



Air-Conditioners Indispensable Optional Parts BRANCH BOX

PAC-MMK40BCB

ONLY FOR R32 OUTDOOR UNIT

ONLY FOR INDOOR USE



INSTALLATION MANUAL

FOR INSTALLER

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

English



Manual and Declaration of Conformity Download



<https://www.l2.mitsubishielectric.com/>

en Go to the above website to download manuals and declaration of conformity, select model name, then choose language.

de Besuchen Sie die oben stehende Website, um Anleitungen und die Konformitätserklärung herunterzuladen, wählen Sie den Modellnamen und dann die Sprache aus.

fr Rendez-vous sur le site Web ci-dessus pour télécharger les manuels et la déclaration de conformité, sélectionnez le nom de modèle, puis choisissez la langue.



nl Ga naar de bovenstaande website om handleidingen en de conformiteitsverklaring te downloaden, de modelnaam te selecteren en vervolgens de taal te kiezen.

es Visite el sitio web anterior para descargar manuales y la declaración de conformidad, seleccione el nombre del modelo y luego elija el idioma.

it Andare sul sito web indicato sopra per scaricare i manuali e la dichiarazione di conformità, selezionare il nome del modello e scegliere la lingua.

el Μεταβείτε στον παραπάνω ιστότοπο για να κατεβάσετε εγχειρίδια και τη δήλωση συμμόρφωσης. Επιλέξτε το όνομα του μοντέλου και, στη συνέχεια, τη γλώσσα.

pt Aceda ao site Web acima para descarregar manuais e declarações de conformidade, selecione o nome do modelo e, em seguida, escolha o idioma.

da Gå til ovenstående websted for at downloade manualer og overensstemmelseserklæring. Vælg modelnavn, og vælg derefter sprog.

sv Gå till ovanstående webbplats för att ladda ner anvisningar och försäkringar om överensstämmelse, välj modellnamn och välj sedan språk.

tr Kılavuzları ve uygunluk beyanını indirmek için yukarıdaki web sitesine gidin, model adını ve ardından dili seçin.

uk Щоб завантажити керівництва та декларацію про відповідність, перейдіть на зазначений вище веб-сайт, виберіть назву моделі, а потім мову.

bg Посетете горепосочения уебсайт, за да изтеглите ръководства и декларация за съответствие, като изберете име на модел и след това – език.

pl Odwiedź powyższą stronę internetową, aby pobrać instrukcje i deklarację zgodności, wybierz nazwę modelu, a następnie język.

no Gå til nettstedet over for å laste ned håndbøker og samsvarserklæringer, velg modellnavn, og velg deretter språk.

fi Lataa oppaat ja vaatimustenmukaisuusvakuutus siirtymällä edellä mainittuun verkkosivustoon, valitse mallin nimi ja valitse sitten kieli.

cs Příručky a prohlášení o shodě naleznete ke stažení na internetové stránce zmíněné výše poté, co zvolíte model a jazyk.

sk Na webovej stránke vyššie si môžete stiahnuť návody a vyhlásenie o zhode. Vyberte názov modelu a zvolte požadovaný jazyk.

hu A kézikönyvek és a megfelelőségi nyilatkozat letöltéséhez látogasson el a fenti weboldalra, válassza ki a modell nevét, majd válasszon nyelvet.

sl Obiščite zgornjo spletno stran za prenos priročnikov in izjave o skladnosti; izberite ime modela, nato izberite jezik.

ro Accesați site-ul web de mai sus pentru a descărca manualele și declarația de conformitate, selectați denumirea modelului, apoi alegeți limba.

et Kasutusjuhendite ja vastavusdeklaratsioonid allalaadimiseks minge ülaltoodud veebilehele, valige mudeli nimi ja seejärel keel.

lv Dodieties uz iepriekš norādīto tīmekļa vietni, lai lejupielādētu rokasgrāmatas un atbilstības deklarāciju, tad izvēlieties modeļa nosaukumu un valodu.

lt Norėdami atsisiųsti vadovus ir atitikties deklaraciją, apsilankykite pirmiau nurodytoje žiniatinklio svetainėje, pasirinkite modelio pavadinimą, tada – kalbą.

hr Kako biste preuzeli priručnike i izjavu o skladnosti, idite na gore navedeno web-mjesto, odaberite naziv modela, a potom odaberite jezik.

sr Idite na gore navedenu veb stranicu da biste preuzeli uputstva i deklaraciju o usaglašenosti, izaberite ime modela, a zatim izaberite jezik.

Contents

1. Safety precautions	1	5. Mounting the Branch box	9
2. Selecting a location for installation	3	6. Installing refrigerant piping	10
3. Confirming supplied accessories	3	7. Electrical work	13
4. Dimensions and required servicing space of Branch box	4	8. Test run	22

This installation manual is only for the Branch box installation. In installing the indoor units and outdoor units, refer to the installation manual attached to each unit.



Note: This symbol mark is for related countries only.
This symbol mark is according to the directive 2012/19/EU Article 14 Information for users and Annex IX.
Your MITSUBISHI ELECTRIC product is designed and manufactured with high quality materials and components which can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste. Please, dispose of this equipment at your local community waste collection/recycling centre.
In the European Union there are separate collection systems for used electrical and electronic product.
Please, help us to conserve the environment we live in!

1. Safety precautions

- ▶ Before installing the unit, make sure you read all the “Safety precautions”.
- ▶ Please report to or take consent by the supply authority before connection to the system.
- ▶ When receiving electricity from the outdoor unit, applicable standards for the outdoor unit may not be satisfied depending on the indoor unit used.

⚠ WARNING:
Describes precautions that must be observed to prevent danger of injury or death to the user.

MEANINGS OF SYMBOLS DISPLAYED ON THE UNIT

	WARNING (Risk of fire)	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.
	Read the OPERATION MANUAL carefully before operation.	
	Service personnel are required to carefully read the OPERATION MANUAL and INSTALLATION MANUAL before operation.	

- ⚠ WARNING:**
- The SENSOR AND ALARM KIT complying with IEC60335-2-40 can be connected to the unit.
Be sure to read the installation manual of the outdoor unit for requirements of installation and the system.
 - The unit must not be installed by the user.
 - Ask a dealer or an authorized technician to install the unit.
 - For installation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with refrigerant specified in the outdoor unit installation manual.
 - The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit may fall down and cause damage or injuries.
 - The unit must be securely installed on a structure that can sustain its weight.
 - If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. Should the refrigerant leak and cause the concentration limit to be exceeded, hazards due to lack of oxygen in the room may result.
 - Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, it may ignite or poisonous gases will be released.

⚠ CAUTION:
Describes precautions that must be observed to prevent damage to the unit.

After installation work has been completed, explain the “Safety Precautions,” use, and maintenance of the unit to the customer according to the information in the Operation Manual and perform the test run to ensure normal operation. Both the Installation Manual and Operation Manual must be given to the user for keeping. These manuals must be passed on to subsequent users.
⚡ : Indicates a part which must be grounded.

⚠ WARNING:
Carefully read the labels affixed to the main unit.

- All electric work must be performed by a qualified technician according to local regulations and the instructions given in this manual.
- Use only specified cables for wiring. The wiring connections must be made securely with no tension applied on the terminal connections. Also, never splice the cables for wiring (unless otherwise indicated in this document). Failure to observe these instructions may result in overheating or fire.
- The terminal block cover panel of the unit must be firmly attached.
- The appliance shall be installed in accordance with national wiring regulations.
- Use only authorized accessories and ask a dealer or an authorized technician to install them.
- The user should never attempt to repair the unit or transfer it to another location.
- After installation has been completed, check for refrigerant leaks. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, it may ignite or poisonous gases will be released.
- 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).

1. Safety precautions

WARNING:

- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Pipe-work shall be protected from physical damage.
- The installation of pipe-work shall be kept to a minimum.
- Compliance with national gas regulations shall be observed.
- Keep any required ventilation openings clear of obstruction.
- Do not use low temperature solder alloy in case of brazing the refrigerant pipes.
- When performing brazing work, be sure to ventilate the room sufficiently. Make sure that there are no hazardous or flammable materials nearby. When performing the work in a closed room, small room, or similar location, make sure that there are no refrigerant leaks before performing the work. If refrigerant leaks and accumulates, it may ignite or poisonous gases may be released.
- The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
- Keep gas-burning appliances, electric heaters, and other fire sources (ignition sources) away from the location where installation, repair, and other air conditioner work will be performed. If refrigerant comes into contact with a flame, poisonous gases will be released.
- Do not smoke during work.
- For safety purposes, this unit is equipped with a refrigerant leak detection function. For this reason, be sure always to keep the power on, except during maintenance.
- Run a connection cable to the Branch box behind a wall. When running the cable on a wall, be sure to protect it with wire molding, etc. so that it cannot be directly touched or pulled.
- Be sure to use the flare nut supplied with the unit.
- Refrigerant pipes must be protected against external force.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

CAUTION:

- Make sure that the refrigerant pipes are well insulated to prevent condensation. Incomplete insulation may cause condensation on the surface of pipes, wetting of the ceiling, floor and other important properties.
- Do not use the unit in an unusual environment. If the air conditioner is installed in areas exposed to steam, volatile oil (including machine oil), or sulfuric gas, areas exposed to high salt content such as the seaside, the performance can be significantly reduced and the internal parts can be damaged.
- Do not install the unit where combustible gases may leak, be produced, flow, or accumulate. If combustible gas accumulates around the unit, fire or explosion may result.
- When installing the unit in a hospital or communications office, be prepared for noise and electronic interference. Inverters, home appliances, high-frequency medical equipment, and radio communications equipment can cause the air conditioner to malfunction or breakdown. The air conditioner may also affect medical equipment, disturbing medical care, and communications equipment, harming the screen display quality.
- Thermal insulation of the refrigerant pipe is necessary to prevent condensation. If the refrigerant pipe is not properly insulated, condensation will be formed.
- Place thermal insulation on the pipes to prevent condensation. If the drain-pipe is installed incorrectly, water leakage and damage to the ceiling, floor, furniture, or other possessions may result.
- Do not clean the air conditioner unit with water. Electric shock may result.
- Tighten all flare nuts to specification using a torque wrench. If tightened too much, the flare nut can break after an extended period.
- Be sure to install circuit breakers, if not installed, electric shock may result.
- For the power lines, use standard cables of sufficient capacity. Otherwise, a short circuit, overheating, or fire may result.
- When installing the power lines, do not apply tension to the cables. If the connections are loosened, the cables can snap or break and overheating or fire may result.
- Do not connect the ground wire to gas or water pipes, lighting rods, or telephone grounding lines. If the unit is not properly grounded, electric shock may result.
- Follow the instructions below to prevent abrasive components contained in sandpaper and cutting tools from entering the refrigerant circuit because those components can cause failures of the compressor and valves.
 - To deburr pipes, use a reamer or other deburring tools, not sandpaper.
 - To cut pipes, use a pipe cutter, not a grinder or other tools that use abrasive materials.
 - When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes.
 - If cutting chips or other foreign matters enter pipes, wipe them off the inside of the pipes.

2. Selecting a location for installation

- * The Branch box is only for indoor use.
- Never install the Branch box in a room.
- Ensure that the Branch box is installed above the ceiling of corridor, bath room, etc., where persons are not regularly there. Do not provide any vent or mesh between the space where the Branch box will be installed and the room below it.
- Do not install near bed rooms, living rooms, etc. The sound of refrigerant flowing through the piping may sometimes be audible.
- Ensure that it is located where noise in operation will not be a problem. After power is supplied or after an operation stop for a while, a small clicking noise may be heard from the inside of the Branch box. The electronic expansion valve is opening and closing. The unit is not faulty.

- Ensure that the Branch box is installed in a location which facilitates servicing and maintenance. (ensure that the required maintenance hole or service space is available).
 - Determine the route of refrigerant piping, and electrical wiring beforehand.
 - Ensure that the location of the installation is such that the length of refrigerant piping is within the specified limits.
- Do not install in location that is hot or humid for long periods of time.

⚠ WARNING:
Ensure that the unit is installed firmly in a location able to support its weight. If the installation is of insufficient strength the unit may fall, resulting in injury.

3. Confirming supplied accessories

■ PAC-MMK40BCB

3.1. Check the Branch box accessories and parts

No.	Accessory name	Q'ty	Remarks
		PAC-MMK40BCB	
①	Washer (with insulation)	4	
②	Washer	4	
③	Pipe cover (Liquid/Gas)	4	To outdoor unit
④	Pipe cover (Liquid)	4	To indoor unit
⑤	Pipe cover (Gas)	4	With ins. To indoor unit
⑥	Joint cover(Liquid)	1	
⑦	Joint cover(Gas)	1	
⑧	Joint pipe(Liquid)	2	
⑨	Joint pipe(Gas)	2	
⑩	Cu cap 23.7	1	
⑪	Cu cap 14.0	1	
⑫	Joint cover (Liquid/Gas)	4	
⑬	Band	24	
⑭	Cable strap	1	
⑮	Wire saddle	1	
⑯	Ins	8	To indoor unit

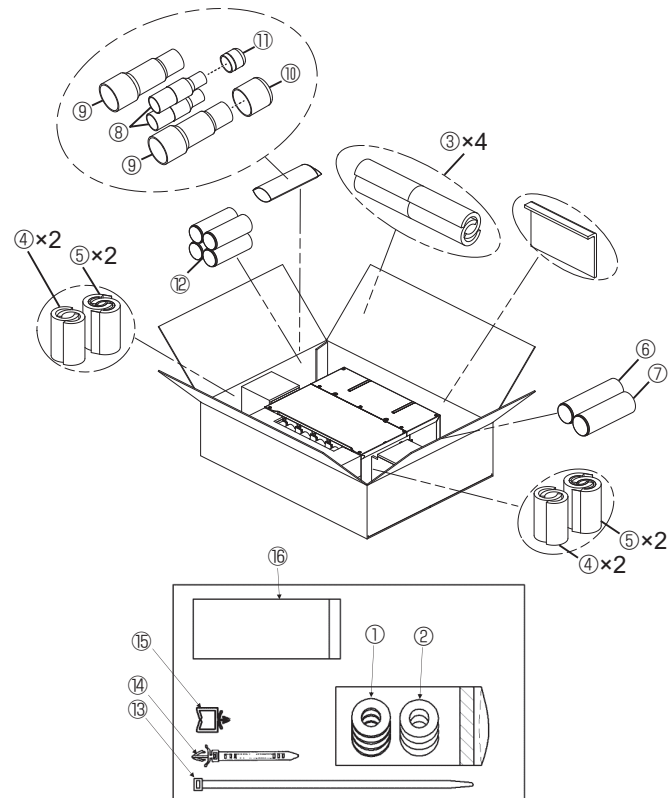


Fig. 3-1

4. Dimensions and required servicing space of Branch box

Optional different-diameter joints



Fig. 4-1

Model name	Connected pipes diameter	Diameter A	Diameter B
	mm	mm	mm
PAC-SG77RJB-E	ø6.35 → ø9.52	ø6.35	ø9.52
PAC-SG78RJB-E	ø9.52 → ø12.7	ø9.52	ø12.7
PAC-SG79RJB-E	ø12.7 → ø9.52	ø12.7	ø9.52
PAC-SG80RJB-E	ø12.7 → ø15.88	ø12.7	ø15.88
PAC-SG76RJB-E	ø9.52 → ø15.88	ø9.52	ø15.88
PAC-SJ72RJB-E	ø15.88 → ø19.05	ø15.88	ø19.05

* Suspension bolt : W3/8 (M10)

* Refrigerant pipe brazed connection

* The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size for indoor unit and Branch box. If the piping connection size of Branch box does not match the piping connection size of indoor unit, use optional different-diameter joints to the Branch box side. (Connect deformed joint directly to the Branch box side.)

* Do not use any optional parts not listed in the left table for the piping connection.

Conversion formula

1/4 F	ø6.35
3/8 F	ø9.52
1/2 F	ø12.7
5/8 F	ø15.88
3/4 F	ø19.05
7/8 F	ø22.2

■ PAC-MMK40BCB (Fig. 4-2)

(mm)

Suspension bolt: W3/8 (M10)

Refrigerant pipe brazed connection

	To indoor unit				To outdoor unit
	A	B	C	D	
Liquid pipe	ø6.35	ø6.35	ø6.35	ø6.35	ø9.52
Gas pipe	ø9.52	ø9.52	ø9.52	ø9.52	ø15.88

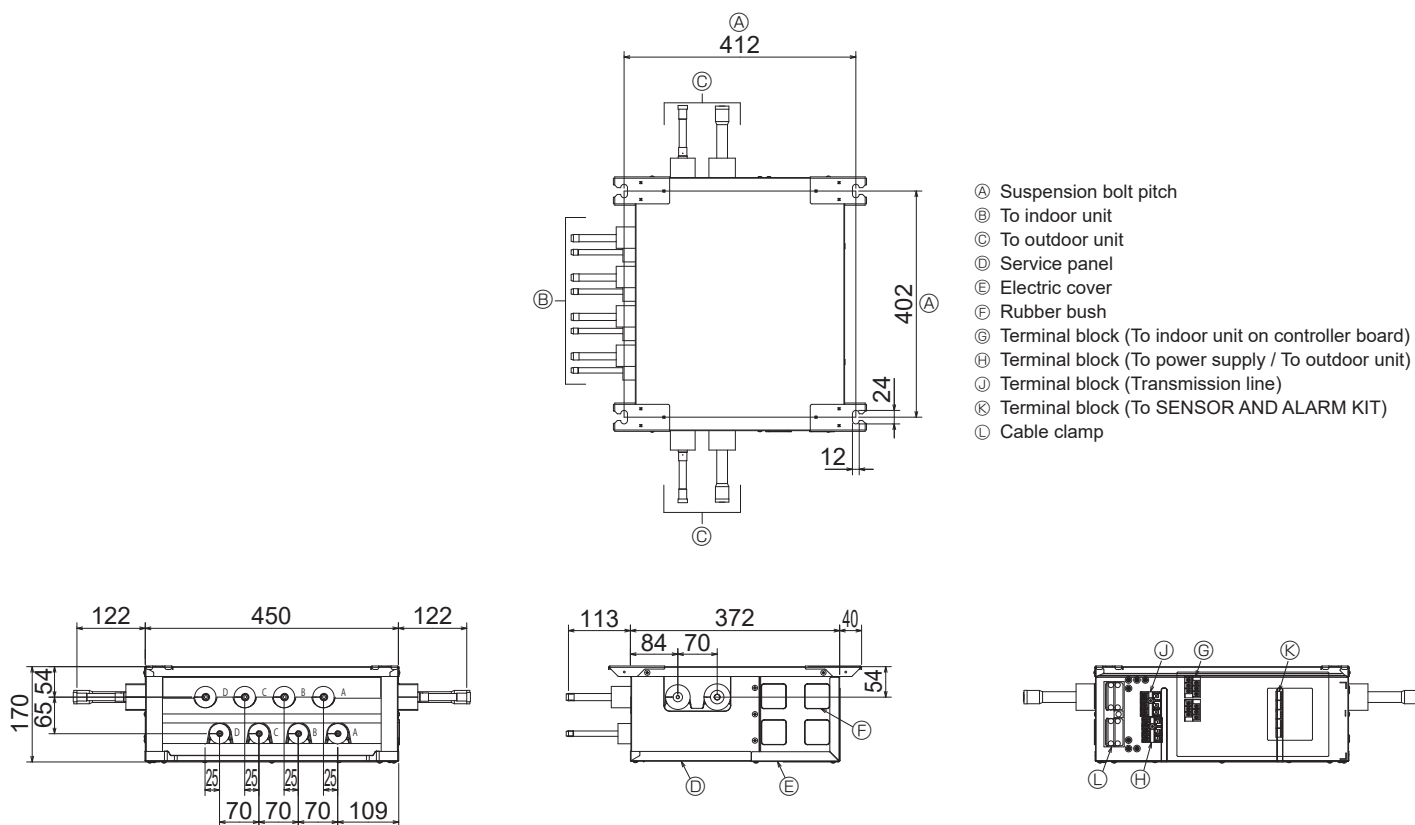


Fig. 4-2

4. Dimensions and required servicing space of Branch box

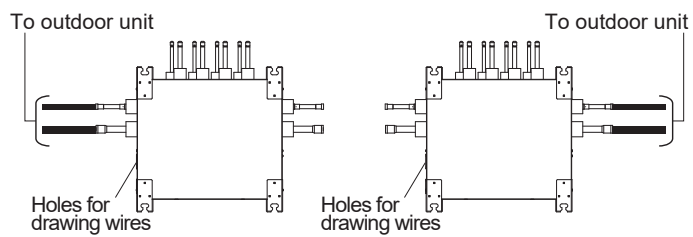


Fig. 4-3

4.1. How to connect the pipes of an outdoor unit and a Branch box

- Connect the connection pipes of the outdoor unit to the main pipe connection ports on either side of the Branch box, depending on connection conditions such as the installation location of the outdoor unit. (Fig. 4-3)
- The number of connectable indoor units and Branch boxes differs depending on the outdoor unit. Refer to the installation manual of the outdoor unit for details.

4. Dimensions and required servicing space of Branch box

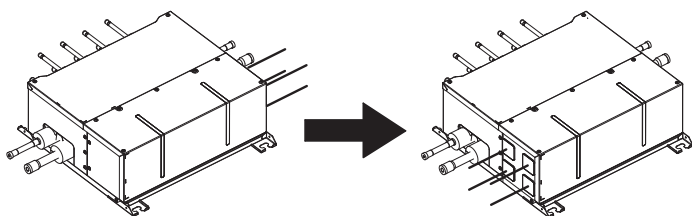
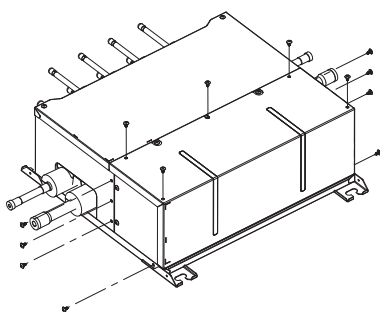


Fig. 4-4

4.2. The direction of the piping can be changed. (Fig. 4-4) Piping direction change work procedures. (Fig. 4-5 ①~⑤)

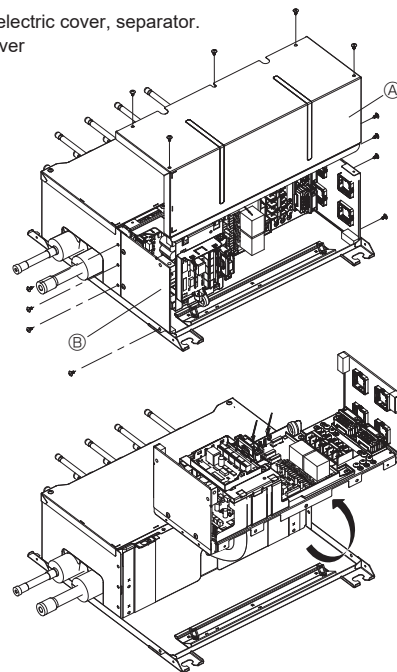
The figures show the procedure of the 4-branch type as an example.
You can change the piping direction of the 6-branch type in the same procedure.

① Remove the screws in each part.



② Remove the electric cover, separator.

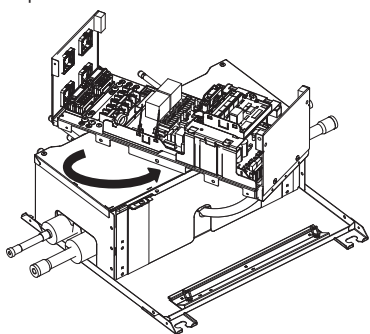
- Ⓐ Electric cover
- Ⓑ Separator



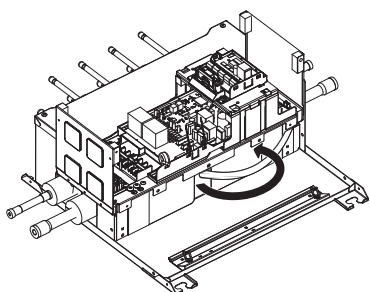
③ Rotate the separator

CAUTION:

Do not rotate separator more than 180°.



④ Fasten the screws in each part.



⑤ Direction change complete.

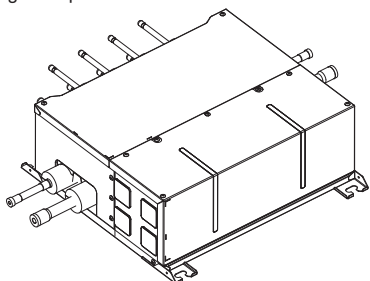


Fig. 4-5

4. Dimensions and required servicing space of Branch box

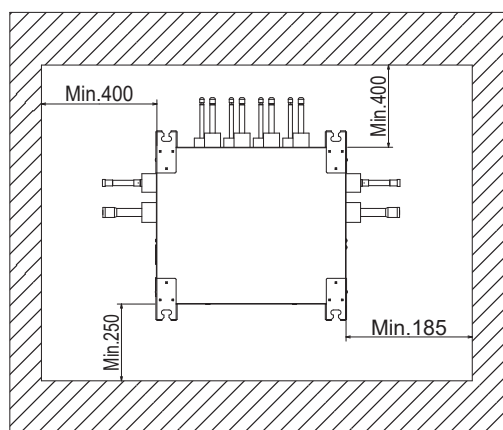


Fig. 4-6

(mm)

4.3. Space required for installation and servicing

I. The space when installing with the suspension bolts.

- Ⓐ Branch box
- Ⓑ On the side of piping
- Ⓒ Maintenance hole
- Ⓓ Ceiling board or Floor board or Wall board
- Ⓔ On the side of board assembly

1-1. Required space around the Branch box at installation

Refer to Fig. 4-6. If the space shown in the figure is not ensured, it would be difficult to perform piping work or replace parts when servicing.

1-2. When providing a maintenance hole in a recommended size

When the main pipes are connected to one side of the Branch box, refer to Fig. 4-7 and 4-8.

If the space shown in these figures is not ensured, it would be difficult to replace the circuit boards, LEV coil, sensor and Branch box.

1-3. When a maintenance hole in a recommended size cannot be provided

Refer to Fig. 4-9 and 4-10. When providing a maintenance hole in a size of □ 450 mm, the LEV coil, sensor, and Branch box cannot be replaced. Additionally, it would be difficult to replace the circuit boards if the size of a maintenance hole is smaller than □ 450 mm.

*1 If enough space is not ensured around the Branch box, it would be difficult to replace circuit boards.

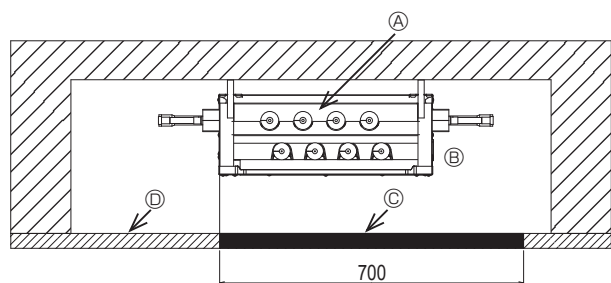


Fig. 4-7

(mm)

⚠ CAUTION:

Branch boxes should be secured with bolts.

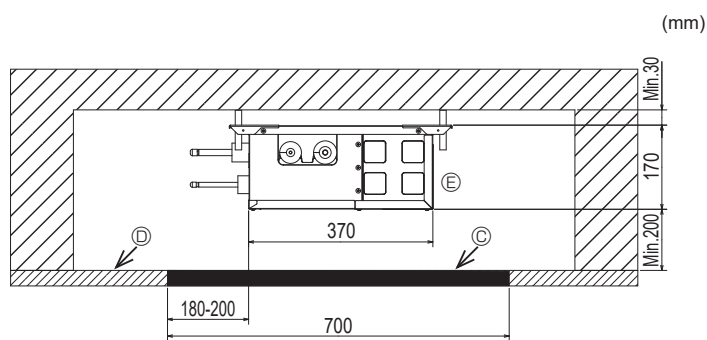


Fig. 4-8

(mm)

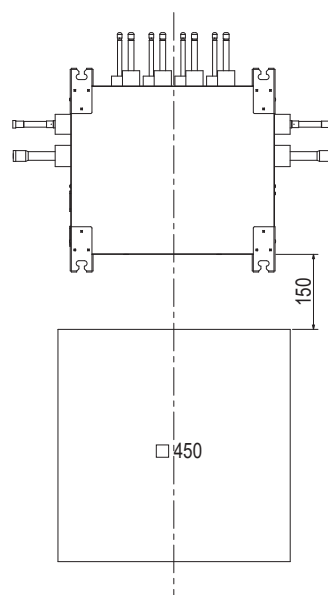


Fig. 4-9

(mm)

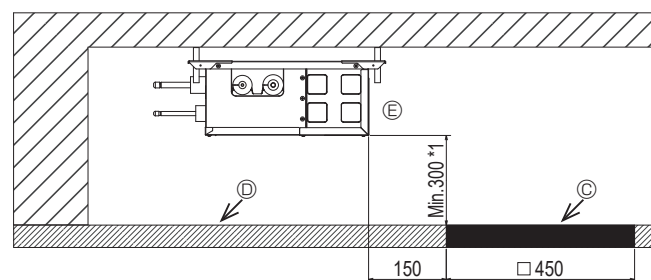


Fig. 4-10

(mm)

4. Dimensions and required servicing space of Branch box

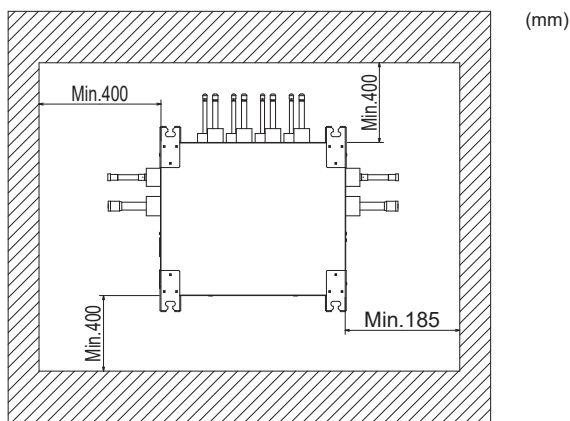


Fig. 4-11

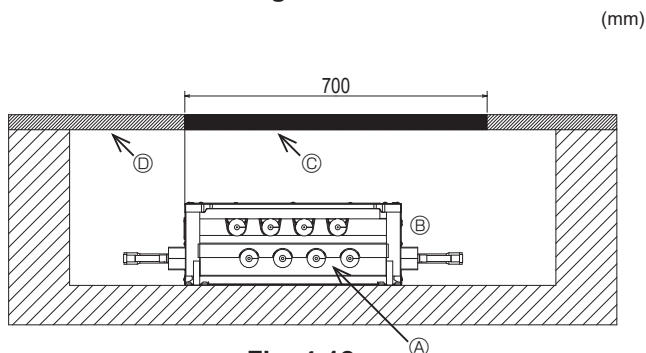


Fig. 4-12

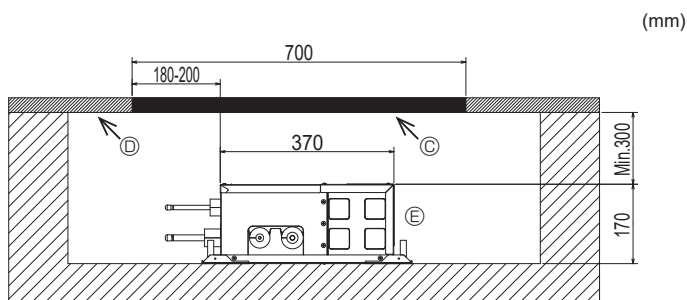


Fig. 4-13

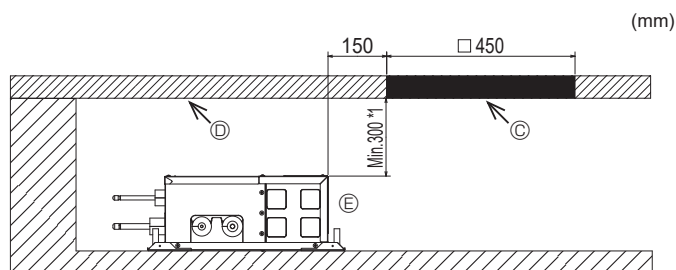


Fig. 4-14

4.3. Space required for installation and servicing

II. The space when installing on the ceiling/floor/wall board directly.

- Ⓐ Branch box
- Ⓑ On the side of piping
- Ⓒ Maintenance hole
- Ⓓ Ceiling board or Floor board or Wall board
- Ⓔ On the side of board assembly

2-1. Required space around the Branch box at installation

Refer to Fig. 4-11. If the space shown in the figure is not ensured, it would be difficult to perform piping work or replace parts when servicing.

2-2. When providing a maintenance hole in a recommended size

When the main pipes are connected to one side of the Branch box, refer to Fig. 4-12 and 4-13 about the size and installation position of the inspection port in the horizontal direction.

If the space shown in these figures is not ensured, it would be difficult to replace the circuit boards, LEV coil, sensor and Branch box.

2-3. When a maintenance hole in a recommended size cannot be provided

Refer to Fig. 4-9 and 4-14. When providing a maintenance hole in a size of □450 mm, the LEV coil, sensor, and Branch box cannot be replaced.

Additionally, it would be difficult to replace the circuit boards if the size of a maintenance hole is smaller than □450 mm.

*1 If enough space is not ensured around the Branch box, it would be difficult to replace circuit boards.

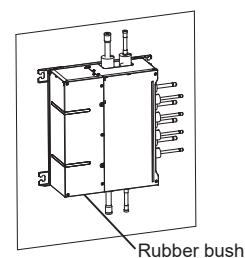
⚠ CAUTION:

Branch boxes should be secured with bolts.

4.4. Installation direction

Correct installation direction

When installing the unit on the wall, install the wiring and piping connected to the outdoor unit facing down. Other ways are not acceptable.



When installing on the wall, do not place the device in the manner shown below. Doing so may cause electric shock or fire.

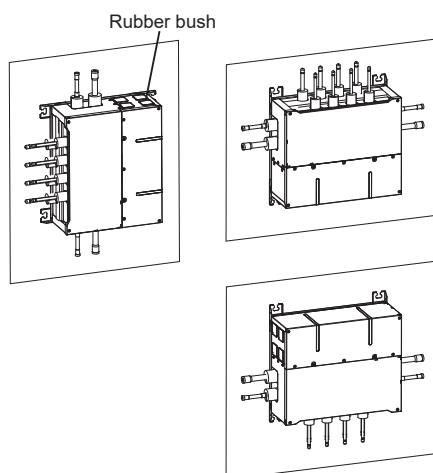


Fig. 4-15

5. Mounting the Branch box

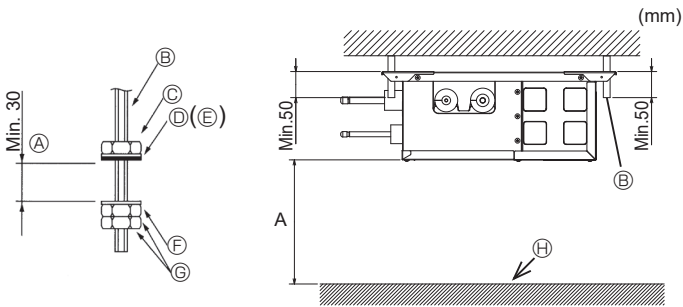


Fig. 5-1

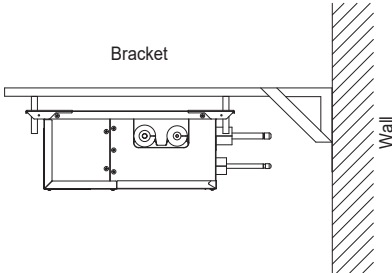


Fig. 5-2

* Purchase an appropriate bracket locally if the unit is to be mounted on a wall.

- (1) Install the suspension bolts (procure locally) at the specified pitch (Fig. 4-2).
- (2) Fit the washers (①, ②) and nuts (procure locally) to the suspension bolts.
(Fig. 5-1 and refer to "3.1. Check the Branch box accessories and parts")
- (3) Hang the unit on the suspension bolts.
- (4) Fully tighten the nuts (check ceiling height).
- (5) Use a level to adjust the Branch box to the horizontal.

- Ⓐ When unit is hung and nuts tightened
- Ⓑ Suspension bolt
- Ⓒ Nut (procure locally)
- Ⓓ Washer (with cushion) ①
- Ⓔ Ensure that cushion faces downwards
- Ⓕ Washer (without cushion) ②
- Ⓖ Nut (procure locally)
- Ⓗ Ceiling board

Maintenance hole size	Dimension A
Recommended size	200mm
□ 450mm	300mm

6. Installing refrigerant piping

* Always follow the specifications written in the installation manual of the outdoor unit. Exceeding these requirements may cause reduced performance of the equipment, and malfunctions.

⚠ CAUTION:

- 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.
 - R32 is a high-pressure refrigerant and can cause the existing piping to burst.
 - 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.
- Follow the instructions below to prevent abrasive components contained in sandpaper and cutting tools from entering the refrigerant circuit because those components can cause failures of the compressor and valves.
- To deburr pipes, use a reamer or other deburring tools, not sandpaper.
 - To cut pipes, use a pipe cutter, not a grinder or other tools that use abrasive materials.
 - When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes.
 - If cutting chips or other foreign matters enter pipes, wipe them off the inside of the pipes.

NOTE

- After pipe connection, be sure to check that there is no gas leakage, using a leak detector or soap-and-water solution.
- Before brazing the refrigerant piping, always wrap the piping on the main body, and the thermal insulation piping, with wet towels to prevent heat shrinkage and burning the thermal insulation tubing. Ensure that there are no gaps between the copper tubes and the wet towel. Take care to ensure that the flame does not come into contact with the main body itself. (Fig. 6-1)
- Do not use leak-detection additives.

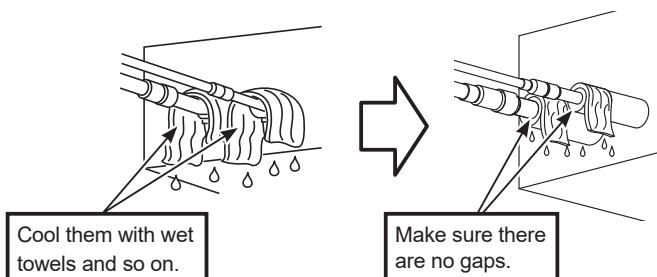


Fig. 6-1

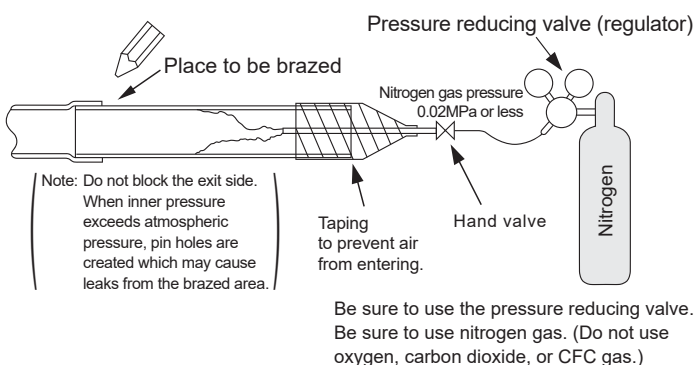


Fig. 6-2

- ▶ Connect the liquid and gas pipes of each indoor unit to the same end connection numbers as indicated on the indoor unit flare connection section of each Branch box.

- ▶ When connecting indoor units, make sure to connect refrigerant pipes and connection wires to the appropriate connection ports marked with matching alphabets. (e.g., A, B, C, D) If connected to wrong end connection numbers, it doesn't work normally.

Note:

Be sure to mark all the local refrigerant piping (liquid pipes, gas pipes, etc.) for each indoor unit designating clearly which room it belongs in. (e.g., A, B, C, D)

- ▶ List indoor unit model names in the name plate of Branch box (for identification purposes).

- Conduct sufficient anti-condensation and insulation work to prevent water dripping from the refrigerant piping. (liquid pipe/gas pipe)
- Increase insulation depending on the environment where the refrigerant piping is installed, or condensation may occur on the surface of the insulation material. (Insulation material Heat-resistant temperature: 120 °C, Thickness: 15 mm or more)
- * When the refrigerant piping is used in locations subject to high temperature and humidity such as in the attic, further addition of insulation may be required.
- Insulate the liquid and gas pipes of the Branch box by attaching the heat-resistant polyethylene foam tightly around them. Otherwise, a burn during pipe connection work or water leakage due to condensation on pipes may result.
- ▶ When using commercially available refrigerant piping, ensure that both liquid and gas piping are wrapped with commercially available thermal insulation materials.
- ▶ Refer to the installation manual of the outdoor unit when creating a vacuum and opening or closing valves.

When connecting piping by brazing, be sure to use nitrogen-substituted non-oxidation brazing. Do not use commercial antioxidants which may cause pipe corrosion and degradation of refrigerator oil. Use non-oxidation brazing, or the compressor may be damaged. (Fig. 6-2)

- *1 Properly ventilate during brazing work. Before brazing in a closed room or a small room, make sure that there is no refrigerant leakage. Buildup of leaked refrigerant poses toxicity and combustion issues.
- *2 Keep ignition sources, such as gas burning appliances and electrical heater, etc., away from where the air conditioner is being installed or repaired.
- *3 Use good quality brazing filler metal.
- *4 When using flux, pay attention to the following points.
 - After brazing, completely remove flux. If the chlorine contained in the flux remaining in the pipe, the refrigerator oil is degraded and it becomes contamination.

6. Installing refrigerant piping

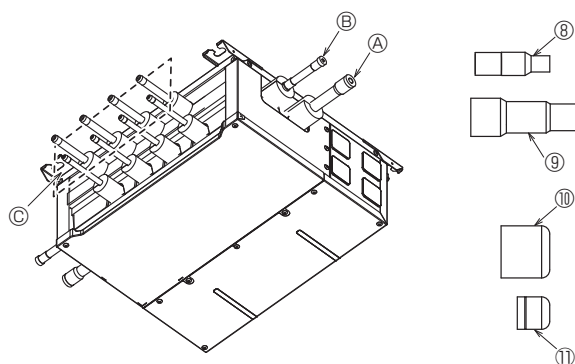


Fig. 6-3

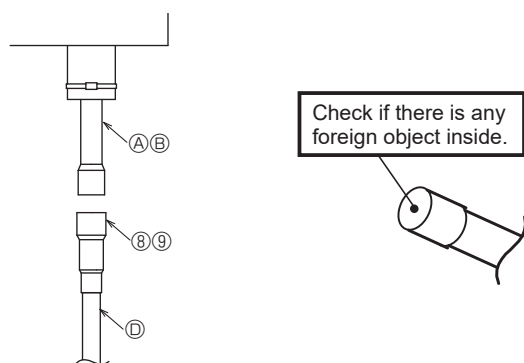


Fig. 6-4

Fig. 6-5

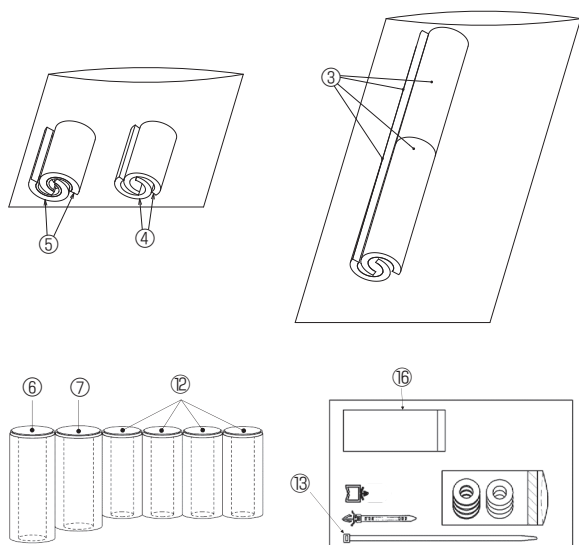


Fig. 6-6

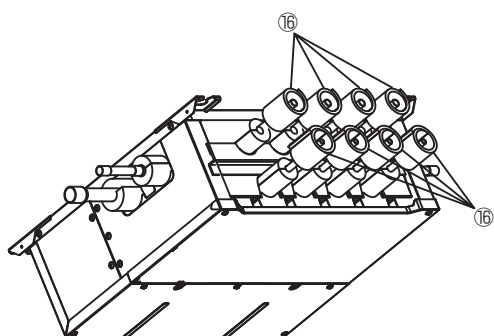


Fig. 6-7

6.1 Piping connection procedure

⚠ CAUTION:

When brazing in succession, conduct the next brazing once the welded section has cooled down to room temperature. Failure to do so will cause the insulation material or the unit to melt causing condensation. After cutting piping or unsoldering brazed piping or copper caps, ensure to clean away any foreign object (i.e., brazing material, cutting chips) so as to prevent entry of any foreign object into the piping. Failure to do so may cause malfunction of the outdoor compressor, and the like. (Fig. 6-5)

- (1) Remove the rubber caps from the outdoor unit side connection pipe ④ and ⑤.
- (2) After brazing ⑧ to the liquid pipe side and ⑨ to the gas pipe of the refrigerant pipe ⑩ connected to the outdoor unit side, braze the branch box to connect. (Fig. 6-3, 6-4)
When installing the unit on a wall, do not braze the joint pipe to the unit first. Doing so will make filling the gap with filler metal difficult, resulting in a refrigerant leak when brazing the refrigerant pipe.
- (3) Braze the copper cap ⑩ and ⑪ to the port on the other side.
- (4) When the indoor unit is not connected, do not remove the copper cap of ④, or refrigerant leaks.
- (5) Wrap and fix the supplied insulation ⑫ on the connection ports for the pipes. (Fig. 6-7)

Table 1

No.	Accessory name	Q'ty	Remarks
		PAC-MMK40BCB	
③	Pipe cover (Liquid/Gas)	4	To outdoor unit
④	Pipe cover (Liquid)	4	To indoor unit
⑤	Pipe cover (Gas)	4	With ins. To indoor unit
⑥	Joint cover(Liquid)	1	
⑦	Joint cover(Gas)	1	
⑧	Joint pipe(Liquid)	2	
⑨	Joint pipe(Gas)	2	
⑩	Cu cap 23.7	1	
⑪	Cu cap 14.0	1	
⑫	Joint cover (Liquid/Gas)	4	
⑬	Band	24	
⑭	Ins	8	To indoor unit

6. Installing refrigerant piping

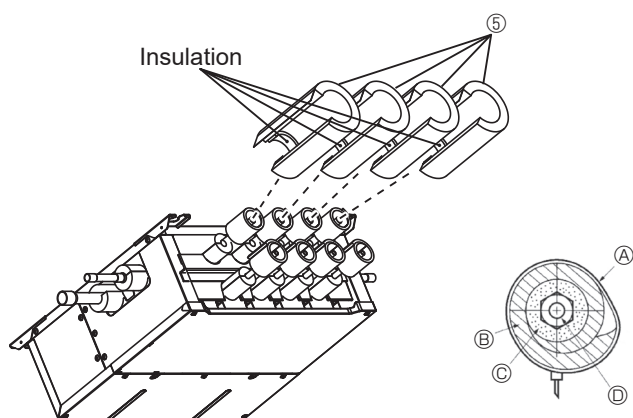


Fig. 6-8

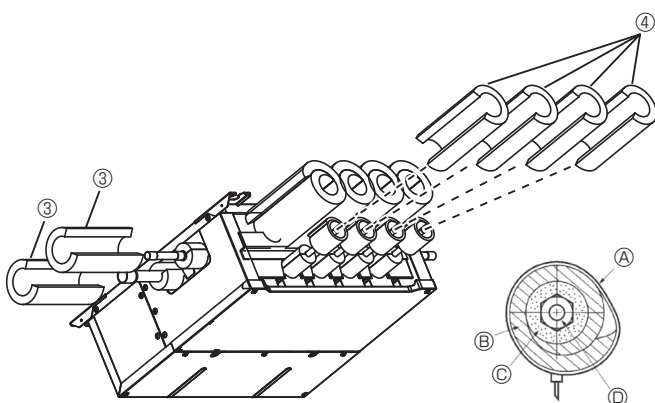


Fig. 6-9

- (6) Wrap the supplied pipe covers (gas) ⑤ by butting their inner insulation to the Branch box. Tighten the bands ⑬ to fix the covers at 10 - 20 mm from their both edges. (Fig. 6-8)
- (7) Wrap the supplied pipe covers (liquid/gas) ③/④ by butting them to the Branch box. Tighten the bands ⑬ to fix the covers at 10 - 20 mm from their both edges. In addition, tighten the bands ⑬ to fix the covers ③ at their center. (Fig. 6-9)
- (8) Attach the joint covers ② (with a cap) to the connection ports which are not connected to an indoor unit to prevent condensation. (Fig. 6-10)
- (9) Attach the joint covers (⑥ and ⑦ with a cap) to the connection ports which are not connected to the outdoor unit to prevent condensation. (Fig. 6-10)
- (10) Fix the joint covers (⑥, ⑦, and ②) with the bands ⑬. (Fig. 6-10)

- Ⓐ Band (Table 1 Accessories No. ⑬)
- Ⓑ Pipe covers (Table 1 Accessories No. ③④⑤)
- Ⓒ Thermal insulation for refrigerant piping
- Ⓓ Refrigerant piping

⚠ CAUTION:

To avoid excessive strain on the Branch box, support the piping with one or more support(s) 1.5 m or less from the Branch box. Refer to Fig. 6-11 as an example.

- Ⓐ Refrigerant piping
- Ⓑ Thermal insulation for refrigerant piping

6.2 How to charge the refrigerant

Refer to the installation manual of the outdoor unit.
Use only R32 refrigerant (use of other refrigerants may cause troubles).

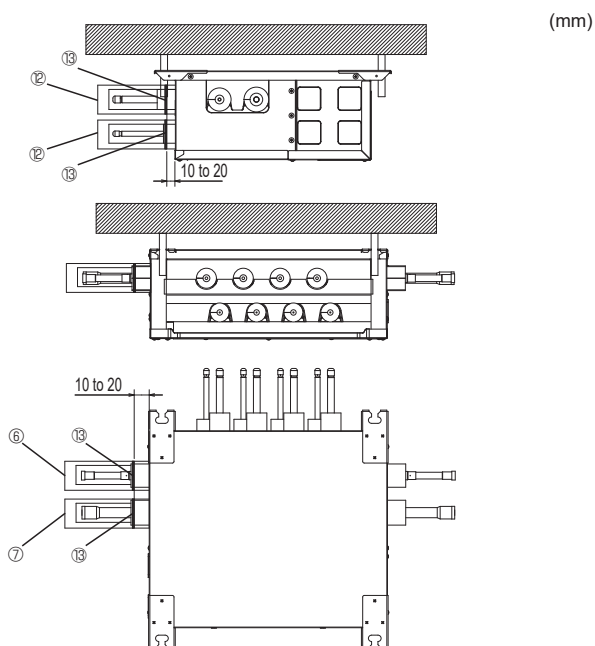


Fig. 6-10

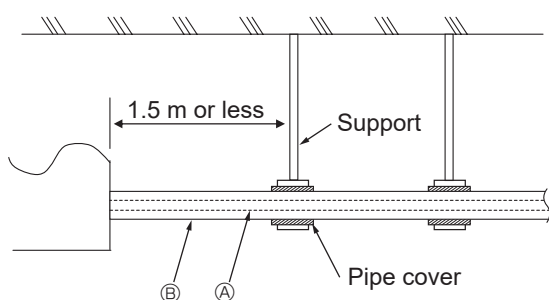


Fig. 6-11

7. Electrical work

7.1 Precautions

⚠ WARNING:

- **Always use dedicated circuits with breakers, and at the rated voltage. Power supply circuits with insufficient capacity, and bad workmanship during installation, may result in electric shock or fire.**

⚠ CAUTION:

- Be sure to establish an earth. Do not earth the unit to a utility pipe, arrester, or telephone earth. Incomplete earth may cause electrical shock. A high surge current from lightning or other sources may cause damage to the air conditioner.
- Use the specified electrical wiring and ensure that it is connected properly, and that it is not under tension. Failure to follow these requirements may result in broken wiring, heating, or fire.

- **Never splice the cable, otherwise it may result in a smoke, a fire or communication failure.**

- Never connect the main power source to terminal block of transmission line. If connected, electrical parts will be burnt out.
- Wiring for control (hereinafter referred to as transmission line) shall be (5 cm 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.)

7.2 Electrical work procedure

- Connect refrigerant pipes and electrical wires to the appropriate ports and terminal blocks so that each last alphabet matches. Incorrect wiring will interfere with the correct operation of the indoor unit.
- To link the SENSOR AND ALARM KIT with the indoor unit installed in the same room, match the last alphabet of the terminal number for the SENSOR AND ALARM KIT with that for the indoor unit. If the alphabet does not match, the SENSOR AND ALARM KIT will not operate properly after it detects refrigerant leakage and the safety cannot be secured.

- Be sure to set the switches before turning on the breakers of the Branch box and the outdoor unit.
- When power is separately supplied to the Branch box and the outdoor unit, turn on the Branch box first.

- (1) Remove the electric cover. (Fig. 7-1)
- (2) Attach accessories ⑭ and ⑮. (Fig. 7-2, 7-5 and Table 2)
- (3) Slit the rubber bushes, pass each wire through the rubber bushes. (Fig. 7-3)

Note: Do not remove the rubber bushes.

- (4) Firmly connect each wire to the appropriate terminal block, and pass each wire through each clamps. (Fig. 7-4 and 7-5)
For the SENSOR AND ALARM KIT connection, refer to 7.4.
- (5) Set dip sw. (Refer to 7.5)
- (6) Replace the electric cover.

- Wiring connecting Branch box and outdoor unit, and Branch box and indoor units, functions as both power supply and signal cable. Connect this wiring in accordance with the terminal block numbers to ensure correct polarity.
- Always fix each ground wire separately with a ground screw.
- Protect the wiring placed above a ceiling to prevent it from being bitten by rats as necessary.
- Run a connection cable to the Branch box behind a wall. When running the cable on a wall, be sure to protect it with wire molding, etc. so that it cannot be directly touched or pulled.

7. Electrical work

7.2 Electrical work procedure

■ PAC-MMK40BCB

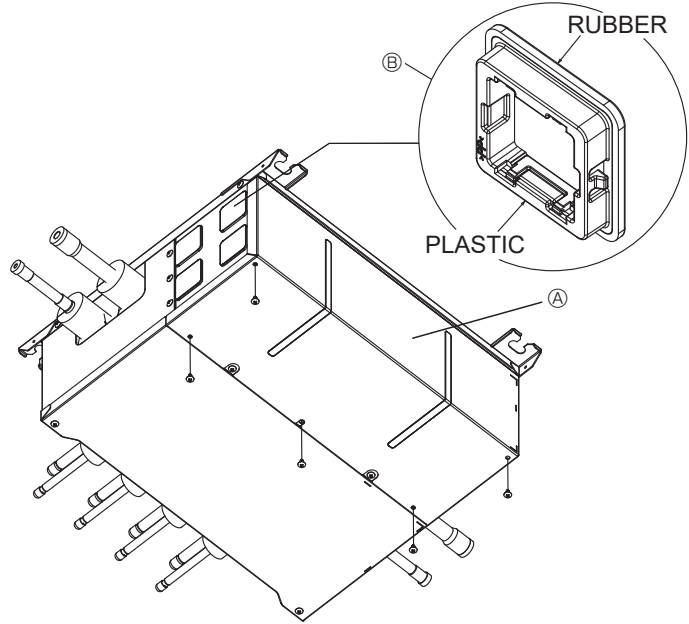


Fig. 7-1

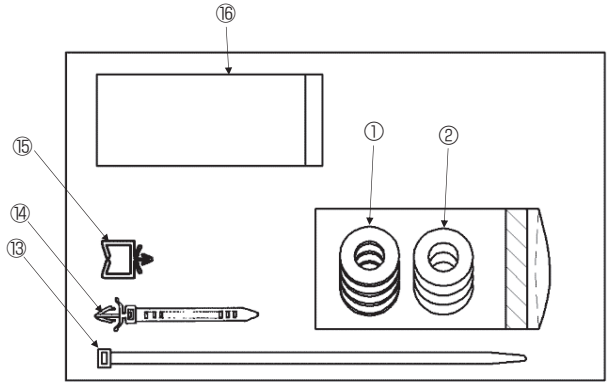


Fig. 7-2

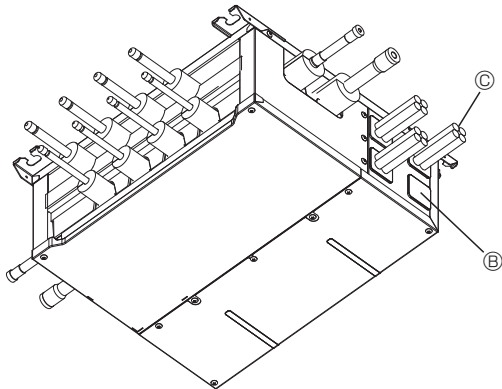


Fig. 7-3

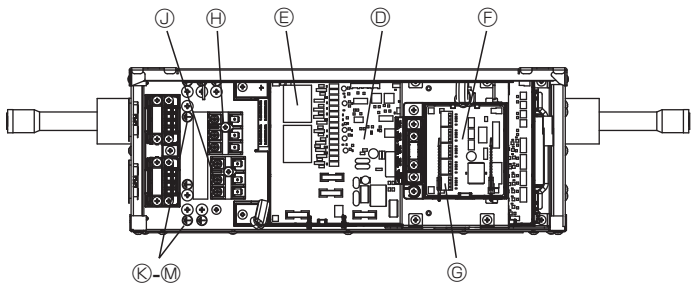


Fig. 7-4

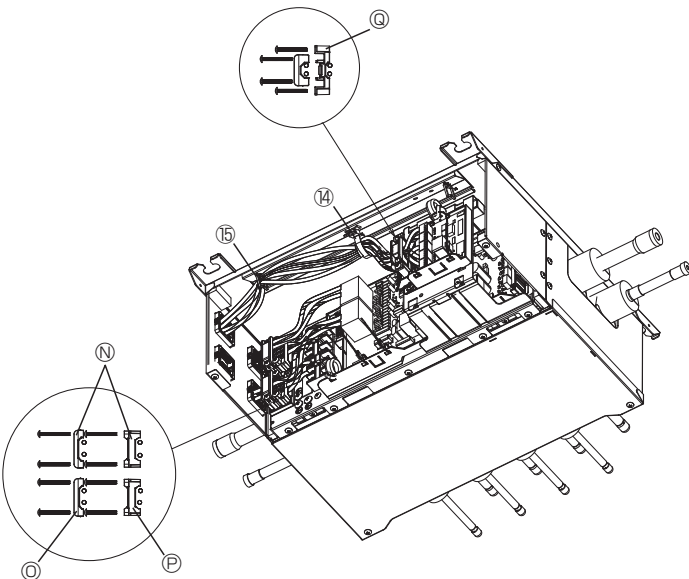


Fig. 7-5

- Ⓐ Electric cover
- Ⓑ Rubber bush
- Ⓒ Wiring
- Ⓓ Controller board
- Ⓔ Terminal block: TB3A-TB3D
<To indoor unit A-D>
- Ⓕ Interconnect board
- Ⓖ Terminal block: TB4A-TB4E
<To SENSOR AND ALARM KIT Room
A-D, Supervisor room>
- Ⓗ Terminal block: TB5
<Transmission line>
- Ⓙ Terminal block: TB2B
<For power supply
/To outdoor unit or other Branch box>
- Ⓚ Earth Terminal <To indoor unit A-D>
- Ⓛ Earth Terminal <For power supply>
- Ⓜ Earth Terminal <To other Branch box>
- Ⓝ Cable clamp <For TB3A-TB3D>
<To indoor unit A-D>
- Ⓞ Cable clamp <For TB5>
<To outdoor unit or other Branch box>
- Ⓟ Cable clamp <For TB2B>
<To power supply or other Branch box>
- Ⓠ Cable clamp <For TB4A-TB4E>
<To SENSOR AND ALARM KIT>

Table 2

No.	Accessory name	Q'ty	Remarks
		PAC-MMK40BCB	
Ⓛ	Cable strap	1	
Ⓜ	Wire saddle	1	

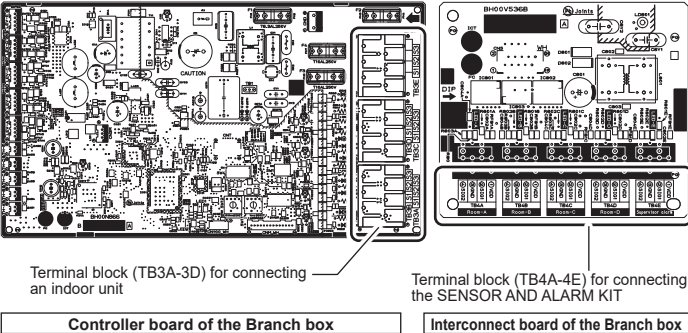
7. Electrical work

7.3 External wiring procedure

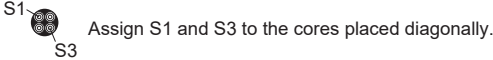
Wiring Specifications

Table 3

Wiring Specifications			
(A) Main power line/ Earth line	(B) M-NET cable	(C) Signal line/ Earth line	(D) Wire to connect the SENSOR AND ALARM KIT
3-core 2.5 mm ²	shielded wire CVVS, CPEVS or MVVS 2-core 1.25 mm ² Less than 200 m Connect the shielded part of the shielded wire to the S terminal on TB5.	4-core 1.5 mm ² Less than 25 m	4-core 0.5 mm ² (AWG20) 40 m or less Note: Refer to the installation manual of the SENSOR AND ALARM KIT, PAC-SK60SA-E.



- ① Wiring size must comply with the applicable local and national code.
- ② Power supply cords and indoor unit/Branch box/outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57) For example, use wiring such as YZW.
- ③ Install an earth line longer than power cables.
- ④ Connect wiring in accordance with the terminal block names to ensure correct polarity.
- ⑤ Indoor unit and Branch box connecting wires(C) have polarities. Make sure to match the terminal number (S1, S2, S3) for correct wirings.



- ⑥ When using twisted wire for the wiring, the use of round terminal is required. Take care when using strand wires, because fraying wires may cause the wiring to short out.
- ⑦ Do not bundle the M-NET cable with the connection cable and power supply cable. It may cause erroneous operation.

• Recommended Connection Method
When connecting one indoor unit to the branch box, connect it to TB3A. When connecting 2 indoor units, connect them to TB3A and TB3B. When connecting 3 indoor units, connect them to TB3A, TB3B, and TB3C. Connect indoor units in the order of A→B→C→D.

• When connecting the Interface kit to an outdoor unit that is compatible with the Interface kit, also refer to the installation manuals for the outdoor unit and Interface kit.

Power supply wiring (Supply power separately to Branch box and outdoor unit)

- When Branch box and outdoor unit power supply separately, a switch with at least 3 mm, 1/8 inch contact separation in each pole shall be provided by the air conditioner installation. (Fig 7-6)

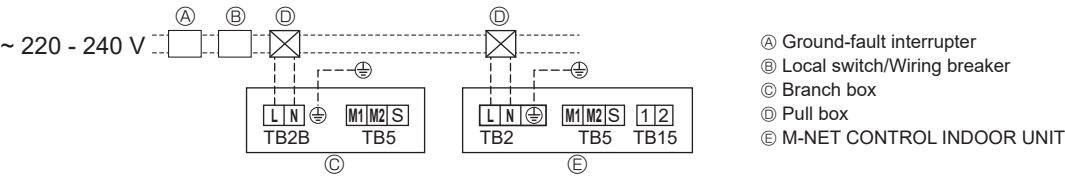


Fig. 7-6

WARNING:
Never splice the cable, otherwise it may result in a smoke, a fire or communication failure.

7. Electrical work

7.3. External wiring procedure

- Supply power (1-phase) separately to Branch box and outdoor unit

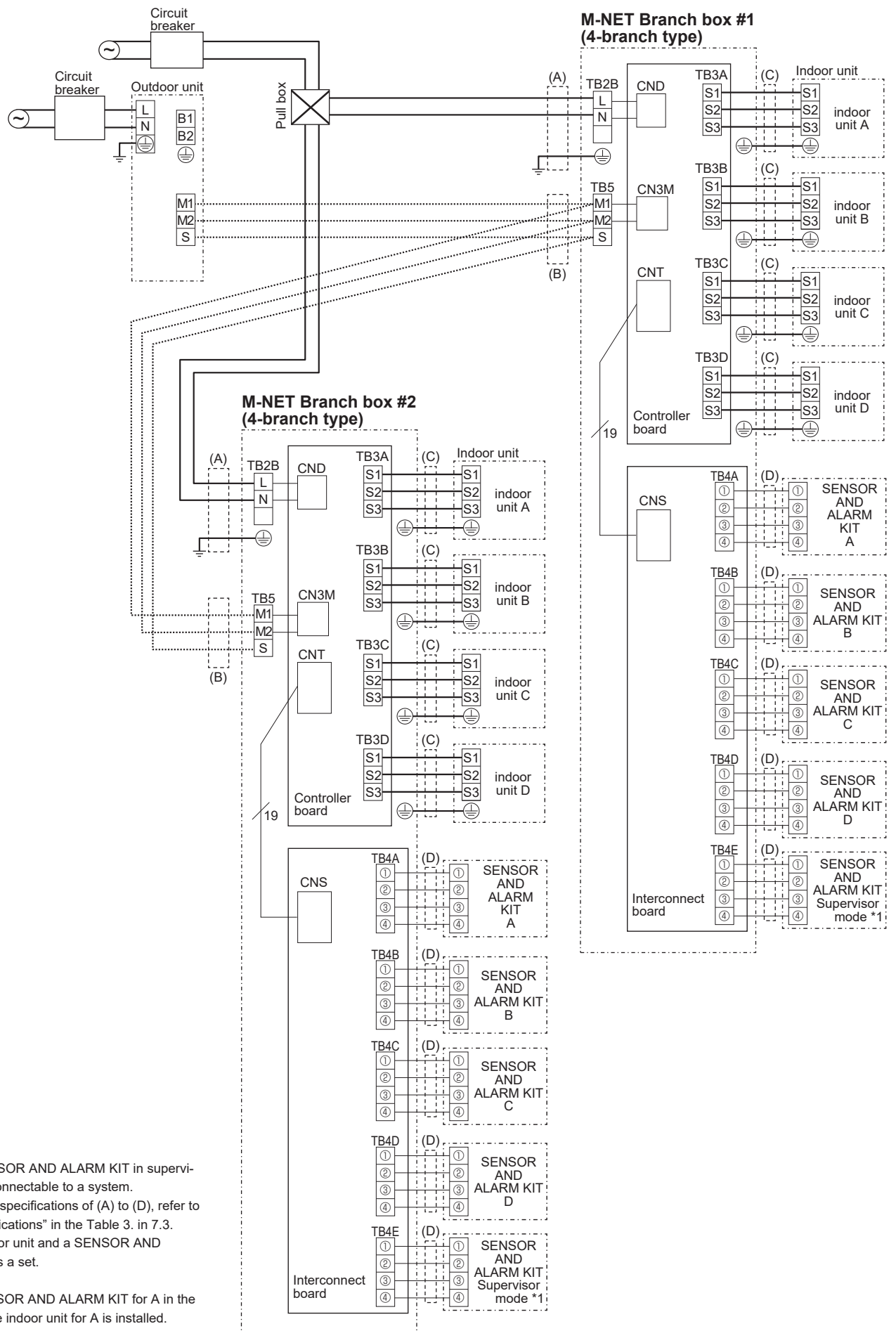


Fig. 7-7

- *1 Just one SENSOR AND ALARM KIT in supervisor mode is connectable to a system.
- * For the wiring specifications of (A) to (D), refer to "Wiring Specifications" in the Table 3. in 7.3.
- * Install an indoor unit and a SENSOR AND ALARM KIT as a set.
- Examples:
- Install the SENSOR AND ALARM KIT for A in the room where the indoor unit for A is installed.

7. Electrical work

7.3. External wiring procedure

■ Power supply (1-phase) from Outdoor unit

* Refer to installation manual of the outdoor unit

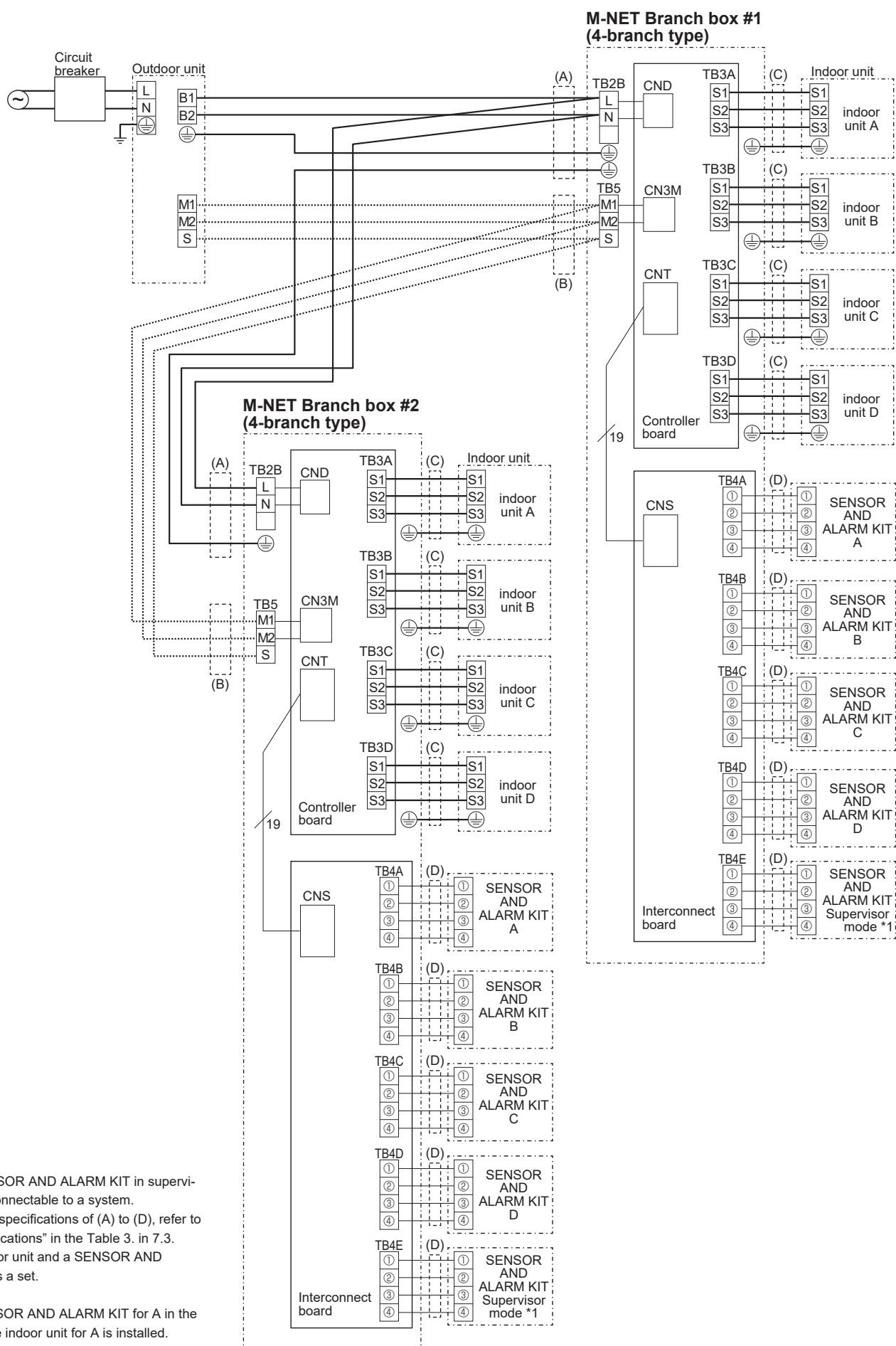


Fig. 7-8

*1 Just one SENSOR AND ALARM KIT in supervisor mode is connectable to a system.

* For the wiring specifications of (A) to (D), refer to "Wiring Specifications" in the Table 3. in 7.3.

* Install an indoor unit and a SENSOR AND ALARM KIT as a set.

Examples:

- Install the SENSOR AND ALARM KIT for A in the room where the indoor unit for A is installed.

7. Electrical work

7.3. External wiring procedure

- Supply power (3-phase) separately to Branch box and outdoor unit

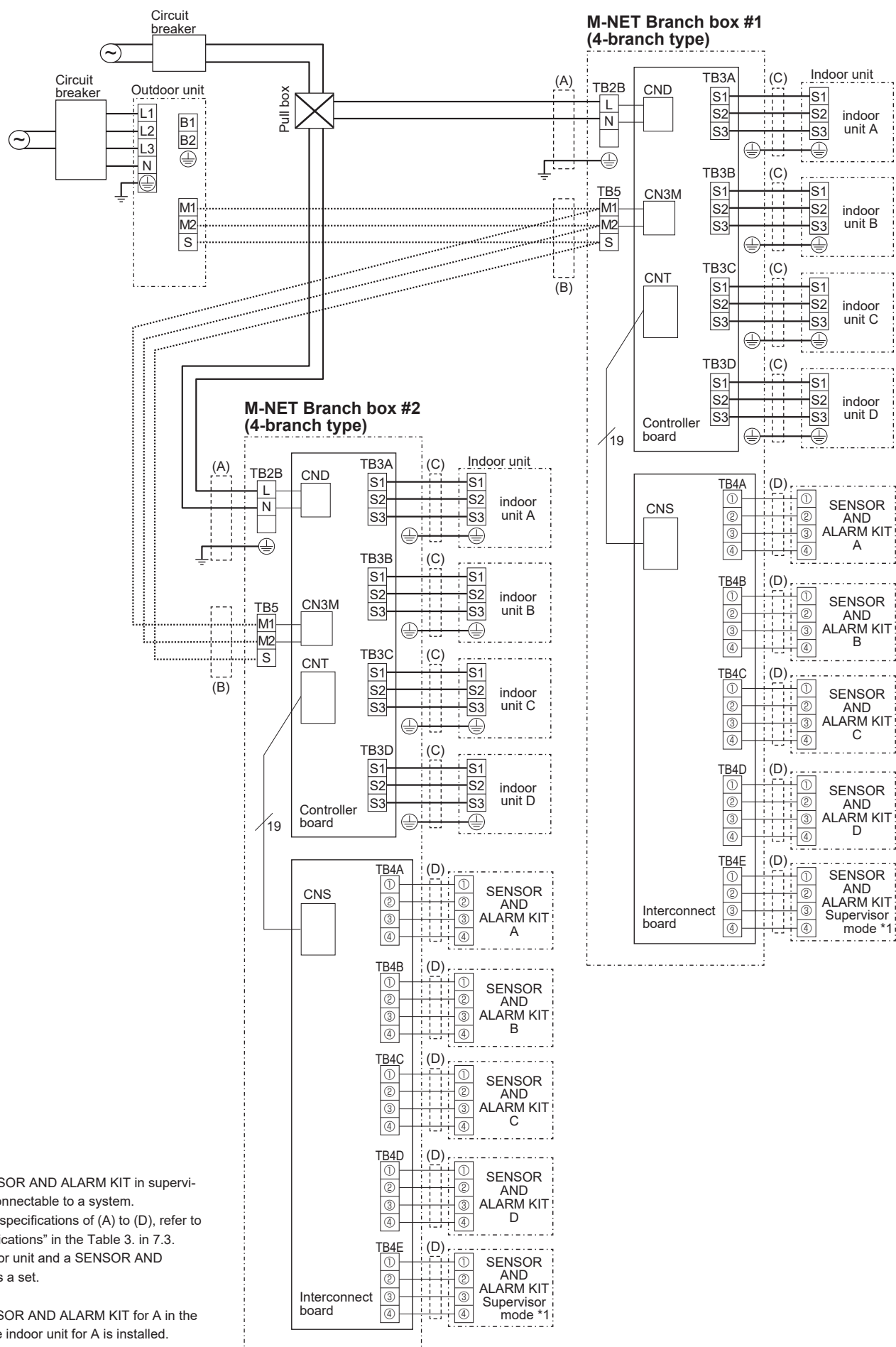


Fig. 7-9

- *1 Just one SENSOR AND ALARM KIT in supervisor mode is connectable to a system.
- * For the wiring specifications of (A) to (D), refer to "Wiring Specifications" in the Table 3. in 7.3.
- * Install an indoor unit and a SENSOR AND ALARM KIT as a set.
- Examples:
- Install the SENSOR AND ALARM KIT for A in the room where the indoor unit for A is installed.

7. Electrical work

7.3. External wiring procedure

■ Power supply (3-phase) from Outdoor unit

* Refer to installation manual of the outdoor unit

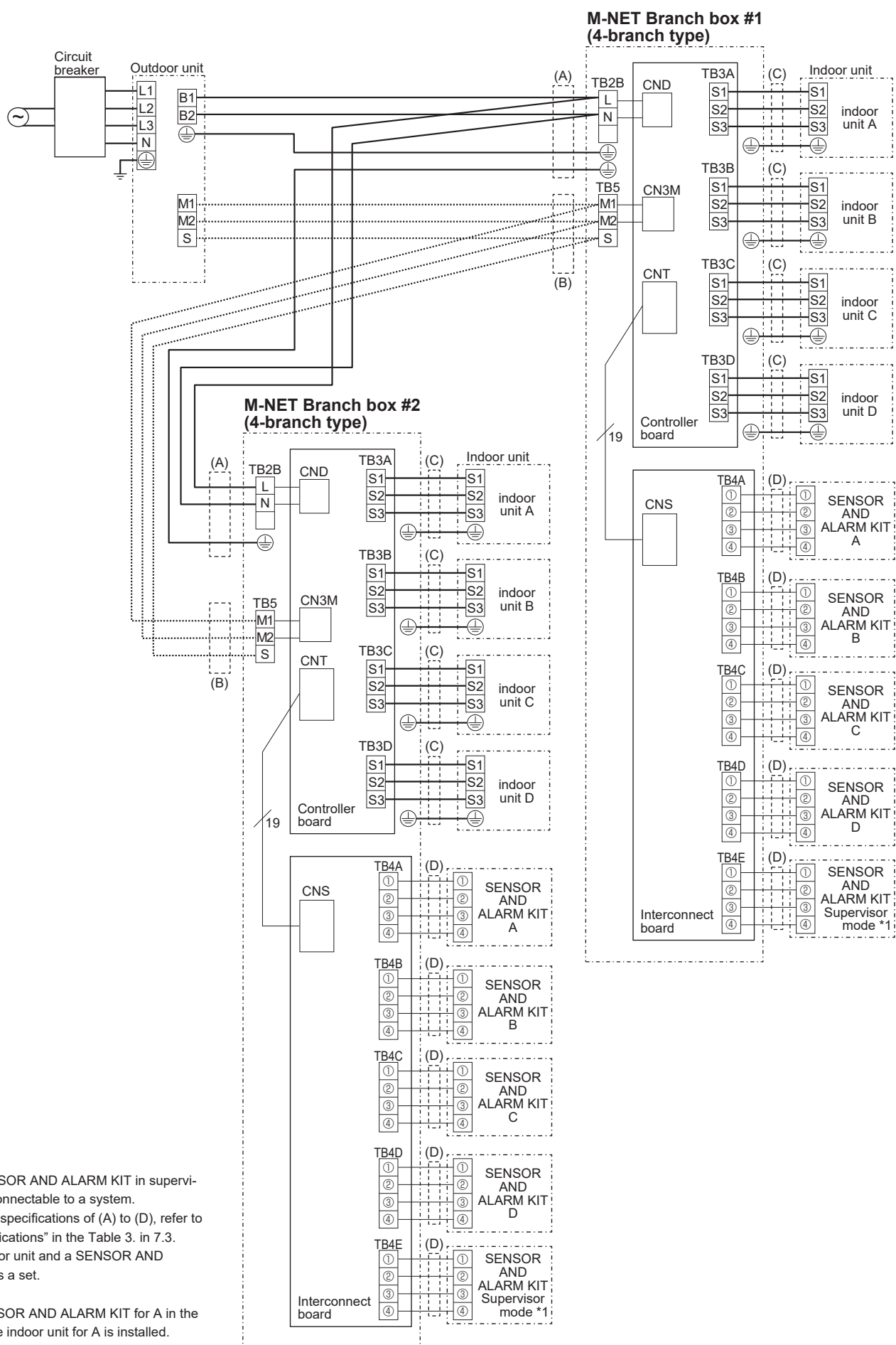


Fig. 7-10

*1 Just one SENSOR AND ALARM KIT in supervisor mode is connectable to a system.

* For the wiring specifications of (A) to (D), refer to "Wiring Specifications" in the Table 3. in 7.3.

* Install an indoor unit and a SENSOR AND ALARM KIT as a set.

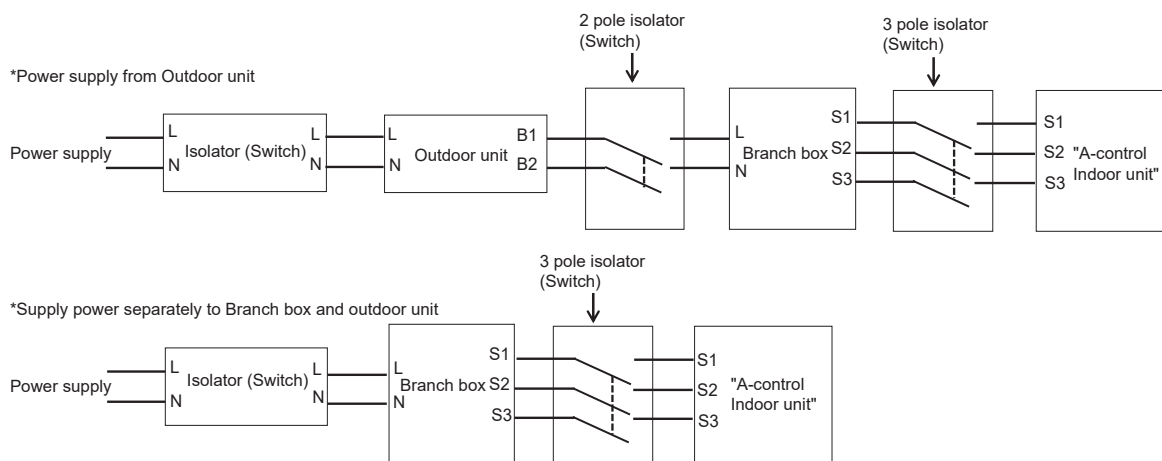
Examples:

- Install the SENSOR AND ALARM KIT for A in the room where the indoor unit for A is installed.

7. Electrical work

⚠ WARNING:

- In case of A-control wiring, there is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing. And do not touch the S1, S2, S3 terminals when the power is energized. If an isolator should be used, use the 2 pole type between the outdoor unit and the Branch box, and use the 3 pole type between the Branch box and the indoor unit.



⚠ CAUTION:

After using the isolator, be sure to turn off and on the main power supply to reset the system. Otherwise, the outdoor unit may not be able to detect the Branch box(es) or indoor units.

7.4. SENSOR AND ALARM KIT connection

To link the SENSOR AND ALARM KIT with the indoor unit installed in the same room, match the last alphabet of the terminal number for the SENSOR AND ALARM KIT with that for the indoor unit. Be careful not to assign a different terminal number.

e.g.) When connecting an indoor unit to the port A of the 4-branch type:
Connect the transmission line of the SENSOR AND ALARM KIT to TB4A on the interconnect board.

- Connect the SENSOR AND ALARM KIT installed in the supervisor room that is not air-conditioned through this unit to the terminal block of TB4E. Switch settings for the supervisor room and other rooms are required on the SENSOR AND ALARM KITs.
- The wire to connect the SENSOR AND ALARM KIT has polar character. (Fig. 7-11)
Match the pin assignment on the Branch box (TB4A-4E) and that on the SENSOR AND ALARM KIT (CN1).
- Strip the core wire by about 9 mm and twist the conductors adequately before connection. (Fig. 7-12)
- Press each button at the upper side on the terminal of the Interconnect board to open each wiring connection port and insert the lead wires until the core wire is hidden. (Fig. 7-12)
- Make sure that there are no risks of shortcircuit between terminals due to fraying wires after connection.
- Pull the lead wires slightly after connection to make sure that they do not come off the port.
- Do not solder the core wire.

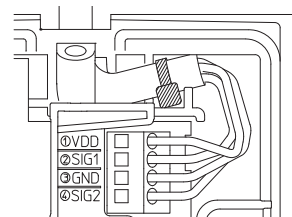
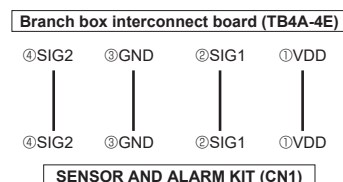
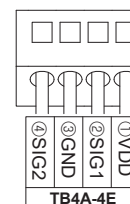


Fig. 7-11

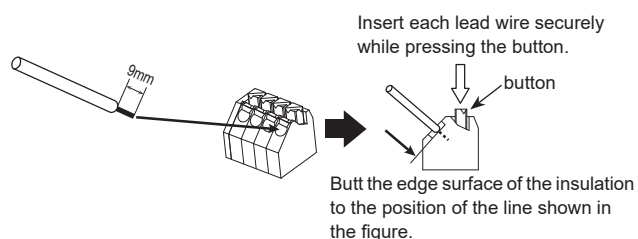
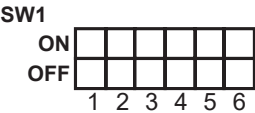
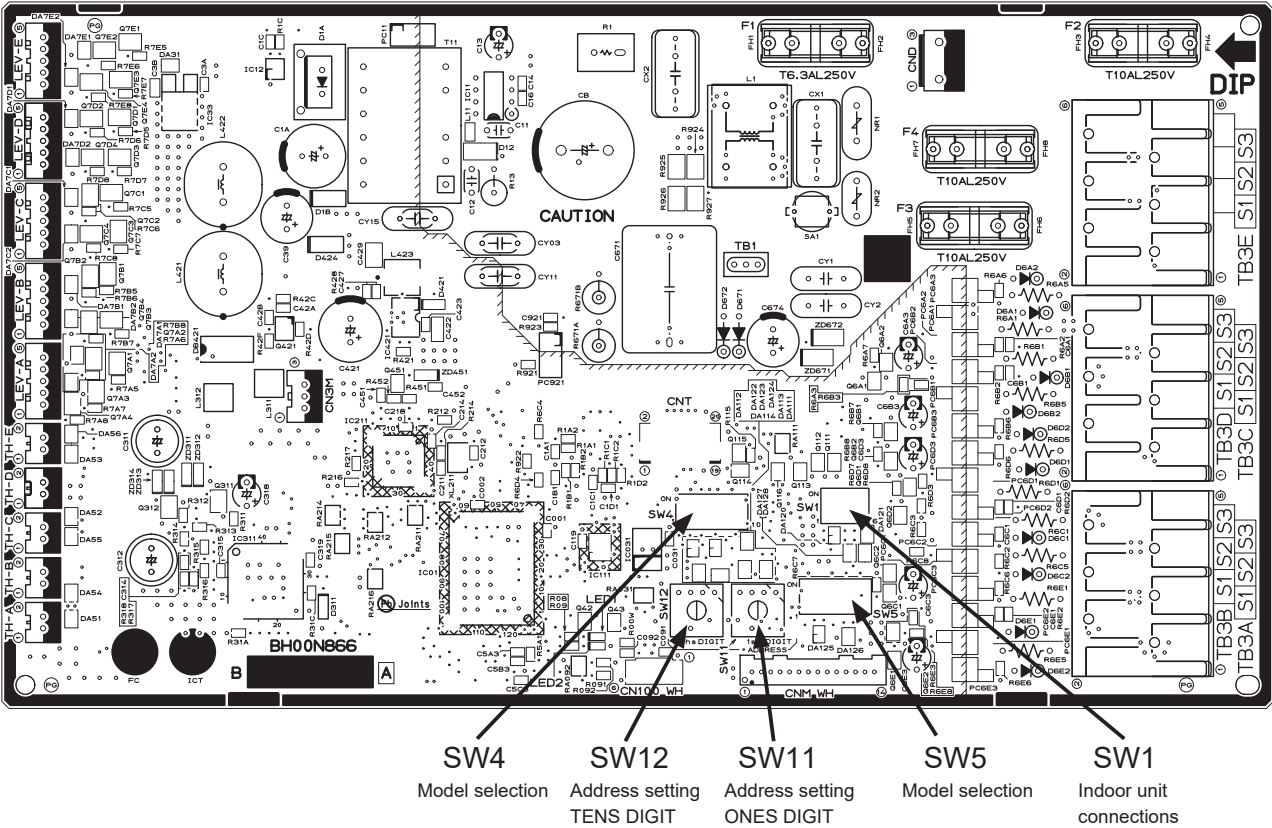


Fig. 7-12

7. Electrical work

7.5. Switch setting

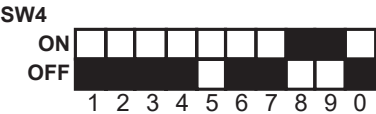


(Example)

- When connecting the indoor unit to A and B of 4-Branch box, turn on SW1-1 and SW1-2 of Controller board.

PAC-MMK40BCB

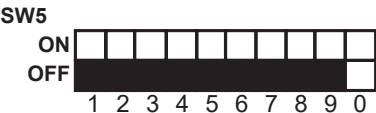
Controller board		Connection	OFF	ON
SW1	1	Indoor unit A	Not connected	Connected
	2	Indoor unit B	Not connected	Connected
	3	Indoor unit C	Not connected	Connected
	4	Indoor unit D	Not connected	Connected
	5	Not used		
	6	Supervisor alarm	Not connected	Connected



(Example)

- When the system includes a cooling only indoor unit, turn on SW4-5 of all the controller boards on the Branch boxes.

OFF		ON
SW4-5	Cooling & Heating system	Cooling only system



(Example)

- When the system connecting with Interface kit, turn on SW5-0 of all the controller boards on the Branch boxes.

OFF		ON
SW5-0	Normal	With Interface kit connection

NOTE: If system not connecting the Interface kit, never SW5-0 turn on.
System will not working properly.
The black square (■) indicates a switch position.

Refer to the installation manual of the SENSOR AND ALARM KIT for details of the switch settings on the SENSOR AND ALARM KIT.

7. Electrical work

Address switch setting

(Set the addresses before turning on the power.)

The addresses of indoor units A~D are allocated according to the address switches (SW11, SW12) and SW1 on the controller board of each Branch box. Refer to this installation manual and the one for the outdoor unit for details on how to make the address setting. Each address is set with a combination of the settings for the tens digit and ones digit.

[Factory default value]
PAC-MMK40BCB: Set to "1".

(Example)

- When setting the address to "3", set the ones digit to 3, and the tens digit to 0.
- When setting the address to "25", set the ones digit to 5, and the tens digit to 2.

(Example)

- When setting the address of the branch BOX to "3", an address is assigned to each indoor unit starting with Unit A as shown below no matter if each indoor unit is connected. (SW1-1~4 ON)
Indoor Unit A Address 3
Indoor Unit B Address 4
Indoor Unit C Address 5
Indoor Unit D Address 6
- When the address is set to "25" and also 3 indoor units (Unit A, Unit C, and Unit D) are connected. (SW1-1, 1-3, 1-4 ON)
Indoor Unit A Address 25
Indoor Unit C Address 26
Indoor Unit D Address 27

⚠ CAUTION:

Please make sure that the addresses of the indoor units connected to the controller board of 1st Branch box and controller board of 2nd Branch box are not duplicated.

The address of 1st Branch box controller board is set to "1", and two indoor units are connected (connection ports A, B)
the address of 2nd Branch box controller board is set to "2", and two indoor units are connected (connection ports A, B),

Indoor unit A	Address 1	
Indoor unit B	Address 2	
Indoor unit A	Address 2	} Address duplication
Indoor unit B	Address 3	

Address 2 will not start, and a double definition error will occur.

8. Test run

- Refer to the "Test run" section of the installation manual of the indoor units and outdoor unit.
- When the Branch box and outdoor power source are separate, turn on the power of the Branch box first, and then turn on the outdoor unit power.

• After power is supplied or after an operation stop for a while, a small clicking noise may be heard from the inside of the Branch box. The electronic expansion valve is opening and closing. The unit is not faulty.

- Be sure to perform the test run in cooling mode for each indoor unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
- If you perform the test run for all indoor units at once, you cannot detect any erroneous connection, if any, of the refrigerant pipes and the indoor/outdoor unit connecting wires.
- To check for improper wiring, perform the test run for each indoor unit individually.

⚠ CAUTION:

- Use the remote controller to operate the indoor unit.
- The unit will not work unless the SENSOR AND ALARM KIT is connected properly.
Refer to the installation manual of the SENSOR AND ALARM KIT for details of the LED states on the SENSOR AND ALARM KIT.
- The following symptoms are not malfunctions.

Symptom	Cause	Indoor unit LED display *
Indoor unit does not operate even if set to cooling (heating) operation	The cooling (heating) operation cannot be operated when the heating (cooling) operation of another indoor unit is operating.	Stand by (For Multi System)
Indoor unit fan stops during heating operation	The fan stops during defrosting operation.	-
	Fan stops when the refrigerant collecting mode ** is activated.	Stand by (For Multi System)

* See the operation manual of indoor units for details.

** This mode is activated for approximately 1 minute to help avoid an insufficient supply of refrigerant during heating operation when refrigerant is stored in an indoor unit that has been turned off or thermo-off.

<ENGLISH>

English is original. The other languages versions are translation of the original.

 CAUTION

- Refrigerant leakage may cause suffocation. Provide ventilation in accordance with EN378-1.
- Be sure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Never put batteries in your mouth for any reason to avoid accidental ingestion.
- Battery ingestion may cause choking and/or poisoning.
- Install the unit on a rigid structure to prevent excessive operation sound or vibration.
- The A-weighted sound pressure level is below 70dB.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

This product is designed and intended for use in the residential, commercial, and light-industrial environment.

Manufacturer

mitsubishi electric corporation

Tokyo Building, 2-7-3, Marunouchi, Chiyoda-Ku, Tokyo 100-8310, Japan

Contact:LES@nb.mitsubishielectric.co.jp

Importer within the EU / Authorised representative within the EU

Mitsubishi Electric Europe B.V.

Living Environment Systems Business Unit

2, Rue de l'Union, 92565 Rueil-Malmaison Cedex, France

Contact:LES@fra.mee.com

Importer within the UK

Mitsubishi Electric Europe B.V.

UK Branch

Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, United Kingdom

<https://gb.mitsubishielectric.com/en/>

Türkiye içindeki ithalatçı

MITSUBISHI ELECTRIC TURKEY ELEKTRİK ÜRÜNLERİ A.Ş.

Şerifali Mahallesi Kale Sokak No: 41, 34775 Ümraniye, İstanbul, Türkiye

<https://tr.mitsubishielectric.com/tr/>

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

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN