TOSHIBA

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AIR CONDITIONER (SPLIT TYPE)

Owner's Manual

R32

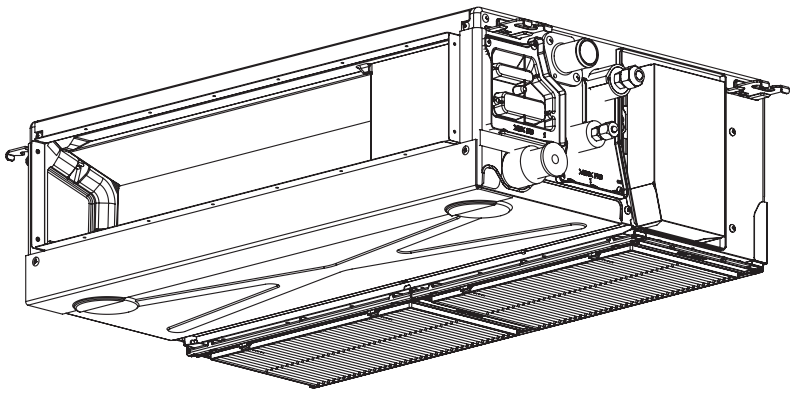
For commercial use

Indoor Unit

Model name:

<Slim Duct Type>

RAV-HM301SDTY-E
RAV-HM401SDTY-E
RAV-HM561SDTY-E
RAV-HM801SDTY-E



English

Original instruction

Thank you very much for purchasing TOSHIBA Air Conditioner.
Please read this owner's manual carefully before using your Air Conditioner.
- Be sure to obtain the "Owner's manual" and "Installation manual" from constructor (or dealer).
- Request to constructor or dealer.

Please clearly explain the contents of the Owner's manual and hand over it.

ADOPTION OF R32 REFRIGERANT

This Air Conditioner has adopted a HFC (R32) which does not destroy the ozone layer.
Be sure to combine with an outdoor unit for the R32 refrigerant.

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Thank you for purchasing this Toshiba air conditioner.
Please read carefully through these instructions that contain important information, which complies with the "Machinery" Directive(Directive 2006/42/EC), and ensure that you understand them.
After completing the installation work, hand over this Installation Manual as well as the Owner's Manual provided with the outdoor unit to the user, and ask the user to keep them in a safe place for future reference.

Generic denomination: Air conditioner

Definition of qualified installer or qualified service person
The air conditioner must be installed, maintained, repaired and removed by a qualified installer or qualified service person. When any of these jobs is to be done, ask a qualified installer or qualified service person to do them.
A qualified installer or qualified service person is an agent who has the qualifications and knowledge described in the table below.

Agent	Qualifications and knowledge which the agent must have
Qualified installer (*1)	• The qualified installer is a person who installs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations. • The qualified installer who is allowed to do the electrical work involved in installation, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified installer who is allowed to do the refrigerant handling and piping work involved in installation, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.
Qualified service person (*1)	• The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations. • The qualified service person who is allowed to do the electrical work involved in installation, repair, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified service person who is allowed to do the refrigerant handling and piping work involved in installation, repair, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified service person who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.

Definition of protective gear
When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.
In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the table below.
Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.

Work undertaken	Protective gear worn
All types of work	Protective gloves 'Safety' working clothing
Electrical-related work	Gloves to provide protection from electric shock Insulating shoes Clothing to provide protection from electric shock
Work done at heights (50 cm or more)	Helmets for use in industry
Transportation of heavy objects	Shoes with additional protective toecap
Repair of outdoor unit	Gloves to provide protection for electricians

These safety cautions describe important matters concerning safety to prevent injury to users or other people and damages to property. Please read through this manual after understanding the contents below (meanings of indications), and be sure to follow the description.

Indication	Meaning of Indication
⚠ WARNING	Text set off in this manner indicates that failure to adhere to the directions in the warning could result in serious bodily harm (1) or loss of life if the product is handled improperly.
⚠ CAUTION	Text set off in this manner indicates that failure to adhere to the directions in the caution could result in slight injury (2) or damage (3) to property if the product is handled improperly.

1: Serious bodily harm indicates loss of eyesight, injury, burns, electric shock, bone fracture, poisoning, and other injuries which leave aftereffect and require hospitalization or long-term treatment as an outpatient.
2: Slight injury indicates injury, burns, electric shock, and other injuries which do not require hospitalization or long-term treatment as an outpatient.
3: Damage to property indicates damage extending to buildings, household effects, domestic livestock, and pets.

	**WARNING** (Risk of fire)	This mark is for R32 refrigerant only. Refrigerant type is written on nameplate of outdoor unit. In case that refrigerant type is R32, this unit uses a flammable refrigerant. If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire.
	Read the OWNER'S MANUAL carefully before operation.	
	Service personnel are required to carefully read the OWNER'S MANUAL and INSTALLATION MANUAL before operation.	
	Further information is available in the OWNER'S MANUAL, INSTALLATION MANUAL, and the like.	

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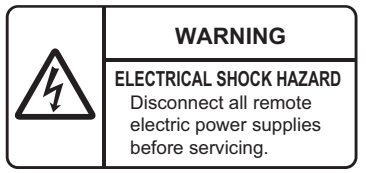
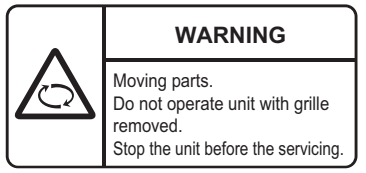
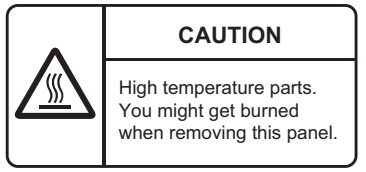
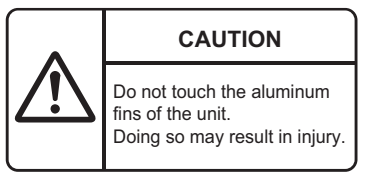
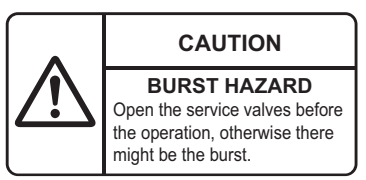
■ Warning Indications on the Air Conditioner Unit

Warning indication	Description
	**WARNING** **ELECTRICAL SHOCK HAZARD** Disconnect all remote electric power supplies before servicing.
	**WARNING** Moving parts. Do not operate unit with grille removed. Stop the unit before the servicing.
	**CAUTION** High temperature parts. You might get burned when removing this panel.
	**CAUTION** Do not touch the aluminium fins of the unit. Doing so may result in injury.
	**CAUTION** **BURST HAZARD** Open the service valves before the operation, otherwise there might be the burst.

1 Precautions for Safety

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

⚠ WARNING

General

- Before starting to install the air conditioner, read through the Installation Manual carefully, and follow its instructions to install the air conditioner.
- 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.
- Before opening the intake grille of the indoor unit or service panel of the outdoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts. Only a qualified installer (*1) or qualified service person (*1) is allowed to remove the intake grille of the indoor unit or service panel of the outdoor unit and do the work required.
- Before carrying out the installation, maintenance, repair or removal work, set the circuit breaker to the OFF position. Otherwise, electric shocks may result.
- Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
- Only a qualified installer (*1) or qualified service person (*1) is allowed to undertake work at heights using a stand of 50 cm or more or to remove the intake grille of the indoor unit to undertake work.

- Wear protective gloves and safety work clothing during installation, servicing and removal.
- 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.
- Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off of the outdoor unit and result in injury.
- When work is performed at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder's instructions. Also wear a helmet for use in industry as protective gear to undertake the work.
- Before cleaning the filter or other parts of the indoor unit, set the circuit breaker to OFF without fail, and place a "Work in progress" sign near the circuit breaker before proceeding with the work.
- Before working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below. While carrying out the work, wear a helmet for protection from falling objects.
- The refrigerant used by this air conditioner is the R32.
- The air conditioner must be transported in stable condition. If any part of the product is broken, contact the dealer.
- When the air conditioner must be transported by hand, carry it by two or more people.
- Do not move or repair any unit by yourself. There is high voltage inside the unit. You may get electric shock when removing the cover and main unit.
- This appliance is intended to be used by expert or trained users in shops, in light industry, or for commercial use by lay persons.

Selection of installation location

- 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.
- 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.
- To transport the air conditioner, wear shoes with additional protective toecap.
- To transport the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
- Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
- Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.
- Appliance and pipe-work shall be installed, operated and stored in a room with a floor area larger than $\mathbf{A_{min}\ m^2}$.
  How to get A_{min} m^2: $A_{min} = (M / (2.5 \times 0.22759 \times h_0))^2$
  M is the refrigerant charge amount in appliance in **kg**;
  h_0 is the installation height of the appliance in **m**:
  0.6 m for floor standing / 1.8 m for wall mounted / 1.0 m for window mounted / 2.2 m for ceiling mounted.
  (R32 refrigerant models only. For detail, refer to Installation Manual of the outdoor unit.)

Installation

- Suction duct length must be longer than 850mm.
- When the indoor unit is to be suspended, the designated hanging bolts (M10 or W3/8) and nuts (M10 or W3/8) must be used.

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- 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.
- Follow the instructions in the Installation Manual to install the air conditioner. Failure to follow these instructions may cause the product to fall down or topple over or give rise to noise, vibration, water leakage or other trouble.
- Carry out the specified installation work to guard against the possibility of high winds and earthquake. If the air conditioner is not installed appropriately, a unit may topple over or fall down, causing an accident.
- 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.
- Use forklift truck to carry in the air conditioner units and use winch or hoist at installation of them.
- Helmet must be worn to protect your head from falling objects. Especially, when you work under an inspection opening, helmet must be worn to protect your head from falling objects from the opening.
- The unit can be accessed from the service panel shown in the figure.
- After the unit has been suspended and installed, take dust-proof measures for the air intake and air discharge openings (cover these openings) to ensure that no dust will enter inside the unit at any point until the construction work has been completed.

Refrigerant piping

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

Electrical wiring

- Only a qualified installer (*1) or qualified service person (*1) is allowed to carry out the electrical work of the air conditioner. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and/or electrical leaks.
- To connect the electrical wires, repair the electrical parts or undertake other electrical jobs, wear gloves to provide protection for electricians, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- Use wiring that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring which does not meet the specifications may give rise to electric shocks, electrical leakage, smoking and/or a fire.
- Be sure to connect earth wire. (Grounding work)
  Incomplete earthing causes an electric shock.
- Do not connect earth wires to gas pipes, water pipes, and lightning conductor or telephone earth wires.
- After completing the repair or relocation work, check that the earth wires are connected properly.

- Install a circuit breaker that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws.
- Install the circuit breaker where it can be easily accessed by the agent.
- When installing the circuit breaker outdoors, install one which is designed to be used outdoors.
- Under no circumstances, the power supply wire or the indoor and outdoor connecting wire must be connected in the middle (Connection using a solderless terminal etc.).
  Connection trouble in the places where the wire is connected in the middle may give rise to smoking and/or a fire.
- Electrical wiring work shall be conducted according to law and regulation in the community and Installation Manual.
  Failure to do so may result in electrocution or short circuit.

Test run

- Before operating the air conditioner after having completed the work, check that the electrical control box cover of the indoor unit and service panel of the outdoor unit are closed, and set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks.
- If there is any kind of trouble (such as check code display has appeared, smell of burning, abnormal sounds, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself but set the circuit breaker to the OFF position, and contact a qualified service person. Take steps to ensure that the power will not be turned on (by marking “out of service” near the circuit breaker, for instance) until qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other trouble.
- After the work has finished, use an insulation tester set (500V Megger) to check the resistance is 1 MΩ or more between the charge section and the non-charge metal section (Earth section). If the resistance value is low, a disaster such as a leak or electric shock is caused at user’s side.
- Upon completion of the installation work, check for refrigerant leaks and check the insulation resistance and water drainage. Then conduct a test run to check that the air conditioner is operating properly.

Explanations given to user

- Upon completion of the installation work, tell the user where the circuit breaker is located. If the user does not know where the circuit breaker is, he or she will not be able to turn it off in the event that trouble has occurred in the air conditioner.
- After the installation work, follow the Owner’s Manual to explain to the customer how to use and maintain the unit.

Relocation

- Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and/or vibration may result.
- When carrying out the pump-down work, shut down the compressor before disconnecting the refrigerant pipe.
  Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air or other gas to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in rupture, injury, or other trouble.

(*1) Refer to the “Definition of qualified installer or qualified service person”.

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⚠ CAUTION

This Air Conditioner has adopted a refrigerant HFC (R32) which does not destroy the ozone layer.

- As the R32 refrigerant is easily affected by impurities such us moisture, oxidized film, oil, etc., due to the high pressure, be careful not to allow the moisture, dirt, existing refrigerant, refrigerating machine oil, etc., to get mixed up in the refrigeration cycle during the installation work.
- A special tool for the R32 refrigerant is required for installation.
- Use a new and clean piping materials for the connecting pipe so that moisture and dirt are not mixed together during the installation work.

To Disconnect the Appliance from Main Power Supply.

- This appliance must be connected to the main power supply by means of a switch with a contact separation of at least 3 mm.

■ Precautions for using R32 refrigerant

The basic installation work procedures are the same as conventional refrigerant (R410A, R22) models.
However, Please read through this manual after understanding the contents below;

These safety cautions describe important matters concerning safety to prevent injury to users or other people and damages to property.
Please read through this manual after understanding the contents below (meanings of indications), and be sure to follow the description;

⚠ WARNING

- Models that use refrigerant R32 have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety.

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.
- The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odor.

⚠ CAUTION

When a flammable refrigerant is used, all appliances shall be charged with refrigerant at the manufacturing location or charged on site as recommended by the manufacturer.
A part of an appliance that is charged on site, which requires brazing or welding in the installation shall not be shipped with a flammable refrigerant charge. Joints made in the installation between parts of the refrigerating system, with at least one part charged, shall be made in accordance with the following.

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part.
- Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated.
- Refrigerant tubing shall be protected or enclosed to avoid damage. Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operations shall be protected against mechanical damage.

General (Installation space / area)

- The installation of pipe-work shall be kept to a minimum.
- Pipe-work shall be protected from physical damage.
- The compliance with national gas regulations shall be observed.
- The mechanical connections shall be accessible for maintenance purposes.
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- When disposing of the product is used, be based on national regulations with properly processed.
- The servicing shall be performed only as recommended by the manufacturer.
- Where the appliance using flammable refrigerants is installed, Be aware that;
  - The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
  - The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
  - The appliance shall be stored so as to prevent mechanical damage from occurring.
- Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
- Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
- Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
- Provision shall be made for expansion and contraction of long runs of piping.
- Piping in refrigerating systems shall be so designed and installed to minimize the likelihood hydraulic shock damaging the system.
- Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.
- Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.
- Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.
- Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces. They should be checked for mechanical damage annually.
- The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.
- Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in Installation Manual.
- Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described in Installation Manual.
- Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.
- The total refrigerant charge in the system cannot exceed the requirements for minimum floor area of the smallest room that is served. For minimum floor area requirements for indoor units, see the installation and owner's manual of the outdoor unit.
- When connecting to an outdoor unit of R32 refrigerant and using a leak detector, always turn on the power of the indoor unit after installation except during service in order to detect refrigerant leakage and take safety measures.

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Unventilated area

• The appliance shall be stored so as to prevent mechanical damage from occurring.

Information on servicing

1. Check to the area

• Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the precautions in item 2 to 6 shall be complied with prior to conducting work on the system.

2. Work procedure

• Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.
• When connecting to an outdoor unit of R32 refrigerant and using a leak detector, the fan may automatically operate even if the air conditioner is stopped when a refrigerant leak is detected. Be careful not to get injured by the fan.

3. General work area

• All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.
• Work in confined spaces shall be avoided.
• The area around the workspace shall be sectioned off.
• Ensure that the conditions within the area have been made safe by control of flammable material.

4. Checking for presence of refrigerant

• The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
• Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non sparking, adequately sealed or intrinsically safe.

5. Presence of fire extinguisher

• If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand.
• Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

6. No ignition sources

• No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
• All possible ignition sources including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
• Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

7. Ventilated area

• Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
• A degree of ventilation shall continue during the period that the work is carried out.
• The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

8. Checks to the refrigeration equipment

• Where electrical components are being changed, installer shall be fit for the purpose and to the correct specification.

- At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.
- The following checks shall be applied to installations using flammable refrigerants.
  - The charge size is in accordance with the room size within which the refrigerant containing parts are installed.
  - The ventilation machinery and outlets are operating adequately and are not obstructed.
  - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
  - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
  - Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant contain- ing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

9. Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include;
  - That capacitors are discharged to avoid possibility of sparking.
  - That there no live electrical components and wiring are exposed while charging, recovering or purging the system.
  - That there is continuity of earth bonding.

10. Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected.
- This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

11. Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.

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- The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer.
- Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

12. Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- Check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

13. Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode containing chlorine.
- If a leak is suspected, all naked flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

14. Leak detection methods

- Electronic leak detectors shall be used to detect flammable refrigerants leak, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

15. Removal and evacuation

- When breaking into the refrigerant circuit to make repairs or for any other purpose, Conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration.

  The following procedure shall be adhered to:

- remove refrigerant;
- purge the circuit with inert gas;
- evacuate;
- purge again with inert gas;
- open the circuit by cutting or brazing;

• The refrigerant charge shall be recovered into the correct recovery cylinders.
• The system shall be “Flushed” with OFN to render the unit safe.
• This process may need to be repeated several times.
• Compressed air or oxygen shall not be used for purging refrigerant systems.
• Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
• This process shall be repeated until no refrigerant is within the system.
• When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
• This operation is absolutely vital if brazing operations on the pipe-work are to take place.
• Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation available.

16. Charging procedures

• In addition to conventional charging procedures, the following requirements shall be followed.
- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.

• Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
• The system shall be leak tested on completion of charging but prior to commissioning.
• A follow up leak test shall be carried out prior to leaving the site.

17. Decommissioning

• Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.
• It is recommended good practice that all refrigerants are recovered safely.
• Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required to reuse of reclaimed refrigerant.
• It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- All personal protective equipment is available and being used correctly;
- The recovery process is supervised at all times by a competent person;
- Recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

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e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

18. Labelling

- Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant.
- The label shall be dated and signed.
- Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

19. Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropiated refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

2 Applicable controls

REQUIREMENT

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

- 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 controller operations can be performed. Setup takes up to 10 minutes (usually about 5 minutes).
- When the power is turned on after automatically address setup, it takes up to 10 minutes (usually about 3 minute) for the outdoor unit to start operating after the power has been turned on.

Before the air conditioner was 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 controller.

* The settings cannot be changed using only a wireless remote controller and simple remote controller by itself so install a wired remote controller separately as well.

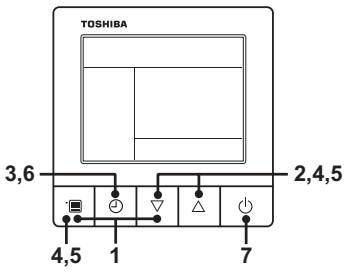
■ Applicable controls setup (settings at the site)

Remote controller model name: RBC-ASCU11*

Basic procedure
Be sure to stop the air conditioner before making settings.
(Change the setup while the air conditioner is not working.)

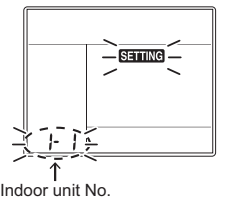
⚠ CAUTION

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 trouble with the product may result.



1 **Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.**

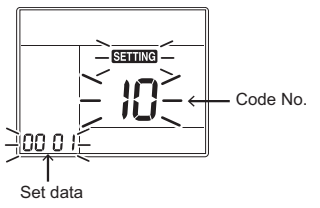
- After a while, the display flashes as shown in the figure. "ALL" is displayed as indoor unit numbers during initial communication immediately after the power has been turned on.



2 **Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for.**

- The fan of the selected indoor unit runs. The indoor unit can be confirmed for which to change settings.

3 **Push OFF timer button to confirm the selected indoor unit.**



4 **Push the menu button to make Code No. [✻✻] flash. Change Code No. [✻✻] with [▽] [△] setting button.**

5 **Push the menu button to make Set data [✻✻✻✻] flash. Change Set data [✻✻✻✻] with [▽] [△] setting button.**

6 **Push OFF timer button to complete the set up.**

- To change other settings of the selected indoor unit, repeat from Procedure ***4***.

7 **When all the settings have been completed, push ON/OFF button to finish the settings. (Return to the normal mode).**
"SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while "SETTING" is flashing.)

- To change settings of another indoor unit, repeat from Procedure ***1***.

■ 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*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

- Specify **[01]** for the Code No. in Procedure ***4***.
- For the set data in Procedure ***5***, select the set data of filter sign term from the following table.

Set data	Filter sign term
0000	None
0001	150 H
0002	2500 H (Factory default)
0003	5000 H
0004	10000 H

- The filter sign may be unavailable depending on the remote controllers.

■ External static pressure settings

To set the external static pressure, refer to the "Fan characteristics" in **6 Duct design**.
Set up a tap change based upon the external static pressure of the duct to be connected.
To set up a tap change, follow to the basic operation procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

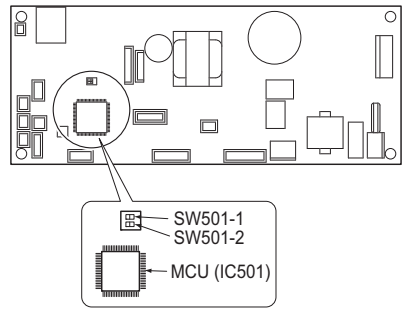
- Specify **[5d]** for the Code No. in procedure ***4***.
- For the set data of procedure ***5***, select a set data of the external static pressure to be set up from the following table.

Set data	External static pressure	
0000	10Pa	Standard (Factory default)
0001	20Pa	High static pressure 1
0003	30Pa	High static pressure 2
0004	40Pa	High static pressure 3
0006	50Pa	High static pressure 4

Remote controller-less setting

Change the external static pressure setting with the DIP switch on the P.C. board.

- Once the Set data has been changed, though it can be to reset it to 0000 (factory default), it need changing using remote controller (sold separately). After setting has been completed, restart the air conditioner.



SW501-1	OFF	ON	OFF	ON
SW501-2	OFF	OFF	ON	ON
Set data	0000 Factory default	0001	0003	0006

To restore the factory defaults
To return the DIP switch settings to the factory defaults, set SW501-1 and SW501-2 to OFF, connect a separately sold wired remote controller, and then set the data of Code No. [5d] to “0000”.

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■ 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*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

- Specify **[06]** for the Code No. in Procedure ***4***.
- For the set data in Procedure ***5***, select the set data of shift value of detection temperature to be set up from the following table.

Set data	Detection temperature shift value
0000	No shift
0001	+1 °C
0002	+2 °C (Factory default)
0003	+3 °C
0004	+4 °C
0005	+5 °C
0006	+6 °C

■ Remote controller sensor

The temperature sensor of the indoor unit senses room temperature usually. Set the remote controller sensor to sense the temperature around the remote controller.
Select items following the basic operation procedure (***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

- Specify **[32]** for the Code No. in Procedure ***4***.
- Select the following data for the set data in Procedure ***5***.

Set data	0000	0001
Remote controller sensor	Not in use (Factory default)	In use

When flashes, the remote controller sensor is defective.
Select the set data [0000] (not in use) or replace the remote controller.

■ Group control

In a group control, a remote controller can control up to maximum 8 or 16 units. (Depending on the outdoor unit.)

- The wired remote controller only can control a group control. The wireless remote controller is unavailable for this control.
- For wiring procedure and wires of the individual line (Identical refrigerant line) system, refer to “8 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 controller wires from the remote controller terminal blocks (A, B) of the indoor unit connected with a remote controller to the remote controller terminal blocks (A, B) of the other indoor unit. (Non-polarity)
- For address setup, refer to the Installation Manual attached to the outdoor unit.

3 Test run

■ Before test run

- Before turning on the circuit breaker, carry out the following procedure.
  1) By using insulation tester (500V Megger), check that resistance of 1 MΩ or more exists between the terminal block L to N and the earth (grounding). If resistance of less than 1 MΩ 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 for operating.
- Before starting a test run, be sure to set addresses 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 circuit CN72 on the circuit board, and then turn the power back on. (Set the operation mode to "fan" to operate the unit.) When the test run has been performed using this method, be sure to release the short circuit of CN72 after the test run is completed.

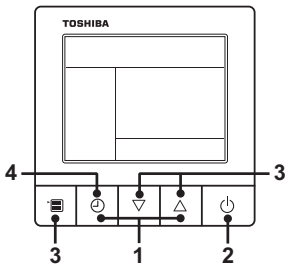
Operate the unit with the remote controller as usual.
For the procedure of the operation, refer to the Owner’s Manual attached to the outdoor unit.
A forced test run can be executed in the following procedure even if the operation stops by thermostat-OFF.
In order to prevent a serial operation, the forced test run is released after 60 minutes have passed and returns to the usual operation.

⚠ CAUTION

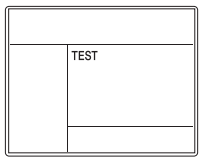
- Do not use the forced test run for cases other than the test run because it applies an excessive load to the devices.

Wired remote controller

Be sure to stop the air conditioner before making settings.
(Change the setup while the air conditioner is not working.)



1 **Push and hold OFF timer button and [△] setting button simultaneously for 10 seconds or more. [TEST] is displayed on the display part and the test run is permitted.**

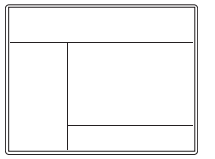


2 **Push ON/OFF button.**

3 **Push menu button to select the operation mode. Select [☼ Cool] or [☀ Heat] with [▽] [△] setting button.**

- Do not run the air conditioner in a mode other than [Cool] or [Heat].
- The temperature setting function does not work during test run.
- The check code is displayed as usual.

4 **After the test run, push OFF timer button to stop a test run.**
([TEST] disappears on the display and the air conditioner enters the normal stop mode.)



Wired remote controller

1 **Turn on the power of the air conditioner. When power is turned on for the first time after installation, it takes approx. 5 minutes until the remote controller becomes available. In the case of subsequent poweron, it takes approx. 1 minute until the remote controller becomes available. Execute a test run after the predetermined time has passed.**

2 **Push "ON/OFF" button on the remote controller, select [☼ Cool] or [☀ Heat] with "MODE" button, and then select [▬▬▬ HIGH] with "FAN" button.**

3

Cooling test run	Heating test run
Set the temperature to 17°C with the temp. setup buttons.	Set the temperature to 30°C with the temp. setup buttons.

4

Cooling test run	Heating test run
After confirming a signal receiving sound "beep" immediately set the temperature to 18°C with the temp. setup buttons.	After confirming a signal receiving sound "beep" immediately set the temperature to 29°C with the temp. setup buttons.

5

Cooling test run	Heating test run
After confirming a signal receiving sound "beep" immediately set the temperature to 17°C with the temp. setup buttons.	After confirming a signal receiving sound "beep" immediately set the temperature to 30°C with the temp. setup buttons.

6 **Repeat procedures *4* → *5* → *4* → *5*. Indicators "Operation" (green), "Timer" (green), and "Ready" (orange) in the wireless receiver section flash in approx. 10 seconds, and the air conditioner starts operation. If any of these indicators does not flash, repeat procedures 2 to 5.**

7 **Upon completion of the test run, push "ON/OFF" button to stop operation.**

<Overview of test run operations using the wireless remote controller>

▼ Cooling test run:
ON/OFF → 17°C → 18°C → 17°C → 18°C → 17°C → 18°C → 17°C → (test run) → ON/OFF

▼ Heating test run:
ON/OFF → 30°C → 29°C → 30°C → 29°C → 30°C → 29°C → 30°C → (test run) → ON/OFF

4 Maintenance

⚠ CAUTION

- When connecting to an outdoor unit of R32 refrigerant and using a leak detector,be sure to turn on the circuit breaker after maintenance to detect the leakage of refrigerant and take safety measures.

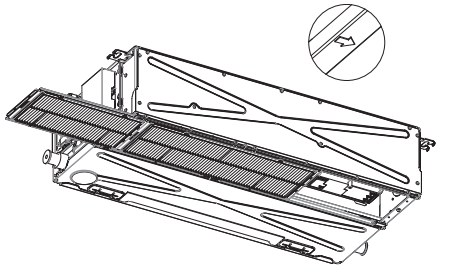
<Daily maintenance>

▼ Cleaning of air filter

- Be sure to stop the air conditioner before cleaning of air filter, then turn off the circuit breaker.

1 **Take off the air filter.**
When connecting a return air duct to the unit, cleaning method of the air filter differs according to the construction of duct end. Please ask the constructor for construction of air duct.

- Slide and remove the filter as shown in the following figure.



⚠ WARNING

When the first filter comes out without connected to the other one, insert it once more to connect the two filters together and pull out them as connected. Do not insert hands to take out the second filter. You may injure yourself.

2 **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.

3 **Mount the air filter.**
Insert the filter into the rail in the direction of the arrow as shown in the figure below until it reaches the filter stopper.

⚠ CAUTION

- Do not start the air conditioner while leaving air filter removed.

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Periodic Maintenance

For environmental conservation, it is strongly recommended that the indoor and outdoor units of the air conditioner in use be cleaned and maintained regularly to ensure efficient operation of the air conditioner.
When the air conditioner is operated for a long time, periodic maintenance (once a year) is recommended.
Furthermore, regularly check the outdoor unit for rust and scratches, and remove them or apply rustproof treatment, if necessary.
As a general rule, when an indoor unit is operated for 8 hours or more daily, clean the indoor unit and outdoor unit at least once every 3 months. Ask a professional for this cleaning / maintenance work.
Such maintenance can extend the life of the product though it involves the owner's expense.
Failure to clean the indoor and outdoor units regularly will result in poor performance, freezing, water leakage, and even compressor failure.

Inspection before maintenance

Following inspection must be carried out by a qualified installer or qualified service person.

Parts	Inspection method
Heat exchanger	Access from inspection opening and remove the access panel. Examine the heat exchanger if there is any clogging or damages.
Fan motor	Access from inspection opening and check if any abnormal noise can be heard.
Fan	Access from inspection opening and remove the access panel. Examine the fan if there are any waggles, damages or adhesive dust.
Filter	Access from check port and check if there are any stains or breaks on the filter.
Drain pan	Access from inspection opening and remove the access panel. Check if there is any clogging or drain water is polluted.

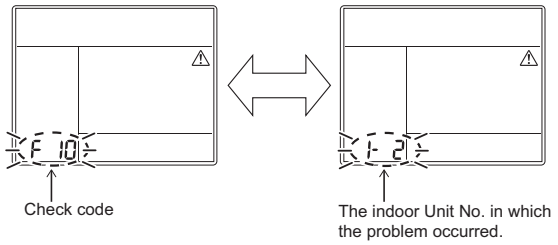
Maintenance List

Parts	Unit	Check (visual / auditory)	Maintenance
Heat exchanger	Indoor / Outdoor	Dust / dirt clogging, scratches	Wash the heat exchanger when it is clogged.
Fan motor	Indoor / Outdoor	Sound	Take appropriate measures when abnormal sound is generated.
Filter	Indoor	Dust / dirt, breakage	• Wash the filter with water when it is contaminated. • Replace it when it is damaged.
Fan	Indoor	• Vibration, balance • Dust / dirt, appearance	• Replace the fan when vibration or balance is terrible. • Brush or wash the fan when it is contaminated.
Air intake / discharge grilles	Indoor / Outdoor	Dust / dirt, scratches	Fix or replace them when they are deformed or damaged.
Drain pan	Indoor	Dust / dirt clogging, drain contamination	Clean the drain pan and check the downward slope for smooth drainage.
Ceiling panel, louvres	Indoor	Dust / dirt, scratches	Wash them when they are contaminated or apply repair coating.
Exterior	Outdoor	• Rust, peeling of insulator • Peeling / lift of coat	Apply repair coating.

5 Troubleshooting

■ Confirmation and check

If a problem occurs with the air conditioner, the OFF timer indicator alternately shows the check code and the indoor Unit No. in which the problem occurred.

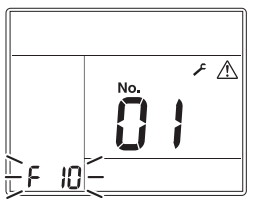


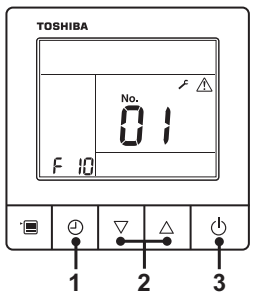
■ Troubleshooting history and confirmation

You can check the troubleshooting history with the following procedure if a problem occurs with the air conditioner.
(The troubleshooting history records up to 4 incidents.)
You can check it during operation or when operation is stopped.

- If you check the troubleshooting history during OFF timer operation, the OFF timer will be canceled.

Procedure	Description of operation
1	Push the OFF timer button for over 10 seconds and the indicators appear as an image indicating the troubleshooting history mode has been entered. If [Service check] is displayed, the mode enters in the troubleshooting history mode. • [01: Order of troubleshooting history] appears in the temperature indicator. • The OFF timer indicator alternately shows the [check code] and the [indoor Unit No.] in which the problem occurred.
2	Each time the setting button is pushed, the recorded troubleshooting history is displayed in sequence. The troubleshooting history appears in order from [01] (newest) to [04] (oldest). **⚠ CAUTION** In the troubleshooting history mode, DO NOT push the Menu button for over 10 seconds, doing so deletes the entire troubleshooting history of the indoor unit.
3	After you have finished checking, push the ON/OFF button to return to the regular mode. • If the air conditioner is operating, it remains operated even after the ON/OFF button has been pushed. To stop its operation, push the ON/OFF button again.





■ Check codes and parts to be checked

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit		Main defective parts	Judging device	Parts to be checked / trouble description	Air conditioner status
Indication	Operation Timer Ready GR GR OR	Flashing				
E01	◎ ● ●		No header remote controller	Remote controller	Incorrect remote controller setting --- The header remote controller has not been set (including two remote controllers).	*
			Remote controller communication trouble		No signal can be received from the indoor unit.	
E02	◎ ● ●		Remote controller transmission trouble	Remote controller	Indoor / outdoor connecting wires, indoor P.C. board, remote controller --- No signal can be sent to the indoor unit.	*
E03	◎ ● ●		Indoor unit-remote controller regular communication trouble	Indoor	Remote controller, network adapter, indoor P.C. board --- No data is received from the remote controller or network adapter.	Auto-reset
E04	● ● ◎		Indoor unit-outdoor unit serial communication trouble	Indoor	Indoor / outdoor connecting wires, indoor P.C. board, outdoor P.C. board --- Serial communication trouble between indoor unit and outdoor unit	Auto-reset
			IPDU-CDB communication trouble			
E08	◎ ● ●		Duplicated indoor addresses ★	Indoor	Indoor address setting trouble --- The same address as the self-address was detected.	Auto-reset
E09	◎ ● ●		Duplicated header remote controllers	Remote controller	Remote controller address setting trouble --- Two remote controllers are set as header in the double-remote controller control.	*
					(* The header indoor unit stops raising alarm and follower indoor units continue to operate.)	
E10	◎ ● ●		CPU-CPU communication trouble	Indoor	Indoor P.C. board --- Communication trouble between main MCU and motor microcomputer MCU	Auto-reset
E11	◎ ● ●		Communication trouble between Application control kit and Indoor unit	Indoor	Communication trouble between Application control kit and Indoor unit	Entire stop
E18	◎ ● ●		Header unit follower unit regular communication trouble	Indoor	Indoor P.C. board --- Regular communication is not possible between header and follower indoor units or between twin header (main) and follower (sub) units.	Auto-reset
E31	● ● ◎		IPDU communication trouble	Outdoor	Communication trouble between IPDU and CDB	Entire stop
F01	◎ ◎ ●	ALT	Indoor unit heat exchanger sensor (TCJ) trouble	Indoor	Heat exchanger sensor (TCJ), indoor P.C. board --- Open-circuit or short-circuit of the heat exchanger sensor (TCJ) was detected.	Auto-reset
F02	◎ ◎ ●	ALT	Indoor unit heat exchanger sensor (TC) trouble	Indoor	Heat exchanger sensor (TC), indoor P.C. board --- Open-circuit or short-circuit of the heat exchanger sensor (TC) was detected.	Auto-reset
F04	◎ ◎ ○	ALT	Outdoor unit discharge temp. sensor (TD) trouble	Outdoor	Outdoor temp. sensor (TD), outdoor P.C. board --- Open-circuit or short-circuit of the discharge temp. sensor was detected.	Entire stop
F06	◎ ◎ ○	ALT	Outdoor unit temp. sensor (TE / TS) trouble	Outdoor	Outdoor temp. sensors (TE / TS), outdoor P.C. board --- Open-circuit or short-circuit of the heat exchanger temp. sensor was detected.	Entire stop
F07	◎ ◎ ○	ALT	TL sensor trouble	Outdoor	TL sensor may be displaced, disconnected or short-circuited.	Entire stop
F08	◎ ◎ ○	ALT	Outdoor unit outside air temp. sensor trouble	Outdoor	Outdoor temp. sensor (TO), outdoor P.C. board --- Open-circuit or short-circuit of the outdoor air temp. sensor was detected.	Operation continued
F10	◎ ◎ ●	ALT	Indoor unit room temp. sensor (TA) trouble	Indoor	Room temp. sensor (TA), indoor P.C. board --- Open-circuit or short-circuit of the room temp. sensor (TA) was detected.	Auto-reset

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit		Main defective parts	Judging device	Parts to be checked / trouble description	Air conditioner status
Indication	Operation Timer Ready GR GR OR	Flashing				
F12	◎ ◎ ○	ALT	TS sensor trouble	Outdoor	TS sensor may be displaced, disconnected or short-circuited.	Entire stop
F13	◎ ◎ ○	ALT	Heat sink sensor trouble	Outdoor	Abnormal temperature was detected by the temp. sensor of the IGBT heat sink.	Entire stop
F15	◎ ◎ ○	ALT	Temp. sensor connection trouble	Outdoor	Temp. sensor (TE / TS) may be connected incorrectly.	Entire stop
F29	◎ ◎ ●	SIM	Indoor unit, other P.C. board trouble	Indoor	Indoor P.C. board --- EEPROM trouble	Auto-reset
F30	◎ ◎ ○	SIM	Occupancy sensor trouble	Indoor	Abnormality was detected from occupancy sensor.	Operation continued
F31	◎ ◎ ○	SIM	Outdoor unit P.C. board	Outdoor	Outdoor P.C. board ---- In the case of EEPROM trouble.	Entire stop
H01	● ◎ ●		Outdoor unit compressor breakdown	Outdoor	Current detect circuit, power voltage --- Minimum frequency was reached in the current releasing control or short-circuit current (Idc) after direct excitation was detected	Entire stop
H02	● ◎ ●		Outdoor unit compressor lock	Outdoor	Compressor circuit --- Compressor lock was detected.	Entire stop
H03	● ◎ ●		Outdoor unit current detect circuit trouble	Outdoor	Current detect circuit, outdoor unit P.C. board --- Abnormal current was detected in AC-CT or a phase loss was detected.	Entire stop
H04	● ◎ ●		Case thermostat operation	Outdoor	Malfunction of the case thermostat	Entire stop
H06	● ◎ ●		Outdoor unit low-pressure system trouble	Outdoor	Current, high-pressure switch circuit, outdoor P.C. board --- Pressure sensor trouble was detected or low-pressure protective operation was activated.	Entire stop
L03	◎ ● ◎	SIM	Duplicated header indoor units ★	Indoor	Indoor address setting trouble --- There are two or more header units in the group.	Entire stop
L07	◎ ● ◎	SIM	Group line in individual indoor unit ★	Indoor	Indoor address setting trouble --- There is at least one group-connected indoor unit among individual indoor units.	Entire stop
L08	◎ ● ◎	SIM	Indoor group address not set ★	Indoor	Indoor address setting trouble --- Indoor address group has not been set.	Entire stop
L09	◎ ● ◎	SIM	Indoor unit capacity not set	Indoor	Indoor unit capacity has not been set.	Entire stop
L10	◎ ○ ◎	SIM	Outdoor unit P.C. board	Outdoor	In the case of outdoor P.C. board jumper wire (for service) setting trouble	Entire stop
L20	◎ ○ ◎	SIM	LAN communication trouble	Network adapter central control	Address setting, central control remote controller, network adapter --- Duplication of address in central control communication	Auto-reset
L29	◎ ○ ◎	SIM	Other outdoor unit trouble	Outdoor	Other outdoor unit trouble	Entire stop
					1) Communication trouble between IPDU MCU and CDB MCU	Entire stop
					2) Abnormal temperature was detected by the heat sink temp. sensor in IGBT.	
L30	◎ ○ ◎	SIM	Abnormal external input into indoor unit (interlock)	Indoor	External devices, outdoor unit P.C. board --- Abnormal stop due to incorrect external input into CN80	Entire stop
L31	◎ ○ ◎	SIM	Phase sequence trouble, etc.	Outdoor	Power supply phase sequence, outdoor unit P.C. board --- Abnormal phase sequence of the 3-phase power supply	Operation continued (thermost at OFF)
P01	● ◎ ◎	ALT	Indoor unit fan trouble	Indoor	Indoor fan motor, indoor P.C. board --- Indoor AC fan trouble (fan motor thermal relay activated) was detected.	Entire stop
P03	◎ ● ◎	ALT	Outdoor unit discharge temp. trouble	Outdoor	An trouble was detected in the discharge temp. releasing control.	Entire stop

EN

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit		Main defective parts	Judging device	Parts to be checked / trouble description	Air conditioner status
Indication	Operation Timer Ready GR GR OR	Flashing				
P04	◎ ● ◎	ALT	Outdoor unit high-pressure system trouble	Outdoor	High-pressure switch --- The IOL was activated or an trouble was detected in the high-pressure releasing control using the TE.	Entire stop
P05	◎ ● ◎	ALT	Open phase detected	Outdoor	The power wire may be connected incorrectly. Check open phase and voltages of the power supply.	Entire stop
P07	◎ ● ◎	ALT	Heat sink overheat	Outdoor	Abnormal temperature was detected by the temp. sensor of the IGBT heat sink.	Entire stop
P10	● ◎ ◎	ALT	Indoor unit water overflow detected	Indoor	Drain pipe, clogging of drainage, float switch circuit, indoor P.C. board --- Drainage is out of order or the float switch was activated.	Entire stop
P12	● ◎ ◎	ALT	The fan trouble of the indoor unit	Indoor	Abnormal operation of the indoor fan motor, indoor P.C. board, or indoor DC fan (over current or lock, etc.) is detected.	Entire stop
P15	◎ ● ◎	ALT	Gas leakage detected	Outdoor	There may be gas leakage from the pipe or connecting part. Check for gas leakage.	Entire stop
P19	◎ ● ◎	ALT	4-way valve trouble	Outdoor (Indoor)	4-way valve, indoor temp. sensors (TC / TCJ) --- An trouble was detected due to temperature drop of the indoor unit heat exchanger sensor when heating.	Auto-reset
P20	◎ ● ◎	ALT	High-pressure protective operation	Outdoor	High-pressure protection	Entire stop
P22	◎ ● ◎	ALT	Outdoor unit fan trouble	Outdoor	Outdoor unit fan motor, outdoor unit P.C. board --- An trouble (overcurrent, locking, etc.) was detected in the outdoor unit fan drive circuit.	Entire stop
P26	◎ ● ◎	ALT	Outdoor unit inverter Idc activated	Outdoor	IGBT, outdoor unit P.C. board, inverter wiring, compressor --- Short-circuit protection for compressor drive circuit devices (G-Tr / IGBT) was activated.	Entire stop
P29	◎ ● ◎	ALT	Outdoor unit position trouble	Outdoor	Outdoor unit P.C. board, high-pressure switch --- Compressor motor position trouble was detected.	Entire stop
P31	◎ ● ◎	ALT	Other indoor unit trouble	Indoor	Another indoor unit in the group is raising an alarm.	Entire stop
					E03/L07/L03/L08 alarm check locations and trouble description	Auto-reset

◯ : Lighting ◎ : Flashing ● : OFF ★ : The air conditioner automatically enters the auto-address setting mode.
ALT: When two LEDs are flashing, they flash alternately. SIM: When two LEDs are flashing, they flash in synchronization.
Receiving unit display OR: Orange GR: Green

Trouble detected by central control device

Check code			Wireless remote controller				Check code name	Judging device
Central control device indication	Outdoor unit 7-segment display		Sensor block display of receiving unit					
		Auxiliary code	Operation	Timer	Ready	Flash		
C05	–	–	–				Sending trouble in central control device	Central control device
C06	–	–	–				Receiving trouble in central control device	Central control device
C12	–	–	–				Batch alarm of general-purpose equipment control interface	General-purpose equipment I/F
P30 (L20)	Differs according to trouble contents of unit with occurrence of alarm						Group control follower unit trouble	Central control device
	–	–	(L20 is displayed.)				• Duplication addresses of indoor units in central control device • With the combination of air conditioning system, the indoor unit may detect the check code of L20	
S01	–	–	–				Receiving trouble in central control device	Central control device

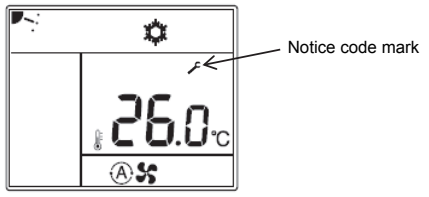
6 Specifications

Model	Sound pressure level (dB(A))		Weight (kg)
	Cooling	Heating	
RAV-HM301SDTY-E	*	*	15
RAV-HM401SDTY-E	*	*	15
RAV-HM561SDTY-E	*	*	19
RAV-HM801SDTY-E	*	*	22

* Under 70 dBA

7 Notice code

- Notice code is a function only in TC2U-Link communication.
- When the outdoor or indoor unit detects its conditions requiring caution or maintenance, this function notices you to check your units with the spanner mark (Notice code mark) on the wired remote controller or central controller display.
- Even while the notice code mark is displayed, the air conditioner can operate normally.
- A maximum of 5 notice codes can be issued simultaneously in one system (line).



■ How to check Notice code No.

1. Stop the operation of the air conditioner and push the Menu button and OFF timer button at the same time for 10 seconds or more.
2. The unit number of the indoor unit is displayed at the bottom left of the screen.
   Change it with the [▽] [△] setting button and push the OFF timer button to confirm.
3. The history number is displayed in the center of the screen, and the Notice code No. is displayed in the lower left.
   [▽] [△] You can switch the history with the setting button (a maximum of 5 notice codes)
4. Push the ON / OFF button to return to the operation stop screen.

■ Notice code list

Notice code No.	Item	Content
203	Flow Selector unit battery dead	The battery kit connected to the Flow Selector unit has reached the end of its life.
204	Leak detector life advance display	The leak detector will soon reach the end of its life.

Declaration of Conformity

Manufacturer:	Toshiba Carrier Air Conditioning (China) Co., Ltd. No.181, Weiken Street, Baiyang Block, Hangzhou Qiantang New Area, Zhejiang Province, China
TCF holder:	TOSHIBA CARRIER EUROPE S.A.S Route de Thil 01120 Montluel FRANCE

Hereby declares that the machinery described below:

Generic Denomination:	Air Conditioner
Model / type:	RAV-HM301SDTY-E, RAV-HM401SDTY-E, RAV-HM561SDTY-E, RAV-HM801SDTY-E
Commercial name:	Digital Inverter Air Conditioner Super Digital Inverter Air Conditioner

Complies with the provisions of the “Machinery” Directive (Directive 2006/42/EC) and the regulations transposing into national law

Name:	Shi Zhangxi
Position:	Senior Manager Quality Assurance & Service Engineering Dept.
Date:	01 April, 2022
Place Issued:	China

NOTE

This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer’s consent.

Declaration of Conformity

Manufacturer:	Toshiba Carrier Air Conditioning (China) Co., Ltd. No.181, Weiken Street, Baiyang Block, Hangzhou Qiantang New Area, Zhejiang Province, China
TCF holder:	TOSHIBA CARRIER UK LTD. Porsham Close Belliver Industrial Estate Roborough Plymouth Devon PL6 7DB United Kingdom

Hereby declares that the machinery described below:

Generic Denomination:	Air Conditioner
Model / type:	RAV-HM301SDTY-E, RAV-HM401SDTY-E, RAV-HM561SDTY-E, RAV-HM801SDTY-E
Commercial name:	Digital Inverter Air Conditioner Super Digital Inverter Air Conditioner

Complies with the provisions of the Supply of Machinery (Safety) Regulations 2008

Name:	Shi Zhangxi
Position:	Senior Manager Quality Assurance & Service Engineering Dept.
Date:	01 April, 2022
Place Issued:	China

NOTE

This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer’s consent.

■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. Be sure to 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 Service Manual of outdoor unit.)
*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 high ceiling setup? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to Applicable controls in this manual.) * In case of replacement of jumper blocks on indoor microcomputer P.C. board, setup is automatically changed.

External static pressure (CODE NO. [5d])	External static pressure (CODE NO. [5d])	External static pressure (CODE NO. [5d])	External static pressure (CODE NO. [5d])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ STANDARD [0000]	☐ STANDARD [0000]	☐ STANDARD [0000]	☐ STANDARD [0000]
☐ HIGH STATIC 1 [0001]	☐ HIGH STATIC 1 [0001]	☐ HIGH STATIC 1 [0001]	☐ HIGH STATIC 1 [0001]
☐ HIGH STATIC 2 [0003]	☐ HIGH STATIC 2 [0003]	☐ HIGH STATIC 2 [0003]	☐ HIGH STATIC 2 [0003]
☐ HIGH STATIC 3 [0004]	☐ HIGH STATIC 3 [0004]	☐ HIGH STATIC 3 [0004]	☐ HIGH STATIC 3 [0004]
☐ HIGH STATIC 4 [0006]	☐ HIGH STATIC 4 [0006]	☐ HIGH STATIC 4 [0006]	☐ HIGH STATIC 4 [0006]

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.
(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])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ NONE [0000]	☐ NONE [0000]	☐ NONE [0000]	☐ NONE [0000]
☐ 150 H [0001]	☐ 150 H [0001]	☐ 150 H [0001]	☐ 150 H [0001]
☐ 2500 H [0002]	☐ 2500 H [0002]	☐ 2500 H [0002]	☐ 2500 H [0002]
☐ 5000 H [0003]	☐ 5000 H [0003]	☐ 5000 H [0003]	☐ 5000 H [0003]
☐ 10000 H [0004]	☐ 10000 H [0004]	☐ 10000 H [0004]	☐ 10000 H [0004]

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.
(For check method, refer to Applicable controls 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])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ NO SHIFT [0000]	☐ NO SHIFT [0000]	☐ NO SHIFT [0000]	☐ NO SHIFT [0000]
☐ +1 °C [0001]	☐ +1 °C [0001]	☐ +1 °C [0001]	☐ +1 °C [0001]
☐ +2 °C [0002]	☐ +2 °C [0002]	☐ +2 °C [0002]	☐ +2 °C [0002]
☐ +3 °C [0003]	☐ +3 °C [0003]	☐ +3 °C [0003]	☐ +3 °C [0003]
☐ +4 °C [0004]	☐ +4 °C [0004]	☐ +4 °C [0004]	☐ +4 °C [0004]
☐ +5 °C [0005]	☐ +5 °C [0005]	☐ +5 °C [0005]	☐ +5 °C [0005]
☐ +6 °C [0006]	☐ +6 °C [0006]	☐ +6 °C [0006]	☐ +6 °C [0006]

Remote controller sensor (CODE NO. [32])	Remote controller sensor (CODE NO. [32])	Remote controller sensor (CODE NO. [32])	Remote controller sensor (CODE NO. [32])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ NOT IN USE [0000]	☐ NOT IN USE [0000]	☐ NOT IN USE [0000]	☐ NOT IN USE [0000]
☐ IN USE [0001]	☐ IN USE [0001]	☐ IN USE [0001]	☐ IN USE [0001]

Incorporation of parts sold separately	Incorporation of parts sold separately	Incorporation of parts sold separately	Incorporation of parts sold separately
☐ Others ( )	☐ Others ( )	☐ Others ( )	☐ Others ( )
☐ Others ( )	☐ Others ( )	☐ Others ( )	☐ Others ( )

MEMO

MEMO

MEMO

Toshiba Carrier Air Conditioning (China) Co., Ltd.

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