TOSHIBA

Carrier

AIR CONDITIONER (SPLIT TYPE)

Installation Manual

HFC
R410A

1128950138

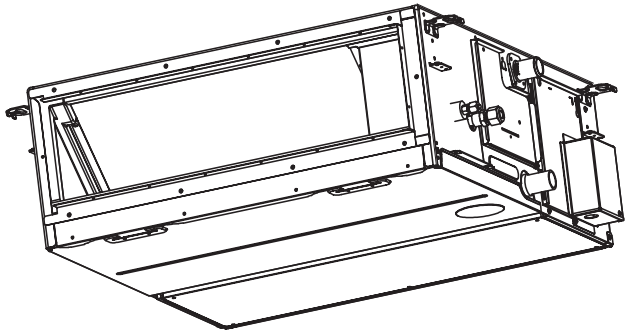
Indoor Unit

For commercial use
Pour usage commercial
Para uso comercial

Model name:

Concealed Duct Type

RAV-SM122BTP-UL
RAV-SM182BTP-UL
RAV-SM242BTP-UL
RAV-SM302BTP-UL
RAV-SM362BTP-UL
RAV-SM422BTP-UL
RAV-SM482BTP-UL



Original instruction

Please read this Installation Manual carefully before installing the Air Conditioner.
- This Manual describes the installation method of the indoor unit.
- For installation of the outdoor unit, follow the Installation Manual attached to the outdoor unit.
- For precaution for safety, follow the Installation Manual attached to the outdoor unit.

ADOPTION OF NEW REFRIGERANT

This Air Conditioner uses R410A an environmentally friendly refrigerant.

Contents

Generic Denomination: Air Conditioner

Definition of Qualified Installer or Qualified Service Person

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

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

Definition of Protective Gear

When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.

In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the following table.

Failure to wear the proper protective gear could lead to injury, burns, electric shocks and other injuries.

Work undertaken	Protective gear worn
All types of work	Protective gloves 'Safety' working clothing
Electrical-related work	Gloves to provide protection for electricians and from heat Insulating shoes Clothing to provide protection from electric shock
Work done at heights (19.7" (50 cm) or more)	Helmets for use in industry
Transportation of heavy objects	Shoes with additional protective toe cap

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

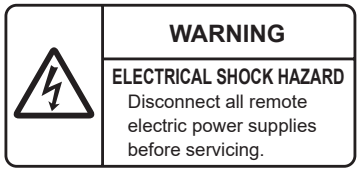
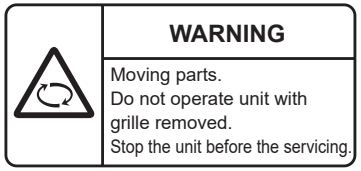
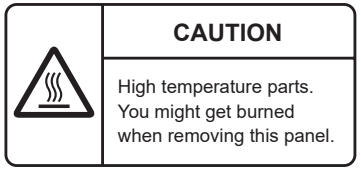
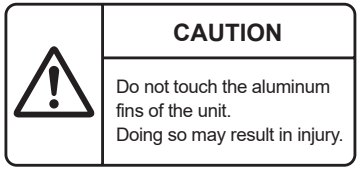
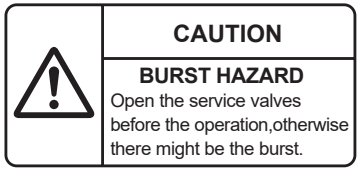
Indication	Meaning of Indication
⚠ WARNING	Text set off in this manner indicates that failure to adhere to the directions in the warning could result in serious bodily harm (*1) or loss of life if the product is handled improperly.
⚠ CAUTION	Text set off in this manner indicates that failure to adhere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

*1: Serious bodily harm indicates loss of eyesight, injury, burns, electric shock, bone fracture, poisoning, and other injuries which leave aftereffect and require hospitalization or long-term treatment as an outpatient.

*2: Slight injury indicates injury, burns, electric shock, and other injuries which do not require hospitalization or long-term treatment as an outpatient.

*3: Damage to property indicates damage extending to buildings, household effects, domestic livestock, and pets.

■ Warning indications on the air conditioner unit

Warning indication	Description
	**WARNING** **ELECTRICAL SHOCK HAZARD** Disconnect all remote electric power supplies before servicing.
	**WARNING** Moving parts. Do not operate unit with grille removed. Stop the unit before the servicing.
	**CAUTION** High temperature parts. You might get burned when removing this panel.
	**CAUTION** Do not touch the aluminium fins of the unit. Doing so may result in injury.
	**CAUTION** **BURST HAZARD** Open the service valves before the operation, to avoid unnecessary pressure built up which could lead to explosion.

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1 Precautions for safety

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

⚠ WARNING

General

- Before starting to install the air conditioner, read through the Installation Manual carefully, and follow its instructions to install the air conditioner.
- Only a qualified installer or service person is allowed to do installation work. Inappropriate installation may result in water leakage, electric shock or fire.
- Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
- Before opening the electrical control box cover of the indoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts. Only a qualifed installer or qualifed service person is allowed to remove the electrical control box cover of the indoor unit and do the work required.
- Before carrying out the installation, maintenance, repair or removal work, set the circuit breaker to the OFF position. Otherwise, may result in electric shocks.
- Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
- Only a qualified installer or qualified service person is allowed to undertake work at heights using a stand of 19.7” (50 cm) or more or to remove the intake grille of the indoor unit to undertake work.
- Wear protective gloves and safety work clothing during installation, servicing and removal.
- Do not touch the aluminium fin of the unit. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.
- Before opening the inspection opening, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in injury through contact with the rotation parts. Only a qualified installer or qualified service person is allowed to remove the inspection opening and do the work required.
- When work is performed at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder’s instructions. Also wear a helmet for use in industry as protective gear to undertake the work.
- Before cleaning the filter (sold separately) or other parts of the outdoor unit, set the circuit breaker to OFF without fail, and place a “Work in progress” sign near the circuit breaker before proceeding with the work.
- Before working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below. While carrying out the work, wear a helmet for protection from falling objects.
- The refrigerant used by this air conditioner is the R410A.
- The air conditioner must be transported in stable condition. If any part of the product is broken, contact the dealer.
- When the air conditioner must be transported by hand, carry it by four or more people.

- Do not move or repair any unit by yourself. Must be done by qualified installer or qualified service person. Special precaution should be taken when removing the cover for the unit to avoid electric snock from high voltage lines.
- This appliance is intended to be used by expert or trained users in shops, in light industry, or for commercial use by lay persons.

Selection of installation location

- When the air conditioner is installed in a small room, provide appropriate measures to ensure that the concentration of refrigerant leakage occur in the room does not exceed the critical level.
- Do not install in a location where flammable gas leaks are possible. Flammable gas accumulation may ignite and cause a fire.
- To transport the air conditioner, wear shoes with additional protective toe caps.
- To transport the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
- Install the indoor unit at least 8'2" (2.5 m) above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
- Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.

Installation

- Suction duct length must be longer than 33.46" (850 mm).
- When the indoor unit is to be suspended, the designated hanging bolts (M10 or W3/8") and nuts (M10 or W3/8") must be used.
- Install the air conditioner securely in a location where the base can sustain the weight adequately. If the strength is not enough, the unit may fall down resulting in injury.
- Follow the instructions in the Installation Manual to install the air conditioner. Failure to follow these instructions may cause the product to fall down or topple over or give rise to noise, vibration, water leakage or other trouble.
- If refrigerant gas has leaked during the installation work, ventilate the room immediately. If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.
- Use forklift to carry in the air conditioner units and use winch or hoist at installation of them.
- Helmet must be worn to protect your head from falling objects. Especially, when you work under an inspection opening, helmet must be worn to protect your head from falling objects from the opening.

Refrigerant piping

- Install the refrigerant pipe securely during the installation work before operating the air conditioner. If the compressor is operated with the valve open and without refrigerant pipe, the compressor sucks air and the refrigeration cycles is over pressurized, which may cause an injury.
- Tighten the flare nut with a torque wrench in the specified manner. Over tightening tighten of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage.
- After the installation work, confirm that refrigerant gas does not leak. If refrigerant gas leaks into the room and flows near a fire source, such as a cooking range, noxious gas may be generated.

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- When the air conditioner has been installed or relocated, follow the instructions in the Installation Manual and purge the air completely so that no gases other than the refrigerant will be mixed in the refrigerating cycle. Failure to purge the air completely may cause the air conditioner to malfunction.
- Nitrogen gas must be used for the airtight test.
- The charge hose must be connected in such a way that it is not slack.

Electrical wiring

- Only a qualified installer or qualified service person is allowed to carry out the electrical work of the air conditioner. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and/or electrical leaks.
- To connect the electrical wires, repair the electrical parts or undertake other electrical jobs, wear gloves to provide protection for electricians, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- Use wiring that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring which does not meet the specifications may give rise to electric shocks, electrical leakage, smoking and/or a fire.
- Connect earth wire. (grounding wire) Incomplete grounding causes an electric shock.
- Do not connect grounding wires to gas pipes, water pipes, and lightning conductor or telephone earth wires.
- After completing the repair or relocation work, check that the grounding wires are connected properly.
- Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws.
- Install the circuit breaker where it can be easily accessed by the agent.
- When installing the circuit breaker outdoors, install one which is designed to be used outdoors.
- Under no circumstances the power wire must not be extended. Connection trouble in the places where the wire is extended may give rise to smoking and/or a fire.
- Electrical wiring work shall be conducted according to law and regulation in the community and installation manual. Failure to do so may result in electrocution or short circuit.

Test run

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

Explanations given to user

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

Relocation

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

⚠ CAUTION

New refrigerant air conditioner installation

- **This air conditioner adopts the new HFC refrigerant (R410A) which does not destroy ozone layer.**
- The characteristics of R410A refrigerant are easy to absorb water, oxidizing membrane or oil, and its pressure is approx. 1.6 times higher than that of refrigerant R22. Accompanied with the new refrigerant, refrigerating oil has also been changed. Therefore, do not let water, dust, former refrigerant, or refrigerating oil enter the refrigerating cycle during installation work.
- To prevent charging an incorrect refrigerant and refrigerating oil, the sizes of connecting sections of charging port of the main unit and installation tools are changed from those for the conventional refrigerant.
- Accordingly the exclusive tools are required for the new refrigerant (R410A).
- For connecting pipes, use new and clean piping designed for R410A, and please care so that water or dust does not enter.

To disconnect the appliance from main power supply.

- This appliance must be connected to the main power supply by means of a switch with a contact separation of at least 0.1" (3 mm).

The installation fuse (all types can be used) must be used for the power supply line of this conditioner.

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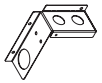
2 Accessory parts

■ Accessory parts

Part name	Q'ty	Shape	Usage
Installation Manual	1	This manual	(Hand over to customers)
Owner's Manual	1		(Hand over to customers)
Insulation pipe	2		For 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
Insulation	1		For insulation of drain connecting section
Electrical cover 2 holes	1		—

Part name	Shape	Q'ty		
		SM122 SM182	SM242	SM302 SM362 SM422 SM482
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	

3 Selection of installation place

Avoid installing in the following places

Select a location for the indoor unit where the cool or warm air will circulate evenly. Avoid installation in the following 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 case, including the rainy season, The inside of the ceiling may become a high-humidity atmosphere (dew-point temperature: 73.4 °F (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

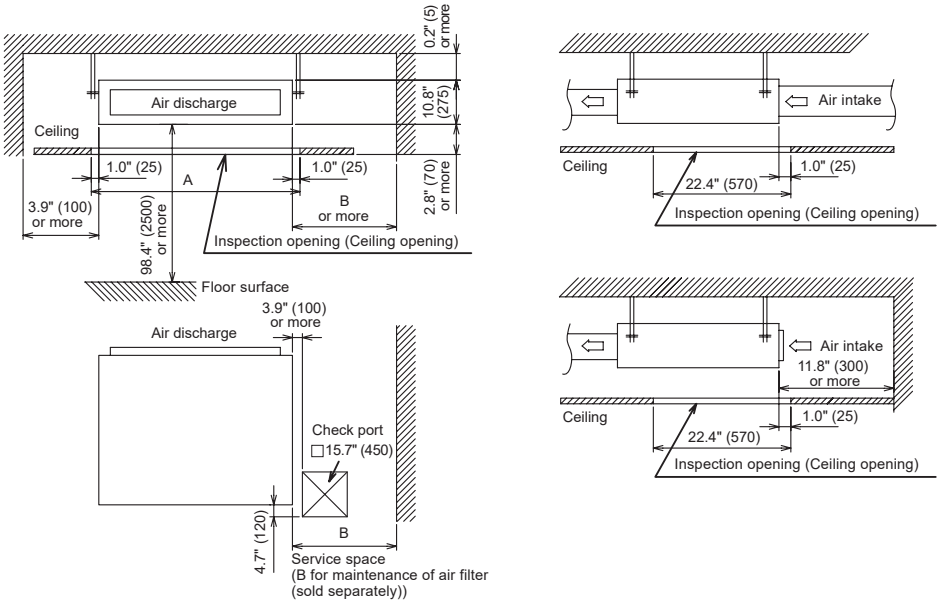
- In the above cases, attach insulation to all positions of the air conditioner, which come to contact with the high-humidity atmosphere. In this case, arrange the side plate (Check port) so that it is easily removed.
- Apply also heat insulating a sufficient thickness 0.4"(10 mm) or more to the duct and connecting part of the duct.

[Reference]	Condensation test conditions	
	Indoor side:	80.6 °F (27 °C) dry bulb temperature 75.2 °F (24 °C) wet bulb temperature
	Air volume:	Low air volume, operation time 4 hours

■ Installation space

(Unit: in (mm))

Reserve sufficient space required for installation or service work.



Model	A	B
SM122, SM182 type	29.5"(750)	27.6"(700)
SM242 type	41.3"(1050)	19.7"(500)
SM302, SM362 type **SM422, SM482 type**	57.1"(1450)	27.6"(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.

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4 Installation

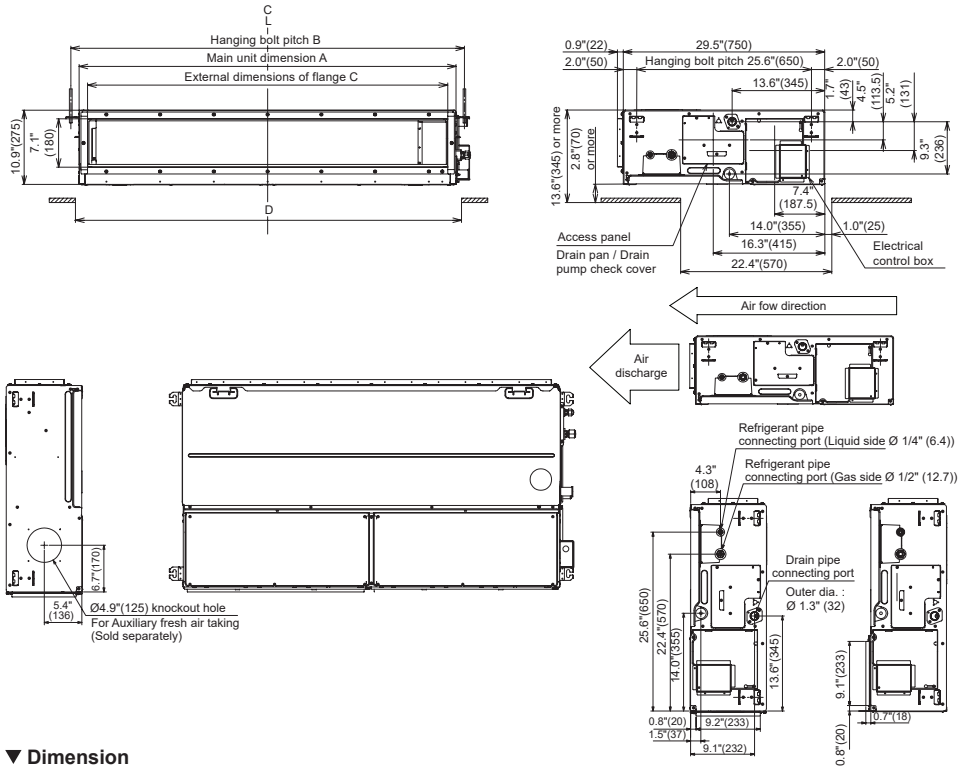
⚠ CAUTION

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

- Do not put a heavy article on the indoor unit or let a person get on it. (Even units are packaged)
- Carring the indoor unit as it is packaged if possible. If carring the indoor unit unpacked is necessary, 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 four 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: in (mm))



▼ Dimension

Model	A	B	C	D
SM122, SM182	27.6"(700)	30.1"(765)	25.2"(640)	29.5"(750)
SM242	39.4"(1000)	41.9"(1065)	37.0"(940)	41.3"(1050)
SM302, SM362 SM422, SM482	55.2"(1400)	57.7"(1465)	52.8"(1340)	57.1"(1450)

■ Installation of hanging bolt

- When determining the location of the indoor unit, consider the piping and wiring connection
- 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).

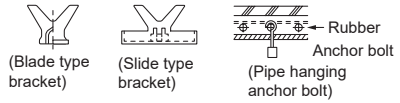
Hanging bolt	M10 or W3/8"	4 pieces
Nut	M10 or W3/8"	12 pieces
Washer	M10	8 pieces

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.

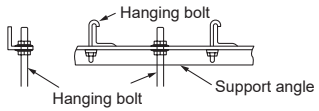
New concrete slab

Install the bolts with insert brackets or anchor bolts.



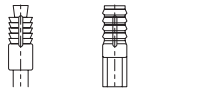
Steel flame structure

Use existing angles or install new support angles.



Existing concrete slab

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

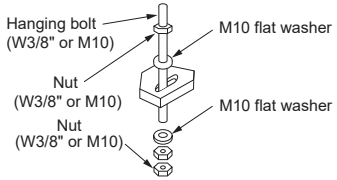


■ Installation of indoor unit

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.

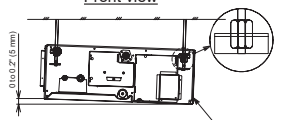
- Attach the nuts and the M10 flat washers to the hanging bolt.
- Put washers above and below of the hanging bracket of the indoor unit to hang the indoor unit.
- Check that four sides are horizontal with a level gauge. (Horizontal degree: Within 0.2"(5 mm))



REQUIREMENT

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

Front view



Set the drain pipe connecting port side within 0.2" (5 mm) lower than opposite side.

Side view

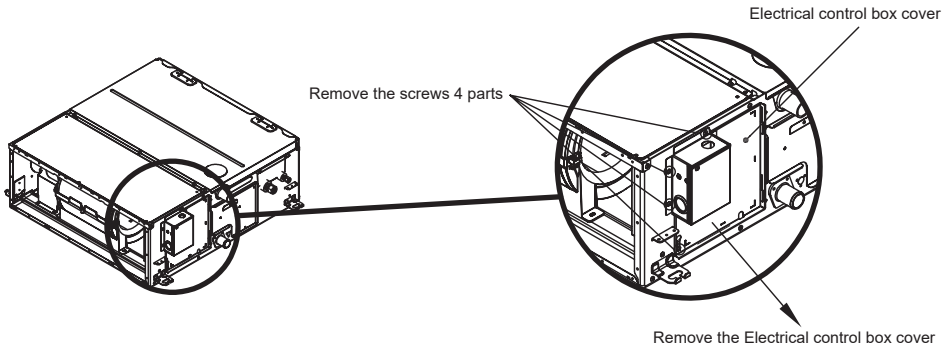
Set the air intake and air discharge sides are within with 0.2" (5 mm) each other.

■ Installation electrical cover 2 holes type

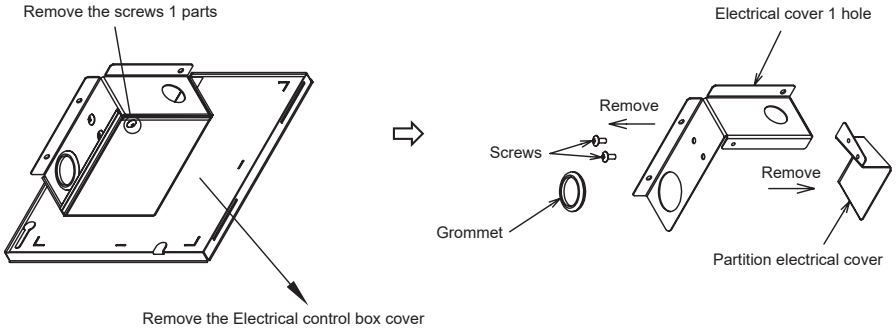
REQUIREMENT

In case of group control, electrical cover 1 hole type need to change to electrical cover 2 holes type.

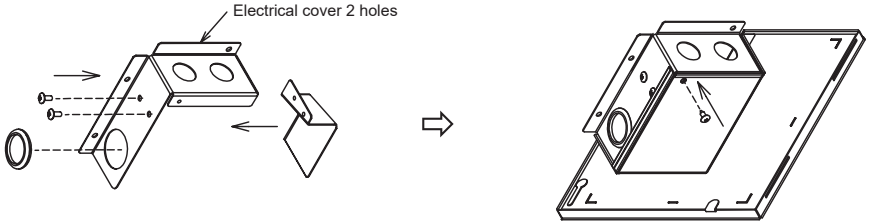
1 **Remove Electrical control box cover.**



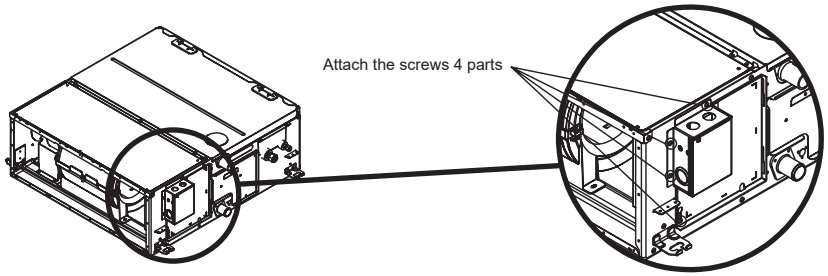
2 **Remove Electrical control box cover and Partition electrical cover.**



3 **Change part electrical cover 1 hole to 2 holes and attach Electrical control box cover.**



4 **Attach the Electrical control box cover to unit.**



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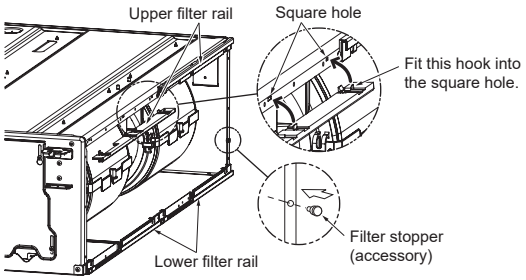
■ Mounting filter rails and filters

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.**

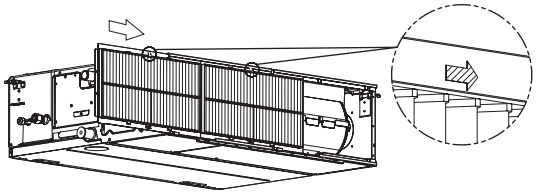
⚠ CAUTION

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)

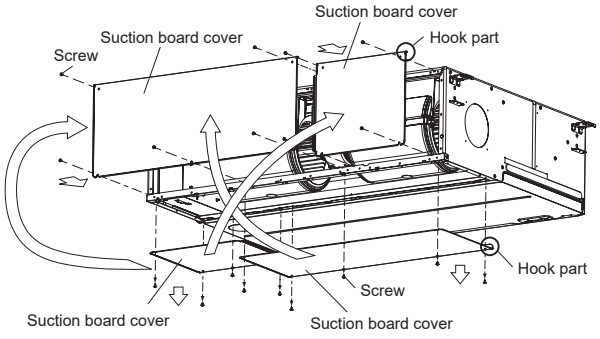


■ Changing from back air intake to under air intake

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.**



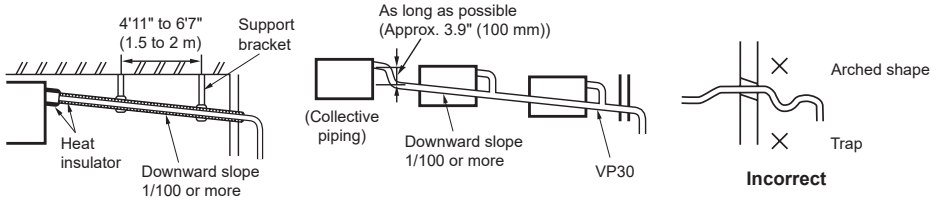
* The sizes of the left and right covers of SM242 class unit are not identical. As shown in the figure, re-mount the covers left-right reversed by facing the hook part upwards.

5 Drain piping

⚠ CAUTION

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

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



■ Pipe material, size and insulator

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

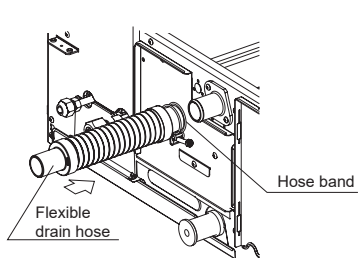
Pipe material	Hard vinyl chloride pipe VP25 (Nominal outer diameter 1.3" (32 mm))
Insulator	Foamed polyethylene foam, thickness: 0.4" (10 mm) or more

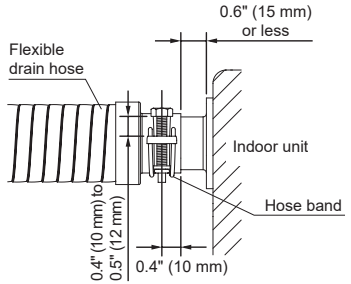
■ Connecting drain pipe

Insert flexible drain hose into upper 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.



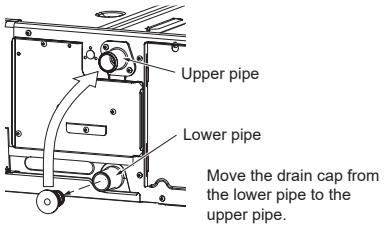


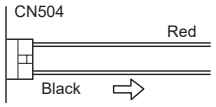
■ Gravitational drainage

1 **Reattach the drain cap.**

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

3 **Remove drain pump connector CN504.**

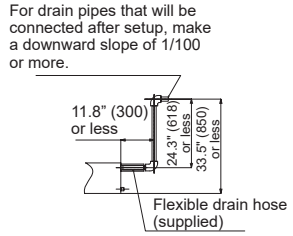




■ Drain up

When a down-gradient cannot be secured for the drain pipe, drain-up piping is possible.

- The height of the drain pipe must be 33.5" (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 11.8" (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

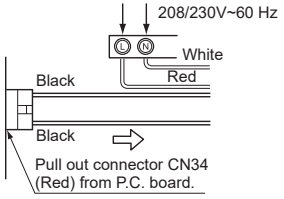
In the test run, check that water drain is properly performed and water does not leak from the connecting part of the pipes. When doing this, also check that no abnormal sounds are heard from the drain pump motor.
Check draining also when installed in heating period.

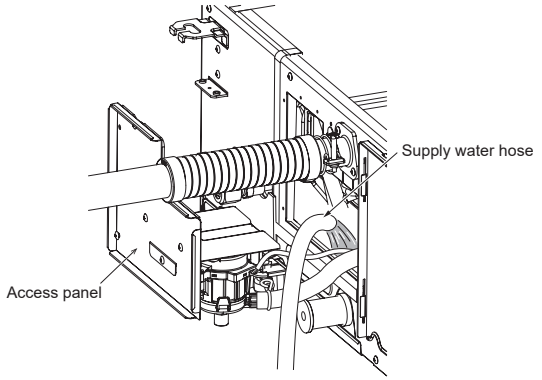
When the electrical and wiring work has been completed

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

- To ensure the power has been turned off.
- Disconnect the float switch connector (3P: red) from the connector (CN34: red) on the printed circuit board inside the electrical control box.
- Connect a 208/230V supply voltage to (L) and (N) on the power supply terminal block.
  (Do not apply a 208/230V voltage to (U1), (U2), (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: 1.5L to 2L (1/3 to 0.5 gallon)
- 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.





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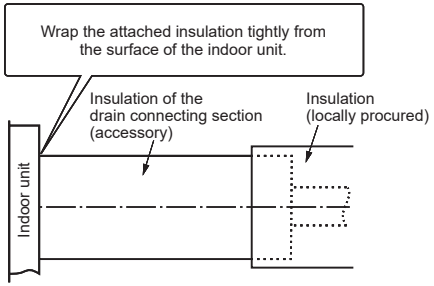
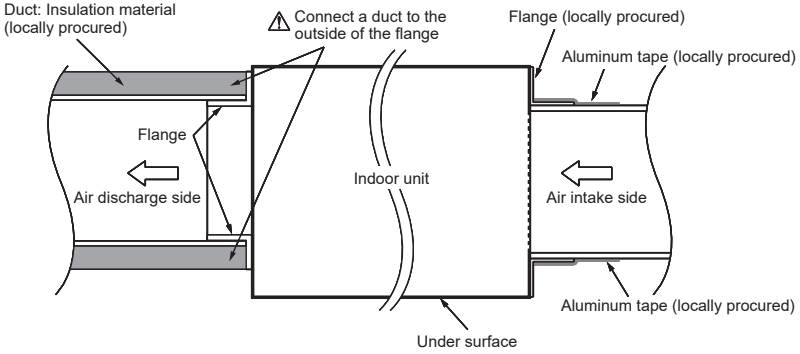
■ Insulation process

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



■ Connecting method of the duct

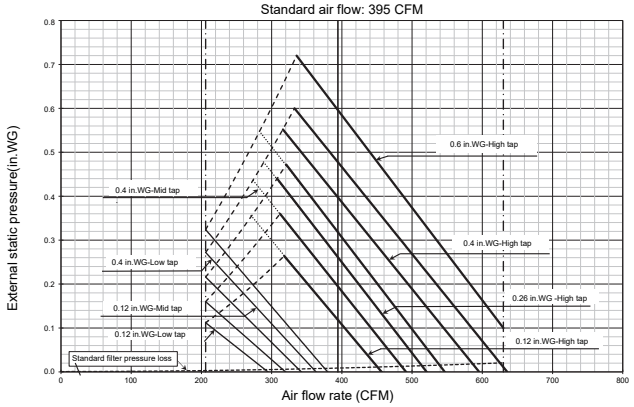


⚠ CAUTION

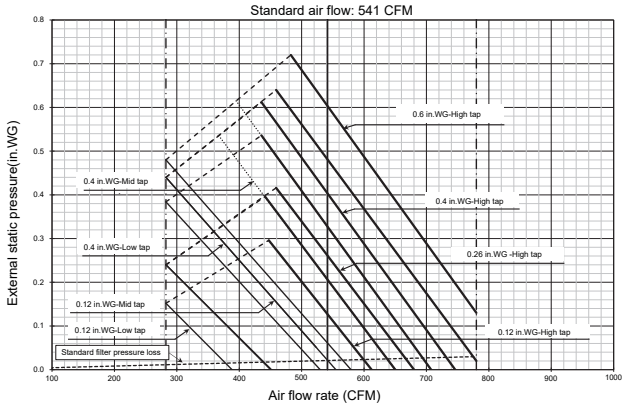
Incomplete insulation of the supply air flange and sealing may occur dewing resulted in falling of water drop.

■ Fan characteristics

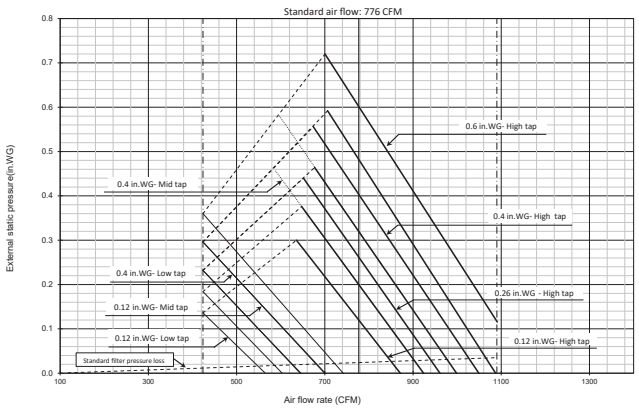
RAV-SM122BTP-UL



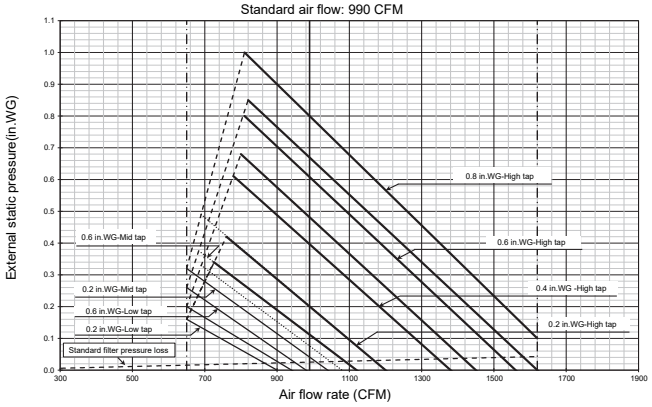
RAV-SM182BTP-UL



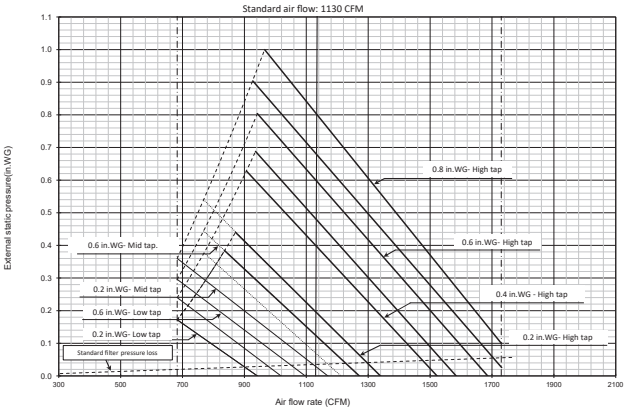
RAV-SM242BTP-UL



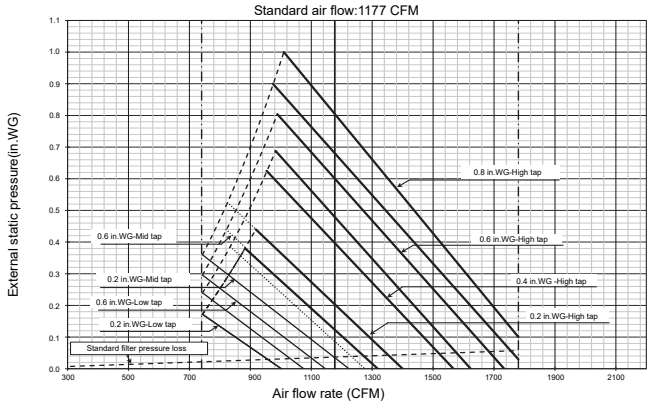
RAV-SM302BTP-UL



RAV-SM362BTP-UL, RAV-SM422BTP-UL



RAV-SM482BTP-UL



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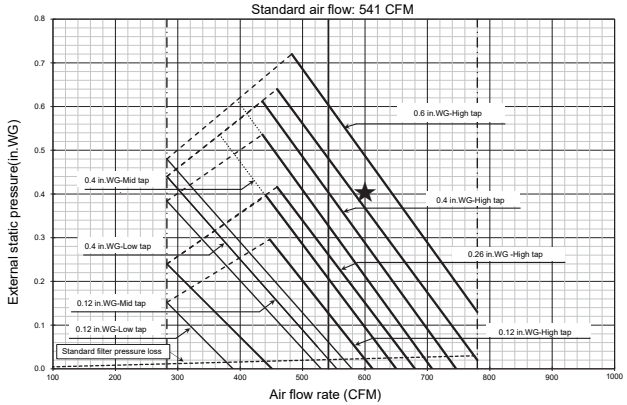
The concealed duct unit has 7 steps of static pressure (RAV-SM122 ~ 242BTP-UL is 0.12 – 0.6 in. WG, RAV-SM302 ~ 482BTP-UL is 0.12 – 0.8 in. WG) adjustment to meet the installation site requirements / conditions.
With these steps there are different speed fan taps associated to select correct air flow.
For meeting the site requirement / conditions, make sure the external static pressure and air flow are determined.
Plot the external static pressure and air flow on the below graph to determine the right speed fan step setting.

For example : Job site requirement is to deliver 600 CFM at 0.4 in. WG external static pressure. Using the below graph, external static pressure on vertical axis and air flow on horizontal axis, the star mark indicates the job site requirement.
The star mark is below 0.6 in. WG high speed fan tap line, which means the unit needs to be set to 0.6 in WG external static pressure with high speed fan tap.
Please follow the process described in application controls of this manual for set up external static pressure.



NOTE

Supply air CFM will follow the solid line fan curve shown in the above graph if there is any change in the external static pressure.
Supply air volume for medium and low fan speed tap is also set by remote controller. It will follow the dotted line fan curve in the graph.

6 Duct design

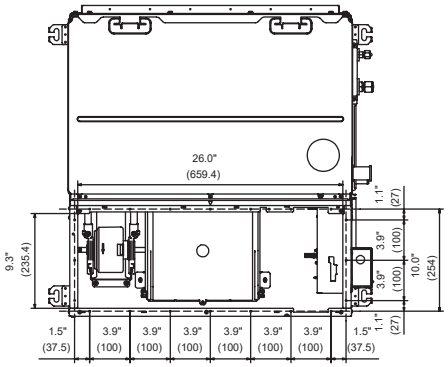
■ Arrangement

(Unit: in (mm))

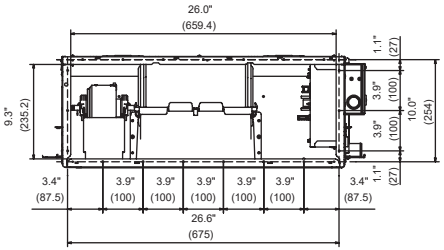
Referring to the following dimensions, manufacture duct at the local site.

SM122, SM182

<Under air intake>

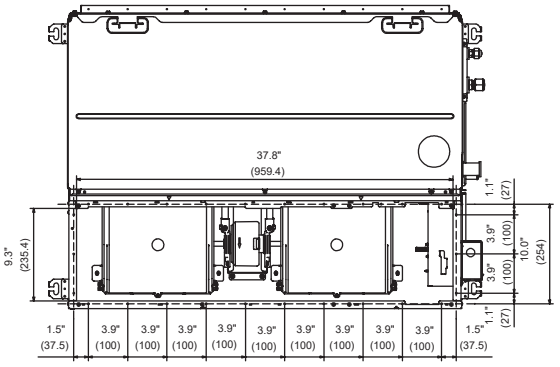


<Back air intake>

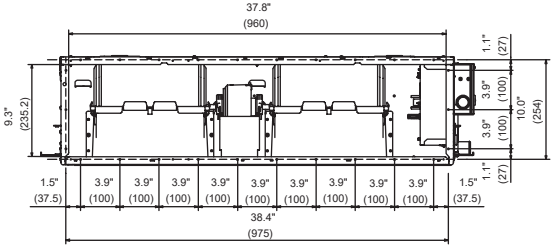


SM242

<Under air intake>

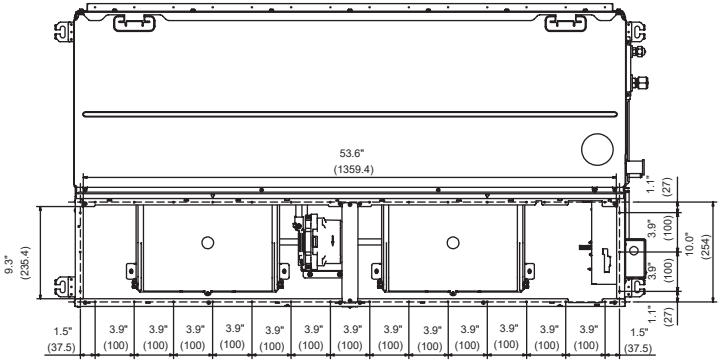


<Back air intake>

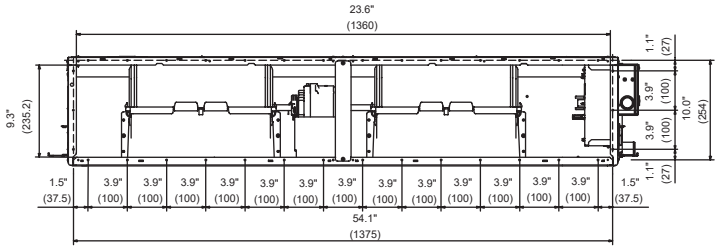


SM302, SM362, SM422, SM482

<Under air intake>



<Back air intake>



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7 Refrigerant piping

⚠ CAUTION

When the refrigerant pipe is long, provide support brackets at intervals of 8'22" to 9'10" (2.5 m to 3 m) to clamp the refrigerant pipe. Otherwise, abnormal sound may be generated.
Use the flare nut attached with the indoor unit or R410A flare nut.

■ Permissible piping length and height difference

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

■ Pipe size (Unit: in (mm))

Model RAV	Pipe size	
	Gas side	Liquid side
SM122, SM182	1/2"(12.7)	1/4" (6.4)
SM242 to SM482	5/8" (15.9)	3/8" (9.5)

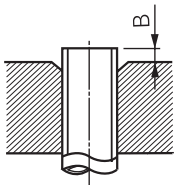
■ Connecting refrigerant piping

Flaring

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

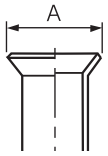
Projection margin in flaring: B (Unit: in (mm))

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



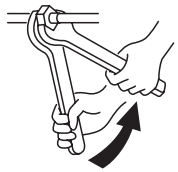
Flaring diameter size: A (Unit: in (mm))

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



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

- The sealed gas was sealed at the atmospheric pressure so when the flare nut is removed, therewill 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.

Unit : ft•lbs (N•m)

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

- Tightening torque of flare pipe connections.
  Pressure of R410A is higher than that of R22. (Approx. 1.6 times) Therefore, using a torque wrench, tighten the flare pipe connecting sections which connect the indoor and outdoor units of the specified tightening torque.
  Incorrect connections may cause not only a gas leak, but also a trouble of the refrigeration cycle.

⚠ 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, use those manufactured exclusively for R410A.

Refrigerant amount to be added

For addition of the refrigerant, add refrigerant “R410A” 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 (R410A, R134a).

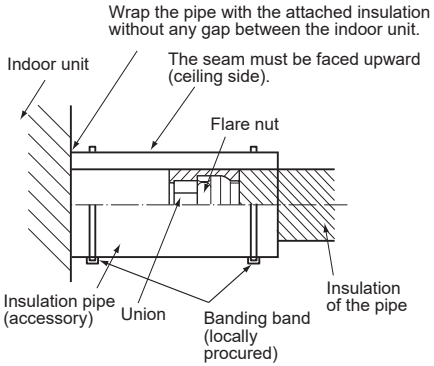
Insulation process

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

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

REQUIREMENT

- Apply the 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 insulation with its slits facing up (ceiling side).



8 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.

⚠ CAUTION

- For power supply specifications, follow the Installation Manual of outdoor unit.
- Do not connect 208/230V~60 Hz 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 system interconnection wires duringpeeling 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.

■ System interconnection wires specifications

System interconnection wires*	AWG16 or more (H07RN-F or 60245 IEC 66)	Up to 229'7" (70 m)

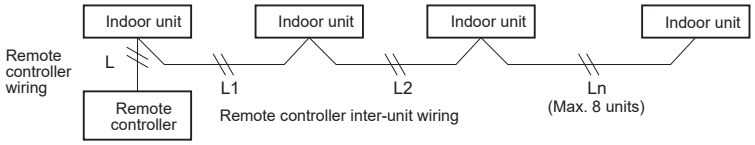
*Number of wire x wire size

Remote controller wiring

Remote controller wiring, remote controller inter-unit wiring	Wire size: AWG20 to AWG16	
Total wire length of remote controller wiring and remote controller inter-unit wiring = L + L1 + L2 + … Ln	In case of wired type only	Up to 1640' 5" (500 m)
	In case of wireless type included	Up to 1312' 4" (400 m)
Total wire length of remote controller inter-unit wiring = L1 + L2 + … Ln		Up to 656' 2" (200 m)

⚠ CAUTION

The remote controller wire and system interconnection 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.



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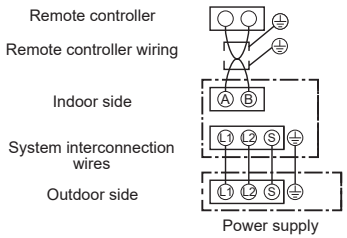
■ Wiring between indoor unit and outdoor unit

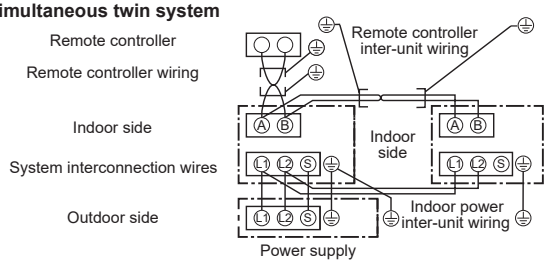
1. Figure below shows the wiring connections between the indoor and outdoor units and between the indoor units and remote controller. The wires indicated by the broken lines or dot-and-dash lines are provided locally.
2. Refer to the both indoor and outdoor unit wiring diagrams.
3. The power of the indoor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

Wiring diagram

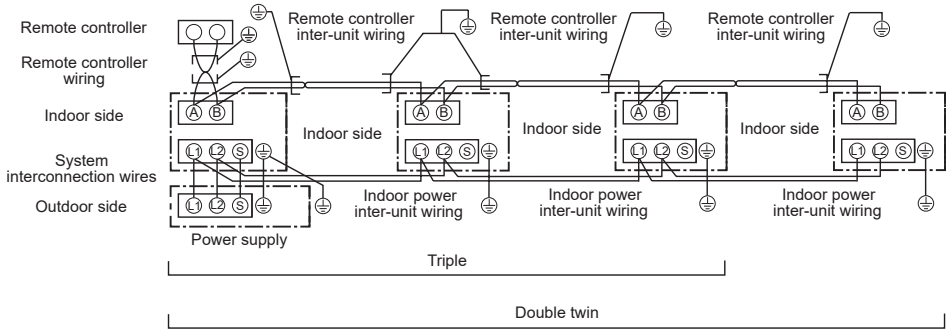
Single system



Simultaneous twin system



Simultaneous triple and double twin system



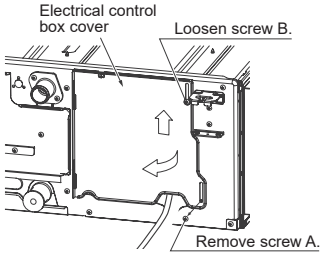
* Use 2-core shield wire (MVVS AWG20 to AWG16 or more) for the remote controller wiring in the simultaneous twin, simultaneous triple and simultaneous double twin systems to prevent noise problems. Connect both ends of theshield wire to earth leads.
* Connect earth wires for each indoor unit in the simultaneous twin, simultaneous triple and simultaneous doublet win systems.

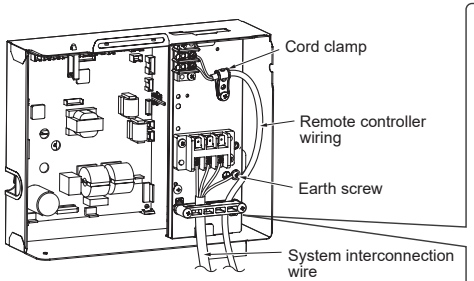
■ Wire connection

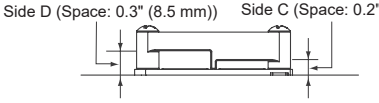
REQUIREMENT

- Connect the wires matching the terminal numbers. Incorrect connection causes troble.
- Pass the wires through the bushing of wire connection holes of the indoor unit.
- Keep a margin (Approx. 3.9" (100 mm)) on a wire to hang down the electrical control box 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.

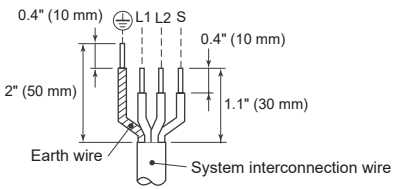


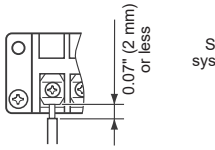




Select side C or D for the power cable clamping position referring to the following table according to the cable type and diameter.
* Cable clamp can be attached on either right or left side.
When twin system are connected, clamp two cables with one cable clamp.

Wire type	Specification	Cable clamping position
Cabtyre cable	4-core stranded wire AWG14	Side D
Cabtyre cable	4-core stranded wire AWG16	Side C



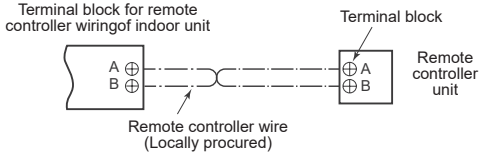


See the figure on the left for system interconnection wires to the terminal block.

■ Remote controller wiring

Strip off approx. 0.4" (9 mm) the wire to be connected.

Wiring diagram

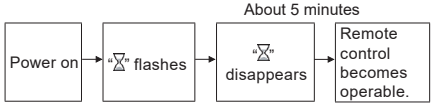


9 Applicable controls

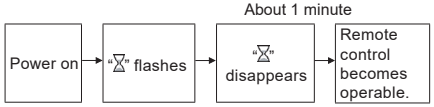
REQUIREMENT

It takes some time before the remote control becomes operable when the remote control is used for the first time. This is not a malfunction.

<When the power is turned on for the first time after installation>
It takes about 5 minutes before the remote control becomes operable.



<When the power is turned on from the second time>
It takes about 1 minute before the remote control becomes operable.



- 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.

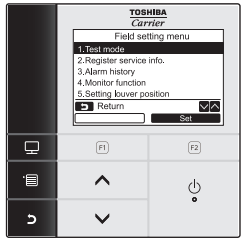
■ Basic procedure for changing settings

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

⚠ CAUTION

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

■ Field setting menu



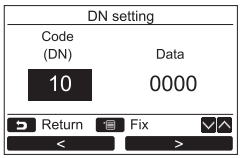
1 **Push the [MENU] button to display the menu screen.**
Push and hold the [MENU] button and the [∨] button at the same time to display the "Field setting menu".
→Push and hold the buttons for more than 4 seconds.
Push the [CANCEL] button to return.

Item	Function
1. Test mode	Settings for when performing the test operation after installation
2. Register service info	Registration of information about the contact number for service, model name and serial number of the indoor unit and outdoor unit
3. Alarm history	List of latest 10 alarm data: information of check code, date, time, and unit
4. Monitor function	Monitoring data of sensor temperature, rotating speed of the compressor or other factor.
5. Setting louver position	Change the louver indication setting to match the indoor unit type.
6. Setting timer operation mode	Set whether or not the operation mode can be selected when setting the schedule timer.
7. DN setting	Advanced settings using DN code

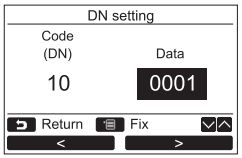
■ DN setting

Perform the advanced settings for the air conditioner. Carry out the setting operation while the indoor unit is stopped. (Turn off the air conditioning unit before starting the setting operation.)

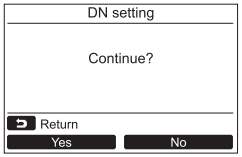
2 **Push the [∧] / [∨] button to select "7. DN setting" on the "Field setting menu" screen, then push the " Set" [F2] button.**
→The fan and louver of the indoor unit operate. When the group control is used, the fan and louver of the selected indoor unit operate.



3 **Move the cursor to select "Code(DN)" with the " < " [F1] button, then set "Code(DN)" with the [∧] / [∨]button.**



4 **Move the cursor to select "Data" with the " > " [F2] button, then set "Data" with the [∧] / [∨] button.**



5 **Push the [MENU] button to set the other Code (DN) and Data. After "Continue?" is displayed on the screen, push the " Yes" [F1] button.**

6 **Push the " No" [F2] button to finish the setting operation. " ⧖ Setting" appears on the screen for a while, then the screen returns to the "Field setting menu" screen.**
→ Pushing the " No" [F2] button displays the unit selection screen when the group control is used. Push the [CANCEL] button on the unit selection screen to finish the setting operation. " ⧖ Setting" appears on the screen for a while, then the screen returns to the "Field setting menu" screen.

■ 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 ***3***.
- For the SET DATA of procedure ***4***, select a SET DATA of the external static pressure to be set up from the following table.

SET DATA	External static pressure	
0000	0.12 in.WG	SM122 to SM242 (Factory default)
0001	0.26 in.WG	—
0002	0.20 in.WG	—
0003	0.40 in.WG	—
0004	0.32 in.WG	—
0005	0.48 in.WG	—
0006	0.60 in.WG	—

SET DATA	External static pressure	
0000	0.20 in.WG	SM302 to SM482 (Factory default)
0001	0.12 in.WG	—
0002	0.40 in.WG	—
0003	0.60 in.WG	—
0004	0.48 in.WG	—
0005	0.68 in.WG	—
0006	0.80 in.WG	—

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■ 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 ***3***, specify [01].
- For the [SET DATA] in Procedure ***4***, 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

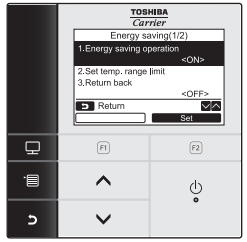
When it is difficult to obtain satisfactory heating due to installation place of the indoor unit or structure of the room, the detection temperature of heating can be raised. Also use a circulator or other device to circulate heat air near the ceiling.
Follow to the basic operation procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).

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

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

■ Energy saving

Set for the energy saving operation: Energy saving operation, Set temp. range limit, Return back and Saving operation.



1 **Push the [^] / [v] button to select “Energy saving” on the menu screen, then push the “ Set Set” [F2] button.**

2 **Push the [^] / [v] button to select the item to set.**

3 **Push the “ Set Set” [F2] button.**

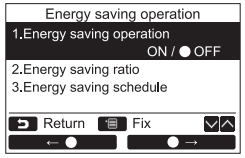
Item	Function
1. Energy saving operation	Perform the power saving operation of the air conditioner.
2. Set temp. range limit	Set the temperature range limit of the remote control operation.
3. Return back	Set the function that changes the temperature back to the specified temperature automatically if the temperature has been changed on the remote control.
4. Saving operation	Performs operation by suppressing excessive heating or excessive cooling through automatic correction of the temperature set point. * “No function” is displayed in the case of a model for which the saving operation cannot be set.

⚠ CAUTION

Refer to the Owner’s Manual supplied with the air conditioner about “Energy saving operation”, “Saving operation”.

■ Energy saving operation

Set for the power saving operation of the air conditioner.

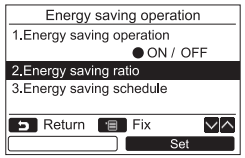


1 **Push the [∧] / [∨] button to select "1. Energy saving operation" on the "Energy saving" screen.**

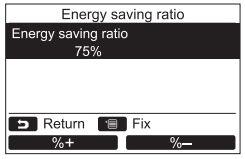
2 **To start the Energy saving operation:**
After setting "2. Energy saving ratio" and "3. Energy saving schedule", push the "←● ←●" [F1] button to select "ON", then push the [MENU] button.
To stop the Energy saving operation:
Push the" ●→ ●→" [F2] button to select "OFF", then push the [MENU] button.

Energy saving ratio

Carry out the setting operation while the indoor unit is stopped. (Turn off the air conditioning unit before starting the setting operation.)



1 **Push the [∧] / [∨] button to select "2. Energy saving ratio" on the "Energy saving operation" screen, then push the " Set Set" [F2] button.**



2 **Push the " %+ %+" [F1] / " %– %-" [F2] button to set the value.**
→The Energy saving ratio can be set within the range from 50% to 100% by 1%. The lower the value is set, the higher the power saving effect becomes.

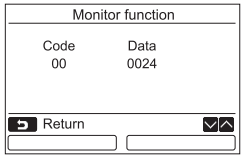
3 **Push the [MENU] button.**
→" Setting" appears on the screen, then the screen returns to the "Energy saving operation" screen.

NOTE

- Cooling / heating performance may be reduced a little because its power is saved during the Energy saving operation.
- " " appears on the display when the Energy saving operation is activated.
- The Energy saving operation cannot be set on the Follower remote control when the dual remote con trol system is used.
- The remote control may not be used for setting the Energy saving operation depending on the settings of the central control remote control or the outdoor unit.
- The Energy saving schedule operation is not available when the clock display is blinking (the clock has not been adjusted).

■ Remote controller switch monitoring function

This function is available to call the service monitor mode from the remote controller during a test run to acquire temperatures of sensors of the remote controller, indoor unit, and outdoor unit.



1 **Push the [∧] / [∨] button to select "4. Monitor function" on the "Field setting menu" screen, then push the " Set Set" [F2] button.**
→Push the [∧] / [∨] button to select the code to check data.

2 **Refer to the Installation Manual supplied with the indoor unit or outdoor unit or service manual for details about the check code and data.**

3 **Push the [CANCEL] button to return to the "Field setting menu" screen.**

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)
F3	Filter sign time

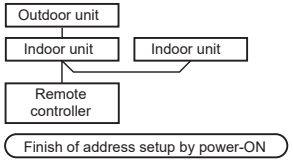
Outdoor unit data	
CODE No.	**Data name**
60	Outdoor unit heat exchanger (coil) temperature (TE)
61	Outside air temperature (TO)
62	Compressor discharge temperature (TD)
63	Compressor suction temperature (TS)
64	—
65	Heatsink temperature (THS)
6A	Operating current (x1/10)
F1	Compressor cumulative operating hours (x100 h)

■ Group control

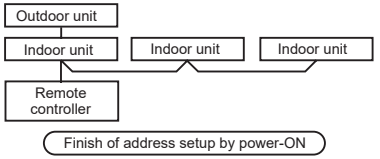
Simultaneous twin, triple or double twin system

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
- Three indoor units for the triple system
- Four indoor units for the double-twin system

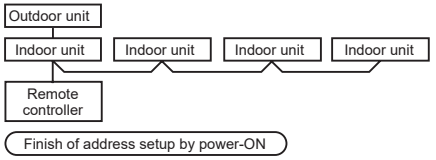
▼ Twin system



▼ Triple system



▼ Double twin



- 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.

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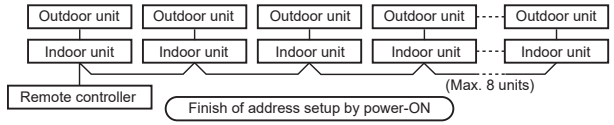
Group control for system of multiple units

One remote controller can control maximum 8 indoor units as a group.

▼ 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 master indoor unit of follower 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.

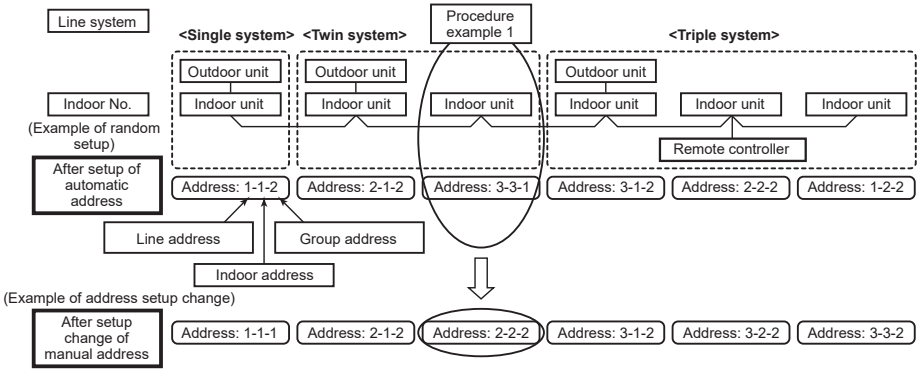
Required time up to the finish of automatic addressing is approx. 5 minutes.

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 simultane ous twin and simultaneous triple unit is controlled as a group by a remote controller.

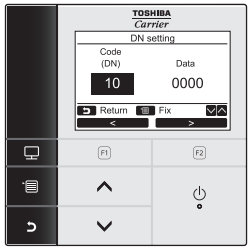
(Example) Group control for complex system



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.

[Procedure example]

Manual address setup procedure
While the operation stops, change the setup.
(Stop the operation of the unit.)



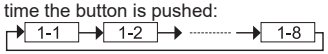
1 **Push the [MENU] button to display the menu screen.**

Push and hold the [MENU] button and the [∨] button at the same time to display the "Field setting menu".
→Push and hold the buttons for more than 4 seconds.

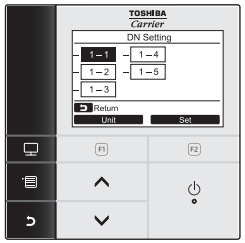
Push the [CANCEL] button to return. Push the [∧] / [∨] button to select "DN setting" on the "Field setting menu" screen, then push the " Set" [F2] F2] button.
→The fan and louver of the indoor unit operate. When the group control is used, the fan and louver of the selected indoor unit operate.

Select the group-controlled function on the menu screen, then push the " Set" [F2] F2] button.

Push the " Unit" [F1] F1] button to select the unit to set.
→The selected unit changes as follows each time the button is pushed:



Push the " Set" [F2] F2] button.
→The setting display for the selected unit appears.
(For a group control, No. of the firstly displayed indoor unit becomes the header unit.)



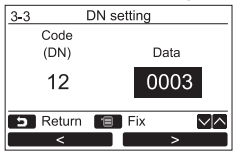
(* Display changes according to the model No. of indoor unit.)

2 **The indoor UNIT No. in the group control is displayed in order. Select the indoor unit of which setup is changed.**
In this time, the position of the indoor unit of which setup is changed can be confirmed because fan of the selected indoor unit operate.

3

1. Specify CODE No. [**12**] with Move the cursor to select "Code(DN)" with the " <" [F1] F1] button, then set "Code(DN)" with the [∧] / [∨] button.
   (CODE No. [**12**]: Line address)
2. Change the line address from [**3**] to [**2**] with Move the cursor to select "Data" with the " >" [F2] F2] button, then set "Data" with the [∧] / [∨] button.
3. Push the [MENU] button to set the other Code (DN) and Data. After "Continue?" is displayed on the screen, push the " Yes" [F1] F1] button.

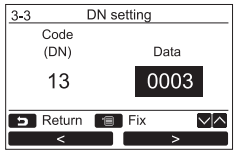
Indoor UNIT No. before setup change is displayed.

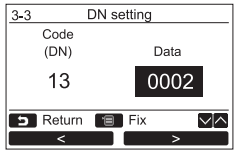


4

1. Specify CODE No. [**13**] with Move the cursor to select "Code(DN)" with the " <" [F1] F1] button, then set "Code(DN)" with the [∧] / [∨] button.
   (CODE No. [**13**]: Indoor address)
2. Change the Indoor address from [**3**] to [**2**] with Move the cursor to select "Data" with the " >" [F2] F2] button, then set "Data" with the [∧] / [∨] button.
3. Push the [MENU] button to set the other Code (DN) and Data. After "Continue?" is displayed on the screen, push the " Yes" [F1] F1] button.

Indoor UNIT No. before setup change is displayed.

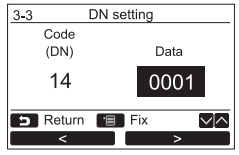


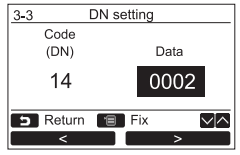


5

1. Specify CODE No. [**14**] with Move the cursor to select “Code(DN)” with the “ < ” [F1] F1] button, then set “Code(DN)” with the [∧] / [∨] button.
   (CODE No. [**14**]: Group address)
2. Change the SET DATA from [**0001**] to [**0002**] with Move the cursor to select “Data” with the “ > ” [F2] F2] button, then set “Data” with the [∧] / [∨] button.
   (SET DATA [Header unit: 0001] [Follower unit: 0002])
3. Push the [MENU] button to set the other Code (DN) and Data. After “Continue?” is displayed on the screen, push the “ Yes ” Yes” [F1] button.

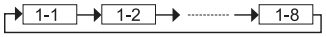
Indoor UNIT No. before setup change is displayed.





6 **If there is other indoor unit to be changed, repeat procedure *2* to *5* to change the setup.**
When the above setup has finished, push Select the group-controlled function on the menu screen, then push the “ Set ” Set” [F2] F2] button.

Push the “ Unit ” unit” [F1] F1] button to select the unit to set.
→The selected unit changes as follows each time the button is pushed:



Push the “ Set ” Set” [F2] F2] button.
→The setting display for the selected unit appears.

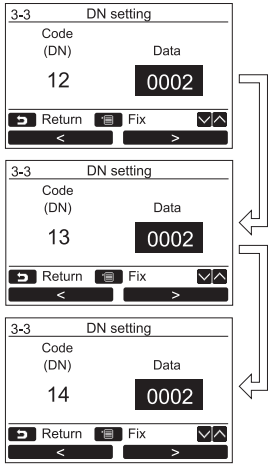
before change of setup, specify CODE No. [**12**], [**13**], [**14**] in order with Move the cursor to select “Code(DN)” with the “ < ” [F1] F1] button, then set “Code(DN)” with the [∧] / [∨] button. and then check the changed contents.

Address change check Before change: [**3-3-1**] → After change: [**2-2-2**]

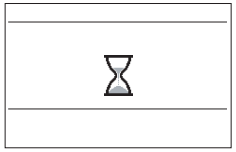
The contents of which setup was changed.

(In this case, procedure from ***2*** is repeated.)

Indoor UNIT No. before setup change is displayed.



7 **After check of the changed contents, Push the “ No ” No” [F2] F2] button to finish the setting operation. “ ⧖ Setting” appears on the screen for a while, then the screen returns to the “Field setting menu” screen.**
→Pushing the “ No ” No” [F2] F2] button displays the unit selection screen when the group control is used. Push the [CANCEL] button on the unit selection screen to finish the setting operation. “ ⧖ Setting” appears on the screen for a while, then the screen returns to the “Field setting menu” screen.



■ 46 °F (8 °C) operation

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

1 **Push the [MENU] button to display the menu screen.**

Push and hold the [MENU] button and the [∨] button at the same time to display the “Field setting menu”.
→Push and hold the buttons for more than 4 seconds.

Push the [∧] / [∨] button to select “DN setting” on the “Field setting menu” screen, then push the “ Set ” Set” [F2] F2] button.
→The fan and louver of the indoor unit operate. When the group control is used, the fan and louver of the selected indoor unit operate. Specify CODE No. [D1]

Move the cursor to select “Code(DN)” with the “ < ” [F1] F1] button, then set “Code(DN)” with the [∧] / [∨]button.

Move the cursor to select “Data” with the “ > ” [F2] F2] button, then set “Data” with the [∧] / [∨] button.

SET DATA	46 °F (8 °C) Operation setting
0000	None (Factory default)
0001	46 °F (8 °C) Operation setting

Push the [CANCEL] button to return.

EN

10 Test run

■ Before test run

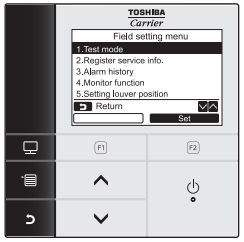
- Before turning on the power supply, carry out the following procedure.
  1) By using 500 V-megger, check that resistanceof 1MΩ or more exists between the terminal block 1 to 3 and the earth (grounding).
     If resistance of less than 1MΩ is detected, do not run the unit.
  2) Check the valve of the 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 wired remote controller as usual.
For the procedure of the operation, refer to the attached Owner's Manual.
A forced test run can be executed in the following procedure even if the operation stops by 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.



1 **Push the [MENU] button to display the menu screen.**

Push and hold the [MENU] button and the [∨] button at the same time to display the "Field setting menu".
→Push and hold the buttons for more than 4 seconds.

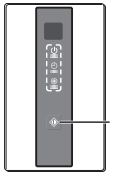
Item	Function
1. Test mode	Settings for when performing the test operation after installation
2. Register service info	Registration of information about the contact number for service, model name and serial number of the indoor unit and outdoor unit
3. Alarm history	List of latest 10 alarm data: information of check code, date, time, and unit
4. Monitor function	Monitoring data of sensor temperature, rotating speed of the compressor or other factor.
5. Setting louver position	Change the louver indication setting to match the indoor unit type.
6. Setting timer operation mode	Set whether or not the operation mode can be selected when setting the schedule timer.
7. DN setting	Advanced settings using DN code

Push the [CANCEL] button to return.

Wireless 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.

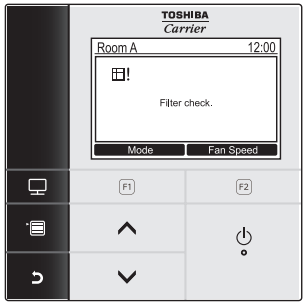
11 Maintenance

<Daily maintenance>

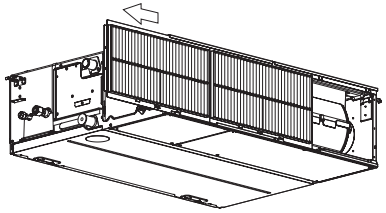
▼ Cleaning of air filter

If ▦ is displayed on the remote controller, maintain 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.**

3 **After cleaning, push FILTER.**
▦ display disappears.

⚠ CAUTION

- Do not start the air conditioner while leaving air filter removed.
- (▦ indication will be turn off.)

▼ 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 (Once a year)

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.

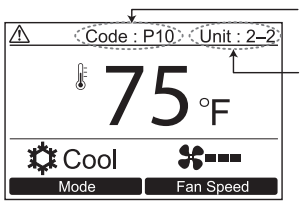
▼ Maintenance List

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, louvres	Indoor	Dust / dirt, scratches	Wash them when they are contaminated or apply repair coating.
Exterior	Outdoor	• Rust, peeling of insulator • Peeling / lift of coat	Apply repair coating.

EN

12 Troubleshooting

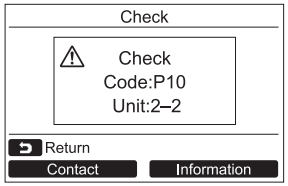
■ Confirmation and check



When an error has occurred in the air conditioner, the check code and the unit number of the indoor unit appear on the display of the remote control.

* The check code appears only while the unit is running.

Push the [MONITOR] button or [CANCEL] button to display the check information screen.



While the check information screen appears:
Push the " Contact" [F1] button to display the contact number for service.
Push the " Information" [F2] button to display the model name and serial number of the unit.

■ Error codes and parts to be checked

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit			Main defective parts	Judging device	Parts to be checked / error description	Air conditioner status
Indication	Operation Timer Ready GR GR OR						
E01	◎	●	●	No header remote controller Remote controller communication error	Remote controller	Incorrect remote controller setting --- The header remote controller has not been set (including two remote controllers). No signal can be received from the indoor unit.	*
E02	◎	●	●	Remote controller transmission error	Remote controller	System interconnection 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 IPDU-CDB communication error	Indoor	System interconnection wires, indoor P.C. board, outdoor P.C. board --- Serial communication error between indoor unit and outdoor unit	Auto-reset
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
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	◎	◎	●	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	◎	◎	●	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	◎	◎	○	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	◎	◎	○	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	◎	◎	○	TL sensor error	Outdoor	TL sensor may be displaced, disconnected or short-circuited.	Entire stop
F08	◎	◎	○	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	◎	◎	●	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

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit			Main defective parts	Judging device	Parts to be checked / error description	Air conditioner status
Indication	Operation Timer Ready GR GR OR		Flashing				
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
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
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 (1)	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)

Wired remote controller display	Wireless remote controller Sensor block display of receiving unit			Main defective parts	Judging device	Parts to be checked / error description	Air conditioner status
Indication	Operation Timer Ready GR GR OR		Flashing				
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
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.	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

EN

Warnings on Refrigerant Leakage

Check of concentration limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its concentration will not exceed a set limit.

The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R410A is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its concentration does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

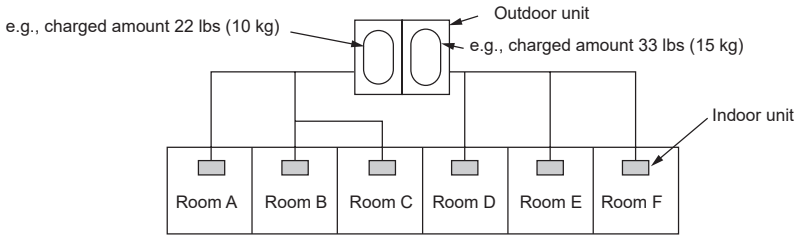
In a room where the concentration may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.The concentration is as given below.

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

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

▼ NOTE 1

If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.



For the amount of charge in this example:

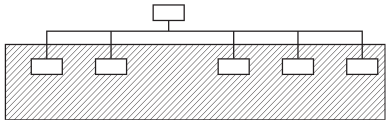
The possible amount of leaked refrigerant gas in rooms A, B and C is 22 lbs (10 kg.)

The possible amount of leaked refrigerant gas in rooms D, E and F is 33 lbs (15 kg.)

▼ NOTE 2

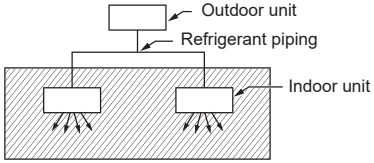
The standards for minimum room volume are as follows.

1) No partition (shaded portion)

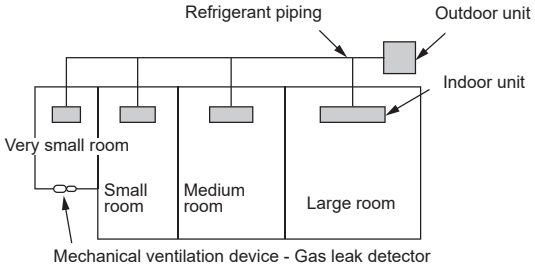


Important

2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).

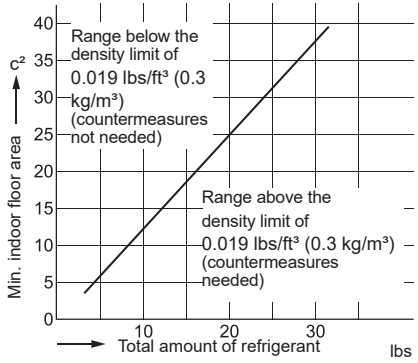


3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the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



▼ NOTE 3

The minimum indoor floor area compared with the amount of refrigerant is roughly as follows:
(When the ceiling is 8'9" ft (2.7 m) high)



■ Confirmation of indoor unit setup

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

REQUIREMENT

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

Indoor unit setup check sheet

Indoor unit	Indoor unit	Indoor unit	Indoor unit
Room name	**Room name**	**Room name**	**Room name**
Model	**Model**	**Model**	**Model**

Check indoor unit address. (For check method, refer to APPLICABLE CONTROLS in this manual.)
*In case of a single system, it is unnecessary to enter the indoor address. (CODE NO.: Line [12], Indoor [13], Group [14], Central control [03])

Line	Indoor	Group	Line	Indoor	Group	Line	Indoor	Group	Line	Indoor	Group

Central control address	Central control address	Central control address	Central control address

Various setup	Various setup	Various setup	Various setup

Have you changed high ceiling setup? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to APPLICABLE CONTROLS in this manual.) * In case of replacement of jumper blocks on indoor microcomputer P.C. board, setup is automatically changed.

External static pressure (CODE NO. [5d])		External static pressure (CODE NO. [5d])		External static pressure (CODE NO. [5d])		External static pressure (CODE NO. [5d])	
☐ NO CHANGE		☐ NO CHANGE		☐ NO CHANGE		☐ NO CHANGE	
☐ STANDARD	[0000]	☐ STANDARD	[0000]	☐ STANDARD	[0000]	☐ STANDARD	[0000]
☐ STATIC 1	[0001]	☐ STATIC 1	[0001]	☐ STATIC 1	[0001]	☐ STATIC 1	[0001]
☐ STATIC 2	[0002]	☐ STATIC 2	[0002]	☐ STATIC 2	[0002]	☐ STATIC 2	[0002]
☐ STATIC 3	[0003]	☐ STATIC 3	[0003]	☐ STATIC 3	[0003]	☐ STATIC 3	[0003]
☐ STATIC 4	[0004]	☐ STATIC 4	[0004]	☐ STATIC 4	[0004]	☐ STATIC 4	[0004]
☐ STATIC 5	[0005]	☐ STATIC 5	[0005]	☐ STATIC 5	[0005]	☐ STATIC 5	[0005]
☐ STATIC 6	[0006]	☐ STATIC 6	[0006]	☐ STATIC 6	[0006]	☐ STATIC 6	[0006]

Have you changed lighting time of filter sign? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to APPLICABLE CONTROLS in this manual.)

Filter sign lighting time (CODE NO. [01])		Filter sign lighting time (CODE NO. [01])		Filter sign lighting time (CODE NO. [01])		Filter sign lighting time (CODE NO. [01])	
☐ NO CHANGE		☐ NO CHANGE		☐ NO CHANGE		☐ NO CHANGE	
☐ NONE	[0000]	☐ NONE	[0000]	☐ NONE	[0000]	☐ NONE	[0000]
☐ 150H	[0001]	☐ 150H	[0001]	☐ 150H	[0001]	☐ 150H	[0001]
☐ 2500H	[0002]	☐ 2500H	[0002]	☐ 2500H	[0002]	☐ 2500H	[0002]
☐ 5000H	[0003]	☐ 5000H	[0003]	☐ 5000H	[0003]	☐ 5000H	[0003]
☐ 10000H	[0004]	☐ 10000H	[0004]	☐ 10000H	[0004]	☐ 10000H	[0004]

Have you changed detected temp. shift value? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to APPLICABLE CONTROLS in this manual.)

Detected temp. shift value setup (CODE NO. [06])		Detected temp. shift value setup (CODE No. [06])		Detected temp. shift value setup (CODE No. [06])		Detected temp. shift value setup (CODE No. [06])	
☐ NO CHANGE		☐ NO CHANGE		☐ NO CHANGE		☐ NO CHANGE	
☐ NO SHIFT	[0000]	☐ NO SHIFT	[0000]	☐ NO SHIFT	[0000]	☐ NO SHIFT	[0000]
☐ +1.8°F (+1°C)	[0001]	☐ +1.8°F (+1°C)	[0001]	☐ +1.8°F (+1°C)	[0001]	☐ +1.8°F (+1°C)	[0001]
☐ +3.6°F (+2°C)	[0002]	☐ +3.6°F (+2°C)	[0002]	☐ +3.6°F (+2°C)	[0002]	☐ +3.6°F (+2°C)	[0002]
☐ +5.4°F (+3°C)	[0003]	☐ +5.4°F (+3°C)	[0003]	☐ +5.4°F (+3°C)	[0003]	☐ +5.4°F (+3°C)	[0003]
☐ +7.2°F (+4°C)	[0004]	☐ +7.2°F (+4°C)	[0004]	☐ +7.2°F (+4°C)	[0004]	☐ +7.2°F (+4°C)	[0004]
☐ +9.0°F (+5°C)	[0005]	☐ +9.0°F (+5°C)	[0005]	☐ +9.0°F (+5°C)	[0005]	☐ +9.0°F (+5°C)	[0005]
☐ +10.8°F (+6°C)	[0006]	☐ +10.8°F (+6°C)	[0006]	☐ +10.8°F (+6°C)	[0006]	☐ +10.8°F (+6°C)	[0006]

Incorporation of parts sold separately	Incorporation of parts sold separately	Incorporation of parts sold separately	Incorporation of parts sold separately

Have you incorporated the following parts sold separately? If incorporated, fill check mark [×] in each [ITEM].
(When incorporating, the setup change is necessary in some cases. For setup change method, refer to Installation Manual attached to each part sold separately.)

Panel Standard panel	Panel Standard panel	Panel Standard panel	Panel Standard panel
☐ Others ( ) ☐ Others ( )	☐ Others ( ) ☐ Others ( )	☐ Others ( ) ☐ Others ( )	☐ Others ( ) ☐ Others ( )

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