

Air-Conditioners For Building Application INDOOR UNIT

PLFY-P·VFM-E

For use with the R410A Για χρήση με τα R410A
Bei Verwendung von R410A Para utilização com o R410A
A utiliser avec le R410A Til anvendelse sammen med R410A
Bij gebruik van R410A För användning med R410A
Para utilizar con el R410A R410A ile beraber kullanmak için
Usò del refrigerante R410A Для использования с моделями R410A

INSTALLATION MANUAL

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

FOR INSTALLER

INSTALLATIONSHANDBUCH

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

FÜR INSTALLATEURE

MANUEL D'INSTALLATION

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

POUR L'INSTALLATEUR

INSTALLATIEHANDLEIDING

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

VOOR DE INSTALLATEUR

MANUAL DE INSTALACIÓN

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

PARA EL INSTALADOR

MANUALE DI INSTALLAZIONE

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

PER L'INSTALLATORE

ΕΓΧΕΙΡΙΔΙΟ ΟΔΗΓΙΩΝ ΕΓΚΑΤΑΣΤΑΣΗΣ

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

ΓΙΑ ΑΥΤΟΝ ΠΟΥ ΚΑΝΕΙ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ

MANUAL DE INSTALAÇÃO

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

PARA O INSTALADOR

INSTALLATIONSMANUAL

Læs af sikkerhedshensyn denne installationsmanual grundigt, før du installerer klimaanlægget.

TIL INSTALLATØREN

INSTALLATIONSMANUAL

Läs installationsmanualen noga innan du installerar luftkonditioneringsenheten för säker och korrekt användning.

FÖR INSTALLATÖREN

MONTAJ ELKİTABI

Emniyetli ve doğru biçimde nasıl kullanılacağını öğrenmek için lütfen klima cihazını monte etmeden önce bu elkitabını dikkatle okuyunuz.

MONTÖR İÇİN

РУКОВОДСТВО ПО УСТАНОВКЕ

Для осторожного и правильного использования прибора необходимо тщательно ознакомиться с данным руководством по установке до выполнения установки кондиционера.

ДЛЯ УСТАНОВИТЕЛЯ**English (GB)****Deutsch (D)****Français (F)****Nederlands (NL)****Español (E)****Italiano (I)****Ελληνικά (GR)****Português (P)****Dansk (DA)****Svenska (SV)****Türkçe (TR)****Русский (RU)**

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Note:
The phrase “Wired remote controller” in this installation manual refers 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”.
- ▶ 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.

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 an action that must be avoided.
- ⚠ : Indicates that important instructions must be followed.
- ⚡ : Indicates a part which must be grounded.
- ⚠ : Indicates that caution should be taken with rotating parts.
- ⚠ : Indicates that the main switch must be turned off before servicing.
- ⚠ : Beware of electric shock.
- ⚠ : Beware of hot surface.
- ⚠ ELV: At servicing, please shut down the power supply for both the Indoor and Outdoor Unit.

Warning:
Carefully read the labels affixed to the main unit.
Install the indoor unit at least 2.5 m above floor or grade level.
For appliances not accessible to the general public.

- Warning:**
- Ask the dealer or an authorized technician to install the air conditioner.
 - The user should never attempt to repair the unit or transfer it to another location.
 - Install the unit at a place that can withstand its weight.
 - 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.
 - Use only accessories authorized by Mitsubishi Electric and ask the dealer or an authorized technician to install them.
 - Do not touch the heat exchanger fins.
 - Install the air conditioner according to this Installation Manual.
 - Have all electric work done by a licensed electrician according to local regulations.
 - The appliance shall be installed in accordance with national wiring regulations.

- 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.
- If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit even if the refrigerant should leak.
- The cut face punched parts may cause injury by cut, etc. The installers are requested to wear protective equipment such as gloves, etc.
- When installing or relocating, or servicing 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. 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.

- Caution:**
- Do not use the existing refrigerant piping.
 - Use ester oil, either oil or alkylbenzene (small amount) as the refrigerant oil to coat flares and flange connections.
 - Do not use the air conditioner where food, pets, plants, precision instruments, or artwork are kept.
 - Do not use the air conditioner in special environments.
 - Ground the unit.
 - Install an leak circuit breaker, as required.

- Use power line cables of sufficient current carrying capacity and rating.
- Use only a circuit breaker and fuse of the specified capacity.
- Do not touch the switches with wet fingers.
- Do not touch the refrigerant pipes during and immediately after operation.
- Do not operate the air conditioner with the panels and guards removed.
- Do not turn off the power immediately after stopping operation.

2. Installing the indoor unit

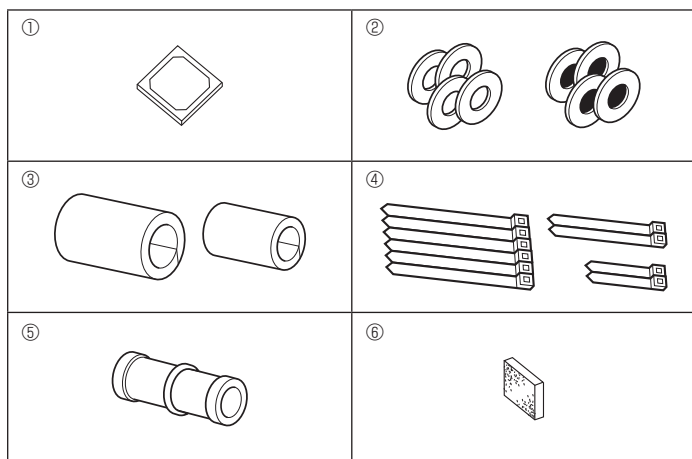


Fig. 2-1

2.1. Check the indoor unit accessories (Fig. 2-1)

The indoor unit should be supplied with the following accessories.

	Accessory name	Q'ty
①	Installation template	1
②	Washers (with insulation)	4
	Washers (without insulation)	4
③	Pipe cover (for refrigerant piping joint)	
	small diameter (liquid)	1
	large diameter (gas)	1
④	Band (large)	6
	Band (middle)	2
	Band (small) * Use only one.	2
⑤	Drain socket	1
⑥	Insulation	1

2. Installing the indoor unit

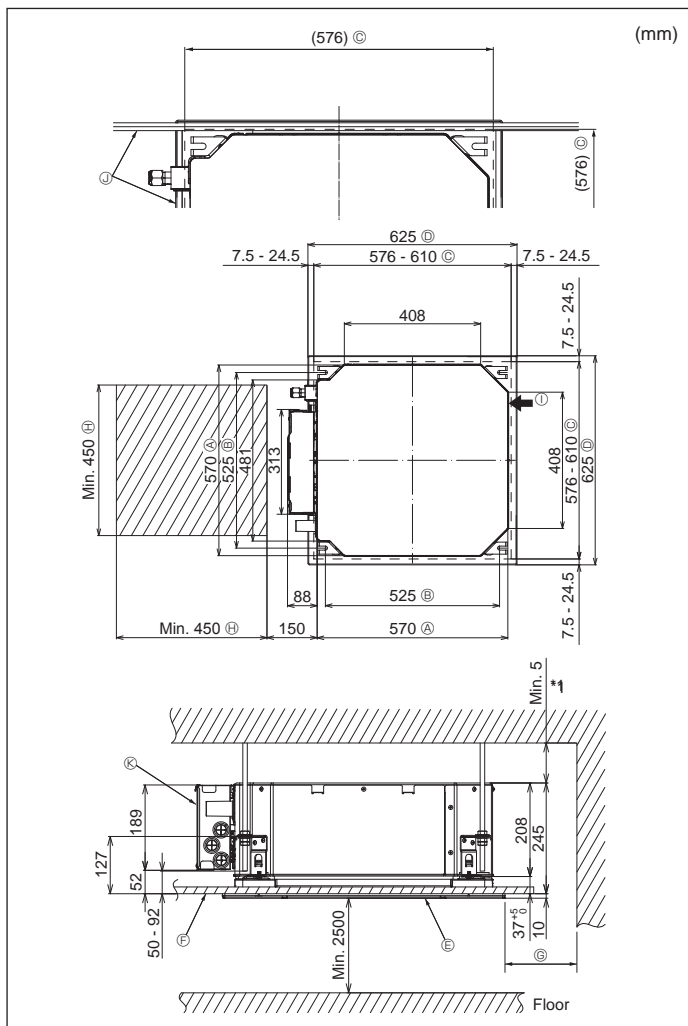


Fig. 2-2

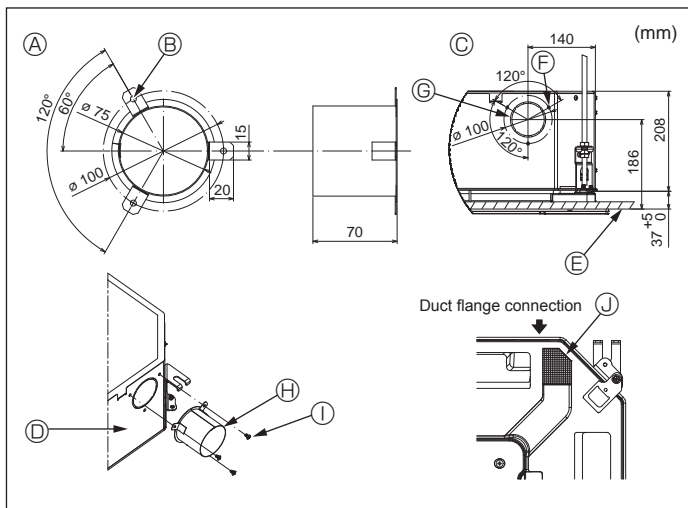


Fig. 2-3

2.2. Ceiling openings and suspension bolt installation locations (Fig. 2-2)

- Using the installation template and the gauge (supplied as an accessory with the grille), make an opening in the ceiling so that the main unit can be installed as shown in the diagram. (The method for using the template and the gauge are shown.)
 - Before using, check the dimensions of template and gauge, because they change due to fluctuations of temperature and humidity.
 - The dimensions of ceiling opening can be regulated within the range shown in following diagram; so center the main unit against the opening of ceiling, ensuring that the respective opposite sides on all sides of the clearance between them becomes identical.
- Use M10 (3/8") suspension bolts.
 - Suspension bolts are to be procured at the field.
- Install securely, ensuring that there is no clearance between the ceiling panel & grille, and between the main unit & grille.

- | | |
|---------------------------|---|
| Ⓐ Outer side of main unit | ⓐ Min. 500 mm (Entire periphery)
If setting the maintenance space for ⓐ, be sure to leave a minimum of 700 mm. |
| Ⓑ Bolt pitch | ⓑ Maintenance space |
| Ⓒ Ceiling opening | Ⓓ Fresh air intake |
| Ⓓ Outer side of Grille | Ⓔ Angle |
| Ⓔ Grille | Ⓚ Electric component box |
| Ⓚ Ceiling | |

* Leave the maintenance space at the electric component box end.

*1 When installing in an existing ceiling unit location or applying additional heat insulation, ensure a minimum space of 25 mm.

2.3. Installation of duct (in case of fresh air intake) (Fig. 2-3)

- ⚠ Caution:**
Linkage of duct fan and air conditioner
 In case that a duct fan is used, be sure to make it linked with the air conditioner when outside air is taken.
 Do not run the duct fan only. It can cause dew drop.

Making a duct flange (prepared locally)

- The shape of duct flange shown left is recommended.

Installation of duct flange

- Cut out the cutout hole. Do not knock it out.
- Install a duct flange to the cutout hole of the indoor unit with three 4 × 10 tapping screws which should be prepared locally.

Installation of duct (should be prepared locally)

- Prepare a duct of which inner diameter fits into the outer diameter of the duct flange.
- In case that the environment above the ceiling is high temperature and high humidity, wrap the duct in a heat insulate to avoid causing dew drop on the wall.

Remove the drain pan insulation.

- | | |
|---|---|
| Ⓐ Duct flange recommended shape
(Thickness: 0.8 or more) | ⓕ 3-Tapping screw hole |
| Ⓑ 3-φ5 hole | ⓖ ø73.4 cutout hole |
| Ⓒ Detail drawing of fresh air intake | ⓓ Duct flange (Prepared locally) |
| Ⓓ Indoor unit | ⓑ 4 × 10 Tapping screw (Prepared locally) |
| Ⓚ Ceiling surface | Ⓔ Insulation |

2. Installing the indoor unit

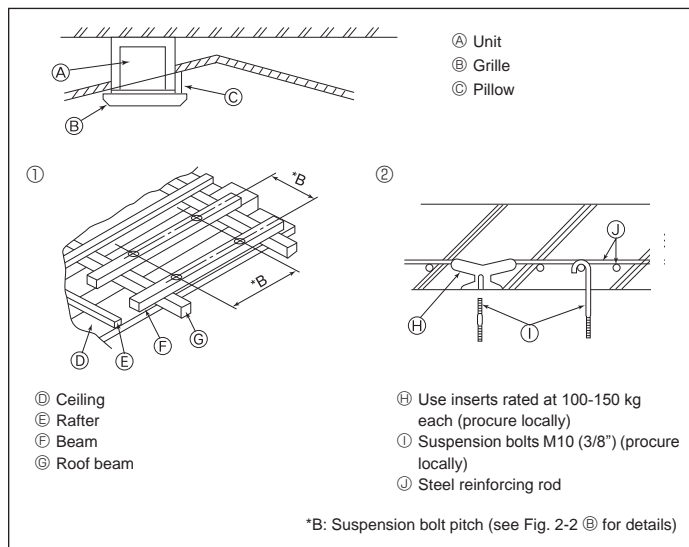


Fig. 2-4

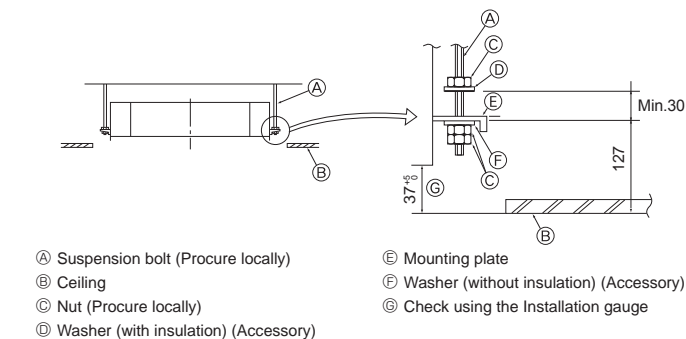


Fig. 2-5

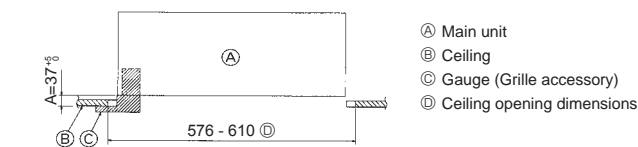


Fig. 2-6

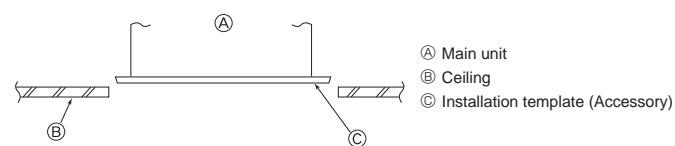


Fig. 2-7

2.4. Suspension structure (Give site of suspension strong structure) (Fig. 2-4)

The ceiling work differs according to the construction of the building. Building constructors and interior decorators should be consulted for details.

(1) Extent of ceiling removal: The ceiling must be kept completely horizontal and the ceiling foundation (framework: wooden slats and slat holders) must be reinforced in order to protect the ceiling from vibration.

(2) Cut and remove the ceiling foundation.

(3) Reinforce the ends of the ceiling foundation where it has been cut and add ceiling foundation for securing the ends of the ceiling board.

(4) When installing the unit on a slanting ceiling, interlock a pillow between the ceiling and the grille and set so that the unit is installed horizontally.

① Wooden structures

Use tie beams (single storied houses) or second floor beams (two story houses) as reinforcing members.

Wooden beams for suspending air conditioners must be sturdy and their sides must be at least 6 cm long if the beams are separated by not more than 90 cm and their sides must be at least 9 cm long if the beams are separated by as much as 180 cm. The size of the suspension bolts should be $\phi 10$ (3/8"). (The bolts do not come with the unit.)

② Ferro-concrete structures

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

2.5. Unit suspension procedures (Fig. 2-5)

Suspend the main unit as shown in the diagram.

1. In advance, set the parts onto the suspension bolts in the order of the washers (with insulation), washers (without insulation) and nuts (double).

• Fit the washer with cushion so that the insulation faces downward.

• In case of using upper washers to suspend the main unit, the lower washers (with insulation) and nuts (double) are to be set later.

2. Lift the unit to the proper height of the suspension bolts to insert the mounting plate between washers and then fasten it securely.

3. When the main unit can not be aligned against the mounting hole on the ceiling, it is adjustable owing to a slot provided on the mounting plate. (Fig. 2-6)

• Make sure that step A is performed within 37-42 mm. Damage could result by failing to adhere to this range.

2.6. Confirming the position of main unit and tightening the suspension bolts (Fig. 2-7)

Using the gauge attached to the grille, ensure that the bottom of the main unit is properly aligned with the opening of the ceiling. Be sure to confirm this, otherwise condensation may form and drip due to air leakage etc.

Confirm that the main unit is horizontally levelled, using a level or a vinyl tube filled with water.

After checking the position of the main unit, tighten the nuts of the suspension bolts securely to fasten the main unit.

The installation template can be used as a protective sheet to prevent dust from entering the main unit when the grilles are left unattached for a while or when the ceiling materials are to be lined after installation of the unit is finished.

* As for the details of fitting, refer to the instructions given on the Installation template.

3. Refrigerant pipe and drain pipe

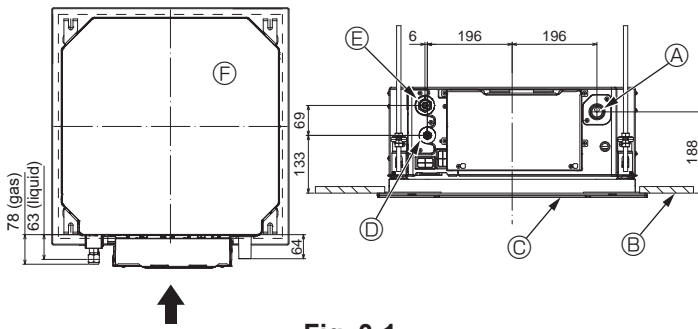


Fig. 3-1

3.1. Refrigerant and drainage piping locations of indoor unit (Fig. 3-1)

- Ⓐ Drain pipe
- Ⓑ Ceiling
- Ⓒ Grille
- Ⓓ Refrigerant pipe (liquid)
- Ⓔ Refrigerant pipe (gas)
- Ⓕ Main unit

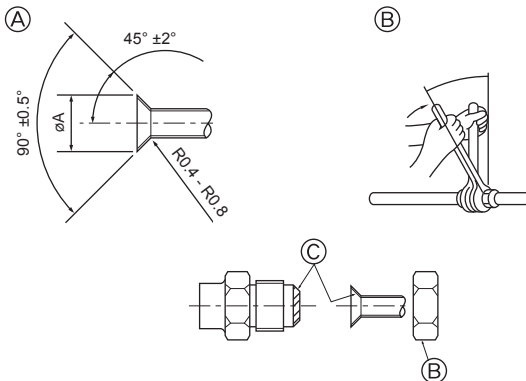


Fig. 3-2

3.2. Connecting pipes (Fig. 3-2)

- 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 two wrenches to tighten piping connections.
- Use refrigerant piping insulation provided to insulate indoor unit connections. Insulate carefully.

⚠ Warning:

When installing the unit, securely connect the refrigerant pipes before starting the compressor.

- Ⓐ Flare cutting dimensions

Copper pipe O.D. (mm)	Flare dimensions ϕA dimensions (mm)
$\phi 6.35$	8.7 - 9.1
$\phi 9.52$	12.8 - 13.2
$\phi 12.7$	16.2 - 16.6
$\phi 15.88$	19.3 - 19.7
$\phi 19.05$	22.9 - 23.3

Ⓑ Refrigerant pipe sizes & Flare nut tightening torque

	R410A				Flare nut O.D.	
	Liquid pipe		Gas pipe		Liquid pipe (mm)	Gas pipe (mm)
	Pipe size (mm)	Tightening torque (N·m)	Pipe size (mm)	Tightening torque (N·m)		
P15/20/25/32/40	OD $\phi 6.35$ (1/4")	14 - 18	OD $\phi 12.7$ (1/2")	49 - 61	17	26
P50	OD $\phi 6.35$ (1/4")	14 - 18	OD $\phi 12.7$ (1/2")	49 - 61	17	26
P63/80	OD $\phi 9.52$ (3/8")	34 - 42	OD $\phi 15.88$ (5/8")	68 - 82	22	29
P100/125	OD $\phi 9.52$ (3/8")	34 - 42	OD $\phi 15.88$ (5/8")	68 - 82	22	29

* Connect the joint with the following pipes: Liquid and gas pipes of P50, gas pipes of P100/P125.

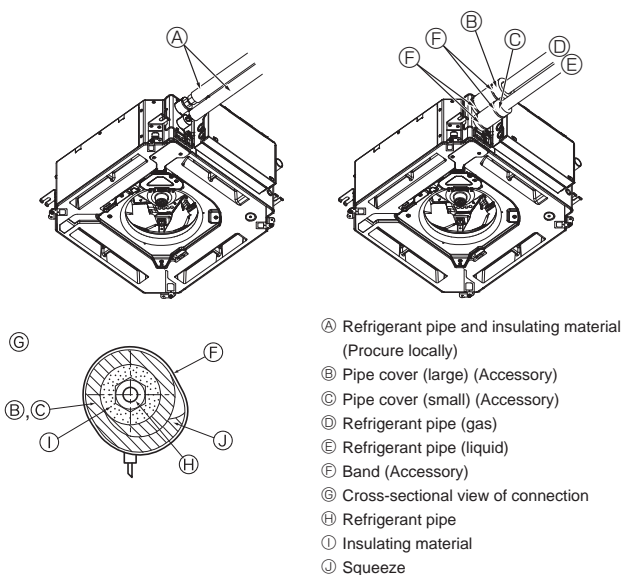


Fig. 3-3

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

3.3. Indoor unit (Fig. 3-3)

Heat insulation for refrigerant pipes:

- ① Wrap the enclosed large-sized pipe cover around the gas pipe, making sure that the end of the pipe cover touches the side of the unit.
 - ② Wrap the enclosed small-sized pipe cover around the liquid pipe, making sure that the end of the pipe cover touches the side of the unit.
 - ③ Secure both ends of each pipe cover with the enclosed bands. (Attach the bands 20 mm from the ends of the pipe cover.)
Make sure that the slit in the pipe cover is facing upward when it is installed.
- 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.)

3. Refrigerant pipe and drain pipe

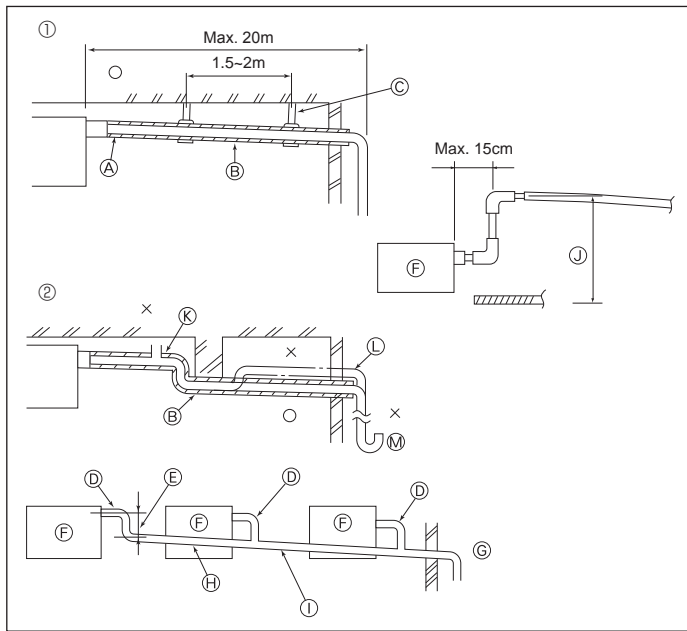


Fig. 3-4

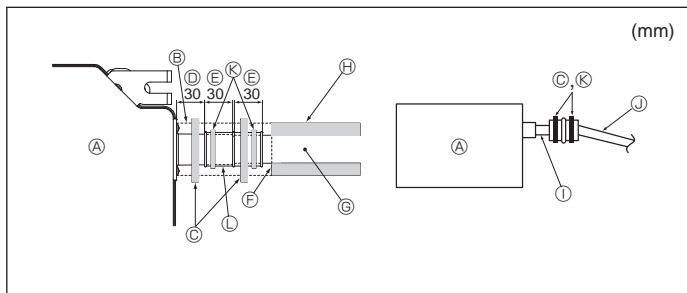


Fig. 3-5

3.4. Drainage piping work (Fig. 3-4)

- Use VP25 (O.D. $\phi 32$ (1-1/4") PVC TUBE) for drain piping and provide 1/100 or more downward slope.
- Be sure to connect the piping joints using a polyvinyl type adhesive.
- Observe the figure for piping work.
- Use the included drain hose to change the extraction direction.

- ① Correct piping
- ② Wrong piping
- Ⓐ Insulation (9 mm or more)
- Ⓔ Downward slope (1/100 or more)
- Ⓒ Support metal
- Ⓚ Air bleeder
- Ⓛ Raised
- Ⓜ Odor trap

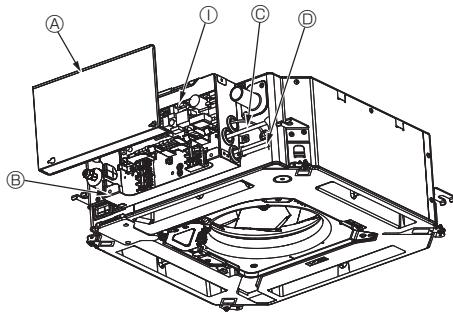
Grouped piping

- Ⓓ O.D. $\phi 32$ PVC TUBE
- Ⓕ Make it as large as possible
- Ⓕ Indoor unit
- Ⓗ Make the piping size large for grouped piping.
- Ⓗ Downward slope (1/100 or more)
- ① O.D. $\phi 38$ PVC TUBE for grouped piping. (9 mm or more insulation)
- Ⓙ Up to 850 mm

1. Connect the drain socket (supplied with the unit) to the drain port. (Fig. 3-5) (Affix the tube using PVC adhesive then secure it with a band.)
2. Install a locally purchased drain pipe (PVC pipe, O.D. $\phi 32$). (Affix the pipe using PVC adhesive then secure it with a band.)
3. Insulate the tube and pipe. (PVC pipe, O.D. $\phi 32$ and socket)
4. Check that drain flows smoothly.
5. Insulate the drain port with insulating material, then secure the material with a band. (Both insulating material and band are supplied with the unit.)

- Ⓐ Unit
- Ⓑ Insulating material
- Ⓒ Band (large)
- Ⓓ Drain port (transparent)
- Ⓔ Insertion margin
- Ⓕ Matching
- Ⓖ Drain pipe (O.D. $\phi 32$ PVC TUBE)
- Ⓗ Insulating material (purchased locally)
- ① Transparent PVC pipe
- Ⓛ O.D. $\phi 32$ PVC TUBE (Slope 1/100 or more)
- Ⓚ Band (middle)
- Ⓛ Drain socket

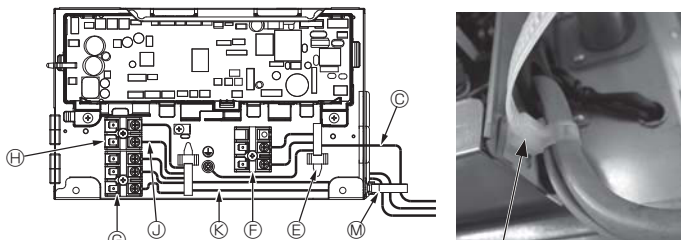
4. Electrical work



4.1. Indoor unit (Fig. 4-1, Fig. 4-2, Fig. 4-3)

1. Remove 2 screws to detach the electric component cover.
 2. Route each cable through the wiring intake into the electric component box. (Procure power supply cable and control cable locally.)
 3. Securely connect the power supply cable and control cable to the terminal blocks.
 4. Secure the cables with clamps outside the electric component box.
 5. Attach the electric component cover as it was.
- Do not allow slackening of the terminal screws.
 - Always install earth.
- (Earth cable dia: Thicker than 1.6 mm)
- Fix power supply cable and control cable to electric component box by using buffer bushing for tensile force. (PG connection or the like.)

- Ⓐ Electric component cover
- Ⓑ Electric component box
- Ⓒ Entry for power supply cable
- Ⓓ Entry for remote control cable and transmission cable
- Ⓔ Cable clamp
- Ⓕ Power supply terminals (L, N)
- Ⓖ Transmission terminals (M1, M2, S)
- Ⓗ MA Remote controller terminal (1, 2)
- ① Indoor controller
- Ⓛ Remote control cable
- Ⓚ Transmission cable
- Ⓛ Power supply cable
- Ⓜ Cable strap



J, K, L

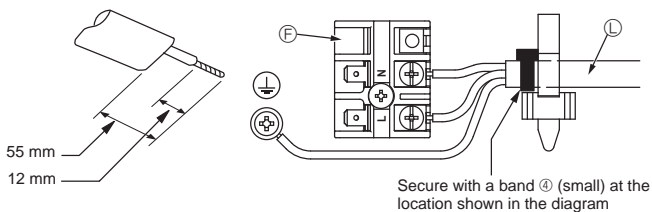


Fig. 4-1

4. Electrical work

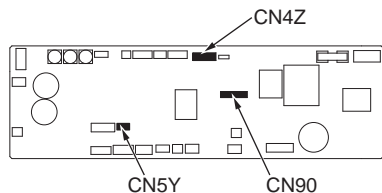


Fig. 4-2

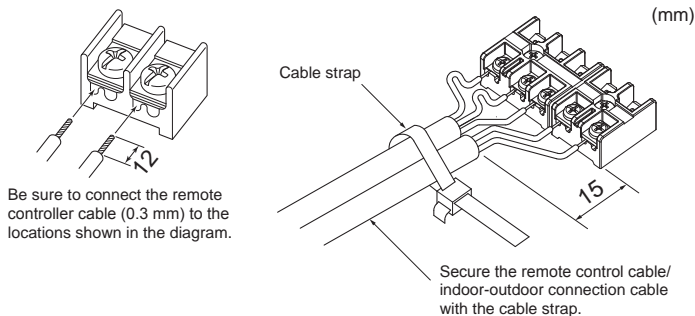


Fig. 4-3

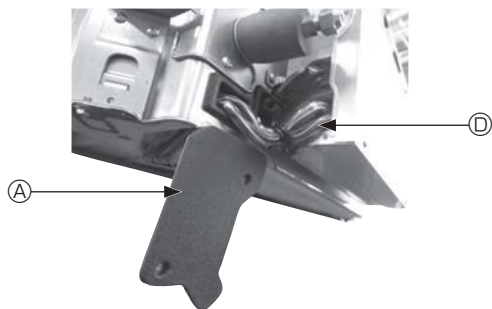


Fig. 4-4

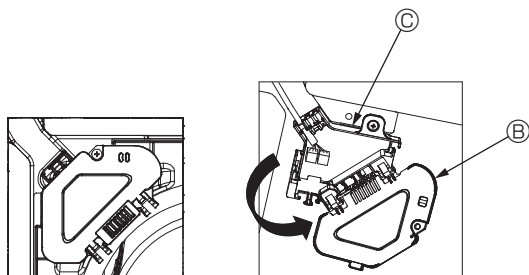


Fig. 4-5

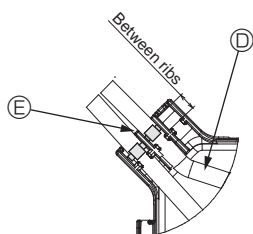


Fig. 4-6

⚠ Caution:

- Before installing the grille, make sure that the junction cable is connected.
- If the grille has signal receiver or i-see sensor, the pack of grille includes junction cables.

- When using the panel with wireless signal receiver or i-see sensor, install wireless junction cable for connecting with the cable from the panel through the following steps before installing the main unit.

Signal receiver: CN90

i-see sensor: CN5Y

i-see sensor motor: CN4Z

⚠ Warning:

- Insert hook the electric component cover into the bent support on the electric component box and attach the cover securely. If it is attached incorrectly, it could result in a fire, electric shock due to dust, water, etc.
- Use the specified indoor/outdoor unit connecting cable to connect the indoor and outdoor units and fix the cable to the terminal block securely so that no stress is applied to the connecting section of the terminal block. Incomplete connection or fixing of the cable could result in a fire.

4.1.1. Installing the i-See sensor and signal receiver

Before installing the grille, connect the junction wires included with the grille accessories and place them in the connector box.

- ① Remove the two screws securing the wire cover of the main unit, and then open the cover.
- ② Route the wires of the i-See sensor and signal receiver through the wire inlets in the electric component box as shown in the diagram and around the bushings on the side of the main unit. (Fig. 4-4)
When routing the wires, open the clamp securing the grille junction wire, and then secure the grille junction wire and the wires of the i-See sensor and signal receiver with the clamp.
- ③ Remove the one screw securing the connector box cover, and then open the cover. (Fig. 4-5)
- ④ Place the junction wire connector in the connector box.
- ⑤ Install the wire cover and connector box cover.

⚠ Caution:

When installing the covers, make sure that the wires do not get pinched. Fit the band securing the junction wires between the ribs on the connector box as shown in the diagram. (Fig. 4-6)

- Ⓐ Wire cover
- Ⓑ Connector box cover
- Ⓒ Connector box
- Ⓓ I-See sensor or signal receiver lead wire (Grille accessory)
- Ⓔ Band

4. Electrical work

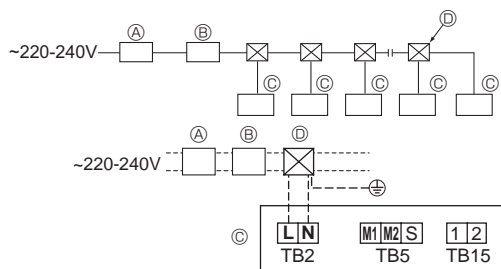


Fig. 4-7

4.2. Power supply wiring

- Wiring size must comply with the applicable local and national codes.
- Power supply cable of appliance shall not be lighter than design 245 IEC 53 or 227 IEC 53, 245 IEC 53 or 227 IEC 53.
- Install an earth line longer than other cables.
- A switch with at least 3 mm, 1/8 inch contact separation in each pole shall be provided by the air conditioner installation.

[Fig.4-7]

- Ⓐ Ground-fault interrupter
- Ⓑ Local switch/Wiring breaker
- Ⓒ Indoor unit
- Ⓓ Pull box

⚠ Warning:

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

Total operating current of the indoor unit	Minimum wire thickness (mm ²)			Ground-fault interrupter *1	Local switch (A)		Breaker for wiring (NFB)
	Main cable	Branch	Ground		Capacity	Fuse	
F0 = 16 A or less *2	1.5	1.5	1.5	20 A current sensitivity *3	16	16	20
F0 = 25 A or less *2	2.5	2.5	2.5	30 A current sensitivity *3	25	25	30
F0 = 32 A or less *2	4.0	4.0	4.0	40 A current sensitivity *3	32	32	40

Apply to IEC61000-3-3 about max. permissive system impedance.

*1 The Ground-fault interrupter should support inverter circuit.

The Ground-fault interrupter should combine using of local switch or wiring breaker.

*2 Please take the larger of F1 or F2 as the value for F0.

F1 = Total operating maximum current of the indoor units × 1.2

F2 = {V1 × (Quantity of Type1)/C} + {V1 × (Quantity of Type2)/C} + {V1 × (Quantity of Type3)/C} + {V1 × (Quantity of Others)/C}

Indoor unit	V1	V2
Type 1 PLFY-VBM, PMFY-VBM, PEFY-VMS, PCFY-VKM, PKFY-VHM, PKFY-VKM, PLFY-VFM	19.8	2.4
Type 2 PEFY-VMA	38	1.6
Type 3 PEFY-VMHS	46.6	4.8
Others Other indoor unit	0	0

C : Multiple of tripping current at tripping time 0.01 s

Please pick up "C" from the tripping characteristic of the breaker.

<Example of "F2" calculation>

*Condition PEFY-VMS × 4 + PEFY-VMA × 1, C = 8 (refer to right sample chart)

$$F2 = 19.8 \times 4/8 + 38 \times 1/8$$

$$= 14.65$$

→ 16 A breaker (Tripping current = 8 × 16 A at 0.01 s)

*3 Current sensitivity is calculated using the following formula.

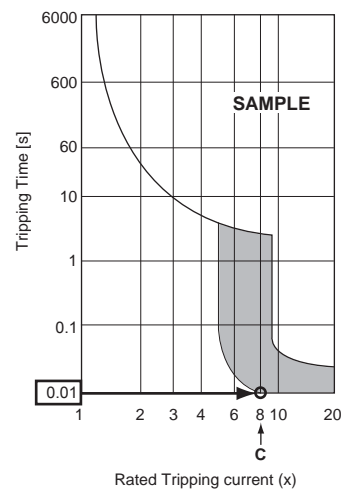
$$G1 = V2 \times (\text{Quantity of Type1}) + V2 \times (\text{Quantity of Type2}) + V2 \times (\text{Quantity of Type3}) + V2 \times (\text{Quantity of Others})$$

$$+ V3 \times (\text{Wire length[km]})$$

G1	Current sensitivity
30 or less	30 mA 0.1 sec or less
100 or less	100 mA 0.1 sec or less

Wire thickness	V3
1.5 mm ²	48
2.5 mm ²	56
4.0 mm ²	66

Sample chart



4. Electrical work

4.3. Types of control cables

1. Wiring transmission cables

Types of transmission cable	Shielding wire CVVS or CPEVS
Cable diameter	More than 1.25 mm ²
Length	Less than 200 m

2. M-NET Remote control cables

Types of remote control cable	Shielding wire MVVS
Cable diameter	More than 0.5 to 1.25 mm ²
Length	Add any portion in excess of 10 m to within the longest allowable transmission cable length 200 m.

3. MA Remote control cables

Types of remote control cable	2-core cable (unshielded)
Cable diameter	0.3 to 1.25 mm ²
Length	Less than 200 m

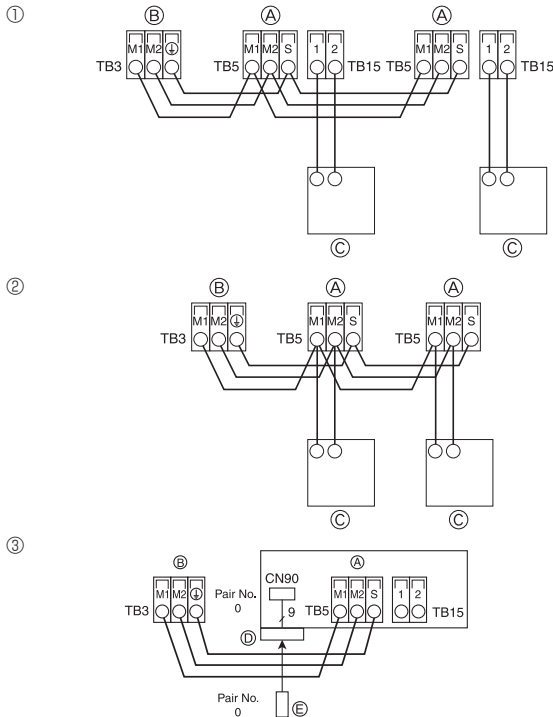


Fig. 4-8

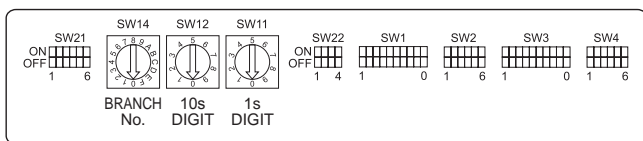


Fig. 4-9

4.4. Connecting remote controller, indoor and outdoor transmission cables (Fig. 4-8)

- Connect indoor unit TB5 and outdoor unit TB3. (Non-polarized 2-wire) The "S" on indoor unit TB5 is a shielding wire connection. For specifications about the connecting cables, refer to the outdoor unit installation manual.
- Install a remote controller following the manual supplied with the remote controller.
- Connect the remote controller's transmission cable within 10 m using a 0.75 mm² core cable. If the distance is more than 10 m, use a 1.25 mm² junction cable.

① MA Remote controller

- Connect the "1" and "2" on indoor unit TB15 to a MA remote controller. (Non-polarized 2-wire)

- DC 9 to 13 V between 1 and 2 (MA remote controller)

② M-NET Remote controller

- Connect the "M1" and "M2" on indoor unit TB5 to a M-NET remote controller. (Nonpolarized 2-wire)

- DC 24 to 30 V between M1 and M2 (M-NET remote controller)

③ Wireless remote controller (When installing wireless signal receiver)

- Connect the wire of wireless signal receiver (9-pole cable) to CN90 of indoor controller board.
- To change Pair No. setting, refer to installation manual attached to wireless remote controller. (In the default setting of indoor unit and wireless remote controller, Pair No. is 0.)

Ⓐ Terminal block for indoor transmission cable

Ⓑ Terminal block for outdoor transmission cable (M1(A), M2(B), ⊕(S))

Ⓒ Remote controller

Ⓓ Wireless signal receiver

Ⓔ Wireless remote controller

4.5. Setting addresses (Fig. 4-9)

(Be sure to operate with the main power turned OFF.)

- There are two types of rotary switch setting available: setting addresses 1 to 9 and over 10, and setting branch numbers.

① How to set addresses

Example: If Address is "3", remain SW12 (for over 10) at "0", and match SW11 (for 1 to 9) with "3".

② How to set branch numbers SW14 (Series R2 only)

Match the indoor unit's refrigerant pipe with the BC controller's end connection number.

Remain other than series R2 at "0".

- The rotary switches are all set to "0" when shipped from the factory. These switches can be used to set unit addresses and branch numbers at will.
- The determination of indoor unit addresses varies with the system at site. Set them referring to the Data Book.

4.6. Sensing room temperature with the built-in sensor in a remote controller

If you want to sense room temperature with the built-in sensor in a remote controller, set SW1-1 on the control board to "ON". The setting of SW1-7 and SW1-8 as necessary also makes it possible to adjust the air flow at a time when the heating thermometer is OFF.

4. Electrical work

4.7. Switch setting for high ceiling

With this unit, the air flow rate and fan speed can be adjusted by setting the SW21-1 and SW21-2. Select a suitable setting from the table below according to the installation location.

* Make sure the SW21-1 and SW21-2 switch are set, otherwise problems such as not getting cool/warm may occur.

	SW21-1	SW21-2	Height
Silent	–	ON	2.5 m
Standard	OFF	OFF	2.7 m : default setting
High ceiling	ON	OFF	3.0 m

4.8. Switch setting for i-See sensor

With i-See sensor panel, SW3-4 must be adjusted as a position of i-See sensor. (Refer to 14 page.)

	SW3-4	
Position ①	OFF	"□" stamp position
Position ③	ON	"○" stamp position : default setting

4.9. Electrical characteristics

Symbols: MCA: Max. Circuit Amps (= 1.25×FLA) FLA: Full Load Amps
IFM: Indoor Fan Motor Output: Fan motor rated output

Model	Power supply		IFM		
	Volts/ Hz	Range +/- 10%	MCA (A)	Output (kW)	FLA (A)
PLFY-P15VFM-E	220-240V / 50Hz 220V / 60Hz	Max.: 264V Min.: 198V	0.24	0.05	0.19
PLFY-P20VFM-E			0.26	0.05	0.21
PLFY-P25VFM-E			0.28	0.05	0.22
PLFY-P32VFM-E			0.29	0.05	0.23
PLFY-P40VFM-E			0.35	0.05	0.28
PLFY-P50VFM-E			0.50	0.05	0.40

4.10. How to set the fixed up/down air direction (Only for wired remote controller)

- For PLFY-FM, only the particular outlet can be fixed to certain direction with the procedures below. Once fixed, only the set outlet is fixed every time air conditioner is turned on. (Other outlets follow UP/DOWN air direction setting of the remote controller.)

■ Explanation of word

- "Address No. of indoor unit" is the number given to each air conditioner.
- "Outlet No." is the number given to each outlet of air conditioner.
(Refer to the right.)
- "Up/Down air direction" is the direction (angle) to fix.



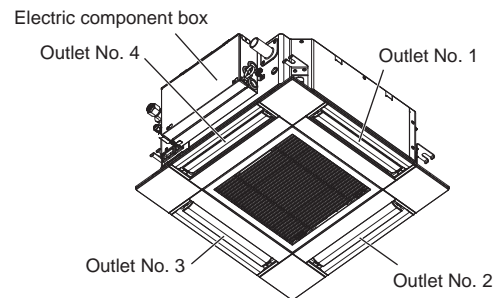
Remote controller setting

The airflow direction of this outlet is controlled by the airflow direction setting of remote controller.

Fixed setting

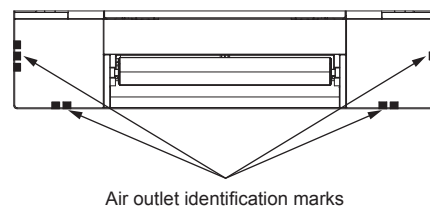
The airflow direction of this outlet is fixed in particular direction.

* When it is cold because of direct airflow, the airflow direction can be fixed horizontally to avoid direct airflow.



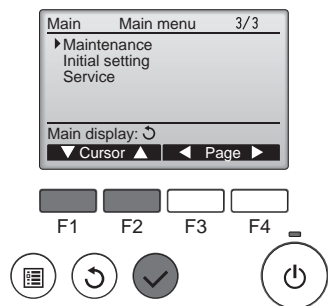
Note:

The outlet No. is indicated by the number of grooves on both ends of each air outlet. Set the air direction while checking the information shown on the remote controller display.

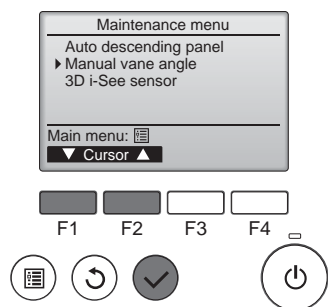


4. Electrical work

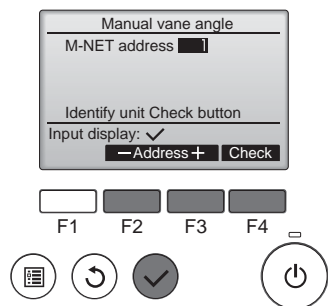
■ Manual vane angle



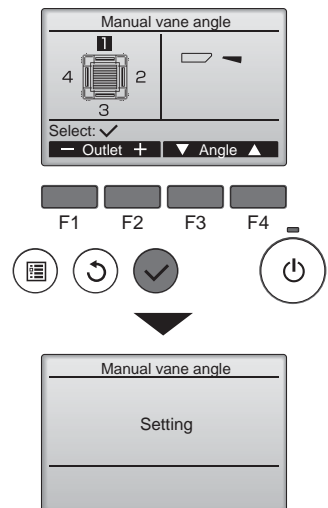
① Select "Maintenance" from the Main menu, and press the [SELECT] button.



② Select "Manual vane angle" with the [F1] or [F2] button, and press the [SELECT] button.



③ Select the "M-NET address" for the units to whose vanes are to be fixed, with the [F2] or [F3] button, and press the [SELECT] button. Press the [F4] button to confirm the unit. The vane of only the target indoor unit is pointing downward.



④ The current vane setting will appear.

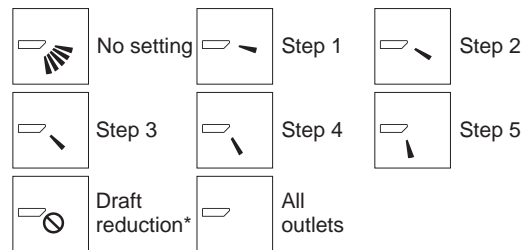
Select the desired outlets from 1 through 4 with the [F1] or [F2] button.
 • Outlet: "1", "2", "3", "4" and "1, 2, 3, 4, (all outlets)"

Press the [F3] or [F4] button to go through the option in the order of "No setting (reset)," "Step 1", "Step 2", "Step 3", "Step 4", "Step 5" and "Draft reduction*".
 Select the desired setting.

* Draft reduction

The airflow direction for this setting is more horizontal than the airflow direction for the "Step 1" setting in order to reduce a drafty feeling. The draft reduction can be set for only 1 vane.

■ Vane setting



Press the [SELECT] button to save the settings.

A screen will appear that indicates the setting information is being transmitted.

The setting changes will be made to the selected outlet.

The screen will automatically return to the one shown above (step 5) when the transmission is completed.

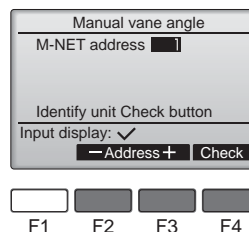
Make the settings for other outlets, following the same procedures.

If all outlets are selected, will be displayed the next time the unit goes into operation.

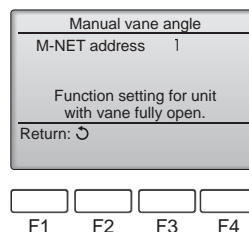
Navigating through the screens

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

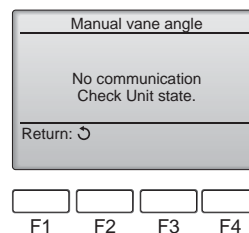
■ Confirmation procedure



① Select the "M-NET address" for the units to whose vanes are to be fixed, with the [F2] or [F3] button. Press the [F4] button to confirm the unit.



② After pressing the [F4] button, wait approximately 15 seconds, and then check the current state of the air conditioner.
 → The vane is pointing downward.
 → This air conditioner is displayed on the remote controller.
 → All outlets are closed. → Press the [RETURN] button and continue the operation from the beginning.
 → The messages shown to the left are displayed. → The target device does not exist at this refrigerant address.



• Press the [RETURN] button to return to the initial screen.

③ Change the "M-NET address" to the next number.

• Refer to step ① to change the "M-NET address" and continue with the confirmation.

5. Installing the grille

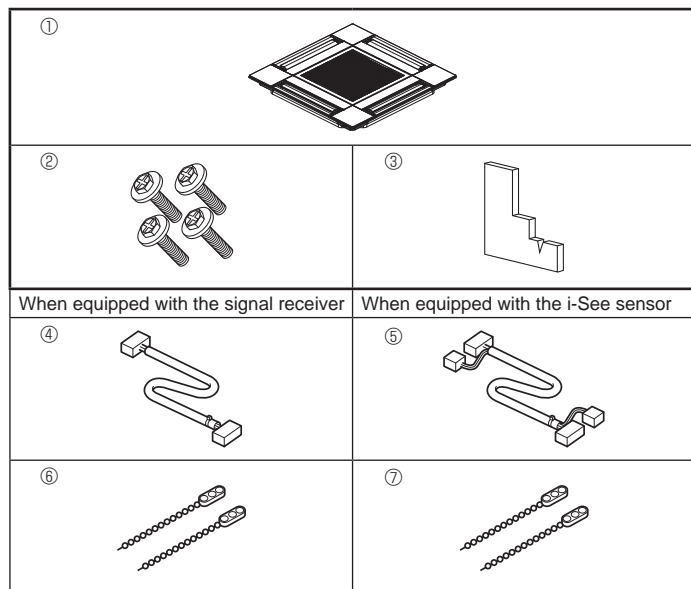


Fig. 5-1

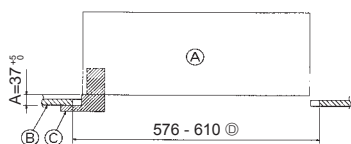


Fig. 5-2

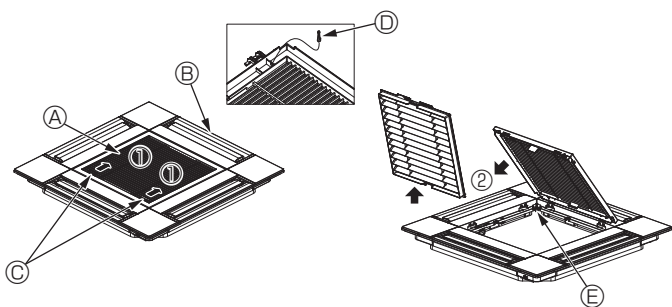


Fig. 5-3

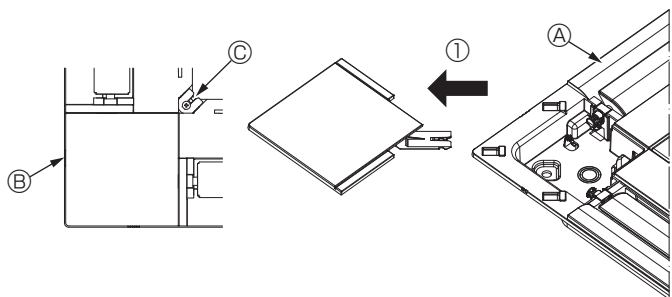


Fig. 5-4

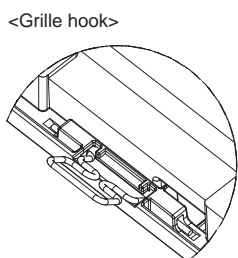


Fig. 5-5

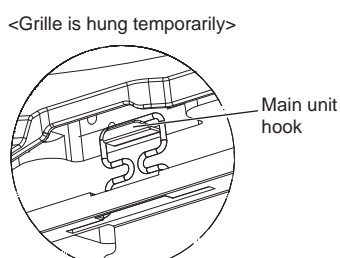


Fig. 5-6

5.1. Check the grille accessories (Fig. 5-1)

- The grille should be supplied with the following accessories.

	Accessory name	Q'ty	Remark
①	Grille	1	625 × 625 (mm)
②	Screw with washer	4	M5 × 0.8 × 28 (mm)
③	Gauge	1	
④	Junction wire for signal receiver	1	Included when equipped with the signal receiver.
⑤	Junction wire for i-See sensor	1	Included when equipped with the i-See sensor.
⑥	Fastener	2	Included when equipped with the signal receiver.
⑦	Fastener	2	Included when equipped with the i-See sensor.

5.2. Preparing to attach the grille (Fig. 5-2)

- With the gauge supplied with this kit, adjust and check the positioning of the unit relative to the ceiling. If the unit is not properly positioned in the ceiling, there may be air leaks, condensation may form, or the up/down vanes may not operate correctly.
- Make sure that the opening in the ceiling is within the following tolerances: 576 × 576 - 610 × 610
- Make sure that step A is performed within 37-42 mm. Damage could result by failing to adhere to this range.

- Ⓐ Main unit
- Ⓑ Ceiling
- Ⓒ Gauge (Accessory)
- Ⓓ Ceiling opening dimensions

5.2.1. Removing the intake grille (Fig. 5-3)

- Slide the levers in the direction indicated by the arrow ① to open the intake grille.
- Unlatch the hook that secures the grille.
 - * Do not unlatch the hook for the intake grille.
- With the intake grille in the "open" position, remove the hinge of the intake grille from the grille as indicated by the arrow ②.

- Ⓐ Intake grille
- Ⓑ Grille
- Ⓒ Intake grille levers
- Ⓓ Grille hook
- Ⓔ Hole for the grille's hook

5.2.2. Removing the corner panel (Fig. 5-4)

- Remove the screw from the corner of the corner panel. Slide the corner panel as indicated by the arrow ① to remove the corner panel.

- Ⓐ Grille
- Ⓑ Corner panel
- Ⓒ Screw

5.3. Installing the grille

- Please pay attention because there is a restriction in the attachment position of the grille.

5.3.1. Temporarily installing the grille

Align the screw holes in the corners of the grille with the screw mounting holes in the corners of the main unit, latch the two hooks on the grille onto the drain pan projections on the main unit, and temporarily hang the grille. (Fig. 5-5, 5-6)

⚠ Caution:

When installing the i-See sensor and signal receiver, place the junction wires in the connector box before temporarily hanging the grille. Refer to 4.1.1. on page 7 to route the junction wires.

5. Installing the grille

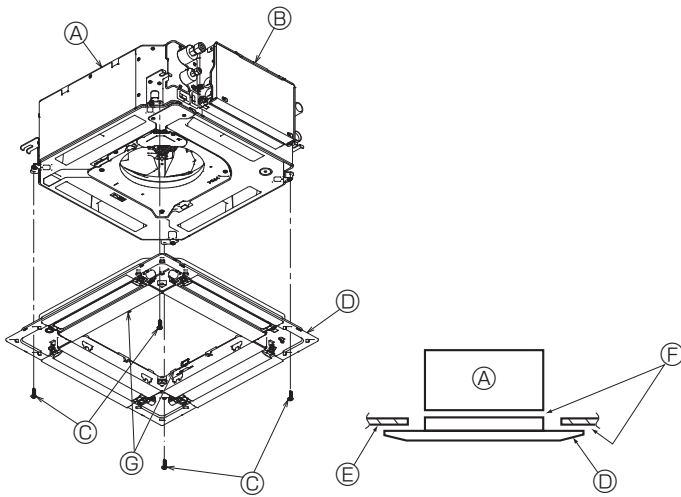


Fig. 5-7

Fig. 5-8

5.3.2. Securing the grille

- Secure the grille by tightening the four screws. (Fig. 5-7)
- * Make sure that there are no gaps between the main unit and the grille or the grille and the ceiling. (Fig. 5-8)

- Ⓐ Main unit
- Ⓑ Electric component box
- Ⓒ Screw with washer (Accessory)
- Ⓓ Grille
- Ⓔ Ceiling
- Ⓕ Make sure that there are no gaps.
- Ⓖ Temporary hanging hooks on the panel

⚠ Caution:

When tightening the screw with captive washer Ⓒ, tighten it at a torque of 4.8 N·m or less. Never use an impact screwdriver. It may result in parts damage.

- After tightening the screw, confirm that the two grille hooks (Fig. 5-6) are latched onto the hooks on the main unit.

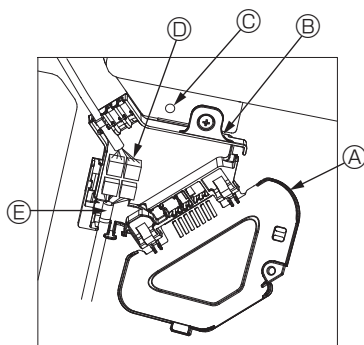


Fig. 5-9

5.3.3. Connecting the wires

- ① Remove the one screw securing the connector box cover, slide the cover in the direction indicated by the arrow as shown in the diagram, and then open the cover.
- ② In the connector box, locate the junction wire for the vane motor of the grille and the wire for the vane motor, and then connect the wires. (Fig. 5-9)
There are two vane motor connectors: one blue connector and one orange connector. Make sure that the connector colors match when connecting them.
- ③ After placing the wires in the connector box, close the connector box cover. Make sure that the wires do not get pinched. (Fig. 5-10)
When closing the connector box cover, slide the cover in the direction indicated by the arrow and make sure that the projection is firmly inserted.

- Ⓐ Connector box cover
- Ⓑ Connector box
- Ⓒ Securing screw
- Ⓓ Junction connector
- Ⓔ Wire connector for the vane motor
- Ⓕ Band

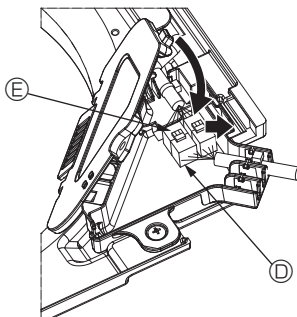


Fig. 5-10

⚠ Caution:

- Place the band securing the panel vane motor wire in the connector box as shown in the diagram. (Fig. 5-11)
- When closing the connector box cover, make sure that the wires do not get pinched.

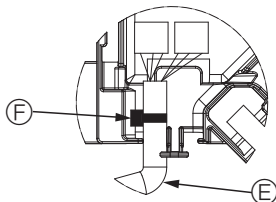


Fig. 5-11

5. Installing the grille

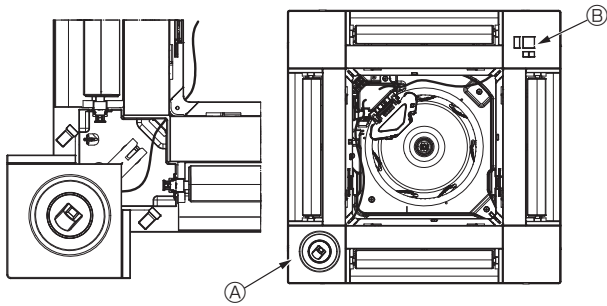


Fig. 5-12

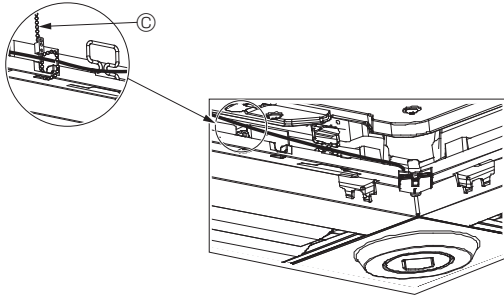


Fig. 5-13

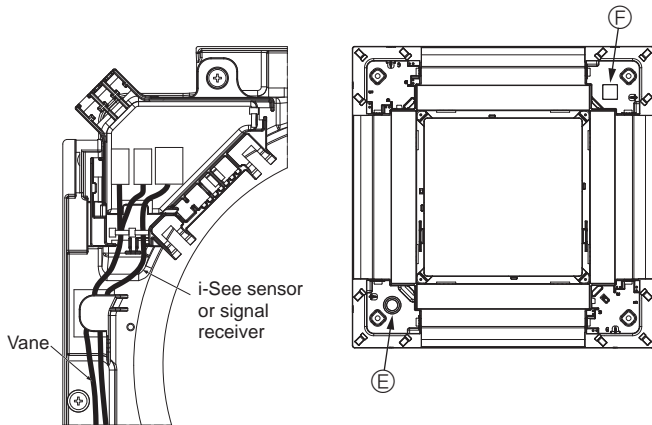


Fig. 5-14

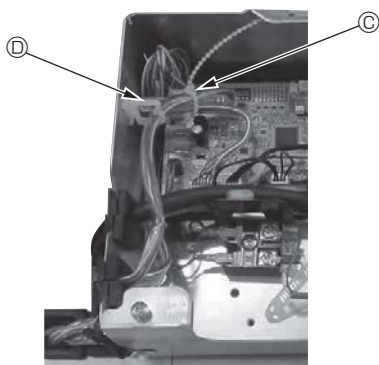


Fig. 5-15

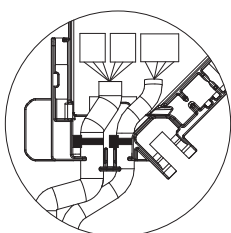


Fig. 5-16

5.3.4. Wiring the i-See sensor corner panel and signal receiver

- Install the i-See sensor and signal receiver at the corners of the panel at the locations stamped with "○" or "□". (The positions may be reversed.)
- Route the i-See sensor and signal receiver wires through the square holes at the corners of the panel and install them.
- Connect the junction wire connector and the wire connectors of the i-See sensor and signal receiver in the connector box.
- Close the connector box cover.
- Secure the i-See sensor and signal receiver wires to the panel with the fastener as shown in the diagram so that there is no slack in the wires, and then cut off the excess end of the fastener. (Fig. 5-13)
- Place the i-See sensor and signal receiver wires to the inside of the flange on the panel.
- If the position of the i-See sensor was changed from the "○" position (E) to the "□" position (F), change the switch settings. (Refer to page 10.)

⚠ Caution:

- Route the i-See sensor and signal receiver wires as shown in Fig. 5-14.
- Place the excess portions of the i-See sensor and signal receiver junction wires in the electric component box in the wire clip as shown in the diagram, and secure the wires together with the fastener. (Fig. 5-15)
- Make sure that the band securing the i-See sensor and signal receiver junction wires is positioned inside the connector box. (Fig. 5-16)
- If the vane motor connectors and signal receiver connector are connected incorrectly, the vanes will not move or communication with the remote controller will not be possible.

- Ⓐ i-See sensor
- Ⓑ Signal receiver
- Ⓒ Fastener
- Ⓓ Wire clip
- Ⓔ "○" stamp : default i-See sensor position
- Ⓕ "□" stamp : default signal receiver position

5. Installing the grille

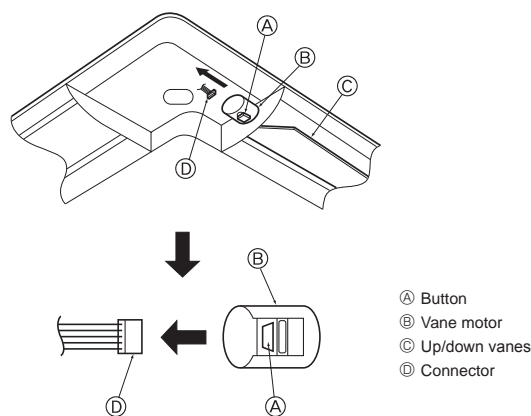
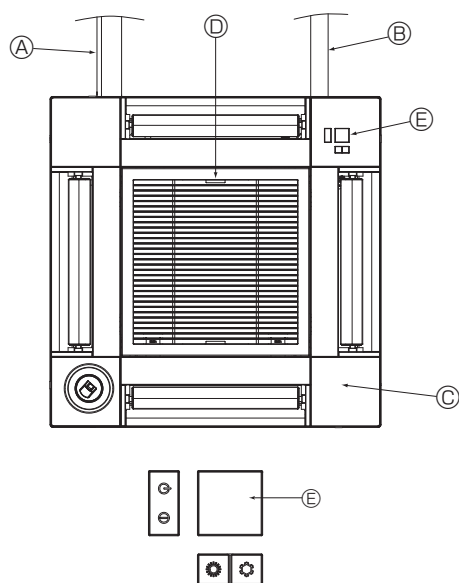


Fig. 5-17



Signal receiver

Fig. 5-18

5.4. Locking the up/down airflow direction (Fig. 5-17)

The vanes of the unit can be set and locked in up or down orientations depending upon the environment of use.

- Set according to the preference of the customer.

The operation of the fixed up/down vanes and all automatic controls cannot be performed using the remote controller. In addition, the actual position of the vanes may differ from the position indicated on the remote controller.

- ① Turn off the main power switch.
Injuries and or an electrical shock may occur while the fan of the unit is rotating.
- ② Disconnect the connector for the vane motor of the vent that you want to lock.
(While pressing the button, remove the connector in the direction indicated by the arrow as shown in the diagram.) After removing the connector, insulate it with tape.

⚠ Caution:

Do not set the up/down vanes passed the specified range. Condensation could form on and drop from the ceiling, or the unit could malfunction.

5.5. Installing the intake grille (Fig. 5-18)

- Perform the procedure that is described in "5.2. Preparing to attach the grille" in reverse order to install the intake grille and the corner panel.

Ⓐ Refrigerant piping of the main unit

Ⓑ Drain piping of the main unit

Ⓒ Corner panel

* Installation in any position is possible.

Ⓓ Position of the levers on the intake grille when sent from the factory.

* Although the clips can be installed in any of four positions.

Ⓔ Receiver (for SLP-2FAL*)

5.6. Check

- Make sure that there is no gap between the unit and the grille, or between the grille and the surface of the ceiling. If there is any gap between the unit and the grille, or between the grille and the surface of the ceiling, it may cause dew to collect.
- Make sure that the wires have been securely connected.
- Check that all four vanes move. If two or four vanes do not move, refer to 10.3 and check the connections.
- For 3D i-See sensor corner panel, check the rotating movement. If the 3D i-See sensor does not rotate, review the procedure in "5.3. Installing the grille".

6. Test run

6.1. 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.

Controller interface

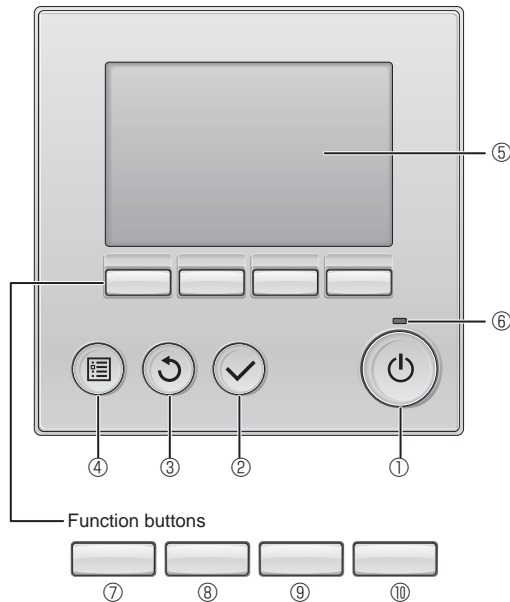


Fig. 6-1

6.2. Test run

The following 3 methods are available.

6.2.1. Using wired remote controller (Fig. 6-1)

① [ON/OFF] button

Press to turn ON/OFF the indoor unit.

② [SELECT] button

Press to save the setting.

③ [RETURN] button

Press to return to the previous screen.

④ [MENU] button

Press to bring up the Main menu.

⑤ Backlit LCD

Operation settings will appear.

When the backlight is off, pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.

When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the [ON/OFF] button)

⑥ ON/OFF lamp

This lamp lights up in green while the unit is in operation. It blinks while the remote controller is starting up or when there is an error.

⑦ Function button [F1]

Main display: Press to change the operation mode.

Main menu: Press to move the cursor down.

⑧ Function button [F2]

Main display: Press to decrease temperature.

Main menu: Press to move the cursor up.

⑨ Function button [F3]

Main display: Press to increase temperature.

Main menu: Press to go to the previous page.

⑩ Function button [F4]

Main display: Press to change the fan speed.

Main menu: Press to go to the next page.

Step 1 Switch the remote controller to "Test run".

- ① Select "Service" from the Main menu, and press the [SELECT] button.
- ② When the Service menu is selected, a window will appear asking for the password. (Fig. 6-2)
To enter the current maintenance password (4 numerical digits), move the cursor to the digit you want to change with the [F1] or [F2] button, and set each number (0 through 9) with the [F3] or [F4] button. Then, press the [SELECT] button.

Note: The initial maintenance password is "9999". Change the default password as necessary to prevent unauthorized access. Have the password available for those who need it.

Note: If you forget your maintenance password, you can initialize the password to the default password "9999" by pressing and holding the [F1] and [F2] buttons simultaneously for three seconds on the maintenance password setting screen.

- ③ Select "Test run" with the [F1] or [F2] button, and press the [SELECT] button. (Fig. 6-3)
- ④ Select "Test run" with the [F1] or [F2] button, and press the [SELECT] button. (Fig. 6-4)

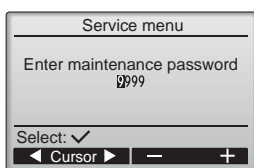


Fig. 6-2

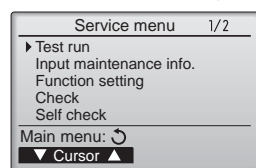


Fig. 6-3

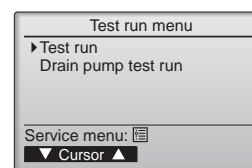


Fig. 6-4

6. Test run

Step 2 Perform the test run and check the airflow temperature and auto vane.

- Press the **F1** button to go through the operation modes in the order of "Cool" and "Heat". (Fig. 6-5)
Cool mode: Check the cold air blow off.
Heat mode: Check the heat blow off.
* Check the operation of the outdoor unit's fan.
- Press the **✓** button and open the Vane setting screen.
If the vanes do not move, check that the junction wire connectors are connected securely and the connector colors match.

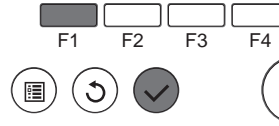
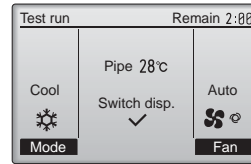


Fig. 6-5

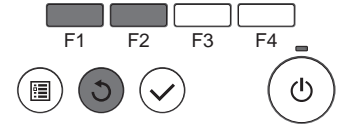
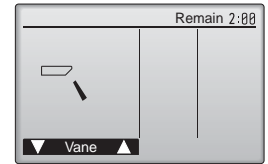


Fig. 6-6

AUTO vane check

- Check the auto vane with the **F1** **F2** buttons. (Fig. 6-6)
- Press the **⏪** button to return to "Test run operation".
- Press the **⏩** button.

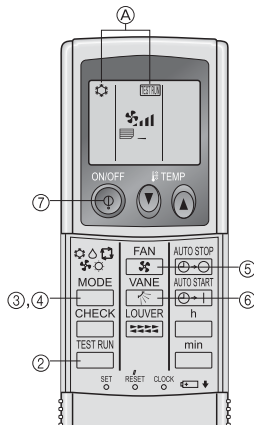
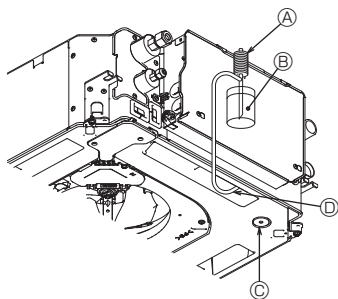


Fig. 6-7



- Ⓐ Water supply pump
 - Ⓑ Water (about 1000 cc)
 - Ⓒ Drain plug
 - Ⓓ Pour water through outlet
- Be careful not to spray water into the drain pump mechanism.

Fig. 6-8

6.2.2. Using wireless remote controller (Fig. 6-7)

- Turn on the power to the unit at least 12 hours before the test run.
- 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.
- Press the **MODE** button to activate **COOL** mode, then check whether cool air is blown out from the unit.
- Press the **MODE** button to activate **HEAT** mode, then check whether warm air is blown out from the unit.
- Press the **FAN** button and check whether fan speed changes.
- Press the **VANE** button and check whether the auto vane operates properly.
- 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.

6.3. Check of drainage (Fig. 6-8)

- Ensure that the water is being properly drained out and that no water is leaking from joints.

When electric work is completed.

- Pour water during cooling operation and check.

When electric work is not completed.

- Pour water during emergency operation and check.

* Drain pan and fan are activated simultaneously when single phase 220-240V is turned on to L and N on terminal block after the connector (SWE) on controller board in the electrical branch box is set to ON.

Be sure to turn it back to the former state after work.

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

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

- Low Voltage Directive 2006/95
- Electromagnetic Compatibility Directive 2004/108 EEC
- Machinery Directive 2006/42/EC
- Energy-related Products Directive 2009/125/EC and Regulation (EU) No 206/2012
- RoHS Directive 2011/65/EU

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

mitsubishi electric corporation

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

Authorized representative in EU: MITSUBISHI EUROPE, B.V. HARMAN HOUSE,

1 GEORGE STREET, UXBRIDGE,

MIDDLE SEX UB8 1QQ.U.K.