



Mr. SLIM

Air-Conditioners

PKA-A-KA

PKA-A-KAL

INSTALLATION MANUAL

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

FOR INSTALLER

English

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1. Safety precautions

- ▶ Before installing the unit, make sure you read all the “Safety precautions”.
- ▶ Please report to your supply authority or obtain their consent before connecting this equipment to the power supply system.

⚠ Warning:

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

⚠ Caution:

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

⚠ Warning:

- 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.

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.

- Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.
- 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 terminal block cover panel of the unit must be firmly attached.
- Use only accessories authorized by Mitsubishi Electric 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, poisonous gases will be released.

1.1. Before installation (Environment)

⚠ Caution:

- 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.
- Do not keep food, plants, caged pets, artwork, or precision instruments in the direct airflow of the indoor unit or too close to the unit as these items can be damaged by temperature changes or dripping water.

- When the room humidity exceeds 80% or when the drainpipe is clogged, water may drip from the indoor unit. Do not install the indoor unit where such dripping can cause damage.
- 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.

1.2. Before installation or relocation

⚠ Caution:

- Be extremely careful when transporting the units. Two or more persons are needed to handle the unit as it weighs 20 kg, 44lbs or more. Do not grasp the packaging bands. Wear protective gloves as you can injure your hands on the fins or other parts.
- Be sure to safely dispose of the packaging materials. Packaging materials, such as nails and other metal or wooden parts may cause stabs or other injuries.

- 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 drainpipe 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.

1.3. Before electric work

⚠ Caution:

- Be sure to install molded case 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.

- Be sure to ground the unit. If the unit is not properly grounded, electric shock may result.
- Use circuit breakers (ground fault interrupter, isolating switch (+B fuse), and molded case circuit breaker) with the specified capacity. If the circuit breaker capacity is larger than the specified capacity, breakdown or fire may result.

1.4. Before starting the test run

⚠ Caution:

- Turn on the main power switch more than 12 hours before starting operation. Starting operation just after turning on the power switch can severely damage the internal parts.
- Before starting operation, check that all panels, guards and other protective parts are correctly installed. Rotating, hot, or high voltage parts can cause injuries.

- Do not operate the air conditioner without the air filter set in place. If the air filter is not installed, dust may accumulate and breakdown may result.
- Do not touch any switch with wet hands. Electric shock may result.
- Do not touch the refrigerant pipes with bare hands during operation.
- After stopping operation, be sure to wait at least five minutes before turning off the main power switch. Otherwise, water leakage or breakdown may result.

2. Installation location

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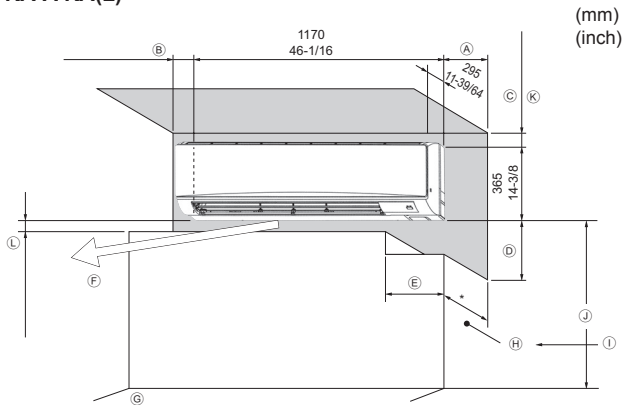


Fig. 2-1

2.1. Outline dimensions (Indoor unit) (Fig. 2-1)

Select a proper position allowing the following clearances for installation and maintenance.

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(mm, inch)

A	B	C	D	E
Min. 100.5	Min. 22.4	Min. 48	Min. 250	Min. 220
Min. 3-61/64	Min. 7/8	Min. 1-52/64	Min. 9-27/32	Min. 8-21/32

- F Air outlet: Do not place an obstacle within 1500 mm, 59-1/16 inch of the air outlet.
- G Floor surface
- H Furnishing
- I When the projection dimension of a curtain rail or the like from the wall exceeds 60 mm, 2/23/64 inch extra distance should be taken because the fan air current may create a short cycle.
- J 1800 mm, 70-7/8 inch or greater from the floor surface (for high location mounting)
- K 108 mm, 4-1/4 inch or greater with left or rear left piping.
- L Minimum 7 mm, 9/32 inch.

3. Installing the indoor unit

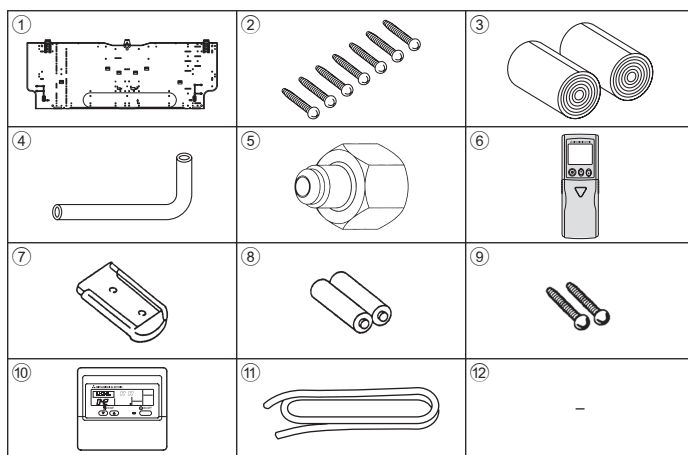


Fig. 3-1

3.1. Check the indoor unit accessories (Fig. 3-1)

The indoor unit should be supplied with the following accessories.

PART NUMBER	ACCESSORY	QUANTITY		LOCATION OF SETTING
		PKA-A-KAL	PKA-A-KA	
①	Mount board	1	1	Fix at the back of the unit
②	Tapping screw 4 × 25	7	7	
③	Felt tape	2	2	
④	L-shaped connection pipe	1	1	
⑤	Charge nut	1	1	
⑥	Wireless remote controller	1		
⑦	Remocon holder	1		
⑧	Alkali batteries (size AAA)	2		
⑨	Tapping screw 3.5 × 16	2		
⑩	Wired remote controller		1	
⑪	Remote controller cable		1	
⑫	Spacer	1	1	Make use of packaging material

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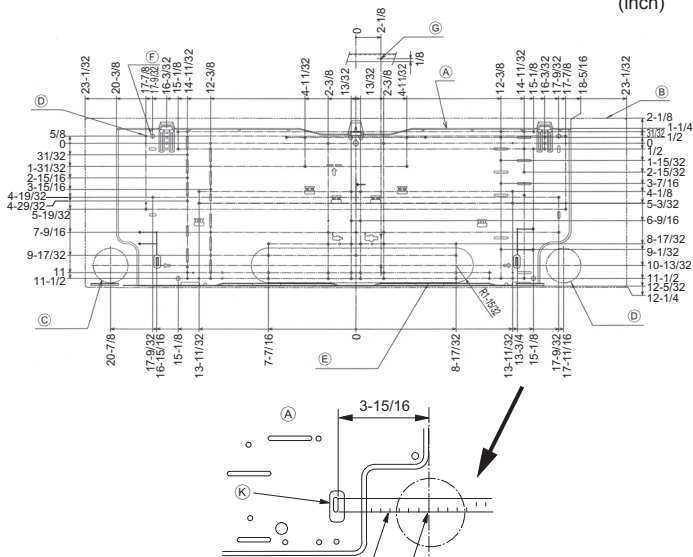


Fig. 3-2

3.2. Installing the wall mounting fixture

3.2.1. Setting the wall mounting fixture and piping positions (Fig. 3-2)

► Using the wall mounting fixture, determine the unit's installation position and the locations of the piping holes to be drilled.

Warning:

Before drilling a hole in the wall, you must consult the building contractor.

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- A Mount board ①
- B Indoor unit
- C Bottom left rear pipe hole (ø75-ø80 mm, 2-61/64~3-35/64 inch)
- D Bottom right rear pipe hole (ø75-ø80 mm, 2-61/64~3-35/64 inch)
- E Knockout hole for left rear hole (75 × 480)
- F Bolt hole (4-ø9 mm, 23/64 inch hole)
- G Center measurement hole (ø2.5 mm, 3/32 inch hole)
- H Tapping hole (75-ø5.1 mm, 13/64 inch hole)
- I Hole centre
- J Align the scale with the line.
- K Insert scale.

3.2.2. Drilling the piping hole (Fig. 3-3)

► Use a core drill to make a hole of 75-80 mm, 2-61/64~3-5/32 inch diameter in the wall in the piping direction, at the position shown in the diagram to the left.

► The hole should incline so that the outside opening is lower than the inside opening.

► Insert a sleeve (with a 75 mm, 2-61/64 inch diameter and purchased locally) through the hole.

Note:

The purpose of the hole's inclination is to promote drain flow.

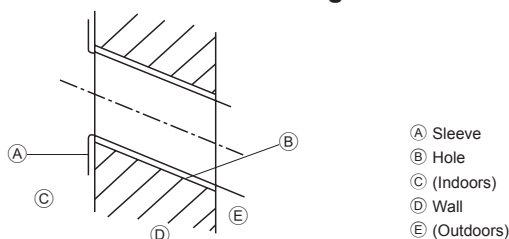


Fig. 3-3

3. Installing the indoor unit

■ PKA-A-KA(L)

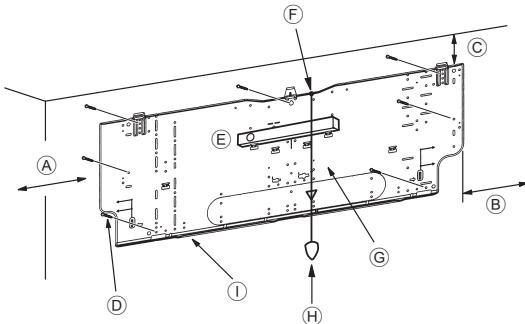


Fig. 3-4

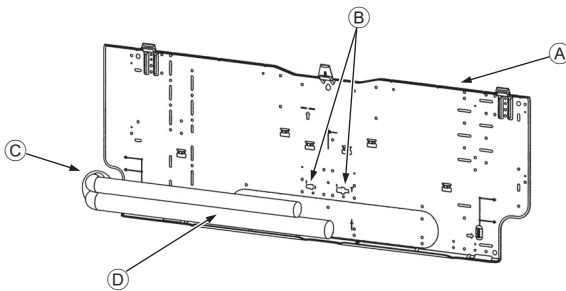


Fig. 3-5

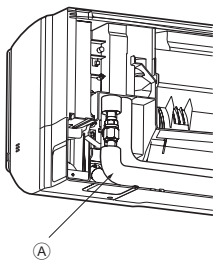


Fig. 3-6

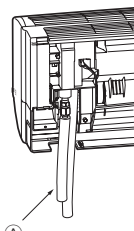


Fig. 3-7



Fig. 3-8

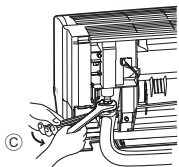


Fig. 3-9

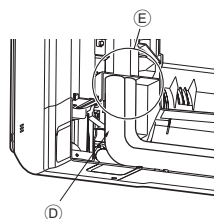


Fig. 3-10

3.2.3. Installing the wall mounting fixture

- ▶ Since the indoor unit weighs near 21 kg, 46.3lbs, selection of the mounting location requires thorough consideration. If the wall does not seem to be strong enough, reinforce it with boards or beams before installation.
- ▶ The mounting fixture must be secured at both ends and at the centre, if possible. Never fix it at a single spot or in any nonsymmetrical way. (If possible, secure the fixture at all the positions marked with a bold arrow.)

⚠ Warning:

If possible, secure the fixture at all positions indicated with a bold arrow.

⚠ Caution:

- The unit body must be mounted horizontally.
- Fasten at the holes marked with ▲ as shown by the arrows.

■ PKA-A-KA(L) (Fig. 3-4)

- Ⓐ Min. 90 mm, 3-35/64 inch
- Ⓑ Min. 200 mm, 7-7/8 inch
- Ⓒ Min. 70 mm, 2-3/4 inch
- Ⓓ Fixing screws (4 × 25) ②
- Ⓔ Level
- Ⓕ Fasten a thread to the hole.
- Ⓖ Place the level against the horizontal reference line of the mount board and mount so that it is level. Hang a weight from the thread and align with ▽ EPK of the mount board to permit leveling.
- Ⓗ Weight
- Ⓘ Mount board ①

3.3. When embedding pipes into the wall (Fig. 3-5)

- The pipes are on the bottom left.
- When the cooling pipe, drain pipes internal/external connection lines etc are to be embedded into the wall in advance, the extruding pipes etc, may have to be bent and have their length modified to suit the unit.
- Use marking on the mount board as a reference when adjusting the length of the embedded cooling pipe.
- During construction, give the length of the extruding pipes etc some leeway.
 - Ⓐ Mount board ①
 - Ⓑ Reference marking for flare connection
 - Ⓒ Through hole
 - Ⓓ On-site piping

3.4. Preparing the indoor unit

* Check beforehand because the preparatory work will differ depending on the exiting direction of the piping.

* When bending the piping, bend gradually while maintaining the base of the piping exiting portion. (Abrupt bending will cause misshaping of the piping.)

■ PKA-A-KA(L)

Attachment of L-shaped connection pipe ④

Right, left and rear piping (Fig. 3-6)

1. Remove the flare nut and cap of the indoor unit. (Gas pipe only)
2. Apply refrigerating machine oil to the flare sheet surface. (Preparation on location)
3. Facing the direction in which the L-shaped connection pipe ④ will be removed, make a quick connection to the indoor unit flare connection opening.
4. Tighten the flare nut using a double open-end wrench. (Fig. 3-9)
Tightening force: 68~82 N•m, 49~59ft lbs
5. Attach the charge nut ⑤ to the liquid pipe side joint portion, and check for leakage of the L-shaped connection pipe ④ connection portion. Remove the charge nut ⑤ after completion of the work.
Tightening force: 34~42 N•m, 25~30ft lbs
6. Cover the flare connection portion with the pipe cover of the L-shaped connection pipe ④ so that it is not exposed. (Fig. 3-10)
 - Ⓐ L-shaped connection pipe ④
 - Ⓑ Cut-off position (Straight pipe portion)
 - Ⓒ Tightening direction
 - Ⓓ Cover with pipe cover
 - Ⓔ Cover the flare nut connection portion with the pipe cover.

Lower piping (Fig. 3-7)

1. Cut L-shaped connection pipe ④ at the position indicated in (Fig. 3-8).
2. Insert the flare nut that was removed earlier onto the straight pipe side of the cut L-shaped connection pipe ④ and then flare the end of the pipe.
3. Remove the flare nut and cap of the indoor unit. (Gas pipe only)
4. Apply refrigerating machine oil to the flare sheet surface. (Preparation on location)
5. Quickly connect the L-shaped connection pipe ④ that has been processed as described in part 2) to the indoor unit flare connection opening.
6. Tighten the flare nut using a double open-end wrench. (Fig. 3-9)
Tightening force: 68~82 N•m, 49~59ft lbs
7. Attach the charge nut ⑤ to the liquid pipe side joint portion, and check for leakage of the L-shaped connection pipe ④ connection portion. Remove the charge nut ⑤ after completion of the work.
Tightening force: 34~42 N•m, 25~30ft lbs
8. Cover the flare connection portion with the pipe cover of the L-shaped connection pipe ④ so that it is not exposed. (Fig. 3-10)

3. Installing the indoor unit

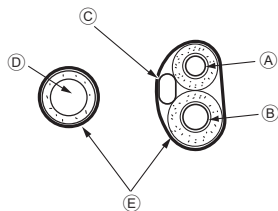


Fig. 3-11

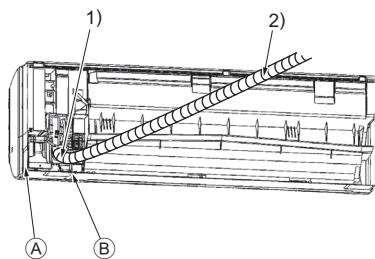


Fig. 3-12

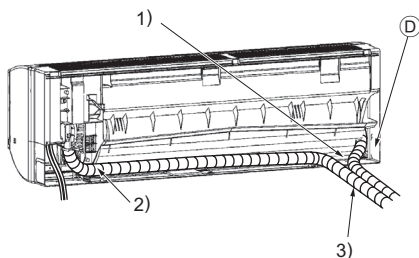
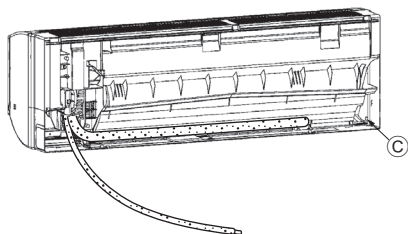


Fig. 3-13

Leakage check of the L-shaped connection pipe connection portion

1. Attach the charge nut ⑤ to the liquid pipe side joint portion.
Tightening force: 34~42 N·m, 25~30ft lbs
2. Pressurize by filling with nitrogen gas from the charge nut.
Do not pressurize to the current constant pressure all at once. Pressurize gradually.
 - 1) Pressurize to 0.5MPa, 73PSIB wait five minutes, and make sure the pressure does not decrease.
 - 2) Pressurize to 1.5MPa, 218PSIB wait five minutes, and make sure the pressure does not decrease.
 - 3) Pressurize to 4.15MPa, 606PSIB and measure the surrounding temperature and refrigerant pressure.
3. If the specified pressure holds for about one day and does not decrease, the pipes have passed the test and there are no leaks.
 - If the surrounding temperature changes by 33.8°F, the pressure will change by about 0.01MPa, 1.5PSIB. Make the necessary corrections.
4. If the pressure decreases in steps (2) or (3), there is a gas leak. Look for the source of the gas leak.

Extraction and processing of the piping and wiring (Fig. 3-11)

1. Connection of indoor/outdoor wiring → See page. 9.
2. Wrap the felt tape ③ in the range of the refrigerant piping and drain hose which will be housed within the piping space of the indoor unit.
 - Wrap the felt tape ③ securely from the base for each of the refrigerant piping and the drain hose.
 - Overlap the felt tape ③ at one-half of the tape width.
 - Fasten the end portion of the wrapping with vinyl tape.
3. Be careful that the drain hose is not raised, and that contact is not made with the indoor unit box body.
Do not pull the drain hose forcefully because it might come out.

Rear, right and lower piping (Fig. 3-12)

- 1) Be careful that the drain hose is not raised, and that contact is not made with the indoor unit box body.
Arrange the drain hose at the underside of the piping and wrap it with felt tape ③.
- 2) Securely wrap the felt tape ③ starting from the base. (Overlap the felt tape at one-half of the tape width.)
 - Ⓐ Cut off for right piping.
 - Ⓑ Cut off for lower piping.

Left and left rear piping (Fig. 3-13)

4. Drain hose replacement → See 5. Drainage piping work
Be sure to replace the drain hose and the drain cap for the left and rear left piping. Dripping may occur if you forget to install or fail to replace these parts.
- Ⓒ Drain cap
 - 1) Be careful that the drain hose is not raised, and that contact is not made with the indoor unit box body.
 - 2) Securely wrap the felt tape ③ starting from the base. (Overlap the felt tape at one-half of the tape width.)
 - 3) Fasten the end portion of the felt tape ③ with vinyl tape.
 - Ⓓ Cut off for left piping.

3. Installing the indoor unit

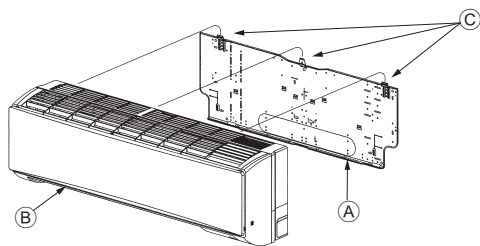


Fig. 3-14

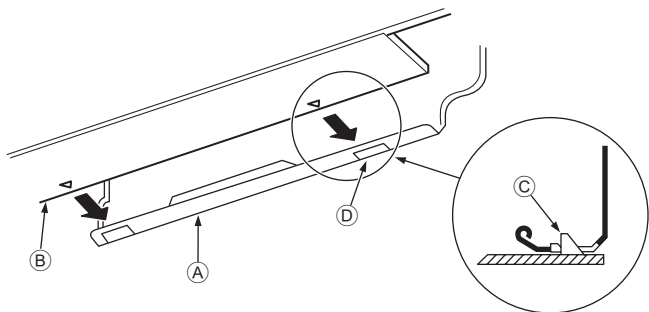


Fig. 3-15

■ PKA-A-KA(L)

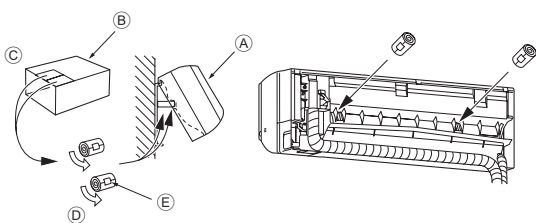


Fig. 3-16

3.5. Mounting the indoor unit

1. Affix the mount board ① to the wall.
2. Hang the indoor unit on the hook positioned on the upper part of the mount board.

Rear, right and lower piping (Fig. 3-14)

3. While inserting the refrigerant piping and drain hose into the wall penetration hole (penetration sleeve), hang the top of the indoor unit to the mount board ①.
 4. Move the indoor unit to the left and right, and verify that the indoor unit is hung securely.
 5. Fasten by pushing the bottom part of the indoor unit onto the mount board ①. (Fig. 3-15)
- * Check that the knobs on the bottom of the indoor unit are securely hooked into the mount board ①.

6. After installation, be sure to check that the indoor unit is installed level.

- ① Mount board
- ② Indoor unit
- ③ Hook
- ④ square hole

Left and left rear piping (Fig. 3-16)

3. While inserting the drain hose into the wall penetration hole (penetration sleeve), hang the top of the indoor unit to the mount board ①. Giving consideration to the piping storage, move the unit all the way to the left side, then cut part of the packaging carton and wrap into a cylindrical form as illustrated in the diagram. Hook this to the rear surface rib as a spacer, and raise the indoor unit.

4. Connect the refrigerant piping with the site-side refrigerant piping.
5. Fasten by pushing the bottom part of the indoor unit onto the mount board ①.

- * Check that the knobs on the bottom of the indoor unit are securely hooked into the mount board ①.

6. After installation, be sure to check that the indoor unit is installed level.

- ① Indoor unit
- ② Packaging carton
- ③ Cut off
- ④ Wrap into a cylindrical form
- ⑤ Fasten with tape

4. Installing the refrigerant piping

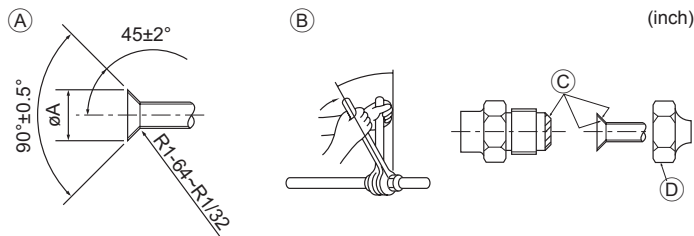


Fig. 4-1

4.1. Precautions

4.1.1. For devices that use R410A refrigerant

- Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil applied to the flared sections.
- Use C1220 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. Use refrigerant pipes with the thicknesses specified in the table to the below. Make sure the insides of the pipes are clean and do not contain any harmful contaminants such as sulfuric compounds, oxidants, debris, or dust.

⚠ Warning:

When installing or moving the air conditioner, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. Air enclosed in the lines can cause pressure peaks resulting in a rupture and other hazards.

	A24, A30, A36
Liquid pipe	ø9.52 mm, 3/8 inch thickness 0.8 mm, 1/32 inch
Gas pipe	ø15.88 mm, 5/8 inch thickness 1.0 mm, 3/64 inch

- Do not use pipes thinner than those specified above.

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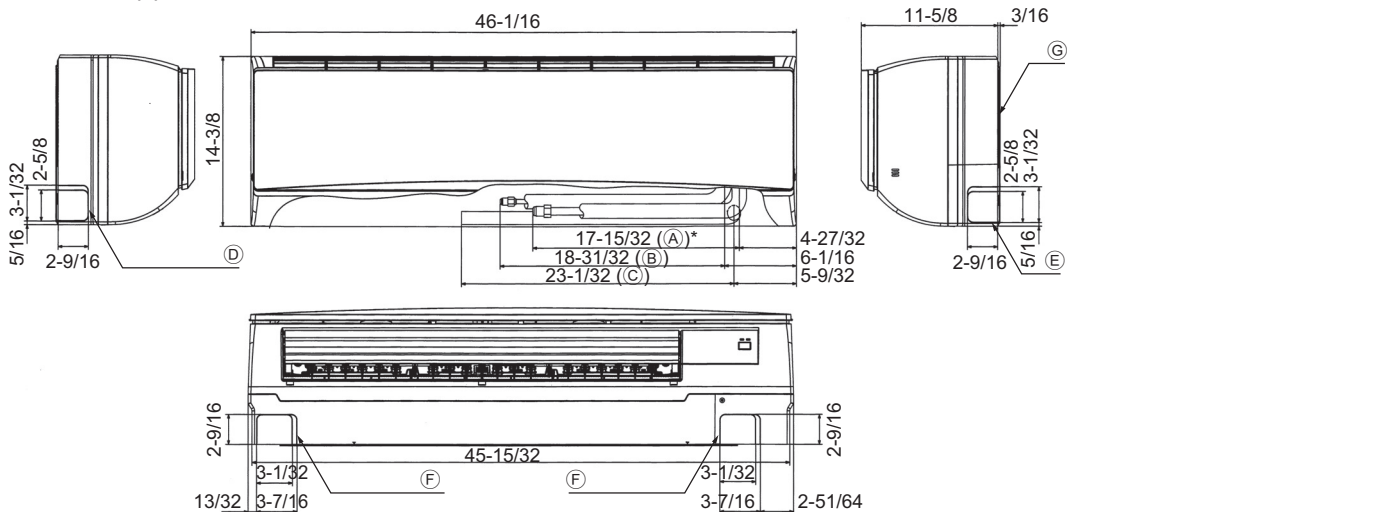


Fig. 4-2

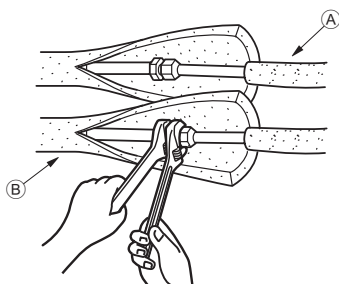


Fig. 4-3

■ PKA-A-KA(L)

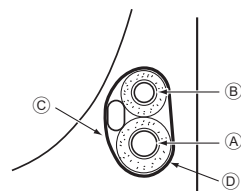


Fig. 4-4

4.2. Connecting pipes (Fig. 4-1)

- When commercially available copper pipes are used, wrap liquid and gas pipes with commercially available insulation materials (heat-resistant to 100 °C, 212 °F or more, thickness of 12 mm, 1/2 inch or more).
- The indoor parts of the drain pipe should be wrapped with polyethylene foam insulation materials (specific gravity of 0.03, thickness of 9 mm, 23/64 inch or more).
- Apply thin layer of refrigerant oil to pipe and joint seating surface before tightening flare nut.
- Use two wrenches to tighten piping connections.
- Use refrigerant piping insulation provided to insulate indoor unit connections. Insulate carefully.

(A) Flare cutting dimensions

Copper pipe O.D. (mm, inch)	Flare dimensions øA dimensions (mm, inch)
ø9.52, 3/8"	12.8 - 13.2, 1/2-33/64
ø15.88, 5/8"	19.3 - 19.7, 49/64-25/32

(B) Flare nut tightening torque

Copper pipe O.D. (mm, inch)	Flare nut O.D. (mm, inch)	Tightening torque (N·m, ft·lbs)
ø9.52, 3/8"	22, 7/8	34 - 42, 25-30
ø15.88, 5/8"	29, 1-9/64	68 - 82, 49-59

(C) Apply refrigerating machine oil over the entire flare seat surface.

(D) Use correct flare nuts meeting the pipe size of the outdoor unit.

4.3. Positioning refrigerant and drain piping (Fig. 4-2)

■ PKA-A-KA(L)

- (A) Gas pipe * Indicates the condition with accessories mounted.

- (B) Liquid pipe
- (C) Drain hose
- (D) Left-side piping knockout hole
- (E) Right-side piping knockout hole
- (F) Lower piping knockout hole
- (G) Mount board ①

4.4. Refrigerant piping (Fig. 4-3)

Indoor unit

1. Remove the flare nut and cap of the indoor unit.
2. Make a flare for the liquid pipe and gas pipe and apply refrigerating machine oil (available from your local supplier) to the flare sheet surface.
3. Quickly connect the on site cooling pipes to the unit.
4. Wrap the pipe cover that is attached to the gas pipe and make sure that the connection joint is not visible.
5. Wrap the pipe cover of the unit's liquid pipe and make sure that it covers the insulation material of the on site liquid pipe.
6. The portion where the insulation material is joined is sealed by taping.

(A) Site-side refrigerant piping

(B) Unit side refrigerant piping

4.4.1. Storing in the piping space of the unit (Fig. 4-4)

1. Wrap the supplied felt tape in the range of the refrigerant piping which will be housed within the piping space of the unit to prevent dripping.
2. Overlap the felt tape at one-half of the tape width.
3. Fasten the end portion of the wrapping with vinyl tape, etc.

(A) Gas pipe

(B) Liquid pipe

(C) Indoor/outdoor connection cable

(D) Felt tape ③

5. Drainage piping work

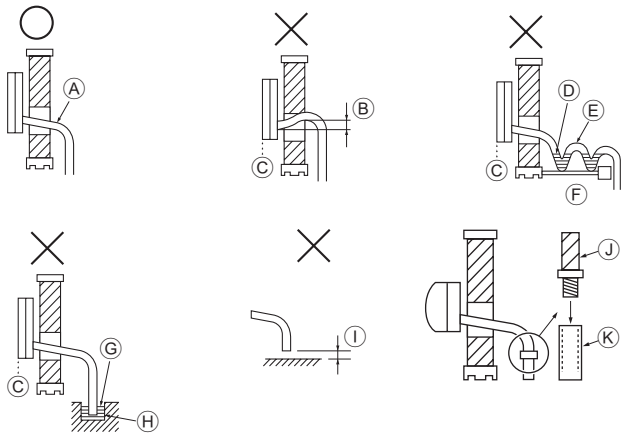


Fig. 5-1

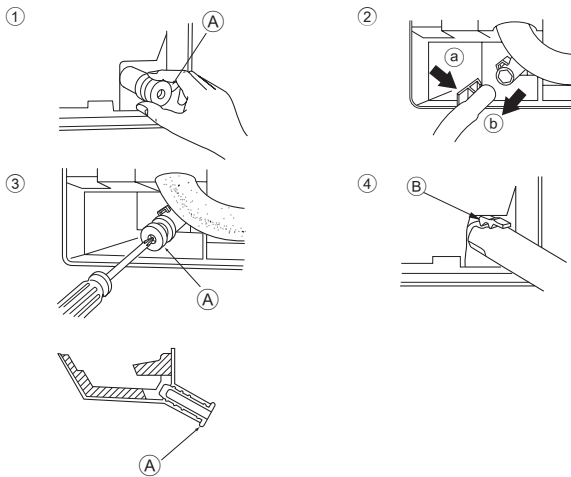


Fig. 5-2

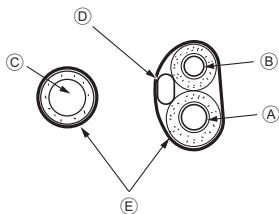


Fig. 5-3

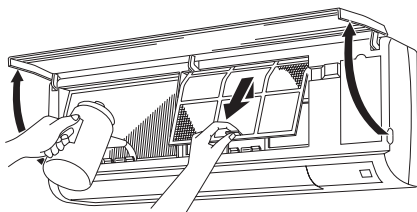


Fig. 5-4

5.1. Drainage piping work (Fig. 5-1)

- Drain pipes should have an inclination of 1/100 or more.
- For extension of the drain pipe, use a soft hose (inner dia. 15 mm, 19/32 inch) available on the market or hard vinyl chloride pipe (VP-16 mm, 5/8 inch/O.D. ø22 mm, ø55/64 inch PVC TUBE). Make sure that there is no water leakage from the connections.
- Do not put the drain piping directly in a drainage ditch where sulphuric gas may be generated.
- When piping has been completed, check that water flows from the end of the drain pipe.

⚠ Caution:

The drain pipe should be installed according to this Installation Manual to ensure correct drainage. Thermal insulation of the drain pipes is necessary to prevent condensation. If the drain pipes are not properly installed and insulated, condensation may drip on the ceiling, floor or other possessions.

- (A) Inclined downwards
- (B) Must be lower than outlet point
- (C) Water leakage
- (D) Trapped drainage
- (E) Air
- (F) Wavy
- (G) The end of drain pipe is under water.
- (H) Drainage ditch
- (I) 5 cm or less between the end of drain pipe and the ground.
- (J) Drain hose
- (K) Soft PVC hose (Inside diameter ø15 mm, 19/32 inch) or
Hard PVC pipe (VP-16 mm, 5/8 inch)
* Bond with PVC type adhesive

Preparing left and left rear piping (Fig. 5-2)

- 1 Remove the drain cap.
 - Remove the drain cap by holding the bit that sticks out at the end of the pipe and pulling.
 - (A) Drain cap
- 2 Remove the drain hose.
 - Remove the drain hose by holding on to the base of the hose (a) (shown by arrow) and pulling towards yourself (b).
- 3 Insert the drain cap.
 - Insert a screwdriver etc into the hole at the end of the pipe and be sure to push to the base of the drain cap.
- 4 Insert the drain hose.
 - Push the drain hose until it is at the base of the drain box connection outlet.
 - Please make sure the drain hose hook is fastened properly over the extruding drain box connection outlet.
 - (B) Hooks

◆ Storing in the piping space of the indoor unit (Fig. 5-3)

- * When the drain hose will be routed indoors, be sure to wrap it with commercially available insulation.
- * Gather the drain hose and the refrigerant piping together and wrap them with the supplied felt tape (3).
- * Overlap the felt tape (3) at one-half of the tape width.
- * Fasten the end portion of the wrapping with vinyl tape, etc.

- (A) Gas pipe
- (B) Liquid pipe
- (C) Drain hose
- (D) Indoor/outdoor connection wiring
- (E) Felt tape (3)

◆ Check of drainage (Fig. 5-4)

1. Open the front grille and remove the filter.
2. Facing the fins of the heat exchanger, slowly fill with water.
3. After the drainage check, attach the filter and close the grille.

6. Electrical work

■ PKA-A-KA(L)

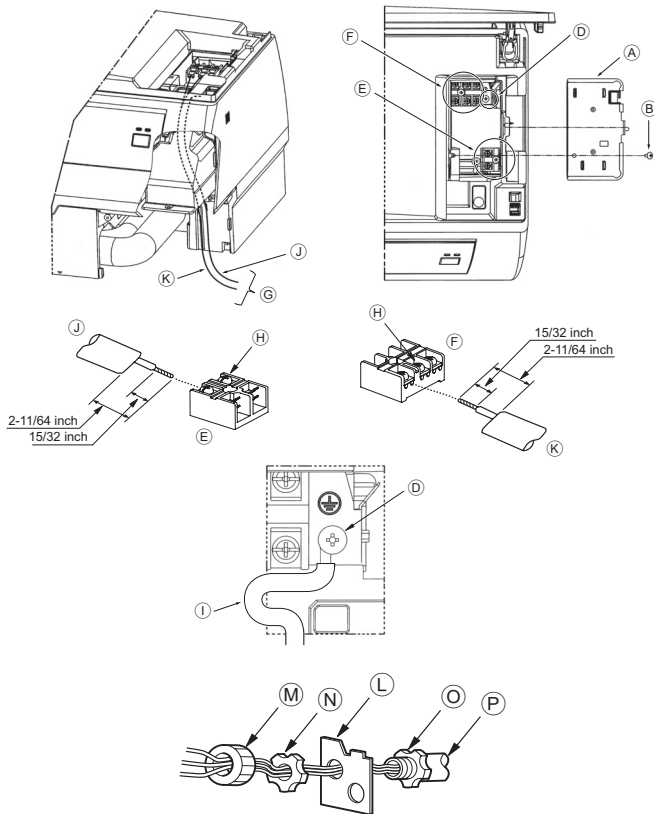


Fig. 6-1

6.1. Indoor unit

■ PKA-A-KA(L) (Fig. 6-1)

Connection can be made without removing the front panel.

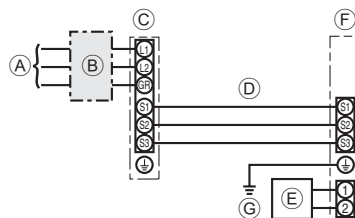
1. Open the front grille, remove the screw (1 piece), and remove the electrical parts cover.
2. Securely connect each wire to the terminal board.
 - * In consideration of servicing, provide extra length for each of the wires.
 - * Take care when using strand wires, because beards may cause the wiring to short out.
3. Install the parts that were removed back to their original condition.

- (A) Electrical box cover
- (B) Fixing screw
- (D) Ground wire connection portion
- (E) Remote control terminal board: (only for PKA-A-KA) 1 and 2, do not have polarity
- (F) Indoor/outdoor connection terminal board: S1, S2, and S3, have polarity
- (G) Lead
- (H) Terminal screw
- (I) Ground wire: Connect the ground wire in the direction illustrated in the diagram.
- (J) Remote control cord
- (K) Indoor/outdoor connection cord
- (L) Conduit plate
- (M) Bush (purchased locally)
- (N) Lock nut (purchased locally)
- (O) Connector (purchased locally)
- (P) Conduit (purchased locally)

6.1.1. Indoor unit power supplied from outdoor unit (A-control application)

The following connection patterns are available.
The outdoor unit power supply patterns vary on models.

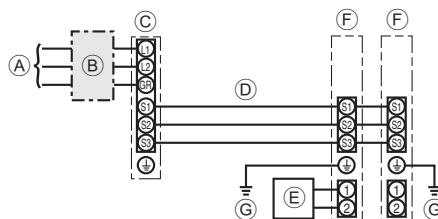
1:1 System



- (A) Outdoor unit power supply
- (B) Wiring circuit breaker or isolating switch
- (C) Outdoor unit
- (D) Indoor unit/outdoor unit connecting cords
- (E) Wired remote controller (Only for PKA-A-KA)
- (F) Indoor unit
- (G) Indoor unit earth

* Affix a label A that is included with the manuals near each wiring diagram for the indoor and outdoor units.

Simultaneous twin system



- (A) Outdoor unit power supply
- (B) Wiring circuit breaker or isolating switch
- (C) Outdoor unit
- (D) Indoor unit/outdoor unit connecting cords
- (E) Wired remote controller (Only for PKA-A-KA)
- (F) Indoor unit
- (G) Indoor unit earth

* Affix a label A that is included with the manuals near each wiring diagram for the indoor and outdoor units.

6. Electrical work

Indoor unit model		PKA-A-KA(L)
Minimum circuit ampacity		1A
Maximum rating of overcurrent protective device		15A
Wiring Wire No. x Size	Indoor unit-Outdoor unit	*1 3 × AWG16 (Polar)
	Indoor unit earth	1 × Min. AWG16
Circuit rating	Remote controller-Indoor unit	*2 2 × AWG22 (Non-polar)
	Indoor unit-Outdoor unit S1-S2	*3 AC 208/230 V
	Indoor unit-Outdoor unit S2-S3	*3 DC24 V
	Remote controller-Indoor unit	*3 DC12 V

*1. Max. 50 m, 165 ft

*2. The 3 m, 10 ft wire is attached in the remote controller accessory. Max. 500 m, 1640 ft <Only for PKA-A-KA>

*3. The figures are NOT always against the ground.

S3 terminal has DC 24 V against S2 terminal. However between S3 and S1, these terminals are not electrically insulated by the transformer or other device.

- Notes:**
1. Wiring size must comply with the applicable local and national code.
 2. Use copper supply wires.
 3. Use wires rated 300V or more for the power supply cords and the indoor unit/outdoor unit connecting cords.
 4. Install an earth longer than other cords.

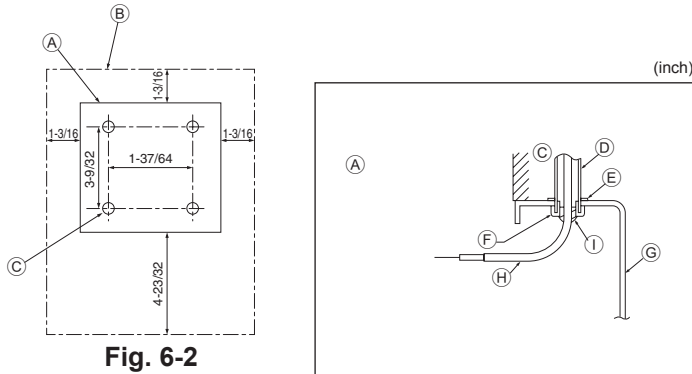


Fig. 6-2

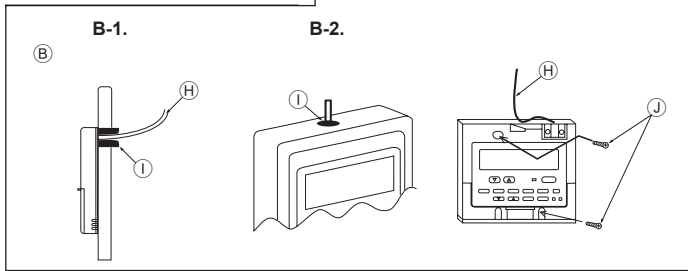


Fig. 6-3

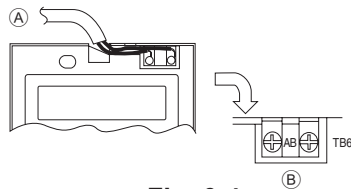


Fig. 6-4

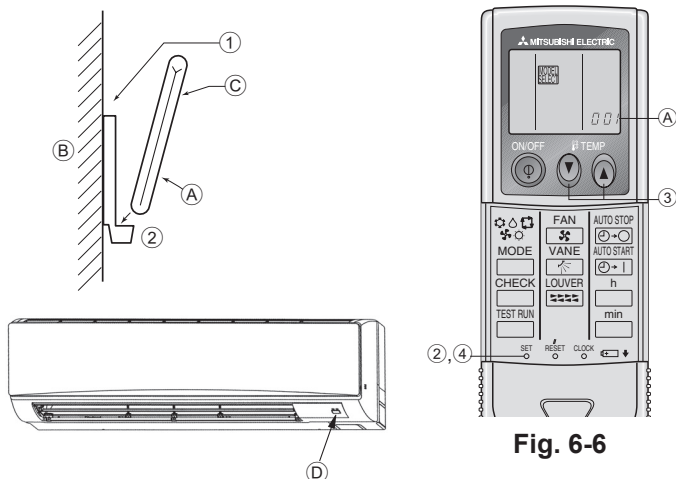


Fig. 6-5

Fig. 6-6

6.2. Remote controller

6.2.1. For wired remote controller

1) Installing procedures

(1) Select an installing position for the remote controller. (Fig. 6-2)

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
- (A) Remote controller profile
- (B) Required clearances surrounding the remote controller
- (C) 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. 6-3)

(A) For installation in the switch box:

(B) 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 cut-out upper case, then seal the cut-out 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

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

2) Connecting procedures (Fig. 6-4)

(1) Connect the remote controller cord to the terminal block.

- (A) To TB5 on the indoor unit
- (B) TB6 (No polarity)

3) Two remote controllers setting

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.

6.2.2. For wireless remote controller

1) Installation area

- Area in which the remote controller is not exposed to direct sunshine.
- Area in which there is no nearby heating source.
- Area in which the remote controller is not exposed to cold (or hot) winds.
- Area in which the remote controller can be operated easily.
- Area in which the remote controller is beyond the reach of children.

2) Installation method (Fig. 6-5)

(1) Attach the remote controller holder to the desired location using two tapping screws.

(2) Place the lower end of the controller into the holder.

- (A) Remote controller
- (B) Wall
- (C) Display panel
- (D) Receiver

• The signal can travel up to approximately 7 meters, 23 ft (in a straight line) within 45 degrees to both right and left of the center line of the receiver.

3) Setting (Fig. 6-6)

1. Insert batteries.
2. Press the SET button with something sharp at the end. The display blinks and Model No. is lighted.
3. Press the temp button to set the Model No.
4. Press the SET button with something sharp at the end. The display and Model No. are lighted for three seconds, then turned off.

PKA (A24, A30, A36)	heat pump models	002
	cooling only models	034

6. Electrical work

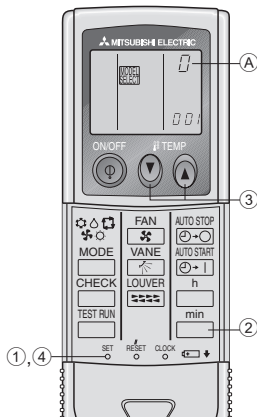


Fig. 6-7

4) Assigning a remote controller to each unit (Fig. 6-7)

Each unit can be operated only by the assigned remote controller. Make sure each pair of an indoor unit PC board and a remote controller is assigned to the same pair No.

5) Wireless remote controller pair number setting operation

- ① Press the SET button with something sharp at the end.
Start this operation from the status of remote controller display turned off.
The display blinks and Model No. is lighted.
- ② Press the \square button twice continuously.
Pair No. "0" blinks.
- ③ Press the temp \uparrow/\downarrow button to set the pair number you want to set.
- ④ Press the SET button with something sharp at the end.
Set pair number is lighted for three seconds then turned off.

① Pair No. of wireless remote controller	Indoor PC board
0	Factory setting
1	Cut J41
2	Cut J42
3-9	Cut J41, J42

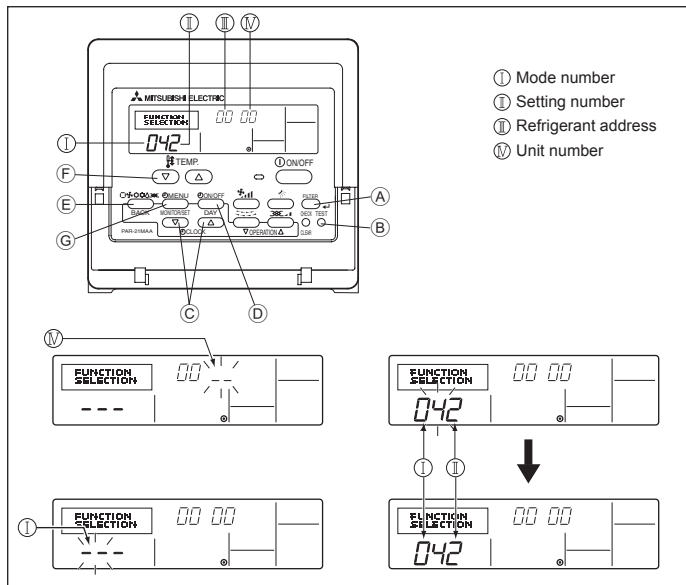


Fig. 6-8

6.3. Function settings

6.3.1 Function setting on the unit (Selecting the unit functions)

1) For wired remote controller (Fig. 6-8)

Changing the power voltage setting

- Be sure to change the power voltage setting depending on the voltage used.
- ① Go to the function setting mode.
Switch OFF the remote controller.
Press the (A) and (B) buttons simultaneously and hold them for at least 2 seconds. FUNCTION will start to flash.
- ② Use the (C) button to set the refrigerant address (III) to 00.
- ③ Press (D) and [-] will start to flash in the unit number (IV) display.
- ④ Use the (C) button to set the unit number (IV) to 00.
- ⑤ Press the (E) MODE button to designate the refrigerant address/unit number. [-] will flash in the mode number (I) display momentarily.
- ⑥ Press the (F) buttons to set the mode number (I) to 04.
- ⑦ Press the (G) button and the current set setting number (II) will flash.
Use the (F) button to switch the setting number in response to the power supply voltage to be used.
Power supply voltage
230 V : setting number = 1
208 V : setting number = 2
- ⑧ Press the MODE button (E) and mode and the setting number (I) and (II) will change to being on constantly and the contents of the setting can be confirmed.
- ⑨ Press the FILTER (A) and TEST RUN (B) buttons simultaneously for at least two seconds. The function selection screen will disappear momentarily and the air conditioner OFF display will appear.

2) For wireless remote controller (Fig. 6-9)

Changing the power voltage setting

- Be sure to change the power voltage setting depending on the voltage used.

- ① Go to the function select mode
Press the \square button (F) twice continuously.
(Start this operation from the status of remote controller display turned off.)
CHECK is lighted and "00" blinks.
Press the temp \uparrow/\downarrow button (C) once to set "50". Direct the wireless remote controller toward the receiver of the indoor unit and press the \square button (A).
- ② Setting the unit number
Press the temp \uparrow/\downarrow button (C) and (D) to set the unit number "00". Direct the wireless remote controller toward the receiver of the indoor unit and press the \square button (B).
- ③ Selecting a mode
Enter 04 to change the power voltage setting using the \uparrow/\downarrow (C) and \uparrow/\downarrow (D) buttons.
Direct the wireless remote controller toward the receiver of the indoor unit and press the \square button (A).
Current setting number:
1 = 1 beep (one second)
2 = 2 beeps (one second each)
3 = 3 beeps (one second each)

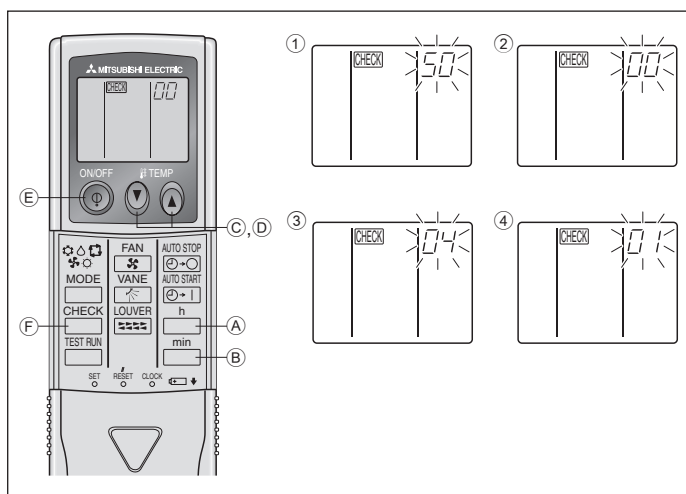


Fig. 6-9

④ Selecting the setting number

Use the \uparrow/\downarrow (C) and \uparrow/\downarrow (D) buttons to change the power voltage setting to 01 (230 V). Direct the wireless remote controller toward the sensor of the indoor unit and press the \square button (A).

⑤ To select multiple functions continuously

Repeat steps ③ and ④ to change multiple function settings continuously.

⑥ Complete function selection

Direct the wireless remote controller toward the sensor of the indoor unit and press the \square button (E).

Note:

Whenever changes are made to the function settings after installation or maintenance, be sure to record the changes with a mark in the "Setting" column of the Function table.

6.3.2 Function setting on the remote controller

Refer to the indoor unit operation manual.

6. Electrical work

Function table

Select unit number 00

Mode	Settings	Mode no.	Setting no.	Initial setting	setting
Power failure automatic recovery	Not available	01	1		
	Available *1		2	○	
Indoor temperature detecting	Indoor unit operating average	02	1	○	
	Set by indoor unit's remote controller		2		
	Remote controller's internal sensor		3		
LOSSNAY connectivity	Not Supported	03	1	○	
	Supported (indoor unit is not equipped with outdoor-air intake)		2		
	Supported (indoor unit is equipped with outdoor-air intake)		3		
Power voltage	230 V	04	1	○	
	208 V		2		

Select unit numbers 01 to 03 or all units (AL [wired remote controller]/07 [wireless remote controller])

Mode	Settings	Mode no.	Setting no.	Initial setting	setting
Filter sign	100Hr	07	1	○	
	2500Hr		2		
	No filter sign indicator		3		
Fan speed	Silent	08	1	-	
	Standard		2	○	
	High ceiling		3	-	

*1 When the power supply returns, the air conditioner will start 3 minutes later.

7. Test run

7.1. 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.

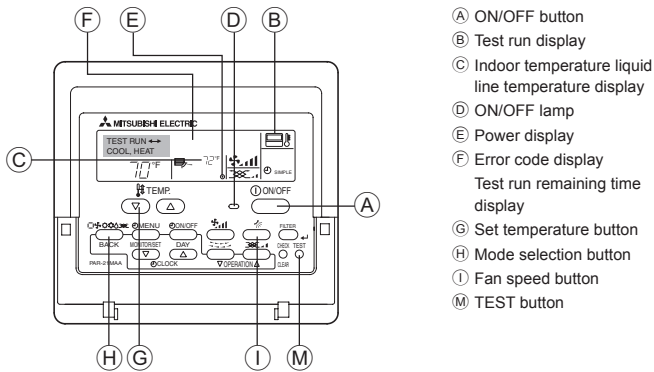


Fig. 7-1

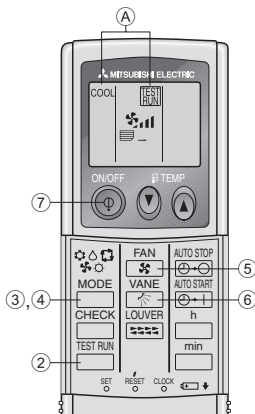


Fig. 7-2

7.2. Test run

The following 3 methods are available.

7.2.1. Using wired remote controller (Fig. 7-1)

- 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.

7.2.2. Using wireless remote controller (Fig. 7-2)

- ① Turn on the power to the unit at least 12 hours before the test run.
- ② Press the [TEST RUN] button twice continuously. (Start this operation from the status of remote controller display turned off.) (A) and current operation mode are displayed.
- ③ Press the [MODE] button to activate COOL mode, then check whether cool air is blown out from the unit.
- ④ Press the [MODE] button to activate HEAT mode, then check whether warm air is blown out from the unit.
- ⑤ Press the [FAN] button and check whether fan speed changes.
- ⑥ Press the [VANE] button and check whether the auto vane operates properly.
- ⑦ Press the [ON/OFF] button to stop the test run.

Note:

- Point the remote controller towards the indoor unit receiver while following steps ② to ⑦.
- It is not possible to run the in FAN, DRY or AUTO mode.

7. Test run

7.2.3. Using SW4 in outdoor unit

Refer to the outdoor unit installation manual.

7.3. Self-check

7.3.1. Wired remote controller (Fig. 7-3)

- 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
- (F) Unit address

7.3.2. Wireless remote controller (Fig. 7-4)

- ① Turn on the power.
- ② Press the button twice.
(Start this operation from the status of remote controller display turned off.)
(A) begins to light.
(B) "00" begins to blink.
- ③ While pointing the remote controller toward the unit's receiver, press the button. The check code will be indicated by the number of times that the buzzer sounds from the receiver section and the number of blinks of the operation lamp.
- ④ Press the ON/OFF button to stop the self-check.

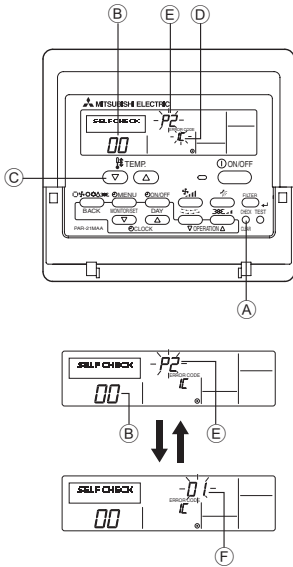


Fig. 7-3

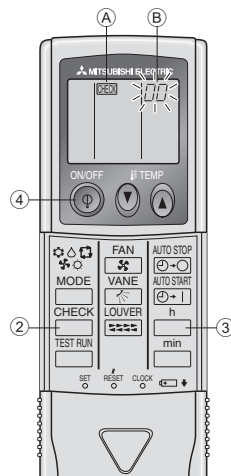
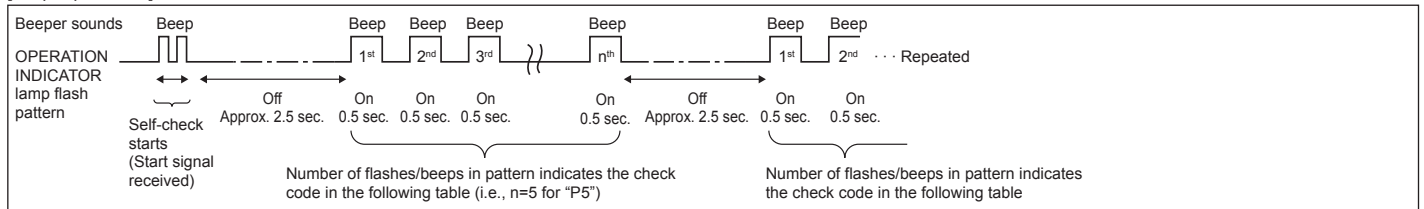


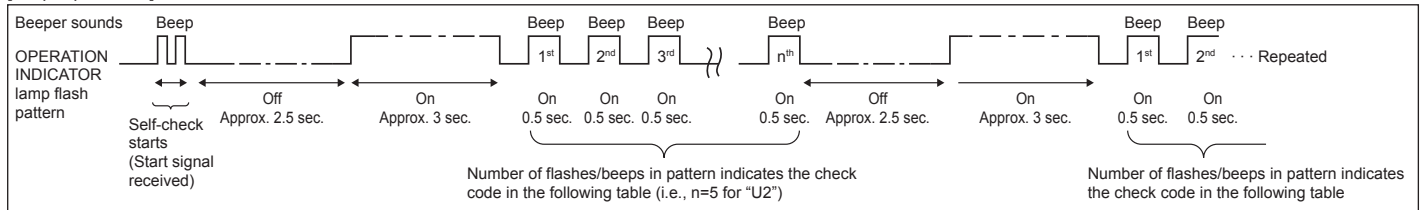
Fig. 7-4

• Refer to the following tables for details on the check codes. (Wireless remote controller)

[Output pattern A]



[Output pattern B]



[Output pattern A] Errors detected by indoor unit

Wireless remote controller	Wired remote controller	Symptom	Remark
Beeper sounds/OPERATION INDICATOR lamp flashes Check code (Number of times)	Check code		
1	P1	Intake sensor error	
2	P2, P9	Pipe (Liquid or 2-phase pipe) sensor error	
3	E6, E7	Indoor/outdoor unit communication error	
4	P4	Float switch connector CN4F open.	
5	P5	Drain pump error	
	PA	Forced compressor error	
6	P6	Freezing/Overheating safeguard operation	
7	EE	Communication error between indoor and outdoor units	
8	P8	Pipe temperature error	
9	E4	Remote controller signal receiving error	
10	-	-	
11	-	-	
12	Fb	Indoor unit control system error (memory error, etc.)	
No sound	----	No corresponding	

7. Test run

[Output pattern B] Errors detected by unit other than indoor unit (outdoor unit, etc.)

Wireless remote controller	Wired remote controller	Symptom	Remark
Beeper sounds/OPERATION INDICATOR lamp flashes (Number of times)	Check code		
1	E9	Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)	For details, check the LED display of the outdoor controller board.
2	UP	Compressor overcurrent interruption	
3	U3, U4	Open/short of outdoor unit thermistors	
4	UF	Compressor overcurrent interruption (When compressor locked)	
5	U2	Abnormal high discharging temperature/49C worked/insufficient refrigerant	
6	U1, Ud	Abnormal high pressure (63H worked)/Overheating safeguard operation	
7	U5	Abnormal temperature of heat sink	
8	U8	Outdoor unit fan safeguard stop	
9	U6	Compressor overcurrent interruption/Abnormal of power module	
10	U7	Abnormality of super heat due to low discharge temperature	
11	U9, UH	Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/Current sensor error	
12	-	-	
13	-	-	
14	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 wireless remote controller
The continuous buzzer sounds from receiving section of indoor unit.
Blink of operation lamp
- On wired remote controller
Check code displayed in the LCD.
- If the unit cannot be operated properly after the above test run has been performed, refer to the following table to remove the cause.

Symptom		Cause
Wireless remote controller	LED 1, 2 (PCB in outdoor unit)	
PLEASE WAIT	For about 2 minutes following power-on	After LED 1, 2 are lighted, LED 2 is turned off, then only LED 1 is lighted. (Correct operation)
PLEASE WAIT → Error code	After about 2 minutes has expired following power-on	Only LED 1 is lighted. → LED 1, 2 blink.
Display messages do not appear even when operation switch is turned ON (operation lamp does not light up).		Only LED 1 is lighted. → LED 1 blinks twice, LED 2 blinks once.

On the wireless remote controller with condition above, following phenomena takes place.

- No signals from the remote controller are accepted.
- OPE lamp is blinking.
- The buzzer makes a short pipng sound.

Note:

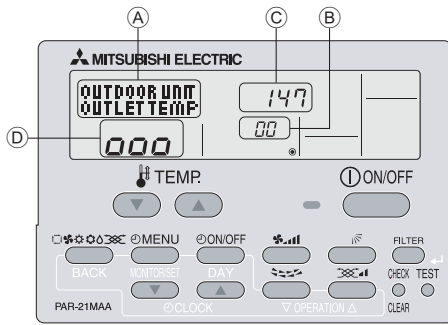
Operation is not possible for about 30 seconds after cancellation of function selection. (Correct operation)

For description of each LED (LED 1, 2, 3) provided on the indoor controller, refer to the following table.

LED 1 (power for microcomputer)	Indicates whether control power is supplied. Make sure that this LED is always lit.
LED 2 (power for remote controller)	Indicates whether power is supplied to the remote controller. This LED lights only in the case of the indoor unit which is connected to the outdoor unit refrigerant address "0".
LED 3 (communication between indoor and outdoor units only A-control)	Indicates state of communication between the indoor and outdoor units. Make sure that this LED is always blinking.

8. Easy maintenance function [This function only for A-control]

Display example (Comp discharge temperature 147°F)



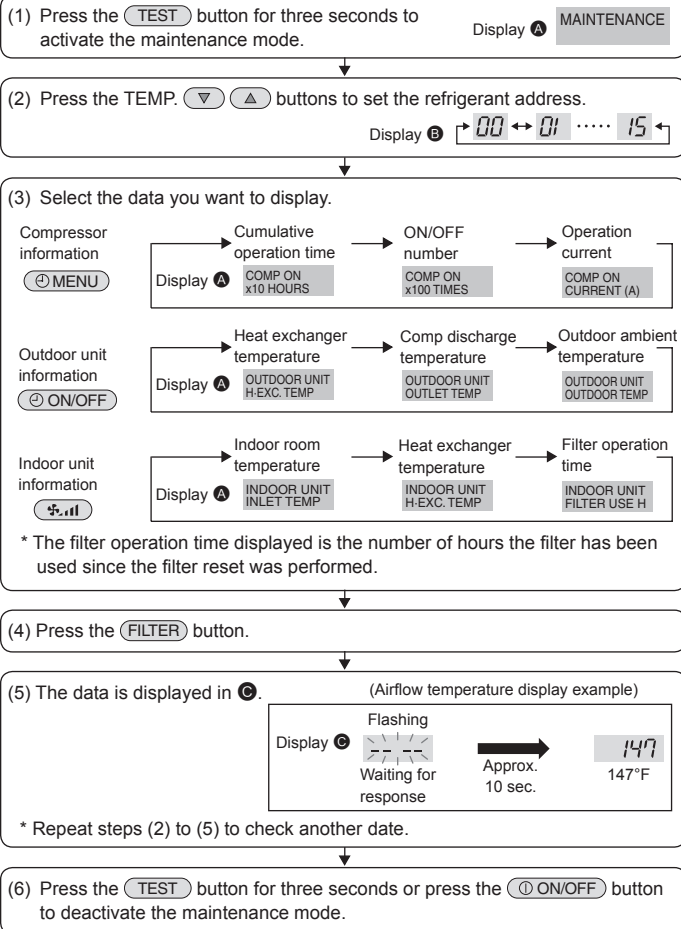
By using the maintenance mode, you can display many types of maintenance data on the remote controller such as the heat exchanger temperature and compressor current consumption for the indoor and outdoor units.

This function can be used whether the air conditioner is operating or not. During air conditioner operation, data can be checked during either normal operation or maintenance mode stable operation.

* This function cannot be used during the test run.

* The availability of this function depends on the connecting outdoor unit. Refer to the brochures.

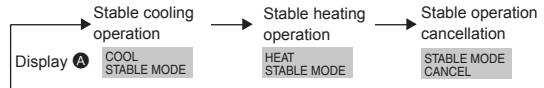
Maintenance mode operation procedures



Stable operation

Using the maintenance mode, the operation frequency can be fixed and the operation can be stabilized. If the air conditioner is stopped, use the following procedure to start this operation.

Press the **MODE** button to select the operation mode.



Press the **FILTER** button.



* You can check the data using steps (3) to (5) of the maintenance mode operation procedures while waiting for the stable operation.

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

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