TOSHIBA

AIR CONDITIONER (SPLIT TYPE)

Installation Manual

R32

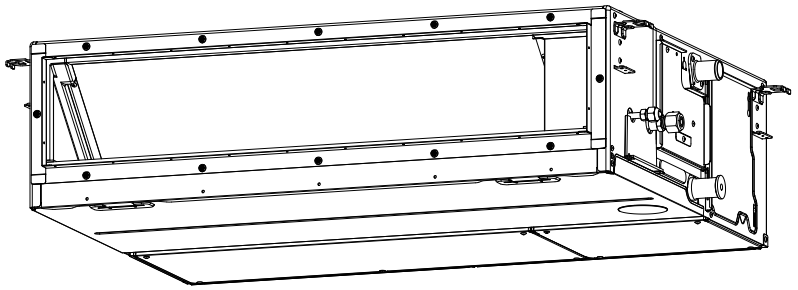
Indoor Unit

For commercial use

Model name :

Concealed Duct Type

RAV-HM561BTP-E
RAV-HM801BTP-E
RAV-HM901BTP-E
RAV-HM1101BTP-E
RAV-HM1401BTP-E
RAV-HM1601BTP-E



Scan QR CODE to access installation and owner's manual on website.
https://www.toshiba-carrier.co.th/manuals/default.aspx
Manual are available in AR/BG/CZ/DA/DE/EL/EN/ES/ET/FI/FR/
HR/HU/IT/LT/LV/NL/NO/PL/PT/RO/RU/SK/SL/SV/TR.

English

Original instruction

Contents

1 Accessory parts

■Accessory parts

Part name	Q'ty	Shape	Usage
Installation Manual	1	This manual	For hand over to customers
Owner's Manual	1		For hand over to customers
Heat insulating pipe	2		For heat insulation of pipe connecting section
Washer	8		For hanging-down unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For adjusting center of drain pipe
Heat insulator	1		For heat insulation of drain connecting section
Filter stopper	1		For fixing the filter
Safety Manual	1		For hand over directly to the customer

Part name	Shape	Q'ty		
		HM56	HM80	HM90, HM110, HM140, HM160
Filter fixing rail 1 (700 L)		1		2
Filter fixing rail 2 (700 L)		1		2
Filter fixing rail 3 (490 L)			2	
Filter fixing rail 4 (490 L)			2	

2 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 kinds of 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 with 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.
- Places where iron or other metal dust is present. If iron or other metal dust adheres to or collects on the interior of the air conditioner, it may spontaneously combust and start a fire.
- 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.
- On truck cranes, ships or other moving conveyances.
- The air conditioner must not be used for special applications (such as for storing food, plants, precision instruments or art works).
  (The quality of the items stored may be degraded.)
- 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.)
- In the case of the wireless type of system, rooms with the inverter type of fluorescent lighting or locations exposed to direct sunlight.
  (The signals from the wireless remote controller may not be sensed.)
- Locations where organic solvents are being used.
- The air conditioner cannot be used for liquefied carbonic acid cooling or in chemical plants.
- Location near doors or windows where the air conditioner may come into contact with high-temperature, high-humidity outdoor air.
  (Condensation may occur as a result.)
- Locations where special sprays are used frequently.

■Installation under high-humidity atmosphere

In some cases including the rainy season, especially inside of the ceiling may become high-humidity atmosphere (dew-point temperature: 23°C or higher).

1. Installation to inside of the ceiling with tiles on the roof
2. Installation to inside of the ceiling with slated roof
3. Installation to a place where inside of the ceiling is used for pathway to intake the fresh air
4. Installation to a kitchen

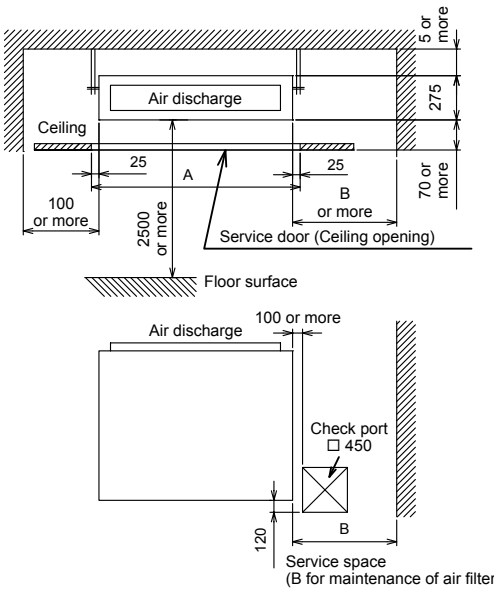
- In the above cases, additionally attach the heat insulator to all positions of the air conditioner, which come to contact with the high-humidity atmosphere. In this case, arrange the side plate (Check port) so that it is easily removed.
- Apply also a sufficient heat insulation to the duct and connecting part of the duct.

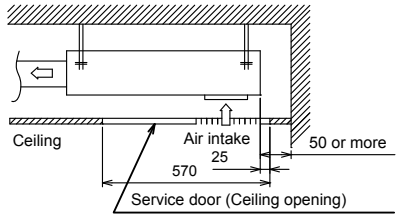
[Reference]	Condensation test conditions	
	Indoor side:	27°C dry bulb temperature 24°C wet bulb temperature
	Air volume:	Low air volume, operation time 4 hours

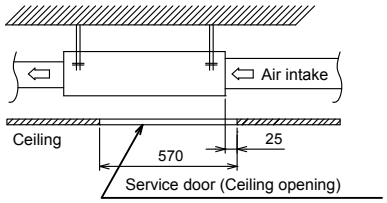
■Installation space

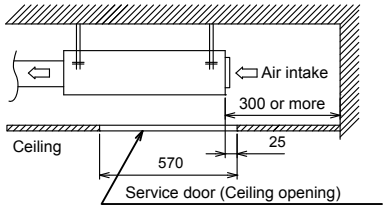
(Unit: mm)

Reserve sufficient space required for installation or service work.









Model	A	B
HM56 type	750	700
HM80 type	1050	500
HM90, HM110, HM140, HM160 type	1450	700

■Filter cleaning sign term setting

The lighting term setup of the filter sign (Notification of filter cleaning) of the remote controller can be changed according to the condition of installation.
For setup method, refer to “Filter sign setting” in the Applicable controls of this Manual.

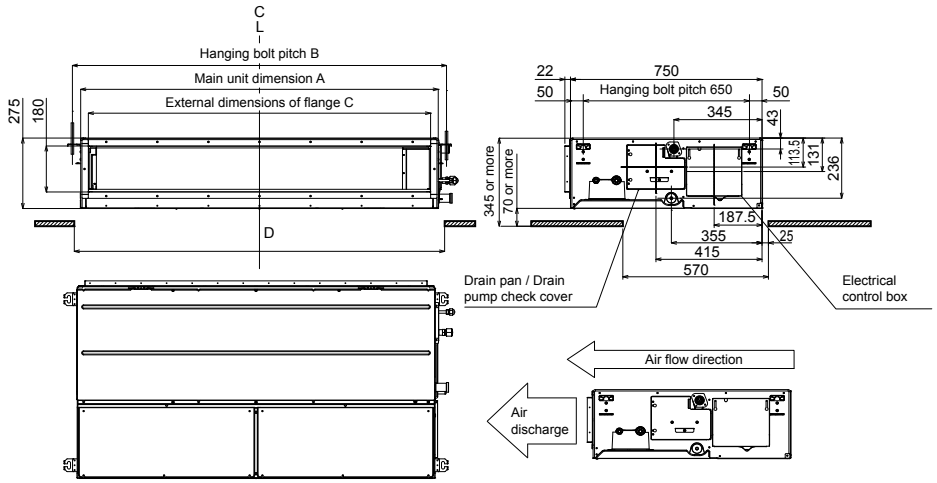
3 Installation

⚠ 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 carrying in the indoor unit unpacked by necessity, use buffering cloth or other material to not damage the unit.
- To move the indoor unit, hold the hooking brackets (4 positions) only. Do not apply force to the other parts (such as refrigerant pipe, drain pan, foamed parts, or resin parts).
- Carry the package by two or more persons, and do not bundle it with plastic band at positions other than specified.
- To install vibration isolation material to hanging bolts, confirm that it does not increase the unit vibration.

■External dimensions (Unit: mm)



▼ **Dimension**

Model	A	B	C	D
HM56 type	700	765	640	750
HM80 type	1000	1005	940	1050
HM90, HM110, HM140, HM160 type	1400	1465	1340	1450

■Installation of hanging bolt

- Consider the piping / wiring after the unit is hung to determine the location of the indoor unit installation and orientation.
- After the location of the indoor unit installation has been determined, install hanging bolts.
- For the dimensions of the hanging bolt pitches, refer to the external view.
- When a ceiling already exists, lay the drain pipe, refrigerant pipe, control wires, and remote controller wires to their connection locations before hanging the indoor unit.

Procure hanging bolts washer and nuts for installing the indoor unit (these are not supplied).

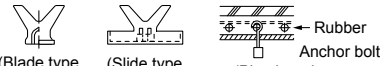
Hanging bolt	M10 or W3/8	4 pieces
Nut	M10 or W3/8	12 pieces
Washer	M10	8 pieces

Installation of hanging bolt

Use M10 hanging bolts (4 pcs, locally procured). Matching to the existing structure, set pitch according to size in the unit external view as shown below.

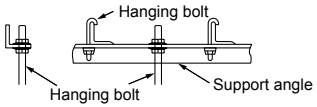
New concrete slab

Install the bolts with insert brackets or anchor bolts.



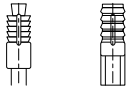
Steel frame structure

Use existing angles or install new support angles.



Existing concrete slab

Use a hole-in anchors, hole-in plugs, or a hole-in bolts.

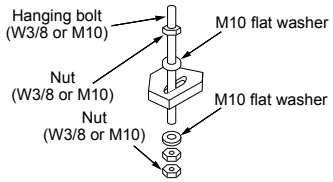


■Installation of indoor unit

Treatment of ceiling

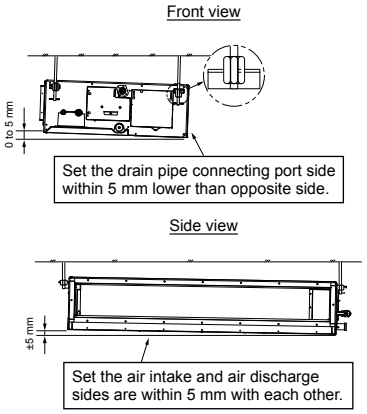
The ceiling differs according to structure of building. For details, consult your constructor or interior finish contractor.
In the process after the ceiling board has been removed, it is important to reinforce ceiling foundation (frame) and to keep horizontal level of installed ceiling correctly in order to prevent vibration of ceiling board.

- Attach the nuts and the M10 flat washers to the hanging bolt.
- Put washers at up and down of the hanging bracket of the indoor unit to hang down the indoor unit.
- Check that four sides are horizontal with a level gauge. (Horizontal degree: Within 5 mm)



REQUIREMENT

- Hang the unit in a horizontal position. When unit is hanged to slant, it may cause overflow of drainage.
- Install the unit within the dimension according to the figure below.
- Use level gauge to confirm whether the unit is hang horizontally.

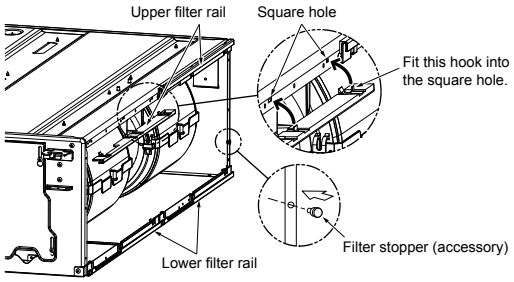


■Mounting filter rails and filters

1 **Mount the filter rail so that the hooks fit into the corresponding holes. (Note that the upper and lower filter rails are not identical.)**

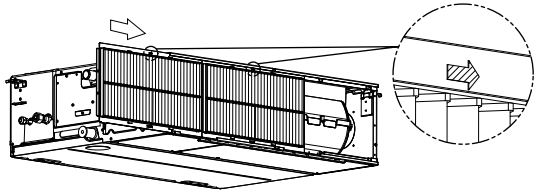
2 **Mount the filter stopper.**

* When mounting the rails, push them until the 3 latches click.



3 **Slide and push the filters until it stop.**

* Insert the filters into the direction which the arrows, carved on the filters, show. (2 filters are identical)

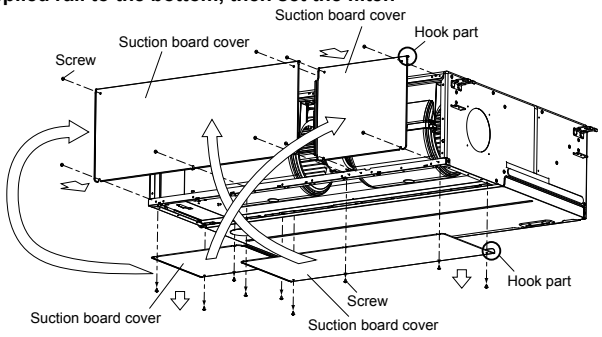


■Changing from back air intake to under air intake

1 **Remove the filters on back of unit.**

2 **Remove the suction board cover attached to the bottom, and screw it to the back of unit.**

3 **Mount the supplied rail to the bottom, then set the filter.**

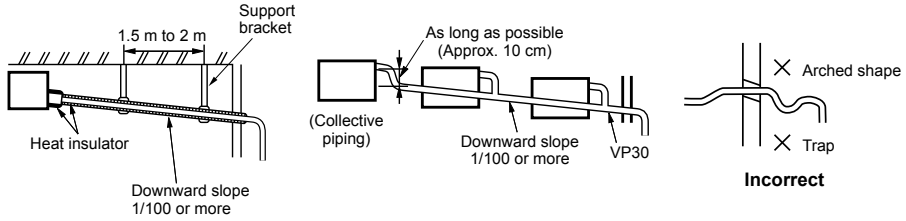


4 Drain piping

⚠ 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 20 meters or less. For a long pipe, provide support brackets at intervals of 1.5 to 2 meters 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.



■Pipe material, size and insulator

The following materials for piping work and insulating process are locally procured.

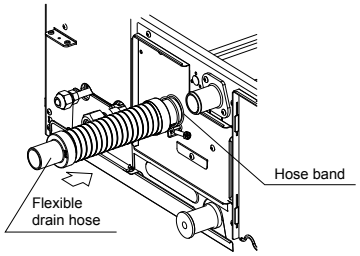
Pipe material	Hard vinyl chloride pipe VP25 (Nominal outer diameter Ø32 mm)
Insulator	Foamed polyethylene foam, thickness: 10 mm or more

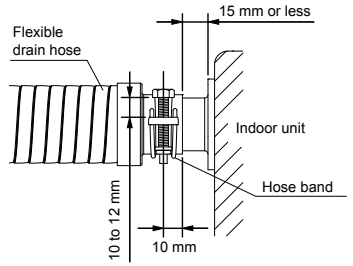
■Connecting drain pipe

Insert flexible drain hose into the drain pipe of main unit as far as it will go. Fix it with hose band.

REQUIREMENT

Mount the flexible drain hose using the hose band without using adhesive.



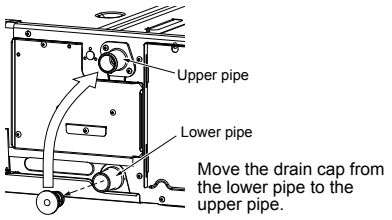


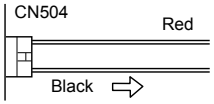
■Gravitational drainage

1 **Reattach the drain cap.**
* For gravitational drainage, remove the white connector (CN504) on the upper left of the circuit board in the electrical control box.

2 **Insert flexible drain hose into lower drain pipe and fix it with hose band.**

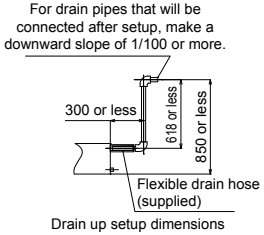
3 **Remove drain pump connector CN504.**





■Drain up

When a down-gradient cannot be secured for the drain pipe, drain-up piping is possible.
- The height of the drain pipe must be 850 mm or less from the underside of the indoor unit.
- Take the drain pipe out of the drain pipe joint with the indoor unit in 300 mm or less, and bend up the pipe vertically.
- Immediately after the pipe is bent up vertically, lay the pipe making a down-gradient.



Drain up setup dimensions

■Check the draining

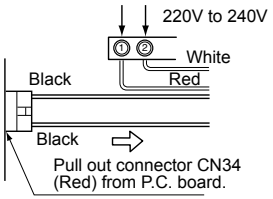
In the test run, check that water drain is properly performed and water does not leak from the connecting part of the pipes. When doing this, also check that no abnormal sounds are heard from the drain pump motor.
Check draining also when installed in heating period.

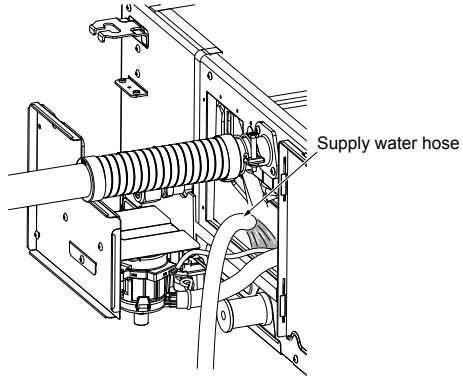
When the electrical and wiring work has been completed

Pour some water by following the method shown in the following figure. Then, while performing a cooling operation, check that the water drains from the drain pipe connecting port (transparent) and that no water is leaking from the drain pipe.

When the electrical and wiring work has not been completed

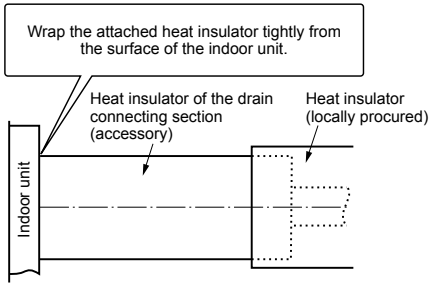
- Disconnect the float switch connector (3P: red) from the connector (CN34: red) on the printed circuit board inside the electrical control box. (Before doing this, the power must be turned off.)
- Connect a 220V to 240V supply voltage to (①) and (②) on the power supply terminal block.
  (Do not apply a 220V to 240V voltage to (A), (B) of the terminal block. Otherwise, the printed circuit board may be damaged.)
- Pour the water by following the method shown in the following figure. (Amount of water poured: 1500 cc to 2000 cc)
- When the power is turned on, the drain pump automatically starts running. Check whether the water is draining from the drain pipe connecting port, and check that no water is leaking from the drain pipe.
- After checking that the water drains and there are no water leaks, turn off the power, connect the float switch connector to its original location (CN34) on the printed circuit board, and return the electrical control box to its original position.



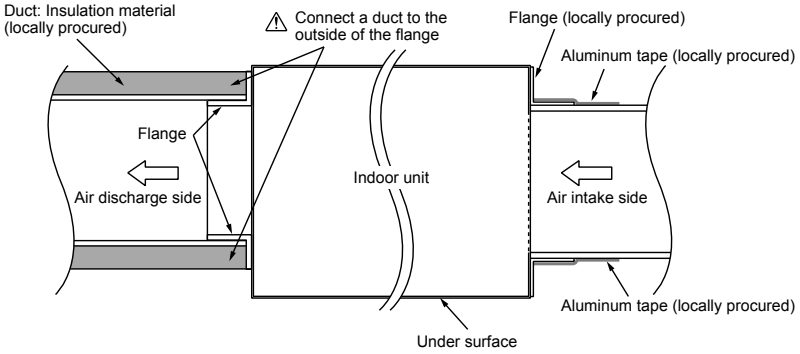


■Heat insulating process

- As shown in the figure, cover the flexible hose and hose band with the attached heat insulator up to the bottom of the indoor unit tightly.
- Cover the drain pipe tightly with a heat insulator procured locally so that it overlaps with the attached heat insulator of the drain connecting section.



■Connecting method of the duct

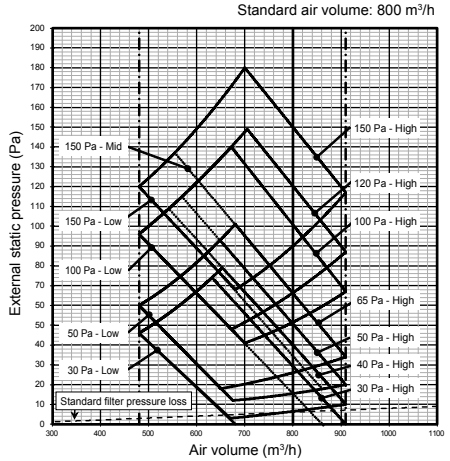


⚠ CAUTION

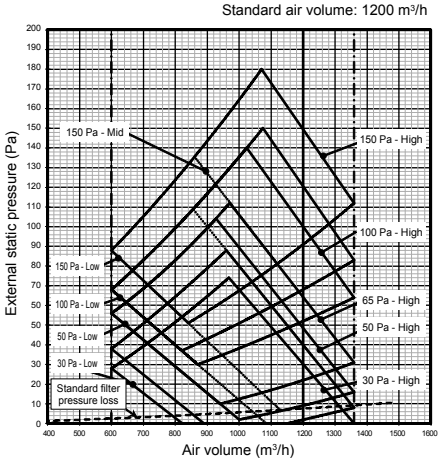
Incomplete heat insulation of the supply air flange and sealing may occur dewing resulted in falling of water drop.

■Fan characteristics

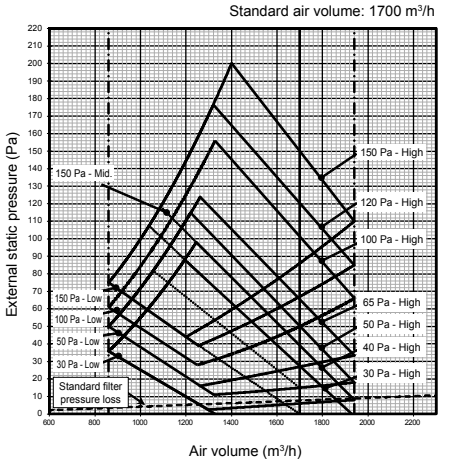
HM56



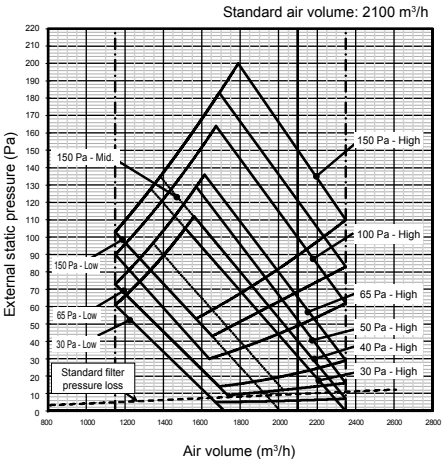
HM80



HM90



HM110, 140, 160



5 Duct design

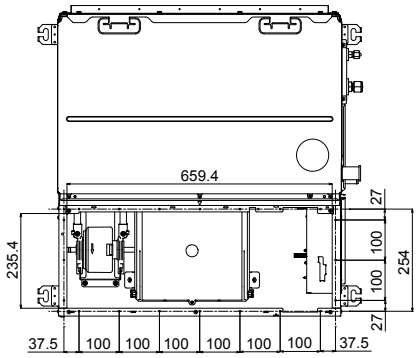
■Arrangement

(Unit: mm)

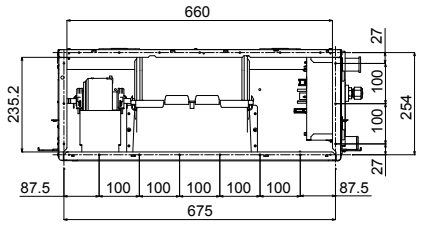
Referring to the following dimensions, manufacture duct at the local site.

HM56

<Under air intake>

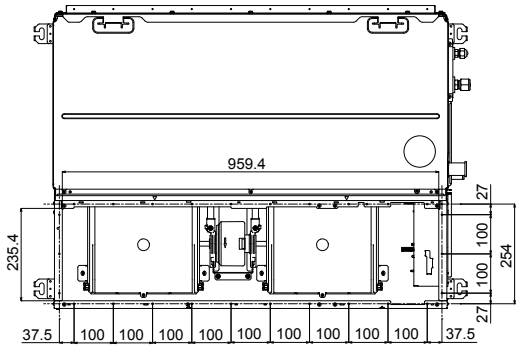


<Back air intake>



HM80

<Under air intake>



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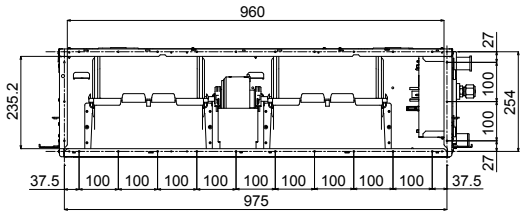
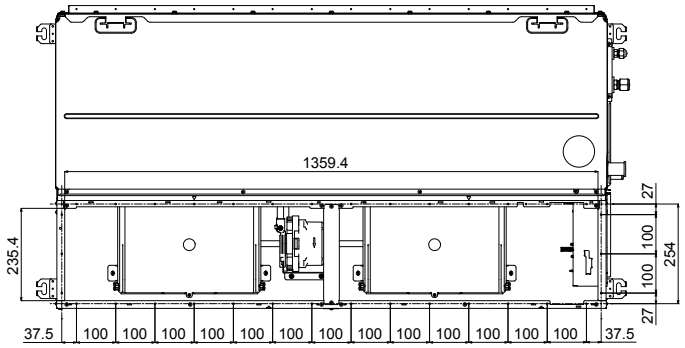
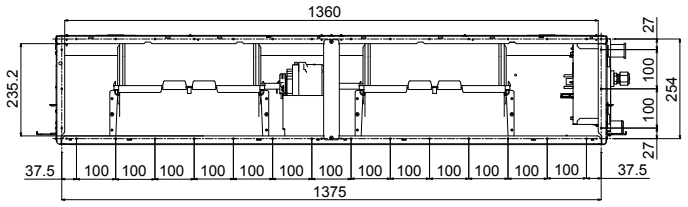


HM90, HM110, HM140, HM160

<Under air intake>



<Back air intake>



6 Refrigerant piping

⚠ CAUTION

When the refrigerant pipe is long, provide support brackets at intervals of 2.5 m to 3 m to clamp the refrigerant pipe. Otherwise, abnormal sound may be generated.

■Permissible piping length and height difference

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

⚠ CAUTION

IMPORTANT 4 POINTS FOR PIPING WORK

1. Reusable mechanical connectors and flared joints are not allowed indoors. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.
2. Tight connection (between pipes and unit)
3. Evacuate the air in the connecting pipes using VACUUM PUMP.
4. Check the gas leakage. (Connected points)

■Pipe size

Model	Pipe size (mm)	
	Gas side	Liquid side
HM56	Ø12.7	Ø6.4
HM80, HM90, HM110, HM140, HM160	Ø15.9	Ø9.5

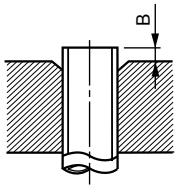
■Connecting refrigerant piping

Flaring

- Cut the pipe with a pipe cutter.
  Remove burrs completely.
  Remaining burrs may cause gas leakage.
- Insert a flare nut into the pipe, and flare the pipe.
  As the flaring sizes of R32 differ from those of refrigerant R22, the flare tools newly manufactured for R32 are recommended.
  However, the conventional tools can be used by adjusting projection margin of the copper pipe.

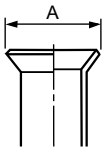
Projection margin in flaring: B (Unit: mm)

Outer dia. of copper pipe	Tool used	Conventional tool used
6.4, 9.5	0.5 to 1.1	0.5 to 1.1
12.7, 15.9	0.5 to 1.1	1.5 to 2.0



Flaring diameter size: A (Unit: mm)

Outer dia. of copper pipe	$A^{+0}_{-0.4}$
6.4	9.1
9.5	13.2
12.7	16.6
15.9	19.7

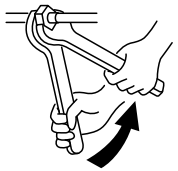


⚠ CAUTION

- Do not scratch the inner surface of the flared part when removing burrs.
- Flare processing under the condition of scratches on the inner surface of flare processing part will cause refrigerant gas leak.
- Check that the flared part is not scratched, deformed, stepped, or flattened, and that there are no chips adhered or other problems, after flare processing.
- Do not apply refrigerating machine oil to the flare surface.

* In case of flaring with the conventional flare tool, pull it out approx. 0.5 mm more than that for R22 to djust 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 no “whooshing” sound: This is normal and is not indicative of trouble.
- Use two wrenches to connect the indoor unit pipe.



Work using double spanner

- Use the tightening torque levels as listed in the following table.

Outer dia. of connecting pipe (mm)	Tightening torque (N•m)
6.4	14 to 18
9.5	34 to 42
12.7	49 to 61
15.9	63 to 77

▼ Tightening torque of flare pipe connections

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

⚠ CAUTION

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

■Evacuation

Perform vacuuming from the charge port of valve of the outdoor unit by using a vacuum pump.
For details, follow to the Installation Manual attached to the outdoor unit.

- Do not use the refrigerant sealed in the outdoor unit for evacuation.

REQUIREMENT

For the tools such as charge hose, etc., use those manufactured exclusively for R32.

Refrigerant amount to be added

For addition of the refrigerant, add refrigerant “R32” referring to the attached Installation Manual of outdoor unit.
Use a scale to charge the refrigerant of specified amount.

REQUIREMENT

- Charging an excessive or too little amount of refrigerant causes a trouble of the compressor. Charge the refrigerant of specified amount.
- A personnel who charged the refrigerant should write down the pipe length and the added refrigerant amount in the F-GAS label of the outdoor unit. It is necessary to fix the compressor and refrigeration cycle malfunction.

Open the valve fully

Open the valve of the outdoor unit fully. A 4 mm-hexagonal wrench is required for opening the valve.
For details, refer to the Installation Manual attached to the outdoor unit.

Gas leak check

Check with a leak detector or soap water whether gas leaks or not, from the pipe connecting section or cap of the valve.

REQUIREMENT

Use a leak detector manufactured exclusively for HFC refrigerant (R32, R134a, R410A, etc.).

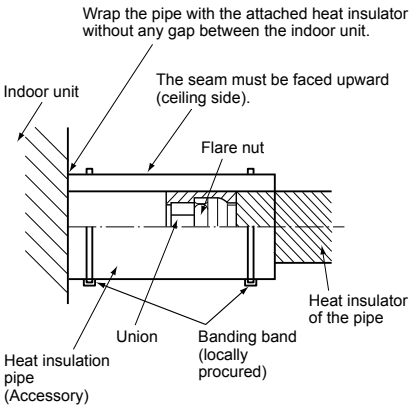
Heat insulation process

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

- For the heat insulation to the pipes at gas side, be sure to use the material with heat-resisting temperature 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.)
- Wrap heat insulator with its slits facing up (ceiling side).



7 Electrical connection

⚠ WARNING

- **Use the specified wires for wiring connect the terminals. Securely fix them to prevent external forces applied to the terminals from affecting the terminals.**
  Incomplete connection or fixation may cause a fire or other trouble.
- **Connect earth wire. (grounding work)**
  Incomplete grounding cause an electric shock.
  Do not connect earth wires to gas pipes, water pipes, lightning conductor or telephone earth wires.
- **Appliance shall be installed in accordance with national wiring regulations.**
  Capacity shortage of power circuit or incomplete installation may cause an electric shock or a fire.
- **Under no circumstances, the power supply wire or the indoor and outdoor connecting wire must not 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.

⚠ CAUTION

- For power supply specifications, follow the Installation Manual of outdoor unit.
- Do not connect 220 – 240V power to the terminal blocks (Ⓐ, Ⓑ) for control wiring.
  Otherwise, the system will fail.
- Do not damage or scratch the conductive core and inner insulator of power and Indoor/Outdoor connecting wires when peeling them.
- 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 power of the indoor unit until vacuuming of the refrigerant pipes completes.

■Wiring specifications

Indoor / Outdoor connecting wires specifications

Indoor unit power supplied from outdoor unit

- The outdoor unit power supply patterns vary on models.

Indoor unit power supply	1~50 Hz 220 - 240V 1~60 Hz 220V

Indoor / Outdoor connecting wires*	4 x 1.5 mm^2 or more (H07RN-F or 60245 IEC 66)*	Up to 70 m

*Number of wire x wire size
*Including earth line

Remote controller wiring

Remote controller wiring, remote controller inter-unit wiring	Wire size: 2 x 0.5 to 2.0 mm^2

Indoor / Outdoor connecting wires*	In case of wired type only	Up to 500 m
Total wire length of remote controller wiring and remote controller inter-unit wiring = L + L1 + L2 + … Ln	2 remote controllers	Up to 300 m
	In case of wireless type included	Up to 400 m
Total wire length of remote controller inter-unit wiring = L1 + L2 + … Ln		Up to 200 m

* The remote controller wiring length differs depending on the remote controller used. For details, refer to the Installation Manual attached to the remote controller.

⚠ CAUTION

The remote controller wire and Indoor/Outdoor connecting wires cannot be parallel to contact each other and cannot be stored in the same conduits. If doing so, a trouble may be caused on the control system due to noise or other factor.

■Communication type

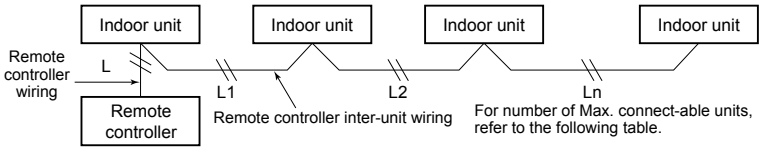
TU2C-Link can be used with these models.
If the indoor unit and the connected remote controller / remote sensor are all TU2C-Link models, TU2C-Link communication will be performed automatically.
(If the TCC-Link model is included, TCC-Link communication will be performed.)
For details of communication type, refer to the following table.

Communication type and model names

Communication type	TU2C-Link	TCC-Link
Indoor unit	RAV-HM ∗∗∗ series model	Other than RAV-HM ∗∗∗ series
Wired remote controller	RBC-A∗∗U∗∗∗ ↑ This letter indicates U series model.	Other than U series
Wireless remote controller kit & receiver unit	RBC-AXU∗∗∗ ↑ This letter indicates U series model.	Other than U series
Remote sensor	TCB-TC∗∗U∗∗∗ ↑ This letter indicates U series model.	Other than U series

⚠ CAUTION

When connecting to the central control device dedicated to TCC-Link, it is necessary to change to TCC-Link using a wired remote controller. Set according to the Communication type procedure of “9 Applicable controls”.



Max. number of connect-able indoor units, and communication type

	Unit type			
Indoor unit	RAV-HM∗∗∗	RAV-HM∗∗∗	∗	∗
Remote controller Remote sensor	U series	∗	U series	∗
Communication type	TU2C-Link	TCC-Link		
Max. number of connect-able units	16	8		

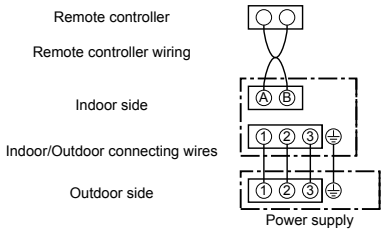
∗: Other than RAV-HM∗∗∗ and U series

■Wiring between indoor unit and outdoor unit

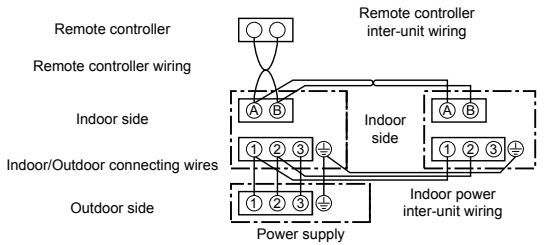
1. Figure below shows the wiring connections between the indoor and outdoor units and between the indoor units and remote controller. The wires indicated by the broken lines or dot-and-dash lines are provided at the locally.
2. Refer to the both indoor and outdoor unit wiring diagrams.
3. The power of the indoor unit is supplied from the outdoor unit.

Wiring diagram

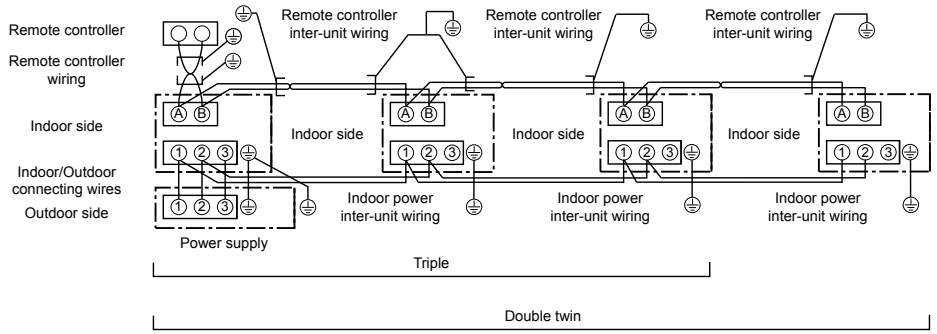
Single system



Simultaneous twin system



Simultaneous triple and double twin system



* Use 2-core shield wire (MVVS 0.5 to 2.0 mm² or more) for the remote controller wiring in the simultaneous triple and simultaneous double twin systems to prevent noise problems. Be sure to connect both ends of the shield wire to earth leads.

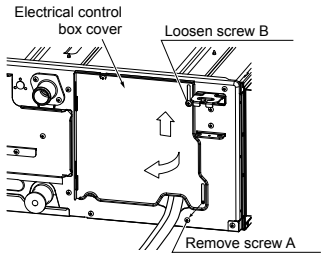
• Connect earth wires for each indoor unit in the simultaneous twin, simultaneous triple and simultaneous double twin systems.

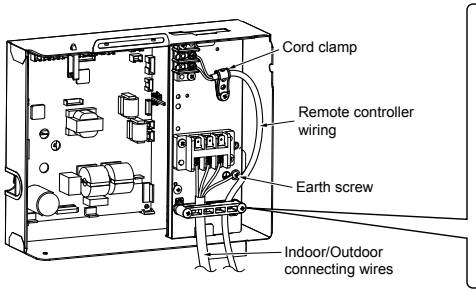
■Wire connection

REQUIREMENT

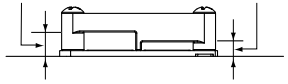
- Connect the wires matching the terminal numbers. Incorrect connection causes a trouble.
- Pass the wires through the bushing of wire connection holes of the indoor unit.
- Keep a margin (Approx. 100 mm) on a wire to hang down the electrical control box at servicing or other purpose.
- The low-voltage circuit is provided for the remote controller. (Do not connect the high-voltage circuit)

- Before performing wiring work in the electrical control box, remove the air filter and the cover of the box (fixed with 2 screws).
- Remove screw A, and loosen screw B.
- Pull up and open the electrical control box cover.
- Tighten the screws of the terminal block firmly, and fix the wires with the cord clamps attached to the electrical control box. (Do not apply tension to the connecting section of the terminal block.)
- Slide the electrical control box cover to install it. Do not pinch the wire and make the gap as small as possible when installing the cover.



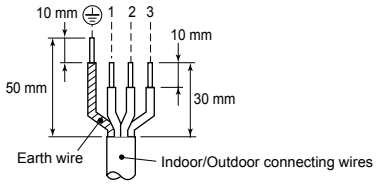


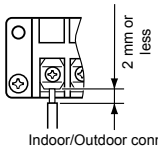
Side D (Space: 8.5 mm) Side C (Space: 4 mm)



Select side C or D for the power cable clamping position referring to the following table according to the cable type and diameter.
* Cable clamp can be attached on either right or left side.
When twin system are connected, clamp two cables with one cable clamp.

Wire type	Specification	Cable clamping position
Cabtyre cable	4-core stranded wire 2.5 mm²	Side D
Cabtyre cable	4-core stranded wire 1.5 mm²	Side C



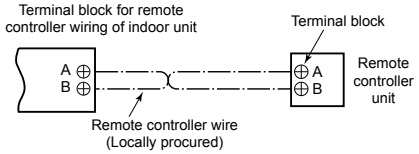


See the figure on the left for Indoor/Outdoor connecting wires to the terminal block.

■Remote controller wiring

Strip off approx. 9 mm the wire to be connected.

Wiring diagram

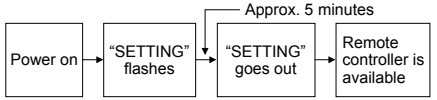


8 Applicable controls

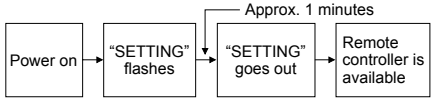
- For using the wired remote controller RBC-AMS55E*, refer to the Owner's Manual attached to the wired remote controller.

REQUIREMENT

- When you use this air conditioner for the first time, it takes approx. 5 minutes until the remote controller becomes available after power-on. This is normal.
  <When power is turned on for the first time after installation>
  It takes **approx. 5 minutes** until the remote controller becomes available.



  <When power is turned on for the second (or later) time>
  It takes **approx. 1 minute** until the remote controller becomes available.



- Normal settings were made when the indoor unit was shipped from factory.
  Change the indoor unit settings as required.
- Use the wired remote controller to change the settings.
  * The settings cannot be changed using the wireless remote controller, sub remote controller, or remote-controller-less system (for central remote controller only). Therefore, install the wired remote controller to change the settings.

■Applicable controls setup (settings at the site)

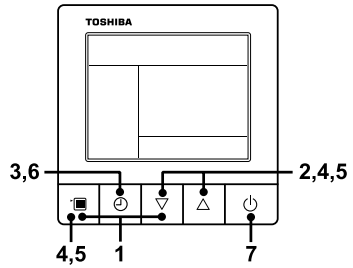
Remote controller model name: RBC-ASCU1∗

Basic procedure

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

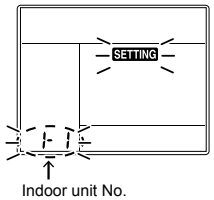
⚠ CAUTION

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.



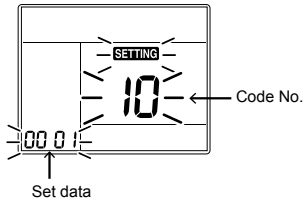
1 Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.

- 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.**
By doing so, the setup is completed.
- 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 determine the settings.**

"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***.

■External static pressure settings

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***).
- Specify [5d] to 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.

<Change on wired remote controller>

HM561, 801BTP series

SET DATA	External static pressure	
0000	30 Pa	Factory setting
0001	50 Pa	
0002	40 Pa	
0003	100 Pa	
0004	65 Pa	
0005	120 Pa	
0006	150 Pa	

HM901, 1101BTP series

SET DATA	External static pressure	
0000	40 Pa	Factory setting
0001	30 Pa	
0002	50 Pa	
0003	100 Pa	
0004	65 Pa	
0005	120 Pa	
0006	150 Pa	

HM1401, 1601BTP series

SET DATA	External static pressure	
0000	50 Pa	Factory setting
0001	30 Pa	
0002	40 Pa	
0003	100 Pa	
0004	65 Pa	
0005	120 Pa	
0006	150 Pa	

The list above is when SW501-1 and SW501-2 is OFF.

■External static pressure

When using the wireless remote controller
To set up the external static pressure, use the DIP switch on the circuit board of the wireless reception part.
For details, refer to the instruction manual of the wireless remote controller kit. Alternatively, use the switch on the indoor micro computer circuit board as shown in the following figure and table.
* Once switched, the settings "0001", "0003", and "0006" can be changed, but to reset to "0000", you need to set the switch to the normal (default) position and use a separately-sold wired remote controller to overwrite the data with "0000".

SW501-1	OFF	ON	OFF	ON
SW501-2	OFF	OFF	ON	ON
SET DATA	0000	0001	0003	0006

To reset to the factory default
Switch off SW501-1 and SW501-2, connect a separately-sold
wired remote controller, and then perform the procedure for installing a separately-sold filter on this page to set the [5d] data to "0000"

■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***).
- For the CODE No. in Procedure ***4***, specify [01].
- 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

■To secure better effect of heating

When it is difficult to obtain satisfactory heating due to installation place of the indoor unit or structure of the room, the detection temperature of heating can be raised. Also use a circulator or other device to circulate heat air near the ceiling.
Follow to the basic operation procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).
- For the CODE No. in Procedure ***4***, specify [06].
- 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	Remote controller sensor
0000	Not in use (Factory default)
0001	In use

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

■Communication type

When connecting to the central control device dedicated to TCC-Link, it is necessary to change to TCC-Link.

Follow to the basic opreration procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

- Specify **[FC]** for the Code No. in Procedure ***4***.
- Select the set data [0000] (TCC-Link) in Procedure ***5***.

SET DATA	Communication type
0000	TCC-Link
0004	TU2C-Link (Factory default)

■Fan speed setting when thermostat-OFF in cooling mode

Set the fan speed when the room temperature reaches the set temperature in the cooling mode.

Follow to the basic opreration procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

- Specify **[9A]** for the Code No. in Procedure ***4***.
- Select the following data for the set data in Procedure ***5***.

SET DATA	Fan speed when thermostat-OFF in cooling mode
0000	Remote controller setting
0001	Extremely low speed (UL) (Factory default)

■8°C operation

Pre-heating operation can be set for cold regions where room temperature drops to below zero.

Follow to the basic opreration procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** → ***7***).

- Specify **[d1]** for the Code No. in Procedure ***4***.
- Select the following data for the set data in Procedure ***5***.

SET DATA	8°C Operation setting
0000	None (Factory default)
0001	8OC Operation setting

■Installing optional parts

When installing optional parts, data setup may be required with remote controller. Be sure to set the data, according to Installation Manual for optional parts.

■Information

The following functions require a connection with the RBC-AMTU∗∗∗ and RBC-AMSU∗∗∗ remote controller.
For details, refer to the manual included with the remote controller.

- Individual unit selection during group operation
- Individual setting of louver position (wind direction)
- Swing type setting
- Louver lock (no swing) setting
- Energy saving operation (Power saving operation)
- Notification of filter cleaning time

■Others

The following functions can be used with this model. Refer to the Service Manual for more information.

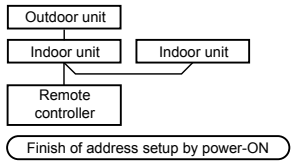
- Rotation / backup operation
- Free cooling
- Secondary heating
- Power shift

■Group control

Simultaneous twin system

A combination with an outdoor unit allows simultaneous ON/OFF operation of the indoor units. The following system patterns are available.
- Two indoor units for the twin system

▼Twin system



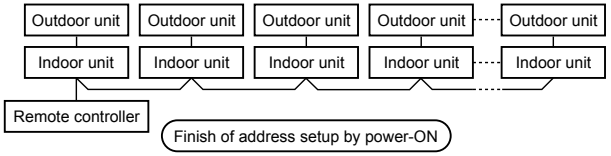
- For wiring procedure and wiring method, follow to the “Electrical connection” in this manual.
- When the power supply has been turned on, the automatic address setup starts and which indicates that address is being set up flashes on the display part.
  During setup of automatic address, the remote controller operation is not accepted.

Required time up to the finish of automatic addressing is approx. 5 minutes.

Group control for system of multiple units

One group can control up to 16 (TU2C-Link) or 8 (TCC-Link) indoor units with one remote controller.
(Refer to the Wiring specifications)

▼ Group control in single system



- For wiring procedure and wiring method of the individual line (Identical refrigerant line) system, follow to "Electrical connection".
- Wiring between lines is performed in the following procedure.
  Connect the terminal block (A/B) of the indoor unit connected with a remote controller to the terminal blocks (A/B) of the indoor units of other indoor units by wiring the inter-unit wire of the remote controller.
- When the power supply has been turned on, the automatic address setup starts and which indicates that address is being set up flashes on the display part in about 3 minutes. During setup of automatic address, the remote controller operation is not accepted.

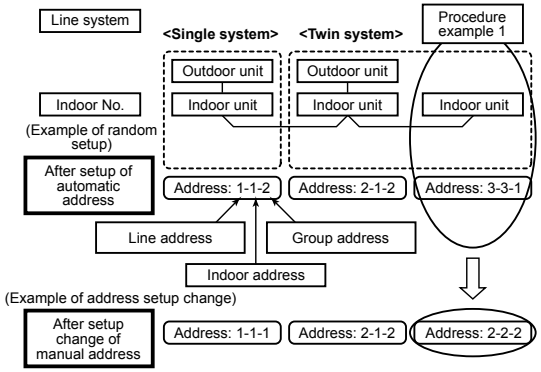
Required time up to the finish of automatic addressing is approx. 5 minutes.

NOTE

In some cases, it is necessary to change the address manually after setup of the automatic address according to the system configuration of the group control.

- The follow mentioned system configuration is a case when complex systems in which systems of the simultaneous twin and simultaneous triple unit is controlled as a group by a remote controller.

(Example) Group control for complex system



The above address is set by the automatic addressing when the power is turned on. However, line addresses and indoor addresses are set randomly. For this reason, change the setting to match line addresses with indoor addresses.

■ Manual address setting

1. Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.
2. Push OFF timer button to confirm the selected indoor unit.

<Line address>

3. Push the menu button until the Code No. flashes. And using the [▽] [△] buttons, specify the Code No. **[12]**.
4. Push the menu button until the Set data flashes. And using the [▽] [△] buttons, set a line address.
5. Push OFF timer button to confirm the Set data.

<Indoor unit address>

6. Push the menu button until the Code No. flashes. And using the [▽] [△] buttons, specify the Code No. **[13]**.
7. Push the menu button until the Set data flashes. And using the [▽] [△] buttons, set an indoor unit address.
8. Push OFF timer button to confirm the Set data.

<Group address>

9. Push the menu button until the Code No. flashes. And using the [▽] [△] buttons, specify the Code No. **[14]**.
10. Push the menu button until the Set data flashes. And using the [▽] [△] buttons, set a group address. If the indoor unit is individual, set the address to 0000. (header unit: 0001, follower unit: 0002)
11. Push OFF timer button to confirm the Set data.
12. When all the settings have been completed, push ON/OFF button to finish the settings.
    (Return to the normal mode)

■ To find an indoor unit's position from its address

1. Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.
   E.g.) A unit number 1-1 is indicated on the LCD of the remote controller. The indicated number shows the line (system) address and indoor unit address of the unit.
2. When 2 or more indoor units are connected to the remote controller (group-controlled units), a number of other connected units appears each time you push the [▽] [△] buttons.
3. Push the ON/OFF button, return to the normal mode.

9 Test run

■Before test run

- Before turning on the power supply, carry out the following procedure.
  1) By using insulation tester (500VMΩ), check that resistance of 1MΩ or more exists between the terminal block L to N and the earth (grounding). If resistance of less than 1MΩ is detected, do not run the unit.
  2) Check the valve of the outdoor unit being opened fully.
- To protect the compressor at activation time, leave power-ON for 12 hours or more before operating.

■Execute a test run

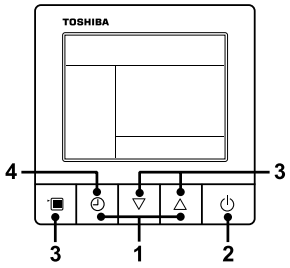
Operate the unit with the remote controller as usual. For the procedure of the operation, refer to the attached Owner's Manual to the outdoor unit.
A forced test run can be executed in the following procedure even if the operation stops by thermostat-OFF.
In order to prevent a serial operation, the forced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

⚠ CAUTION

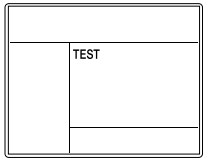
Do not use the forced test run for cases other than the test run because it applies an excessive load to the devices.

Wired remote controller

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



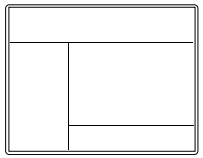
1 **Push and hold OFF timer button and [△] setting button simultaneously for 10 seconds or more. [TEST] is displayed on the display part and the test run is permitted.**



2 **Push ON/OFF button.**

3 **Push menu button to select the operation mode. Select [☼ Cool] or [☀ Heat] with [▽] [△] setting button, and then push menu button (three times) again to determine the operation mode.**
- Do not run the air conditioner in a mode other than [Cool] or [Heat].
- The temperature setting function does notwork 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.)



Wireless 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 power-on, 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>

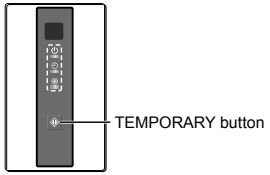
▼ Cooling test run:
ON/OFF → 17°C → 18°C → 17°C → 18°C → 17°C→ 18°C → 17°C → (test run) → ON/OFF

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

Wired remote controller

1 **When TEMPORARY button is pushed for 10 seconds or more, "Pi!" sound is heard and the operation changes to test run. After approx. 3 minutes, a cooling operation starts forcedly.**
Check cool air starts blowing. If the operation does not start, check wiring again.

2 **To stop a test operation, push TEMPORARY button once again (Approx. 1 second).**
Check wiring / piping of the indoor and outdoor units in test run.

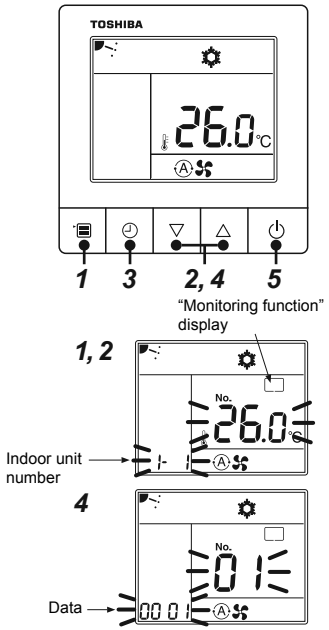


■When a test run is not performed properly

- When a test run is not performed properly, refer to the error code and the part to be checked on "Troubleshooting".
- When a test run is executed before installing the external duct, a protection control may be activated and lets the unit stop and the code P12 may be displayed. (This is not due to a malfunction but to the current control function of the DC motor in this unit.) When a test run executed before installing the external duct, select "Low" for the fan speed level or cover the air discharge.
- In addition, stop the operation before replacing the High-efficiency filter or opening the service panel. After the test run, reset the circuit breaker of the indoor unit.

■Monitoring function

This function can be used to call the service monitor mode from the remote controller during a test run to obtain the temperature of the sensors of the remote controller, indoor unit, and outdoor unit.



1. Push and hold menu button for 10 seconds or more. “Monitoring function” is displayed on a screen.
2. Every pushing [▽] [△] buttons, the indoor unit numbers in group control are displayed successively.
3. Push OFF timer button to confirm the selected indoor unit.
4. Every pushing [▽] [△] buttons, Code No. of the item is changed successively.
5. After you have finished checking, push “ON/ OFF” button, return to normal mode.

Indoor unit data	
Code No.	**Data name**
01	Room temperature (remote controller)
02	Indoor unit intake air temperature (TA)
03	Indoor unit heat exchanger (coil) temperature (TCJ)
04	Indoor unit heat exchanger (coil) temperature (TC)
07	Indoor unit fan speed (x1 rpm)
B9	Communication protocol (0000: TCC-Link, 0001: TU2C-Link)
F3	Indoor unit fan cumulative operating hours (x1 h)
F8	Indoor unit discharge air temperature *1

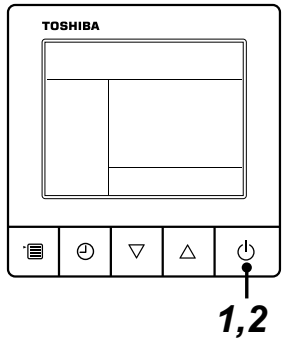
Outdoor unit data *2	
Code No.	**Data name**
60	Outdoor unit heat exchanger (coil) temperature (TE)
61	Outside air temperature (TO)
62	Compressor discharge temperature (TD)
63	Compressor suction temperature (TS)
65	Heatsink temperature (THS)
6A	Operating current (x1/10)
6D	Outdoor heat exchange (coil) temperature (TL)
F1	Compressor cumulative operating hours (x100 h)

*1 : The above temperature values are estimated from the temperature of the heat exchanger. It may differ from the actual discharge temperature.
*2 : For outdoor unit data, refer to the Installation Manual and Service Manual of the outdoor unit.

10 Maintenance

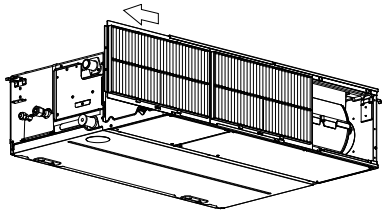
<Daily maintenance>

▼ Cleaning of the air filter



1 Push the ⏻ button to stop the operation, then turn off the circuit breaker.
After the cooling or dry operation, the fan keeps running for self-cleaning. Push the ⏻ button twice to stop the operation.

1. Take out the air filter.
   • 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 filters into the direction which the arrows, carved on the filters, show. (2 filters are identical)

2 Turn on the circuit breaker, then push the ⏻ button on the remote controller to start the operation.

⚠ CAUTION

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

▼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	Go to installed location 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.

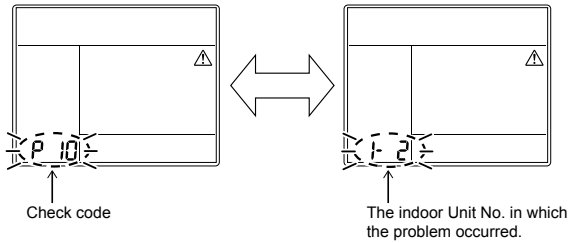
▼Maintenance List

Part	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.
Ornamental panel, louvers	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.

11 Troubleshooting

■Confirmation and check

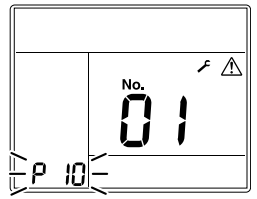
If a problem occurs with the air conditioner, the OFF timer indicator alternately shows the check code and the indoor Unit No. in which the problem occurred.

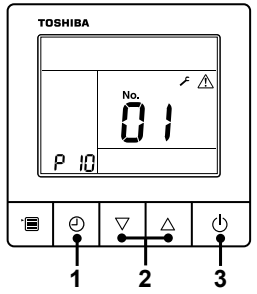


■Troubleshooting history and confirmation

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.





■Error codes and parts to be checked

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit		Main problem parts	Judging device	Parts to be checked / error 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 error		No signal can be received from the indoor unit.	
E02	◎ ● ●		Remote controller transmission error	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 error	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 error	Indoor	Indoor / Outdoor connecting wires, indoor P.C. board, outdoor P.C. board --- Serial communication error between indoor unit and outdoor unit	Auto-reset
			IPDU-CDB communication error			
E08	◎ ● ●		Duplicated indoor addresses ★	Indoor	Indoor address setting error --- The same address as the self-address was detected.	Auto-reset
E09	◎ ● ●		Duplicated header remote controllers	Remote controller	Remote controller address setting error --- 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 error	Indoor	Indoor P.C. board --- Communication error 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 error	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 error	Outdoor	Communication error between IPDU and CDB	Entire stop
F01	◎ ◎ ●	ALT	Indoor unit heat exchanger sensor (TCJ) error	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) error	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) error	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) error	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 error	Outdoor	TL sensor may be displaced, disconnected or short-circuited.	Entire stop
F08	◎ ◎ ○	ALT	Outdoor unit outside air temp. sensor error	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) error	Indoor	Room temp, sensor (TA), indoor P.C. board --- Open-circuit or short-circuit of the room temp, sensor (TA) was detected.	Auto-reset
F12	◎ ◎ ○	ALT	TS sensor error	Outdoor	TS sensor may be displaced, disconnected or short-circuited.	Entire-stop
F13	◎ ◎ ○	ALT	Heat sink sensor error	Outdoor	Abnormal temperature was detected by the temp, sensor of the IGBT heat sink.	Entire stop

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit		Main problem parts	Judging device	Parts to be checked / error description	Air conditioner status
Indication	Operation Timer Ready GR GR OR	Flashing				
F15	◎ ◎ ○	ALT	Temp. sensor connection error	Outdoor	Temp, sensor (TE / TS) may be connected incorrectly.	Entire stop
F29	◎ ◎ ●	SIM	Indoor unit, other P.C. board error	Indoor	Indoor P.C. board --- EEPROM error	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 error.	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 error	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 error	Outdoor	Current, high-pressure switch circuit, outdoor P.C. board --- Pressure sensor error was detected or low- pressure protective operation was activated.	Entire stop
L03	◎ ● ◎	SIM	Duplicated header indoor units ★	Indoor	Indoor address setting error --- There are two or more header units in the group.	Entire stop
L07	◎ ● ◎	SIM	Group line in individual indoor unit ★	Indoor	Indoor address setting error --- 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 error --- 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 error	Entire stop
L20	◎ ○ ◎	SIM	LAN communication error	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 error	Outdoor	Other outdoor unit error	Entire stop
					1) Communication error 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 error, 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 error	Indoor	Indoor fan motor, indoor P.C. board --- Indoor AC fan error (fan motor thermal relay activated) was detected.	Entire stop
P03	◎ ● ◎	ALT	Outdoor unit discharge temp. error	Outdoor	An error was detected in the discharge temp, releasing control.	Entire stop
P04	◎ ● ◎	ALT	Outdoor unit high-pressure system error	Outdoor	High-pressure switch --- The IOL was activated or an error 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

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit			Main problem parts	Judging device	Parts to be checked / error description	Air conditioner status
Indication	Operation Timer Ready GR GR OR			Flashing			
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 error 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. External static pressure setting error.	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 error	Outdoor (Indoor)	4-way valve, indoor temp, sensors (TC / TCJ) --- An error 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 error	Outdoor	Outdoor unit fan motor, outdoor unit P.C. board --- An error (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 error	Outdoor	Outdoor unit P.C. board, high-pressure switch --- Compressor motor position error was detected.	Entire stop
P31	◎	●	◎	ALT	Other indoor unit error	Indoor	Another indoor unit in the group is raising an alarm.	Entire stop
							E03 / L07 / L03 / L08 alarm check locations and error 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

12 Specifications

Model	Sound pressure level (dBA)		Weight (kg)
	Cooling	Heating	
RAV-HM561BTP-E	*	*	23
RAV-HM801BTP-E	*	*	31
RAV-HM901BTP-E	*	*	41
RAV-HM1101BTP-E	*	*	41
RAV-HM1401BTP-E	*	*	41
RAV-HM1601BTP-E	*	*	41

* Under 70 dBA

Declaration of Conformity

Manufacturer: Toshiba Carrier (Thailand) Co., Ltd.
144/9 Moo 5, Bangkadi Industrial Park, Tivanon road, Tambol Bangkadi,
Amphur Muang, Pathumthani 12000, Thailand

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-HM561BTP-E,
RAV-HM801BTP-E,
RAV-HM901BTP-E,
RAV-HM1101BTP-E,
RAV-HM1401BTP-E,
RAV-HM1601BTP-E

Commercial name: Digital Inverter Series / Super Digital Inverter Series Air Conditioner

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

Name: Masaru Takeyama
Position: GM, Quality Assurance Dept.
Date: 5 April, 2022
Place Issued: Thailand

NOTE

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

Declaration of Conformity

Manufacturer: Toshiba Carrier (Thailand) Co., Ltd.
144/9 Moo 5, Bangkadi Industrial Park, Tivanon road, Tambol Bangkadi,
Amphur Muang, Pathumthani 12000, Thailand

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-HM561BTP-E,
RAV-HM801BTP-E,
RAV-HM901BTP-E,
RAV-HM1101BTP-E,
RAV-HM1401BTP-E,
RAV-HM1601BTP-E

Commercial name: Digital Inverter Series / Super Digital Inverter Series Air Conditioner

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

Name: Masaru Takeyama
Position: GM, Quality Assurance Dept.
Date: 5 April, 2022
Place Issued: Thailand

NOTE

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

13 Appendix

Work instructions

The existing R22 and R410A piping can be reused for inverter R32 product installations.

⚠ WARNING

Confirming the existence of scratches or dents on the existing pipes and confirming the reliability of the pipe strength are conventionally referred to the local site.
If the specified conditions can be cleared, it is possible to update existing R22 and R410A pipes to those for R32 models.

Basic conditions needed to reuse existing pipes

Check and observe the presence of three conditions in the refrigerant piping works.

1. **Dry** (There is no moisture inside of the pipes.)
2. **Clean** (There is no dust inside of the pipes.)
3. **Tight** (There are no refrigerant leaks.)

Restrictions for use of existing pipes

In the following cases, the existing pipes should not be reused as they are. Clean the existing pipes or exchange them with new pipes.

1. When a scratch or dent is heavy, be sure to use new pipes for the refrigerant piping works.
2. When the existing pipe thickness is thinner than the specified “Pipe diameter and thickness,” be sure to use new pipes for the refrigerant piping works.
   - The operating pressure of refrigerant is high. If there is a scratch or dent on the pipe or a thinner pipe is used, the pressure strength may be inadequate, which may cause the pipe to break in the worst case.

*** Pipe diameter and thickness (mm)**

Pipe outer diameter		Ø6.4	Ø9.5	Ø12.7	Ø15.9
Thickness	R32, R410A	0.8	0.8	0.8	1.0
	R22				

3. When the outdoor unit was left with the pipes disconnected, or the gas leaked from the pipes and the pipes were not repaired and refilled.
   - There is the possibility of rain water or air, including moisture, entering the pipe.
4. When refrigerant cannot be recovered using a refrigerant recovery unit.
   - There is the possibility that a large quantity of dirty oil or moisture remains inside the pipes.
5. When a commercially available dryer is attached to the existing pipes.
   - There is the possibility that copper green rust has been generated.
6. When the existing air conditioner is removed after refrigerant has been recovered.
   Check if the oil is judged to be clearly different from normal oil.
   - The refrigerator oil is copper rust green in color: There is the possibility that moisture has mixed with the oil and rust has been generated inside the pipe.
   - There is discolored oil, a large quantity of residue, or a bad smell.
   - A large quantity of shiny metal dust or other wear residue can be seen in the refrigerant oil.
7. When the air conditioner has a history of the compressor failing and being replaced.
   - When discolored oil, a large quantity of residue, shiny metal dust, or other wear residue or mixture of foreign matter is observed, trouble will occur.
8. When temporary installation and removal of the air conditioner are repeated such as when leased etc.
9. If the type of refrigerator oil of the existing air conditioner is other than the following oil (Mineral oil), Suniso, Freol-S, MS (Synthetic oil), alkyl benzene (HAB, Barrel-freeze), ester series, PVE only of ether series.
   - The winding-insulation of the compressor may deteriorate.

NOTE

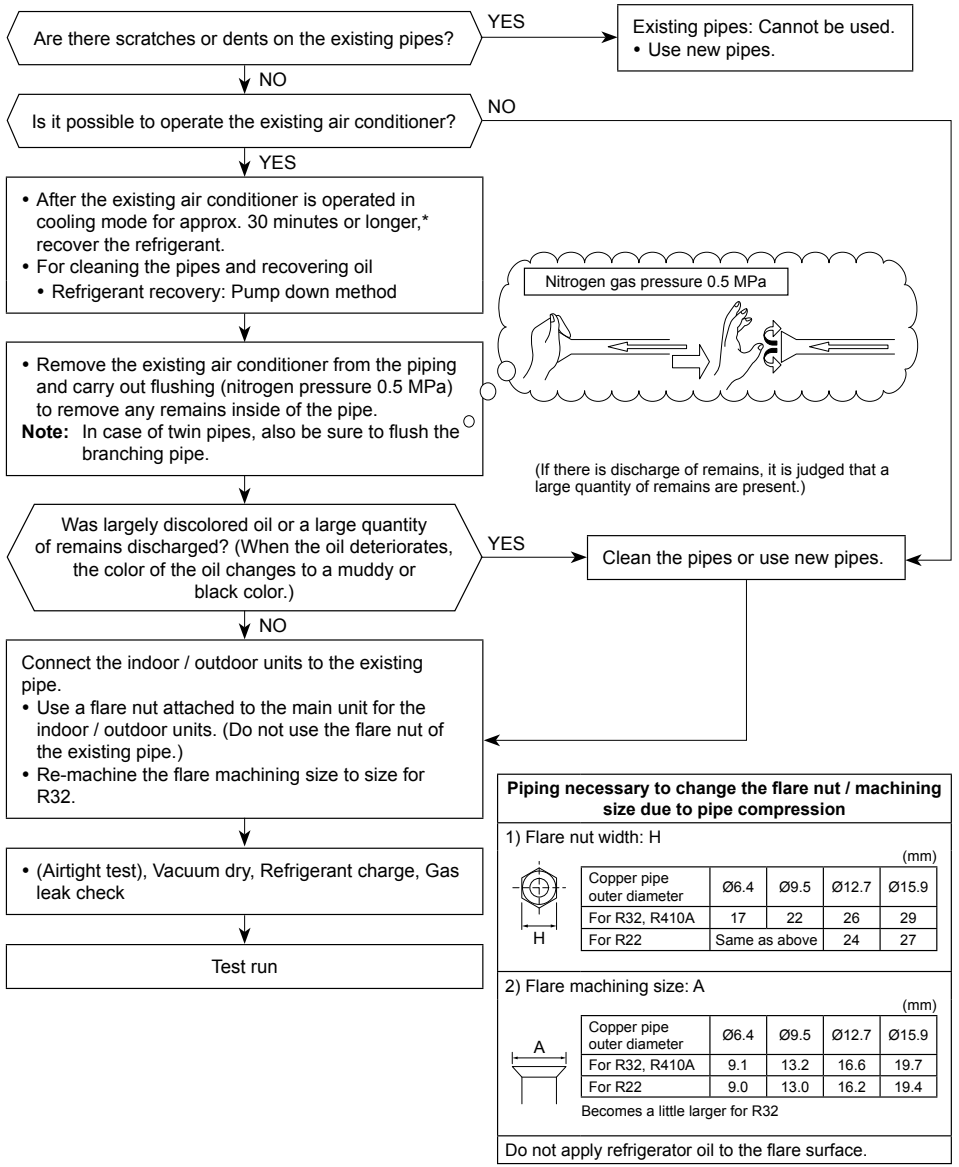
The above descriptions are results have been confirmed by our company and represent our views on our air conditioners, but do not guarantee the use of the existing pipes of air conditioners that have adopted R32 in other companies.

Curing of pipes

When removing and opening the indoor or outdoor unit for a long time, cure the pipes as follows:

- Otherwise rust may be generated when moisture or foreign matter due to condensation enters the pipes.
- The rust cannot be removed by cleaning, and new pipes are necessary.

Placement location	Term	Curing manner
Outdoors	1 month or more	Pinching
	Less than 1 month	Pinching or taping
Indoors	Every time	



Piping necessary to change the flare nut / machining size due to pipe compression

1) Flare nut width: H

(mm)

Copper pipe outer diameter	Ø6.4	Ø9.5	Ø12.7	Ø15.9
For R32, R410A	17	22	26	29
For R22	Same as above		24	27

2) Flare machining size: A

(mm)

Copper pipe outer diameter	Ø6.4	Ø9.5	Ø12.7	Ø15.9
For R32, R410A	9.1	13.2	16.6	19.7
For R22	9.0	13.0	16.2	19.4

Becomes a little larger for R32

Do not apply refrigerator oil to the flare surface.

Toshiba Carrier (Thailand) Co., Ltd.

144 / 9 Moo 5, Bangkadi Industrial Park, Tivanon Road, Tambol Bangkadi, Amphur Muang, Pathumthani 12000, Thailand

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