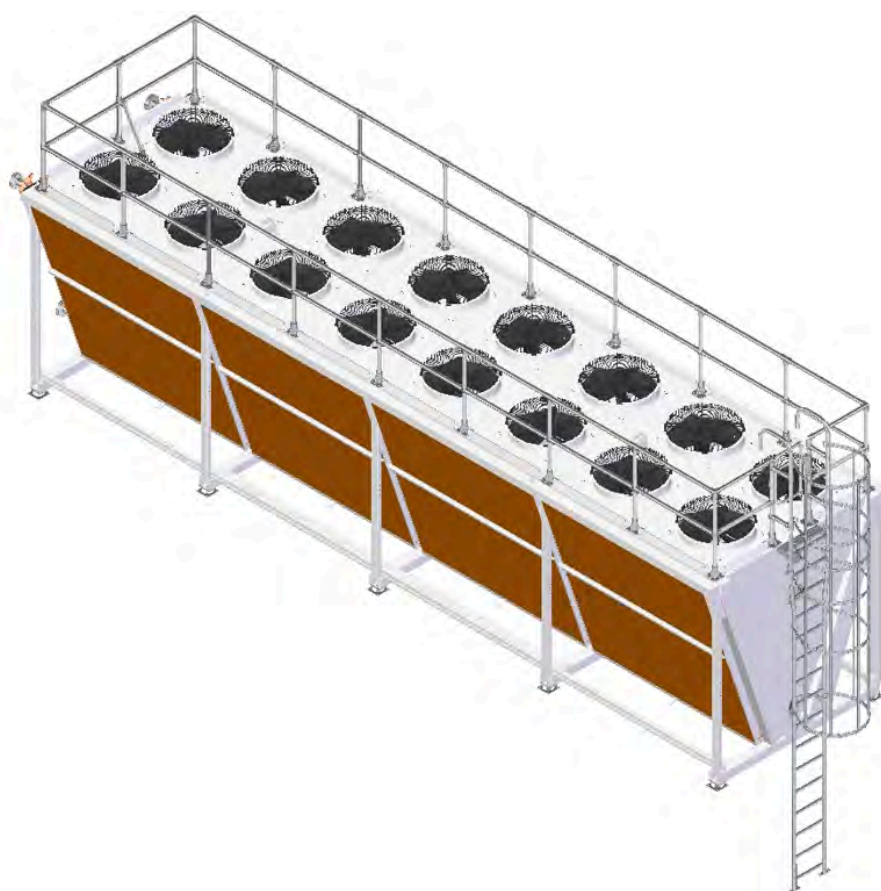


Installation instructions

Transport | Installation | Operation | Maintenance | Disposal



Fall protection – GxD



*These instructions are to be considered part of the unit.
Read and follow these instructions carefully before performing any work on the unit.
Always keep these instructions accessible in the immediate vicinity of the unit
for future reference.*

guntner.com/uk

About us

Fall protection GxD

Version number: 1.4
Date of revision: 2026-07-30

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Installation instructions

These instructions have been compiled in several languages.

The German version applies as the **original installation instructions**. All other language versions are **translations** of the **original installation instructions**.

© Güntner GmbH & Co. KG
Hans-Güntner-Str. 2 – 6
82256 FÜRSTENFELDBRUCK

Phone +49 8141 242 0
Internet: www.guntner.com

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1 Key basic information

1.1 Importance of the instructions

About the fall protection for the GxD

The fall protection for the GxD is intended exclusively for mounting on condensers/gas coolers/dry coolers manufactured by Güntner GmbH & Co. KG, in order to allow safe access to the unit surface, particularly for maintenance and servicing purposes.

Requirement for mounting and use

The prerequisite for the proper mounting and use of this fall protection is knowledge of the basic safety instructions and safety regulations.

Important notes on mounting and use

- These instructions include the most important notes on how to properly mount and use the fall protection.
- These instructions, especially the safety instructions, must be observed by everyone who mounts or uses the fall protection.
- The accident prevention rules and regulations that apply for the place of installation must also be observed.

1.2 Set-up and applicable documents

These instructions contain the following information:

- Intended use
- Mounting and use
- Safety instructions and warnings

The following documents are applicable:

- Manufacturer's documentation for the unit
- Drawing specifying the customer, project number and order number

These instructions are also part of the plant's operating instructions that are provided by the manufacturer of the plant.

1.3 Legal notes

Warranty

Note that warranty claims require the existence of a defect that must be proved. These instructions form part of the fall protection and must be followed in full. Damage and malfunctions resulting from the failure to comply with the instructions are not covered by the warranty. This applies in particular to the use of spare parts other than those specified (original spare parts in case of doubt) and modifications to the fall protection compared to its original condition on delivery without the consent of Güntner GmbH & Co. KG.

1.4 Applicable standards and technical rules

Standards

- DIN 4426
- EN 547-1
- EN 547-3
- EN 10240
- EN ISO 14122-1
- EN ISO 14122-2
- EN ISO 14122-3
- EN ISO 14122-4

1.5 Document conventions

Mark-up elements for special information

bold	Requires special attention!
⇒ –	Instructions Instructions (sub-item)
• ◦	Listing Listing (sub-item)

1.6 List of abbreviations

Abbreviation	Meaning
BetrSichV	German Ordinance on Industrial Safety and Health
DIN	German industrial standard (specification of a standard)
EN	European standard
ISO	International Organization for Standardization

1.7 Conventions for safety signs and instructions

NOTICE

The operator of the installation is responsible for attaching the following prohibitory, warning and mandatory signs.

1.7.1 General safety signs and their meaning in these instructions

⚠ DANGER



This signal word is used to show an **immediately dangerous situation** which, if not avoided, **will cause** severe injury or death.

⚠ WARNING



This signal word is used to show a **potentially dangerous situation** which, if not avoided, **could cause** severe injury or death.

⚠ CAUTION



This signal word is used to show a **potentially dangerous situation** which, if not avoided, **could cause** minor or moderate injury.

ATTENTION

This signal word **without any safety symbols** is used to show a possible risk of damage to property.

NOTICE

This signal word indicates additional information that is useful for the reader, such as operator tips and cross references.

1.7.2 Warning signs and their meaning in these instructions



General warning sign

Warns of hazards that could cause injury or death, without specifying the nature of the hazard.



Warning of dangerous electrical voltage
Risk of an electric shock if live parts are touched.



Warning of the risk of falling
Risk of falling when working high up.



Warning of the risk of tripping
There is a risk of tripping if there are obstacles on the floor or the ground.



Warning of the the risk of slipping
After defrosting, after cleaning work or due to other circumstances, there is a risk of slipping.



Warning of hand injury
Failure to observe the warnings can result in hands or fingers being crushed, drawn in or otherwise injured.



Warning of extreme cold
The temperature is below 0 °C and can cause frostbite.



Warning of falling objects
Standing under falling objects can cause injury or death.

1.7.3 Prohibitory signs and their meaning in these instructions



Unauthorised access prohibited!
Unauthorised persons are prohibited from entering.



No unauthorised climbing!
Unauthorised persons are prohibited from climbing the ladder.

1.7.4 Mandatory signs and their meaning in these instructions

**Completely disconnect before working!**

Completely disconnect the electrical system and secure it against restart before performing installation, maintenance and repair work.

**Wear protective gloves!**

Protective gloves must protect against mechanical and chemical dangers.

**Wear safety shoes!**

Safety shoes must protect against mechanical and chemical dangers.

**Wear safety helmet!**

The protective headgear protects from falling objects.

1.7.5 Other safety signs

**Maximum load limit**

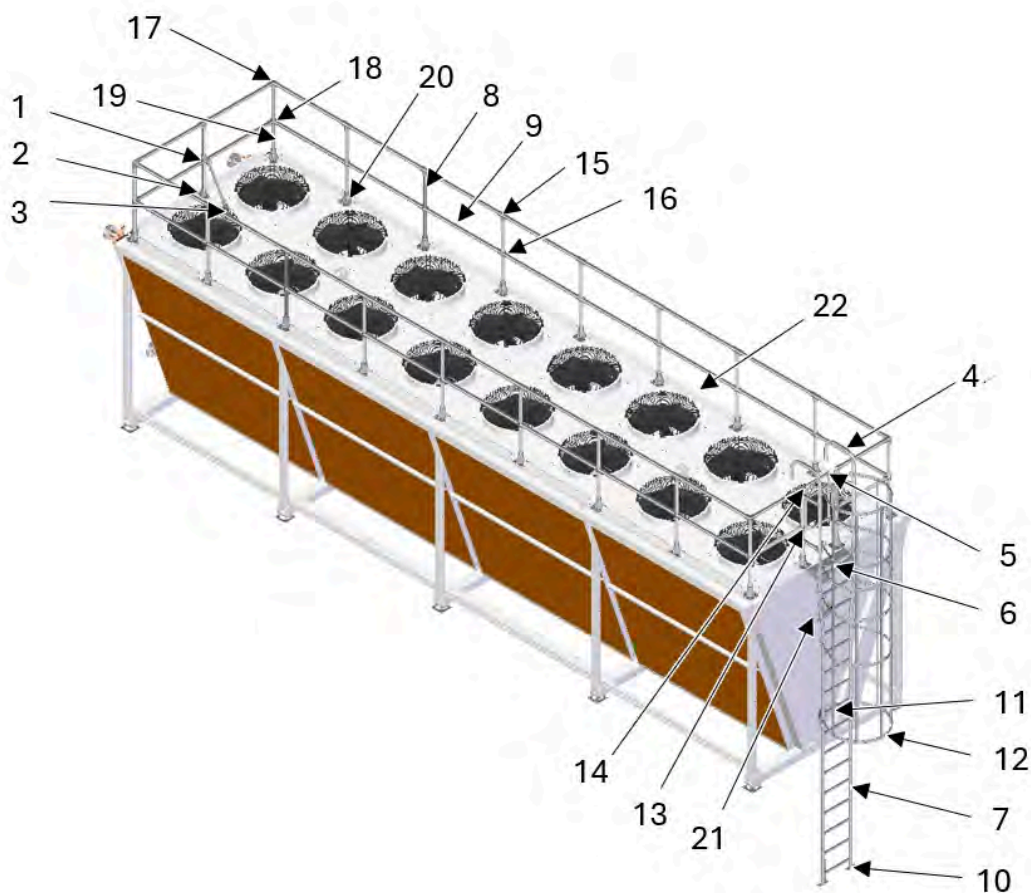
Exceeding the permissible weight or force applied to the surface can result in damage to property and personal injury.

2 Description

2.1 Overview of the fall protection

The following illustrations show examples of fall protection applications.

2.1.1 Single-row fall protection

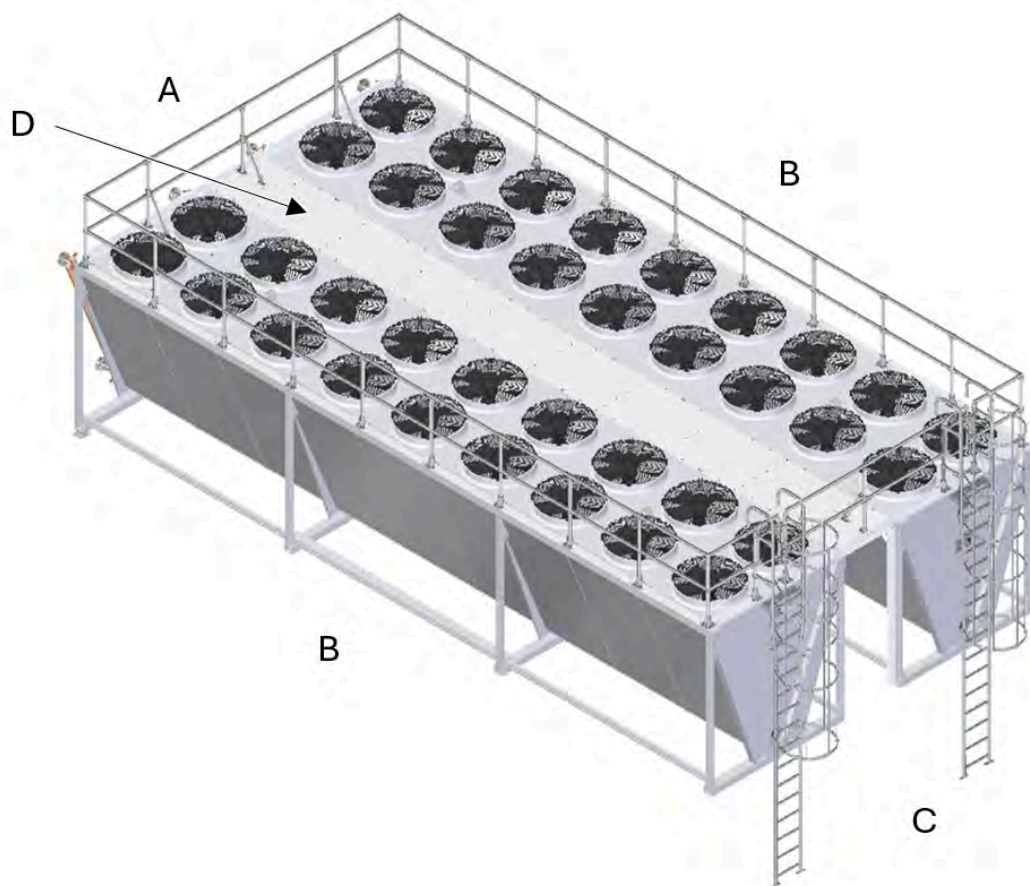


Single-row fall protection

No.	Designation
1	Single swivel socket
2	Floor mounting
3	Swivel flange (0 – 160°)
4	Handrail bend
5	Safety gate
6	Access platform

No.	Designation
7	Ladder
8	Post
9	Horizontal tube
10	Ladder foot
11	Wall fixing bracket
12	Ladder cage
13	90° fitting
14	90° elbow fitting
15	Three-socket tee
16	Two-socket cross fitting
17	90° side outlet elbow fitting
18	90° side outlet tee fitting
19	Rail support
20	Railing base
21	Label plate
22	Toeboard

2.1.2 Multi-row fall protection



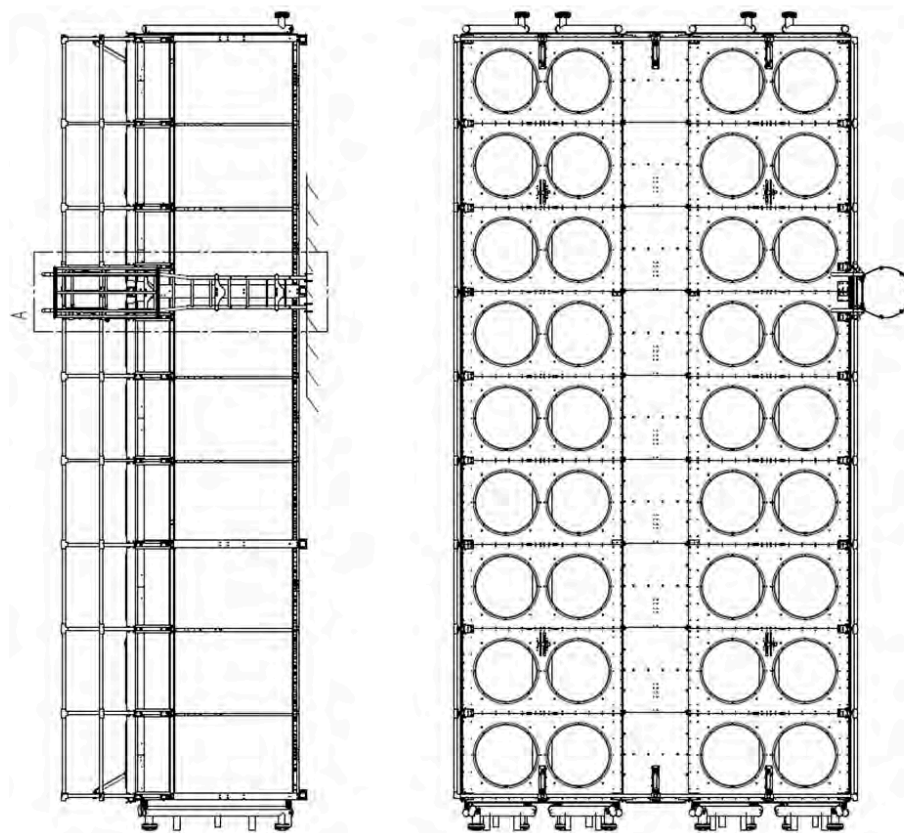
Multi-row fall protection

Pos.	Side
A	Short side
B	Long side
C	Short side with ladders
D	Middle walkway

2.2 Installation plan

NOTICE

When mounting, observe the dimensions and information shown in the following illustration.



Installation plan

3 Safety

3.1 Intended/improper use

3.1.1 Intended use

Installation location

Condensers/gas coolers/dry coolers manufactured by Güntner GmbH are designed to be integrated into a refrigerating plant and for outdoor installation. The fall protection (railing, ladder, etc.) is intended for attachment to the top of condensers/gas coolers/dry coolers manufactured by Güntner GmbH & Co. KG.

Conditions of use

The fall protection is designed for the following ambient conditions:

- Ambient temperatures ranging from -30 °C to +50 °C
- Relative humidity ranging from 0 % to 90 %

The operator must be trained and experienced in handling the fall protection and in walking on the unit surface. The customer is responsible for any installations and mounted parts retrofitted to the fall protection by him or herself, and for the associated risks to the overall construction.

Safety measures

Observe the following to prevent personal injury and damage to property:

- The operator must ensure that the design of the fall protection does not deviate from the specifications set out in the order documents, including during use, visual inspection and maintenance. Any modifications to the design require prior approval from the manufacturer.
- The operator must ensure that all maintenance measures for the fall protection stated in these instructions are carried out in acc. with the instructions for the unit and the plant.

3.1.2 Improper use

The mounting and use of the fall protection is improper if:

- these instructions and the safety instructions contained therein are not observed,
- the main dimensions, maximum weight, distances and recommended mounting sizes are not adhered to during mounting,
- the wrong fixing elements or not all of the fixing points provided were used for mounting
- the fall protection is not installed properly (e.g. by untrained staff),
- if standard parts are modified without authorisation to correct any inaccuracy of fit (e.g. by grinding, drilling or cutting),
- the fall protection is walked on without authorisation,
- the maintenance schedule is not adhered to.

3.1.3 Further information

Space limits

The mounting location has to be accessible without risk.

Lifting gear (a crane) is required for the maintenance/servicing of the fall protection.

Main dimensions and weight:

- According to the offer drawing and order confirmation

Assembly drawing:

- According to the offer drawing

Layout plan:

- The layout plan must be drawn up by the plant operator. The fall protection is manufactured on the basis of the site map provided by the customer.

Time limits

When used as intended, with maintenance carried out at the specified intervals and under the prescribed environmental conditions, the fall protection has a service life of 10 to 12 years.

3.2 Basic safety instructions

Please note

⚠ WARNING

Before performing any work on the fall protection on the unit:

- Completely disconnect the unit and secure it against unintentional restart (lockable emergency stop switch is available or must be provided by the customer)



NOTICE

All work on the fall protection must be performed by specialist staff who have been trained in the specific hazards involved.

Only experienced persons (specialised fitters) are allowed to use the fixed double-stile ladder. An occupational health examination G41 "Arbeiten mit Absturzgefahr" ("Work involving the risk of falling") or relevant national examinations are required beforehand.

The operator must prevent persons under the age of 14 and unauthorised persons from gaining access to the unit.

NOTICE

Refer to the manufacturer's documentation for safety instructions relating to the unit and follow them.

Hazards

⚠ WARNING		
	WARNING OF FALLING OBJECTS! Objects can fall from the unit due to improper mounting or human error and injure bystanders.	
	• Wear personal protective equipment (safety helmet) when working on or near the unit. • Attach toeboards to both short and long sides of the unit.	
⚠ WARNING		
	WARNING OF ELECTRIC SHOCK! Due to a potential shift between components, it can happen that a person gets a little shock when touching the ladder/railing.	
	• Before starting any work, ensure that the ladder/handrail is connected to the building's equipotential bonding via the earthing clamp.	
⚠ WARNING		
	WARNING OF FROSTBITE! Contact with the unit surface or the fall protection (railing, ladder, etc.) can result in severe frostbite.	 
	• Wear personal protective equipment (safety shoes, work gloves).	

⚠ WARNING



WARNING OF THE RISK OF SLIPPING, TRIPPING AND FALLING!

The operator or another person can slip while accessing the unit, on the unit surface or while climbing the ladder, or can trip over a protruding or projecting part. This can result in falls (also from a height), even if a railing is in place. This risk increases, particularly in adverse weather conditions such as water on the unit, clear ice or gusts of wind.

- Wear personal protective equipment (work gloves and slip-resistant safety shoes or safety shoes with slip-resistant overshoes).
- Stepping onto the unit surface is permitted only if the total weight does not exceed 150 kg and appropriate fall protection is in place.
- Before walking on the unit surface for maintenance or servicing, check for snow/ice and remove it if necessary.
- Watch out for obstacles and tripping hazards.
- Never step on the fans.
- In bad weather conditions (water on the unit, clear ice, gusts of wind), take particular care when walking on the unit surface!
- The fastening elements of the fall protection (railing and ladder construction) may be used only once, i.e. new fastening elements must be used for each assembly/disassembly.
- It is the responsibility of the operator to ensure that the ladder is secured against unauthorised climbing. Access only for persons who have permission from the operator and are appropriately trained.



⚠ CAUTION



WARNING OF THE RISK OF CRUSHING!

There is a risk of crushing if the components are handled improperly.

- Wear personal protective equipment (PPE).



4 Mounting

4.1 Safety instructions

⚠ WARNING		
	WARNING OF THE RISK OF FALLING DURING MOUNTING! There is an increased risk of falling when mounting the railing. • Prior to mounting, put on an alternative fall protection (e.g. PPE against falls from a height with a suitable attachment point). • Cordon off the area around the unit (risk due to falling components). • Wear personal protective equipment (PPE).	
NOTICE		
Observe the basic safety instructions (see section "Basic safety instructions").		
NOTICE		
Safety instructions regarding access to the unit can be found on the unit in the area of the terminal box.		

4.2 Requirements for the mounting location

Dimensions/weights

For dimensions and weights, refer to the documents supplied and the illustration in the "Installation plan" section.

Mounting conditions

- Mount the fall protection in such a way that it cannot be damaged by in-house traffic or transport procedures.
- Place the fall protection in such a way that it can be inspected from all sides at all times.
- Ensure that sufficient space is available for mounting.
- Ensure that the space for mounting is free of obstacles.
- Observe the dimensions in the installation plan when mounting the ladder feet and the ladder.

Provisions for fixing

- Prevent mechanical stress on the fall protection as follows:
 - Ensure that all fixing points are at the same distance from the fixing level.
 - Ensure that all fixing points maintain the same distance to the fixing level, under load and permanently.
- Mount the fall protection at the fixing points provided for this purpose and tighten it with fixing bolts. The operator or fitter of the equipment is responsible for ensuring that the bolted connections are of an adequate strength.
- Observe the following instructions when fixing the fall protection:
 - The fixing bolts must be secured against loosening by means of an appropriate screw-locking device.
 - The fixing bolts must not be overtightened.
 - All fixing bolts must be tightened equally.
- Prevent the fall protection from shifting in its position. Fix the fall protection.
- Use the intended fixing points to fix the fall protection.
- Tighten the bolts at the fixing points with the following tightening torques:
 - Setscrew of the Kee Klamp fittings: 40 Nm
 - M6 bolt: 7.7 Nm
 - M10 bolt: 63 Nm
 - M12 bolt: 73 Nm

4.3 Mounting the fall protection

Required staff

- Specialist staff

Auxiliary equipment/tools

- Lifting accessories and lifting gear
- Climbing aids
- Fixing bolts, washers and nuts
- Wall plugs
- Hole pattern
- Percussion drilling machine
- Set of wrenches
- Socket wrench set
- Spanner set
- Ring spanner set
- Ratchet
- Tubes (material: aluminium)
- Post (material: galv. st.)
- Personal protective equipment against falls from a height or mobile railings
- Where applicable, struts for mounting the middle walkway (material: galv. st.)

Mounting sequence

The fall protection is mounted in the following order:

- 1 Mounting the safety railing
- 2 Mounting the toeboards
- 3 Mounting the ladder and ladder cage
- 4 Mounting the safety gate

The mounting of the middle walkway (if required) must be integrated into the sequence accordingly by the customer.

NOTICE

These instructions do not provide a detailed description of how to mount the toeboards on the outside (no. 22, section "Single-row fall protection"). The toeboards must be mounted by the customer.

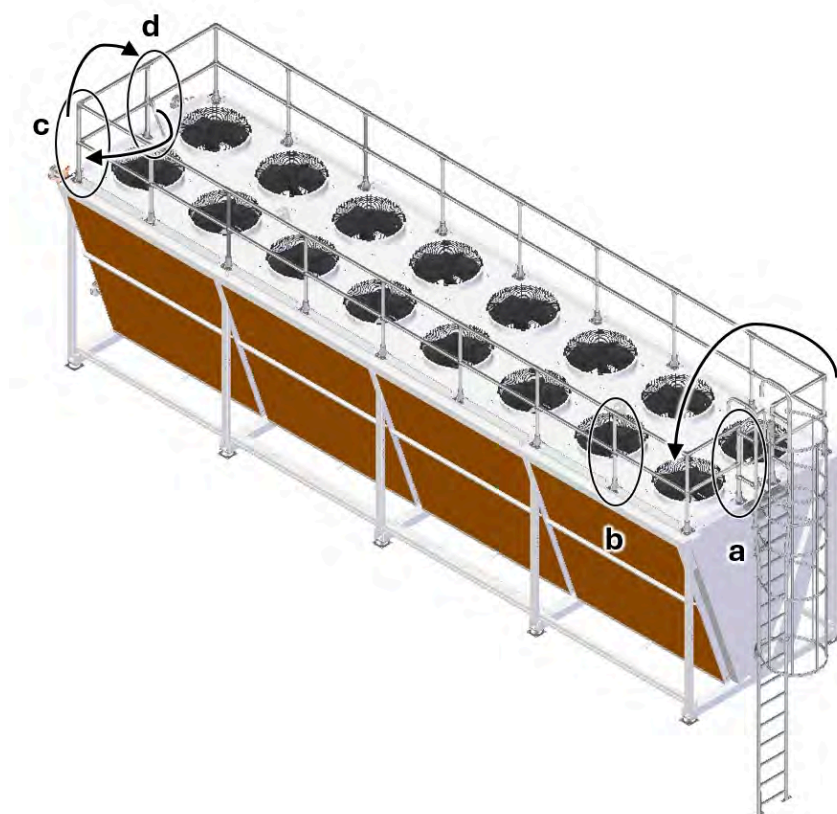
4.3.1 Mounting the safety railing

Important notes on mounting

NOTICE

All tubular fittings are factory-adjusted to the required insertion depths! In case it is necessary to loosen the tubular fittings for assembly, it is imperative to tighten the grub screw with a ratchet and then with the torque wrench.
Therefore, follow the installation instructions in the manufacturer's documentation, particularly with regard to calculating the correct tube lengths.

4.3.1.1 Mounting sequence



Mounting sequence

⇒ Start mounting the railing in the access area (a), then continue clockwise until you have reached the access area (a) again.

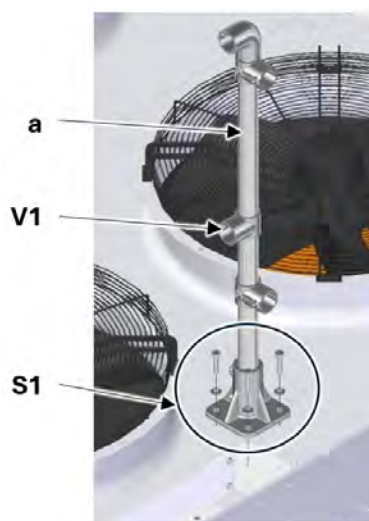
The following table provides an overview of the mounting sequence of the components:

Mounting sequence	See section
Mounting the access and the corner bracket	4.3.1.2
Mounting the middle section	4.3.1.3
Mounting the stiffener	4.3.1.4
Mounting the corner brackets	4.3.1.5

The following table provides an overview of the components required for the mounting steps:

Components	
Tubular fitting assembly "access"	a
Tubular fitting assembly "middle section"	b
Tubular fitting assembly "corner bracket"	c
Tubular fitting assembly "stiffener"	d

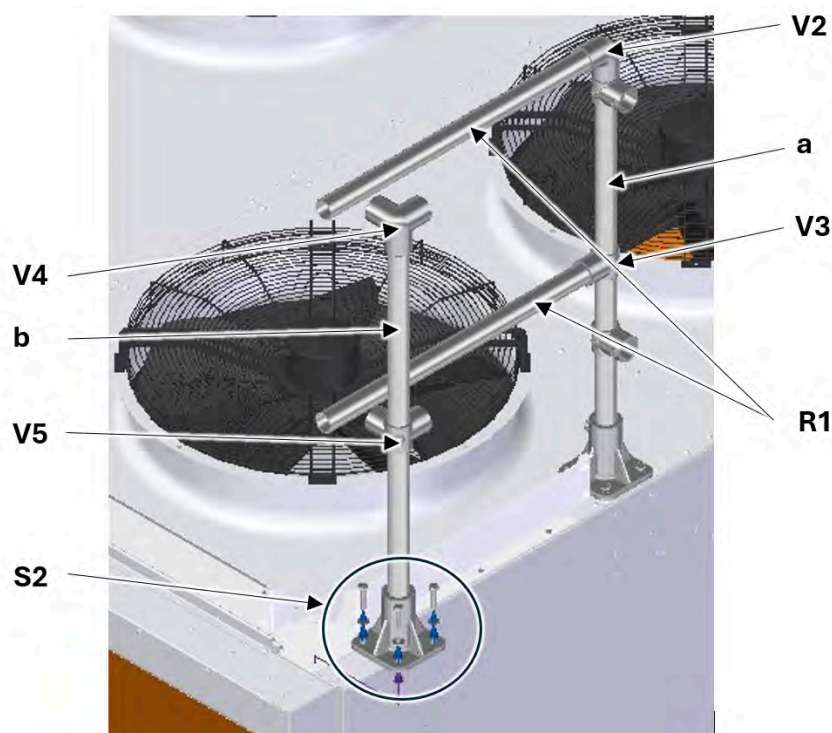
4.3.1.2 Mounting the access and the corner bracket



Start/completion of mounting in the access area

- ⇒ Mount the tubular fitting assembly “access” to the unit in the access area. Use the fasteners (S1) for this purpose.
- ⇒ The tubular fitting (V1) is intended for connecting the ladder.
- ⇒ Tighten the fasteners according to the specified tightening torque (see section "Requirements for the mounting location")!

Components	Abbreviation
Tubular fitting assembly “access”	a
Tubular fitting type 10-8/90° fitting	V1
Fasteners: Hexagon bolt M10x30 (4 pieces) / detent edged washer 10 (4 pieces)	S1

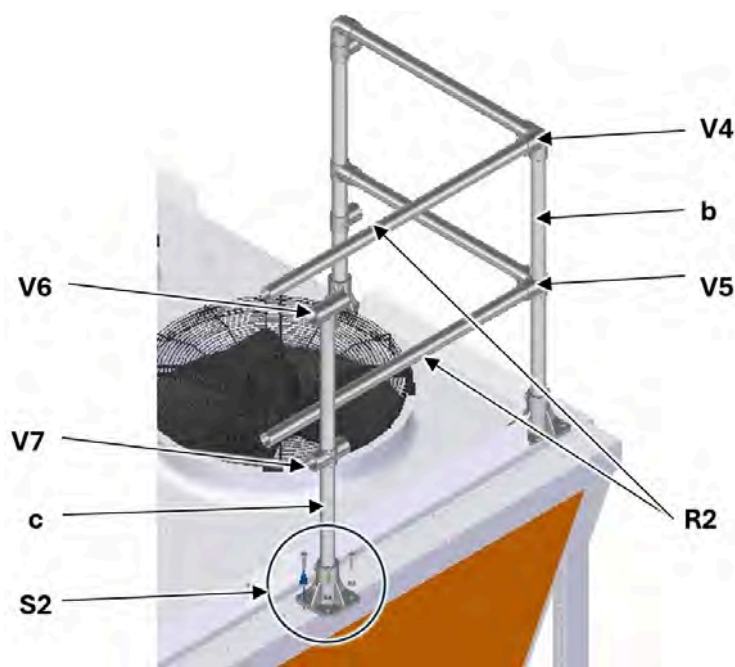


Mounting the handrail and kneerail and the “corner bracket” tubular fitting assembly

- ⇒ Insert the tubes for the handrail and kneerail (R1) into the tubular fittings (V2/V3) of the tubular fitting assembly “access” (a).
- ⇒ Then mount the tubular fitting assembly “corner bracket” (b). For this purpose, first insert the tubes for the handrail and kneerail (R1) into the tubular fittings (V4/V5) and then mount the assembly “corner bracket” with fasteners (S2).
- ⇒ Tighten the fixing elements and setscrews according to the specified tightening torque!

Components	Abbreviation
Tubular fitting assembly “access”	a
Tubular fitting assembly “corner bracket”	b
Tubular fitting type 15-8/90° elbow fitting	V2
Tubular fitting type 10-8/90° fitting	V3
Tubular fitting type 20-8/side outlet elbow	V4
Tubular fitting type 21-8/side outlet tee (90°)	V5
Tube handrail and kneerail – “access” area	R1
Fasteners: Hexagon bolt M6x20 (4 pieces) / detent edged washer 6 (4 pieces)	S2

4.3.1.3 Mounting the middle section

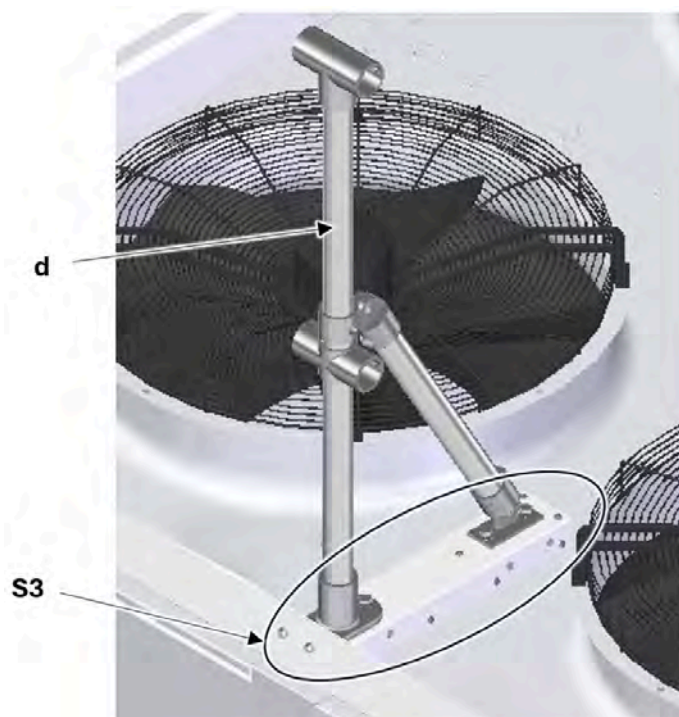


Mounting the handrail and kneerail and the “middle section” tubular fitting assembly

- ⇒ Insert the tubes for the handrail and kneerail (R2) into the tubular fittings (V4/V5) of the tubular fitting assembly “corner bracket” (b).
- ⇒ Mount the tubular fitting assembly “middle section” (c). To do this, first insert the tubes for the handrail and kneerail (R2) into the tubular fittings (V4/V5), and then mount the “middle section” assembly using the fasteners (S2).
- ⇒ Repeat these steps until you reach the next corner of the unit. As you do so, make sure to insert the new tubes for the handrails and kneerails (R2) into the tubular fittings (V6/V7).
- ⇒ Tighten the fasteners and setscrews according to the specified tightening torque (see section “Requirements for the mounting location”)!

Components	Abbreviation
Tubular fitting assembly “corner bracket”	b
Tubular fitting assembly “middle section”	c
Tubular fitting type 20-8/side outlet elbow	V4
Tubular fitting type 21-8/side outlet tee (90°)	V5
Tubular fitting type 25-8/three-socket tee	V6
Tubular fitting type 26-8/cross fitting	V7
Tube handrail and kneerail – “middle section” area	R2
Fasteners: Hexagon bolt M6x20 (4 pieces) / detent edged washer 6 (4 pieces)	S2

4.3.1.4 Mounting the stiffener

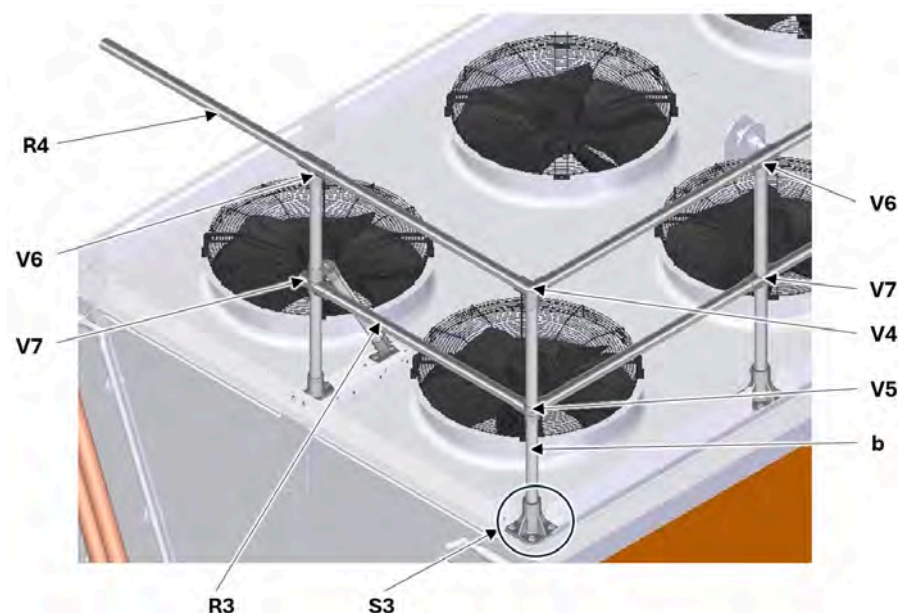


Mounting the stiffener

- ⇒ First mount the tubular fitting assembly “stiffener” (d) before mounting the tubular fitting assembly “corner bracket”.
- ⇒ Mount the tubular fitting assembly “stiffener” (d) on the unit using the fasteners (S3).
- ⇒ Tighten the fasteners according to the specified tightening torque (see section “Requirements for the mounting location”)!

Components	Abbreviation
Tubular fitting assembly “stiffener”	d
Fasteners hexagon bolt M12x30 (4 pieces) / detent edged washer 12 (4 pieces)	S3

4.3.1.5 Mounting the corner brackets



Mounting the corner brackets

- ⇒ After mounting the tubular fitting assembly “stiffener”, insert the tubes for the handrail and kneerail (R3/R4) into the tubular fittings (V6/V7) at the corners of the unit. Then insert the tubes for the handrail and kneerail (R2) at the tubular fitting assembly “middle section” (b).
- ⇒ Mount the tubular fitting assembly “corner bracket” (b). For this purpose, first insert the tubes for the handrail and kneerail (R3/R4) into the tubular fittings (V4/V5) and then mount the assembly group “corner bracket” with fasteners (S3).
- ⇒ Tighten the fasteners and setscrews according to the specified tightening torque (see section “Requirements for the mounting location”)!

Components	Abbreviation
Tubular fitting assembly “corner bracket”	b
Tubular fitting type 20-8/side outlet elbow	V4
Tubular fitting type 21-8/side outlet tee (90°)	V5
Tubular fitting type 25-8/three-socket tee	V6
Tubular fitting type 26-8/cross fitting	V7
Tube handrail and kneerail – “stiffener” area“ or “middle section”	R3/R4
Fasteners hexagon bolt M12x30 (4 pieces) / detent edged washer 12 (4 pieces)	S3

4.3.2 Mounting the ladder and the ladder cage

Important notes on mounting

NOTICE

The number and type of rawlplugs for the ladder feet and the wall fixing brackets are specified in the manufacturer's documentation. Follow the instructions for mounting the access area and the crossbars as set out in the manufacturer's documentation.

Preparation

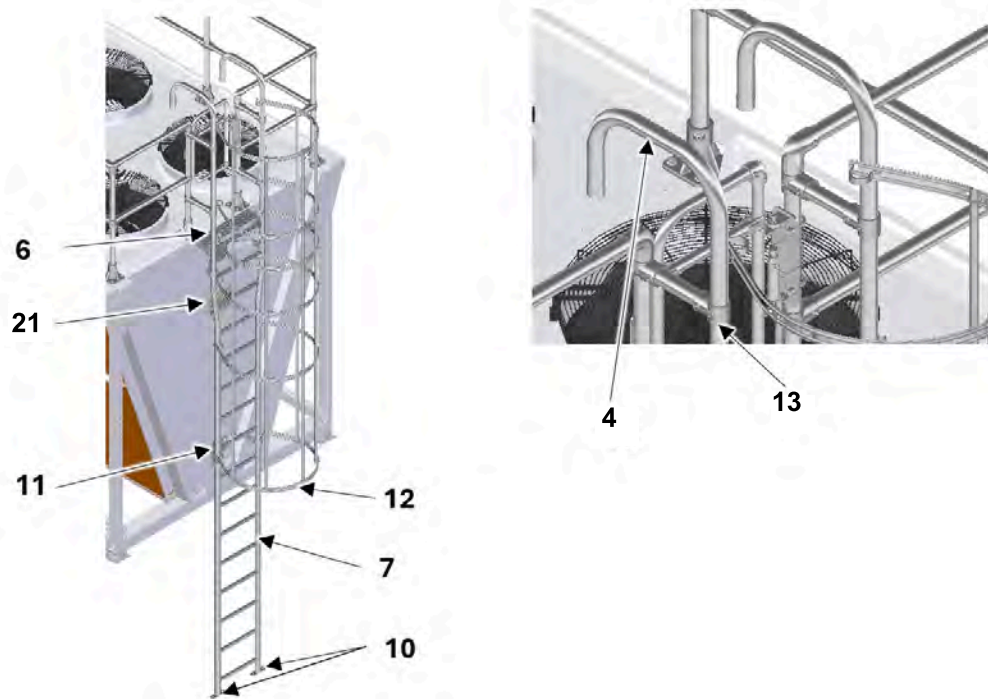
- ⇒ Make the dimensional division from above. The top rung must be level with the access platform.
- ⇒ Mark where the holes for the wall fixing brackets and the ladder feet are to be drilled.
- ⇒ Drill holes in the wall and the floor and insert rawlplugs.



Ladder feet and wall fixing brackets

- ⇒ Secure the ladder feet (10) to the floor with fixing bolts.
- ⇒ Secure all wall fixing brackets (11) to the wall with fixing bolts.

Procedure



Ladder with ladder cage and handrail bend

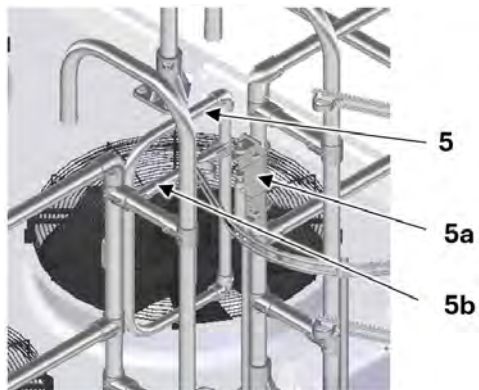
- ⇒ Place the ladder (7) in the ladder feet (10) and clip it into the wall fixing brackets (11).
- ⇒ Mount the ladder cage (12) on the ladder.
- ⇒ Fit the access platform (6) to the top rung of the ladder.
- ⇒ Slide the tubular fitting assembly "ladder" onto the left and right stile and insert it into the tubular fitting (13) of the safety railing that is already in place and secure it.
- ⇒ Slide the handrail bends (4) onto the ladder stiles and screw them tight.
- ⇒ Securely attach the enclosed label plate with the safety instructions and warnings (21) to the unit wall.



Label plate with safety instructions and warnings

4.3.3 Mounting the self-closing safety gate

Procedure



Safety gate

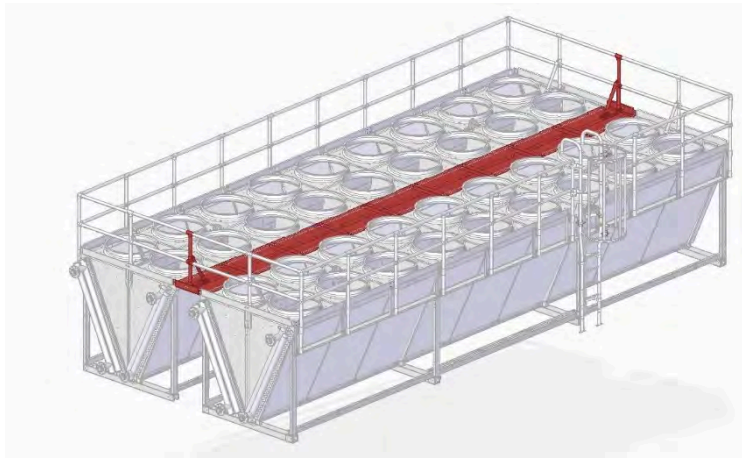
- ⇒ Mount the self-closing safety gate (5) (see the manufacturer's mounting instructions).
- ⇒ Tension the spring of the self-closing safety gate (5a) (see the manufacturer's mounting instructions).
- ⇒ Mount the "middle" tube (5b) (see the manufacturer's mounting instructions).

4.3.4 Mounting the middle walkway

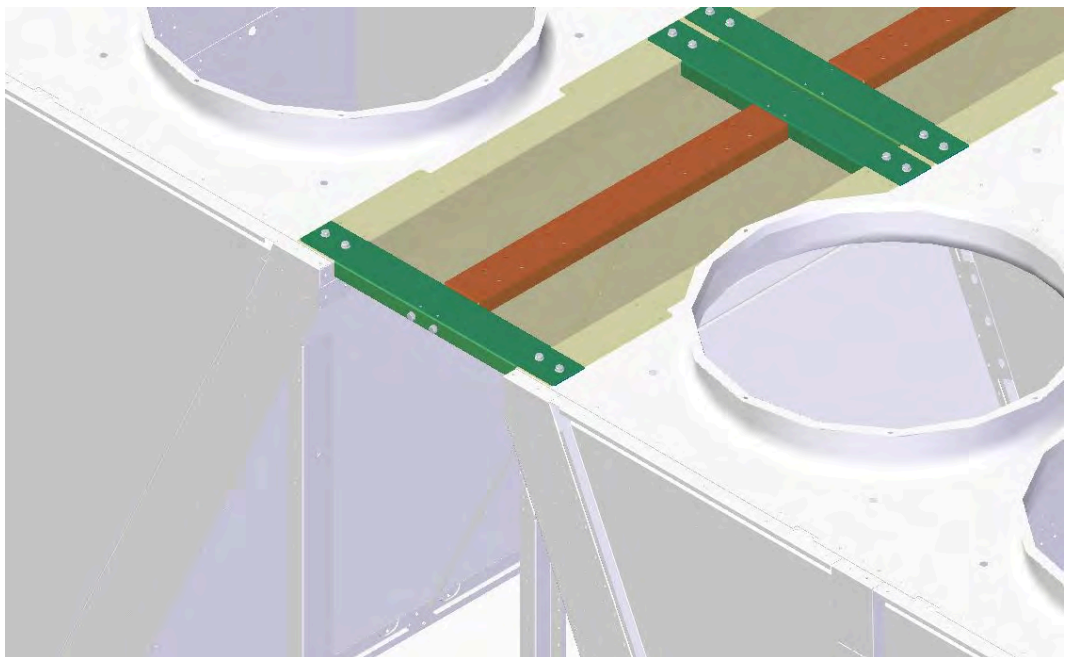
Requirements

- The middle walkway is required only if two or more identical units are installed side by side.

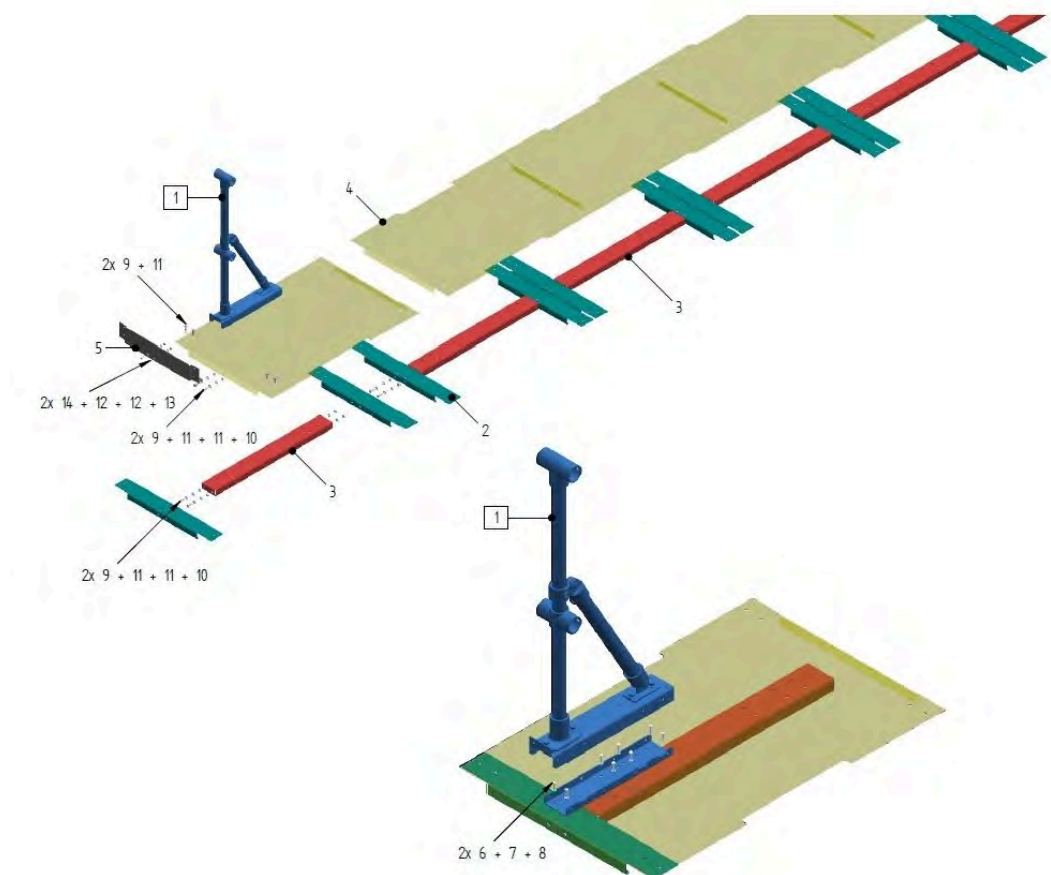
4.3.4.1 Mounting the middle walkway: module A/B



View middle walkway A/B



Detail of middle walkway mounting. Connection points (4 pieces each) to the fan plate



Components and fixing elements for mounting the middle walkway

- ⇒ Bolt the struts (2) and struts (3) together and place them on the fan plates of the units (fixing elements: Pos. 9, 10, 11; see table 1)
- ⇒ Place the support plate (4) on the struts (2) (3) and bolt everything to the fan plates (fixing elements: Pos. 9, 11; see table 1)
- ⇒ Connect the support (1) with the support plate (4) and the struts (2) (3) as illustrated. (fixing elements: Pos. 6, 7, 8; see table 1)

Pos.	Number*	Designation	Tightening torque
1	2	Support	
2	18	Strut	
3	9	Strut	
4	9	Support plate	

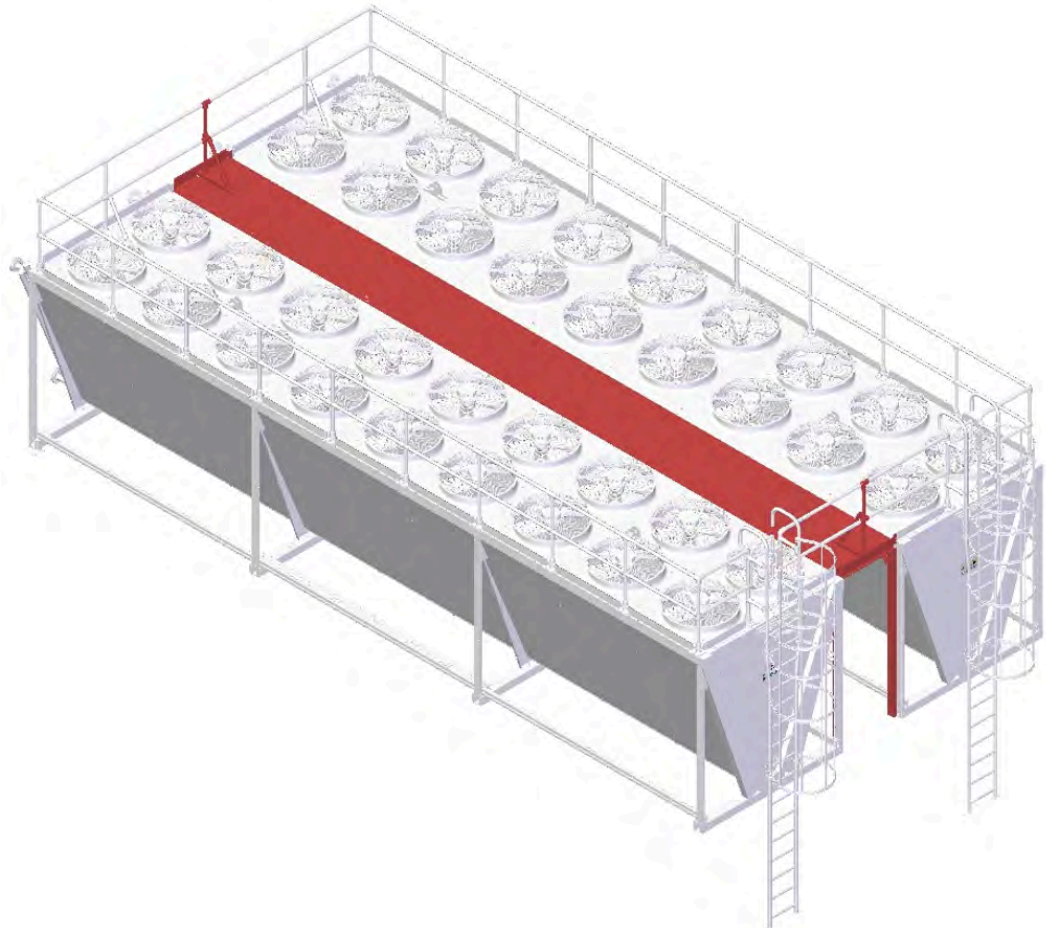
Positions of the components and fixing elements for mounting the middle walkway

Pos.	Number*	Designation	Tightening torque
5	2	Toeboard	
6	16	Bolt ISO 4017 M6x20 A2	7.7 Nm
7	16	Detent edged washer 6 SKMA46	
8	16	Blind rivet nut M6 A2	
9	126	Bolt ISO 4017 M10x35 A4	37 Nm
10	54	Nut ISO 4032 M10 St	
11	180	Detent edged washer 10 SKMA410	
12	8	Detent edged washer 8 SKMA48	
13	4	Nut ISO 4032 M8 A2	
14	4	Bolt ISO 4017 M8x20 A2	18.5 Nm

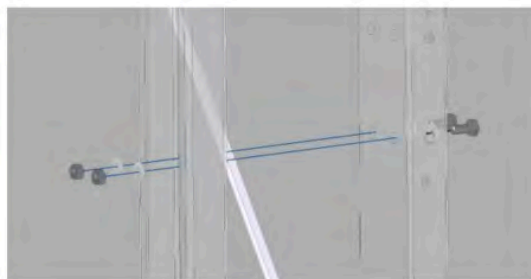
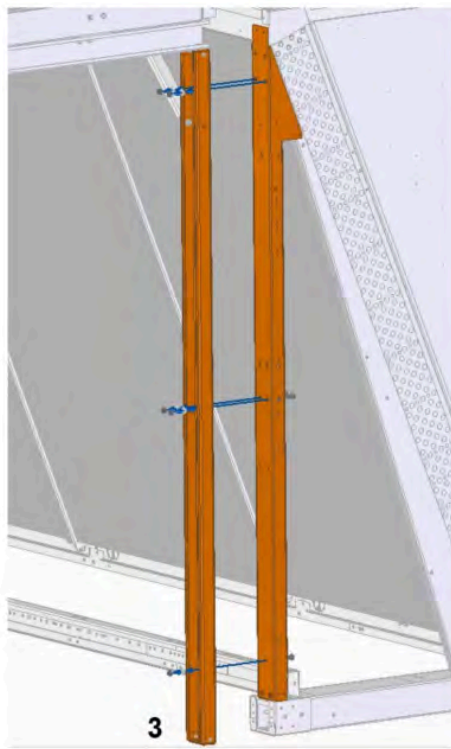
Positions of the components and fixing elements for mounting the middle walkway

* with 2 x 9 units

4.3.4.2 Mounting the middle walkway: module C/D



View middle walkway C/D



Detail of middle walkway mounting

Important notes on mounting

NOTICE

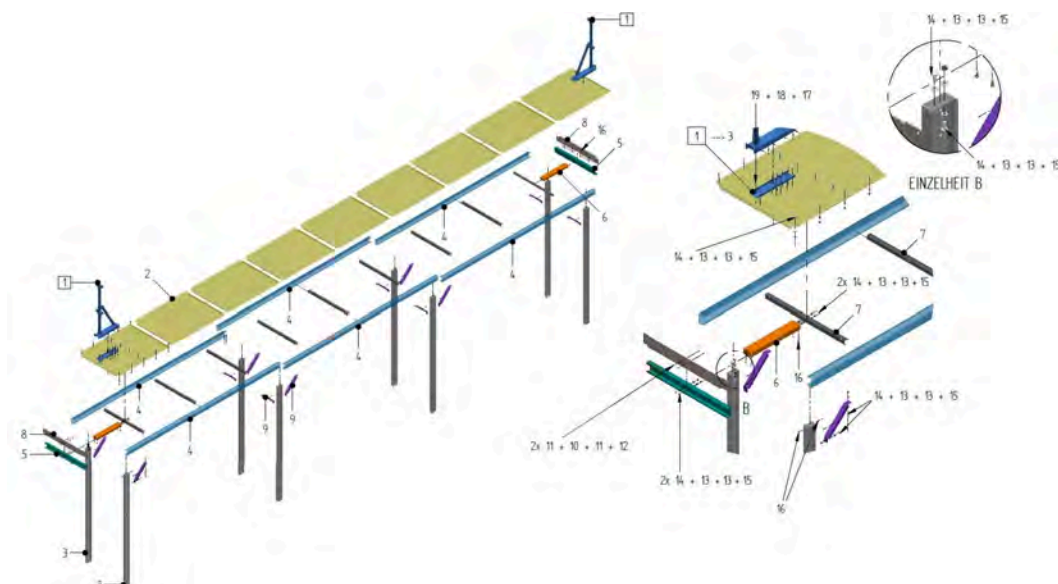


The support (3) must be in contact with the floor or placed on the same level as the base plate of the unit.

Fixing elements

Total of 6 connection points per support laterally.

- 6 x bolt ISO 4017 M10x25 A2
- 6 x nut ISO 4032 M10 A2
- 12 x detent edged washer 10 SKMA



Components and fixing elements for mounting the middle walkway

- ⇒ Bolt together the support (3) to the support on the side (unit) (fixing elements: see fig. 19)
- ⇒ Bolt together the support (3) (4) (5), the reinforcement (7) and the strut (9) (fixing elements: Pos. 13, 14, 15; see table 2)
- ⇒ Place the support plate (2) on the top of the frame and bolt together (fixing elements: Pos. 13, 14, 15; see table 2)
- ⇒ Connect the support (1) with the support plate (2) and the counter support (6) as illustrated (fixing elements: Pos. 17, 18, 19; see table 2)

Pos.	Number*	Designation	Tightening torque
1	2	Support	
2	9	Support plate	
3	8	Support	
4	6	Support	
5	2	Support	
6	2	Counter support	
7	9	Reinforcement	
8	2	Toeboard	
9	12	Strut	
10	8	Detent edged washer 8 SKMA48	
11	4	Bolt ISO 4017 M8x20 A2	18.5 Nm
12	4	Nut ISO 4032 M8 A4	
13	324	Detent edged washer 10 SKMA410	

Positions of the components and fixing elements for mounting the middle walkway

Pos.	Number*	Designation	Tightening torque
14	174	Bolt ISO 4017 M10x25 A2	37 Nm
15	174	Nut ISO 4032 M10 A2	
16	48	Rivet Monobolt 6.4 x 14	
17	20	Blind rivet nut M6 A2	
18	20	Detent edged washer I SKMA46	
19	20	Bolt ISO 4017 M6x20 A2	7.7 Nm

Positions of the components and fixing elements for mounting the middle walkway

* with 2 x 9 units

4.4 Acceptance test

Operator obligation

The acceptance test must be performed by the operator of the system.

Requirement

- The mounting conditions and mounting rules correspond to the requirements of the mounting location (see section "Requirements for the mounting location").

Time of the acceptance test

- After mounting the fall protection
- After replacing parts of the fall protection

Procedure

- ⇒ Perform an initial test in acc. with the applicable standards and rules (see section "Applicable standards and technical rules").
- ⇒ Perform a visual inspection of the design, the brackets and the fixing devices.
- ⇒ Check all bolted/screwed connections and tighten if necessary.
- ⇒ Check that the railing, the ladder, the ladder cage and the safety gate have been mounted properly.
- ⇒ Ensure that the fall protection can be inspected at any time and is always freely accessible.
- ⇒ Check the corrosion protection: Perform a visual inspection on all fixing elements and components. Document and archive the test results.

Procedure in case of defects

- ⇒ Report any defects to the manufacturer immediately.
- ⇒ Rectify defects following consultation with the manufacturer.

5 Maintenance

5.1 Safety instructions

⚠ WARNING	
 	WARNING OF THE RISK OF FALLING DUE TO CORROSION! In the course of time, the fall protection (railing/ladder) can corrode. The time period depends on the corrosive factors in the ambient air. Due to the onset of corrosion, the fall protection (railing/ladder) can lose its stability, leading to an increased risk of falling. Corroded parts of the fall protection are a significant safety risk also to bystanders, as parts can come loose and fall. This can also result in damage to objects near the unit and to the unit itself. • Check load-bearing components and fasteners of the fall protection (railing/ladder) for corrosion damage and load-bearing capacity at regular intervals. • If corrosion occurs, cordon off access to the unit and replace the affected components. • All work must be performed by specialist staff only.
NOTICE	
Observe the basic safety instructions (see section "Basic safety instructions").	
NOTICE	
All inspection and maintenance results must be documented and archived in acc. with the German "BetrSichV" (or national equivalents).	

5.2 Maintaining and servicing the fall protection

Important notes

NOTICE
The corresponding cleaning and maintenance intervals are specified in the unit's installation instructions.

Procedure

- ⇒ Clean the fall protection at regular intervals.
- ⇒ Measure the equipotential bonding at regular intervals: Check the electrical resistance of the connection between the fall protection and the earthing clamp on the equipment using suitable measuring equipment. The operator must ensure that the unit is correctly connected to the building's equipotential bonding. Inspection intervals must be determined by the operator on the basis of a job hazard analysis and national standards.
- ⇒ Perform a visual inspection of the equipotential bonding at regular intervals: Visually inspect the connection point on the unit's earthing clamp for damage, corrosion and a secure fit. Inspection intervals must be determined by the operator on the basis of a job hazard analysis and national standards.

- ⇒ Before walking on the surface, check that the unit is free of snow and ice. Remove any snow and ice.
- ⇒ Check load-bearing fasteners and load-bearing components for corrosion at regular intervals. Replace fasteners and components if necessary (see section "Mounting the fall protection").

6 Removal

6.1 Safety instructions

⚠ WARNING		
	WARNING OF THE RISK OF FALLING DURING REMOVAL! There is an increased risk of falling when removing the railing. • Prior to removal, put on an alternative fall protection (e.g. PPE against falls from a height with a suitable attachment point). • Cordon off the area around the unit (risk due to falling components). • Do not remove the ladder until everyone has left the surface of the unit. • Wear personal protective equipment (PPE).	 

NOTICE
Observe the basic safety instructions (see section "Basic safety instructions").

NOTICE
All fasteners (bolts/screws, washers, detent edged washers) removed during disassembly must be disposed of and must not be reused. Use new fastening elements for re-assembly.

NOTICE
Removal is carried out in reverse order of mounting: 1 Remove the safety gate 2 Remove the safety railing 3 Remove the ladder The ladder must always be the last component to be removed to ensure a safe descent. Whilst dismantling the railing, fitters must be protected by PPE or equivalent fall protection equipment.

6.2 Removing the fall protection

Required staff

- Specialist staff

Auxiliary equipment/tools

- Lifting accessories and lifting gear
- Spanner set
- Ring spanner set
- Tools for removing rawlplugs

- Socket wrench set
- Set of wrenches
- Ratchet
- Climbing aids
- Personal protective equipment against falls from a height or mobile railings

6.2.1 Removing the self-closing safety gate

Procedure

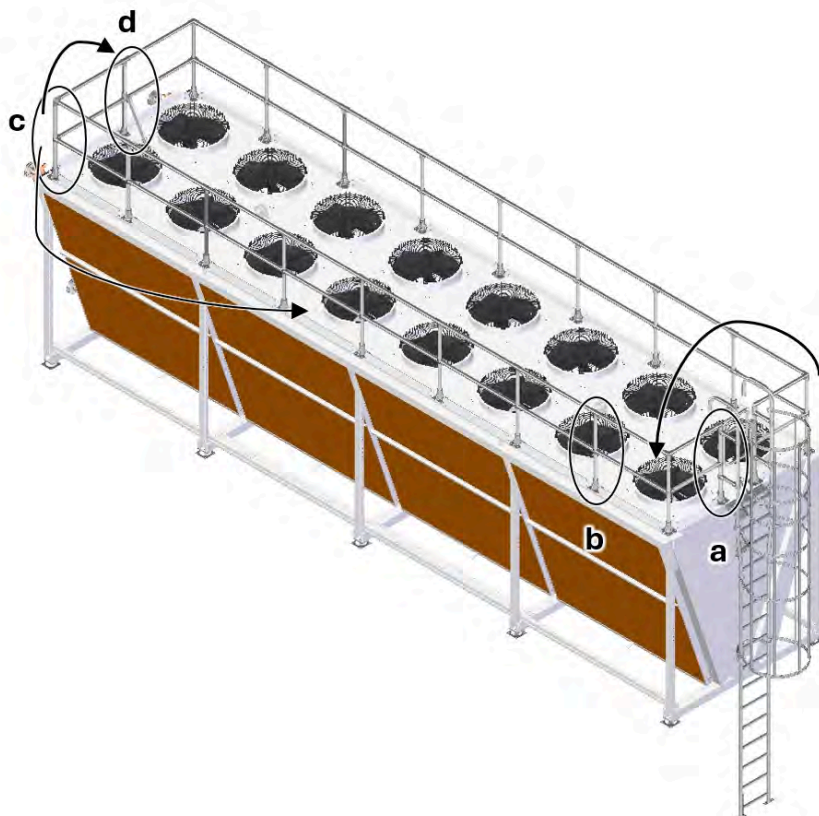


Safety gate

- ⇒ Remove the “middle” tube (5b) (see the manufacturer's mounting instructions).
- ⇒ Release the tension from the spring of the self-closing safety gate (5a) (see the manufacturer's mounting instructions).
- ⇒ Remove the self-closing safety gate (5) (see the manufacturer's mounting instructions).

6.2.2 Removing the safety railing

6.2.2.1 Removal sequence



Removal sequence

- ⇒ Start removing the railing at the corner bracket (c), then continue clockwise/counterclockwise until you have reached the access area (a). In the course of removal, the individual steps must be repeated in reverse order.

The following table provides an overview of the removal steps of the components:

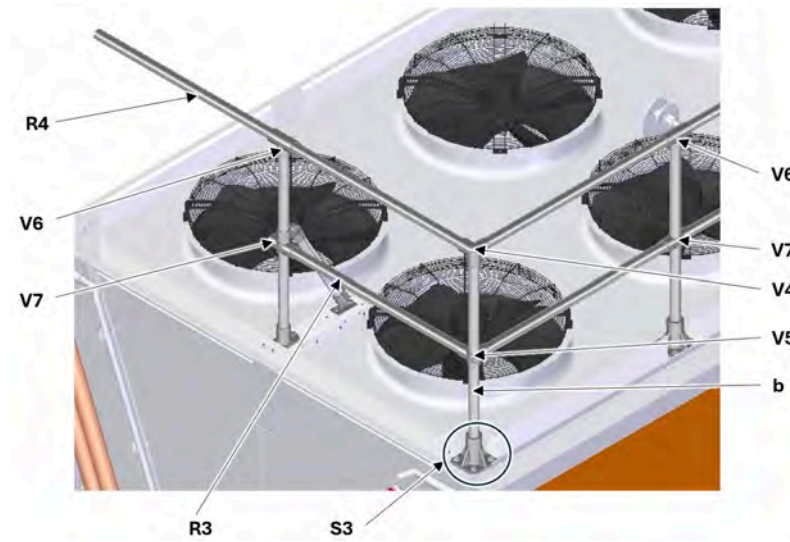
Removal sequence	See section
Removing the corner bracket	6.2.2.2
Removing the stiffener	6.2.2.3
Removing the middle section	6.2.2.4
Removing the access area	6.2.2.5

The following table provides an overview of the components required for the removal steps:

Components	Abbreviation
Tubular fitting assembly "access"	a
Tubular fitting assembly "middle section"	b
Tubular fitting assembly "corner bracket"	c

Components	Abbreviation
Tubular fitting assembly "stiffener"	d

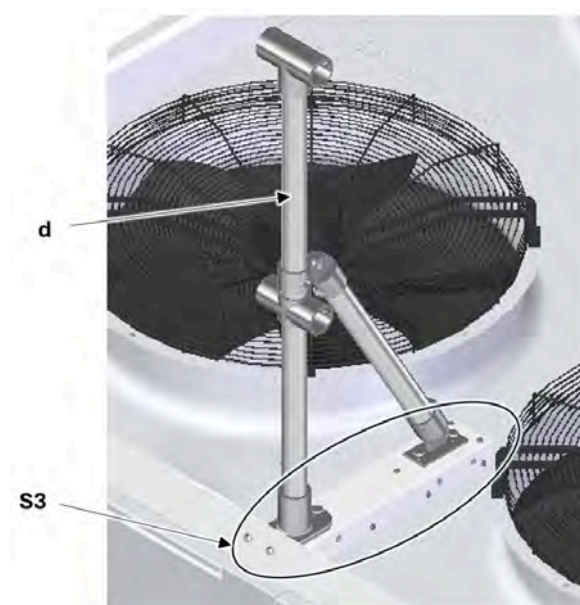
6.2.2.2 Removing the corner bracket



Removing the corner bracket

- ⇒ Unscrew the setscrews and fasteners (S3).
- ⇒ Remove the tubular fitting assembly "corner bracket" (b). For this purpose, pull the tubes of the handrail and kneerail (R3/R4) out of the tubular fittings (V4/V5).

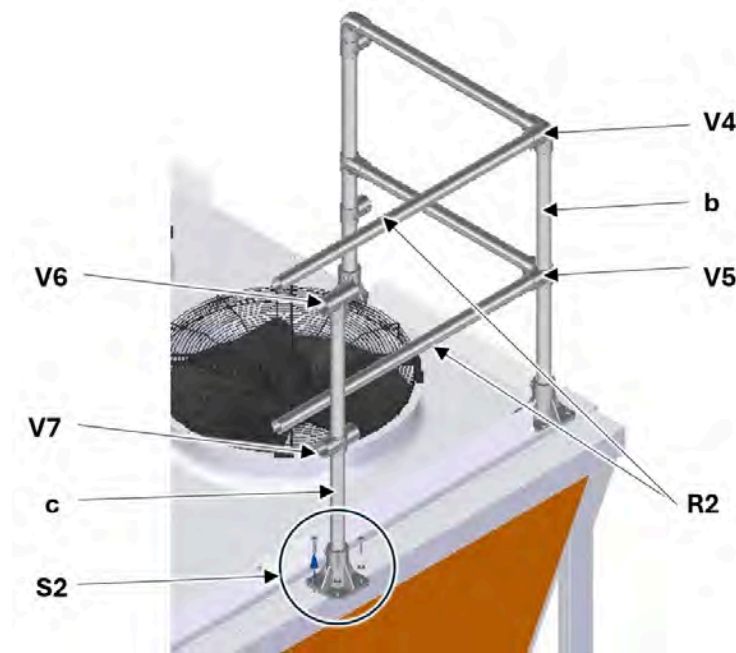
6.2.2.3 Removing the stiffener



Removing the "stiffener" tubular fitting assembly

- ⇒ First remove the tubular fitting assembly “corner bracket” before removing the tubular fitting assembly “stiffening” (d).
- ⇒ Unscrew the setscrews and fasteners (S3).
- ⇒ Remove the tubular fitting assembly “stiffener” (d).

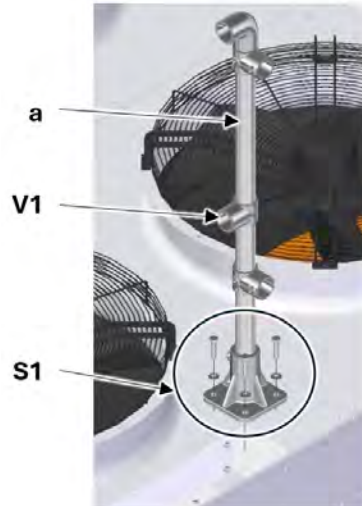
6.2.2.4 Removing the middle section



Removing the middle section

- ⇒ First remove the tubular fitting assembly “corner bracket” before removing the tubular fitting assembly “middle section” (c).
- ⇒ Unscrew the setscrews and fasteners (S2).
- ⇒ Remove the tubular fitting assembly “middle section” (c). For this purpose, pull the tubes of the handrail and kneerail out of the tubular fittings (V4/V5).
- ⇒ Pull the tubes of the handrail and kneerail out of the tubular fittings of the next tubular fitting assembly.
- ⇒ Repeat these steps until you reach the access area or the tubular fittings of another assembly group.

6.2.2.5 Removing the access



Completion of removal in the access area

- ⇒ Unscrew the setscrews and fasteners (S1).
- ⇒ Remove the tubular fitting assembly “access” (a) from the unit in the access area.

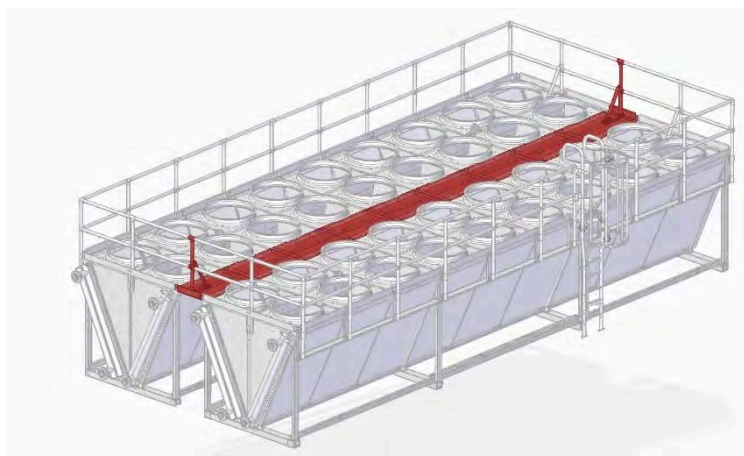
6.2.3 Removing the middle walkway

Requirements

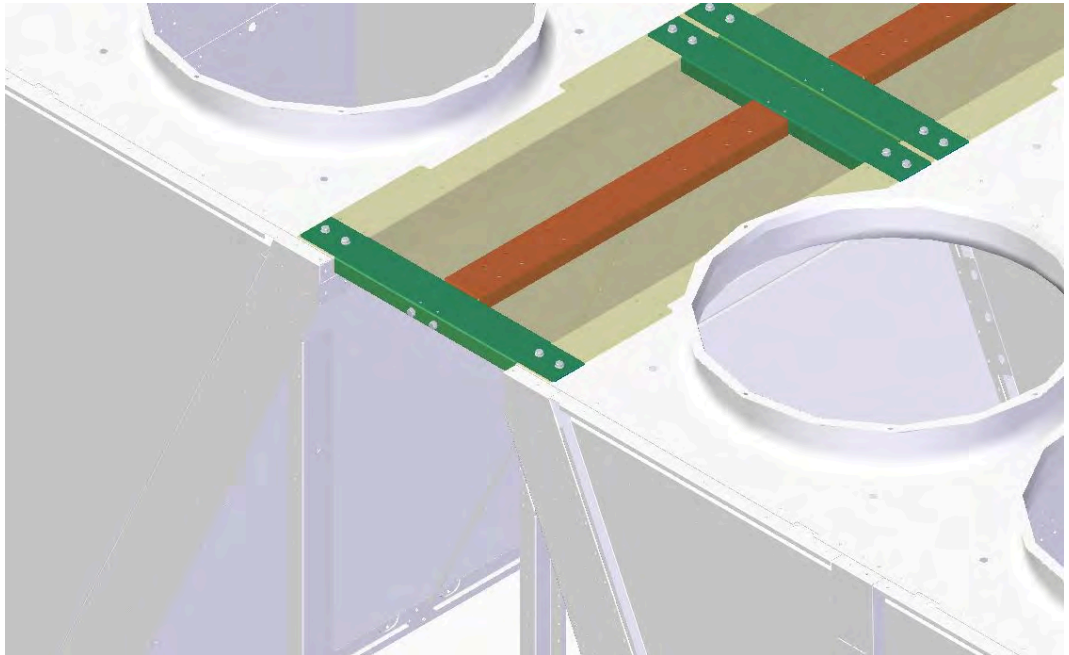
- Removing the middle walkway is only required if two or more identical units were set up next to each other.

6.2.3.1 Removing the middle walkway: module A/B

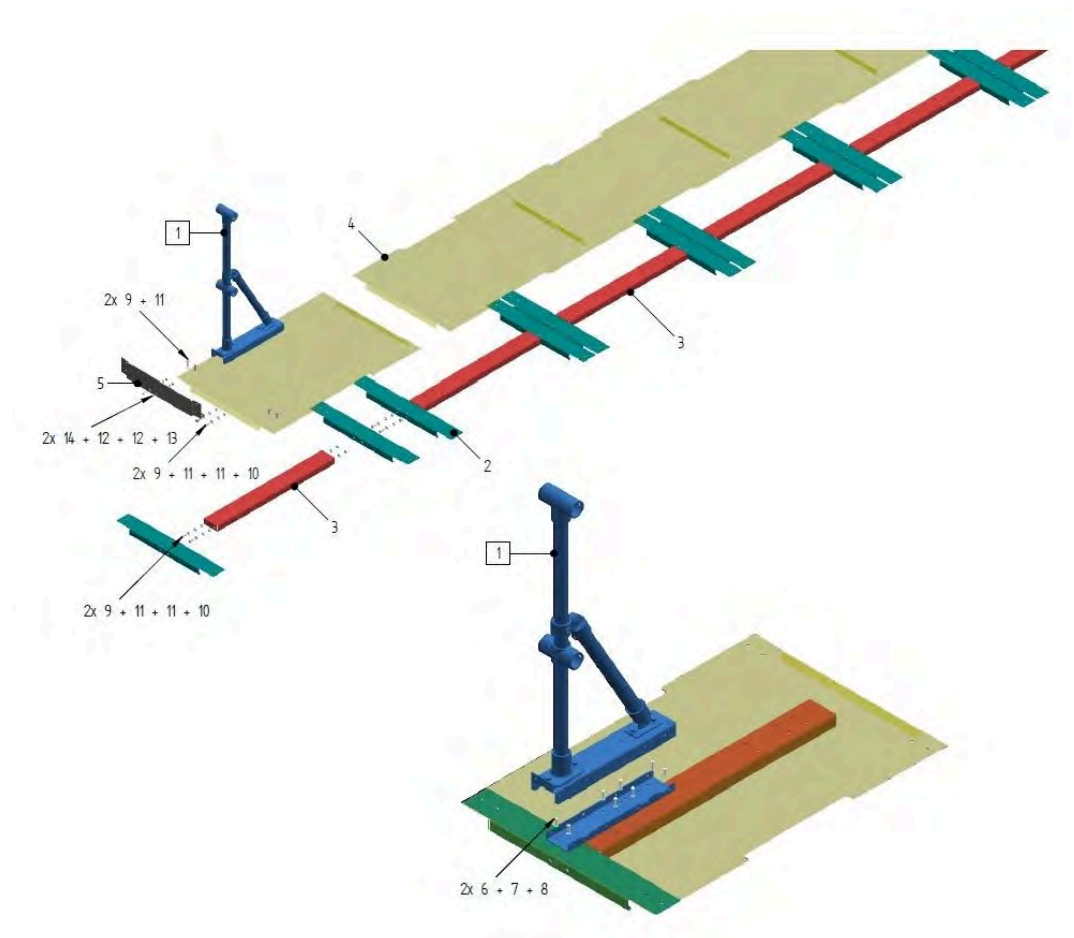
Removal



View middle walkway A/B



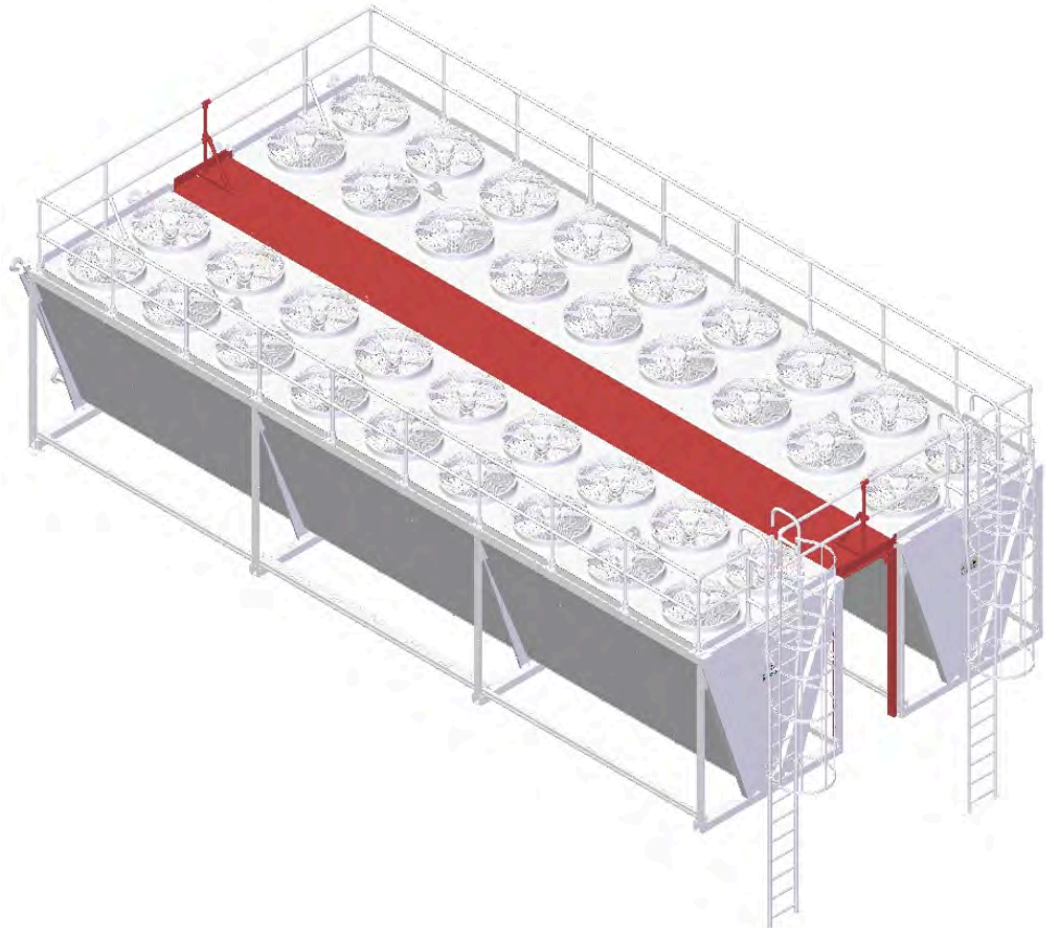
Detail of middle walkway removal from the unit



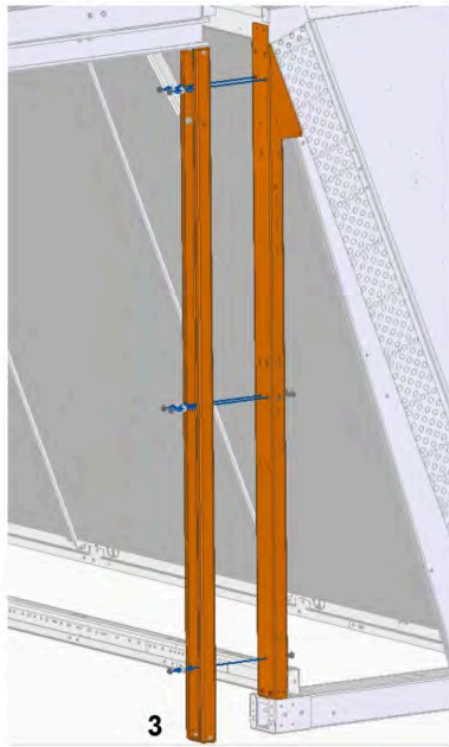
Components and fixing elements for removing the middle walkway

- ⇒ Separate the support (1) from the support plate (4) and the struts (2) (3). For this purpose, unscrew the fixing bolts.
- ⇒ Separate the support plate (4) from the fan plates and the struts (2) (3).
- ⇒ Separate the struts (2) (3) from the fan plates of the units and from one another. For this purpose, unscrew the fixing bolts.

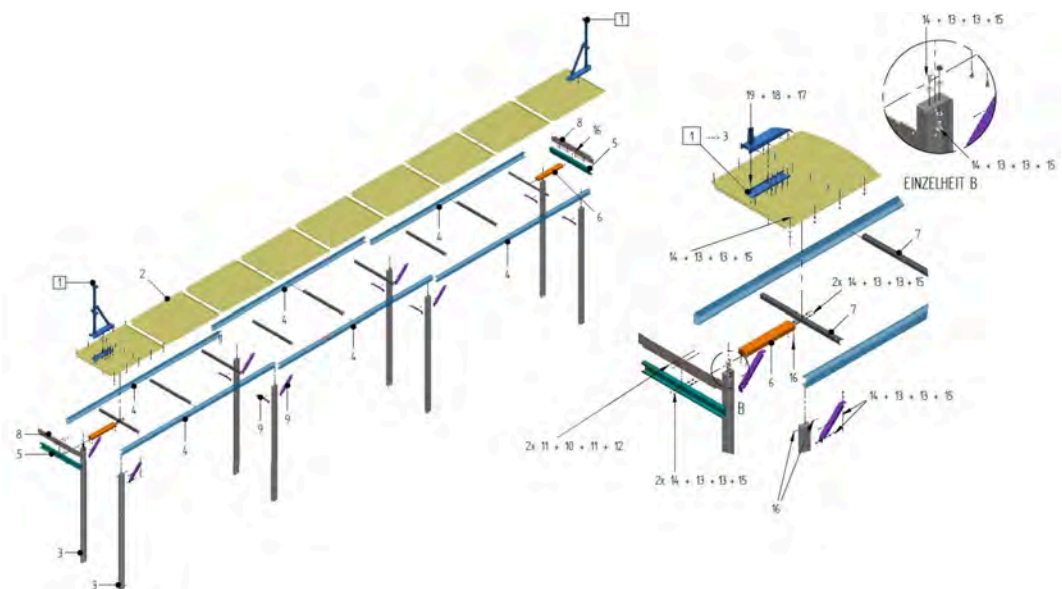
6.2.3.2 Removing the middle walkway: module C/D



View middle walkway A/B



Detail of middle walkway removal from the unit

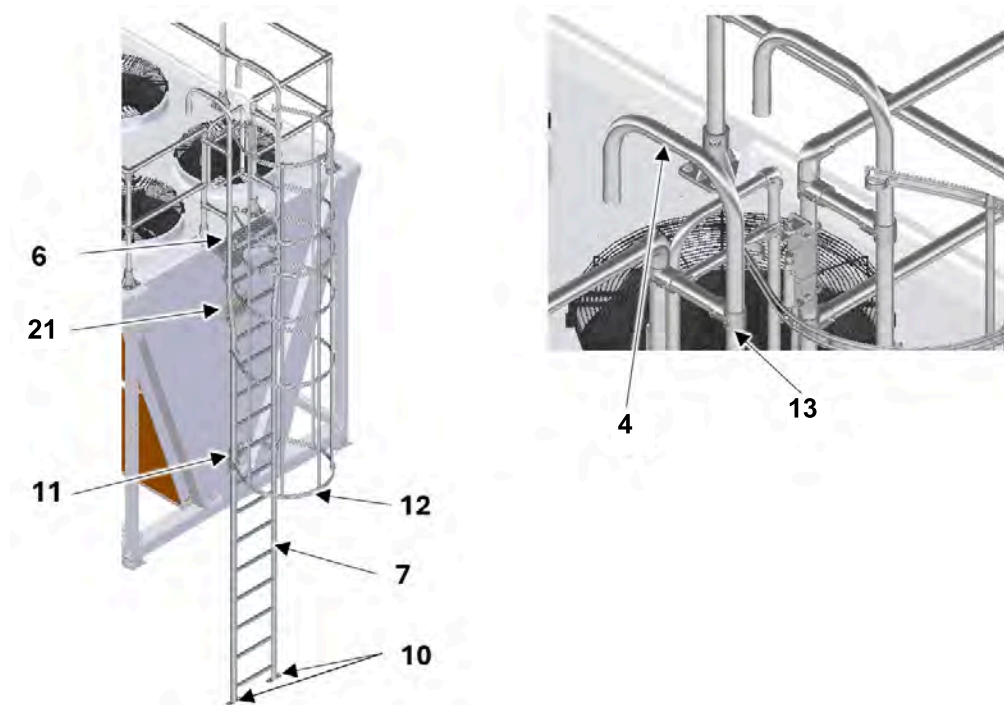


Components and fixing elements for removing the middle walkway

- ⇒ Separate the support (1) from the support plate (2) and the counter support (6). For this purpose, unscrew the fixing bolts.
- ⇒ Separate the support plate (2) from the frame. For this purpose, unscrew the fixing bolts.
- ⇒ Separate the support (3) (4) (5), the reinforcement (7) (8) and the strut (9) from one another. For this purpose, unscrew the fixing bolts.
- ⇒ Separate the support (3) from the support on the side (unit).

6.2.4 Removal of the ladder and the ladder cage

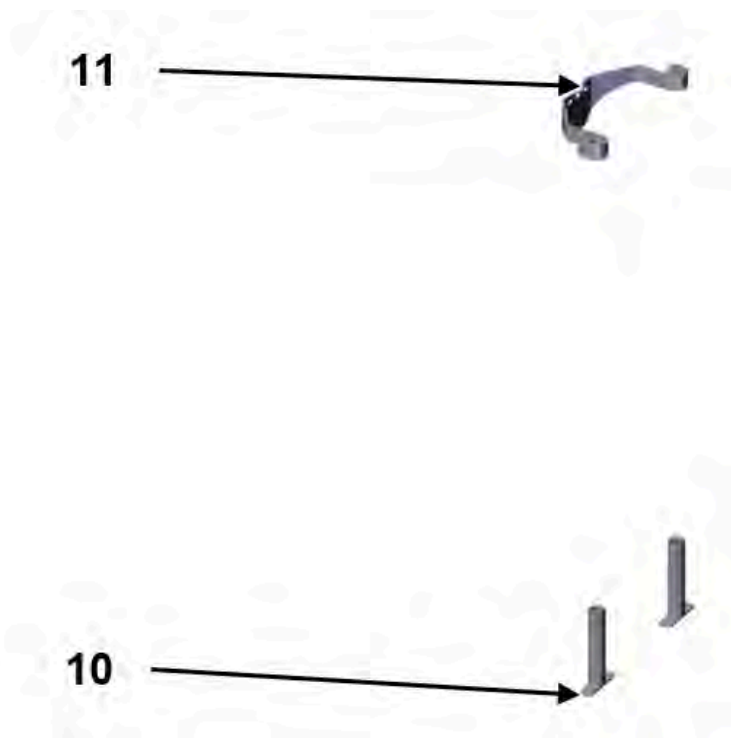
Procedure



Ladder with ladder cage and handrail bend

- ⇒ Remove the label plate with the safety instructions and warnings (21) from the unit wall.
- ⇒ Unscrew the bolted connections between the handrail bends (4) and the ladder stiles, then pull the handrail bends upwards to remove them.
- ⇒ Detach the tubular fitting assembly "ladder" from the left and right stile and pull it out of the tubular fitting (13) of the safety railing.
- ⇒ Remove the access platform (6) from the top rung of the ladder.
- ⇒ Remove the ladder cage (12) from the ladder.
- ⇒ Have a second person secure the ladder (7). Loosen the wall brackets (11), then lift the ladder out of the ladder feet (10) and set it aside carefully.

Final steps



Ladder feet and wall fixing brackets

- ⇒ Remove the ladder feet (10) from the floor.
- ⇒ Remove all wall fixing brackets (11) from the wall.
- ⇒ Remove rawlplugs.

7 Disposal

7.1 Safety instructions

NOTICE

Observe the basic safety instructions (see section "Basic safety instructions").

ATTENTION

ENVIRONMENTAL POLLUTION!

At the end of its service life, the fall protection requires proper disposal of the materials used. If the materials are not disposed of correctly, this could result in environmental damage.

- Only dispose of materials in compliance with the waste disposal laws that are binding for the country of operation.

7.2 Disposal of the fall protection

- ⇒ Unless a take-back or disposal agreement has been made, recycle dismantled components.
- ⇒ Scrap metal residues.
- ⇒ Dispose of the remaining components sorted according to material properties.

8 Technical data

NOTICE
For technical data, refer to the documents supplied.