TOSHIBA
Carrier
AIR CONDITIONER (MULTI TYPE)
Installation Manual

Indoor Unit
Model name:

Floor Console Recessed Type
MML-AP0074BH2UL
MML-AP0094BH2UL
MML-AP0124BH2UL
MML-AP0154BH2UL
MML-AP0184BH2UL
MML-AP0244BH2UL
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 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)
• 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 over pressurized, 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 refrigerant gas has leaked during the installation work, ventilate the room immediately.
• After the installation work, confirm that refrigerant gas does not leak.
• 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.
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 over pressurized, which may cause a burst or injury. Before carrying out the installation, maintenance, repair or removal work, set the circuit breaker to the OFF position. Otherwise, electric shocks may result. Do not touch the aluminum fin of the unit. 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. 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. Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws. The 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. Exclusive new tools are required for the new refrigerant (R410A). For connecting pipes, use new and clean piping designed for R410A, and make sure 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.

### CAUTION
- **Installation Manual**
  - Q’ty: 1
  - Usage: This manual (Hand over to customers)

<table>
<thead>
<tr>
<th>Part name</th>
<th>Q’ty</th>
<th>Shape</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat insulation</td>
<td>2</td>
<td></td>
<td>For heat insulation of drain connecting section</td>
</tr>
<tr>
<td>Drain pan</td>
<td>1</td>
<td></td>
<td>For water draining</td>
</tr>
<tr>
<td>Drain filter</td>
<td>1</td>
<td></td>
<td>With the drain pan</td>
</tr>
<tr>
<td>Drain pan screw</td>
<td>1</td>
<td></td>
<td>For drain pan fixing</td>
</tr>
<tr>
<td>Drain hose</td>
<td>1</td>
<td></td>
<td>For adjusting core-out of drain pipe (with drain receiver.)</td>
</tr>
<tr>
<td>Heat insulated pipe</td>
<td>1</td>
<td></td>
<td>For insulating the drain receiver (with the drain receiver.)</td>
</tr>
</tbody>
</table>
3 Selection of installation place

Avoid installing in the following places.

Select a location for the indoor unit where the cool or warm air will circulate evenly.

Avoid installation in the following locations.

- Saline area (coastal area).
- Locations with acidic or alkaline atmospheres (such as areas with hot springs, factories where chemicals or pharmaceuticals are made and places where the exhaust air from combustion appliances will be sucked into the unit). Doing so may cause the heat exchanger (its aluminum fins and copper pipes) and other parts to become corroded.
- Locations with atmospheres consisting of mist of cutting oil or other types of machine oil. Doing so may cause the heat exchanger to become corroded, mists caused by the blockage of the heat exchanger to be generated, the plastic parts to be damaged, the heat insulators to peel off, and other such problems to result.
- Locations where vapors from food oils are formed (such as kitchens where food oils are used). Blocked filters may cause the air conditioner's performance to deteriorate, condensation to form, the plastic parts to be damaged, and other such problems to result.
- Locations near obstructions such as ventilation openings or lighting fixtures where the flow of the blown air will be disrupted (a disruption of the air flow may cause the air conditioner’s performance to deteriorate or the unit to shut down).
- Locations where an in-house power generator is used for the power supply. The power line frequency and voltage may fluctuate, and the air conditioner may not work properly as a result.
- Locations where high frequencies are generated (by inverter equipment, in-house power generators, medical equipment or communication equipment). Malfunctioning or control trouble in the air conditioner or noise may adversely affect the equipment's operation.
- Locations where there is anything under the unit installed that would be compromised by wetness. If the drain has become blocked or when the humidity is over 80%, condensation from the indoor unit will drip, possibly causing damage to anything underneath.
- Locations where the special sprays are used frequently.

Before installation

REQUIREMENT

- The drain filter is provide to avoid drain from clogging during construction phase. Clean the filter before test run. Keep the drain filter in place during normal running cycle of the unit to avoid drain from clogging. Clean the filter periodically.
- The air filter is provided under the indoor unit. Clean air filter before test run. Replace or clean the filter during unit normal running cycle.

Installation space

Reserve sufficient space required for installation or service work.

<table>
<thead>
<tr>
<th>Model MNL</th>
<th>Unit: in (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP007 to AP012</td>
<td>24.0&quot; (610)</td>
</tr>
<tr>
<td>AP015 to AP024</td>
<td>35.6&quot; (910)</td>
</tr>
</tbody>
</table>

Filter cleaning sign term setting

The lighting term setup of the filter sign (Notification of filter cleaning) of the remote control can be changed according to the condition of installation.

For setup method, refer to “Filter sign setting” in the Applicable controls of this Manual.
4 Installation

CAUTION

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 or let a person get on it. (Even units are packaged)
• Carry in the indoor unit as it is packaged if possible. If it is necessary to carry the indoor unit unpacked, then use buffering cloth or other material so as to not damage the unit.
• To move the indoor unit, hold the bottom face of the unit only.
• Do not apply force to the other parts (refrigerant pipe, drain pan, foamed parts, resin parts or other parts).
• Have two or more people carry the package, and do not bundle it with plastic band at positions other than specified.
• Protective polystyrene foams for transportation are attached to the underneath of the side plates on both sides of the unit. Remove them before installation of the unit.
• Install the indoor unit before putting up wall.

Installation of indoor unit

1 Remove foamed polystyrene cushion for protection during transportation, which is entered under left / right side plate of the main unit and electrical control box.
Also, before installing the unit, remove tape for transportation adhered to the electrical control box.

2 Install the indoor unit before lining the wall.

Fixing of unit

Fix the indoor unit to the floor and wall by attaching two or four M8 anchor bolts to the position in the following figure to tighten and fix with nut utilizing holes at left / right side plates.

Fixing indoor unit to floor

<table>
<thead>
<tr>
<th>Model MML</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP007 to AP012</td>
<td>22.8” (580)</td>
<td>24.0” (610)</td>
</tr>
<tr>
<td>AP015 to AP024</td>
<td>34.6” (880)</td>
<td>35.8” (910)</td>
</tr>
</tbody>
</table>

* Attach and fix the electrical control box to the wall under condition that electrical control box to be attached to the side face is removed. Remove the electrical control box as follows.
5 Drain piping

CAUTION
Following the Installation Manual, perform the drain piping work so that water is properly drained. Apply a heat insulation so as not to cause a dew condensation. Inappropriate piping work may result in water leakage in the room and wet furniture.

- Provide the indoor drain piping with proper heat insulation.
- Provide the area where the pipe connects to the indoor unit with proper heat insulation. Improper heat insulation will cause condensation to form.
- The drain pipe must be sloping downward (at an angle of 1/100 or more), and do not run the pipe up and down (arched shape) or allow it to form traps. Doing so may cause abnormal sounds.
- Restrict the length of the traversing drain pipe to 65.6' (20 m) or less. For a long pipe, provide support brackets at intervals of 4'11" to 6'7" (1.5 to 2 m) to prevent flapping.
- Install the collective piping as shown in the following figure.
- Do not provide any air vents. Otherwise, the drain water will spout, causing water to leak.
- Do not allow any force to be applied to the connection area with the drain pipe.

Installation of accessories
Install the drain pan (accessory) on the pipe side of the indoor unit.
Pipe material, size and insulator
The following materials for piping work and insulating process are procured locally.

<table>
<thead>
<tr>
<th>Pipe material</th>
<th>PVC pipe, pipe elbow (Nominal outer diameter Ø0.8” (20 mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulator</td>
<td>Foamed polyethylene foam, thickness: 0.4” (10 mm) or more</td>
</tr>
</tbody>
</table>

Connecting drain pipe
Insert the drain hose into the connector until the hose can go no farther.

REQUIREMENT
- Connect the hard vinyl chloride pipes by using adhesive agents for vinyl chloride so that water does not leak.
- It takes some time to dry and indurate the adhesive agent. (Refer to the manual of adhesive agent.) Do not apply any extra force on the connecting section until the adhesive agent is dried.

CAUTION
Sometimes, debris will accumulate in the drain pan while installation work is in progress. Remove the drain filter from the drain pan and clean it. After cleaning the drain filter, replace it in the drain pan.

Check the draining
Pour water on the drain pan. Confirm that water drains well and does not leak from the drain hose connecting part.

6 Refrigerant piping

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

Use the flare nut attached with the indoor unit or R410A flare nut.

Permissible piping length and height difference
They vary depending on the outdoor unit. For details, refer to the Installation Manual attached to the outdoor unit.

Pipe size

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>Unit: in (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP007 to AP012</td>
<td>3/8” (9.5), 1/4” (6.4)</td>
</tr>
<tr>
<td>AP015, AP018</td>
<td>1/2” (12.7), 1/4” (6.4)</td>
</tr>
<tr>
<td>AP024</td>
<td>5/8” (15.9), 3/8” (9.5)</td>
</tr>
</tbody>
</table>

Flaring

1 Cut the pipe with a pipe cutter.
Remove burrs completely. (Remaining burrs may cause gas leakage.)

2 Insert a flare nut into the pipe, and flare the pipe.
Use the flare nut provided with the unit or the one used for the R410A refrigerant. The flaring dimensions for R410A are different from the ones used for the conventional R22 refrigerant. A new flare tool manufactured for use with the R410A refrigerant is recommended, but the conventional tool can still be used if the projection margin of the copper pipe is adjusted to be as shown in the following table.

Projection margin in flaring: B

<table>
<thead>
<tr>
<th>Outer dia. of copper pipe</th>
<th>R410A tool used</th>
<th>Conventional tool used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4” (6.4)</td>
<td>0 to 0.02” (0 to 0.5)</td>
<td>0.04” to 0.06” (1.0 to 1.5)</td>
</tr>
<tr>
<td>5/8” (15.9)</td>
<td>0.04” to 0.06” (1.0 to 1.5)</td>
<td></td>
</tr>
</tbody>
</table>

Flaring diameter size: A

<table>
<thead>
<tr>
<th>Outer dia. of copper pipe</th>
<th>A +0 to –0.02” (0 to 0.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4” (6.4)</td>
<td>0.36” (9.1)</td>
</tr>
<tr>
<td>3/8” (9.5)</td>
<td>0.52” (13.2)</td>
</tr>
<tr>
<td>1/2” (12.7)</td>
<td>0.65” (16.6)</td>
</tr>
<tr>
<td>5/8” (15.9)</td>
<td>0.78” (19.7)</td>
</tr>
</tbody>
</table>

* 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.
* The sealed gas was sealed at the atmospheric pressure so when the flare nut is removed, there will be no “whooshing” sound. This is normal and is not indicative of trouble.
* Use two spanners to connect the indoor unit pipe.

Work using two spanners
• Use the tightening torque levels as listed in the following table.

<table>
<thead>
<tr>
<th>Outer dia. of connecting pipe (in)</th>
<th>Tightening torque (ft-lbs (N•m))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; (6.4)</td>
<td>10 to 13 (14 to 18)</td>
</tr>
<tr>
<td>5/8&quot; (9.5)</td>
<td>24 to 31 (33 to 42)</td>
</tr>
<tr>
<td>1/2&quot; (12.7)</td>
<td>37 to 46 (50 to 62)</td>
</tr>
<tr>
<td>5/8&quot; (15.9)</td>
<td>46 to 57 (63 to 77)</td>
</tr>
</tbody>
</table>

• 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 connections of 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.

**CAUTION**

Tightening with an excessive torque may crack the nut depending on installation conditions.

**Heat insulation process**

Apply heat insulation for the pipes separately at liquid side and gas side.

- For the heat insulation to the pipes at gas side, use the material with heat-resisting temperature 248 °F (120 °C) or higher.
- To use the attached heat insulation pipe, apply the heat insulation to the pipe connecting section of the indoor unit securely without gap.

**REQUIREMENT**

Apply the heat insulation to the pipe connecting section of the indoor unit securely up to the root without exposure of the pipe. (The pipe exposed to the outside causes water leak.)

**Electrical connection**

**WARNING**

1. 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.
2. 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.
3. 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.
- 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 central control wire terminals (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 is completed.

**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 locally procured. For the power supply specifications, follow the table below. If the capacity is too low, overheat or seizure may occur.

**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**

- 208 / 230 V-60 Hz

**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.

**Airtight test / air purge, etc.**

For air tightness test, adding refrigerant, refer to the Installation Manual attached to the outdoor unit.

**CAUTION**

Do not supply power to the indoor unit until the airtight test and vacuuming 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.

**CAUTION**

- 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

Recommended wire diameter and wire length for power supply wire.

<table>
<thead>
<tr>
<th>Model</th>
<th>Power Supply</th>
<th>Voltage Range (V)</th>
<th>MCA (A)</th>
<th>MOCP (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MML-AP0074BH2UL</td>
<td>208 / 230 V-1-60 Hz</td>
<td>187</td>
<td>0.4</td>
<td>15</td>
</tr>
<tr>
<td>MML-AP0094BH2UL</td>
<td></td>
<td></td>
<td>0.4</td>
<td>15</td>
</tr>
<tr>
<td>MML-AP0124BH2UL</td>
<td></td>
<td></td>
<td>0.4</td>
<td>15</td>
</tr>
<tr>
<td>MML-AP0154BH2UL</td>
<td></td>
<td></td>
<td>0.7</td>
<td>15</td>
</tr>
<tr>
<td>MML-AP0184BH2UL</td>
<td></td>
<td></td>
<td>0.7</td>
<td>15</td>
</tr>
<tr>
<td>MML-AP0244BH2UL</td>
<td></td>
<td></td>
<td>0.7</td>
<td>15</td>
</tr>
</tbody>
</table>

**Control wire**

Control wiring between indoor units, and outdoor unit (2-core shielded wire) Wire size: AWG16

Remote control wiring

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

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

### CAUTION

Do not put the remote control wires and power supply wires (AC208 / 230 V) in the same conduit. Doing so may cause trouble in the control system due to noise or other factors.

### 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**

![Diagram of wiring example](image-url)
### Wire connection

**REQUIREMENT**
- Connect the wires matching the terminal numbers. Incorrect connection can cause problems.
- Pass the wires through the bushing of wire connection holes of the indoor unit.
- Keep a margin (Approx. 3.9” (100 mm)) on a wire to hang down the electrical control box for servicing or other purpose.
- The low-voltage circuit is provided for the remote control. (Do not connect it to high-voltage circuit)
- Remove the mounting screws from electrical control box cover. Detach the cover from the electrical control box.
- Connect the wires to the terminal block and tighten the screws. Fix the wires with the cord clamp attached to the electrical control box. (Do not apply tension to the connecting section of the terminal block.)
- Mount the cover of the electrical control box without pinching wires.

**CAUTION**
- 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.

### Remote control wiring
Strip off approx. 0.4” (9 mm) the wire to be connected.

**Wiring diagram**
Terminal block for remote control wiring of indoor unit

### Address setup
Set up the addresses as per the Installation Manual supplied with the outdoor unit.
### 8 Applicable controls

**REQUIREMENT**

When the air conditioner is used for the first time, it will take some time after the power has been turned on before the remote control becomes available for operations. This is normal and is not indicative of any problems.

- Concerning the automatic addresses (The automatic addresses are set up by performing operations on the outdoor interface circuit board.)
  - While the automatic addresses are being set up, no remote control operations can be performed. Setup takes up to 10 minutes (usually about 5 minutes) for the outdoor unit to start operating after the power has been turned on.

Before the air conditioner is shipped from the factory, all units are set to [STANDARD] (factory default). If necessary, change the indoor unit settings. The settings are changed by operating the wired remote control.

- The settings cannot be changed by using only a wireless remote control, simple remote control or group control remote control by itself so install a wired remote control separately as well.

#### Basic procedure for changing settings

**Change the settings while the air conditioner is not working.** (Stop the air conditioner before changing the settings.)

**CAUTION**

Set only the CODE No. shown in the following table: Do NOT set any other CODE No. If a CODE No. not listed is set, it may not be possible to operate the air conditioner or other troubles with the product may result.

1. Push and hold \( \text{ button and "TEMP." \( \text{ button simultaneously for at least 4 seconds. After a while, the display flashes as shown in the figure. Confirm that the CODE No. is [91]. If the CODE No. is not [91], push \( \text{ button to clear the display content, and repeat the procedure from the beginning. (No operation of the \( \text{ remote control is accepted for a while after button is pushed.)}} \)

(While air conditioners are operated under the group control, "ALL" is displayed first. When \( \text{ is pushed, the indoor unit number displayed following "ALL" is the header unit.)}

2. Each time \( \text{ 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 for change settings can be confirmed.

3. Specify CODE No. \( \text{ with "TEMP." \( \text{ buttons.

4. Select SET DATA \( \text{ with "TIME" \( \text{ buttons.

5. Push \( \text{ 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.

6. When settings have been completed, push \( \text{ button to determine the settings.

When \( \text{ button is pushed, \( \text{ flashes and then the display content disappears and the air conditioner enters the normal stop mode. (While \( \text{ is flashing, no operation of the remote control is accepted.)}

#### Filter sign setting

According to the installation condition, the filter sign term (Notification of filter cleaning) can be changed. Follow to the basic operation procedure \((1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6)\).

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

#### 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 machinery to circulate heat air near the ceiling.

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

- 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 following table.

<table>
<thead>
<tr>
<th>SET DATA</th>
<th>Filter sign term</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>None</td>
</tr>
<tr>
<td>0001</td>
<td>150 H (Factory default)</td>
</tr>
<tr>
<td>0002</td>
<td>250 H</td>
</tr>
<tr>
<td>0003</td>
<td>500 H</td>
</tr>
<tr>
<td>0004</td>
<td>1000 H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SET DATA</th>
<th>Detection temperature shift value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>No shift (Factory default)</td>
</tr>
<tr>
<td>0001</td>
<td>+1.8 °F (+1 °C)</td>
</tr>
<tr>
<td>0002</td>
<td>+3.6 °F (+2 °C)</td>
</tr>
<tr>
<td>0003</td>
<td>+5.4 °F (+3 °C)</td>
</tr>
<tr>
<td>0004</td>
<td>+7.2 °F (+4 °C)</td>
</tr>
<tr>
<td>0005</td>
<td>+9.0 °F (+5 °C)</td>
</tr>
<tr>
<td>0006</td>
<td>+10.8 °F (+6 °C)</td>
</tr>
</tbody>
</table>
Remote control sensor

The temperature sensor of the indoor unit senses room temperature usually. Set the remote control sensor to sense the temperature around the remote control.

Select items following the basic operation procedure (1 → 2 → 3 → 4 → 5 → 6).
- Specify [32] for the CODE No. in Procedure 3.
- Select the following data for the SET DATA in Procedure 4.
- When  flashes, the remote control sensor is defective. Select the SET DATA [0000] (not used) or replace the remote control.

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 "Electrical Connection" 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.

Test run

Before test run
- Before turning on the power supply, carry out the following procedure.
  1) By using 500 V-megger, check that resistance of 1 MΩ or more exists between the terminal block L to N and the ground.
  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.
- Do not press the electromagnetic contactor to forcibly perform a test run. (This is very dangerous in case the protective device does not work.)
- Before starting a test run, set addresses by following the Installation Manual supplied with the outdoor unit.

Execute a test run
- When a fan operation is to be performed for an individual indoor unit, turn off the power, short CN72 on the circuit board, and then turn the power back on. (First set the operating mode to “fan,” and then operate.) When the test run has been performed using this method, do NOT forget to release the shorting of CN72 after the test run is completed.
- Operate the unit with the wired remote control as usual. For the procedure of the operation, refer to the attached to the outdoor unit Owner’s Manual. A forced test run can be executed in the following procedure even if the operation stops by turning the thermostat - 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.

Wireless remote control

(TCB-AX32-UL)
- TEMPORARY button is pushed 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 forcibly.
- Check cool air starts blowing. If the operation does not start, check wiring again.

<table>
<thead>
<tr>
<th>SET DATA</th>
<th>0000</th>
<th>0001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote control sensor</td>
<td>Not used</td>
<td>(Factory default)</td>
</tr>
</tbody>
</table>

Test run

Wired remote control

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.

2 Push button.

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.

4 After the test run, push button to stop a test run.
- Display part is same as procedure 1.

5 Push button to cancel (release from) the test run mode.
- [TEST] disappears on the display and the status returns to a normal.

CAUTION

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

<Daily maintenance>

Cleaning of air filter
If is displayed on the remote control, maintain the air filter.

1 Push the button to stop the operation, then turn off the circuit breaker.

2 Take out the air filter.
   • Push down hook of the air filter on the front panel (Lower side).
   • Pull the air filter toward you to remove it.
   • Cleaning with water or vacuum cleaner
   • If dirt is heavy, clean the air filter by tepid water with neutral detergent or water.
   • After cleaning with water, dry the air filter sufficiently in a shade place.
   • Mount the air filter.

3 Turn on the circuit breaker, then push the button on the remote control to start the operation.

4 After cleaning, push . display disappears.

11 Troubleshooting

 Confirmation and check

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

1 When and buttons are pushed simultaneously for 4 seconds or more, the following display appears.

2 Every pushing of button used to set temperature, the error log stored in memory is displayed in order.

3 After confirmation, push button to return to the usual display.
Check codes and parts to be checked

Check method
On the remote control (Wireless 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.

Check code

<table>
<thead>
<tr>
<th>Check code</th>
<th>Check code name</th>
<th>Auxiliary code</th>
<th>Check method</th>
</tr>
</thead>
<tbody>
<tr>
<td>E01 — —</td>
<td>Communication error between indoor and remote control</td>
<td>Remote control</td>
<td>Indoor</td>
</tr>
<tr>
<td>E02 — —</td>
<td>Remote control transmission error</td>
<td>Remote control</td>
<td>Indoor</td>
</tr>
<tr>
<td>E03 — —</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E04 — —</td>
<td>Communication error between indoor and outdoor unit</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E05 — —</td>
<td>Increase of No. of indoor units</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E06 — —</td>
<td>Communication circuit error between indoor and outdoor unit</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E07 — —</td>
<td>Communication circuit error between indoor and outdoor unit</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E08 — —</td>
<td>Communication circuit error between indoor and outdoor unit</td>
<td>Remote control</td>
<td>Indoor</td>
</tr>
<tr>
<td>E09 — —</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E10 — —</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E11 — —</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E12 E12</td>
<td>Indoor / Outdoor Communication error</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E13 E13</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E14 E14</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E15 E15</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E16 E16</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E17 E17</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E18 E18</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E19 E19</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E20 E20</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E21 E21</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E22 E22</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E23 E23</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E24 E24</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E25 E25</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E26 E26</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E27 E27</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E28 E28</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E29 E29</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E30 E30</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>E31 E31</td>
<td>Communication error between indoor and remote control</td>
<td>Indoor</td>
<td>Indoor</td>
</tr>
</tbody>
</table>
### Oil level detective circuit error
- **Check code**: 01
- **Auxiliary code**: H16
- **Judge device**: Oil level detective circuit error IF

### TD recentering
- **Check code**: 01
- **Auxiliary code**: H16
- **Judge device**: TD recentering IF

### Indoor unit duplicated
- **Check code**: 02
- **Auxiliary code**: L03
- **Judge device**: Indoor unit duplicated IF

### Outdoor address duplicated
- **Check code**: 03
- **Auxiliary code**: L06
- **Judge device**: Outdoor address duplicated IF

### Group line in individual indoor unit
- **Check code**: 04
- **Auxiliary code**: L10
- **Judge device**: Group line in individual indoor unit IF

### No. of indoor units with priority duplicated
- **Check code**: 05
- **Auxiliary code**: L19
- **Judge device**: No. of indoor units with priority duplicated IF

### Outdoor fan IPDU error
- **Check code**: 06
- **Auxiliary code**: L29
- **Judge device**: Outdoor fan IPDU error IF

### G-TR short protection error
- **Check code**: 07
- **Auxiliary code**: P29
- **Judge device**: G-TR short protection error IF

### Comp. position detective circuit system error
- **Check code**: 08
- **Auxiliary code**: P31
- **Judge device**: Comp. position detective circuit system error IF

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

<table>
<thead>
<tr>
<th>Error detected by TCC-LINK central control device</th>
<th>Check code</th>
<th>Wireless remote control</th>
<th>Sensor Block display of receiving unit</th>
<th>Check code name</th>
<th>Judging device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sending error at TCC-LINK central control device</td>
<td>005</td>
<td>Indoor</td>
<td></td>
<td></td>
<td>TCC-LINK</td>
</tr>
<tr>
<td>Receiving error at TCC-LINK central control device</td>
<td>006</td>
<td>Indoor</td>
<td></td>
<td></td>
<td>TCC-LINK</td>
</tr>
<tr>
<td>Power supply in general-purpose equipment control</td>
<td>010</td>
<td>Indoor</td>
<td></td>
<td></td>
<td>General-purpose equipment IF</td>
</tr>
<tr>
<td>TCC-LINK : TOSHIBA Carrier Communication Link.</td>
<td></td>
<td>Indoor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**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 the 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.

Total amount of refrigerant (lbs (kg))

Min. volume of the indoor unit installed room (ft³ (m³)) ≤ Concentration limit (lbs/ft³ (kg/m³))

The concentration limit of R410A which is used in multi air conditioners is 0.019 lbs/ft³ (0.3 kg/m³).

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).

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 interconnected 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:

<table>
<thead>
<tr>
<th>Total amount of refrigerant (lbs)</th>
<th>Min. volume of the indoor unit installed room (ft³ (m³))</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ R410A</td>
<td>≤ 0.019 lbs/ft³ (0.3 kg/m³)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indoor unit</th>
<th>Refrigerant piping</th>
<th>Outdoor unit</th>
<th>(\frac{\text{Min. volume of the indoor unit installed room (ft³ (m³))}}{\text{Density limit of 0.019 lbs/ft³ (0.3 kg/m³)}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room A</td>
<td></td>
<td></td>
<td>Room A: 22 lbs (10 kg)</td>
</tr>
<tr>
<td>Room B</td>
<td></td>
<td></td>
<td>Room B: 22 lbs (10 kg)</td>
</tr>
<tr>
<td>Room C</td>
<td></td>
<td></td>
<td>Room C: 22 lbs (10 kg)</td>
</tr>
<tr>
<td>Room D</td>
<td></td>
<td></td>
<td>Room D: 33 lbs (15 kg)</td>
</tr>
<tr>
<td>Room E</td>
<td></td>
<td></td>
<td>Room E: 33 lbs (15 kg)</td>
</tr>
<tr>
<td>Room F</td>
<td></td>
<td></td>
<td>Room F: 33 lbs (15 kg)</td>
</tr>
</tbody>
</table>

Important

Indoor unit

Refrigerant piping

Outdoor unit

Mechanical ventilation device - Gas leak detector

Very small room

Small room

Medium room

Large room

Total amount of refrigerant lbs

Range below the density limit of 0.019 lbs/ft³ (0.3 kg/m³) (countermeasures not needed)

Range above the density limit of 0.019 lbs/ft³ (0.3 kg/m³) (countermeasures needed)
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.

Indoor unit setup check sheet

<table>
<thead>
<tr>
<th>Indoor unit</th>
<th>Indoor unit</th>
<th>Indoor unit</th>
<th>Indoor unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room name</td>
<td>Room name</td>
<td>Room name</td>
<td>Room name</td>
</tr>
<tr>
<td>Model</td>
<td>Model</td>
<td>Model</td>
<td>Model</td>
</tr>
</tbody>
</table>

Check indoor unit address. (For check method, refer to Applicable controls in this manual.)

1. 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])

<table>
<thead>
<tr>
<th>Line</th>
<th>Indoor</th>
<th>Group</th>
<th>Line</th>
<th>Indoor</th>
<th>Group</th>
<th>Line</th>
<th>Indoor</th>
<th>Group</th>
<th>Line</th>
<th>Indoor</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central control address</td>
<td>Central control address</td>
<td>Central control address</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have you changed lighting time of filter sign? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.

Filter sign lighting time

- **NO CHANGE**
- **NONE**
- **150H**
- **250H**
- **500H**
- **1000H**

Filter sign lighting time

- **NO CHANGE**
- **NONE**
- **150H**
- **250H**
- **500H**
- **1000H**

Filter sign lighting time

- **NO CHANGE**
- **NONE**
- **150H**
- **250H**
- **500H**
- **1000H**

Filter sign lighting time

- **NO CHANGE**
- **NONE**
- **150H**
- **250H**
- **500H**
- **1000H**

Have you changed detected temp. shift value? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.

Detected temp. shift value setup

- **NO CHANGE**
- **NO SHIFT**
- **+1°C 1.8°F**
- **+2°C 3.6°F**
- **+3°C 5.4°F**
- **+4°C 7.2°F**
- **+5°C 9.0°F**
- **+6°C 10.8°F**

Detected temp. shift value setup

- **NO CHANGE**
- **NO SHIFT**
- **+1°C 1.8°F**
- **+2°C 3.6°F**
- **+3°C 5.4°F**
- **+4°C 7.2°F**
- **+5°C 9.0°F**
- **+6°C 10.8°F**

Detected temp. shift value setup

- **NO CHANGE**
- **NO SHIFT**
- **+1°C 1.8°F**
- **+2°C 3.6°F**
- **+3°C 5.4°F**
- **+4°C 7.2°F**
- **+5°C 9.0°F**
- **+6°C 10.8°F**

Detected temp. shift value setup

- **NO CHANGE**
- **NO SHIFT**
- **+1°C 1.8°F**
- **+2°C 3.6°F**
- **+3°C 5.4°F**
- **+4°C 7.2°F**
- **+5°C 9.0°F**
- **+6°C 10.8°F**

Incorporation of parts sold separately

- **Others**
- **Others**
- **Others**
- **Others**
- **Others**
- **Others**

REQUIREMENT

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