EN

TOSHIBA

AIR CONDITIONER (SPLIT TYPE)

INSTALLATION MANUAL AND OWNER'S MANUAL

R32 ***INVERTER***

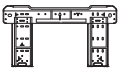
Indoor unit
RAS-B13B2KVG-E3

Outdoor unit
RAS-13B2AVG-E2

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 EN/IT.

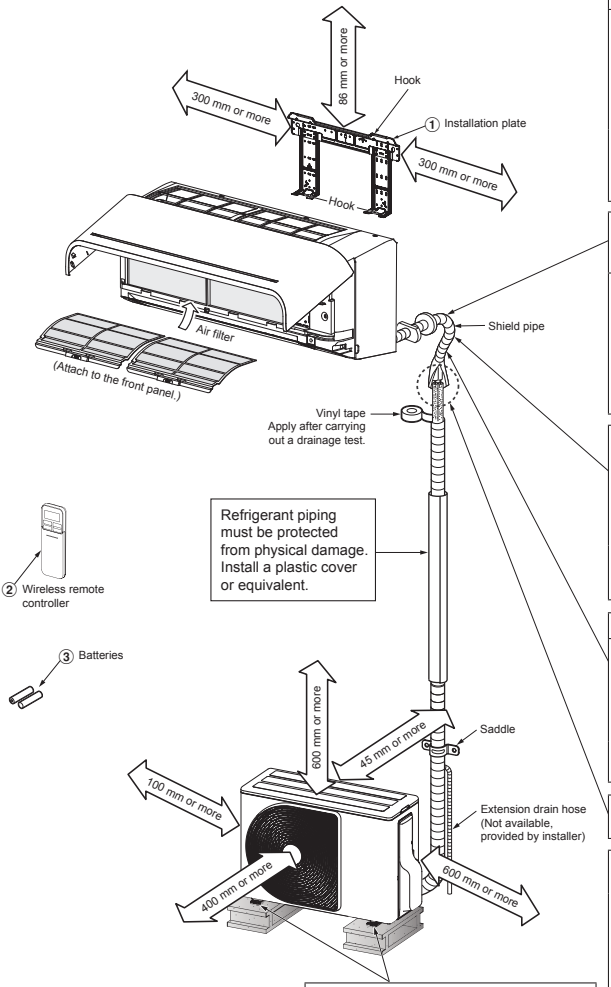
INSTALLATION MANUAL

ACCESSORIES PARTS

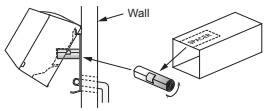
INDOOR								
No.	**Part name**	**Q'ty**	**No.**	**Part name**	**Q'ty**	**No.**	**Part name**	**Q'ty**
①	Installation plate 	1	④	Mounting screw 	5	⑦	Safety Manual 	1
②	Wireless remote controller 	1	⑤	B Label 	1	⑧	R32 Information Servicing Manual 	1
③	Battery 	2	⑥	Installation and Owner's Manual (This manual) 	1			

OUTDOOR		
No.	**Part name**	**Q'ty**
⑨	Drain nipple 	1

INSTALLATION DIAGRAM OF INDOOR AND OUTDOOR UNITS

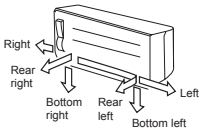


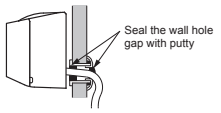
For the rear left, bottom left and left piping



Cut out a piece of SPACER from indoor unit packaging box, roll it and insert between the indoor unit and wall to tilt the indoor unit for better operation.

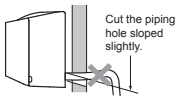
The auxiliary piping can be connected to the left, rear left, rear right, right, bottom right or bottom left.





After completing refrigerant piping, wiring, and drain piping, caulk pipe hole gap with putty to prevent water leakage.

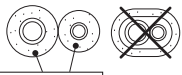
Do not allow the drain hose to get slack



Make sure to run the drain hose sloped downward.

The flare connection should be installed outdoors.

Insulate the refrigerant pipes separately with insulation, not together.



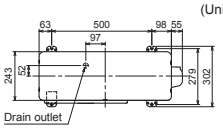
Optional Installation Parts

Part code	Parts name	Q'ty
A	Refrigerant piping Liquid side : Ø6.35 mm Gas side : Ø9.52 mm	One each
B	Pipe insulating material (polyethylene foam, 6 mm thick)	1
C	Putty, PVC tapes	One each

Fixing bolt arrangement of outdoor unit

- Secure the outdoor unit with fixing bolts and nuts if the unit is likely to be exposed to a strong wind.
- Use Ø8 mm or Ø10 mm anchor bolts and nuts.
- If it is necessary to drain the defrost water, attach drain nipple ⑨ to the bottom plate of the outdoor unit before installing it.

(Unit : mm)



※ When using a multi-system outdoor unit, refer to the Installation Manual provided with the model concerned.

Installation Place

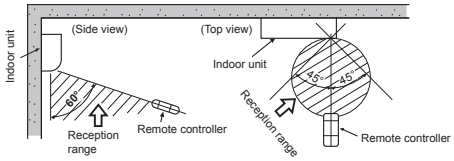
- A place which provides the spaces around the indoor unit as shown in the diagram.
- A place where there are no obstacles near the air inlet and outlet.
- A place which allows easy installation of the piping to the outdoor unit.
- A place which allows the front panel to be opened.
- The indoor unit shall be installed at least 2.5 m height. Also, it must be avoided to put anything on the top of the indoor unit.

⚠ CAUTION

- Direct sunlight to the indoor unit's wireless receiver should be avoided.
- The microprocessor in the indoor unit should not be too close to RF noise sources.

Remote controller

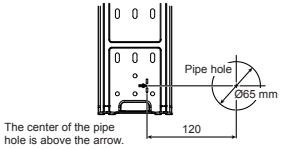
- A place where there are no obstacles such as a curtain that may block the signal from the indoor unit.
- Do not install the remote controller in a place exposed to direct sunlight or close to a heating source such as a stove.
- Keep the remote controller at least 1 m apart from the nearest TV set or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



Cutting a Hole and Mounting Installation Plate

Cutting a hole

When installing the refrigerant pipes from the rear.

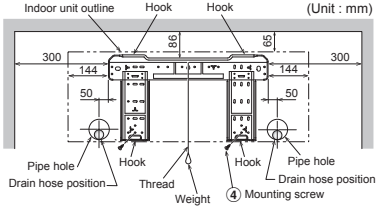


1. After determining the pipe hole position on the mounting plate (➡), drill the pipe hole (Ø65 mm) at a slight downward slant to the outdoor side.

NOTE

- When drilling a wall that contains a metal lath, wire lath or metal plate, be sure to use a pipe hole brim ring sold separately.

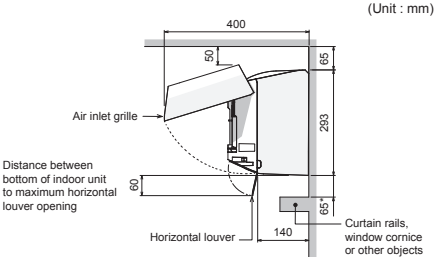
Mounting the installation plate



Space allows under indoor unit

- Space allows for moving range of the air inlet grille and horizontal louver in operation above curtain rails, window cornice or other objects.

(Unit : mm)



⚠ CAUTION

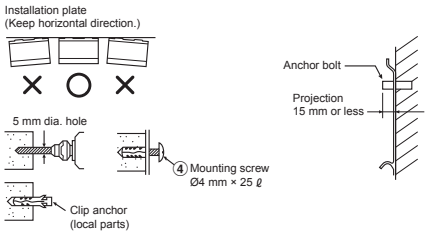
- If have curtain rails, window cornice or other objects, allow space from the indoor unit should be 65 mm or more.
- If allow space is less than stated above, this can affect the opening and closing of the air inlet grille and the horizontal louver.
- However, there should be no objects in the air outlet position. It will block the air flow direction and drop performance.

When the installation plate is directly mounted on the wall

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

⚠ CAUTION

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



⚠ CAUTION

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

- In case of block, brick, concrete or similar type walls, make 5 mm dia. holes in the wall.
- Insert clip anchors for appropriate ④ mounting screws.

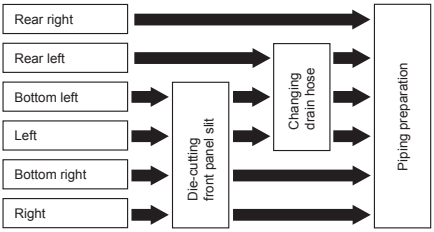
NOTE

- Secure four corners and lower parts of the installation plate with 5 mounting screw to install it.

Piping and Drain Hose Installation

Piping and drain hose forming

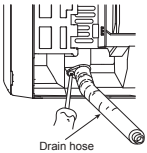
- Since dewing results in a machine trouble, make sure to insulate both connecting pipes. (Use polyethylene foam as insulating material.)
- The connection of pipes can be installed in the following directions.



1. **Die-cutting front panel slit**
   Cut out the slit on the left or right side of the front panel for the left or right connection and the slit on the bottom left or right side of the front panel for the bottom left or right connection with a pair of nippers.
2. **Changing drain hose**
   For leftward connection, bottom-leftward connection and rear-leftward connection's piping, it is necessary to change the drain hose and drain cap.

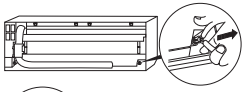
How to remove the drain hose

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



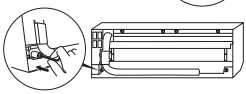
How to remove the drain cap

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

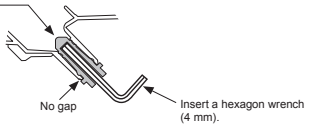


How to fix the drain cap

1) Insert hexagon wrench (4 mm) in a center head.
2) Firmly insert the drain cap.



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

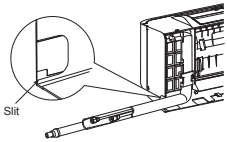


⚠ CAUTION

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

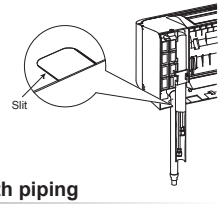
In case of right or left piping

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



In case of bottom right or bottom left piping

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

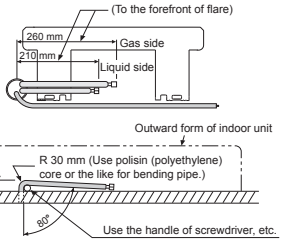


Left-hand connection with piping

- Bend the connecting pipe so that it is laid within 43 mm above the wall surface. If the connecting pipe is laid exceeding 43 mm above the wall surface, the indoor unit may unstably be set on the wall.
- When bending the connecting pipe, make sure to use a spring bender so as not to crush the pipe.

Bend the connecting pipe within a radius of 30 mm.

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

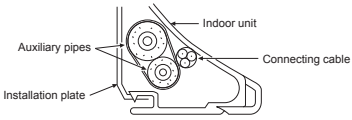


NOTE

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

⚠ CAUTION

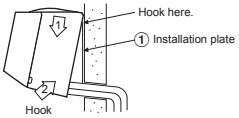
- Bind the auxiliary pipes (two) and connecting cable with facing tape tightly. In case of leftward piping and rear-leftward piping, bind the auxiliary pipes (two) only with facing tape.

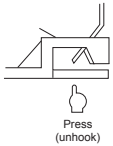


- Carefully arrange pipes so that any pipe does not stick out of the rear plate of the indoor unit.
- Carefully connect the auxiliary pipes and connecting pipes to one another and cut off the insulating tape wound on the connecting pipe to avoid double-taping at the joint; moreover, seal the joint with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

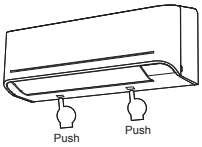
Indoor Unit Fixing

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





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

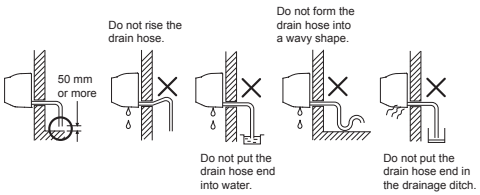


Drainage

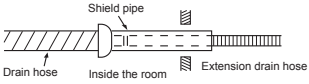
1. Run the drain hose sloped downwards.

NOTE

- The hole should be made at a slight downward slant on the outdoor side.



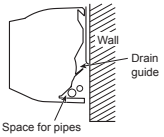
2. Put water in the drain pan and make sure that the water is drained out of door.
3. When connecting extension drain hose, insulate the connecting part of extension drain hose with shield pipe.



⚠ CAUTION

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

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



OUTDOOR UNIT

Installation Place

- A place which provides the spaces around the outdoor unit as shown in the diagram.
- A place which can bear the weight of the outdoor unit and does not allow an increase in noise level and vibration.
- A place where the operation noise and discharged air do not disturb your neighbors.
- A place which is not exposed to a strong wind.
- A place free of a leakage of combustible gases.
- A place which does not block a passage.
- When the outdoor unit is to be installed in an elevated position, be sure to secure its feet.
- The allowable length of the connecting pipe.

Model	RAS-13B2AVG-E2
Chargeless	Up to 10 m
Maximum length	10 m
Additional refrigerant charging	-
Maximum refrigerant charging	0.58 kg

- The allowable height of outdoor unit installation site.

Model	RAS-13B2AVG-E2
Maximum height	8 m

- A place where the drain water does not raise any problems or with good drainage.
- A place where it can be installed horizontally.

Precautions for adding refrigerant

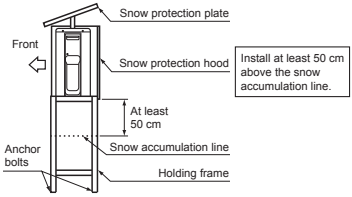
- Use a scale having a precision with at least 10 g per index line when adding the refrigerant.
- Do not use a bathroom scale or similar instrument.

⚠ CAUTION

- When the outdoor unit is installed in a place where the drain water might cause any problems, Seal the water leakage point tightly using a silicone adhesive or caulking compound.

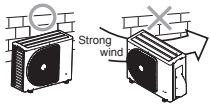
Precautions about Installation in Regions with Snowfall and Cold Temperatures

- Drain the water from all the drain holes directly.
- To protect the outdoor unit from snow accumulation, install a holding frame, and attach a snow protection hood and plate.
  * Do not use a double-stacked design.



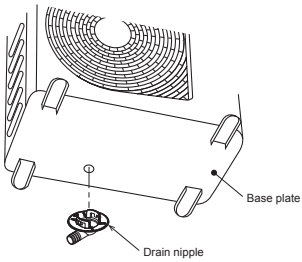
⚠ CAUTION

1. Install the outdoor unit without anything blocking the air discharging.
2. When the outdoor unit is installed in a place always exposed to strong wind like a coast or on a high storey of a building, secure the normal fan operation using a duct or a windshield.
3. In particularly windy areas, install the unit such as to avoid admission of wind.
4. Installation in the following places may result in trouble.
   Do not install the unit in such places.
   - A place full of machine oil.
   - A saline-place such as the coast.
   - A place full of sulfide gas.
   - A place where high-frequency waves are likely to be generated as from audio equipment, welders, and medical equipment.

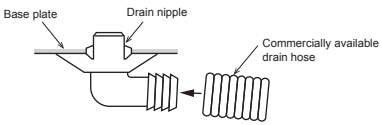


Draining the Water

- Holes are provided on the base plate of the outdoor unit to ensure that the defrost water produced during heating operations is drained off efficiently.
- If a centralized drain is required when installing the unit on a balcony or wall, follow the steps below to drain off the water.



- Install the drain nipple and a commercially available drain hose (with 16 mm inside diameter), and drain off the water.
  (For the position where the drain nipple is installed, refer to the installation diagram of the indoor and outdoor units.)
  - Check that the outdoor unit is horizontal, and route the drain hose at a downward sloped angle while ensuring that it is connected tautly.



⚠ CAUTION

- Do not use ordinary garden hose, but one can flatten and prevent water from draining.

Refrigerant Piping Connection

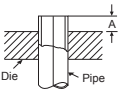
Flaring

1. Cut the pipe with a pipe cutter.

2. Insert a flare nut into the pipe and flare the pipe.
   - **Projection margin in flaring : A (Unit : mm)**

RIDGID (clutch type)

Outer dia. of copper pipe	Tool used	Conventional tool used
Ø6.35	0 to 0.5	1.0 to 1.5
Ø9.52	0 to 0.5	1.0 to 1.5
Ø12.70	0 to 0.5	1.0 to 1.5
Pipes thickness	0.8 mm or more	



IMPERIAL (wing nut type)

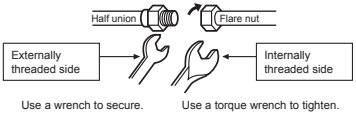
Outer dia. of copper pipe	Tool used
Ø6.35	1.5 to 2.0
Ø9.52	1.5 to 2.0
Ø12.70	2.0 to 2.5
Pipes thickness	0.8 mm or more

⚠ 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.

Tightening connection

Align the centers 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.

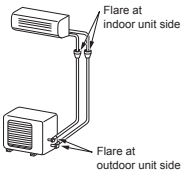


⚠ CAUTION

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

Outer dia. of copper pipe	Tightening torque (N·m)
Ø6.35 mm	14 to 18 (1.4 to 1.8 kgf·m)
Ø9.52 mm	30 to 42 (3.0 to 4.2 kgf·m)
Ø12.70 mm	50 to 62 (5.0 to 6.2 kgf·m)

- **Tightening torque of flare pipe connections**
  The operating pressure of R32 is higher than that of R22 (approx. 1.6 times). It is therefore necessary to firmly tighten the flare pipe connecting sections (which connect the indoor and outdoor units) up to the specified tightening torque. Incorrect connections may cause not only a gas leakage, but also damage to the refrigeration cycle.



Evacuating

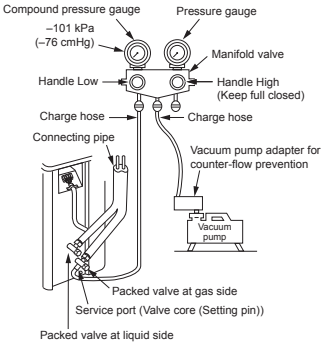
After the piping has been connected to the indoor unit, you can perform the air purge together at once.

AIR PURGE
Evacuate the air in the connecting pipes and in the indoor unit using a vacuum pump.
Do not use the refrigerant in the outdoor unit.
For details, see the manual of the vacuum pump.

Using a vacuum pump

Be sure to use a vacuum pump with counter-flow prevention function so that inside oil of the pump does not flow backward into pipes of the air conditioner when the pump stops. (If oil inside of the vacuum pump enters the air conditioner, which use R32, refrigeration cycle trouble may result.)

1. Connect the charge hose from the manifold valve to the service port of the packed valve at gas side.
2. Connect the charge hose to the port of the vacuum pump.
3. Open fully the low pressure side handle of the gauge manifold valve.
4. Operate the vacuum pump to start evacuating. Perform evacuating for about 15 minutes if the piping length is 20 meters. (15 minutes for 20 meters) (assuming a pump capacity of 27 liters per minute) Then confirm that the compound pressure gauge reading is –101 kPa (–76 cmHg).
5. Close the low pressure side valve handle of the gauge manifold valve.
6. Open fully the valve stem of the packed valves (both gas and liquid sides).
7. Remove the charging hose from the service port.
8. Securely tighten the caps on the packed valves.



⚠ CAUTION

- **KEEP IMPORTANT 7 POINTS FOR PIPING WORK.**
  (1) Take away dust and moisture (inside of the connecting pipes).
  (2) Tighten the connections (between pipes and unit).
  (3) Evacuate the air in the connecting pipes using a VACUUM PUMP.
  (4) Check gas leak (connected points).
  (5) Be sure to fully open the packed valves before operation.
  (6) 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.
  (7) Don't operate air conditioner in case no refrigerant in the system.

Packed valve handling precautions

- Open the valve stem all the way out, but do not try to open it beyond the stopper.

Pipe size of Packed Valve	Size of Hexagon wrench
12.70 mm and smallers	A = 4 mm
15.88 mm	A = 5 mm

Pump down process

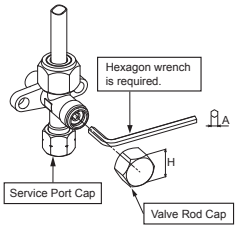
1. Turn off the Air Conditioner system.
2. Connect the charge hose from the manifold valve to the service port of the packed valve at gas side.
3. Turn on the Air Conditioner system in cooling operation more than 10 minutes.
4. Check the operating pressure of the system should be normal value. (Ref. with product specification)
5. Release the valve rod cap of both service valves.
6. Use the Hexagon wrench to turning the valve rod of Liquid side fully close. (*Make sure no entering air into the system)
7. Continue operate Air Conditioner system until the gauge of manifold dropped into the range of 0.5 - 0 kgf/cm²
8. Use the Hexagon wrench to turning the valve rod of Gas side fully close. And turn off the Air Conditioner system immediately thereafter.
9. Remove the gauge manifold from the service port of the packed valve.
10. Securely tighten the valve rod cap to the both service valves.

⚠ CAUTION

- Should be check the compressor operating condition while pumping down process. It must not any abnormal sound, more vibration. It is abnormal condition appears and must turn off the air conditioner immediately.

- Securely tighten the valve cap with torque in the following table:

Cap	Cap Size (H)	Torque
Valve Rod Cap	H17 - H19	14~18 N·m (1.4 to 1.8 kgf·m)
	H22 - H30	33~42 N·m (3.3 to 4.2 kgf·m)
Service Port Cap	H14	8~12 N·m (0.8 to 1.2 kgf·m)
	H17	14~18 N·m (1.4 to 1.8 kgf·m)



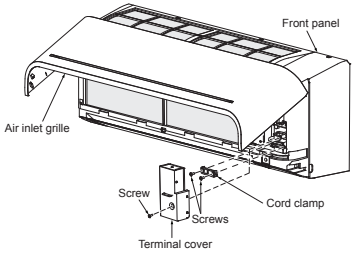
ELECTRICAL WORKS

Model	RAS-B13B2KVG-E3
Power source	50Hz, 220 – 240V / 60Hz, 220 – 230V Single phase
Maximum running current	7.5A
Circuit breaker rating	10A
Power supply cable	H07RN-F or 60245 IEC66 (1.0 mm² or more)
Connecting cable	H07RN-F or 60245 IEC66 (1.0 mm² or more)

Indoor unit

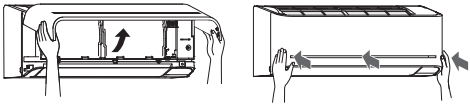
Wiring of the connecting cable can be carried out without removing the front panel.

1. Remove the air inlet grille.
   Open the air inlet grille upward and pull it toward you.
2. Remove the terminal cover and cord clamp.
3. Insert the connecting cable (according to the local cords) into the pipe hole on the wall.
4. Take out the connecting cable through the cable slot on the rear panel so that it protrudes about 20 cm from the front.
5. Insert the connecting cable fully into the terminal block and secure it tightly with screws.
6. Tightening torque : 1.2 N·m (0.12 kgf·m)
7. Secure the connecting cable with the cord clamp.
8. Fix the terminal cover, rear plate bushing and air inlet grille on the indoor unit.



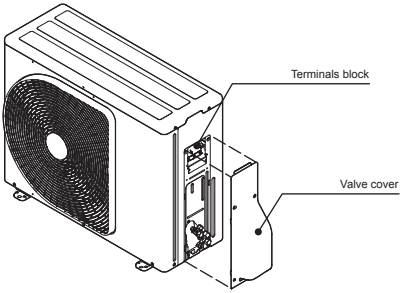
How to install the air inlet grille on the indoor unit

- When attaching the air inlet grille, the contrary of the removed operation is performed.



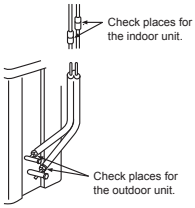
Outdoor unit

1. Remove the valve cover, the electric parts cover and the cord clamp from the outdoor unit.
2. Connect the connecting cable to the terminal as identified by the matching numbers on the terminal block of indoor and outdoor unit.
3. Insert the power cord and the connecting cable carefully into the terminal block and secure it tightly with screws.
4. Use vinyl tape, etc. to insulate the cords which are not going to be used. Locate them so that they do not touch any electrical or metal parts.
5. Secure the power cord and the connecting cable with the cord clamp.
6. Attach the electric parts cover and the valve cover on the outdoor unit.



OTHERS

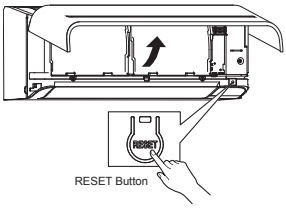
Gas Leak Test



- Check the flare nut connections for the gas leak with a gas leak detector or soap water.

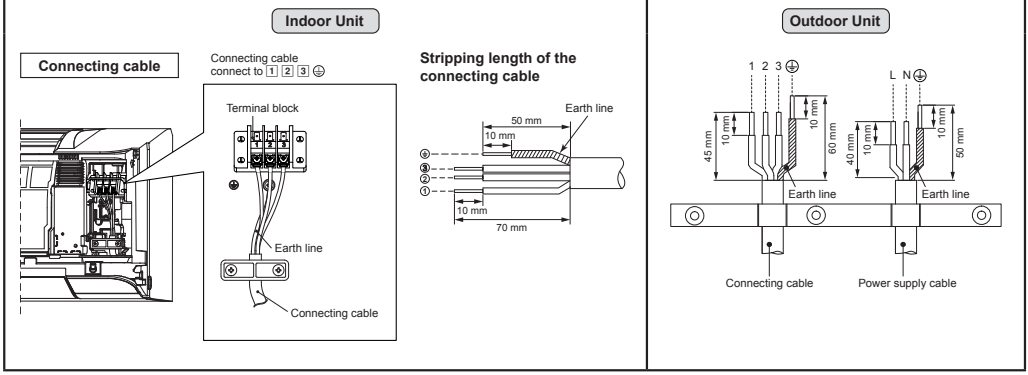
Test Operation

To switch the TEST RUN (COOL) mode, press [RESET] button for 10 seconds. (The beeper will make a short beep.)



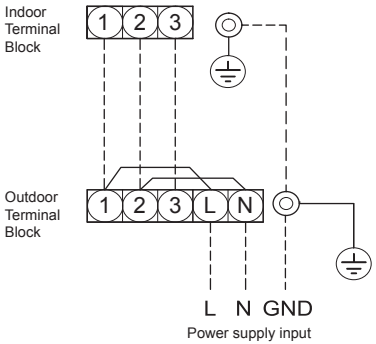
Power Supply and Connecting Cable Connection

Power Supply Input at Outdoor Unit Terminal Block



Power supply input Wiring Diagram

Power supply input at Outdoor Terminal Block



⚠ CAUTION

1. The power supply must be same as the rated of air conditioner.
2. Prepare the power source for exclusive use with air conditioner.
3. Circuit breaker must be used for the power supply line of this air conditioner.
4. Be sure to comply power supply and connecting cable for size and wiring method.
5. Every wire must be connected firmly.
6. Perform wiring works so as to allow a general wiring capacity.
7. Wrong wiring connection may cause some electrical part burn out.
8. Incorrect or incomplete wiring is carried out, it will cause an ignition or smoke.
9. This product can be connected to main power supply.
   Connection to fixed wiring : A switch which disconnects all poles and has a contact separation at least 3 mm must be incorporated in the fixed wiring.

Existing Piping

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 pipe

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 R32 is high (1.6 times that of R22). 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
Thickness	R32, R410A	0.8	0.8	0.8
	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

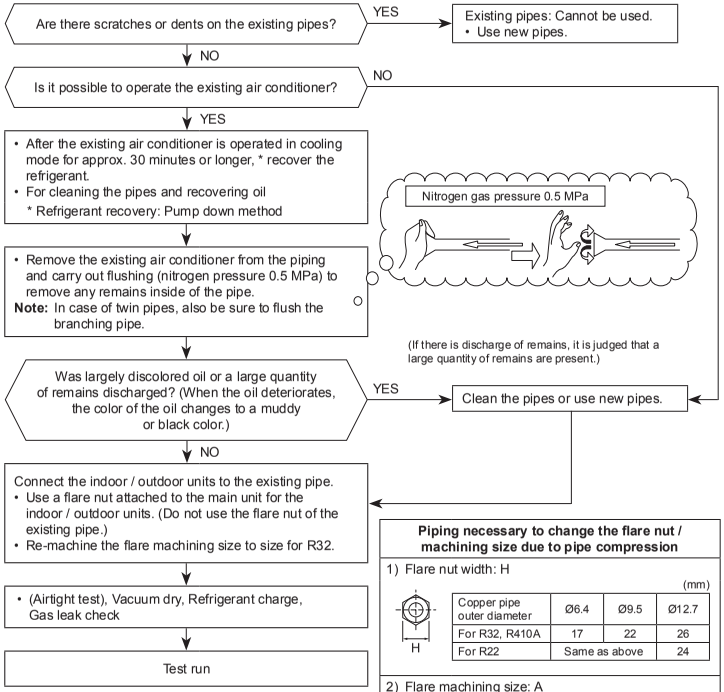
- The above descriptions are results have been confirmed by our company and represent our views on our air conditioners, but do not guarantee the use of the existing pipes of air conditioners that have adopted R32 in other companies.

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
For R32, R410A	17	22	26
For R22	Same as above		24

2) Flare machining size: A

(mm)

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

Becomes a little larger for R32.

Do not apply refrigerator oil to the flare surface.

INSTALLATION CHECK LIST

After finishing installation work, please check items below and hand this sheet to user to keep it in a safe place together with Installation and Owner's Manual

Model name

Check date

Checked by

Note : Please put a mark " ✓ " in the box you checked.

■ Piping work

Check items	Symptom	Check
Connecting pipes are cleaned and no dent	Insufficient Air conditioner capacity Compressor malfunction Compressor rupture or Burst	
Use vacuum pump for completed vacuuming		
No any gas leakage or clogging is found		
Service valves are fully open before operation		

■ Wiring work

Check items	Symptom	Check
Electrical wires are connected correctly	Burnt out, No operation	
Use breaker to connect to main power supply	Burnt out, No abnormal protection	
Wiring insulators are in good condition	Burnt out, Electrical leakage	
Use the specified size/rating wires	Burnt out	
Ground wire must be Installation per manufacturing Installation and Owner's Manual	Electrical leakage or shock	

■ Drainage work

Check items	Symptom	Check
Drain hose is properly connected	Water leakage or dropping	
Drain hose is well insulated	Water or dew dropping	

Remark

• All check items, please refer procedure from manufacturing Installation and Owner's Manual.

OWNER'S MANUAL

1 INDOOR UNIT DISPLAY

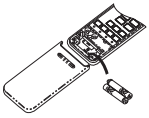
① Timer (White)
② Operation mode (White)

• Display brightness can be adjusted, follow procedure on ⑭.

2 PREPARATION BEFORE USE

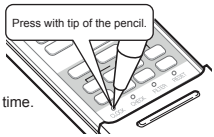
Insert the Battery

1. Remove the slide cover.
2. Insert 2 new batteries (AAA type) following the (+) and (–) positions.



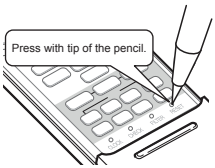
Clock Setting

1. Push CLOCK by tip of the pencil.
   If timer indication is flashing, go to the next step 2.
2. Press ON or OFF : adjust the time.
3. Press SET : Set the time.

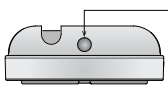


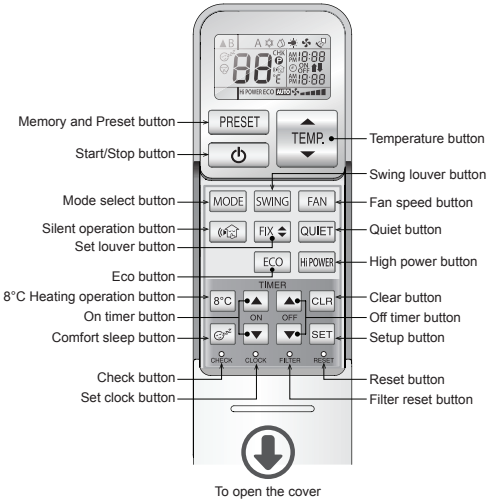
Remote controller reset

1. Push RESET by tip of the pencil.
2. Remove the batteries.
3. Press ⏻ .
4. Insert the batteries.



3 REMOTE CONTROLLER



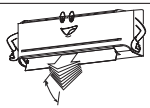
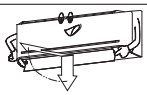
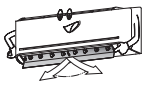


To open the cover

NOTE

- The provided Remote Controller is a wireless type, which also can be used as a wire. Please see "How to Connect The Remote Controller for Wired Operation", located in installation instruction, in case of wired control is required.
- In wire operation, remote controller will return to initial condition (PRESET, TIMER and CLOCK will return to initial condition) when user shutdown power supply of Air conditioner.

4 AIR FLOW DIRECTION

1	Press FIX : Move the louver in the desired vertical direction.	
2	Press SWING : Swing the air automatically and press again to stop.	
3	For horizontal direction, adjust manually.	

NOTE

- Do not move the louver manually by others.
- The louver may automation positioning by some operation mode.

5 SILENT OPERATION

Keep outdoor unit operating silently to ensure either yourself or neighborhood will have a tight sleep in nighttime. By this feature, the Heating (or Cooling) capacity will be optimized to deliver such silent experience.
The silent operation can be selected from one of two purposes (Silent 1 and Silent 2).

There are three setting parameters: Standard level > Silent 1 > Silent 2

Press

Silent 1

Though operating silently, the Heating (or Cooling) capacity is still prioritized to ensure having suficient comfort inside the room.

This setting is a perfect balance between the Heating (or Cooling) capacity and the Sound level of outdoor unit.

Silent 2

Compromising the Heating (or Cooling) capacity to the Sound level in any circumstance where the outdoor unit's sound level is highly prioritized.

This setting has a purpose to reduce the maximum sound level of outdoor unit by 4 dB(A).

NOTE

- While activating of Silent operation, inadequate Heating (or Cooling) capacity may occur.

6 AUTOMATIC OPERATION

To automatically select cooling, heating or fan only operation.

1. Press MODE : Select Auto A.
2. Press TEMP. : Set the desired temperature.
   Min. 17°C, Max. 30°C.
3. Press FAN : Select AUTO ,
   LOW ,
   LOW+ ,
   MED ,
   MED+ ,
   HIGH

7 COOLING / HEATING / FAN ONLY OPERATION

1. Press MODE : Select Cool , Heat or Fan only .
2. Press TEMP. : Set the desired temperature.
   Min. 17°C, Max. 30°C.
   Fan Only: No temperature indication
3. Press FAN : Select AUTO ,
   LOW ,
   LOW+ ,
   MED ,
   MED+ ,
   HIGH

8 DRY OPERATION

For dehumidification, a moderate cooling performance is controlled automatically.

1. Press MODE : Select Dry .
2. Press TEMP. : Set the desired temperature.
   Min. 17°C, Max. 30°C.

NOTE

- Dry mode fan speed is set to Auto only.

9 Hi POWER OPERATION

To automatically control room temperature and airflow for faster cooling or heating operation (except in DRY and FAN ONLY mode).

Press Hi POWER : Start and stop the operation.

10 ECO OPERATION

To automatically control room temperature to save energy (except in DRY and FAN ONLY mode)

Press ECO : Start and stop the operation.

NOTE

- Cooling operation; the set temperature will increase automatically 1 degree/hour for 2 hours (maximum 2 degrees increase).
- For heating operation the set temperature will decrease.

11 8°C OPERATION

1. Press 8°C : To change to 8°C set temperature heating.
2. Press TEMP. : To adjust setting temperature from 5°C to 13°C.

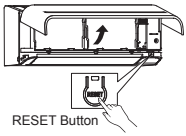
NOTE

- 8°C will operate in Heating mode only.
- If Air conditioner performs in cooling operation (including automatic cooling) or dry operation it will change to heating operating.

12 TEMPORARY OPERATION

In case of the misplaced or discharged remote controller.

- Pressing the RESET button, the unit can start or stop without using the remote controller.
- Operation mode is set on AUTOMATIC operation, preset temperature is 24°C and fan operation is automatic speed.



RESET Button

13 TIMER OPERATION

Set the timer when the air conditioner is operating.

	Setting the ON Timer	Setting the OFF Timer
1	Press ▲ ON ▼ : Set the desired ON timer.	Press ▲ OFF ▼ : Set the desired OFF timer.
2	Press SET : Set the timer.	Press SET : Set the timer.
3	Press CLR : Cancel the timer.	Press CLR : Cancel the timer.

Daily timer allows the user to set both the ON & OFF timers and will be activated on a daily basis.

Setting Daily Timer

1	Press ▲ ON ▼ : Set the ON timer.	3	Press SET .
2	Press ▲ OFF ▼ : Set the OFF timer.	4	Press SET button during the (⬆ or ⬇) mark flashing.

- During the daily timer is activating, both arrows (⬆ , ⬇) are indicated.

NOTE

- Keep the remote controller in accessible transmission to the indoor unit; otherwise, the time lag of up to 15 minutes will occur.
- The setting will be saved for the next same operation.

14 DISPLAY LAMP BRIGHTNESS ADJUSTMENT

To decrease the display lamp brightness or turn it off.

1. Press and hold FAN for 3 seconds until brightness level (d0, d1, d2 or d3) is shown on remote controller LCD then release the button.
2. Press Rise ▲ TEMP. ▼ or Decrease ▲ TEMP. ▼ to adjust brightness in 4 levels.

Remote controller LCD	Operation display	Brightness
d3	Lamp illuminates full brightness.	100%
d2	Lamp illuminates 50% brightness.	50%
d1	Lamp illuminates 50% brightness and the operation lamp is turned off.	50%
d0	All lamps are turned off.	All turned off

- In the examples of d1 and d0, the lamp illuminates for 5 seconds before going off.

15 PRESET OPERATION

Set your preferred operation for future use. The setting will be memorized by the unit for future operation (except airflow direction).

1. Select your preferred operation.
2. Press and hold PRESET for 3 seconds to memorize the setting. The Ⓟ mark displays.
3. Press PRESET : Operate the preset operation.

16 QUIET OPERATION

To operate at super low fan speed for quiet operation (except in DRY mode).

Press QUIET : Start and stop the operation.

NOTE

- Under certain conditions, QUIET operation may not provide adequate cooling due to low sound features.

17 COMFORT SLEEP OPERATION

For comfortable sleep, automatically control air flow and automatically turn OFF.

Press : Select 1, 3, 5 or 9 hrs for OFF timer operation.

NOTE

- The cooling operation, the set temperature will increase automatically 1 degree/hour for 2 hours (maximum 2 degrees increase).
- For heating operation, the set temperature will decrease.

18 AUTO RESTART FUNCTION SETTING

This product is designed so that, after a power failure, it can restart automatically in the same operating mode as before the power failure.

INFORMATION

The product is shipped with Auto Restart function in the ON position. Turn it OFF if this function is not required.

How to turn OFF the Auto Restart Function

- Press and hold the [OPERATION] button on the indoor unit for 3 seconds (3 beep sounds but OPERATION lamp does not blink).

How to turn ON the Auto Restart Function

- Press and hold the [OPERATION] button on the indoor unit for 3 seconds (3 beep sounds and OPERATION lamp blink 5 time/sec for 5 seconds).

NOTE

- In case of ON timer or OFF timer are set, AUTO RESTART OPERATION does not activate.

19 MAINTENANCE

⚠ CAUTION

- Firstly, turn off the circuit breaker.

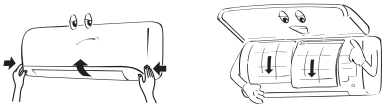
Indoor Unit and Remote Controller

- Clean the indoor unit and the remote controller with a wet cloth when needed.
- No benzine, thinner, polishing powder or chemically-treated duster.

Air Filters

Clean every 2 weeks.

1. Open the air inlet grille.
2. Remove the filters if they are on the air filter.
3. Vacuum or wash and then dry them.
4. Reinstall the filters and close the air inlet grille.



20 SELF CLEANING OPERATION (COOL AND DRY OPERATION ONLY)

To protect bad smell caused by the humidity in the indoor unit.

1. If the ☞ ⏻ button is pressed once during “Cool” or “Dry” mode, the fan will continue to run for other 30 minutes, then it will turn off automatically. This will reduce the moisture in the indoor unit.
2. To stop the unit immediately, press the ☞ ⏻ more 2 times within 30 seconds.

21 MANUAL DEFROST OPERATION

To defrosting the heat exchanger of the outdoor unit during Heating operation.

Press and hold ☞ SET : for 5 sec. then remote controller display will show [dF] as picture ① for 2 sec.

①

22 OPERATION AND PERFORMANCE

1. Three-minute protection feature: To prevent the unit from being activated for 3 minutes when suddenly restarted or switched to ON.
2. Preheating operation: Warm up the unit for 5 minutes before the heating operation starts.
3. Warm air control: When the room temperature reaches the set temperature, the fan speed is automatically reduced and the outdoor unit will stop.
4. Automatic defrosting: Fans will stop during defrost operation.
5. Heating capacity: Heat is absorbed from outdoors and released into the room.
   When the outdoor temperature is too low, use another recommended heating apparatus in combination with the air conditioner.
6. Consideration for accumulated snow: Select the position for outdoor unit where it will not be subjected to snow drifts, accumulation of leaves or other seasonal debris.
7. Some minor cracking sound may occur when unit operating.
   This is normal because the cracking sound may be caused by expansion/contraction of plastic.

NOTE

- Item 2 to 6 for Heating model.

Air conditioner operating conditions

Operation \ Temp.	Outdoor Temperature	Room Temperature
Heating	–15°C ~ 24°C	Less than 28°C
Cooling	–15°C ~ 46°C	21°C ~ 32°C
Dry	–15°C ~ 46°C	17°C ~ 32°C

23 TROUBLESHOOTING (CHECK POINT)

The unit does not operate.	Cooling or Heating is abnormally low.
• The power main switch is turned off. • The circuit breaker is activated to cut off the power supply. • Stoppage of electric current. • ON timer is set.	• The filters are blocked with dust. • The temperature has been set improperly. • The windows or doors are opened. • The air inlet or outlet of the outdoor unit is blocked. • The fan speed is too low. • The operation mode is FAN or DRY. • POWER SELECTION function is set 75% or 50% **(This function is depend on remote controller)**.

24 REMOTE CONTROLLER A-B SELECTION

To separate using of remote controller for each indoor unit in case of 2 air conditioners are installed nearly.

Remote controller B setup

1. Press RESET button on the indoor unit to turn the air conditioner ON.
2. Point the remote controller at the indoor unit.
3. Push and hold CHECK button on the Remote Controller by the tip of the pencil.
   “00” will be shown on the display. (Picture ①)
4. Press ☞ MODE during pushing CHECK . “B” will show on the display and “00” will disappear and the air conditioner will turn OFF.
   The Remote Controller B is memorized. (Picture ②)

①

②

NOTE

1. Repeat above step to reset Remote Controller to be A.
2. Remote Controller A has not “A” display.
3. Default setting of Remote Controller from factory is A.

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