

TOSHIBA

AIR CONDITIONER (MULTI TYPE)

Installation Manual

Outdoor Unit

Model name: _____

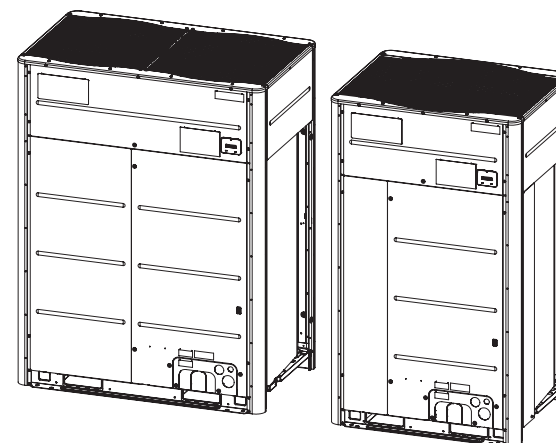
<Heat Recovery and Heat Pump Compatible Model>

MMY-SUG0801MT8P-E MMY-SUG1801MT8P-E
MMY-SUG1001MT8P-E MMY-SUG2001MT8P-E
MMY-SUG1201MT8P-E MMY-SUG2201MT8P-E
MMY-SUG1401MT8P-E MMY-SUG2401MT8P-E
MMY-SUG1601MT8P-E

MMY-SUG0801MT8JP-E MMY-SUG1801MT8JP-E
MMY-SUG1001MT8JP-E MMY-SUG2001MT8JP-E
MMY-SUG1201MT8JP-E MMY-SUG2201MT8JP-E
MMY-SUG1401MT8JP-E MMY-SUG2401MT8JP-E
MMY-SUG1601MT8JP-E

R32

For commercial use



Original instruction

Please read this Installation Manual carefully before installing the Air Conditioner.

- This Manual describes the installation method of the outdoor unit.
- For installation of the indoor unit, follow the Installation Manual attached to the indoor unit.

ADOPTION OF R32 REFRIGERANT

This air conditioner adopts the HFC refrigerant (R32) which does not destroy the ozone layer.
 This outdoor unit is designed exclusively for use with R32 refrigerant. Be sure to use in combination with a R32 refrigerant indoor unit.

Contents

1	Precautions for safety	3
2	Precautions of equipment using R32 refrigerant	9
	General (Installation space / area)	9
	(1) Installation conditions for each requirement	16
	1) Outdoor unit installation	16
	2) Indoor unit installation	16
	[1] [Confirmation of installation space and floor area]	16
	[2] [Safety measures]	17
	[3] [Leak detector installation]	18
	[4] [Safety Shut-off valve installation]	19
	[5] [To determine the limit on the amount of additional refrigerant]	21
3	Accessory parts	23
4	Installation of R32 refrigerant air conditioner	23
5	Selection of installation place	24
6	Carrying in the outdoor unit	25
7	Installation of the outdoor unit	26
8	Refrigerant piping	27
9	Electric wiring	43
10	Address setting	49
11	Communication setting	53
12	Applicable control settings	69
13	How to set up the cooling only indoor unit	70

14	Test run	70
15	Troubleshooting	74
16	Machine card and logbook	75

Thank you for purchasing this Toshiba air conditioner.

Moreover, as this installation manual includes the important articles concerning the Machinery Directive (Directive 2006/42/EC), please read through the manual and make sure you understand it. After installation, hand the Owner's Manual and Installation Manual (indoor unit and outdoor unit) to the customer and tell the customer to store them.

Generic Denomination: Air Conditioner

Definition of Qualified Installer or Qualified Service Person

The air conditioner must be installed, maintained, repaired and removed by a qualified installer or qualified service person.

When any of these jobs is to be done, ask a qualified installer or qualified service person to do them.

A qualified installer or qualified service person is an agent who has the qualifications and knowledge described in the table below.

Agent	Qualifications and knowledge which the agent must have
Qualified installer (*1)	<ul style="list-style-type: none"> The qualified installer is a person who installs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations. The qualified installer who is allowed to do the electrical work involved in installation, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. The qualified installer who is allowed to do the refrigerant handling and piping work involved in installation, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.
Qualified service person (*1)	<ul style="list-style-type: none"> The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations. The qualified service person who is allowed to do the electrical work involved in installation, repair, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. The qualified service person who is allowed to do the refrigerant handling and piping work involved in installation, repair, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. The qualified service person who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.

Definition of Protective Gear



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

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

Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.







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

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

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

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

■ Warning indications on the air conditioner unit

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

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 the instructions to install the air conditioner. Otherwise, falling down of the unit may occur, or the unit may cause noise, vibration or water leakage.
- Only a qualified installer(*1) or qualified service person(*1) is allowed to do installation work. If installation is carried out by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and/or vibration may result.
- If using separately sold products, make sure to use Toshiba specified products only. Using unspecified products may cause fire, electric shock, water leak or other failure.
- 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 service panel of the outdoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts. Only a qualified installer(*1) or qualified service person(*1) is allowed to remove the service panel of the outdoor unit and do the work required.
- Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breakers for both the indoor and outdoor units to the OFF position. Otherwise, electric shock may result.

-
- Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
 - Only a qualified installer(*1) or qualified service person(*1) is allowed to undertake work at heights using a stand of 50 cm or more or to remove the intake grille of the indoor unit to undertake work.
 - Wear protective gloves and safety work clothing during installation, servicing and removal.
 - Do not touch the aluminum fin of the outdoor unit. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.
 - Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off of the outdoor unit and result in injury.
 - When working at height, put a sign in place so that no-one will approach the work location before proceeding with the work. Parts or other objects may fall from above, possibly injuring a person below. Also, be sure that workers put on helmets.
 - When cleaning the filter 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.
 - The refrigerant used by this air conditioner is the R32.
 - Do not power other equipment such as vacuum pump from the outdoor unit. Doing so may cause a fire or a malfunction of the air conditioner.
 - Do not disassemble, modify or move the product yourself. Doing so may cause fire, electric shock, injury or water leaks.

-
- This appliance is intended to be used by expert or trained users in shops, in light industry, or for commercial use by lay persons.
 - We do not take any responsibility on the local design.

Selection of installation location

- Due to the use of the mildly flammable refrigerant R32, there are safety and legal installation conditions for installing equipment such as indoor units, outdoor units, Flow Selector and Shut-off valve units. Install each unit according to the section “Installation conditions for each equipment”.
- Do not install in a location where flammable gas may leaks are possible. If the gas should leak and accumulate around the unit, it may ignite and cause a fire.
- When transporting the air conditioner, wear shoes with protective toe caps, protective gloves and other protective clothing.
- When transporting the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands break.
- Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
- Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.
- Do not install in location where operation sound of the outdoor unit may cause a disturbance. (Especially at the boundary line with a neighbor, install the air conditioner while considering the noise)

Installation

- 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 failure.
- The designated bolts (M12) and nuts (M12) for securing the outdoor unit must be used when installing the unit.
- Install the outdoor unit properly in a location that is durable enough to support the weight of the outdoor unit. Insufficient durability may cause the outdoor unit to fall, which may result in injury.
- Install the unit in the prescribed manner for protection against strong wind and earthquake. Incorrect installation may result in the unit falling down, or other accidents.
- Be sure to fix the screws back which have been removed for installation or other purposes.

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 a injury.
- Tighten the flare nut with a torque wrench in the specified manner. Excessive tighten of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage.
- Ventilate the air if the refrigerant gas leaks during installation. If the leaked refrigerant gas comes into contact with fire, toxic gas may be produced.

- 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, it may ignite the R32 refrigerant and so noxious gas may be generated. For prevention, install according to the section “Installation conditions for each equipment”.
- 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.
- If refrigerant gas leaked during the installation work, ventilate the room immediately. If the leaked refrigerant gas comes in contact with fire, it may ignite the R32 refrigerant and so noxious gas may be generated. For prevention, Install according to the section “Precautions of equipment using R32”.

Electrical wiring

- Only a qualified installer(*1) or qualified service person(*1) is allowed to carry out the electrical work of the air conditioner. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and/or electrical leaks.
- When connecting the electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians and from heat, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- When executing address setting, test run, or troubleshooting through the checking window on the electrical control box, put on insulated heat-proof gloves, insulated shoes and other clothing to provide protection from electric shock. Otherwise you may receive an electric shock.

-
- 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.
 - Check that the product is properly earthed. (grounding work) Incomplete earthing may cause electric shock.
 - Do not connect the earth line to a gas pipe, water pipe, lightning conductor, or a telephone earth line.
 - After completing the repair or relocation work, check that the ground 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 cable must not be extended. Connection trouble in the places where the cable 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.
 - Do not supply power from the power terminal block equipped on the outdoor unit to another outdoor unit. Capacity overflow may occur on the terminal block and may result in fire.
 - When carrying out electric connection, use the wire specified in the Installation Manual and connect and fix the wires securely to prevent them applying external force to the terminals. Improper connection or fixing may result in fire.

Test run

- Before operating the air conditioner after having completed the work, check that the electrical parts 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.
- When you have noticed that some kind of trouble (such as when an error display has appeared, there is a smell of burning, abnormal sounds are heard, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself but set the circuit breaker to the OFF position, and contact a qualified service person. Take steps to ensure that the power will not be turned on (by marking “out of service” near the circuit breaker, for instance) until qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other failure.
- After the work has finished, be sure to use an insulation tester set (500V Megger) to check the resistance is 2MΩ or more between the charge section and the non-charge metal section (Earth section). If the resistance value is low, a disaster such as a leak or electric shock is caused at user’s side.
- Upon completion of the installation work, check for refrigerant leaks and check the insulation resistance and water drainage. Then conduct a test run to check that the air conditioner is operating properly.

Explanations given to user

- Upon completion of the installation work, tell the user where the circuit breaker is located. If the user does not know where the circuit breaker is, he or she will not be able to turn it off in the event that trouble has occurred in the air conditioner.

- If you have discovered that the fan grille is damaged, do not approach the outdoor unit but set the circuit breaker to the OFF position, and contact a qualified service person(*1) to have the repairs done. Do not set the circuit breaker to the ON position until the repairs are completed.
- After the installation work, follow the Owner's Manual to explain to the customer how to use and maintain the unit.

Relocation

- Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and/or vibration may result.
- When carrying out the pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air or other gas to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in rupture, injury or other trouble.
- Never recover the refrigerant into the outdoor unit. Be sure to use a refrigerant recovery machine to recover the refrigerant when moving or repairing. It is impossible to recover the refrigerant into the outdoor unit. Refrigerant recovery into the outdoor unit may result in serious accidents such as explosion of the unit, injury or other accidents.

(*1) Refer to the "Definition of Qualified Installer or Qualified Service Person."

CAUTION

This air conditioner adopts the HFC refrigerant (R32) which does not destroy the ozone layer.

- R32 refrigerant has a high working pressure and is apt to be affected by impurities such as water, oxidizing membrane, and oils. Therefore, during installation work, be careful that water, dust, previous refrigerant, refrigerating machine oil, or other substances do not enter the R32 refrigeration cycle.
- Special tools for R32 or R410A refrigerant are required for installation.
- For connecting pipes, use new and clean piping materials, and make sure that water and/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 3 mm.

Do not wash air conditioners with pressure washers.

- Electric leaks may cause electric shocks or fires.





Since the mildly flammable refrigerant R32 is used, for the installation conditions and safety precautions for indoor units, outdoor units, Flow Selector units, etc., refer to the following "Precautions for using R32 refrigerant" and do the installation works.

Precautions for using R32 refrigerant

Make sure installation, servicing, maintenance and repair comply with instructions from TOSHIBA and with applicable legislation (for example, national gas regulation) and are executed only by authorized people.

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;

Meanings of symbols displayed on the unit

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

WARNING

- Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources. (For example: open flames, an operating gas appliance or an operating electric heater.)
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.
- The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odor.

⚠ CAUTION

When a flammable refrigerant is used, all appliance shall be charged with refrigerant at the manufacturing location or charged on site as recommended by the manufacturer.

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

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part.
- Refrigerant tubing shall be protected or enclosed to avoid damage. Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operations shall be protected against mechanical damage.
- Piping shall be protected from damage during installation, operation and maintenance.
- When installing piping in the occupied space, protect the piping from accidental damage.
- Check the piping as described in [8 Refrigerant piping] [Airtightness test].
- Wherever possible, protection, piping and fixtures shall be protected against the environment and weather resistance.
- You must prepare for long-term expansion and contraction of piping.
- Indoor equipment and plumbing must be safely installed and protected from accidental rupture of equipment or plumbing from events such as furniture movements or home renovations.

2 Precautions of equipment using R32 refrigerant

General (Installation space / area)

- The installation of pipe-work shall be kept to a minimum.
- Pipe-work shall be protected from physical damage.
- The compliance with national gas regulations shall be observed.
- The mechanical connections shall be accessible for maintenance purposes.
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- When disposing of the product is used, be based on national regulations with properly processed.
- The servicing shall be performed only as recommended by the manufacturer.
- Where the appliance using flammable refrigerants is installed, Be aware that;
 - The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
 - The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
 - The appliance shall be stored so as to prevent mechanical damage from occurring.
- Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
- Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.

-
- Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
 - Provision shall be made for expansion and contraction of long runs of piping.
 - Piping in refrigerating systems shall be so designed and installed to minimize the likelihood hydraulic shock damaging the system.
 - Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.
 - Install the system according to this IM and avoid the likelihood hydraulic shock damaging the system.
 - Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.
 - Install the system according to this IM so that it does not shut off in the liquid refrigerant.
 - Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.
 - Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces. They should be checked for mechanical damage annually.
 - The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.
 - Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in Installation Manual.
 - Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described Installation Manual.

-
- When installing the system that uses flammable refrigerant in a non-ventilated space, it shall be installed in the large space or with safety equipment as designated below, so as to prevent the refrigerant from staying and causing a fire or explosion by the refrigerant leak.
 - Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.
 - The total refrigerant charge in the system cannot exceed the requirements for minimum floor area of the smallest room that is served. For minimum floor area requirements for indoor units, see the Installation and Owner's Manual of the outdoor unit.
 - When connecting to an outdoor unit of the R32 refrigerant and using a leak detector, always turn on the power of the indoor unit after installation except during service in order to detect refrigerant leakage and take safety measures.
 - Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
 - Only mechanical fittings can be used. (Example: Brazing + Flare connection)
 - Refrigerating systems shall use only permanent joints indoors except for site-made joints directly connecting the indoor unit to the refrigerant piping, or factory made mechanical joints in compliance with ISO 14903.

Unventilated area

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

Information on servicing

1. Check to the area

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

2. Work procedure

- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- When connecting to an outdoor unit of R32 refrigerant and using a leak detector, the fan may automatically operate even if the air conditioner is stopped when a refrigerant leak is detected. Be careful not to get injured by the fan.
- All installers and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

3. General work area

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

4. Checking for presence of refrigerant

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

5. Presence of fire extinguisher

- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand.
- Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

6. No ignition sources

- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
- Make sure that the exhaust port of the vacuum pump is not close to the ignition source and that ventilation is possible.

7. Ventilated area

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

8. Checks to the refrigeration equipment

- Where electrical components are being changed, installer shall be fit for the purpose and to the correct specification.
- At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt consult the manufacturer’s technical department for assistance.

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

9. Checks to electrical devices

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

10. Repairs to sealed components

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

NOTE

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

11. Repair to intrinsically safe components

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

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

12. Cabling

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

13. Detection of flammable refrigerants

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

- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

14. Leak detection methods

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

15. Removal and evacuation

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

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

16. Charging procedures

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

- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

17. Decommissioning

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required to reuse of reclaimed refrigerant.
- It is essential that electrical power is available before the task is commenced.
 - a) Become familiar with the equipment and its operation.
 - b) Isolate system electrically.
 - c) Before attempting the procedure ensure that:
 - Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - All personal protective equipment is available and being used correctly;
 - The recovery process is supervised at all times by a competent person;
 - Recovery equipment and cylinders conform to the appropriate standards.
 - d) Pump down refrigerant system, if possible.
 - e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

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

18. Labelling

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

19. Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.

- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriated refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.
- Do not use the unit until it is confirmed that the portion from which the refrigerant leaked is repaired.
- When installing, relocating, or servicing the air conditioner, use only the specified refrigerant (R32) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines.

(1) Installation conditions for each requirement

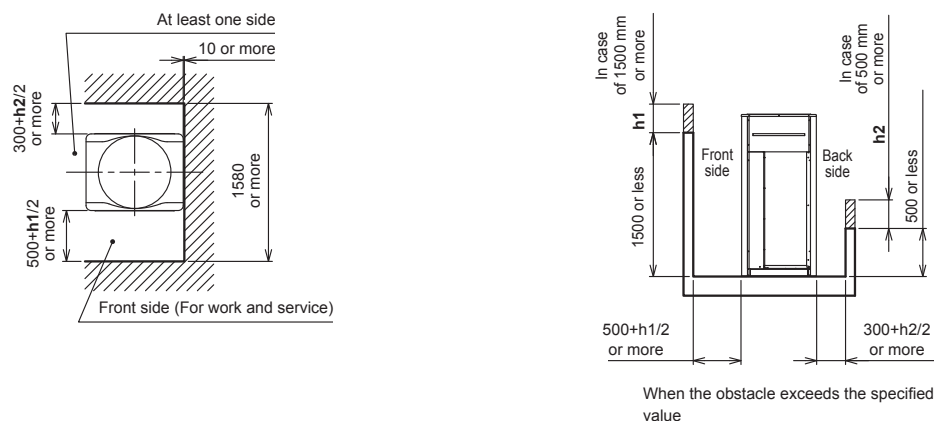
- To comply with the requirements of enhanced tightness refrigerating systems of IEC 60335-2-40, the system is equipped with the shut-off valves (Flow Selector unit, Shut-off valve unit), Leak detector and Battery kit. And each systems have the appropriate safety systems in according to the system specifications. In case the requirements of this manual are followed, no additional safety measures are needed.
- Follow the installation requirements below to ensure that the complete system is compliant to legislation. If you have any questions, please contact the dealer where you purchased the product. Depending on the conditions, safety measures (optional parts) may be required.
- System compliance has been completed to IEC60335-2-40 Ed6. If EN378 compliance is required please refer separately to EN378 for guidance.

1) Outdoor unit installation

Please observe the following warning and install according to "4. Installation of R32 refrigerant air conditioner".

⚠ WARNING

Basically the outdoor unit has to be installed in outdoor area. The outdoor unit has to be installed at least one side of 4 sides surrounding the unit open. When installing indoors such as in a machine room, it shall be installed in accordance with IEC60335-2-40. For other installation conditions, please contact the dealer where you purchased the product.



2) Indoor unit installation

For the installation of the indoor unit, refer to the installation manual attached to the indoor unit. For the indoor unit installation of R32 air conditioning system, check the following before installing.

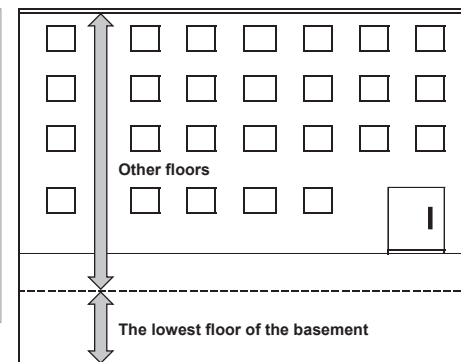
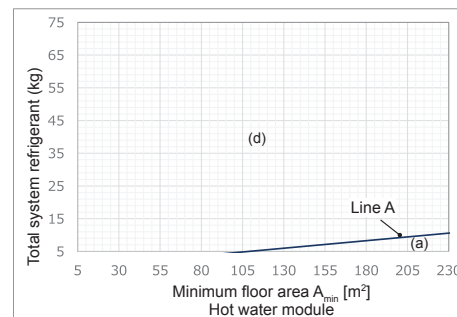
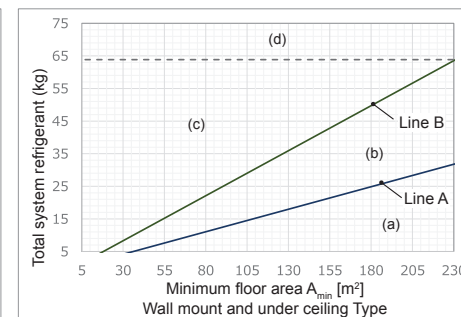
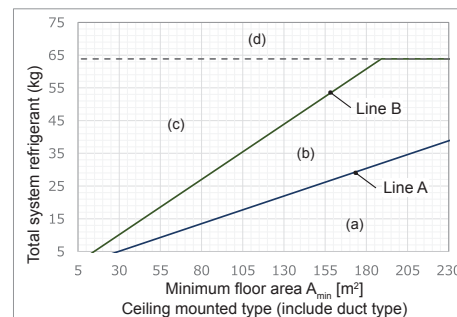
⚠ WARNING

- Appliance shall be installed, operated and stored in a room with a floor area larger than $[A_{min}] m^2$.
 - For appliances using R32 refrigerant connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct;
 - No auxiliary devices, which may be a potential ignition source, shall be installed in the duct work. (example: hot surfaces with a temperature exceeding 700°C and electric switching device)
 - There shall be no operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in case the floor area is less than the minimum floor area $A (m^2)$.
- For the applicable floor area and minimum floor area $[A_{min}]$, refer to [1] to [5] below.

- Piping shall be installed according to the instructions in "8 Refrigerant piping". The length of the connection pipe, types of Flow Selector unit and Shut-off Valve unit etc. are determined by the indoor floor area.

[1] [Confirmation of installation space and floor area]

- Make sure that the installation height and floor area of each indoor unit type meet the installation height and floor area specified by the total system refrigerant amount.
- Please refer to the attached "Installation data" for the numerical values of line A and line B in the graphs below.



	Other than the lowest basement floor	The lowest floor of the basement	LFL threshold
Area (a)	No safety measured required.	No safety measured required.	A large space of LFL/4 or less.
Area (b)	Leak detector required.	Leak detector and safety shut-off valve required.	A large space of LFL/4 - LFL/2.
Area (c)	Leak detector and safety shut-off valve required.	Installation not permitted.	A narrow space of LFL/2 or more.
Area (d)	Installation not permitted.	Installation not permitted.	Maximum allowable total refrigerant amount determined from LFL.

⚠ WARNING

- The total amount of refrigerant in the system must be less than or equal to the maximum allowable total amount of refrigerant.
The maximum allowable amount of refrigerant = (The number of connected indoor units) x 15.96 [kg] and the maximum is 63.85 [kg].
- Keep the installation height according to the indoor unit type.
 - Ceiling-mounted unit (include Duct type.): 2.2 m or more.
For Duct type, both inlet and outlet shall be placed at least 2.2 m.
Inlet and outlet shall not be located above the unit.
 - Wall-mounted and under ceiling unit : 1.8 m or more.
But install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.

NOTE

- The maximum total amount of refrigerant allowed depends on the area of the room the system serves and the room on the lowest floor of the basement.
- Please confirm that the condition for total system refrigerant amount is satisfied for [5] [To determine the limit on the amount of additional refrigerant].

If the installation becomes impossible in the condition of [1], redesign the system again.

[2] [Safety measures]

This unit is equipped with a refrigerant leak detector and safety Shut-off Valves for safety. For each indoor unit, the number of safety devices varies depending on the installation floor, total system refrigerant amount, indoor unit installation height, and LFL value. It's not necessary to install the safety devices when the air conditioning system is installed in a large space of LFL/4 or less.(each indoor room, outdoor area)

LD : Leak Detector
SV : Shut-off Valve
FS : Flow Selector

Area	Safety system	Safety measures	Safety system operation	subsequent status
(a)	No safety measures	0 pc. -	No safety system operation.	Not applicable
(a)(b)	Leak Detector only.	1 pc. LD	When a leak is detected, operation stops.	Operation cannot be continued.
(a)(b)(c)	Pump-down operation.	2 pcs. LD, FS unit or SV unit	When a leak is detected, a system does Refrigerant recovery to Outdoor unit side by pump-down operation and closes all safety shut-off valves. After that, all systems stop.	Operation cannot be continued. (Refrigerant system will be locked.)
(a)(b)(c)	Individual shut-off operation.	2 pcs. LD, FS unit (single port) or SV unit	When a leak is detected, safety Shut-off Valves close only for the indoor units which refrigerant is leaked. After that, all systems stop.	Operation cannot be continued only for the indoor units which refrigerant is detected. Other indoor units can continue to operate.

⚠ WARNING

- For the refrigerant leak detector to function, the unit shall be powered on at all times after installation, except during service.
- If LFL area is (c), install Battery kit in each applicable Flow Selector unit and Shut-off Valve unit. They can shut-off the refrigerant by Battery kits even in the event of a power failure. (Make sure there are no leaks before use as charging may not be in time during a continuous system power off.)

NOTE

- If there are multiple indoor units with different safety systems in refrigerant system, safety system behaviors may be different in each indoor unit

(Installation patterns for each safety measure)
The table below shows installation example of safety measures for each safety system. Position where Leak Detector and Flow Selector unit, Shut-off Valve unit can be installed is determined by room area, combination, indoor unit type and capacity, etc. For details, refer to [3] [Leak Detector installation] and [4] [Safety shut-off valve installation]. [Each safety system and installation example]

FS : Flow Selector

CODE No. [107]	Installation example	Case
[00]		When installing in a room corresponding to area (a), set the CODE No. [107] to [00]. No additional safety measures are required.
[01]		<p>When installing in a room corresponding to area (c), set the CODE No. [107] to [01] or [02]. Be sure to install a refrigerant leak detector. Be sure to connect the FS unit (or Shut-off Valve unit) and install the battery unit.</p> <p>When the CODE No. [107] is set to [01], the entire system will be stopped when refrigerant leakage is detected.</p> <p>※ In the [01] setting and [02] setting of the CODE No. [107], the position where the FS unit (or Shut-off Valve unit) can be installed is different.</p>

FS : Flow Selector

CODE No. [107]	Connection example	Case
[02]		<p>When installing in a room corresponding to area (c), set the CODE No. [107] to [01] or [02]. Be sure to install a refrigerant leak detector. Be sure to connect the FS unit (or Shut-off Valve unit) and install the battery unit.</p> <p>When the CODE No. [107] is set to [02], the corresponding indoor unit stops when refrigerant leakage is detected (other indoor units can continue operation).</p> <p>※ Indoor units connected to the multi port type FS unit cannot be set to [02] for indoor DN[107].</p> <p>※ In the [01] setting and [02] setting of the CODE No. [107], the position where the FS unit (or Shut-off Valve unit) can be installed is different.</p>
[03]		<p>When the CODE No. [107] is set to [03] by area (b), the entire system stops when refrigerant leakage is detected.</p> <p>This setting can only be used in rooms that fall under area (b). Be sure to install a refrigerant leak detector.</p>

a : Outdoor unit
b : Indoor unit
c : Leak detector

d : Single port type Flow Selector unit (or Shut-off Valve unit)
e : Multi port type Flow Selector unit
f : Battery unit

[3] [Leak Detector installation]

See Installation Manual included in Leak Detector for information on installing Leak Detector. The leak detector implements have safety measures to light up in red and to sound a buzzer, that will warn in case of a refrigerant leak.

For the Leak Detector installation to R32 air conditioning system, check the following before installing.

⚠ WARNING

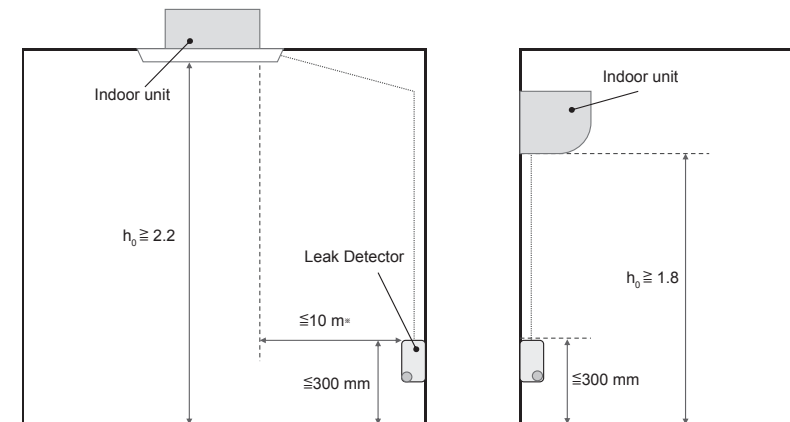
- The Leak Detector detector used as a safety device for the air conditioning system shall be used the specified Toshiba optional product.
- Leak Detector installation shall be complied with the following requirements.
 - 1, Leak Detector shall be installed in each room that requires a safety measure.
 - 2, The installation position shall be determined by the type and height of the indoor unit and the presence or the absence of obstacles between the indoor unit and the leak detector.
- Leak Detector shall be installed outside the indoor unit within a height of 300 mm from the floor.
- Leak Detector shall be located within 10 m horizontal distance in line sight of the unit and on a wall within the room in which the unit is installed, or 7 m, if not in line sight of the unit, and on a wall within the room in which the unit is installed. The distance from the unit to Leak Detector shall be measured as the shortest horizontal unobstructed path between the unit and the nearest Leak Detector.
- The alarm shall always be 15 dB(A) louder than the room background noise.
Leak detector can generate a 65 dB(A) alarm. (Sound pressure level, measured at a distance of 1 m from the alarm.)

If the surrounding environment is noisy in a particular room, we recommend that you use an external alarm (by local power supply) in that room.

This leak detector has output terminals to external ventilation and an external alarm.

When taking safety measures using external ventilation or an external alarm, install according to the installation manual for the leak detector.

[Installation positions of Leak Detectors]



※ It must be placed within a horizontal distance of 10 meters and on the wall in the room where the indoor unit is installed.

However, when it does not enter the field of view on a straight line from the Leak Detector, it is within 7 m at the shortest horizontal distance without obstacles and installed on the wall in the room where the indoor unit is installed.

NOTE

The leak detector generates visual and auditory warnings.

(The examples for safety device installations)

The location of the leak detector varies depending on the safety system and the room.

	Incorrect	Correct	Case
1			Install the Leak Detector in the same room as the connected indoor unit.
2			Group setting of indoor unit across FS unit (or Shut-off Valve unit) is not possible.
3			Only one Leak Detector can be connected to indoor units with a group setting.
4			Multiple refrigerant Leak Detectors cannot be connected to one indoor unit.
5			Only one Leak Detector can be connected to indoor units with a group setting. Install each indoor unit in a separate room, and do not set the group if a Leak Detector is required. ※ Multi port type FS unit cannot be used by setting the CODE No. [107] to [02] (Individual shut-off).

	Incorrect	Correct	Case
6			Only one Leak Detector can be connected to indoor units with a group setting. If indoor units installed in the same room are used in the group setting, the Leak Detector to be connected should be one in one group. ※ Multi port type FS unit cannot be used by setting the CODE No. [107] to [02] (Individual shut-off).
7			Install the Leak Detector in the same room as the connected indoor unit. ※ Multi port type FS unit cannot be used by setting the CODE No. [107] to [02] (Individual shut-off).

a : Outdoor unit
b : Indoor unit
c : Leak detector

d : Single port type Flow Selector unit (or Shut-off Valve unit)
e : Multi port type Flow Selector unit
f : Battery unit

FS : Flow Selector

[4] [Safety shut-off valve installation]

Flow Selector unit and Shut-off Valve unit can be used as safety shut-off valve.

In Pump-down operation and Individual shut-off operation, the position where the safety shut-off valve can be installed differs depending on the indoor unit, safety shut-off valve type, etc.

The installation position shall be determined according to the following.

○ Pump-down operation

For Pump-down operation, following 3 types of safety shut-off valves can be installed;

FS : Flow Selector
SV : Shut-off Valve

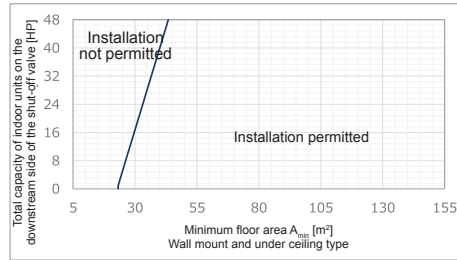
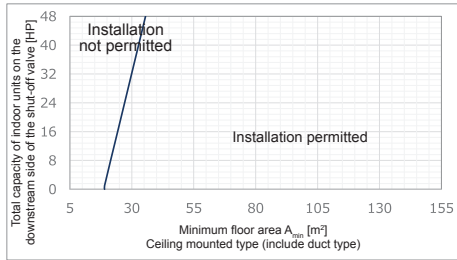
NO.	Type	System
1	FS unit (Multi port)	Heat recovery
2	FS unit (Single port)	Heat recovery
3	SV unit	Cooling only setting of heat recovery, Heat pump

• Flow Selector (FS) unit

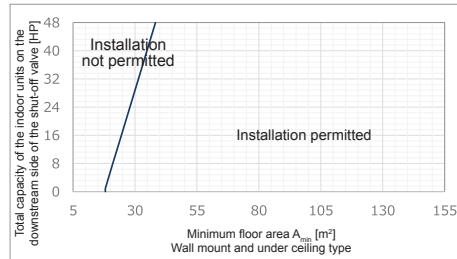
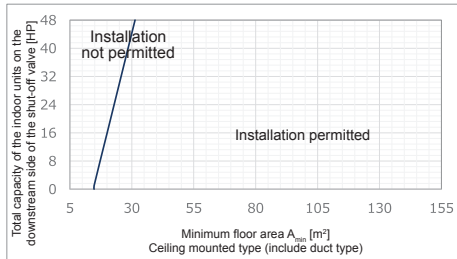
The installation availability line differs depending on the FS unit type (multi / single, horsepower, number of ports) and the length of the connecting pipe.

Example) Multi port types of 8 and 12 ports Shut-off valve secondary side (Max. pipe connection length 180 m)

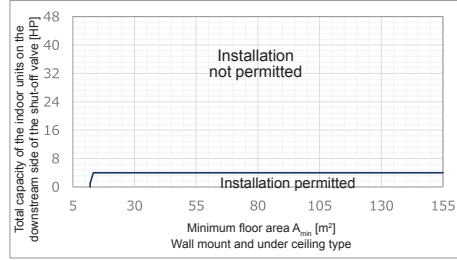
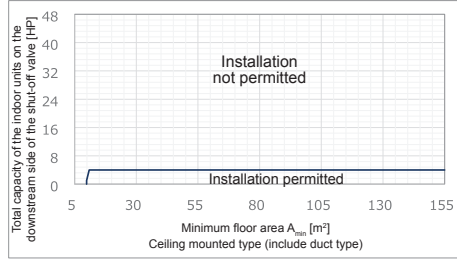
■ Flow Selector unit Multi-port type (12 ports and 8 ports type) In case that connection pipe length on the downstream side is 180 m. (Connection pipe length on the downstream side is total length of each port)



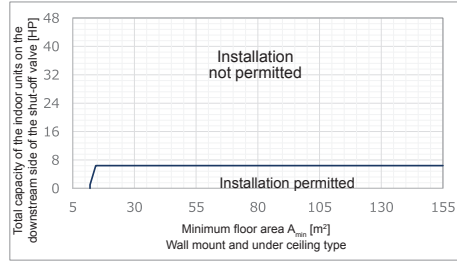
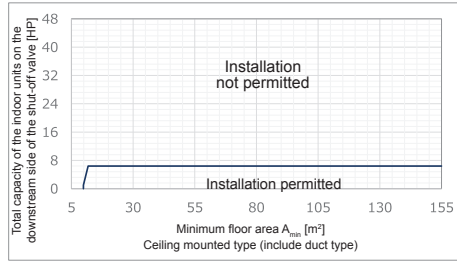
■ Flow Selector unit Multi-port type (4 ports type) In case that connection pipe length on the downstream side is 120 m. (Connection pipe length on the downstream side is total length of each port)



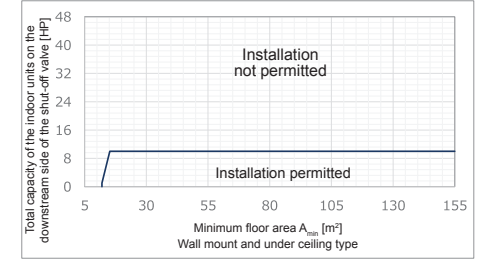
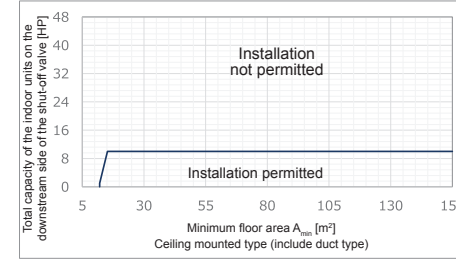
■ Flow Selector unit Single-port type (4 HP type) In case that connection pipe length on the downstream side is 50 m.



■ Flow Selector unit Single-port type (6.4 HP type) In case that connection pipe length on the downstream side is 50 m.



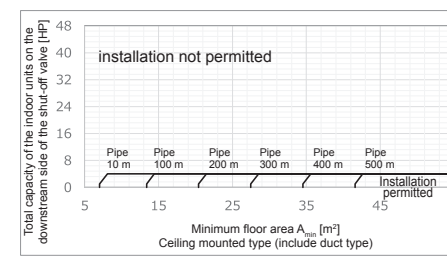
■ Flow Selector unit Single-port type (10 HP type) In case that connection pipe length on the downstream side is 50 m.



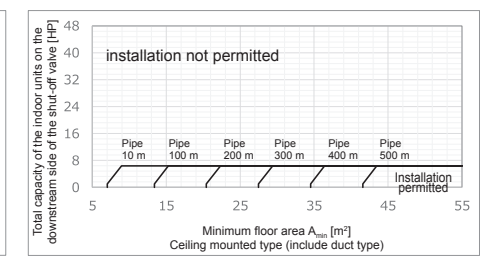
• Shut-off Valve unit

The installation availability line differs depending on the Shut-off Valve unit type (horsepower) and the length of the connecting pipe.

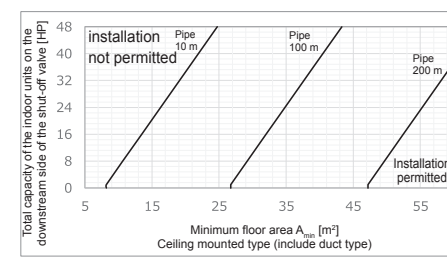
Example) Every 100 m connections from maximum to minimum connection (4 HP)



Every 100 m connections from maximum to minimum connection (6.4 HP)



Every 100 m connections from maximum to minimum connection (24 HP)



※ Please refer to the attached "Installation data" for graphs and numerical values in other cases.
 ※ For units to which the Shut-off Valve unit (24 HP type) is connected and the system refrigerant amount exceeds 30 kg, the following restrictions shall be set on the main pipe length on the outdoor unit side of the Shut-off Valve unit.

(Main piping length on the outdoor unit side of the Shut-off Valve unit) \geq (total system refrigerant amount - 30 kg) \times 3 m.
 If the main pipe length exceeds 40 m, it will not be restricted beyond that.

○ Individual shut-off

For Individual shut-off operation, following 2 types of safety shut-off valves can be installed;

FS : Flow Selector
SV : Shut-off Valve

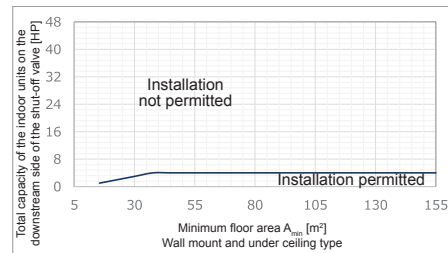
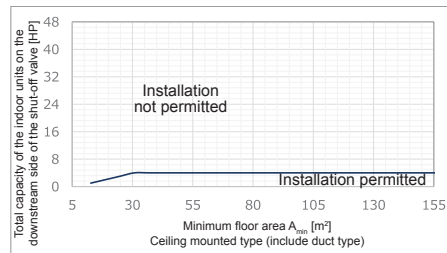
NO.	Type	System
1	FS unit (Single port)	Heat recovery
2	SV unit	Cooling only setting of heat recovery, Heat pump

The installation availability line differs depending on the FS unit type and SV unit type (single, horsepower) and the length of the connecting pipe.

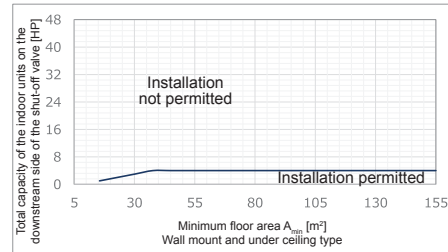
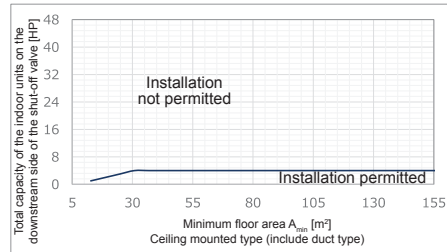
Example) Flow Selector unit single port type (4,6.4 HP) Shut-off valve secondary side 10 m pipe connection

○ Setting up the CODE No. [107] to 2 (Individual shut-off operation)

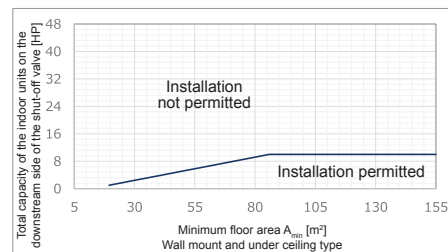
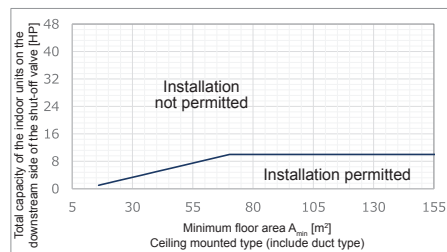
■ Flow Selector unit Single-port type (4 HP type) In case that connection pipe length on the downstream side is 10 m.



■ Flow Selector unit Single-port type (6.4 HP type) In case that connection pipe length on the downstream side is 10 m.



■ Flow Selector unit Single-port type (10 HP type) In case that connection pipe length on the downstream side is 10 m.



[5] [To determine the limit on the amount of additional refrigerant]

Determine the smallest room area to calculate the total allowable refrigerant charge limit in the system. The area of the smallest room being served by the system is decided in the following contents to determine the maximum allowable total charge of the system.

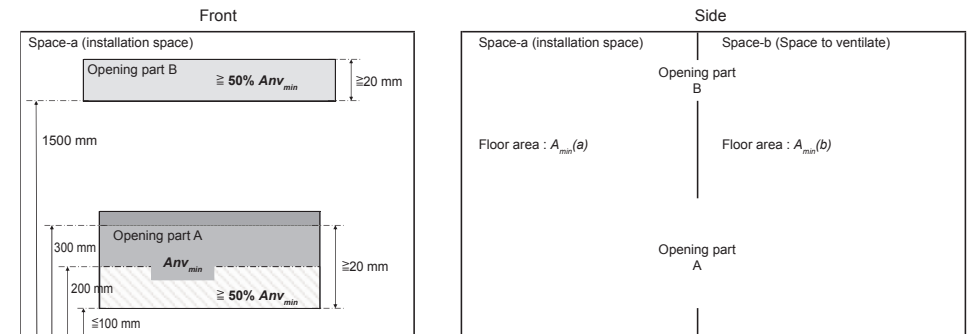
- (1) The area of a room can be determined by projecting walls, doors and partitions onto the floor and calculating from the enclosed area.
- (2) Spaces connected by only false ceilings, ductwork, or similar connections shall not be considered a single space.
- (3) If the partition between 2 rooms on the same floor meets certain requirements then the rooms are considered as one room and the areas of the rooms may be added up. In this way, it is possible to increase the A_{min} value used to calculate the maximum allowed charge.

One of the following 2 requirements shall be met to add up room areas.

- 1) A room on the same floor, connected by a permanent opening that extends to the floor, and is intended for people to pass through, and can be considered as a single room.
- 2) Rooms on the same floor that are connected by openings that meet the following conditions can be considered as one room.

The opening shall consist of two parts to allow air circulation.

- $A_{min}(a) + A_{min}(b) \geq m_c / (0.25 \times LFL \times H) = m_c / 0.04605 (m^2)$
- $Anv_{min} > 0.0123 [m^2]$



the opening can't be connected to the outdoors.
the opening can't be closed.
the lower opening shall be $\geq 0.012 m^2$ (minimum opening area for natural ventilation [Anv_{min}]).
Areas of openings greater than 300 mm from the floor are not included in the calculation when determining Anv_{min} .
50% of Anv_{min} or more is less than 200 mm from the floor.
the bottom of the bottom opening is 100 mm or less from the floor the height of the opening is ≥ 20 mm.

For the upper opening :
the opening can't be connected to the outdoors.
the opening can't be closed.
the upper opening shall be $\geq 0.006 m^2$ (50% of Anv_{min}).
The bottom of the upper opening shall be at least 1500 mm from the floor.
the height of the opening is ≥ 20 mm.

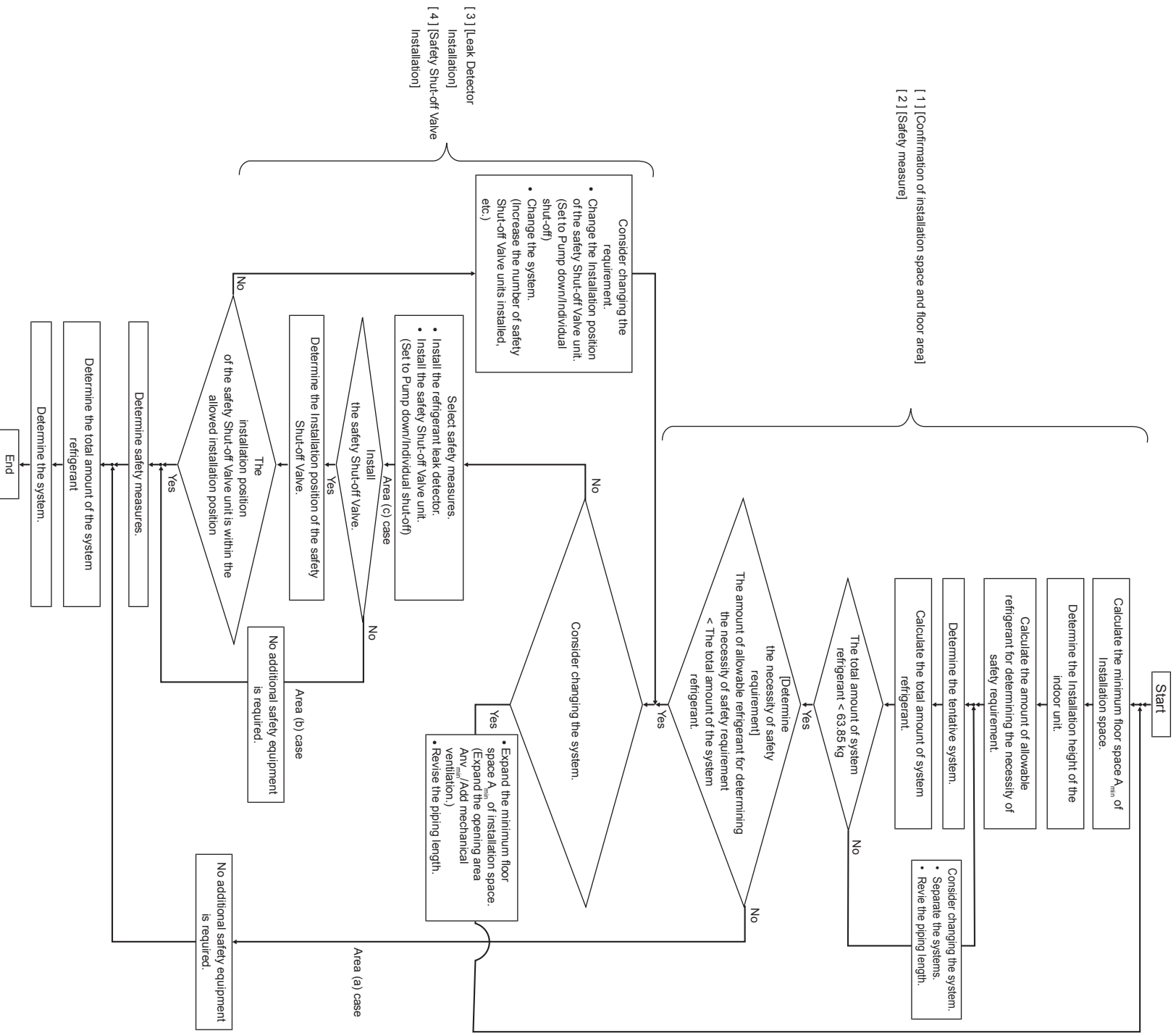
Note) The requirements for the upper opening can be met by a drop ceiling, ventilation ducts, or similar arrangements that provide airflow between connected rooms.

- (4) Connect both the air inlet and outlet directly to the same room.
- (5) Do not use a space such as a false ceiling as the air inlet or the outlet of the duct.
- (6) There shall be no auxiliary device (for example, an electric switch device whose surface is 700°C) that can be a potential ignition source in the duct work.
- (7) Only equipment approved by the manufacturer shall be used for duct work.



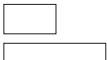
For appliances connected via an air duct system to one or more rooms using an A2L refrigerant – which include a separate section with refrigerant containing components except pipes (e.g. compressors, condensers), and – which are isolated from the airflow and located in a room smaller than minimum floor area [A_{min}] then ECG0335-2-40 Clause GG.4 (ventilated enclosure) can be applied, where the required ventilation can be provided by the ventilation system. That section shall have an opening to the outdoor or indoor air-stream to be able to ventilate the refrigerant to an area in compliance with Annex GG.

(2) Safety measure selection flow

Based on the installation conditions calculated above, determine the installation specifications according to the following safety measure selection flow.



3 Accessory parts

Part name	Q'ty	Shape	Usage
Owner's Manual	1	—	(Be sure to hand over to customers)
Installation Manual	1	—	(Be sure to hand over to customers)
Installation data	1	—	(Be sure to hand over to customers)
CD-ROM (Owner's Manual, Installation Manual)	1	—	For other languages that do not appear in this Installation Manual, Please refer to the enclosed CD-ROM.
Binding band	12	—	2 pcs...long type 10 pcs...short type
F-GAS label	1		Fill the items on the label after adding refrigerant.
Piping	1		Installation for the Heat pump system.
Insulation-cover	2		Freeze prevention for Heat Pump System Long size:1 pc., Short size:1 pc.

4 Installation of R32 refrigerant air conditioner

CAUTION

R32 refrigerant air conditioner installation

• **This air conditioner adopts the HFC refrigerant (R32) which does not destroy ozone layer.**


Therefore, during installation work, make sure that water, dust, former refrigerant, or refrigerant oil does not enter the R32 refrigerant air conditioner cycle. To prevent mixing of refrigerant or refrigerant oil, the sizes of connecting sections of charge port on the main unit and installation tools are different from those of the conventional refrigerant units.


Accordingly, special tools are required for the R32 or R410A refrigerant units. For connecting pipes, use new and clean piping materials with high pressure fittings made for the R32 or R410A only, so that water and/or dust does not enter.














■ Required Tools/Equipment and Precautions for use

Prepare the tools and equipment listed in the following table before starting the installation work. Newly prepared tools and equipment must be used exclusively.

Legend

 : Conventional tools (R32 or R410A)

 : Prepared newly (Use for R32 only)

Tools / equipment	Use	How to use tools / equipment
Gauge manifold	Vacuuming / charging refrigerant and operation check	 Conventional tools (R32 or R410A)
Charging hose		 Conventional tools (R32 or R410A)
Charging cylinder	Can not be used	Unusable (Use the electronic refrigerant charging scale)
Gas leak detector	Charging refrigerant	 Prepared newly (Use for R32 only)
Vacuum pump	Vacuum drying	 Conventional tools (R32 or R410A) Usable if the backflow prevention adapter is installed.
Vacuum pump with backflow prevention function	Vacuum drying	 Conventional tools (R32 or R410A)
Flare tool	Flare processing of pipes	 Conventional tools (R32 or R410A)
Bender	Bending pipes	 Conventional tools (R32 or R410A)
Refrigerant recovery equipment	Refrigerant recovery	 Conventional tools (R32 or R410A)
Torque wrench	Tightening flare nuts	 Conventional tools (R32 or R410A)
Pipe cutter	Cutting pipes	 Conventional tools (R32 or R410A)
Refrigerant cylinder	Charging refrigerant	 Prepared newly (Use for R32 only)
Welding machine and nitrogen cylinder	Welding pipes	 Conventional tools (R32 or R410A)
Electronic refrigerant charging scale	Charging refrigerant	 Conventional tools (R32 or R410A)

5 Selection of installation place

Upon customer's approval, install the air conditioner in a place which satisfies the following conditions:

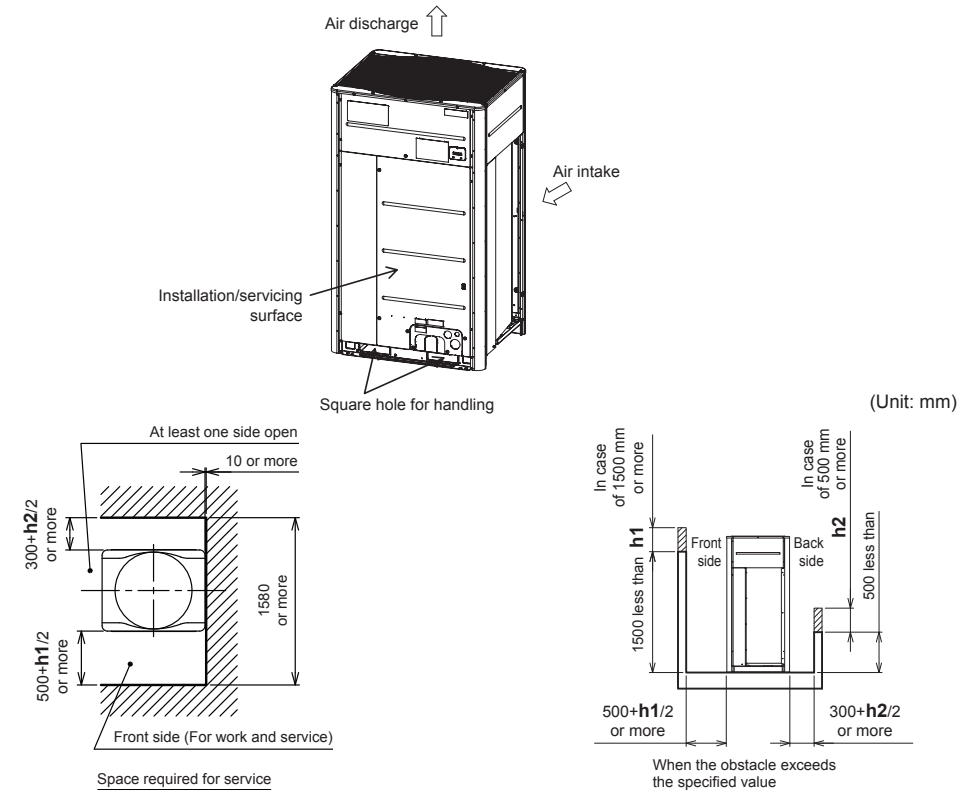
- Place where it can be installed horizontally.
- Place which can reserve a sufficient service space for safe maintenance or checks.
- Place where there is no problem even if the drained water overflows.

Avoid the following places:

- Salty places (seaside area) or places with much gas sulfide (hot spring area) (If selecting such a place, special maintenance is required.)
- Places where oil (including machine oil), steam, oil smoke or corrosive gas is generated.
- 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.
- Places where an organic solvent is used.
- Chemical plants with a cooling system using liquid carbon dioxide.
- Places where a device generating high frequency (inverter, non-utility generator, medical apparatus, or communication equipment) is set. (Malfunction or abnormal control of the air conditioner, or interference to devices listed above may occur.)
- Places where discharged air from the outdoor unit blows against the windows of a neighbour's house.
- Places unable to bear the weight of the unit.
- Places with poor ventilation.

■ Installation space

Leave space necessary for running, installation and servicing.



NOTE

- If there is an obstacle above the outdoor unit, leave a space of 2000 mm or more from the top of the outdoor unit.
- When the obstacle height in front side exceeds 1500 mm, take a space of 500 mm or more plus half length of the portion (**h1**) exceeding 1500 mm between the outdoor unit and the obstacle. ($500 + h1/2$)
- When the obstacle height in back side exceeds 500 mm, take a space of 300 mm or more plus half length of the portion (**h2**) exceeding 500 mm between the outdoor unit and the obstacle. ($300 + h2/2$)
- When attaching a snowfall-hood take a space for the unit height plus the snowfall-hood height.

6 Carrying in the outdoor unit

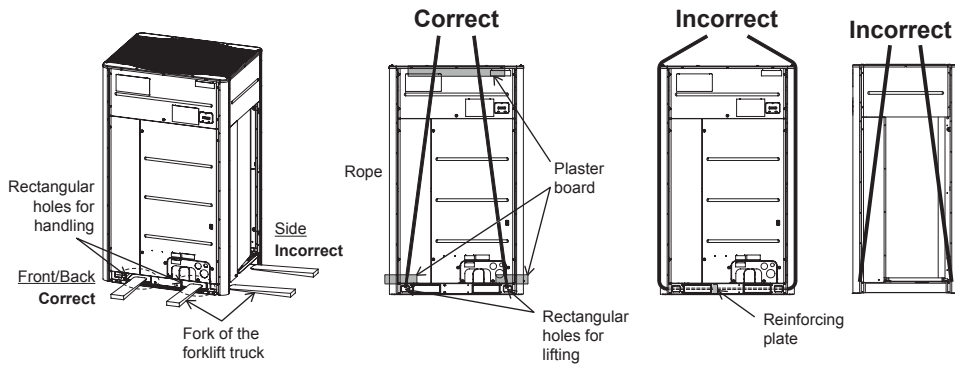
⚠ CAUTION

Handle the outdoor unit carefully, observing the following items.

- When using a forklift truck or other machinery for loading/unloading in transportation, insert the fork of the forklift truck into the rectangular holes for handling as shown below.
- When lifting up the unit, insert a rope able to bear the unit's weight into the rectangular holes for handling, and tie the unit from 4 sides.

(Apply padding in positions where the rope comes into contact with the outdoor unit so that no damage is caused to the outer surface of the outdoor unit.)

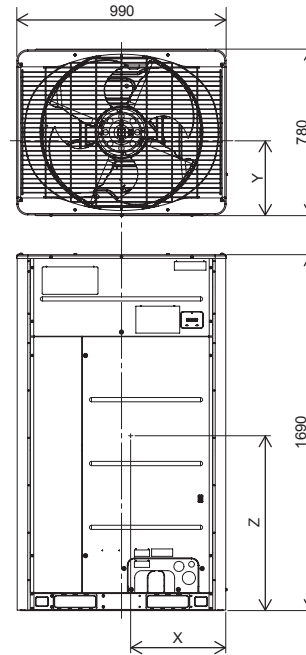
(There are reinforcing plates on the side surfaces, so the rope cannot be passed through.)



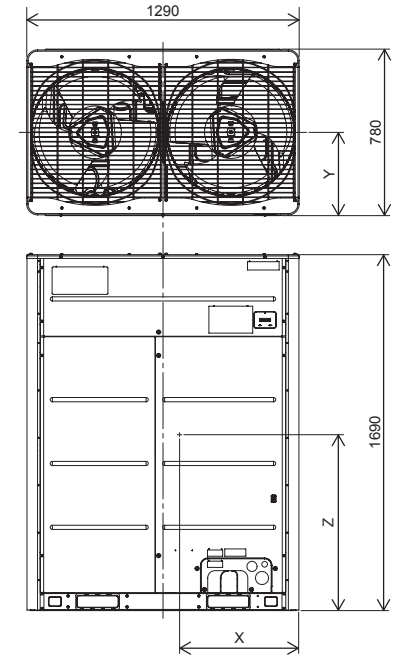
■ Weight center and weight

◆ Weight center of an outdoor unit

A



B



No.	Model	X (mm)	Y (mm)	Z (mm)	Mass (kg)
A	MMY-SUG0801 *	450	355	830	232
	MMY-SUG1001 *				
	MMY-SUG1201 *				
	MMY-SUG1401 *				
B	MMY-SUG1601 *	565	390	835	329
	MMY-SUG1801 *				
	MMY-SUG2001 *	490	390	725	361
	MMY-SUG2201 *				
	MMY-SUG2401 *				

7 Installation of the outdoor unit

⚠ WARNING

- **Be sure to install the outdoor unit in a place able to bear its weight.**
If strength is insufficient, the unit may fall down resulting in human injury.
- **Perform specified installation work to protect against strong wind and earthquakes.**
If the outdoor unit is imperfectly installed, an accident by falling or dropping may be caused.

⚠ CAUTION

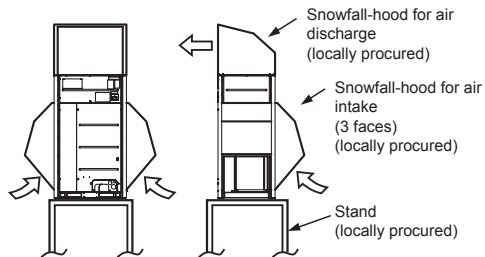
- Drain water is discharged from the outdoor unit. (Especially while heating)
Install the outdoor unit in a place with good drainage.
- For installation, be careful of the strength and level of the foundation so that abnormal sounds (vibration or noise) are not generated.

REQUIREMENT

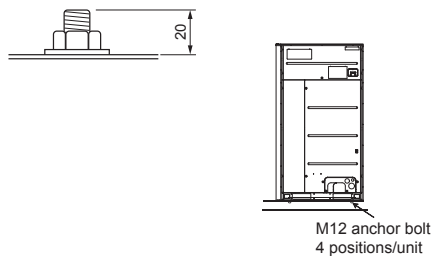
<Installation in a snowfall area>

In order to prevent the outdoor unit buried due to snowdrifts, carefully consider the installation location, and place where snow and ice doesn't fall from above, under eaves and under trees, and continuously install on the leeward side of the roof of the building. Never install it in a snowdrift area.

1. Install the outdoor unit on a higher foundation than the snowfall or set up a stand to install the unit so that snowfall will not affect the unit.
 - Set up a stand higher than the snowfall.
 - Apply an angled structure to the stand so that drainage will not be prevented. (Avoid using a stand with a flat surface.)
 - The height of the gantry should be higher than the snow cover.
 - The stand should have an angle structure so as not to interfere with the drainage of the drain.
 - Do not allow pipes, angles, foundations or other parts to pass under the bottom plate drain. There is a risk that the parts freeze due to drainage and grow the reverse icicles and freeze themselves.
2. Mount a snowfall-hood onto the air intake and the air discharge.
 - Leave enough space for the snowfall-hood so that it isn't an obstacle for the air intake and the air discharge.
 - If it is installed in an area with heavy snowfall, a place with direct blowing, or on the roof, attach a snow hood (deep type) to the air intake.

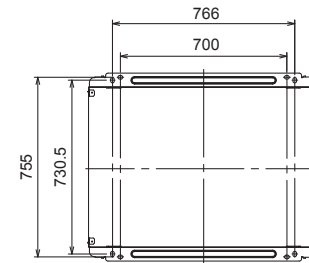


1. Fix each outdoor unit with M12 anchor bolts at 4 positions. 20 mm projection is appropriate for an anchor bolt.

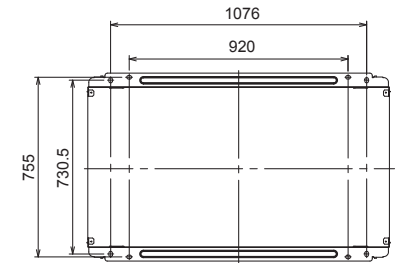


- Anchor bolt positions are as shown below:

(Unit : mm)

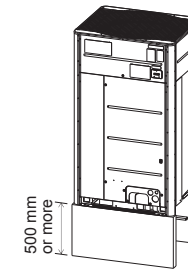


8-14HP



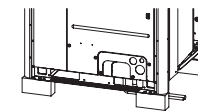
16-24HP

2. When drawing out the refrigerant pipe from the underside, set the height of the stand to 500 mm or more.

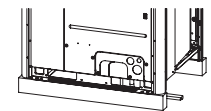


3. Do not use 4 stands on the corner to support the outdoor unit.

Incorrect

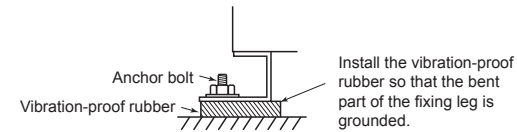


Correct

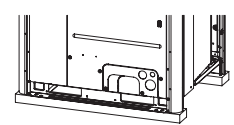


4. Mount the vibration-proof rubber (including vibration-proof blocks) so that it fits under the whole clamping leg.

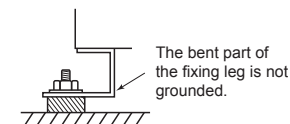
Correct



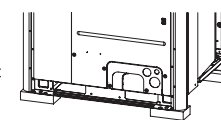
Correct



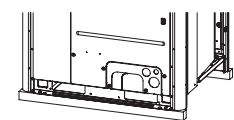
Incorrect



Incorrect



Incorrect



8 Refrigerant piping

Do NOT turn on power to FS units and SV units until following work is completed.
If power turned off after turned it on, valves of the FS units and SV units will close and there is risk of air entering the refrigerant piping.

- Connection of refrigerant pipe
- Airtightness test
- Vacuum drying
- Adding refrigerant

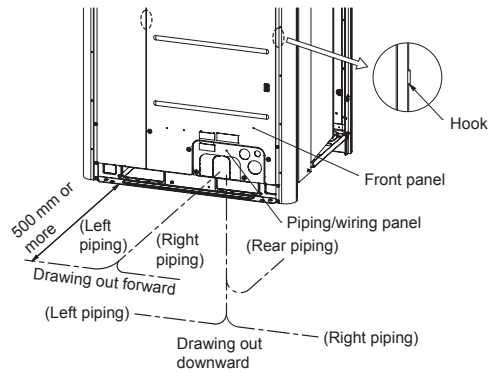
If power turned on before the work is completed, keep power on while working.

⚠ WARNING

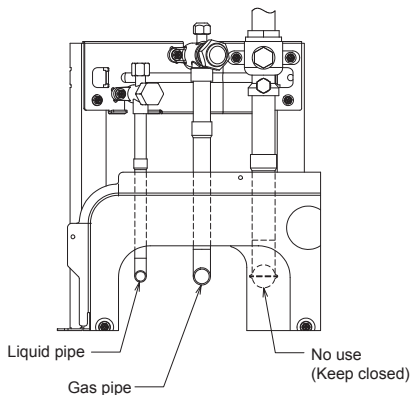
- **If the refrigerant gas leaks during installation, ventilate the room.**
If the leaked refrigerant gas comes into contact with fire, noxious gas may be generated.
- **After installation, check that the refrigerant gas does not leak.**
If the refrigerant gas leaks into the room and comes into contact with fire such as a fan heater, stove, or kitchen range, noxious gas may be generated.

■ Connection of refrigerant pipe

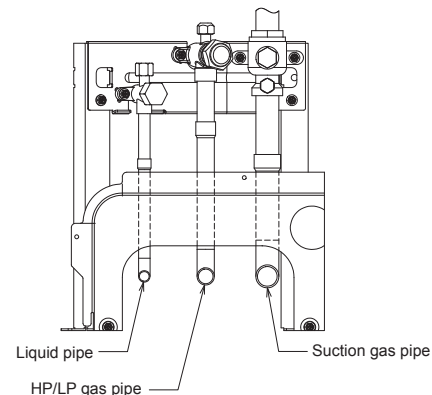
- The refrigerant pipe connecting section is set in the outdoor unit. Remove the front panel and the piping/wiring panel. (M5: 8 pcs.)
- As shown in the illustration on the right, the hooks are at the right and left sides of the front panel. Lift up and remove the front panel.
- Pipes can be drawn out forward or downward from the outdoor unit.
- When drawing out the pipe forward, draw it out to the outside via the piping/wiring panel, and leave a space of 500 mm or more from the main pipe connecting the outdoor unit with the indoor unit, considering service work or other work on the unit. (For replacing the compressor, 500 mm or more space is required.)
- When drawing out the pipe downward, remove the knockouts on the base plate of the outdoor unit, draw the pipes out of the outdoor unit, and perform piping on the right/left or rear side.
- Do not apply any load to the pipes.



For Heat Pump System Installation



For Heat Recovery System Installation



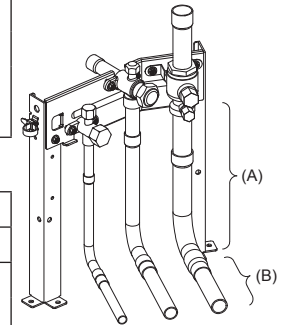
REQUIREMENT

- For a welding work of the refrigerant pipes, be sure to use nitrogen gas in order to prevent oxidation of the inside of the pipes; otherwise clogging of the refrigerating cycle due to oxidized scale may occur.
- Use clean and new pipes for the refrigerant pipes and perform piping work so that water or dust does not contaminate the refrigerant.

Pipe connection method of valve (Example)

- **Heat recovery system**
[(A) Valve side piping diameter → (B) Main piping diameter]

Model name	Liquid	HP/LP gas	Suction gas
MMY-SUG0801*	Ø12.7→Ø12.7	Ø19.1→Ø15.9 ^{※)}	Ø25.4→Ø19.1 ^{※)}
MMY-SUG1001*		Ø19.1→Ø19.1	Ø25.4→Ø22.2 ^{※)}
MMY-SUG1201*		Ø19.1→Ø19.1	Ø25.4→Ø28.6 ^{※)}
MMY-SUG1401*	Ø19.1→Ø19.1		
MMY-SUG1601*	Ø15.9→Ø15.9	Ø19.1→Ø22.2 ^{※)}	
MMY-SUG1801*			
MMY-SUG2001*	Ø15.9→Ø15.9	Ø19.1→Ø22.2 ^{※)}	Ø25.4→Ø28.6 ^{※)}
MMY-SUG2201*			
MMY-SUG2401*			



- **Heat pump system**

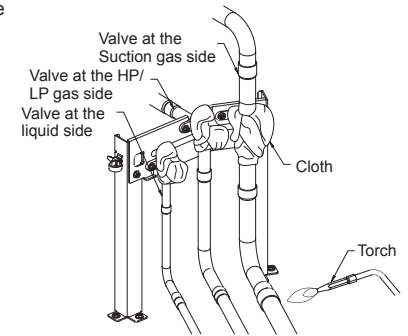
Model name	Liquid	Gas	No use
MMY-SUG0801*	Ø12.7→Ø12.7	Ø19.1→Ø19.1	-
MMY-SUG1001*		Ø19.1→Ø22.2 ^{※)}	-
MMY-SUG1201*		Ø19.1→Ø28.6 ^{※)}	-
MMY-SUG1401*	Ø19.1→Ø28.6 ^{※)}		
MMY-SUG1601*	Ø15.9→Ø15.9	Ø19.1→Ø28.6 ^{※)}	
MMY-SUG1801*			
MMY-SUG2001*	Ø15.9→Ø15.9	Ø19.1→Ø28.6 ^{※)}	-
MMY-SUG2201*			
MMY-SUG2401*			

※) Connect the piping procured locally different diameter sockets.

System / Direction	Draw-out forward	Draw-out downward
Heat recovery	<p>Cut the L-shaped pipe, then braze the socket and piping procured locally.</p>	<p>Cut the L-shaped pipe, then braze the socket and piping procured locally.</p>
Heat pump	<p>Cut the L-shaped pipe, then braze the socket and piping procured locally. When connecting the local piping, on the gas side, it will be easier to connect if you use the attached piping other than 8 HP.</p> <p>Wrap the attachment pipe-cover around the Ball valve (no use valve) to close the gap after connecting the pipe to all the valves. As shown in the figure, after wrapping and fixing the thin Insulation-cover around the pipe side, wrap and fix the thick Insulation-cover around the cap side.</p>	<p>Cut the L-shaped pipe, then braze the socket and piping procured locally. When connecting the local piping, on the gas side, it will be easier to connect if you use the attached piping other than 8 HP.</p>

CAUTION

Wrap all the valves in wet cloth to keep them cool and prevent the heat from the torch from damaging it when connecting the pipe to all the valves.



Coupling size of brazed pipe

Connected section	
External size	Internal size

(Unit: mm)

Standard outer dia. of connected copper pipe	Connected section					Min. thickness of coupling
	External size	Internal size	Min. depth of insertion		Oval value	
	Standard outer dia. (Allowable difference)		K	G		
	C	F				
6.35	6.35 (±0.03)	6.45 (±0.03)	7	6	0.06 or less	0.50
9.52	9.52 (±0.03)	9.62 (±0.03)	8	7	0.08 or less	0.60
12.70	12.70 (±0.03)	12.81 (±0.03)	9	8	0.10 or less	0.70
15.88	15.88 (±0.03)	16.00 (±0.03)	9	8	0.13 or less	0.80
19.05	19.05 (±0.03)	19.19 (±0.03)	11	10	0.15 or less	0.80
22.22	22.22 (±0.03)	22.36 (±0.03)	11	10	0.16 or less	0.90
25.40	25.40 (±0.04)	25.56 (±0.04)	13	12	0.18 or less	0.95
28.58	28.58 (±0.04)	28.75 (±0.04)	13	12	0.20 or less	1.00
34.92	34.92 (±0.04)	35.11 (±0.04)	13	12	0.24 or less	1.20
38.10	38.10 (±0.05)	38.31 (±0.05)	15	14	0.27 or less	1.35
41.28	41.28 (±0.05)	41.50 (±0.05)	15	14	0.29 or less	1.45
44.45	44.45 (±0.05)	44.68 (±0.05)	17	14	0.31 or less	1.55
53.98	53.98 (±0.05)	54.22 (±0.05)	17	16	0.32 or less	1.80

■ Selection of pipe materials and sizes

◆ Selection of pipe materials

Materials : Phosphorus deoxidation seam-less pipe. Minimum wall thickness for R410A application.

Soft	Half hard or hard	OD (Inch)	OD (mm)	Minimum wall thickness (mm)
✓	✓	1/4"	6.35	0.80
✓	✓	3/8"	9.52	0.80
✓	✓	1/2"	12.70	0.80
✓	✓	5/8"	15.88	1.00
	✓	3/4"	19.05	1.00
	✓	7/8"	22.22	1.00
	✓	1"	25.40	1.00
	✓	1-1/8"	28.58	1.00
	✓	1-3/8"	34.92	1.20
	✓	1-5/8"	41.28	1.45
	✓	1-3/4"	44.45	1.55
	✓	2-1/4"	53.98	1.80

◆ Capacity code of indoor and outdoor units

- For the indoor unit, the capacity code is decided at each capacity rank. (Table 1)
- The capacity codes of the outdoor units are decided at each capacity rank. The maximum number of connectable indoor units and the total value of capacity codes of the indoor units are also decided. (Table 2-1, Table 2-2)

NOTE

Compared with the capacity code of the outdoor unit, the total value of capacity codes of the connectable indoor units differs based on the height difference between the indoor units.

- When the height difference between the indoor units is 15 m or less: Up to 200% of the capacity code (Equivalent to HP) of the outdoor unit.
- When the height difference between the indoor units is over 15 m: Up to 105% of the capacity code.
- If MMU-UP *** H is include in the system, total indoor capacity code must be between 70% and 105% of outdoor unit capacity.
- If the system diversity is more than 135%, check the maximum number of indoor unit connections in table 2-1, 2-2, and then turn on DIP switch 3 of SW103 on the interface P.C. boards.

Table 1

Indoor unit capacity rank	Capacity code	
	Equivalent to HP	Equivalent to capacity
003	0.3	0.9
005	0.6	1.7
007	0.8	2.2
009	1	2.8
012	1.25	3.6
015	1.7	4.5
018	2	5.6
024	2.5	7.1
027	3	8.0
030	3.2	9.0
036	4	11.2
048	5	14.0
056	6	16.0
072	8	22.4
096	10	28.0
112	12	33.5
128	14	40.0

Table 2-1 [Diversity 135%]

Model name (MMY-)	Capacity code		Max. No. of indoor units ※	Total capacity of indoor units	Diversity (%)
	Equivalent to HP	Equivalent to capacity			
SUG0801*	8	22.4	18(23)	30.2	135%
SUG1001*	10	28.0	22(28)	37.8	135%
SUG1201*	12	33.5	27(34)	45.2	135%
SUG1401*	14	40.0	31(39)	54.0	135%
SUG1601*	16	45.0	36(46)	60.7	135%
SUG1801*	18	50.4	40(51)	68.0	135%
SUG2001*	20	56.0	45(57)	75.6	135%
SUG2201*	22	61.5	49(62)	83.0	135%
SUG2401*	24	67.0	54(69)	90.4	135%

※ () = Maximum indoor units when 0.3 HP indoor units only are connected

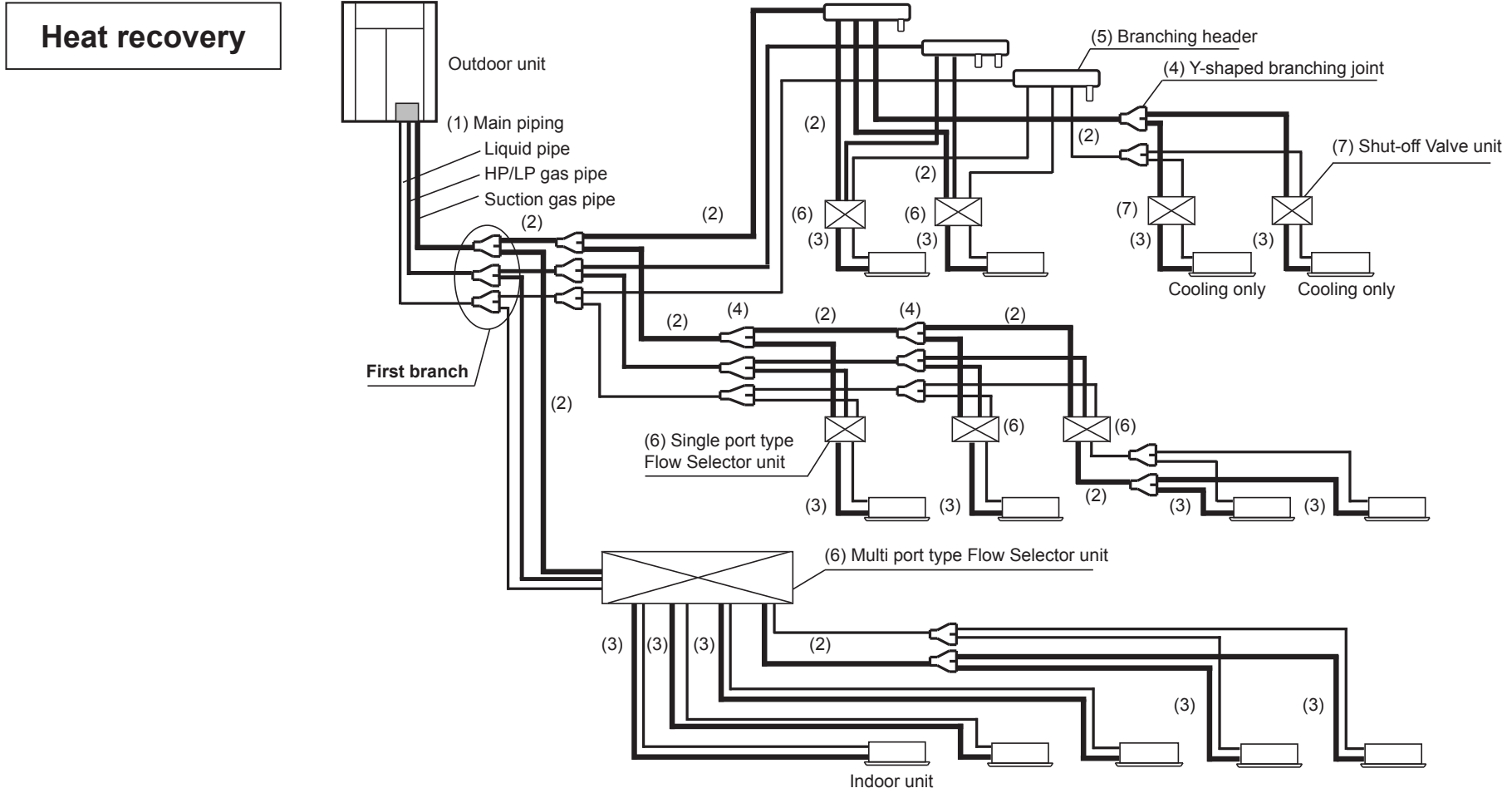
※ This table is common for both heat pump and heat recovery models.

Table 2-2 [Diversity 200%]

Model name (MMY-)	Capacity code		Max. No. of indoor units ※	Total capacity of indoor units	Diversity (%)
	Equivalent to HP	Equivalent to capacity			
SUG0801*	8	22.4	12	44.8	200%
SUG1001*	10	28.0	15	56.0	200%
SUG1201*	12	33.5	18	67.0	200%
SUG1401*	14	40.0	21	80.0	200%
SUG1601*	16	45.0	24	90.0	200%
SUG1801*	18	50.4	27	100.8	200%
SUG2001*	20	56.0	30	112.0	200%
SUG2201*	22	61.5	33	123.0	200%
SUG2401*	24	67.0	36	134.0	200%

※ This table is common for both heat pump and heat recovery models.

■ Selection of pipe size



(1) Main piping (*8)

Model name	Capacity code	Liquid side(*9)			HP/LP gas side (mm)	Suction gas side (mm)
	Equivalent to capacity (HP)	Standard size (mm)	Refrigerant saving size (mm)	Farthest piping length		
MMY-SUG080*	8	12.7	9.5	90 m	15.9	19.1
MMY-SUG100*	10	12.7	9.5	60 m	19.1	22.2
MMY-SUG120*	12	12.7	9.5	50 m	19.1	22.2
MMY-SUG140*	14	12.7	9.5	40 m	19.1	28.6
MMY-SUG160*	16	15.9	12.7	130 m	22.2	28.6
MMY-SUG180*	18	15.9	12.7	100 m	22.2	28.6
MMY-SUG200*	20	15.9	12.7	90 m	22.2	28.6
MMY-SUG220*	22	15.9	12.7	70 m	22.2	28.6
MMY-SUG240*	24	15.9	12.7	60 m	22.2	28.6

(2) Branching pipe (*1) (*2) (*8)

Total capacity code of indoor units at downstream side(*7)	Liquid side (mm)	HP/LP gas side (mm)	Suction gas side (mm)
Equivalent to capacity (HP)			
Below 6.4	9.5	12.7	15.9
6.4 to below 8.4	12.7	15.9	19.1
8.4 to below 16.2	12.7	19.1	22.2
16.2 to below 20.2	15.9	19.1	28.6
20.2 or more	15.9	22.2	28.6

3) Indoor unit connecting pipe(*2) (*8)

Capacity rank (Type)	Capacity code	Liquid side (mm)	Gas side (mm)	Real piping length (m)
	Equivalent to capacity (HP)			
003 ~ 012	0.3 ~ 1.25	6.4	9.5	15 or less
		9.5	12.7	Exceeds 15
015 ~ 018	1.5 ~ 2.0	6.4	12.7	15 or less
		9.5	15.9	Exceeds 15
024 ~ 056	2.5 ~ 6.0	9.5	15.9	
072, 096	8.0, 10.0	12.7	22.2	
112	12	12.7	28.6	
128	14	15.9	28.6	

(4) Y-shaped branching joint (*3) (*4)

Total capacity code of indoor units at downstream side (*7)	Model name	
Equivalent to capacity (HP)	For 3 piping	For 2 piping
Below 6.4	RBM-BY55FE	RBM-BY55E
6.4 to below 14.2	RBM-BY105FE	RBM-BY105E
14.2 or more	RBM-BY205FE	RBM-BY205E

Model name	Liquid side	HP/LP gas side	Suction gas side
RBM-BY55FE (3 piping) RBM-BY55E (2 piping)			
RBM-BY105FE (3 piping) RBM-BY105E (2 piping)			
RBM-BY205FE (3 piping) RBM-BY205E (2 piping)			

(5) Branching header (*4) (*5) (*6)

Number of branches	Total capacity code of indoor units at downstream side (*7)	Model name	
	Equivalent to capacity (HP)	For 3 piping	For 2 piping
For 4 branches	Below 14.2	RBM-HY1043FE	RBM-HY1043E
	14.2 or more	RBM-HY2043FE	RBM-HY2043E
For 8 branches	Below 14.2	RBM-HY1083FE	RBM-HY1083E
	14.2 or more	RBM-HY2083FE	RBM-HY2083E

Model name	Liquid side	HP/LP gas side	Suction gas side
RBM-HY1043FE RBM-HY2043FE (For 4 branches)			
RBM-HY1083FE RBM-HY2083FE (For 8 branches)			

(6) Flow selector unit (*10) (*11) (*12)

Port type	Total capacity code of indoor units at downstream side (*7)	Model name	Number of branches	Maximum number of connectable indoor units
	Equivalent to capacity (HP)			
Single port	Below 4.0	RBM-Y1121FUPE	-	6
	4.0 to below 6.4	RBM-Y1801FUPE	-	10
	6.4 to 10.0 or less	RBM-Y2801FUPE	-	16
Multi port	Below 25.6 (1 branch: below 6.4)	RBM-Y1801FU4PE	4	Max. 10 units per branch
	Below 38.4 (1 branch: below 6.4)	RBM-Y1801FU8PE	8	
	Below 38.4 (1 branch: below 6.4)	RBM-Y1801FU12PE	12	

Model name	Piping size
RBM-Y1121FUPE RBM-Y1801FUPE	
RBM-Y2801FUPE	
RBM-Y1801FU4PE RBM-Y1801FU8PE RBM-Y1801FU12PE	

(7) Shut-off Valve unit (*10) (*12)

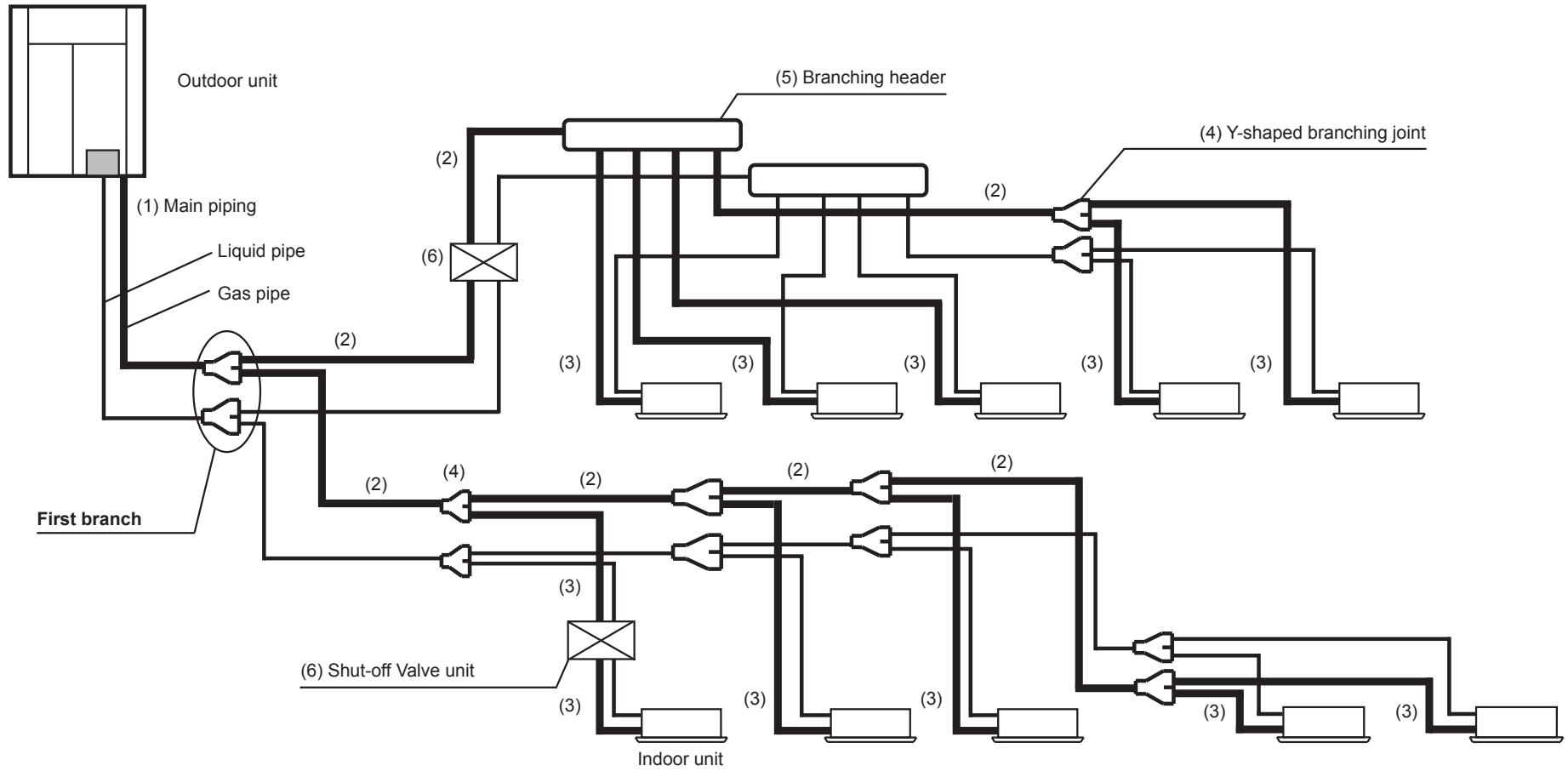
Total capacity code of indoor units at downstream side (*7)	Model name	Maximum number of connectable indoor units
Equivalent to capacity (HP)	For 2 piping	
Below 4.0	RBM-SV1121HUPE	6
4.0 to below 6.4	RBM-SV1801HUPE	10
6.4 to 32.4 or less	RBM-SV6701HUPE	16

Model name	Piping size
RBM-SV1121HUPE RBM-SV1801HUPE	
RBM-SV6701HUPE	

- (*1): Use the same size as the main pipe if it is larger than the main pipe.
- (*2): Use a suction gas pipe and a liquid pipe for the two pipes branching downstream from the flow selector unit and the dedicated cooling circuit.
- (*3): Select the branch pipe of the first branch according to the outdoor capacity code.
- (*4): Select according to the outdoor unit capacity code if the total of the indoor capacity codes exceeds the outdoor unit capacity code.
- (*5): It is possible to select up to a maximum capacity code total 6 HP for each one branch of the branching header.
- (*6): When using a branch header for the first branch with an outdoor unit capacity code of 12 HP or more and 24 HP or less, use RBM-HY2043FE(4 branches) and RBM-HY2083FE(8 branches) regardless of the total value of the capacity codes of the downstream indoor units
- (*7): The downstream starting point is the main pipe.
- (*8): If the pipe size is Ø19.0 or more, use a suitable material as detailed in the Installation Manual.
- (*9): When making the liquid pipe of the main pipe a refrigerant saving size, make height difference between indoor units smaller than 15 m.
In addition, the farthest piping real length will be limited.
- (*10): For installation conditions, refer to the precautions of equipment using R32.
- (*11): Please contact our sales representative when merging downstream piping of multi port type.
- (*12): Group connection of multiple indoor units is possible up to 8 units within one FS unit or SV unit.

■ Selection of pipe size

Heat pump



(1) Main piping (*7)

Model name	Capacity code	Liquid side (*8)			Gas side (mm)
	Equivalent to capacity (HP)	Standard size (mm)	Refrigerant saving size (mm)	Farthest piping length	
MMY-SUG080*	8	12.7	9.5	90 m	19.1
MMY-SUG100*	10	12.7	9.5	60 m	22.2
MMY-SUG120*	12	12.7	9.5	50 m	22.2
MMY-SUG140*	14	12.7	9.5	40 m	28.6
MMY-SUG160*	16	15.9	12.7	130 m	28.6
MMY-SUG180*	18	15.9	12.7	100 m	28.6
MMY-SUG200*	20	15.9	12.7	90 m	28.6
MMY-SUG220*	22	15.9	12.7	70 m	28.6
MMY-SUG240*	24	15.9	12.7	60 m	28.6

(2) Branching pipe (*1) (*7)

Total capacity code of indoor units at downstream side (*6) Equivalent to capacity (HP)	Liquid side (mm)	Gas side (mm)
Below 2.4	9.5	12.7
2.4 to Below 6.4	9.5	15.9
6.4 to below 8.4	12.7	19.1
8.4 to below 16.2	12.7	22.2
16.2 or more	15.9	28.6

(3) Indoor unit connecting pipe (*7)

Capacity rank (Type)	Capacity code	Liquid side (mm)	Gas side (mm)	Real piping length (m)
	Equivalent to capacity (HP)			
003 ~ 012	0.3 ~ 1.25	6.4	9.5	15 or less
		6.4	12.7	Exceeds 15
015 ~ 018	1.5 ~ 2.0	6.4	12.7	
024 ~ 056	2.5 ~ 6.0	9.5	15.9	
072, 096	8.0, 10.0	12.7	22.2	
112	12	12.7	28.6	
128	14	15.9	28.6	

(4) Y-shaped branching joint (*2) (*3)

Total capacity code of indoor units at downstream side (*6) Equivalent to capacity (HP)	Model name
Below 6.4	RBM-BY55E
6.4 to below 14.2	RBM-BY105E
14.2 or more	RBM-BY205E

Model name	Liquid side	Gas side
RBM-BY55E		
RBM-BY105E		

Model name	Liquid side	Gas side
RBM-BY205E		

(5) Branching header (*3) (*4) (*5)

Number of branches	Total capacity code of indoor units at downstream side (*6) Equivalent to capacity (HP)	Model name
	For 4 branches	
For 8 branches	Below 14.2 14.2 or more	RBM-HY1083E RBM-HY2083E

Model name	Liquid side	Gas side
RBM-HY1043E RBM-HY2043E (For 4 branches)		
RBM-HY1083E RBM-HY2083E (For 8 branches)		

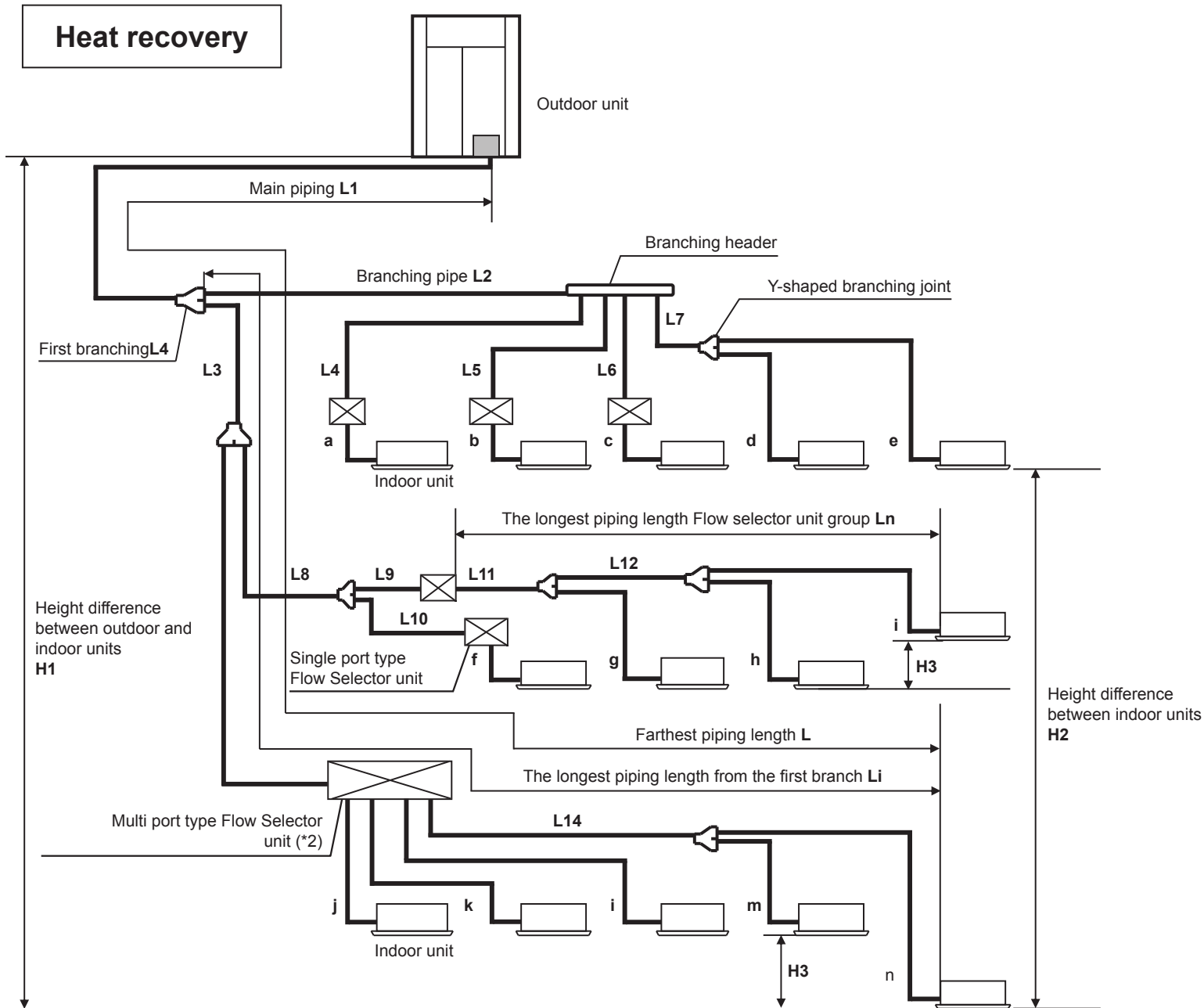
(6) Shut-off Valve unit (*9) (*10)

Total capacity code of indoor units at downstream side (*7) Equivalent to capacity (HP)	Model name	Maximum number of connectable indoor units
Below 4.0	RBM-SV1121HUPE	
4.0 to below 6.4	RBM-SV1801HUPE	10
6.4 to 32.4 or less	RBM-SV6701HUPE	16

Model name	Piping size
RBM-SV1121HUPE RBM-SV1801HUPE	
RBM-SV6701HUPE	

- (*1): Use the same size as the main pipe if it is larger than the main pipe.
- (*2): Select the branch pipe of the first branch according to the outdoor capacity code.
- (*3): Select according to the outdoor unit capacity code if the total of the indoor capacity codes exceeds the outdoor unit capacity code.
- (*4): It is possible to select up to a maximum capacity code total 6 HP for each one branch of the branching header.
- (*5): When using a branch header for the first branch with an outdoor unit capacity code of 12 HP or more and 24 HP or less, use RBM-HY2043FE(4 branches) and RBM-HY2083FE(8 branches) regard less of the total value of the capacity codes of the downstream indoor units
- (*6): The downstream starting point is the main pipe.
- (*7): If the pipe size is Ø19.0 or more, use a suitable material as detailed in the Installation Manual.
- (*8): When making the liquid pipe of the main pipe a refrigerant saving size, make height difference between indoor units smaller than 15 m.
In addition, the farthest piping real length will be limited.
- (*9): For installation conditions, refer to the precautions of equipment using R32.
- (*10): Group connection of multiple indoor units is possible up to 8 units within one SV unit.

■ Allowable length of refrigerant pipes and allowable height difference between units



◆ System restriction

Outdoor unit combination	Only 1 unit	
Max capacity of outdoor units	Up to 24 HP	
Indoor unit connection	Up to 54 units	
Total capacity of indoor units (Varies depending on the height difference between indoor units.)	H2 ≤ 15 m	200% of outdoor units capacity(*1)
	H2 > 15 m	105% of outdoor units capacity

(*1): If it exceeds 135%, there is a limit to the maximum number of indoor units that can be connected.

(*2): Multi port type Flow Selector unit is considered a branch.

◆ Allowable length and allowable height difference of refrigerant piping

Item			Allowable Value	Piping section	
Pipe length	Total extension of pipe (Liquid pipe, real length)		500 m (*1)	L1 + L2 + L3 + L4 + L5 + L6 + L7 + L8 + L9 + L10 + L11 + L12 + L13 + L14 + a + b + c + d + e + f + g + h + i + j + k + l + m + n	
	Farthest piping length L	Equivalent length	190 m	L1 + L3 + L13 + L14 + n	
		Real length	165 m		
	Max. equivalent length of Main piping L1	Equivalent length	125 m	L1	
		Real length	100 m		
	Equivalent length of farthest piping from 1 st branching Li	H1 > 3 m	50 m	L3 + L13 + L14 + n	
		H1 ≤ 3 m	65 m		
	Max. real length of piping from the end branch to the indoor unit		50 m	L4 + a, L5 + b, L6 + c, d, e, L10 + f, g, h, i, j, k, l, m, n	
	Max. equivalent length between branches		50 m	L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14	
	Max. real length of piping from Flow selector unit to the indoor unit Ln		50 m	L11 + g, L11 + L12 + h, L11 + L12 + i, L14 + m, L14 + n	
The total piping length in one Multi port type Flow Selector unit	4 branches	Max	120 m	L14 + j + k + l + m + n	
	8 or 12 branches (*3)	Max	180 m		
Difference in height	Height difference between outdoor and indoor unit H1	Upper outdoor unit	H2 > 3 m	50 m	----
			H2 ≤ 3 m	70 m 90 m (*2)	
	Lower outdoor unit	40 m			
	Height difference between indoor units H2	Upper outdoor unit	40 m		
		Lower outdoor unit	30 m		
Height difference between indoor units connected to the same Flow selector unit H3		15 m			

(*1): The total amount of system refrigerant should be 63.8 kg or less.

(*2): Extension up till 90 m is possible with conditions below :

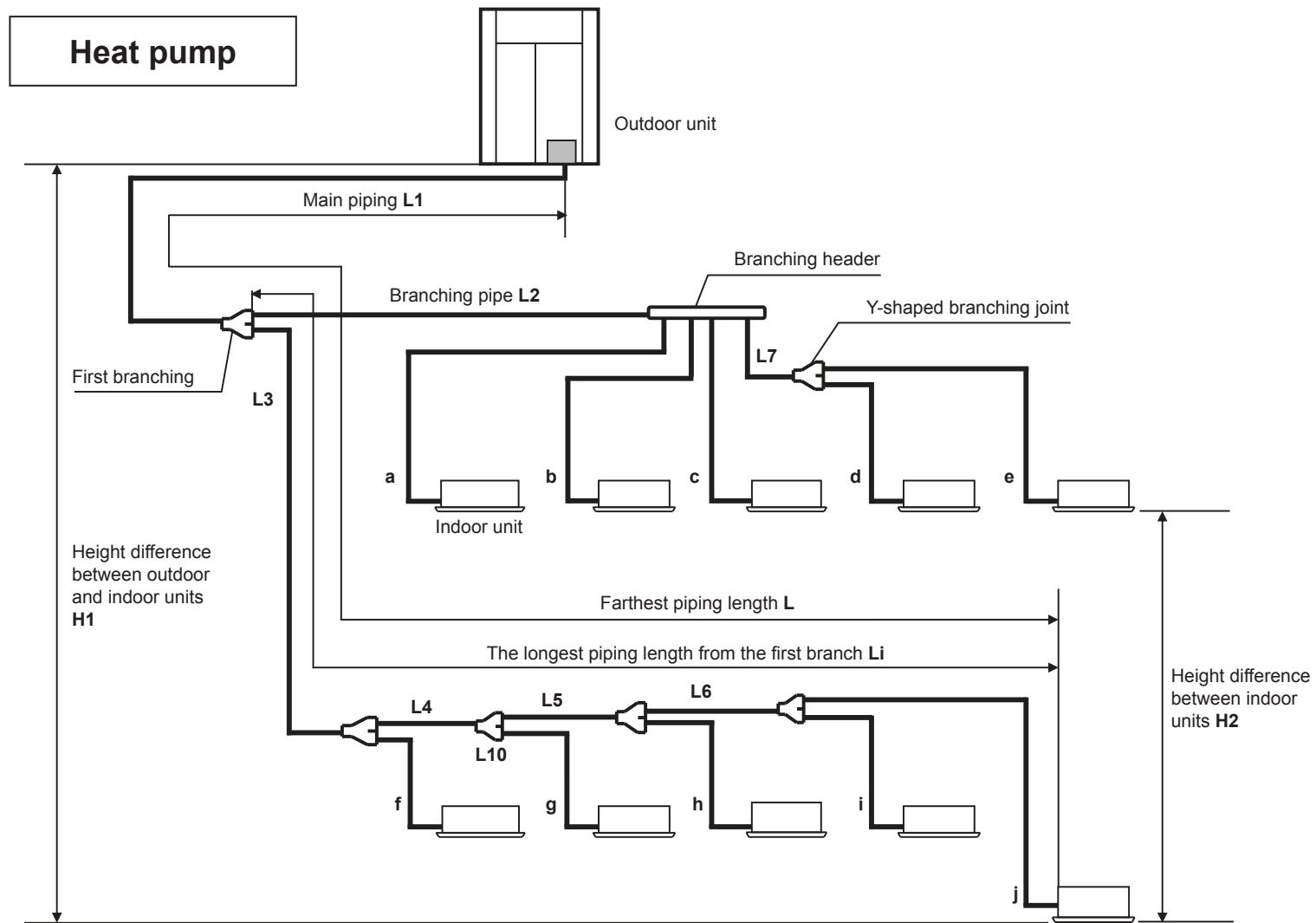
- Connected ratio of indoor units to outdoor units is below 105%
- Liquid side has been increased 1 size from standard size
- Change the connection method of the indoor unit from flare connection to welding connection.

(*3): When using a Multi port type Flow Selector unit, be sure to set the piping length between the indoor and the Flow Selector unit at least 10 m.

If a piping length of 10 m or longer is not secured, refrigerant noise generated from the Multi port type Flow Selector unit may propagate to the indoor unit.

(*4): For installation conditions, refer to the precautions of equipment using R32.

■ Allowable length of refrigerant pipes and allowable height difference between units



◆ System restriction

Outdoor unit combination	Only 1 unit	
Max. capacity of outdoor units	Up to 24 HP	
Indoor unit connection	Up to 54 units	
Total capacity of indoor units (Varies depending on the height difference between indoor units.)	H2 ≤ 15 m	200% of outdoor units capacity(*1)
	H2 > 15 m	105% of outdoor units capacity

(1*): If it exceeds 135%, there is a limit to the maximum number of indoor units that can be connected.

◆ Allowable length and allowable height difference of refrigerant piping

Item		Allowable Value	Piping section
Pipe length	Total extension of pipe (Liquid pipe, real length)	500 m (*1)	L1 + L2 + L3 + L4 + L5 + L6 + L7 + a + b + c + d + e + f + g + h + i + j
	Farthest piping length L	Equivalent length	215 m
		Real length	190 m
	Max. equivalent length of Main piping L1	Equivalent length	125 m
		Real length	100 m
	Equivalent length of farthest piping from 1st branching Li	H1 > 3 m	65 m
		H1 ≤ 3 m	90 m
Max. real length of indoor unit connecting piping	50 m	a, b, c, d, e, f, g, h, i, j	
Max. equivalent length between branches	50 m	L2, L3, L4, L5, L6, L7	
Difference in height	Height difference between outdoor and indoor unit H1	Upper outdoor unit	-----
		H2 > 3 m	
	Lower outdoor unit	H2 ≤ 3 m	70 m 90 m (*2)
Height difference between indoor units H2	40 m	-----	

(*1): The total amount of system refrigerant should be 63.8 kg or less.

(*2): Extension up till 90 m is possible with conditions below :

- Connected ratio of indoor units to outdoor units is below 105%
- Liquid side has been increased 1 size from standard size
- Change the connection method of the indoor unit from flare connection to welding connection.

(*3): For installation conditions, refer to the precautions of equipment using R32.

■ Airtightness test

After the refrigerant piping has been finished, execute an airtight test.

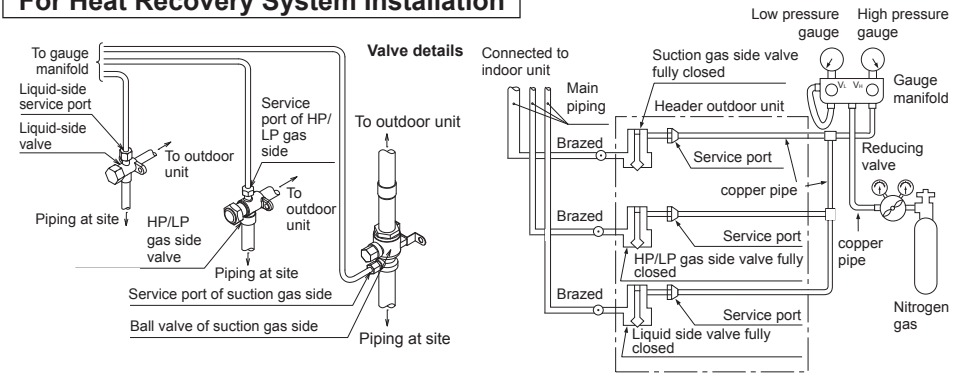
For an airtight test, connect a nitrogen gas canister as shown in the figure on this page and apply pressure.

- Be sure to apply pressure from the service ports of the packed valves (or ball valve) at the liquid side and (HP/LP, Suction) gas side.
 - An airtight test can only be performed at the service ports at the liquid side and (HP/LP, Suction) gas side.
 - Close the valves fully at the (HP/LP, Suction) gas side and liquid side. As there is a possibility that the nitrogen gas will enter into the cycle of outdoor units, re-tighten the valve rods at the liquid side before applying pressure.
 - For each refrigerant line, apply pressure gradually in steps at the liquid side and (HP/LP, Suction) gas side.
- Be sure to apply pressure at the (HP/LP, Suction) gas side and liquid side.**

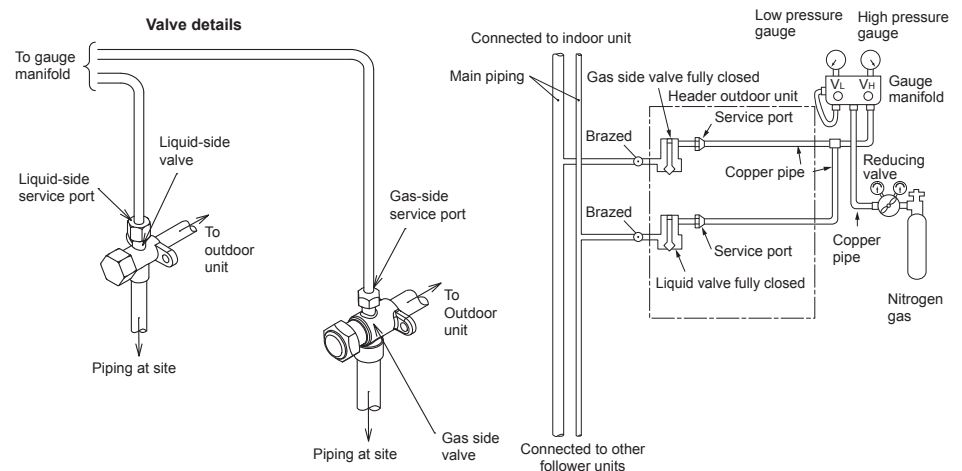
⚠ WARNING

Never use oxygen, flammable gases, or noxious gases in an airtight test.

For Heat Recovery System Installation



For Heat Pump System Installation



Able to detect a serious leakage

1. Apply pressure 0.3 MPa (3.0 kg/cm²G) for 5 minutes or more.
2. Apply pressure 1.5 MPa (15 kg/cm²G) for 5 minutes or more.

Available to detect slow leakage

3. Apply pressure 4.15 MPa (42.3 kg/cm²G) for approx. 24 hours.

- If there is no pressure decrease after 24 hours, the test is passed.

NOTE

However, if the environmental temperature changes from the moment of applying pressure to 24 hours after that, the pressure will change by about 0.01 MPa (0.1 kg/cm²G) per 1°C. Consider the pressure change when checking the test result.

REQUIREMENT

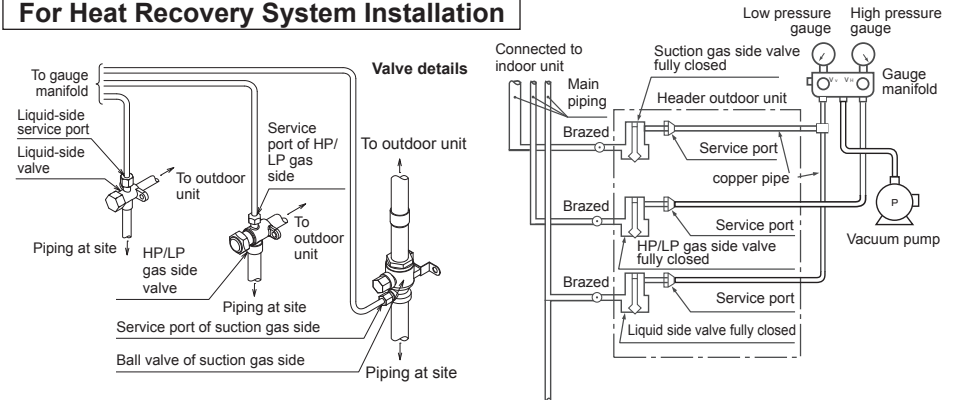
When pressure decrease is detected in steps 1-3, check the leakage at the connecting points. Check the leakage using a foaming agent or other measures and seal the leak with re-brazing, flare retightening or other methods. After sealing, execute an airtight test again.

■ Vacuum drying

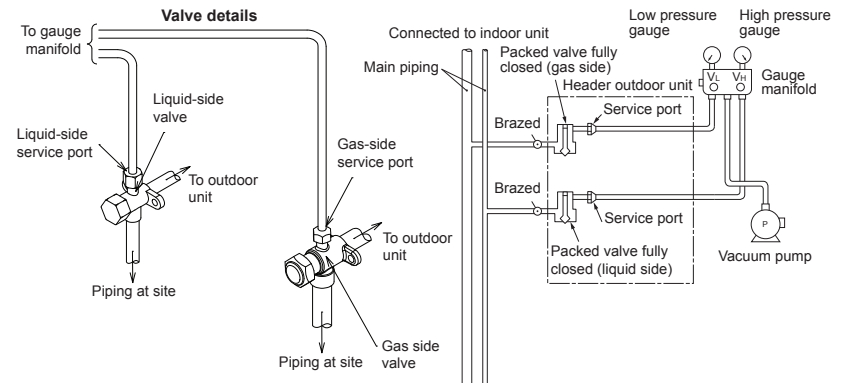
- Before and during installation, do NOT turn on the power until vacuuming and refrigerant charging are completed.
- If the power is turned on during vacuuming or refrigerant charging, do NOT turn off the power until the work is completed.
- Be sure to perform vacuuming from both liquid and (HP/LP, Suction) gas side.
- Be sure to use a vacuum pump equipped with the counter-flow prevention function so that oil in the pump will not flow back into piping for air conditioners. (If oil in the vacuum pump enters in the air conditioner with R32 refrigerant, a problem may be caused in the refrigerating cycle.)

After finishing the airtight test and discharging nitrogen gas, connect the gauge manifold to the service ports of the liquid side and (HP/LP, Suction) gas side and connect a vacuum pump as shown in the figure below. Be sure to perform vacuuming for the liquid and (HP/LP, Suction) gas pipe sides.

For Heat Recovery System Installation



For Heat Pump System Installation



- Use a vacuum pump with a high vacuuming degree [-100.7 kPa (5 Torr, -755 mmHg)] and large exhaust gas amount (40 L/minute or larger).
- Perform vacuuming for 2 or 3 hours, though the time differs depending on the pipe length. Check that all the packed valves at the liquid side and (HP/LP, Suction) gas side are fully closed.
- If the pressure does not reach -100.7 kPa or less, continue vacuuming for 1 hour or more. If the pressure does not reach -100.7 kPa after 3 hours of vacuuming, stop vacuuming and check for air leakage.
- If the pressure reaches -100.7 kPa or less after vacuuming for 2 hours or more, close the valves VL and VH on the gauge manifold fully and stop the vacuum pump. Leave it as it is for 1 hour to confirm that the vacuuming degree does not change. If the degree of vacuum loss is large, moisture may remain in the pipes. In that case, inject dry nitrogen gas and apply pressure to 0.05 MPa and perform vacuuming again.
- After finishing the above procedure of vacuuming, exchange the vacuum pump with a refrigerant canister and advance to the additional charging of refrigerant.

■ Adding refrigerant

After finishing vacuuming, exchange the vacuum pump with a refrigerant canister and start additional charging of refrigerant.

Calculation of additional refrigerant charge amount

Refrigerant charge amount at shipment from the factory does not include the refrigerant for pipes at the local site. For refrigerant to be charged in pipes at the local site, calculate the amount and charge it additionally.

NOTE

If the additional refrigerant amount indicates minus as the result of calculation, use the air conditioner without additional refrigerant.

Outdoor unit type	SUG0801	SUG1001	SUG1201	SUG1401	SUG1601	SUG1801	SUG2001	SUG2201	SUG2401
Charging amount (kg)	6.0				9.0				

Additional refrigerant charge amount at site = [1] + [2] + [3] + [4]

- [1] Compensation by system HP (Table 1)*
- [2] Real Length of liquid pipe X additional refrigerant charge amount per 1 m liquid pipe (Table 2)
- [3] Corrective amount of refrigerant depending on the Indoor units (Table 3-1, 3-2 and 3-3)
- [4] Corrective amount of refrigerant depending on the outdoor unit diversity (Connected ratio of indoor units to outdoor units). (Table 4)

Table 1
Standard

System HP	Compensation by System HP (kg)
8	0.5
10	0.7
12	1.2
14	1.2
16	-0.3
18	0.6
20	1.2
22	1.4
24	1.6

※ This table is common for both heat pump and heat recovery models.

Table 2

Liquid pipe dia. (mm)		6.4	9.5	12.7	15.9	19.1
Heat pump	Additional refrigerant amount per 1m liquid pipe (kg/m)	0.024	0.052	0.100	0.152	0.238
Heat recovery	Additional refrigerant amount per 1 m liquid pipe (kg/m)	0.025	0.055	0.105	0.160	0.250

Table 3-1

Corrective amount of refrigerant varies according to indoor unit capacity rank.

Indoor unit Capacity rank	003	005	007	008	009	010	012	014	015	018	020	024	027	030	036	048	056	072	096
Capacity code (Equivalent to HP)	0.3	0.6	0.8	0.9	1	1.1	1.25	1.5	1.7	2	2.25	2.5	3	3.2	4	5	6	8	10
Corrective amount of refrigerant (kg)	0.2					0.4					0.6				1.0				

- If the Fresh Air Intake Indoor Unit (MMD-UP *** HFP *) is connected, the correction amount refrigerant for Fresh Air Intake Indoor Unit is 0 Kg.

Table 3-2

Corrective amount of refrigerant varies for Hot Water Module

Indoor unit Capacity rank	024	048
Capacity code (Equivalent to HP)	2.5	5
Corrective amount of refrigerant (kg)	0.2	

Table 3-3

Corrective amount of refrigerant varies for (MMU-UP *** H-E) High Efficiency 4 way cassette

Indoor unit capacity rank	009	012	015	018	024	027	030	036	048	056
Capacity code (Equivalent to HP)	1	1.25	1.7	2	2.5	3	3.2	4	5	6
Corrective amount of refrigerant (kg)	0.2				0.6					

Charging of refrigerant

- Keeping the valve of the outdoor unit closed, be sure to charge the liquid refrigerant into the service port at the liquid side.
- If the specified amount of refrigerant cannot be charged, fully open the valves of the outdoor unit at liquid and gas sides, operate the air conditioner in COOL mode, and then charge refrigerant into service port at the gas side. In this time, choke the refrigerant slightly by operating the valve of the canister to charge liquid refrigerant.
- The liquid refrigerant may be charged suddenly, therefore be sure to charge refrigerant gradually.

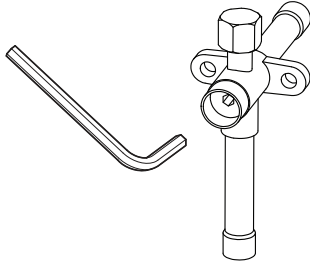
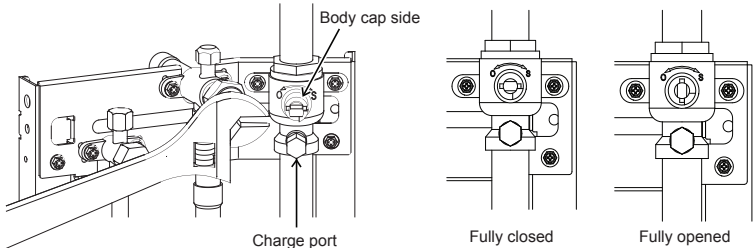
Table 4

Corrective amount of refrigerant varies according to the outdoor unit diversity

Diversity D (%)	Corrective amount of refrigerant (kg)
50% ≤ D < 60%	-2.5
60% ≤ D < 70%	-2.0
70% ≤ D < 80%	-1.5
80% ≤ D < 90%	-1.0
90% ≤ D < 95%	-0.5
95% ≤ D	0

■ Full opening of the valve

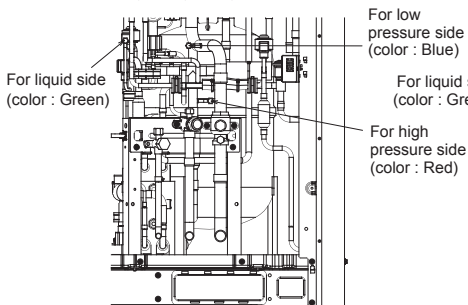
Open the valves of the outdoor unit fully.

Liquid side HP/LP gas side	<p>Packed valve Using a 5 mm-hexagonal wrench, turn the valve shaft counterclockwise fully to open it.</p> 
Suction gas side	<p>Ball valve Using a wrench, turn it counterclockwise by 90° until it hits the stopper. (Full open) For the ball valve with the stopper, release the stopper to opened or closed the ball valve. When finished working, to set the stopper.</p> <p>Pay attention so that the wrench does not come into contact with the charge port when the body cap is opened or closed.</p> 

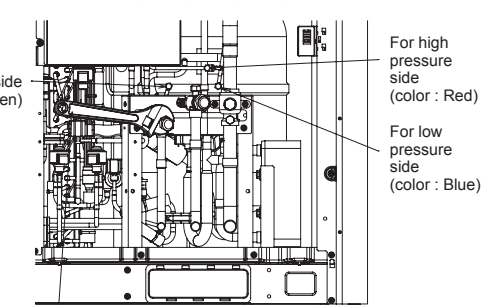
■ Position of the Check-joint

The figure below shows the position of the check-joint.

MMY-SUG0801,1001,1201,1401MT8



MMY-SUG1601,1801,2001,2201,2401MT8



When opening and closing the cap with a wrench, be careful not to turn the wrench vigorously as it may come into contact with surrounding parts.

■ Heat insulation for pipe

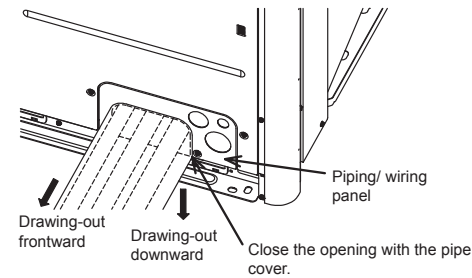
- Apply heat insulation of pipe separately at the liquid, HP/LP gas and suction gas sides.
- Be sure to use thermal insulator resistant up to 120°C or higher for pipes at the HP/LP gas (Gas) side.

■ Finishing after connecting pipes

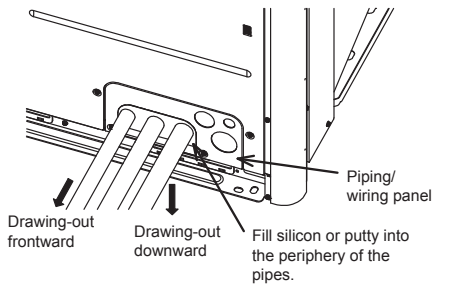
- After piping connection work has been finished, cover the opening of the piping/wiring panel with the piping cover, or fill silicon or putty into the space between the pipes.
- In case of drawing-out the pipes downward, also close the openings of the base plate.
- Under the opened condition, a problem may be caused due to the entering of water or dust.

For Heat Recovery System Installation

When using the piping cover

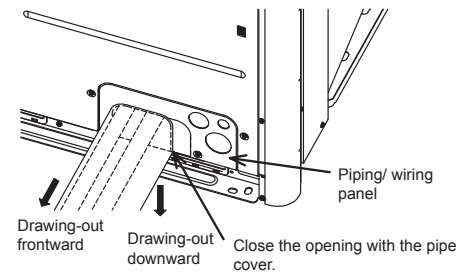


When not using the piping cover

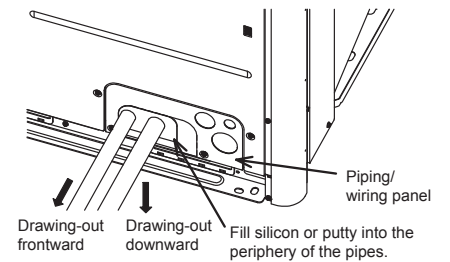


For Heat Pump System Installation

When using the piping cover



When not using the piping cover



◆ Pipe holding bracket

Attach pipe holding brackets following the table below.

Diameter of pipe (mm)	Interval
15.9 - 19.1	2 m
22.2 - 54.0	3 m

■ F-GAS label

This product contains fluorinated greenhouse gases

- Chemical Name of Gas R32
- Global Warming Potential (GWP) of Gas 675

⚠ CAUTION

1. Stick the enclosed refrigerant label adjacent to the service ports for charging or recovering location and where possible adjacent to existing nameplates or product information label.
2. Clearly write the charged refrigerant quantity on the refrigerant label using indelible ink. Then, place the included transparent protective sheet over the label to prevent the writing from rubbing off.
3. Prevent emission of the contained fluorinated greenhouse gas. Ensure that the fluorinated greenhouse gas is never vented to the atmosphere during installation, service or disposal. When any leakage of the contained fluorinated greenhouse gas is detected, the leak shall be stopped and repaired as soon as possible.
4. Only qualified service personnel are allowed to access and service this product.
5. Any handling of the fluorinated greenhouse gas in this product, such as when moving the product or recharging the gas, shall comply under (EU) Regulation No. 517/2014 on certain fluorinated greenhouse gases and any relevant local legislation.
6. Periodical inspections for refrigerant leaks may be required depending on European or local legislation.
7. Contact dealers, installers, etc., for any questions.

9 Electric wiring

⚠ WARNING

The appliance shall be installed in accordance with national wiring regulations.

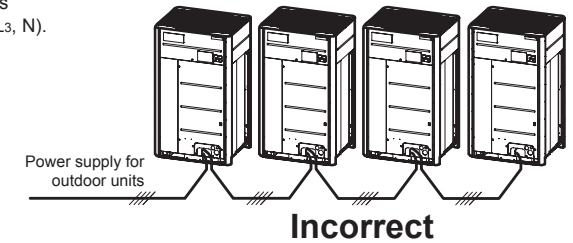
Capacity shortages of the power circuit or an incomplete installation may cause an electric shock or fire.

⚠ CAUTION

- Perform wiring of power supply complying with the rules and regulations of the local electric company.
- Do not connect 380V - 415V power to the terminal blocks for control cables (Uv (U1, U2), Uh (U3, U4), Uc (U5, U6)); otherwise, the unit may break down.
- Be sure that electric wiring does not come into contact with high-temperature parts of piping; otherwise, the coating of cables may melt and cause an accident.
- After connecting wires to the terminal block, take off the traps and fix the wires with cord clamps.
- Process both electric wiring and refrigerant piping into the same system.
- Do not conduct power to indoor units until airtightness test, vacuum drying and adding refrigerant finish. In case that conducting power before doing them, conduct power during doing them to keep PMV in safety shut-off unit open.
- For the power supply wiring of indoor units, follow the instructions in the Installation Manual of each indoor unit.

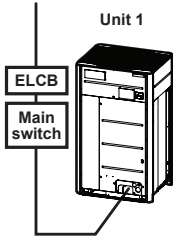
■ Power supply specifications

Do not bridge the power between outdoor units through the equipped terminal blocks (L1, L2, L3, N).



◆ Power wiring selection

1 Single unit



MCA: Minimum Circuit Amps
MOCP: Maximum Overcurrent Protection (Amps)

Model name	Power Supply		MCA (A)	MOCP (A)
	Phase supply	Nominal Voltage		
MMY-SUG0801*	3N-50Hz	380 - 400 - 415V	17.0	20
MMY-SUG1001*			23.0	32
MMY-SUG1201*			27.0	32
MMY-SUG1401*			31.0	40
MMY-SUG1601*			34.0	40
MMY-SUG1801*			38.0	50
MMY-SUG2001*			40.0	50
MMY-SUG2201*			57.0	63
MMY-SUG2401*			60.0	80

■ Communication line

TU2C-LINK models (U series) can be combined with TCC-LINK models (other than U series and SHRM Advance). But SHRM Advance (Outdoor unit) can NOT be combined with TCC-LINK models (other than U series and SHRM Advance).

For details of communication type, refer to the following table.

Communication type	TU2C-LINK (U series, SHRM Advance and future models)	TCC-LINK (Other than U series)
Outdoor unit	MMY-MUP *** ↑ This letter indicates U series model. MMY-SUG *** ↑ This letter indicates SHRM Advance model.	Other than U series MMY-MAP *** MCY-MAP ***
Indoor unit	MM *-UP *** ↑ This letter indicates U series model.	Other than U series MM*-AP***
Wired remote controller	RBC-A ** U*** ↑ This letter indicates U series model.	Other than U series
Wireless remote controller kit & receiver unit	RBC-AXU*** ↑ This letter indicates U series model.	Other than U series
Remoter sensor	TCB-TC**U*** ↑ This letter indicates U series model.	Other than U series

U series outdoor unit : SMMS-u (MMY-MUP***)

SHRM Advance outdoor unit : MMY-SUG***.

Other than U series outdoor unit : SMMS-i, SMMS-e etc. (MMY-MAP***, MCY-MAP***)

■ Specifications for communication wiring

FS : Flow Selector

◆ Design of communication wiring

Summary of communication wiring

- Communication wiring and central control wiring use 2-core non-polarity wires.
Use 2-core shield wires to prevent noise trouble.
- Connecting the closed end terminal of shield wire. (Connected to all connecting sections in each unit)
- Use 2-core non-polarity wire for remote controller. (A, B terminals)
Use 2-core non-polarity wire for Multi port type FS unit and Single port type FS unit .(A, B terminals)
Use 2-core non-polarity wire for wiring of group control. (A, B terminals)
Use 2-core non-polarity wire for leak detector. (A, B terminals)

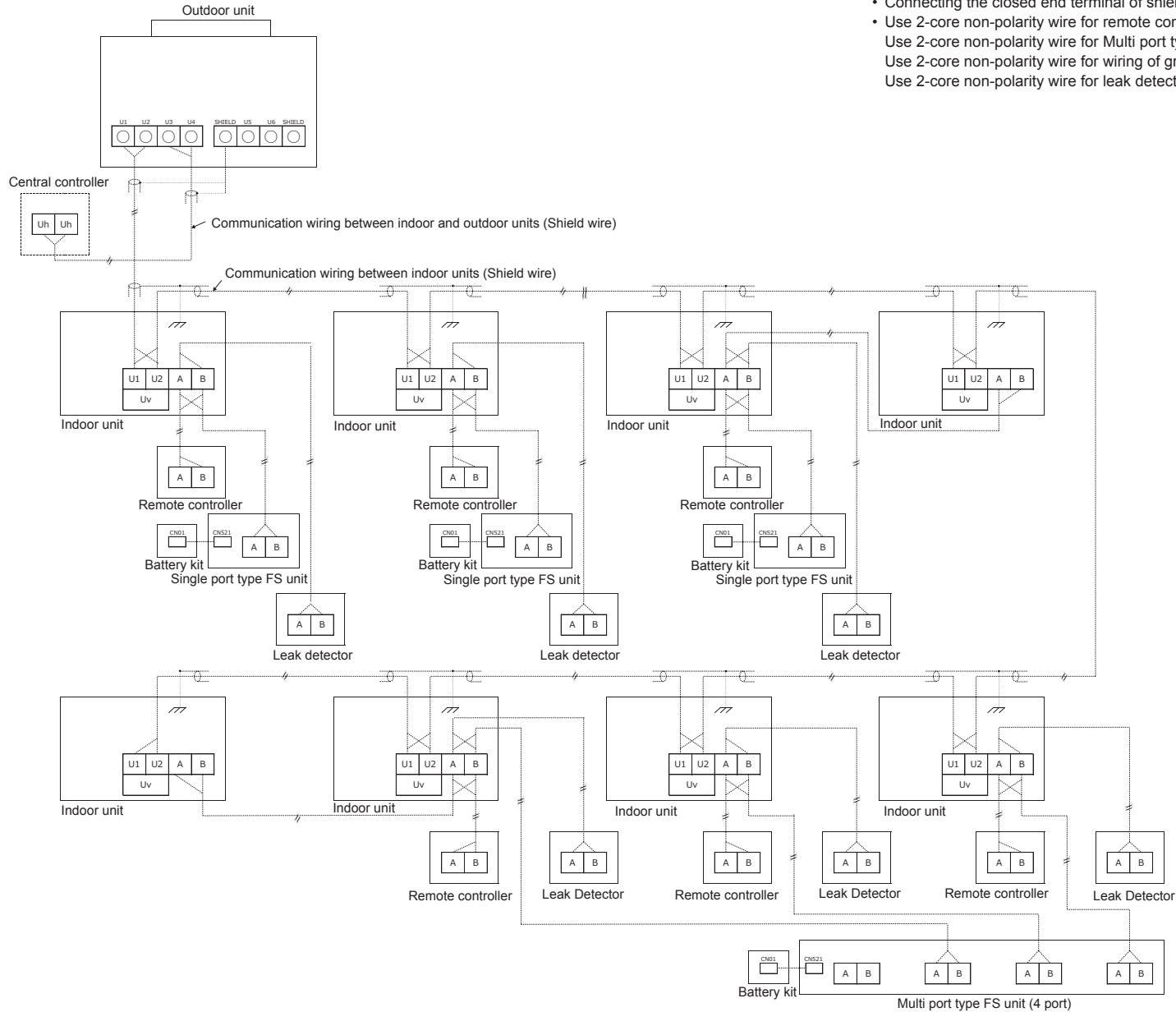


Table-1 Uv line

Wiring	2-core, non-polarity
Type	Shield wire
Size/Length	1.0 to 1.5 mm ² : Up to 1000 m

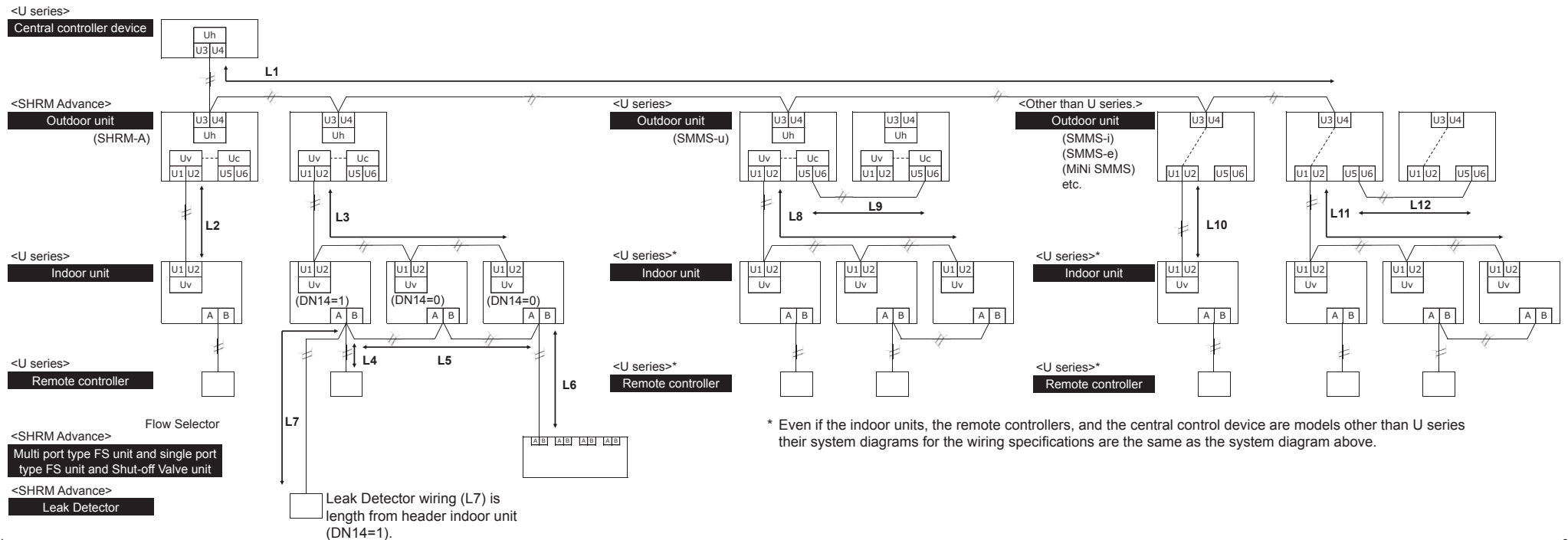
Table-2 Uh line

Wiring	2-core, non-polarity
Type	Shield wire
Size/Length	1.0 to 1.5 mm ² : Up to 1000 m 2.0 mm ² : Up to 2000 m

Table-3 Remote controller wiring, Flow Selector unit Multi-port type and Single-port type, Shut-off Valve unit wiring, Leak Detector wiring

Wiring	2-core, non-polarity
Type	0.5 mm ² to 2.0 mm ²
Length	<ul style="list-style-type: none"> • Up to 300 m (L4+L5+L6+L7) • Up to 400 m in case of wireless remote controller in group control. • Up to 200 m total length of communication wiring between indoor units and FS unit (Multi-port type and Single-port type) or SV unit. (L5+6) • Up to 300 m. (L4) • Up to 100 m. (L7)

- U (v, h, c) line means of control wiring.
Uv line: Between indoor and outdoor units.
Uh line: Central control line.
Uc line: Between outdoor and outdoor units (U series).



REQUIREMENT

- For the central control line (L1) when SHRM Advance outdoor units and outdoor units other than SHRM Advance and U-series are connected to the central control device, follow the communication wiring specifications for outdoor unit other than SHRM Advance and U-series.
- Using the same wire type and size, wire each line below.
If the different wire types and sizes are mixed in each line, communication trouble is caused.
 - Central control line and wiring between indoors and outdoor units other than SHRM Advance and U-series
 - Uv line (wiring between indoor and outdoor units) and Uc line (wiring between outdoor and outdoor units) in SHRM Advance and U-series
 - Wiring between outdoor and outdoor units other than SHRM Advance and U-series
- For communication wiring specifications for outdoor unit other than SHRM Advance, refer to the Installation Manual attached to the outdoor unit to be connected.

[Uh-line and line / wiring between outdoor and indoor units other than SHRM Advance and U series]
Up to 2000 m (L1 + L10 + L11)

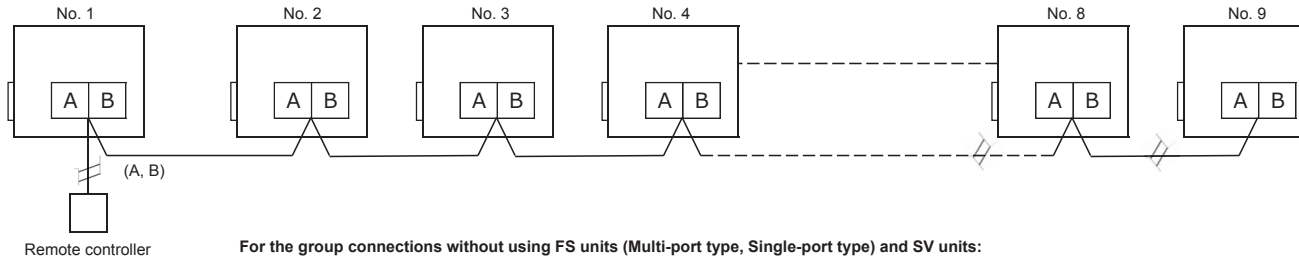
[Uv line and Uc line in U series]
Up to 1000 m (L2, L3)
Up to 1000 m (L8 + L9)

[Between outdoor and outdoor units other than SHRM Advance and U series]
Up to 100 m (L12)

◆ Group control through a remote controller

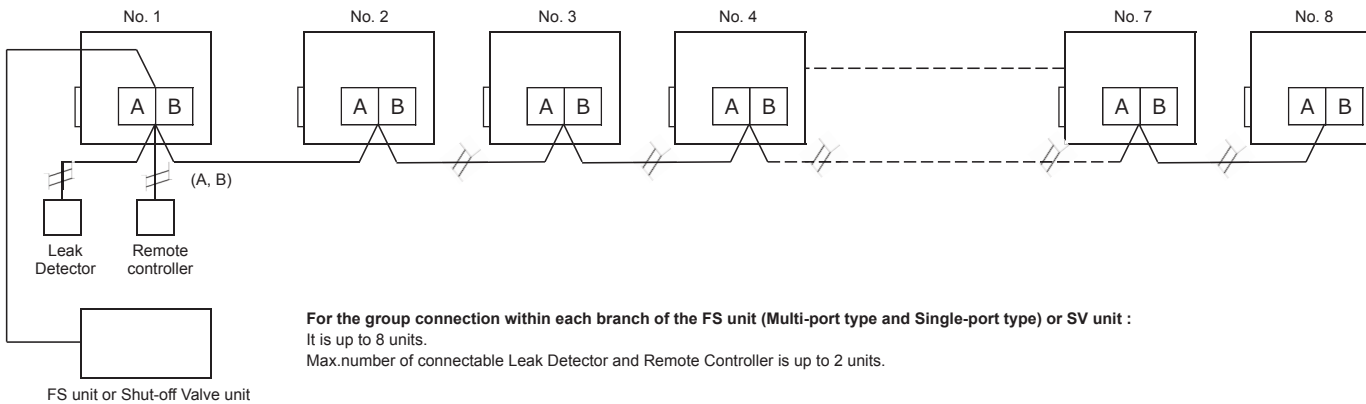
SHRM Advance cannot connect to the model other than SHRM Advance and U series (TCC-LINK).
Group control of multiple indoor units (8 or 9 units) through a single remote controller

Indoor unit



For the group connections without using FS units (Multi-port type, Single-port type) and SV units:
It is up to 9 units.
Max. number of connectable Leak Detector and Remote Controller is up to 2 units.

Indoor unit

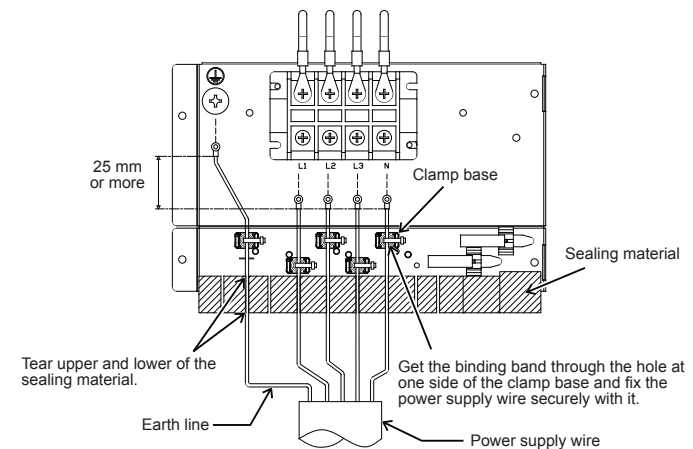


FS : Flow Selector
SV : Shut-off Valve

For the group connection within each branch of the FS unit (Multi-port type and Single-port type) or SV unit :
It is up to 8 units.
Max. number of connectable Leak Detector and Remote Controller is up to 2 units.

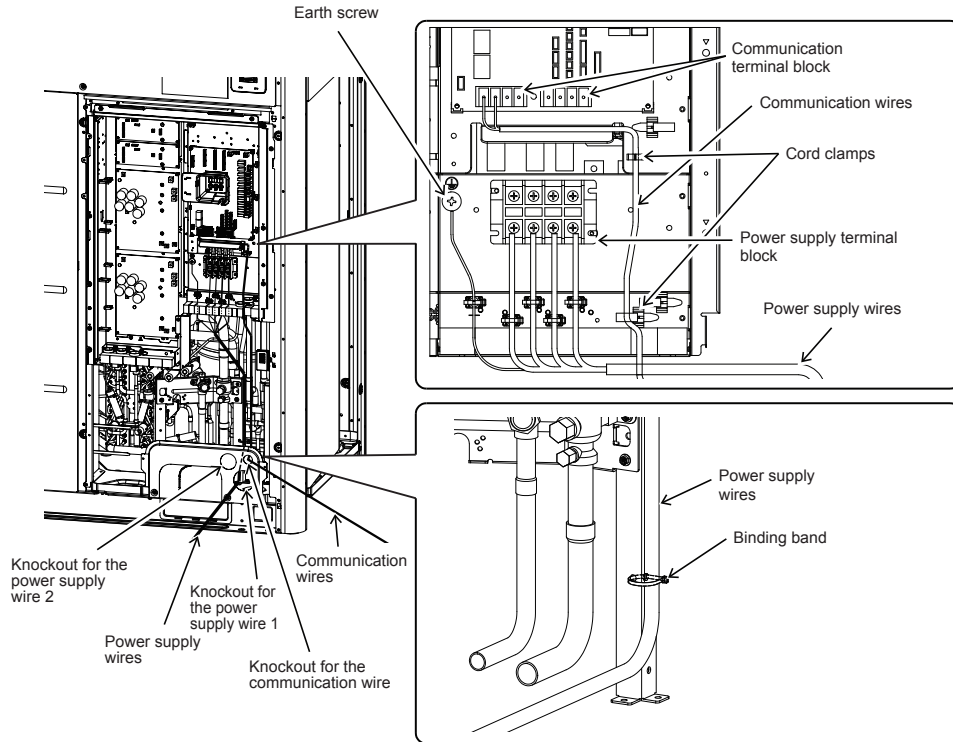
◆ Power supply wire connection

1. Insert the power supply wires from lower right of the electrical control box and connect them to the power terminal blocks and the earth line to the earth screw, and then fix each of the five wires with each cord clamp and binding band.
2. When finished wiring the power supply wires, get each of five wires through the cutout on the sealing material (black) under the cord clamp to pull it outside the electrical control box. Tear upper and lower of the cutout on the sealing material with your hands before getting the wires through the cutout.
3. Get the binding band through two holes in the right part of the valve fixing plate and fix the power supply wires with it.



■ Connection of power supply wires and communication wires

Remove knockouts on the piping / wiring panel on the front of the unit and the panel on the bottom to get the power and communication wires through the holes.



NOTE

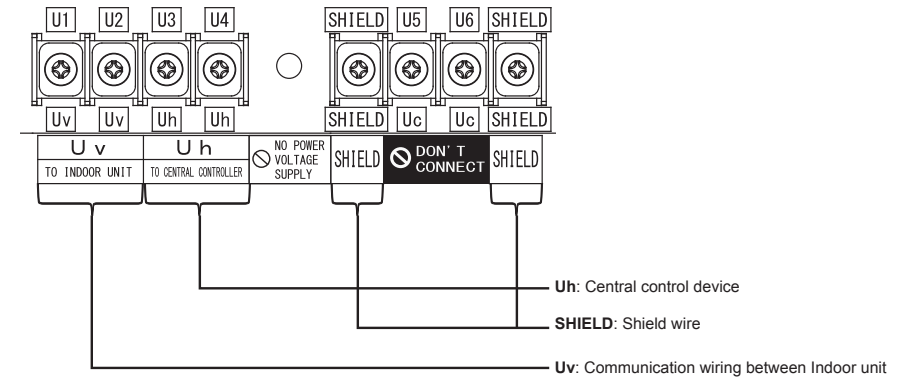
Be sure to separate the power supply wire and communication wires.

Screw size and tightening torque

	Screw size	Tightening torque (N•m)
Power supply terminal	M6	2.5 to 3.0
Earth screw	M8	5.5 to 6.6

◆ Communication wire connection

1. Insert the communication wires from lower right of the electrical control box and connect them to the communication terminal blocks.
2. Fix the communication wires with the cord clamp on the right of the terminal block and fix them with the cord clamp on the sealing material under the electrical control box, and then get the wires through the cutout on the sealing material to pull them outside the electrical control box. Tear upper and lower of the cutout on the sealing material with your hands before getting the wires through the cutout.



Screw size and tightening torque

	Screw size	Tightening torque (N•m)
Communication wire terminal	M4	1.2 to 1.4

■ Regulation of harmonic currents

This equipment complies with IEC 61000-3-12 provided that the short-circuit power S_{sc} is greater than or equal to $S_{sc} (*1)$ at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power S_{sc} greater than or equal to $S_{sc} (*1)$

Furthermore, when similar equipment or other equipment which may cause harmonic current emissions are to be connected to the same interface point with this equipment, to reduce the risk of possible problems which may be caused from addition of those harmonic current emissions, it is recommended to make sure that the short-circuit power S_{sc} at the interface point is greater than the sum of the minimum S_{sc} required by all the equipment which will be connected to the interface point.

Model	S_{sc} (kW)
MMY-SUG0801MT8(J)P-E	1050
MMY-SUG1001MT8(J)P-E	1310
MMY-SUG1201MT8(J)P-E	1573
MMY-SUG1401MT8(J)P-E	1792
MMY-SUG1601MT8(J)P-E	2141
MMY-SUG1801MT8(J)P-E	2220
MMY-SUG2001MT8(J)P-E	2208
MMY-SUG2201MT8(J)P-E	2985
MMY-SUG2401MT8(J)P-E	3137

10 Address setting

On this unit, it is required to set the addresses of the indoor units before starting air conditioning. Set the addresses following the steps below.

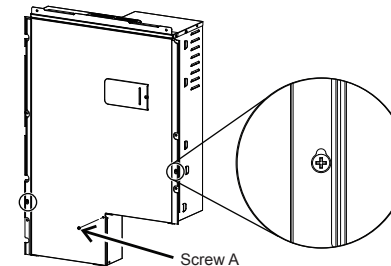
CAUTION

- Be sure to complete the electric wiring before setting the addresses.
- If you turn on the outdoor unit before turning on the indoor units, the CODE No. [E19] is indicated on the 7 - segment display on the interface P.C. board of the outdoor unit until the indoor units are turned on. This is not a malfunction.
- It may take up to ten minutes (normally about five minutes) to address one refrigerant line automatically.
- Settings on the outdoor unit are required for automatic addressing. (Address setting is not started simply by turning on the power.)
- Running the unit is not required for address setting.

Before setting the address, set the DIP-SW on the header outdoor unit interface P.C. board.

1. Follow the steps below to open the electrical control box cover

- (1). Loosen the screws on the left and right side of the electrical control box cover.
- (2). Remove the screw A for MMY-SUG160, 180, 200, 220 and 240.
(There is no screw A for MMY-SUG080, 100, 120 and 140.)



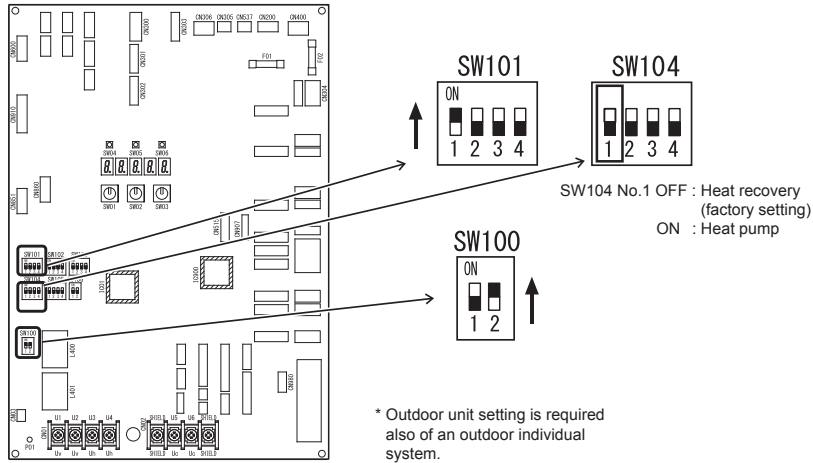
- (3). Hold the lower side of the electrical control box cover to draw it toward you while lifting it up, and remove the electrical control box cover.

2. Follow the steps below to set the DIP switch on the outdoor unit interface P.C. board.

2-1. Outdoor unit setting

Turn on DIP switch 1 of SW101 on the outdoor unit interface P.C. boards.
And, turn on DIP switch 2 of SW100.

Interface P.C. board on the outdoor unit



2-2. Battery-kit (sold separately) setting on Flow Selector (FS) unit, Shut-off Valve (SV) unit P.C. board

If the FS unit or SV unit is to be used as a safety measure, a battery kit must be installed.
When installing a battery kit to an Flow Selector unit or shut-off valve unit, make the following settings for each unit.

For the multiport type FS unit : Turn on DIP switch 4 of SW03.

For the single port type FS unit : Turn on DIP switch 4 of SW03.

For SV unit : Turn on DIP switch 4 of SW03.

Refer to the installation manual of Flow Selector unit or Shut-off valve unit about detail for installing Battery kit.

2-3. Line (system) address setting

For the central control among two or more refrigerant lines or group control among two or more refrigerant lines, set the line (system) address.

(Example)	Controlling a single refrigerant line centrally	Controlling 2 or more refrigerant lines centrally
System wiring diagram		
Line (system) address setting	No	Set the address

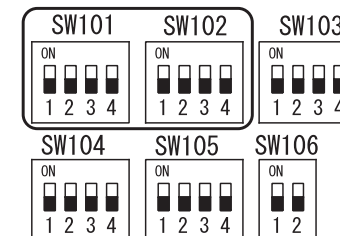
(Example)	Controlling 2 or more refrigerant lines as a group is not permitted
System wiring diagram	<p>NOT permitted</p>

- (1) Set a line (system) address for each system using SW101 and 102 on the interface P.C. board on the outdoor unit of each system.
(Factory default : Address 1)

NOTE

Be sure to set a unique address on each system. Do not use a same address as another system (refrigerant line) or a custom side.

Interface P.C. board on the outdoor unit



Switch settings for a line (system) address on the interface P.C. board on the outdoor unit
 (○: switch ON, ×: switch OFF)

Line (system) address	SW101				SW102			
	1	2	3	4	1	2	3	4
1	-	×	×	×	×	×	×	×
2	-	×	×	×	×	×	×	○
3	-	×	×	×	×	×	○	×
4	-	×	×	×	×	×	○	○
5	-	×	×	×	×	○	×	×
6	-	×	×	×	×	○	×	○
7	-	×	×	×	×	○	○	×
8	-	×	×	×	×	○	○	○
9	-	×	×	×	○	×	×	×
10	-	×	×	×	○	×	×	○
11	-	×	×	×	○	×	○	×
12	-	×	×	×	○	×	○	○
13	-	×	×	×	○	○	×	×
14	-	×	×	×	○	○	×	○
15	-	×	×	×	○	○	○	×
16	-	×	×	×	○	○	○	○
17	-	×	×	○	×	×	×	×
18	-	×	×	○	×	×	×	○
19	-	×	×	○	×	×	○	×
20	-	×	×	○	×	×	○	○
21	-	×	×	○	×	○	×	×
22	-	×	×	○	×	○	×	○
23	-	×	×	○	×	○	○	×
24	-	×	×	○	×	○	○	○
25	-	×	×	○	○	×	×	×
26	-	×	×	○	○	×	×	○
27	-	×	×	○	○	×	○	×
28	-	×	×	○	○	×	○	○

NOTE

Beware that if the setting is different from what is shown in the table above, the line (system) address will be 28. Because the SW101 bit 1 is a dedicated switch for the header outdoor unit, it is not used for line (system) address setting.

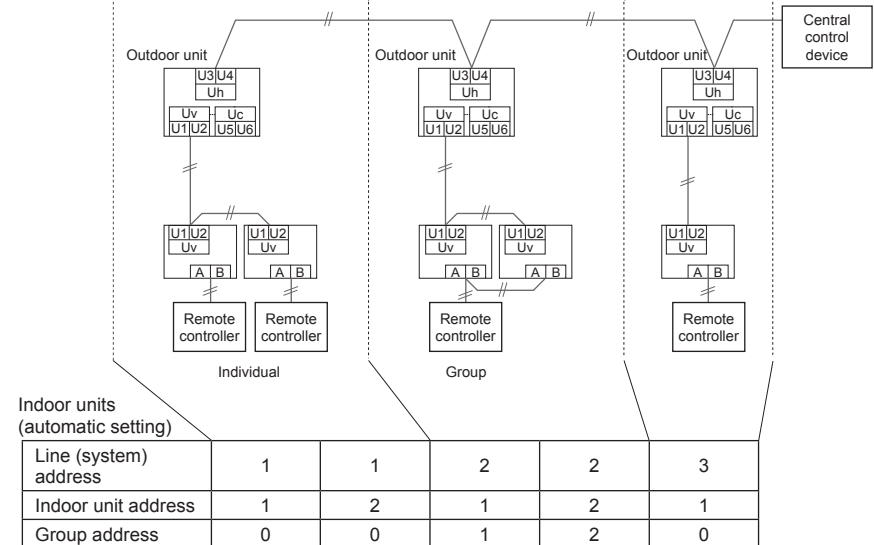
(2) Turn on DIP switch 1 of SW100 on the header outdoor unit interface P.C. board of the lowest system address number.

Switch setting (setting example when controlling 2 or more refrigerant lines centrally)

Outdoor units (setting manually)

*The items in bold font must be set manually.

Outdoor unit's interface P.C. board	Outdoor unit	Outdoor unit	Outdoor unit	Factory default
SW101, 102 (line (system) address)	1	2	3	1
DIP switch 1 of SW100 (Terminator of central control line)	Set to ON	(No setting required)	(No setting required)	OFF

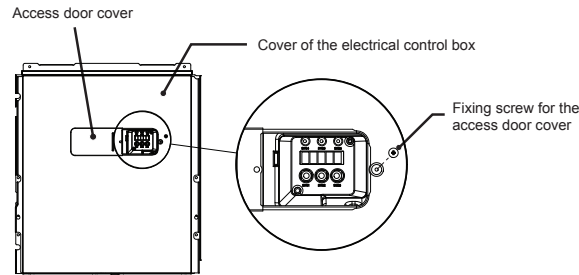


3. Attach the electrical control box cover.

4. Open the access door cover and follow the steps below to set the address.

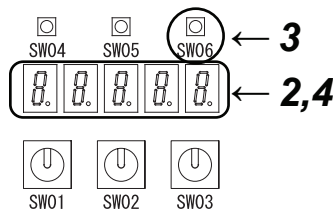
REQUIREMENT

- High voltage parts exist in the electrical control box.
If you set addresses on an outdoor unit, operate the unit through the access door as shown in the illustration below to avoid electric shock. Do not remove the cover of electrical control box.
- * After finishing operations, close the access door cover and fix it with the screw.



- Turn on indoor units first, and then turn on outdoor units.
- About 1 minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the header outdoor unit indicates **U. 1. Err (U. 1. flash)** and **L08** alternately at 1 second intervals.
- Press SW06 for more than 1 second to start the automatic address setting.
(It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)
- The 7-segment display indicates **Auto 1 → Auto 2 → Auto 3**.
The setting is complete when the display changes to **U. 1. --- (U. 1. flash)** or **U. 1. --- (U. 1. light)**.
* When either a TU2C-Link incompatible device or indoor unit incompatible with R32 refrigerant is connected, "L02" will be displayed for 30 minutes.
If "L02" is displayed, please check whether the connected device is a device compatible with TU2C-Link or A2L refrigerant.
- Repeat steps 2 to 4 for other refrigerant lines.
- Set the central control address.
(For the setting of the central control address, refer to the Installation Manuals of the central control devices.)

Interface P.C. board on the header outdoor unit

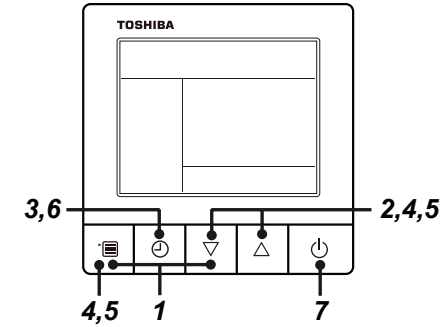


■ Changing the indoor unit address using a remote controller

To change an indoor unit address using a wired remote controller.

Remote controller model name : RBC-ASCU11-E

- ▼ The method to change the address of an individual indoor unit (the indoor unit is paired with a wired remote controller one-tone), or an indoor unit in a group. (The method is available when the addresses have already been set automatically.)



(Execute it while the units are stopped.)

- Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.
(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)
- Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for. (The fan and louvers of the selected indoor unit are activated.)
(The fan of the selected indoor unit is turned on.)
- Push the Timer off button.
- Push the menu button to make CODE NO. flash. Change CODE NO. [13] with [▽] [△] setting button.
- Push the menu button to make Set data [****] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section to that you want.
- Push the Timer off button.
(When the display changes from [--] to SET DATA [****] flashing, the setup is completed.)
- When all the settings have been completed, push ON/OFF button to determine the settings.
SETTING flashes and then the display content disappears and the air conditioner enters the normal stop mode.
(The remote controller is unavailable while SETTING is flashing.)
- To change settings of another indoor unit, repeat from Procedure 1.
If an indoor unit incompatible with R32 refrigerant is connected, "L02" is displayed.
If "L02" is displayed, please check whether the connected indoor unit is compatible with A2L refrigerant.

NOTE

1. The CODE NO. [E04] (Indoor / outdoor communication trouble) will appear if line (system) addresses are mistakenly set.
2. If you set addresses to indoor units in 2 or more refrigerate lines manually using the remote controller and will control them centrally, set the header outdoor unit of each line as below.
 - Set a system address for the header outdoor unit of each line with SW101 and 102 of their interface P.C. boards.
 - Turn on DIP switch 1 of SW100 on the header outdoor unit interface P.C. board of the lowest system address number.
 - After finishing all the settings above, set the address of the central control devices. (For the setting of the central control address, refer to the installation manuals of the central control devices.)

■ Resetting the address (Resetting to the factory default (address undecided))

Method 1

Clearing each address separately using a wired remote controller.
Set the system address, indoor unit address and group address to "00Un" using a wired remote controller.
(For the setting procedure, refer to the address setting procedures using the wired remote controller on the previous pages.)

Method 2

Clearing all the indoor unit addresses on a refrigerate line at once from the outdoor unit.

- 1** Turn off the indoor and outdoor units of the refrigerant line to reset to the factory default and set outdoor unit of the line as below.
- 2** Turn on the indoor and outdoor units of the refrigerant line for which you want to initialize the addresses. About one minute after turning on the power, confirm that the 7-segment display on outdoor unit indicates "U.1. - - -" and operate the interface P.C. board on the outdoor unit of the refrigerant line as follows.

SW01	SW02	SW03	SW04	Clearable addresses
2	1	2	Confirm that the 7-segment display indicates "A.d.buS" and turn SW04 ON for more than five seconds.	System / indoor unit / group address
2	2	2	Confirm that the 7-segment display indicates "A.d.nEt" and turn SW04 ON for more than five seconds.	Central control address

- 3** Confirm that the 7-segment display indicates "A.d. c.L." and set SW01, SW02 and SW03 to 1, 1, 1 respectively.
- 4** After finished clearing the address successfully, "U.1.Err" and "L08" appear alternatively at 1 second intervals on the 7-segment display.
- 5** Set the addresses again after finishing the clearance.

11 Communication setting

This product needs setting TU2C-Link communication after the address setting.
Follow the procedure below for the communication setting.
TCC-Link communication has been set as the factory default.

CAUTION

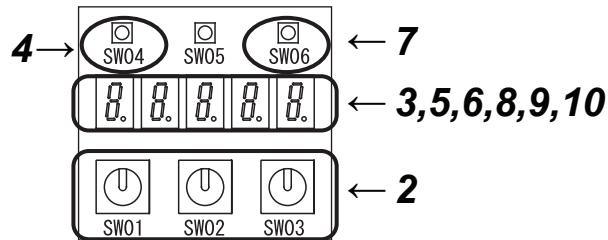
- Be sure to complete the electric wiring before setting the addresses.
- It may takes approximately 1 to 3 minutes to address one refrigerant line.
- Settings on the outdoor unit are required for communication setting.
(Communication setting is not started simply by turning on the power.)
- If outdoor units for which communication setting has already been made are connected, the setting cannot be made correctly.
In this case, reset the communication setting and perform the setting again.

■ Communication setting

- 1** Turn on indoor units first, and then turn on outdoor units.
- 2** Set the rotary switch of the interface P.C. board on the header outdoor unit to SW01= [2], SW02= [16] and SW03= [2].
- 3** The 7-segment display switches between "c.c. b p s" and "c.c. 0" at 1-second intervals.
- 4** Push and hold SW04 for more than 5 seconds.
- 5** The 7-segment display flashes "c.c.i n".
- 6** The 7-segment display switches between "c.c. i n" and "c.c.***" at 1-second intervals.
The number of connected indoor unit is displayed in [***], so if it is correct, proceed to " 7 ".
In parentheses are the measures to be taken when the number of indoor units is different.
(When the number of the connected indoor units differs from the number of indoor units displayed on the 7-segment display, clear the communication type setting to eliminate the cause. To clear the communication type setting, push and hold the SW05 for 5 seconds or more.
The 7-segment display flashes "c.c.r S t".
After a while, the 7-segment display switches between "c.c. b p s" and "c.c. 0".
Set the rotary switch back to SW01 to [1], SW02 to [1] and SW03 to [1].)
- 7** Push and hold SW06 for more than 5 seconds.
- 8** The 7-segment display flashes "c.c.b p s".
After that, the setting is complete when the 7-segment display changes to "c.c F i n".
(If the 7-segment display changes to "c.c. E r r", try again.)
When either a TU2C-Link incompatible device or indoor unit incompatible with R32 refrigerant is connected, "L02" will be displayed for 30 minutes.
If "L02" is displayed, please check whether the connected device is a device compatible with TU2C-Link or A2L refrigerant.
- 9** After a while, the 7-segment display switches between "c.c. b p s" and "c.c. 1" 1-second intervals.
When a TCC-Link compatible device is connected, "L02" is displayed.
If "L02" is displayed, please check whether the connected device is a device compatible with TU2C-Link.
- 10** Set the rotary switch on the interface P.C. board of the header outdoor unit back to SW01= [1], SW02= [1], SW03= [1].

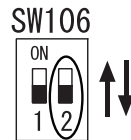
7-segment display		Communication type
[A] [c.c.] [c.c.]	[B] [b p s] [1]	TU2C-Link (U series, advance series and future models)

Interface P.C. board on the header outdoor unit



■ Resetting the communication (Return to factory default)

- 1** Turn off indoor units first, and then turn off outdoor units.
- 2** Set SW106-2 on the interface P.C. board of the header outdoor unit to ON.
- 3** Turn on outdoor units first, and then turn on indoor units.
(Turn on the header unit, and then 20 seconds or more later, turn on the follower units and indoor units. If the follower units cannot be turned on after the header unit has been turned on, turn on both of them simultaneously. After that, turn on the indoor unit.)
- 4** The 7-segment display indication “ - r S t . - ”. Check all the units have turned on more than approx. 1 minute. Turn off all the indoor and outdoor units.
- 5** Set SW106-2 on the interface P.C. board of the header outdoor unit to OFF.



■ Setting when connecting indoor units to Flow Selector (FS) unit or Shut-off Valve (SV) unit, and when connecting safety equipment

[Cautions to connection of indoor unit]

- When connecting the indoor units to a single port type Flow Selector unit, a branch of the multi port type Flow Selector unit and a Shut-off Valve unit, it is necessary to set up the CODE No. Be sure to set up the CODE No. after setup of address.
- When connecting the indoor units to a single port type Flow Selector unit and a branch of the multi port type Flow Selector unit and Shut-off Valve unit, it is possible to connect with multiple groups and connect individually.
- When connecting the indoor units to a branch of the multi port type Flow Selector unit, it is necessary to set up the port address No. (the CODE No. [105]). Be sure to set up the port address No..
- When connecting the indoor units to combining branches of the multi port type Flow Selector unit, it is necessary to set up the CODE No. [106]. Be sure to set up the CODE No. [106].
- Even if you do not add safety equipment, be sure to set safety measures (the CODE No. [107]).

[Connection rules]

- It is possible to branch after the port.
- It is possible to set the group of indoor units after the port.
- The multi-port type Flow Selector unit can group indoor units with adjacent ports.
 - 1) Group settings across ports are allowed only adjacent (contiguous) ports.
 - 2) Only some indoor units in one port are not allowed to be grouped with the indoor units on other ports. (It is allowed to group all indoor units in one port with the indoor units of other ports.)
- Ports can be combined and used.
 - 1) Port combined use should be up to 2 ports, and combined use of 3 or more ports is not allowed.
 - 2) Port combined use is allowed only for adjacent ports.
- Group settings across Flow Selector units or Shut-off Valve units are not allowed.
- The Flow Selector unit and Shut-off Valve unit are allowed in the system.
- Simultaneous connection of Flow Selector units and Shut-off Valve units to the same indoor unit is not allowed.
- It is not possible to set the port combined use across the P.C. board of the multiport type Flow Selector unit.
- Be sure to connect the No.1 port of the multiport type Flow Selector unit to the indoor unit. (If the indoor unit is not connected to No.1 port, the air conditioning system will not operate.)
- In the case of the same group, connect one communication line to the Flow Selector unit (one place). (The connection location should be made at the sub bus terminal of the address with the smallest port address of the Flow Selector unit.)

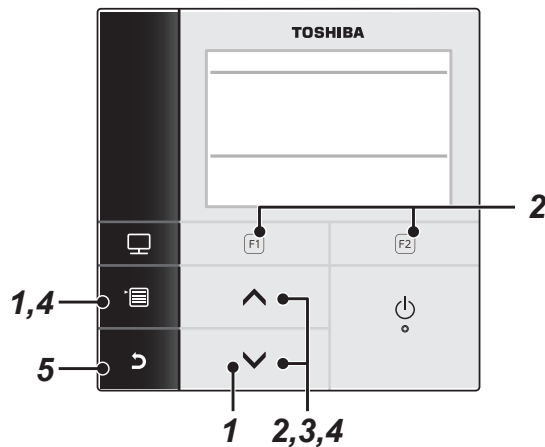
[Setting rules]

- The safety measures for indoor units set in the group shall be the same. (Allow mixing in the system.)
- Only one detector is used in a group.

■ How to set up the CODE No. [FE] (Flow Selector unit address)

SV : Shut-off Valve
FS : Flow Selector

- As for every single port type FS unit, multi port type FS unit and SV unit, set up CODE No. "FE" within the range of 1~128.
This CODE No. should cannot be duplicate in one system.
- Push and hold "MENU" button and [▼] setting button simultaneously for 4 seconds or more.
 - Select the "DN setting" using the [▼] and [▲] button and press the "F2 (Set)" button.
Select the corresponding "Indoor unit" using the "F1(Unit)" button and push the "F2 (Set)" button.
(The fan and louvers of the selected indoor unit will be activated.)
 - Set the Indoor Unit Function Code (I.DN) to [FE] and the data using the [▼] and [▲] button
(The fan of the selected indoor unit is turned on.)
 - When done, press the "MENU" button.
 - Push the "Back CANCEL" button and complete the setting for the time being.



■ How to set up the CODE No. [105] (Flow Selector unit and Shut-off Valve unit port address)

SV : Shut-off Valve
FS : Flow Selector

- As for multi port type FS unit, set up CODE No. "105" within the range of 1~12.
This CODE No. should not be duplicate in one system.
 - As for both single port type FS unit and SV unit, set up CODE No. "105" to 1.
- Push and hold "MENU" button and [▼] setting button simultaneously for 4 seconds or more.
 - Select the "DN setting" using the [▼] and [▲] button and press the "F2 (Set)" button.
Select the corresponding "Indoor unit" using the "F1 (Unit)" button and push the "F2 (Set)" button.
(The fan and louvers of the selected indoor unit will be activated.)
 - Set the Indoor Unit Function Code (I.DN) to [105] and the data using the [▼] and [▲] button
(The fan of the selected indoor unit is turned on.)
 - When done, press the "MENU" button.
 - Push the "Back CANCEL" button and complete the setting for the time being.

■ How to set up the CODE No. [106] (Combining branches mode of Flow Selector unit)

FS : Flow Selector

- When connecting the indoor units to combining branches of the multi port type FS unit, set up CODE No. "106" to 1.
 - When connecting the indoor units to NOT combining branches of the multi port type FS unit, set up CODE No. "106" to 0.
- Push and hold "MENU" button and [▼] setting button simultaneously for 4 seconds or more.
 - Select the "DN setting" using the [▼] and [▲] button and press the "F2 (Set)" button.
Select the corresponding "Indoor unit" using the "F1(Unit)" button and push the "F2 (Set)" button.
(The fan and louvers of the selected indoor unit will be activated.)
 - Set the Indoor Unit Function Code (I.DN) to [106] and the data using the [▼] and [▲] button
(The fan of the selected indoor unit is turned on.)
 - When done, press the "MENU" button.
 - Push the "Back CANCEL" button and complete the setting for the time being.

■ How to set up the CODE No. [107] (Safety measures)









- It is necessary to set up safety measures.
- If the settings and actual connections are different, the system will not be able to operate.
0: No Safety equipment is required
1: Pump-down operation
2: Individual shut-off operation
3: Only refrigerant leak detector

- Push and hold "MENU" button and [▼] setting button simultaneously for 4 seconds or more.
- Select the "DN setting" using the [▼] and [▲] button and press the "F2 (Set)" button.
Select the corresponding "Indoor unit" using the "F1 (Unit)" button and push the "F2 (Set)" button.
(The fan and louvers of the selected indoor unit will be activated.)
- Set the Indoor Unit Function Code (I.DN) to [107] and the data using the [▼] and [▲] button
(The fan of the selected indoor unit is turned on.)
- When done, press the "MENU" button.
- Push the "Back CANCEL" button and complete the setting for the time being.

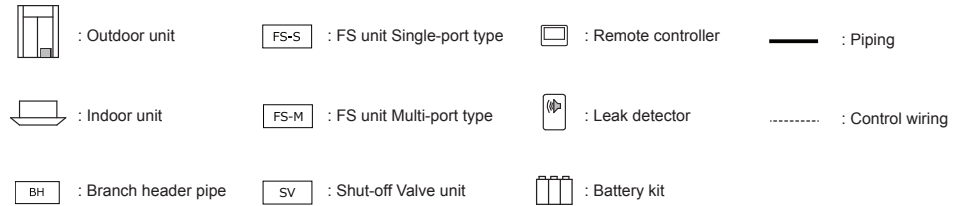
■ How to set up the CODE No. [108] (Circulation flow operation mode of the indoor unit)

- It is necessary to set whether or not the indoor unit is in circulation flow operation when refrigerant leakage is detected.
- If the CODE No. [107] sets to 2 (Individual shut-off operation), circulation flow operation is not performed even if the CODE No. [108] sets to 0.

0: Circulation flow operation
1: Not circulation flow operation

1. Push and hold “ MENU” button and [] setting button simultaneously for 4 seconds or more.
2. Select the "DN setting" using the [] and [] button and press the "F2 (Set)" button.
Select the corresponding "Indoor unit" using the "F1 (Unit)" button and push the "F2 (Set)" button.
(The fan and louvers of the selected indoor unit will be activated.)
3. Set the Indoor Unit Function Code (I.DN) to [108] and the data using the [] and [] button
(The fan of the selected indoor unit is turned on.)
4. When done, press the “ MENU” button.
5. Push the “ Back” button and complete the setting for the time being.

FS : Flow Selector



◆ [Set up example]

[OF] : Cooling only setup

- 0 : Heat pump
- 1 : Cooling only

[14] : Group address

- 0 : Individual
- 1 : Header unit
- 2 : Follower unit

[FE] : Branching system address

- Should not be duplicate in one system.
- Factory default : Un

[105] : FS unit and Shut-off Valve unit port address (1~12)

- As for multi port type FS unit, set up within the range of 1~12.
- As for both single port type FS unit and Shut-off Valve unit, set up CODE No. "105" to 1.

[106] : Combining branches mode of the multi port type FS unit

- 0 : NOT combining branches mode
- 1 : Combining branches mode

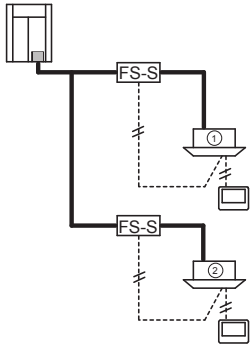
[107] : Safety measures

- 0 : No safety equipment is required
- 1 : Pump-down operation
- 2 : Individual shut-off operation
- 3 : Only refrigerant leak detection

[108] : Circulation flow operation mode of the indoor unit

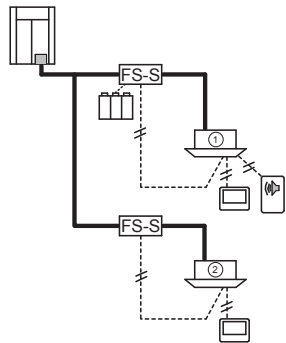
- 0 : Circulation flow operation
- 1 : Not circulation flow operation

In case of connecting one indoor unit to single port type Flow Selector unit.



Indoor unit	①	②
[14]	0	0
[FE]	1	2
[105]	1	1
[106]	0	0
[107]	0	0
[108]	0	0

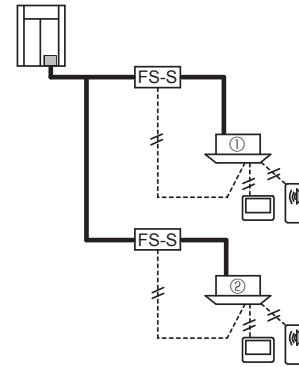
In case of connecting one indoor unit and safety measures to single port type Flow Selector unit.



Indoor unit	①	②
[14]	0	0
[FE]	1	2
[105]	1	1
[106]	0	0
[107]	1 or 2	0
[108]	0 or 1※	0

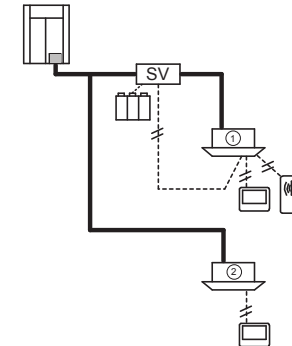
※ When you set up CODE No. "107" to 2, please set up CODE No. "108" to 1.

In case of connecting one indoor unit to single port type Flow Selector unit, and connecting leak detector, and there are multiple in the system.



Indoor unit	①	②
[14]	0	0
[FE]	1	2
[105]	1	1
[106]	0	0
[107]	3	3
[108]	0	0

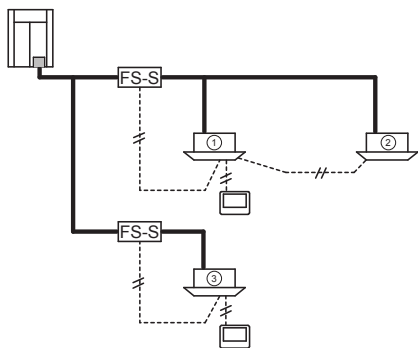
In case of connecting one indoor unit and safety measures to Shut-off Valve unit.



Indoor unit	①	②
[0F]	1	0
[14]	0	0
[FE]	1	2
[105]	1	0
[106]	0	0
[107]	1 or 2	0
[108]	0 or 1※	0

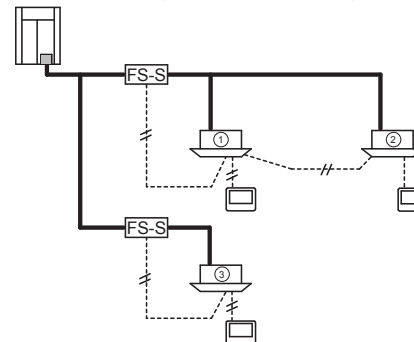
※ When you set up CODE No. "107" to 2, please set up CODE No. "108" to 1.

In case of connecting one group operation of indoor units to single port type Flow Selector unit.



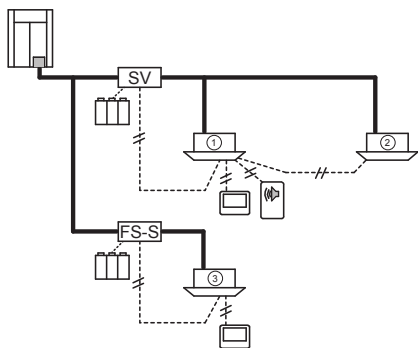
Indoor unit	①	②	③
[14]	1	2	0
[FE]	1	1	2
[105]	1	1	1
[106]	0	0	0
[107]	0	0	0
[108]	0	0	0

In case of connecting one indoor unit to single port type FS unit.



Indoor unit	①	②	③
[14]	1	2	0
[FE]	1	1	2
[105]	1	1	1
[106]	0	0	0
[107]	0	0	0
[108]	0	0	0

In case of connecting one group operation of indoor units and safety measures to Shut-off Valve unit.

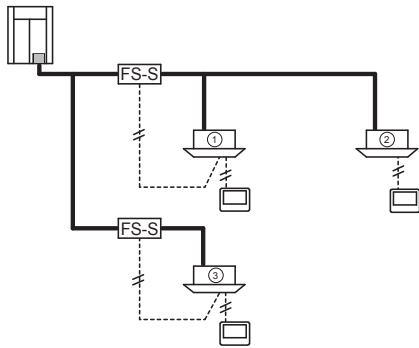


Indoor unit	①	②	③
[0F]	1	1	0
[14]	1	2	0
[FE]	1	1	2
[FD]	0	0	0
[105]	1	1	1
[107]	1 or 2※1	1 or 2※1	0
[108]	0 or 1※1	0 or 1※2	0

※1 It is necessary set up same No. in ① and ②.

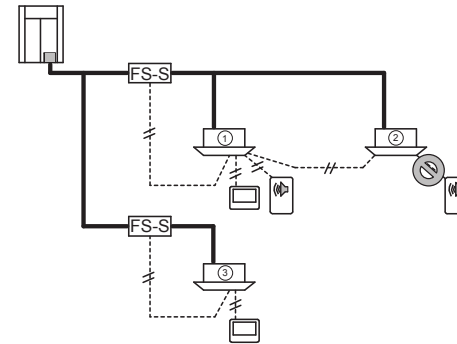
※2 When you set up CODE No. "107" to 2, please set up CODE No. "108" to 1.

In case of connecting two indoor units to single port type Flow Selector unit.



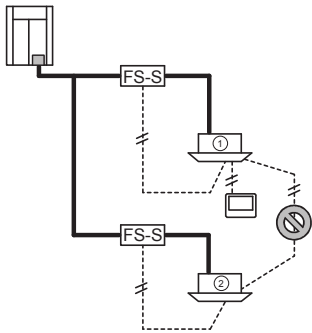
Indoor unit	①	②	③
[14]	0	0	0
[FE]	1	1	2
[105]	1	1	1
[106]	0	0	0
[107]	0	0	0
[108]	0	0	0

Incorrect connection
 ※ It may cause unintended user behavior.

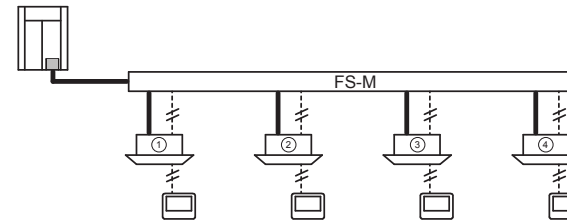


In correct connection example.

※ Cannot operate due to check code "J03".

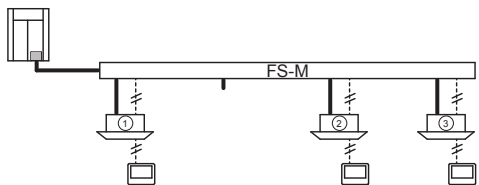


In case of connecting one indoor unit to one port of multi port type Flow Selector unit.



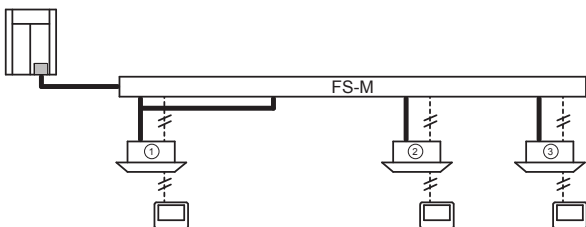
Indoor unit	①	②	③	④
[14]	0	0	0	0
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	0	0	0	0
[108]	0	0	0	0

In case of connecting one indoor unit and not connecting indoor unit to one port of multi port type Flow Selector unit.



Indoor unit	①	②	③
[14]	0	0	0
[FE]	1	1	1
[105]	1	3	4
[106]	0	0	0
[107]	0	0	0
[108]	0	0	0

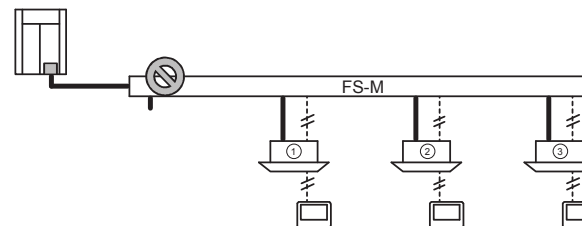
In case of connecting to combining branches of multi port type Flow Selector unit.



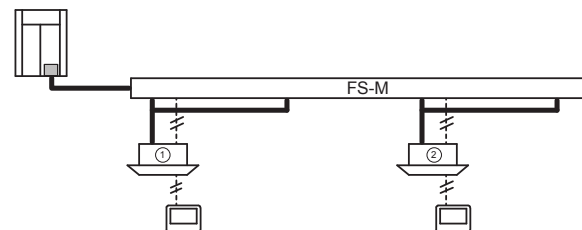
Indoor unit	①	②	③
[14]	0	0	0
[FE]	1	1	1
[105]	1	3	4
[106]	1	0	0
[107]	0	0	0
[108]	0	0	0

In correct connection.

※ Cannot operate due to check code "L13".



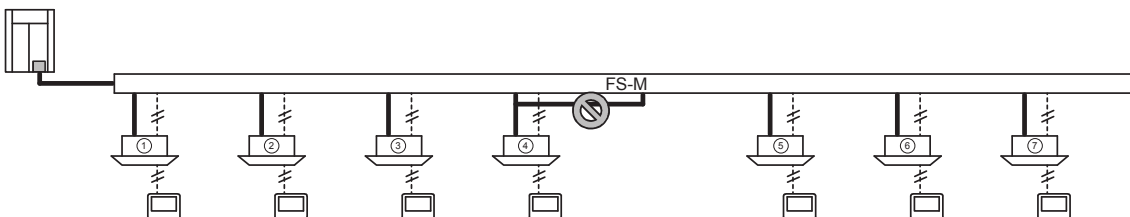
In case of connecting to combining branches of multi port type Flow Selector unit, and there are multiple in the system.



Indoor unit	①	②
[14]	0	0
[FE]	1	1
[105]	1	3
[106]	1	1
[107]	0	0
[108]	0	0

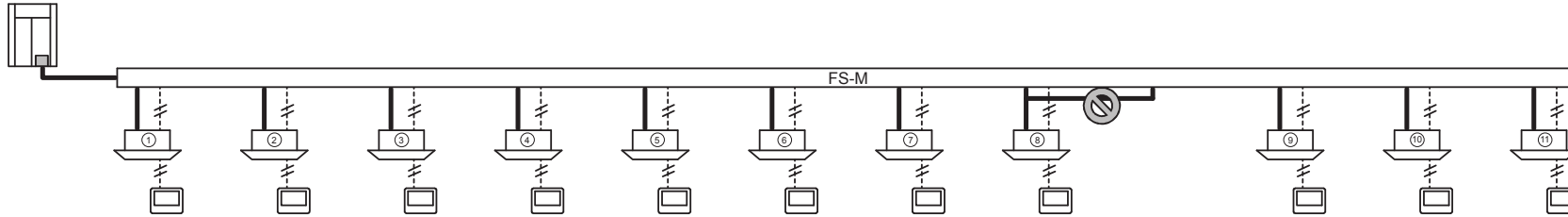
Incorrect connection.

※ "Even-numbered port" and "even-numbered port + 1" cannot be connected. It may cause unintended user behavior.



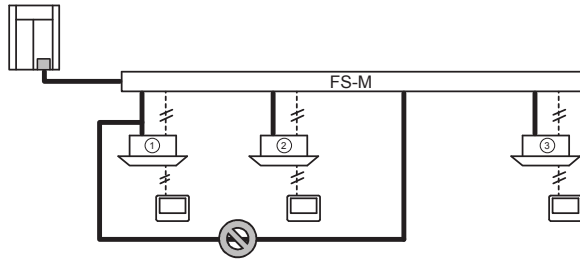
Incorrect connection.

※ “Even-numbered port” and “even-numbered port + 1” cannot be connected. It may cause unintended user behavior.



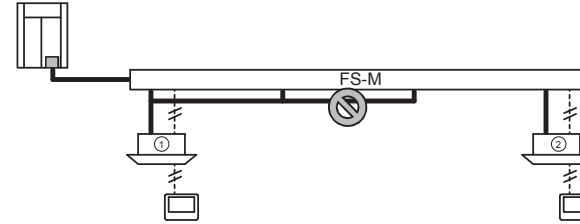
Incorrect connection.

※ Cannot operate due to check code “L13”.

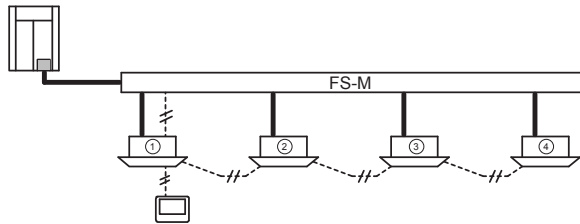


Incorrect connection.

※ Cannot be set.

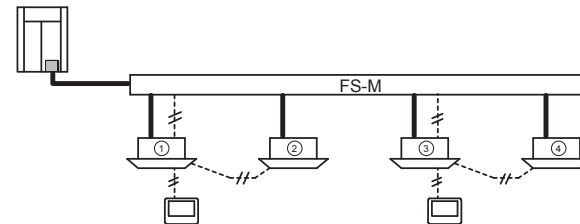


In case of one group operation of indoor units to multiple ports of multi port type Flow Selector unit.



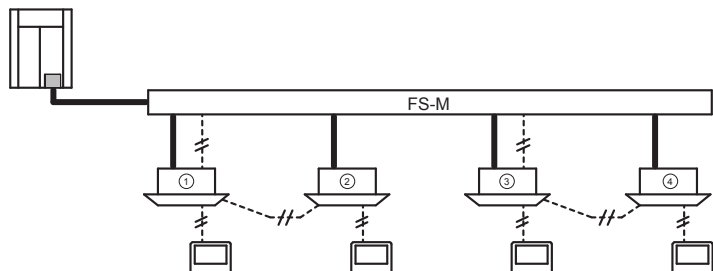
Indoor unit	①	②	③	④
[14]	1	2	2	2
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	0	0	0	0
[108]	0	0	0	0

In case of two group operations of indoor units to multiple ports of multi port type Flow Selector unit.



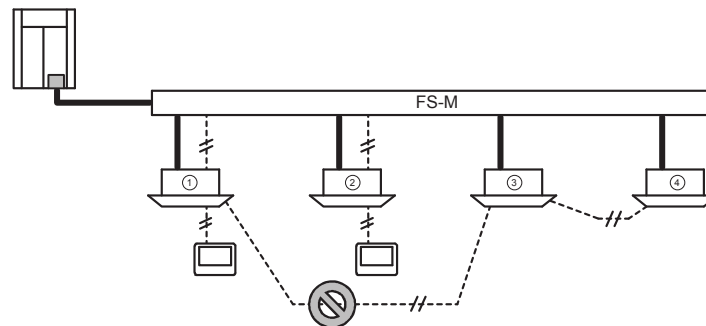
Indoor unit	①	②	③	④
[14]	1	2	1	2
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	0	0	0	0
[108]	0	0	0	0

In case of connecting two group operation of indoor units to multiple ports of multi port type Flow Selector unit, and connecting two remote controllers to one group of indoor unit.

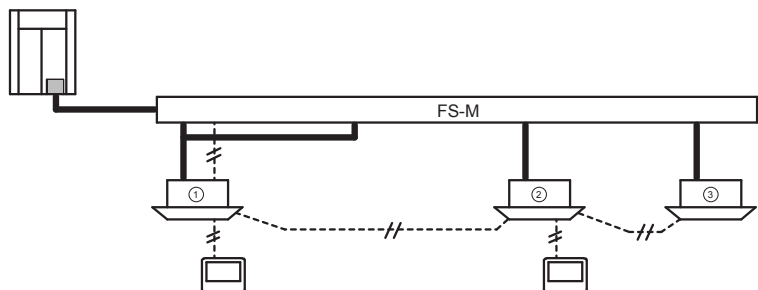


Indoor unit	①	②	③	④
[14]	1	2	1	2
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	0	0	0	0
[108]	0	0	0	0

Incorrect connection.
 ※ It may cause unintended user behavior.

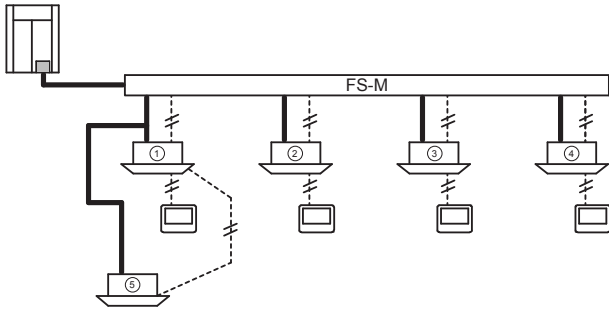


In case of connecting one group operation of indoor unit to multiple port and combining branches of multi port type Flow Selector unit.



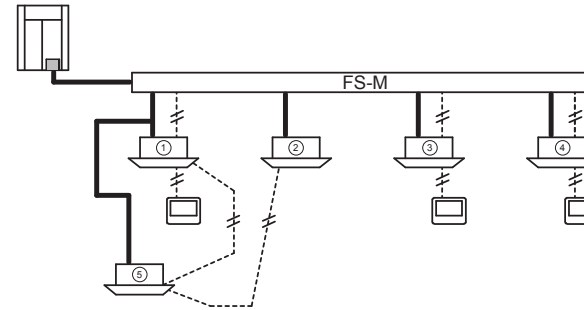
Indoor unit	①	②	③
[14]	1	2	2
[FE]	1	1	1
[105]	1	3	4
[106]	1	0	0
[107]	0	0	0
[108]	0	0	0

In case of connecting one group operation of indoor unit to one port of multi port type Flow Selector unit.



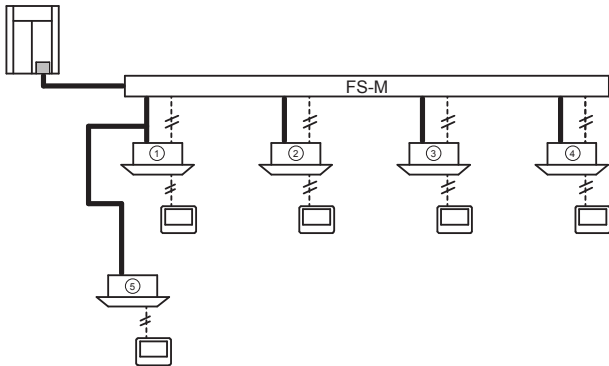
Indoor unit	①	②	③	④	⑤
[14]	1	0	0	0	2
[FE]	1	1	1	1	1
[105]	1	2	3	4	1
[106]	0	0	0	0	0
[107]	0	0	0	0	0
[108]	0	0	0	0	0

In case of connecting one group operation of indoor units to one port and multiple ports of multi port type Flow Selector unit.



Indoor unit	①	②	③	④	⑤
[14]	1	2	0	0	2
[FE]	1	1	1	1	1
[105]	1	2	3	4	1
[106]	0	0	0	0	0
[107]	0	0	0	0	0
[108]	0	0	0	0	0

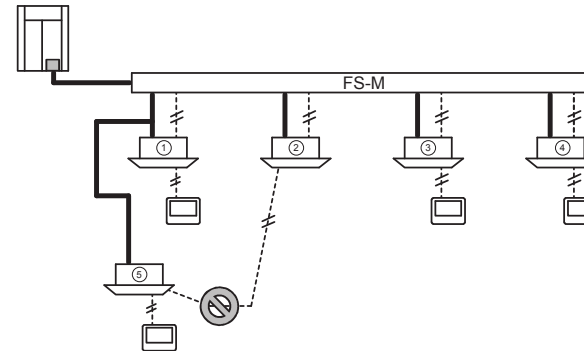
In case of connecting two indoor units to one port of multi port type Flow Selector unit.



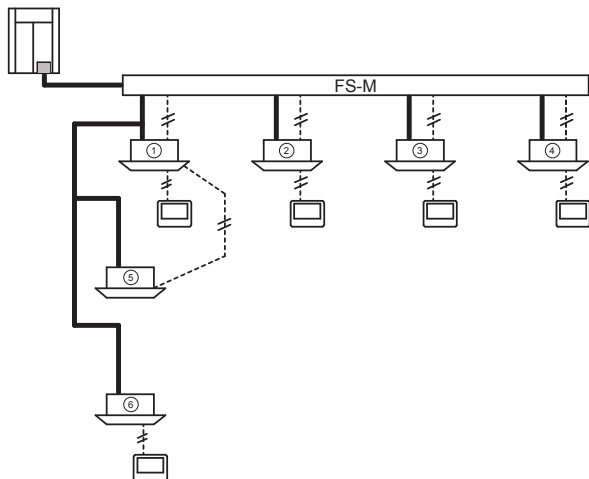
Indoor unit	①	②	③	④	⑤
[14]	0	0	0	0	0
[FE]	1	1	1	1	1
[105]	1	2	3	4	1
[106]	0	0	0	0	0
[107]	0	0	0	0	0
[108]	0	0	0	0	0

Incorrect connection.

※ Cannot operate due to check code "L13".

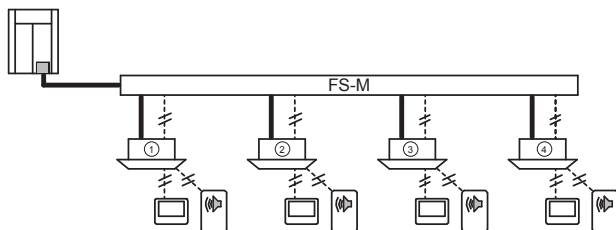


In case of connecting one group operation of indoor unit and one indoor unit to one port of multi port type Flow Selector unit.



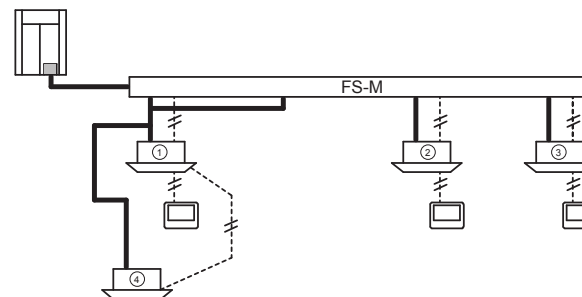
Indoor unit	①	②	③	④	⑤	⑥
[14]	1	0	0	0	2	0
[FE]	1	1	1	1	1	1
[105]	1	2	3	4	1	1
[106]	0	0	0	0	0	0
[107]	0	0	0	0	0	0
[108]	0	0	0	0	0	0

In case of connecting one indoor unit to one port of multi port type Flow Selector unit, and connecting leak detector.



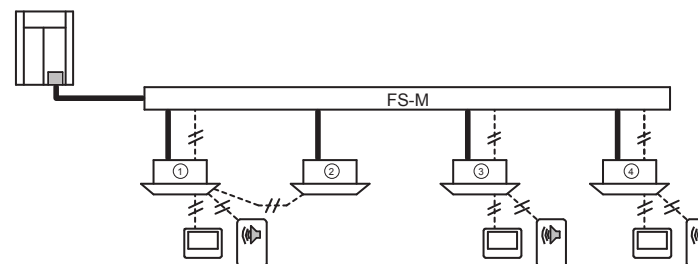
Indoor unit	①	②	③	④
[14]	0	0	0	0
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	1 or 3	1 or 3	1 or 3	1 or 3
[108]	0	0	0	0

Incorrect connection.



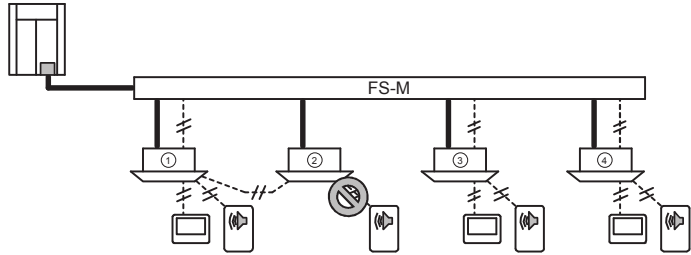
Indoor unit	①	②	③	④
[14]	1	0	0	2
[FE]	1	1	1	1
[105]	1	3	4	1
[106]	1	0	0	0
[107]	0	0	0	0
[108]	0	0	0	0

In case of connecting one group operation of indoor units to multiple port of multi port type Flow Selector unit and connecting leak detector, and connecting one indoor unit to one port of multi port type Flow Selector unit and connecting leak detector.

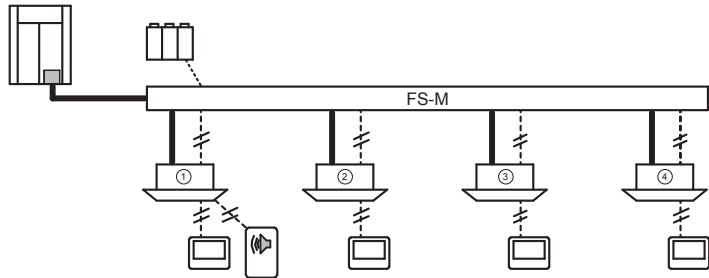


Indoor unit	①	②	③	④
[14]	1	2	0	0
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	1 or 3	1 or 3	1 or 3	1 or 3
[108]	0	0	0	0

Incorrect connection.
 ※ It may cause unintended user behavior.

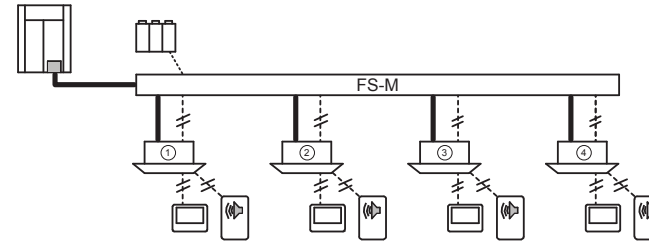


In case of connecting indoor units to each ports of multi port type Flow Selector unit one by one, and connecting a safety measure to one indoor unit and be not connecting safety measures to the other indoor units.



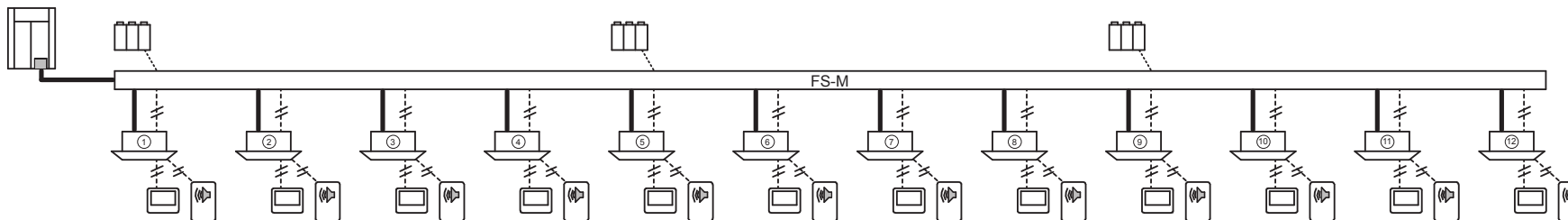
Indoor unit	①	②	③	④
[14]	0	0	0	0
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	1 or 3	0	0	0
[108]	0	0	0	0

In case of connecting one indoor unit to one port of multi port type Flow Selector unit (4 port type), and connecting safety measures.



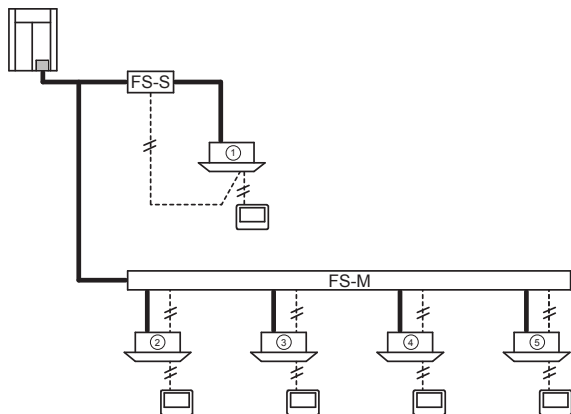
Indoor unit	①	②	③	④
[14]	0	0	0	0
[FE]	1	1	1	1
[105]	1	2	3	4
[106]	0	0	0	0
[107]	1 or 3	1 or 3	1 or 3	1 or 3
[108]	0	0	0	0

In case of connecting one indoor unit to one port of multi port type Flow Selector unit (12 port type), and connecting safety measures.



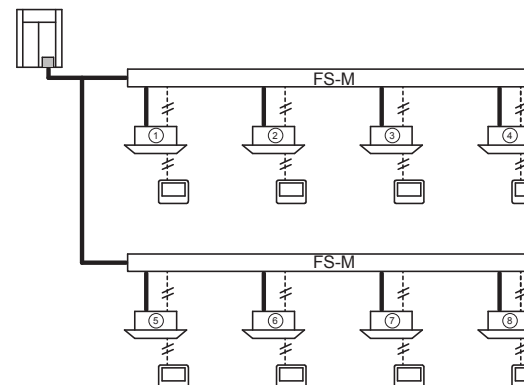
Indoor unit	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
[14]	0	0	0	0	0	0	0	0	0	0	0	0
[FE]	1	1	1	1	1	1	1	1	1	1	1	1
[105]	1	2	3	4	5	6	7	8	9	10	11	12
[106]	0	0	0	0	0	0	0	0	0	0	0	0
[107]	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3	1 or 3
[108]	0	0	0	0	0	0	0	0	0	0	0	0

In case of connecting one indoor unit to single port type Flow Selector unit, and connecting one indoor unit to one port of multiple port type Flow Selector unit.



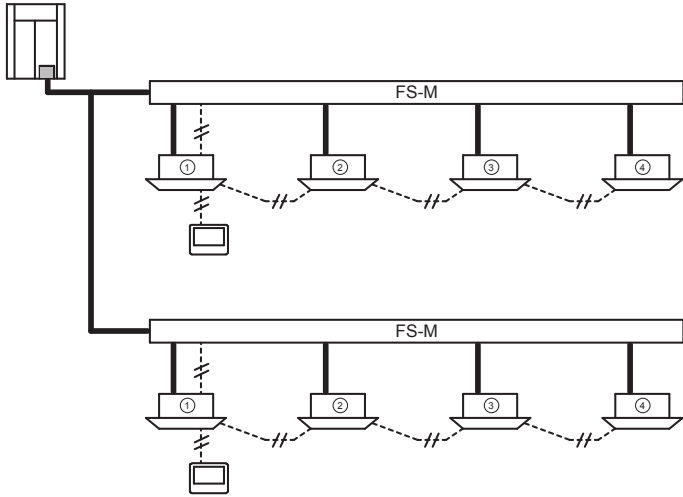
Indoor unit	①	②	③	④	⑤
[14]	0	0	0	0	0
[FE]	1	2	2	2	2
[105]	1	1	2	3	4
[106]	0	0	0	0	0
[107]	0	0	0	0	0
[108]	0	0	0	0	0

In case of connecting one indoor unit to one port of multiple port type FS unit.



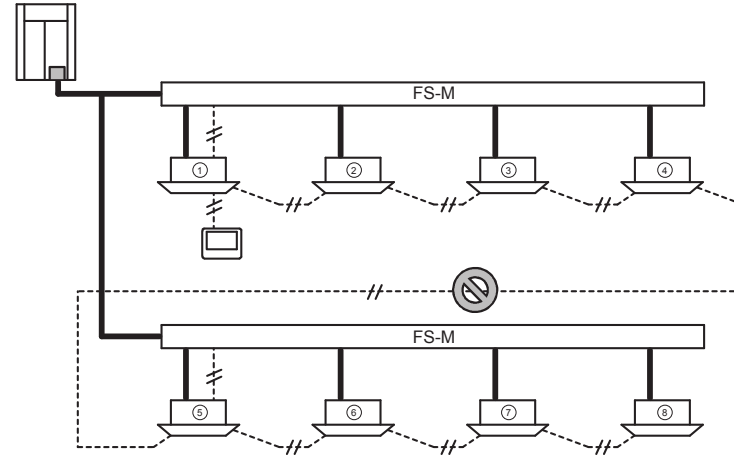
Indoor unit	①	②	③	④	⑤	⑥	⑦	⑧
[14]	0	0	0	0	0	0	0	0
[FE]	1	1	1	1	2	2	2	2
[105]	1	2	3	4	1	2	3	4
[106]	0	0	0	0	0	0	0	0
[107]	0	0	0	0	0	0	0	0
[108]	0	0	0	0	0	0	0	0

In case of connecting one group operation of indoor units to multiple port of multi port type Flow Selector unit, and there are two multi port type Flow Selector units.

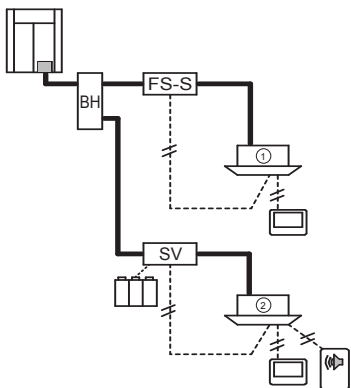


Indoor unit	①	②	③	④	⑤	⑥	⑦	⑧
[14]	1	2	2	2	1	2	2	2
[FE]	1	1	1	1	2	2	2	2
[105]	1	2	3	4	1	2	3	4
[106]	0	0	0	0	0	0	0	0
[107]	0	0	0	0	0	0	0	0
[108]	0	0	0	0	0	0	0	0

Incorrect connection.
 ※ It may cause unintended user behavior.



In case of connecting single port type Flow Selector unit and shut-off valve unit in the system.

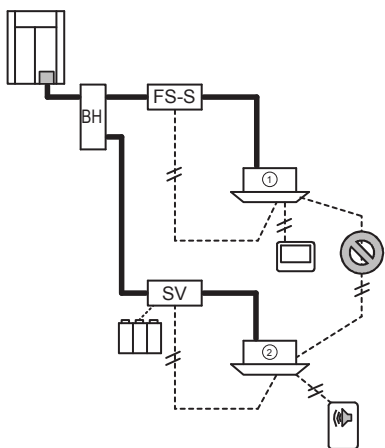


Indoor unit	①	②
[0F]	0	1
[14]	0	0
[FE]	1	2
[105]	1	1
[106]	0	0
[107]	0	1 or 2
[108]	0	0 or 1※

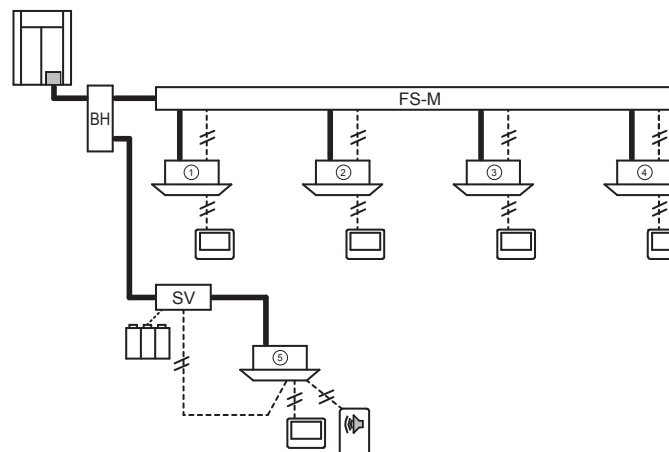
※ When you set up CODE No. "107" to 2, please set up CODE No. "108" to 1.

Incorrect connection.

※ Cannot operate due to check code "J03".



In case of connecting multiple port type Flow Selector unit and shut-off valve unit in the system.

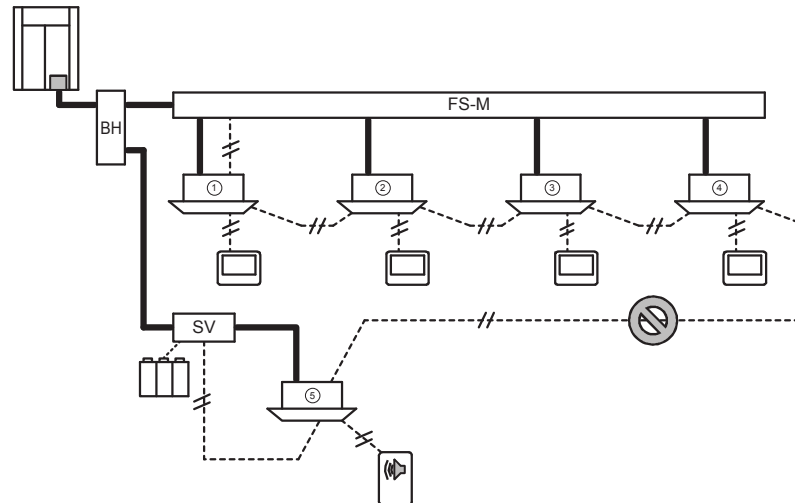


Indoor unit	①	②	③	④	⑤
[0F]	0	0	0	0	1
[14]	0	0	0	0	0
[FE]	1	1	1	1	2
[105]	1	2	3	4	1
[106]	0	0	0	0	0
[107]	0	0	0	0	1 or 2
[108]	0	0	0	0	0 or 1※

※ When you set up CODE No. "107" to 2, please set up CODE No. "108" to 1.

Incorrect connection.

※ It may cause unintended user behavior.



12 Applicable control settings

When connecting an optional P.C. board (sold separately) for outdoor units, it is necessary to change the settings of the outdoor unit.

All are set to [Standard (factory setting)] at the time of shipment, so change the settings of the outdoor unit as necessary.

The settings can be changed by operating the switches on the interface board.

In the TU2C-Link communication system, it can also be done by operating the wired remote controller.

◆ Applicable controls setup

(settings at the site)

Basic procedure

Be sure to stop the air conditioner before making settings.

(Change the setup while the air conditioner is not working.)

⚠ CAUTION

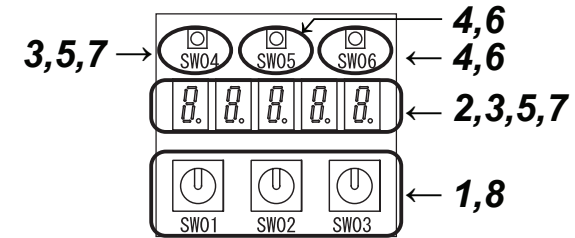
Set only the CODE NO. shown in the following table: Do NOT set any other CODE NO.

If a CODE NO. not listed is set, it may not be possible to operate the air conditioner or other trouble with the product may result.

When switching settings from the interface P.C. board of the outdoor unit

- 1 Set the rotary switch of the interface P.C. board on the outdoor unit to SW01= [9], SW02= [1] and SW03= [1].
- 2 The 7-segment display shows "d n.S E t".
- 3 When SW04 is pressed, the 7-segment display switches to "d n.0 0 1" and the outdoor unit code NO. [001] is displayed.
- 4 Change outdoor unit code NO. [****] with SW05 or SW06. Push SW05 to advance the code. Push and hold SW05 to advance in 5 steps. Push SW06 to return the code. Push and hold SW06 to return in 5 steps.
- 5 When SW04 is pressed, the 7-segment display blinks "d.* * * *" and the setting data [****] being set is displayed.
- 6 Change setting data [****] with SW05 or SW06. Push SW05 to advance the data. Push SW06 to return the setting data.
- 7 Push and hold SW04 for more than 2 seconds. When the flashing stops and remain lit on the display, the setting is complete. (To return to the item code setting after completing the setting, or to return to the item code setting without setting, press SW04 once.)
- 8 Set the rotary switch on the interface P.C. board of the outdoor unit back to SW01= [1], SW02= [1], SW03= [1].
- 9 Reset the power of the outdoor unit (power off for one minute or more).

Interface P.C. board of header unit

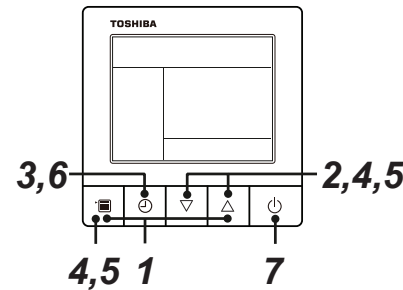


When switching from the wired remote controller (RBC-ASCU11-E)

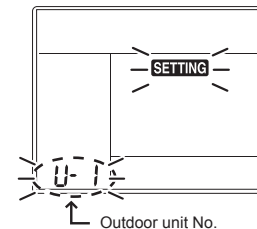
Basic procedure

Be sure to stop the air conditioner before making settings.

(Change the setup while the air conditioner is not working.)



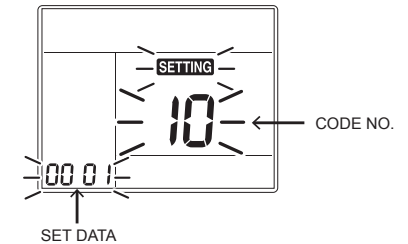
- 1 Push and hold menu button and [△] setting button simultaneously for 10 seconds or more.
 - After a while, the display flashes as shown in the figure. ALL is displayed as indoor unit numbers during initial communication immediately after the power has been turned on.



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

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

- 3 Push OFF timer button to confirm the selected outdoor unit.



- 4 Push the menu button to make CODE NO. [**] flash. Change CODE NO. [**] with [▽] [△] setting button.
- 5 Push the menu button to make Set data [****] flash. Change Set data [****] with [▽] [△] setting button.
- 6 Push OFF timer button to complete the set up.
 - To change other settings of the selected outdoor unit, repeat from Procedure 4.
- 7 When all the settings have been completed, push ON/OFF button to finish the settings. (Return to the normal mode)
 - SETTING flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while SETTING is flashing.)
 - To change settings of another outdoor unit, repeat from Procedure 1.

13 How to set up the cooling only indoor unit

When setting the specific indoor unit to Cooling Only unit without connecting to the flow selector unit, setup to the indoor unit to become the Cooling Only unit is necessary. Perform setup in the following procedure. Setup to the indoor unit is performed by handling the wired remote controller.

Even if a wired remote controller is not used, attach a wired remote controller for setup.

Change the setup with the wired remote controller before using the air conditioner with a wireless remote controller.

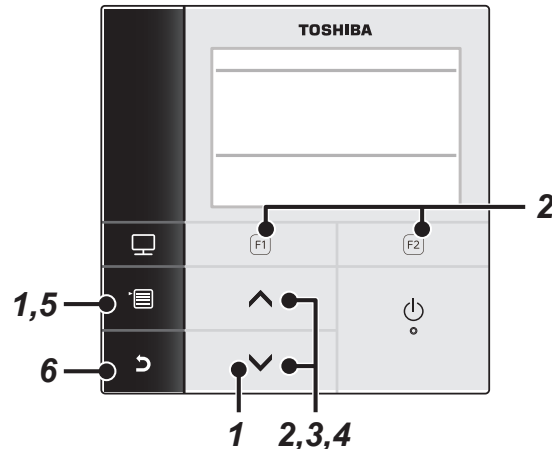
Change the setup during stop of the operation. (Be sure to stop operation of the air conditioner.)

1. Push and hold "MENU" button and [▼] setting button simultaneously for 4 seconds or more.
2. Select the "DN setting" using the [▼] and [▲] button and Push the "F2 (Set)" button.
Select the corresponding "Indoor unit" using the "F1 (Unit)" button and push the "F2 (Set)" button.
(The fan and louvers of the selected indoor unit will be activated.)
3. Set the Indoor Unit Function Code (I.DN) to [0F] and the data using the [▼] and [▲] button
(The fan of the selected indoor unit is turned on.)
4. Push the menu button to make Set data [****] flash. Push the [▼][▲] buttons repeatedly

SET DATA	0000	0001
Cooling Only setup	Heat pump	Cooling Only

5. When done, press the "MENU" button.

6. Push the "Back CANCEL" button and complete the setting for the time being.



CAUTION

Cooling Only and Heat pump cannot exist in the same group.

14 Test run

Before test run

Confirm that the valve of the refrigerate pipe of the outdoor unit is OPEN.

- Before turning on the power, confirm that the resistance between the terminal block of power supply and the earth is more than 2MΩ using a 500V megohmmeter.
Do not run the unit if it is less than 2MΩ.

CAUTION

- Turn on the power and turn on the case heater of the compressor.
To save the compressor when it is activated, leave the power on for more than 12 hours.

Methods of test run

When connecting an Flow Selector unit or a shut-off valve unit, perform the following detailed inspection mode.

The detailed inspection mode is performed on the interface board of the outdoor unit.

Detailed inspection mode is completed in about 40 minutes in general and about 90 minutes at maximum.

<Detailed inspection mode start operation>

- 1 Set the rotary switch on the interface board of the outdoor unit to SW01=[2], SW02=[15], sw03=[16].

7-segment display	
[A] []	[B] []

- 2 Push SW04 for at least 2 seconds.

7-segment display	
[A] [FS]	[B] [CH]

If the detailed inspection mode successfully completes, the following will be displayed.

7-segment display	
[A] [FS]	[B] [--]

If there is an incorrect electrical wiring, incorrect piping connection, incorrect indication, etc., the following will be displayed.

If there are multiple indoor units with errors, Push SW06 to change the address display of the indoor unit. (If there is only one indoor unit with an error, the display remains the same.)

7-segment display	
[A] [U1]	[B] [Err]
[]	⊕ The indication changes every 0.5 second.
[]	↓
Address of the error indoor unit	

If [Err] is indicated on 7-segment display, execute a cooling/heating test run for each indoor unit and check cool/hot air is blowing. Also, check the piping connection, wiring connections, and settings again. If there is no problem after checking again, the system is normal.

When you modify piping connections, wiring connections, or settings, execute detailed inspection mode again.

Please contact a qualified service person if there is any trouble during test run.

*[Err] may be indicated even if there is no problem.

- When the temperature difference is large between in each indoor unit.
- When the FS unit or Shut-off Valve is connected to the main pipe from the outdoor unit.

<Detailed inspection mode end operation>

- 1 Push SW05 for at least 2 seconds. Return the rotary switch on the interface board of the outdoor unit to SW01=[1], SW02=[1], and SW03=[1].

7-segment display	
[A] [U1]	[B] []

◆ When using a refrigerant leak detector, perform the following simple inspection mode.

The simple inspection mode is performed with a refrigerant leakage detector. The simple inspection mode should be performed for each refrigerant leak detector. If you run a simple inspection mode while normal operation, this operation stops. The simple inspection mode can be performed during the detailed inspection mode. (Detailed inspection mode operation does not stop.)

<Simple inspection mode start operation>

- 1 Push the reset switch on the refrigerant leak detector for at least 5 seconds. (Please use a precision screwdriver, etc.)

7-segment display	
[A] [Sd]	[B] [CH]

It is not displayed during detailed inspection mode.

The refrigerant leak detector works. (For the operation of the refrigerant leakage detector, refer to the operating instructions of the refrigerant leak detector.)

If the simple inspection mode operates normally, the following is displayed. (It is not displayed during detailed inspection mode.)

7-segment display	
[A] [Sd]	[B] [--]

If there is a disconnection, etc., the following display will be displayed.

7-segment display	
[A] [Sd]	[B] [Err]

If you see an error, check the wiring connection again.

<Simple inspection mode end operation>

- 2 Push the alarm stop switch on the refrigerant leak detector for at least 5 seconds.

7-segment display	
[A] [U1]	[B] []

- ◆ If “there is no” Flow Selector unit or shut-off valve unit, perform the following procedure.

◆ When executing a test run using a remote controller

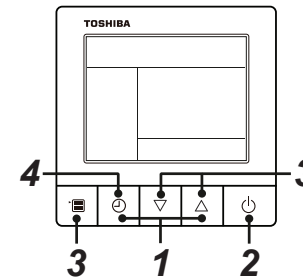
Operate the system normally to check the running condition using the wired remote controller. Follow the instructions in the supplied owner's manual when operating the unit. If you use a wireless remote controller for operations, follow the instructions in the installation manual supplied with the indoor unit. To execute a test run forcibly under the condition that the thermostat automatically turns the unit off due to the indoor temperature, follow the procedure below. The forcible test run will automatically stop after 60 minutes to prevent continuous forcible running and return to normal running.

⚠ CAUTION

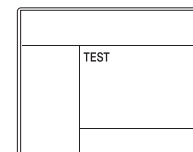
Do not use forcible running except for a test run as it overloads the unit.

Wired remote controller

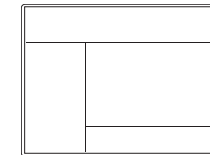
Be sure to stop the air conditioner before making settings. (Change the setup while the air conditioner is not working.)



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



- 2 Push ON/OFF button.
- 3 Push menu button to select the operation mode. Select [Cool] or [Heat] with [▽] [△] setting button, and then push menu button (three times) again to determine the operation mode.
 - Do not run the air conditioner in a mode other than [Cool] or [Heat].
 - The temperature setting function does not work during test run.
 - The check code is displayed as usual.
- 4 After the test run, push OFF timer button to stop a test run. ([TEST] disappears on the display and the air conditioner enters the normal stop mode.)



◆ When executing a test run using the interface P.C. board on the outdoor unit

You can execute a test run by operating switches on the interface P.C. board of the header outdoor unit. "Individual trial", which tests each indoor unit separately, and "collective trial", which tests all the indoor units connected, are available.

<Individual test operation>

▼ Starting operation

- 1 Set the running mode to "COOL" or "HEAT" on the remote controller of the indoor unit to be tested. (The unit will run in the current mode unless you set the mode otherwise.)

7-segment display	
[A] [U1]	[B] []

- 2 Set the rotary switches on the interface P.C. board of the header outdoor unit: SW01 to [16], SW02 and SW03 to the address of the indoor unit to be tested.

SW 01	SW 02	SW 03	Indoor unit address	
16	1 to 16	1	1 to 16	Set number of SW02
16	1 to 16	2	17 to 32	Set number of SW02 + 16
16	1 to 16	3	33 to 48	Set number of SW02 + 32
16	1 to 16	4	49 to 64	Set number of SW02 + 48
16	1 to 16	5	65 to 80	Set number of SW02 + 64
16	1 to 16	6	81 to 96	Set number of SW02 + 80
16	1 to 16	7	97 to 112	Set number of SW02 + 96
16	1 to 16	8	113 to 128	Set number of SW02 + 112

7-segment display	
[A] [] ↓ Address display of the corresponding indoor unit	[B] []

- 3 Push and hold SW04 for more than 10 seconds.

7-segment display	
[A] [] ↓ Address display of the corresponding indoor unit	[B] [] ↓ [FF] is displayed for 5 seconds.

NOTE

- The running mode follows the mode setting on the remote controller of the target indoor unit.
- You cannot change the temperature setting during the test run.
- Errors are detected as usual.
- The unit does not perform test run for 3 minutes after turning the power on or stopping running.

▼ Finishing operation

- 1 Set the rotary switches on the interface P.C. board of the header unit back: SW01 to [1], SW02 to [1] and SW03 to [1].

7-segment display	
[A] [U1]	[B] []

<Collective trial>

▼ Start operation

- 1 Set the rotary switches on the interface P.C. board of the header outdoor unit as below.
When in "COOL" mode: SW01=[2], SW02=[5], SW03=[1].
When in "HEAT" mode: SW01=[2], SW02=[6], SW03=[1].
When in "FAN" mode: SW01=[2], SW02=[9], SW03=[1].

7-segment display	
[A] [C] [H] [F]	[B] [] [] []

- 2 Push and hold SW04 for more than 2 seconds.

NOTE

- You cannot change the temperature setting during the test run.
- Errors are detected as usual.
- The unit does not perform test run for 3 minutes after turning the power on or stopping running.

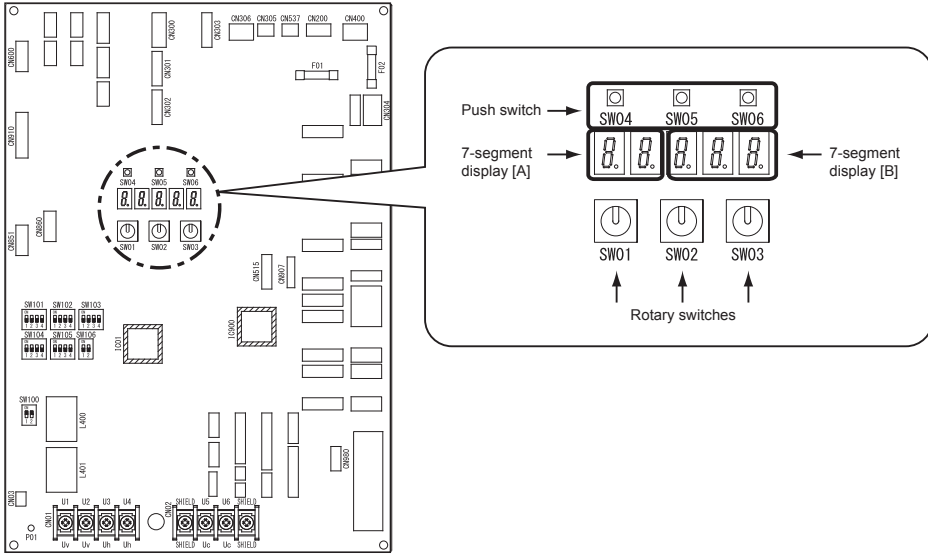
7-segment display	
[A] [C] [H] [F]	[B] [-C] [-H] [-F]

▼ Stop operation

- 1 Set the rotary switches on the interface P.C. board of the header unit back: SW01 to [1], SW02 to [1] and SW03 to [1].

7-segment display	
[A] [U1]	[B] []

Interface P.C. board



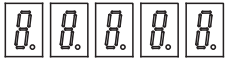
15 Troubleshooting

In addition to the CODE No. on the remote controller of an indoor unit, you can diagnose failure type of an outdoor unit by checking the 7-segment display on the interface P.C. board.

Use the function for various checks.

Set every DIP switch to OFF after checking.

7-Segment display and check code

Rotary switch setting value			Indication	7 - segment LED	
SW01	SW02	SW03			
1	1	1	Outdoor unit check code	Display contents	[U. * .Err] ⇄ [○○○.△△] Display alternately every 2 seconds * : Outdoor Unit No.(1~5) ○○○: Check code △△ : Sub code

* If a check code has an auxiliary code, the display indicates the check code for three seconds and the auxiliary code for one second alternately.

Check code (indicated on the 7-segment display on the outdoor unit)

Indicated when SW01 = [1], SW02 = [1], and SW03 = [1].

Check code		Check code name
Indication on 7-segment display on the outdoor unit		
Auxiliary code		
E06	Number of indoor units which received normally	<ul style="list-style-type: none"> Decrease of number of indoor units No indoor unit with a terminating resistor set
E07	—	Indoor / outdoor communication circuit trouble
E08	Duplicated indoor addresses	Duplication of indoor addresses.
E12	01: Communication between indoor and outdoor units 02: Communication between outdoor units	Automatic addressing start trouble
E15	—	No indoor unit during automatic addressing
E16	00: Capacity over 01: Number of connected units	Capacity over / number of connected indoor units
E19	00: Header is not detected 02: 2 or more header units	Number of header outdoor unit trouble
E20	01: Other line outdoor connected 02: Other line indoor connected	Other lines connected during automatic addressing
E23	—	Sending trouble between outdoor units communication
E25	—	Duplicated follower outdoor address set up
E26	Number of outdoor units which received normally	Decrease of connected outdoor units
E28	Detected outdoor	Follower outdoor unit trouble
E31	Inverter quantity information ⁽¹⁾	Inverter communication trouble
E31	80	Communication trouble between MCU and sub MCU
F04	—	TD1 sensor trouble
F05	—	TD2 sensor trouble
F06	01: TE1 sensor 02: TE2 sensor 03: TE3 sensor	TE1, TE2 or TE3 sensor trouble
F07	01: TL1 sensor 02: TL2 sensor 03: TL3 sensor	TL1, TL2 or TL3 sensor trouble
F08	—	TO sensor trouble

Check code		Check code name
Indication on 7-segment display on the outdoor unit		
Auxiliary code		
F09	01: TG1 sensor 02: TG2 sensor 03: TG3 sensor	TG1, TG2 or TG3 sensor trouble
F12	01: TS1 sensor 02: TS2 sensor 03: TS3 sensor 04: TS3 detached	TS1, TS2 or TS3 sensor trouble
F13	1*: Compressor 1 side 2*: Compressor 2 side	TH (Heat sink) sensor trouble
F15	—	Outdoor Temperature sensor miswiring (TE1, TL1)
F16	—	Outdoor pressure sensor miswiring (Pd, Ps)
F23	—	Ps sensor trouble
F24	—	Pd sensor trouble
F31	—	Outdoor EEPROM trouble
H01	1*: Compressor 1 side 2*: Compressor 2 side	Compressor breaking down
H02	1*: Compressor 1 side 2*: Compressor 2 side	Compressor trouble (Locked)
H03	1*: Compressor 1 side 2*: Compressor 2 side	Current detection circuit system trouble
H05	—	TD1 sensor miswiring
H06	—	Low pressure protective operation
H07	—	Oil level down detection
H08	01: TK1 sensor trouble 02: TK2 sensor trouble	Temperature sensor trouble for oil level detection
H15	—	TD2 sensor miswiring
H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble	Oil level detector circuit system trouble
H17	1*: Compressor 1 side 2*: Compressor 2 side	Compressor trouble (step out)
H28	1*: Compressor 1 side 2*: Compressor 2 side	Compressor motor winding trouble
J30	Detected indoor unit address	Refrigerant leak detection
L02	Detected indoor unit address	<ul style="list-style-type: none"> Model mismatch of indoor and outdoor unit Indoor unit incompatible with A2L refrigerant
L04	—	Outdoor system address duplication
L06	Number of prior indoor units	Duplication of indoor units with priority
L08	—	Indoor unit group/address unset
L10	—	Outdoor unit capacity unset.
L11	Detected indoor unit address	FS unit or Shut-off Valve unit installation trouble
L13	Detected indoor unit address	Safety measures setting unmatched
L14	Detected indoor unit address	Safety measures nonconformity
L17	—	Inconsistent models of outdoor units
L24	02 : Indoor units operation mode priority setting	Flow Selector unit(s) setting trouble
L28	—	Too many outdoor units connected
L29	00 : when there are many inverter P.C. board. ** : Inverter quantity information ⁽¹⁾	Inverter quantity trouble

16 Machine card and logbook

■ Machine card

After test run, fill the items on the machine card and paste the card on an accessible place on the product securely before delivery to the customer.

Describe the following items on the machine card:

name, address and telephone number of the installer, his service department, the service department of the party concerned or at any addresses and telephone numbers of fire department, police, hospitals and burn centers;

■ Logbook

Update the log periodically after maintenance.

Describe the following items on the logbook:

1. details of the maintenance and repair works;
2. quantities, kind of (new, reused, recycled) refrigerant which have been charged on each occasion, the quantities of refrigerant which have been transferred from the system on each occasion;
3. if there is an analysis of a reused refrigerant, the results shall be kept in the logbook;
4. source of the reused refrigerant;
5. changes and replacements of components of the system;
6. result of all periodic routine tests;
7. significant periods of non-use.

Check code		Check code name
Indication on 7-segment display on the outdoor unit		
	Auxiliary code	
L30	Detected indoor unit address	External interlock of indoor unit
P03	—	Discharge temperature TD1 trouble
P04	01: Compressor 1 side 02: Compressor 2 side	High-pressure SW system operation
P05	1* : Compressor 1 side 2* : Compressor 2 side	Inverter DC voltage (Vdc) trouble (compressor) MG-CTT trouble
	00: Power outage detection 01: Open phase detection 02: Miswiring detection	Power outage detection Open phase detection Miswiring detection
P07	1* : Compressor 1 side 2* : Compressor 2 side 00: Compressor 1 side or Compressor 2 side	Heat sink overheating trouble
	04: Heat sink	Heat sink condensation trouble
P10	Detected indoor unit address	Indoor overflow error
P11	—	Outdoor heat exchanger freezing trouble
P13	—	Outdoor liquid back flow detection trouble
P14	01: Outdoor unit valve is close	Another Refrigerant Cycle Protection
P15	01: TS condition 02: TD condition	Gas leak detection
P16	01:PMV 5 side 02:PMV 6 side Miss installation of PMV5 and PMV6	Injection circuit trouble
P17	—	Discharge temperature TD2 trouble
P19	0# : 4-way valves 1# : 4-way valve1 2# : 4-way valve2 *Put in outdoor unit No. in [#] mark	4-way valve inverse trouble
P20	—	High-pressure protective operation
P22	1* : Fan P.C. board 1 2* : Fan P.C. board 2	Outdoor fan inverter trouble
P25	1* : Compressor 1 side 2* : Compressor 2 side	Compressor inverter P.C.board trouble
P26	1* : Compressor 1 side 2* : Compressor 2 side	Compressor start up trouble
P29	11: Compressor 1 side 21: Compressor 2 side	Compressor position detecting circuit system trouble

A value from 0 to F is displayed in “*”.

*1 Inverter quantity information

01: Compressor 1 trouble
02: Compressor 2 trouble
03: Compressor 1 and 2 trouble
08: Fan 1 trouble
09: Compressor 1, Fan 1 trouble
0A: Compressor 2, Fan 1 trouble
0B: Compressor 1 and 2, Fan 1 trouble
10: Fan 2 trouble

11: Compressor 1, Fan 2 trouble
12: Compressor 2, Fan 2 trouble
13: Compressor 1 and 2, Fan 2 trouble
18: Fan 1 and 2 trouble
19: Compressor 1, Fan 1 and 2 trouble
1A: Compressor 2, Fan 1 and 2 trouble
1B: Compressor 1 and 2, Fan 1 and 2 trouble

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 R32, 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 R32 is almost non-existent. However with recent increase in the number of high concentration buildings, 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 etc.

Most importantly, the multi air conditioner system is able to hold 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 mode 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 imposed by the local regulation, create an opening with adjacent rooms, or install mechanical ventilation or isolation, combined with a gas leak detection device, which complies with the local regulatory requirements.

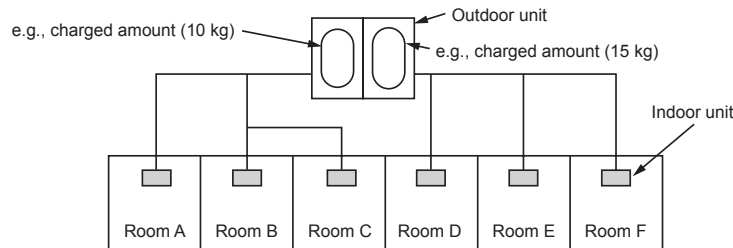
The concentration calculation method is as given below.

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

Refrigerant Concentration Limit shall be in accordance with local regulations.

▼ 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 10 kg.

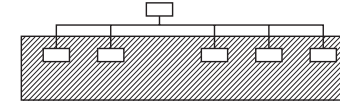
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

■ Important

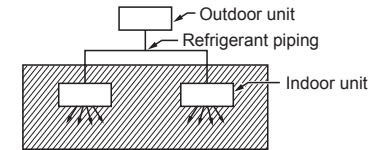
▼ NOTE 2

The standards for minimum room volume are as follows.

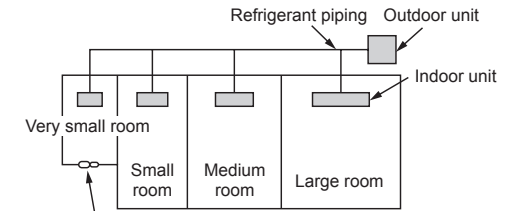
- 1) No partition (shaded portion)



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



- 3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed 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.



Mechanical ventilation device - Gas leak detector

Toshiba Carrier (Thailand) Co., Ltd.

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

1140101201