

## **Fresh Master**

Models:

**GUF-50RDH4**

**GUF-50RD4**

**GUF-100RDH4**

**GUF-100RD4**

# **Installation Instructions**

**⚠ Caution:**

1. Always use an all pole disconnection for the main switch (breaker) for the power connection.
2. Always use double insulated PVC cable for the transmission lines.

**⚠ Vorsicht:**

1. Verwenden Sie als Hauptschalter immer einen Schalter, der alle Pole der Stromversorgung trennt.
2. Verwenden Sie für die Übertragungsleitungen ausschließlich doppelt isoliertes PVC-Kabel.

**⚠ Précaution:**

1. Utilisez toujours comme connexion sur le secteur un disjoncteur principal de mise hors tension de tous les pôles.
2. Utilisez toujours un câble en PVC à double isolation pour les lignes de transmission.

**⚠ Cautela:**

1. Per l'interruttore principale (interruttore di circuito) per il collegamento di alimentazione elettrica, bisogna usare un'interruttore di disconnessione di tutti i poli.
2. Per le linee di trasmissione, usare solo un cavo in PVC a doppio isolamento.

**⚠ Cuidado:**

1. Utilice siempre una desconexión de todos los polos para el interruptor (disyuntor) principal de la conexión del suministro eléctrico.
2. Utilice siempre cable de PVC con doble aislamiento para las líneas de transmisión.

**⚠ Cuidado:**

1. Desligue sempre todos os pólos do interruptor (disjuntor) principal para ligação da electricidade.
2. Utilize sempre cabos de PVC de isolamento duplo para as linhas de transmissão.

**⚠ Voorzichtig:**

1. Gebruik voor de hoofdschakelaar van de elektrische voeding (stroomverbreker) altijd een schakelaar, waarbij alle polen verbroken worden.
2. Gebruik altijd dubbel geïsoleerde PVC-kabel voor de transmissieleidingen.

**⚠ Προσοχή:**

1. Χρησιμοποιείτε πάντα μηχανισμό αποσύνδεσης όλων των ακροδεκτών για τον κύριο διακόπτη (ασφαλειοδιακόπτη) για τη σύνδεση με την παροχή ρεύματος.
2. Χρησιμοποιείτε πάντα καλώδιο PVC με διπλή μόνωση για τις γραμμές μετάδοσης.

**⚠ 注意:**

1. 电源连接用的主开关（断路器）一定要使用所有电极都能脱开的结构型式。
2. 传输线路一定要使用双重绝缘的PVC电缆。

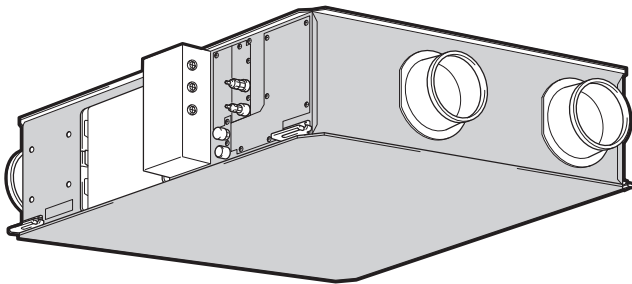
# Fresh Master

Models:

**GUF -50RDH4, GUF -50RD4**

**GUF -100RDH4, GUF -100RD4**

## Installation Instructions (For use by dealer/contractor)



GUF -50RDH4 shown above.

Humidifier function not available on GUF-50RD4 and GUF-100RD4.

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

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- Please take the time to read through these instructions before commencing with the installation work. They will help to install the Fresh Master properly and safely.
- The separate Operating Instructions are for the user. Make sure that they are handed over to the customer.

**The warranty will not apply to damage resulting from failure to follow the warnings and precautions set forth in the Installation Instructions.**

**For use with the R410A & R407C**

### 1. Safety precautions

 <b>WARNING</b>	
 Do not disassemble	<ul style="list-style-type: none"> <li>- <b>Do not modify or disassemble.</b></li> <li>- It could cause fire, electric shock or injury.</li> </ul>
 Prohibition of use in bath or shower room	<ul style="list-style-type: none"> <li>- <b>The Fresh Master and remote controller should not be installed where it is highly humid, like a bathroom, or other wet place.</b></li> <li>- It could cause electric shock or power leakage.</li> </ul>
 Connect the grounding wire.	<ul style="list-style-type: none"> <li>- <b>Connect the product properly to ground.</b></li> <li>- Malfunctioning or power leaks can cause electrical shock.</li> </ul>
 The instructions given must be followed.	<ul style="list-style-type: none"> <li>- <b>Use the specified power supply and voltage.</b></li> <li>- Use of incorrect power supply or voltage could cause fire or electric shock.</li> <li>- <b>Select a place with sufficient strength and install the main unit securely.</b></li> <li>- It could cause injury if it falls.</li> </ul>
 The instructions given must be followed.	
<ul style="list-style-type: none"> <li>- <b>Wiring work must be performed by qualified professionals, and be implemented safely and securely in accordance with the engineering standards and the extension wiring rules for electrical equipment.</b></li> <li>- Poor connection or improper wiring work could cause electric shock or fire.</li> <li>- <b>Install a power supply isolator at the power supply side as per local electrical regulations. All supply circuits must be disconnected before obtaining access to the terminal devices. Use the specified cable size and connect the cables securely to prevent disconnection when they are pulled.</b></li> <li>- If there is a defect in the connection, there is a possibility of fire.</li> <li>- <b>Select an adequate place for the opening to introduce outdoor air, where it will not intake the exhaust fumes like combustion gas, or others, and there is no risk of blockage.</b></li> <li>- Shortage of fresh air could put the room in a state of oxygen deficiency.</li> <li>- <b>A duct made of steel must be installed with care not to be connected electrically with metals such as metal, wire, stainless steel plate, or others.</b></li> <li>- It could cause fire when power leakage occurs.</li> </ul>	

## ⚠ CAUTION



Prohibited

- Do not place a burning appliance in a place where it is exposed directly to the air from the Fresh Master.
  - It could cause an accident as a result of incomplete combustion.
- Do not use at a place where it is exposed to high temperatures (40°C or higher), naked flames, or in environment with combustible fumes.
  - It could cause fire.
- Do not use in an environment such as a chemical factory, where hazardous gases such as acidic gases, alkaline gases, organic solvent fumes, paint fumes, or gases containing corrosive components are generated.
  - It could cause malfunction.
- Do not install this product in a place where it is exposed to ultraviolet light.
  - UV may damage covering insulation.



The instructions given must be followed.

- Put on gloves during installation.
  - It could cause injury.
- Make sure the power supply isolator is turned off on the power distribution panel when Fresh Master is not used for a long period of time after the installation.
  - It could cause electric shock, power leakage, or fire as a result of deteriorated insulation.
- Always use the specified suspension bolts, nuts and washers and correctly rated wire / chain hangers.
  - Use of hardware with insufficient strength could result in the product dropping.
- The outside ducts must be tilted at a gradient (1/30 or more) down toward the outdoor louvres from Fresh Master, and properly insulated.
  - The entry of rain water may cause power leakage, fire, or damage to household property.
- The control box cover must be closed after the installation.
  - Dust or humidity may cause power leakage or fire.
- When connecting external devices (electrically operated damper, lamp, monitoring unit, etc.) using output signals of the Fresh Master, make sure to install safety equipment for the external devices.
  - It could cause fire, damage, etc. without safety equipment.

## ⚠ CAUTION

- When using the product where it is exposed to high temperatures and humidity (40°C or higher, RH 80% or higher), or where fog occurs frequently, moisture is likely to condense in the core, and may result in condensation build up in the unit. The product should not be used under such conditions.
- Outdoor air may enter the Fresh Master owing to the pressure difference between indoor and outdoor or external winds even when the product is not operated. It is recommended to install an electrically operated damper to block the outdoor air.
- In a cold weather area, an area with strong external winds or where fog occurs frequently, cold outdoor air, external winds or fog may be introduced into the product when its operation is stopped. It is recommended to install an electrically operated damper.

- When using the product in an environment where there is a window, or opening near the outdoor louvre, where insects are likely to gather around the interior or exterior light, take note that small insects may intrude into the product.
- In a cold weather area, or others, dewing or freezing could occur on the main unit, where the duct is connected, or other sections, depending on the conditions of outdoor air and indoor temperature and moisture, even if they are within the range of operating conditions. Make sure to confirm the operating conditions and other precautions, and do not use the product if dewing or freezing is anticipated.
  - \* Example of dewing condition - Outdoor air: -5°C or lower, dew-point temperature at installation place: 10°C or higher (When the indoor temperature is 22°C or higher with the relative humidity higher than 50%, or other)

- ▶ Before operating the unit, make sure you read all the "Safety precautions".
- ▶ "Safety precautions" lists important points about safety. Please be sure to follow them.

### Symbols used in the text

#### ⚠ Warning:

Describes precautions that should be observed to avoid the risk of injury or death to the user.

#### ⚠ Caution:

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

### Symbols used in the illustrations



: Indicates that important instructions must be followed.



: Indicates a part which must be grounded.



: Beware of electric shock. (This symbol is displayed on the main unit label.) <Colour: Yellow>

#### ⚠ Warning:

Carefully read the labels affixed to the main unit.

## 1.1. Installation

- ▶ After you have read this manual, keep it and the Installation Manual in a safe place for easy reference whenever a question arises. If the unit is going to be operated by another person, make sure that this manual is given to him or her.

#### ⚠ Warning:

- Never charge any types of refrigerant other than those specified by Mitsubishi Electric. Failure to follow this warning may result in violation of law, or blowout, explosion or fire when the product is used, serviced, or disposed of. The types of refrigerant that can be used are specified in the manual supplied with the product or on the product nameplate. Mitsubishi Electric shall assume no liability for any damage, breakdown, malfunction, or accident resulting from the charging of a refrigerant not specified by Mitsubishi Electric.
- The unit should not be installed by the user. Ask the dealer or an authorized company to install the unit. If the unit is installed improperly, water leakage, electric shock or fire may result.
- Use only accessories authorized by Mitsubishi Electric and ask your dealer or an authorized company to install them. If accessories are installed improperly, water leakage, electric shock or fire may result.
- The Installation Manual details the suggested installation method. Any structural alteration necessary for installation must comply with local building code requirements.

- Never repair the unit or transfer it to another site by yourself. If repair is performed improperly, water leakage, electric shock or fire may result. If you need to have the unit repaired or moved, consult your dealer.

## 1) Outdoor unit

### ⚠ Warning:

- The outdoor unit must be installed on a stable, level surface, in a place where there is no accumulation of snow, leaves or rubbish.
- Do not stand on, or place any items on the unit. You may fall down or the item may fall, causing injury.

### ⚠ Caution:

- The outdoor unit should be installed in a location where air and noise emitted by the unit will not disturb the neighbours.

## 2) Fresh Master

### ⚠ Warning:

- The Fresh Master should be securely installed. If the unit is loosely mounted, it may fall, causing injury.
- Install the unit on a rigid structure to prevent excessive operation sound or vibration.

## 3) Remote controller

### ⚠ Warning:

- The Remote controller should be installed in such a way that children cannot play with it.

## 4) Drain hose

### ⚠ Caution:

- Make sure that the drain hose is installed so that drainage can go ahead smoothly. Incorrect installation may result in water leakage, causing damage to furniture.

## 5) Refrigerant pipe

### ⚠ Warning:

- Be sure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.

## 6) Power Supply, fuse or circuit isolator

### ⚠ Warning:

- Make sure that the unit is powered by a dedicated power supply. Other appliances connected to the same power supply could cause an overload.
- Make sure that there is a mains power switch.
- Be sure to adhere to the unit's voltage and fuse circuit isolator ratings. Never use a cable or a fuse with a higher rating than the one specified.

## 7) Grounding

### ⚠ Caution:

- The unit must be properly grounded. Never connect the grounding wire to a gas pipe, water pipe, lightning conductor or telephone grounding wire. If the unit is not grounded properly, electric shock may result.
- Check frequently that the ground wire from the outdoor unit is properly connected to both the unit's ground terminal and the grounding electrode.

## 1.2. Precautions for devices that use R 407C refrigerant

### ⚠ Caution:

- Do not use the existing refrigerant piping.
  - The old refrigerant and refrigerator oil in the existing piping contains a large amount of chlorine which may cause the refrigerator oil of the new unit to deteriorate.
- Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.
  - Contaminants on the inside of the refrigerant piping may cause the refrigerant residual oil to deteriorate.
- Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)
  - If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.
- Use ester oil, ether oil or alkylbenzene (small amount) same as the refrigerator oil to coat flares and flange connections.
  - The refrigerator oil will degrade if it is mixed with a large amount of mineral oil.
- Use liquid refrigerant to fill the system.
  - If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- Do not use a refrigerant other than R 407C.
  - If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the refrigerator oil to deteriorate.
- Use a vacuum pump with a reverse flow check valve.
  - The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerator oil to deteriorate.
- Do not use the following tools that are used with conventional refrigerants. (Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment)
  - If the conventional refrigerant and refrigerator oil are mixed in the R407C, the refrigerant may deteriorate.
  - If water is mixed in the R407C, the refrigerator oil may deteriorate.
  - Since R407C does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- Do not use a charging cylinder.
  - Using a charging cylinder may cause the refrigerant to deteriorate.
- Be especially careful when managing the tools.
  - If dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.
- Refrigerant leakage may cause suffocation. Provide ventilation in accordance with EN378-1.

## 1.3. Precautions for devices that use R 410A refrigerant

- Make sure to use new refrigerant piping.
  - When using the existing piping which used R22, take care of the following points.
    - Replace the flare nut with that is attached to the product. Flare section must be finished with the flare processing. (See P.10.)
    - Use of piping with thin wall should be avoided. (See P.10.)
- Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". The pipes must have the wall thickness as shown in the table below. In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.

ø6.35, Wall thickness 0.8 mm	ø9.52, Wall thickness 0.8 mm
ø12.7, Wall thickness 0.8 mm	ø15.88, Wall thickness 1.0 mm

It is strictly prohibited to use pipes with thin wall not listed in the above table.

If the inside of pipe is contaminated, it could cause deterioration of refrigerator oil, or other problems.

- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
  - If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result
- **Use ester oil, ether oil or alkylbenzene (small amount) same as the refrigerator oil to coat flares and flange connections.**
  - The refrigerator oil will degrade if it is mixed with a large amount of mineral oil.
- **Do not use a refrigerant other than R 410A.**
  - If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the refrigerator oil to deteriorate.
- **Use a vacuum pump with a reverse flow check valve.**
  - The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerator oil to deteriorate.
- **For the following tools, use only the tools special to the refrigerant R 410A.**
  - Tools as listed in the following table are required for the refrigerant R 410A.

Tool name (F or R 410A)	
Gas manifold	Flare tool
Charging hose	Protrusion adjust copper pipe gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Balance for refrigerant charging

- **Be especially careful when managing the tools.**
  - If dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.
- **Do not use a charging cylinder.**
  - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Refrigerant leakage may cause suffocation. Provide ventilation in accordance with EN378-1.**

## 1.4. Before conducting supply pipe and drain pipe work

[Supply pipe work is not required for GUF -50, 100RD4]

### ⚠ Caution:

- **The water quality of the permeable film humidifier's supply water should meet public waterworks standards, and have a hardness less than 100 mg/l. If the supply water does not meet these standards, use a deionizer.**
- **The supply pressure must be within the range of  $2 \times 10^5$  pa to  $49 \times 10^5$  pa.**
  - Supply pressure that is lower than the specified range will cause the water to not be supplied to the permeable-film humidifier, and the humidifier may not work. Supply pressure that exceeds the specified range may cause damage to the solenoid valve and result in water leaks.
- **Drain pipe gradient must be more than 1/100.**
  - Drain water will not be properly discharged.
- **For areas that are extremely cold in winter, perform freeze-prevention on the supply pipe by wrapping a freeze prevention heater and thermal insulation.**
  - Cold temperatures may freeze water, and damage supply pipe.
- **Install the drain piping according to this installation Manual to ensure proper drainage. Wrap thermal insulation around the pipes to prevent condensation.**
  - Improper drain piping may cause water leakage and damage to furniture and other possessions.

## 1.5. Before getting installed

### ⚠ Caution:

- **Do not install the unit where combustible gas may leak.**
  - If the gas leaks and accumulates around the unit, an explosion may result
- **Do not use the Fresh Master where food, pets, plants, precision instruments, or artwork are kept.**
  - The quality of the food, etc. may deteriorate.
- **Do not use the Fresh Master in special environments.**
  - Oil, steam, sulfuric smoke, etc. can significantly reduce the performance of the Fresh Master or damage its parts.
- **When installing the unit in a hospital, communication station, or similar place, provide sufficient protection against noise.**
  - The inverter equipment, private power generator, high-frequency medical equipment, or radio communication equipment may cause the Fresh Master to operate erroneously, or fail to operate. On the other hand, the Fresh Master may affect such equipment by creating noise that disturbs medical treatment or image broadcasting.
- **Do not install the unit on a structure that may cause leakage.**
  - When the room humidity exceeds 80% or when the drain pipe is clogged, condensation may drip from the Fresh Master. Perform collective drainage work together with the outdoor unit, as required.

## 1.6. Before getting installed (moved) - electrical work

### ⚠ Caution:

- **Ground the unit.**
  - Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock.
- **Install the power cable so that tension is not applied to the cable.**
  - Tension may cause the cable to break and generate heat and cause a fire.
- **Install an leak circuit isolator, as required.**
  - If an leak circuit isolator is not installed, electric shock may result
- **Use power line cables of sufficient current carrying capacity and rating.**
  - Cables that are too small may leak, generate heat, and cause a fire.
- **Use only a circuit isolator and fuse of the specified capacity.**
  - A fuse or circuit isolator of a larger capacity or a steel or copper wire may result in a general unit failure or fire.
- **Do not wash the Fresh Master.**
  - Washing them may cause an electric shock.
- **Be careful that the installation base is not damaged by long use.**
  - If the damage is left uncorrected, the unit may fall and cause personal injury or property damage.
- **Be very careful about product transportation.**
  - Only one person should not carry the product if it weighs more than 20 kg.
  - Fresh Master use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
  - Do not touch the heat exchanger fins. Doing so may cut your fingers.
  - When transporting the outdoor unit, suspend it at the specified positions on the unit base. Also support the outdoor unit at four points so that it cannot slip sideways.
- **Safely dispose of the packing materials.**
  - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
  - Tear apart and throw away plastic packaging bags so that children can not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.

## 1.7. Before starting the test run

### ⚠ Caution:

- Turn on the power at least 12 hours before starting operation.
  - Starting operation immediately after turning on the main power switch can result in severe damage to internal parts. Keep the power switch turned on during the operational season.
- Do not touch the switches with wet fingers.
  - Touching a switch with wet fingers can cause electrification.
- Do not touch the refrigerant pipes during and immediately after operation.
  - During and immediately after operation, the refrigerant pipes are may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.

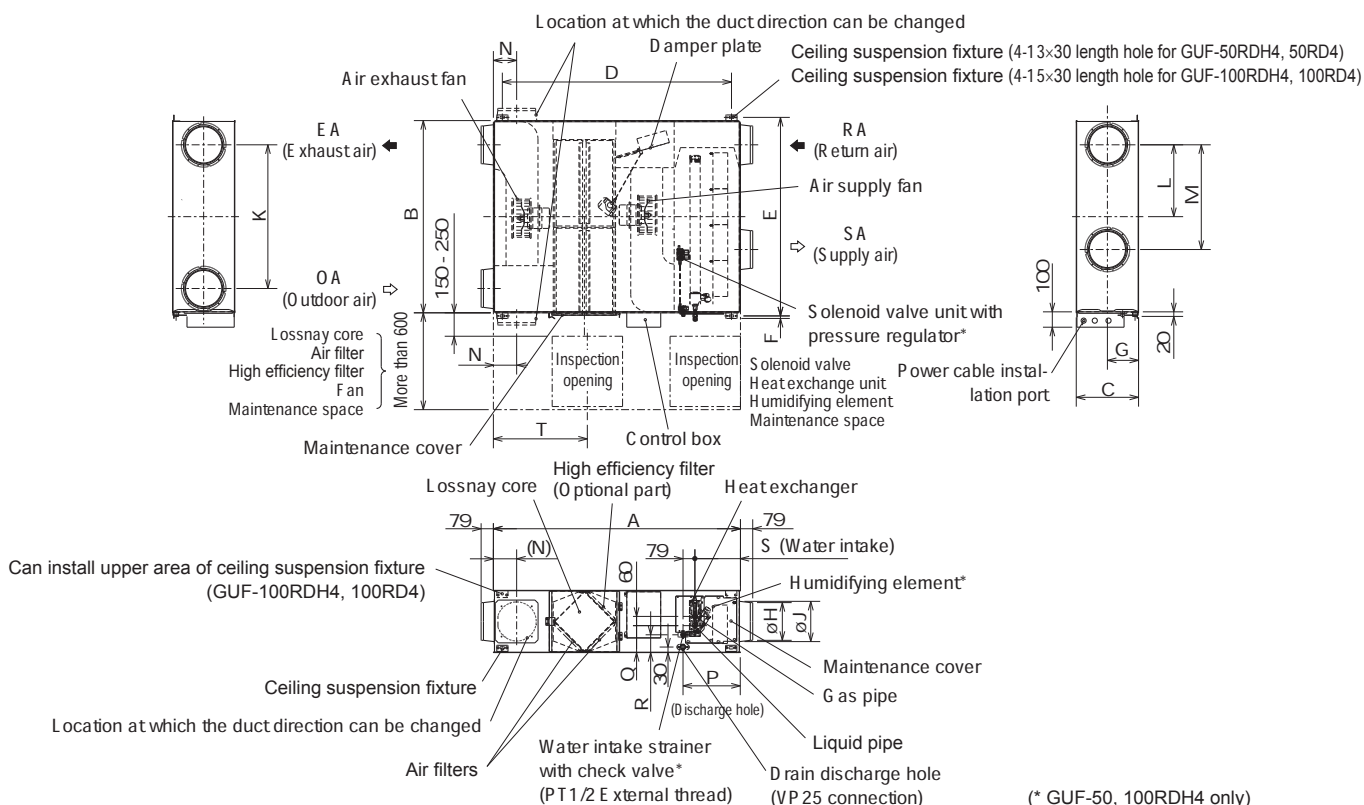
- Do not operate the Fresh Master and outdoor unit with the panels and guards removed.
  - Rotating, hot, or high-voltage parts can cause injuries.
- Do not turn off the power immediately after stopping operation.
  - Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.

## 2 Accessories

The unit is provided with the following accessories:

No.	Accessories	Qty
1	Pipe insulation	2
2	Flare insulation	2
3	Tie band	4
4	Duct connecting flanges	4
5	Mounting screws	16

## 3. Outline drawings



Model	External dimension			Ceiling suspension fixture pitch			Duct connection flange			Duct pitch				Humidification				Inspection opening	Weight (kg)		
	A	B	C	D	E	F	Nominal diameter	G	H	J	K	L	M	N	P	Q	R			S	T
	Unit (mm)																				
GUF-50RDH4, GUF-50RD4	1288	1016	317	1185	1048	22	200	158.5	192	208	745	372.5	435	124	347	135	99	266	450	57 (54)	
GUF-100RDH4, GUF-100RD4	1580	1231	398	1465	1271	16	250	199	242	258	920	460	670	149	361	169	110	280	600	98 (92)	

\*Values shown in parentheses "( )" are for RD4.

## 4. Selecting an installation site

- Select a site with sturdy fixed surface sufficiently durable against the weight of unit
- Before installing unit, the route to carry the unit to the installation site should be determined.
- Select a site where the unit is not affected by entering air.
- Select a site where the flow of supply, return, exhaust and outdoor air is not blocked.
- Select a site where refrigerant piping and exhaust/outdoor ducts can easily be led to the outside.
- Select a site which allows the supply air to be distributed fully in room.
- Select a location where the inspection opening can be installed.
- Do not install unit at a site with oil splashing or steam in large quantities.
- Do not install unit at a site where combustible gas may generate, flow in, stagnate or leak.
- Do not install unit at a site where equipment generating high frequency waves (a high frequency wave welder for example) is provided.
- Do not install unit at a site where fire detector is located at the supply air side. (Fire detector may operate erroneously due to the heated air supplied during heating operation.)
- When special chemical product may be scatter all around such as site chemical plants and hospitals, full investigation is required before installing unit. (The plastic components may be damaged depending on the chemical product applied.)
- Do not install this product in a refrigerated warehouse, heated swimming pool or other location where the temperature and humidity are significantly different. (Failure to heed this warning may result in electrical shock or malfunction.)
- The electro-magnetic susceptibility has been chosen at a level that gains proper operation in residential areas, on business and light industrial premises and on small-scale enterprises, inside as well as outside of the buildings. All places of operation are characterised by their connection to the public low voltage power supply system.

### 4.1. Install the Fresh Master on a ceiling strong enough to sustain its weight

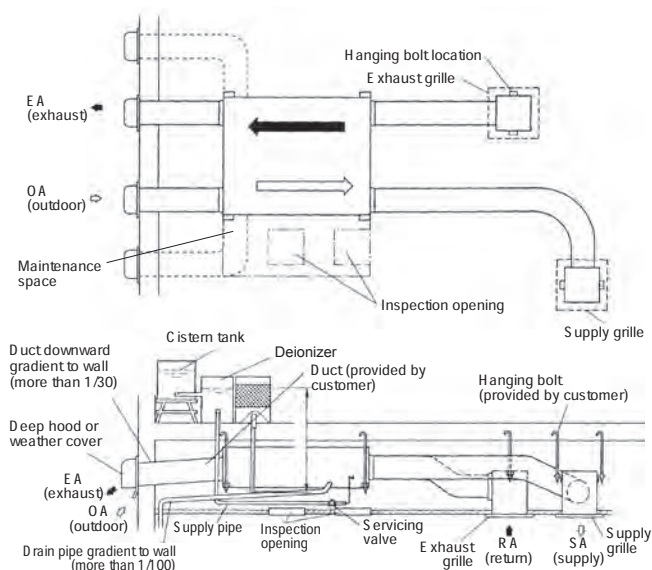
#### ⚠ Warning:

- The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down causing injuries.

### 4.2. Securing installation and service space

- Select the optimum direction of supply airflow according to the configuration of the room and the installation position.
- As the piping and wiring are connected at the side surfaces, and the maintenance is made at the same surfaces, allow a proper space properly. For the efficient suspension work and safety, provide a space as much as possible.

### 4.3. Standard installation examples



## 5. Installing the Fresh Master

### 5.1. Fixing hanging bolts

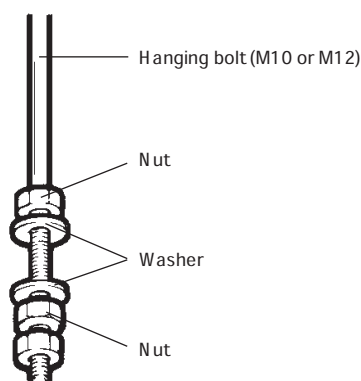
(Use M10 or M12 hanging bolts. The bolts and washers should be supplied in the field.)

(Give site of suspension strong structure.)

#### Hanging structure

- Ceiling: The ceiling structure varies from one building to another. For detailed information, consult your construction company.
- ① Reinforcing the ceiling with additional members (edge beam, etc.) must be required to keep the ceiling at level and to prevent the ceiling from vibrations.
  - ② Cut and remove the ceiling members.
  - ③ Reinforce the ceiling members, and add other members for fixing the ceiling boards.

- Mount the washers (outer diameter of >21 mm for M10, >24 mm for M12) and nuts obtained from a field supply onto the pre-processed hanging bolts (M10 or M12) also obtained from a field supply, as shown in the figure.



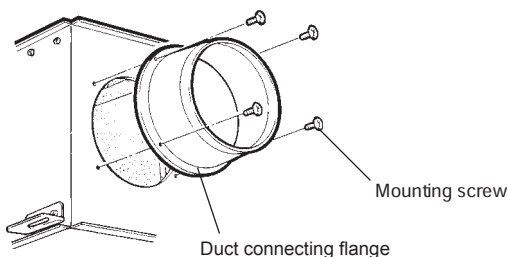


## 5.2 Attaching the duct connecting flanges

Use the screws supplied to secure the duct connecting flanges to the Fresh Master.

### ⚠ Caution:

- Before attaching the duct connecting flanges, check that no foreign matter (scraps of paper, vinyl, etc.) has found its way inside the main unit.
- Replace the screws that were removed when the duct connecting flange was removed back in place and securely tighten them.

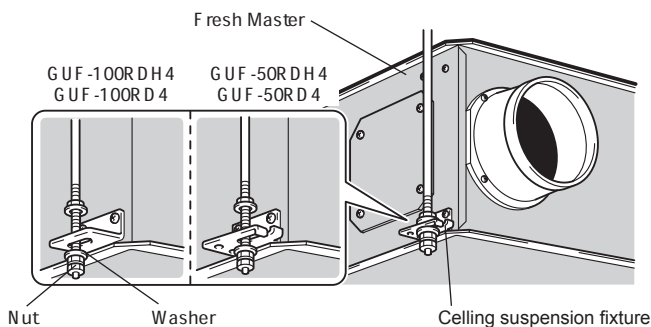


## 5.3 Hanging the unit body

1. Hang the ceiling suspension fixtures on the hanging bolts and adjust in such a way that the main unit is level.
2. Tighten up securely using double nuts in order to prevent looseness.

### ⚠ Caution:

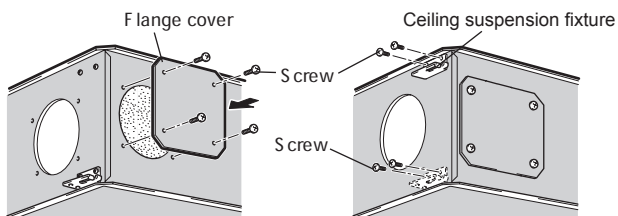
- When suspending the main unit from the ceiling, do not handle it in such a way that force will be applied to the control box.
- Fasten the body so that it is oriented horizontally. (within 1°)



## 5.4 When changing the direction of the outdoor side duct (EA/OA)

Remove the flange cover and suspension fixture.

1. Remove the four mounting screws for the flange cover and remove the flange cover.
2. Remove the screws at the top mounting position.
3. Remove the ceiling suspension fixtures and attach them at higher mounting positions.
4. Tighten up the screws in the screw hole where the ceiling suspension fixtures were removed in order to prevent air leaks.

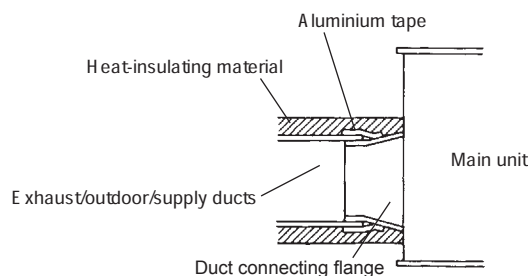
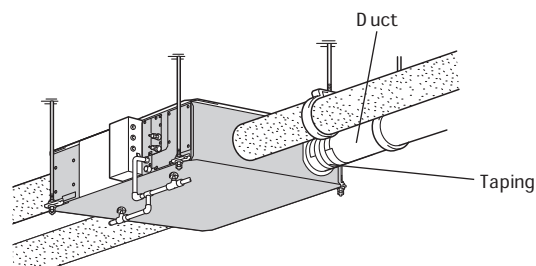


### Mounting the duct connection flange

1. Use the mounting screws provided to mount the duct connection flange to the main body.
2. Use the four mounting screws that were removed to attach the flange cover.

## 5.5. Connecting the ducts

1. Fit the ducts securely into the duct connecting flanges, and wind aluminium tape available from a field supply around them to prevent air leaks.
2. Suspend the ducts from the ceiling so that their weight will not be applied to the Fresh Master.
3. The exhaust/outdoor and supply ducts must be covered with heat-insulating material in order to prevent condensation from forming.

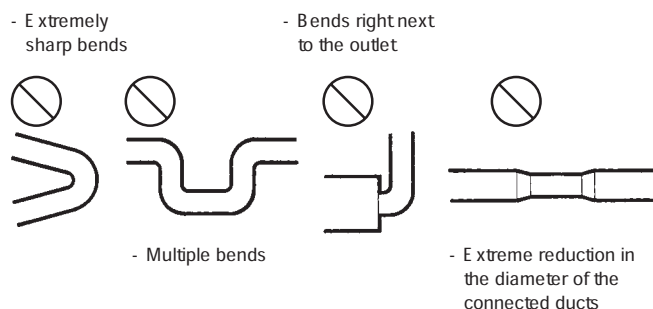


### ⚠ Caution:

- The main unit is equipped with connection locations for equi-potential connection of ducts.
- Down ward gradient of outdoor duct: 1/30 or more (toward wall side)
- Provision of distance for the exhaust/outdoor ducts in table below (to prevent rain water from seeping in)

Model	Distance
GUF-50RDH4, GUF-50RD4	1 m or more
GUF-100RDH4, GUF-100RD4	2.5 m or more

- Before connecting the ducts, check that no sawdust or any other foreign matter (scraps of paper, vinyl, etc.) has found its way inside the ducts.
- Do not touch the damper plate inside the main unit when connecting the ducts.
- Do not install the ducts in the ways illustrated below. Doing so will reduce the air volume and give rise to abnormal sounds.

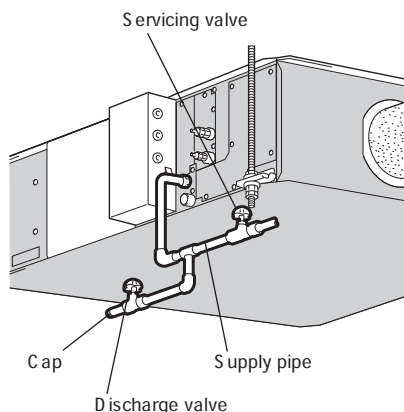


## 6. Supply pipe and drain pipe work

Supply pipe work is not required for GUF-50, 100RD4. Only perform the drain pipe work.

### 6.1. Supply pipe work

1. Connect a commercially available interlocked flexible metal hose or the equivalent between the water supply pipe and the water filler hole when performing pipe work for the water supply.
  - Set the water pressure between  $2 \times 10^4 \text{ Pa}$  to  $49 \times 10^4 \text{ Pa}$ .
  - Install the servicing valve near the strainer then install the supply pipe.



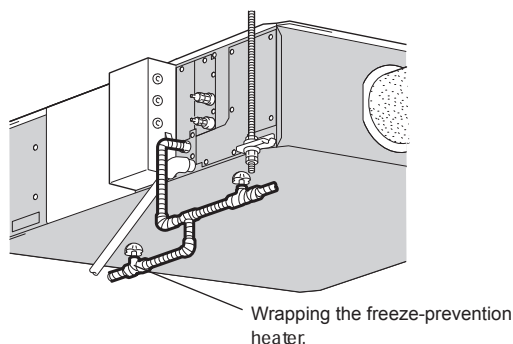
#### ⚠ Caution:

- The supply water should meet public waterworks standards, and have a hardness less than  $100 \text{ mg/l}$ , otherwise the humidifier will clog up.
- Install the discharge and servicing valve in locations accessible from the inspection opening.
- Securely lock the supply pipe so that no force is applied to the strainer.
- When performing the supply pipe work, wash the pipe with fresh water prior to installation to prevent saw dust, etc. from entering, or install a discharge valve in the piping and sufficiently conduct water discharge before using until the water is clear.
- Take caution as to not let cutting oil or detergent from entering.
- The supply and drain pipes must be installed as such that they do not rest on the Maintenance cover and cover (humidifier).
- The supply and drain pipes must be properly installed so that there is no water leak.
- To prevent freezing when not using the unit for long periods of time, close the servicing valve, open the discharge valve, and remove the servicing valve and any water in the unit's supply water entrance. After removing the servicing valve and water, close the discharge valve.

#### 2. Freeze-prevention work for extremely cold areas

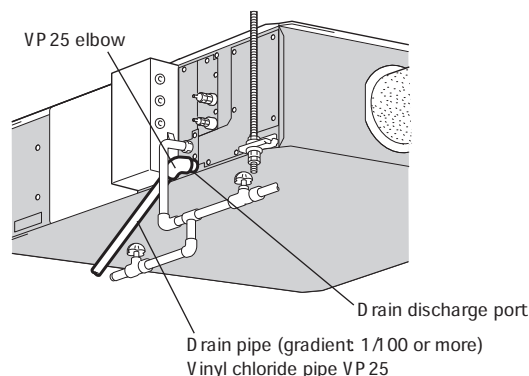
Perform freeze prevention by wrapping a freeze-prevention heater (field supply) on the supply pipe.

- Wrap a freeze-prevention heater all the way to the Fresh Master.
- Insulation work must be performed upon the heater as well.



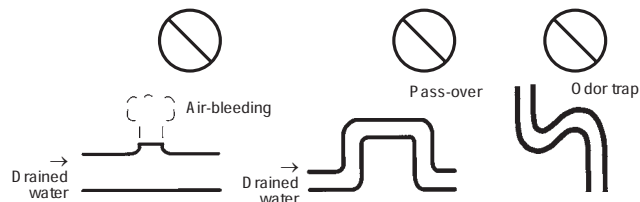
### 6.2. Drain pipe work

1. Connect a vinyl chloride VP 25 elbow to the drain discharge port.
2. The drain pipe must be properly insulated from the drain discharge port.



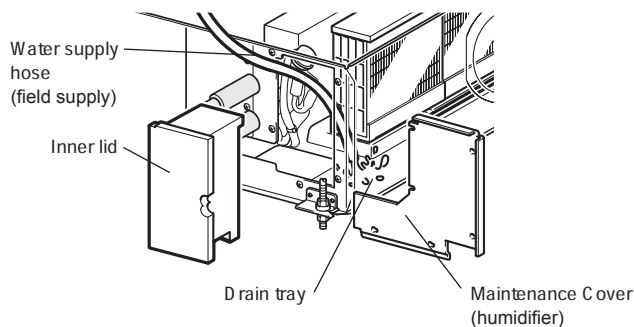
#### ⚠ Caution:

- The pipe must be installed with gradient of more than 1/100.
- The drain pipe must be installed so that water does not accumulate inside.
- Check to make sure that the end of the drain pipe is at a location where discharge is possible and that the pipe can be properly drained.
- Do not install the drain pipe as shown below. (This will result in insufficient drainage)
- Do not insert the tip of the drain pipe into a gutter or the like. Doing so will cause the gutter to freeze in the event of heavy snowfall, resulting in water leakage from the main unit.



#### 3. Make sure the pipe drains water properly.

- (1) Remove the maintenance cover (for humidifying).
  - Remove the seven mounting screws, slide the maintenance cover to the right, and remove it from the potbelly-shaped holes (six locations for Model 50).
- (2) Pull out the inner lid.
- (3) Pour approximately 1,000 cc of water onto the drain tray.
- (4) Confirm that the drain pipe drains away water at the pipe's final exit.
- (5) Replace the inner lid and the maintenance cover (for humidifying).



\* The diagram shows GUF-50, 100RDH4

## 7. Refrigerant pipe work

### ⚠ Warning:

Never charge any types of refrigerant other than those specified by Mitsubishi Electric. Failure to follow this warning may result in violation of law, or blowout, explosion or fire when the product is used, serviced, or disposed of. The types of refrigerant that can be used are specified in the manual supplied with the product or on the product nameplate. Mitsubishi Electric shall assume no liability for any damage, breakdown, malfunction, or accident resulting from the charging of a refrigerant not specified by Mitsubishi Electric.

### 7.1. Refrigerant pipe specifications

To avoid dew drops, provide sufficient insulation to the refrigerant and drain pipes.

When using commercially available refrigerant pipes, be sure to use commercially available insulation (with a heat-resisting temperature of more than 120°C and thickness given below) onto both liquid and gas pipes.

Be also sure to use commercially available insulating material (with a formed polyethylene's specific gravity of 0.03 and thickness given below) onto all pipes which pass through rooms.

- ① Select the thickness of insulating material by pipe size.

Pipe size	Insulating material's thickness
6.4 mm to 25.4 mm	More than 12 mm
28.6 mm to 38.1 mm	More than 15 mm

- ② If the unit is used on the highest story of a building and under conditions of high temperature and humidity, it is necessary to use pipe size and insulating material's thickness more than those given in the table above.  
e.g. 30 mm thickness is necessary under 30°C and 80%RH.

- ③ If there are customer's specifications, simply follow them.

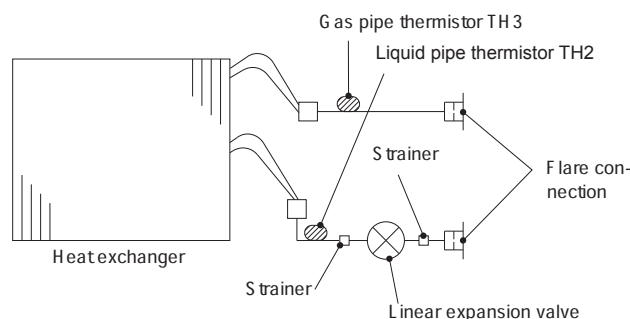
- ④ Refrigerant pipe specifications

Item		Model	
		G U F -50R D H 4 G U F -50R D 4	G U F -100R D H 4 G U F -100R D 4
Refrigerant pipe (Flare connection)	Liquid pipe	ø6.35	ø9.52
	Gas pipe	ø12.7	ø15.88

- ⑤ Torque specifications

Outer dia of copper pipe	Tightening torque
ø6.35	14 - 18 N·m
ø9.52	34 - 42 N·m
ø12.7	49 - 61 N·m
ø15.88	68 - 82 N·m

6 R refrigerant system diagram



### 7.2 Refrigerant piping work

This piping work must be done in accordance with the installation manuals for both outdoor unit and BC controller (simultaneous cooling and heating series R2).

- With R2 systems connect Fresh Masters to BC controllers.
- For constraints on pipe length and allowable difference of elevation, refer to the outdoor unit manual.
- The method of pipe connection is flare connection.
- After finishing the piping work, check gas leakage.

#### Cautions On Refrigerant Piping

- ▶ Be sure to use non-oxidative brazing for brazing to ensure that no foreign matter or moisture enter into the pipe.
- ▶ Be sure to apply refrigerating machine oil over the flare connection seating surface and tighten the connection using a double spanner.
- ▶ Provide a metal brace to support the refrigerant pipe so that no load is imparted to the Fresh Master end pipe. This metal brace should be provided 50 cm away from the Fresh Master's flare connection.

### ⚠ Warning:

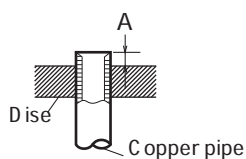
When installing and moving the unit, do not charge it with refrigerant other than the refrigerant (R410A, R407C) specified on the unit.

- Mixing of a different refrigerant, air, etc. may cause the refrigerant cycle to malfunction and result in severe damage.

### ⚠ Caution:

- Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.
- Never use existing refrigerant piping.
  - The large amount of chlorine in conventional refrigerant and refrigerator oil in the existing piping will cause the new refrigerant to deteriorate.
- Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing.
  - If dust, dirt, or water gets into the refrigerant cycle, the oil will deteriorate and the compressor may fail.
- Use ester oil, ether oil or alkylbenzene (small amount) as the refrigerator oil to coat flares and flange connections. (For using R407C, R410A)
  - The refrigerant used in the unit is highly hygroscopic and mixes with water and will degrade the refrigerator oil.

- **Make sure to use new refrigerant piping.**
- When using the existing piping which used R22, take care of the following points.
  - Replace the flare nut with that is attached to the product. Flare section must be finished with the flare processing.
  - Use of piping with thin wall should be avoided.

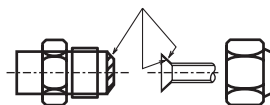


Pipe Dia. (mm)	Dimension A (mm)		
	R 410A Flare Tool	When using conventional flare tool (R407C)	
	Rigid (clutch type)	Imperial (wing nut) type	
ø6.35 (1/4")	0-0.5	1.0 - 1.5	1.5 - 2.0
ø9.52 (3/8")	0-0.5	1.0 - 1.5	1.5 - 2.0
ø12.7 (1/2")	0-0.5	1.0 - 1.5	1.5 - 2.5
ø15.88 (5/8")	0-0.5	1.0 - 1.5	1.5 - 2.5

\* When applying the flare processing for the refrigerant R410A using conventional tools, conduct the work referring to the above. If you use the copper pipe gauge for the adjustment of protrusion margin, you can secure the dimension A.

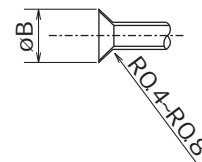
Coat small amount of ester oil, ether oil or hard alkylbenzen oil over the entire periphery of flare seat surface.

\* Do not coat at the threaded section.  
(Otherwise, you cannot lock the flare nut securely.)



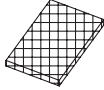


\* Make sure to use only the flare nut attached to the main unit. (Off-the-shelf product could be cracked.)

Copper Pipe O.D.	Flare Dimension Dimension øB (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



### 7.3. Request for application of insulation to the connectors of the field refrigerant pipe

Check if the parts listed below are included in the package before installation.

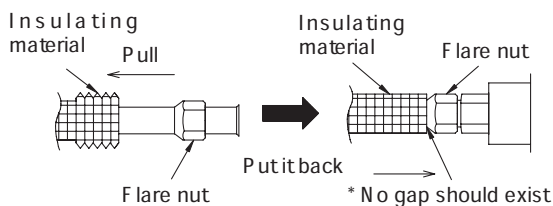
F flare insulation	Pipe insulation	Tie band
		
2 pieces	2 pieces	4 pieces

Locally Procured Materials  
(Refrigerant pipe, Tape for piping installation)

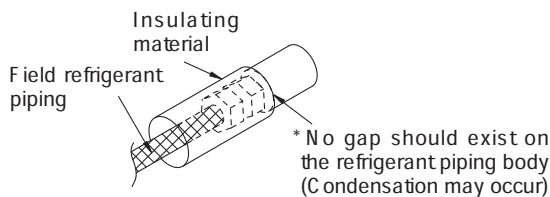
After the refrigerant pipe connection is complete, be sure to apply insulation to the connector (flare connection) using the attached insulated pipe as shown in the figure below.

- Make sure not to leave a gap between the insulated pipe and the indoor unit as well as the insulated pipe and the field refrigerant piping.
- Faulty insulation application may cause condensation to form resulting in water leakage.

1. Insert the flare nut in the field refrigerant piping, pull the insulating material when performing flare pipe expansion, and put the insulating material back so that the copper pipe is not exposed.  
\* Condensation may occur.

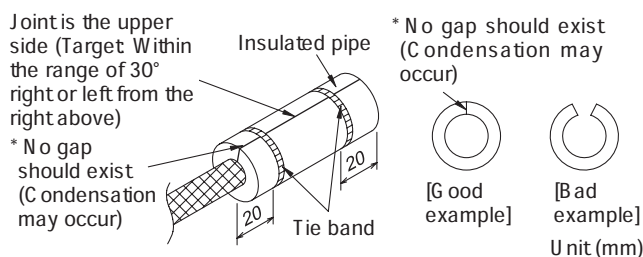
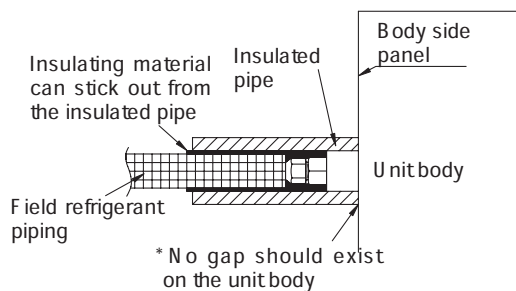


2. Wrap the insulating material around the flare connection and the field refrigerant piping (no gap should exist) and temporarily fix using the tape for piping construction. (It will be clipped by the insulating pipes described in the step 3 to fix.)

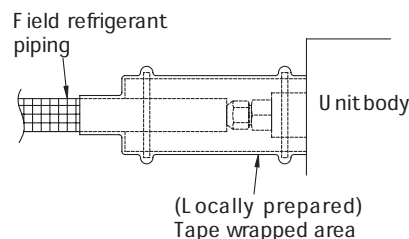


3. Wrap the insulated pipe around the flare area and fix the each insulating pipe with a tie band.

\* Be sure to perform construction so as not to leave a gap on the insulated pipe joint area. (Condensation may occur in the flared area.)



4. Wrap the tape for piping construction around the joint between the insulated pipe and the field refrigerant piping to prevent the insulated joint from being exposed.



## 8. Electrical wiring

### 8.1. Precautions on electrical wiring

**⚠ Warning:**

- Electrical work should be done by qualified electrical engineers in accordance with "Engineering Standards For Electrical Installation" and supplied installation manuals. Special circuits should also be used. If the power circuit lacks capacity or has an installation failure, it may cause a risk of electric shock or fire.

1. Be sure to take power from the special branch circuit
2. Be sure to install an earth leakage isolator to the power.
3. Install the unit to prevent that any of the control circuit cables (Remote controller, transmission cables) is brought in direct contact with the power cable outside the unit
4. Ensure that there is no slack on all wire connections.

5. Some cables (power, Remote controller, transmission cables) above the ceiling may be bitten by mice. Use as many metal pipes as possible to insert the cables into them for protection.
6. Never connect the power supply cable to leads for the transmission cables. Otherwise the electronic circuit would be broken.
7. Be sure to connect control cables to the Fresh Master, Remote controller, and the outdoor unit.
8. Put the unit to the ground on the outdoor unit side.
9. Select control cables from the conditions given below

**⚠ Caution:**

- Be sure to put the unit to the ground on the outdoor unit side. Do not connect the earth cable to any gas pipe, water pipe, lightning rod, or telephone earth cable. Incomplete grounding may cause a risk of electric shock.

### 8.2. Types of control cables

#### 1. Wiring M-NET transmission cables

- Types of transmission cables  
Design wiring in accordance with the following table <Table 1>.
- Cable cross-sectional area 1.25 mm<sup>2</sup> to 2.00 mm<sup>2</sup>

<Table 1>

System configuration	For a single-refrigerant system		For a multi-refrigerant system
Transmission cable length	Less than 120 m		More than 120 m
Facility example (for noise judgment)	Residence or independent store without noise	Building, clinic, hospital or communications station without noise supposedly generated from inverter equipment, private power generator, high-frequency medical equipment, radio-used communications equipment and so on	Regardless of length All facilities
Types of transmission cables	VCTF, VCTFK, CVV, CVS, VVR, VVF, VCT or shielding wire CVVS or CPEVS	Shielding wire CVVS or CPEVS	

#### 2. Remote controller cables

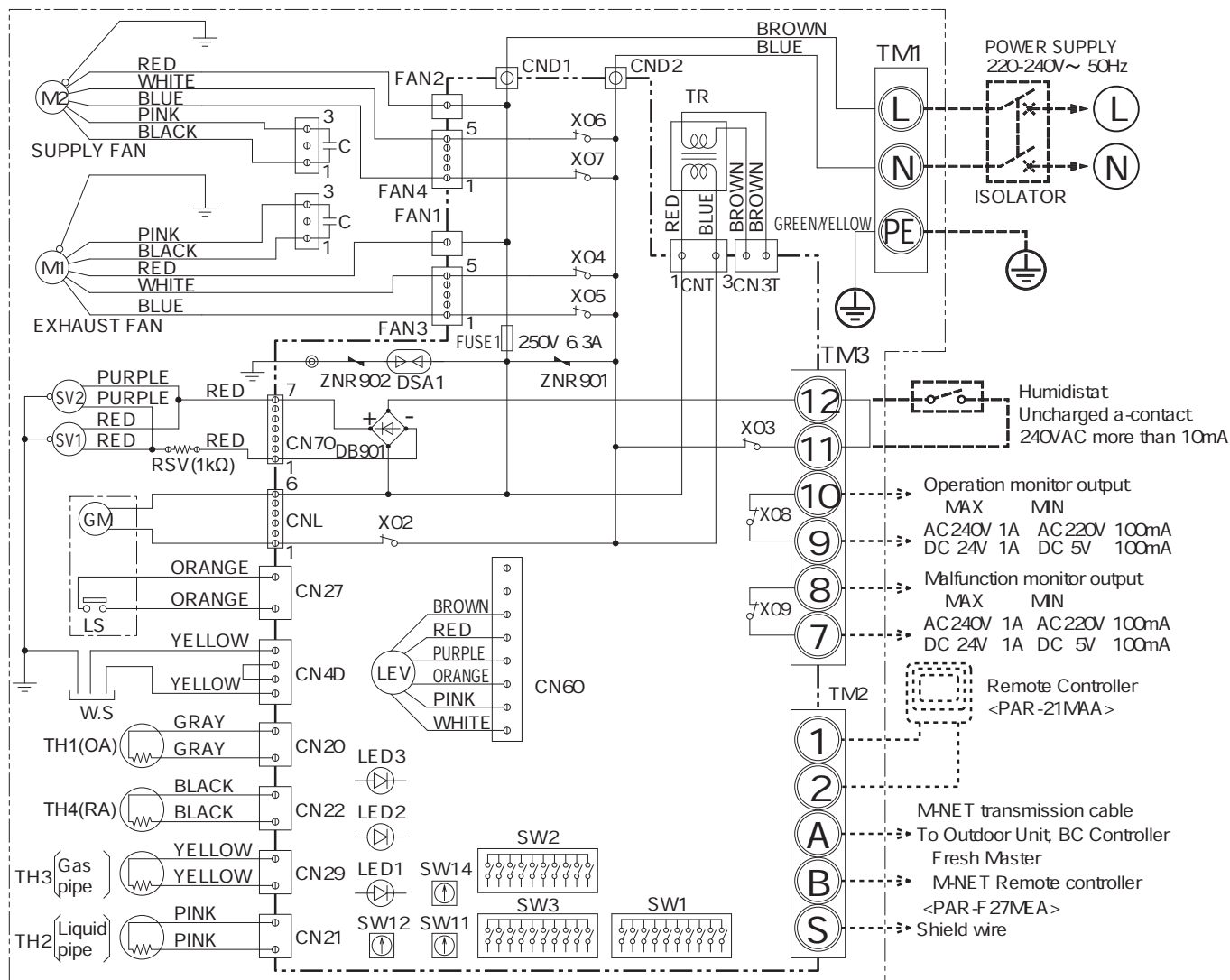
Wire Type	MA Remote controller (PAR -21MAA)		ME Remote controller (PAR-F27MEA, PAC-SE51CRA)	
	Type	VCTF, VCTFK, CVV, CVS, VVR, VVF, VCT	10 m or shorter	If the length exceeds 10 m.
	Number of conductors	2-conductor cable		M-NET transmission cable
	Wire diameter	0.3 - 1.25 mm <sup>2</sup> (Note 1)	0.3 - 1.25 mm <sup>2</sup> (Note 1) (0.75 - 1.25 mm <sup>2</sup> ) (Note 2)	
Total Length	Max. 200 m	Max. 10 m	If the length exceeds 10 m, keep the length within the maximum length of communications lines between indoor and outdoor units.	

**Note1** For work purposes, a wire diameter of 0.75 mm<sup>2</sup> is recommended.

**Note2** If you are running the wires to the PAC-SE51CRA terminal block, use the wire diameter shown in ( ).

### 8.3. Electrical wiring diagram

#### ■ GUF-50, 100RDH4



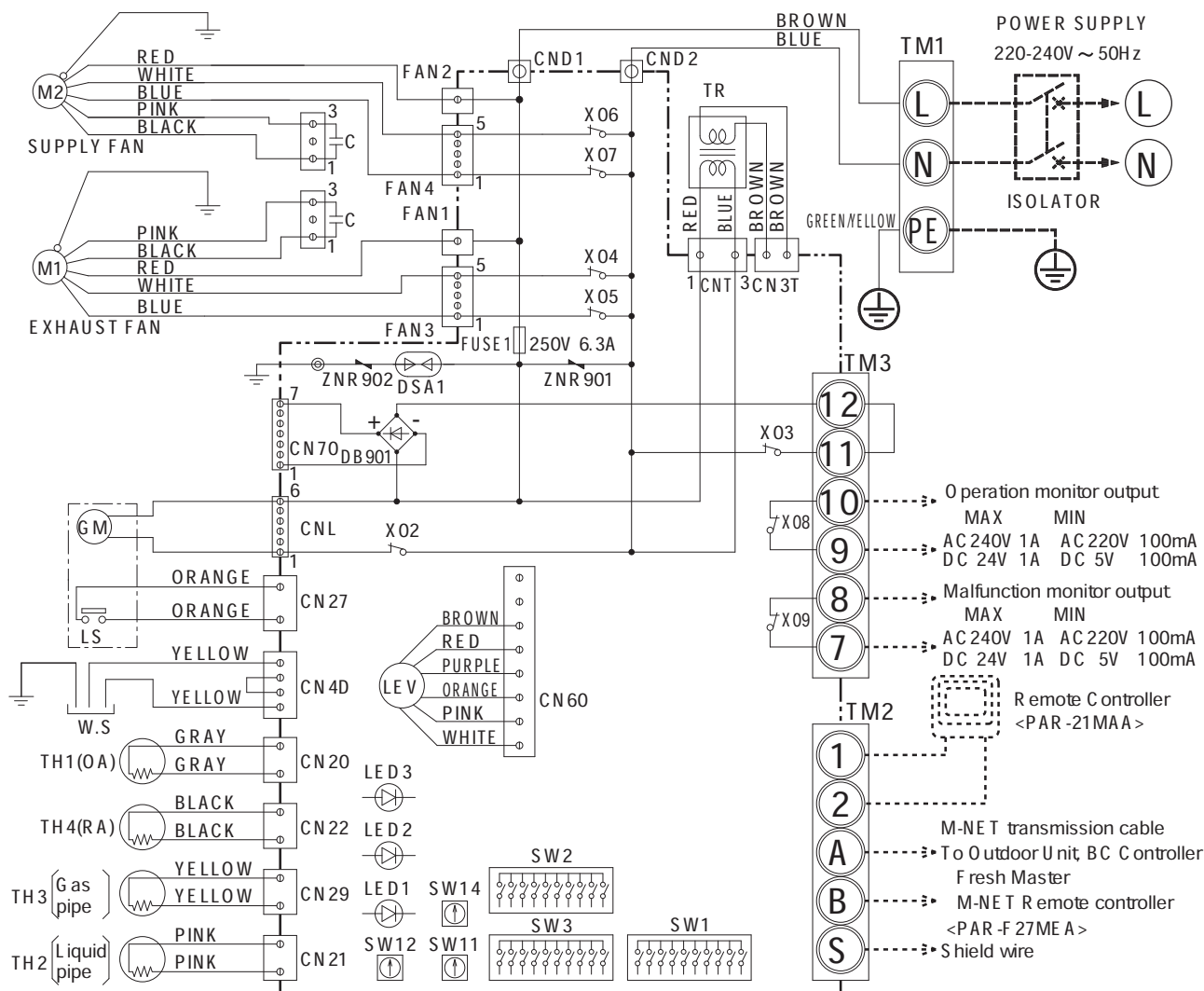
- **NOTE**
1. TM1, TM2, TM3 shown in dotted lines are field work.
  2. Be sure to connect the grounding wire.
  3. Isolator should be provided by the customer.
  4. MARK ○: indicates terminal block, ⊙: connector  
 ⊕: board insertion connector or fastening connector of control board.

■ **Warning**  
 Before obtaining access to terminals, all supply circuits must be disconnected.

#### ■ SYMBOL EXPLANATION

Symbol	Name	Symbol	Name	Symbol	Name
M1	F an motor (exhaust)	TM1	Terminal block (power supply)	CND1, CND2	Connector (power supply)
M2	F an motor (supply)	TM2	Terminal block (transmission)	X 02-X 09	R elay
C	C apacitor	TM3	Terminal block (humidistat, monitor)	TR	T ransformer
W.S	W ater sensor	SW1	S witch (function selection)	GM	D amper motor
SV1	S olenoid valve (pressure regulator)	SW2	S witch (capacity code setting)	LS	L imit switch
SV2	S olenoid valve (exhaust)	SW3	S witch (function selection)	LED1	P ower supply monitor
TH1	T hermistor (outdoor air temp. detection)	SW11	S witch (1st digit address set)	LED2	M A R emote controller P ower supply monitor
TH2	T hermistor (pipe temp. detection/liquid)	SW12	S witch (2nd digit address set)	LED3	M-N E T P ower supply monitor
TH3	T hermistor (pipe temp. detection/gas)	SW14	S witch (branch NO. set)		
TH4	T hermistor (room air temp. detection)	1, 2	R emote control terminal		
LEV	E lectronic linear expansion valve	A, B	M-N E T transmission terminal		
RSV	R esistance(solenoid valve)	S	S hield		

■ GUF-50, 100RD4



- **NOTE**
1. TM1, TM2, TM3 shown in dotted lines are field work.
  2. Be sure to connect the grounding wire.
  3. Isolator should be provided by the customer.
  4. MARK ○: indicates terminal block, ⊕: connector  
⊙: board insertion connector or fastening connector of control board.

■ **Warning**  
Before obtaining access to terminals, all supply circuits must be disconnected.

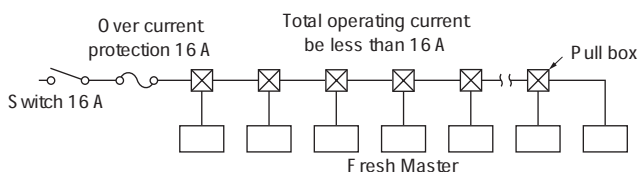
■ **SYMBOL EXPLANATION**

Symbol	Name	Symbol	Name	Symbol	Name
M1	Fan motor (exhaust)	TM1	Terminal block (power supply)	S	Shield
M2	Fan motor (supply)	TM2	Terminal block (transmission)	CND1, CND2	Connector (power supply)
C	Capacitor	TM3	Terminal block (humidistat, monitor)	X02-X09	Relay
W.S	Water sensor	SW1	Switch (function selection)	TR	Transformer
TH1	Thermistor (outdoor air temp. detection)	SW2	Switch (capacity code setting)	GM	Damper motor
TH2	Thermistor (pipe temp. detection/liquid)	SW3	Switch (function selection)	LS	Limit switch
TH3	Thermistor (pipe temp. detection/gas)	SW11	Switch (1st digit address set)	LED1	Power supply monitor
TH4	Thermistor (room air temp. detection)	SW12	Switch (2nd digit address set)	LED2	MA Remote controller Power supply monitor
LEV	Electronic linear expansion valve	SW14	Switch (branch NO. set)	LED3	M-NET Power supply monitor
		1, 2	Remote control terminal		
		A, B	M-NET transmission terminal		



## 8.4. Power supply wiring

Power cable size: 1.5 mm<sup>2</sup> or more

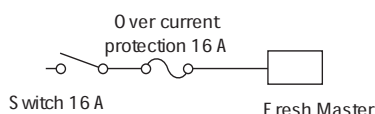


[Selecting non-fuse isolator (NF) or earth leakage isolator (NV)]

To select NF or NV instead of a combination of Class B fuse with switch, use the following:

- In the case of Class B fuse rated 15 A or 20 A,  
**NF model name (MITSUBISHI): NF 30-CS (15 A) (20 A)**  
**NV model name (MITSUBISHI): NV 30-CA (15 A) (20 A)**

Use an earth leakage isolator with a sensitivity of less than 30 mA 0.1 sec.



### ⚠ Caution:

- Do not use anything other than the correct capacity isolator and fuse. Using fuse, wire or copper wire with too large capacity may cause a risk of malfunction or fire.

## 8.5. Connecting the Remote controller, the Fresh Master and outdoor transmission cables

(The Remote controller is optionally available.)

- Connect Fresh Master TM2 and outdoor unit TB3. (Non-polarized 2-wire)

The "S" on Fresh Master TM2 is a shielding wire connection. For specifications about the connecting cables, refer to the outdoor unit installation manual.

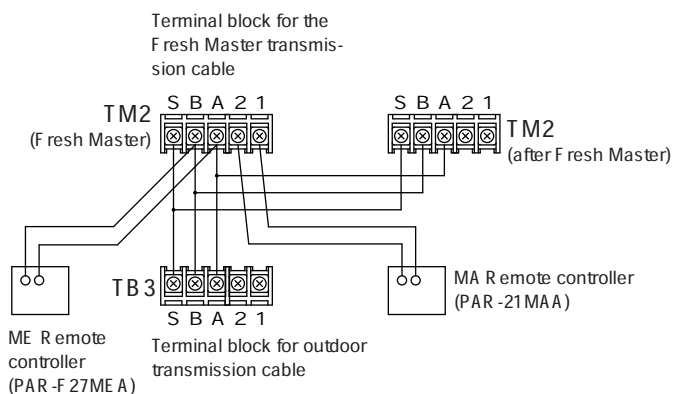
- Install the Remote controller following the manual supplied with the Remote controller.

[For using the ME Remote controller]

Connect the "A" and "B" on Fresh Master TM2 to the Remote controller. (Non-polarized 2-wire) Connect the Remote controller's transmission cable within 200 m. If the distance is more than 10 m, use a 1.25 mm<sup>2</sup> to 2.0 mm<sup>2</sup> cable.

[For using the MA Remote controller]

Connect the "1" and "2" on Fresh Master TM2 to the Remote controller. (Non-polarized 2-wire) Connect the Remote controller's transmission cable within 200 m.



- 24 to 30 V DC between M1 and M2

Longest wiring length (L1+L2+L4 or L1+L3): less than 200 m

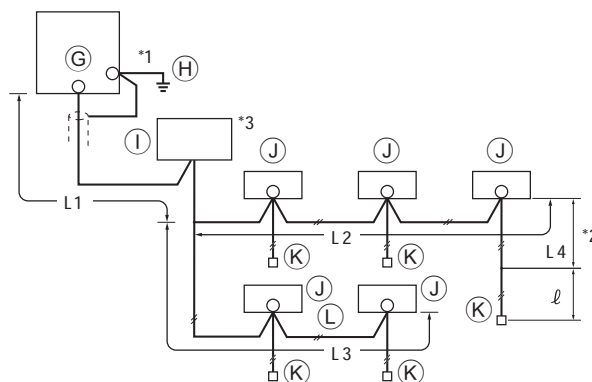
Longest wiring length (L2+L3+L4): less than 500 m

Length between the Fresh Master and the Remote controller (L): within 10 m

Notes:

- \*1 Put the transmission cable earth via the outdoor unit's earth terminal (H) to the ground.
- \*2 If the Remote controller cable exceeds 10 m, use a 1.25 mm<sup>2</sup> to 2.0 mm<sup>2</sup> cable over the exceeded portion, and add that exceeded portion to within 200 m.
- \*3 The BC controller is required only for simultaneous cooling and heating series R2.

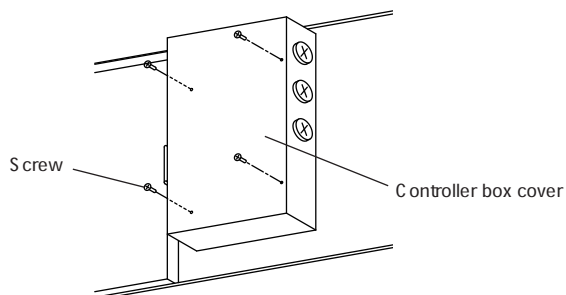
[Constraints on transmission cable]



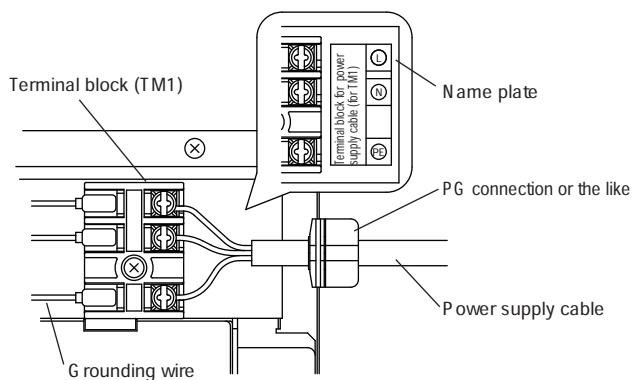
- ⓐ Outdoor unit
- Ⓜ Earth
- Ⓨ BC controller
- Ⓩ Fresh Master
- Ⓚ Remote controller
- Ⓛ Non-polarized 2-wire

## 8.6. Connecting electrical connections

1. Remove the 4 screws to remove the control box cover.



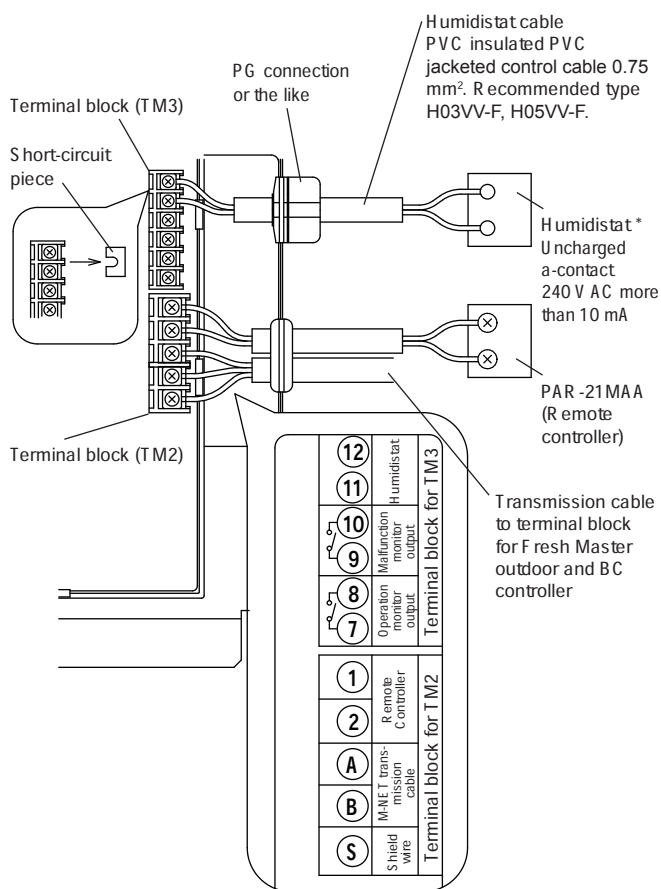
2. Install a PG connection or the like, then connect the power supply cable to the TM1 terminal block.



### ⚠ Caution:

- Wire the power supply so that no tension is imparted. Otherwise disconnection, heating or fire may result.

3. Connect the transmission line to the TM2 terminal block as shown in the diagram.



4. When connecting the humidistat input, remove the short-circuit piece from the TM3 terminal block as shown in the diagram, then install a PG connector and connect to the TM3 terminal block.

\* The humidistat is the sensor designed specifically for the control of moisture environment

The suitable model in this stage :

Uncharged a-contact turns on when atmospheric moisture content becomes less than your preset minimum allowable percentage.

## 9. Feature settings

### ⚠ Caution:

- \* Always turn off the main power supply.
- \* Remove the control box cover.

### 9.1. Address setting

(Determining the address depends on the own-site system. Please see to technical references, etc.)

Remove the control box cover.

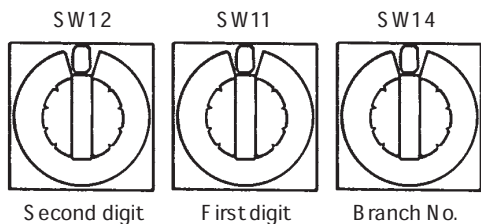
Turn the address setting switch on the board using a Phillips screwdriver.

- The left side (SW12) shows the second digit and the right side (SW11) shows the first digit.
- The switch is set to 00 when factory shipped.
- Set the address between 1 and 50.

### 9.2. When using an R2 series external unit, setting for the branch No. is also required.

Turn the branch controller No. setting switch (SW14) on the board using a Phillips screwdriver.

- Set the refrigerant pipe of the external unit and the connected branch controller to the same number.
- The switch is set to 0 when factory shipped.



### SW3 ---- GUF-50, 100RDH4

	OFF	ON	
1	█	□	Synchronous air-conditioning switch (async when ON)
2	█	□	
3	█	□	Humidifier mode (OFF: humidifier; ON: heat save)
4	█	□	
5	□	█	Heater operation during synchronous operation/ stop temperature switch
6	█	□	
7	█	□	Exhaust fan operation when supply fan is stopped (exhaust fan also stopped when ON)
8	█	□	
9	█	□	Do not touch
10	█	□	

### SW3 ---- GUF-50, 100RD4

	OFF	ON	
1	█	□	Synchronous air-conditioning switch (async when ON)
2	█	□	
3	█	□	Do not touch
4	█	□	
5	█	□	Exhaust fan operation when supply fan is stopped (exhaust fan also stopped when ON)
6	█	□	
7	█	□	Do not touch
8	█	□	
9	█	□	Room temperature detected at main unit is decreased by 4°C when heating. (OFF: active; ON: inactive) Room-temperature sensor location (OFF: main unit; ON: remote control)
10	□	█	

### 9.3. Feature select switches (SW1, SW3, SW2)

\* When shipped from the factory  
Items concerning humidifying is for GUF-50, 100RDH4 only.

#### SW1

	OFF	ON	
1	█	□	F an test operation switch (test operation when ON)
2	█	□	F ilter maintenance display (displayed when ON)
3	█	□	F ilter maintenance time setting switch
4	█	□	
5	█	□	Do not touch
6	█	□	
7	█	□	D amper motor test operation (test operation when ON)
8	█	□	Solenoid valve test operation for humidifier water supply (test operation when ON) Do not touch GUF-50, 100RD4
9	█	□	A uto-recovery during power failure (active when on)
10	█	□	P ower supply ON/OFF (test operation when on)

#### SW2

	OFF	ON	
1	□	█	Do not touch
2	█	□	
3	□	█	Do not touch
4	□	█	
5	█	□	F an speed control method select switch 7: OFF, 8: ON fix to High speed. Both ONs fix to Low speed.
6	█	□	
7	█	□	Do not touch
8	█	□	
9	█	□	Do not touch
10	█	□	

#### Notes:

- \* The switches are vertical for explanation purposes.

### 9.3.1. Filter maintenance time setting

Set the filter maintenance display ON/OFF and time according to use.

Switch	OFF	ON	Maintenance time
SW1	2		Filter maintenance display ON
	2		Filter maintenance display OFF *
	3 4		1,500 hours
	3 4		3,000 hours*
	3 4		4,500 hours
	3 4		Unrestricted

When the accumulated operation time reaches the set time, indication for filter cleaning is notified to the Remote controller. After cleaning, press the filter button twice to reset the accumulated operation time.

### 9.3.2. Power-failure auto-recovery select (independent of Fresh Master)

Set the Fresh Master operation condition when power failure is recovered.

Switch	OFF	ON	Mode
SW1	9		Fresh Master stopped when power failure is recovered.*
	9		Fresh Master recovers to the prior state when power failure is recovered.

### 9.3.3. Power ON feature

Set whether to operate the Fresh Master or not when the main power is turned ON.

Switch	OFF	ON	Mode
SW1	10		Inactive: operates according to the SW1-9 setting*
	10		Active: operation starts with power ON

### 9.3.4. Indoor unit and synchronous setting

Setting to synchronize with the indoor unit.

Switch	OFF	ON	Mode
SW3	1		Synchronizing with the indoor unit*
	1		Asynchronous with the indoor unit. The Remote controller operation only.

### 9.3.5. Humidifier mode select (GUF-50, 100RDH4 only)

Setting the humidifier mode.

Switch	OFF	ON	Mode
SW3	2		Standard humidifier mode*
	2		Heat save humidifier mode (see below)

Used when operating only the Fresh Master and the temperature during heating becomes too hot. The heating capability can be saved lower temperature than normal.

### 9.3.6. Heat operation stop temperature setting (GUF-50, 100RDH4 only)

Stopping the heating operation when synchronous with the indoor unit.

It becomes invalid when SW3-1 is ON.

Switch	OFF		Set outside temperature	ON		Set outside temperature
	3	4		3	4	
SW3	3		6°C	3		10°C*
	4			4		
	5			5		
	3		7°C	3		12°C
	4			4		
	5			5		
	3		8°C	3		14°C
	4			4		
	5			5		
	3		9°C	3		16°C
	4			4		
	5			5		

### 9.3.7. Exhaust fan operation setting

Setting the exhaust fan operation, although the supply fan will stop when defrosting during heating or when withdrawing the refrigerant.

Switch	OFF	ON	Mode
SW3	6		Exhaust fan in operation even when the supply fan is stopped*
	6		Exhaust fan is stopped when the supply fan is stopped

### 9.3.8. Automatic humidifier control setting (GUF-50, 100RDH4 only)

Although the permeable-film humidifier is supplied with water for humidifying when heating, there is a feature to automatically stop the water supply depending on the outside temperature.

Switch	OFF	ON	Mode
SW3	8		Automatic humidifier control prohibited* Water is supplied to the permeable-film humidifier constantly when the heater is in operation.
	8		Automatic humidifier control permitted When the outside temperature is below 12°C during heating operation, supply water to the permeable-film humidifier.

### 9.3.9. Selecting the fan speed control method

This setting is used to select whether to operate according to the fan speed requested by the indoor unit, or to operate in high or low speed.

Switch	OFF	ON	Mode
SW2	7		Following the selected fan speed from controllers.*
	8		Following the selected fan speed from controllers.
	7		High fan speed mode (notch constantly on high)
	8		Low fan speed mode (notch constantly on low)

\* When factory shipped.

### 9.3.10. Room temperature control (GUF -50, 100RD4 only)

Room temperature detected at main unit is decreased by 4°C when heating.

Switch	OFF	ON	Mode
SW3	8		Effective*
	8		Ineffective

### 9.3.11. Room temperature sensor position (GUF -50, 100RD4 only)

Switch	OFF	ON	Mode
SW3	9		Fresh Master's return air*
	9		Built in the Remote controller.

## 10. Check points after installation work

After installation work, please double-check the points below. If there is any troubles, it must be done correctly.

#### (1) Check points - Unit installation

- Are the outdoor ducts (2) and the indoor supply duct (1) covered with heat insulating material? ..... page 7
- Are the outdoor ducts provided with 1/30 or more downward gradient toward the wall? ..... page 7
- Are the outdoor ducts provided with enough distance of at least 1 m for type 50 and at least 2.5 m for type 100? ..... page 7
- Is the Fresh Master securely installed without loose attachment? ..... page 6
- Has the heat insulating work been completed for refrigerant, drain and water supply pipes? ..... page 8-11
- Are refrigerant, drain or water supply pipes correctly routed? ..... page 8-11
- Does the refrigerant type conform to the one indicated on the name plate? ..... page 9
- Has the gas leak test been conducted? ..... page 9
- Has the drainage check been finished? ..... page 8
- Have the valves at both the higher and the lower pressure sides been checked to be fully open? ..... page 19
- Has the power been turned on for at least 12 hours before test run? ..... page 6
- Aren't the inlet and the outlet ports of the Fresh Master and the outdoor unit plugged? ..... page 6

#### (2) Check points - Wiring work

- Does the supply power voltage conform to the specification? ..... page 13, 14
- Is the wiring work the same as wiring diagram? ..... page 13, 14
- Is wiring securely connected to the terminal block? ..... page 16
- Is wiring firmly secured? ..... page 16
- Is the connector on the circuit board connected certainly? ..... page 13, 14
- Is the unit properly grounded? ..... page 13, 14
- Do the power supply cable and the transmission cables satisfy the specified diameter and specification? ..... page 13, 14

#### (3) Check points - Switch setting

- Are the Address setting switches (SW11 and SW12) set correctly? ..... page 17
- In the case of connecting to R2 series outdoor unit, is the branch controller No. setting switch (SW14) properly set? ..... page 17
- When the remote controller is to be used, is the switch (SW3-1) correctly set? ..... page 20
- Are functions correctly set using the remote controller? ..... page 20-21
- Are the Function setting switches (SW1, SW2 and SW3) set correctly? ..... page 17-20

## 11. Test run

#### ► Read the operation manual, too.

- After installing, piping and wiring the Fresh Master and outdoor units, make sure again that there is no refrigerant leakage, no slack on the power and transmission cables, or no polarity mistakes.
- Make sure using a 500 V DC megger that the resistance between the power terminal bed and ground is more than 2.0 MΩ. If less than 2.0 MΩ, do not operate the unit.
- Check that the valves at both the higher and the lower pressure sides are fully open and fasten the cap without fail.

#### ⚠ Warning:

- Never measure the insulation resistance of the terminal block for transmission cables.

#### ⚠ Caution:

- When operating the Fresh Master for a test run, be sure there is no water leakage.

## ■ When operating the Fresh Master for a test run

- Turn ON the test run switches (1, 7, 8) of the function changeover switch (SW1).

Switch	OFF	ON	Mode
SW1	1	<input checked="" type="checkbox"/>	Power is delivered to the fans for air supply and exhaust, and they start operating.
	7	<input checked="" type="checkbox"/>	The damper motor is powered on, and the bypass ventilation is activated.
	8	<input checked="" type="checkbox"/>	The solenoid valve unit with a pressure regulator that supplies water to the solenoid valve unit with a pressure regulator for the humidifier is powered on, and water is supplied (GUF-50, 100RDH4 only).

### Notes:

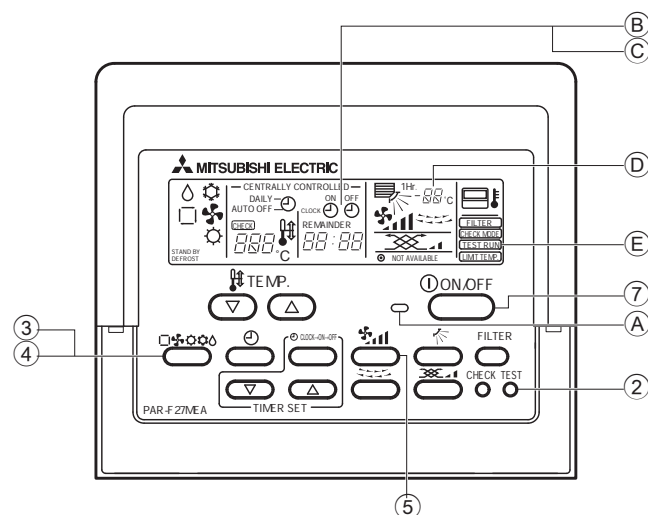
- When the test run switches (1, 7, 8) are turned on, the Remote controller inspection code "0900" is displayed.
- The operating sound of the damper plate is generated when the test run switch 7 is turned on. However, it is not abnormal.

- Turn off the test run switches (1, 7, 8).

## ■ When operating the Fresh Master directly using the Remote controller (SW3-1 is ON)

### Operational Procedure

- Turn ON power at least 12 hours before operation
- Press [TEST RUN] button twice → displaying "TEST RUN" on the screen
- Press [Selecting operation] button → Check that wind is blowing out
- Press [Selecting operation] button to change over to cooling (or heating) → Check that cool (or warm) air is blowing out
- Press [Fan speed adjustment] button → Check that the wind speed is changed
- Check that the outdoor unit fan is operating
- Press [ON/OFF] button to clear test run → Test run stops



- (A) Lighting in operation
- (B) Displaying inspection code
- (C) Displaying remaining test run time
- (D) Displaying indoor unit's liquid pipe temperature
- (E) Displaying test run

### Notes:

- It takes a while until warm air comes out when heating. When cooling, make sure that the display on the remote control shows "Cooling".
- The 2-hour-set timer is activated to automatically stop test run after two hours.

## ■ When operating the Fresh Master by synchronizing with the indoor unit

During test operation of the indoor unit, press the ventilation button to operate the Fresh Master simultaneously.

Check to make sure that the mode is the same as the indoor unit operation mode.

### Notes:

- If the Remote controller shows an inspection code or does not operate normally, refer to the outdoor unit installation manual.
- The 2-hour-set timer is activated to automatically stop test run after two hours.
- The Remote controller displays the remaining test run time on the time display section during test run.
- The Remote controller displays the temperature of the indoor unit's liquid pipe on the temperature display section during test run.
- Depending on the model, the Remote controller displays "This function is not available" when pressing the [Up/down airflow selection] button. This is not a malfunction.

## ■ In case of abnormality during a test-run operation

If the unit fails to operate normally, check the phenomena and causes listed below, and correct the problem. (The phenomena listed below are applicable to the test-run mode.)

Phenomenon	Cause
(1) No Remote controller display appears at all.	The source power supply is not turned on.
(2) No Remote controller display appears at all.	Wiring error, short-circuit or contact failure of transmission line
(3) Inspection code "6600" flashes.	Error in setting the indoor unit address There are duplicate address settings, meaning there are indoor units with the same address.
(4) Inspection code "7107" flashes.	Error in setting the branch exit number.
(5) Inspection code "7106" flashes.	The Remote controller was connected with the SW3-1 OFF.

## 12 Troubleshooting

See below for possible remedies when there is an error during test operation and [Check] followed by a 4-digit number is displayed on the remote controller.

Error code	Error content	Cause	Remedy
0900	Test run	- Is the test operation SW of either the fan, humidifier solenoid valve or bypass damper turned ON?	- Set the test operation SW (SW1-1, 7, 8) to OFF.
2600	Drain error	- Drain water is not properly discharged.  - Is there a leak from the permeable-film humidifier? - Is there a leak from the permeable-film humidifier? - When no problem is discovered after checking the above items.	- The body must be levelly installed. The drain pipe must be installed with gradient of more than 1/100. - Fix the water leak.  - Replace the permeable-film humidifier.  - Replace the PCB (printed circuit board).
2601	Disconnected water sensor connector	- Is the CN4D connector firmly connected? - Is the relay connector between the PCB and water sensor firmly connected? - When no problem is discovered after checking the above item.	- Firmly connect the connector. - Firmly connect the connector.  - Replace the PCB (printed circuit board).
3602	Damper motor error	- Is the CNL connector firmly connected? - Is the connector of the damper motor section firmly connected? - Does the damper operate when the damper motor is running? - When no problem is discovered after checking the above items.	- Firmly connect the connector. - Firmly connect the connector.  - Replace the damper motor if not working.  - Replace the PCB (printed circuit board).
4116	Fan motor error	- The motor continues to run when the operation is stopped.	- Replace the PCB (printed circuit board).
5101	Indoor temperature sensor error	- Are the connectors of each thermister firmly connected? - Is each relay connector firmly connected? - When no problem is discovered after checking the above item.	- Firmly connect each connector.
5102	Liquid pipe temperature sensor error		- Firmly connect each connector. - Replace the PCB (printed circuit board).
5103	Gas pipe temperature sensor error		
5104	Outdoor temperature sensor error		
HO	Booting system	- Has 10 minutes passed since system boot-up? - Has group registration been made?  - Has the Fresh Master address been changed? - When no problem is discovered after checking the above items.	- After system boot-up, HO may flash for a maximum of 10 minutes. However, this is not a malfunction. - Conduct group registration. If there is a master system controller such as the central controller, use the controller to conduct group registration. - If the Fresh Master main unit address has been changed, conduct the group registration again. - If HO continues to flash for more than 10 minutes after reregistering the group and rebooting, replace the PCB (printed circuit board).
-	Unable to register.	- The Fresh Master which is linked with air conditioner, cannot be group registered other than the interlock setting with the Remote controller.	- Change the setting of the SW 3-1 switch and reset the registration or register it interlocked.
-	Operation display comes up with the Remote controller, however it turns off immediately.	- Main power hasn't supplied to the Fresh Master.	- Supply Main Power.

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