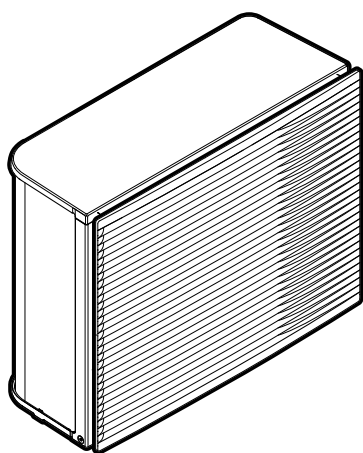


# Installation manual

## Daikin Altherma 3 H HT

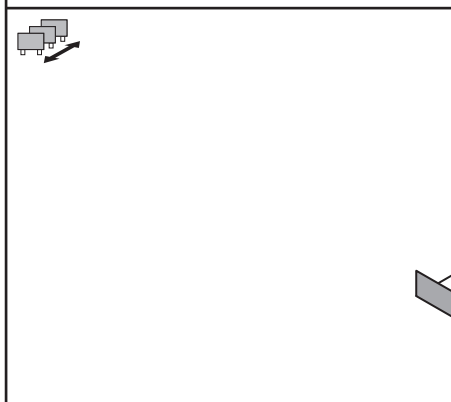
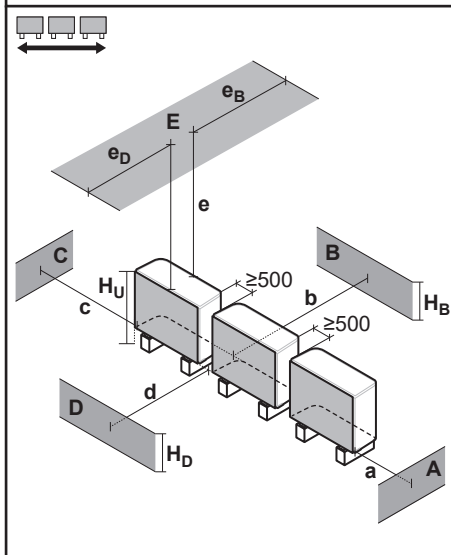
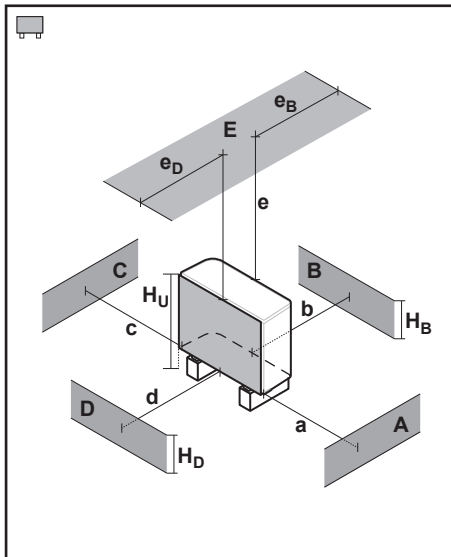
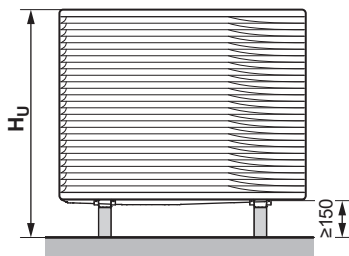


<https://daikintechdatahub.eu>

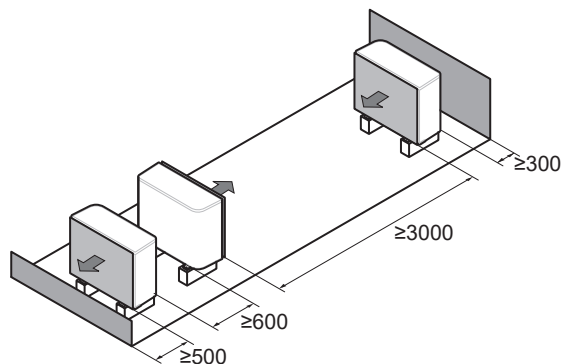


EPRA14D▲V3▼  
EPRA16D▲V3▼  
EPRA18D▲V3▼  
EPRA14D▲W1▼  
EPRA16D▲W1▼  
EPRA18D▲W1▼

▲ = 1, 2, 3, ..., 9, A, B, C, ..., Z  
▼ = , , 1, 2, 3, ..., 9



| A~E           | $H_B \ H_D \ H_U$  | (mm)       |            |            |             |             |            |            |
|---------------|--|------------|------------|------------|-------------|-------------|------------|------------|
|               |  | a          | b          | c          | d           | e           | $e_B$      | $e_D$      |
| B             | —  |            | $\geq 300$ |            |             |             |            |            |
| A, B, C       | —  | $\geq 500$ | $\geq 300$ | $\geq 100$ |             |             |            |            |
| B, E          | —  |            | $\geq 300$ |            |             | $\geq 1000$ |            | $\leq 500$ |
| A, B, C, E    | —  | $\geq 500$ | $\geq 300$ | $\geq 150$ |             | $\geq 1000$ |            | $\leq 500$ |
| D             | —  |            |            |            | $\geq 500$  |             |            |            |
| D, E          | —  |            |            |            | $\geq 500$  | $\geq 1000$ | $\leq 500$ |            |
| A, C          | —  | $\geq 500$ |            | $\geq 100$ |             |             |            |            |
| B, D          | $(H_B \text{ OR } H_D) \leq H_U$<br>$(H_B \text{ AND } H_D) > H_U$ |            | $\geq 300$ |            | $\geq 500$  |             |            |            |
| B, D, E       | $(H_B \text{ OR } H_D) \leq H_U$<br>$H_B > H_D$                    |            | $\geq 300$ |            | $\geq 1000$ | $\geq 1000$ |            | $\leq 500$ |
|               | $H_B < H_D$  |            | $\geq 300$ |            | $\geq 1000$ | $\geq 1000$ | $\leq 500$ |            |
|               | $(H_B \text{ AND } H_D) > H_U$                                     | ✗          |            |            |             |             |            |            |
| A, C, D, E    | —  | $\geq 500$ |            | $\geq 150$ | $\geq 500$  | $\geq 1000$ | $\leq 500$ |            |
| A, B, C, D, E | $(H_B \text{ OR } H_D) \leq H_U$<br>$H_B > H_D$                    | $\geq 500$ | $\geq 300$ | $\geq 150$ | $\geq 1000$ | $\geq 1000$ |            | $\leq 500$ |
|               | $H_B < H_D$  | $\geq 500$ | $\geq 300$ | $\geq 150$ | $\geq 1000$ | $\geq 1000$ | $\leq 500$ |            |
|               | $(H_B \text{ AND } H_D) > H_U$                                     | ✗          |            |            |             |             |            |            |
| B             | —  |            | $\geq 300$ |            |             |             |            |            |
| A, B, C       | —  | $\geq 500$ | $\geq 300$ | $\geq 500$ |             |             |            |            |
| B, E          | —  |            | $\geq 300$ |            |             | $\geq 1000$ |            | $\leq 500$ |
| A, B, C, E    | —  | $\geq 500$ | $\geq 300$ | $\geq 500$ |             | $\geq 1000$ |            | $\leq 500$ |
| D             | —  |            |            |            | $\geq 500$  |             |            |            |
| D, E          | —  |            |            |            | $\geq 500$  | $\geq 1000$ | $\leq 500$ |            |
| A, C          | —  | $\geq 500$ |            | $\geq 500$ |             |             |            |            |
| B, D          | $(H_B \text{ OR } H_D) \leq H_U$<br>$(H_B \text{ AND } H_D) > H_U$ |            | $\geq 300$ |            | $\geq 500$  |             |            |            |
| B, D, E       | $(H_B \text{ OR } H_D) \leq H_U$<br>$H_B > H_D$                    |            | $\geq 300$ |            | $\geq 1000$ | $\geq 1000$ |            | $\leq 500$ |
|               | $H_B < H_D$  |            | $\geq 300$ |            | $\geq 1000$ | $\geq 1000$ | $\leq 500$ |            |
|               | $(H_B \text{ AND } H_D) > H_U$                                     | ✗          |            |            |             |             |            |            |
| A, C, D, E    | —  | $\geq 500$ |            | $\geq 500$ | $\geq 500$  | $\geq 1000$ | $\leq 500$ |            |
| A, B, C, D, E | $(H_B \text{ OR } H_D) \leq H_U$<br>$H_B > H_D$                    | $\geq 500$ | $\geq 300$ | $\geq 500$ | $\geq 1000$ | $\geq 1000$ |            | $\leq 500$ |
|               | $H_B < H_D$  | $\geq 500$ | $\geq 300$ | $\geq 500$ | $\geq 1000$ | $\geq 1000$ | $\leq 500$ |            |
|               | $(H_B \text{ AND } H_D) > H_U$                                     | ✗          |            |            |             |             |            |            |



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## 1 About this document

### Target audience

Authorised installers

### 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)
- **Operation manual:**
  - Quick guide for basic usage
  - Format: Paper (in the box of the indoor unit)

- **User reference guide:**
  - Detailed step-by-step instructions and background information for basic and advanced usage
  - Format: Digital files on <https://www.daikin.eu>. Use the search function 🔍 to find your model.
- **Installation manual – Outdoor unit:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor unit)
- **Installation manual – Indoor unit:**
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)
- **Installer reference guide:**
  - Preparation of the installation, good practices, reference data, ...
  - Format: Digital files on <https://www.daikin.eu>. Use the search function 🔍 to find your model.
- **Addendum book for optional equipment:**
  - Additional info about how to install optional equipment
  - Format: Paper (in the box of the indoor unit) + Digital files on <https://www.daikin.eu>. Use the search function 🔍 to find your model.

Latest revisions of the supplied documentation may be available on the regional Daikin website or via your dealer.

The original documentation is written in English. All other languages are translations.

### Technical engineering 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 Business Portal (authentication required).

### Online tools

In addition to the documentation set, some online tools are available for installers:

- **Daikin Technical Data Hub**
  - Central hub for technical specifications of the unit, useful tools, digital resources, and more.
  - Publicly accessible via <https://daikintechdatahub.eu>.
- **Heating Solutions Navigator**
  - Digital toolbox that offers a variety of tools to facilitate the installation and configuration of heating systems.
  - To access Heating Solutions Navigator, registration to the Stand By Me platform is required. For more information, see <https://professional.standbyme.daikin.eu>.
- **Daikin e-Care**
  - Mobile app for installers and service technicians that allows you to register, configure and troubleshoot heating systems.
  - The mobile app can be downloaded for iOS and Android devices using the QR codes below. Registration to the Stand By Me platform is required to access the app.

App Store

Google Play



## 2 Specific installer safety instructions

### 2 Specific installer safety instructions

Always observe the following safety instructions and regulations.

Installation site (see "[4.1 Preparing the installation site](#)" ▶ 5))



#### WARNING

Follow the service space dimensions in this manual for correct installation of the unit. See "[4.1.1 Installation site requirements of the outdoor unit](#)" ▶ 6].

Special requirements for R32 (see "[4.1.1 Installation site requirements of the outdoor unit](#)" ▶ 6])



#### WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- 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).



#### WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation and are executed ONLY by authorised persons.

Mounting the outdoor unit (see "[4.2 Mounting the outdoor unit](#)" ▶ 6))



#### WARNING

Fixing method of the outdoor unit MUST be in accordance with the instructions from this manual. See "[4.2 Mounting the outdoor unit](#)" ▶ 6].



#### CAUTION

To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.

Opening and closing the units (see "[4.2 Mounting the outdoor unit](#)" ▶ 6))



#### DANGER: RISK OF ELECTROCUTION

Do NOT leave the unit unattended when the service cover is removed.



#### DANGER: RISK OF ELECTROCUTION



#### DANGER: RISK OF BURNING/SCALDING



#### WARNING

**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "[4.4 To install the discharge grille](#)" ▶ 8]
- "[4.5 To remove the discharge grille, and put the grille in safety position](#)" ▶ 9]

Piping installation (see "[5 Piping installation](#)" ▶ 10))



#### WARNING

The field piping method MUST be in accordance with the instructions from this manual. See "[5 Piping installation](#)" ▶ 10].

In case of freeze protection by glycol:



#### WARNING

Ethylene glycol is toxic.



#### WARNING

Due to the presence of glycol, corrosion of the system is possible. Uninhibited glycol will turn acidic under the influence of oxygen. This process is accelerated by the presence of copper and high temperatures. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that cause severe damage to the system. Therefore it is important that:

- the water treatment is correctly executed by a qualified water specialist,
- a glycol with corrosion inhibitors is selected to counteract acids formed by the oxidation of glycols,
- no automotive glycol is used because their corrosion inhibitors have a limited lifetime and contain silicates which can foul or plug the system,
- galvanized pipes are NOT used in glycol systems since the presence may lead to the precipitation of certain components in the glycol's corrosion inhibitor.

Electrical installation (see "[6 Electrical installation](#)" ▶ 12))



#### DANGER: RISK OF ELECTROCUTION



#### WARNING

Electrical wiring connection method MUST be in accordance with the instructions from:

- This manual. See "[6 Electrical installation](#)" ▶ 12].
- The wiring diagram, which is delivered with the unit, located at the inside of the service cover. For a translation of its legend, see "[8.2 Wiring diagram: Outdoor unit](#)" ▶ 18].



#### WARNING

- All wiring MUST be performed by an authorised electrician and MUST comply with the applicable national wiring regulation.
- Make electrical connections to the fixed wiring.
- All components procured on-site and all electrical construction MUST comply with the applicable legislation.



#### WARNING

**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "[4.4 To install the discharge grille](#)" ▶ 8]
- "[4.5 To remove the discharge grille, and put the grille in safety position](#)" ▶ 9]



#### WARNING

ALWAYS use multicore cable for power supply cables.



#### CAUTION

Do NOT push or place redundant cable length into the unit.

**WARNING**

- If the power supply has a missing or wrong N-phase, equipment might break down.
- Establish proper earthing. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shock.
- Install the required fuses or circuit breakers. See "6.2 Specifications of standard wiring components" [p. 12].
- Secure the electrical wiring with cable ties so that the cables do NOT come in contact with sharp edges or piping, particularly on the high-pressure side.
- Do NOT use taped wires, stranded conductor wires, extension cords, or connections from a star system. They can cause overheating, electrical shock or fire.
- Do NOT install a phase advancing capacitor, because this unit is equipped with an inverter. A phase advancing capacitor will reduce performance and may cause accidents.

**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.

**INFORMATION**

Details of type and rating of fuses, or rating of circuit breakers are described in "6 Electrical installation" [p. 12].

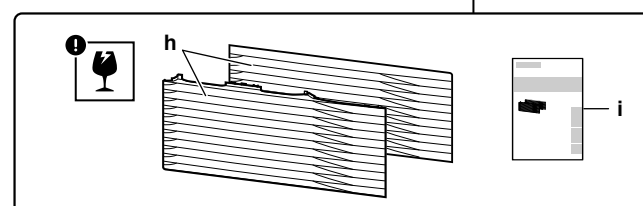
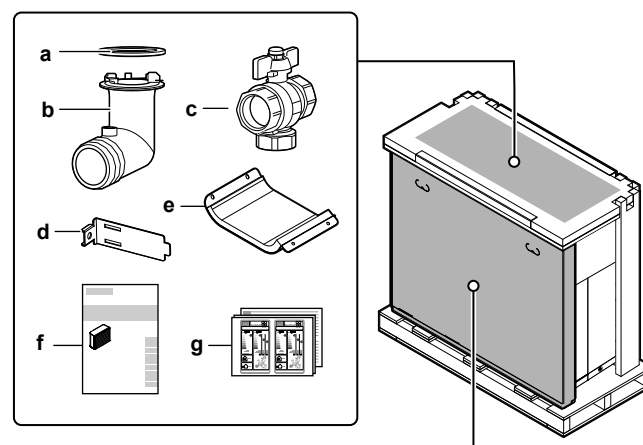
## 3 About the box

Keep the following in mind:

- At delivery, the unit **MUST** be checked for damage and completeness. Any damage or missing parts **MUST** be reported immediately to the claims agent of the carrier.
- Bring the packed unit as close as possible to its final installation position to prevent damage during transport.
- Prepare in advance the path along which you want to bring the unit to its final installation position.

### 3.1 Outdoor unit

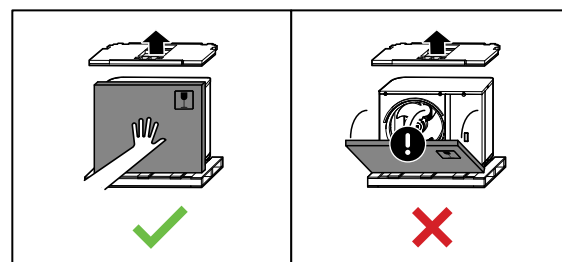
#### 3.1.1 To remove the accessories from the outdoor unit



- a O-ring for drain socket
- b Drain socket
- c Shut-off valve (with integrated filter)
- d Thermistor fixture (for installations in areas with low ambient temperatures)
- e Compressor cover piece
- f Installation manual – Outdoor unit
- g Energy label
- h Discharge grille (upper + lower part)
- i Installation manual – Discharge grille

**NOTICE**

**Unpacking.** When you remove the top packaging/ accessories, hold the box containing the discharge grille to prevent it from falling.



## 4 Unit installation

### 4.1 Preparing the installation site

**WARNING**

The appliance shall be stored in a room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).



## 4 Unit installation

### 4.1.1 Installation site requirements of the outdoor unit

Mind the spacing guidelines. See figure 1 on the inside of the front cover.



#### NOTICE

**Cascading outdoor units.** The installation layouts with multiple outdoor units shown in  (side-to-side) and  (front-to-front / back-to-back) are only allowed in combination with wall-mounted indoor units, NOT in combination with floor-standing indoor units.

The symbols can be interpreted as follows:

- A, C** Right side and left side obstacles (walls/baffle plates)
- B** Suction side obstacle (wall/baffle plate)
- D** Discharge side obstacle (wall/baffle plate)
- E** Top side obstacle (roof)
- a, b, c, d, e** Minimum service space between the unit and obstacles
  - A, B, C, D and E**
  - e<sub>B</sub>** Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle B
  - e<sub>D</sub>** Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle D
- H<sub>u</sub>** Height of the unit including the installation structure
- H<sub>B</sub>, H<sub>D</sub>** Height of obstacles B and D
- X** NOT allowed

The outdoor unit is designed for outdoor installation only, and for the following ambient temperatures:

|              |          |
|--------------|----------|
| Cooling mode | 10~43°C  |
| Heating mode | -28~35°C |

#### Special requirements for R32

The outdoor unit contains an internal refrigerant circuit (R32), but you do NOT have to do any refrigerant field piping, or refrigerant charging.

Mind the following requirements and precautions:



#### WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- 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).



#### WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation and are executed ONLY by authorised persons.

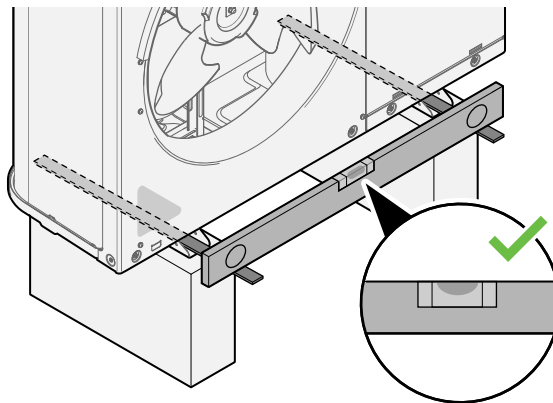
### 4.2 Mounting the outdoor unit

#### 4.2.1 To provide the installation structure



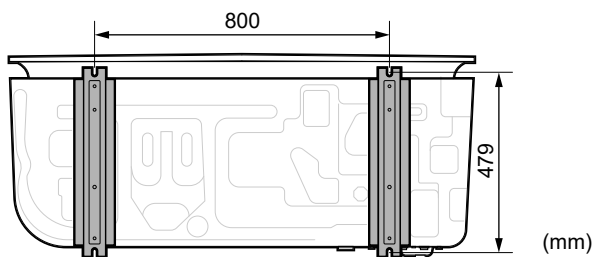
#### NOTICE

**Level.** Make sure the unit is leveled in all directions. Recommended:



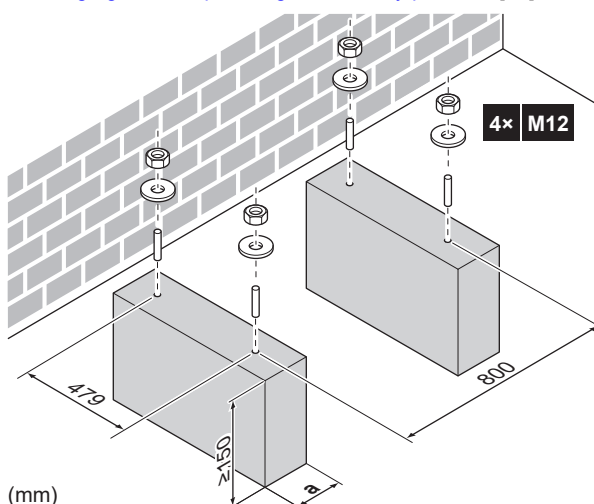
Use 4 sets of M12 anchor bolts, nuts and washers. Provide at least 150 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow.

#### Anchor points



#### Pedestal

When installing on a pedestal, make sure that the discharge grille still can be put in its safety position. See ["4.5 To remove the discharge grille, and put the grille in safety position" \[p. 9\]](#).



- a** Make sure not to cover the drain hole in the bottom plate of the unit.

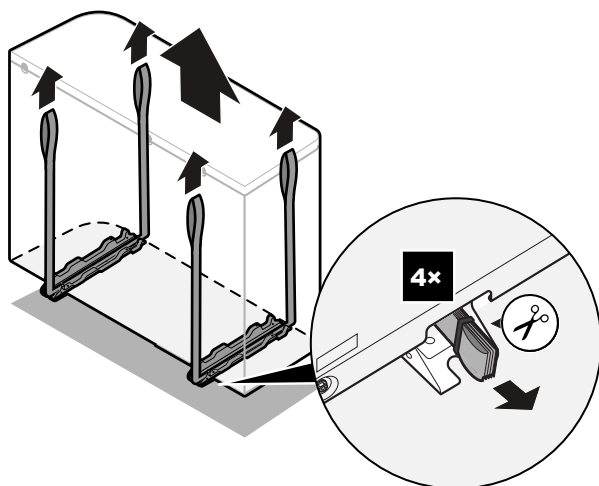
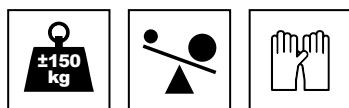
## 4.2.2 To install the outdoor unit



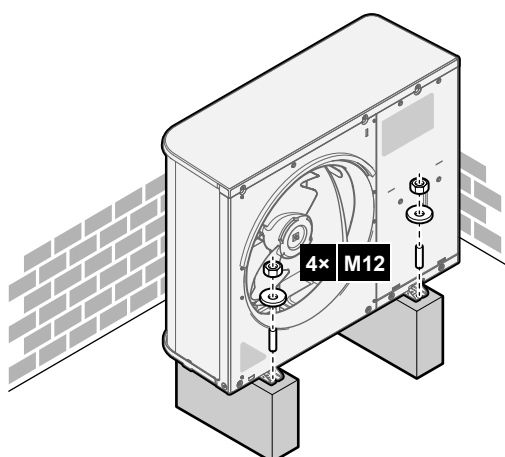
### CAUTION

To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.

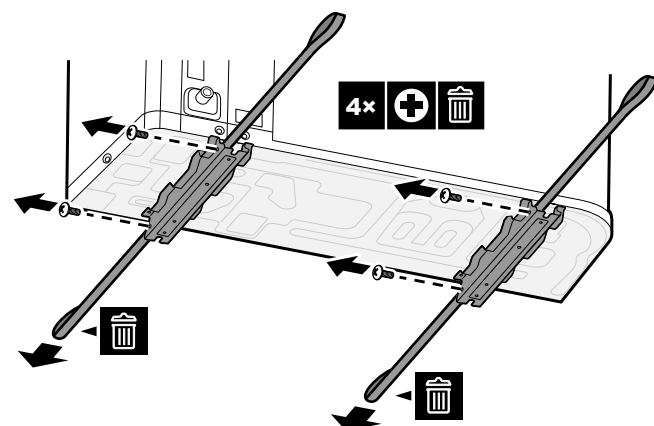
- 1 Carry the unit by its slings, and put it onto the installation structure.



- 2 Fix the unit to the installation structure.



- 3 Remove the slings (and screws), and dispose of them.



## 4.2.3 To provide drainage

Make sure that condensation water can be evacuated properly.



### NOTICE

If the unit is installed in a cold climate, take adequate measures so that the evacuated condensate CANNOT freeze. We recommend to do the following:

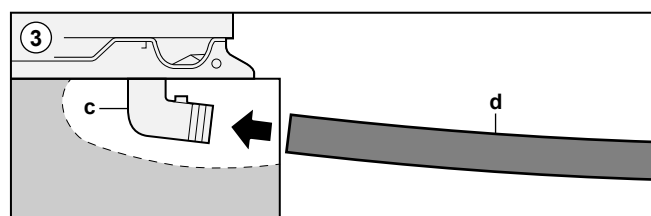
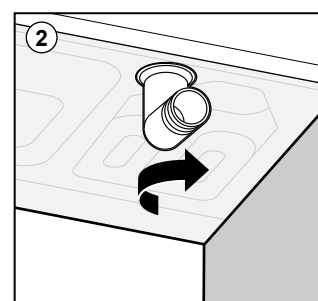
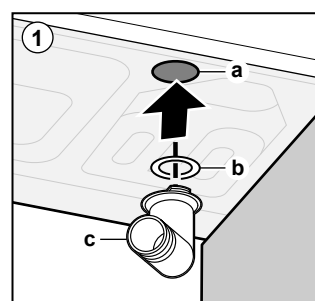
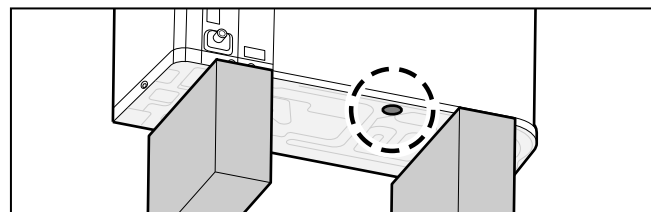
- Insulate the drain hose.
- Install a drain tube heater (field supply). To connect the drain tube heater, see "6.4.1 To connect the electrical wiring to the outdoor unit" ▶ 13].



### NOTICE

Provide at least 150 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the expected level of snow.

Use the drain plug (with O-ring) and a hose for drainage.



- a Drain hole
- b O-ring (delivered as accessory)
- c Drain plug (delivered as accessory)
- d Hose (field supply)



### NOTICE

**O-ring.** Make sure the O-ring is installed correctly to prevent leakage.

## 4.3 Opening and closing the unit

### 4.3.1 To open the outdoor unit



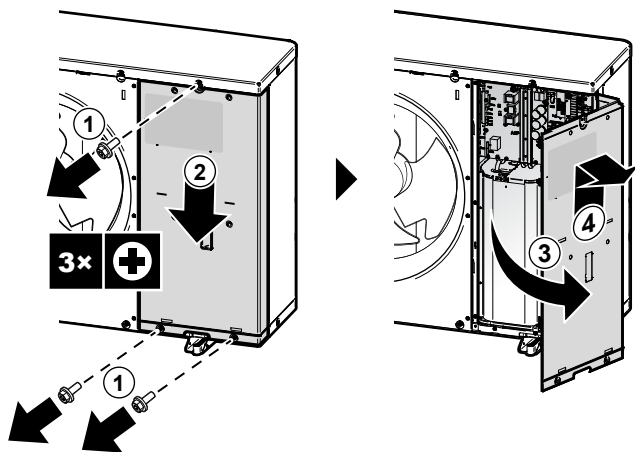
**DANGER: RISK OF ELECTROCUTION**



**DANGER: RISK OF BURNING/SCALDING**



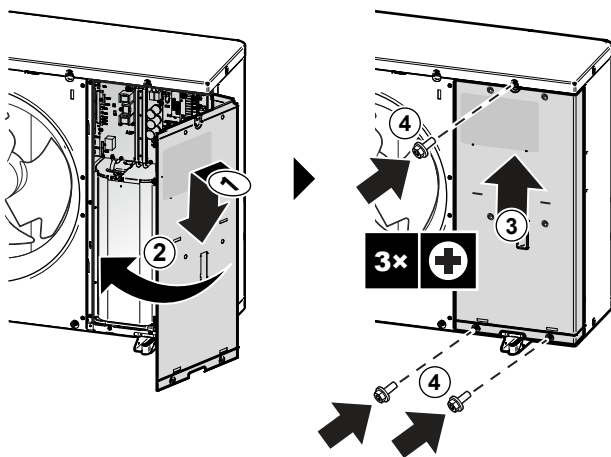
## 4 Unit installation



### 4.3.2 To close the outdoor unit

#### ! NOTICE

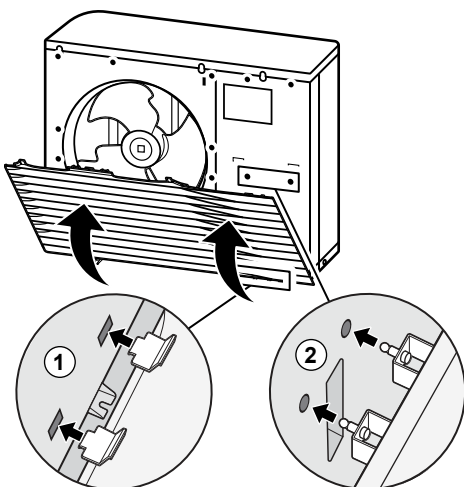
When closing the outdoor unit cover, make sure that the tightening torque does NOT exceed 4.1 N•m.



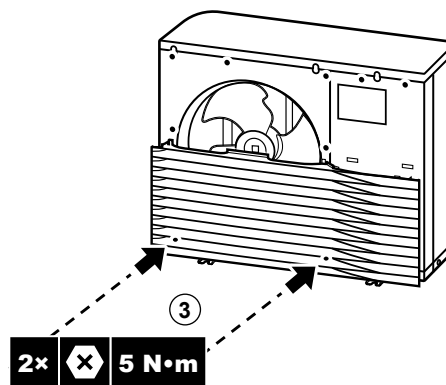
### 4.4 To install the discharge grille

#### Install the lower part of the discharge grille

- 1 Insert the hooks.
- 2 Insert the ball studs.



- 3 Fix the 2 lower screws.

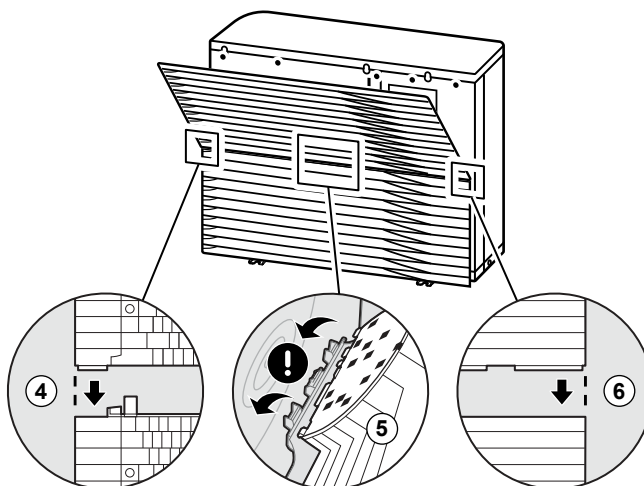


#### Install the upper part of the discharge grille

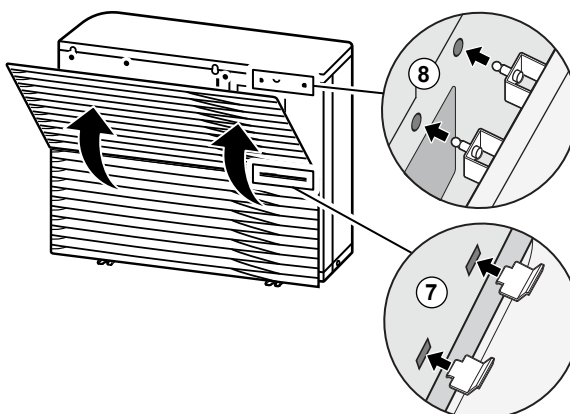
#### ! NOTICE

**Vibrations.** Make sure the upper part of the discharge grille is attached seamlessly to the lower part to prevent vibrations.

- 4 Align and attach the left side.
- 5 Align and attach the middle part.
- 6 Align and attach the right side.

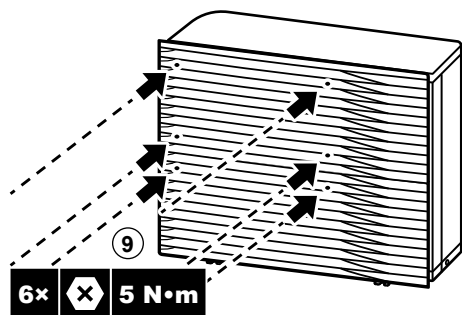


- 7 Insert the hooks.
- 8 Insert the ball studs.



- 9 Fix the 6 remaining screws.





## 4.5 To remove the discharge grille, and put the grille in safety position

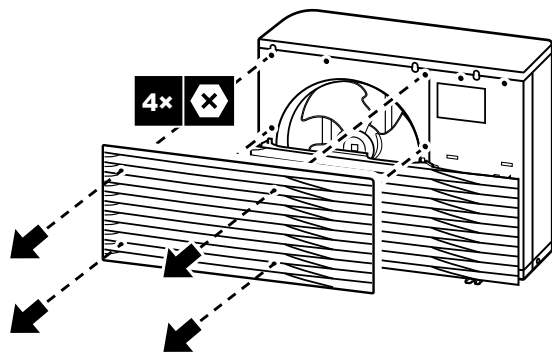


### WARNING

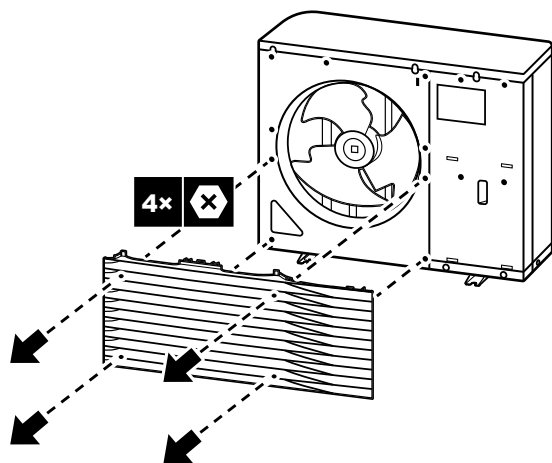
**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "4.4 To install the discharge grille" [ 8]
- "4.5 To remove the discharge grille, and put the grille in safety position" [ 9]

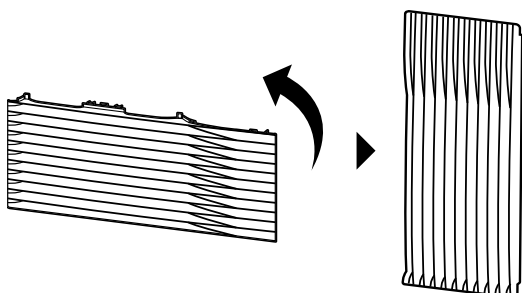
- 1 Remove the upper part of the discharge grille.



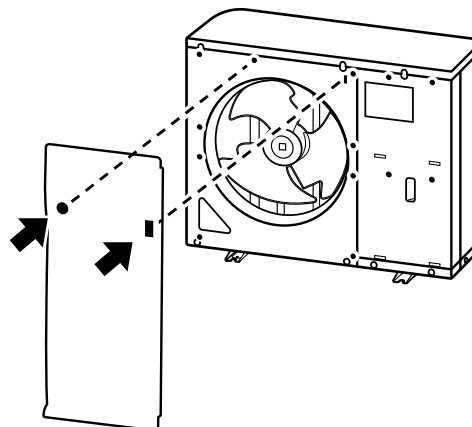
- 2 Remove the lower part of the discharge grille.



- 3 Rotate the lower part of the discharge grille.

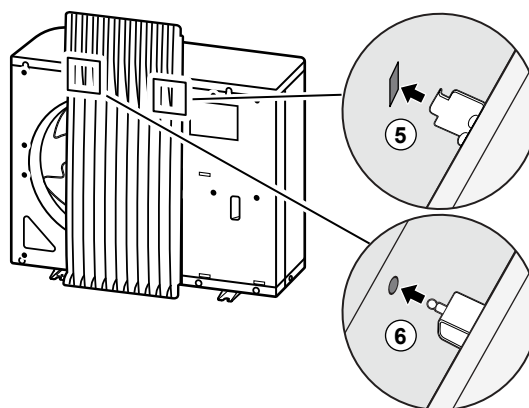


- 4 Align the ball stud and hook on the grille with their counterparts on the unit.



- 5 Insert the hook.

- 6 Insert the ball stud.



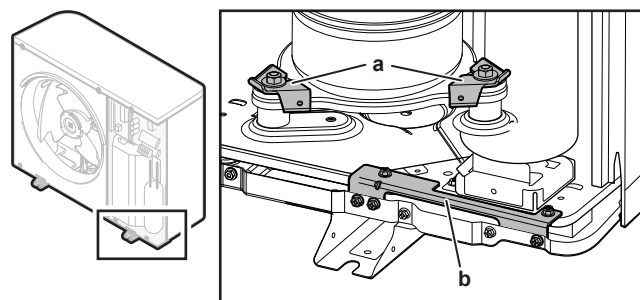
## 4.6 To remove the transportation stay



### NOTICE

If the unit is operated with the transportation stay attached, abnormal vibration or noise may be generated.

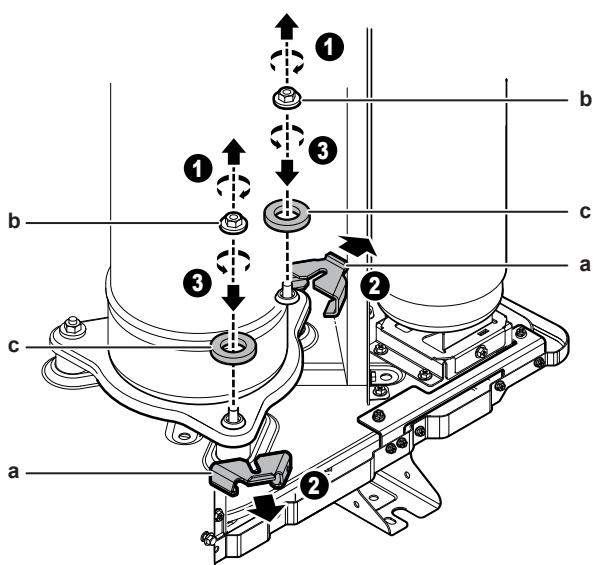
The transportation stays protect the unit during transport. During installation they must be removed.



- a Transportation stays (2x) and washers (2x)  
b Transportation stay (1x)

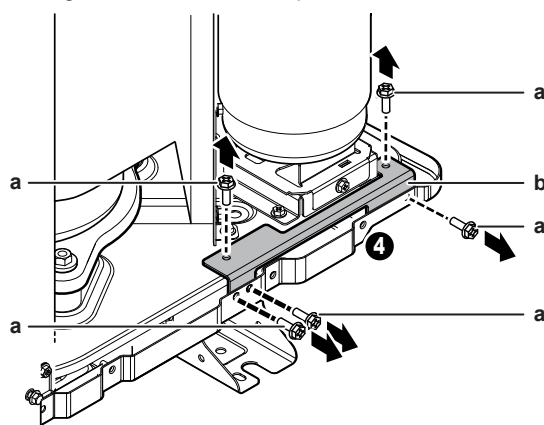
**Prerequisite:** Open the switch box cover. See "4.3.1 To open the outdoor unit" [ 7].

## 5 Piping installation



a Transportation stay  
b Nut  
c Washer

- 1 Remove the nut (b) and washer (c) from both transportation stays (a).
- 2 Remove and discard the washers (c) and transportation stays (a).
- 3 Re-install the nuts (b) of the compressor mounting bolt and tighten to 10.1 N·m of torque.

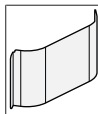


a Screw  
b Transportation stay

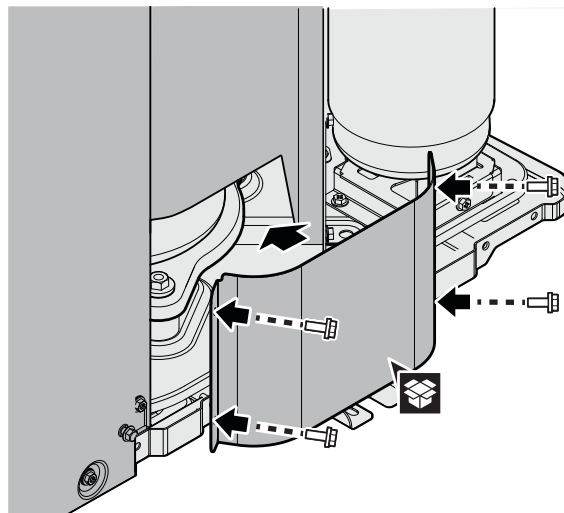
- 4 Remove the screws (a) (5×) from the transportation stay (b). Put 4 screws (a) aside for later use (see "4.7 To attach the compressor cover piece" ▶ 10).
- 5 Remove and discard the transportation stay (b).

### 4.7 To attach the compressor cover piece

Required accessory (delivered with the unit):

|  |                        |
|--|------------------------|
|  | Compressor cover piece |
|--|------------------------|

- 1 Put the compressor cover piece on its place. Use the screws (4x) of the transportation stay to fix it (see "4.6 To remove the transportation stay" ▶ 9).



## 5 Piping installation

### 5.1 Connecting water piping

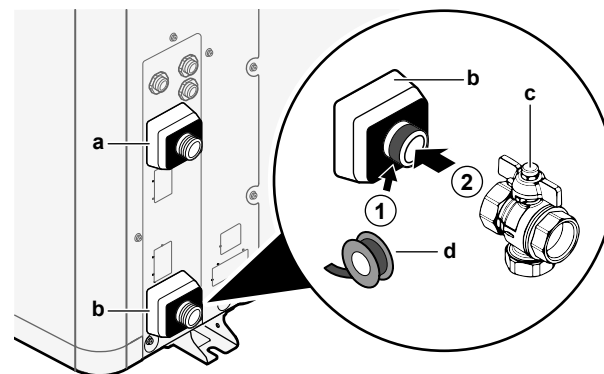
#### 5.1.1 To connect the water piping



#### NOTICE

Do NOT use excessive force when connecting the field piping and make sure the piping is aligned properly. Deformation of the piping can cause malfunctioning of the unit.

- 1 Connect the shut-off valve (with integrated filter) to the outdoor unit water inlet, using thread sealant.



a Water OUT (screw connection, male, 1")  
b Water IN (screw connection, male, 1")  
c Shut-off valve with integrated filter (delivered as accessory) (2× screw connection, female, 1")  
d Thread sealant

- 2 Connect the field piping to the shut-off valve.
- 3 Connect the field piping to the outdoor unit water outlet.



#### NOTICE

About the shut-off valve with integrated filter (delivered as accessory):

- The installation of the valve at the water inlet is mandatory.
- Mind the flow direction of the valve.



#### NOTICE

Install air purge valves at all local high points.

## 5.1.2 To fill the water circuit

See the installation manual of the indoor unit, or the installer reference guide.

## 5.1.3 To protect the water circuit against freezing

### About freeze protection

Frost can damage the system. To prevent the hydraulic components from freezing, the software is equipped with special frost protection functions such as water pipe freeze prevention and drain prevention (see the installer reference guide) that include the activation of pump in case of low temperatures.

However, in case of a power failure, these functions cannot guarantee protection.

Do one of the following to protect the water circuit against freezing:

- Add glycol to the water. Glycol lowers the freezing point of the water.
- Install freeze protection valves. Freeze protection valves drain the water from the system before it can freeze. Insulate the freeze protection valves in a similar way as the water piping, but do NOT insulate the inlet and outlet (release) of these valves.



#### NOTICE

If you add glycol to the water, do NOT install freeze protection valves. **Possible consequence:** Glycol leaking out of the freeze protection valves.

### Freeze protection by glycol

#### About freeze protection by glycol

Adding glycol to the water lowers the freezing point of water.



#### WARNING

Ethylene glycol is toxic.



#### WARNING

Due to the presence of glycol, corrosion of the system is possible. Uninhibited glycol will turn acidic under the influence of oxygen. This process is accelerated by the presence of copper and high temperatures. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that cause severe damage to the system. Therefore it is important that:

- the water treatment is correctly executed by a qualified water specialist,
- a glycol with corrosion inhibitors is selected to counteract acids formed by the oxidation of glycols,
- no automotive glycol is used because their corrosion inhibitors have a limited lifetime and contain silicates which can foul or plug the system,
- galvanized pipes are NOT used in glycol systems since the presence may lead to the precipitation of certain components in the glycol's corrosion inhibitor.



#### NOTICE

Glycol absorbs water from its environment. Therefore do NOT add glycol that has been exposed to air. Leaving the cap off the glycol container causes the concentration of water to increase. The glycol concentration is then lower than assumed. As a result, the hydraulic components might freeze up after all. Take preventive actions to ensure a minimal exposure of the glycol to air.

### Types of glycol

The types of glycol that can be used depend on whether the system contains a domestic hot water tank:

| If...   | Then...   |
|---|---|
| The system contains a domestic hot water tank         | Only use propylene glycol <sup>(a)</sup>                              |
| The system does NOT contain a domestic hot water tank | You can use either propylene glycol <sup>(a)</sup> or ethylene glycol |

<sup>(a)</sup> Propylene glycol, including the necessary inhibitors, classified as Category III according to EN1717.

### Required concentration of glycol

The required concentration of glycol depends on the lowest expected outdoor temperature, and on whether you want to protect the system from bursting or from freezing. To prevent the system from freezing, more glycol is required.

Add glycol according to the table below.

| Lowest expected outdoor temperature | Prevent from bursting | Prevent from freezing |
|-------------------------------------|-----------------------|-----------------------|
| -5°C                                | 10%                   | 15%                   |
| -10°C                               | 15%                   | 25%                   |
| -15°C                               | 20%                   | 35%                   |
| -20°C                               | 25%                   | —                     |
| -25°C                               | 30%                   | —                     |
| -30°C                               | 35%                   | —                     |



#### INFORMATION

- Protection against bursting: the glycol will prevent the piping from bursting, but NOT the liquid inside the piping from freezing.
- Protection against freezing: the glycol will prevent the liquid inside the piping from freezing.



#### NOTICE

- The required concentration might differ depending on the type of glycol. ALWAYS compare the requirements from the table above with the specifications provided by the glycol manufacturer. If necessary, meet the requirements set by the glycol manufacturer.
- The added concentration of glycol should NEVER exceed 35%.
- If the liquid in the system is frozen, the pump will NOT be able to start. Mind that if you only prevent the system from bursting, the liquid inside might still freeze.
- When water is at standstill inside the system, the system is very likely to freeze and get damaged.

### Glycol and the maximum allowed water volume

Adding glycol to the water circuit reduces the maximum allowed water volume of the system. For more information, see the installer reference guide (topic "To check the water volume and flow rate").

### Glycol setting



#### NOTICE

If glycol is present in the system, setting [E-0D] must be set to 1. If the glycol setting is NOT set correctly, the liquid inside the piping can freeze.

### Freeze protection by freeze protection valves

#### About freeze protection valves

When no glycol is added to the water, you can use freeze protection valves to drain the water from the system before it can freeze.

## 6 Electrical installation

- Install freeze protection valves (field supply) at all lowest points of the field piping.
- Normally closed valves (located indoors near the piping entry/exit points) can prevent that all water from indoor piping is drained when the freeze protection valves open.



### NOTICE

When freeze protection valves are installed, set the minimum cooling setpoint (default=7°C) at least 2°C higher than the maximum opening temperature of the freeze protection valve. If lower, freeze protection valves can open during cooling operation.

For more information, see the installer reference guide.

### 5.1.4 To insulate the water piping

The piping in the complete water circuit MUST be insulated to prevent condensation during cooling operation and reduction of the heating and cooling capacity.

#### Outdoor water piping insulation



### NOTICE

**Outside piping.** Make sure the outside piping is insulated as instructed to protect against hazards.

For piping in free air, it is recommended to use the insulation thickness as shown in below table as a minimum (with  $\lambda=0.039$  W/mK).

| Piping length (m) | Minimum insulation thickness (mm) |
|-------------------|-----------------------------------|
| <20               | 19                                |
| 20~30             | 32                                |
| 30~40             | 40                                |
| 40~50             | 50                                |

For other cases the minimum insulation thickness can be determined using the Hydronic Piping Calculation tool.

The Hydronic Piping Calculation tool also calculates the maximum hydronic piping length from the indoor unit to the outdoor unit based on the emitter pressure drop or the other way around.

The Hydronic Piping Calculation tool is part of the Heating Solutions Navigator which can be reached via <https://professional.standby.me.daikin.eu>.

Please contact your dealer if you have no access to Heating Solutions Navigator.

This recommendation ensures good operation of the unit, however, local regulations may differ and shall be followed.

## 6 Electrical installation



### DANGER: RISK OF ELECTROCUTION



### WARNING

**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "4.4 To install the discharge grille" [p 8]
- "4.5 To remove the discharge grille, and put the grille in safety position" [p 9]



### WARNING

ALWAYS use multicore cable for power supply cables.



### CAUTION

Do NOT push or place redundant cable length into the unit.



### NOTICE

The distance between the high voltage and low voltage cables should be at least 50 mm.

## 6.1 About electrical compliance

### Only for EPRA14~18D ▲ V3 ▼

Equipment complying with EN/IEC 61000-3-12 (European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase.).

## 6.2 Specifications of standard wiring components



### NOTICE

We recommend using solid (single-core) wires. If stranded wires are used, slightly twist the strands to consolidate the end of the conductor for either direct use in the terminal clamp or insertion in a round crimp-style terminal. Details are described in "Guidelines when connecting the electrical wiring" in the installer reference guide.

| Component   | V3                 | W1   |
|---|--------------------|--|
| Power supply cable                                      | MCA <sup>(a)</sup> | 30.7 A   |
|   | Voltage            | 220-240 V  |
|   | Phase              | 1~   |
|   | Frequency          | 50 Hz  |
|   | Wire size          | MUST comply with national wiring regulation.<br>3 or 5-core cable<br>Wire size based on the current, but not less than 2.5 mm <sup>2</sup> |
| Interconnection cable (indoor ↔ outdoor)                | Voltage            | 220-240 V  |
|   | Wire size          | Only use harmonised wire providing double insulation and suitable for applicable voltage.<br>4-core cable<br>Minimum 1.5 mm <sup>2</sup>   |
| Recommended field fuse                                  |                    | 32 A, C curve  |
| Earth leakage circuit breaker / residual current device |                    | 16 A or 20 A, C curve  |
| Earth leakage circuit breaker / residual current device |                    | 30 mA – MUST comply with national wiring regulation  |

<sup>(a)</sup> MCA=Minimum circuit ampacity. Stated values are maximum values (see electrical data of combination with indoor units for exact values).

## 6.3 Guidelines when connecting the electrical wiring

### Tightening torques

Outdoor unit:

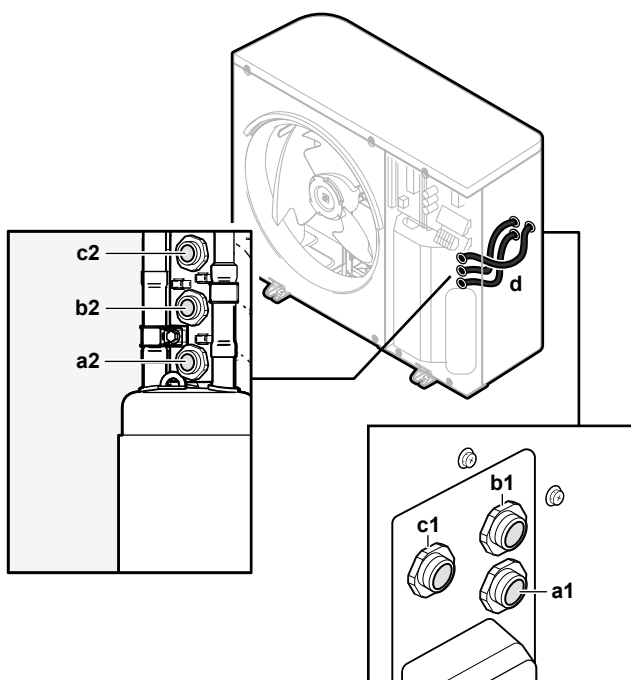
| Item       | Tightening torque (N•m) |
|------------|-------------------------|
| X1M        | 1.47 ±10%               |
| X2M        |                         |
| M4 (earth) |                         |

## 6.4 Connections to the outdoor unit

| Item  | Description   |
|---|---|
| Power supply cable  | See "6.4.1 To connect the electrical wiring to the outdoor unit" ▶ 13]. |
| Interconnection cable                                     |   |
| Drain tube heater cable                                   |   |
| Connection for power saving function (only for V3 models) |   |
| Air thermistor cable                                      | See "6.4.2 To reposition the air thermistor on the outdoor unit" ▶ 15]. |

### 6.4.1 To connect the electrical wiring to the outdoor unit

- 1 Open the switch box cover. See "4.3.1 To open the outdoor unit" ▶ 7].
- 2 Insert the cables at the back of the unit, and route them through the factory-mounted cable sleeves into the switch box.



**a1+a2** Power supply cable (field supply)  
**b1+b2** Interconnection cable (field supply)  
**c1+c2** (optional) Drain tube heater cable (field supply)  
**d** Cable sleeves (factory-mounted)

- 3 Inside the switch box, connect the wires to the appropriate terminals, and fix the cables with cable ties. See:

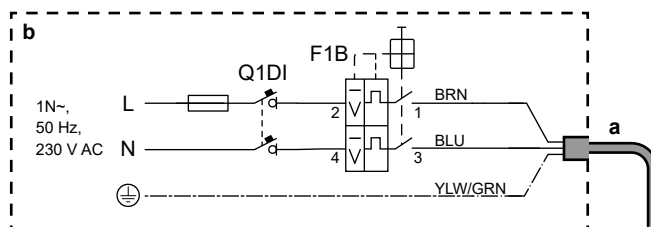
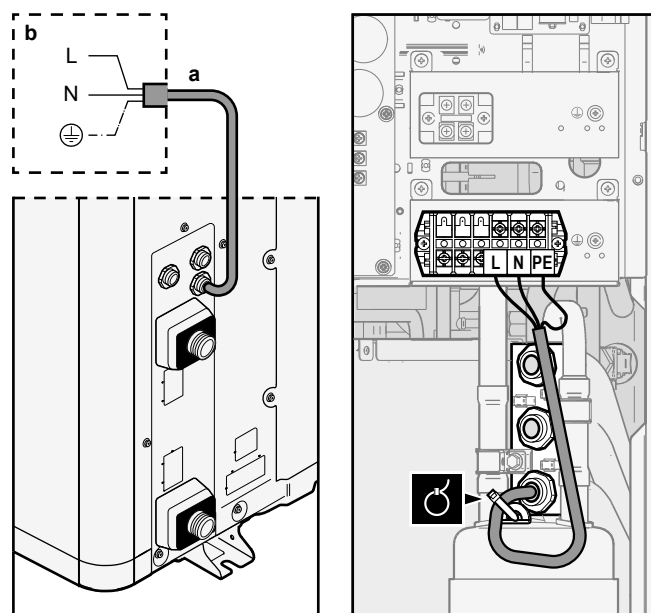
- "In case of V3 models" ▶ 13]
- "In case of W1 models" ▶ 14]

#### In case of V3 models

##### 1 Power supply cable:

- Route the cable through the frame.
- Connect the wires to the terminal block.
- Fix the cable with a cable tie.

|  |   |
|--|---|
|  | Wires: 1N+GND   |
|  | Maximum running current: Refer to name plate on unit. |

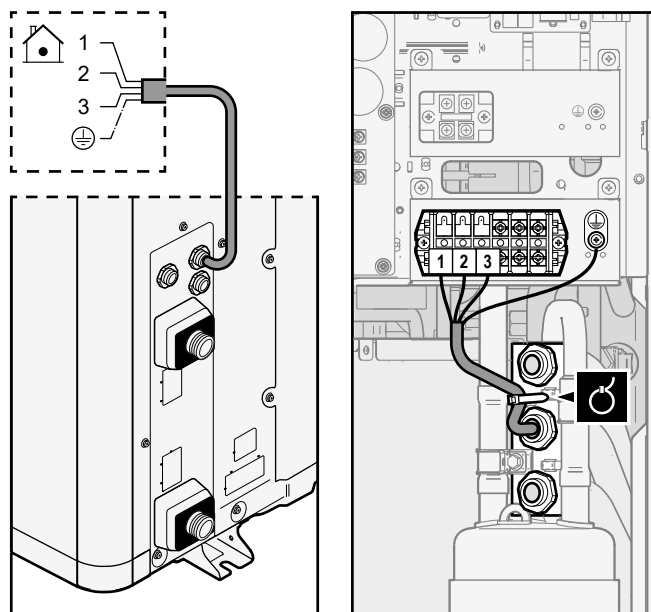


- a** Power supply cable (field supply)  
**b** Field wiring  
**F1B** Overcurrent fuse (field supply). Recommended fuse: 2 pole, 32 A fuse, C curve.  
**Q1DI** Earth leakage circuit breaker (30 mA)(field supply)

##### 2 Interconnection cable (indoor↔outdoor):

- Route the cable through the frame.
- Connect the wires to the terminal block (make sure the numbers match with the numbers on the indoor unit) and the earth screw.
- Fix the cable with a cable tie.

|  |                                    |
|--|------------------------------------|
|  | Wires: (3+GND)×1.5 mm <sup>2</sup> |
|  |                                    |





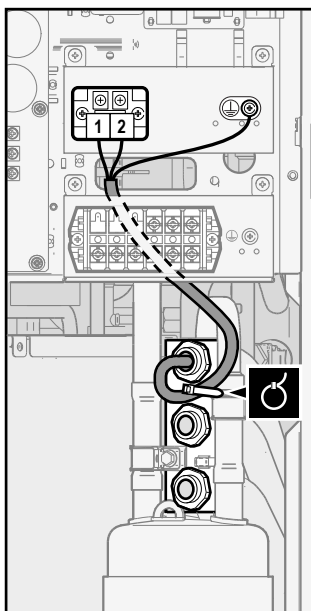
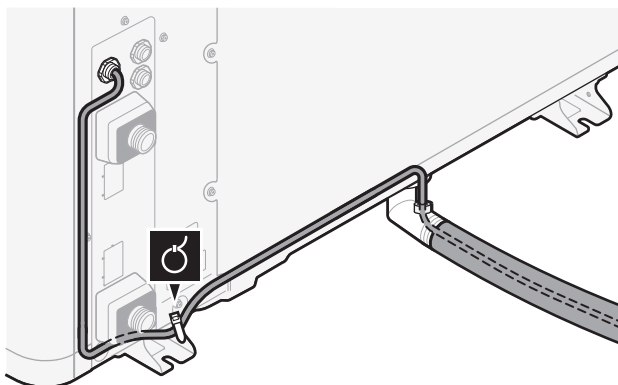


## 6 Electrical installation

### 3 (Optional) Drain tube heater cable:

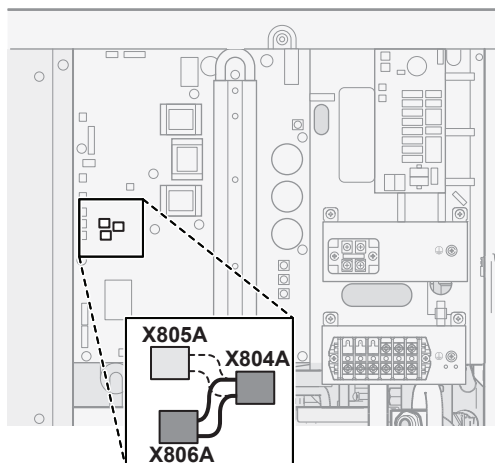
- Make sure the heating element of the drain tube heater is completely inside the drain tube.
- Route the cable through the frame.
- Connect the wires to the terminal block and the earth screw.
- Fix the cable with cable ties.

|  |  |
|--|--|
|  | Wires: (2+GND)×0.75 mm <sup>2</sup> . Wiring must be double insulated. |
|  | Maximum power allowed for drain tube heater = 115 W (0.5 A)            |



### 4 (Optional) Power saving function: If you want to use the power saving function:

- Disconnect X804A from X805A.
- Connect X804A to X806A.



#### INFORMATION

**Power saving function.** The power saving function is only applicable for V3 models. For more information about the power saving function ([9.F] or overview field setting [E-08]), see the installer reference guide.

### In case of W1 models

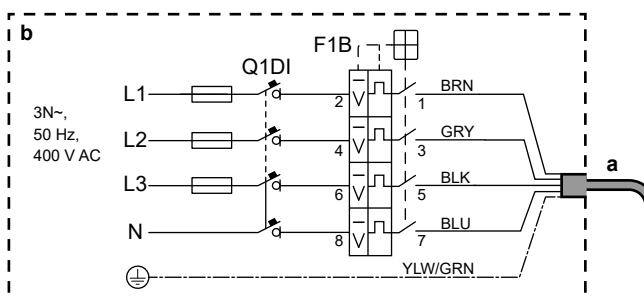
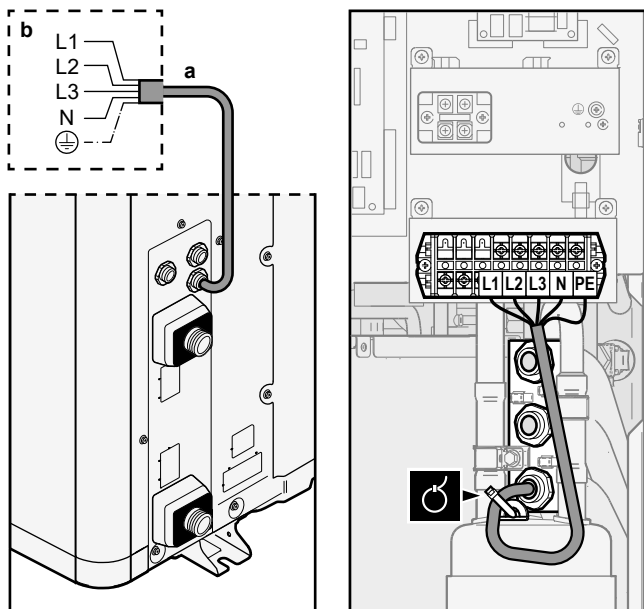
#### 1 Power supply cable:

- Route the cable through the frame.
- Connect the wires to the terminal block.
- Fix the cable with a cable tie.



Wires: 3N+GND

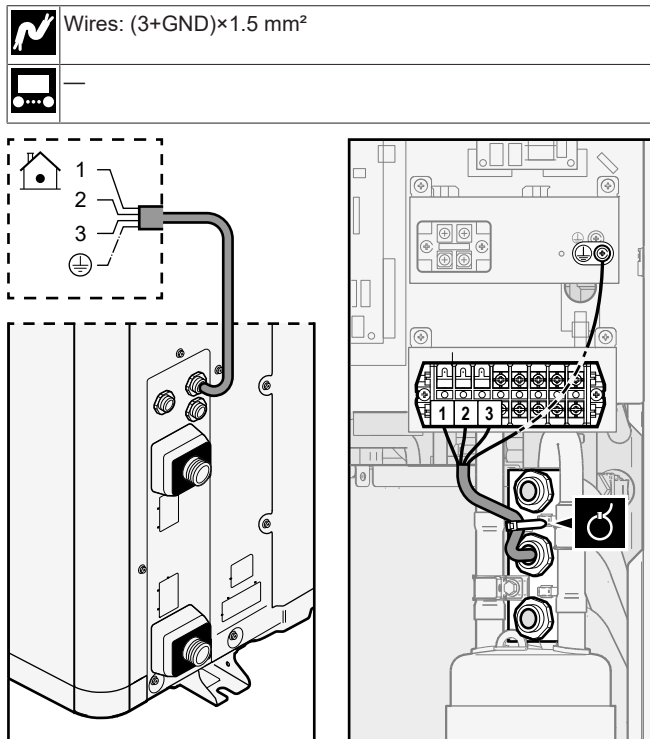
Maximum running current: Refer to name plate on unit.



- a Power supply cable (field supply)
- b Field wiring
- F1B** Overcurrent fuse (field supply). Recommended fuse: 4 pole, 16 A or 20 A fuse, C curve.
- Q1DI** Earth leakage circuit breaker (30 mA)(field supply)

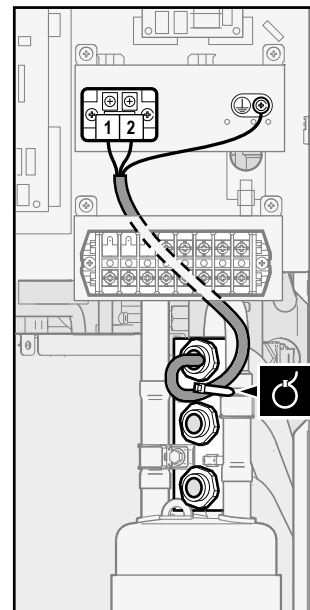
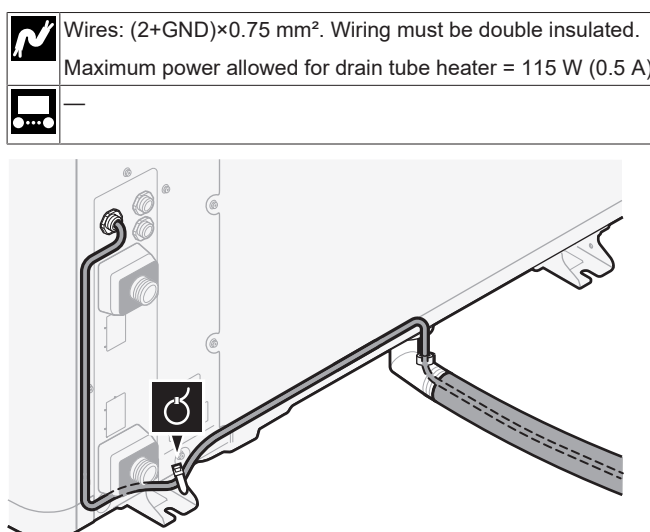
## 2 Interconnection cable (indoor↔outdoor):

- Route the cable through the frame.
- Connect the wires to the terminal block (make sure the numbers match with the numbers on the indoor unit) and the earth screw.
- Fix the cable with a cable tie.



## 3 (Optional) Drain tube heater cable:


- Make sure the heating element of the drain tube heater is completely inside the drain tube.
- Route the cable through the frame.
- Connect the wires to the terminal block and the earth screw.
- Fix the cable with cable ties.

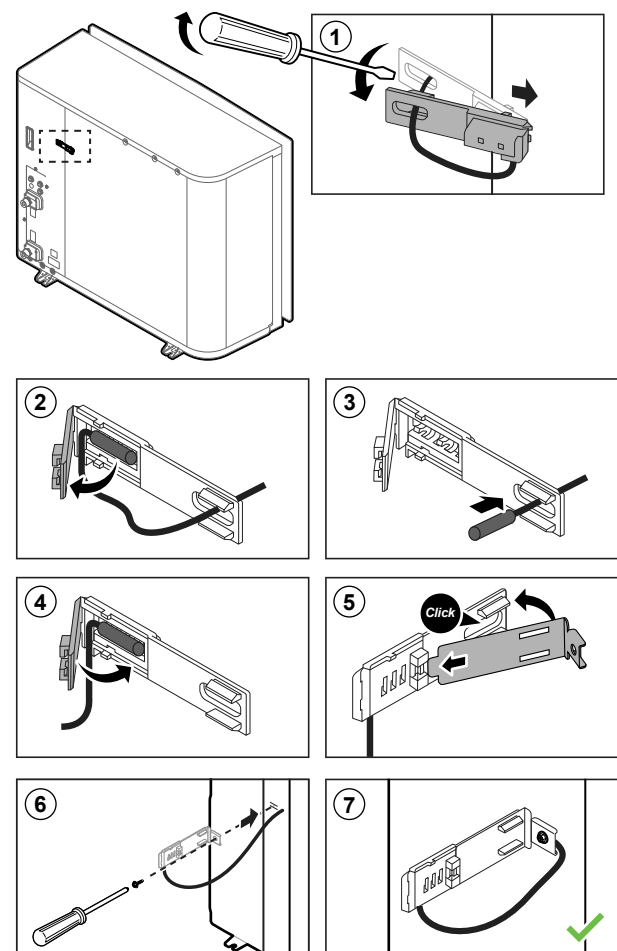


## 6.4.2 To reposition the air thermistor on the outdoor unit

This procedure is only necessary in areas with low ambient temperatures.

Required accessory (delivered with the unit):

|  |                     |
|--|---------------------|
|  | Thermistor fixture. |
|--|---------------------|





### 7 Starting up the outdoor unit

See the indoor unit installation manual for configuration and commissioning of the system.



#### WARNING

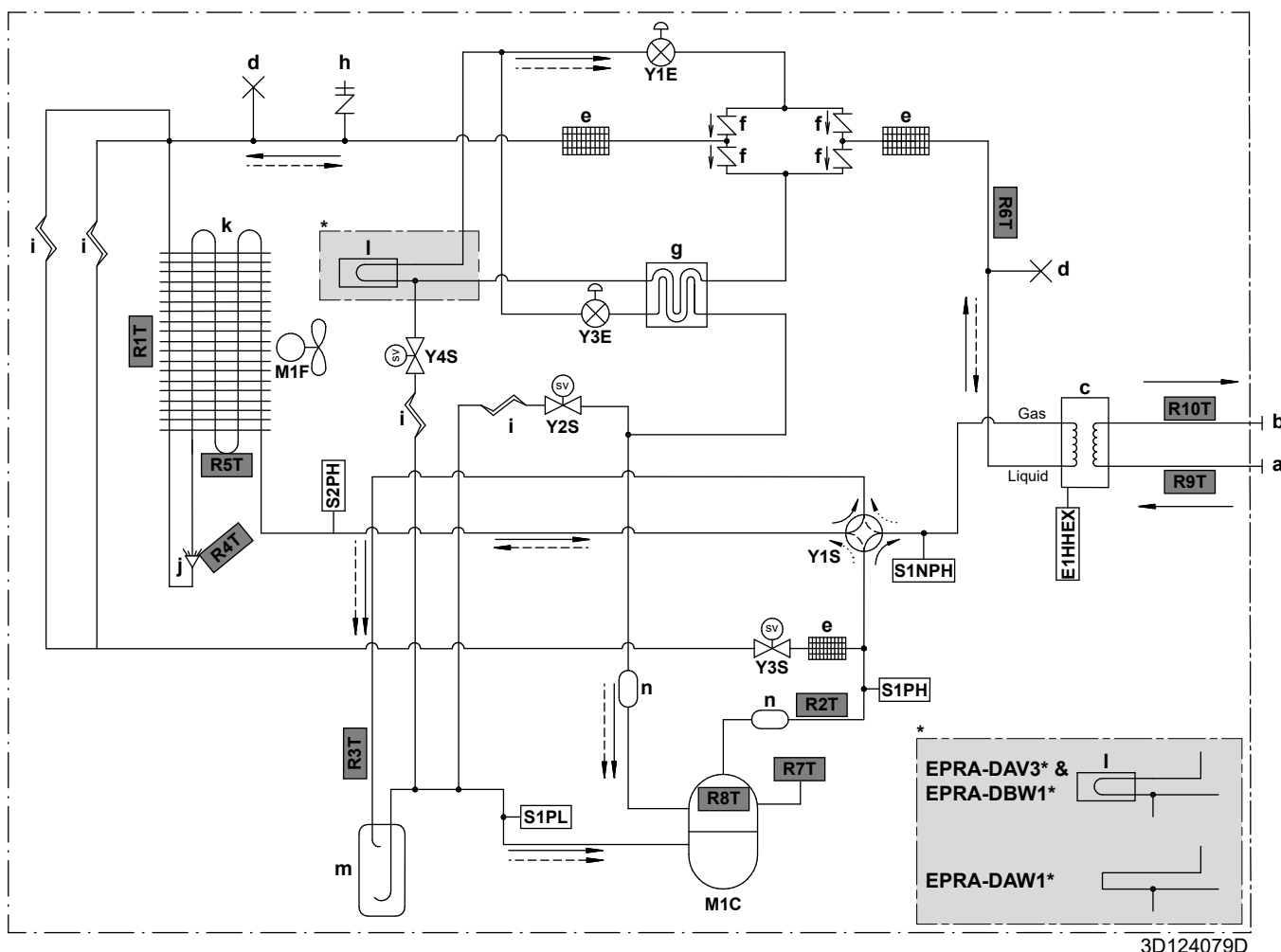
**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- ["4.4 To install the discharge grille" \[p 8\]](#)
- ["4.5 To remove the discharge grille, and put the grille in safety position" \[p 9\]](#)

## 8 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 Business Portal (authentication required).

### 8.1 Piping diagram: Outdoor unit



- Gas** Gas  
**Liquid** Liquid
- a Water IN (screw connection, male, 1")  
b Water OUT (screw connection, male, 1")  
c Plate heat exchanger  
d Pinched pipe  
e Refrigerant filter  
f One-way valve  
g Economiser heat exchanger  
h Service port 5/16" flare  
i Capillary tube  
j Distributor  
k Air heat exchanger  
l PCB cooling  
m Accumulator  
n Muffler
- E1HHEX** Plate heat exchanger heater  
**M1C** Compressor  
**M1F** Fan motor  
**S1PH** High pressure switch (5.6 MPa)  
**S2PH** High pressure switch (4.17 MPa)  
**S1PL** Low pressure switch  
**S1NPH** High pressure sensor  
**Y1E** Electronic expansion valve (main)  
**Y3E** Electronic expansion valve (injection)  
**Y1S** Solenoid valve (4-way valve)  
**Y2S** Solenoid valve (low pressure bypass)  
**Y3S** Solenoid valve (hot gas bypass)  
**Y4S** Solenoid valve (liquid injection)

- Thermistors:**  
**R1T** Outdoor air  
**R2T** Compressor discharge  
**R3T** Compressor suction  
**R4T** Air heat exchanger, distributor  
**R5T** Air heat exchanger, middle  
**R6T** Refrigerant liquid  
**R7T** Compressor shell  
**R8T** Compressor port  
**R9T** Entering water  
**R10T** Leaving water

- Refrigerant flow:**  
→ Heating  
--> Cooling






## 8 Technical data

### 8.2 Wiring diagram: Outdoor unit

The wiring diagram is delivered with the unit, located at the inside of the switch box cover.

| English                         | Translation                                     |
|---------------------------------|---|
| Electronic component assembly   | Electronic component assembly                   |
| Front side view                 | Front side view                                 |
| Indoor                          | Indoor  |
| OFF                             | OFF   |
| ON                              | ON  |
| Outdoor                         | Outdoor   |
| Position of compressor terminal | Position of compressor terminal                 |
| Position of elements            | Position of elements                            |
| Rear side view                  | Rear side view                                  |
| Right side view                 | (only for EPRA-DAW1* models)<br>Right side view |
| See note ***                    | See note ***                                    |

#### Notes:

|   |  |
|---|--|
| 1 | Symbols:   |
|   | L Live   |
|   | N Neutral  |
|   |  Protective earth   |
|   |  Noiseless earth  |
|   |  Field wiring   |
|   | ==:== Option   |
|   |  Terminal strip   |
|   | —○— Terminal   |
|   |  Connector  |
|   | —●— Connection   |
| 2 | Colours:   |
|   | BLK Black  |
|   | RED Red  |
|   | BLU Blue   |
|   | WHT White  |
|   | GRN Green  |
|   | YLW Yellow   |
|   | PNK Pink   |
|   | ORG Orange   |
|   | GRY Grey   |
|   | BRN Brown  |
| 3 | This wiring diagram applies only to the outdoor unit.  |
| 4 | When operating, do not short-circuit protective devices S1PH, S2PH and S1PL.   |
| 5 | <ul style="list-style-type: none"> <li>In case of EPRA-DAV3* and EPRA-DAW1* models:<br/>Refer to the combination table and the option manual for how to connect the wiring to X6A, X41A and X2M.</li> <li>In case of EPRA-DBW1* models:<br/>Refer to the combination table and the option manual for how to connect the wiring to X41A and X2M.</li> </ul> |
| 6 | <ul style="list-style-type: none"> <li>In case of EPRA-DAV3* and EPRA-DAW1* models:<br/>The factory setting of all switches is OFF, do not change the setting of the selector switch (DS1).</li> <li>In case of EPRA-DBW1* models:<br/>The factory setting of DIP switch DS1.1 is OFF.</li> </ul>  |

|   |   |
|---|---|
| 7 | (Only for EPRA-DAW1* models)<br>Ferrite core Z8C consists of 2 separate core parts. |
|---|---|

#### Legend in case of EPRA-DAV3\* models:

|                      |  |
|----------------------|--|
| A1P                  | Printed circuit board (main)                         |
| A2P                  | Printed circuit board (noise filter)                 |
| A3P                  | Printed circuit board (leakage current)              |
| A4P                  | Printed circuit board (ACS)                          |
| A5P                  | Printed circuit board (flash)                        |
| BS1~BS4 (A1P)        | Push button switch                                   |
| C1~C4 (A1P, A2P)     | Capacitor  |
| DS1 (A1P)            | DIP switch   |
| E1H                  | Drain tube heater (field supply)                     |
| E1HHEX~E3HHEX        | Plate heat exchanger heaters                         |
| F1U                  | Field fuse (field supply)                            |
| F1U~F4U (A2P)        | Fuse   |
| F6U (A1P)            | Fuse (T 5.0 A / 250 V)                               |
| H1P~H7P (A1P)        | Light-emitting diode (service monitor is orange)     |
| HAP (A1P)            | Light-emitting diode (service monitor is green)      |
| K1R (A1P)            | Magnetic relay (Y1S)                                 |
| K1R (A4P)            | Magnetic relay (E1HHEX~E3HHEX)                       |
| K2R (A1P)            | Magnetic relay (Y2S)                                 |
| K2R (A4P)            | Magnetic relay (E1H)                                 |
| K3R (A1P)            | Magnetic relay (Y3S)                                 |
| K4R (A1P)            | Magnetic relay (E1HC)                                |
| K10R (A1P)           | Magnetic relay                                       |
| K11M (A1P)           | Magnetic contactor                                   |
| K13R~K15R (A1P, A2P) | Magnetic relay                                       |
| L1R~L3R (A1P)        | Reactor  |
| M1C                  | Compressor motor                                     |
| M1F                  | Fan motor  |
| PS (A1P)             | Switching power supply                               |
| Q1DI                 | Earth leakage circuit breaker (30 mA) (field supply) |
| R1~R5 (A1P, A2P)     | Resistor   |
| R1T                  | Thermistor (outdoor air)                             |
| R2T                  | Thermistor (compressor discharge)                    |
| R3T                  | Thermistor (compressor suction)                      |
| R4T                  | Thermistor (air heat exchanger, distributor)         |
| R5T                  | Thermistor (air heat exchanger, middle)              |
| R6T                  | Thermistor (refrigerant liquid)                      |
| R7T                  | Thermistor (compressor shell)                        |
| R8T                  | Thermistor (compressor port)                         |
| R9T                  | Thermistor (entering water)                          |
| R10T                 | Thermistor (leaving water)                           |
| R11T                 | Thermistor (fin)                                     |
| RC (A2P)             | Signal receiver circuit                              |
| S1NPH                | High pressure sensor                                 |
| S1PH, S2PH           | High pressure switch                                 |
| S1PL                 | Low pressure switch                                  |
| T1A                  | Current transfo                                      |
| TC (A2P)             | Signal transmission circuit                          |

|                    |  |
|--------------------|--|
| V1D~V4D (A1P)      | Diode                                    |
| V1R (A1P)          | IGBT power module                        |
| V2R (A1P)          | Diode module                             |
| V1T~V3T (A1P)      | Insulated Gate Bipolar Transistor (IGBT) |
| X1M, X2M           | Terminal strip                           |
| Y1E                | Electronic expansion valve (main)        |
| Y3E                | Electronic expansion valve (injection)   |
| Y1S                | Solenoid valve (4-way valve)             |
| Y2S                | Solenoid valve (low pressure bypass)     |
| Y3S                | Solenoid valve (hot gas bypass)          |
| Y4S                | Solenoid valve (liquid injection)        |
| Z1C~Z11C           | Noise filter (ferrite core)              |
| Z1F~Z6F (A1P, A2P) | Noise filter                             |

**Legend in case of EPRA-DAW1\* models:**

|                    |  |
|--------------------|--|
| A1P                | Printed circuit board (main)                         |
| A2P                | Printed circuit board (noise filter)                 |
| A3P                | Printed circuit board (leakage current)              |
| A4P                | Printed circuit board (ACS)                          |
| A5P                | Printed circuit board (inverter)                     |
| BS1~BS4 (A1P)      | Push button switch                                   |
| C1~C3 (A2P)        | Capacitor  |
| DS1 (A1P)          | DIP switch   |
| E1H                | Drain tube heater (field supply)                     |
| E1HHEX             | Plate heat exchanger heater                          |
| F1U                | Field fuse (field supply)                            |
| F1U~F7U (A1P, A2P) | Fuse   |
| H1P~H7P (A1P)      | Light-emitting diode (service monitor is orange)     |
| HAP (A1P, A2P)     | Light-emitting diode (service monitor is green)      |
| K1R (A1P)          | Magnetic relay (Y1S)                                 |
| K1R (A2P)          | Magnetic relay                                       |
| K1R (A4P)          | Magnetic relay (E1HHEX)                              |
| K2R (A1P)          | Magnetic relay (Y2S)                                 |
| K2R (A4P)          | Magnetic relay (E1H)                                 |
| K3R (A1P)          | Magnetic relay (Y3S)                                 |
| K4R (A1P)          | Magnetic relay (E1HC)                                |
| K2M, K11M (A2P)    | Magnetic contactor                                   |
| L1R~L4R            | Reactor  |
| M1C                | Compressor motor                                     |
| M1F                | Fan motor  |
| PS (A2P)           | Switching power supply                               |
| Q1DI               | Earth leakage circuit breaker (30 mA) (field supply) |
| R1, R2 (A2P)       | Resistor   |
| R1T                | Thermistor (outdoor air)                             |
| R2T                | Thermistor (compressor discharge)                    |
| R3T                | Thermistor (compressor suction)                      |
| R4T                | Thermistor (air heat exchanger, distributor)         |
| R5T                | Thermistor (air heat exchanger, middle)              |
| R6T                | Thermistor (refrigerant liquid)                      |
| R7T                | Thermistor (compressor shell)                        |
| R8T                | Thermistor (compressor port)                         |
| R9T                | Thermistor (entering water)                          |
| R10T               | Thermistor (leaving water)                           |

|                    |  |
|--------------------|--|
| R11T               | Thermistor (fin)                       |
| S1NPH              | High pressure sensor                   |
| S1PH, S2PH         | High pressure switch                   |
| S1PL               | Low pressure switch                    |
| T1A                | Current transfo                        |
| V1R, V2R (A2P)     | IGBT power module                      |
| V3R (A2P)          | Diode module                           |
| X1M, X2M           | Terminal strip                         |
| Y1E                | Electronic expansion valve (main)      |
| Y3E                | Electronic expansion valve (injection) |
| Y1S                | Solenoid valve (4-way valve)           |
| Y2S                | Solenoid valve (low pressure bypass)   |
| Y3S                | Solenoid valve (hot gas bypass)        |
| Y4S                | Solenoid valve (liquid injection)      |
| Z1C~Z10C           | Noise filter (ferrite core)            |
| Z1F~Z4F (A1P, A3P) | Noise filter                           |

**Legend in case of EPRA-DBW1\* models:**

|                 |  |
|-----------------|--|
| A1P             | Printed circuit board (main)                         |
| A2P             | Printed circuit board (noise filter)                 |
| A3P             | Printed circuit board (leakage current)              |
| A4P             | Printed circuit board (ACS)                          |
| BS1~BS3 (A1P)   | Push button switch                                   |
| C1~C619 (A1P)   | Capacitor  |
| DS1 (A1P)       | DIP switch   |
| E1H             | Drain tube heater (field supply)                     |
| E1HHEX          | Plate heat exchanger heater                          |
| F1              | Field fuse (field supply)                            |
| F1U, F3U (A2P)  | Fuse (T 6.3 A / 250 V)                               |
| F4U, F5U (A2P)  | Fuse (T 30 A / 500 V)                                |
| F7U (A1P)       | Fuse (T 5.0 A / 250 V)                               |
| HAP (A1P)       | Light-emitting diode (service monitor is green)      |
| K1R (A4P)       | Magnetic relay (E1HHEX)                              |
| K2R (A1P)       | Magnetic relay (Y2S)                                 |
| K2R (A4P)       | Magnetic relay (E1H)                                 |
| K3R (A1P)       | Magnetic relay (Y3S)                                 |
| K4R (A1P)       | Magnetic relay (Y1S)                                 |
| K10R~K84R (A1P) | Magnetic relay                                       |
| K1M, K2M (A1P)  | Magnetic contactor                                   |
| L3R~L6R (A1P)   | Reactor  |
| M1C             | Compressor motor                                     |
| M1F             | Fan motor  |
| PS (A1P)        | Switching power supply                               |
| Q1DI            | Earth leakage circuit breaker (30 mA) (field supply) |
| R2~R807 (A1P)   | Resistor   |
| R1T             | Thermistor (outdoor air)                             |
| R2T             | Thermistor (compressor discharge)                    |
| R3T             | Thermistor (compressor suction)                      |
| R4T             | Thermistor (air heat exchanger, distributor)         |
| R5T             | Thermistor (air heat exchanger, middle)              |
| R6T             | Thermistor (refrigerant liquid)                      |
| R7T             | Thermistor (compressor shell)                        |
| R8T             | Thermistor (compressor port)                         |
| R9T             | Thermistor (entering water)                          |

## 8 Technical data

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|                    |   |
|--------------------|---|
| R10T               | Thermistor (leaving water)                    |
| R11T               | Thermistor (fin)                              |
| RC (A1P)           | Signal receiver circuit                       |
| S1NPH              | High pressure sensor                          |
| S1PH, S2PH         | High pressure switch                          |
| S1PL               | Low pressure switch                           |
| SEG* (A1P)         | 7-segment display                             |
| T1A                | Current transfo                               |
| TC (A1P)           | Signal transmission circuit                   |
| V1D~V3D (A1P)      | Diode   |
| V1R, V2R (A1P)     | Diode module                                  |
| V3R~V5R (A1P)      | IGBT power module                             |
| X1M, X2M           | Terminal strip                                |
| Y1E                | Electronic expansion valve (main – black)     |
| Y3E                | Electronic expansion valve (injection – blue) |
| Y1S                | Solenoid valve (4-way valve)                  |
| Y2S                | Solenoid valve (low pressure bypass)          |
| Y3S                | Solenoid valve (hot gas bypass)               |
| Y4S                | Solenoid valve (liquid injection)             |
| Z1C~Z11C           | Noise filter (ferrite core)                   |
| Z1F~Z5F (A1P, A2P) | Noise filter                                  |









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