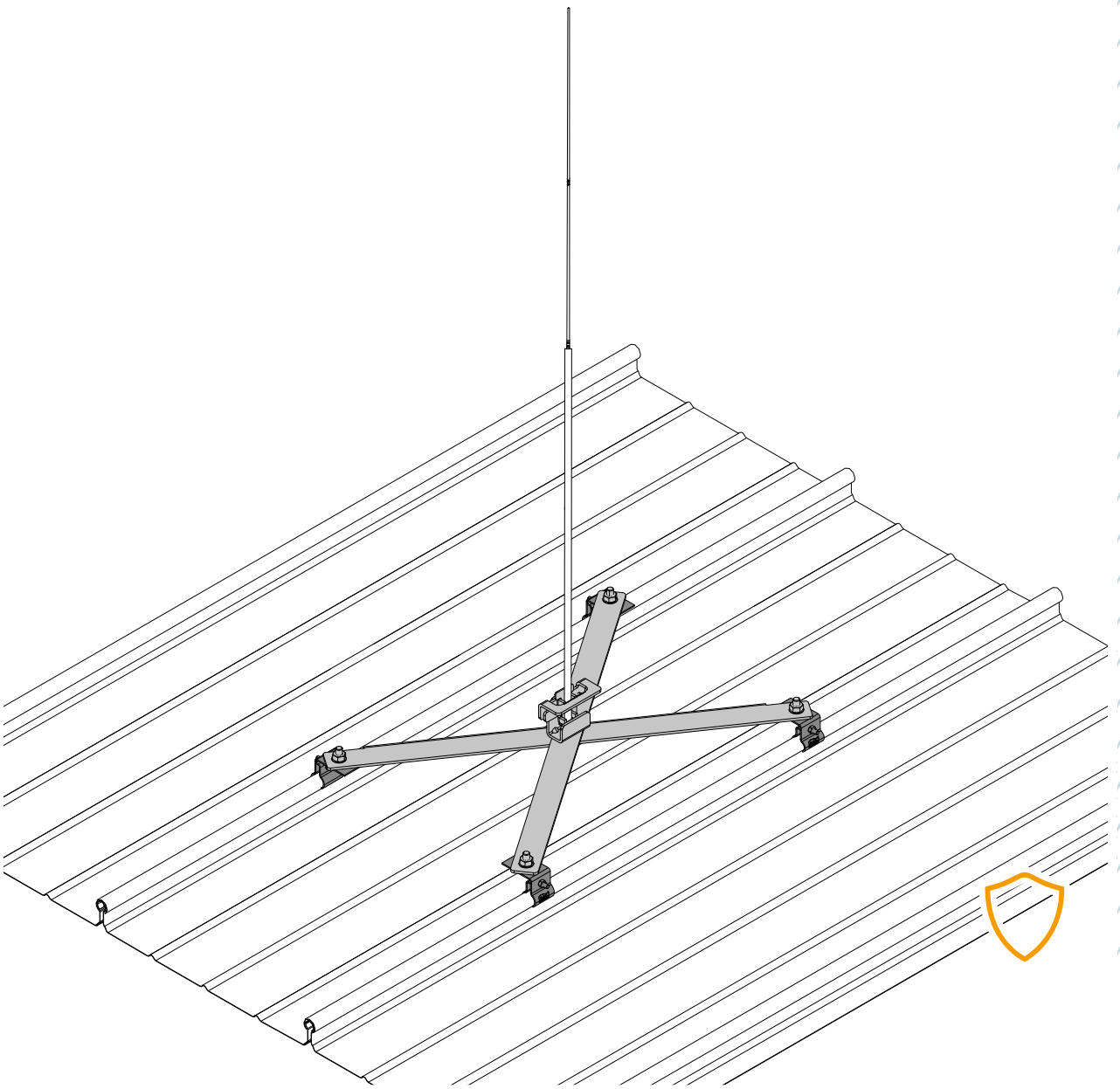


Mounting instructions

Air-termination rod fastening for metal roofs (Kalzip)

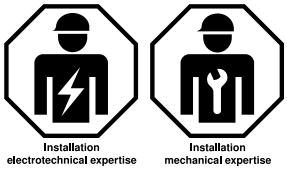
OBO BETTERMANN

Air-termination rod fastening for metal roofs F-FIX-MD
Mounting instructions

Table of contents

1 About these instructions

1.1 Target group



Work on air-termination systems may only be carried out by qualified people:

– For lightning protection systems according to IEC 62305 (VDE 0185-305), e.g. a lightning protection specialist. This specialist must know the lightning protection standards applicable at the mounting location, as well as the generally recognised rules of technology.

1.2 Relevance of these instructions

These instructions are based on the standards valid at the time of compilation (August 2025).

Please read the instructions carefully before commencing mounting. We will not accept any warranty claims for damage and liability caused through non-observance of these instructions.

Any images are intended merely as examples. Mounting results may look different.

All the documents supplied with the product must be stored in an easily accessible location, so as to be available when information is required. (Only for printed instructions)

In these instructions, cables and lines are referred to simply as cables.

To find out more about planning and mounting the product, we recommend a comprehensive training course.

1.3 Types of warning information

WARNING

Type of risk!
Shows a risky situation. If the warning information is not observed, then serious or fatal injuries may occur.

CAUTION

Type of risk!
Shows a risky situation. If the warning information is not observed, then medium or minor injuries may occur.

ATTENTION

Type of risk!
Shows a risky situation. If the warning information is not observed, then damage to the product or the surroundings may occur.

Note! *Indicates important information or assistance.*

1.4 Basic standards and regulations

– IEC 62561-1 (DIN EN 62561-1 ED 2, VDE 0185-561-1), Lightning protection system components – Part 1: Requirements for connection components

– DIN EN 1991-1-4: 2010-12, Eurocode 1: Effects on structures – Parts 1–4: General effects – wind loads

– DIN EN 1991-1-4/NA: 2024-08, Eurocode 1: Effects on structures – Parts 1–4: General effects – wind loads

* Status of standards: August 2025

1.5 Applicable documents

Lightning protection components are not subject to an EU directive. Instead, OBO makes the provider's declarations of conformity available for the appropriate components of the lightning protection systems. These declarations of conformity certify the agreement with the named standards and stored documents, but do not, however, contain any guarantee of properties.

2 Intended use

The air-termination rod fastening is used to mount air-termination rods (Ø 16 mm) on metal roofs (F-FIX-MD) or Kalzip metal roofs (F-FIX-MD+) with a slope of up to 38°.

The air-termination rod fastening is not designed for any use other than that described here. If the air-termination rod fastening is used for another purpose, then this shall render all liability, warranty and damage claims null and void.

3 Safety

3.1 General safety information

Observe the following general safety information:

– If there is a lightning strike, lethal currents can flow through the lightning protection system. Never work on the elements of the lightning protection system during a thunderstorm or if there is the risk of one.

– Before mounting, calculate and dimension the system according to local circumstances according to Eurocode 1: DIN EN 1991-1-4.

– Take the approved roof loads at the mounting location into account and, if necessary, agree with the building constructor.

– Check the air-termination rod fastening, air-termination rod and accessories for proper condition. Do not mount incomplete or damaged items.

3.2 Personal protective equipment

List of personal protective equipment to be used:

Use hand protection

The production method means that metallic objects may have areas with sharp edges. Wear suitable protective gloves to avoid cutting injuries.

4 Necessary tools

List of tools to be used:

– Open-end wrench, WAF: 10, 17 and 19

– Torque spanner

5 Product description

The air-termination rod fastening can be mounted on metal roofs with a slope of up to 38°. Air-termination rods with a diameter of 16 mm can be fastened at an angle of inclination of up to 38°.

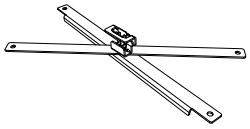
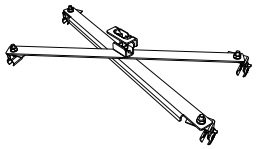
The material is resistant to frost, weathering and UV.

The air-termination rod fastening is suitable for mounting air-termination rods at wind loads according to Eurocode 1: DIN EN 1991-1-4.

The air-termination rod fastening is available either without folding clamps (F-FIX-MD) or with folding clamps for Kalzip roof profiles (F-FIX-MD+).

The air-termination rod is not contained in the scope of delivery.

5.1 Product overview

Article	Item no.	Type	Designation	Use
	5403336	F-FIX-MD	Air-termination rod fastening for metal roof	Can be extended with adequate folding clamps or other metal roof fastening systems
	5403337	F-FIX-MD+	Air-termination rod fastening for Kalzip metal roof	With folding clamps for Kalzip roof profile

Tab. 1: Air-termination rod fastenings

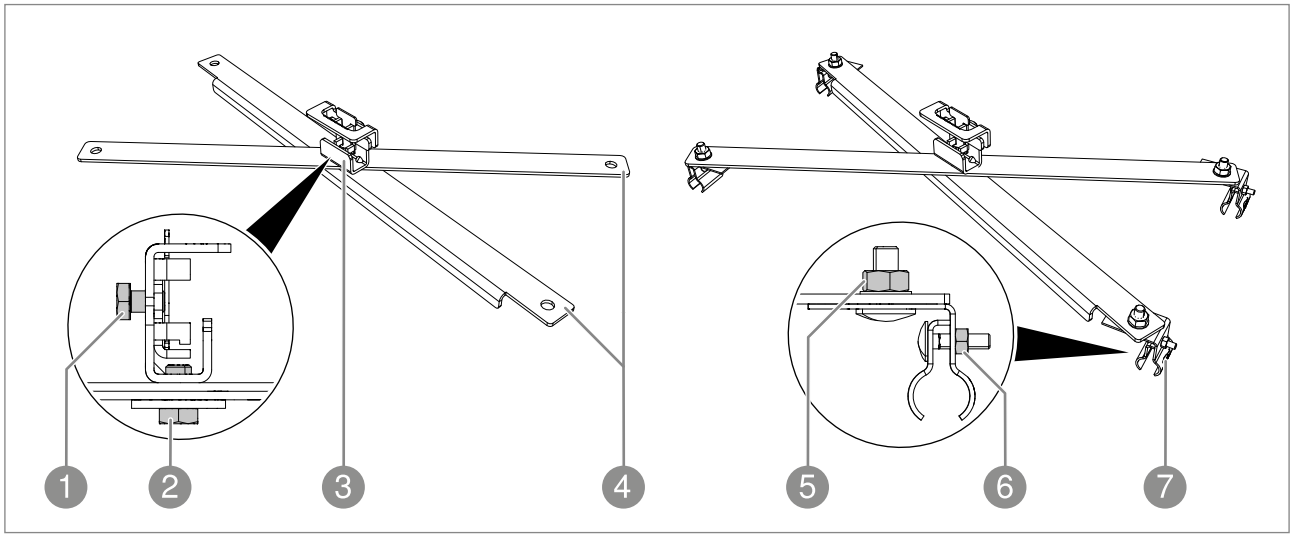


Fig. 1: Product overview

1 1 Hexagonal bolt M10x16

2 1 Hexagonal bolt M12x20

3 1 Clamping element

4 1 Strut frame

5 1 Hexagonal nut M10

6 1 Hexagonal nut M6

7 1 Folding clamp (Kalzip)

5.2 Accessories

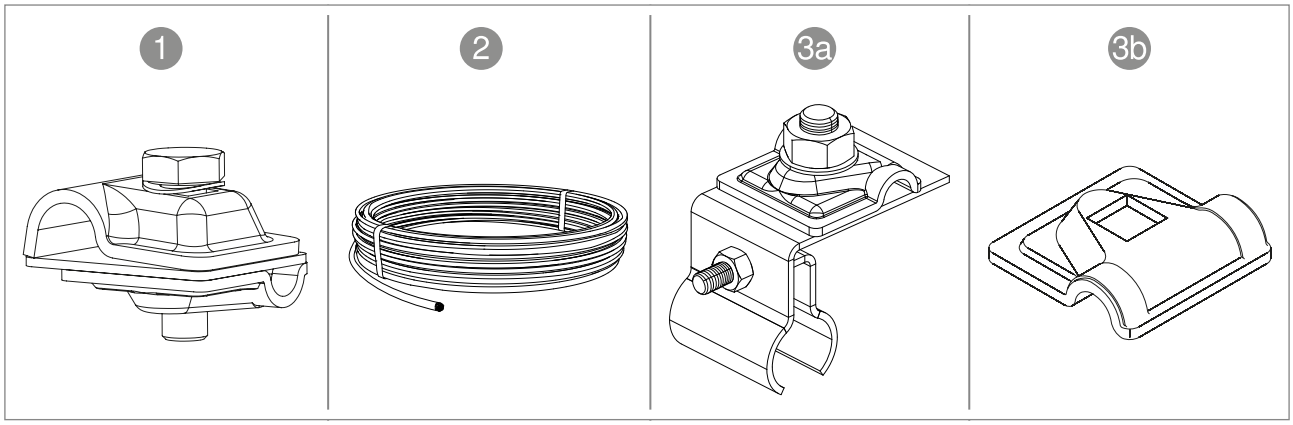


Fig. 2: Accessories

Figure no.	Item no.	Designation	Type	Length	Diameter/hole	Material	Use
1	5311590	Quick connector	249 8-10x16 VA	40 x 50 mm	M10	VA	Fastening the support to the air-termination rod
2	5021235	Round conductor	RD 8-V2A	125 m	RD 8	VA	Supporting element
	5021227	Round conductor	RD 10-V2A	50 m	RD 10	VA	
	5021239	Round conductor	RD 10-V2A	80 m	RD 10	VA	
	5021644	Round conductor	RD 8-V4A	125 m	RD 8	V4A	
	5021640	Round conductor	RD 10-V4A 20	20 m	RD 10	V4A	
	5021642	Round conductor	RD 10-V4A	50 m	RD 10	V4A	
	5021647	Round conductor	RD 10-V4A	80 m	RD 10	V4A	
3a	5317502	Folding clamp	RSF 249 8-10 VA	67 x 38 mm	M10	VA	When using F-FIX-MD+: Fastening of the support to metal roof
3b	5311554	Quick connector	249 8-10 VA-OT	40 x 40 mm	For M10	V2A	When using F-FIX-MD: Fastening of the support to metal roof Mounting requires folding clamps appropriate for the roof, M10 screws and spring washers (DIN 137).

Tab. 2: Accessories

6 Planning an installation

When planning an air-termination system, take the following planning steps into account:

– For the erection of the air-termination rods, determine the appropriate wind load according to Eurocode 1: DIN EN 1991-1-4.

– Depending on the lightning protection class, determine the protection area, the required height and the arrangement of the air-termination rods, according to IEC 62305-3 (DIN EN 62305-3, VDE 0185-305-3).

– Calculate the necessary separation distance according to IEC 62305- 3 (DIN EN 62305-3, VDE 0185-305-3).

Note! *You can find detailed planning aids on lightning and surge protection systems in the OBO lightning protection guide (Item. no.: 9131970).*

6.1 Determining the wind load

To determine the wind load, the following factors must be taken into account, in accordance with Eurocode 1: DIN EN 1991-1-4:

1. Determining the wind load zone

   The first factor that needs to be known when determining the wind load is the wind load zone in which the object is located.

2. Determining the terrain category (TC)

   Terrain-specific loads and dynamic pressures are the second factor in determining wind loads.

3. Determining the wind load

   The wind load can be determined based on the wind load zone and terrain category. The wind load must be determined at the project location.

7 Mounting the air-termination rod fastening

Note! *In this chapter, mounting is shown using the air-termination rod fastening F-FIX-MD+ with folding clamps already mounted as an example. To mount the air-termination rod fastening F-FIX-MD, the same procedure applies after attaching the folding clamps for the specific roof profile.*

Note! *The folding clamps of air-termination rod fastening F-FIX-MD+ may only be mounted on the round standing seam edges of Kalzip metal roofs.*

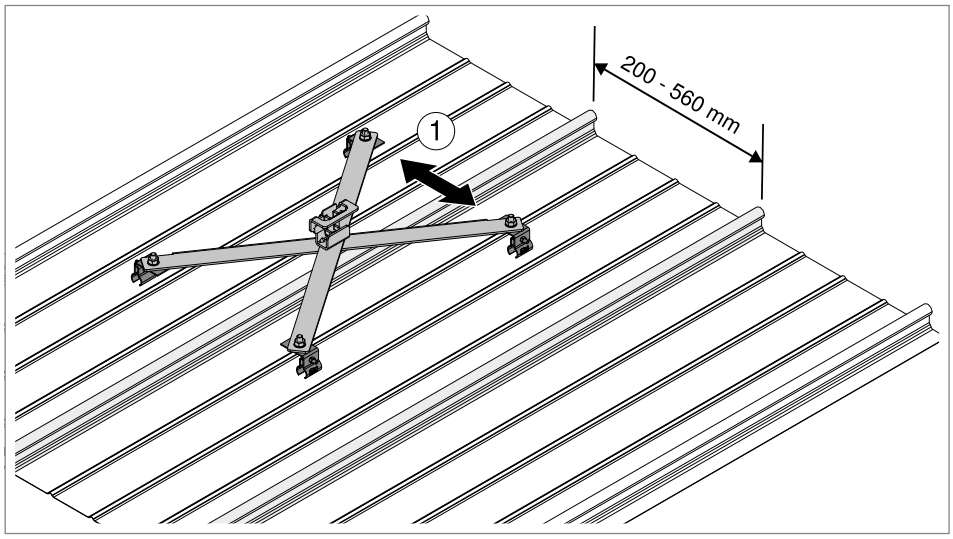


Fig. 3: Mounting the strut frame

Note! *The air-termination rod fastening can be mounted on metal roofs with a roof profile that has a seam spacing of 200–560 mm.*
Seam spacings on Kalzip metal roofs, however, measure a maximum of 537 mm.

1. Adjust the strut frame to the seam spacing of the metal roof.

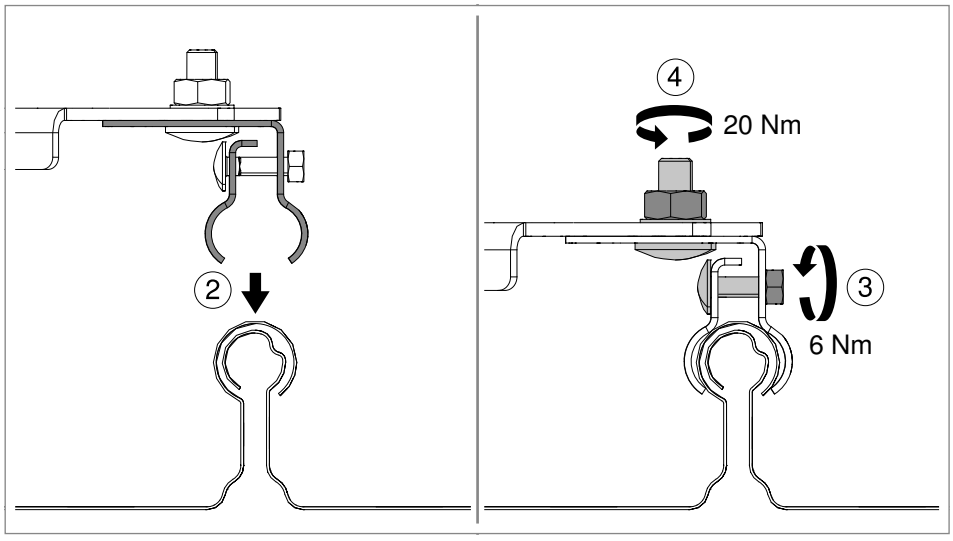


Fig. 4: Fastening the clamps

Note! *On the strut frame of the air-termination rod fastening F-FIX-MD, a folding clamp must be mounted to each strut end with a hexagonal nut M10 to mechanically stabilise the air-termination rod. Select the folding clamps to match the respective roof profile.*

2. Place all four folding clamps on the seams of the metal roof.

3. To fasten the folding clamps on the seams of the metal roof, tighten the hexagonal nuts M6 on the folding clamps.

4. To secure the position of the strut frame, tighten the hexagonal nut M10 above the seam.

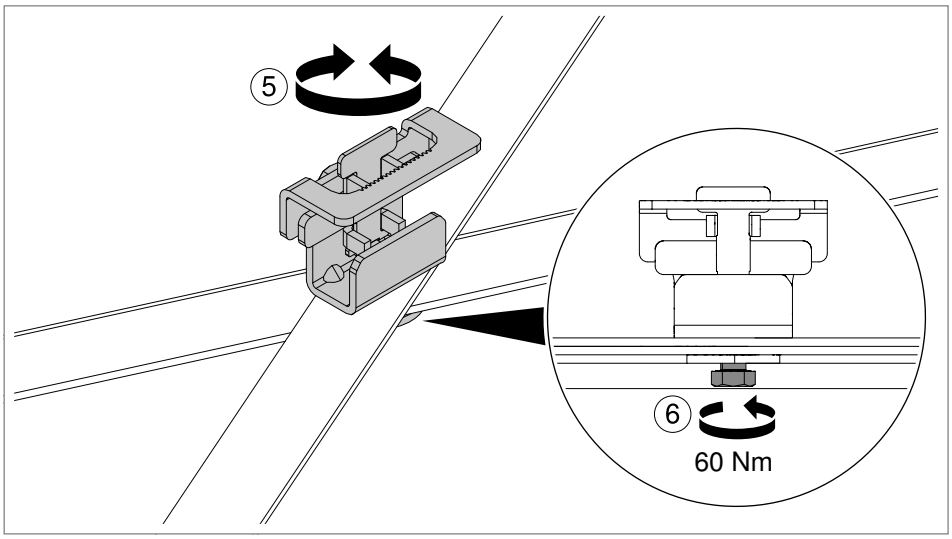


Fig. 5: Aligning the clamping element

5. The clamping element can be rotated 360°. Align the clamping element as needed.

6. Tighten the hexagonal bolt M12x20 under the clamping element using a torque spanner.

8 Attaching the air-termination rod

Air-termination rods with a diameter of 16 mm and a total length of up to 4 m can be attached with the air-termination rod fastening.

Air-termination rods with a length exceeding 2 m must be supported with an additional mechanical fastening depending on the wind load determined (see chapter “1 About these instructions“ on page 4).

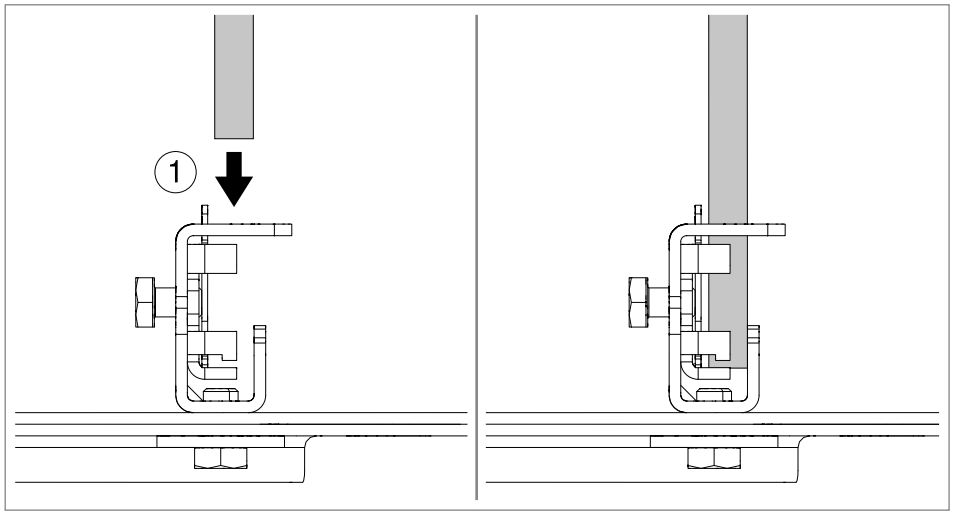


Fig. 6: Inserting the air-termination rod

1. Insert the air-termination rod into the clamping element.

WARNING

Reduced stability!
If the air-termination rod is not in the clamping element completely, the air-termination rod can come loose again and lose its protective function. Push the air-termination rod completely into the air-termination rod holder.

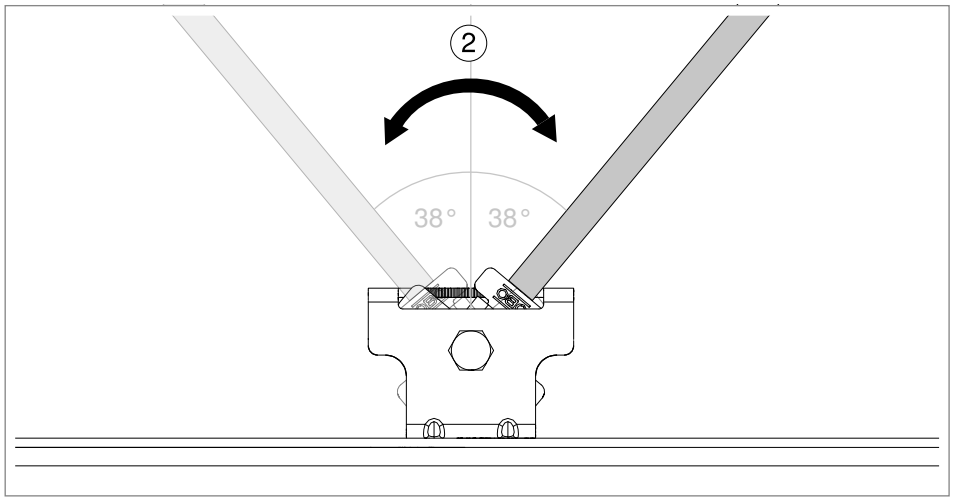


Fig. 7: Adjusting the angle of the air-termination rod

2. Adjust the angle of inclination of the air-termination rod (max. 38° possible in both directions).

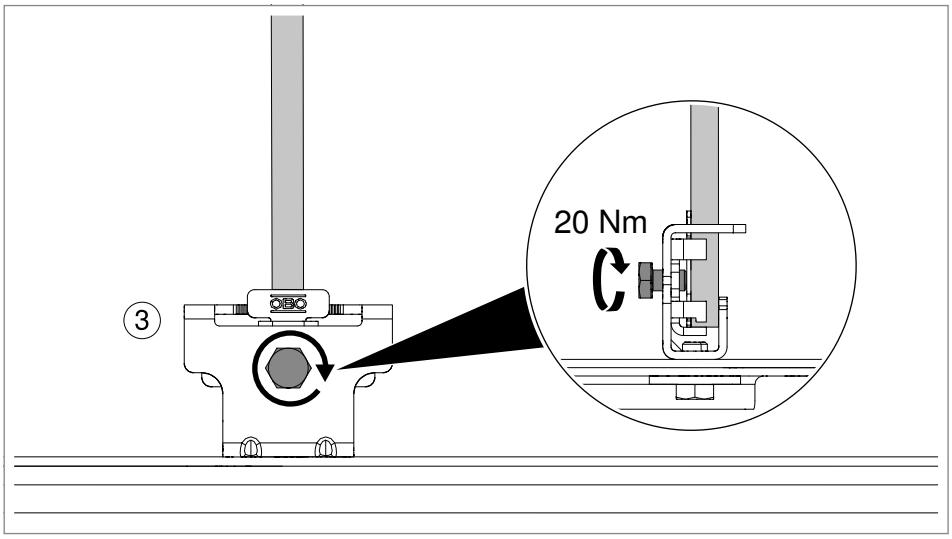


Fig. 8: Securing the position

3. To secure the position of the air-termination rod, tighten the hexagonal bolt M10x16 on the side of the clamping element.

Note! *When using the round conductor indicated in chapter “5.2 Accessories“ and an OBO round wire connection terminal for air-termination rods, the air-termination rod fastening may be used for lightning currents H to 100 kA (10/350) in accordance with IEC 62561-1.*

9 Air-termination rod conductor

Provided the metal roof (capable of carrying lightning current according to DIN VDE 0185-305-3, Supplement 4) is integrated into the external lightning protection (e.g. via a down conductor cable to metal roof, metal facade or eaves), no additional down conductor is required, as the air-termination rod is conductively connected to the metal roof via the strut frame and the four folding clamps.

10 Providing additional support for the air-termination rod

The air-termination rod may have to be provided with additional support following mounting depending on the wind load and the air-termination rod length.

10.1 Determining the type of support

Depending on the wind load, the air-termination rod will need no support at all, or support on one or two sides.

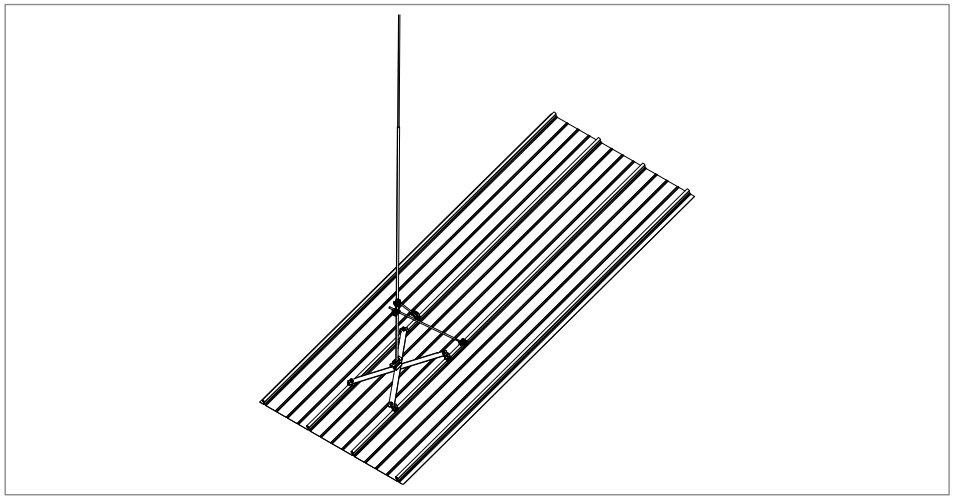


Fig. 9: Support on one side

Note! *Support on one side can be attached from above (see Fig. 9) or from below. Both variants provide the same support.*

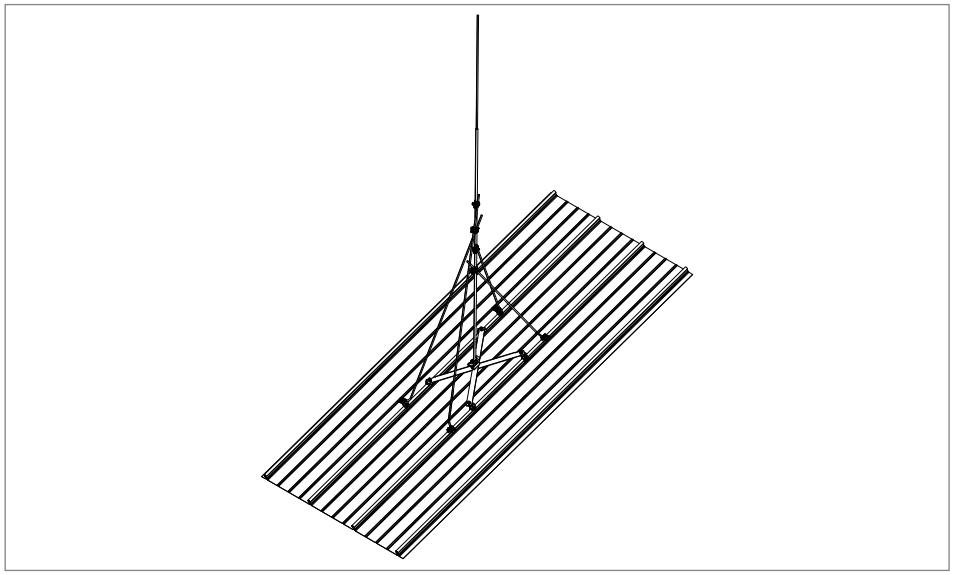


Fig. 10: Support on two sides

In the following table, you can take the wind load calculated in chapter 6.1 to determine whether the air-termination rod length requires no support, support on one side or support on two sides:

Total length of the air-termination rod / Wind load	1.5 m	2 m	2.25 m	2.5 m	2.75 m	3 m	3.25 m	3.5 m	3.75 m	4 m
≤108 km/h	-	-	-	-	-	-	-	-	1	1
109–117 km/h	-	-	-	-	-	-	-	1	1	2
118–130 km/h	-	-	-	-	-	-	1	1	2	2
131–140 km/h	-	-	-	-	-	1	1	2	2	2
141–157 km/h	-	-	-	-	1	1	2	2	2	2
158–176 km/h	-	-	-	1	1	2	2	2	2	2
177–200 km/h	-	-	1	1	2	2	2	2	2	2
201–275 km/h	-	1	1	2	2	2	2	2	2	2

Tab. 3: Determining the support

10.2 Support components

Note! *You will find more exact information on the components of the support in the chapter “5.2 Accessories“ on page 8.*

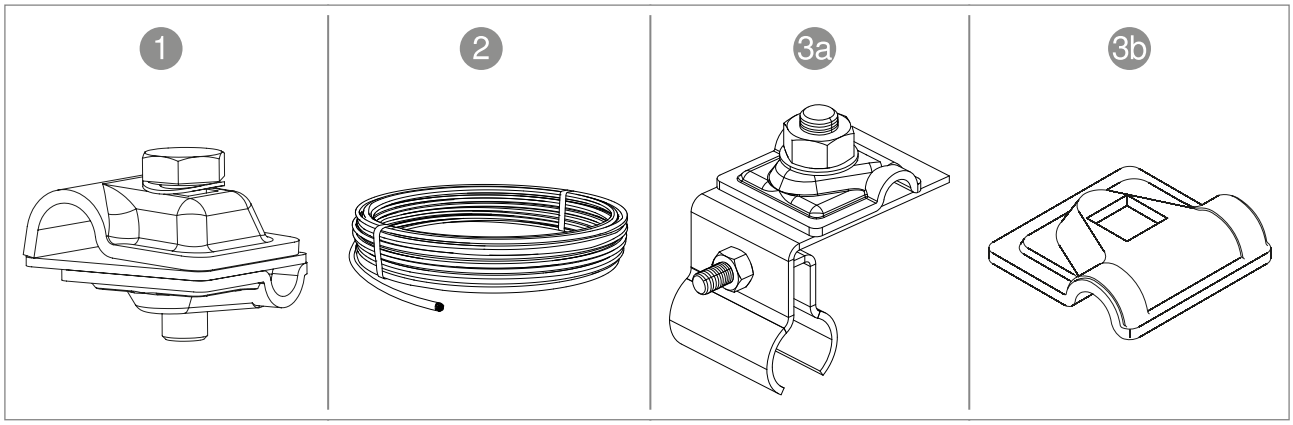


Fig. 11: Accessories for support

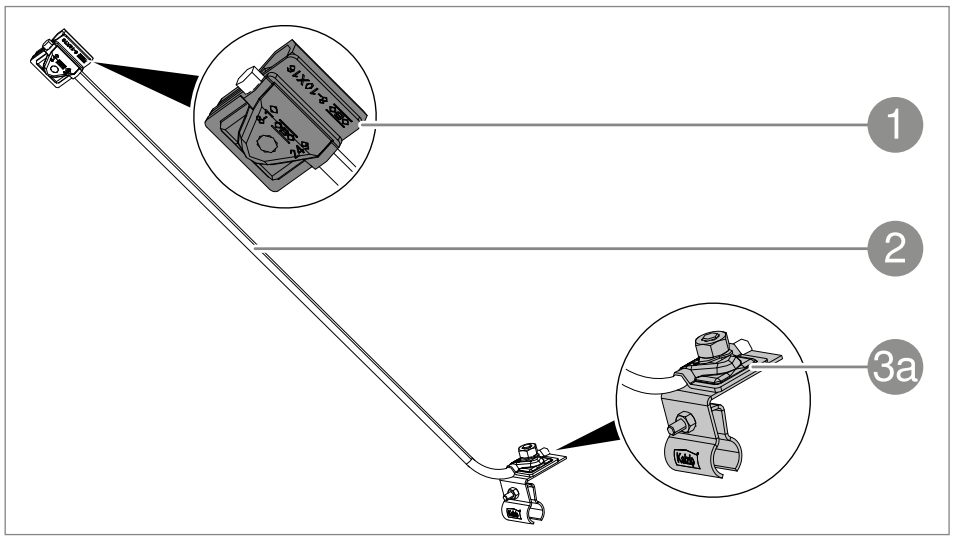


Fig. 12: Support

Fastening of the support on the seams of the metal roof depends on the roof profile (3a / 3b).

The support consists of:

1 1 Quick connector

2 1 Round conductor

3a Kalzip metal roof: folding clamp

3b Other roof profile: quick connector combined with:

- Folding clamp
- Bolt M10
- Spring washer (DIN 137)

Note! *Folding clamp, bolt M10 and spring washer must be obtained separately by the specialist. The folding clamp must match the roof profile and have a Ø 10 mm hole.*

10.3 Support angle and length

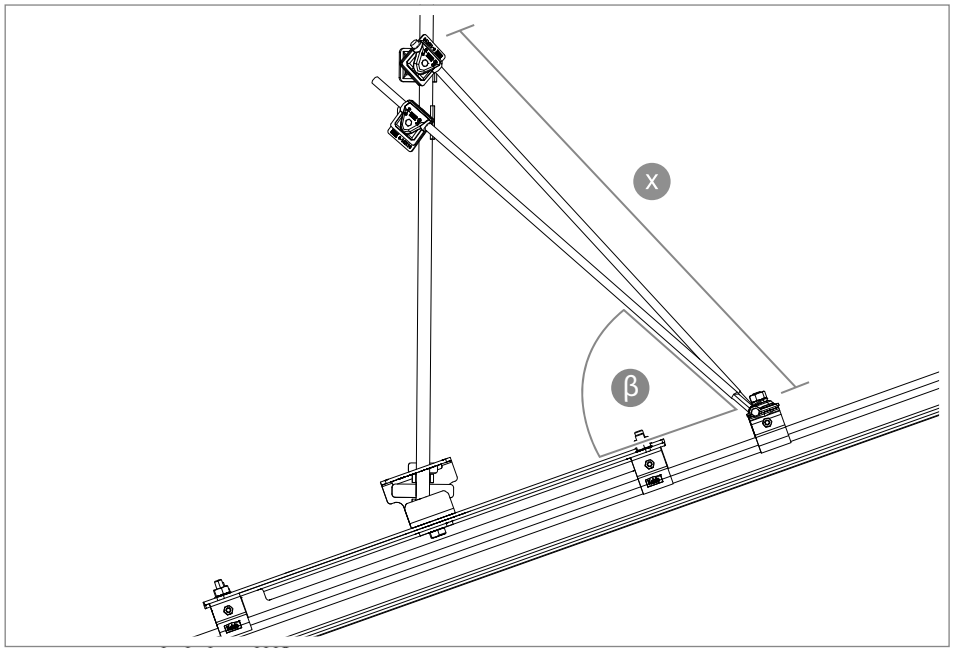


Fig. 13: Angle and length

The length X describes the spacing required on the supporting round conductor between the connection points at the folding clamp and quick connector. With support on one side, the required length X depends on the diameter Ø of the round conductor:

– Ø 8 mm → X = 400–500 mm

– Ø 10 mm → X = 400–600 mm

The angle β between the round conductor and metal roof must be between 30° and 55°.

With support on two sides, there are no specifications for angle and length, as the air-termination rod is stabilised by tension.

10.4 Mounting the support

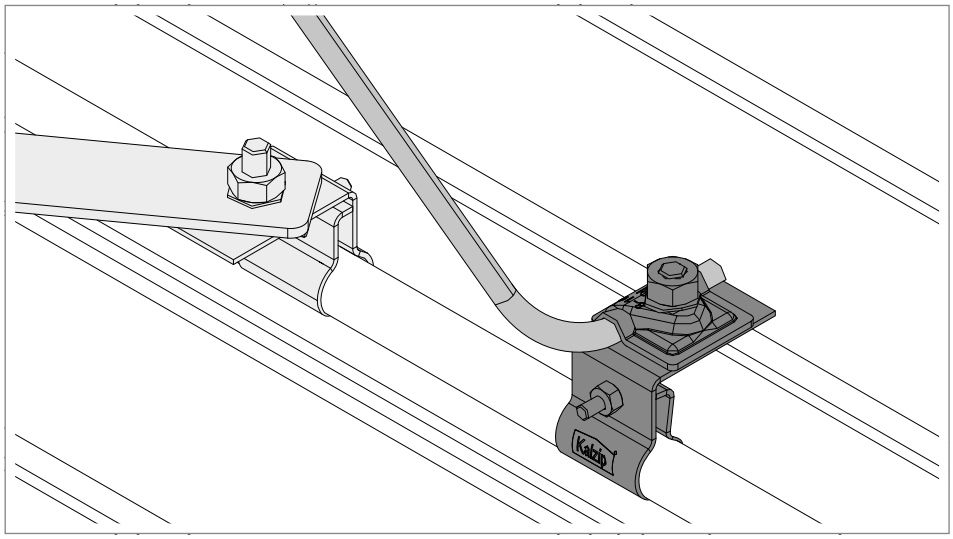


Fig. 14: Fastening the support to the roof

1. Place the folding clamp on the seam of the metal roof on which the air-termination rod fastening is also fastened.

2. To fasten the folding clamp, tighten the hexagonal nut M6 on the side of the folding clamp.

3. Tighten the hexagonal nut M10 on the top side of the folding clamp to fasten the round conductor.

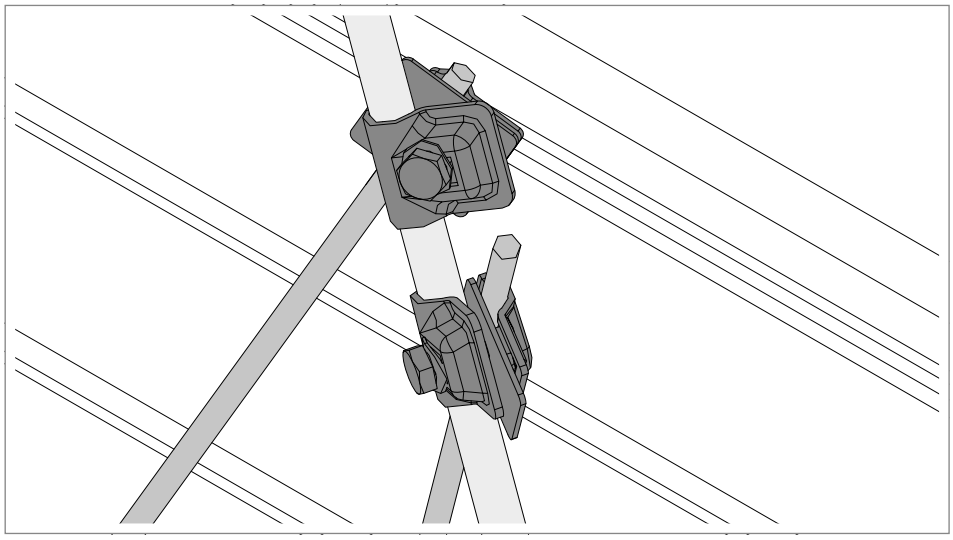


Fig. 15: Fastening the support to the air-termination rod

Note! *Position the fastening points of the quick connector on the air-termination rod as close together as possible.*

4. Tighten the bolt M10x30 on the Vario quick connector to fasten the round conductor to the air-termination rod with the Vario quick connector.

11 Maintaining the air-termination rod fastening

Check the air-termination rod fastening as part of the testing of the entire lightning protection system according to IEC 62305-3 (and DIN EN 62305-3, Supplementary Sheet 3).

12 Disassembling the air-termination rod fastening

Dismantling of all the elements takes place in the reverse order to mounting.

13 Disposing of the air-termination rod fastening

Comply with the local waste disposal regulations.

– Air-termination rod and air-termination rod fastening: As scrap metal

– Packaging: As plastic or cardboard

14 Technical data

	F-FIX-MD (Item no. 5403336)	F-FIX-MD+ (Item no. 5403337)
Weight	2.52 kg	3.06 kg
Seam spacing	200–560 mm	200–537 mm
Angle of inclination	38°	38°
Material	Stainless steel, rustproof	Stainless steel, rustproof

Tab. 4: Technical data

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251002.02

Building Connections