

Air-Conditioners

SEZ-KA35, KA50, KA60VA

INSTALLATION MANUAL

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

FOR INSTALLER

INSTALLATIONSHANDBUCH

Zum sicheren und ordnungsgemäßen Gebrauch der Klimaanlage das Installationshandbuch gründlich durchlesen.

FÜR INSTALLATEURE

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.

POUR L'INSTALLATEUR

INSTALLATIEHANDLEIDING

Voor een veilig en juist gebruik moet u deze installatiehandleiding grondig doorlezen voordat u de airconditioner installeert.

VOOR DE INSTALLATEUR

MANUAL DE INSTALACIÓN

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

PARA EL INSTALADOR

MANUALE DI INSTALLAZIONE

Per un uso sicuro e corretto, leggere attentamente questo manuale di installazione prima di installare il condizionatore d'aria.

PER L'INSTALLATORE

ΕΓΧΕΙΡΙΔΙΟ ΟΔΗΓΙΩΝ ΕΓΚΑΤΑΣΤΑΣΗΣ

Για ασφάλεια και σωστή χρήση, παρακαλείσθε διαβάσετε προσεκτικά αυτό το εγχειρίδιο εγκατάστασης πριν αρχίσετε την εγκατάσταση της μονάδας κλιματισμού.

ΓΙΑ ΑΥΤΟΝ ΠΟΥ ΚΑΝΕΙ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ

MANUAL DE INSTALAÇÃO

Para segurança e utilização correctas, leia atentamente este manual de instalação antes de instalar a unidade de ar condicionado.

PARA O INSTALADOR

INSTALLATIONSMANUAL

Läs denna installationsmanual noga för säkert och korrekt bruk innan luftkonditioneringen installeras.

FÖR INSTALLATÖREN

English

Deutsch

Français

Nederlands

Español

Italiano

Ελληνικά

Português

Svenska

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This Installation Manual describes only for the indoor unit and the connected outdoor unit of SUZ series.
If the connected outdoor unit is MXZ series, refer to the Installation Manual for MXZ series.

1. Safety precautions

- Please report to or take consent by the supply authority before connection to the system.
- Be sure to read “The following should always be observed for safety” before installing the air conditioner.
- Be sure to observe the cautions specified here as they include important items related to safety.
- The indications and meanings are as follows.

⚠ Warning:

Could lead to death, serious injury, etc.

⚠ Caution:

Could lead to serious injury in particular environments when operated incorrectly.

- After reading this manual, be sure to keep it together with the instruction manual in a handy place on the customer's site.

⚠ Warning:

- Do not install it by yourself (customer).

Incomplete installation could cause injury due to fire, electric shock, the unit falling or leakage of water. Consult the dealer from whom you purchased the unit or special installer.

- Install the unit securely in a place which can bear the weight of the unit. When installed in an insufficient strong place, the unit could fall causing injured.
- Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal board connecting sections so the stress of the wires is not applied to the sections. Incomplete connecting and fixing could cause fire.
- Do not use intermediate connection of the power cord or the extension cord and do not connect many devices to one AC outlet. It could cause a fire or an electric shock due to defective contact, defective insulation, exceeding the permissible current, etc.
- Check that the refrigerant gas does not leak after installation has completed.

⚠ Caution:

- Perform grounding.

Do not connect the ground wire to a gas pipe, water pipe arrester or telephone ground wire. Defective grounding could cause an electric shock.

- Do not install the unit in a place where an inflammable gas leaks. If gas leaks and accumulates in the area surrounding the unit, it could cause an explosion.

- Install a ground leakage breaker depending on the installation place (where it is humid).

If a ground leakage breaker is not installed, it could cause an electric shock.

2. Selecting the installation location

2.1. Indoor unit

- Where airflow is not blocked.
- Where cool air spreads over the entire room.
- Where it is not exposed to direct sunshine.
- At a distance 1 m or more away from your TV and radio (to prevent picture from being distorted or noise from being generated).
- In a place as far away as possible from fluorescent and incandescent lights (so the infrared remote control can operate the air conditioner normally).

2.2. Outdoor unit

- Where it is not exposed to strong wind.
- Where airflow is good and dustless.
- Where it is not exposed to rain and direct sunshine.
- Where neighbours are not annoyed by operation sound or hot air.
- Where rigid wall or support is available to prevent the increase of operation sound or vibration.
- Where there is no risk of combustible gas leakage.
- When installing the unit at a high level, be sure to fix the unit legs.
- Where it is at least 3 m away from the antenna of TV set or radio. (Otherwise, images would be disturbed or noise would be generated.)

⊘ : Indicates an action that must be avoided.

⚠ : Indicates that important instructions must be followed.

⚡ : Indicates a part which must be grounded.

⚠ : Indicates that caution should be taken with rotating parts.

⚠ : Indicates that the main switch must be turned off before servicing.

⚠ : Beware of electric shock.

⚠ : Beware of hot surface.

⚠ Warning:

Carefully read the labels affixed to the main unit.

- Perform the installation securely referring to the installation manual. Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.
- Perform electrical work according to the installation manual and be sure to use an exclusive circuit. If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.
- Attach the electrical part cover to the indoor unit and the service panel to the outdoor unit securely. If the electrical part cover in the indoor unit and/or the service panel in the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.
- Be sure to use the part provided or specified parts for the installation work. The use of defective parts could cause an injury or leakage of water due to a fire, an electric shock, the unit falling, etc.
- Ventilate the room if refrigerant leaks during operation. If the refrigerant comes in contact with a flame, poisonous gases will be released.

- Perform the drainage/piping work securely according to the installation manual. If there is a defect in the drainage/piping work, water could drop from the unit and household goods could be wet and damaged.
- Fasten a flare nut with a torque wrench as specified in this manual. When fastened too tight, a flare nut may broken after a long period and cause a leakage of refrigerant.

- Where the air filter can be removed and replaced easily.

⚠ Warning:

Mount the indoor unit into a ceiling strong enough to withstand the weight of the unit.

- Install the unit horizontally.

⚠ Caution:

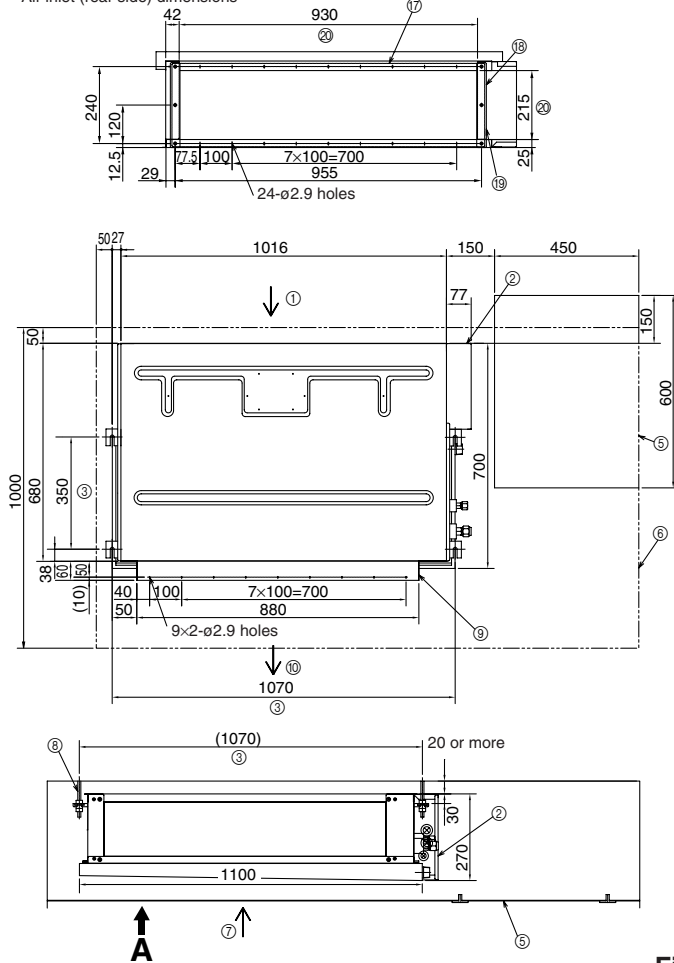
Avoid the following places for installation where air conditioner trouble is liable to occur.

- Where there is too much machine oil.
- Salty environment as seaside areas.
- Hot-spring areas.
- Where sulfide gas exists.
- Other special atmospheric areas.

3. Installation diagram & Accessories

■ SEZ-KA35/KA50/KA60VA

Air inlet (rear side) dimensions



A

Air inlet (bottom side) dimensions

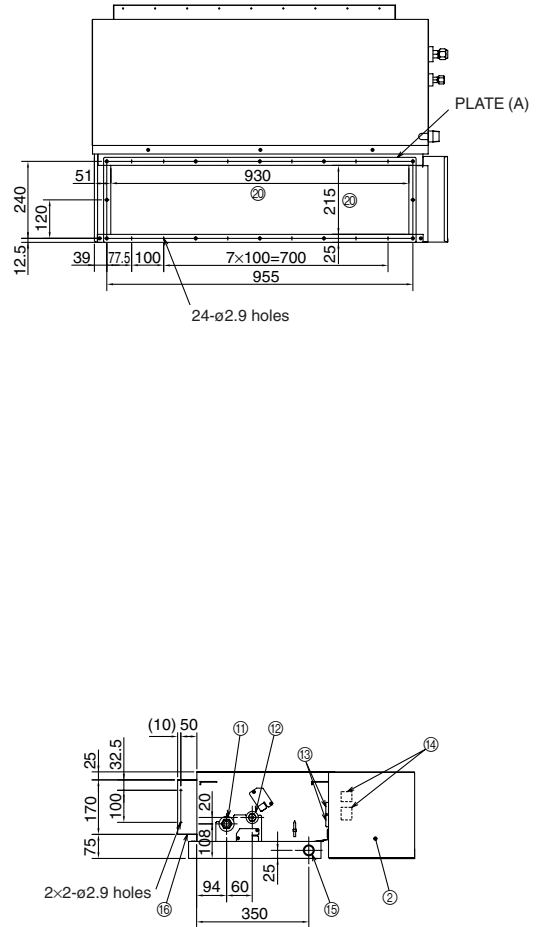


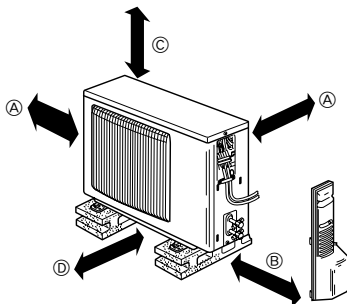
Fig. 3-1

3.1. Indoor unit (Fig. 3-1)

- ① Air inlet (rear side) *Select the either back side or bottom side
- ② Electrical parts box
- ③ Suspension bolt pitch
- ④ Access door
- ⑤ Service space (It is necessary to maintain a working service area from the ceiling.)
- ⑦ Air inlet (bottom side) *Select the either back side or bottom side
- ⑧ Suspension bolt M10 or 3/8 (procure locally)
- ⑨ Air outlet duct flange
- ⑩ Air outlet
- ⑪ Refrigerant pipe (gas)

- ⑫ Refrigerant pipe (liquid)
- ⑬ Wiring entry
- ⑭ Terminal block
- ⑮ Drain plug R1
- ⑯ Air outlet duct flange
- ⑰ In case of bottom side suction, mount the PLATE (A) on the rear side.
- ⑱ After installation, remove the transportation support PLATE (B).
- ⑲ PLATE (B) × 2
- Ⓜ Inlet size

■ SUZ-KA35VA



■ SUZ-KA50/KA60VA

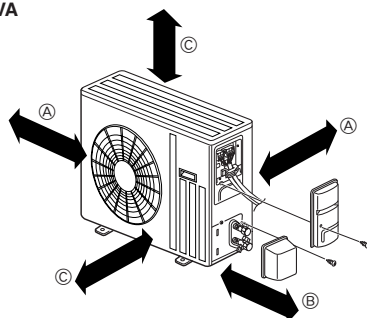


Fig. 3-2

3.2. Outdoor unit (Fig. 3-2)

Ventilation and service space

■ SUZ-KA35VA

- Ⓐ 100 mm or more
- Ⓑ 350 mm or more
- Ⓒ Basically open 100 mm or more without only obstruction in front and on both sides of the unit.
- Ⓓ 200 mm or more (Open two sides of left, right, or rear side.)

■ SUZ-KA50/KA60VA

- Ⓐ 100 mm or more
- Ⓑ 350 mm or more
- Ⓒ 500 mm or more

When the piping is to be attached to a wall containing metals (tin plated) or metal netting, use a chemically treated wooden piece 20 mm or thicker between the wall and the piping or wrap 7 to 8 turns of insulation vinyl tape around the piping.

Units should be installed by licensed contractor accordingly to local code requirement.

3. Installation diagram & Accessories

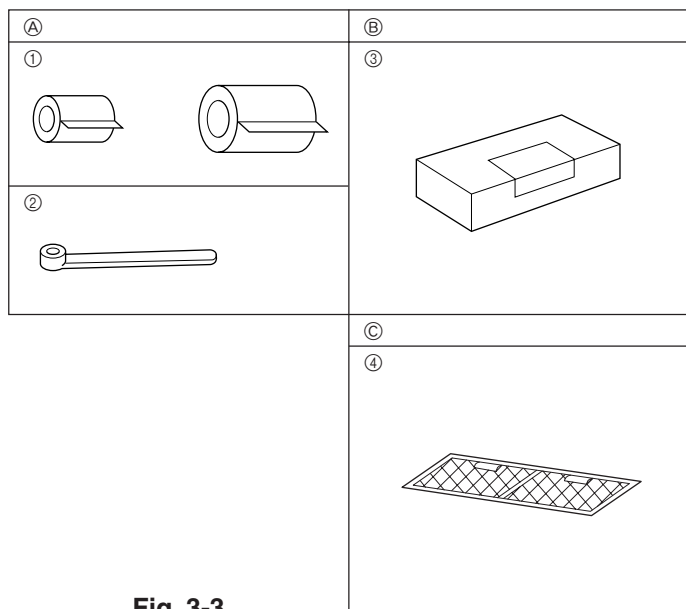


Fig. 3-3

4. Indoor unit installation

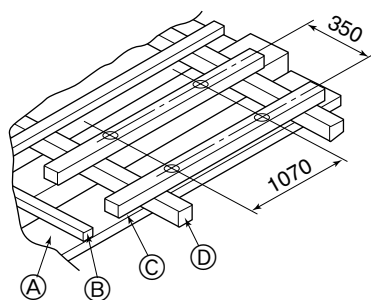


Fig. 4-1

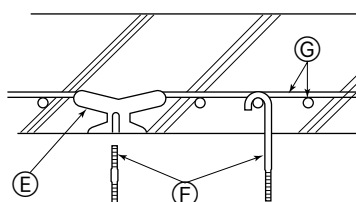


Fig. 4-2

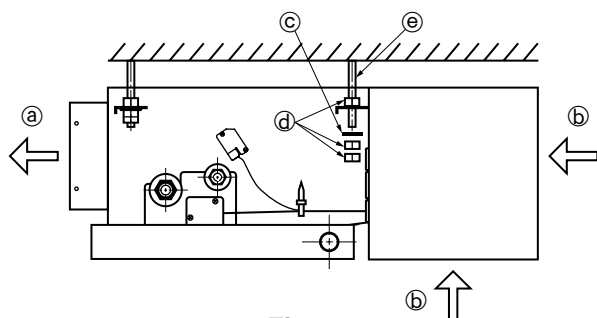


Fig. 4-3

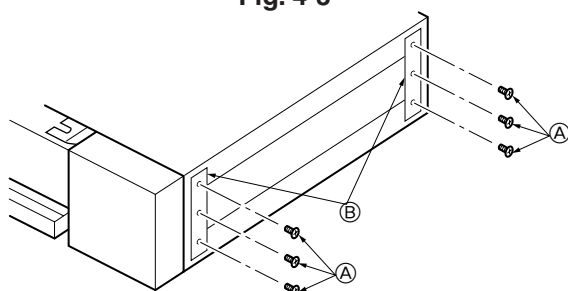


Fig. 4-4

3.3. Checking the indoor unit accessories (Fig. 3-3)

Check that the indoor unit is equipped with the following parts and accessories:

A Refrigerant pipe parts

- ① Pipe cover (for refrigerant piping joint)
 - Small diameter × 1
 - Large diameter × 1
- ② Bands for temporary tightening of pipe cover × 4

B Remote controller parts

- ③ Parts contained in the cardboard box × 1
- Check the contents and read the explanations provided.

C Air filter parts

- ④ Parts contained in the bag × 1
- Check the contents and read the explanations provided.

Refrigerant and drainage pipe sizes

| Model | | SEZ-KA35VA | SEZ-KA50VA | SEZ-KA60VA |
|------------------|--------|-----------------------------|-----------------|------------------|
| Refrigerant pipe | Liquid | OD ø6.35 (1/4") | OD ø6.35 (1/4") | OD ø6.35 (1/4") |
| | Gas | OD ø9.52(3/8") | OD ø12.7 (1/2") | OD ø15.88 (5/8") |
| Drainage pipe | | Hard PVC pipe : OD ø26 (1") | | |

4.1. Suspension Structure (Give site of suspension strong structure.)

4.1.1. Wooden structure (Fig. 4-1)

- Select tie beam (one-story houses) or second-floor girder (two-story houses) as reinforcement member.
- Use sturdy beams of at least 6 cm square for beam pitch of 90 cm or less or of at least 9 cm square for beam pitch of 90-180 cm.

- Ⓐ Ceiling
- Ⓑ Rafter
- Ⓒ Beam
- Ⓓ Roof beam

4.1.2. Ferroconcrete structures (Fig. 4-2)

Secure the suspension bolts using the method shown, or use steel or wooden hangers, etc. to install the suspension bolts.

- Ⓔ Use inserts rated at 100-150 kg each (procure locally)
- Ⓕ Suspension bolts M10 (3/8") (procure locally)
- Ⓖ Steel reinforcing rod

4.1.3. Installing the suspension bolts

- Check the pitch of the suspension bolts.
- Use the ø10 (3/8") suspension bolts (×4, procure locally).
- Adhere strictly to the length of the suspension bolts.

4.2. Suspending the unit (Fig. 4-3)

Direct suspension method:

Raise the unit and line it up with the suspension bolts, then secure it using both nuts.

- Ⓐ Air outlet
- Ⓔ Air intake (selecting the either back side or bottom side.)
- Ⓒ Washer (procure locally)
- Ⓓ Nuts (procure locally)
- Ⓕ Suspension bolts (procure locally)

4.3. Transportation support removal (Fig. 4-4)

After installation, completely remove the transportation support because this part should only be used during transportation.

- Ⓐ 3 screws
- Ⓑ Transportation support

5. Refrigerant piping work

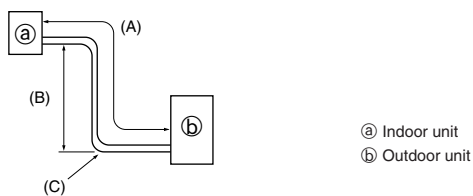


Fig. 5-1

5.1. Refrigerant pipe (Fig. 5-1)

Maximum difference between heights of indoor unit and outdoor unit, the length of refrigerant piping and the number of bends in piping are within limits shown below.

| Models | (A) Pipe length (one way) | (B) Height difference | (C) Number of bends (one way) |
|------------|---------------------------|-----------------------|-------------------------------|
| SEZ-KA35VA | max. 20 m | max. 12 m | max. of 10 |
| SEZ-KA50VA | max. 30 m | max. 15 m | max. of 10 |
| SEZ-KA60VA | max. 30 m | max. 15 m | max. of 10 |

*1: Height difference limitations are binding regardless of which unit, indoor or outdoor, is positioned higher.

Avoid the following places for installation where air conditioner trouble is liable to occur.

- Where there is too much oil such as for machine or cooking.
- Salty environment as seaside areas.
- Hot-spring areas.
- Where sulfide gas exists.
- Other special atmospheric areas.
- This unit has flared connections on both indoor and outdoor sides. (Fig. 5-2)
- Refrigerant pipes are used to connect the indoor and outdoor units as shown in the figure below.
- Insulate both refrigerant and drainage piping completely to prevent condensation.
- Refrigerant adjustment ... If pipe length exceeds 7 m, additional refrigerant (R410A) charge is required.

(The outdoor unit is charged with refrigerant for 7 m pipe length.)

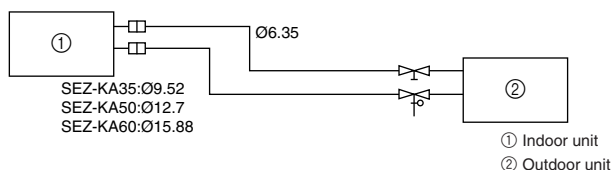


Fig. 5-2

| Pipe length | 7 m maximum | No additional charge required | - | |
|-------------|---------------|-------------------------------|-------------------------|----------------------------------------------------------|
| | Exceeding 7 m | Additional charge required | Refrigerant to be added | SEZ-KA35VA:30g/m SEZ-KA50VA:20g/m SEZ-KA60VA:20g/m |

| Pipe length | Up to 7 m | No additional charge is required. |
|-------------------------|--------------------|---------------------------------------------------------------|
| | Exceeding 7 m | Additional charge is required. (Refer to the table below.) |
| Refrigerant to be added | SEZ-KA35 type | 30 g × (refrigerant piping length (m) - 5) |
| | SEZ-KA50/KA60 type | 20 g × (refrigerant piping length (m) - 7) |

Piping preparation

- Refrigerant pipes of 3, 5, 7, 10 and 15 m are available as optional items.

(1) Table below shows the specifications of pipes commercially available.

| Model | Pipe | Outside diameter | | Min. wall thickness | Insulation thickness | Insulation material |
|------------|------------|------------------|------|---------------------|----------------------|-------------------------------------------------------|
| | | mm | inch | | | |
| SEZ-KA35VA | For liquid | 6.35 | 1/4 | 0.8 mm | 8 mm | Heat resisting foam plastic 0.045 specific gravity |
| | For gas | 9.52 | 3/8 | 0.8 mm | 8 mm | |
| SEZ-KA50VA | For liquid | 6.35 | 1/4 | 0.8 mm | 8 mm | |
| | For gas | 12.7 | 1/2 | 0.8 mm | 8 mm | |
| SEZ-KA60VA | For liquid | 6.35 | 1/4 | 0.8 mm | 8 mm | |
| | For gas | 15.88 | 5/8 | 1.0 mm | 8 mm | |

(2) Ensure that the 2 refrigerant pipes are well insulated to prevent condensation.

(3) Refrigerant pipe bending radius must be 10 cm or more.

⚠ Caution:

Using careful insulation of specified thickness. Excessive thickness prevents storage behind the indoor unit and smaller thickness causes dew drippage.

5. Refrigerant piping work

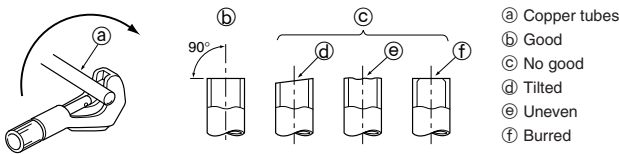


Fig. 5-3

- Ⓐ Copper tubes
- Ⓑ Good
- Ⓒ No good
- Ⓓ Tilted
- Ⓔ Uneven
- Ⓕ Burred

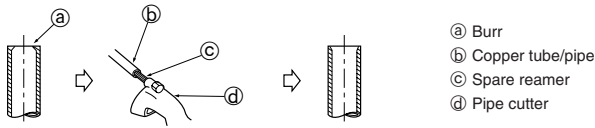


Fig. 5-4

- Ⓐ Burr
- Ⓑ Copper tube/pipe
- Ⓒ Spare reamer
- Ⓓ Pipe cutter



Fig. 5-5

- Ⓐ Flare nut
- Ⓑ Copper tube

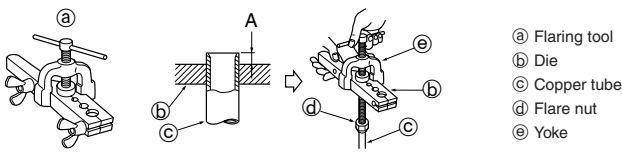


Fig. 5-6

- Ⓐ Flaring tool
- Ⓑ Die
- Ⓒ Copper tube
- Ⓓ Flare nut
- Ⓔ Yoke

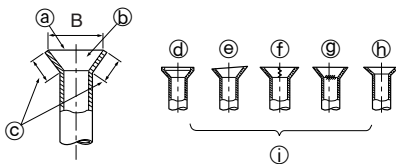


Fig. 5-7

5.2. Flaring work

- Main cause of gas leakage is defect in flaring work.
- Carry out correct flaring work in the following procedure.

5.2.1. Pipe cutting (Fig. 5-3)

- Using a pipe cutter cut the copper tube correctly.

5.2.2. Burrs removal (Fig. 5-4)

- Completely remove all burrs from the cut cross section of pipe/tube.
- Put the end of the copper tube/pipe to downward direction as you remove burrs in order to avoid burrs drop in the tubing.

5.2.3. Putting nut on (Fig. 5-5)

- Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal.
- (not possible to put them on after flaring work)

5.2.4. Flaring work (Fig. 5-6)

- Carry out flaring work using flaring tool as shown at the right.

| Pipe diameter (mm) | Dimension | |
|-----------------------|------------------------------------------------|----------------------------------------|
| | A (mm) | B ^{+0.4} _{-0.4} (mm) |
| | When the tool for R410A is used Clutch type | |
| 6.35 | 0 - 0.5 | 9.1 |
| 9.52 | 0 - 0.5 | 13.2 |
| 12.7 | 0 - 0.5 | 16.6 |
| 15.88 | 0 - 0.5 | 19.7 |

Firmly hold copper tube in a die in the dimension shown in the table at above.

5.2.5. Check (Fig. 5-7)

- Compare the flared work with a figure in right side hand.
 - If flare is noted to be defective, cut off the flared section and do flaring work again.
- Ⓐ Smooth all around
 - Ⓑ Inside is shining without any scratches
 - Ⓒ Even length all around
 - Ⓓ Too much
 - Ⓔ Tilted
 - Ⓕ Scratch on flared plane
 - Ⓖ Cracked
 - Ⓗ Uneven
 - Ⓖ Bad examples

5.3. Pipe connection (Fig.5-8)

- Apply a thin coat of refrigeration oil on the seat surface of pipe.
- For connection first align the center, then tighten the first 3 to 4 turns of flare nut.
- Use tightening torque table below as a guideline for indoor unit side union joint section, and tighten using two wrenches. Excessive tightening damages the flare section.

| Copper pipe O.D. (mm) | Flare nut O.D. (mm) | Tightening torque (N·m) |
|--------------------------|------------------------|----------------------------|
| ø6.35 | 17 | 14 - 18 |
| ø9.52 | 22 | 34 - 42 |
| ø12.7 | 26 | 49 - 61 |
| ø15.88 | 29 | 68 - 82 |

⚠ Warning:

Be careful of flying flare nut! (Internally pressurized)

Remove the flare nut as follows:

1. Loosen the nut until you hear a hissing noise.
2. Do not remove the nut until the gas has been completely released (i.e., hissing noise stops).
3. Check that the gas has been completely released, and then remove the nut.

Outdoor unit connection

Connect pipes to stop valve pipe joint of the outdoor unit in the same manner applied for indoor unit.

- For tightening use a torque wrench or spanner, and use the same tightening torque applied for indoor unit.

Refrigerant pipe insulation (Fig. 5-9)

- (1) Peel the separator sheet off the accompanying pipe cover, and wrap it around the refrigerant pipe, making sure that the side which is slit faces upwards.
- (2) Be sure to fix both ends of the pipe cover using an attachment band (ensure that the band's joint faces upwards).
- (3) Stick vinyl tape on the joint positions.

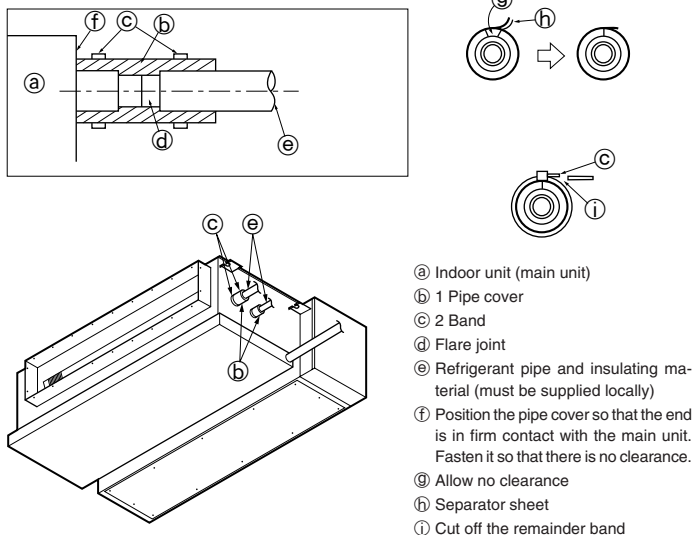
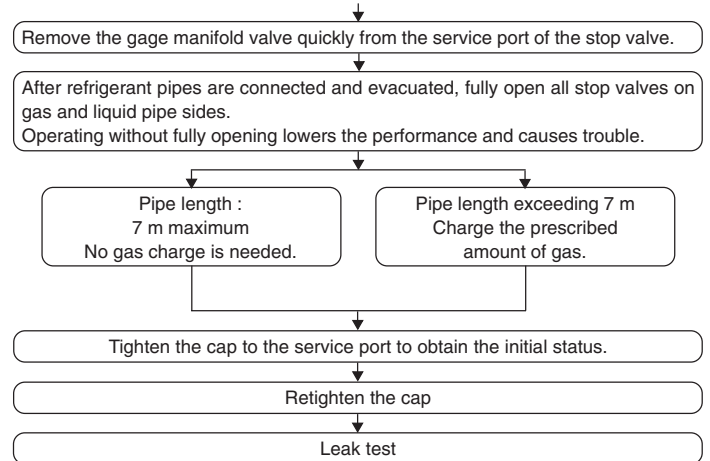
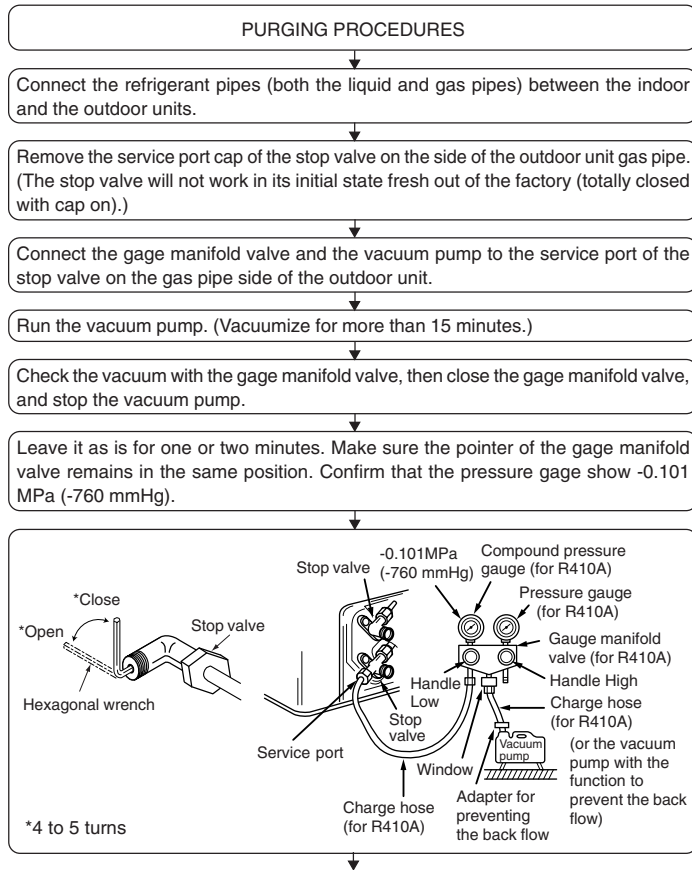


Fig. 5-9

- Ⓐ Indoor unit (main unit)
- Ⓑ 1 Pipe cover
- Ⓒ 2 Band
- Ⓓ Flare joint
- Ⓔ Refrigerant pipe and insulating material (must be supplied locally)
- Ⓕ Position the pipe cover so that the end is in firm contact with the main unit. Fasten it so that there is no clearance.
- Ⓖ Allow no clearance
- Ⓗ Separator sheet
- Ⓖ Cut off the remainder band

5. Refrigerant piping work

5.4. Purging procedures leak test



6. Drainage piping work

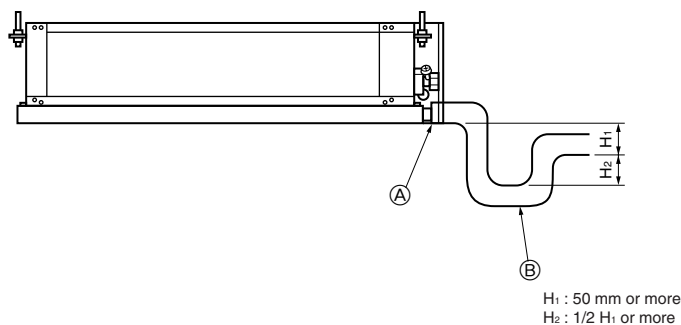


Fig. 6-1

6.1. Drainage pipe connection (Fig. 6-1)

Indoor unit's drainage pipe

- The drainage pipe should be arranged so that the discharge end is lower than the other end, as shown in the figure opposite.
- Place the trap outside the unit.
- After connecting the drainage pipe, make sure that water is discharged properly and that there are no leaks.

Ⓐ Drainage piping connection 1 RP male.

Ⓑ Trap

Outdoor unit drainage pipe connection

When drainage piping is necessary, use the drain pan (supplied as an option).

7. Electrical work

(1) SEZ-KA35, KA50, KA60VA

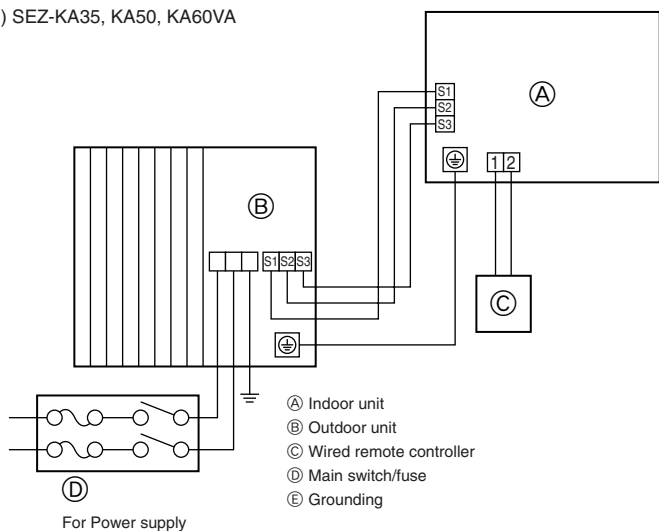
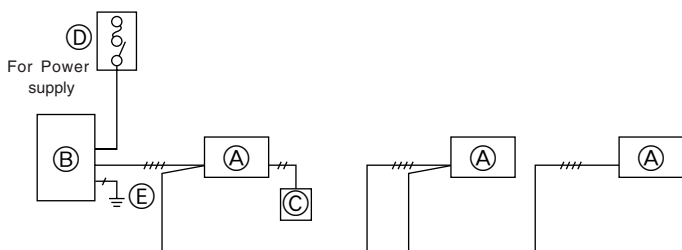


Fig. 7-1



7.1. Precautions (Fig. 7-1)

| Electrical specification Power supply (1 phase ~/N, 230V, 50Hz) | Input capacity Main Switch/Fuse (A) | | |
|--------------------------------------------------------------------------|-------------------------------------|----------|----------|
| | SEZ-KA35 | SEZ-KA50 | SEZ-KA60 |
| | 10 | 20 | 20 |

- The compressor will not operate unless the power supply phase connection is correct.
- Grounding protection with a no-fuse breaker (earth leakage breaker [ELB]) is usually installed for (D).
- The connection wiring between the outdoor and indoor units can be extended up to a maximum of 50 meters, and the total extension including the crossover wiring between rooms is a maximum of 80 m.

A switch with at least 3 mm contact separation in each pole shall be provided by the air conditioner installation.

* Label each breaker according to purpose (heater, unit etc.).

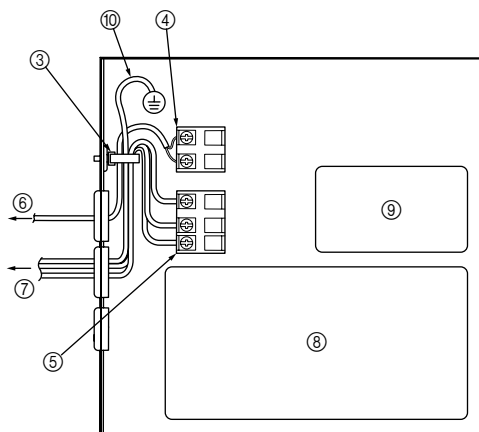
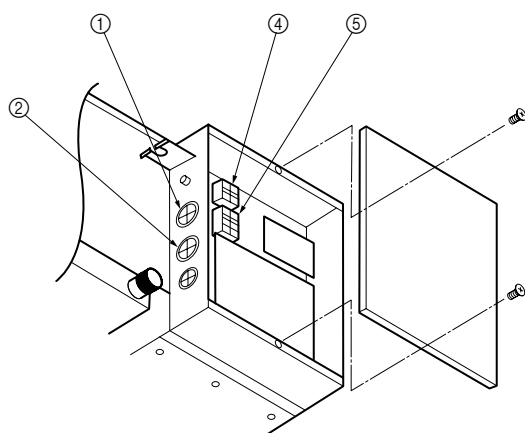


Fig. 7-2

7.2. Indoor wire connection (Fig. 7-2)

Work procedure

1. Remove 2 screws to detach the electric component cover.
 2. Route each cable through the wiring intake into the electric component box. (Procure power cable and in-out connecting cable locally and use remote control cable supplied with the unit.)
 3. Securely connect the power cable and the in-out connecting cable and the remote control cable to the terminal blocks.
 4. Secure the cables with clamps inside the electric component box.
 5. Attach the electric component cover as it was.
- Fix power supply cable and indoor/outdoor cable to control box by using buffer bushing for tensile force. (PG connection or the like.)

⚠ Warning:

- Attach the electrical part cover securely. If it is attached incorrectly, it could result in a fire, electric shock due to dust, water, etc.
- Use the specified indoor/outdoor unit connecting wire to connect the indoor and outdoor units and fix the wire to the terminal bed securely so that no stress is applied to the connecting section of the terminal bed. Incomplete connection or fixing of the wire could result in a fire.
- The wiring configuration of the indoor unit's fan motor is for a 50 Hz power supply. The wiring must be reconfigured if a 60 Hz power supply is used. Refer to the wiring diagram for details.

- ① Entry for wired remote controller cable
- ② Entry for Indoor-Outdoor connecting cable
- ③ Cable clamp
- ④ Remote controller terminal
- ⑤ Indoor/Outdoor unit connecting terminal
- ⑥ To wired remote controller
- ⑦ To outdoor unit
- ⑧ Indoor controller
- ⑨ Power board
- ⑩ Earth cable

7. Electrical work

(1) SEZ-KA35, KA50, KA60VA

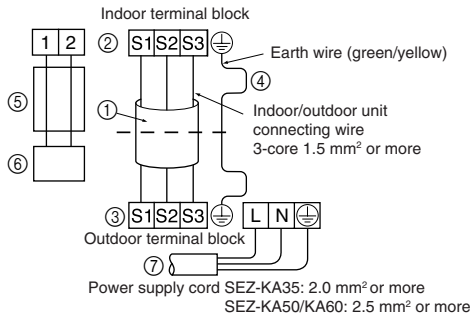


Fig. 7-3

- Perform wiring as shown in the diagram to the lower left. (Procure the cable locally). (Fig. 7-3)

Make sure to use cables of the correct polarity only.

- ① Connecting cable
Cable 3-core 1.5 mm², in conformity with Design 245 IEC 57.
- ② Indoor terminal block
- ③ Outdoor terminal block
- ④ Always install an earth wire (1-core 1.5 mm²) longer than other cables
- ⑤ Remote controller cable
Wire No × size (mm²) : Cable 2C × 0.69
This wire accessory of remote controller
(wire length : 10m, non-polar)
- ⑥ Wired remote controller
- ⑦ Power supply cord
 - SEZ-KA35
Cable 3-core 2.0 mm² or more, in conformity with Design 245 IEC 57.
 - SEZ-KA50/KA60
Cable 3-core 2.5 mm² or more, in conformity with Design 245 IEC 57.

⚠ Caution:

- Use care not to make miswiring.
- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.

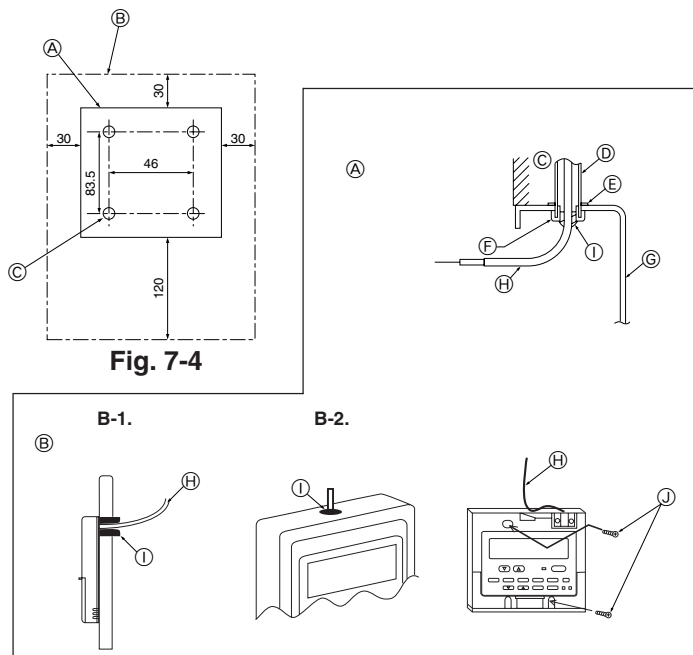


Fig. 7-4

Fig. 7-5

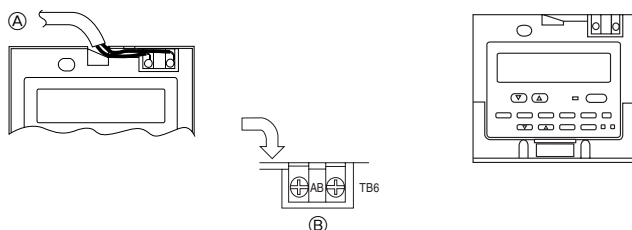


Fig. 7-6

7.3. Remote controller

7.3.1. For wired remote controller

1) Installing procedures

(1) Select an installing position for the remote controller. (Fig. 7-4)

The temperature sensors are located on both remote controller and indoor unit.

► Procure the following parts locally:

- Two piece switch box
- Thin copper conduit tube
- Lock nuts and bushings
- Ⓐ Remote controller profile
- Ⓑ Required clearances surrounding the remote controller
- Ⓒ Installation pitch

(2) Seal the service entrance for the remote controller cord with putty to prevent possible invasion of dew drops, water, cockroaches or worms. (Fig. 7-5)

Ⓐ For installation in the switch box:

Ⓑ For direct installation on the wall select one of the following:

- Prepare a hole through the wall to pass the remote controller cord (in order to run the remote controller cord from the back), then seal the hole with putty.
- Run the remote controller cord through the cutout in the upper case, then seal the cutout notch with putty similarly as above.

B-1. To lead the remote controller cord from the back of the controller:

B-2. To run the remote controller cord through the upper portion:

(3) For direct installation on the wall

- Ⓒ Wall
- Ⓓ Conduit
- Ⓔ Lock nut
- Ⓕ Bushing
- Ⓖ Switch box
- Ⓗ Remote controller cord
- Ⓙ Seal with putty
- Ⓚ Wood screw

2) Connecting procedures (Fig. 7-6)

① Connect the remote controller cord to the terminal block.

- Ⓐ To the terminal block on the indoor unit
- Ⓑ TB6 (No polarity)

② Set the dip switch No.1 shown below when using two remote controller's for the same group.

- Ⓒ Dip switches

3) Function selection of remote controller

If two remote controllers are connected, set one to "Main" and the other to "Sub". For setting procedures, refer to "Function selection of remote controller" in the operation manual for the indoor unit.

7. Electrical work

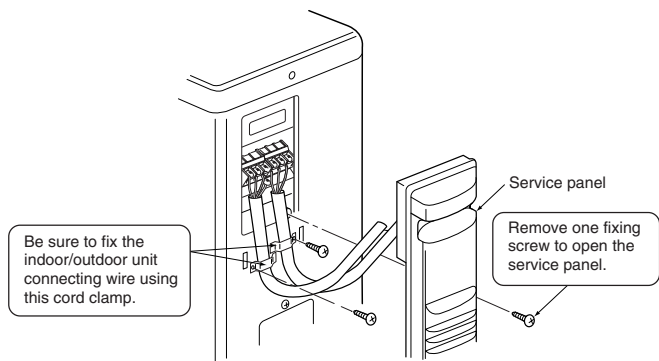


Fig. 7-7

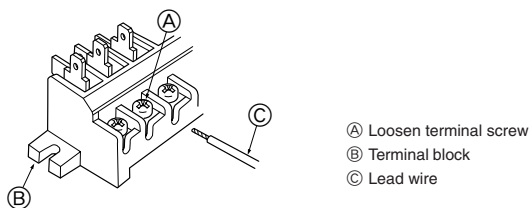


Fig. 7-8

7.4. Outdoor unit (Fig. 7-7)

- Connect cable from the indoor unit correctly on the terminal-block.
- Use the same terminal block and polarity as is used with the indoor unit.
- For aftercare maintenance, give extra length to connecting cable.

- Both end of connecting cable (extension wire) are peeled off. When too long, or connected by cutting off the middle, peel off power supply cable to the size given in the figure.
- Be careful not to contact connecting cable with piping.

⚠ Caution:

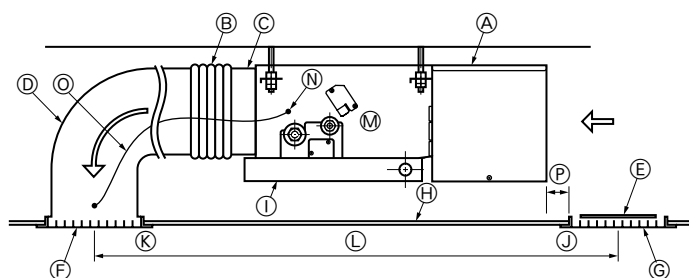
- Use care not to make mis-wiring. (Fig. 7-8)
- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.

⚠ Warning:

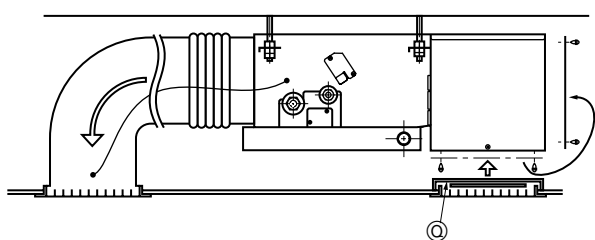
- Be sure to attach the service panel of the outdoor unit securely. If it is not attached correctly, it could result in a fire or an electric shock due to dust, water, etc.
- Tighten terminal screws securely.
- Wiring should be done so that the power lines are not subject to tension. Otherwise, heat may be generated or fire may occur.

8. Duct work

At the time of shipping from factory



In case of bottom-side suction



Remove the panel attached to the bottom side, and mount it on the rear side.

Fig. 8-1

Use the canvas duct for connecting the indoor unit and the duct. (Fig. 8-1)

Use fireproof material for the duct parts.

Make sure that the duct has sufficient heat insulation.

- Ⓐ Electrical parts box
- Ⓑ Canvas duct
- Ⓒ Air outlet flange
- Ⓓ Air outlet duct
- Ⓔ Air filter (procure locally)
- Ⓕ Air outlet grille
- Ⓖ Air intake grille
- Ⓗ Ceiling
- Ⓘ Drainage pan
- Ⓙ Air intake
- Ⓚ Air outlet
- Ⓛ Allow clearance to avoid short cycling.
- Ⓜ Indoor unit
- Ⓝ Earth terminal
- Ⓞ Earth cable
- Ⓟ 850 mm or more
- Ⓠ Safety net (procured locally)

Notes:

- The fan and motor are dangerous if handled during operation. For this reason, be sure to install the indoor unit at least 850 mm from the air intake grill Ⓔ.
- If it is not possible to put more than 850 mm of distance between the air intake grill and the indoor unit, install the safety net Ⓠ (locally procured).
- Connect the main body of the air conditioner and the duct so that their potentials are equal.
- Connect an earth cable Ⓞ from the air outlet flange Ⓒ to the earth terminal Ⓝ. Then, connect another earth cable Ⓞ from the earth terminal Ⓝ to the air outlet duct Ⓓ.
- Be sure to install an air filter (procure locally) and an air outlet duct.

9. Air filter installation

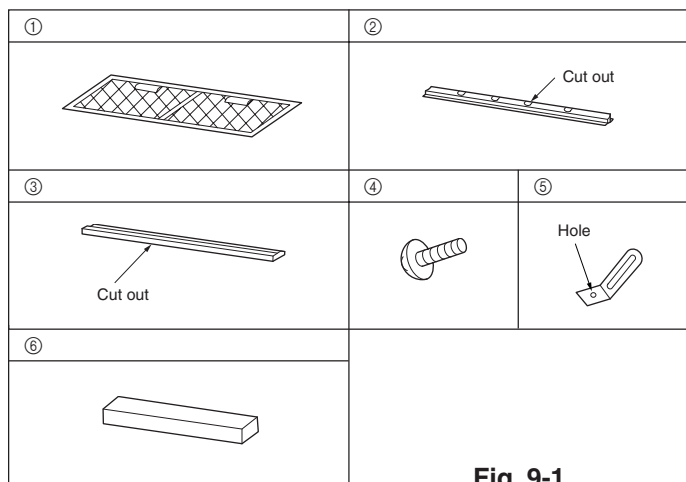


Fig. 9-1

9.1. Confirmation of enclosed parts (Fig. 9-1)

• Please ensure all the parts shown below are present before starting installation.

- ① Filter × 1
- ② Filter rail × 1
- ③ Filter rail × 1
- ④ ST. screw (4 × 10) × 14
- ⑤ Clamp × 2
- ⑥ Seal × 2

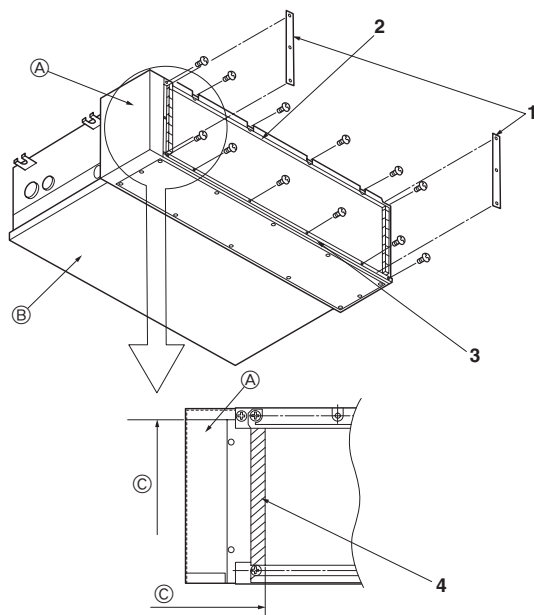


Fig. 9-2

9.2. Filter rail installation (Rear air intake) (Fig. 9-2)

■ Please select air intake direction A or B

1. Transportation support remove (Throw away).
 2. Please attach filter rail ② as per the diagram (screw × 6).
Please connect rails ② ③ carefully.
 3. Please attach filter rail ③ as per the diagram (screw × 6).
Please connect rails ② ③ carefully.
 4. Seal ⑥
Upright position here.
- Ⓐ Control box
Ⓑ Drain pan
Ⓒ Air tight seal
Level with edge

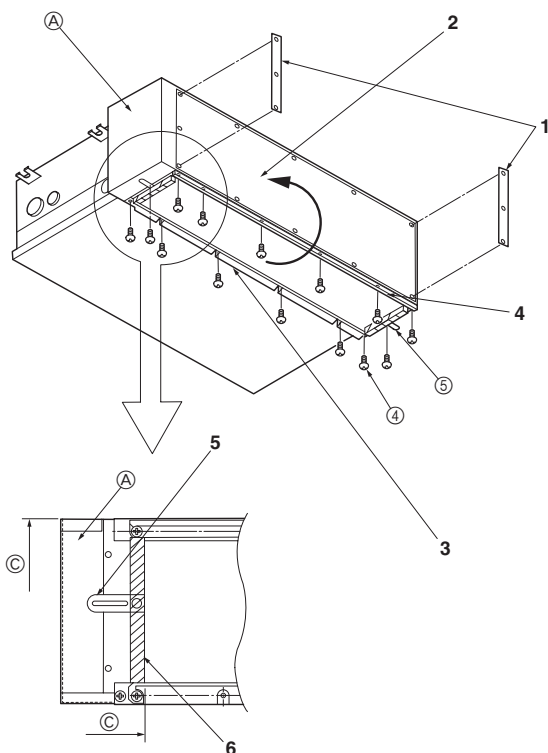


Fig. 9-3

9.3. Filter rail installation (Bottom air intake) (Fig. 9-3)

1. Transportation support remove (Throw away).
 2. Please move the plate position. (Please use the screws removed.)
 3. Please attach filter rail ② as per the diagram (screw × 6).
Please connect rails ② ③ carefully.
 4. Please attach filter rail ③ as per the diagram (screw × 6).
Please connect rails ② ③ carefully.
 5. Clamp ⑤ (Attach the clamps ⑤ with screw × 2)
Upright position here.
 6. Seal ⑥
Upright position here.
- Ⓐ Control box
Ⓒ Air tight seal
Level with edge

9. Air filter installation

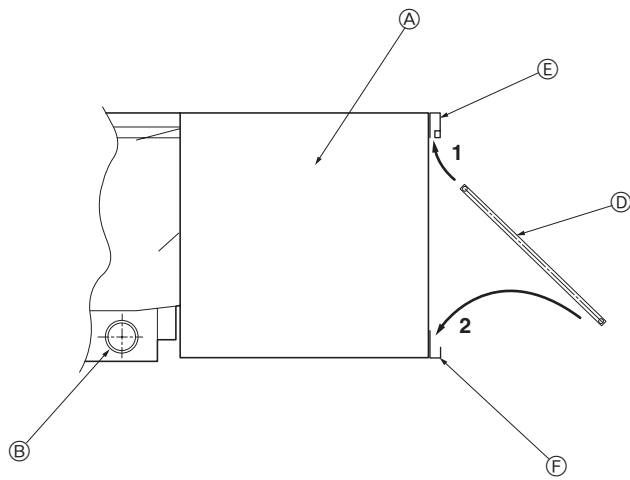


Fig. 9-4

9.4. Filter installation points (Rear air intake) (Fig. 9-4)

1. Insert the filter into rail ②
2. Hook the filter onto rail ③

Ⓐ Control box
Ⓑ Drain pan
Ⓓ Filter
Ⓔ Rail ②
Ⓕ Rail ③

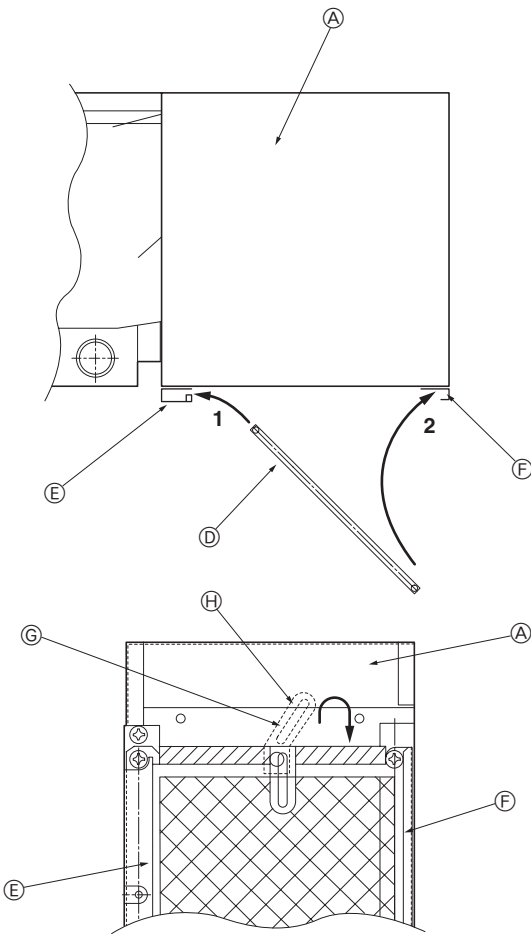


Fig. 9-5

9.5. Filter installation points (Bottom air intake) (Fig. 9-5)

1. Insert the filter into rail ②
2. Hook the filter onto rail ③
3. Bend the clamp to hold the filter.

Ⓐ Control box
Ⓓ Filter ①
Ⓔ Rail ②
Ⓕ Rail ③
Ⓖ Bend
Ⓗ Clamp ⑤

10. Test run

10.1. Before test run

- ▶ After completing installation and the wiring and piping of the indoor and outdoor units, check for refrigerant leakage, looseness in the power supply or control wiring, wrong polarity, and no disconnection of one phase in the supply.
- ▶ Use a 500-volt megohmmeter to check that the resistance between the power supply terminals and ground is at least 1.0 MΩ.
- ▶ Do not carry out this test on the control wiring (low voltage circuit) terminals.

⚠ Warning:

Do not use the air conditioner if the insulation resistance is less than 1.0 MΩ.
Insulation resistance

After installation or after the power source to the unit has been cut for an extended period, the insulation resistance will drop below 1 MΩ due to refrigerant accumulating in the compressor. This is not a malfunction. Perform the following procedures.

1. Remove the wires from the compressor and measure the insulation resistance of the compressor.
2. If the insulation resistance is below 1 MΩ, the compressor is faulty or the resistance dropped due to the accumulation of refrigerant in the compressor.

3. After connecting the wires to the compressor, the compressor will start to warm up after power is supplied. After supplying power for the times indicated below, measure the insulation resistance again.
 - The insulation resistance drops due to accumulation of refrigerant in the compressor. The resistance will rise above 1 MΩ after the compressor is warmed up for two to three hours.
(The time necessary to warm up the compressor varies according to atmospheric conditions and refrigerant accumulation.)
 - To operate the compressor with refrigerant accumulated in the compressor, the compressor must be warmed up at least 12 hours to prevent breakdown.
4. If the insulation resistance rises above 1 MΩ, the compressor is not faulty.

⚠ Caution:

- **The compressor will not operate unless the power supply phase connection is correct.**
- **Turn on the power at least 12 hours before starting operation.**
 - Starting operation immediately after turning on the main power switch can result in severe damage to internal parts. Keep the power switch turned on during the operational season.

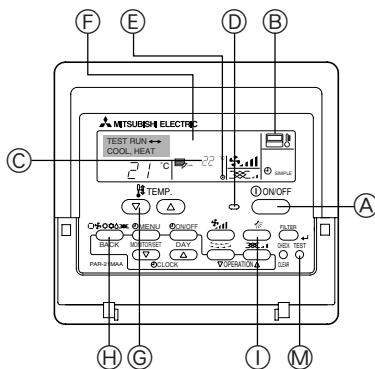


Fig. 10-1

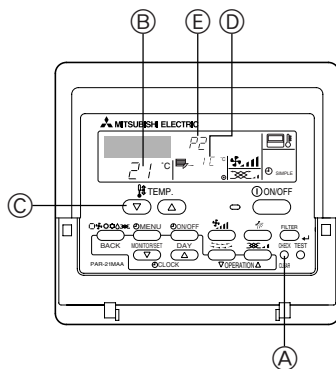


Fig. 10-2

10.2. Test run

The following 3 methods are available.

10.2.1. Using wired remote controller (Fig. 10-1)

- ① Turn on the power at least 12 hours before the test run.
- ② Press the [TEST] button twice. ⇒ "TEST RUN" liquid crystal display
- ③ Press the [Mode selection] button. ⇒ Make sure that wind is blown out.
- ④ Press the [Mode selection] button and switch to the cooling (or heating) mode. ⇒ Make sure that cold (or warm) wind is blown out.
- ⑤ Press the [Fan speed] button. ⇒ Make sure that the wind speed is switched.
- ⑥ Check operation of the outdoor unit fan.
- ⑦ Release test run by pressing the [ON/OFF] button. ⇒ Stop
- ⑧ Register a telephone number.

The telephone number of the repair shop, sales office, etc., to contact if an error occurs can be registered in the remote controller. The telephone number will be displayed when an error occurs. For registration procedures, refer to the operation manual for the indoor unit.

- A ON/OFF button
- B Test run display
- C Indoor temperature liquid line temperature display
- D ON/OFF lamp
- E Power display
- F Error code display
- G Test run remaining time display
- H Set temperature button
- I Mode selection button
- J Fan speed button
- K TEST button
- L TEMP button
- M ON/OFF button

10.3. Self-check

10.3.1. Wired remote controller (Fig. 10-2)

- ① Turn on the power.
- ② Press the [CHECK] button twice.
- ③ Set refrigerant address with [TEMP] button if system control is used.
- ④ Press the [ON/OFF] button to stop the self-check.

- A CHECK button
- B Refrigerant address
- C TEMP button
- D IC: Indoor unit
- OC: Outdoor unit
- E Check code

10. Test run

• For description of each check code, refer to the following table.

| ① Check code | Symptom | Remark | |
|--------------|---------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------|
| P1 | Intake sensor error | | |
| P2, P9 | Pipe (Liquid or 2-phase pipe) sensor error | | |
| E6, E7 | Indoor/outdoor unit communication error | | |
| P4 | Drain sensor error | | |
| P5 | Drain pump error | | |
| P6 | Freezing/Overheating safeguard operation | | |
| EE | Communication error between indoor and outdoor units | | |
| P8 | Pipe temperature error | | |
| E4 | Remote controller signal receiving error | | |
| Fb | Indoor unit control system error (memory error, etc.) | | |
| E9 | Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit) | | |
| UP | Compressor overcurrent interruption | | For details, check the LED display of the outdoor controller board. |
| U3, U4 | Open/short of outdoor unit thermistors | | |
| UF | Compressor overcurrent interruption (When compressor locked) | | |
| U2 | Abnormal high discharging temperature/49C worked/insufficient refrigerant | | |
| U1, Ud | Abnormal high pressure (63H worked)/Overheating safeguard operation | | |
| U5 | Abnormal temperature of heat sink | | |
| U8 | Outdoor unit fan safeguard stop | | |
| U6 | Compressor overcurrent interruption/Abnormal of power module | | |
| U7 | Abnormality of super heat due to low discharge temperature | | |
| U9, UH | Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/ Current sensor error | | |
| Others | Other errors (Refer to the technical manual for the outdoor unit.) | | |

*1 If the beeper does not sound again after the initial two beeps to confirm the self-check start signal was received and the OPERATION INDICATOR lamp does not come on, there are no error records.

*2 If the beeper sounds three times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 sec.," after the initial two beeps to confirm the self-check start signal was received, the specified refrigerant address is incorrect.

• On wired remote controller

① Check code displayed in the LCD.

10.4. AUTO RESTART FUNCTION

Indoor controller board

This model is equipped with the AUTO RESTART FUNCTION.

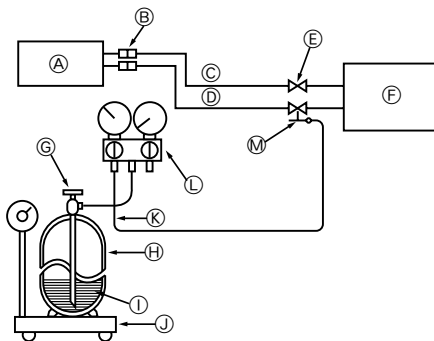
When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the indoor controller board. The auto restart function sets to work the moment the power has restored after power failure, then, the unit will restart automatically.

Set the AUTO RESTART FUNCTION using the DIP switch of the indoor controller board.

DIP switch SW3-1 ON: Available

DIP switch SW3-1 OFF: Not available

11. Maintenance



- | | |
|--------------------------------------------|--------------------------------------------------|
| Ⓐ Indoor unit | Ⓔ Refrigerant (liquid) |
| Ⓑ Union | Ⓜ Service port |
| Ⓒ Liquid pipe | |
| Ⓓ Gas pipe | |
| Ⓔ Stop valve | |
| Ⓕ Outdoor unit | |
| Ⓖ Refrigerant gas cylinder operating valve | |
| | Ⓝ Refrigerant gas cylinder for R410A with siphon |
| | Ⓟ Electronic scale for refrigerant charging |
| | Ⓠ Charge hose (for R410A) |
| | Ⓡ Gauge manifold valve (for R410A) |

Fig. 11-1

11.1. Gas charge (Fig. 11-1)

1. Connect gas cylinder to the service port of stop valve (3-way).
2. Execute air purge of the pipe (or hose) coming from refrigerant gas cylinder.
3. Replenish specified amount of refrigerant, while running the air conditioner for cooling.

Note:

In case of adding refrigerant, comply with the quantity specified for the refrigerating cycle.

⚠ Caution:

- Do not discharge the refrigerant into the atmosphere. Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- For additional charging, charge the refrigerant from liquid phase of the gas cylinder. If the refrigerant is charged from the gas phase, composition change may occur in the refrigerant inside the cylinder and the outdoor unit. In this case, ability of the refrigerating cycle decreases or normal operation can be impossible. However, charging the liquid refrigerant all at once may cause the compressor to be locked. Thus, charge the refrigerant slowly.

To maintain the high pressure of the gas cylinder, warm the gas cylinder with warm water (under 40°C) during cold season. But never use naked fire or steam.

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

The product at hand is based on the following EU regulations:

- Low Voltage Directive 73/23/ EEC
- Electromagnetic Compatibility Directive 89/336/ EEC

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