MITSUBISHI ELECTRIC

Mr.SLIM

Packaged Air Conditioners
PCA-M·KA

INSTALLATION MANUAL

FOR INSTALLER

English

Contents

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

Note:
The phrase "Wired remote controller" in this installation manual refers only to the PAR-32MAA.
If you need any information for the other remote controller, please refer to either the installation manual or initial setting manual which are included in these boxes.

1. Safety precautions

- **► Before installing the unit, make sure you read all the "Safety Precautions".**
- **► The "Safety Precautions" provide very important points regarding safety. Make sure you follow them.**
- **► Please report to your supply authority or obtain their consent before connecting this equipment to the power supply system.**

MEANINGS OF SYMBOLS DISPLAYED ON INDOOR UNIT AND/OR OUTDOOR UNIT

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

EN

Symbols used in the text

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

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

⚠ Warning:
Describes precautions that must be observed to prevent danger of fire.

Symbols used in the illustrations

⏚ : Indicates a part which must be grounded.

⃠ : Be sure not to do.

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.

⚠ Warning:

- **Carefully read the labels affixed to the main unit.**
- **Ask a dealer or an authorized technician to install, relocate and repair the unit.**
- **The user should never attempt to repair the unit or transfer it to another location.**
- **Do not alter the unit.**
- **For installation and relocation 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.**
- **The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.**
- **If the air conditioner is installed in a small room or closed 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.**
- **Keep gas-burning appliances, electric heaters, and other fire sources (ignition sources) away from the location where installation, repair, and other air conditioner work will be performed.**
  If refrigerant comes into contact with a flame, poisonous gases will be released.
- **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 wiring connections must be made securely with no tension applied on the terminal connections. Also, never splice the cables for wiring (unless otherwise indicated in this document).**
  Failure to observe these instructions may result in overheating or a fire.
- **When installing or relocating, or servicing the air conditioner, use only the specified refrigerant written on outdoor unit to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines.**
  If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.
  The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.
- **The appliance shall be installed in accordance with national wiring regulations.**
- **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.**
- **Children should be supervised to ensure that they do not play with the appliance.**
- **The terminal block cover panel of the unit must be firmly attached.**
- **If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.**
- **Use only accessories authorized by Mitsubishi Electric and ask a dealer or an authorized technician to install them.**
- **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.**
- **Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.**
- **The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).**
- **Do not pierce or burn.**
- **Be aware that refrigerants may not contain an odour.**
- **Pipe-work shall be protected from physical damage.**
- **The installation of pipe-work shall be kept to a minimum.**
- **Compliance with national gas regulations shall be observed.**
- **Keep any required ventilation openings clear of obstruction.**
- **Do not use low temperature solder alloy in case of brazing the refrigerant pipes.**
- **When performing brazing work, be sure to ventilate the room sufficiently. Make sure that there are no hazardous or flammable materials nearby.**
  When performing the work in a closed room, small room, or similar location, make sure that there are no refrigerant leaks before performing the work.
  If refrigerant leaks and accumulates, it may ignite or poisonous gases may be released.

1. Safety precautions

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 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.**

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1.3. Before electric work

⚠ **Caution:**

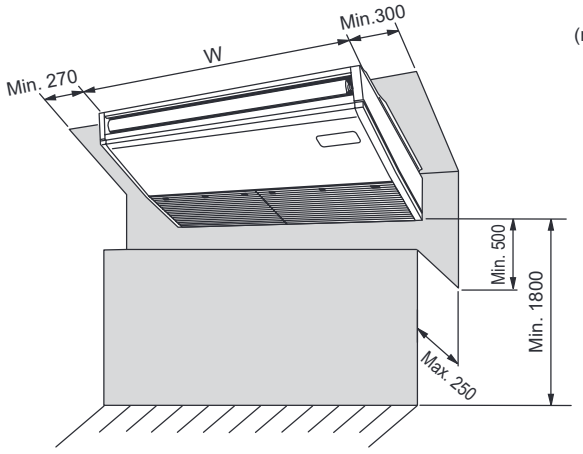
- **Be sure to install circuit breakers. If not installed, electric shock may result.**
- **For the power lines, use standard cables of sufficient capacity. Otherwise, a short circuit, overheating, or fire may result.**
- **When installing the power lines, do not apply tension to the cables.**
- **Be 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



(mm)

Fig. 2-1

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

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

(mm)

Models	W
M35, 50	960
M60, 71	1280
M100, 125, 140	1600

⚠ **Warning:**

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

2.2. Outline dimensions (Outdoor unit)

Refer to the outdoor unit installation manual.

3. Installing the indoor unit

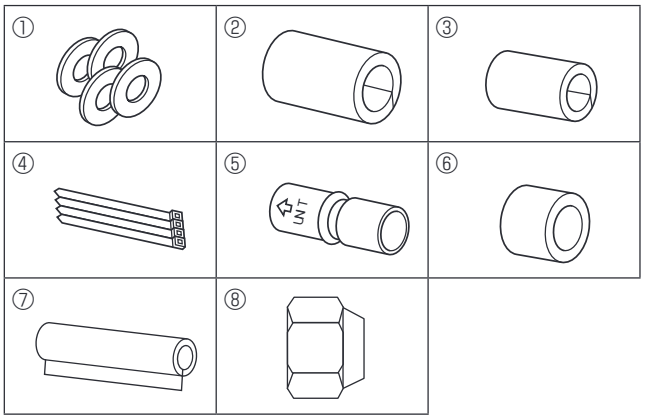


Fig. 3-1

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

The indoor unit should be supplied with the following accessories (contained in the inside of the intake grille).

	Accessory name	Q'ty
①	Washer	4 pcs
②	Pipe cover	1 pc Large size (For gas tubing)
③	Pipe cover	1 pc Small size (For liquid tubing)
④	Band	4 pcs
⑤	Joint socket	1 pc Marked with "UNIT"
⑥	Socket cover	1 pc
⑦	Drain tubing cover	1 pc
⑧	Flare nut	1 pc ø6.35 (M60 only)

(mm)

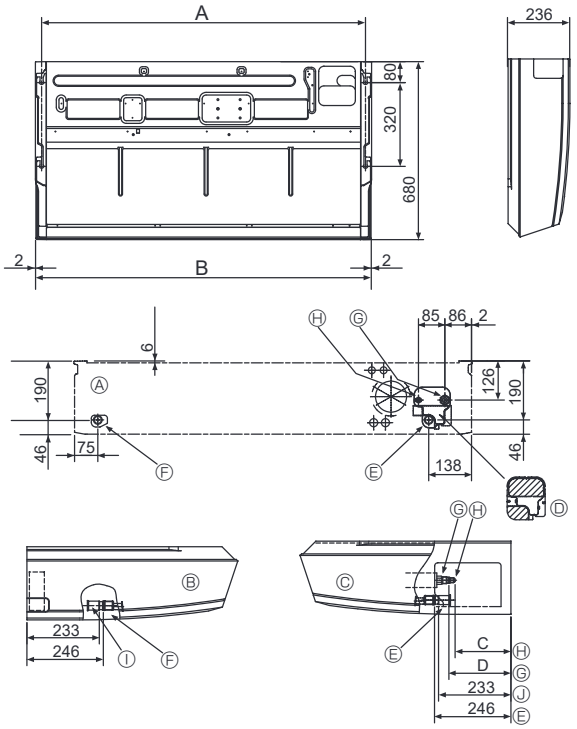


Fig. 3-2

3.2. Preparation for installation (Fig. 3-2)

3.2.1. Suspension bolt installing spacing

(mm)

Models	A	B
M35, 50	917	960
M60, 71	1237	1280
M100, 125, 140	1557	1600

3.2.2. Refrigerant and drain tubing location

(mm)

Models	C	D
M35, 50	184	203
M60	179	203
M71-140	180	200

Ⓐ Front side outlet
Ⓑ Left side outlet
Ⓒ Right side outlet
Ⓓ Independent piece (Removable)
Ⓔ Right drain tubing
Ⓕ Left drain tubing
Ⓖ Gas tubing
Ⓗ Liquid tubing
Ⓘ Rubber plug
Ⓙ with Joint socket ⑤

In case of the rear pipe arrangement, make sure to remove the shaded portions from the Ⓓ independent piece. Then put the Ⓓ independent piece back in initial position. (The heat exchanger might be clogged because of dust)

3. Installing the indoor unit

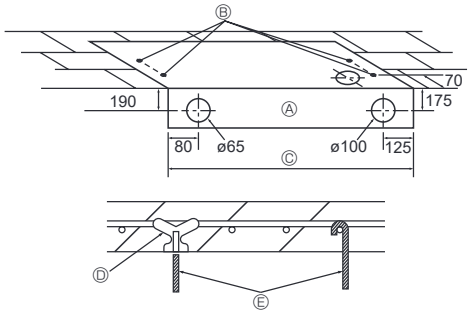


Fig. 3-3

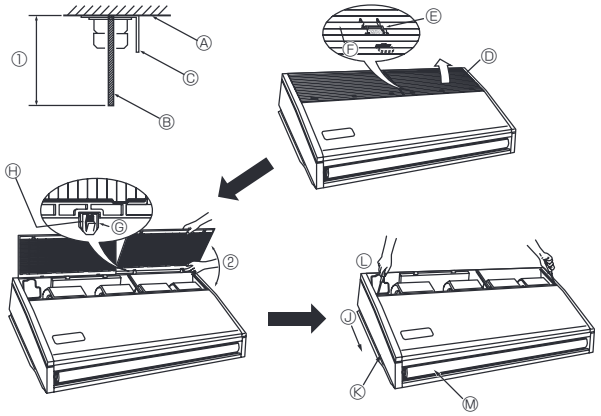


Fig. 3-4

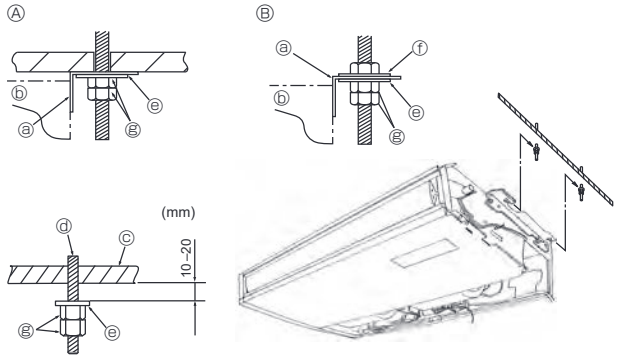


Fig. 3-5

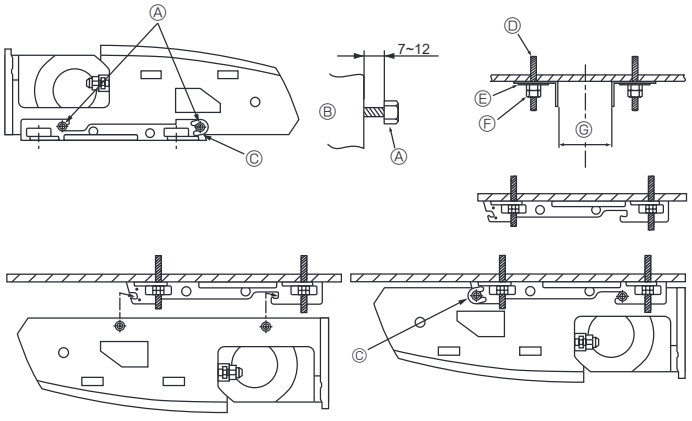


Fig. 3-6

3.2.3. Selection of suspension bolts and tubing positions (Fig. 3-3)

Using the pattern paper provided for installation, select proper positions for suspension bolts and tubing and prepare relative holes.

Ⓐ Pattern paper
Ⓑ Suspension bolt hole
Ⓒ Indoor unit width

Secure the suspension bolts or use angle stock braces or square timbers for bolt installation.

Ⓓ Use inserts of 100 kg to 150 kg each.
Ⓔ Use suspension bolts of W3/8 or M10 in size.

3.2.4. Indoor unit preparation (Fig. 3-4)

1. Install the suspending bolts. (Procure the W3/8 or M10 bolts locally.)
   Predetermine the length from the ceiling (① within 100 mm).
   Ⓐ Ceiling surface Ⓑ Suspending bolt Ⓒ Suspending bracket
2. Remove the intake grille.
   Slide the intake grille holding knobs (at 2 or 3 locations) backward to open the intake grille.
3. Remove the side panel.
   Remove the side panel holding screws (one in each side, right and left) then slide the side panel forward for removal.

Ⓓ Intake grille
Ⓔ Intake grille holding knob
Ⓕ Slide
Ⓖ Hinge
Ⓙ Slide the side panel forward.
Ⓚ Side panel
Ⓛ Remove the side panel holding screws.
Ⓜ Remove the protective vinyl of vane.
Ⓗ Pushing the hinge, pull out the intake grille.
② Forcing open the intake grille or opening it to an angle of more than 120° may damage the hinges.

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3.3. Installing the indoor unit (Fig. 3-5)

Use a proper suspending method depending on the presence or absence of ceiling materials as follows.

Ⓐ In the presence of ceiling materials
Ⓑ In the absence of ceiling materials
ⓐ Suspending bracket
ⓑ Unit
Ⓒ Ceiling
ⓓ Suspending bolt
ⓔ Washer ①
ⓕ Washer (Local procurement)
ⓖ Double nuts

1) Directly suspending the unit

Installing procedures

1. Install the washer ① (supplied with the unit) and the nuts (to be locally procured).
2. Set (hook) the unit through the suspending bolts.
3. Tighten the nuts.

Check the unit installing condition.

- Check that the unit is horizontal between the right and left sides.
- Check that the front and the rear of suspending brackets are horizontal.
  (To keep drainage,the unit is inclined to the suspending brackets. The unit slopes continuously downward from the front to the rear is the right installation position.)

2) Installing the suspending bracket first onto the ceiling (Fig. 3-6)

Installing procedures

1. Remove the suspending brackets and U-shaped washers from the unit.
2. Adjust the suspending bracket holding bolts on the unit.
3. Attach the suspending brackets to the suspending bolts.
4. Check that the suspending brackets are horizontal (front and rear/right and left).
5. Set (hook) the unit to the suspending brackets.
6. Tighten fixed bolts of the suspending brackets.

※ Be sure to install the U-shaped washers.

Ⓐ Suspending bracket holding bolt
Ⓑ Unit
Ⓒ U-shaped washer
Ⓓ Suspending bolt
Ⓔ Washer ①
Ⓕ Double nuts

(mm)

Ⓖ	M35, 50	882-887
	M60, 71	1202-1207
	M100-140	1522-1527

4. Installing the refrigerant piping

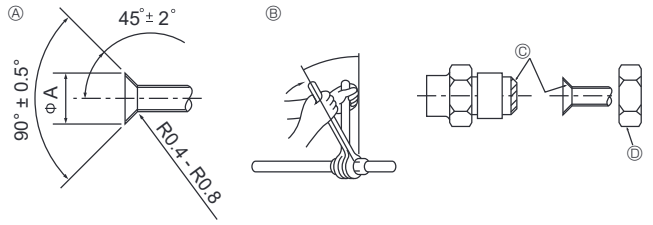

Fig. 4-1

Ⓐ Flare cutting dimensions

Copper pipe O.D. (mm)	Flare dimensions øA dimensions (mm)
ø6.35	8.7 - 9.1
ø9.52	12.8 - 13.2
ø12.7	16.2 - 16.6
ø15.88	19.3 - 19.7

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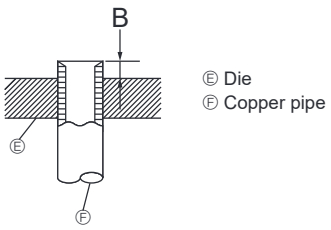


Ⓔ Die
Ⓕ Copper pipe

Fig. 4-2

Copper pipe O.D. (mm)	B (mm) Flare tool for R32/R410A Clutch type
ø6.35 (1/4″)	0 - 0.5
ø9.52 (3/8″)	0 - 0.5
ø12.7 (1/2″)	0 - 0.5
ø15.88 (5/8″)	0 - 0.5

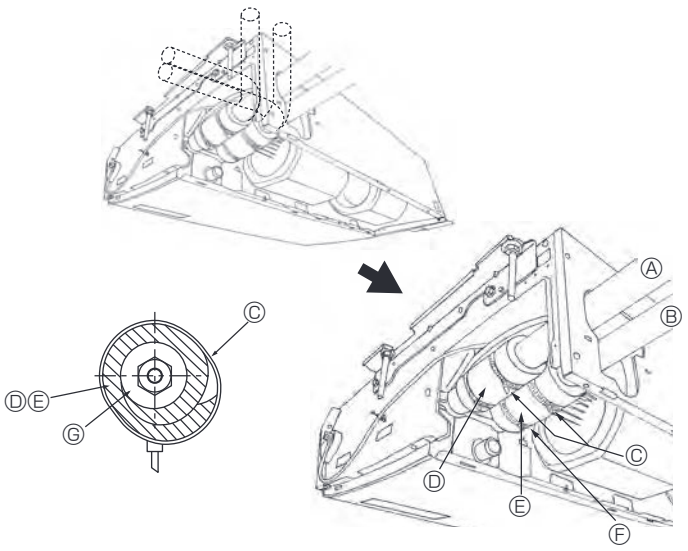


Fig. 4-3

4.1. Precautions

For devices that use R32/R410A refrigerant

- **Use ester oil, ether oil or 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 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 relocating, or servicing the air conditioner, use only the specified refrigerant written on outdoor unit to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards. The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.

	M35, 50	M60-140
Liquid pipe	ø6.35 thickness 0.8 mm	ø9.52 thickness 0.8 mm
Gas pipe	ø12.7 thickness 0.8 mm	ø15.88 thickness 1.0 mm

- **Do not use pipes thinner than those specified above.**

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 or more, thickness of 12 mm 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 or more).
- Apply thin layer of refrigerant oil to pipe and joint seating surface before tightening flare nut.
- Use 2 wrenches to tighten piping connections.
- Use refrigerant piping insulation provided to insulate indoor unit connections. Insulate carefully.
- After connecting the refrigerant piping to the indoor unit, be sure to test the pipe connections for gas leakage with nitrogen gas. (Check that there is no refrigerant leakage from the refrigerant piping to the indoor unit.)
- Use flared nut installed to this indoor unit.
- In case of reconnecting the refrigerant pipes after detaching, make the flared part of pipe re-fabricated.

Ⓑ Flare nut tightening torque

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

Ⓒ Apply refrigerating machine oil over the entire flare seat surface.
Do not apply refrigerating machine oil to the screw portions.
(This will make the flare nuts more apt to loosen.)

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

Available pipe size

	M35, 50	M60	M71-140
Liquid side	ø6.35 O	ø6.35	—
	—	ø9.52 O	ø9.52 O
Gas side	ø12.7 O	ø15.88 O	ø15.88 O

O : Factory flare nut attachment to the heat exchanger.

4.3. Indoor unit (Fig. 4-3)

Installing procedures

1. Slide the supplied pipe cover ② over the gas tubing until it is pressed against the sheet metal inside the unit.
2. Slide the provided pipe cover ③ over the liquid tubing until it is pressed against the sheet metal inside the unit.
3. Tighten the pipe covers ② and ③ at the both ends (20 mm) with the supplied bands ④.

Ⓐ Gas tubing
Ⓑ Liquid tubing
Ⓒ Band ④
Ⓓ Pipe cover ②
Ⓔ Pipe cover ③
Ⓕ Press the pipe cover against the sheet metal.
Ⓖ Refrigerant tubing heat insulating material

4.4. For twin/triple combination

Refer to the outdoor unit installation manual.

5. Drainage piping work

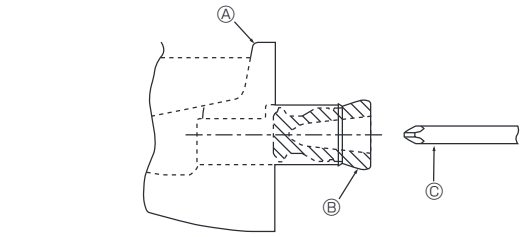


Fig. 5-1

- For left side tubing, be sure to insert the rubber plug into the right drain port. (Fig. 5-1)
- Use VP-20 (O.D. ø26 (1”) PVC TUBE) for drain piping and provide 1/100 or more downward slope.
- After completion of work, check that correct drain is available from the outflow port of the drain tubing.
  Ⓐ Drain pan
  Ⓑ Plug
  Ⓒ Insert the driver etc.in the plug deeply.

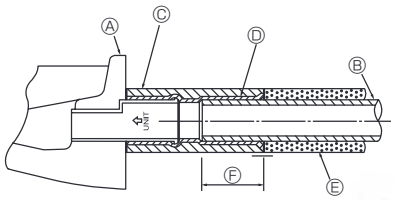
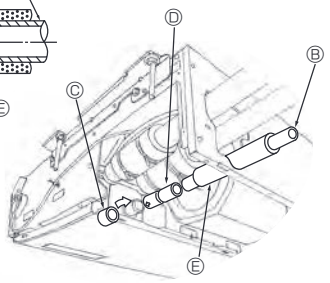


Fig. 5-2

Installing procedures (Fig. 5-2)

1. Attach the joint socket ⑤ supplied with the unit to the drain port on the unit with a vinyl chloride adhesive.
2. Fasten the socket cover ⑥ supplied with the unit to the joint socket ⑤.
3. Attach the field drain tubing (VP-20) to the joint socket ⑤ with a vinyl chloride adhesive.
4. Wrap the drain tubing cover ⑦ supplied with the unit. (Seam taping)
   Ⓐ Drain pan
   Ⓑ Drain tubing
   Ⓒ Socket cover ⑥
   Ⓓ Joint socket ⑤
   Ⓔ Drain tubing cover ⑦
   Ⓕ Insertion length 37 mm



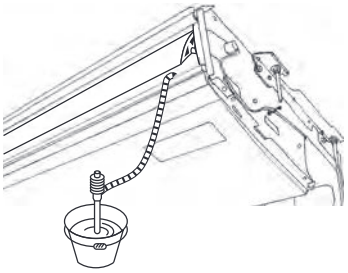


Fig. 5-3

5. Check for correct drainage. (Fig. 5-3)
* Fill the drain pan with water of about 1 L from the air outlet.

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6. Electrical work

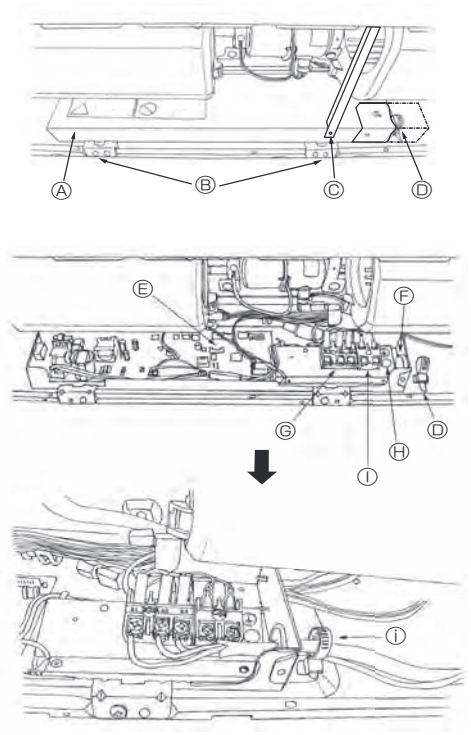


Fig. 6-1

6.1. Electric wiring (Fig. 6-1)

Wiring procedures

1. Remove the tapping screw Ⓒ then remove the beam.
2. Remove the (2) tapping screws Ⓑ then remove the electric part cover Ⓐ.
3. Connect the electric wires securely to the corresponding terminals.
4. Replace the removed parts.
5. Tie the electric wires with the local wiring clamp located in the right side of the junction box.

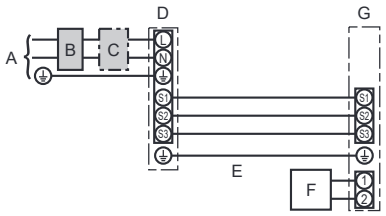
Ⓐ Cover
Ⓑ Set screws (2 pcs)
Ⓒ Set screws (Beam)
Ⓓ Wiring clamp
Ⓔ Control board
Ⓕ Wire service entrance
Ⓖ Terminal block for indoor and outdoor units connection
Ⓗ Grounding cable connector
Ⓘ Terminal block for Remote controller
Ⓘ Secure with the wiring clamp.

6. Electrical work

6.1.1. Indoor unit power supplied from outdoor unit

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

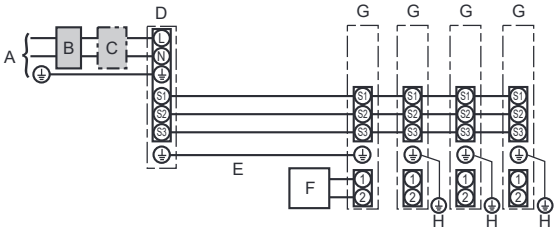
1:1 System



A Outdoor unit power supply
B Earth leakage breaker
C Wiring circuit breaker or isolating switch
D Outdoor unit
E Indoor unit/outdoor unit connecting cables
F Remote controller
G Indoor unit

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

Simultaneous twin/triple/quadruple system



A Outdoor unit power supply
B Earth leakage breaker
C Wiring circuit breaker or isolating switch
D Outdoor unit
E Indoor unit/outdoor unit connecting cables
F Remote controller
G Indoor unit
H Indoor unit earth

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

Indoor unit model			PCA
Wiring Wire No. × size (mm²)	Indoor unit-Outdoor unit	*1	3 × 1.5 (polar)
	Indoor unit-Outdoor unit earth	*1	1 × Min.1.5
	Indoor unit earth		1 × Min.1.5
	Remote controller-Indoor unit	*2	2 × 0.3 (Non-polar)
Circuit rating	Indoor unit (Heater) L-N	*3	-
	Indoor unit-Outdoor unit S1-S2	*3	230 V AC
	Indoor unit-Outdoor unit S2-S3	*3	24 V DC
	Remote controller-Indoor unit	*3	12 V DC

*1. <For 50-140 outdoor unit application>
Max. 45 m
If 2.5 mm² used, Max. 50 m
If 2.5 mm² used and S3 separated, Max. 80 m
<For 200/250 outdoor unit application>
Max. 18 m
If 2.5 mm² used, Max. 30 m
If 4 mm² used and S3 separated, Max. 50 m
If 6 mm² used and S3 separated, Max. 80 m
*2. Max. 500 m
(When using 2 remote controllers, the maximum wiring length for the remote controller cables is 200 m.)
*3. The figures are NOT always against the ground.
S3 terminal has 24 V DC against S2 terminal. However between S3 and S1, these terminals are not electrically insulated by the transformer or other device.

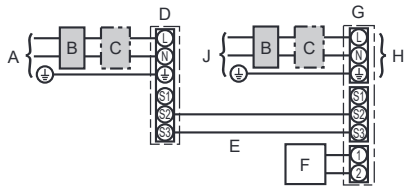
Notes:
1. **Wiring size must comply with the applicable local and national code.**
2. **Power supply cords and indoor unit/outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)**
3. **Install an earth longer than other cables.**
4. **Indoor and outdoor connecting wires have polarities. Make sure to match the terminal number (S1, S2, S3) for correct wirings.**
5. **Wiring for remote controller cable shall be apart (5 cm or more) from power source wiring so that it is not influenced by electric noise from power source wiring.**

6.1.2. Separate indoor unit/outdoor unit power supplies (For PUZ/PUHZ application only)

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

1:1 System

* The indoor power supply terminal kit is required.



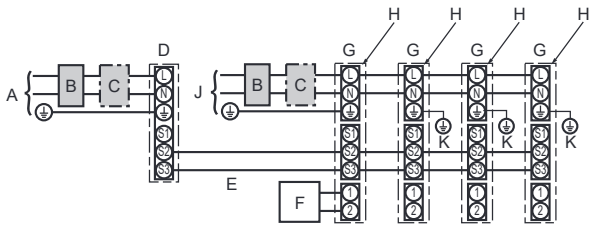
A Outdoor unit power supply
B Earth leakage breaker
C Wiring circuit breaker or isolating switch
D Outdoor unit
E Indoor unit/outdoor unit connecting cables
F Remote controller
G Indoor unit
H Option
J Indoor unit power supply

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

6. Electrical work

Simultaneous twin/triple/quadruple system

* The indoor power supply terminal kits are required.



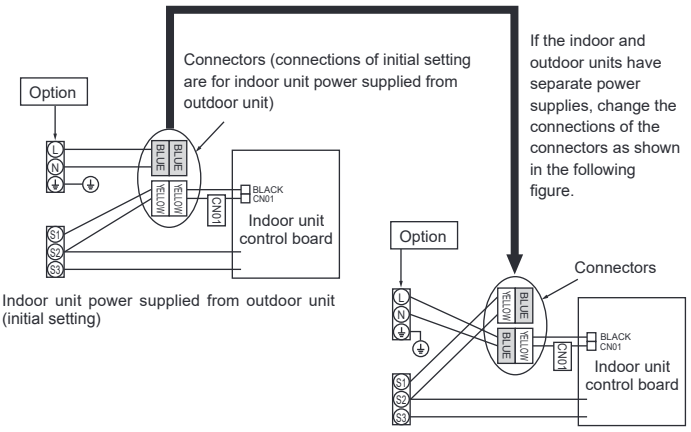
A Outdoor unit power supply
B Earth leakage breaker
C Wiring circuit breaker or isolating switch
D Outdoor unit
E Indoor unit/outdoor unit connecting cables
F Remote controller
G Indoor unit
H Option
J Indoor unit power supply
K Indoor unit earth

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

If the indoor and outdoor units have separate power supplies, refer to the table below. If the indoor power supply terminal kit is used, change the indoor unit electrical box wiring refering to the figure in the right and the DIP switch settings of the outdoor unit control board.

	Indoor unit specifications
Indoor power supply terminal kit (option)	Required
Indoor unit electrical box connector connection change	Required
Label affixed near each wiring diagram for the indoor and outdoor units	Required
Outdoor unit DIP switch settings (when using separate indoor unit/outdoor unit power supplies only)	ON 3 / OFF 1 2 (SW8) Set the SW8-3 to ON.

* There are 3 types of labels (labels A, B and C). Affix the appropriate labels to the units according to the wiring method.



Indoor unit power supplied from outdoor unit (initial setting)

Separate indoor unit/outdoor unit power supplies

Indoor unit model			PCA
Indoor unit power supply			~/N (single), 50 Hz, 230 V
Indoor unit input capacity Main switch (Breaker)		*1	16 A
Wiring Wire No. × size (mm²)	Indoor unit power supply & earth		3 × Min. 1.5
	Indoor unit-Outdoor unit	*2	2 × Min. 0.3
	Indoor unit-Outdoor unit earth		–
	Remote controller-Indoor unit	*3	2 × 0.3 (Non-polar)
Circuit rating	Indoor unit L-N	*4	230 V AC
	Indoor unit-Outdoor unit S1-S2	*4	–
	Indoor unit-Outdoor unit S2-S3	*4	24 V DC
	Remote controller-Indoor unit	*4	12 V DC

*1. A breaker with at least 3.0 mm contact separation in each pole shall be provided. Use earth leakage breaker (NV).
The breaker shall be provided to ensure disconnection of all active phase conductors of the supply.
*2. Max. 120 m
*3. Max. 500 m
(When using 2 remote controllers, the maximum wiring length for the remote controller cables is 200 m.)
*4. The figures are NOT always against the ground.

Notes:
1. **Wiring size must comply with the applicable local and national code.**
2. **Power supply cords and indoor unit/outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)**
3. **Install an earth longer than other cables.**
4. **Wiring for remote controller cable shall be apart (5 cm or more) from power source wiring so that it is not influenced by electric noise from power source wiring.**

⚠ **Warning:**

Never splice the power cable or the indoor-outdoor connection cable, otherwise it may result in a smoke, a fire or communication failure.

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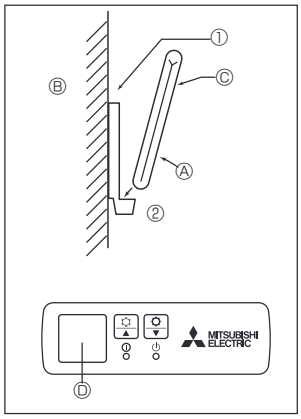

Fig. 6-2

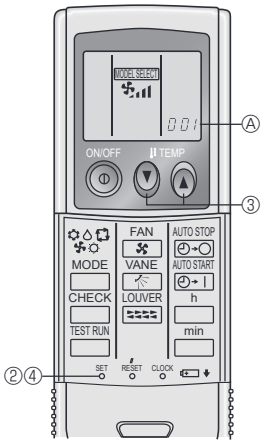

Fig. 6-3

6.2. Remote controller

6.2.1. For wired remote controller

1) 2 remote controllers setting

If 2 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. 6-2)

① Attach the remote controller holder to the desired location using 2 tapping screws.
② Place the lower end of the controller into the holder.
Ⓐ Remote controller Ⓑ Wall Ⓒ Display panel Ⓓ Receiver

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

3) Setting (Fig. 6-3)

① Insert batteries.
② Press the SET button with something sharp at the end.
MODEL SELECT blinks and Model No. is lit.
③ Press the temp ▽ △ buttons to set the Model No.
If you mistook the operation, press the ON/OFF ⏻ button and operate again from procedure ③.
④ Press the SET button with something sharp at the end.
MODEL SELECT and Model No. are lit for 3 seconds, then turned off.

Indoor	Outdoor	Ⓐ Model No.
PCA	PUZ/PUHZ, SUZ	001

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

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.
MODEL SELECT blinks and Model No. is lit.
② Press the min button twice continuously. Pair No. “0” blinks.
③ Press the temp ▽ △ buttons to set the pair number you want to set.
If you mistook the operation, press the ON/OFF ⏻ button and operate again from procedure ②.
④ Press the SET button with something sharp at the end.
Set pair number is lit for 3 seconds then turned off.

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

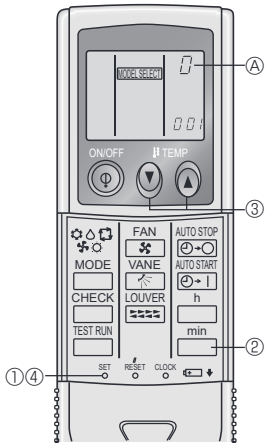

Fig. 6-4

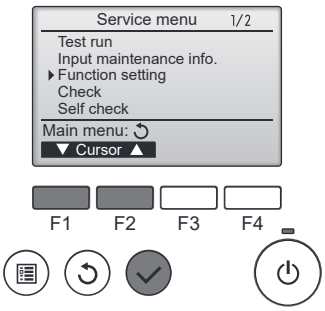

Fig. 6-5

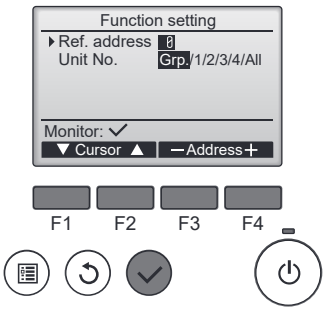

Fig. 6-6

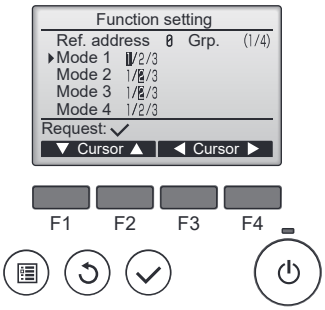

Fig. 6-7

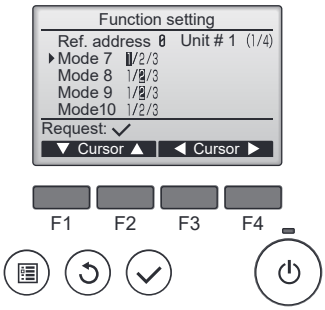

Fig. 6-8

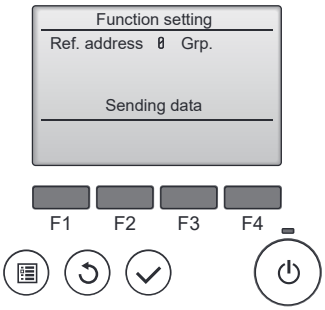

Fig. 6-9

6.3. Function settings

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

1) For wired remote controller

① (Fig. 6-5)
- Select “Service” from the Main menu, and press the [SELECT] button.
- Select “Function settings” with the [F1] or [F2] button, and press the [SELECT] button.

② (Fig. 6-6)
- Set the indoor unit refrigerant addresses and unit numbers with the [F1] through [F4] buttons, and then press the [SELECT] button to confirm the current setting.

<Checking the Indoor unit No.>
When the [SELECT] button is pressed, the target indoor unit will start fan operation. If the unit is common or when running all units, all indoor units for the selected refrigerant address will start fan operation.

③ (Fig. 6-7)
- When data collection from the indoor units is completed, the current settings appears highlighted. Non-highlighted items indicate that no function settings are made. Screen appearance varies depending on the “Unit No.” setting.

④ (Fig. 6-8)
- Use the [F1] or [F2] button to move the cursor to select the mode number, and change the setting number with the [F3] or [F4] button.

⑤ (Fig. 6-9)
- When the settings are completed, press the [SELECT] button to send the setting data from the remote controller to the indoor units.
- When the transmission is successfully completed, the screen will return to the Function setting screen.

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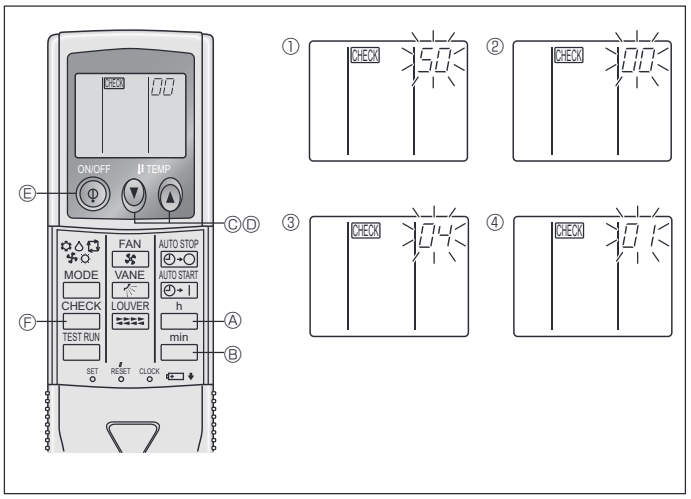


Fig. 6-10

EN

2) For wireless remote controller (Fig. 6-10)

Changing the power voltage setting

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

① Going to the function select mode
Press the CHECK button Ⓕ twice continuously.
(Start this operation from the status of remote controller display turned off.)
CHECK is lit and "00" blinks.
Press the temp button Ⓒ once to set "50". Direct the wireless remote controller toward the receiver of the indoor unit and press the h button Ⓐ.

② Setting the unit number
Press the temp buttons Ⓒ and Ⓓ to set the unit number "00". Direct the wireless remote controller toward the receiver of the indoor unit and press the min button Ⓑ.

③ Selecting a mode
Enter 04 to change the power voltage setting using the temp buttons Ⓒ and Ⓓ. Direct the wireless remote controller toward the receiver of the indoor unit and press the h button Ⓐ.
Current setting number: 1 = 1 beep (1 second)
2 = 2 beeps (1 second each)
3 = 3 beeps (1 second each)

④ Selecting the setting number
Use the temp buttons Ⓒ and Ⓓ to change the power voltage setting to 01 (240 V). Direct the wireless remote controller toward the sensor of the indoor unit and press the h button Ⓐ.

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 Ⓔ button Ⓔ.

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.

Function table

Select unit number 00

Mode	Settings	Mode no.	Setting no.	Initial setting	setting
Power failure automatic recovery	Not available	01	1		
	Available ※		2	O	
Indoor temperature detecting	Indoor unit operating average	02	1	O	
	Set by indoor unit's remote controller		2		
	Remote controller's internal sensor		3		
LOSSNAY connectivity	Not Supported	03	1	O	
	Supported (indoor unit is not equipped with outdoor-air intake)		2		
	Supported (indoor unit is equipped with outdoor-air intake)		3		
Power voltage	240 V	04	1		
	220 V, 230 V		2	O	

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	100 Hr	07	1		
	2500 Hr		2	O	
	No filter sign indicator		3		
Fan speed	Silent	08	1		
	Standard		2	O	
	High ceiling		3		
Installed options (high efficiency filter)	Not supported	10	1	O	
	Supported		2		
Up/down vane setting	No vanes	11	1		
	Equipped with vanes (vanes angle setup ①)		2	O	
	Equipped with vanes (vanes angle setup ②)		3		
Fan speed during the cooling thermostat is OFF	Setting fan speed	27	1		
	Stop		2		
	Extra low		3	O	

※ 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 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 MΩ.

7.2. Test run

7.2.1. Using wired remote controller.

■ Make sure to read operation manual before test run. (Especially items to secure safety)

Step 1 Turn on the power.

- Remote controller: The system will go into startup mode, and the remote controller power lamp (green) and “PLEASE WAIT” will blink. While the lamp and message are blinking, the remote controller cannot be operated. Wait until “PLEASE WAIT” is not displayed before operating the remote controller. After the power is turned on, “PLEASE WAIT” will be displayed for approximately 2 minutes.
- Indoor controller board: LED 1 will be lit up, LED 2 will be lit up (if the address is 0) or off (if the address is not 0), and LED 3 will blink.
- Outdoor controller board: LED 1 (green) and LED 2 (red) will be lit up. (After the startup mode of the system finishes, LED 2 will be turned off.) If the outdoor controller board uses a digital display, [-] and [-] will be displayed alternately every second.
  If the operations do not function correctly after the procedures in step 2 and thereafter are performed, the following causes should be considered and eliminated if they are found.
  (The symptoms below occur during the test run mode. “Startup” in the table means the LED display written above.)

Symptoms in test run mode		Cause
Remote Controller Display	**OUTDOOR BOARD LED Display** < > indicates digital display.	
Remote controller displays “PLEASE WAIT”, and cannot be operated.	After “startup” is displayed, only green lights up. <00>	• After power is turned on, “PLEASE WAIT” is displayed for 2 minutes during system startup. (Normal)
After power is turned on, “PLEASE WAIT” is displayed for 3 minutes, then error code is displayed.	After “startup” is displayed, green (once) and red (once) blink alternately. <F1>	• Incorrect connection of outdoor terminal block (R, S, T and S1, S2, S3.)
	After “startup” is displayed, green (once) and red (twice) blink alternately. <F3, F5, F9>	• Outdoor unit’s protection devise connector is open.
No display appears even when remote controller operation switch is turned on. (Operation lamp does not light up.)	After “startup” is displayed, green (twice) and red (once) blink alternately. <EA. Eb>	• Incorrect wiring between the indoor and outdoor unit (Polarity is wrong for S1, S2, S3.) • Remote controller transmission wire short.
	After “startup” is displayed, only green lights up. <00>	• There is no outdoor unit of address 0. (Address is other than 0.) • Remote controller transmission wire open.
Display appears but soon disappears even when remote controller is operated.	After “startup” is displayed, only green lights up. <00>	• After canceling function selection, operation is not possible for about 30 seconds. (Normal)

Step 2 Switch the remote controller to “Test run”.

① Select “Test run” from the Service menu, and press the [SELECT] button. (Fig. 7-1)
② Select “Test run” from the Test run menu, and press the [SELECT] button. (Fig. 7-2)
③ The test run operation starts, and the Test run operation screen is displayed.

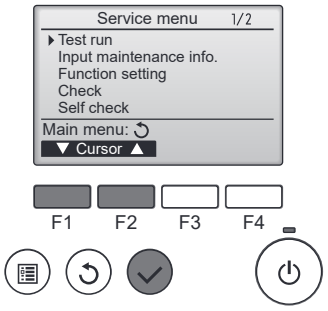


Fig. 7-1

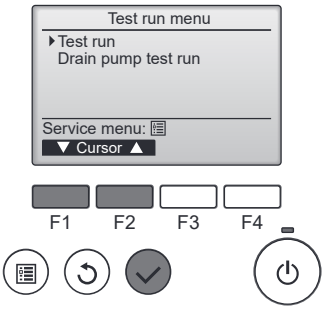


Fig. 7-2

Step 3 Perform the test run and check the airflow temperature and auto vane.

① Press the [F1] button to change the operation mode. (Fig. 7-3)
  Cooling mode: Check that cool air blows from the unit.
  Heating mode: Check that warm air blows from the unit.
② Press the [SELECT] button to display the Vane operation screen, and then press the [F1] and [F2] buttons to check the auto vane. (Fig. 7-4)
  Press the [RETURN] button to return to the Test run operation screen.

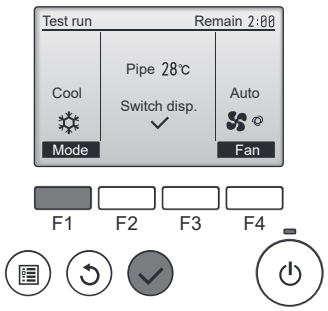


Fig. 7-3

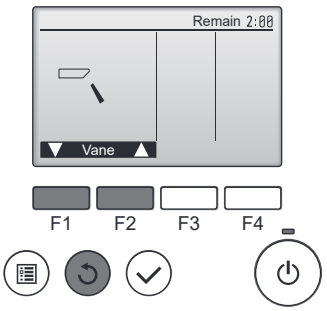


Fig. 7-4

Step 4 Confirm the operation of the outdoor unit fan.

The speed of the outdoor unit fan is controlled in order to control the performance of the unit. Depending on the ambient air, the fan will rotate at a slow speed and will keep rotating at that speed unless the performance is insufficient. Therefore, the outdoor wind may cause the fan to stop rotating or to rotate in the opposite direction, but this is not a problem.

EN

7. Test run

Step 5 Stop the test run.

① Press the [ON/OFF] button to stop the test run. (The Test run menu will appear.)
Note: If an error is displayed on the remote controller, see the table below.

LCD	Description of malfunction	LCD	Description of malfunction	LCD	Description of malfunction
P1	Intake sensor error	P9	Pipe sensor error (dual-wall pipe)	E0 ~ E5	Communication error between the remote controller and the indoor unit
P2	Pipe sensor error (liquid pipe)	PA	Leakage error (refrigerant system)		
P4	Drain float switch connector disconnected (CN4F)	Pb	Indoor unit fan motor error		
		PL	Refrigerant circuit abnormal		
P5	Drain overflow protection operation	FB	Indoor controller board error	E6 ~ EF	Communication error between the indoor unit and the outdoor unit
P6	Freezing/overheating protection operation	U*, F* (* indicates an alphanumeric character excluding FB.)	Outdoor unit malfunction Refer to the wiring diagram for the outdoor unit.		
P8	Pipe temperature error				

See the table below for the details of the LED display (LED 1, 2, and 3) on the indoor controller board.

LED 1 (microcomputer power supply)	Indicates whether control power is supplied. Make sure that this LED is always lit.
LED 2 (remote controller power supply)	Indicates whether power is supplied to the wired remote controller. The LED is lit only for the indoor unit that is connected to the outdoor unit that has an address of 0.
LED 3 (indoor/outdoor unit communication)	Indicates whether the indoor and outdoor units are communicating. Make sure that this LED is always blinking.

EN

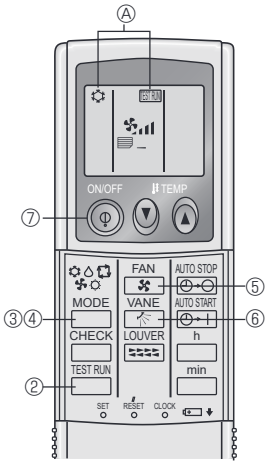


Fig. 7-5

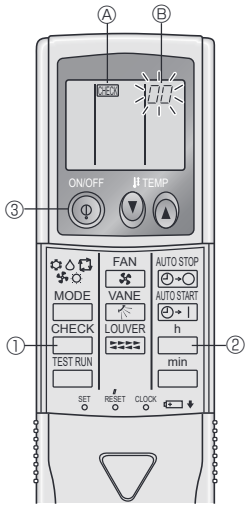


Fig. 7-6

7.2.2. Using wireless remote controller (Fig. 7-5)

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.)
Ⓐ TEST RUN 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 TEST RUN in FAN, DRY or AUTO mode.**

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

■ Refer to the installation manual that comes with each remote controller for details.
① Press the [CHECK] button twice.
② Set refrigerant address with [TEMP] button if system control is used.
③ Press the [ON/OFF] button to stop the self-check.
Ⓐ CHECK button
Ⓑ Refrigerant address
Ⓒ TEMP. button
Ⓓ IC: Indoor unit
OC: Outdoor unit
Ⓔ Check code
Ⓕ Unit address

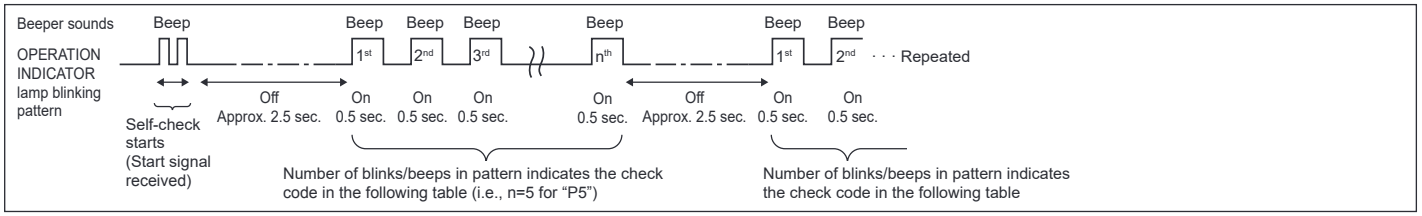
7.3.2. Wireless remote controller (Fig. 7-6)

① Turn on the power.
② Press the CHECK button twice.
(Start this operation from the status of remote controller display turned off.)
Ⓐ CHECK begins to light.
Ⓑ "00" begins to blink.
③ While pointing the remote controller toward the unit's receiver, press the h 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.

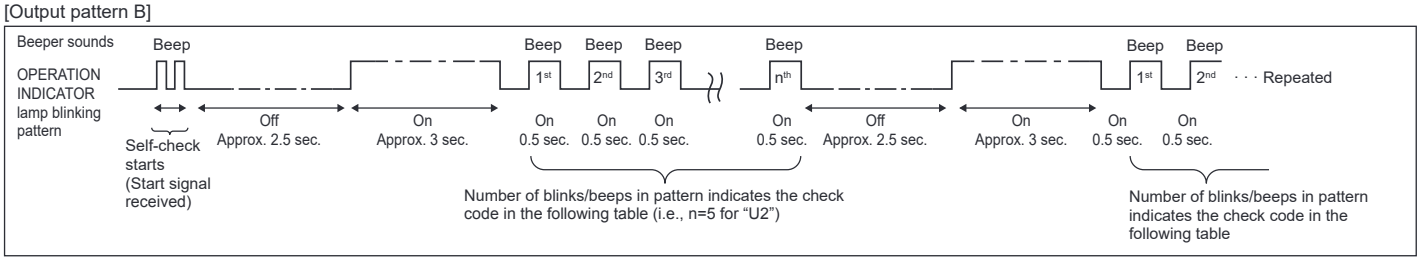
7. Test run

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

[Output pattern A]



[Output pattern B]



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[Output pattern A] Errors detected by indoor unit

Wireless remote controller	Wired remote controller	Symptom	Remark
Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)	Check code		
1	P1	Intake sensor error	
2	P2	Pipe (TH2) sensor error	
	P9	Pipe (TH5) sensor error	
3	E6, E7	Indoor/outdoor unit communication error	
4	P4	Float switch connector open	
5	P5	Drain pump error	
	PA	Forced compressor stop (due to water leakage abnormality)	
6	P6	Freezing/Overheating protection operation	
7	EE	Communication error between indoor and outdoor units	
8	P8	Pipe temperature error	
9	E4	Remote controller signal receiving error	
10	—	—	
11	Pb	Indoor unit fan motor error	
12	Fb	Indoor unit control system error (memory error, etc.)	
14	PL	Refrigerant circuit abnormal	
No sound	E0, E3	Remote controller transmission error	
No sound	E1, E2	Remote controller control board error	
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 blinks (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 protection operation	
7	U5	Abnormal temperature of heat sink	
8	U8	Outdoor unit fan protection 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.)	

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***1. If the beeper does not sound again after the initial 2 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 3 times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 sec.)" after the initial 2 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 test run, refer to the following table to find the cause.

Symptom			Cause
Wired remote controller		LED 1, 2 (PCB in outdoor unit)	
PLEASE WAIT	For about 2 minutes after power-on	After LED 1, 2 are lit, LED 2 is turned off, then only LED 1 is lit. (Correct operation)	•For about 2 minutes after power-on, operation of the remote controller is not possible due to system start-up. (Correct operation)
PLEASE WAIT →Error code	Subsequent to about 2 minutes after power-on	Only LED 1 is lit. → LED 1, 2 blink.	•Connector for the outdoor unit's protection device is not connected. Reverse or open phase wiring for the outdoor unit's power terminal block (L1, L2, L3)
Display messages do not appear even when operation switch is turned ON (operation lamp does not light up).		Only LED 1 is lit. → LED 1 blinks twice, LED 2 blinks once.	•Incorrect wiring between indoor and outdoor units (incorrect polarity of S1, S2, S3) •Remote controller wire short

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

- No signals from the remote controller are accepted.
- Operation lamp is blinking.
- The buzzer makes a short ping 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)	Indicates state of communication between the indoor and outdoor units. Make sure that this LED is always blinking.

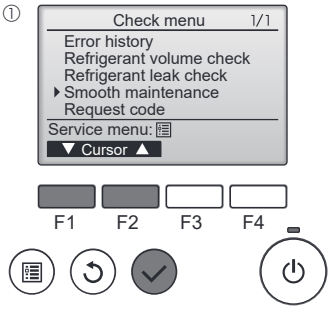
8. Easy maintenance function

Maintenance data, such as the indoor/outdoor unit's heat exchanger temperature and compressor operation current can be displayed with "Smooth maintenance".

*** This cannot be executed during test operation.**

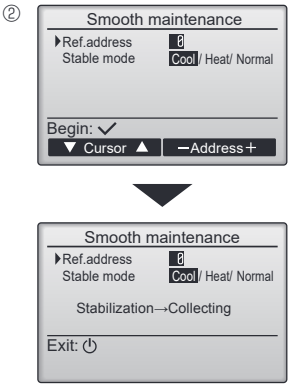
*** Depending on the combination with the outdoor unit, this may not be supported by some models.**

①



- Select "Service" from the Main menu, and press the [SELECT] button.
- Select "Check" with the [F1] or [F2] button, and press the [SELECT] button.
- Select "Smooth maintenance" with the [F1] or [F2] button, and press the [SELECT] button.

②



Select each item.

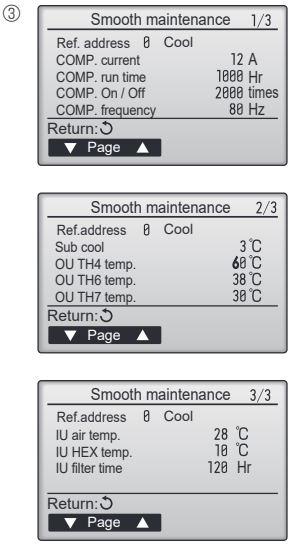
- Select the item to be changed with the [F1] or [F2] button.
- Select the required setting with the [F3] or [F4] button.

  "Ref. address" setting ……. "0" - "15"
  "Stable mode" setting…….. "Cool" / "Heat" / "Normal"

- Press the [SELECT] button, fixed operation will start.

* Stable mode will take approx. 20 minutes.

③



The operation data will appear.

The Compressor-Accumulated operating (COMP. run) time is 10-hour unit, and the Compressor-Number of operation times (COMP. On/Off) is a 100-time unit (fractions discarded)

Navigating through the screens

- To go back to the Main menu.....[MENU] button
- To return to the previous screen ..... [RETURN] button

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

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