 seconds or more.

After a while, the display flashes as shown in the figure.

Confirm that the CODE No. is [01].

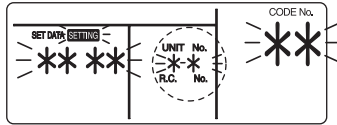
- If the CODE No. is not [01], push **TEST** button to erase the display content, and repeat the procedure from the beginning. (No operation of the remote control is accepted for a while after **TEST** button is pushed.) (While air conditioners are operated under the group control, "ALL" is displayed first. When **UNIT LOUVER** button is pushed, the indoor unit number displayed following "ALL" is header unit.)



(\* Display content varies with the indoor unit model.)

## Procedure 2

Each time **UNIT LOUVER** button is pushed, indoor unit numbers in the control group change cyclically. Select the indoor unit to change settings for. The fan of the selected unit runs and the louvers start swinging. The indoor unit can be confirmed for which to change settings.



## Procedure 3

Specify CODE No. [ \*\* ] with temp. setup  $\nabla$  /  $\blacktriangle$  buttons.

## Procedure 4

Select SET DATA [ \*\*\*\* ] with timer time  $\nabla$  /  $\blacktriangle$  buttons.

## Procedure 5

Push **SET** button. When the display changes from flashing to lit, the setup is completed.

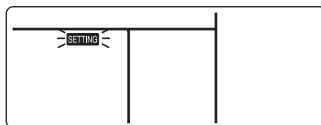
- To change settings of another indoor unit, repeat from Procedure 2.
  - To change other settings of the selected indoor unit, repeat from Procedure 3.
- Use **SET** button to clear the settings.  
To make settings after **SET** button was pushed, repeat from Procedure 2.

## Procedure 6

When settings have been completed, push **TEST** button to determine the settings.

When **TEST** button is pushed, "SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode.

(While "SETTING" is flashing, no operation of the remote control is accepted.)



## Filter sign setting

According to the installation condition, the lighting time of the filter sign (Notification of filter cleaning) can be changed.

Follow to the basic operation procedure (1 → 2 → 3 → 4 → 5 → 6).

- For the CODE No. in Procedure 3, specify [01].
- For the [Set data] in Procedure 4, select the SET DATA of filter sign lighting time from the following table.

SET DATA	Filter sign lighting time
0000	None
0001	150 H (Factory default)
0002	2500 H
0003	5000 H
0004	10000 H

## To secure better effect of heating

When it is difficult to obtain satisfactory heating due to installation place of the indoor unit or structure of the room, the detection temperature of heating can be raised. Also use a circulator or other device to circulate heat air near the ceiling.

Follow to the basic operation procedure (1 → 2 → 3 → 4 → 5 → 6).

- For the CODE No. in Procedure 3, specify [06].
- For the set data in Procedure 4, select the SET DATA of shift value of detection temperature to be set up from the table below.

SET DATA	Detection temp shift value
0000	No shift
0001	+1.8 °F (+1 °C)
0002	+3.6 °F (+2 °C)
0003	+5.4 °F (+3 °C) (Factory default)
0004	+7.2 °F (+4 °C)
0005	+9.0 °F (+5 °C)
0006	+10.8 °F (+6 °C)

## ■ Adjustment of air direction

1. Using the remote control, change the up/down air direction by moving the horizontal louver.
2. Adjust the right/left air direction by bending the vertical grille inside of the air outlet port with hands.

### REQUIREMENT

Do not touch the horizontal louver directly with hands; otherwise a trouble may be caused. For handling of the horizontal louver, refer to "Owner's Manual" attached to the indoor unit.

## ■ Group control

In a group control, a remote control can control up to maximum 8 units.

- The wired remote control only can control a group control. The wireless remote control is unavailable for this control.
- For wiring procedure and wires of the individual line (Identical refrigerant line) system, refer to "Electric work" in this Manual.
- Wiring between indoor units in a group is performed in the following procedure.
- Connect the indoor units by connecting the remote control wires from the remote control terminal blocks (A, B) of the indoor unit connected with a remote control to the remote control terminal blocks (A, B) of the other indoor unit. (Non-polarity)
- For address setup, refer to the Installation Manual attached to the outdoor unit.



# 11 Test Run

## ▼ In case of wired remote control

### ■ Before test run

- Before turning on the circuit breaker, carry out the following procedure.
  - 1) By using 500V-megger, check that resistance of 1MΩ or more exists between the terminal block L1 to L2 and the ground (grounding). If resistance of less than 1MΩ is detected, do not run the unit.
  - 2) Check the valve of the outdoor unit being opened fully.
- To protect the compressor at activation time, leave power-ON for 12 hours or more before operating.
- Before starting a test run, be sure to set addresses following the Installation Manual supplied with the outdoor unit.

### ■ Execute a test run

Operate the unit with the remote control as usual. For the procedure of the operation, refer to the attached Owner's Manual.

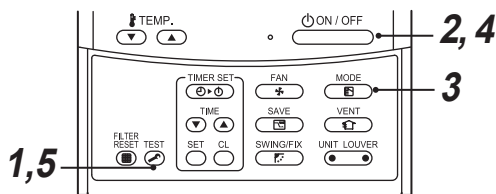
A forced test run can be executed in the following procedure even if the operation stops by thermo.-OFF.

In order to prevent a serial operation, the forced test run is released after 60 minutes have passed and returns to the usual operation.

### ⚠ CAUTION

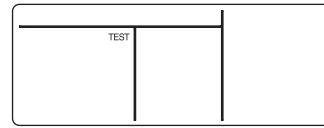
- Do not use the forced test run for cases other than the test run because it applies an excessive load to the devices.

## Wired remote control



### Procedure 1

Push button for 4 seconds or more. [TEST] is displayed on the display part and the selection of mode in the test mode is permitted.



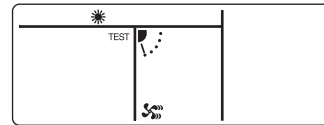
### Procedure 2

Push button.

### Procedure 3

Select the operation mode with button, [COOL] or [HEAT].

- Do not run the air conditioner in a mode other than [COOL] or [HEAT].
- The temperature controlling function does not work during test run.
- The detection of error is performed as usual.



### Procedure 4

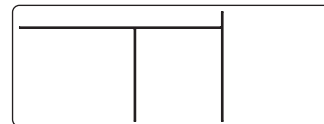
After the test run, push button to stop a test run.

(Display part is same as procedure 1.)

### Procedure 5

Push check button to cancel (release from) the test run mode.

([TEST] disappears on the display and the status returns to a normal.)





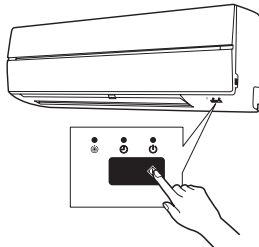
▼ **In case of wireless remote control (Forced test operation is performed in a different way.)**

**REQUIREMENT**

- For the operation procedure, be sure to follow the Owner's Manual.
- Finish the forced cooling operation in a short time because it applies excessive strength to the air conditioner.
- A test operation of forced heating is unavailable. Perform a test operation by heating operation using the switches of the remote control.  
However heating operation may be not carried out according to the temperature conditions.

• **Check wiring/piping of indoor and outdoor units**

1. When is pushed  button for 10 seconds or more, "Pi!" sound is heard and the operation changes to a forced cooling operation. After approx. 3 minutes, a cooling operation starts forcedly. Check cool air starts blowing. If the operation does not start, check wiring again.
2. To stop a test operation, push  button once again (Approx. 1 second). The louver closes and the operation stops.



• **Check transmission of remote control**

1. Push "START/STOP" button of the remote control to check an operation can also start by the remote control.
  - "Cooling" operation by the remote control may be unavailable according to the temperature conditions.  
Check wiring/piping of the indoor and outdoor units in forced cooling operation.

# 12 Troubleshooting

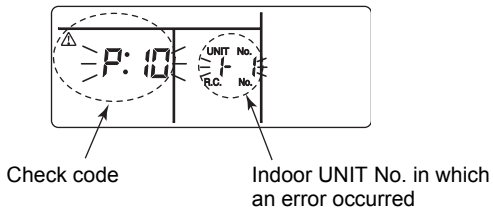
A wired remote control is necessary for this function. This function cannot be operate with a wireless remote control.

## Confirmation and check

When an error occurred in the air conditioner, the check code and the indoor UNIT No. appear on the display part of the remote control.

The check code is only displayed during the operation.

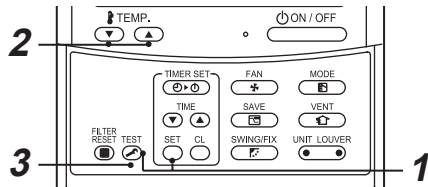
If the display disappears, operate the air conditioner according to the following "Confirmation of error log" for confirmation.



## Confirmation of error log

When an error occurred on the air conditioner, the error log can be confirmed with the following procedure. (The error log is stored in memory up to 4 errors.)

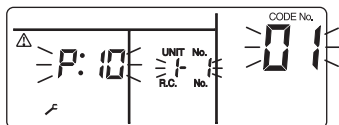
The log can be confirmed from both operating status and stop status.



### Procedure 1

Push **SET** and **TEST** buttons simultaneously for 4 seconds or more, the following display appears. If [Service check] is displayed, the mode enters in the error log mode.

- [01: Order of error log] is displayed in CODE No. window.
- [Check code] is displayed in CHECK window.
- [Indoor unit address in which an error occurred] is displayed in Unit No.



### Procedure 2

Push **TEMP.** button. The error log stored in memory is displayed in order.

The numbers in CODE No. indicate CODE No. [01] (latest) → [04] (oldest).

### REQUIREMENT

Do not push **CL** button because all the error log of the indoor unit will be deleted.

### Procedure 3

Push **TEST** button to return to the usual display after confirmation.

1. Check the errors according to the above procedure.
2. Ask an authorized dealer or qualified service (maintenance) professional to repair or maintain the air conditioner.

## ■ Check codes and parts to be checked

### Check method

On the remote control (Wired remote control, Central control remote control) and the interface P.C. board of the outdoor unit (I/F), a check display LCD (Remote control) or 7-segment display (on the outdoor interface P.C. board) to display the operation is provided. Therefore the operation status can be known. With this self-diagnosis function, a trouble or position with error of the air conditioner can be found as shown in the table below.

### Check code list

The following list shows each check code. Find the check contents from the list according to part to be checked.

- To check from indoor remote control: See "Wired remote control display" in the list.
- To check from outdoor unit: See "Outdoor 7-segment display" in the list.
- To check from indoor unit with a wireless remote control: See "Sensor block display of receiving unit" in the list.

IPDU : Intelligent Power Drive Unit

○ : Lighting, ◻ : Flashing, ● : Goes off

ALT. : Flashing is alternately when there are two flashing LED.

SIM : Simultaneous flashing when there are two flashing LED.

Check code		Wireless remote control				Check code name	Judging device
Wired remote control display	Outdoor 7-segment display	Sensor block display of receiving unit					
		Auxiliary code	Operation	Timer	Ready	Flash	
E01	—	—	◻	●	●	Communication error between indoor and remote control (Detected at remote control side)	Remote control
E02	—	—	◻	●	●	Remote control transmission error	Remote control
E03	—	—	◻	●	●	Communication error between indoor and remote control (Detected at indoor side)	Indoor
E04	—	—	●	●	◻	Communication circuit error between indoor/outdoor (Detected at indoor side)	Indoor
E06	E06	No. of indoor units in which sensor has been normally received	●	●	◻	Decrease of No. of indoor units	I/F
—	E07	—	●	●	◻	Communication circuit error between indoor/outdoor (Detected at outdoor side)	I/F
E08	E08	Duplicated indoor addresses	◻	●	●	Duplicated indoor addresses	Indoor / I/F
E09	—	—	◻	●	●	Duplicated header remote controls	Remote control
E10	—	—	◻	●	●	Communication error between indoor MCU	Indoor
E12	E12	01: Indoor/Outdoor communication 02: Communication between outdoor units	◻	●	●	Automatic address start error	I/F
E15	E15	—	●	●	◻	Indoor is nothing during automatic addressing	I/F
E16	E16	00: Capacity over 01 ~:No. of connected units	●	●	◻	Capacity over / No. of connected indoor units	I/F
E18	—	—	◻	●	●	Communication error between indoor units	Indoor
E19	E19	00: Header is nothing 02: Two or more header units	●	●	◻	Outdoor header units quantity error	I/F
E20	E20	01: Outdoor of other line connected 02: Indoor of other line connected	●	●	◻	Other line connected during automatic address	I/F
E23	E23	—	●	●	◻	Sending error in communication between outdoor units	I/F
E25	E25	—	●	●	◻	Duplicated follower outdoor addresses	I/F
E26	E26	No. of outdoor units which received signal normally	●	●	◻	Decrease of No. of connected outdoor units	I/F

High Wall Type

Installation Manual

Check code		Wireless remote control				Check code name	Judging device																																																																																									
Wired remote control display	Outdoor 7-segment display		Sensor block display of receiving unit																																																																																													
	Auxiliary code	Operation	Timer	Ready	Flash																																																																																											
E28	E28	Detected outdoor unit number		●	●	○	Follower outdoor unit error	I/F																																																																																								
E31	E31	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">A3-IPDU</th> <th rowspan="2">Fan IPDU</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr><td>01</td><td>○</td><td></td><td></td><td></td></tr> <tr><td>02</td><td></td><td>○</td><td></td><td></td></tr> <tr><td>03</td><td>○</td><td>○</td><td></td><td></td></tr> <tr><td>04</td><td></td><td></td><td>○</td><td></td></tr> <tr><td>05</td><td>○</td><td></td><td>○</td><td></td></tr> <tr><td>06</td><td></td><td>○</td><td>○</td><td></td></tr> <tr><td>07</td><td>○</td><td>○</td><td>○</td><td></td></tr> <tr><td>08</td><td></td><td></td><td></td><td>○</td></tr> <tr><td>09</td><td>○</td><td></td><td></td><td>○</td></tr> <tr><td>0A</td><td></td><td>○</td><td></td><td>○</td></tr> <tr><td>0B</td><td>○</td><td>○</td><td></td><td>○</td></tr> <tr><td>0C</td><td></td><td></td><td>○</td><td>○</td></tr> <tr><td>0D</td><td>○</td><td></td><td>○</td><td>○</td></tr> <tr><td>0E</td><td></td><td>○</td><td>○</td><td>○</td></tr> <tr><td>0F</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td colspan="5">○ : IPDU error</td></tr> </tbody> </table>			A3-IPDU			Fan IPDU	1	2	3	01	○				02		○			03	○	○			04			○		05	○		○		06		○	○		07	○	○	○		08				○	09	○			○	0A		○		○	0B	○	○		○	0C			○	○	0D	○		○	○	0E		○	○	○	0F	○	○	○	○	○ : IPDU error					●	●	○	IPDU communication error	I/F
			A3-IPDU			Fan IPDU																																																																																										
			1	2	3																																																																																											
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○ : IPDU error																																																																																																
F01	—	—	○	○	●	ALT	Indoor TCJ sensor error	Indoor																																																																																								
F02	—	—	○	○	●	ALT	Indoor TC2 sensor error	Indoor																																																																																								
F03	—	—	○	○	●	ALT	Indoor TC1 sensor error	Indoor																																																																																								
F04	F04	—	○	○	○	ALT	TD1 sensor error	I/F																																																																																								
F05	F05	—	○	○	○	ALT	TD2 sensor error	I/F																																																																																								
F06	F06	TE1 sensor TE2 sensor	○	○	○	ALT	TE1 sensor error TE2 sensor error	I/F																																																																																								
F07	F07	—	○	○	○	ALT	TL sensor error	I/F																																																																																								
F08	F08	—	○	○	○	ALT	TO sensor error	I/F																																																																																								
F10	—	—	○	○	●	ALT	Indoor TA sensor error	Indoor																																																																																								
F12	F12	—	○	○	○	ALT	TS1 sensor error	I/F																																																																																								
F13	F13	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	○	○	○	ALT	TH sensor error	IPDU																																																																																								
F15	F15	—	○	○	○	ALT	Outdoor temp. sensor miswiring (TE1, TL)	I/F																																																																																								
F16	F16	—	○	○	○	ALT	Outdoor pressure sensor miswiring (Pd, Ps)	I/F																																																																																								
F22	F22	—	○	○	○	ALT	TD3 error	I/F																																																																																								
F23	F23	—	○	○	○	ALT	Ps sensor error	I/F																																																																																								
F24	F24	—	○	○	○	ALT	Pd sensor error	I/F																																																																																								
F29	—	—	○	○	●	SIM	Indoor other error	Indoor																																																																																								
F31	F31	—	○	○	○	SIM	Indoor EEPROM error	I/F																																																																																								
H01	H01	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	●	○	●		Compressor break down	IPDU																																																																																								
H02	H02	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	●	○	●		Compressor trouble (lock)	IPDU																																																																																								
H03	H03	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	●	○	●		Current detect circuit system error	IPDU																																																																																								

EN

High Wall Type

Installation Manual

Check code			Wireless remote control				Check code name	Judging device																																																																																								
Wired remote control display	Outdoor 7-segment display		Sensor block display of receiving unit																																																																																													
	Auxiliary code		Operation	Timer	Ready	Flash																																																																																										
H05	H05	—	●	□	●		TD1 miswiring	I/F																																																																																								
H06	H06	—	●	□	●		Low pressure protective operation	I/F																																																																																								
H07	H07	—	●	□	●		Oil level down detective protection	I/F																																																																																								
H08	H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error	●	□	●		Oil level detective temp sensor error	I/F																																																																																								
H15	H15	—	●	□	●		TD2 miswiring	I/F																																																																																								
H16	H16	01: TK1 oil circuit system error 02: TK2 oil circuit system error 03: TK3 oil circuit system error 04: TK4 oil circuit system error	●	□	●		Oil level detective circuit error	I/F																																																																																								
H25	H25	—	●	□	●		TD3 miswiring	I/F																																																																																								
L03	—	—	□	●	□	SIM	Indoor center unit duplicated	Indoor																																																																																								
L04	L04	—	□	○	□	SIM	Outdoor line address duplicated	I/F																																																																																								
L05	—	—	□	●	□	SIM	Duplicated indoor units with priority (Displayed in indoor unit with priority)	I/F																																																																																								
L06	L06	No. of indoor units with priority	□	●	□	SIM	Duplicated indoor units with priority (Displayed in unit other than indoor unit with priority)	I/F																																																																																								
L07	—	—	□	●	□	SIM	Group line in individual indoor unit	Indoor																																																																																								
L08	L08	—	□	●	□	SIM	Indoor group/Address unset	Indoor, I/F																																																																																								
L09	—	—	□	●	□	SIM	Indoor capacity unset	Indoor																																																																																								
L10	L10	—	□	○	□	SIM	Outdoor capacity unset	I/F																																																																																								
L17	L17	—	□	○	□	SIM	Outdoor unit model unmatch error	I/F																																																																																								
L20	—	—	□	○	□	SIM	Duplicated central control addresses	Indoor																																																																																								
L28	L28	—	□	○	□	SIM	Over No. of connected outdoor units	I/F																																																																																								
L29	L29	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">A3-IPDU</th> <th rowspan="2">Fan IPDU</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr><td>01</td><td>○</td><td></td><td></td><td></td></tr> <tr><td>02</td><td></td><td>○</td><td></td><td></td></tr> <tr><td>03</td><td>○</td><td>○</td><td></td><td></td></tr> <tr><td>04</td><td></td><td></td><td>○</td><td></td></tr> <tr><td>05</td><td>○</td><td></td><td>○</td><td></td></tr> <tr><td>06</td><td></td><td>○</td><td>○</td><td></td></tr> <tr><td>07</td><td>○</td><td>○</td><td>○</td><td></td></tr> <tr><td>08</td><td></td><td></td><td></td><td>○</td></tr> <tr><td>09</td><td>○</td><td></td><td></td><td>○</td></tr> <tr><td>0A</td><td></td><td>○</td><td></td><td>○</td></tr> <tr><td>0B</td><td>○</td><td>○</td><td></td><td>○</td></tr> <tr><td>0C</td><td></td><td></td><td>○</td><td>○</td></tr> <tr><td>0D</td><td>○</td><td></td><td>○</td><td>○</td></tr> <tr><td>0E</td><td></td><td>○</td><td>○</td><td>○</td></tr> <tr><td>0F</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td colspan="5">○ : IPDU error</td></tr> </tbody> </table>		A3-IPDU			Fan IPDU	1	2	3	01	○				02		○			03	○	○			04			○		05	○		○		06		○	○		07	○	○	○		08				○	09	○			○	0A		○		○	0B	○	○		○	0C			○	○	0D	○		○	○	0E		○	○	○	0F	○	○	○	○	○ : IPDU error					□	●	□	SIM	No. of IPDU error	I/F
	A3-IPDU			Fan IPDU																																																																																												
	1	2	3																																																																																													
01	○																																																																																															
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○ : IPDU error																																																																																																
L30	L30	Detected indoor address	□	○	□	SIM	Indoor outside interlock	Indoor																																																																																								
—	L31	—		—			Extended I/C error	I/F																																																																																								
P01	—	—	●	□	□	ALT	Indoor fan motor error	Indoor																																																																																								
P03	P03	—	□	●	□	ALT	Discharge temp. TD1 error	I/F																																																																																								

Check code			Wireless remote control				Check code name	Judging device	
Wired remote control display	Outdoor 7-segment display		Sensor block display of receiving unit						
	Auxiliary code		Operation	Timer	Ready	Flash			
P04	P04	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	☐ ● ☐				ALT	High-pressure SW system operation	IPDU
P05	P05	00: Detected phase loss	☐ ● ☐				ALT	Phase loss error/interruption of power supply	I/F
		01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side						Inverter DC voltage (Vdc) error	
P07	P07	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	☐ ● ☐				ALT	Heat sink overheat error	IPDU, I/F
P10	P10	Detected indoor address	● ☐ ☐				ALT	Indoor overflow error	Indoor
P12	—	—	● ☐ ☐				ALT	Indoor fan motor error	Indoor
P13	P13	—	● ☐ ☐				ALT	Outdoor liquid back detection error	I/F
P15	P15	01: TS condition 02: TD condition	☐ ● ☐				ALT	Gas leak detection	I/F
P17	P17	—	☐ ● ☐				ALT	Discharge temp. TD2 error	I/F
P18	P18	—	☐ ● ☐				ALT	Discharge temp. TD3 error	I/F
P19	P19	Detected outdoor unit number	☐ ● ☐				ALT	4-way valve inverse error	I/F
P20	P20	—	☐ ● ☐				ALT	High-pressure protective operation	I/F
P22	P22	0* :IGBT circuit 1* :Location detection circuit error 3* :Motor lock-up error 4* :Motor current was detected. C* :Abnormal temperature was detected by the TH sensor. D* :TH sensor error E* :Inverter DC voltage error (outdoor unit fan)	☐ ● ☐				ALT	Outdoor fan IPDU error	IPDU
		Caution) Although letters 0 to F appear at locations indicated by "*", please ignore them.							
P26	P26	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	☐ ● ☐				ALT	G-TR short protection error	IPDU
P29	P29	01: Comp. 1 side 02: Comp. 2 side 03: Comp. 3 side	☐ ● ☐				ALT	Comp position detective circuit system error	IPDU
P31	P31	—	☐ ● ☐				ALT	Other indoor unit error (Group follower unit error)	Indoor

**Error detected by TCC-LINK central control device**

Check code			Wireless remote control				Check code name	Judging device		
Wired remote control display	Outdoor 7-segment display		Sensor block display of receiving unit							
	Auxiliary code		Operation	Timer	Ready	Flash				
C05	—	—					—	Sending error in TCC-LINK central control device	TCC-LINK	
C06	—	—					—	Receiving error in TCC-LINK central control device	TCC-LINK	
C12	—	—					—	Batch alarm of general-purpose equipment control interface	General-purpose equipment I/F	
P30	Differs according to error contents of unit with occurrence of alarm								Group control branching unit error	TCC-LINK
	—	—	(L20 is displayed)						Duplicated central control addresses	

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TCC-LINK : TOSHIBA Carrier Communication Link.

## WARNINGS ON REFRIGERANT LEAKAGE

### Check of Concentration Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, 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.

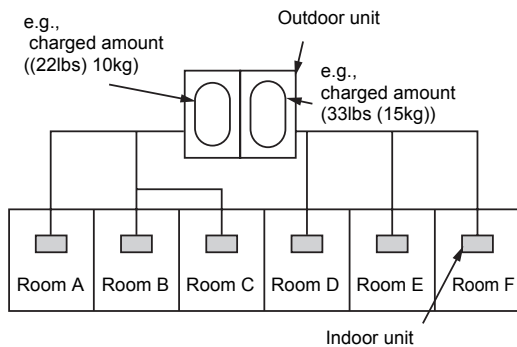
The concentration is as given below.

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

The concentration limit of R410A which is used in multi air conditioners is 0.019lbs/ft<sup>3</sup> (0.3kg/m<sup>3</sup>).

#### 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.



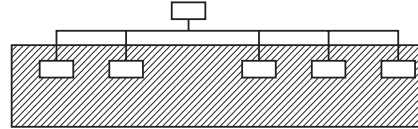
For the amount of charge in this example:  
 The possible amount of leaked refrigerant gas in rooms A, B and C is 22lbs (10kg).  
 The possible amount of leaked refrigerant gas in rooms D, E and F is 33lbs (15kg).

### Important

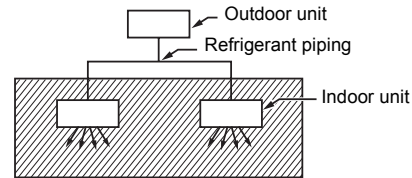
#### NOTE 2 :

The standards for minimum room volume are as follows.

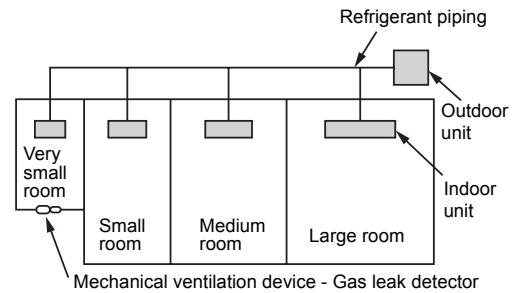
(1) No partition (shaded portion)



(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).



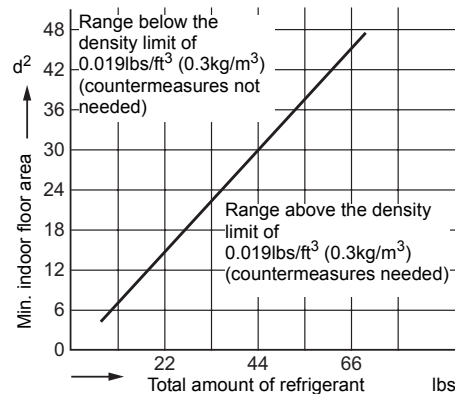
(3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the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



#### NOTE 3 :

The minimum indoor floor area compared with the amount of refrigerant is roughly as follows:

(When the ceiling is 8.9ft (2.7m) high)





## Confirmation of Indoor Unit Setup

Prior to delivery to the customer, check the address and setup of the indoor unit, which has been installed in this time and fill the check sheet (Table below). Data of four units can be entered in this check sheet. Copy this sheet according to the No. of the indoor units. If the installed system is a group control system, use this sheet by entering each line system into each installation manual attached to the other indoor units.

### REQUIREMENT

This check sheet is required for maintenance after installation. Fill this sheet and then pass this Installation Manual to the customers.

### Indoor unit setup check sheet

Indoor unit			Indoor unit			Indoor unit			Indoor unit		
Room name			Room name			Room name			Room name		
Model			Model			Model			Model		
Check indoor unit address. (For check method, refer to Applicable controls in this manual.) * In case of a single system, it is unnecessary to enter the indoor address. (CODE No.: Line [12], Indoor [13], Group [14], Central control [03])											
Line	Indoor	Group	Line	Indoor	Group	Line	Indoor	Group	Line	Indoor	Group
Central control address			Central control address			Central control address			Central control address		
Various setup			Various setup			Various setup			Various setup		
Have you changed lighting time of filter sign? If not, fill check mark [x] in [NO CHANGE], and fill check mark [x] in [ITEM] if changed, respectively. (For check method, refer to Applicable controls in this manual.)											
Filter sign lighting time (CODE No. [01])			Filter sign lighting time (CODE No. [01])			Filter sign lighting time (CODE No. [01])			Filter sign lighting time (CODE No. [01])		
<input type="checkbox"/> NO CHANGE			<input type="checkbox"/> NO CHANGE			<input type="checkbox"/> NO CHANGE			<input type="checkbox"/> NO CHANGE		
<input type="checkbox"/> NONE	[0000]		<input type="checkbox"/> NONE	[0000]		<input type="checkbox"/> NONE	[0000]		<input type="checkbox"/> NONE	[0000]	
<input type="checkbox"/> 150H	[0001]		<input type="checkbox"/> 150H	[0001]		<input type="checkbox"/> 150H	[0001]		<input type="checkbox"/> 150H	[0001]	
<input type="checkbox"/> 2500H	[0002]		<input type="checkbox"/> 2500H	[0002]		<input type="checkbox"/> 2500H	[0002]		<input type="checkbox"/> 2500H	[0002]	
<input type="checkbox"/> 5000H	[0003]		<input type="checkbox"/> 5000H	[0003]		<input type="checkbox"/> 5000H	[0003]		<input type="checkbox"/> 5000H	[0003]	
<input type="checkbox"/> 10000H	[0004]		<input type="checkbox"/> 10000H	[0004]		<input type="checkbox"/> 10000H	[0004]		<input type="checkbox"/> 10000H	[0004]	
Have you changed detected temp. shift value? If not, fill check mark [x] in [NO CHANGE], and fill check mark [x] in [ITEM] if changed, respectively. (For check method, refer to Applicable control in this manual.)											
Detected temp. shift value setup (CODE No. [06])			Detected temp. shift value setup (CODE No. [06])			Detected temp. shift value setup (CODE No. [06])			Detected temp. shift value setup (CODE No. [06])		
<input type="checkbox"/> NO CHANGE			<input type="checkbox"/> NO CHANGE			<input type="checkbox"/> NO CHANGE			<input type="checkbox"/> NO CHANGE		
<input type="checkbox"/> NO SHIFT	[0000]		<input type="checkbox"/> NO SHIFT	[0000]		<input type="checkbox"/> NO SHIFT	[0000]		<input type="checkbox"/> NO SHIFT	[0000]	
<input type="checkbox"/> +1°C 1.8°F	[0001]		<input type="checkbox"/> +1°C 1.8°F	[0001]		<input type="checkbox"/> +1°C 1.8°F	[0001]		<input type="checkbox"/> +1°C 1.8°F	[0001]	
<input type="checkbox"/> +2°C 3.6°F	[0002]		<input type="checkbox"/> +2°C 3.6°F	[0002]		<input type="checkbox"/> +2°C 3.6°F	[0002]		<input type="checkbox"/> +2°C 3.6°F	[0002]	
<input type="checkbox"/> +3°C 5.4°F	[0003]		<input type="checkbox"/> +3°C 5.4°F	[0003]		<input type="checkbox"/> +3°C 5.4°F	[0003]		<input type="checkbox"/> +3°C 5.4°F	[0003]	
<input type="checkbox"/> +4°C 7.2°F	[0004]		<input type="checkbox"/> +4°C 7.2°F	[0004]		<input type="checkbox"/> +4°C 7.2°F	[0004]		<input type="checkbox"/> +4°C 7.2°F	[0004]	
<input type="checkbox"/> +5°C 9.0°F	[0005]		<input type="checkbox"/> +5°C 9.0°F	[0005]		<input type="checkbox"/> +5°C 9.0°F	[0005]		<input type="checkbox"/> +5°C 9.0°F	[0005]	
<input type="checkbox"/> +6°C 10.8°F	[0006]		<input type="checkbox"/> +6°C 10.8°F	[0006]		<input type="checkbox"/> +6°C 10.8°F	[0006]		<input type="checkbox"/> +6°C 10.8°F	[0006]	
Incorporation of parts sold separately			Incorporation of parts sold separately			Incorporation of parts sold separately			Incorporation of parts sold separately		
Have you incorporated the following parts sold separately? If incorporated, fill check mark [x] in each [ITEM]. (When incorporating, the setup change is necessary in some cases. For setup change method, refer to Installation Manual attached to each part sold separately.)											
<input type="checkbox"/> Others ( )			<input type="checkbox"/> Others ( )			<input type="checkbox"/> Others ( )			<input type="checkbox"/> Others ( )		
<input type="checkbox"/> Others ( )			<input type="checkbox"/> Others ( )			<input type="checkbox"/> Others ( )			<input type="checkbox"/> Others ( )		

# TOSHIBA CARRIER CORPORATION