Installer reference guide

Split system air conditioners

FNA25A2VEB
FNA35A2VEB
FNA50A2VEB
FNA60A2VEB
FNA25A2VEB9
FNA35A2VEB9
FNA50A2VEB9
FNA60A2VEB9
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1 General safety precautions

1.1 About the documentation

- The original documentation is written in English. All other languages are translations.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual and the installer reference guide MUST be performed by an authorised installer.

1.1.1 Meaning of warnings and symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="DANGER" /></td>
<td>Indicates a situation that results in death or serious injury.</td>
</tr>
<tr>
<td><img src="image" alt="DANGER" /></td>
<td>Indicates a situation that could result in electrocution.</td>
</tr>
<tr>
<td><img src="image" alt="DANGER" /></td>
<td>Indicates a situation that could result in burning because of extreme hot or cold temperatures.</td>
</tr>
<tr>
<td><img src="image" alt="DANGER" /></td>
<td>Indicates a situation that could result in explosion.</td>
</tr>
<tr>
<td><img src="image" alt="WARNING" /></td>
<td>Indicates a situation that could result in death or serious injury.</td>
</tr>
<tr>
<td><img src="image" alt="WARNING" /></td>
<td>Indicates a situation that could result in minor or moderate injury.</td>
</tr>
<tr>
<td><img src="image" alt="NOTICE" /></td>
<td>Indicates a situation that could result in equipment or property damage.</td>
</tr>
<tr>
<td><img src="image" alt="INFORMATION" /></td>
<td>Indicates useful tips or additional information.</td>
</tr>
</tbody>
</table>

For more information, see the installer and user reference guide.
1 General safety precautions

1.2 For the installer

1.2.1 General

If you are NOT sure how to install or operate the unit, contact your dealer.

**NOTICE**
Improper installation or attachment of equipment or accessories could result in electric shock, short-circuit, leaks, fire or other damage to the equipment. Only use accessories, optional equipment and spare parts made or approved by Daikin.

**WARNING**
Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).

**CAUTION**
Wear adequate personal protective equipment (protective gloves, safety glasses,…) when installing, maintaining or servicing the system.

**WARNING**
Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. Possible risk: suffocation.

**DANGER: RISK OF BURNING**
- Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you must touch it, wear protective gloves.
- Do NOT touch any accidental leaking refrigerant.

**WARNING**
Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.

**CAUTION**
Do NOT touch the air inlet or aluminium fins of the unit.

**NOTICE**
- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

**NOTICE**
Works executed on the outdoor unit are best done under dry weather conditions to avoid water ingress.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least: information on maintenance, repair work, results of tests, stand-by periods,… Also, at least, following information MUST be provided at an accessible place at the product:
- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN578 provides the necessary guidance for this logbook.

---

1.2.2 Installation site

- Provide sufficient space around the unit for servicing and air circulation.
- Make sure the installation site withstands the unit’s weight and vibration.
- Make sure the area is well ventilated. Do NOT block any ventilation openings.
- Make sure the unit is level.

Do NOT install the unit in the following places:
- In potentially explosive atmospheres.
- In places where there is machinery that emits electromagnetic waves. Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
- In places where there is a risk of fire due to the leakage of flammable gases (example: thinner or gasoline), carbon fibre, ignitable dust.
- In places where corrosive gas (example: sulphurous acid gas) is produced. Corrosion of copper pipes or soldered parts may cause the refrigerant to leak.

**Instructions for equipment using R32 refrigerant**

If applicable.

**WARNING**
- Do NOT pierce or burn.
- Do NOT use means to accelerate the defrosting process or to clean the equipment, other than those recommended by the manufacturer.
- Be aware that R32 refrigerant does NOT contain an odour.

**WARNING**
The appliance shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) and have a room size as specified below.

**NOTICE**
- Do NOT re-use joints which have been used already.
- Joints made in installation between parts of refrigerant system shall be accessible for maintenance purposes.

**WARNING**
Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation (for example national gas regulation) and are executed only by authorised persons.

**NOTICE**
- Pipework shall be protected from physical damage.
- Installation of pipework shall be kept to a minimum.

---
1 General safety precautions

**WARNING**

If appliances contain R32 refrigerant, the floor area of the room in which the appliances are installed, operated and stored MUST be larger than the minimum floor area defined in table below A (m²). This applies to:

- Indoor units **without** a refrigerant leakage sensor; in case of indoor units **with** refrigerant leakage sensor, consult the installation manual.
- Outdoor units installed or stored indoors (e.g. winter garden, garage, machinery room)
- Pipework in unventilated spaces

To determine the minimum floor area

1. Determine the total refrigerant charge in the system (= factory refrigerant charge + additional refrigerant amount charged).

2. Determine which graph or table to use.
   - For indoor units: Is the unit ceiling-mounted, wall-mounted or floor-standing?
   - For outdoor units installed or stored indoors, and field piping in unventilated spaces, this depends on the installation height.

3. Use the graph or table to determine the minimum floor area.

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<th>A min (m²)</th>
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<td>80</td>
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</tr>
</tbody>
</table>

- Ceiling-mounted unit
- Wall-mounted unit
- Floor-standing unit

### General safety precautions

1. Determine the total refrigerant charge in the system (= factory refrigerant charge + additional refrigerant amount charged).
2. Determine which graph or table to use.
   - For indoor units: Is the unit ceiling-mounted, wall-mounted or floor-standing?
   - For outdoor units installed or stored indoors, and field piping in unventilated spaces, this depends on the installation height.
3. Use the graph or table to determine the minimum floor area.

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- Pipework in unventilated spaces

To determine the minimum floor area

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2. Determine which graph or table to use.
   - For indoor units: Is the unit ceiling-mounted, wall-mounted or floor-standing?
   - For outdoor units installed or stored indoors, and field piping in unventilated spaces, this depends on the installation height.
3. Use the graph or table to determine the minimum floor area.

### Graphs and tables for determining minimum floor area

#### Ceiling-mounted units

- **Graph A**: Total refrigerant charge in the system
- **Table B**: Minimum floor area

#### Wall-mounted units

- **Graph C**: Total refrigerant charge in the system
- **Table D**: Minimum floor area

#### Floor-standing units

- **Graph E**: Total refrigerant charge in the system
- **Table F**: Minimum floor area

### Installer reference guide

FNA25-50A2VEB(9)

Split system air conditioner

4P5S055S-3 – 2018.08
1 General safety precautions

1.2.3 Refrigerant
If applicable. See the installation manual or installer reference guide of your application for more information.

NOTICE
Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.

NOTICE
Make sure the field piping and connections are NOT subjected to stress.

WARNING
During tests, NEVER pressurize the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).

WARNING
Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:
- Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.
- Toxic gas may be produced if refrigerant gas comes into contact with fire.

DANGER: RISK OF EXPLOSION
Pump down – Refrigerant leakage. If you want to pump down the system, and there is a leak in the refrigerant circuit:
- Do NOT use the unit's automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit. Possible consequence: Self-combustion and explosion of the compressor because of air going into the operating compressor.
- Use a separate recovery system so that the unit's compressor does NOT have to operate.

WARNING
Always recover the refrigerant. Do NOT release them directly into the environment. Use a vacuum pump to evacuate the installation.

NOTICE
After all the piping has been connected, make sure there is no gas leak. Use nitrogen to perform a gas leak detection.

WARNING
To avoid compressor breakdown, do NOT charge more than the specified amount of refrigerant.

WARNING
When the refrigerant system is to be opened, refrigerant MUST be treated according to the applicable legislation.

WARNING
Make sure there is no oxygen in the system. Refrigerant may only be charged after performing the leak test and the vacuum drying.
- In case re-charge is required, refer to the nameplate of the unit. It states the type of refrigerant and necessary amount.
- The unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.

### Table: Charging Refrigerant

<table>
<thead>
<tr>
<th>If</th>
<th>Then</th>
</tr>
</thead>
<tbody>
<tr>
<td>A siphon tube is present (i.e., the cylinder is marked with “Liquid filling siphon attached”)</td>
<td>Charge with the cylinder upright.</td>
</tr>
<tr>
<td>A siphon tube is NOT present</td>
<td>Charge with the cylinder upside down.</td>
</tr>
</tbody>
</table>

- Open refrigerant cylinders slowly.
- Charge the refrigerant in liquid form. Adding it in gas form may prevent normal operation.

CAUTION
When the refrigerant charging procedure is done or when pausing, close the valve of the refrigerant tank immediately. If the valve is NOT closed immediately, remaining pressure might charge additional refrigerant. Possible consequence: Incorrect refrigerant amount.

1.2.4 Brine
If applicable. See the installation manual or installer reference guide of your application for more information.

WARNING
The selection of the brine MUST be in accordance with the applicable legislation.

WARNING
Take sufficient precautions in case of brine leakage. If brine leaks, ventilate the area immediately and contact your local dealer.

WARNING
The ambient temperature inside the unit can get much higher than that of the room, e.g. 70°C. In case of a brine leak, hot parts inside the unit can create a hazardous situation.

WARNING
The use and installation of the application MUST comply with the safety and environmental precautions specified in the applicable legislation.

1.2.5 Water
If applicable. See the installation manual or installer reference guide of your application for more information.

NOTICE
Make sure water quality complies with EU directive 98/83 EC.
2 About the documentation

1.2.6 Electrical

**DANGER: RISK OF ELECTROCUTION**
- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Disconnect the power supply for more than 1 minute, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.

**WARNING**
If NOT factory installed, a main switch or other means for disconnection, having a contact separation in all poles providing full disconnection under overvoltage category III condition, MUST be installed in the fixed wiring.

**WARNING**
- ONLY use copper wires.
- Make sure the field wiring complies with the applicable legislation.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electric shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

**CAUTION**
When connecting the power supply, the earth connection must be made before the current-carrying connections are established. When disconnecting the power supply, the current-carrying connections must be separated before the earth connection is. The length of the conductors between the power supply stress relief and the terminal block itself must be as short as possible so that the current-carrying wires are tautened before the earth wire is in case the power supply is pulled loose from the stress relief.

**NOTICE**
Precautions when laying power wiring:
- Do NOT connect wiring of different thicknesses to the power terminal block (plugs in the power wiring may cause abnormal heat).
- When connecting wiring which is the same thickness, do as shown in the figure above.
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will damage the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.

**WARNING**
- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.

**WARNING**
- Only applicable if the power supply is three-phase, and the compressor has an ON/OFF starting method.

If there exists the possibility of reversed phase after a momentary black out and the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase can break the compressor and other parts.

2 About the documentation

2.1 About this document

**INFORMATION**
Make sure that the user has the printed documentation and ask him/her to keep it for future reference.

**Target audience**
Authorised installers

**INFORMATION**
This appliance is intended to be used by expert or trained users in shops, in light industry, and on farms, or for commercial and household use by lay persons.

**Documentation set**
This document is part of a documentation set. The complete set consists of:
- General safety precautions:
  - Safety instructions that you MUST read before installing
  - Format: Paper (in the box of the indoor unit)
- Indoor unit installation manual:
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)
3 About the box

3.1 Overview: About the box

This chapter describes what you have to do after the box with the indoor unit is delivered on-site.

Keep the following in mind:
- At delivery, the unit MUST be checked for damage. Any damage MUST be reported immediately to the carrier's claims agent.
- Bring the packed unit as close as possible to its final installation position to prevent damage during transport.
- Prepare the path along which you want to bring the unit inside in advance.

3.2 Indoor unit

WARNING: FLAMMABLE MATERIAL

The R32 refrigerant (if applicable) in this unit is mildly flammable. Refer to the outdoor unit specifications for the type of refrigerant to be used.

3.2.1 To unpack and handle the unit

Use a sling of soft material or protective plates together with a rope when lifting the unit. This to avoid damage or scratches to the unit.

Lift the unit by holding on to the hanger brackets without exerting any pressure on other parts, especially on refrigerant piping, drain piping and other resin parts.

3.2.2 To remove the accessories from the indoor unit

- Installation manual
- Operation manual
- General safety precautions
- Washers for hanger bracket
- Screws for duct flanges
- Metal clamp
- Sealing pads: small and large
- Drain hose
- Sealing material
- Insulation piece: Small (liquid pipe)
- Insulation piece: Large (gas pipe)
- Tie wraps
- Washer fixing plate
- Air filter
- Levelling screws

4 About the units and options

4.1 Overview: About the units and options

This chapter contains information about:
- Combining outdoor and indoor units
- Combining the indoor unit with options

WARNING

NEVER use a flammable spray such as hair spray, lacquer or paint near the unit. It may cause a fire.

NOTICE

Do NOT wipe the controller operation panel with benzine, thinner, chemical dust cloth, etc. The panel may get discoloured or the coating peeled off. If it is heavily dirty, soak a cloth in water-diluted neutral detergent, squeeze it well and wipe the panel clean. Wipe it with another dry cloth.
5 Preparation

4.2 System layout

INFORMATION
The following illustration is an example and might NOT
match your system layout.

4.3 Combining units and options

4.3.1 Possible options for the indoor unit

▪ User interface: Wired or wireless
Select a user interface in accordance with the customer's request.
Refer to the table below to select a suitable user interface.

<table>
<thead>
<tr>
<th>User interface</th>
<th>Wired user interface</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRC1D52/BRC1D61/BRC1E51A/BRC1E53A7/</td>
</tr>
<tr>
<td></td>
<td>BRC1E53B7/BRC1E53C7/BRC1H519</td>
</tr>
<tr>
<td>Wireless user interface</td>
<td>BRC4C65</td>
</tr>
</tbody>
</table>

5 Preparation

5.1 Overview: Preparation

This chapter describes what you have to do and know before going
on-site.

It contains information about:
▪ Preparing the installation site
▪ Preparing the refrigerant piping
▪ Preparing the electrical wiring

5.2 Preparing the installation site

▪ Provide sufficient space around the unit for servicing and air
circulation.
▪ Choose the installation location with sufficient space for carrying
the unit in and out of the site.

5.2.1 Installation site requirements of the indoor unit

INFORMATION
Also read the following requirements:
▪ General installation site requirements. See the
"General safety precautions" chapter.
▪ Refrigerant piping requirements (length, height
difference). See further in this "Preparation" chapter.

INFORMATION
The sound pressure level is less than 70 dBA.

NOTICE
The equipment described in this manual may cause
electronic noise generated from radio-frequency energy.
The equipment complies to specifications that are
designed to provide reasonable protection against such
interference. However, there is no guarantee that
interference will not occur in a particular installation.
It is therefore recommended to install the equipment and
electric wires keeping proper distances away from stereo
equipment, personal computers, etc.

▪ Fluorescent lights. When installing a wireless user interface in a
room with fluorescent lights, mind the following to avoid
interference:
▪ Install the wireless user interface as close as possible to the
indoor unit.
▪ Install the indoor unit as far as possible from the fluorescent
lights.
▪ Take care that in the event of a water leak, water cannot cause
any damage to the installation space and surroundings.
▪ Choose a location where the hot/cold air discharged from the unit
or the operation noise, will NOT disturb anyone.

WARNING
Do NOT place objects below the indoor and/or outdoor unit
that may get wet. Otherwise condensation on the main unit
or refrigerant pipes, air filter dirt or drain blockage may
cause dripping, and objects under the unit may get dirty or
damaged.

▪ Air flow. Make sure nothing blocks the air flow.

Only for units using R32 refrigerant. Refer to the outdoor unit specifications for the type of refrigerant to be used.
5 Preparation

- **Drainage.** Make sure condensation water can be evacuated properly.
- **Wall insulation.** When conditions in the wall exceed 30°C and a relative humidity of 80%, or when fresh air is inducted into the wall, then additional insulation is required (minimum 10 mm thickness, polyethylene foam).
- **Protective guards.** Make sure to install protective guards on the suction and discharge side to prevent somebody from touching the fan blades or heat exchanger.

Do NOT install the unit in the following places:
- In places where a mineral oil mist, spray or vapour may be present in the atmosphere. Plastic parts may deteriorate and fall off or cause water leakage.
- Where the voltage fluctuates a lot
- In vehicles or vessels
- Where acidic or alkaline vapour is present

Use suspension bolts for installation.

### Refrigerant piping material
- **Piping material:** Phosphoric acid deoxidised seamless copper.
- **Piping temper grade and thickness:**

<table>
<thead>
<tr>
<th>Outer diameter (Ø)</th>
<th>Temper grade</th>
<th>Thickness (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4 mm (1/4&quot;)</td>
<td>Annealed (O)</td>
<td>≥0.8 mm</td>
</tr>
<tr>
<td>9.5 mm (3/8&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.7 mm (1/2&quot;)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Depending on the applicable legislation and the unit's maximum working pressure (see "PS High" on the unit name plate), larger piping thickness might be required.

5.3 Refrigerant piping insulation

- Use polyethylene foam as insulation material:
  - with a heat transfer rate between 0.041 and 0.052 W/mK (0.035 and 0.045 kcal/mh°C)
  - with a heat resistance of at least 120°C
- **Insulation thickness**

<table>
<thead>
<tr>
<th>Pipe outer diameter (Ø)</th>
<th>Insulation inner diameter (Ø)</th>
<th>Insulation thickness (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4 mm (1/4&quot;)</td>
<td>8~10 mm</td>
<td>≥10 mm</td>
</tr>
<tr>
<td>9.5 mm (3/8&quot;)</td>
<td>12~15 mm</td>
<td></td>
</tr>
<tr>
<td>12.7 mm (1/2&quot;)</td>
<td>14~16 mm</td>
<td></td>
</tr>
</tbody>
</table>

If the temperature is higher than 30°C and the humidity is higher than RH 80%, the thickness of the insulation materials should be at least 20 mm to prevent condensation on the surface of the insulation.

5.4 Preparing electrical wiring

5.4.1 About preparing electrical wiring

- **INFORMATION**
  Also read the precautions and requirements in the "General safety precautions" chapter.

### Refrigerant piping diameter

Use the same diameters as the connections on the outdoor units:
6 Installation

6.1 Overview: Installation
This chapter describes what you have to do and know on-site to install the system.

Typical workflow
Installation typically consists of the following stages:
1. Mounting the outdoor unit.
2. Mounting the indoor unit.
3. Connecting the refrigerant piping.
4. Checking the refrigerant piping.
5. Charging refrigerant.
6. Connecting the electrical wiring.
7. Finishing the outdoor installation.
8. Finishing the indoor installation.

6.2 Mounting the indoor unit

6.2.1 Precautions when mounting the indoor unit

6.2.2 Guidelines when installing the indoor unit

INFORMATION
Optional equipment. When installing optional equipment, also read the installation manual of the optional equipment. Depending on the field conditions, it might be easier to install the optional equipment first.

• Wall or floor strength. Check whether the wall or the floor is strong enough to support the weight of the unit. If there is a risk, reinforce the wall or the floor before installing the unit.

• Suspension bolts. Use W3/8 M10 suspension bolts for installation. Attach the hanger bracket to the suspension bolt. Fix it securely using a nut and washer from the upper and lower sides of the hanger bracket.

• Suspension bolt pitch for fastening to the wall:

<table>
<thead>
<tr>
<th>Class</th>
<th>A (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25–35</td>
<td>140</td>
</tr>
<tr>
<td>50–60</td>
<td>140</td>
</tr>
</tbody>
</table>

INFORMATION
Also read the precautions and requirements in the following chapters:
• General safety precautions
• Preparation
6 Installation

Floor-standing installation

<table>
<thead>
<tr>
<th>Class</th>
<th>A (mm)</th>
<th>B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25+35</td>
<td>1350</td>
<td>660</td>
</tr>
<tr>
<td>50+60</td>
<td>1750</td>
<td>1060</td>
</tr>
</tbody>
</table>

- **A** Maintenance area width
- **B** Air inlet grille width
- **a** Air outlet direction
- **b** Air inlet grille height
- **c** Air inlet direction

Wall-mounted installation

<table>
<thead>
<tr>
<th>Class</th>
<th>A (mm)</th>
<th>B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25+35</td>
<td>1350</td>
<td>660</td>
</tr>
<tr>
<td>50+60</td>
<td>1750</td>
<td>1060</td>
</tr>
</tbody>
</table>

- **A** Maintenance area width
- **B** Air inlet grille width
- **a** Air outlet direction
- **b** Air inlet grille height
- **c** Air inlet direction

- **External static pressure.** Refer to technical documentation to ensure that the unit's external static pressure is not exceeded.
- **Removing the legs.** If it is necessary to remove the legs, follow these instructions:
  1. In case of bottom suction, remove the air filter.
  2. Remove 4 screws (2 on each side) that hold both legs on the bottom side of the unit.
  3. Remove 2 screws (1 on each side) on the side of the unit.
  4. In case of bottom suction, reattach the filter.
  5. In case of front suction, reinstall 2 screws on the side of the unit.
- **Install suction cover and air filter (accessory)**
  6. In case of front suction, remove the protective grille and the suction cover from the front side.

- **Removing the suction cover**
- **Reattaching the suction cover**
- **Suction cover**
- **Protective grille**
- **Air inlet**
- **Air outlet**

- **7** Remove one leg on the opposite side of the electronic component box.
- **8** Reattach the removed suction cover to the bottom side.
- **9** Attach the protective grille to the front side.
- **10** Reattach the leg if necessary.
- **11** Attach the air filter (accessory) by pushing down the hooks (2 hooks for 25+35 type, 3 hooks for 50+60 type).
6 Installation

6.2.3 Guidelines when installing the ducting

**WARNING**
If one or more rooms are connected to the unit using a duct system, make sure:
- there are no operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in the room area is less than \( A \) specified in the General safety precautions;
- no auxiliary devices, which may be a potential ignition source, are installed in the duct work (example: hot surfaces with a temperature exceeding 70°С and electric switching device);
- only auxiliary devices approved by the manufacturer are used in the duct work;
- an air inlet or outlet is connected directly with a room by ducting. Do NOT use spaces such as a false ceiling as a duct for the air inlet or outlet.

**NOTICE**
Do NOT install the unit tilted. Possible consequence: If the unit is tilted against the direction of the condensate flow (the drain piping side is raised), the float switch might malfunction and cause water to drip.

**WARNING**
Do NOT install operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in the duct work.

The ducting is to be field supplied.

- **Air inlet side.** Attach the duct and intake-side flange (field supply). For connecting the flange, use 7 accessory screws.

- **Air outlet side.** Connect the duct according to the inside dimension of the outlet-side flange.

- **Air leaks.** Wind aluminium tape around the intake side flange and duct connection. Make sure there are no air leaks at any other connection.

- **Insulation.** Insulate the duct to prevent condensation from forming. Use glass wool or polyethylene foam 25 mm thick.

6.2.4 Guidelines when installing the drain piping

Make sure condensation water can be evacuated properly. This involves:
- General guidelines
- Connecting the drain piping to the indoor unit
- Checking for water leaks

**General guidelines**
- **Pipe length.** Keep drain piping as short as possible.
- **Pipe size.** Keep the pipe size equal to or greater than that of the connecting pipe (vinyl pipe of 20 mm nominal diameter and 26 mm outer diameter).
6 Installation

- **Slope.** Make sure the drain piping slopes down (at least 1/100) to prevent air from being trapped in the piping. Use hanging bars as shown.

- **Condensation.** Take measures against condensation. Insulate the complete drain piping in the building.

### To connect the drain piping to the indoor unit

**NOTICE**
Incorrect connection of the drain hose might cause leaks, and damage the installation space and surroundings.

1. Push the drain hose as far as possible over the drain pipe connection.
2. Tighten the metal clamp until the screw head is less than 4 mm from the metal clamp part.
3. Check for water leaks (see "To check for water leaks" on page 13).
4. Install the insulation piece (drain pipe).
5. Wind the large sealing pad (= insulation) around the metal clamp and drain hose, and fix it with cable ties.
6. Connect the drain piping to the drain hose.

### Connecting the refrigerant piping

**6.3 Connecting the refrigerant piping**

**6.3.1 About connecting the refrigerant piping**

Before connecting the refrigerant piping
Make sure the outdoor and indoor unit are mounted.

Typical workflow
Connecting the refrigerant piping involves:
- Connecting the refrigerant piping to the outdoor unit
- Connecting the refrigerant piping to the indoor unit
- Insulating the refrigerant piping
- Keeping in mind the guidelines for:
  - Pipe bending
  - Flaring pipe ends
  - Brazing
  - Using the stop valves

**6.3.2 Precautions when connecting the refrigerant piping**

**INFORMATION**
Also read the precautions and requirements in the following chapters:
- General safety precautions
- Preparation

**DANGER: RISK OF BURNING**
6 Installation

CAUTION
▪ Do NOT use mineral oil on flared part.
▪ NEVER install a drier to this unit to guarantee its lifetime. The drying material may dissolve and damage the system.

NOTICE
Take the following precautions on refrigerant piping into account:
▪ Avoid anything but the designated refrigerant to get mixed into the refrigerant cycle (e.g. air).
▪ Only use R32 or R410A when adding refrigerant. Refer to the outdoor unit specifications for the type of refrigerant to be used.
▪ Only use installation tools (e.g. manifold gauge set) that are exclusively used for R32 or R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils and moisture) from mixing into the system.
▪ Install the piping so that the flare is NOT subjected to mechanical stress.
▪ Protect the piping as described in the following table to prevent dirt, liquid or dust from entering the piping.
▪ Use caution when passing copper tubes through walls (see figure below).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Installation period</th>
<th>Protection method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor unit</td>
<td>&gt;1 month</td>
<td>Pinch the pipe</td>
</tr>
<tr>
<td></td>
<td>&lt;1 month</td>
<td>Pinch or tape the pipe</td>
</tr>
<tr>
<td>Indoor unit</td>
<td>Regardless of the period</td>
<td>Pinch or tape the pipe</td>
</tr>
</tbody>
</table>

INFORMATION
Do NOT open the refrigerant stop valve before checking the refrigerant piping. When you need to charge additional refrigerant it is recommended to open the refrigerant stop valve after charging.

6.3.3 Guidelines when connecting the refrigerant piping
Take the following guidelines into account when connecting pipes:
▪ Coat the flare inner surface with ether oil or ester oil when connecting a flare nut. Tighten 3 or 4 turns by hand, before tightening firmly.
▪ ALWAYS use 2 wrenches together when loosening a flare nut.
▪ ALWAYS use a spanner and torque wrench together to tighten the flare nut when connecting the piping. This to prevent nut cracking and leaks.

6.3.4 Pipe bending guidelines
Use a pipe bender for bending. All pipe bends should be as gentle as possible (bending radius should be 30~40 mm or larger).

6.3.5 To flare the pipe end

CAUTION
▪ Incomplete flaring may cause refrigerant gas leakage.
▪ Do NOT re-use flares. Use new flares to prevent refrigerant gas leakage.
▪ Use flare nuts that are included with the unit. Using different flare nuts may cause refrigerant gas leakage.

1 Cut the pipe end with a pipe cutter.
2 Remove burrs with the cut surface facing down so that the chips do NOT enter the pipe.
3 Remove the flare nut from the stop valve and put the flare nut on the pipe.
4 Flare the pipe. Set exactly at the position as shown in the following figure.
5 Check that the flaring is properly made.

<table>
<thead>
<tr>
<th>Piping size (mm)</th>
<th>Tightening torque (N•m)</th>
<th>Flare dimensions (A) (mm)</th>
<th>Flare shape (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø6.4</td>
<td>15~17</td>
<td>8.7~9.1</td>
<td></td>
</tr>
<tr>
<td>Ø9.5</td>
<td>33~39</td>
<td>12.8~13.2</td>
<td></td>
</tr>
<tr>
<td>Ø12.7</td>
<td>50~60</td>
<td>16.2~16.6</td>
<td></td>
</tr>
</tbody>
</table>

Flare tool for R410A or R32 (clutch type)
Conventional flare tool

- Flare tool for R410A or R32
- Clutch type (Rigid-type)
- Wing nut type (Imperial-type)

0~0.5 mm 1.0~1.5 mm 1.5~2.0 mm

- Flare's inner surface MUST be flawless.
- The pipe end MUST be evenly flared in a perfect circle.
- Make sure the flare nut is fitted.
6.3.6 To connect the refrigerant piping to the indoor unit

**CAUTION**
Install the refrigerating piping or components in a position where they are unlikely to be exposed to any substance which may corrode components containing refrigerant, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

**WARNING: FLAMMABLE MATERIAL**
The R32 refrigerant (if applicable) in this unit is mildly flammable. Refer to the outdoor unit specifications for the type of refrigerant to be used.

- **Pipe length.** Keep refrigerant piping as short as possible.
- **Flare connections.** Connect refrigerant piping to the unit using flare connections.
- **Insulation.** Insulate the refrigerant piping on the indoor unit as follows:

  ![Diagram of insulation](image)

  - A Gas piping
  - B Liquid piping
  - a Insulation material (field supply)
  - b Cable tie (accessory)
  - c Insulation pieces: Large (gas pipe), small (liquid pipe) (accessories)
  - d Flare nut (attached to the unit)
  - e Refrigerant pipe connection (attached to the unit)
  - f Unit
  - g Sealing pads: Medium 1 (gas pipe), medium 2 (liquid pipe) (accessories)

  1. Turn up the seams of the insulation pieces.
  2. Attach to the base of the unit.
  3. Tighten the cable ties on the insulation pieces.
  4. Wrap the sealing pad from the base of the unit to the top of the flare nut.

**NOTICE**
Make sure to insulate all refrigerant piping. Any exposed piping might cause condensation.

6.3.7 To check for leaks

**NOTICE**
Do NOT exceed the unit's maximum working pressure (see "PS High" on the unit name plate).

**NOTICE**
Make sure to use a recommended bubble test solution from your wholesaler. Do not use soap water, which may cause corrosion of flare nuts (soap water may contain salt; which absorbs moisture that will freeze when the piping gets cold), and/or lead to corrosion of flared joints (soap water may contain ammonia which causes a corrosive effect between the brass flare nut and the copper flare).

1. Charge the system with nitrogen gas up to a gauge pressure of at least 200 kPa (2 bar). It is recommended to pressurize to 3000 kPa (30 bar) in order to detect small leaks.
2. Check for leaks by applying the bubble test solution to all connections.
3. Discharge all nitrogen gas.

6.4 Connecting the electrical wiring

6.4.1 About connecting the electrical wiring

**Typical workflow**
Connecting the electrical wiring typically consists of the following stages:
1. Making sure the power supply system complies with the electrical specifications of the units.
2. Connecting the electrical wiring to the outdoor unit.
3. Connecting the electrical wiring to the indoor unit.
4. Connecting the main power supply.

6.4.2 Precautions when connecting the electrical wiring

**INFORMATION**
Also read the precautions and requirements in the following chapters:
- General safety precautions
- Preparation

**DANGER: RISK OF ELECTROCUTION**

**WARNING**
ALWAYS use multicore cable for power supply cables.

**WARNING**
If the supply cord is damaged, it MUST be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

6.4.3 Guidelines when connecting the electrical wiring

Keep the following in mind:
- If stranded conductor wires are used, install a round crimp-style terminal on the end of the wire. Place the round crimp-style terminal on the wire up to the covered part and fasten the terminal with the appropriate tool.

  ![Diagram of crimping](image)

  - a Stranded conductor wire
  - b Round crimp-style terminal

**Use the following methods for installing wires:**

<table>
<thead>
<tr>
<th>Wire type</th>
<th>Installation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-core wire</td>
<td><img src="image" alt="Diagram of single-core wire" /></td>
</tr>
</tbody>
</table>
  - a Curled single-core wire
  - b Screw
  - c Flat washer
6 Installation

<table>
<thead>
<tr>
<th>Wire type</th>
<th>Installation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stranded conductor wire with round crimp-style terminal</td>
<td></td>
</tr>
</tbody>
</table>

**Tightening torques**

<table>
<thead>
<tr>
<th>Wiring</th>
<th>Screw size</th>
<th>Tightening torque (N•m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnection cable (indoor↔outdoor)</td>
<td>M4</td>
<td>1.18~1.44</td>
</tr>
<tr>
<td>User interface cable</td>
<td>M3.5</td>
<td>0.79~0.97</td>
</tr>
</tbody>
</table>

- If single-core wires are used, be sure to curl the end of the lead.
- Improper work may cause heat or fire.
- The earth wire between the wire retainer and the terminal must be longer than the other wires.

6.4.4 Specifications of standard wiring components

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnection cable</td>
<td>Minimum cable section of 2.5 mm² and applicable for 230 V</td>
</tr>
<tr>
<td>User interface cable</td>
<td>Vinyl cords with 0.75 to 1.25 mm² sheath or cables (2-core wires) Maximum 500 m</td>
</tr>
</tbody>
</table>

6.4.5 To connect the electrical wiring on the indoor unit

It is important to keep the power supply and the transmission wiring separated from each other. In order to avoid any electrical interference the distance between both wirings should ALWAYS be at least 50 mm.

**NOTICE**

Be sure to keep the power line and transmission line apart from each other. Transmission wiring and power supply wiring may cross, but may NOT run parallel.

1. Remove the service cover.

2. User interface cable: Route the cable through the frame, connect the cable to the terminal block, and fix the cable with a cable tie.

3. Interconnection cable (indoor↔outdoor): Route the cable through the frame, connect the cable to the terminal block (make sure the numbers match with the numbers on the outdoor unit, and connect the earth wire), and fix the cable with a cable tie.

4. Wrap the cables with the sealing material (accessory) to prevent water from entering the unit. Seal all gaps to prevent small animals from entering the system.

**WARNING**

Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.

5. Reattach the service cover.
7 Commissioning

7.1 Overview: Commissioning

This chapter describes what you have to do and know to commission the system after it is installed.

Typical workflow
Commissioning typically consists of the following stages:
1. Checking the "Checklist before commissioning".
2. Performing a test run for the system.

7.2 Checklist before commissioning

After the installation of the unit, first check the following items. Once all below checks are fulfilled, the unit MUST be closed, ONLY then can the unit be powered up.

- You read the complete installation instructions, as described in the installer reference guide.
- The indoor units are properly mounted.
- In case a wireless user interface is used: The indoor unit decoration panel with infrared receiver is installed.
- The outdoor unit is properly mounted.
- There are NO missing phases or reversed phases.
- The system is properly earthed and the earth terminals are tightened.
- The fuses or locally installed protection devices are installed according to this document, and have NOT been bypassed.
- The power supply voltage matches the voltage on the identification label of the unit.
- There are NO loose connections or damaged electrical components in the switch box.
- The insulation resistance of the compressor is OK.
- There are NO damaged components or squeezed pipes on the inside of the indoor and outdoor units.
- There are NO refrigerant leaks.

7.3 To perform a test run

This task is only applicable when using the BRC1E52 or BRC1E53 user interface. When using any other user interface, see the installation manual or service manual of the user interface.

NOTICE

Do not interrupt the test run.

INFORMATION

Backlight. To perform an ON/OFF action on the user interface, the backlight does not need to be lit. For any other action, it needs to be lit first. The backlight is lit for ±30 seconds when you press a button.

1. Perform introductory steps.

#   Action
1. Open the liquid stop valve (A) and gas stop valve (B) by removing the stem cap and turning counterclockwise with a hex wrench until it stops.

A B

2. Close the service cover to prevent electric shocks.

3. Turn ON power for at least 6 hours before starting operation to protect the compressor.

4. On the user interface, set the unit to cooling operation mode.

2. Start the test run

#   Action   Result
1. Go to the home menu.  
   Cool Set to 28 °C

2. Press at least 4 seconds.  
   The Service Settings menu is displayed.

3. Select Test Operation.  

4. Press.  
   Test Operation is displayed on the home menu.
8 Hand-over to the user

<table>
<thead>
<tr>
<th>#</th>
<th>Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Press within 10 seconds</td>
<td>Test run starts.</td>
</tr>
</tbody>
</table>

3 Check operation for 3 minutes.
4 Stop the test run.

<table>
<thead>
<tr>
<th>#</th>
<th>Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press at least 4 seconds</td>
<td>The Service Settings menu is displayed.</td>
</tr>
<tr>
<td>2</td>
<td>Select Test Operation.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Press.</td>
<td>The unit returns to normal operation, and the home menu is displayed.</td>
</tr>
</tbody>
</table>

NOTICE

When the indoor unit fan rotates and the operation light flashes after trial operation, there is a risk of refrigerant leakage. In that case, immediately ventilate the room and contact your dealer.

7.4 Error codes when performing a test run

If the installation of the outdoor unit has NOT been done correctly, the following error codes may be displayed on the user interface:

<table>
<thead>
<tr>
<th>Error code</th>
<th>Possible cause</th>
</tr>
</thead>
</table>
| Nothing displayed (the currently set temperature is not displayed) | • The wiring is disconnected or there is a wiring error (between power supply and outdoor unit, between outdoor unit and indoor units, between indoor unit and user interface).  
  • The fuse on the outdoor or indoor unit PCB has blown. |
| A0         | Refrigerant leak detected.                                                   |
| CH         | Abnormality of refrigerant leakage sensor.                                  |
| E3, E4 or L8 | • The stop valves are closed.             
  • The air inlet or air outlet is blocked. |
| E7         | There is a missing phase in case of three-phase power supply units. Note: Operation will be impossible. Turn OFF the power, recheck the wiring, and switch two of the three electrical wires. |
| L4         | The air inlet or air outlet is blocked.                                      |
| L2         | • There is a voltage imbalance.                                             
  • There is a missing phase in case of three-phase power supply units. Note: Operation will be impossible. Turn OFF the power, recheck the wiring, and switch two of the three electrical wires. |

8 Hand-over to the user

Once the test run is finished and the unit operates properly, please make sure the following is clear for the user:
• Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he can find the complete documentation at the URL mentioned earlier in this manual.
• Explain the user how to properly operate the system and what to do in case of problems.
• Show the user what to do for the maintenance of the unit.

9 Disposal

NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.
10 Technical data

A subset of the latest technical data is available on the regional Daikin website (publicly accessible). The full set of latest technical data is available on the Daikin extranet (authentication required).

10.1 Wiring diagram

Unified Wiring Diagram Legend

For applied parts and numbering, refer to the wiring diagram on the unit. Part numbering is by Arabic numbers in ascending order for each part and is represented in the overview below by symbol "*" in the part code.

- **`: CIRCUIT BREAKER`
- **`: PROTECTIVE EARTH`
- **`: CONNECTION`
- **`: PROTECTIVE EARTH (SCREW)`
- **`: CONNECTOR`
- **`: RECTIFIER`
- **`: EARTH`
- **`: SHORT-CIRCUIT CONNECTOR`
- **`: FIELD WIRING`
- **`: RELAY CONNECTOR`
- **`: FUSE`
- **`: TERMINAL`
- **`: INDOOR UNIT`
- **`: TERMINAL STRIP`
- **`: OUTDOOR UNIT`
- **`: WIRE CLAMP`

**BLK**: BLACK  **GRN**: GREEN  **PNK**: PINK  **WHT**: WHITE  **BLU**: BLUE  **GRY**: GREY  **ORG**: ORANGE  **RED**: RED

- **A**: PRINTED CIRCUIT BOARD
- **B**: PUSHBUTTON (ON/OFF, OPERATION SWITCH)
- **C**: BUZZER
- **D**: CAPACITOR
- **DG**, **DG**: CONNECTION, CONNECTOR
- **EI**: CONDUIT
- **EI**: CONNECTOR (FRAME GROUND)
- **EI**: UBIC (SERVICE MONITOR)
- **EI**: CIRCUIT BREAKER
- **EI**: TERMINAL STRIP
- **EI**: WIRE CLAMP

- **EI**: PROTECTIVE EARTH
- **EI**: PROTECTIVE EARTH (SCREW)
- **EI**: RELAY CONNECTOR
- **EI**: SHORT-CIRCUIT CONNECTOR
- **EI**: FUSE
- **EI**: INDOOR UNIT
- **EI**: OUTDOOR UNIT
- **EI**: WIRE CLAMP

 Customs of symbols are:

**A**: PRINTED CIRCUIT BOARD  **B**: PUSHBUTTON (ON/OFF, OPERATION SWITCH)  **C**: BUZZER  **D**: CAPACITOR  **DG**, **DG**: CONNECTION, CONNECTOR  **EI**: CONDUIT  **EI**: CONNECTOR (FRAME GROUND)  **EI**: UBIC (SERVICE MONITOR)  **EI**: CIRCUIT BREAKER  **EI**: TERMINAL STRIP  **EI**: WIRE CLAMP

**EI**: PROTECTIVE EARTH  **EI**: PROTECTIVE EARTH (SCREW)  **EI**: RELAY CONNECTOR  **EI**: SHORT-CIRCUIT CONNECTOR  **EI**: FUSE  **EI**: INDOOR UNIT  **EI**: OUTDOOR UNIT  **EI**: WIRE CLAMP
11 Glossary

Dealer
Sales distributor for the product.

Authorized installer
Technical skilled person who is qualified to install the product.

User
Person who is owner of the product and/or operates the product.

Applicable legislation
All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company
Qualified company which can perform or coordinate the required service to the product.

Installation manual
Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual
Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions
Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories
Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment
Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supply
Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.