

Installation and Maintenance Manual

***INVERTER-DRIVEN
MULTI-SPLIT SYSTEM
HEAT PUMP
AIR CONDITIONERS***

| Type | Model |
|------------|---|
| Wall Mount | TIWM006B22S TIWM008B22S TIWM012B22S TIWM015B22S TIWM018B22S TIWM024B22S TIWM030B22S |

IMPORTANT:

***READ AND UNDERSTAND
THIS MANUAL BEFORE
INSTALLING THIS HEAT
PUMP AIR CONDITIONER.
KEEP THIS MANUAL FOR
FUTURE REFERENCE.***



P5417090

Important Notice

- Johnson Controls Inc. pursues a policy of continuing improvement in design and performance in its products. As such, Johnson Controls Inc. reserves the right to make changes at any time without prior notice.
- Johnson Controls Inc. cannot anticipate every possible circumstance that might involve a potential hazard.
- This heat pump air conditioning unit is designed for standard air conditioning applications only. Do not use this unit for anything other than the purposes for which it was intended.
- The installer and system specialist shall safeguard against leakage in accordance with local codes. The following standards may be applicable, if local regulations are not available. International Organization for Standardization: (ISO 5149 or European Standard, EN 378). No part of this manual may be reproduced in any way without the expressed written consent of Johnson Controls Inc.
- This heat pump air conditioning unit will be operated and serviced in the United States of America and comes with a full complement of the appropriate Safety, Danger, and Caution, Warnings.
- If you have questions, please contact your distributor or contractor.
- This manual provides common descriptions, basic and advanced information to maintain and service this heat pump air conditioning unit which you operate as well for other models.
- This heat pump air conditioning unit has been designed for a specific temperature range. For optimum performance and long life, operate this unit within the range limits according to the table below.

Temperature

| | | Maximum | Minimum |
|-------------------|---------|-----------------------------------|-----------------------------------|
| Cooling Operation | Indoor | 89°F DB/73°F WB (32°C DB/23°C WB) | 69°F DB/59°F WB (21°C DB/15°C WB) |
| | Outdoor | 118°F DB (48°C DB) * | 14°F DB (-10°C DB) * |
| Heating Operation | Indoor | 80°F DB (27°C DB) | 59°F DB (15°C DB) |
| | Outdoor | 59°F WB (15°C WB) * | -4°F WB (-20°C WB) * |

DB: Dry Bulb, WB: Wet Bulb

* The temperature may change depending on the outdoor unit.

- This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.

Product Inspection upon Arrival

1. Upon receiving this product, inspect it for any damages incurred in transit. Claims for damage, either apparent or concealed, should be filed immediately with the shipping company.
2. Check the model number, electrical characteristics (power supply, voltage, and frequency rating), and any accessories to determine if they agree with the purchase order.
3. The standard utilization for this unit is explained in these instructions. Use of this equipment for purposes other than what it designed for is not recommended.
4. Please contact your local agent or contractor as any issues involving installation, performance, or maintenance arise. Liability does not cover defects originating from unauthorized modifications performed by a customer without the written consent of Johnson Controls, Inc. Performing any mechanical alterations on this product without the consent of the manufacturer will render your warranty null and void.

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1. Introduction

Read following sections carefully before installing this product.

Read over the "Installation and Maintenance Manual" for the outdoor unit and the optional strainer kit as well.



Forward this information, and the warranty registration instructions to all installers and users.

Ask end users to maintain copies for future reference.


(Refrigerant Piping Work) → (Electrical Wiring Work) → (Ref. Charge Work) → (Test Run) → (User)

- For details on wiring between the indoor unit and the outdoor unit, refer to the "Installation and Maintenance Manual" for the outdoor unit.
- For details on the optional controller, refer to the "Installation and Maintenance Manual" for that optional controller module.
- For details on each optional part, refer to the "Installation and Maintenance Manual" for each optional part.
- For central controller, refer to the "Installation and Maintenance Manual" for the central controller.

2. Safety Instructions

| Signal Words | |
|--|---|
|  WARNING | Indicates a hazardous situation that, if not avoided, could result in death or serious injury. |
|  CAUTION | Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. |
| NOTICE | Indicates information considered important, but not hazard-related (for example, messages relating to property damage). |

General Precautions

| | |
|--|--|
|  WARNING | To reduce the risk of serious injury or death, read these instructions thoroughly and follow all warnings or cautions included in all manuals that accompanied the product and are attached to the unit. <i>Refer back to these safety instructions as needed.</i> |
|--|--|

- This system should be installed by personnel certified by Johnson Controls, Inc. Personnel must be qualified according to local, state and national building and safety codes and regulations. Incorrect installation could cause leaks, electric shock, fire or explosion. In areas where "Seismic Performance" requirements are specified, the appropriate measures should be taken during installation to guard against possible damage or injury that might occur in an earthquake if the unit is not installed correctly, injuries may occur due to a falling unit.
- Use appropriate Personal Protective Equipment (PPE), such as gloves and protective goggles and, where appropriate, have a gas mask nearby. Also use electrical protection equipment and tools suited for electrical operation purposes. Keep a wet cloth and a fire extinguisher nearby during brazing. Use care in handling, rigging, and setting of bulky equipment.
- When transporting, be careful when picking up, moving and mounting these units. Although the unit may be packed using plastic straps, do not use them for transporting the unit from one location to another. Do not stand on or put any material on the unit. Get a partner to help, and bend with your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut fingers, so wear protective gloves.

- Do not touch or adjust any safety devices inside the indoor or outdoor units. All safety features, disengagement, and interlocks must be in place and functioning correctly before the equipment is put into operation. If these devices are improperly adjusted or tampered with in any way, a serious accident can occur. Never bypass or jump-out any safety device or switch.
- Before servicing, turn-OFF the power supply and use accepted lockout and tag out procedures at all main switches.
- This unit is the pressurized system. Never loosen threaded joints while the system is under pressure and never open pressurized system parts.
- Johnson Controls will not assume any liability for injuries or damage caused by not following steps outlined or described in this manual. Unauthorized modifications to Johnson Controls products are prohibited as they...
 - May create hazards which could result in death, serious injury, equipment damage or property damage;
 - Will void product warranties;
 - May invalidate product regulatory certifications;
 - May violate OSHA standards;

NOTICE

Take the following precautions to reduce the risk of property damage.

- Be careful that moisture, dust, or variant refrigerant compounds not enter the refrigerant cycle during installation work. Foreign matter could damage internal components or cause blockages.
- If air filters are required on this unit, do not operate the unit without the air filter set in place. If the air filter is not installed, dust may accumulate and breakdown may result.
- Do not install this unit in any place where silicon gases can coalesce. If the silicon gas molecules attach themselves to the surface of the heat exchanger, the finned surfaces will repel water. As a result, any amount of drainage moisture condensate can overflow from the condensate pan and could run inside of the electrical box, possibly causing electrical failures.
- When installing the unit in a hospital or other facility where electromagnetic waves are generated from nearby medical and/or electronic devices, be prepared for noise and electronic interference Electromagnetic Interference (EMI). Do not install where the waves can directly radiate into the electrical box, controller cable, or controller. Inverters, appliances, high-frequency medical equipment, and radio communications equipment may cause the unit to malfunction. The operation of the unit may also adversely affect these same devices. Install the unit at least 10 ft. (3m) away from such devices.
- When a wireless controller is used, locate at a distance of at least 3.3 ft. (1m) between the indoor unit and electric lighting. If not, the receiver part of the unit may have difficulty receiving operation commands.
- Do not install the unit in any location where animals and plants can come into direct contact with the outlet air stream. Exposure could adversely affect the animals and plants.
- Do not install the unit with any downward slope to the side of the drain adaptor. If you do, you may have condensate flowing back which may cause leaks.
- Be sure the condensate hose discharges water properly. If connected incorrectly, it may cause leaks.
- Do not install the unit in any place where oil can seep onto the units, such as table or seating areas in restaurants, and so forth. For these locations or social venues, use specialized units with oil-resistant features built into them. In addition, use a specialized ceiling fan designed for restaurant use. These specialized oil-resistant units can be ordered for such applications. However, in places where large quantities of oil can splash onto the unit, such as a factory, even the specialized units cannot be used. These products should not be installed in such locations.

Installation Precautions

! WARNING

To reduce the risk of serious injury or death, the following installation precautions must be followed.

- When installing the unit into...
 - A wall: Make sure the wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

- A room: Properly insulate any refrigerant tubing routed inside a room to prevent “sweating” that can cause dripping and water damage to wall and floors.
 - Damp or uneven areas: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
 - An area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.
 - A snowy area: Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.
- Do not install the unit in the following places. Doing so can result in an explosion, fire, deformation, corrosion, or product failure.
 - Explosive or flammable atmosphere
 - Where a fire, oil, steam or powder can directly enter the unit, such as nearby or above a kitchen stove.
 - Where oil (including machinery oil) may be present.
 - Where corrosive gases such as chlorine, bromine, or sulfide can accumulate, such as near a hot tub or a hot spring.
 - Where dense, salt-laden airflow is heavy, such as in coastal regions.
 - Where the air quality is of high acidity.
 - Where harmful gases can be generated from decomposition.
- Do not position the condensate pipe for the indoor unit near any sanitary sewers where corrosive gases may be present. If you do, toxic gases can seep into breathable air spaces and can cause respiratory injuries. If the condensate pipe is installed incorrectly, water leakage and damage to the ceiling, floor, furniture, or other possessions may result. If the condensate pipe becomes clogged, water may drip from the indoor unit. Do not install the indoor unit where such dripping can cause moisture damage or uneven locations: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
- Before performing any brazing work, be sure that there are no flammable materials or open flames nearby.
- Perform a test run to ensure normal operation. Safety guards, shields, barriers, covers, and protective devices must be in place while the compressor/unit is operating. During the test run, keep fingers and clothing away from any moving parts.
- Clean up the site when finished, remembering to check that no metal scraps or bits of wiring have been left inside the unit being installed.

After installation work for the system has been completed, explain the “Safety Precautions,” the proper use and maintenance of this unit to the customer according to the information in all manuals that came with the system. All manuals and warranty information must be given to the user or left near the Indoor Unit.

Refrigerant Precautions

WARNING

To reduce the risk of serious injury or death, the following refrigerant precautions must be followed.

- As originally manufactured, this unit contains refrigerant installed by Johnson Controls. Johnson Controls uses only refrigerants that have been approved for use in the unit's intended home country or market. Johnson Controls distributors similarly are only authorized to provide refrigerants that have been approved for use in the countries or markets they serve. The refrigerant used in this unit is identified on the unit's faceplate and/or in the associated manuals. Any additions of refrigerant into this unit must comply with the country's requirements with regard to refrigerant use and should be obtained from Johnson Controls distributors. Use of any non-approved refrigerant substitutes will void the warranty and will increase the potential risk of injury or death.
- If installed in a small room, take measures to prevent the refrigerant from exceeding the maximum allowable concentration in the event that refrigerant gases should escape. The installation should meet the requirements in ASHRAE Standards 15 and 34. If refrigerant gas has leaked during the installation work, ventilate the room immediately.
- Before installation is complete, make sure that the refrigerant leak test has been performed. If refrigerant gases escape into the air, turn OFF the main switch, extinguish any open flames and contact your service contractor. Refrigerant (Fluorocarbon) for this unit is odorless. If the refrigerant should leak and come into contact with open flames, toxic gas could be generated. Also, because the fluorocarbons are heavier than air, they settle to the floor, which could cause asphyxiation. When the air conditioner is to be repaired, transported or removed, keep away from heating equipments such as heater. Any leaked refrigerant gases that happen to come into contact with any heat source can become toxic or cause fire.
- When installing the unit, and connecting refrigerant piping, keep all piping runs as short as possible, and make sure to securely connect the refrigerant piping before the compressor starts operating. If the refrigerant piping is not connected and the compressor activates with the stop valve opened, the refrigerant cycle will become subjected to extremely high pressure, which can cause an explosion or fire.
- Tighten the flare nut with a torque wrench in the specified manner. Do not apply excessive force to the flare nut when tightening. If you do, the flare nut can crack and refrigerant leakage may occur.
- A compressor/unit comprises a pressurized system. Never loosen threaded joints while the system is under pressure and never open pressurized system parts.
- When maintaining, relocating, and disposing of the unit, dismantle the refrigerant piping after the compressor stops.

Electrical Precautions

WARNING

Take the following precautions to reduce the risk of electric shock, fire or explosion resulting in serious injury or death.

- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
- Before servicing, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with meter and equipment.
- Only use electrical protection equipment and tools suited for this installation.
- Use specified cables between units.
- Communication cable shall be a minimum of AWG18 (0.82mm²), 2-Conductor, Stranded Copper. Shielded cable must be considered for applications and routing in areas of high EMI and other sources of potentially excessive electrical noise to reduce the potential for communication errors. When shielded cable is applied, proper bonding and termination of the cable shield is required as per Johnson Controls guidelines. Plenum and riser ratings for communication cables must be considered per application and local code requirements.
- Use an exclusive power supply for the air conditioner at the unit's rated voltage.

- Be sure to install circuit breakers (ground fault interrupter, isolating switch, molded case circuit breaker and so on), with the specified capacity. Ensure that the wiring terminals are tightened securely to recommended torque specifications. If a circuit breaker or fuse is frequently activated, shut down the system and contact your service contractor.
- Clamp electrical wires securely with a cable band after all wiring is connected to the terminal block. In addition, run wires securely through the wiring access channel.
- When installing the power lines, do not apply tension to the cables. Secure the suspended cables at regular intervals, but not too tightly.
- Make sure that the terminals do not come into contact with the surface of the electrical box. If the terminals are too close to the surface, it may lead to failures at the terminal connection.
- Turn OFF and disconnect the unit from the power supply when handling the service connector. Do not open the service cover or access panel to the indoor or outdoor units without turning OFF the main power supply.
- After stopping operation, be sure to wait at least five minutes before turning off the main power switch. Otherwise, water leakage or electrical breakdown may result. Disconnect the power supply completely before attempting any maintenance for electrical parts. Check to ensure that no residual voltage is present after disconnecting the power supply.
- Do not clean with, or pour water into, the controller as it could cause electric shock and/or damage the unit. Do not use strong detergent such as a solvent. Clean with a soft cloth.
- Check that the ground wiring is securely connected. Do not connect ground wiring to gas piping, water piping, lighting conductor, or telephone ground wiring.
- If a circuit breaker or fuse is frequently activated, shut down the system and contact your service contractor.

CAUTION

- Proper handling of this unit requires two-people. Safe handling and installing the indoor unit requires the strength of two people. Mounting the unit alone may cause injury due to fall of the unit. Although the unit may be girded with steel banding, do not use it for transportation. Avoid contact with finned surfaces of the heat exchanger as sharp edges can cause severe injury to hands and fingers. Use appropriate work gloves for the job.

NOTICE

- Check to ensure that the condensate hose discharges moisture properly. If connected incorrectly, it can result in leakage and damage to furniture.
- Do not bend or twist the factory-supplied condensate hose. This could compromise the seal and result in moisture leakage.
- Do not apply an excessive force to the condensate pipe connection. This can also compromise the seal properties of the connection.
- Verify that the installed unit is level with floor and ceiling surfaces. Any variance or inclination can cause moisture to back up into the condensate pan, overflow, and seepage onto wall surfaces, and cause damage to carpeted surfaces or furniture below.
- Do not install this system in close proximity to septic sewer lines where flammable and toxic gases can coalesce.
- Inspect the condensate pan before the onset of winter to drain away all accumulated moisture in the pan.
- The heat exchanger of indoor unit overheats whenever there is a slight amount of refrigerant circulating during slowdown or stoppage. As a result, moisture in the condensate pan evaporates where it can condense on ceiling or wall surfaces.
- When a wireless controller is used, put a distance of at least 3.3ft (1m) between the indoor unit and electric lighting. If not, the receiver part of the unit may be difficult to receive operation commands due to effect of the electric lighting.

Electrical Installation

WARNING

In some cases, the packaged air conditioner may not be operated normally under the following cases:

- When electrical power for the packaged air conditioner is supplied from the same power transformer as the external equipment.
- When the power supply wiring for the external equipment and the packaged air conditioner are located close to each other.

Regarding that mentioned above, surge voltage may be inducted into the power supply wiring for the crated air conditioner due to a spike in power consumption for this device and an activation of the switch. Check the field regulations and standards before performing any electrical work in order to safeguard the power supply for the crated air conditioning unit.

3. Before Installation

3.1 Combination of Outdoor Unit and Indoor Unit

The combination capacity of indoor unit against the outdoor unit is selected depending on the outdoor unit capacity. Refer to "Installation and Maintenance Manual" for outdoor unit to decide the required combination of indoor and outdoor units, and the combination unit capacity.

3.2 Transportation and Handling

- (1) Transport the product as close to the installation location as possible before unpacking.
- (2) Do not lay any objects on the indoor unit.
- (3) Take care when handling the indoor unit. Rough handling of the indoor unit can damage the unit.
- (4) The indoor unit handle is fabricated from foam polystyrene and is susceptible to breakage if any excessive force is applied as a result of mishandling of the unit during installation.
- (5) To avoid damage to the resin covers, cover it with cloth before lifting or moving the indoor unit.
- (6) Do not move the louver by hand. If moved, the louver mechanism will become damaged.

NOTES:

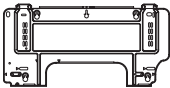



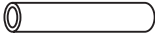
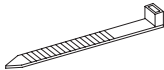


Comply with the following when using the wireless controller (CIR01).

- The built-in receiver can be used only for a single operation and individual operations for twin, triple and quad combinations. However, it cannot be used for the following operations:
 - * Operation with 2 Controllers (CIR01 and wired controller CIW01)
This is because the switch "SW2" on the DIP Switch PCB must be "WIRED" when using CIW01.
 - * Simultaneous Operation of Multiple Units
- When using the wireless controller (CIR01) for simultaneous operation for twin, triple and quad combination, the optional receiver kit (CWDIRK01) is required.
- The "Dual Setpoint Operation" and "Setback Operation" are not available from the wireless controller (CIR01).

3.3 Factory-Supplied Accessories

- (1) Check to ensure that the following accessories are packed with the indoor unit.

inch (mm)

| Accessory | Qty. | | Purpose | Usage |
|--|-----------------|-----------------|---|--|
| | 006 to 012 Type | 015 to 030 Type | | |
| Mounting Plate  | 1 | 1 | For Mounting Indoor Unit | Refer to Section 5. |
| Screw M4 x 1L (25L)  | 6 | 8 | For Securing Mounting Plate | |
| Screw M4 x 9/16L (40L)  | 2 | 4 | | |
| Pipe Insulation  | 1 | 1 | For Refrigerant Piping Connection | Refer to Section 6.2. |
| PVC Tube  | 2 | 2 | For Separating Communication Cables and Wired Controller Cables from Power Supply Wirings 7/16 ID (11 ID) | Refer to Section 8.4. |
| Cable Band  | 5 | 5 | | |
| Logo Label  | 1 | 1 | Logo Label for HITACHI Brand | Refer to the instruction paper attached together with the logo labels. |
| Logo Label  | 1 | 1 | Logo Label for YORK Brand | |

NOTICE

The controller and branch piping are optional accessories and are not included with the indoor unit. If necessary, please contact your contractor.

- (2) Do not insert or leave any foreign objects inside the indoor unit, and verify that no foreign objects remain inside in the indoor unit before the installation and Test Run. Failure to do this can result in equipment failure and damage to the unit.

(3) Necessary Tools and Instrument List for Installation

| No. | Tool | No. | Tool |
|-----|-------------------------------------|-----|-------------------------|
| 1 | Handsaw | 11 | Hexagonal Wrench |
| 2 | Phillips Screwdriver | 12 | Weighter |
| 3 | Vacuum Pump | 13 | Charging Cylinder |
| 4 | Refrigerant Gas Hose | 14 | Manifold Gauge |
| 5 | Megohmmeter | 15 | Wire Cutter |
| 6 | Copper Pipe Bender | 16 | Gas Leak Detector |
| 7 | Manual Water Pump (for Indoor Unit) | 17 | Leveler |
| 8 | Pliers | 18 | Hoist (for Indoor Unit) |
| 9 | Copper Tube Cutter | 19 | Ammeter |
| 10 | Brazing Kit | 20 | Voltage Meter |

NOTE:

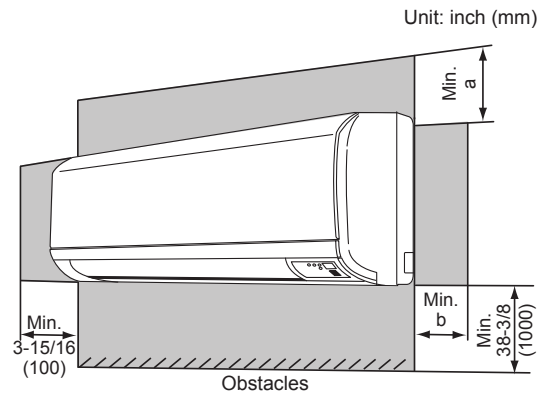
Use tools and measuring instruments (vacuum pump, gas hose, charging cylinder, and manifold gauge) exclusively for the refrigerant R410A.

4. Installation Location

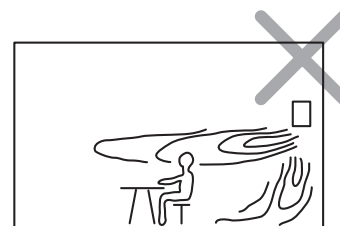
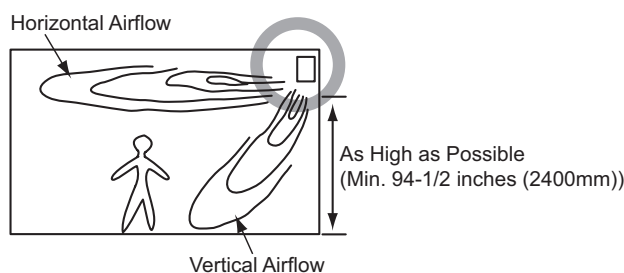
- (1) Install the indoor unit with recommended clearances around it for proper operation, maintenance working space and safety, as shown in the illustration at right.

Unit: inch (mm)

| Unit Type | a | b |
|------------|---------------|---------------|
| 006 to 012 | 5-7/8 (150) | 3-15/16 (100) |
| 015 to 030 | 3-15/16 (100) | 7-7/8 (200) |



- (2) Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained.
- (3) Install the unit where there are no obstacles such as electric lights or a partition, which can impede the suction air and discharged air.
In the case of using a wireless controller, avoid installing the indoor unit to within approximately 3.3ft (1m) from electronic type lighting so that the signal remains unaffected when transmitted to the receiver.
- (4) Check to ensure that the wall is able to withstand the weight of the indoor unit. If there is insufficient structural integrity, noise in the form of vibration generated by the unit is magnified.
- (5) Verify that the supporting walls are vertical and flat.
- (6) Install the indoor unit as high off the floor as possible.
If not, airflow distribution will be affected and these effects will cause discomfort to some people.



- (7) Do not install the unit near a door or ceiling where the indoor unit comes into contact with humid outside air. Otherwise, condensation may occur.
- (8) Do not install the indoor unit where airflow from the air outlet blows directly onto temperature sensing devices such as an alarm device or a control device. This can result in false readings and an alarm failure.

NOTE:

When connecting the wall mount type indoor unit to the VRF system, consider the installation location of the optional strainer kit.

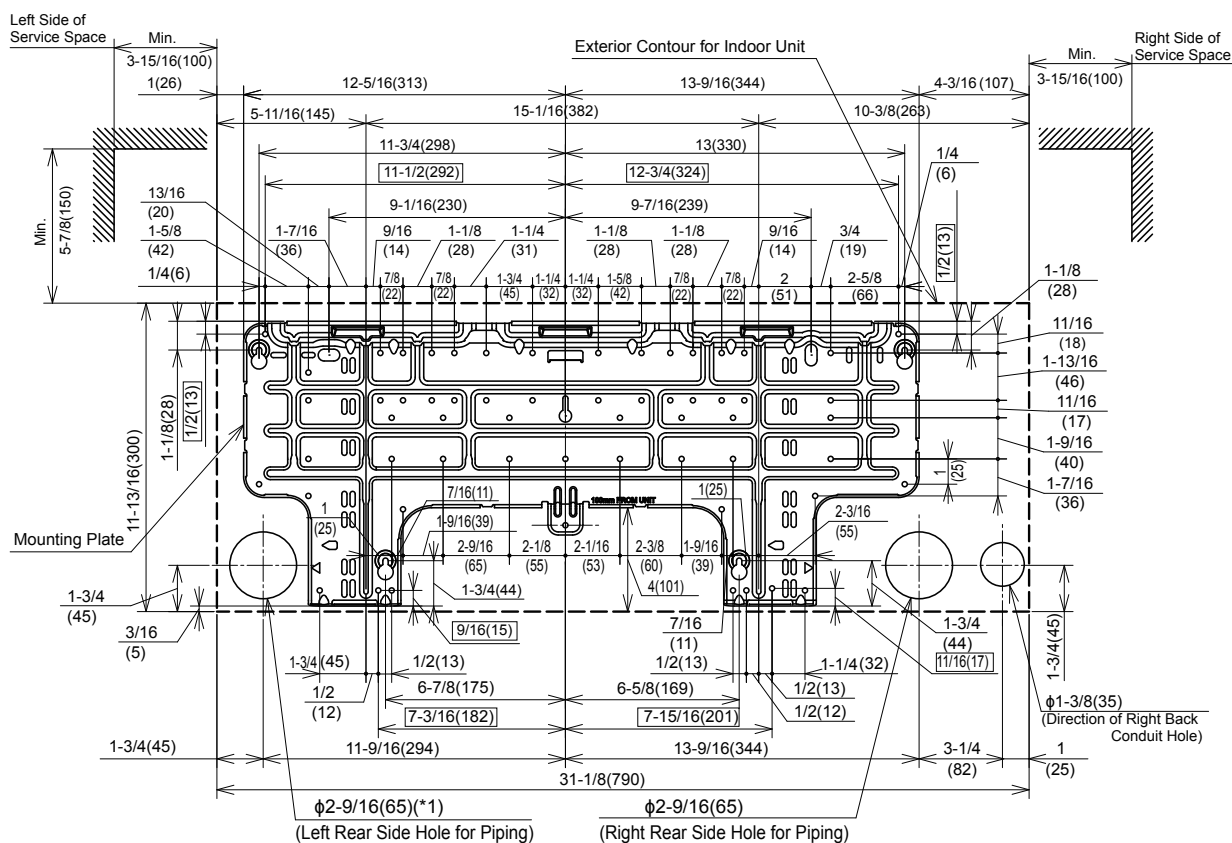
5.1 Installation

NOTE:

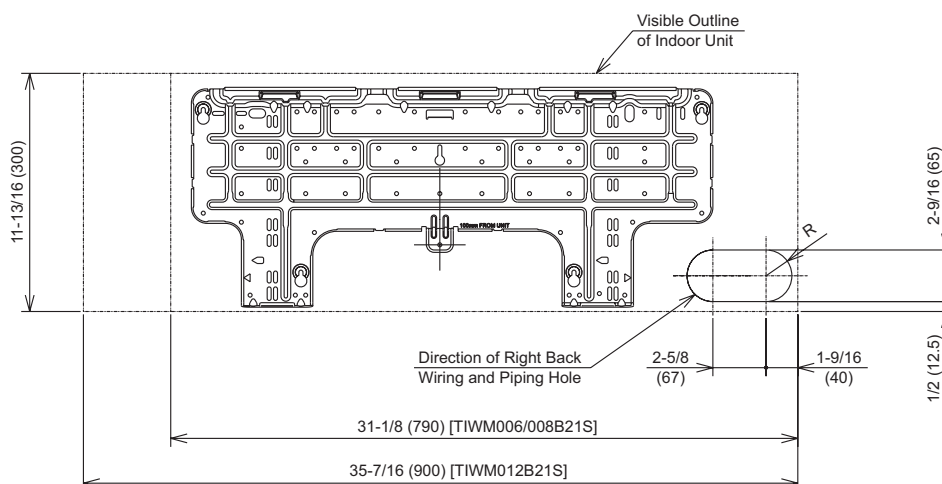
Install both mounting plate and air conditioning unit to conform with the drawing below.

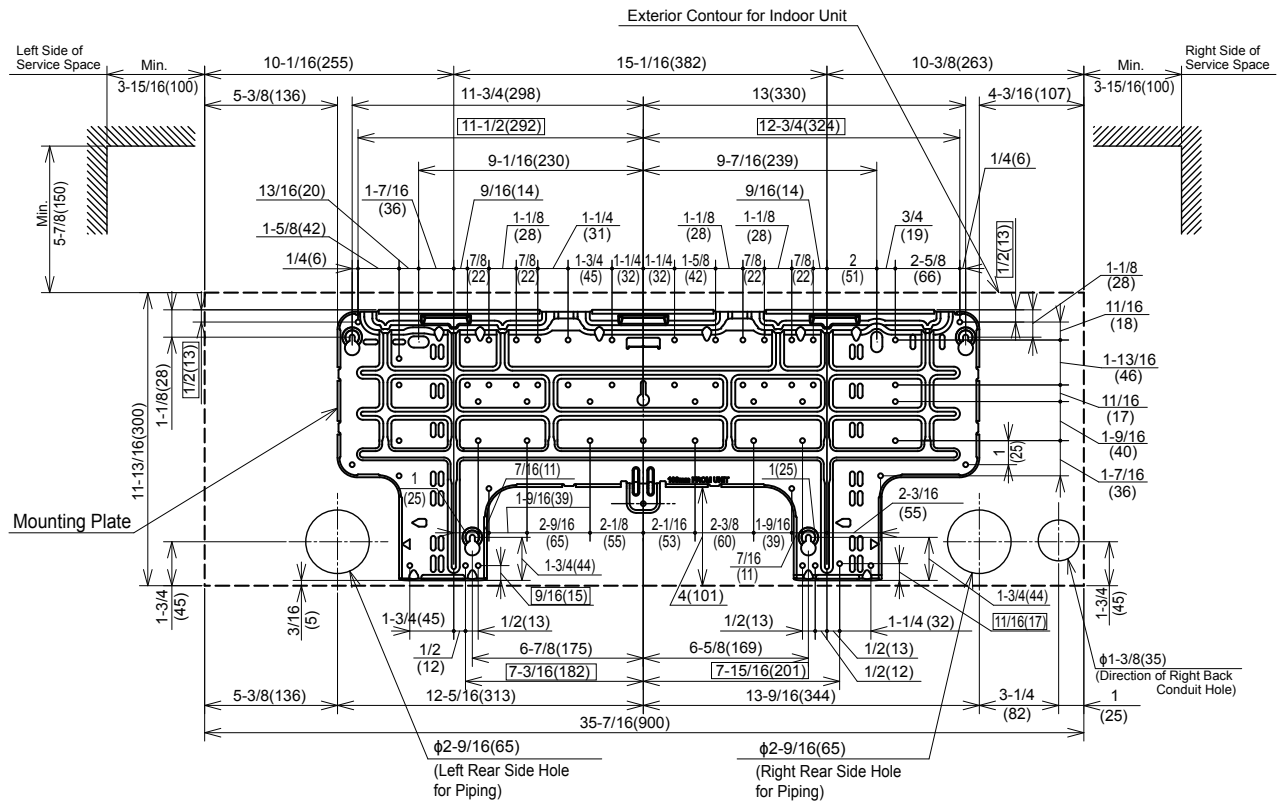
TIWM006B22S and TIWM008B22S

Unit: inch (mm)

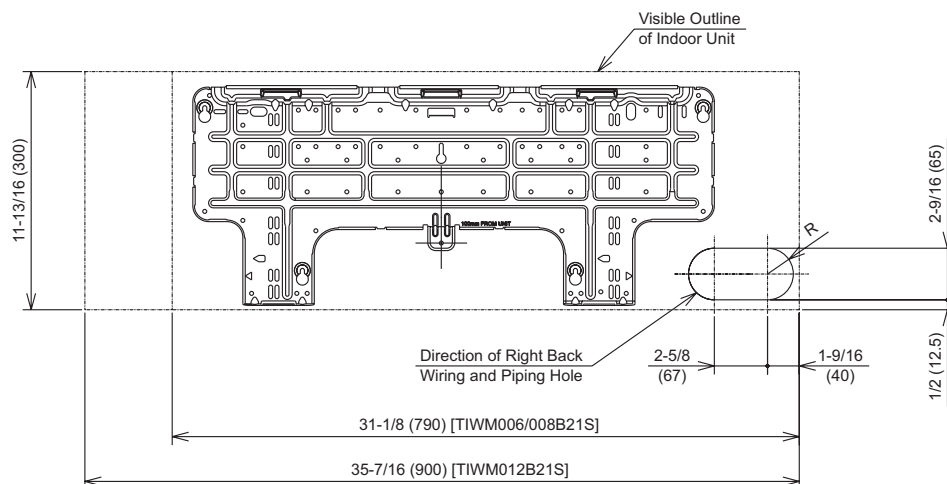


Alternative Opening Direction:



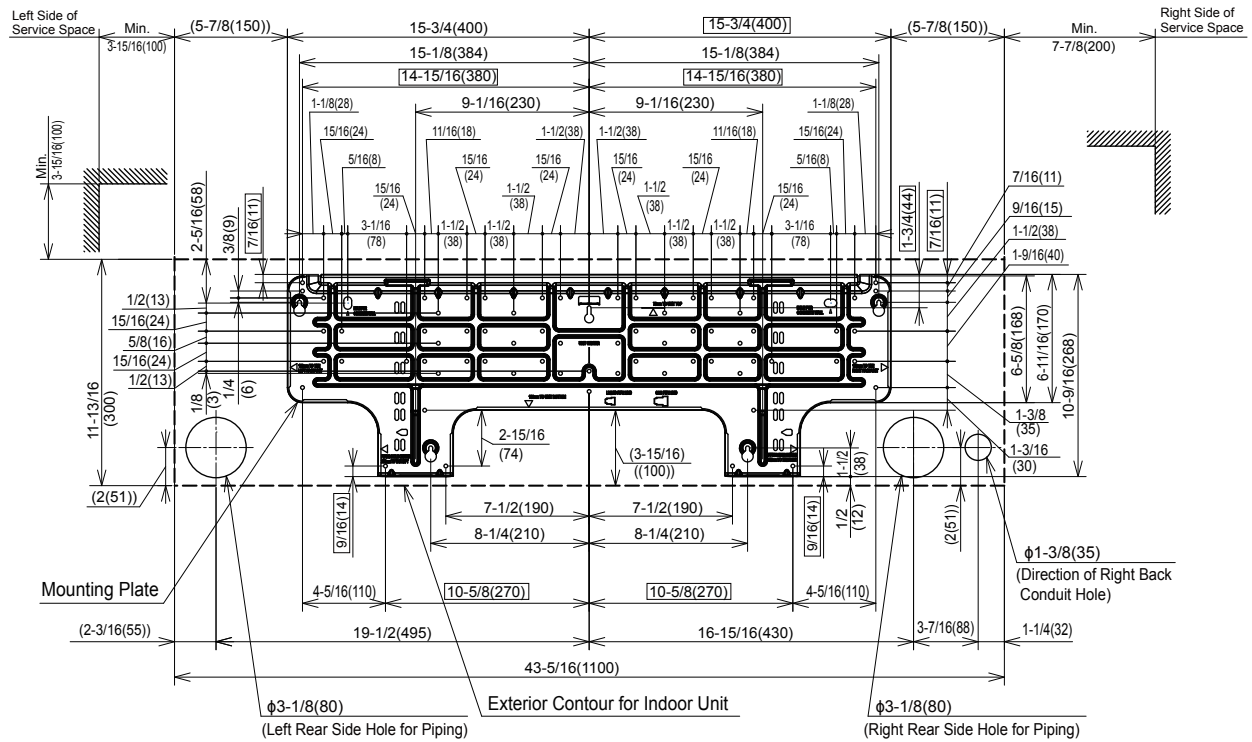


Alternative Opening Direction:

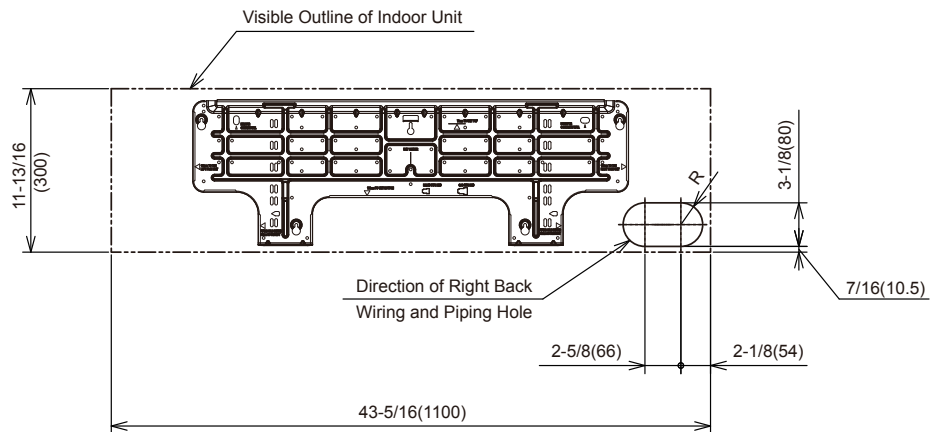


TIWM015B22S, TIWM018B22S, TIWM024B22S and TIWM030B22S

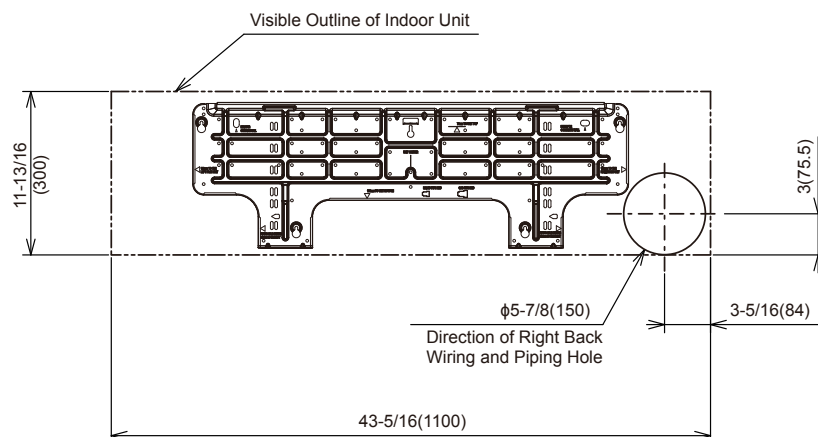
Unit: inch (mm)



Alternative Opening Direction 1:



Alternative Opening Direction 2:



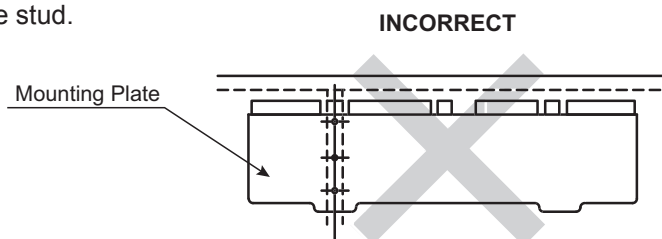
5.2 Working Procedure

5.2.1 Mounting Plate onto Wall

When the mounting plate is directly attached to a wood wall or a concrete wall, check to ensure that the wall is strong enough to support a weight of 450lbs. (2000 N (newton)).

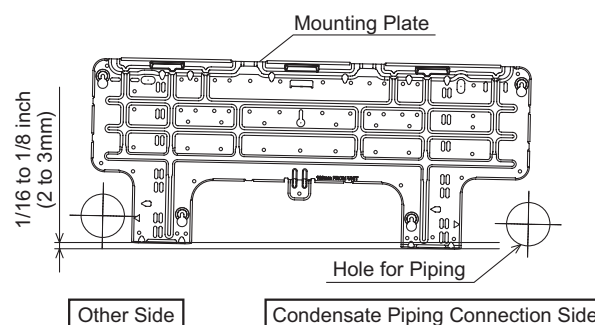
5.2.2 Mounting Indoor Unit between Studs

- (1) The core drill [diameter: 2-9/16 inches (65mm) for 006 to 012 type, 3-1/8 inches (80mm) for 015 to 030 type] facilitates making holes for piping.
- (2) Do not install the mounting plate on one stud.

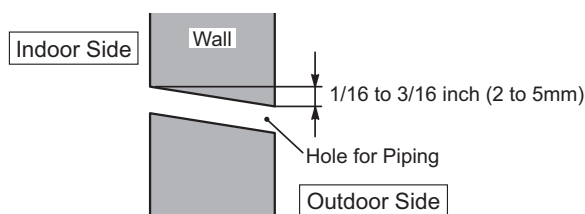


Do not secure the mounting plate onto the one stud as shown.

- (3) Mount the indoor unit in a position that offers the best advantages of weight distribution.
- (4) When installing the mounting plate, make sure that the side of condensate piping connection is slightly [1/16 to 1/8 inch (2 to 3mm)] lower than the other side, sloping down and away from the unit as shown in the figure at right. (Condensate piping connection can be performed on both right side and left side of the unit.)

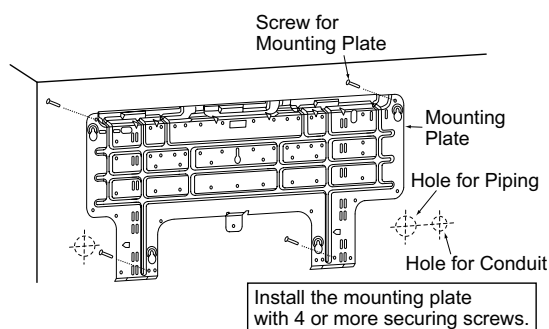


- (5) Open the piping hole slightly lower to the outside as shown in the figure below.

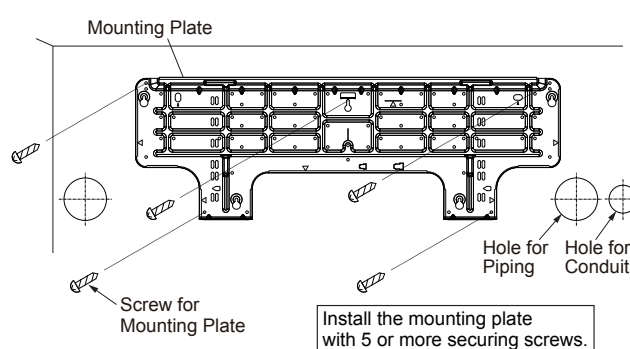


Correct Mounting on Studs

TIWM006B22S to TIWM012B22S



TIWM015B22S to TIWM030B22S

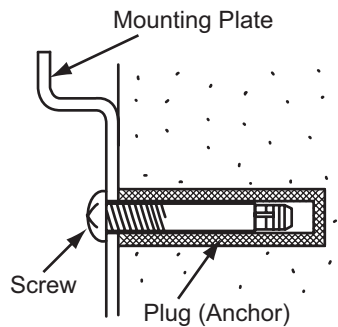


NOTE:

Refer to the dimensions of the mounting plate on Section 5.1, and use the screw holes indicated with for installation. If stronger installation is required, use other holes.

5.2.3 Mounting Indoor Unit onto a Poured Concrete Wall or Concrete Block Wall

Attach the mounting plate to a concrete wall or a concrete block wall with screws and plugs (anchors). Install the mounting plate directly to the wall by the field-supplied plug as shown in the figure below. Mount the unit according to the plug depth specified by the manufacturer. Select the plug size from the table below.



| Plug (Anchor) Size | Qty. | |
|-----------------------|-----------------|-----------------|
| | 006 to 012 Type | 015 to 030 Type |
| M4 - M5 | 4 | 5 |

5.2.4 Mounting Indoor Units

- (1) Hook the upper part of the indoor unit to the mounting plate.

NOTE:

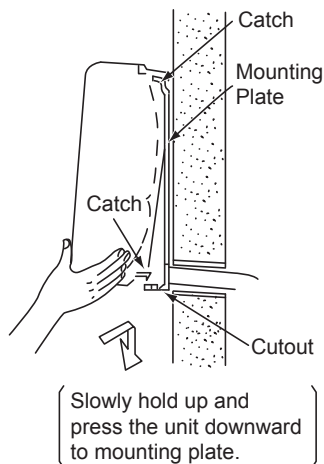
Avoid contact with refrigerant or refrigerant oil to the upper part of indoor unit.

If the unit cover plate comes into contact with these substances, wipe them off immediately and completely.

⚠ CAUTION

Mounting this unit is a two-person job. The unit is too much to handle for one person and the risk of injury exists.

- (2) Insert the catches along the bottom of the indoor unit into corresponding locations on the mounting plate.



⚠ CAUTION

Check to ensure that the unit is securely hooked onto the mounting plate.

An insecure fitting will result in unwanted vibration when the unit is running.

A poorly mounted unit can separate from its mounting plate and fall to the floor with serious injuries.

When removing or replacing the unit, push upward the "PUSH" part on the bottom to release the bottom part of unit from the catches in the mounting plate.

5.2.5 Removing Flat Panel

When removing the flat panel, remove it according to the following instructions. Take care not to scratch any other plastic parts.

NOTICE

Remove and attach the flat panel with both hands. When installing or removing the front panel, do not use excessive force as it and other portions can easily break.

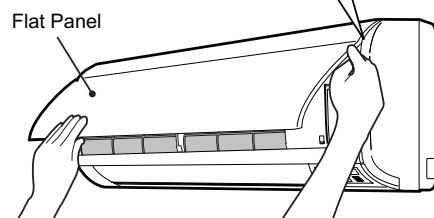
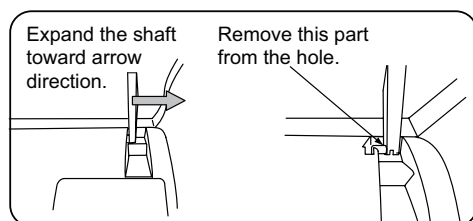
TIWM006B22S to TIWM012B22S

(1) Removing Flat Panel

- (a) Hold both sides of the flat panel and lift it up.

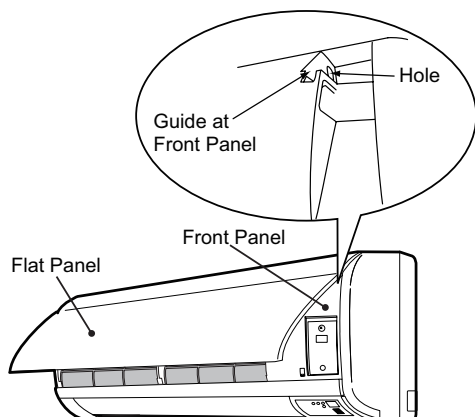


- (b) Release the two (2) catches and pull the air filter downward to remove it.
- (c) Open the flat panel fully and slightly extend the right arm shaft outward. After the shaft is removed from the front panel, pull the flat panel forward with the right arm shaft slightly extended outward and then remove the flat panel.



(2) Attaching Flat Panel

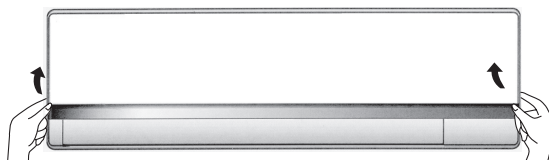
Insert the arm shafts on both sides of the flat panel into the holes on the unit body, along the guide of the front panel. After the flat panel is attached completely, insert the catches for the air filter to complete.



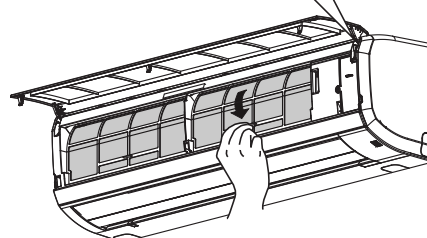
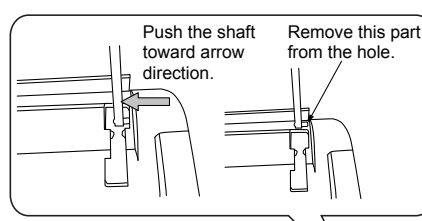
TIWM015B22S to TIWM030B22S

(1) Removing Flat Panel

- (a) Hold both sides of the flat panel and lift it up.

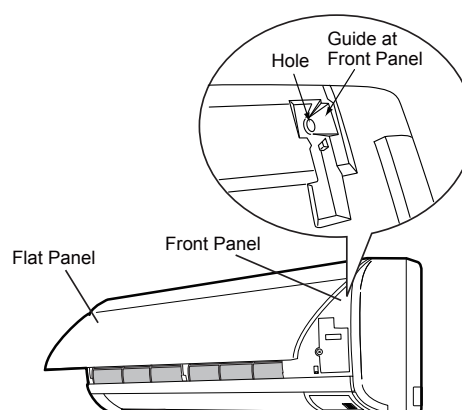


- (b) Release the two (2) catches and pull the air filter downward to remove it.
- (c) Open the flat panel fully and push the right arm shaft inward. After the shaft is removed from the front panel, pull the flat panel forward with the right arm shaft slightly pushed inward and then remove the flat panel.



(2) Attaching Flat Panel

Insert the arm shafts on both sides of the flat panel into the holes on the unit body, along the guide for the front panel. After the flat panel is reattached, insert the catches for air filter to complete.



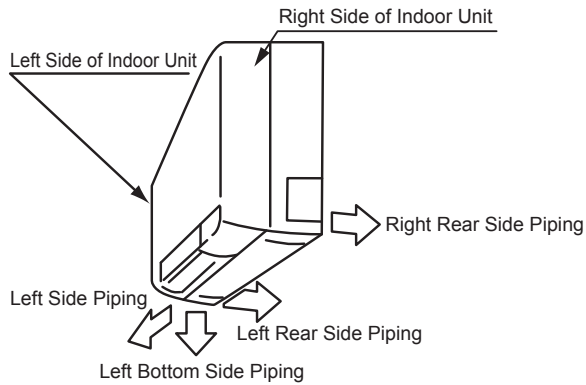
5.2.6 Position of Piping Connection

Piping can be installed from the indoor unit in the following directions: the right rear side, the left rear side, the left bottom side, and the left side of the unit.

(1) Direction of Piping Installation

Determine the direction of the piping connection according to the layout of the installation site.

In the case that the pipe is connected toward the side, remove the "knock-out" panel on the side for the piping. Do this before the unit is mounted onto the wall.

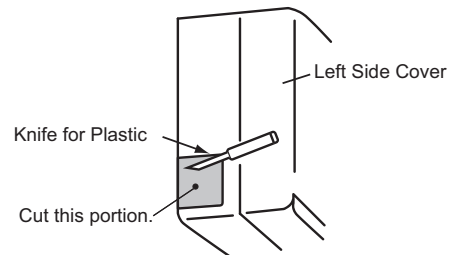


NOTE:

Taking out of refrigerant pipe from the right bottom side and right side of the unit are not available.

• For Left Side Piping

With the appropriate cutting tool, remove the left-side "knock-out" panel and smooth away any sharp edges. Do this before the unit is mounted onto the wall.



NOTE:

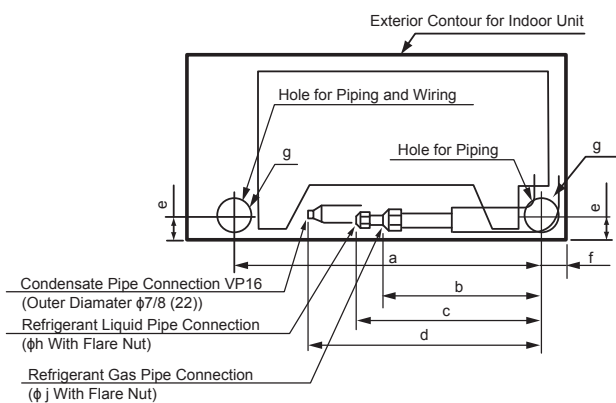
If left side piping access is selected, the condensate pipe outlet should be on the left side, and the mounting plate downslope should be adjusted to left side. It does not change the mounting plate downslope to the left side.

(2) Piping Installation

For the pipe installation embedded in the wall

TIWM006B22S to TIWM012B22S

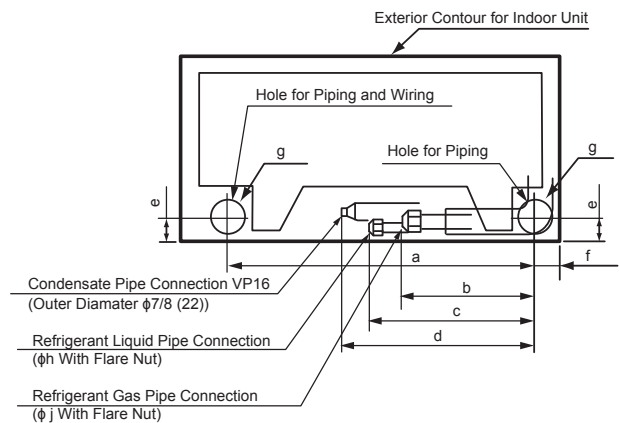
Unit: inch (mm)



View from Front Side for Indoor Unit

TIWM015B22S to TIWM030B22S

Unit: inch (mm)



View from Front Side for Indoor Unit


Unit: Inch (mm)

| Dimension \ MBH | 6 and 8 | 12 | 15 | 18 to 30 |
|-----------------|----------------|----------------|---------------|---------------|
| a | 25-1/8 (638) | 25-7/8 (657) | 36-7/16 (925) | 36-7/16 (925) |
| b | 15-9/16 (395) | 15-9/16 (395) | 13-3/4 (350) | 13-3/4 (350) |
| c | 17-11/16 (450) | 17-11/16 (450) | 16-1/8 (410) | 16-1/8 (410) |
| d | 22-3/8 (568) | 22-3/8 (568) | 21-5/8 (550) | 21-5/8 (550) |
| e | 1-3/4 (45) | 1-3/4 (45) | 2 (51) | 2 (51) |
| f | 4-3/16 (107) | 4-3/16 (107) | 4-3/4 (120) | 4-3/4 (120) |
| g | 2-9/16 (65) | 2-9/16 (65) | 3-1/8 (80) | 3-1/8 (80) |
| h | 1/4 (6.35) | 1/4 (6.35) | 1/4 (6.35) | 3/8 (9.52) |
| j | 1/2 (12.7) | 1/2 (12.7) | 1/2 (12.7) | 5/8 (15.88) |

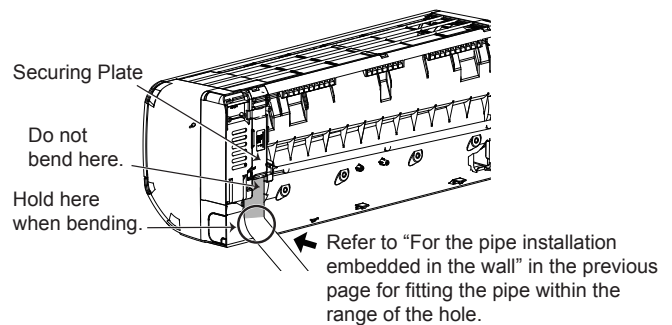
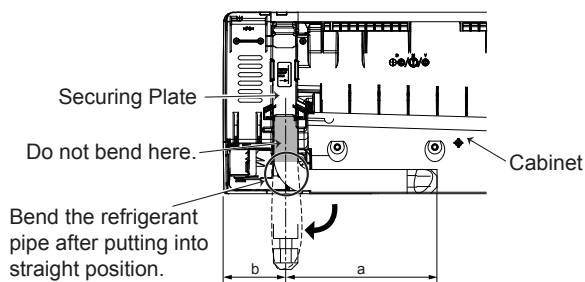
For the rear side installation

In the case that the pipe is connected directly to the rear side, rebend the refrigerant piping as shown in the following figures.

NOTICE

When bending the pipe, remove the “knock-out” panel and put the pipe into the straight position by holding  part with your hand.

- Make the pipe straight before bending in order to prevent the pipe from getting kinked inside. In addition, in the case of connecting to the back side, the position of pipe and hole in the wall may result in misalignment.
- Make sure the pipe insulation is not damaged from contacting with the cabinet when bending.

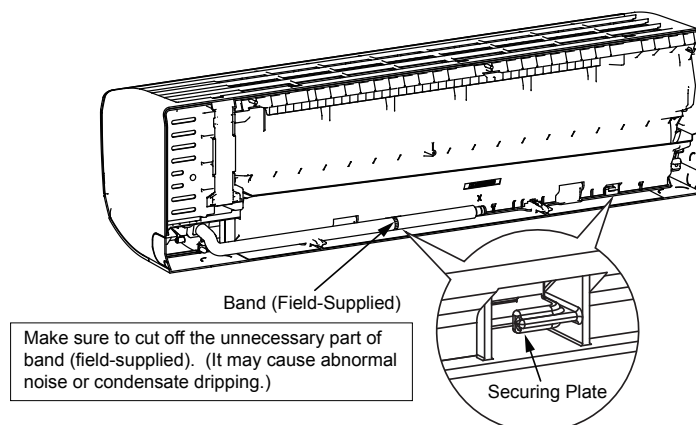


Unit: Inch (mm)

| MBH Dimension | 6 and 8 | | 12 | | 15 | | 18 to 30 | |
|------------------|----------------|---------------|----------------|---------------|---------------|--------------|---------------|--------------|
| | Liquid Piping | Gas Piping | Liquid Piping | Gas Piping | Liquid Piping | Gas Piping | Liquid Piping | Gas Piping |
| a | 17-11/16 (450) | 15-9/16 (395) | 17-11/16 (450) | 15-9/16 (395) | 16-1/8 (410) | 13-3/4 (350) | 16-1/8 (410) | 13-3/4 (350) |
| b | 4-3/16 (107) | 4-3/16 (107) | 4-3/16 (107) | 4-3/16 (107) | 4-3/4 (120) | 4-3/4 (120) | 4-3/4 (120) | 4-3/4 (120) |

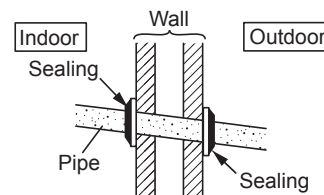
For installing the securing plate (Only TIWM015B22S to TIWM030B22S)

Bend the pipe, place it in the bottom space on the rear side of the unit and secure the pipe to the securing plate with band (field-supplied).



NOTICE

Make sure to seal the hole in the wall completely in order to prevent rainwater and outdoor air from entering.
When using putty for sealing, avoid contact with the wall since it may result in oil stain.



6. Refrigerant Piping Work

DANGER

Use the specified non-flammable refrigerant (HFC R410A) for the outdoor unit refrigerant cycle. Do not charge the unit with anything other than HFC R410A, such as hydrocarbon refrigerants (propane and Isobutene), oxygen, and other flammable gases (acetylene, ammonia, and so forth), or any poisonous gases when installing, maintaining, and moving the unit. These substances are volatile and dangerous and can result in fire, explosion, and serious or fatal injuries.

For details of refrigerant piping work, vacuum pump and refrigerant charging, refer to the "Installation and Maintenance Manual" for the outdoor unit.

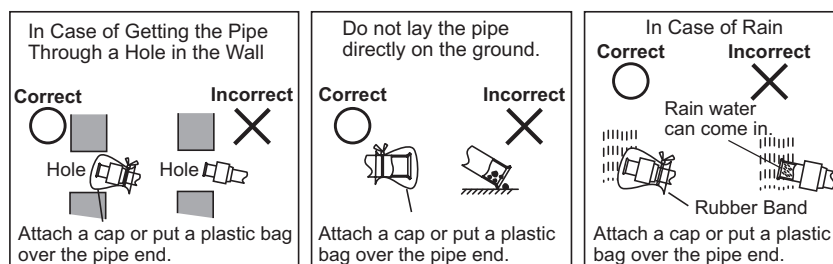
6.1 Piping Materials

- (1) Tolerances of refrigerant piping lengths depend on the combination with the outdoor unit. Refer to the "Installation and Maintenance Manual" for the outdoor unit.
- (2) Select the piping size from the following table.

Table 6.1 Piping Size

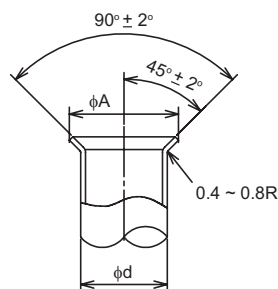
| Model | inch (mm) | |
|--|-------------|---------------|
| | Gas Piping | Liquid Piping |
| TIWM006B22S TIWM008B22S TIWM012B22S TIWM015B22S | 1/2 (12.7) | 1/4 (6.35) |
| TIWM018B22S TIWM024B22S TIWM030B22S | 5/8 (15.88) | 3/8 (9.52) |

- (3) Prepare field-supplied copper pipes.
- (4) Select clean copper pipes. Make sure there is no dust and moisture inside.
- (5) Make sure that moisture, old refrigerant, and other contaminants do not enter the refrigeration system. Impurities can adhere to the expansion valve and can impair system operation.
- (6) When cutting piping, do not use conventional tools such as saws or grinding wheel cutting disks that produce harmful metallic filings and burrs that can damage a refrigerant system. Use a deburring tool to eliminate metal filings produced by the cutting operation. After the cut is made, blow out each pipe with dry compressed air or nitrogen to remove this residue before making pipe connections.



6.2 Piping Connections

- (1) Perform the flaring work as shown below.



| Diameter (d) | inch (mm) |
|-----------------|-------------------------------|
| | ϕA 0 -0.02 (-0.4) |
| 1/4 (6.35) | 0.36 (9.1) |
| 3/8 (9.52) | 0.52 (13.2) |
| 1/2 (12.7) | 0.65 (16.6) |
| 5/8 (15.88) | 0.78 (19.7) |

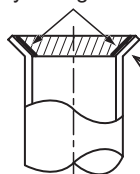
- (2) Use specific flare nut attached with the unit.
- (3) Verify that there are no scratches, burrs stuck to internal surfaces, or surface deformations at the flared opening.
- (4) Before tightening the flare nut, apply the (Field-Supplied) refrigerant oil in a thin layer over the flared part. (Do not apply the oil on other areas.) Tighten the flare nut for the liquid pipe to the specified torque with two spanners. Then, tighten the flare nut for the gas piping in the same way. After the tightening work is completed, check that no refrigerant leakage occurs.

NOTE:

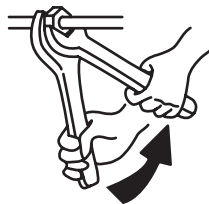
Refrigerant oil is field-supplied.

[Ethereal Oil FVC68D (Idemitsu Kousan Co. Ltd.)]

Apply Refrigerant Oil.



Do not apply the refrigerant oil to the outside of the flaring opening.



Use two wrenches for tightening the flare nut.

Required Tightening Torque

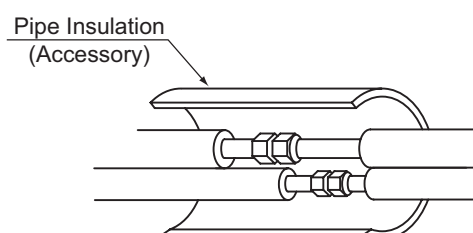
(JIS B 8607)

| Pipe Size | Tightening Torque |
|---------------------|----------------------------------|
| 1/4 inch (6.35 mm) | 10.3 - 13.3 ft·lbs (14 - 18 N·m) |
| 3/8 inch (9.52 mm) | 25.1 - 31.0 ft·lbs (34 - 42 N·m) |
| 1/2 inch (12.7 mm) | 36.1 - 45.0 ft·lbs (49 - 61 N·m) |
| 5/8 inch (15.88 mm) | 50.2 - 60.5 ft·lbs (68 - 82 N·m) |

- (5) Wherever buried piping exists on site, make sure there is a service doorway to provide adequate access to inspect piping sockets and elbows, and for interconnecting parts.
- (6) Piping must be reinforced to withstand earthquakes so as not to be damaged by an external force.
- (7) Do not tightly secure refrigerant piping to accommodate expansion and contraction.
- (8) Prevent the pipes from contacting weak portions such as wall, ceiling, etc. (Otherwise, abnormal sound may be heard due to vibration of the piping.)
- (9) Leak test all piping and connections. Perform procedures in accordance with the "Installation and Maintenance Manual" for the outdoor unit.
- (10) Insulate each flare connection without gap with accessory insulations to prevent condensation. Then insulate each refrigerant pipe as well.

Insulation for Indoor Piping Connection

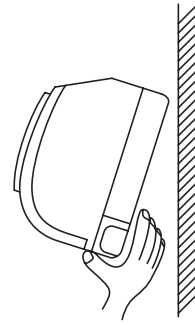
Wrap the pipe insulation accessory around the flare connection and secure it with tape as shown in the figure below.



(11) For Left Side Piping

Perform the following piping connection work.

- (a) It is recommended that the piping connection work be performed by 2 people: one supports the indoor unit and the other performs the piping connection.



NOTICE

Take care not to uncouple the indoor unit from the mounting plate.

- (b) Correctly position piping before installing the indoor unit to the wall. For left rear-side piping connections, refer to Section 5.2.6.

! WARNING

- Do not apply excessive force to the flare nut when tightening. If applied, the flare nut may crack due to stress fracture and refrigerant leakage may occur. Use the correct torque specifications.
- Make sure that a refrigerant leak test is performed. Refrigerant (Fluorocarbon) for this unit is non-flammable, non-toxic, and odorless. If the refrigerant should somehow escape and come into contact with flame, toxic gas will form. This gas is heavier than air and settles near floor areas and spreads where it can cause suffocation to those nearby.

7. Condensate Piping

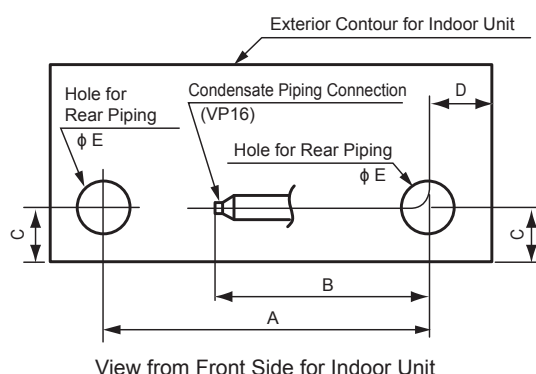
! WARNING

Do not run condensate piping into underground areas near sanitary or sewage lines where toxic and corrosive gas can seep into the system. This creates a pathway for the flow of poisonous gas to penetrate inhabited areas.

NOTICE

- Check to ensure that the condensate piping discharges moisture properly. If connected incorrectly, it can cause structural damage to indoor wall and ceiling surfaces, and damage to furniture and carpeting.
- Avoid sloping the condensate piping upward as it will impede drainage. Moisture will settle back into the unit and may cause water leakage when unit operation stops.
- Do not connect condensation drainage with sanitary or sewer lines or any other condensate piping.
- When the main condensate piping is connected with other indoor units, the connected position of each indoor unit must be higher than the main pipe. The pipe size of the main condensate piping must be large enough according to the unit size and number of units.
- After performing condensate piping work and electrical wiring, check to ensure that water outflow is as smooth as in the following procedure.

- (1) Standard condensate connection is on the rear of the unit, viewed from the discharge grilles. The condensate connection can also be connected to the left side of the unit. Refer to Section 5.2.6 for details.



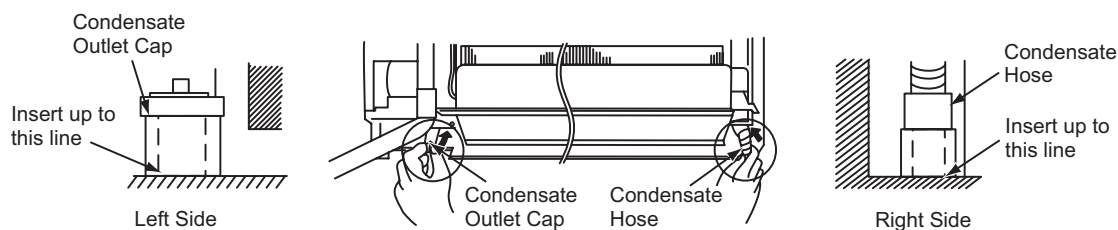
Unit: Inch (mm)

| MBH | 6 and 8 | 12 | 15 to 30 |
|-----------|--------------|--------------|---------------|
| Dimension | | | |
| A | 25-1/8 (638) | 25-7/8 (657) | 36-7/16 (925) |
| B | 22-3/8 (568) | 22-3/8 (568) | 21-5/8 (550) |
| C | 1-3/4 (45) | 1-3/4 (45) | 2 (51) |
| D | 4-3/16 (107) | 4-3/16 (107) | 4-3/4 (120) |
| E | 2-9/16 (65) | 2-9/16 (65) | 3-1/8 (80) |

NOTICE

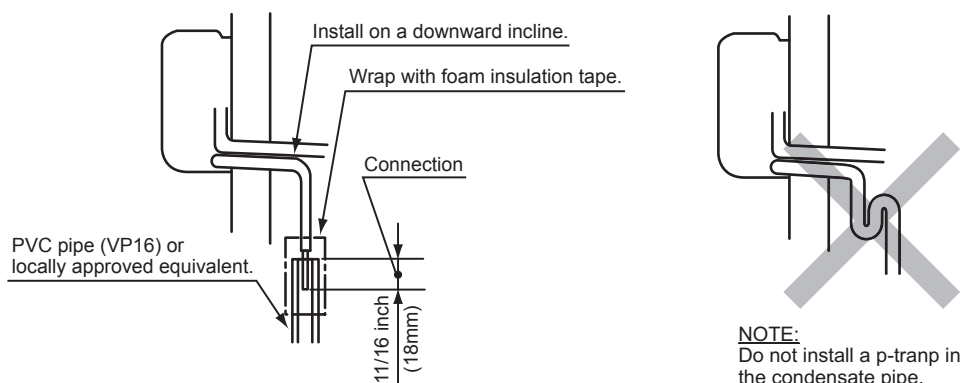
- In order to properly drain condensate water, mount the indoor unit on a slight incline to the condensate piping connection side. (Installed 1/16 to 1/8 inch (2 to 3mm) relative to the unit level.)
- When the left side piping is selected, the condensate piping outlet should be on the left side. If it is not on the left side, and the mounting plate is secured onto the wall with right down slope, the condensate could flow back into the unit, causing a leak from the condensate pan.

- (2) When the left side condensate connection is performed, remove the cap from the left side condensate, and then attach this cap to the right side condensate in order to change the condensate connection from the right side to the left side.
If the cap is tight, carefully remove it with pliers. (Perform this procedure before the indoor unit is hung onto the wall.)



(3) Connecting Condensate Piping

- Prepare PVC piping with 7/8 inch (22mm) outer diameter or locally approved equivalent for the application.
- When the condensate hose is used, do not twist or install on an incline.
- Wrap vinyl tape or locally approved equivalent around the connection to prevent damage from condensation.
- Insulate all condensate piping upon completing the installation to prevent damage from condensation.



- Terminate the condensate piping utilizing locally approved methods and standards.
- After the condensate piping is completed, check that water flows smoothly by pouring water into the condensate pan with a cup.
- Wrap the condensate piping with foam insulation tape or locally approved equivalent.
- When installing the pipe, do not secure the condensate piping and refrigerant pipe together.

! WARNING

Take care not to splash water on the electrical parts such as the fan motor or thermistors.

NOTICE

When the main condensate piping is connected with other indoor units, the connected position of each indoor unit must be higher than the main piping to promote drainage. The size of main condensate piping must be large enough according to the unit size and number of units.

8. Electrical Wiring

Perform electrical wiring work according to this manual and the “Installation and Maintenance Manual” for the outdoor unit.

WARNING

- All electrical work must be done as outlined in this manual and in accordance with this manual. Substandard work can result in fire and damage to the unit.
- Use specified cables between units and choose the cables correctly. If not, an electrical shock or fire may occur.
- Do not open the service cover or access panel for the indoor or outdoor units without turning OFF the main power supply. It can result in electrical shock.
- Turn OFF the main power switch of the indoor unit and the outdoor unit before attempting any electrical wiring work or a periodical check is performed. If not, it will result in electrical shock or a fire.
- Check to ensure that the indoor fan and the outdoor fan have stopped before attempting any electrical wiring work or for any scheduled electrical work that is being performed.
- Protect electrical wiring, condensate piping, and electrical components from threats posed by burrowing animals and temperature extremes. Failure to do so can, over time, deteriorate system performance.
- Tighten screws according to the following torque.
 - M3.5: 0.6 to 0.7 ft·lbs (0.8 to 1.0 N·m)
 - M4: 0.7 to 1.0 ft·lbs (1.0 to 1.3 N·m)
- Connect ground wiring for the outdoor / indoor unit to prevent electrical shock or an unexpected discharge. The ground resistance must be less than 1 megohm. The grounding must be performed by authorized installers.
- Disconnect or turn OFF the main power supply to prevent electrical shock when opening the service cover to perform electrical maintenance.
- Take care not to pinch electrical wiring when attaching the service cover. Electrical fire or shock can occur.
- Insulate all wiring with accessory packing and seal the connection hole against the threat of insects or moisture.

NOTICE

- Pass the wires through the knockout hole on the side cover when using conduit.
- Perform the wiring work according to this manual and “Installation and Maintenance Manual” for the outdoor unit.
- Correctly connect the power supply line phases.
- The communication cable between the indoor unit and the outdoor unit does not have any polarity. Do not apply an excessively high voltage to this cable (Rated Voltage 5V). It may cause failure.
- The controller cable (Field-Supplied) does not have any polarity. Do not apply an excessively high voltage to this cable (Rated Voltage 5V). It may cause failure.
- Maintain the rated voltage for the power supply. Voltage that is too high or too low can damage the unit.
- Make sure there is sufficient capacity for the power supply. If not, operation cannot begin due to insufficient voltage.

8.1 General Check

- (1) Make sure that the field-selected electrical components: (main power switches, circuit breakers, wires, conduit connectors, and wire terminals) are properly labeled in accordance with electrical data as specified in the "Engineering Manual" for the indoor units. Make sure that the components comply with the National Electrical Code (NEC).
- (2) Check to ensure that the power supply voltage is within $\pm 10\%$ of the rated voltage.
- (3) Check the capacity of the electrical wires.
If the power supply capacity is too low, the system cannot be started due to a voltage drop.
- (4) Verify that the ground wiring is securely connected.

8.2 Electrical Wiring Capacity

8.2.1 Field Minimum Wire Sizes for Power Supply

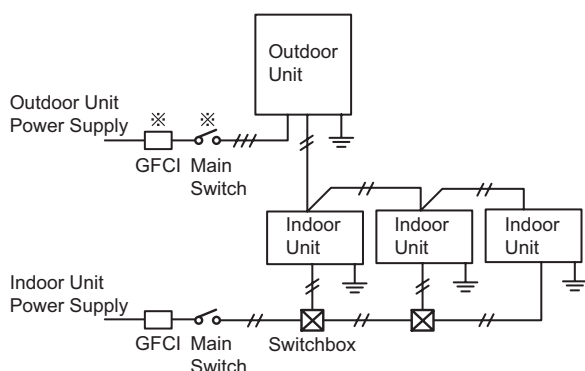
- This equipment can be installed with a Ground Fault Circuit Interrupter (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers / fuses / overcurrent protection switches and wiring in accordance to local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements. Failure to use a GFCI could result in electric shock or fire.
- Do not operate the system until all check points are cleared.
 - (A) Check to ensure that the electrical resistance is more than one megaohm, by measuring the resistance between ground and the terminal of the electrical parts. If it is less than one megaohm, do not operate the system until the source of the electrical current drain is found and repaired.
 - (B) Check to ensure that the stop valves of the outdoor unit are fully opened, and then start the system.
 - (C) Check to ensure that the switch on the main power has been ON for more than 12 hours, to warm up the compressor oil by the crankcase heater.
- Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated to higher than 194°F (90°C).

8.2.2 Details of Electrical Wiring Connection

The electrical wiring capacity of the outdoor unit should be referred according to the "Installation and Maintenance Manual" for the outdoor unit. Adjusting the DIP switches may be required depending on the arrangement with the outdoor unit.

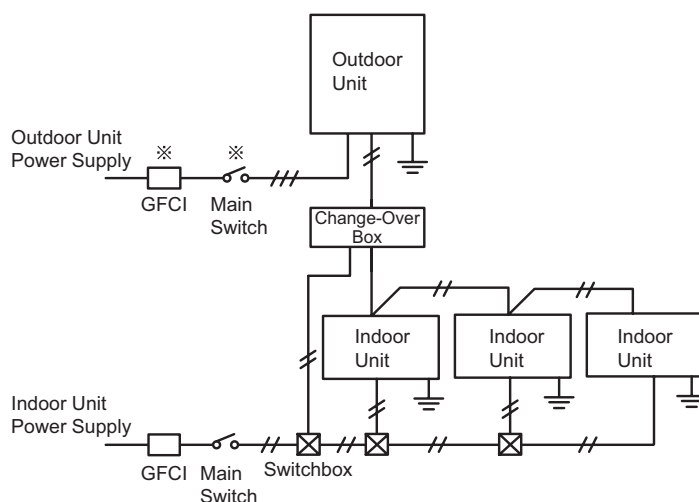
Select wiring capacity according to the table 8.1. Install a GFCI (Ground Fault Circuit Interrupter) and main switch as shown in each of the system diagrams below.

Heat Pump System



※ Refer to the "Installation and Maintenance Manual" for the connected outdoor unit for details of wire, GFCI and main switch for outdoor unit.

Heat Recovery System



※ Refer to the "Installation and Maintenance Manual" for the connected outdoor unit for details of wire, GFCI and main switch for outdoor unit.

Table 8.1 Recommended Wiring Capacity and Sizes

Follow local electrical codes when selecting a GFCI device.

| Model | Power Supply | Minimum Wire Thickness (AWG [mm ²]) | | | GFCI | | Main Switch | | MCA (Minimum Circuit Ampacity) [A] |
|-------------|-------------------|---|--------------------|--------------------------|---------------------|--------------------------------|---------------------|----------|------------------------------------|
| | | Power Supply Wiring Size (Main) | Ground Wiring Size | Communication Cable Size | Nominal Current [A] | Nominal Sensitive Current [mA] | Nominal Current [A] | Fuse [A] | |
| TIWM006B22S | 1~, 208/230V 60Hz | 18 (0.82) | 18 (0.82) | 18 (0.82) | 15 | 30 | 15 | 15 | 0.3 |
| TIWM008B22S | | | | | | | | | 0.3 |
| TIWM012B22S | | | | | | | | | 0.5 |
| TIWM015B22S | | | | | | | | | 0.4 |
| TIWM018B22S | | | | | | | | | 0.7 |
| TIWM024B22S | | | | | | | | | 0.9 |
| TIWM030B22S | | | | | | | | | 1.0 |

NOTES:

- 1) Follow local codes and regulations when selecting field wires.
- 2) Select the GFCI with activation speed of 0.1 sec. or less.
- 3) Total operating current is less than 12A.

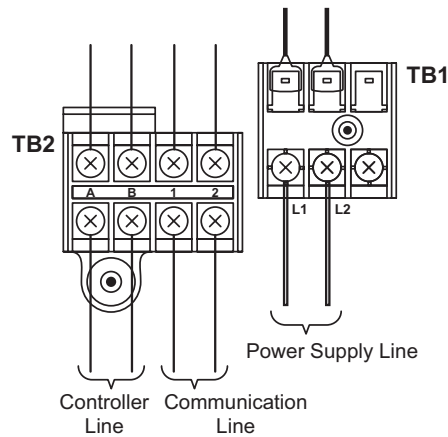
NOTICE

- Check for the recommended size GFCI shown in the table 8.1.
- Between indoor and outdoor units, use dual-conductor, AWG18 (0.82mm²) stranded copper cable for communication cable. Do not use any cable with more than two conductors. Twisted pair or shielded cable can be used in environments with excessive electrical noise to reduce the possibility of communication errors between system components. Total cable length should not exceed 3281 ft (1000m).
- Select the wiring size, GFCI (Ground Fault Circuit Interrupter) in accordance with the regulations for each region, the "Installation and Maintenance Manual", and the dedicated electrical circuit that must be used.
- Outside of the indoor unit, installation of the power supply wiring, communication cable, and wired controller cable should be spaced as far apart as possible.

8.2.3 Electrical Wiring for Indoor Unit

Refer to the “Installation and Maintenance Manual” for the outdoor unit for details on the electrical wiring capacity for the outdoor unit. Setting DIP switches may be required, depending on the combination with the outdoor unit.

- (1) Connect the power supply wirings (L1 and L2) to the terminal block TB1 correctly.



- (2) Connect the communication cables between the indoor unit and the outdoor unit correctly. Prevent damage to components by ensuring that the terminal for power supply wiring (Terminals “L1” to “L1” and “L2” to “L2” for each terminal block: AC208/230V) between the indoor unit and the outdoor unit correspond correctly. Connect ground wiring to the terminals in the electrical box.
- (3) Use 2-conductor, AWG18 (0.82mm²), stranded, copper cable for the communication cable between the outdoor unit and the indoor units. They are connected to terminals 1 and 2 of the terminal block TB2. The controller cable is connected to terminals A and B of each indoor unit terminal block TB2.
- (4) Confirm that the total cable length does not exceed 3281ft (1000m).

NOTE:

The total wiring length for the wired controller can be extended up to 1640ft (500m). If the total wiring length is less than 98ft (30m), other cable can be used.

NOTICE

In Case of Using an Optional Wired Controller or Optional Receiver Kit

The following setting is required when the optional wired controller or the optional receiver kit is used.

- The setting before shipment is “WIRELESS”. Set SW2 to “WIRED”. If not, the operation is not available.
- Connect the controller cables to the terminals A and B at the terminal block TB2.

DIP Switch PCB



Change to “WIRED”.

In Case of Using an Optional Wireless Controller

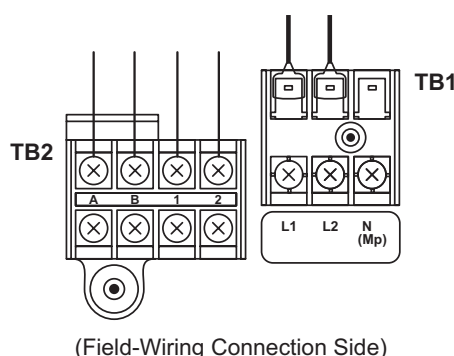
- The SW2 switch setting is NOT required when the wireless controller is used with the receiver built into the indoor unit. However, the multiple indoor unit operation is not available when this wireless controller is used with the receiver built into the indoor unit. If the multiple indoor unit's operation is required with this wireless controller, use the Optional Receiver Kit.
- If there are two indoor units installed close to each other, the wireless controller may not distinguish the units. Use the function “Identifying Indoor Units Installed Side by Side”, and the wireless controller should be set to “B mode”. (Refer to the “Installation and Maintenance Manual” for the wireless controller about the “B mode” setting.)

8.3 Position of Electrical Wiring Connection

! WARNING

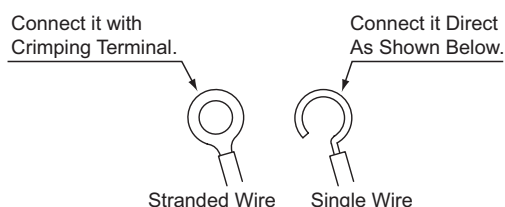
- Ensure that the wire terminals are tight to recommended torque specs. Failure to do this can result in electrical shock or fire at the terminal connection.
- Do not apply excess force when tightening cables. This can result in heat generation and fire.
- Make sure that the terminals do not come into contact with the electrical box. If the terminals are too close to the surface, it can result in the activation of the circuit protection, heat generation and fire at the terminal connection, and an electrical shock.

- (1) The electrical wiring connections at the terminal block for the indoor unit are shown in the figures below. Check the outdoor unit configuration before the wiring work begins.



NOTE:

When standard grade electrical wire is used for field-wiring connections, use an M4 terminal crimping tool. When a single wire is used, reshape it as shown below. The screws at the terminal block should be tightened using the torque specs in the table below.



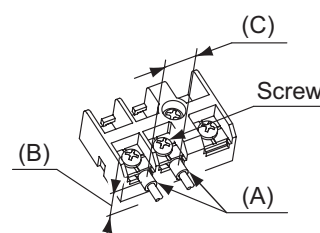
Tightening Torque for Terminals

| | Size | Tightening Torque |
|---------------|------|-------------------------------------|
| Power Supply | M4 | 0.7 - 1.0 ft·lbs (1.0 - 1.3 N·m) |
| Communication | M3.5 | 0.6 - 0.7 ft·lbs (0.8 - 1.0 N·m) |

- (2) Connect the cable for the optional controller or the optional extension cable to the terminals inside the electrical box through the connection hole on the cabinet.
- (3) Connect the power supply and the ground wiring to the terminals in the electrical box.
- (4) Connect the cables between the indoor unit and the outdoor unit to the terminals in the electrical box.
- (5) Connect cables to correspond with terminals of the same number or color band.
- (6) Install the communication cable between indoor units and the outdoor unit for the same system.

NOTICE

- Do not connect the main power supply wiring to the communication line (Terminals A, B, 1, and 2 of TB2). If connected, the printed circuit board (PCB) will be destroyed.
- Pay attention to following when wires are connected at the terminal block:
 - (A) Attach a piece of insulation tape or a sleeve at each terminal.
 - (B) Maintain the recommended distance between the electrical box and the terminals to prevent a short circuit.
 - (C) Maintain the recommended distance between terminals.



- (7) The electrical wiring connection for the indoor unit is shown in Section 8.2.2 and Figure 8.1 below.
- (8) If Power Supply Voltage (208V/230V) is introduced into the Communication Line:
 If 208V/230V are applied to the communication line at (Terminals 1 and 2 of TB2) by mistake, the fuse on the PCB for the communication line will blow. In this case, perform the recovery work as shown in the diagrams below.
- Reconnect the wirings correctly.
 - Set the No.1 pin at DSW7 (on the PCB) to ON.

Upon PCB recovery after the fuse has been replaced, if 208V/230V is reintroduced into the communication line, the PCB will be seriously damaged and will not recover.

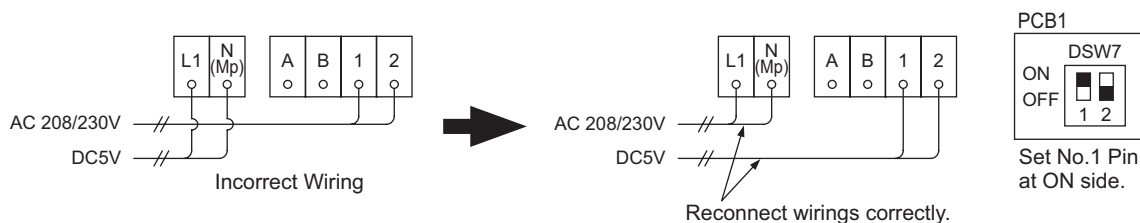
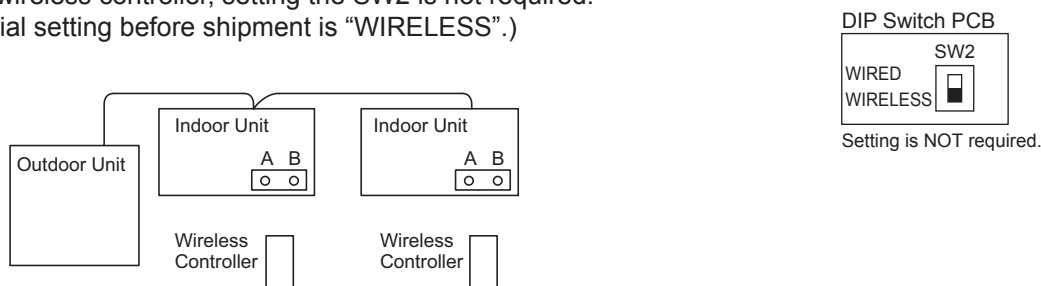


Figure 8.1 Recovery from a Blown Fuse

- (9) Wireless Controller Connection.
 For the wireless controller, setting the SW2 is not required.
 (The initial setting before shipment is "WIRELESS".)



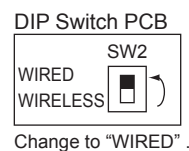
NOTE:

For group control (multiple unit control), with single controller, a wired controller or receiver kit is required.

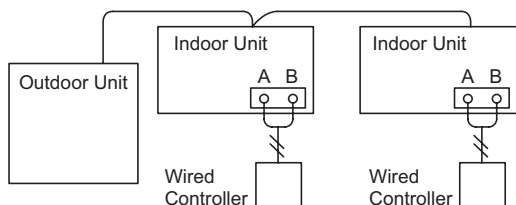
(The group control is NOT available with the wireless controller, if just the built-in receiver is used.)

(10) Wired Controller Connections.

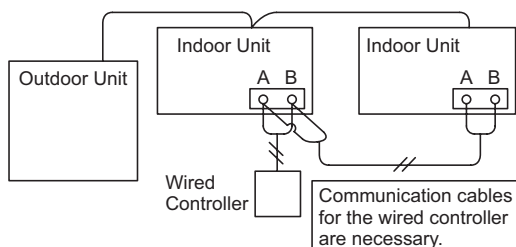
When the wired controller or receiver kit is used, the setting of SW2 is required.



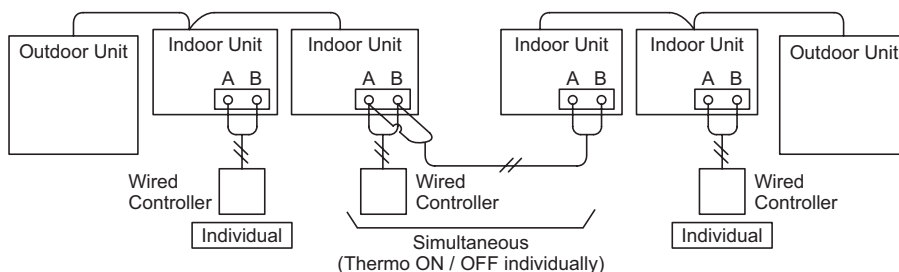
(a) Wired Controller at each unit for an individual operation setting



(b) Single Wired Controller for an individual operation setting



(c) Wired Controller connections between different refrigerant cycles



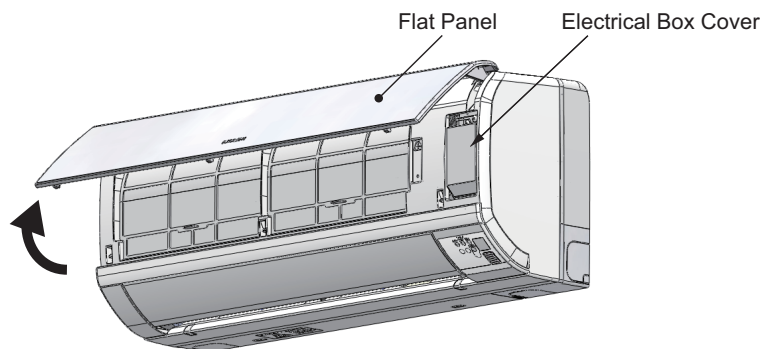
NOTICE

- The DIP switch settings for the outdoor unit should be performed in accordance with the "Installation and Maintenance Manual" for the outdoor unit.
- Be aware that communication cable for the wired controller is required in these instances:
 - The following functions are set to the sub unit which is not installed with the wired controller.
 - Remote ON/OFF function settings, (No.1, 2, and 3), (External Input / Output Function)
 - Power supply ON/OFF functions, (No.1 and 2), (Function Selection)
 - Prohibiting the wired controller after manual stoppage (External Input / Output Function)
 - Group setting by the centralized controller
 - The address for the indoor unit is changed from the wired controller.

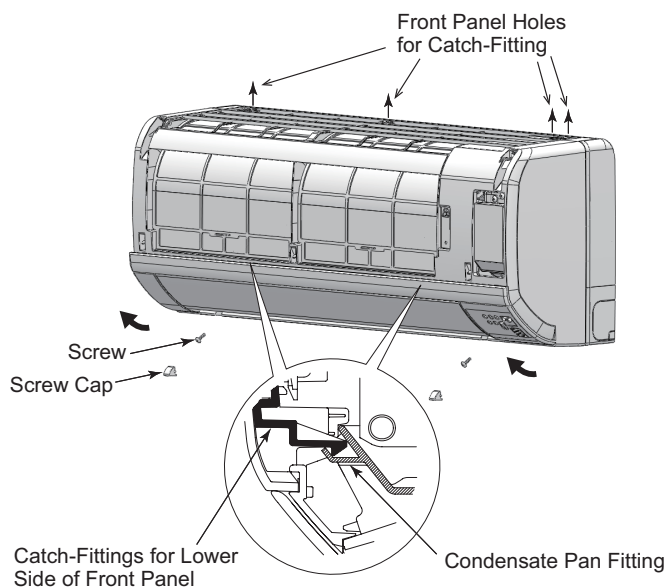
8.4 Conduit and Wiring Connections

The conduit and wiring connections for this unit is shown below. Remove the front panel to connect the conduit and wiring.

- (1) Hold both sides of the flat panel and lift it up.
Open the flat panel fully and slightly extend the right arm shaft outward. After the shaft is removed from the front panel, pull the flat panel and remove it.

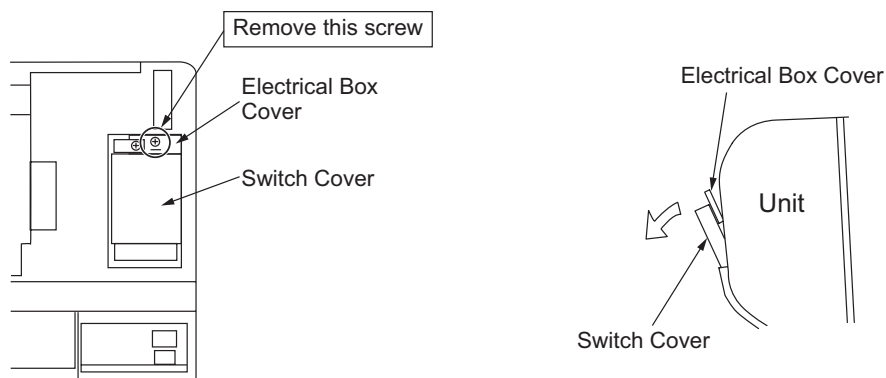


- (2) Remove the two (2) screw caps and then the two (2) screws on the lower side of the front panel. Pull the lower side of the front panel forward to release the catch-fitting. Use caution when removing this panel so as not to make contact with air outlet louver.

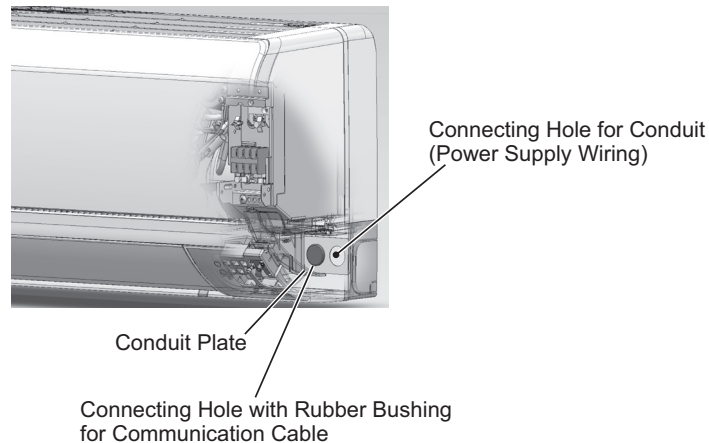


Do not use excessive force when disassembling.

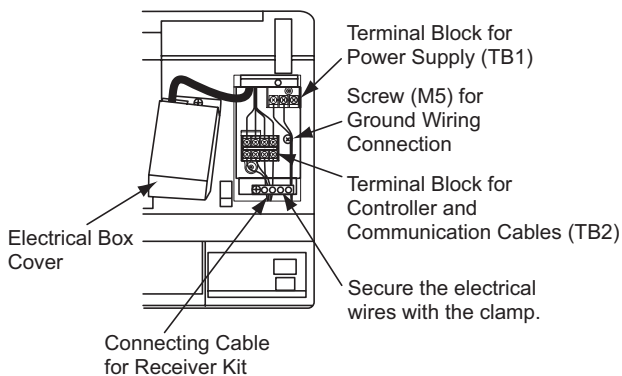
- (3) Slightly lift the front panel up to release the catch-fitting (at four locations) on the upper side of the unit. Then pull the front panel forward to remove it.
- (4) Remove the screw securing the electrical box cover and open it.



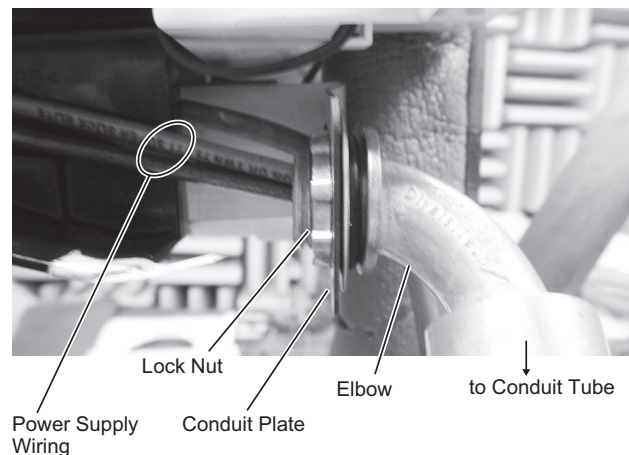
- (5) From the rear, insert the conduit for power supply wiring through the connecting hole on the conduit plate. Insert communication cable through the designated connecting hole (with rubber bushing), on the conduit plate. Ensure that the locknut is installed after the conduit plate as shown in the “Conduit Attachment Detail” below.



Front View of Electrical Box



Conduit Attachment Detail



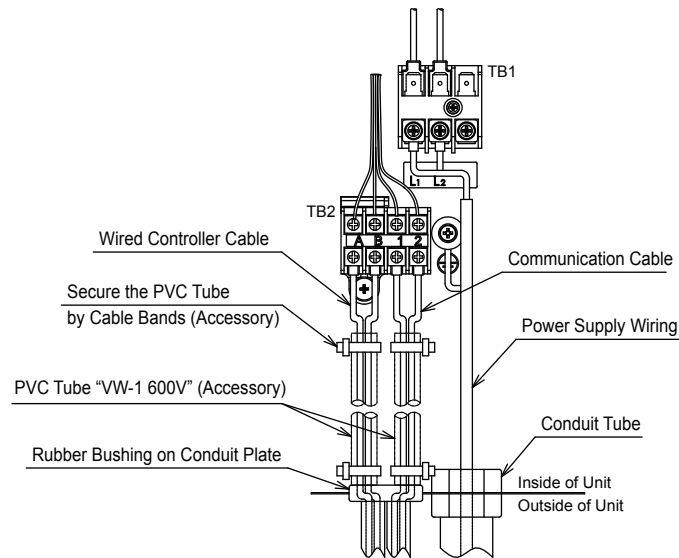
Electrical Wiring Details for Power Supply Wiring and Communication Cable

- (6) Pull the power supply wiring from the conduit into the unit. Connect the ground wiring to the screw for ground wiring connection first. Then connect power supply wiring and communication cable terminals to the terminal blocks. Allow extra length for all wiring inside the electrical box. Secure the wiring with the attached cable band.
- (7) Tighten the conduit locknut after the power supply wiring connection is made.
- (8) Close the electrical box cover. Reattach the front panel and flat panel into position. When installing the front panel, attach the air outlet side first and then the four locations on the upper side of the unit into the holes on the panel. Push the lower side of the panel to attach fittings together.

NOTE:

Make sure that there are no gaps nor overlapping between the front panel and the right side of the condensate pan. If any gap is present, escaping air combined with condensation can leak out and spill onto unit surfaces.

- (9) Tighten two (2) screws and attach two (2) screw caps. Then install the air filter.
- (10) Insert the arm shafts on both sides of the flat panel into the corresponding holes on the unit body, along the front panel guides. After the flat panel is attached, close the flat panel.



NOTES:

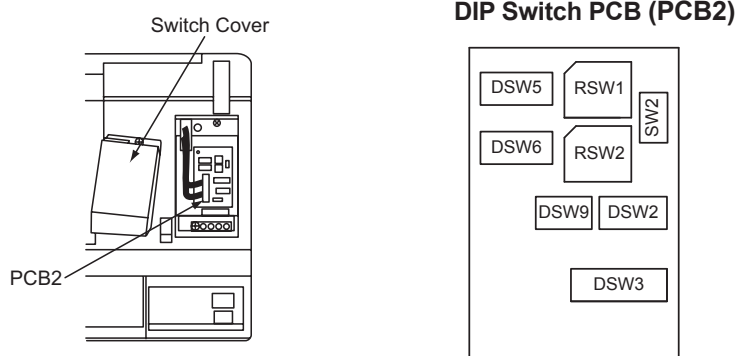
- Remove the sheath part of communication cable and wired controller cable (field-supplied) before passing through the rubber bushing on the conduit plate.
- Then, insert the communication cable and wired controller cable into the PVC tube "VW-1 600V" (Accessory) to separate from the power supply wiring for the indoor unit.
End of PVC tube should be routed just before the rubber bushing on the conduit plate.
Cut the PVC tube for any excess length.
- Secure the both ends of the PVC tube by cable band (Accessory).
- If shielded cable is used, terminate at the ground terminal.
- Separate the power supply wiring from the terminal block for controller and communication cables (TB2).

! WARNING

Install and secure all electrical wiring correctly through the connecting hole, to the terminal blocks using the cable bands provided. Wiring should be spaced appropriately and firmly fastened to guarantee against electrical short, sparks, and flame.

8.5 DIP Switch Settings

- (1) Turn OFF the power supply to both indoor and outdoor units before adjusting DIP switch settings. Otherwise, the settings are invalidated and do not take effect.
- (2) Correct DIP switch settings are shown here. Remove the panel to make these adjustments and reattach when finished.



(3) Unit No. Setting (RSW2 and DSW6)

Setting is not required.

Indoor unit numbers are set by the auto-address function. If an indoor unit number setting is required, set the unit number of all indoor units respectively and sequentially by following setting position. It is recommended that you assign a number to each indoor unit from "1". A maximum of 64 indoor units per refrigerant cycle can be connected to an H-LINK II System. Though the available numbers range from zero to 63, the applicable number for the 64th indoor unit in theory supplants the number "zero". For the centralized control, this setting is required.

Unit No. Setting

| DSW6 (Tens Digit) | RSW2 (Units Digit) | Ex.) Set at No.16 Unit |
|---|---|--|
| ON OFF | Setting Position Set by inserting slotted screwdriver into the groove. | ON OFF Set No.1 Pin at ON side |
| Before shipment, DSW6 and RSW2 are set at "0". For the units supporting H-LINK II, the unit No. can be set for Max. 64 indoor units (No.0~63). | | |
| | Set at "6" | |

(4) Capacity Code Setting (DSW3)

No setting is required, due to setting before shipment. This switch is utilized for setting the capacity code that corresponds to the capacity of the indoor unit.

| Indoor Unit Capacity (MBH) | 006 | 008 | 012 | 015 | 018 | 024 | 030 |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Setting Position | ON OFF | ON OFF | ON OFF | ON OFF | ON OFF | ON OFF | ON OFF |

(5) Refrigerant Cycle No. Setting (RSW1 and DSW5)

This setting is required. The unit arrives with all settings in the OFF position.

Refrigerant Cycle No. Setting

| DSW5 (Tens Digit) | RSW1 (Units Digit) | Ex.) Set at No.5 Cycle |
|--|---|-----------------------------------|
| ON OFF | Setting Position Set by inserting slotted screwdriver into the groove. | ON OFF Set All Pins OFF |
| Before shipment, DSW5 and RSW1 are set at "0". For the units supporting H-LINK II, the ref. cycle No. can be set for Max. 64 cycles. (No. 0~63) | | |
| | Set at "5" | |

- (6) Fuse Recovery (DSW7)
(This DIP switch is located at PCB1.)

Factory Setting



When introducing high voltage to terminals 1 and 2 of TB2, the (0.5A) fuse on the PCB is cut. In such a case, first, reconnect the wiring correctly to TB2, and then adjust the No.1 pin to ON.

- (7) Optional Function Setting (DSW2 and DSW9)
No setting is required. Setting positions before shipment are all in the OFF position.

In order to set "Identifying Indoor Units Installed for Side by Side" when using wireless controller, set the DIP switch according to the following table. Set this function as well for the wireless controller used for the indoor unit that is set as "Identifying Indoor Units Installed for Side by Side". Refer to "Installation and Maintenance Manual" supplied with the wireless controller for setting.

| | Indoor Unit A | Indoor Unit B | Indoor Unit C | Indoor Unit D |
|--------|---------------|---------------|---------------|---------------|
| DSW2-3 | OFF | ON | OFF | ON |
| DSW9-1 | OFF | OFF | ON | ON |

Factory setting for DSW2-3 and DSW9-1 is "OFF".

NOTE:

When using the receiver kit, setting DSW2 and DSW9 on the PCB for the indoor unit is not required. Set the function "Identifying Indoor Units Installed Side by Side" with the receiver kit instead. For details on this setting, refer to the "Installation Manual" for the receiver kit.

- (8) Wired Controller Setting (SW2)

When using the wired controller and receiver kit:

The initial setting prior to shipment is "WIRELESS". Set SW2 to "WIRED". This operation cannot be performed without this adjustment. Connect the controller cables to terminals A and B at terminal block TB2.

NOTES:

- The solid square "■" symbol signifies the "ON" and "OFF" positions for DIP switches. The diagrams show original settings before shipment.
- When the unit number and the refrigerant cycle are set, record the unit number and refrigerant cycle to facilitate maintenance and servicing activities afterward.



For example, set the Number 1 pin of DSW9 to "ON" side when Indoor Unit C is set as "Identifying Indoor Units Installed for Side by Side".

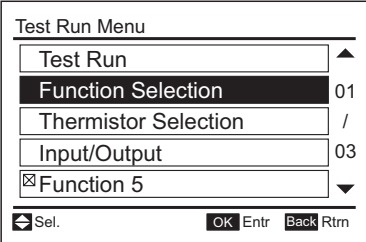
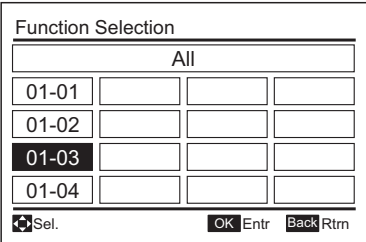
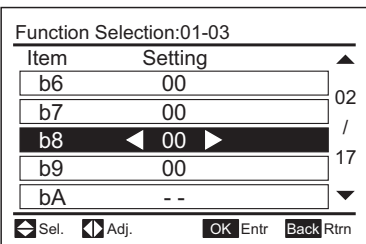
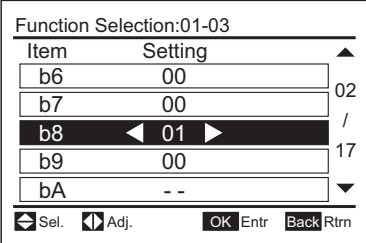
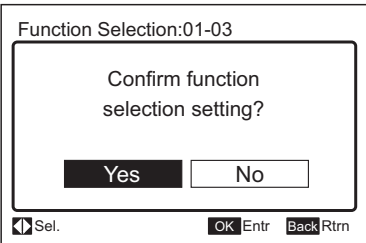
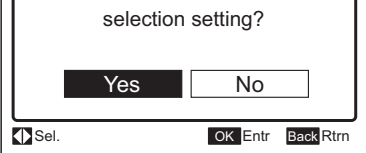
NOTICE

All indoor and outdoor units must be shut down prior to attempting to make DIP Switch adjustments. Otherwise, the settings do not take effect.

8.6 Function Selection by Wired Controller

Each function can be selected with the wired controller.

Refer to the "Installation and Maintenance Manual" for the wired controller and the "Service Manual" for details.

| | |
|---|---|
| (1) Press and hold "Menu" and "Back/Help" simultaneously for at least 3 seconds during the normal mode (when unit is not operated). The test run menu is displayed. |  |
| (2) Select "Function Selection" from the test run menu and press "OK". |  |
| (3) Select the indoor unit by pressing "△ ▽ ◀ ▶" and press "OK". (This screen is NOT displayed when the number of indoor units connected with the controller is 1 (one). In this case, (4) is displayed.) Press "All" to select all the indoor units connected to the wired controller. |  |
| (4) Press "△ ▽" and select the item required to change. |  |
| (5) Press "◀ ▶" and change the setting. |  |
| (6) Press "OK" to display the confirmation screen. |  |
| (7) Select "Yes" and press "OK". The test run menu is displayed after the setting is confirmed. If "No" is pressed, the screen returns to (4). | |
| (8) Press "Back/Help" on the test run menu to return to the normal mode. | |

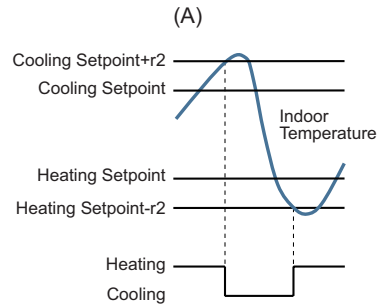
(Figure for Function Selection)

To set other units, press "Back/Help" at (4), (5) so that the screen returns to (3).

(If the number of indoor unit connected with the controller is 1 (one), the screen returns to (1).)

| Optional Function | Function Selection Item | Unit | Setting Condition (<u>Underlined> Part is Factory Setting)</u> | | | | | | | | | | |
|---|-------------------------|------------|--|------------|-------------|------------|------------|------------|-------------|------------|------------|------------|-------------|
| | | | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
| Automatic COOL/HEAT Operation | b8 | - | <u>Not Available</u> | Available | | | | | | | | | |
| Dual Setpoint | r1 | - | <u>Not Available</u> | Available | | | | | | | | | |
| (A) Cooling/Heating Changeover Temperature | r2 | °F (°C) | <u>2</u> (1.0) | 3 (1.5) | 3* (2.0) | 4 (2.5) | 5 (3.0) | 1 (0.5) | | | | | |
| Setback Temperature Adjustment (During card key removal, setpoint is set back) | r3 | °F (°C) | <u>4</u> (2.5) | 5 (3.0) | 6 (3.5) | 7 (4.0) | 8 (4.5) | 9 (5.0) | 10 (5.5) | 1 (0.5) | 2 (1.0) | 3 (1.5) | 3* (2.0) |

* Not displayed when fahrenheit (°F) is displayed.



8.7 Setback Operation

- Press and hold "Menu" and "Back/Help" on the wired controller simultaneously for at least 3 seconds during the normal mode (unit stoppage). The Test Run menu is displayed.

- Select "Input/Output" from the Test Run menu and press "OK".

Test Run Menu

| | |
|--|----|
| Test Run | ▲ |
| Function Selection | 01 |
| Thermistor Selection | / |
| Input/Output | 03 |
| <input checked="" type="checkbox"/> Function 5 | ▼ |

Sel. OK Entr Back Rtrn

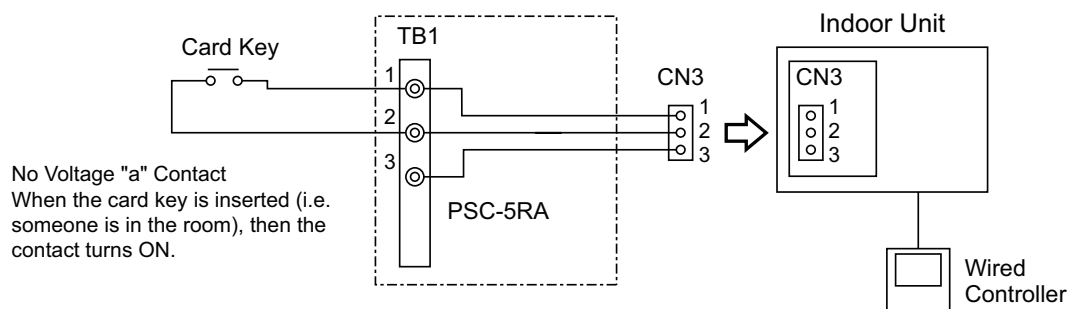
- Select either "Input 1" or "Input 2" and change the setting to "09".

Input/Output:01-03

| Item | Setting | Connector |
|---------|---------|-----------|
| Input 1 | ◀ 00 ▶ | CN3 1-2 |
| Input 2 | 00 | CN3 2-3 |
| Output1 | 00 | CN7 1-2 |
| Output2 | 00 | CN7 1-3 |
| Output3 | 00 | CN8 1-2 |

Sel. Adj. OK Entr Back Rtrn

- Build a circuit such as shown below.



- Temperature adjustment for the setback function can be selected on the wired controller. Refer to Section 8.6, "Function Selection by Wired Controller" of the manual for details.

9. Test Run

9.1 Test Run with Wired Controller

9.1.1 Before Test Run

Verify that there are no problems with the installation, and do not perform Test Run until all the following conditions are resolved.

Refer to the "Installation and Maintenance Manual" for the outdoor unit for details on Test Run operations from the outdoor unit.

Verify that refrigerant piping and the communication cable are connected to the same refrigerant cycle system. If not, it will cause an abnormal operation and damage to instrumentation.

- (1) Verify that electrical resistance is more than one megaohm, by measuring the resistance between ground and the terminal the terminus for electrical components. If the electrical resistance is less than one megaohm, do NOT operate the system until the electrical current outflow to ground is detected and repaired. Do not introduce any high voltage to the terminals of the communication cables (TB2 [A, B, 1 and 2]).
- (2) Verify that each wire is connected correctly at the correct phase for the power supply. If it is incorrectly connected, the unit will not operate and the wired controller will display the alarm code "05". In this case, check the phase for the primary power supply according to the "Attention" label affixed to the back side of the service cover. Then, with the power supply turned OFF at the power supply, remake the necessary connections.
- (3) Check to ensure that the main power supply has been turned ON for more than 12 hours, to warm up the compressor oil by the crankcase heater.
- (4) Verify that all DIP Switch settings are correct. Refer to Section 8.5 "DIP Switch Settings".
- (5) Set switch SW2 to "WIRED" because the initial setting prior to shipment is "WIRELESS". Unit operation cannot be performed without this adjustment.

NOTE:

The RUN indicator on the indoor unit is turned ON even when the wired controller is used. However, any indication of timer settings will be displayed only on the wired controller.

9.1.2 Test Run

After all installation work is completed, perform the **Test Run**.

- (1) Check to ensure that stop valves (gas and liquid) for the outdoor unit are fully opened.
- (2) Whenever indoor units are connected to the VRF system, perform the **Test Run** for the indoor units one by one sequentially and then check the refrigerant piping system and the electrical wiring system for conformity. (If these multiple indoor units are operated simultaneously, system conformity cannot be verified.)
- (3) Perform the **Test Run** in accordance with the following procedure. Ensure that the Test Run is carried out without any problem. The following procedure shows a case where a wired controller is utilized. If other controllers are activated instead, refer to the "Installation and Maintenance Manual" for those other controllers.

NOTE:

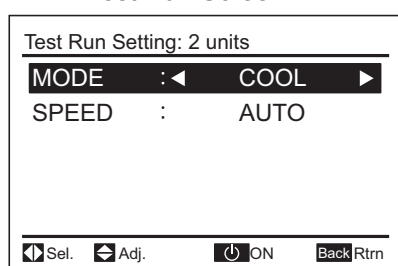
The outdoor unit may not be operated depending on the indoor and outdoor temperature conditions. Refer to the "Installation and Maintenance Manual" for outdoor units for details.

- (a) Press and hold "Menu" and "Back/Help" simultaneously for at least 3 seconds.

The **Test Run** menu is displayed.

- The **Test Run** menu is displayed














Test Run Screen



NOTE

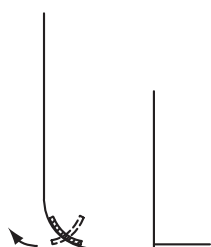
When the "00 unit" is displayed, the auto-address function may be working.

Cancel out of "Test Run" mode and reset it.

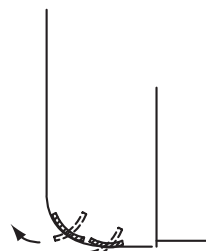
- The total number of connected indoor units is indicated on the LCD (Liquid Crystal Display). In the case of a twin combination (set of two indoor units), the total number of the connected indoor units is displayed as “**2 units**”, and where there is a triple combination (set of three indoor units), the total number of the connected indoor units is displayed as “**3 units**”.
 - If the number indicated is not equal to the actual number of connected indoor units, the auto-address function is not performing correctly due to incorrect wiring or electrical interference. Turn OFF the power supply, and resolve the wiring issue after verifying the following items; (Do not repeat turning ON and OFF within a 10 second timespan.)
 - * The power supply to the indoor unit is not turned ON or there is an incorrect wiring issue.
 - * Incorrect connection of the interconnecting cable between indoor units or a poorly connected controller cable
 - * Incorrect setting of the rotary switch and DIP switch for the indoor unit printed circuit board (PCB). (The setting is overlapped.)
 - Press “ On/Off” to start the Test Run.
 - Press “   ” and set each item.
- (b) Press “ On/Off”.
- The RUN indicator turns ON and the operation starts. At this time, a two-hour OFF timer is set automatically.
- (c) Press “” or “”, select “LOUV.” and select “” (auto-swing) by pressing “” or “”. The auto swing operation starts. Check the operating sound at the louvers. If abnormal sound is generated, press “” or “” again to stop the auto swing operation. If there are any abnormal sound, remove the front panel and make necessary adjustments.

Louver Operation

- When the power supply is turned ON, the louver is set at closed position temporarily.
- Automatic Setting of Louver
The swing louver is stationary and movement is controlled only by the wired controller. The angle of the louvers will rise until the air outlet temperature increases to 86°F (30°C) during the heating operation. After that, it is adjusted lower. When the “Stop” switch is engaged by the wired controller, the swing louver closes down automatically and the operation stops.





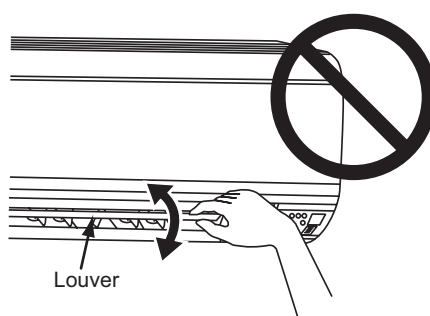
TIWM006B22S to TIWM012B22S



TIWM015B22S to TIWM030B22S

NOTE:

Do not move the louver by hand. It could damage the louver mechanism and the airflow direction may not be set correctly. Change the airflow direction by “” or “” on the wired controller.

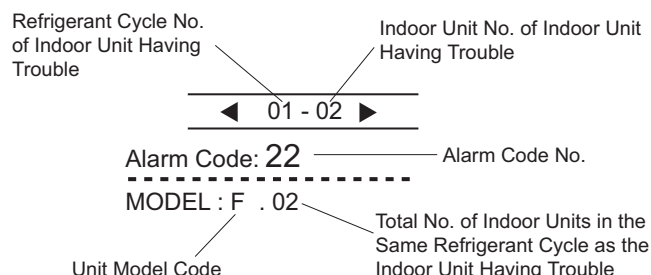


- (d) Though temperature recordings by the thermistors are invalid during the Test Run phase, the protection devices are valid.
- (e) For VRF System
According to the label; "Checking Method by 7-Segment Display" affixed to the inside of the front cover of the outdoor unit, check temperature, pressure, and operation frequency, and interconnected indoor unit numbers by 7-Segment displays.
- (f) To complete Test Run, press "⏻ On/Off" again or wait for the set Test Run time to pass.
When changing the Test Run time, press "△" or "▽" to select "**Test Time**". Then, set the test run time (30 to 600 minutes) by pressing "◀" or "▶".

| | |
|-------------------|-------------------------------|
| Test Run: 2 units | |
| MODE : | COOL |
| SPEED : | ◀ AUTO ▶ |
| LOUV. : | 🌀 |
| Test Time : | 120min <div><div></div></div> |
| Inverter : | 60Hz <div><div></div></div> |
| ◀ Sel. | Adj. ⏻ OFF |

- The RUN indicator on the wired controller for the indoor unit flashes orange (0.5 second ON/ 0.5 second OFF), indicative of a fault or error having been generated with activation of protection devices during the Test Run phase. Alarm code, unit model code, and the number of interconnected indoor units will be displayed on the LCD as shown below. If the RUN indicator on the wired controller flashes for 2 seconds ON and 2 seconds OFF, the source of the problem could be a failure in the communication cable between the indoor unit and the wired controller (a loose or severed connection). In this case, verify Section 9.3 "Alarm Code" and perform the appropriate troubleshooting measures. Consult with an authorized service engineer if the problem cannot be resolved at your end.

| | |
|----------------------|----------|
| ⚠ 01-02 ▶ | |
| Alarm Code: 22 | (Chek) |
| MODEL : F .02 | |
| IDU : ***** | AlarmRst |
| ODU : ***** | Address |
| Sel. OP MODE OK Entr | |



Unit Model Code

The relationship between the unit model code and the unit model is shown in the table below.

| Indication | Unit Model |
|------------|---------------------|
| F | VRF System |
| E | Except Above Models |

9.2 Test Run with Wireless Controller

NOTICE:

- When operating multiple indoor units simultaneously with the wireless controller, an optional receiver kit is required. (This operation is NOT available if a receiver is installed with indoor units.)
- Referring to the attached wireless controller connected to the unit, the value for “Identifying Indoor Units Installed Side by Side” shall be set to “L” mode. Refer to the “Installation and Maintenance Manual” for wireless controller for details about how to execute this setting.

9.2.1 Before Test Run

Verify that there are no problems arising from installation. Do not perform Test Run until all of the following items have been dealt with.

Refer to the “Installation and Maintenance Manual” for the outdoor unit for details about the Test Run operation for the outdoor unit.

- (1) Check to ensure that refrigerant piping and communication cable are connected to the same refrigerant cycle system. Failure to do this will result in impaired performance and damage to the system.
- (2) Check to ensure that electrical resistance is more than 1 megohm by measuring the resistance between ground and terminals for the various electrical components. If electrical resistance is less than 1 megohm, do NOT operate the system until the source of any electrical current drain has been found and repaired. Do not apply high voltage to terminals for communication cables at: (TB2 [A, B, 1 and 2]).
- (3) Check to ensure that each wire is connected correctly at the power supply. If not, the unit will shut down and the wireless controller will display the alarm code “05”. In this case, check the phase for the primary power supply shown on the caution label inside of the service cover. Then, make the proper connections with the power supply turned OFF.
- (4) Apply power to the outdoor unit(s) at least 12 hours prior to operation of the system for preheating of the compressor oil.
- (5) When connecting the wall mount type indoor unit to the VRF system, consider to attach the optional strainer kit.

9.2.2 Test Run

After installation work is completed, Test Run should be performed.

- (1) Check to ensure that stop valves (gas and liquid) on the outdoor unit are fully opened.
- (2) Perform Test Run according to the following procedure. Ensure that Test Run is carried out without any problem.

NOTE:

The outdoor unit may not be operated depending upon indoor and outdoor temperature conditions. Refer to the “Installation and Maintenance Manual” for the outdoor unit for details.


- (a) Set the Test Run mode by pressing and holding the “Louver” and “On Timer” switches simultaneously for more than three seconds. And then set the OFF timer for two hours. The LCD displays this setting at right.
- (b) Set the operation mode by pressing the “Mode” switch.
- (c) Adjust the temperature by pressing “Δ” or “▽”.



- (d) Operate Test Run by pointing the transmitter towards the receiver of the indoor unit and press the “On” switch. When the commands are received by the indoor unit, the “RUN” indicator (orange) of the receiver is turned ON.

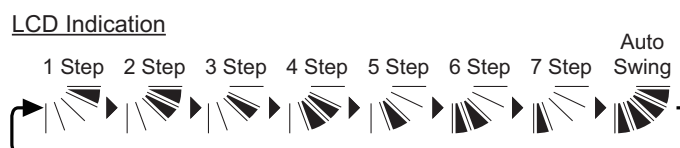
NOTE:

If the "RUN" indicator does not turn ON, the signal may not have reached the receiver. Re-send the commands.

- (e) Press the “Louver” switch to select the “” (auto-swing). The auto-swing operation starts. Check the sound of operation as the louvers move. If abnormal noises are heard from the air outlet, press the “Louver” switch again to stop the auto-swing operation. Open the front panel and make necessary adjustments.

Louver Operation

The louver indication changes as follows.



NOTES:

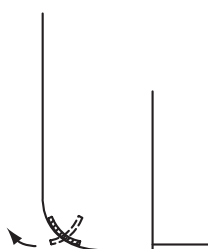
1. Louver angles are only available from 1 step through 5 step and auto-swing in the cooling and dry operation modes.
2. The louver angle adjusts automatically during cooling, heating, or dry operation.



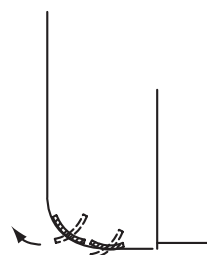
: Auto-swing operation starts.

At this time, an animated digital representation of the auto-swing operation is displayed on the LCD display.

- When the power supply is turned ON, the louver is set at closed position temporarily.
- Automatic Setting of Louver
The swing louver is stationary and movement is controlled only by the wired controller. The angle of the louvers rises until the air outlet temperature increases to 86°F (30°C) during the heating operation. After that, it is adjusted lower. When the “Stop” switch is engaged by the wired controller, the swing louver closes down automatically and the operation stops.



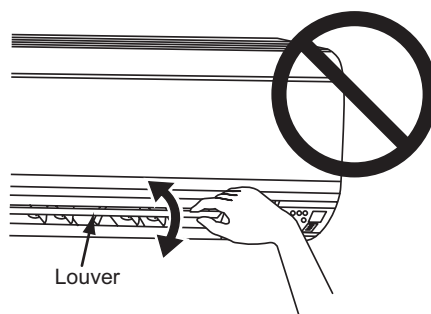
TIWM006B22S to TIWM012B22S



TIWM015B22S to TIWM030B22S

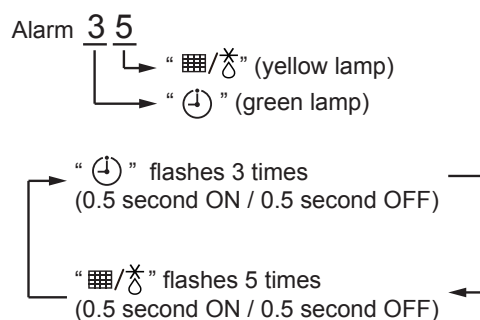
NOTE:

Do not move the louver by hand. It could damage the louver mechanism and the airflow direction may not be set correctly. Change the airflow direction by “◁” or “▷” on the wired controller.



- (f) Though temperature readings detected by the thermistors are invalid during the Test Run phase, the protection devices are valid.
 - (g) Test Run automatically stops after two hours or by pressing the “On” switch again.
- When problems such as safety device activations occur during Test Run or normal operation, the indicator “①” (orange) flashes in intervals: (0.5 second ON / 0.5 second OFF).
 - Alarm code status is indicated by the number of times the indicator “⌚” (green) and the indicator “⏏” (yellow) flash.
 - “⌚” (green):
The tens digit of the Alarm Code is shown by the number of times “⌚” (green) flashes.
 - “⏏” (yellow):
The ones digit of Alarm Code is shown by the number of times “⏏” (yellow) flashes.

Example



These messages are repeated until the alarm is reset.

9.3 Alarm Code

Alarm (Troubleshooting) Code Table

| Code No. | Category | Nature of Problem | Likely Cause |
|----------|---|--|---|
| 01 | Indoor Unit | Activation of a protection device (Float switch) | Activation of the float switch; (High water level present in the condensate pan.) A problem exists in the piping. |
| 02 | Outdoor Unit | Activation of protection device; (Except for Alarm Code: 41, 42) | High Pressure Cut; (R410A: 601 psi (4.15MPa)), fan motor lockup during the outdoor unit cooling operation. |
| 03 | Communication | Communication failure between indoor and outdoor units | Incorrect wiring, loose terminals, disconnected wiring or a blown fuse. |
| 04-09 | Problem with the outdoor unit; (Refer to the "Installation and Maintenance Manual" for outdoor units.) | | |
| 11 | Sensor on Indoor Unit | Inlet Air Thermistor failure | Loosely connected, disconnected, or a severed connection. |
| 12 | | Outlet Air Thermistor failure | |
| 13 | | Freeze Protection Thermistor failure | |
| 14 | | Gas Piping Thermistor failure | |
| 19 | Fan Motor | Problem with Indoor Fan | Fan motor lockup, fan motor protection control device for indoor unit activated. |
| 20-29 | Problem with the outdoor unit; (Refer to the "Installation and Maintenance Manual" for outdoor units.) | | |
| 31 | System | Incorrect capacity setting for indoor and outdoor units. | Incorrect capacity code setting for combination, excessive or insufficient total indoor unit capacity code. |
| 32 | | Incorrect setting of other indoor unit number | Problem with a different Indoor Unit in the same refrigerant cycle; (Failure at the power supply, defective PCB). |
| 35 | | Incorrect setting of indoor | Indoor unit number duplicated in same refrigerant group. |
| 36 | | Incorrect indoor unit combination | Indoor unit is designed for other refrigerant; (R22 or R407C). |
| 38-59 | Problem with the outdoor unit; (Refer to the "Installation and Maintenance Manual" for the outdoor unit.) | | |
| b0 | System | Incorrect setting for unit capacity | Incorrect setting for unit capacity |
| b1 | | Incorrect setting of unit and refrigerant cycle number | Unit number or refrigerant cycle ≥ 64 |
| b5 | | Incorrect setting of indoor unit number for H-LINK type | Interconnected indoor units are not supporting H-LINK II ≥ 17 |
| EE | Compressor | Compressor protection alarm | This alarm code displays when the alarms such as damage to the compressor occur three times within a 6 hour period. |

- When the indicator “①” flashes every 4 seconds, there is a communication failure between the indoor unit and the wired controller (loose connector, disconnected or incorrect wiring, or a severed connection).
- The indication of the alarm code “EE” means serious abnormality and burn out of the compressor.

Refer to the "Installation and Maintenance Manual" for the indoor/outdoor unit connections.

NOTICE

Do NOT operate the air conditioning just to run checks on electrical wiring until preparations for the Test Run phase is completed.

All the installation work of the air conditioning is completed.
Handover this information to the building owner and request to maintain all the equipment manuals and warranty.

Refrigerant Leak Check

Conduct a periodic refrigerant leak check to maintain product performance and secure storage of refrigerant (Fluorocarbons). After completing installation, record the following results into this manual:

1. Results of a leak test all piping and connections
2. Total refrigerant charge volume dispensed (including a trim charge added following the installation)
3. Result of the refrigerant leak check

Then hand it over to users and ask them to retain for reference.

All periodic service and maintenance procedures must be conducted only by authorized and trained personnel.

