



# Multi Head Air Conditioner

## INSTALLATION MANUAL

### Original instructions

#### Indoor

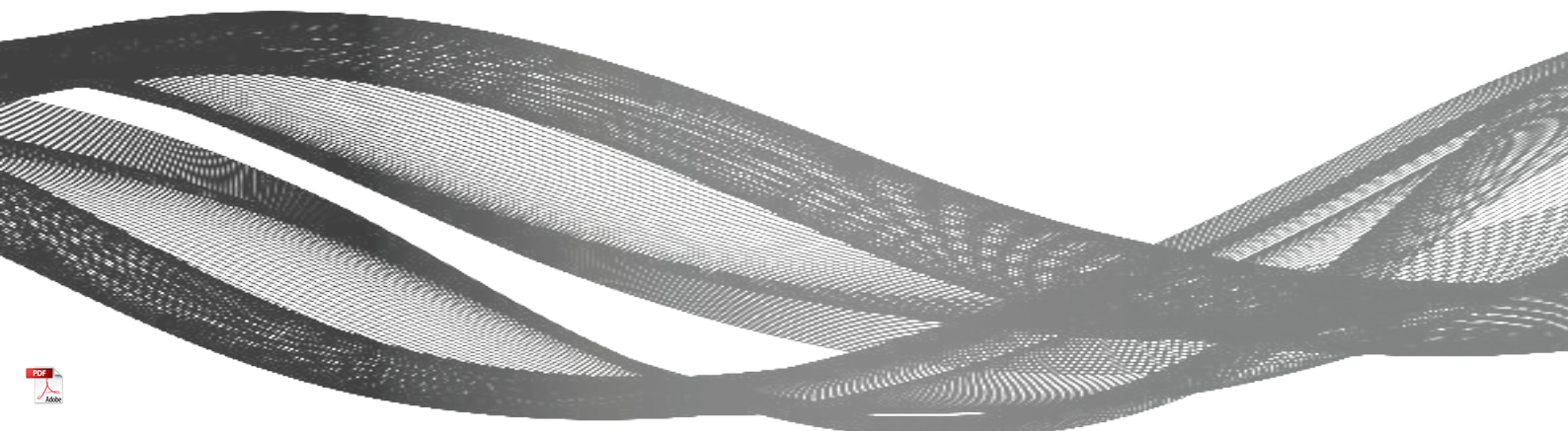
TWSM22HVAG, TWSM26HVAG, TWSM35HVAG, TWSM50HVAG,  
TWSM64HVAG, TWSM71HVAG

#### Outdoor

TSOM73HVAG3, TSOM82HVAG4, TSOM106HVAG4, TSOM123HVAG5



READ AND SAVE THESE INSTRUCTIONS





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# 1. Before you begin

## 1.1 EXCEPTION CLAUSES

The manufacturer shall bear no responsibility if the following reasons cause personal injury or property loss.

1. Damage the product due to improper use or misuse of the product.
2. Alter, change, maintain, or use the product with other equipment without abiding by the instruction manual of the manufacturer.
3. After verification, the defect in the product is directly attributed to the corrosive gas.
4. After verification, the defects are attributed to improper operation during product transportation.
5. Operate, repair, and maintain the unit without abiding by the instruction manual or related regulations.
6. After verification, the problem or dispute is caused by the quality specification or performance of parts and components that are produced by other manufacturers.
7. Damage caused by natural calamities, unsuitable operating environments, or force majeure.

If the air conditioner needs to be installed, moved, or maintained, please contact your dealer or local service centre first. The air conditioner must be installed, relocated, or serviced by an authorised unit. Failure to do so may result in serious damage, personal injury, or death.

If refrigerant leaks occur or if discharge is required during installation, maintenance, or disassembly, these tasks must be carried out by certified professionals and by local laws and regulations.

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or by those lacking experience and knowledge, unless they are supervised or instructed in its safe use by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.

## 1.2 SYMBOLS FROM THE INSTALLATION MANUAL



This unit uses a flammable refrigerant. If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire.



**WARNING**

This symbol indicates the possibility of death or serious injury.



**CAUTION**

This symbol indicates the possibility of injury or damage to property.

**NOTICE**

Indicates important but not hazard-related information, used to indicate risk of property damage.



Read the **USER MANUAL** carefully before operation.



Further information is available in the **USER MANUAL**, **SERVICE MANUAL**, and the like.



Service personnel are required to carefully read the **USER MANUAL** and **SERVICE MANUAL** before operation.



## 2. For your safety

### YOUR SAFETY IS THE MOST IMPORTANT THING WE CONCERNED!



WARNING

Please read this manual carefully and fully understand before operating your appliance.

#### 2.1 THE REFRIGERANT



Appliance filled with flammable gas R32.



Before installing the appliance, read the installation manual first.



Before using the appliance, read the owner's manual first.



Before repairing the appliance, read the service manual first.

- To enable the air conditioner to operate, a specialised refrigerant circulates through the system. This unit uses the fluoride refrigerant R32, which has been specially purified. R32 is flammable and odourless, and under certain conditions, may cause an explosion. However, its flammability is very low, and it can only be ignited by an open flame.
- Compared to common refrigerants, R32 is environmentally friendly and does not harm the ozone layer. Its impact on the greenhouse effect is also lower. In addition, R32 has excellent thermodynamic properties, delivering high energy efficiency and requiring a smaller refrigerant charge.



WARNING

Do not use any methods to accelerate the defrosting process or to clean the appliance other than those recommended by the manufacturer. If repairs are required, contact your nearest authorised Service Centre. Repairs carried out by unqualified personnel may be dangerous. The appliance must be stored in a room without continuously operating ignition sources (for example, open flames, operating gas appliances, or operating electric heaters). Do not pierce or burn the appliance. The appliance must be installed, operated, and stored in a room with a floor area larger than  $X \text{ m}^2$  (refer to Table "A" in the section Safety Operation of Flammable Refrigerant for the value of X). This appliance contains flammable refrigerant R32. For repairs, strictly follow the manufacturer's instructions. Be aware that refrigerants may not have any odour. Refer to the specialist's manual for detailed guidance.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or by those lacking experience and knowledge, unless they are supervised or instructed in the safe use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.

Hereby, our company declares that this air conditioner complies with the essential requirements and other relevant provisions of the RE Directive 2014/53/EU. A copy of the full Declaration of Conformity (DoC) is attached.

**Wireless frequency range:** 2412 MHz – 2472 MHz

**Maximum transmit power:** 18 dBm

**Refrigerant type:** R32 (GWP 675)



This marking indicates that this product should not be disposed of with other household waste. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems available in your area or contact the retailer where the product was purchased. They can ensure this product is recycled safely and in an environmentally responsible manner.

If the air conditioner requires installation, relocation, or maintenance, please contact your dealer or local service centre first. The air conditioner must only be installed, moved, or serviced by authorised personnel. Failure to do so may result in serious damage, personal injury, or death.

## 2. FOR YOUR SAFETY

### 2.2 SAFETY OPERATION OF FLAMMABLE REFRIGERANTS

#### 2.2.1 Qualification Requirements for Installation and Maintenance Personnel:

- All personnel working on the refrigeration system must hold valid certification issued by an authorised organisation, along with the appropriate industry-recognised qualifications for handling refrigeration systems.
- If other technicians are required to maintain or repair the appliance, they must be supervised by someone qualified to work with flammable refrigerants.
- Repairs must only be carried out using methods recommended by the equipment manufacturer.

#### 2.2.2 Installation notes

- The air conditioner must be installed in a room that is larger than the minimum room area. The minimum room area is shown on the nameplate or following Table A.
- Drilling holes or burning the connection pipe is strictly prohibited.
- A leak test must be performed after installation.

**Table A** - Minimum room area ( m<sup>2</sup>)

| Charge amount (kg) | Floor Location | Window Mounted | Wall Mounted | Ceiling Mounted |
|--------------------|----------------|----------------|--------------|-----------------|
| ≤1.2               | /              | /              | /            | /               |
| 1.3                | 14.5           | 5.2            | 1.6          | 1.1             |
| 1.4                | 16.8           | 6.1            | 1.9          | 1.3             |
| 1.5                | 19.3           | 7              | 2.1          | 1.4             |
| 1.6                | 22             | 7.9            | 2.4          | 1.6             |
| 1.7                | 24.8           | 8.9            | 2.8          | 1.8             |
| 1.8                | 27.8           | 10             | 3.1          | 2.1             |
| 1.9                | 31             | 11.2           | 3.4          | 2.3             |
| 2                  | 34.3           | 12.4           | 3.8          | 2.6             |
| 2.1                | 37.8           | 13.6           | 4.2          | 2.8             |
| 2.2                | 41.5           | 15             | 4.6          | 3.1             |
| 2.3                | 45.4           | 16.3           | 5            | 3.4             |
| 2.4                | 49.4           | 17.8           | 5.5          | 3.7             |
| 2.5                | 53.6           | 19.3           | 6            | 4               |

#### 2.2.3 Maintenance notes

- Check whether the maintenance area or room complies with the requirements stated on the nameplate. The unit must only be operated in rooms that meet these requirements.
- Ensure the maintenance area is well-ventilated, and maintain continuous ventilation during operation.
- Check for any fire sources or potential fire hazards in the maintenance area.
- Naked flames are prohibited in the maintenance area, and a "No Smoking" warning sign should be displayed.
- Inspect the appliance markings to ensure they are in good condition.
- Replace any warning marks that are faded or damaged.

## 2. FOR YOUR SAFETY

### 2.2.4 Welding

If you should cut or weld the refrigerant system pipes in the process of maintenance, please follow the steps below :

- a. Shut down the unit and cut the power supply
- b. Eliminate the refrigerant
- c. Vacuuming
- d. Clean it with N<sub>2</sub> gas
- e. Cutting or welding
- f. Carry back to the service spot for welding

The refrigerant should be recycled into the specialised storage tank.

Make sure that there isn't any naked flame near the outlet of the vacuum pump and it's well-ventilated.

### 2.2.5 Filling the refrigerant

- Use refrigerant charging equipment that is specifically designed for R32. Ensure different types of refrigerants are not allowed to contaminate each other.
- Keep the refrigerant cylinder upright during filling.
- Attach a label to the system once filling is complete (or indicate if filling is incomplete).
- Do not overfill.

After filling, perform a leak detection test before the initial test run. Conduct another leak detection test when the system is disconnected or removed.

### 2.2.6 Safety instructions for transportation and storage

- Use a flammable gas detector to check for leaks before unloading and opening the container.
- Ensure there are no ignition sources or smoking in the area, in accordance with local rules and laws.

## 2. FOR YOUR SAFETY



### 2.3 INSTALLATION

- Installation or maintenance must be carried out by qualified professionals.
- The appliance must be installed per national wiring regulations. In compliance with local safety regulations, ensure the use of a qualified power supply circuit and circuit breaker.
- All wiring between the indoor and outdoor units must be connected by a professional. Always disconnect the power supply before performing any electrical or safety-related work.
- Ensure the power supply meets the air conditioner's requirements. An unstable power supply or incorrect wiring may cause electric shock, fire hazards, or malfunction. Install the correct power supply cables before using the air conditioner.
- The grounding resistance must comply with national electrical safety regulations.
- The air conditioner must be properly grounded; incorrect grounding may result in electric shock.
- Do not switch on the power until installation is complete.
- A circuit breaker must be installed. Failure to do so may result in malfunction.
- An all-pole disconnection switch with a contact separation of at least 3 mm on all poles must be connected in fixed wiring.
- The circuit breaker must include both magnetic and thermal trip functions to protect against overload and short-circuit conditions.



- Installation and usage instructions for this product are provided by the manufacturer.
- Select an installation location that is out of reach of children and away from animals or plants. If this is unavoidable, install a safety barrier.
- The indoor unit should be mounted close to the wall. Do not use unqualified power cords.
- If the length of the power connection wire is insufficient, contact the supplier for a replacement.
- The appliance must be positioned so that the plug remains accessible. For air conditioners with a plug, ensure the plug is reachable after installation is complete. For air conditioners without a plug, a circuit breaker must be installed in the line.
- The yellow-green wire in the air conditioner is the grounding wire and must not be used for any other purpose.
- This air conditioner is a Class I electrical appliance and must be properly grounded with a specialised grounding device installed by a professional. Ensure effective grounding at all times, as failure to do so may result in electric shock.
- The temperature of the refrigerant circuit can be high; keep the interconnection cable away from the copper tube.

## 2. FOR YOUR SAFETY



### 2.4 OPERATION AND MAINTENANCE

- This appliance may be used by children aged eight years and above, and by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, provided they have been given supervision or instruction on safe use of the appliance and understand the hazards involved.
- Children must not play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.
- If the supply cord is damaged, it must be replaced by the manufacturer, their service agent, or a similarly qualified person. Failure to do so may create a fire hazard.
- Do not spray water on indoor unit. It may cause electric shock or malfunction.
- Do not connect the air conditioner to a multi-purpose socket, as this may cause a fire hazard.
- Always disconnect the power supply before cleaning the air conditioner to prevent electric shock.
- Do not attempt to repair the air conditioner yourself. Repairs should only be carried out by the dealer or a qualified professional to prevent electric shock or damage.
- After removing the filter, avoid touching the fins to prevent injury.
- Do not insert fingers or objects into the air inlet or outlet, as this may result in injury or damage to the unit.

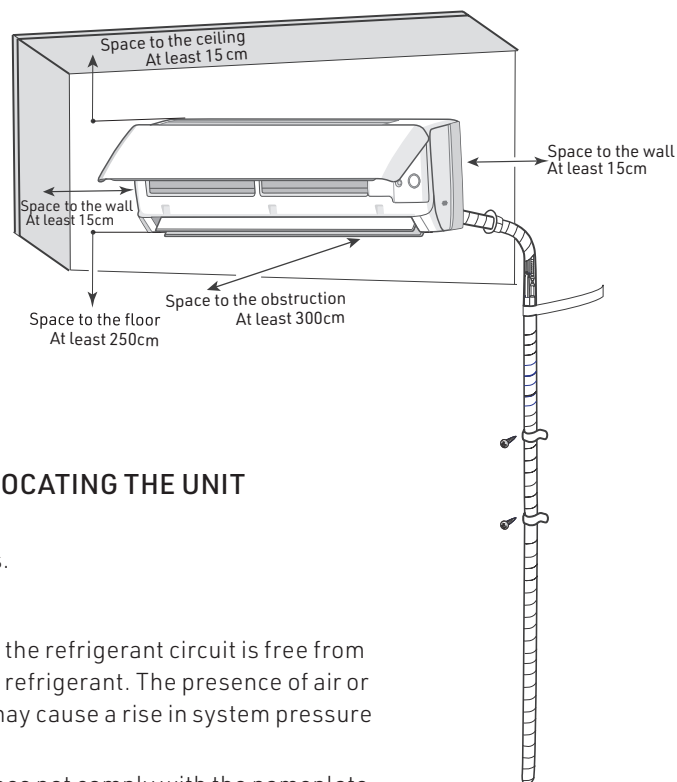


- Do not spill water on the remote controller, as this may cause damage.
- Do not use fire or a hair dryer to dry the filter, as this may cause deformation or a fire hazard.
- Do not block the air outlet or air inlet, as this may cause a malfunction.
- Do not step on the top panel of the outdoor unit or place heavy objects on it, as this may cause damage or personal injury.

Immediately switch off the air conditioner, disconnect the power supply, and contact the dealer or a qualified professional if any of the following occurs:

- The power cord becomes overheated or damaged.
- Abnormal sounds are heard during the operation.
- The circuit breaker trips.
- Air conditioner gives off a burning smell.
- Indoor unit is leaking

## 3. Installation notice



### 3.1 SAFETY PRECAUTIONS FOR INSTALLING AND RELOCATING THE UNIT

To ensure safety, please be mindful of the following precautions.



**WARNING**

- When installing or relocating the unit, ensure the refrigerant circuit is free from air or any substances other than the specified refrigerant. The presence of air or foreign substances in the refrigerant circuit may cause a rise in system pressure or compressor rupture, resulting in injury.
- Do not charge the unit with refrigerant that does not comply with the nameplate specifications or is unqualified, as this may cause abnormal operation, malfunction, or serious safety hazards.
- When refrigerant needs to be recovered during relocation or repair, ensure the unit is running in cooling mode. Then, fully close the high-pressure (liquid) valve. After about 30–40 seconds, fully close the low-pressure (gas) valve, immediately stop the unit, and disconnect the power. Note that refrigerant recovery should not exceed one minute.
- If refrigerant recovery takes too long, air may be drawn in, causing a pressure rise or compressor rupture, which can result in injury. During refrigerant recovery, make sure both the liquid and gas valves are fully closed and the power is disconnected before detaching the connection pipe.
- Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire. Poor connections may lead to electric shock or fire.
- Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses. Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.
- If the compressor starts running while the stop valve is open and the connection pipe is not yet connected, air will be drawn in, causing a pressure rise or compressor rupture, resulting in injury.
- When installing the unit, ensure the connection pipe is securely connected before the compressor starts running.

### 3. INSTALLATION NOTICE

- Do not install the unit in areas where corrosive or flammable gases may leak. Accumulation of leaked gas around the unit may cause explosions or other accidents.
- Do not use extension cords for electrical connections. If the power cable is not long enough, contact an authorised local service centre for a suitable replacement. Poor connections may lead to electric shock or fire.
- Use the specified types of wire for electrical connections between the indoor and outdoor units. Firmly clamp the wires so their terminals are not subjected to external stress. Wires with insufficient capacity, incorrect connections, or loose terminals may cause electric shock or fire.

#### 3.2 TOOLS FOR INSTALLATION

|    |                       |
|----|-----------------------|
| 1  | Level meter           |
| 2  | Screw driver          |
| 3  | Impact drill          |
| 4  | Drill head            |
| 5  | Pipe expander         |
| 6  | Torque wrench         |
| 7  | Open-end wrench       |
| 8  | Pipe cutter           |
| 9  | Leakage detector      |
| 10 | Vacuum pump           |
| 11 | Pressure meter        |
| 12 | Universal meter       |
| 13 | Inner hexagon spanner |
| 14 | Measuring tape        |

#### **NOTICE**

- Please contact the local agent for installation.
- Don't use an unqualified power cold.

# 4. Selection of installation location

## 4.1 BASIC REQUIREMENT

Installing the unit in the following locations may cause a malfunction. If unavoidable, please consult your local dealer:

1. Locations with strong heat sources, vapours, flammable or explosive gases, or volatile substances in the air.
2. Locations with high-frequency devices (such as welding machines or medical equipment).
3. Coastal areas.
4. Locations with oil or fumes in the air.
5. Locations with sulphur-containing gases.
6. Other locations with special conditions.
7. The appliance must not be installed in a laundry.
8. It is prohibited to install the unit on unstable or moving bases (such as trucks) or in corrosive environments (such as chemical factories).

## 4.2 INDOOR UNIT

1. Ensure there are no obstructions near the air inlet or outlet.
2. Choose a location where condensation water can drain easily without affecting others.
3. Select a spot convenient for connecting the outdoor unit and near a power socket.
4. Choose a location out of reach of children.
5. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified personnel to avoid hazards.
6. The refrigerant circuit temperature will be high; keep the interconnection cable away from the copper tubes.
7. Installation must comply with national wiring regulations.
8. The location should support the indoor unit's weight and not increase noise or vibration.
9. The unit must be installed at least 2.5 metres above the floor.
10. Do not install the indoor unit directly above electrical appliances.
11. Avoid installation near fluorescent lamps where possible.



## 4. SELECTION OF INSTALLATION LOCATION

### 4.3 SAFETY PRECAUTION

1. Follow electrical safety regulations during installation.
2. Use qualified power supply circuits and circuit breakers according to local safety regulations.
3. Ensure the power supply matches the air conditioner's requirements. Unstable power supply, incorrect wiring, or malfunction can cause damage.
4. Properly connect the live, neutral, and grounding wires of the power socket.
5. Always disconnect the power supply before performing any electrical work.
6. Do not switch on the power before completing the installation.

### 4.3 GROUNDING REQUIREMENT

1. The air conditioner is a Class I electrical appliance and must be properly grounded using a specialised grounding device installed by a professional. Ensure effective grounding at all times to prevent electric shock.
2. The yellow-green wire in the air conditioner is the grounding wire and must not be used for any other purpose.
3. Grounding resistance must comply with national electrical safety standards.
4. The appliance must be positioned so the plug is accessible.
5. An all-pole disconnection switch with at least 3 mm contact separation in all poles should be connected in fixed wiring.

# 5. Installation of indoor unit

## STEP 1

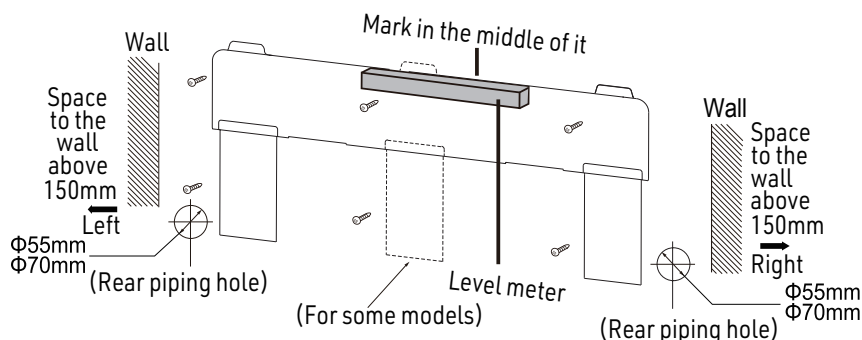
### CHOOSE INSTALLATION LOCATION

Recommend the installation location to the client and then confirm it with the client.

## STEP 2

### INSTALL WALL-MOUNTING FRAME

1. Hang the wall-mounting frame on the wall and adjust it to a horizontal position using a level meter. Mark the screw holes on the wall.
2. Drill the holes with an impact drill, using a drill bit matching the size of the plastic wall plugs. Insert the plastic wall plugs into the holes.
3. Secure the wall-mounting frame to the wall with tapping screws. Check that the frame is firmly fixed by pulling it gently. If the wall plugs are loose, drill new holes nearby and repeat the process.



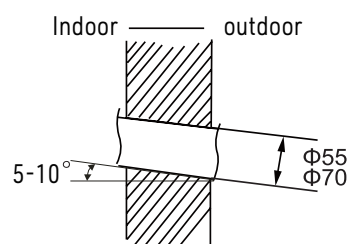
## STEP 3

### OPEN PIPING HOLE

1. Choose the position for the piping hole according to the direction of the outlet pipe. The hole should be slightly lower than the wall-mounted frame, as shown below.
2. After installation, pull the mounting plate by hand to confirm it is securely fixed. The force should be evenly distributed across all screws.
3. Drill a piping hole with a diameter of  $\phi 55$  or  $\phi 70$  at the selected outlet pipe position. To ensure smooth drainage, angle the piping hole slightly downward towards the outdoor side with a gradient of  $5-10^\circ$ .

#### NOTE:

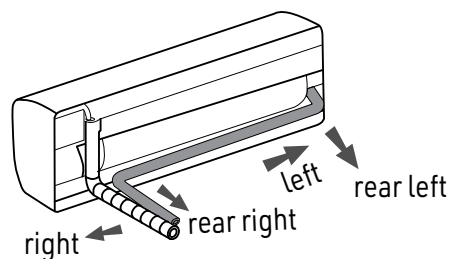
- The wall panel is for illustrative purposes only, please refer to the actual installation.
- Please refer to the actual circumstances for the number of screws and the position of screws.
- Pay attention to dust prevention and take relevant safety measures when opening the hole.



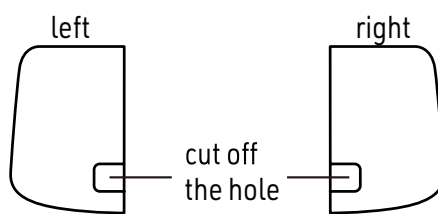
## 5. INSTALLATION OF INDOOR UNIT

### STEP 4 OUTLET PIPE

1. The pipe can be routed to the right, rear right, left, or rear left direction.

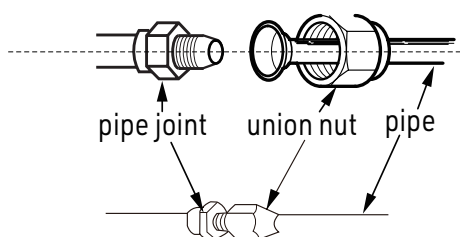


2. When selecting to lead the pipe out from the left or right, please cut the corresponding hole on the bottom case.

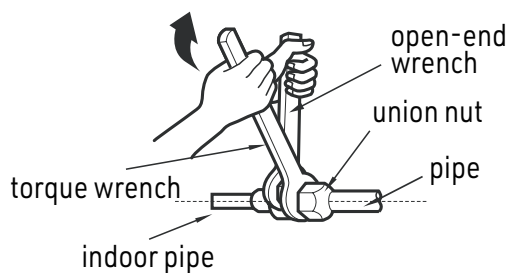


### STEP 5 CONNECT THE PIPE OF INDOOR UNIT

1. Align the pipe joint with the corresponding bellmouth.
2. Hand-tighten the union nut.



3. Adjust the torque according to the table below. Place the open-end wrench on the pipe joint and the torque wrench on the union nut. Tighten the union nut using the torque wrench.

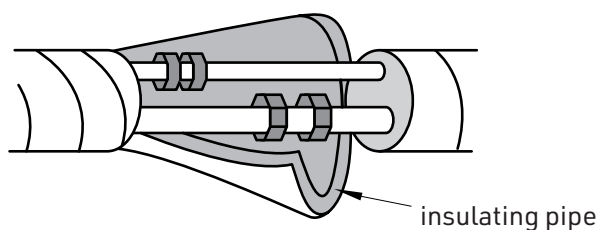


## 5. INSTALLATION OF INDOOR UNIT

Hex nut diameter      Tightening torque (N.m)

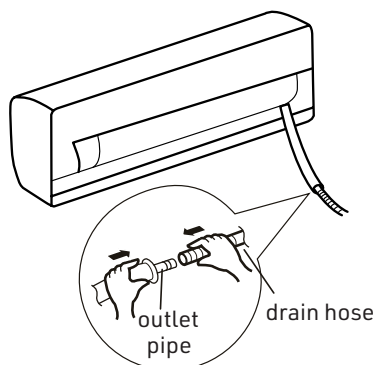
|      |       |
|------|-------|
| 1/4" | 15~20 |
| 3/8" | 30~40 |
| 1/2" | 45~55 |
| 5/8" | 60~65 |
| 3/4" | 70~75 |

4. Wrap the indoor pipe and the connection pipe joint with insulating material, then secure it with tape.

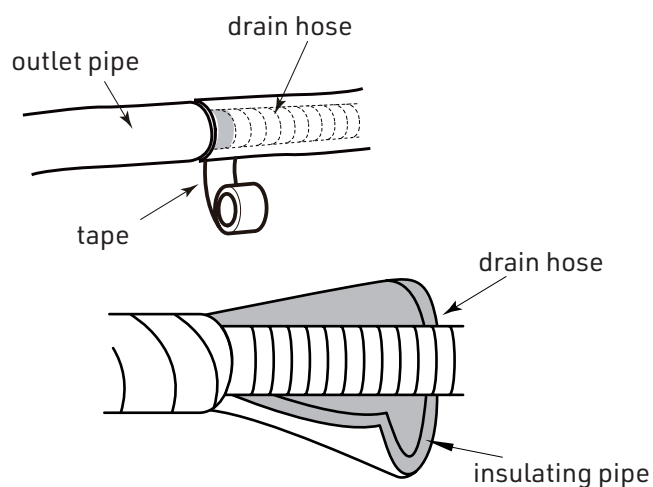


### STEP 6 INSTALL DRAIN HOSE

1. Connect the drain hose to the outlet pipe of the indoor unit.



2. Bind the joint with tape.



#### NOTE:

Add insulating material to the indoor drain hose to prevent condensation.

Please note that plastic expansion plugs are not supplied.

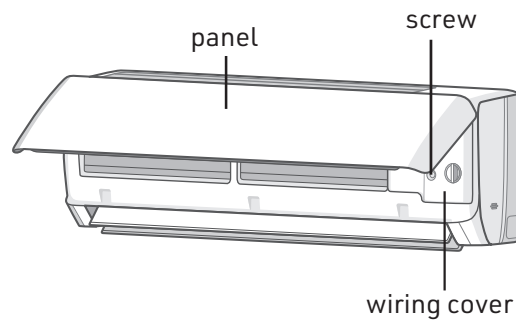
## 5. INSTALLATION OF INDOOR UNIT

### STEP 7 CONNECT WIRE OF INDOOR UNIT

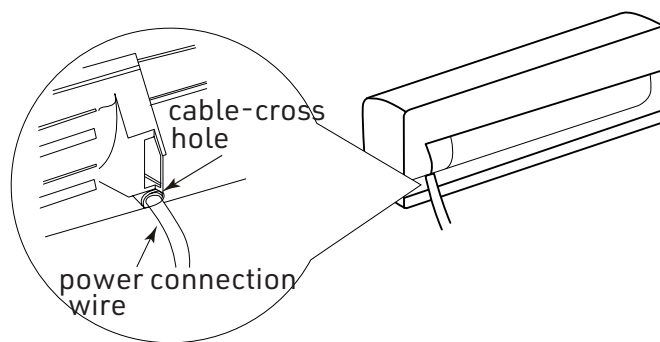
#### NOTICE

- All wires for the indoor and outdoor units must be connected by a qualified professional.
- If the power connection wire is too short, please contact the supplier for a replacement. Do not extend the wire yourself.
- For air conditioners with a plug, ensure the plug is accessible after installation.
- For air conditioners without a plug, an all-pole air switch with a contact separation distance of at least 3mm must be installed in the circuit.

1. Open the panel, remove the screws from the wiring cover, and then take off the cover.



2. Route the power connection wire through the cable hole at the back of the indoor unit, then pull it out from the front side.

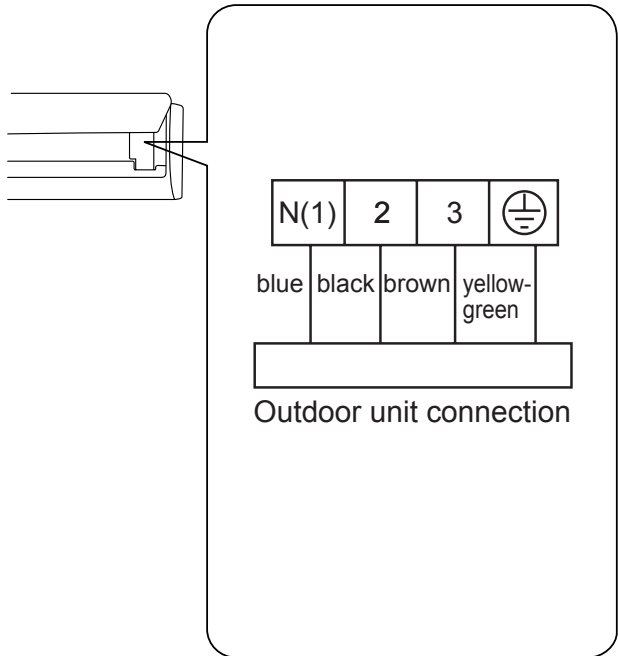


3. Remove the wire clip. Connect the power connection wire to the wiring terminal according to the wire colors. Tighten the screw, then secure the power connection wire with the wire clip

## 5. INSTALLATION OF INDOOR UNIT

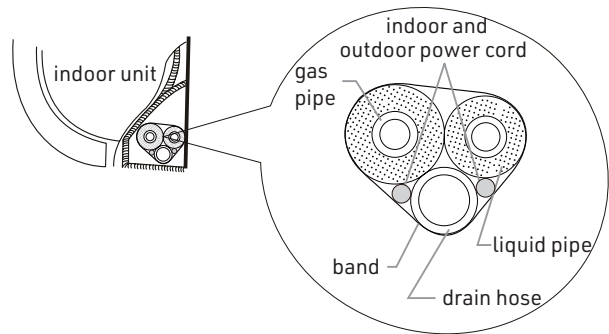
### NOTICE

- The wiring board is for reference only, please refer to the actual one.
- Replace the wiring cover and tighten the screw.
  - Then close the panel.

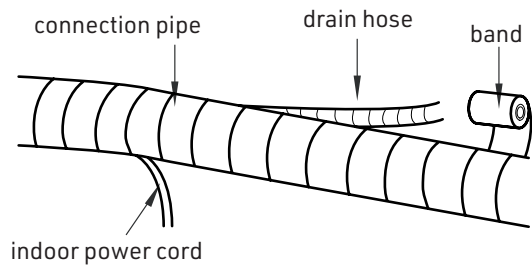


### STEP 8 BIND UP PIPE

- Bind the connection pipe, power cord, and drain hose together with a band.



- Reserve some extra length of the drain hose and power cord for installation when binding them.
- When binding to a certain point, separate the indoor power cord and the drain hose, then bind them evenly.
- At the end, the liquid pipe and gas pipe should be bound separately.



### NOTICE

- The power cord and control wire must not cross or be wound around each other.
- The drain hose should be bound at the bottom.

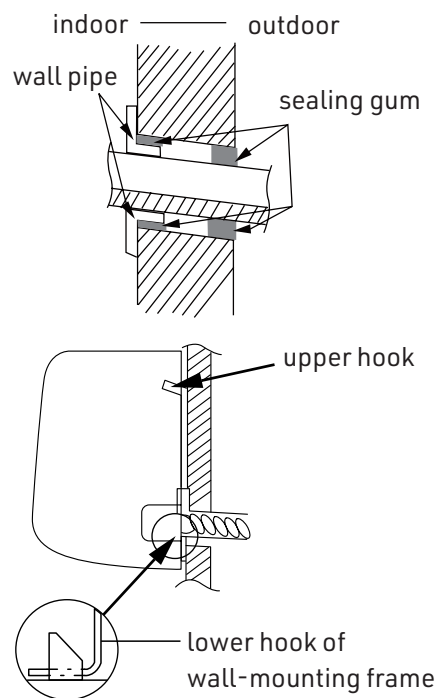
## 5. INSTALLATION OF INDOOR UNIT

### STEP 9 HANG THE INDOOR UNIT

1. Insert the bound pipes into the wall sleeve and pass them through the wall hole.
2. Hang the indoor unit onto the wall-mounting frame.
3. Seal the gap between the pipes and the wall hole with sealing gum.
4. Secure the wall sleeve in place.
5. Check that the indoor unit is firmly installed and flush against the wall.

#### NOTICE

- Do not bend the drain hose too excessively in order to prevent blocking.



## 6. Configuration of connection pipe

1. Standard length of connection pipe: 5m, 7.5m, 8m.
2. Min. length of connection pipe.
  - For units with a standard 5 m connection pipe: No minimum length required.
  - For units with a standard 7.5 m or 8 m connection pipe: Minimum length is 3 m.
3. Maximum connection pipe length: Refer to the table below.

| Cooling capacity    | Max. length of connection pipe(m) |
|---------------------|-----------------------------------|
| 5000Btu/h (1465W)   | 15                                |
| 7000Btu/h (2051W)   | 15                                |
| 9000Btu/h (2637W)   | 15                                |
| 12000Btu/h (3516W)  | 20                                |
| 18000Btu/h (5274W)  | 25                                |
| 24000Btu/h (7032W)  | 25                                |
| 28000Btu/h (8204W)  | 30                                |
| 36000Btu/h (10548W) | 30                                |
| 42000Btu/h (12306W) | 30                                |
| 48000Btu/h (14064W) | 30                                |

4. Calculation method for additional refrigerant oil and refrigerant charge when extending the connection pipe:  
When the connection pipe length exceeds the standard length by 10 m, add 5 ml of refrigerant oil for every additional 5 m of pipe.  
Calculation method for additional refrigerant charge (based on liquid pipe):

**Formula:**

Additional refrigerant charge = (Prolonged length of liquid pipe) × (Additional charge per meter)

Based on the standard pipe length, add refrigerant according to the table provided.

The additional refrigerant charge per meter varies depending on the liquid pipe diameter.  
(See table for details.)



## 6. CONFIGURATION OF CONNECTION PIPE

| Piping size  |              | Indoor unit throttle                            | Outdoor unit throttle   |                                   |
|--------------|--------------|-------------------------------------------------|-------------------------|-----------------------------------|
| Liquid pipe  | Gas pipe     | Cooling only,<br>cooling and heating<br>(g / m) | Cooling only<br>(g / m) | cooling and<br>heating<br>(g / m) |
| 1/4"         | 3/8" or 1/2" | 16                                              | 12                      | 16                                |
| 1/4" or 3/8" | 5/8" or 3/4" | 40                                              | 12                      | 40                                |
| 1/2"         | 3/4" or 7/8" | 80                                              | 24                      | 96                                |
| 5/8"         | 1" or 1 1/4" | 136                                             | 48                      | 96                                |
| 3/4"         | —            | 200                                             | 200                     | 200                               |
| 7/8"         | —            | 280                                             | 280                     | 280                               |

### NOTICE

- The additional refrigerant charging amount shown in the table is a recommended value and not mandatory.

### 6.1 PIPE SIZE

| Outdoor Model | Outer diameter (mm) |             |
|---------------|---------------------|-------------|
|               | Liquid pipe         | Gas pipe    |
| TSOM73HVAG3   | 3x ø6(1/4")         | 3x ø9(3/8") |
| TSOM82HVAG4   | 4x ø6(1/4")         | 4x ø9(3/8") |
| TSOM106HVAG4  | 4x ø6(1/4")         | 4x ø9(3/8") |
| TSOM123HVAG5  | 5x ø6(1/4")         | 5x ø9(3/8") |

## 6. CONFIGURATION OF CONNECTION PIPE

| Indoor Model | Outer diameter (mm) |           |
|--------------|---------------------|-----------|
|              | Liquid pipe         | Gas pipe  |
| TWSM22HVAG   | ø6(1/4")            | ø9(3/8")  |
| TWSM26HVAG   | ø6(1/4")            | ø9(3/8")  |
| TWSM35HVAG   | ø6(1/4")            | ø9(3/8")  |
| TWSM50HVAG   | ø6(1/4")            | ø12(1/2") |
| TWSM64HVAG   | ø6(1/4")            | ø12(1/2") |
| TWSM71HVAG   | ø6(1/4")            | ø16(5/8") |

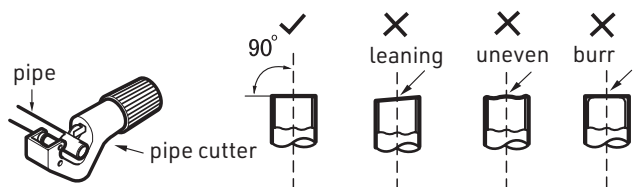
### 6.2 PIPE EXPANDING METHOD

#### NOTICE

- Improper pipe expansion is the main cause of refrigerant leakage.  
Please expand the pipe following these steps:

#### STEP 1 CUT THE PIPE

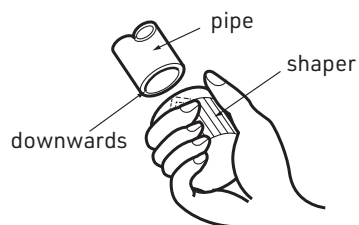
- Confirm the pipe length according to the distance between the indoor unit and the outdoor unit.
- Cut the required pipe with a pipe cutter.



## 6. CONFIGURATION OF CONNECTION PIPE

### STEP 2 REMOVE THE BURRS

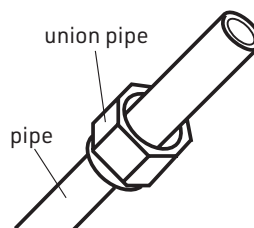
- Remove the burrs with a shaper to prevent the burrs from getting into the pipe.



### STEP 3 PUT ON SUITABLE INSULATING PIPE

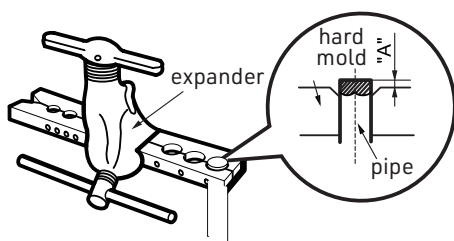
### STEP 4 PUT ON THE UNION NUT

- Remove the union nut on the indoor connection pipe and the outdoor valve.
- Install the union nut on the pipe.



### STEP 5 EXPAND THE PORT

- Expand the port with an expander.



#### NOTICE

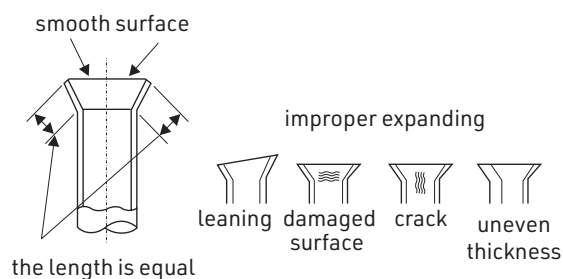
- "A" is different according to the diameter, please refer to the sheet below:

| Outer diameter<br>(mm) | A(mm) |     |
|------------------------|-------|-----|
|                        | MaxM  | in  |
| Φ6 - 6.35(1/4")        | 1.3   | 0.7 |
| Φ9 - 9.52(3/8")        | 1.6   | 1.0 |
| Φ12-12.7(1/2")         | 1.8   | 1.0 |
| Φ15.8-16(5/8")         | 2.4   | 2.2 |

## 6. CONFIGURATION OF CONNECTION PIPE

### STEP 6 INSPECTION

- Check the quality of the expanding port. If there is any blemish, expand the port again according to the steps above.



### 6.3 WORKING TEMPERATURE RANGE

|                 | Indoor side<br>DB/WB(°C) | Outdoor side<br>DB/WB(°C) |
|-----------------|--------------------------|---------------------------|
| Maximum cooling | 32/23                    | 50/26                     |
| Maximum heating | 27/-                     | 24/18                     |

#### NOTICE

- The operating temperature range (outdoor temperature) for Low-temperature cooling only unit is -10°C-50°C; for heat pump unit is -15°C-50°C

### 6.4 OUTDOOR UNIT WORKING TEMPERATURE - GENERAL INFORMATION

|                 | Indoor side DB/WB(°C) | Outdoor side DB/WB(°C) |
|-----------------|-----------------------|------------------------|
| Maximum cooling | 32/23                 | 52/-                   |
| Maximum heating | 27/-                  | 24/18                  |

- The operating temperature range (outdoor temperature) for cooling only unit is -15°C ~ 52°C; for heat pump unit is -22°C ~ 52°C.

## 6. CONFIGURATION OF CONNECTION PIPE

### 6.5 INSTALLATION DIMENSION DIAGRAM



The installation must be done by trained and qualified service personnel with reliability according to this manual.



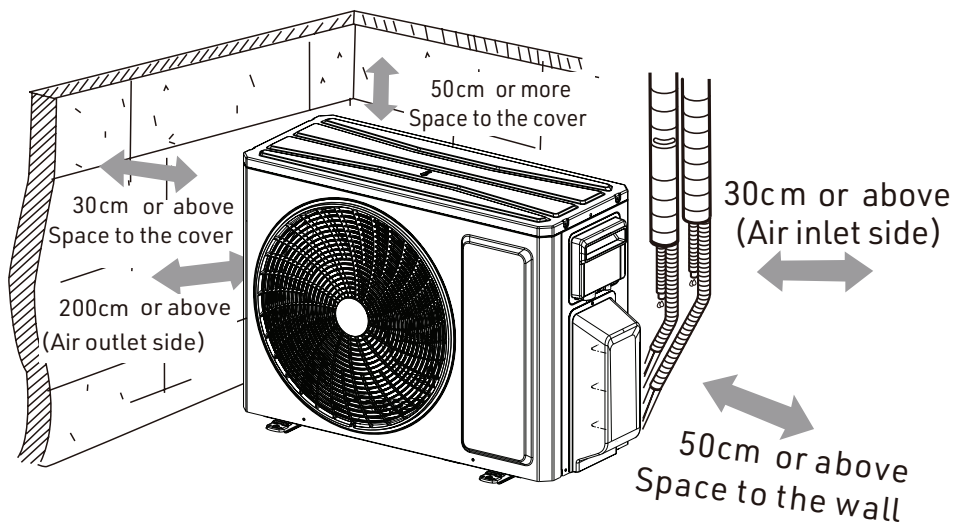
Contact the service center before installation to avoid malfunctions due to improper installation.



When picking up and moving the units, you must be guided by a trained and qualified person.



Ensure that the recommended space is left around the appliance.



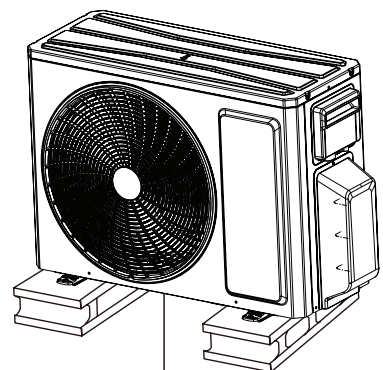
Fix the support of outdoor unit (select according to the actual installation conditions)

1. Choose an installation location based on the structure of the building.
2. Secure the outdoor unit support in the selected position using expansion screws.

#### NOTICE

- Take proper safety precautions when installing the outdoor unit.
- Ensure the support can bear at least four times the weight of the unit.
- Install the outdoor unit at least 3 cm above the floor to accommodate the drain joint. (For models with a heating tube, the installation height must be no less than 20 cm.)
- For units with a cooling capacity of 2300W-5000W, use 6 expansion screws.
- For units with a cooling capacity of 6000W-8000W, use 8 expansion screws.
- For units with a cooling capacity of 10,000W-16,000W, use 10 expansion screws.

Refer to the product specifications for the shape of the drainage joint. Do not install the drainage joint in areas with extreme cold, as frost may form and cause malfunction.



At least 3cm above the floor

# 7. Installing the outdoor unit

## 7.1 LOCATION



Secure the outdoor unit to a flat, solid floor using bolts. If installing on a wall or roof, ensure the support is firmly secured to prevent movement during strong winds or heavy vibrations.



Do not install the outdoor unit in pits or air vents.

## 7.2 INSTALLING THE PIPES



Use suitable connecting pipes and equipment designed for R32 refrigerant.



| Models(m)                                            | 7.3kWx3 | 8.2kWx4 | 10.6kWx4 | 12.3kWx5 |
|------------------------------------------------------|---------|---------|----------|----------|
| Max. connection pipe length                          | 60      | 70      | 80       | 100      |
| Max. connection pipe length (Simple one indoor unit) | 30      | 30      | 30       | 30       |

Ensure the total capacity codes of the indoor units are between 50% and 150% of the outdoor unit's capacity.



**Maximum height difference:** 15 m for 7.3 kW and 8.2 kW models, 25 m for 10.6 kW and 12.3 kW models



Wrap all refrigerant pipes and joints with insulation.



Tighten connections using two wrenches in opposite directions.



Installation must comply with NEC/CEC regulations and be performed only by authorized personnel.

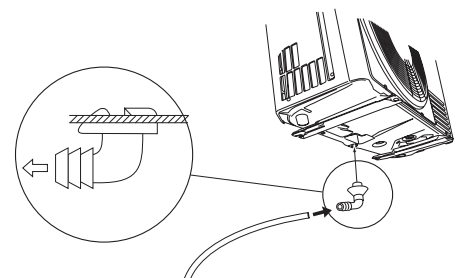
CAUTION

## 7.3 INSTALL THE DRAIN FITTING AND THE DRAIN HOSE (FOR MODEL WITH HEAT PUMP ONLY)

- During heating mode, condensation forms and drains from the outdoor unit.
- To prevent disturbance or environmental impact, install a drain fitting and hose to direct water away.
- Attach the drain fitting and rubber washer to the outdoor unit chassis and connect the drain hose as shown in the product diagram.

### NOTICE

- Refer to the current product design for the shape of the drainage joint. Do not install in extremely cold areas, as frost may form and cause malfunction.



## 7. INSTALLATION OF OUTDOOR UNIT

### 7.4 BLEEDING

Moisture or humid air inside the refrigerant circuit can cause compressor malfunctions. After connecting the indoor and outdoor units, evacuate the air and moisture from the circuit using a vacuum pump.

STEP 1: Unscrew and remove the caps from the 2-way and 3-way valves.

STEP 2: Unscrew and remove the cap from the service valve.

STEP 3: Connect the vacuum pump hose to the service valve.

STEP 4: Operate the vacuum pump for 10-15 minutes until an absolute vacuum of 10 mm Hg is reached.

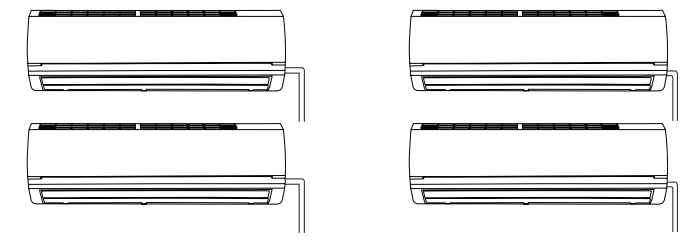
STEP 5: While the pump is still operating, close the low-pressure knob on the vacuum pump coupling and stop the pump.

STEP 6: Open the 2-way valve by 1/4 turn for 10 seconds, then close it.

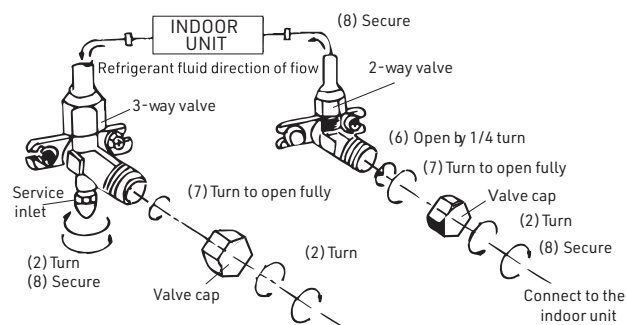
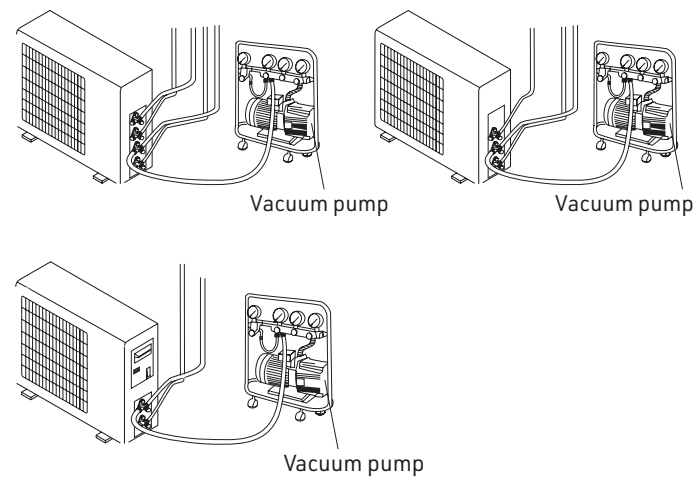
STEP 7: Check all joints for leaks using liquid soap or an electronic leak detector.

STEP 8: Fully open the 2-way and 3-way valves. Disconnect the vacuum pump hose.

STEP 9: Replace and tighten all the caps on the valves securely.



| Diameter (mm) | Twisting moment (N.m) |
|---------------|-----------------------|
| 1/4"          | 15-20                 |
| 3/8"          | 35-40                 |
| 1/2"          | 45-50                 |
| 5/8"          | 60-65                 |
| 3/4"          | 70-75                 |



# 8. Electrical connections

## 8.1 TSOM73HVAG3

STEP 1: Remove the handle on the right side plate of the outdoor unit (secured with one screw).

STEP 2: Remove the cable clamp, connect the power connection cable to the terminal strip, and secure the connection. The wiring layout must match that of the indoor unit’s terminal strip.

STEP 3: Secure the power connection wire with the cable clamp, ensuring it is firmly fixed.

STEP 4: Ensure wire has been fixed well.

STEP 5: Reinstall the handle.

STEP 6: Install an air switch with appropriate capacity as specified in the table. The air switch must include both magnetic and thermal trip functions to protect against short circuits and overloads.

- 

Do not rely on a fuse alone for circuit protection.
- 

An all-pole disconnection switch with a contact separation of at least 3 mm on all poles must be installed in the fixed wiring.
- 

Incorrect wiring may damage electrical components. After securing the cable, ensure there is clearance between the connection leads and fixed points.
- 

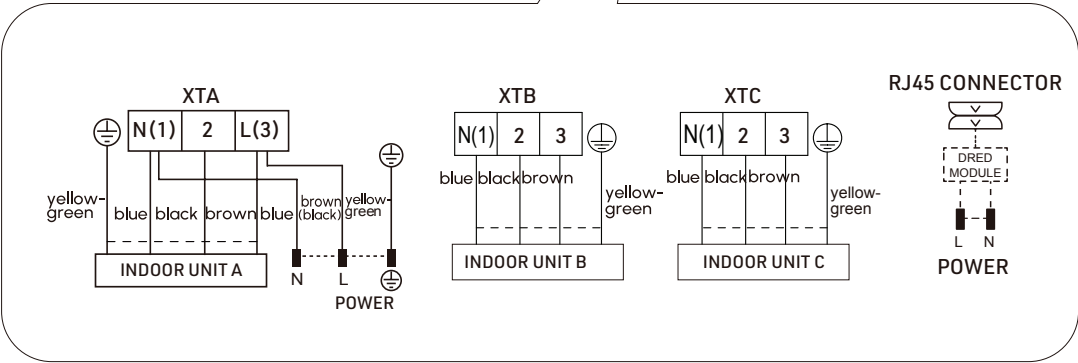
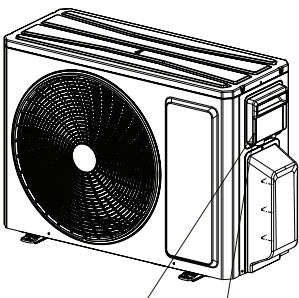
For multi-unit installations (Unit A, B, C), ensure the connection pipes and wiring correspond correctly for each unit.
- 

Installation must comply with national wiring regulations.

**NOTE**

- The diagrams provided are for reference only and may not match the exact appearance of the purchased units.

| Air-conditioner | Air switch capacity |
|-----------------|---------------------|
| TSOM73HVAG3     | 25A                 |





8. ELECTRICAL CONNECTIONS

8.2 TSOM82HVAG4

STEP 1: Remove the handle on the right side plate of the outdoor unit (secured with one screw).

STEP 2: Remove the cable clamp, connect the power connection cable to the terminal strip, and secure the connection. The wiring layout must match that of the indoor unit's terminal strip.

STEP 3: Secure the power connection wire with the cable clamp, ensuring it is firmly fixed.

STEP 4: Ensure wire has been fixed well.

STEP 5: Install the handle.

STEP 6: Install an air switch with appropriate capacity as specified in the table. The air switch must include both magnetic and thermal trip functions to protect against short circuits and overloads.

- 

Do not rely on a fuse alone for circuit protection.
- 

An all-pole disconnection switch with a contact separation of at least 3 mm on all poles must be installed in the fixed wiring.
- 

Incorrect wiring may damage electrical components. After securing the cable, ensure there is clearance between the connection leads and fixed points.
- 

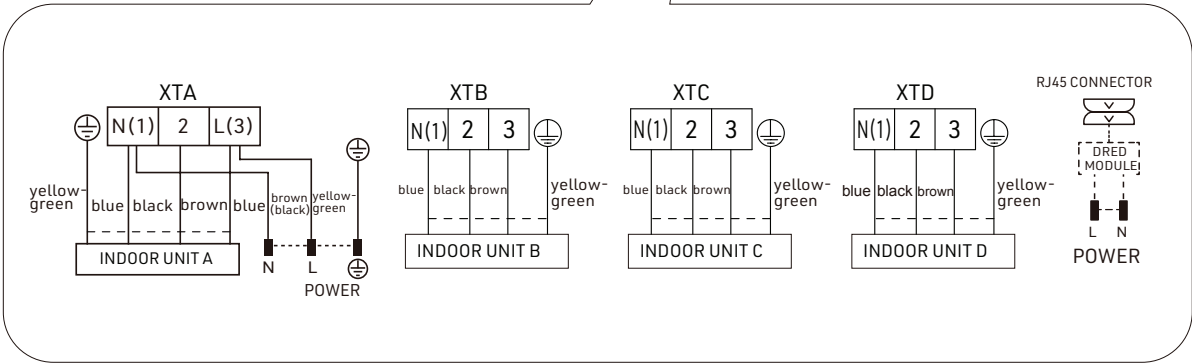
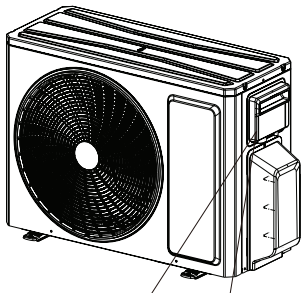
For multi-unit installations (Unit A, B, C and D), ensure the connection pipes and wiring correspond correctly for each unit.
- 

Installation must comply with national wiring regulations.

NOTE

- The diagrams provided are for reference only and may not match the exact appearance of the purchased units.

| Air-conditioner | Air switch capacity |
|-----------------|---------------------|
| TSOM82HVAG4     | 25A                 |



## 8. ELECTRICAL CONNECTIONS

### 8.3 TSOM106HVAG4

STEP 1: Remove the handle on the right side plate of the outdoor unit (secured with one screw).

STEP 2: Remove the cable clamp, connect the power connection cable to the terminal strip, and secure the connection. The wiring layout must match that of the indoor unit's terminal strip.

STEP 3: Secure the power connection wire with the cable clamp, ensuring it is firmly fixed.

STEP 4: Ensure wire has been fixed well.

STEP 5: Install the handle.

STEP 6: Install an air switch with appropriate capacity as specified in the table. The air switch must include both magnetic and thermal trip functions to protect against short circuits and overloads.



Do not rely on a fuse alone for circuit protection.



An all-pole disconnection switch with a contact separation of at least 3 mm on all poles must be installed in the fixed wiring.



Incorrect wiring may damage electrical components. After securing the cable, ensure there is clearance between the connection leads and fixed points.



For multi-unit installations (Unit A, B, C and D), ensure the connection pipes and wiring correspond correctly for each unit.

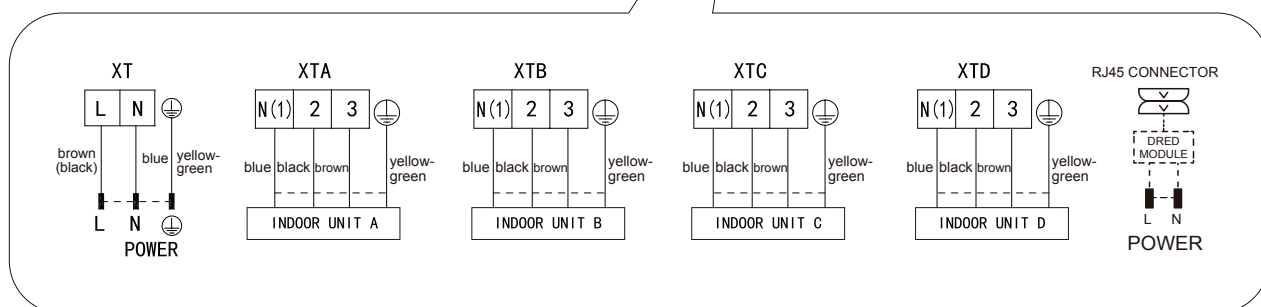
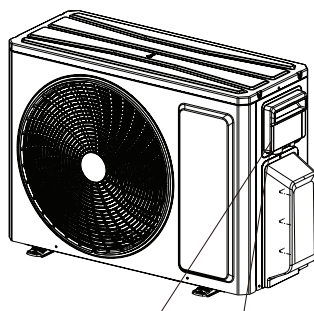


Installation must comply with national wiring regulations.

#### NOTE

- The diagrams provided are for reference only and may not match the exact appearance of the purchased units.

| Air-conditioner | Air switch capacity |
|-----------------|---------------------|
| TSOM106HVAG4    | 32A                 |



8. ELECTRICAL CONNECTIONS

8.4 TSOM123HVAG5

STEP 1: Remove the handle on the right side plate of the outdoor unit (secured with one screw).

STEP 2: Remove the cable clamp, connect the power connection cable to the terminal strip, and secure the connection. The wiring layout must match that of the indoor unit's terminal strip.

STEP 3: Secure the power connection wire with the cable clamp, ensuring it is firmly fixed.

STEP 4: Ensure wire has been fixed well.

STEP 5: Install the handle.

STEP 6: Install an air switch with appropriate capacity as specified in the table. The air switch must include both magnetic and thermal trip functions to protect against short circuits and overloads.

- 

Do not rely on a fuse alone for circuit protection.
- 

An all-pole disconnection switch with a contact separation of at least 3 mm on all poles must be installed in the fixed wiring.
- 

Incorrect wiring may damage electrical components. After securing the cable, ensure there is clearance between the connection leads and fixed points.
- 

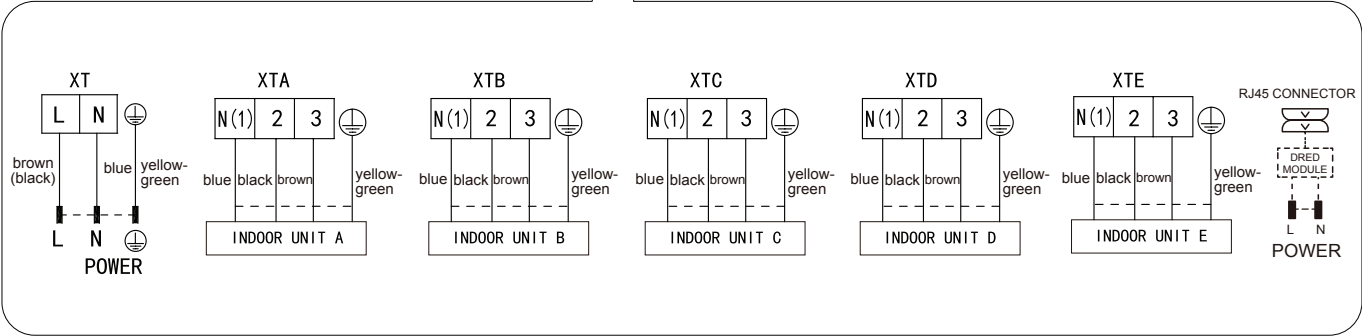
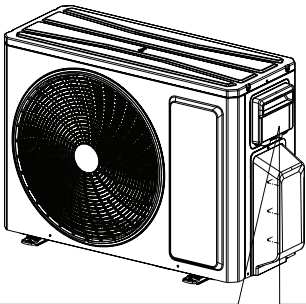
For multi-unit installations (Unit A, B, C, D and E), ensure the connection pipes and wiring correspond correctly for each unit.
- 

Installation must comply with national wiring regulations.

NOTE

- The diagrams provided are for reference only and may not match the exact appearance of the purchased units.

| Air-conditioner | Air switch capacity |
|-----------------|---------------------|
| TSOM123HVAG5    | 32A                 |

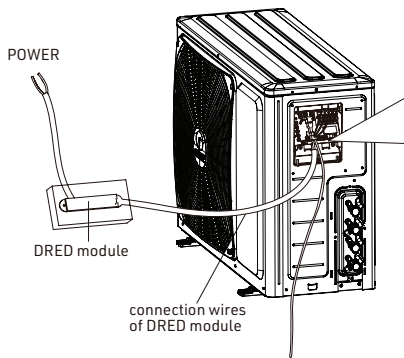


## 8. ELECTRICAL CONNECTIONS

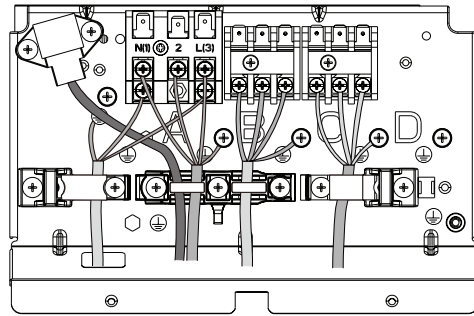
### 8.5 INSTALLATION CONNECTION WIRES OF THE DRED MODULE

- For the connection wire and power cord of the DRED module, it is recommended to use rubber cords compliant with IEC 57 of IEC 60245. If H05VV-F or other wires unsuitable for outdoor use are used, the power cord and connection wire should be installed in wire-leading ducts that protect them from rain and ultraviolet (UV) rays.
- The DRED module should be installed indoors or within an enclosed space that prevents exposure to rain and UV rays.
- The connection wires for the DRED module, indoor unit, and outdoor unit should be secured using the same wire clamp. Separate clamps should be used for the power cords and connection wires of other indoor and outdoor units (as shown in the picture).

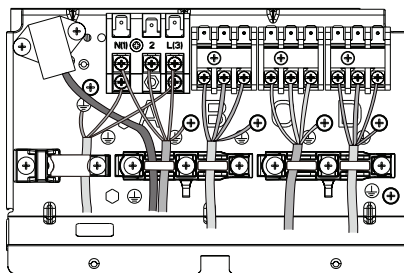
**NOTE:** The picture below is for reference only. Please refer to the actual products.



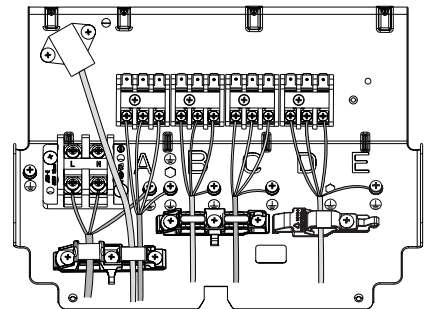
TSOM73HVAG3



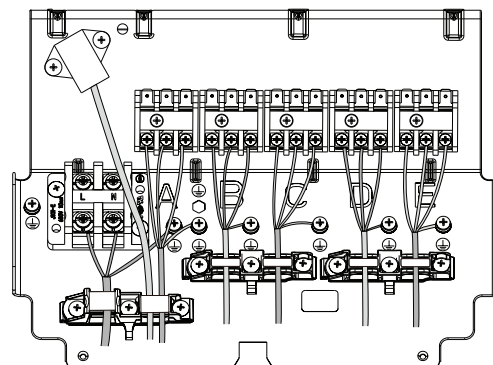
TSOM82HVAG4



TSOM106HVAG4



TSOM123HVAG5



# 9. Test and operation

## 9.1 CHECK AFTER INSTALLATION

- Check according to the following requirements after finishing installation.

| ITEMS TO BE CHECKED                                                                  | POSSIBLE MALFUNCTION                                                       |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Has the unit been installed firmly?                                                  | The unit may drop, shake, or emit noise.                                   |
| Have you done the refrigerant leakage test?                                          | It may cause insufficient cooling(heating) capacity.                       |
| Is the heat insulation of pipe- line sufficient?                                     | It may cause condensation and water dripping.                              |
| Is water drained well?                                                               | It may cause condensation and water dripping.                              |
| Is the voltage of the power supply according to the voltage marked on the nameplate? | It may cause a malfunction or damage the parts.                            |
| Is the electric wiring and pipeline installed correctly?                             | It may cause a malfunction or damage the parts.                            |
| Is the unit grounded securely?                                                       | It may cause electric leakage.                                             |
| Does the power cord follow the specification?                                        | It may cause a malfunction or damage the parts.                            |
| Is there any obstruction in the air inlet and outlet?                                | It may cause insufficient cooling (heating) capacity.                      |
| The dust and sundries caused during installation are removed?                        | It may cause a malfunction or damage the parts.                            |
| Are the gas valve and liquid valve of the connection pipe open completely?           | It may cause insufficient cooling (heating) capacity.                      |
| Have the inlet and outlet of the piping hole been covered?                           | It may cause insufficient cooling (heating) capacity or waste electricity. |

### 9.1.1 Preparation for Test Operation

- Obtain client approval for the air conditioner.
- Explain important notes about the air conditioner to the client

### 9.1.2 Test Operation Method

- Connect the power supply and press the ON/OFF button on the remote controller to start the unit.
- Press the MODE button to select AUTO, COOL, DRY, FAN, and HEAT modes, and check whether the unit operates normally in each mode.
- Note: If the ambient temperature is below 16°C, the air conditioner cannot start cooling.

## 9. TEST AND OPERATION

| ITEMS TO BE CHECKED                                                                        | PROBLEMS OWING TO IMPROPER INSTALLATION                      |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Is the installation reliable?                                                              | The unit may drop, vibrate, or make noises                   |
| Has the gas leakage been checked?                                                          | May cause unsatisfactory cooling (heating) effect            |
| Is the thermal insulation of the unit sufficient?                                          | May cause condensation and water droplets                    |
| Is the drainage smooth?                                                                    | May cause condensation and water droplets                    |
| Does the power supply voltage accord with the rated voltage specified on the nameplate?    | The unit may break down, or the components may be burned out |
| Are the lines and pipelines correctly installed?                                           | The unit may break down or the components may be burned out  |
| Has the unit been safely grounded?                                                         | Risk of electrical leakage                                   |
| Are the models of lines in conformity with the requirements?                               | The unit may break down or the components may be burned out  |
| Are there any obstacles near the air inlet and outlet of the indoor and outdoor units?     | The unit may break down or the components may be burned out  |
| Have the length of the refrigerating pipe and the refrigerant charge amount been recorded? | It is not easy to decide the charge amount of refrigerant.   |

# 10. Specialist's Manual

The following checks shall be applied to installations using flammable refrigerants:

- The charge size is by the room size within which the refrigerant-containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
- Marking on the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigerating pipes or components are installed in a position where they are unlikely to be exposed to any substance that may corrode refrigerant-containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.
- Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

## 10.1 INITIAL SAFETY CHECKS SHALL INCLUDE:

- That capacitors are discharged; this shall be done safely to avoid the possibility of sparking.
- That no live electrical components and wiring are exposed while charging, recovering, or purging the system;
- That there is continuity of earth bonding.

## 10.2 CHECKS TO THE AREA

- Before beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, DD.4.3 to DD.4.7 shall be completed before conducting work on the system.

## 10.3 WORK PROCEDURE

- Work shall be undertaken under a controlled procedure to minimise the risk of a flammable gas or vapour being present.

## 10.4 GENERAL WORK AREA

- All maintenance staff and others working in the local area shall be instructed on the nature of the work being carried out. Work in confined spaces shall be avoided.

## 10.5 CHECKING FOR THE PRESENCE OF REFRIGERANT

The area shall be checked with an appropriate refrigerant detector before and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e., non-sparking, adequately sealed, or intrinsically safe. The following checks shall be applied to installations using flammable refrigerants:

## 10. SPECIALIST'S MANUAL

- The actual refrigerant charge is determined by the room size within which the refrigerant-containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- Refrigerating pipes or components are installed in a position where they are unlikely to be exposed to any substance that may corrode refrigerant-containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

### 10.6 CHECKS ON ELECTRICAL DEVICES

Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

- That capacitors are discharged; this shall be done safely to avoid the possibility of sparking.
- That no live electrical components and wiring are exposed while charging, recovering, or purging the system;
- That there is continuity of earth bonding.

### 10.7 NO IGNITION SOURCES

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

### 10.8 REPAIRS TO SEALED COMPONENTS

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that, by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that the apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

**NOTE:** The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.



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### 10.9 REPAIR TO INTRINSICALLY SAFE COMPONENTS

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

### 10.10 CABLING

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

### 10.11 LEAK DETECTION METHODS

- Leak detection fluids are suitable for use with most refrigerants, but the use of detergents containing chlorine shall be avoided, as the chlorine may react with the refrigerant and corrode the copper pipework.

### 10.12 DETECTION OF FLAMMABLE REFRIGERANTS

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. The following leak detection methods are deemed acceptable for all refrigerant systems:

- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the **LFL** of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants, but the use of detergents containing chlorine shall be avoided, as the chlorine may react with the refrigerant and corrode the copper pipework.

**NOTE:** Examples of leak detection fluids are:

1. Bubble method
2. Fluorescent method agents

- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak. Removal of refrigerant shall be according to clause DD.9.

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### 10.13 REMOVAL AND EVACUATION

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- Remove refrigerant
- Purge the circuit with inert gas (optional for A2L)
- Evacuate (optional for A2L)
- Purge with inert gas (optional for A2L)
- Open the circuit by cutting or brazing

The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing flammable refrigerants other than A2L refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants other than A2L refrigerants, refrigerant purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant remains within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to allow work to take place. This operation is absolutely vital if brazing operations on the pipework are to be performed.

Ensure that the outlet of the vacuum pump is not near any potential ignition sources and that adequate ventilation is available.

### 10.14 CHARGING PROCEDURES

In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- The system shall be leak-tested on completion of charging but prior to commissioning. A follow-up leak test shall be carried out prior to leaving the site.

### 10.15 DECOMMISSIONING

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

- Become familiar with the equipment and its operation.
- Isolate the system electrically.

## 10. SPECIALIST'S MANUAL

- Before attempting the procedure, ensure that:
  1. Mechanical handling equipment is available, if required, for handling refrigerant cylinders.
  2. All personal protective equipment is available and being used correctly.
  3. The recovery process is supervised at all times by a competent person.
  4. Recovery equipment and cylinders conform to the appropriate standards.
- Pump down the refrigerant system, if possible. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Ensure that the cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate it in accordance with the manufacturer's instructions.
- Do not overfill cylinders (no more than 80% volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process is complete, ensure that the cylinders and equipment are removed from the site promptly and that all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

### 10.16 LABELLING

- Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant.
- The label shall be dated and signed.
- For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating that the equipment contains flammable refrigerant.

### 10.17 RECOVERY

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are used.
- Ensure that the correct number of cylinders for holding the total system charge is available.
- All cylinders used shall be designated for the recovered refrigerant and labelled for that refrigerant (i.e., special cylinders for the recovery of refrigerant).
- Cylinders shall be equipped with a pressure-relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders shall be evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions available and suitable for the recovery of all appropriate refrigerants, including, when applicable, flammable refrigerants.
- A set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained, and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult the manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note shall be arranged.
- Do not mix refrigerants in recovery units, especially not in cylinders.

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- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to ensure that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the supplier.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely

### 10.18 GENERAL

- The installation of pipework shall be kept to a minimum.
- Compliance with national gas regulations shall be observed.
- Mechanical connections made in accordance with 22.118 shall be accessible for maintenance purposes.









# Multi Head Air Conditioner

## INSTALLATION MANUAL

### Original instructions

#### Indoor

TWSM22HVAG, TWSM26HVAG, TWSM35HVAG, TWSM50HVAG,  
TWSM64HVAG, TWSM71HVAG

#### Outdoor

TSOM73HVAG3, TSOM82HVAG4, TSOM106HVAG4, TSOM123HVAG5

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