



CITY MULTI

Air-Conditioners For Building Application

OUTDOOR UNIT

PURY-P-TJMU-A (-BS)

PURY-P-YJMU-A (-BS)

For use with R410A

INSTALLATION MANUAL

For safe and correct use, please read this installation manual thoroughly before installing the air-conditioner unit.

MANUEL D'INSTALLATION

Veuillez lire le manuel d'installation en entier avant d'installer ce climatiseur pour éviter tout accident et vous assurer d'une utilisation correcte.

MANUAL DE INSTALACIÓN

Para un uso seguro y correcto, lea detalladamente este manual de instalación antes de montar la unidad de aire acondicionado.

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1. Safety precautions

1.1. Before installation and electric work





- ▶ Before installing the unit, make sure you read all the “Safety precautions”.
- ▶ The “Safety precautions” provide very important points regarding safety. Make sure you follow them.

Symbols used in the text

 **Warning:**
Describes precautions that should be observed to prevent danger of injury or death to the user.

 **Caution:**
Describes precautions that should be observed to prevent damage to the unit.


Symbols used in the illustrations

-  : Indicates an action that must be avoided.
-  : Indicates that important instructions must be followed.
-  : Indicates a part which must be grounded.
-  : Beware of electric shock. (This symbol is displayed on the main unit label.) <Color: yellow>

 **Warning:**
Carefully read the labels attached to the outdoor unit.


HIGH VOLTAGE WARNING:

- Control box houses high-voltage parts.
- When opening or closing the front panel of the control box, do not let it come into contact with any of the internal components.
- Before inspecting the inside of the control box, turn off the power, keep the unit off for at least 10 minutes, and confirm that the voltage between FT-P and FT-N on INV Board has dropped to DC20V or less. (It takes about 10 minutes to discharge electricity after the power supply is turned off.)

-  **Warning:**
- Ask the dealer or an authorized technician to install the air conditioner.
 - Improper installation by the user may result in water leakage, electric shock, or fire.
 - Install the unit at a place that can withstand its weight.
 - Failure to do so may cause the unit to fall down, resulting in injuries and damage to the unit.
 - Use the specified cables for wiring. Make the connections securely so that the outside force of the cable is not applied to the terminals.
 - Inadequate connection and fastening may generate heat and cause a fire.
 - Prepare for strong winds and earthquakes and install the unit at the specified place.
 - Improper installation may cause the unit to topple and result in injury and damage to the unit.
 - Always use filters and other accessories specified by Mitsubishi Electric.
 - Ask an authorized technician to install the accessories. Improper installation by the user may result in water leakage, electric shock, or fire.
 - Never attempt to repair the unit without the proper qualifications. If the air conditioner must be repaired, consult the dealer, contractor or qualified Refrigeration Engineer.
 - If the unit is repaired improperly, water leakage, electric shock, or fire may result.

- Do not touch the heat exchanger fins.
 - Improper handling may result in injury.
- If refrigerant gas leaks during installation work, ventilate the room.
 - If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- Install the air conditioner according to this Installation Manual.
 - If the unit is installed improperly, water leakage, electric shock, or fire may result.
- Have all electric work done by a licensed electrician according to “Electric Facility Engineering Standard” and “Interior Wire Regulations” and the instructions given in this manual and always use a dedicated power supply.
 - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result.
- Securely install the outdoor unit terminal cover (panel).
 - If the terminal cover (panel) is not installed properly, dust or water may enter the outdoor unit and fire or electric shock may result.
- When installing and moving the air conditioner to another site, do not charge it with a refrigerant different from the refrigerant specified on the unit.
 - If a different refrigerant or air is mixed with the original refrigerant, the refrigerant cycle may malfunction and the unit may be damaged.
- If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit if the refrigerant should leak.
 - Consult the dealer regarding the appropriate measures to prevent the safety limit from being exceeded. Should the refrigerant leak and cause the safety limit to be exceeded, hazards due to lack of oxygen in the room could result.
- When moving and reinstalling the air conditioner, consult the dealer or an authorized technician.
 - If the air conditioner is installed improperly, water leakage, electric shock, or fire may result.
- After completing installation work, make sure that refrigerant gas is not leaking.
 - If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- Do not reconstruct or change the settings of the protection devices.
 - If the pressure switch, thermal switch, or other protection device is shorted or operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.
- To dispose of this product, consult your dealer.
- The installer and system specialist shall secure safety against leakage according to local regulation or standards.
 - Choose the appropriate wire size and the switch capacities for the main power supply described in this manual if local regulations are not available.
- Pay special attention to the place of installation, such as a basement, etc. where refrigeration gas can accumulate, since refrigerant is heavier than the air.
- For outdoor units that allow outside air intake to the indoor unit, the installation site must be carefully chosen to ensure only clean air can enter the room.
 - Direct exposure to outdoor air may have harmful effects on people or food.

1.2. Precautions for devices that use R410A refrigerant

-  **Caution:**
- Do not use existing refrigerant piping.
 - The old refrigerant and refrigerant oil in the existing piping contains a large amount of chlorine which may cause the refrigerant oil of the new unit to deteriorate.
 - R410A is a high-pressure refrigerant and can cause the existing piping to burst.

- **Use refrigerant piping made of phosphorus deoxidized copper and copper alloy seamless pipes and tubes. In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.**
 - Contaminants on the inside of the refrigerant piping may cause the refrigerant oil to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
 - If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor failure may result.
- **Apply only a small amount of ester oil, ether oil, or alkyl benzene to flare connections (for indoor unit).**
 - Infiltration of a large amount of mineral oil may cause the refrigerant oil to deteriorate.
- **Use liquid refrigerant to fill the system.**
 - If gas refrigerant is used to fill the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- **Do not use a refrigerant other than R410A.**
 - If another refrigerant (R22, etc.) is mixed with R410A, the chlorine in the refrigerant may cause the refrigerant oil to deteriorate.
- **Use a vacuum pump with a reverse flow check valve.**
 - The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerant oil to deteriorate.
- **Do not use the following tools that are used with conventional refrigerants.**
(Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, refrigerant recovery equipment)
 - If the conventional refrigerant and refrigerant oil are mixed in the R410A, the refrigerant may deteriorate.
 - If water is mixed in the R410A, the refrigerant oil may deteriorate.
 - Since R410A does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- **Do not use a charging cylinder.**
 - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Be especially careful when managing the tools.**
 - If dust, dirt, or water gets into the refrigerant cycle, the refrigerant may deteriorate.
- **Install the power cable so that tension is not applied to the cable.**
 - Tension may cause the cable to break and generate heat and cause a fire.
- **Install a leak circuit breaker, as required.**
 - If a leak circuit breaker is not installed, electric shock may result.
- **Use power line cables of sufficient current carrying capacity and rating.**
 - Cables that are too small may leak, generate heat, and cause a fire.
- **Use only a circuit breaker and fuse of the specified capacity.**
 - A fuse or circuit breaker of a larger capacity, or the use of a substitute simple steel or copper wire may result in a general unit failure or fire.
- **Do not wash the air conditioner units.**
 - Washing them may cause an electric shock.
- **Be careful that the installation base is not damaged by long use.**
 - If the damage is left uncorrected, the unit may fall and cause personal injury or property damage.
- **Install the drain piping according to this Installation Manual to ensure proper drainage. Wrap thermal insulation around the pipes to prevent condensation.**
 - Improper drain piping may cause water leakage causing damage to furniture and other possessions.
- **Be very careful about transporting the product.**
 - One person should not carry the product. Its weight is in excess of 20 kg [45 LBS].
 - Some products use PP bands for packaging. Do not use any PP bands as a means of transportation. It is dangerous.
 - Do not touch the heat exchanger fins. Doing so may cut your fingers.
 - When transporting the outdoor unit, support it at the specified positions on the unit base. Also support the outdoor unit at four points so that it cannot slip sideways.
- **Safely dispose of the packing materials.**
 - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
 - Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which has not been torn apart, they face the risk of suffocation.

1.5. Before starting the test run

⚠ Caution:

- **Turn on the power at least 12 hours before starting operation.**
 - Starting operation immediately after turning on the main power switch can result in irreversible damage to internal parts. Keep the power switch turned on during the operational season. Make sure of the phase order of power supply and voltage between each phase.
- **Do not touch the switches with wet fingers.**
 - Touching a switch with wet fingers can result in an electric shock.
- **Do not touch the refrigerant pipes during and immediately after operation.**
 - During and immediately after operation, the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.
- **Do not operate the air conditioner with the panels and guards removed.**
 - Rotating, hot, or high-voltage parts can cause injuries.
- **Do not turn off the power immediately after stopping operation.**
 - Always wait at least 5 minutes before turning off the power. Otherwise, drainage water leakage or mechanical failure of sensitive parts may occur.
- **Do not touch the surface of the compressor during servicing.**
 - If the unit is connected to a supply and not running, the crank case heater located at the base of the compressor may still be operating.

1.3. Before installation

⚠ Caution:

- **Do not install the unit where combustible gas may leak.**
 - If the gas leaks and accumulates around the unit, an explosion may result.
- **Do not use the air conditioner where food, pets, plants, precision instruments, or artwork are kept.**
 - The quality of the food, etc. may deteriorate.
- **Do not use the air conditioner in special environments.**
 - Oil, steam, sulfuric smoke, etc. can significantly reduce the performance of the air conditioner or damage its parts.
- **When installing the unit in a hospital, communication station, or similar place, provide sufficient protection against noise.**
 - Inverter equipment, private power generator, high-frequency medical equipment, or radio communication equipment may cause the air conditioner to operate erroneously, or fail to operate. On the other hand, the air conditioner may affect such equipment by creating noise that disturbs medical treatment or image broadcasting.
- **Do not install the unit on or over things that are subject to water damage.**
 - When the room humidity exceeds 80% or when the drain pipe is clogged, condensation may drip from the indoor unit. Perform collective drainage work together with the outdoor unit, as required.

1.4. Before installation (relocation) - electrical work

⚠ Caution:

- **Ground the unit.**
 - Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock.

2. About the product

- This unit uses R410A-type refrigerant.
- Piping for systems using R410A may be different from that for systems using conventional refrigerant because the design pressure in systems using R410A is higher. Refer to the Data Book for more information.
- Some of the tools and equipment used for installation with systems that use other types of refrigerant cannot be used with the systems using R410A. Refer to the Data Book for more information.
- Do not use the existing piping, as it contains chlorine, which is found in conventional refrigerating machine oil and refrigerant. This chlorine will deteriorate the refrigerant machine oil in the new equipment. The existing piping must not be used as the design pressure in systems using R410A is higher than that in the systems using other types of refrigerant and the existing pipes may burst.

3. Combination of outdoor units

Component units of PURY-P168 to P288 are listed below.

Outdoor unit model	Component unit model	
PURY-P72TJMU-A(-BS)	-	-
PURY-P96TJMU-A(-BS)	-	-
PURY-P120TJMU-A(-BS)	-	-
PURY-P144TJMU-A(-BS)	-	-
PURY-P168TSJMU-A(-BS)	PURY-P96TJMU-A(-BS)	PURY-P72TJMU-A(-BS)
PURY-P192TSJMU-A(-BS)	PURY-P96TJMU-A(-BS)	PURY-P96TJMU-A(-BS)
PURY-P216TSJMU-A(-BS)	PURY-P120TJMU-A(-BS)	PURY-P96TJMU-A(-BS)
PURY-P240TSJMU-A(-BS)	PURY-P120TJMU-A(-BS)	PURY-P120TJMU-A(-BS)
PURY-P264TSJMU-A(-BS)	PURY-P144TJMU-A(-BS)	PURY-P120TJMU-A(-BS)
PURY-P288TSJMU-A(-BS)	PURY-P144TJMU-A(-BS)	PURY-P144TJMU-A(-BS)

Component units of PURY-P168 to P288 are listed below.

Outdoor unit model	Component unit model	
PURY-P72YJMU-A(-BS)	-	-
PURY-P96YJMU-A(-BS)	-	-
PURY-P120YJMU-A(-BS)	-	-
PURY-P144YJMU-A(-BS)	-	-
PURY-P168YSJMU-A(-BS)	PURY-P96YJMU-A(-BS)	PURY-P72YJMU-A(-BS)
PURY-P192YSJMU-A(-BS)	PURY-P96YJMU-A(-BS)	PURY-P96YJMU-A(-BS)
PURY-P216YSJMU-A(-BS)	PURY-P120YJMU-A(-BS)	PURY-P96YJMU-A(-BS)
PURY-P240YSJMU-A(-BS)	PURY-P120YJMU-A(-BS)	PURY-P120YJMU-A(-BS)
PURY-P264YSJMU-A(-BS)	PURY-P144YJMU-A(-BS)	PURY-P120YJMU-A(-BS)
PURY-P288YSJMU-A(-BS)	PURY-P144YJMU-A(-BS)	PURY-P144YJMU-A(-BS)

4. Specifications

Model	PURY-P72TJMU-A(-BS)	PURY-P96TJMU-A(-BS)	PURY-P120TJMU-A(-BS)	PURY-P144TJMU-A(-BS)	PURY-P168TSJMU-A(-BS)	PURY-P192TSJMU-A(-BS)	PURY-P216TSJMU-A(-BS)	PURY-P240TSJMU-A(-BS)	PURY-P264TSJMU-A(-BS)	PURY-P288TSJMU-A(-BS)
Sound level (60Hz)	58dB<A>	58dB<A>	60dB<A>	61dB<A>	61dB<A>	61dB<A>	62.5dB<A>	63dB<A>	63.5dB<A>	64dB<A>
External static pressure	0 Pa *2									
Indoor units	Total capacity	50 ~ 150% *1								
	Model	06 ~ 96								
	Quantity	1 ~ 18	1 ~ 24	1 ~ 30	1 ~ 36	1 ~ 42	1 ~ 48	2 ~ 50*	2 ~ 50*	2 ~ 50*
Operation temperature	Standard type	Cooling mode: -5°CDB ~ 46°CDB [23°FDB ~ 115°FDB] Heating mode: -20°CWB ~ 15.5°CWB [-4°FWB ~ 60°FWB]								
	Outside air intake type	Cooling mode: 21°CDB/15.5°CWB ~ 46°CDB/35°CWB [70°FDB/60°FWB ~ 115°FDB/95°FWB] Heating mode: -12.5°CWB ~ 20°CWB [-9.5°FWB ~ 68°FWB]								

Model	PURY-P72YJMU-A(-BS)	PURY-P96YJMU-A(-BS)	PURY-P120YJMU-A(-BS)	PURY-P144YJMU-A(-BS)	PURY-P168YSJMU-A(-BS)	PURY-P192YSJMU-A(-BS)	PURY-P216YSJMU-A(-BS)	PURY-P240YSJMU-A(-BS)	PURY-P264YSJMU-A(-BS)	PURY-P288YSJMU-A(-BS)
Sound level (60Hz)	58dB<A>	58dB<A>	60dB<A>	61dB<A>	61dB<A>	61dB<A>	62.5dB<A>	63dB<A>	63.5dB<A>	64dB<A>
External static pressure	0 Pa *2									
Indoor units	Total capacity	50 ~ 150% *1								
	Model	06 ~ 96								
	Quantity	1 ~ 18	1 ~ 24	1 ~ 30	1 ~ 36	1 ~ 42	1 ~ 48	2 ~ 50*	2 ~ 50*	2 ~ 50*
Operation temperature	Standard type	Cooling mode: -5°CDB ~ 46°CDB [23°FDB ~ 115°FDB] Heating mode: -20°CWB ~ 15.5°CWB [-4°FWB ~ 60°FWB]								
	Outside air intake type	Cooling mode: 21°CDB/15.5°CWB ~ 46°CDB/35°CWB [70°FDB/60°FWB ~ 115°FDB/95°FWB] Heating mode: -12.5°CWB ~ 20°CWB [-9.5°FWB ~ 68°FWB]								

*Connectable branch pipe number is max. 48.

*1: The total indoor capacity of units run simultaneously is 150% or less.

*2: To enable high static pressure, set the DipSW on the main panel as follows.

SW3-9: ON, SW3-10 60Pa compatible: OFF, 30Pa compatible: ON

5. Parts included list

- This unit includes the following parts. Please check.

		Adapter <Check joint>
Model	P72	2 pcs.
	P96	2 pcs.
	P120	2 pcs.
	P144	2 pcs.

6. Space required for unit installation and operation

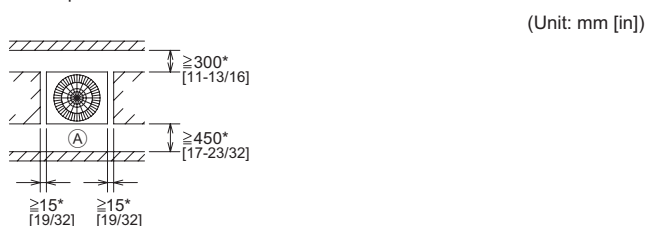
① In case of single installation

- Secure enough space around the unit as shown in the figure below.

[Fig. 6.0.1]

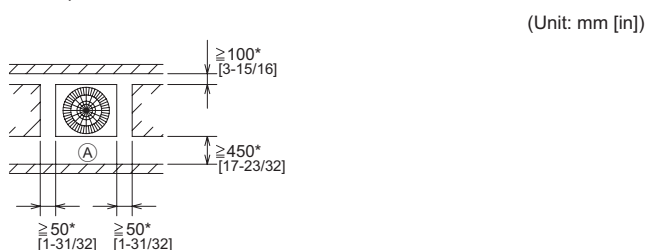
(1) If the distance is 300 mm [11-13/16 in] or more between the rear side and the wall

<A> Top view



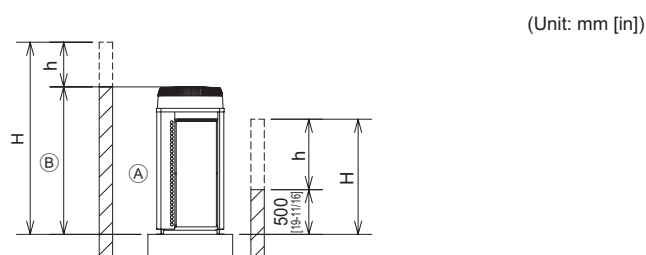
(2) If the distance is 100 mm [3-15/16 in] or more between the rear side and the wall

<A> Top view



(3) If the wall height (H) of the front, rear or side exceeds the wall height restriction

 Side view



- When the height of the walls on the front, back or on the sides <H> exceeds the wall height limit as defined here, add the height that exceeds the height limit <h> to the figures that are marked with an asterisk (*).

<Wall height limit> Front: Up to the unit height

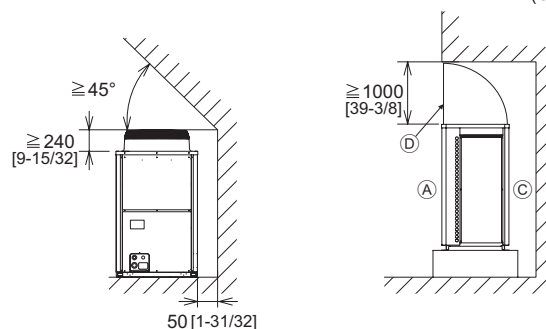
Back: Up to 500 mm [19-11/16 in] from the unit bottom

Side: Up to the unit height

(4) If there are obstacles at the upper part of the unit

<C> When there is little space up to an obstruction

(Unit: mm [in])



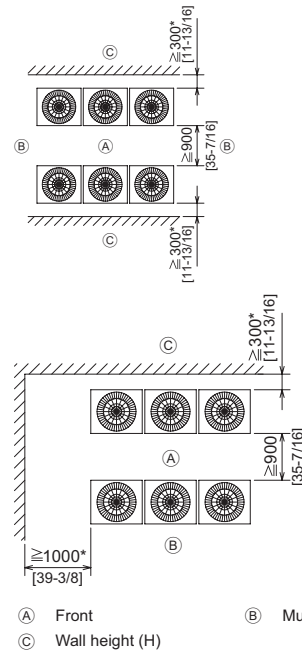
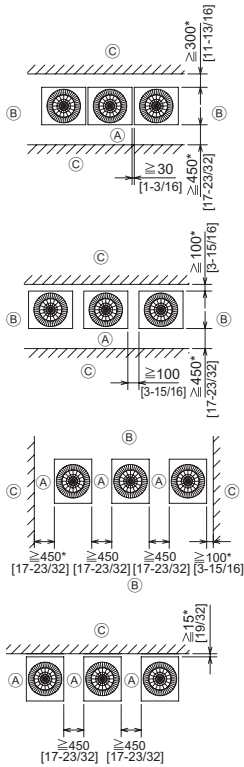
(A) Front
(C) Back

(B) Unit height
(D) Air outlet guide (field-supplied)

② In case of collective installation and continuous installation

(Unit: mm [in])

[Fig. 6.0.2]



- When multiple units are installed adjacent to each other, secure enough space to allow for air circulation and walkway between groups of units as shown in the figures.
- At least two sides must be left open.
- As with the single installation, add the height that exceeds the height limit <h> to the figures that are marked with an asterisk (*).
- If there is a wall at both the front and the rear of the unit, install up to A* units consecutively in the side direction and provide a space of 1000mm or more as inlet space/passage space for each A* units.

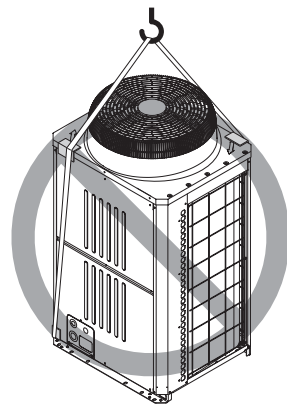
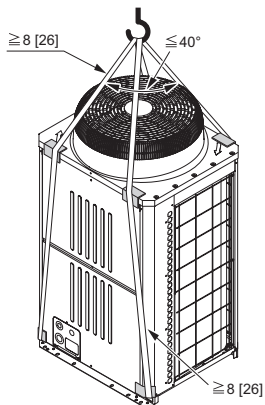
*PURY-P72,96:A=six

*PURY-P120,144:A=three

7. Transporting the unit

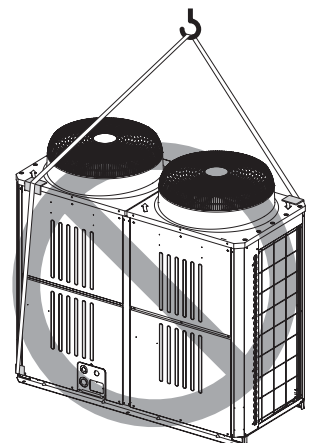
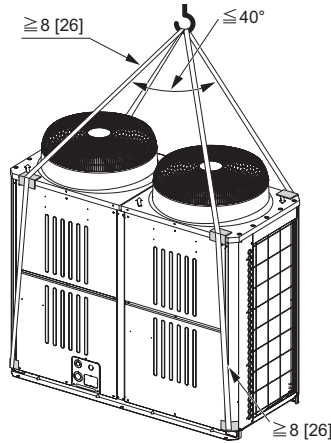
[Fig. 7.0.1]

① P72

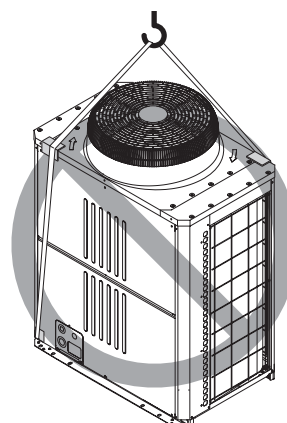
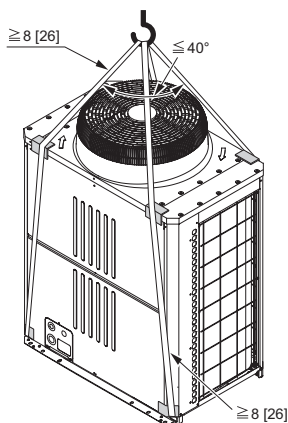


③ P120,P144

(Unit: m [ft])



② P96



- Use suspension ropes that will withstand the weight of the unit.
- When moving the unit, use a **4-point suspension**, and avoid giving impacts to the unit (Do not use **2-point suspension**).
- Place protective pads on the unit where it comes in contact with the ropes to protect the unit from being scratched.
- Set the angle of roping at 40° or less.
- Use 2 ropes that are each longer than 8 m [26ft].
- Place protective padding at the corners of the product to protect the product from scratches or dents that might be caused by the rope.

⚠Caution:

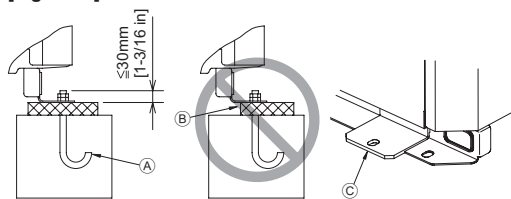
Be very careful when carrying/moving the product.

- When installing the outdoor unit, suspend the unit at the specified location of the unit base. Stabilize as necessary so that it does not move to the side and support it at 4 points. If the unit is installed or suspended with 3-point support, the unit may become unstable and fall.

8. Installation of unit

8.1. Installation

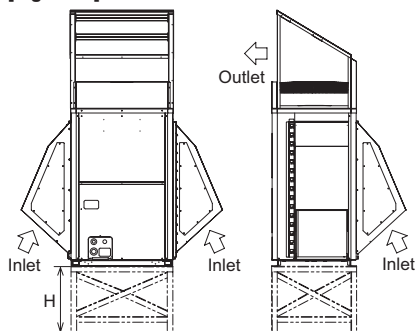
[Fig. 8.1.1]



- (A) Field-supplied M10 anchor bolt
- (B) Corner is not seated.
- (C) Fixing bracket for the hole-in anchor bolt (3 locations to fix with screws).

- Fix unit tightly with bolts so that unit will not fall down due to earthquakes or strong winds.
- Use concrete base or an angle bracket as the foundation of unit.
- Vibration may be transmitted to the installation section and noise and vibration may be generated from the floor and walls, depending on the installation conditions. Therefore, provide ample vibrationproofing (cushion pads, cushion frame, etc.).
- Build the foundation in such way that the corner of the installation leg is securely supported as shown in the above figure [Fig. 8.1.1]. When using a rubber isolating cushion, please ensure it is large enough to cover the entire width of each of the unit's legs. If the corners are not firmly seated, the installation feet may be bent.
- When using cushion pads, be sure that the full width of the unit is covered.
- The projecting length of the anchor bolt should be less than 30 mm [1-3/16 in].
- Post-installed anchor bolts (i.e., bolts not firmly cemented into the base) are not compatible with this product unless fixing brackets are first mounted on the four locations.

[Fig. 8.1.2]



- In abnormally harsh environments such as cold and/or windy areas, sufficient countermeasures to guard against excessive wind and snow should be taken to ensure the unit's correct operation. When the unit is expected to operate in cooling mode in conditions under 10°C [50°F], in snowy areas, in environments subject to strong winds or rain, install air inlet and outlet ducting as shown in [Fig. 8.1.2].

Note:

1. Height of frame base for snow damage prevention (H) shall be twice as high as expected snowfall. Width of frame base shall not exceed that of the unit. The frame base shall be made of angle steel, etc., and designed so that snow and wind slip through the structure. (If frame base is too wide, snow will be accumulated on it.)
2. Install unit so that wind will not directly lash against openings of inlet and outlet ducts.
3. Build frame base at customer referring to this figure.
Material : Galvanized steel plate 1.2T
Painting : Overall painting with polyester powder
Color : Munsell 5Y8/1 (same as that of unit)
4. When the unit is used in a cold region and the heating operation is continuously performed for a long time when the outside air temperature is below freezing, install a heater to the unit base or take other appropriate measures to prevent water from freezing on the base.

⚠ Warning:

- **Be sure to install unit in a place strong enough to withstand its weight. Any lack of strength may cause unit to fall down, resulting in a personal injury.**
- **Have installation work in order to protect against strong winds and earthquakes. Any installation deficiency may cause unit to fall down, resulting in a personal injury.**

When building the foundation, give full attention to the floor strength, drain water disposal <during operation, drain water flows out of the unit>, and piping and wiring routes.

Precautions when routing the pipes and wires below the unit

When routing the pipes and wires below the unit, be sure that the foundation and base work do not block the base through-holes. Also make sure the foundation is at least 100 mm [3-15/16 in] high so that the piping can pass under the unit.

9. Refrigerant piping installation

The pipe is connected via a terminal-branch type connection in which refrigerant piping from the outdoor unit is branched at the terminal and is connected to each of the indoor units.

The method of pipe connection is as follows: flare connection for the indoor units, low-pressure pipes and high-pressure pipes for outdoor units, brazed connection. Note that the branched sections are brazed.

⚠ Warning:

Always use extreme care to prevent the refrigerant gas from leaking while using fire or flame. If the refrigerant gas comes in to contact with a flame from any source, such as a gas stove, it breaks down and generates a poisonous gas which can cause gas poisoning. Never weld in an unventilated room. Always conduct an inspection for gas leakage after installation of the refrigerant piping has been completed.

9.1. Caution

This unit uses refrigerant R410A. Follow the local regulations on materials and pipe thickness when selecting pipes. (Refer to the table on the below.)

- ① Use the following materials for refrigeration piping.
 - Material: Use copper alloy seamless pipes made of phosphorus deoxidized copper. Ensure the inner and outer surfaces of the pipes are clean and free from hazardous sulfur, oxide, dusts, shaving particles, oils, and moisture (contamination).
 - Size: Refer to item 9.2. for detailed information on refrigerant piping system.
- ② Always observe the restrictions on the refrigerant piping (such as rated length, height difference, and piping diameter) to prevent equipment failure or a decline in heating/cooling performance.
- ③ **Do not install outdoor unit piping when it is raining.**
- ④ Commercially available piping often contains dust and other materials. Always blow it clean with a dry inert gas.
- ⑤ Use care to prevent dust, water or other contaminants from entering the piping during installation.
- ⑥ Reduce the number of bending portions as much as possible, and make bending radius as big as possible.
- ⑦ For indoor and outdoor branching and merging section, be sure to use the following twinning pipe sets and merge pipe sets (sold separately).

Indoor Twinning Pipe Kit model	Indoor Junction Pipe Kit model
Line branch	
Lower stream unit model Less than 30 in total	Total indoor model P36 ~ P96
CMY-Y102S-G2	CMY-R160-J

Outdoor Twinning Kit model	
Total outdoor model P168,P192	Total outdoor model P216 ~ P288
CMY-R100VBK	CMY-R100XLVBK

Copper pipe size and radial thickness for R410A CITY MULTI.

Size (mm)	Size (inch)	Radial thickness (mm)	Radial thickness (mil)	Pipe type
ø6.35	ø1/4"	0.8	32	Type-O
ø9.52	ø3/8"	0.8	32	Type-O
ø12.7	ø1/2"	0.8	32	Type-O
ø15.88	ø5/8"	1.0	40	Type-O
*ø19.05	ø3/4"	1.2	48	Type-O
*ø19.05	ø3/4"	1.0	40	Type-1/2H or H
ø22.2	ø7/8"	1.0	40	Type-1/2H or H
ø25.4	ø1"	1.0	40	Type-1/2H or H
ø28.58	ø1-1/8"	1.0	40	Type-1/2H or H
ø31.75	ø1-1/4"	1.1	44	Type-1/2H or H
ø34.93	ø1-3/8"	1.2	48	Type-1/2H or H
ø41.28	ø1-5/8"	1.4	56	Type-1/2H or H

* Both pipe types can be used for pipe size ø19.05 (3/4 inch) for R410A air conditioner.

- ⑧ Use an adapter if a specified refrigerant pipe has a different diameter from that of a branching pipe.
- ⑨ **Braze only with non-oxide brazing material for piping. Failure to do so may damage the compressor. Be sure to perform the non-oxidation brazing with a nitrogen purge.**
Do not use any commercially available anti-oxidizing agent since it may cause pipe corrosion and degrading of the refrigerant oil.
Please contact Mitsubishi Electric for more details.
(Refer to item 10.2. for details of the piping connection and valve operation)

- ⑩ Always insulate the piping properly. Insufficient insulation will result in a decline in heating/cooling performance, water drops from condensation forming and other such problems (Refer to item 10.4 for thermal insulation of refrigerant piping).
- ⑪ When connecting the refrigerant piping, make sure the valve of the outdoor unit is completely closed (the factory setting). Do not operate it until the refrigerant piping for the outdoor, indoor units and BC controller has been connected, a refrigerant leakage test has been performed, and the evacuation process has been completed.
- ⑫ **Never use refrigerant to perform an air purge.** Always evacuate using a vacuum pump.
- ⑬ **Be sure to charge the system using liquid refrigerant.**
- ⑭ Either a lack or an excess of refrigerant causes the unit to make an emergency stop. Charge the system with an appropriate amount of refrigerant. When servicing, always check the notes concerning pipe length and amount of additional refrigerant at both locations, the refrigerant volume calculation table on the back of the service panel and the additional refrigerant section on the labels for the combined number of indoor units (Refer to item 9.2. for detailed information on refrigerant piping system).

⚠ Warning:

When installing and moving the unit, do not charge the system with any other refrigerant other than the refrigerant specified on the unit.

- Mixing of a different refrigerant, air, etc. may cause the refrigerant cycle to malfunction and may result in severe damage.

⚠ Caution:

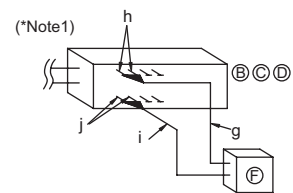
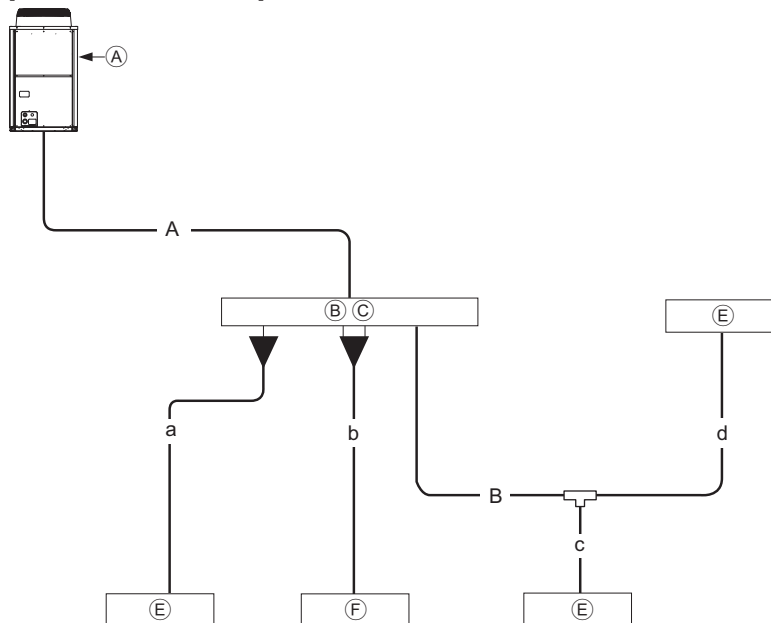
- **Use a vacuum pump with a reverse flow check valve.**
 - If the vacuum pump does not have a reverse flow check valve, the vacuum pump oil may flow back into the refrigerant cycle and cause deterioration of the refrigerant oil.
- **Do not use the tools shown below used with conventional refrigerant. (Gauge manifold, charge hose, gas leak detector, check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment)**
 - Mixing of conventional refrigerant and refrigerant oil may cause the refrigerant oil to deteriorate.
 - Mixing of water will cause the refrigerant oil to deteriorate.
 - R410A refrigerant does not contain any chlorine. Therefore, gas leak detectors for conventional refrigerants will not react to it.
- **Manage the tools used for R410A more carefully than normal.**
 - If dust, dirt, or water gets in the refrigerant cycle, the refrigerant oil will deteriorate.
- **Never use existing refrigerant piping.**
 - The large amount of chlorine in conventional refrigerant and refrigerant oil in the existing piping will cause the new refrigerant to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing.**
 - If dust, dirt, or water gets into the refrigerant cycle, the oil will deteriorate and the compressor may fail.
- **Do not use a charging cylinder.**
 - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Do not use special detergents for washing piping.**

9.2. Refrigerant piping system

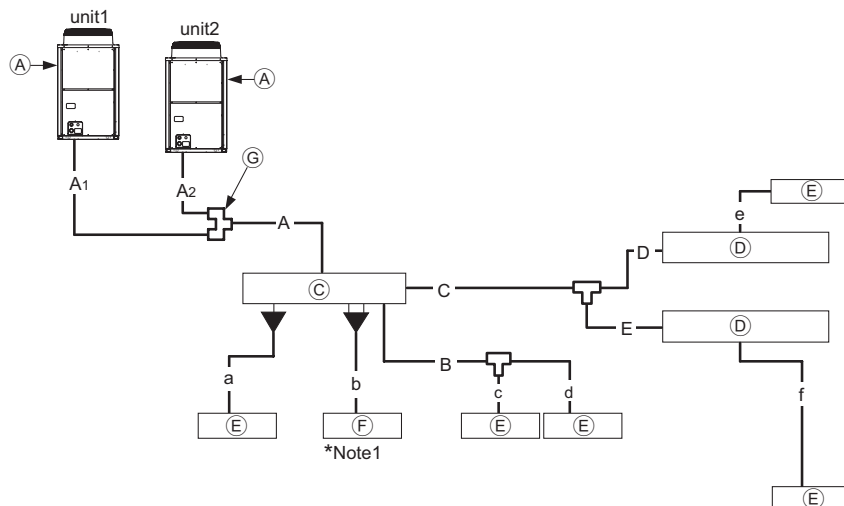
Connection example

[Fig. 9.2.1]

[Outdoor model: P72 ~ P144]



[Outdoor model: P168~ P288]



- Ⓐ Outdoor unit
- Ⓑ BC controller (standard)
- Ⓒ BC controller (main)
- Ⓓ BC controller (sub)
- Ⓔ Indoor unit (06 ~ 54)
- Ⓕ Indoor unit (72 ~ 96)
- Ⓖ Outdoor Twinning Kit

A

(Unit: mm [in])

Outdoor model	Unit combination		A		A1 *1		A2 *1	
	unit 1	unit 2	High-pressure side	Low-pressure side	High-pressure side	Low-pressure side	High-pressure side	Low-pressure side
P72	-	-	ø15.88 [5/8]	ø19.05 [3/4]	-	-	-	-
P96	-	-	ø19.05 [3/4]	ø22.2 [7/8]	-	-	-	-
P120	-	-	ø19.05 [3/4]	ø28.58 [1-1/8]	-	-	-	-
P144	-	-	ø22.2 [7/8]	ø28.58 [1-1/8]	-	-	-	-
P168	P96	P72	ø22.2 [7/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø22.2 [7/8]	ø15.88 [5/8]	ø19.05 [3/4]
P192	P96	P96	ø22.2 [7/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø22.2 [7/8]	ø19.05 [3/4]	ø22.2 [7/8]
P216	P120	P96	ø28.58 [1-1/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø22.2 [7/8]
P240	P120	P120	ø28.58 [1-1/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø28.58 [1-1/8]
P264	P144	P120	ø28.58 [1-1/8]	ø34.93 [1-3/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø28.58 [1-1/8]
P288	P144	P144	ø28.58 [1-1/8]	ø34.93 [1-3/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø22.2 [7/8]	ø28.58 [1-1/8]

*1 The pipe sizes listed in columns A1 to A2 in this table correspond to the sizes for the models listed in the unit 1 and 2 columns. When the order of unit 1 and 2 is changed, make sure to use the appropriate pipe size for the model.

B (Unit: mm [in])

Total capacity of indoor units	Liquid pipe	Gas pipe
~30	ø9.52 [3/8]	ø15.88 [5/8]

C, D (Unit: mm [in])

Downstream unit model total	High-pressure gas pipe	Low-pressure gas pipe	Liquid pipe
~72	ø15.88 [5/8]	ø19.05 [3/4]	ø9.52 [3/8]
73~108	ø19.05 [3/4]	ø22.2 [7/8]	ø9.52 [3/8]
109~126	ø19.05 [3/4]	ø28.58 [1-1/8]	ø12.7 [1/2]
127~144	ø22.2 [7/8]	ø28.58 [1-1/8]	ø12.7 [1/2]
145~168	ø22.2 [7/8]	ø28.58 [1-1/8]	ø15.88 [5/8]

a, b, c, d, e, f (Unit: mm [in])

Model number	Liquid pipe	Gas pipe
06, 08, 12, 15, 18	ø6.35 [1/4]	ø12.7 [1/2]
24, 27, 30, 36, 48, 54	ø9.52 [3/8]	ø15.88 [5/8]
72	ø9.52 [3/8]	ø19.05 [3/4]
96	ø9.52 [3/8]	ø22.2 [7/8]

g, h, i, j (Unit: mm [in])

Model number	Liquid pipe		Gas pipe	
	g	h	i	j
36	ø9.52 [3/8]	ø9.52 [3/8]	ø15.88 [5/8]	ø15.88 [5/8]
48	ø9.52 [3/8]	ø9.52 [3/8]	ø15.88 [5/8]	ø15.88 [5/8]
54	ø9.52 [3/8]	ø9.52 [3/8]	ø15.88 [5/8]	ø15.88 [5/8]
72	ø9.52 [3/8]	ø9.52 [3/8]	ø19.05 [3/4]	ø15.88 [5/8]
96	ø9.52 [3/8]	ø9.52 [3/8]	ø22.2 [7/8]	ø15.88 [5/8]

Outdoor model	Outdoor Twinning Kit
P168,P192	CMY-R100VBK
P216~P288	CMY-R100XLVBK

Precautions for outdoor unit combinations

Refer to [Fig. 9.2.2] for the positioning of twinning pipes.

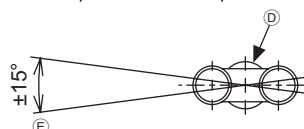
[Fig. 9.2.2]

<A> Make sure the pipes from the twinning pipe to the outdoor unit are sloped downwards (high-pressure side only).



 Slope of twinning pipes (high-pressure side only)

Make sure the slope of the twinning pipes are at an angle within $\pm 15^\circ$ to the ground.
If the slope exceeds the specified angle, the unit may be damaged.



- (A) Downward slope (B) Upward slope
(C) BC controller (D) Twinning pipe
(E) Slope of the twinning pipe is at an angle within $\pm 15^\circ$ to the ground

⚠ Caution:

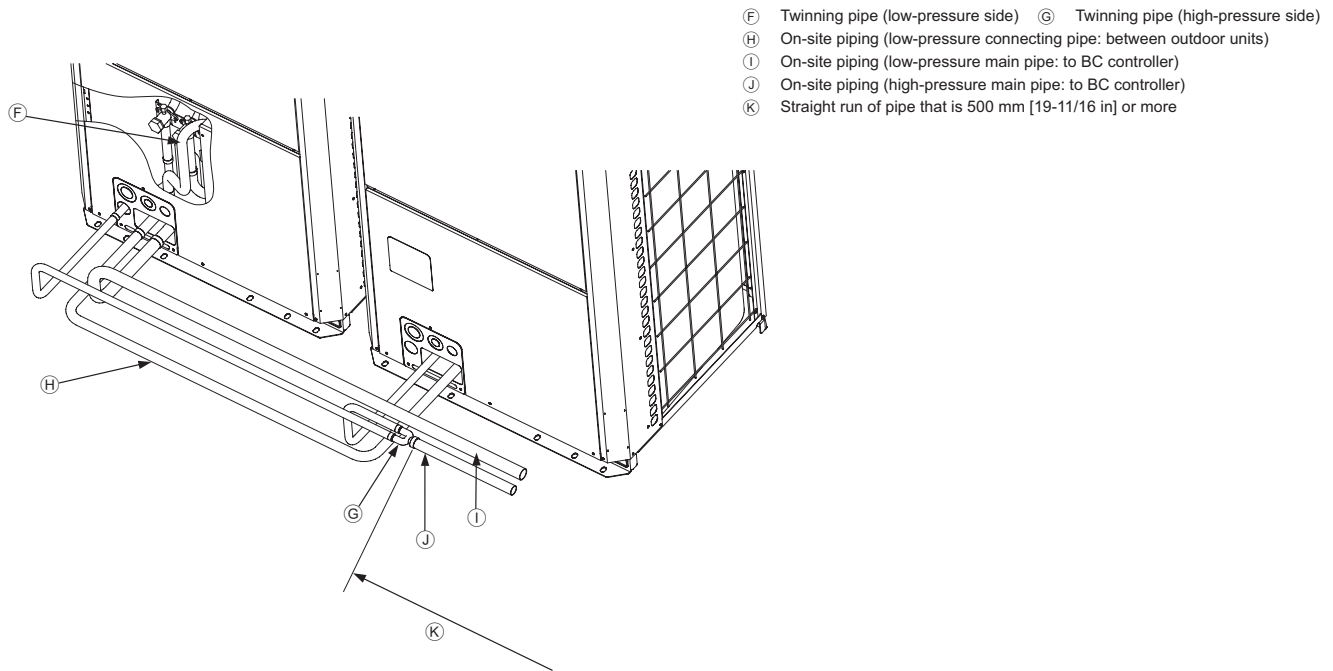
- Do not install traps to prevent oil backflow and compressor start-up failure.
 - Do not install solenoid valves to prevent oil backflow and compressor start-up failure.
 - Do not install a sight glass because it may show improper refrigerant flow.
- If a sight glass is installed, inexperienced technicians that use the glass may overcharge the refrigerant.

<C> Pipe connection example

The distributor on the low-pressure side must be placed in the outdoor unit that has a larger capacity index of the two, regardless of the relative positions of the outdoor units or their addresses.

(If outdoor units that have the same capacity are used in combination, the distributor can be placed in either outdoor unit.)

If the distributor is placed in the outdoor unit that has a smaller capacity, refrigerant will not be properly distributed and compressor failure may result.



- Ⓕ Twinning pipe (low-pressure side) Ⓖ Twinning pipe (high-pressure side)
- Ⓖ On-site piping (low-pressure connecting pipe: between outdoor units)
- Ⓖ On-site piping (low-pressure main pipe: to BC controller)
- Ⓖ On-site piping (high-pressure main pipe: to BC controller)
- Ⓖ Straight run of pipe that is 500 mm [19-11/16 in] or more

10. Additional refrigerant charge

At the time of shipping, the outdoor unit is charged with refrigerant.

This charge does not include the amount needed for extended piping and additional charging of each refrigerant line will be required on-site. In order that future servicing may be properly provided, always keep a record of the size and length of each refrigerant line and the amount of additional charge by writing it in the space provided on the outdoor unit.

10.1. Calculation of additional refrigerant charge

- Calculate the amount of additional charge based on the length of the piping extension and the size of the refrigerant line.
- Use the table below as a guide for calculating the amount of additional charging and then charge the system accordingly.
- If the calculation results in a fraction of less than 0.1 kg [4 oz], round up to the next 0.1 kg [4 oz]. For example, if the result of the calculation was 27.73 kg [979 oz], round the result up to 27.8 kg [983 oz].

<Additional charge>

<div>Additional refrigerant charge</div> <div>(kg) [oz]</div>	=	<div>High-pressure pipe size Total length of ø28.58 mm [1-1/8 in]</div> <div>(m) × 0.36 (kg/m) (ft) × 3.88 (oz/ft)</div>	+	<div>High-pressure pipe size Total length of ø22.2 mm [7/8 in]</div> <div>(m) × 0.23 (kg/m) (ft) × 2.48 (oz/ft)</div>	+	<div>High-pressure pipe size Total length of ø19.05 mm [3/4 in]</div> <div>(m) × 0.16 (kg/m) (ft) × 1.73 (oz/ft)</div>	+	<div>High-pressure pipe size Total length of ø15.88 mm [5/8 in]</div> <div>(m) × 0.11 (kg/m) (ft) × 1.19 (oz/ft)</div>		
<div>Liquid Piping Size Total length of ø15.88 mm [5/8 in]</div> <div>(m) × 0.2 (kg/m) (ft) × 2.16 (oz/ft)</div>	+	<div>Liquid Piping Size Total length of ø12.7 mm [1/2 in]</div> <div>(m) × 0.12 (kg/m) (ft) × 1.30 (oz/ft)</div>	+	<div>Liquid Piping Size Total length of ø9.52 mm [3/8 in]</div> <div>(m) × 0.06 (kg/m) (ft) × 0.65 (oz/ft)</div>	+	<div>Liquid Piping Size Total length of ø6.35 mm [1/4 in]</div> <div>(m) × 0.024 (kg/m) (ft) × 0.26 (oz/ft)</div>				
<div>Total Outdoor Unit Model Name</div> <div>P72</div> <div>P96</div> <div>P120</div> <div>P144</div> <div>P168</div> <div>P192</div> <div>P216</div> <div>P240</div> <div>P264</div> <div>P288</div>	+	<div>BC controller (Standard/Main) Per Unit</div> <div>3.0 kg [106 oz]</div> <div>4.5 kg [160 oz]</div> <div>7.5 kg [265 oz]</div> <div>9.0 kg [318 oz]</div>	+	<div>BC controller (Main) HA-Type</div> <div>2.0 kg</div>	+	<div>BC controller (Sub) Total Units</div> <div>1</div> <div>2</div>	<div>BC controller (Sub) Per Unit</div> <div>1.0 kg [36 oz]</div> <div>2.0 kg [71 oz]</div>	+	<div>Total Capacity of Connected Indoor Units</div> <div>Models ~ 27</div> <div>Models 28 ~ 54</div> <div>Models 55 ~ 126</div> <div>Models 127 ~ 144</div> <div>Models 145 ~ 180</div> <div>Models 181 ~ 234</div> <div>Models 235 ~ 273</div> <div>Models 274 ~ 307</div> <div>Models 308 ~ 342</div> <div>Models 343 ~ 411</div> <div>Models 412 ~</div>	<div>Per Indoor Unit</div> <div>2.0 kg [71 oz]</div> <div>2.5 kg [89 oz]</div> <div>3.0 kg [106 oz]</div> <div>3.5 kg [124 oz]</div> <div>4.5 kg [159 oz]</div> <div>5.0 kg [177 oz]</div> <div>6.0 kg [212 oz]</div> <div>8.0 kg [283 oz]</div> <div>9.0 kg [318 oz]</div> <div>10.0 kg [353 oz]</div> <div>12.0 kg [424 oz]</div>

Maximum refrigerant charge

There is a limit to the amount of refrigerant that can be charged into a unit. Regardless of the amount yielded by the formula above, observe the maximum refrigerant charge in the table below.

Total index of the outdoor units	P72	P96	P120	P144	P168	P192	P216	P240	P264	P288
Maximum *1 refrigerant charge	39.0kg [86LBS]	47.3kg [104LBS 3oz]	52.8kg [116LBS 5oz]	58.5kg [129LBS]	73.0kg [161LBS]	86.3kg [190LBS 3oz]	104.6kg [230LBS 6oz]	107.1kg [236LBS 2oz]	115.1kg [253LBS 8oz]	115.1kg [253LBS 8oz]

*1 Maximum refrigerant charge: the amount of factory-charged refrigerant and the amount of refrigerant to be added on site

<Example>

Indoor	1: 30	A: ø28.58 mm [1-1/8 in]	40 m [131 ft]	a: ø9.52 mm [3/8 in]	10 m [32 ft]	} At the conditions below:
	2: 96	B: ø9.52 mm [3/8 in]	10 m [32 ft]	b: ø9.52 mm [3/8 in]	5 m [16 ft]	
	3: 12	C: ø9.52 mm [3/8 in]	20 m [64 ft]	c: ø6.35 mm [1/4 in]	5 m [16 ft]	
	4: 15	D: ø9.52 mm [3/8 in]	5 m [16 ft]	d: ø6.35 mm [1/4 in]	10 m [32 ft]	
	5: 12	E: ø9.52 mm [3/8 in]	5 m [16 ft]	e: ø6.35 mm [1/4 in]	5 m [16 ft]	
	6: 24	F: ø22.2 mm [7/8 in]	3 m [10 ft]	f: ø9.52 mm [3/8 in]	5 m [16 ft]	
		G: ø19.05 mm [3/4 in]	1 m [4 ft]			

The total length of each liquid line is as follows:

ø28.58 mm [1-1/8 in]: A = 40 m [131 ft]

ø22.2 mm [7/8 in]: F = 3 m [10 ft]

ø19.05 mm [3/4 in]: G = 1 m [4 ft]

ø9.52 mm [3/8 in]: C + D + E + a + b + f = 50 m [164 ft]

ø6.35 mm [1/4 in]: c + d + e = 20 m [64 ft]

Therefore,

<Calculation example>

Additional refrigerant charge

$$= 40 \text{ m [131 ft]} \times 0.36 \text{ kg/m [3.88 oz/ft]} + 3 \text{ m [10 ft]} \times 0.23 \text{ kg/m [2.48 oz/ft]} + 1 \text{ m [4 ft]} \times 0.16 \text{ kg/m [1.73 oz/ft]} + 50 \text{ m [164 ft]} \times 0.06 \text{ kg/m [0.65 oz/ft]} + 20 \text{ m [64 ft]} \times 0.024 \text{ kg/m [0.26 oz/ft]} + 2 \text{ kg [71 oz]} + 2 \text{ kg [71 oz]} + 5 \text{ kg [177 oz]} \\ = 27.8 \text{ kg [983 oz]}$$

10.2. Precautions concerning piping connection and valve operation

- Conduct piping connection and valve operation accurately and carefully.

Removing the pinched connecting pipe

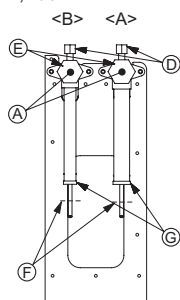
When shipped, a pinched connecting pipe is attached to the on-site high-pressure and low-pressure valves to prevent gas leakage.

Take the following steps ① through ④ to remove the pinched connecting pipe before connecting refrigerant pipes to the outdoor unit.

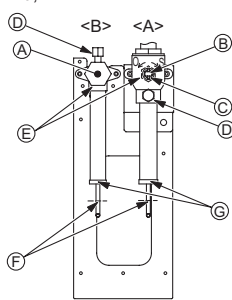
- Check that the refrigerant service valve is fully closed (turned clockwise all the way).
- Connect a charging hose to the service port on the low-pressure/high-pressure refrigerant service valve, and extract the gas in the pipe section between the refrigerant service valve and the pinched connecting pipe.
- After vacuuming gas from the pinched connecting pipe, sever the pinched connecting pipe at the location shown in [Fig.10.2.1] and drain the refrigerant.
- After completing ② and ③ heat the brazed section to remove the pinched connecting pipe.

[Fig. 10.2.1]

P72,P96



P120,P144



<A> Refrigerant service valve (low-pressure side/brazed type)

 Refrigerant service valve (high-pressure side/brazed type)

(A) Shaft

Fully closed at the factory, when connecting the piping, and when vacuuming. Open fully after these operations are completed.

<When opening>

- Turn the shaft counterclockwise with a hexagonal wrench.
- Turn around the shaft until it stops.

<When closing>

- Turn the shaft clockwise with a hexagonal wrench.
- Turn around the shaft until it stops.

(B) Shaft

Fully closed at the factory, when connecting the piping, and when vacuuming.

Open fully after these operations are completed.

<When opening>

- Turn the shaft counterclockwise.
- Turn around the shaft until it stops.

<When closing>

- Turn the shaft clockwise.
- Turn around the shaft until it stops.

(C) Stopper pin

Prevents the shaft from turning 90° or more.

(D) Service port

Available for gas venting of the pinched connecting pipe, or vacuuming in the refrigerant pipes on the site.

(E) Cap

Remove the cap before operating the shaft. Be sure to return it to the original position after completing the operation.

(F) Pinched connecting pipe severing portion

(G) Pinched connecting pipe brazing portion

Warning:

- The sections between the refrigerant service valves and the pinched connecting pipes are filled with gas and refrigerant oil. Extract the gas and refrigerant oil in the above-mentioned pipe section before heating the brazed section to remove the refrigerant service valve pinched connecting pipe.

- If the brazed section is heated without first extracting the gas and refrigerant oil, the pipe may burst or the pinched connecting pipe may blow off and ignite the refrigerant oil, causing serious injury.

Caution:

- Place a wet towel on the refrigerant service valve before heating the brazed section to keep the temperature of the valve from exceeding 120 °C [248 °F].
- Direct the flame away from the wiring and metal sheets inside the unit to prevent heat damage.

Caution:

- Do not vent R410A into the atmosphere.

Refrigerant pipe connection

This product needs connecting pipes for front piping and bottom post-piping. (sold separately) (Refer to [Fig.10.2.2])

Check the high-pressure/low-pressure piping dimensions before connecting the refrigerant pipe.

Refer to item 9.2 Refrigerant piping system for piping dimensions.

Make sure that the refrigerant pipe is not touching other refrigerants pipes, unit panels, or base plates.

Be sure to use non-oxidative brazing when connecting pipes.

Be careful not to burn the wiring and plate when brazing.

<Refrigerant piping connection examples>

[Fig.10.2.2]

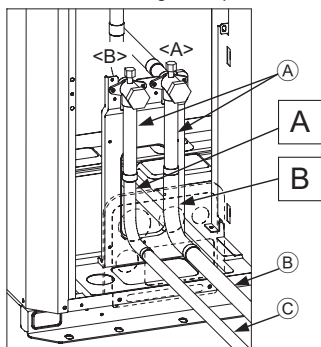
<Front piping and bottom post-piping> (Sold separately)

(Unit: mm [in])

No.	①	②	③
Shape			
P72 (-)	-	-	-
P96 (CMY-RS200UEB)	1 pc. Low-pressure side	1 pc. High-pressure side	1 pc. High-pressure side
P120 (CMY-RS300UEB)	-	1 pc. High-pressure side	1 pc. High-pressure side
P144 (CMY-RS400UEB)	1 pc. High-pressure side	-	-

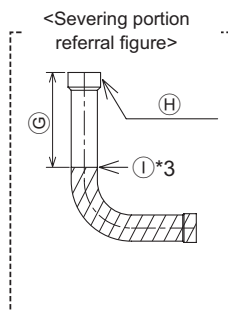
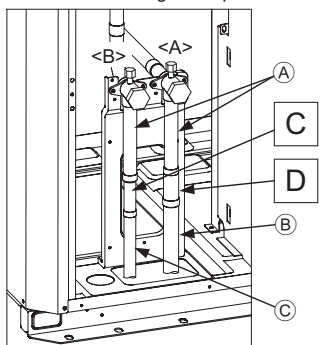
<Front pipe routing>

When not attaching a low-pressure twinning pipe



<Bottom pipe routing>

When not attaching a low-pressure twinning pipe



<A> Low-pressure side

 High-pressure side

A Refrigerant service valve piping

D Twinning Kit (sold separately)

E On-site piping (low-pressure connecting pipe: to BC controller)

F On-site piping (low-pressure connecting pipe: to outdoor unit)

G 75 mm [2-31/32 in] (reference measurement)

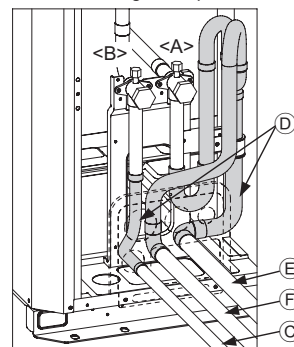
H ID ø25.4 mm [1 in] side

*1 For the attachment of the Twinning pipe (sold separately), refer to the instructions included in the kit.

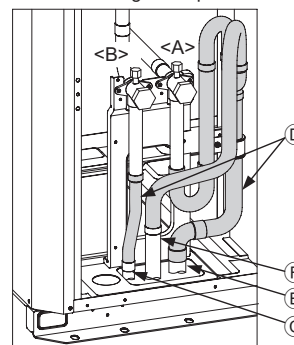
*2 Connection pipe is not used when the Twinning Kit is attached.

*3 Use a pipe cutter to sever.

When attaching a low-pressure twinning pipe *1,*2



When attaching a low-pressure twinning pipe *1,*2



C On-site piping (high-pressure connecting pipe)

I Severing portion

• Front pipe routing

A	P72	Expand the high-pressure side on-site piping (ID ø15.88 mm [5/8 in]) and connect to the refrigerant service valve piping.
	P96, P120	Use the included connecting pipe ② and elbow ③ to connect.
	P144	Use the included connecting pipe ① to connect.
B	P72	Expand the low-pressure side on-site piping (ID ø19.05 mm [3/4 in]) and connect to the refrigerant service valve piping.
	P96	Use the included connecting pipe ① to connect.
	P120, P144	Expand the low-pressure side on-site piping (ID ø28.58 mm [1-1/8 in]) and connect to the refrigerant service valve piping.

• Bottom pipe routing

C	P72	Expand the high-pressure side on-site piping (ID ø15.88 mm [5/8 in]) and connect to the refrigerant service valve piping.
	P96, P120	Use the included connecting pipe ②. Expand the on-site piping to connect to ID ø19.05 mm [3/4 in]
	P144	Sever the included connecting pipe ① as shown in the figure with a pipe cutter to use. Expand the on-site piping to connect to ID ø22.2 mm [7/8 in].
D	P72	Expand the low-pressure side on-site piping (ID ø19.05 mm [3/4 in]) and connect to the refrigerant service valve piping.
	P96	Sever the included connecting pipe ① as shown in the figure with a pipe cutter to use. Expand the on-site piping to connect to ID ø22.2 mm [7/8 in].
	P120, P144	Expand the low-pressure side on-site piping (ID ø28.58 mm [1-1/8 in]) and connect to the refrigerant service valve piping.

Satisfy the minimum insertion depth in the table below when expanding on-site piping

Pipe diameter (mm [in])	Minimum insertion depth (mm [in])
5 [7/32] or more, less than 8 [11/32]	6 [1/4]
8 [11/32] or more, less than 12 [1/2]	7 [9/32]
12 [1/2] or more, less than 16 [21/32]	8 [11/32]
16 [21/32] or more, less than 25 [1]	10 [13/32]
25 [1] or more, less than 35 [1-13/32]	12 [1/2]
35 [1-13/32] or more, less than 45 [1-25/32]	14 [9/16]

- After evacuation and refrigerant charging, ensure that the handle is fully open. If operating with the valve closed, abnormal pressure will be imparted to the high- or low-pressure side of the refrigerant circuit, giving damage to the compressor, four-way valve, etc.
- Determine the amount of additional refrigerant charge by using the formula, and charge refrigerant additionally through the service port after completing piping connection work.
- After completing work, tighten the service port and cap securely so as not to generate any gas leakage. (Refer to the table on the below for appropriate tightening torque.)

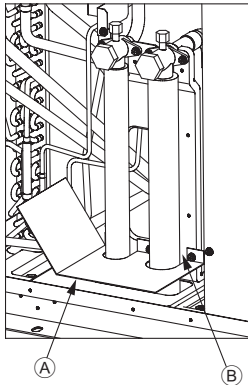
Appropriate tightening torque:

Outer diameter of copper pipe (mm [in])	Cap (N·m/kg·cm)	Shaft (N·m/kg·cm)	Size of hexagonal wrench (mm)	Service port (N·m/kg·cm)
ø9.52 [3/8]	15/150	6/60	4	12/120
ø12.7 [1/2]	20/200	9/90	4	
ø15.88 [5/8]	25/250	15/150	6	
ø19.05 [3/4]	25/250	30/300	8	
ø25.4 [1]	25/250	30/300	8	16/160
ø28.58 [1-1/8]	25/250	-	-	

⚠ Caution:

- Keep the valve closed until refrigerant charging to the pipes to be added on-site has been completed. Opening the valve before charging the refrigerant may cause damage to the unit.
- Do not use a leak detection additive.

[Fig. 10.2.3]



(A) Example of closure materials (field-supplied)

(B) Fill the gap at the site

*When not attaching a low-pressure twinning pipe.

Make sure to seal-off the space around areas where the wires and refrigerant pipes enter the unit to ensure that small animals, rainwater, or snow cannot enter the unit through such openings and cause damage to the unit.

⚠ Caution:

Make sure to seal-off the openings for the pipe and wire retrieval.

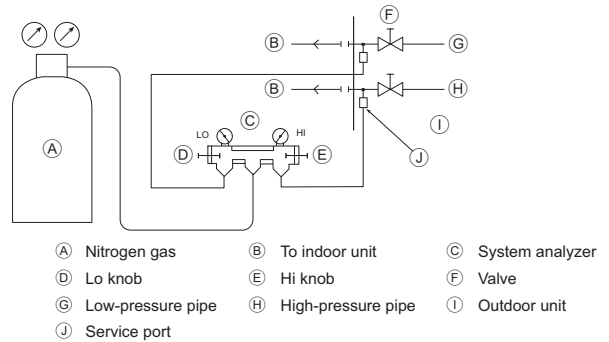
- Small animals, rainwater, or snow entering through the openings may cause damage to the device.

10.3. Airtight test, evacuation, and refrigerant charging

① Airtight test

Perform with the valve of the outdoor unit closed, and pressurize the connection piping and the indoor unit from the service port provided on the valve of the outdoor unit. (Always pressurize from both the high-pressure pipe and the low-pressure pipe service ports.)

[Fig. 10.3.1]



Observe the following restrictions when conducting an air tightness test to prevent negative effects on the refrigerating machine oil. Also, with nonazeotropic refrigerant (R410A), gas leakage causes the composition to change and affects performance. Therefore, perform the airtightness test cautiously.

Airtight test procedure	Restriction
<p>(1) After pressurizing to the design pressure (4.15 MPa [602 psi]) using nitrogen gas, allow it to stand for about one day. If the pressure does not drop, airtightness is good. However, if the pressure drops, since the leaking point is unknown, the following bubble test may also be performed.</p> <p>(2) After the pressurization described above, spray the flare connection parts, brazed parts, flanges, and other parts that may leak with a bubbling agent (Kyuboflex, etc.) and visually check for bubbles.</p> <p>(3) After the airtight test, wipe off the bubbling agent.</p>	<ul style="list-style-type: none"> If a flammable gas or air (oxygen) is used as the pressurization gas, it may catch fire or explode.

⚠ Caution:

Only use refrigerant R410A.

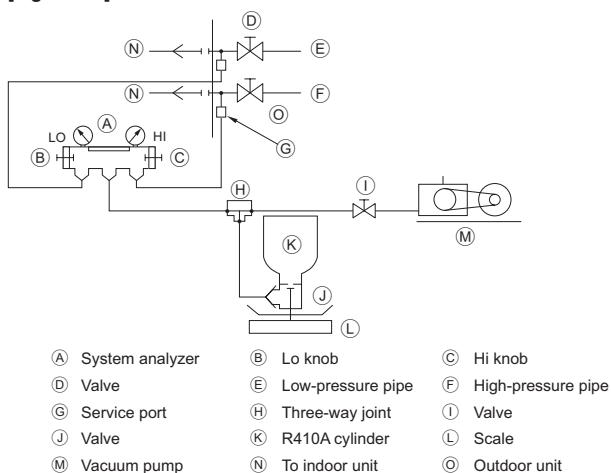
- The use of other refrigerant such as R22 or R407C, which contains chlorine, will deteriorate the refrigerating machine oil or cause the compressor to malfunction.

② Evacuation

Evacuate with the valve of the outdoor unit closed and evacuate both the connection piping and the indoor unit from the service port provided on the valve of the outdoor unit using a vacuum pump. (Always evacuate from the service port of both the high-pressure pipe and the low-pressure pipe.) After the vacuum reaches 650 Pa [abs] [0.0943 psi/5 Torr], continue evacuation for at least one hour or more. Then, stop the vacuum pump and leave it for 1 hour. Ensure the degree of vacuum has not increased. **(If the degree of vacuum increase is larger than 130 Pa [0.01886 psi/1.0 Torr], water might have entered. Apply pressure to dry nitrogen gas up to 0.05 MPa [7.25 psi] and vacuum again.)** Finally, seal in with the liquid refrigerant through the high-pressure pipe, and adjust the low-pressure piping to obtain an appropriate amount of the refrigerant during operation.

* Never perform air purging using refrigerant.

[Fig. 10.3.2]



Note:

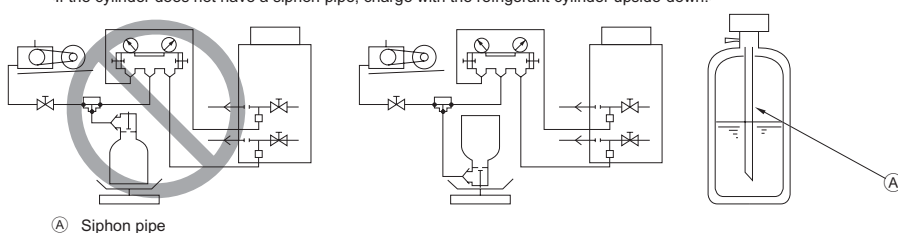
- Always add an appropriate amount of refrigerant. Also always charge the system with liquid refrigerant.
 - Use a gauge manifold, charging hose, and other parts for the refrigerant indicated on the unit.
 - Use a gravimeter. (One that can measure down to 0.1 kg [3 oz].)
 - Use a vacuum pump with a reverse flow check valve.
- (Recommended vacuum gauge: ROBINAIR 14830A Thermistor Vacuum Gauge)
Also use a vacuum gauge that reaches 65 Pa [abs] [0.00943 psi/ 0.5 Torr] or below after operating for five minutes.

③ Refrigerant Charging

Since the refrigerant used with the unit is nonazerotropic, it must be charged in the liquid state. Consequently, when charging the unit with refrigerant from a cylinder, if the cylinder does not have a siphon pipe, charge the liquid refrigerant by turning the cylinder upside-down as shown in Fig.10.3.3. If the cylinder has a siphon pipe like that shown in the picture on the right, the liquid refrigerant can be charged with the cylinder standing upright. Therefore, give careful attention to the cylinder specifications. If the unit should be charged with gas refrigerant, replace all the refrigerant with new refrigerant. Do not use the refrigerant remaining in the cylinder.

[Fig. 10.3.3]

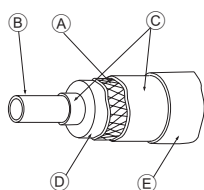
<If the cylinder does not have a siphon pipe, charge with the refrigerant cylinder upside-down.>



10.4. Thermal insulation of refrigerant piping

Be sure to add insulation work to refrigerant piping by covering high-pressure pipe and low-pressure pipe separately with enough thickness heat-resistant polyethylene, so that no gap is observed in the joint between indoor unit and insulating material, and insulating materials themselves. When insulation work is insufficient, there is a possibility of condensation drip, etc. Pay special attention to insulation work in the ceiling plenum.

[Fig. 10.4.1]



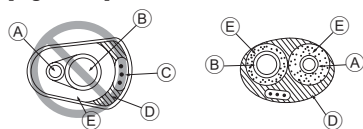
- (A) Steel wire (B) Piping
(C) Oily mastic asphalt or asphalt (D) Heat insulation material A
(E) Outer covering B

Heat insulation material A	Glass fiber + Steel wire	
	Adhesive + Heat - resistant polyethylene foam + Adhesive tape	
Outer covering B	Indoor	Vinyl tape
	Floor exposed	Water-proof hemp cloth + Bronze asphalt
	Outdoor	Water-proof hemp cloth + Zinc plate + Oily paint

Note:

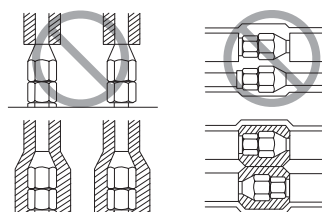
- When using polyethylene cover as covering material, asphalt roofing shall not be required.
- No heat insulation must be provided for electric wires.

[Fig. 10.4.2]



- (A) High-pressure pipe (B) Low-pressure pipe (C) Electric wire
(D) Finishing tape (E) Insulator

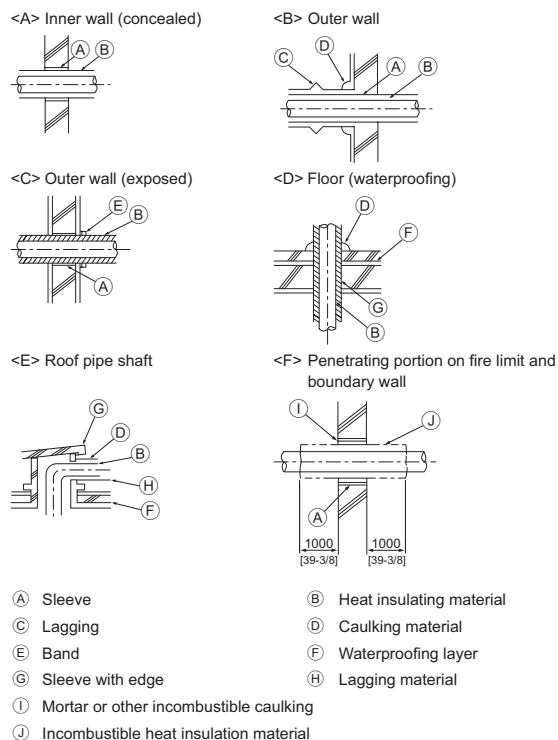
[Fig. 10.4.3]



Penetrations

[Fig. 10.4.4]

(Unit: mm [in])



When filling a gap with mortar, cover the penetration part with steel plate so that the insulation material will not be caved in. For this part, use incombustible materials for both insulation and covering. (Vinyl covering should not be used.)

- Insulation materials for the pipes to be added on-site must meet the following specifications:

Outdoor unit	High-pressure pipe	10 mm [13/32 in] or more
	-BC controller Low-pressure pipe	20 mm [13/16 in] or more
BC controller	Pipe size 6.35 mm to 25.4 mm [1/4 in to 1 in]	
	10 mm min. [13/32 in min.]	
	-indoor unit Pipe size 28.58 mm to 38.1 mm [1-1/8 in to 1-21/32 in]	
	15 mm min. [19/32 in min.]	

- Installation of pipes in a high-temperature high-humidity environment, such as the top floor of a building, may require the use of insulation materials thicker than the ones specified in the chart above.
- When certain specifications presented by the client must be met, ensure that they also meet the specifications on the chart above.

11. Wiring (For details, refer to the installation manual of each indoor/outdoor unit and controller.)

11.1. Caution

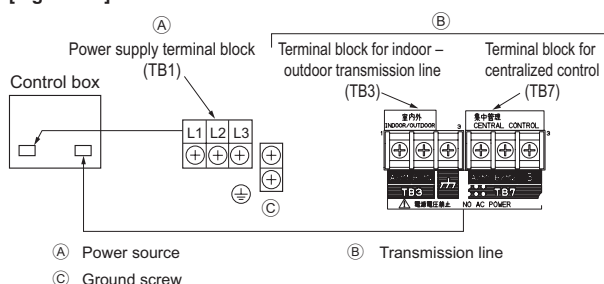
- Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations and guidance of each electric power company.
- Wiring for control (hereinafter referred to as transmission line) shall be (5 cm or more [2 in or more]) apart from power source wiring so that it is not influenced by electric noise from power source wiring. (Do not insert transmission line and power source wire in the same conduit.)
- Be sure to provide designated grounding work to the outdoor unit.
- Give some allowance to wiring for the electrical part box on the indoor and outdoor units, because these boxes are sometimes removed at the time of service work.
- Never connect the main power source to terminal block of transmission line. If connected, electrical parts will burn out.
- Use 2-core shield cable for the transmission line. If transmission lines of different systems are wired with the same multiplecore cable, the resultant poor transmitting and receiving will cause erroneous operations.
- Only the transmission line specified should be connected to the terminal block for outdoor unit transmission.
Erroneous connection does not allow the system to operate.
- When connecting a System Controller to outdoor units or performing a group operation of indoor units that are connected to different outdoor units, a transmission line for centralized control is required. When using a transmission line for centralized control, connect the transmission line (non-polar 2 core wire) to all TB7 terminals between all outdoor units.
- Grouping is set by operating the remote controller.

11.2. Control box and connecting position of wiring

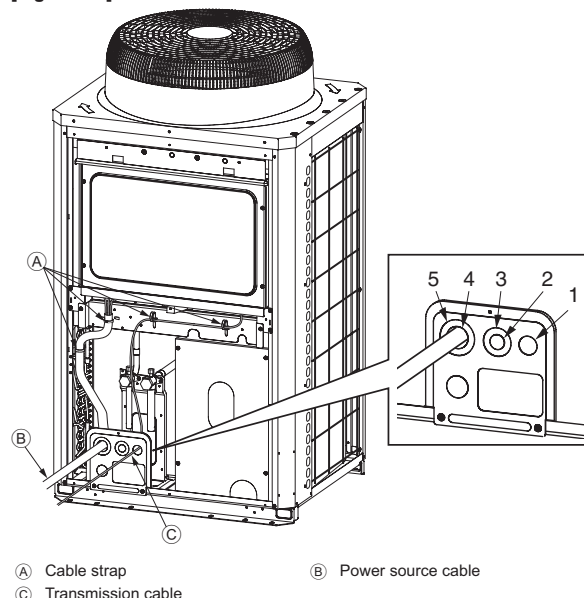
① Outdoor unit

- Remove the front panel of the control box by removing the 4 screws and pushing it up a little before pulling it out.
- Connect the indoor-outdoor transmission line to the terminal block (TB3) for the indoor-outdoor transmission line.
If multiple outdoor units are connected in the same refrigerant system, daisy-chain TB3 (M1, M2, ground terminal \perp) on the outdoor units. Connect the indoor-outdoor transmission line for the outdoor units to TB3 (M1, M2, ground terminal \perp) of only one of the outdoor units.
- Connect the transmission lines for centralized control (between the centralized control system and the outdoor unit of different refrigerant systems) to the terminal block for centralized control (TB7). If the multiple outdoor units are connected to the same refrigerant system, daisy-chain TB7 (M1, M2, S Terminal) on the outdoor units in the same refrigerant system.
(*1)
*1: If TB7 on the outdoor unit in the same refrigerant system is not daisy-chained, connect the transmission line for centralized control to TB7 on the OC (*2). If the OC is out of order, or if the centralized control is being conducted during the power supply shut-off, daisy-chain TB7 on the OC and OS. (In the case that the outdoor unit whose power supply connector CN41 on the control board has been replaced with CN40 is out of order or the power is shut-off, centralized control will not be conducted even when TB7 is daisy-chained.)
*2: OC and OS of the outdoor units in the same refrigerant system are automatically identified. They are identified as OC and OS in descending order of capacity. (If the capacity is the same, they will be in ascending order of their address number.)
- In the case of indoor-outdoor transmission line, connect the shield ground to the ground terminal \perp . In the case of transmission lines for centralized control, connect it to the shield terminal (S) on the terminal block for centralized control (TB7). Furthermore, in the case of the outdoor units whose power supply connector CN41 is replaced with CN40, short circuit the shield terminal (S) and the ground terminal \perp in addition to the above.
- Fix the connected wires securely in place with the cable strap at the bottom of the terminal block. External force applied to the terminal block may damage it and may cause a short circuit, ground fault, or a fire.

[Fig. 11.2.1]



[Fig. 11.2.2]



- When using wire size AWG 14, AWG 12, or AWG 10, be sure to use knockout hole 2.
 - When using wire size AWG 8 or AWG 6, be sure to use knockout hole 4.
 - When using wire size AWG 4, AWG 3, or AWG 2 be sure to use knockout hole 3.
 - When using wire size AWG $\frac{3}{16}$, AWG $\frac{2}{16}$, or AWG 0, be sure to use knockout hole 5.
 - If there are any gaps around the wires, please be sure to fill these in with a suitable material.
- ### ② Conduit tube installation
- Open by hammering the knockout holes for the conduit tube located on the base and the bottom part of the front panel.
 - When installing the conduit tube directly through the knockout holes, remove the burr and protect the tube with masking tape.
 - Use the conduit tube to narrow down the opening if there is a possibility of small animals entering the unit.
 - When taking the conduit tube out from the bottom part of the unit, caulk around the tube opening to prevent water penetration.

11.3. Wiring transmission cables

① Types of control cables

- Wiring transmission cables
 - Types of transmission cables: Shielding wire CVVS, CPEVS or MVVS
 - Cable diameter: More than 1.25 mm² [AWG16]
 - Maximum wiring length: Within 200 m [656 ft]
 - Maximum length of transmission lines for centralized control and indoor/outdoor transmission lines (Maximum length via outdoor units): 500 m [1640 ft] MAX
The maximum length of the wiring between power supply unit for transmission lines (on the transmission lines for centralized control) and each outdoor unit and system controller is 200 m [656 ft].

2. Remote control cables

• M-NET Remote Controller

Kind of remote control cable	Sheathed 2-core cable (unshielded) CVV
Cable diameter	0.3 to 1.25 mm ² [AWG 22 to 16] (0.75 to 1.25 mm ² [AWG 18 to 16])*
Remarks	When 10 m [32 ft] is exceeded, use cable with the same specifications as 1. Wiring transmission cables.

• MA Remote Controller

Kind of remote control cable	Sheathed 2-core cable (unshielded) CVV
Cable diameter	0.3 to 1.25 mm ² [AWG 22 to 16] (0.75 to 1.25 mm ² [AWG 18 to 16])*
Remarks	Within 200 m [656 ft]

* Connected with simple remote controller.

② Wiring examples

- Controller name, symbol and allowable number of controllers.

Name	Code	Possible unit connections
Outdoor unit	Main unit	OC
	Sub unit	OS
BC controller	Main unit	BC
	Sub unit	BS
Indoor unit	Indoor unit controller	IC
Remote controller	Remote controller (*1)	RC
Other	Transmission booster unit	RP

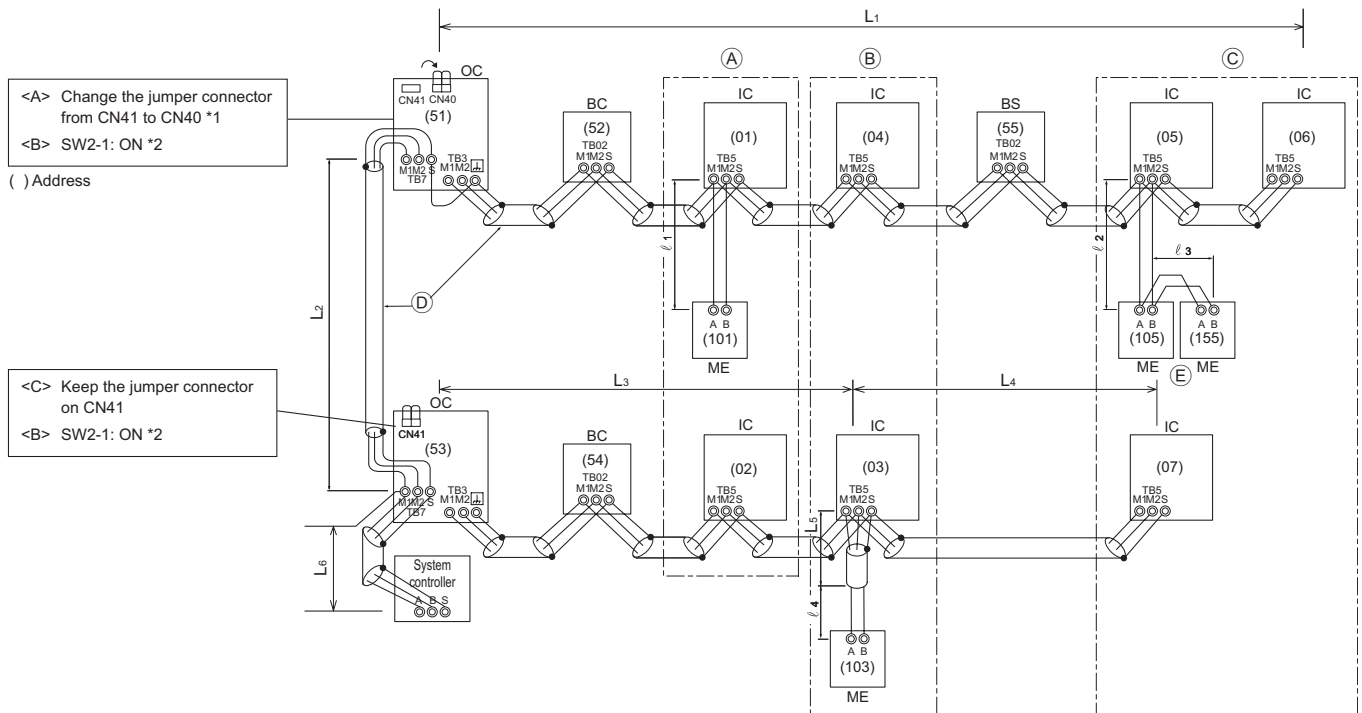
*1 A transmission booster (RP) may be required depending on the number of connected indoor unit controllers.

*2 OC and OS of the outdoor units in the same refrigerant system are automatically identified. They are identified as OC and OS in descending order of capacity. (If the capacity is the same, they will be in ascending order of their address number.)

Example of a group operation system with multiple outdoor units (Shielding wires and address setting are necessary.)

<Examples of transmission cable wiring>

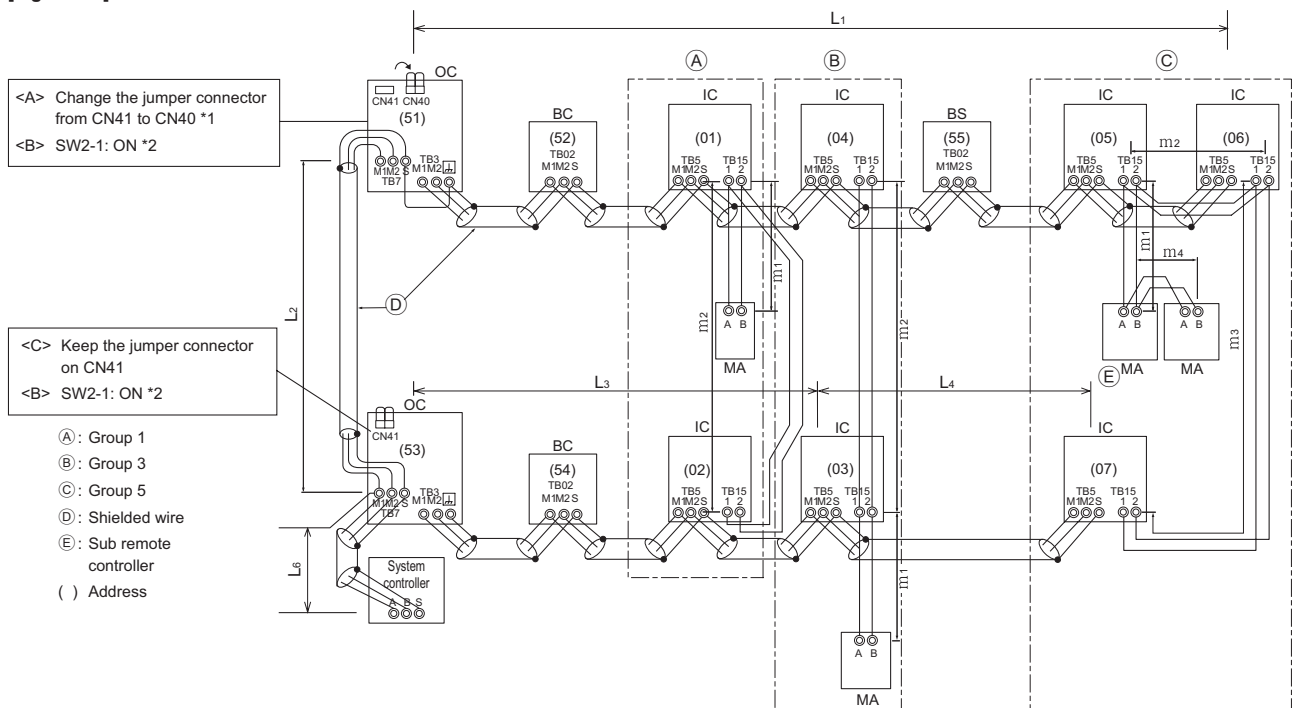
[Fig. 11.3.1] M-NET Remote Controller



*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE outdoor unit in the system and connect it to CN40.

*2: If a system controller is used, set SW2-1 on all of the outdoor units to ON.

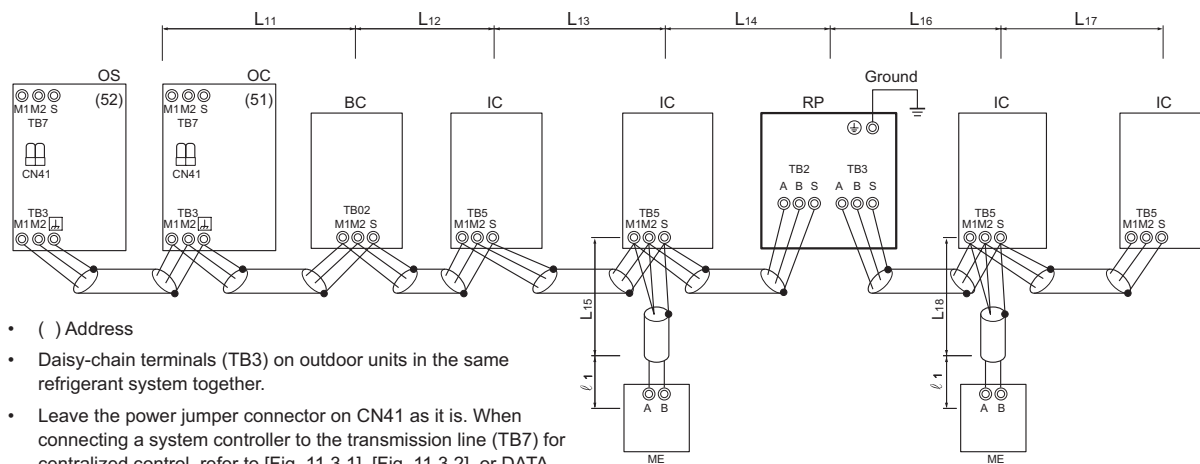
[Fig. 11.3.2] MA Remote Controller



*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE outdoor unit in the system and connect it to CN40.

*2: If a system controller is used, set SW2-1 on all of the outdoor units to ON.

[Fig. 11.3.3] Combination of outdoor units and transmission booster unit



- () Address
- Daisy-chain terminals (TB3) on outdoor units in the same refrigerant system together.
- Leave the power jumper connector on CN41 as it is. When connecting a system controller to the transmission line (TB7) for centralized control, refer to [Fig. 11.3.1], [Fig. 11.3.2], or DATA BOOK.

<Wiring Method and Address Settings>

- Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (IC), as well for all OC-OC, OC-OS and IC-IC wiring intervals.
 - Use feed wiring to connect terminals M1 and M2 and the ground terminal ⏏ on the transmission line terminal block (TB3) of each outdoor unit (OC) to terminals M1, M2 and terminal S on the transmission line block of the indoor unit (IC). For OC and OS, connect TB3 to TB3.
 - Connect terminals 1 (M1) and 2 (M2) on the transmission line terminal block of the indoor unit (IC) that has the most recent address within the same group to the terminal block on the remote controller (RC).
 - Connect together terminals M1, M2 and terminal S on the terminal block for central control (TB7) for the outdoor unit in a different refrigerant system (OC). For OC and OS in the same refrigerant system, connect TB7 to TB7.
 - When the power supply unit is not installed on the central control transmission line, change the jumper connector on the control board from CN41 to CN40 on only one outdoor unit in the system.
 - Connect the terminal S on the terminal block for central control (TB7) for the outdoor unit (OC) for the unit into which the jumper connector was inserted into CN40 in the step above to the ground terminal ⏏ in the electrical component box.
 - Set the address setting switch as follows.
- * To set the outdoor unit address to 100, the outdoor address setting switch must be set to 50.

Unit	Range	Setting Method
Indoor unit (Main)	01 to 50	Use the most recent address within the same group of indoor units. With an R2 system with sub BC controllers, set the indoor unit address in the following order: ① Indoor units connected to the main BC controller ② Indoor units connected to BC sub controller 1 ③ Indoor units connected to BC sub controller 2 Set the indoor unit addresses so that all the addresses of ① are smaller than those of ②, and that all the addresses of ② are smaller than those of ③.
Indoor unit (Sub)	01 to 50	Use an address, other than that of the IC (Main) from among the units within the same group of indoor units. This must be in sequence with the IC (Main)
Outdoor Unit (OC, OS)	51 to 100	Set the addresses of the outdoor units in the same refrigerant system in the order of sequential number. OC and OS are automatically identified. (*1)
BC controller (Main)	51 to 100	Outdoor unit address plus 1. When the set indoor unit address duplicates the address of another indoor unit, set the new address to a vacant address within the setting range.
BC controller (Sub)	51 to 100	Lowest address within the indoor units connected to the BC controller (sub) plus 50
M-NET R/C (Main)	101 to 150	Set at an IC (Main) address within the same group plus 100
M-NET R/C (Sub)	151 to 200	Set at an IC (Main) address within the same group plus 150
MA R/C	—	Unnecessary address setting (Necessary main/sub setting)

*1 OC and OS of the outdoor units in the same refrigerant system are automatically identified. They are identified as OC and OS in descending order of capacity (If the capacity is the same, they are identified in the ascending order of their address number).

- The group setting operations among the multiple indoor units is done by the remote controller (RC) after the electrical power has been turned on.
- When the centralized remote controller is connected to the system, set centralized control switches (SW2-1) on control boards in all outdoor units (OC, OS) to "ON".

<Permissible Lengths>

① M-NET Remote controller [Fig. 11.3.1]

- Max length via outdoor units: $L_1+L_2+L_3+L_4$ and $L_1+L_2+L_3+L_5$ and $L_1+L_2+L_6 \leq 500$ m [1,640 ft] (1.25 mm² [AWG 16] or more)
- Max transmission cable length: L_1 and L_3+L_4 and L_3+L_5 and L_6 and $L_2+L_6 \leq 200$ m [656 ft] (1.25 mm² [AWG 16] or more)
- Remote controller cable length: $\ell_1, \ell_2, \ell_3, \ell_4 \leq 10$ m [32 ft] (0.3 to 1.25 mm² [AWG 22 to 16])
If the length exceeds 10 m [32 ft], use a 1.25 mm² [AWG 16] shielded wire. The length of this section (L_8) should be included in the calculation of the maximum length and overall length.

② MA Remote controller [Fig. 11.3.2]

- Max length via outdoor unit (M-NET cable): $L_1+L_2+L_3+L_4$ and $L_1+L_2+L_6 \leq 500$ m [1,640 ft] (1.25 mm² [AWG 16] or more)
- Max transmission cable length (M-NET cable): L_1 and L_3+L_4 and L_6 and $L_2+L_6 \leq 200$ m [656 ft] (1.25 mm² [AWG 16] or more)
- Remote controller cable length: m_1+m_2 and $m_1+m_2+m_3+m_4 \leq 200$ m [656 ft] (0.3 to 1.25 mm² [AWG 22 to 16])

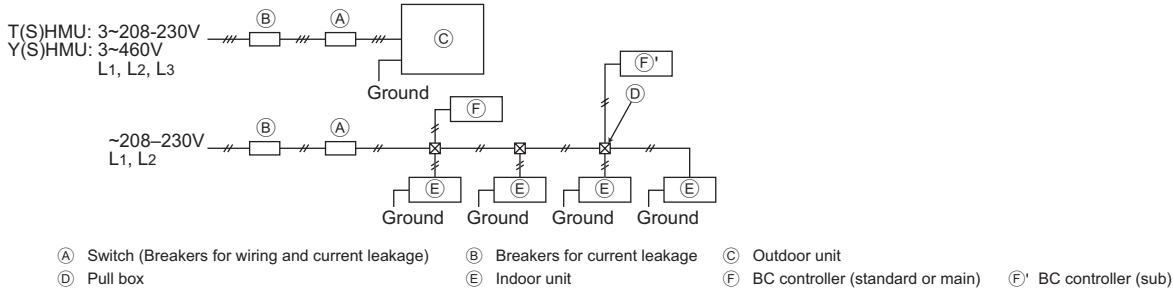
③ Transmission booster [Fig. 11.3.3]

- Max transmission cable length (M-NET cable): ① $L_{11} + L_{12} + L_{13} + L_{14} + L_{16} + L_{17} \leq 200 \text{ m [656 ft] (1.25 mm}^2 \text{ [AWG 16])}$
 ② $L_{11} + L_{12} + L_{13} + L_{14} + L_{16} + L_{18} \leq 200 \text{ m [656 ft] (1.25 mm}^2 \text{ [AWG 16])}$
 ③ $L_{11} + L_{12} + L_{13} + L_{15} \leq 200 \text{ m [656 ft] (1.25 mm}^2 \text{ [AWG 16])}$
 ④ $L_{17} + L_{16} + L_{14} + L_{15}, L_{15} + L_{14} + L_{16} + L_{18} \leq 200 \text{ m [656 ft] (1.25 mm}^2 \text{ [AWG 16])}$
- Remote controller cable length: $\ell_1, \ell_2 \leq 10 \text{ m [32 ft] (0.3 to 1.25 mm}^2 \text{ [AWG 22 to 16])}$
 If the length exceeds 10 m [32 ft], use 1.25 mm² [AWG 16] shielded cable and calculate the length of that portion (L₁₅ and L₁₈) as within the total extended length and the longest remote length.

11.4. Wiring of main power supply and equipment capacity

Schematic Drawing of Wiring (Example)

[Fig. 11.4.1]



Thickness of wire for main power supply, ON/OFF capacities

	Model	Unit combination	Recommended setting							MCA (A)	MOCP (A)
			Minimum wire thickness (mm ² [AWG])			Switch (A)		Breaker for wiring (NFB)(A)	Breaker for current leakage		
			Main cable	Branch	Ground	Capacity	Fuse				
Outdoor unit	PURY-P72TJMU(-BS)	-	5.3 [10]	-	5.3 [10]	30	30	30	30A 30mA or 100mA 0.1sec. or less	27	42
	PURY-P96TJMU(-BS)	-	8.4 [8]	-	8.4 [8]	40	40	40	40A 100mA 0.1sec. or less	35	57
	PURY-P120TJMU(-BS)	-	13.3 [6]	-	13.3 [6]	50	50	50	50A 100mA 0.1sec. or less	49	77
	PURY-P144TJMU(-BS)	-	21.2 [4]	-	21.2 [4]	60	60	60	60A 100mA 0.1sec. or less	59	93
	PURY-P168TSJMU(-BS)	PURY-P96TJMU(-BS)	8.4 [8]	-	8.4 [8]	40	40	40	40A 100mA 0.1sec. or less	35	57
		PURY-P72TJMU(-BS)	5.3 [15]	-	5.3 [15]	30	30	30	30A 30mA or 100mA 0.1sec. or less	27	42
	PURY-P192TSJMU(-BS)	PURY-P96TJMU(-BS)	8.4 [8]	-	8.4 [8]	40	40	40	40A 100mA 0.1sec. or less	35	57
		PURY-P96TJMU(-BS)	8.4 [8]	-	8.4 [8]	40	40	40	40A 100mA 0.1sec. or less	35	57
	PURY-P216TSJMU(-BS)	PURY-P120TJMU(-BS)	13.3 [6]	-	13.3 [6]	50	50	50	50A 100mA 0.1sec. or less	49	77
		PURY-P96TJMU(-BS)	8.4 [8]	-	8.4 [8]	40	40	40	40A 100mA 0.1sec. or less	35	57
	PURY-P240TSJMU(-BS)	PURY-P120TJMU(-BS)	13.3 [6]	-	13.3 [6]	50	50	50	50A 100mA 0.1sec. or less	49	77
		PURY-P120TJMU(-BS)	13.3 [6]	-	13.3 [6]	50	50	50	50A 100mA 0.1sec. or less	49	77
	PURY-P264TSJMU(-BS)	PURY-P144TJMU(-BS)	21.2 [4]	-	21.2 [4]	60	60	60	60A 100mA 0.1sec. or less	59	93
		PURY-P120TJMU(-BS)	13.3 [6]	-	13.3 [6]	50	50	50	50A 100mA 0.1sec. or less	49	77
	PURY-P288TSJMU(-BS)	PURY-P144TJMU(-BS)	21.2 [4]	-	21.2 [4]	60	60	60	60A 100mA 0.1sec. or less	59	93
		PURY-P144TJMU(-BS)	21.2 [4]	-	21.2 [4]	60	60	60	60A 100mA 0.1sec. or less	59	93
Outdoor unit	PURY-P72YJMU(-BS)	-	2.1 [14]	-	2.1 [14]	15	15	15	15A 30mA or 100mA 0.1sec. or less	13	19
	PURY-P96YJMU(-BS)	-	3.3 [12]	-	3.3 [12]	20	20	20	20A 30mA or 100mA 0.1sec. or less	16	26
	PURY-P120YJMU(-BS)	-	5.3 [10]	-	5.3 [10]	25	25	25	25A 30mA or 100mA 0.1sec. or less	23	35
	PURY-P144YJMU(-BS)	-	5.3 [10]	-	5.3 [10]	30	30	30	30A 30mA or 100mA 0.1sec. or less	27	43
	PURY-P168YSJMU(-BS)	PURY-P96YJMU(-BS)	3.3 [12]	-	3.3 [12]	20	20	20	20A 30mA or 100mA 0.1sec. or less	16	26
		PURY-P72YJMU(-BS)	2.1 [14]	-	2.1 [14]	15	15	15	15A 30mA or 100mA 0.1sec. or less	13	19
	PURY-P192YSJMU(-BS)	PURY-P96YJMU(-BS)	3.3 [12]	-	3.3 [12]	20	20	20	20A 30mA or 100mA 0.1sec. or less	16	26
		PURY-P96YJMU(-BS)	3.3 [12]	-	3.3 [12]	20	20	20	20A 30mA or 100mA 0.1sec. or less	16	26
	PURY-P216YSJMU(-BS)	PURY-P120YJMU(-BS)	5.3 [10]	-	5.3 [10]	25	25	25	25A 30mA or 100mA 0.1sec. or less	23	35
		PURY-P96YJMU(-BS)	3.3 [12]	-	3.3 [12]	20	20	20	20A 30mA or 100mA 0.1sec. or less	16	26
	PURY-P240YSJMU(-BS)	PURY-P120YJMU(-BS)	5.3 [10]	-	5.3 [10]	25	25	25	25A 30mA or 100mA 0.1sec. or less	23	35
		PURY-P120YJMU(-BS)	5.3 [10]	-	5.3 [10]	25	25	25	25A 30mA or 100mA 0.1sec. or less	23	35
	PURY-P264YSJMU(-BS)	PURY-P144YJMU(-BS)	5.3 [10]	-	5.3 [10]	30	30	30	30A 30mA or 100mA 0.1sec. or less	27	43
		PURY-P120YJMU(-BS)	5.3 [10]	-	5.3 [10]	25	25	25	25A 30mA or 100mA 0.1sec. or less	23	35
	PURY-P288YSJMU(-BS)	PURY-P144YJMU(-BS)	5.3 [10]	-	5.3 [10]	30	30	30	30A 30mA or 100mA 0.1sec. or less	27	43
		PURY-P144YJMU(-BS)	5.3 [10]	-	5.3 [10]	30	30	30	30A 30mA or 100mA 0.1sec. or less	27	43

- Use dedicated power supplies for the outdoor unit and indoor unit. Ensure OC and OS are wired individually.
- Bear in mind ambient conditions (ambient temperature, direct sunlight, rain water, etc.) when proceeding with the wiring and connections.
- The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter.
Make sure the power-supply voltage does not drop more than 10%.
- Specific wiring requirements should adhere to the wiring regulations of the region.
- Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (design 245 IEC57). For example, use wiring such as YZW.
- A switch with at least 3 mm [1/8 in] contact separation in each pole shall be provided when the Air Conditioner is installed.

⚠ Warning:

- Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.
- Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.

⚠ Caution:

- A breaker for current leakage must be attached to the power supply. If no earth leakage breaker is installed, it may cause an electric shock.
- Do not use anything other than a breaker and fuse with the correct capacity. Using a fuse or wire of too large capacity may cause malfunction or fire.

12. Test run/Typical unit operation

The events listed in the table below are normal occurrences and do not represent operation problems.

Events	Display on remote controller	Cause
A specific indoor unit is not performing the cooling or heating operation.	"Cooling" or "heating" flashes	Because another indoor unit is performing the heating or cooling operation, the cooling or heating operation for the indoor unit in question is not operating.
Auto vane automatically switches air flow direction.	Normal display	The auto vane may switch over to horizontal air flow operation from vertical air flow operation in cooling mode if the vertical air flow operation has been running for 1 hour. At defrost in heating mode or immediately after heating start-up/shutdown, the auto vane automatically switches to horizontal air flow for a short time.
Fan speed automatically changes during heating operation.	Normal display	Unit fan operates in ultra-low speed when thermostat is turned off; automatically changes over to set value via timer or refrigerant temperature when thermostat is turned off.
Fan stops during heating operation.	Defrost display	Fan does not operate when unit is in defrost mode.
Fan does not stop even if unit is not operating.	No display	When in heating mode, fan still runs for 1 minute after unit stops to exhaust any residual heat.
At initial stat in heating operation, fan cannot be manually set.	Heat ready	Fan automatically runs in ultra-low speed for 5 minutes after system is turned on, or until refrigerant temperatures rises to 35°C [95°F], and runs in low-speed operation for 2 minutes thereafter until set temperature is reached.
Indoor unit remote controller displays "H0" or "PLEASE WAIT" for about 5 minutes after turning on the universal power supply.	"H0" or "PLEASE WAIT" flashes	System is performing the initial operating sequence. Remote controller will be operable again after "H0" or "PLEASE WAIT" stops flashing and disappears.
Drain pump continues to operate even after the unit has been turned off.	No display	After turning off the cooling operation, unit continues to operate the drain pump for 3 minutes, then shuts it off. Unit also continues to operate drain pump if condensate has been generated.
Indoor unit emits noise when switching from heating to cooling and vice versa.	Normal display	This is a normal sound of the refrigerant circuit operating properly.
Immediately after start-up, the indoor unit emits the sound of the refrigerant flow.	Normal display	Unstable flow of the refrigerant emits a sound. This is temporary and does not imply a problem.
Warm air is omitted from an indoor unit that is not performing the heating operation.	Normal display	The LEV is slightly open for preventing any refrigerant, inside of the indoor unit that is not performing the heating operation, from being liquefied. This does not imply a problem.

13. Rating plate information

Model	PURY-P72TJMU-A(-BS)	PURY-P96TJMU-A(-BS)	PURY-P120TJMU-A(-BS)	PURY-P144TJMU-A(-BS)
Unit combination	-	-	-	-
Refrigerant(R410A)	10.5kg [23LBS 2oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	235kg [519LBS]	265kg [585LBS]	315kg [695LBS]	315kg [695LBS]

Model	PURY-P168TSJMU-A(-BS)		PURY-P192TSJMU-A(-BS)	
Unit combination	PURY-P96TJMU-A(-BS)	PURY-P72TJMU-A(-BS)	PURY-P96TJMU-A(-BS)	PURY-P96TJMU-A(-BS)
Refrigerant(R410A)	11.8kg [26LBS 1oz]	10.5kg [23LBS 2oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	265kg [585LBS]	235kg [519LBS]	265kg [585LBS]	265kg [585LBS]

Model	PURY-P216TSJMU-A(-BS)		PURY-P240TSJMU-A(-BS)	
Unit combination	PURY-P120TJMU-A(-BS)	PURY-P96TJMU-A(-BS)	PURY-P120TJMU-A(-BS)	PURY-P120TJMU-A(-BS)
Refrigerant(R410A)	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	315kg [695LBS]	265kg [585LBS]	315kg [695LBS]	315kg [695LBS]

Model	PURY-P264TSJMU-A(-BS)		PURY-P288TSJMU-A(-BS)	
Unit combination	PURY-P144TJMU-A(-BS)	PURY-P120TJMU-A(-BS)	PURY-P144TJMU-A(-BS)	PURY-P144TJMU-A(-BS)
Refrigerant(R410A)	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	315kg [695LBS]	315kg [695LBS]	315kg [695LBS]	315kg [695LBS]

Model	PURY-P72YJMU-A(-BS)	PURY-P96YJMU-A(-BS)	PURY-P120YJMU-A(-BS)	PURY-P144YJMU-A(-BS)
Unit combination	-	-	-	-
Refrigerant(R410A)	10.5kg [23LBS 2oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	250kg [552LBS]	280kg [618LBS]	330kg [728LBS]	330kg [728LBS]

Model	PURY-P168YSJMU-A(-BS)		PURY-P192YSJMU-A(-BS)	
Unit combination	PURY-P96YJMU-A(-BS)	PURY-P72YJMU-A(-BS)	PURY-P96YJMU-A(-BS)	PURY-P96YJMU-A(-BS)
Refrigerant(R410A)	11.8kg [26LBS 1oz]	10.5kg [23LBS 2oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	280kg [618LBS]	250kg [552LBS]	280kg [618LBS]	280kg [618LBS]

Model	PURY-P216YSJMU-A(-BS)		PURY-P240YSJMU-A(-BS)	
Unit combination	PURY-P120YJMU-A(-BS)	PURY-P96YJMU-A(-BS)	PURY-P120YJMU-A(-BS)	PURY-P120YJMU-A(-BS)
Refrigerant(R410A)	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	330kg [728LBS]	280kg [618LBS]	330kg [728LBS]	330kg [728LBS]

Model	PURY-P264YSJMU-A(-BS)		PURY-P288YSJMU-A(-BS)	
Unit combination	PURY-P144YJMU-A(-BS)	PURY-P120YJMU-A(-BS)	PURY-P144YJMU-A(-BS)	PURY-P144YJMU-A(-BS)
Refrigerant(R410A)	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]	11.8kg [26LBS 1oz]
Allowable pressure(Ps)	HP:4.15MPa [601psi], LP:2.21MPa [320psi]			
Net weight	330kg [728LBS]	330kg [728LBS]	330kg [728LBS]	330kg [728LBS]

MANUFACTURER: MITSUBISHI ELECTRIC CORPORATION
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This product is designed and intended for use in the residential, commercial
and light-industrial environment.

Please be sure to put the contact address/telephone number on
this manual before handing it to the customer.