

Mounting instructions

FangFix system



FangFix system
Mounting instructions

© 2020 OBO Bettermann Holding GmbH & Co. KG

All the personal designations used in the document are to be considered as gender-neutral.

Table of contents

1	About these instructions.	5
1.1	Target group	5
1.2	Relevance of these instructions.	5
1.3	Types of warning information	5
1.4	Depiction conventions.	5
1.5	Basic standards and regulations	6
1.6	Applicable documents	6
2	Intended use	6
3	Safety	7
3.1	General safety information	7
3.2	Personal protective equipment	7
3.3	Necessary tools.	7
4	System description	8
4.1	FangFix base	9
4.2	FangFix concrete block	9
4.3	FangFix clamp	9
4.4	FangFix stand.	9
5	Planning an installation	10
5.1	Determining the wind load	10
5.2	Determining the number of concrete blocks required.	11
5.3	Mechanical fastening of the air-termination rod.	12
6	Mounting the FangFix system	13
7	Checking the FangFix system	15
8	Dismantling the FangFix system	15
9	Disposing of the FangFix system	15

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, 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 (06/2020).

Follow these instructions to ensure correct and safe use.

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

1.3 Types of warning information



Type of risk!

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



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 hazardous 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 Depiction conventions

List of symbols used in the mounting instructions:



Indicates the representation of correct mounting



Indicates the representation of incorrect mounting

List of symbols used on the products:



Lightning current-tested

1.5 Basic standards and regulations

- IEC 62305-1
Protection against lightning Part 1: General principles
- IEC 62305-2
Protection against lightning Part 2: Risk management
- IEC 62305-3
Protection against lightning – Part 3: Physical damage to structures and life hazard
- IEC 62305-4
Protection against lightning – Part 4: Electrical and electronic systems within structures
- IEC 62561-1
Lightning protection system components (LPSC)– Part 1: Requirements for connection components
- IEC 62561-2
Lightning protection system components (LPSC)– Part 2: Requirements for conductors and earth electrodes
- DIN 18531-1
Waterproofing of roofs, balconies and walkways – Part 1: Non-utilised and utilised roofs – Requirements and principles for execution and design
- EN 206
Concrete – Specification, performance, production and conformity

* Status of standards: 06/2020

1.6 Applicable documents

Lightning protection components are not subject to an EU directive. Instead, OBO makes the manufacturer'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.

You can find individual proofs for lightning protection components on the OBO web pages (www.obo-bettermann.com).

2 Intended use

The FangFix system is a stand system to accept air-termination rods (Ø16 mm) on flat roofs with a roof inclination of up to 10°. The FangFix system is suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4. The material is resistant to frost, weathering and UV. The permitted continuous temperature is –30 to +70 °C.

The FangFix system is not designed for any other purpose than the one described here. If the FangFix system is used for another purpose, any liability, warranty or damage claims shall be rendered 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.
- To install the OBO FangFix system, use only components of the OBO product range, as otherwise there is no guarantee that safe installation is possible.
- Before mounting, calculate and dimension the system according to local circumstances according to Eurocode 1: EN 1991-1-4.
- Take the approved roof loads at the mounting location into account and, if necessary, agree with the building constructor.

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.



Use foot protection

The weight of the FangFix concrete block can lead to contusions. Wear suitable safety shoes during transport and mounting, in order to avoid contusions or crushing injuries.

3.3 Necessary tools

List of required tools:

- Open-end wrench, WAF: 13

4 System description

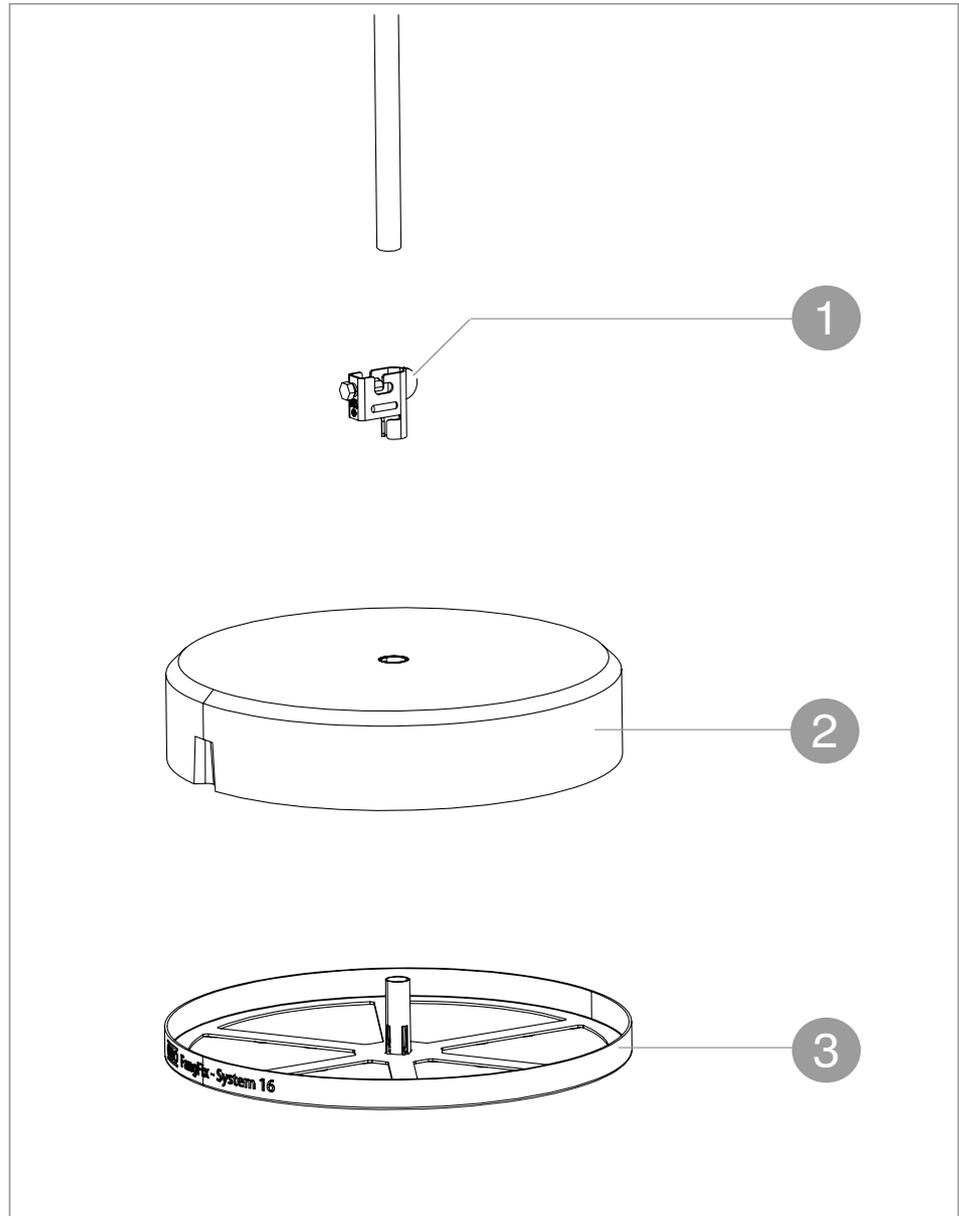


Fig. 1: System overview

- ① FangFix clamp
- ② FangFix concrete block
- ③ FangFix base

4.1 FangFix base

The FangFix base is used as edge protection and, together with the FangFix clamp and an integrated anchor, ensures safe anchoring of the air-termination rod in the base.

Type	Suitable for	Nominal size Ø	Item no.
F-FIX-B10	FangFix concrete block 10 kg	295 mm	5403124
F-FIX-B16	FangFix concrete block 16 kg	373 mm	5403235

Tab. 1: Type overview, FangFix base

4.2 FangFix concrete block

The FangFix concrete block ensure system stability. The bases can be stacked for use in high wind loads (see also “5.1 Determining the wind load” on page 10 and “5.2 Determining the number of concrete blocks required” on page 11).

Type	Weight	Nominal size Ø	Material	Item no.
F-FIX-S10	10 kg	289 mm	Concrete	5403117
F-FIX-S16	16 kg	365 mm	Concrete	5403227

Tab. 2: Type overview, FangFix concrete block

4.3 FangFix clamp

The FangFix clamp, together with the FangFix base, ensures safe anchoring of the air-termination rod. In addition, a round conductor (Rd 8) can be connected to the air-termination rod via the clamp using just one screw.

Type	Fit	Material	Class	Connection type	Item no.
F-FIX-KL	Rd 8	V4A	H – heavy duty	Above-ground, removable	5403219

Tab. 3: Type overview, FangFix clamp

4.4 FangFix stand

The FangFix stand is a pre-mounted set, consisting of the FangFix base with a FangFix concrete block and the FangFix clamp.

Type	Weight of FangFix concrete block	Nominal size Ø	Fit	Item no.
F-FIX-10	10 kg	295 mm	Rd 8	5403103
F-FIX-10-B	10 kg	295 mm	Rd 8	5403110
F-FIX-16	16 kg	365 mm	Rd 8	5403200
F-FIX-16-B	16 kg	365 mm	Rd 8	5403205

Tab. 4: Type overview, pre-mounted FangFix stand

5 Planning an installation

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

- 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.
- Calculate the necessary separation distance according to IEC 62305-3.
- For the erection of the air-termination rods, determine the appropriate wind load according to Eurocode 1: EN 1991-1-4.
- Determine the required number of concrete blocks on the basis of the determined wind load.

Note! *You can find detailed planning aids on lightning and surge protection systems in the OBO lightning protection guide (order no.: 9131971).*

5.1 Determining the wind load

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

1. Step: Determining the wind zone

One factor for determining the wind load is the wind load zone in which the object is located.

2. Step: Determining the terrain category (TC)

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

3. Step: Determining the maximum gust speed

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

5.2 Determining the number of concrete blocks required

The tilt and slip resistance of air-termination rods must be determined on a project-by-project basis. Based on the maximum gust speed, the number and size (10 or 16 kg) of concrete blocks required can be determined for the air-termination rod used. The value in the tables must lie above the maximum gust speed for the location.

Note! *In the case of air-termination rods with a free length of more than 2.5 m, there must be additional mechanical fastening of the air-termination rod. Refer to “5.3 Mechanical fastening of the air-termination rod” on page 12.*

Note! *During calculation and dimensioning, take the permitted roof loads at the mounting location into account and, if necessary, agree them with the building constructor.*

Air-termination rod height in m	1.5	2	2.5	3	3.5	4	Required concrete blocks
Type	101 VL1500	101 VL2000	101 VL2500	101 VL3000	101 VL3500	101 VL4000	
Item no.	5401980	5401983	5401986	5401989	5401993	5401995	
Wind speed in km/h	117	–	–	–	–	–	1x 10 kg
	164	120	95	–	–	–	2x 10 kg
	165	122	96	–	–	–	1x 16 kg
	–	170	135	111	95	–	2x 16 kg
	–	208	164	136	116	102	3x 16 kg

Tab. 5: Number of concrete blocks for tapered pipe air-termination rod

Air-termination rod height in m	1	1.5	2	2.5	3	Required concrete blocks
Type	101 ALU-1000	101 ALU-1500	101 ALU-2000	101 ALU-2500	101 ALU-3000	
Item no.	5401771	5401801	5401836	5401852	5401879	
Wind speed in km/h	97	–	–	–	–	1x 10 kg
	196	133	103	–	–	1x 16 kg
	–	186	143	117	100	2x 16 kg
	–	–	173	142	121	3x 16 kg

Tab. 6: Number of concrete blocks for air-termination rod, one end rounded

Air-termination rod height in m	1	1.5	Required concrete blocks
Type	101 A-L 100	101 A-L 150	
Item no.	5401808	5401859	
Wind speed in km/h	100	–	1x 10 kg
	192	129	1x 16 kg
	–	177	2x 16 kg
	–	214	3x 16 kg

Tab. 7: Number of concrete blocks for air-termination rod, one end rounded with connection strap

5.3 Mechanical fastening of the air-termination rod

In the case of air-termination rods with a free length of more than 2.5 m, there must be additional mechanical fastening of the air-termination rod, e.g. to roof structures, after the FangFix system has been mounted. For this, the separation distance s must be maintained in accordance with IEC 62305-3.

Options for mechanical fastening of the air-termination rod:

- ① Insulated V fastening, item no. 5408978
- ② Adjustable insulating beam, item no. 5408852

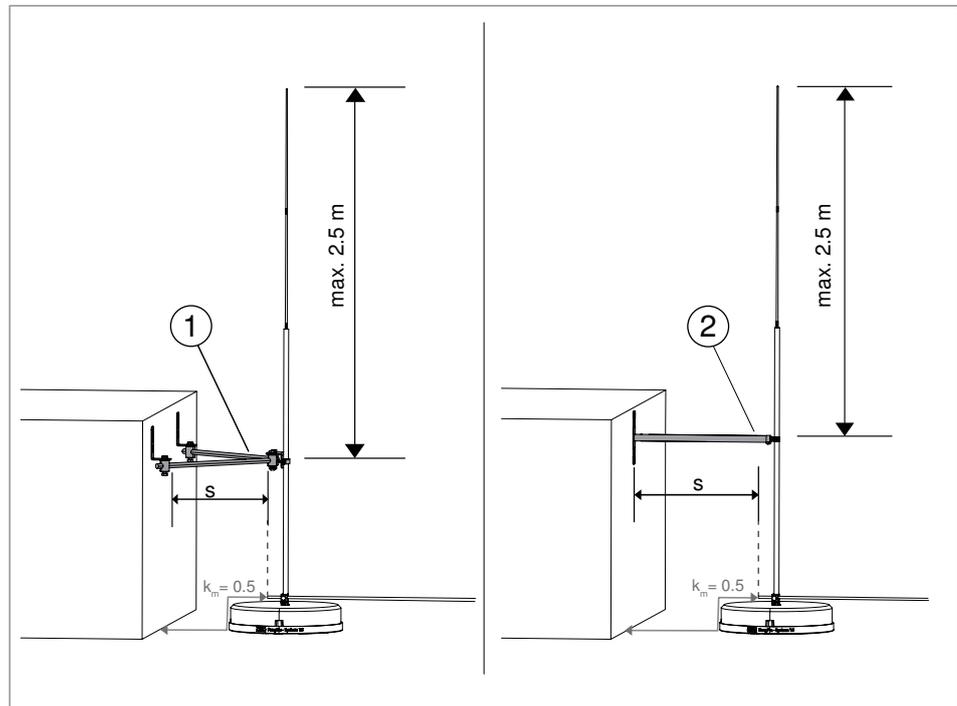


Fig. 2: Mechanical fastening of the air-termination rod

6 Mounting the FangFix system



WARNING

Danger of collapse!

Excessive loads can lead to the roof collapsing. Take the approved roof loads into account and, if necessary, agree with the building constructor.

ATTENTION

Risk of damage!

Depending on the roof material, the FangFix concrete blocks can cause damage. To protect the roof material, lay out construction protection mats at the mounting location.

ATTENTION

Risk of damage!

Frozen water in the grip recess can lead to the FangFix concrete block breaking. Place the FangFix concrete block on the FangFix base with the handle recess pointing downwards.

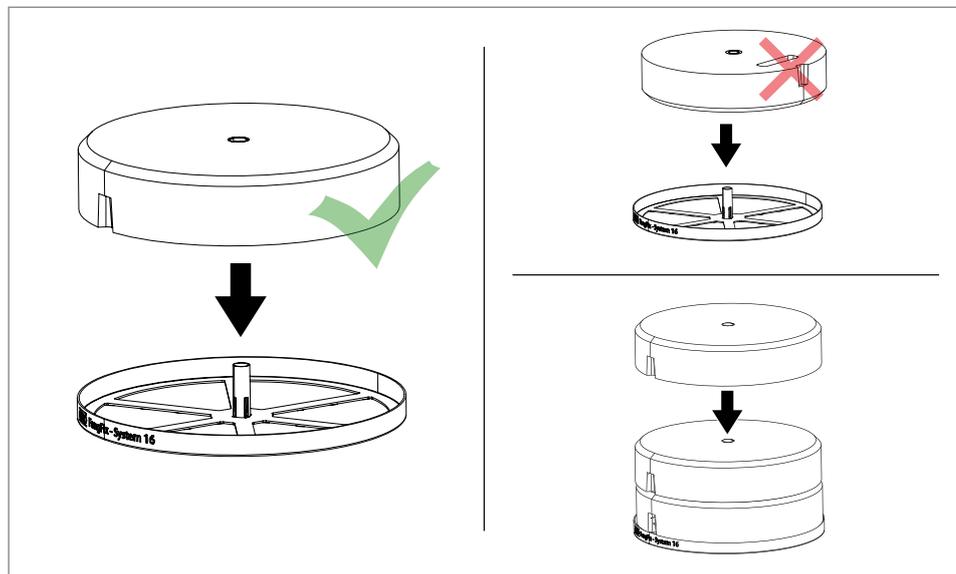


Fig. 3: Placing the FangFix concrete block on the base

1. Place the FangFix concrete block on the FangFix base.
2. Stack the calculated number of FangFix concrete blocks on the lower base.

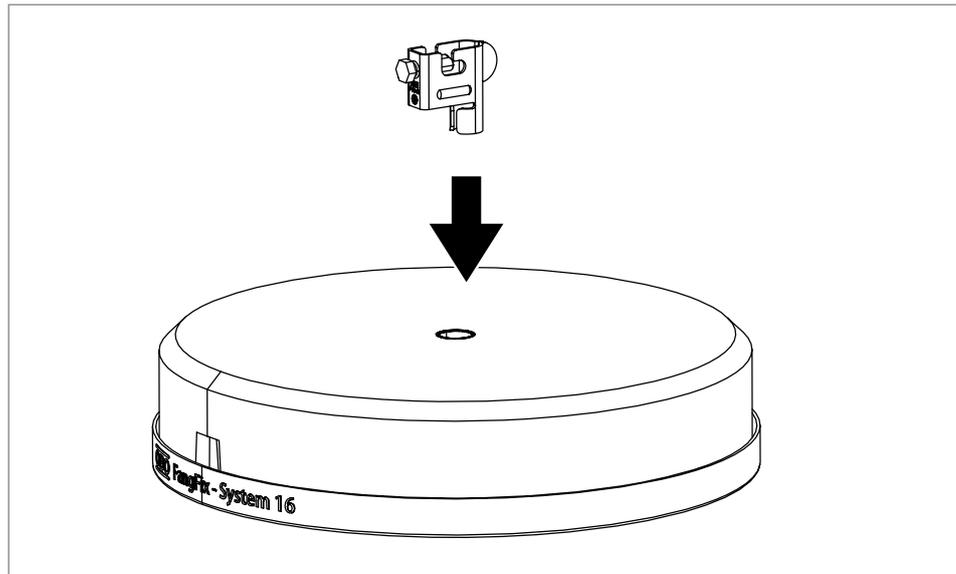


Fig. 4: Mounting the FangFix clamp

3. Insert the FangFix clamp into the opening of the FangFix concrete block from above.

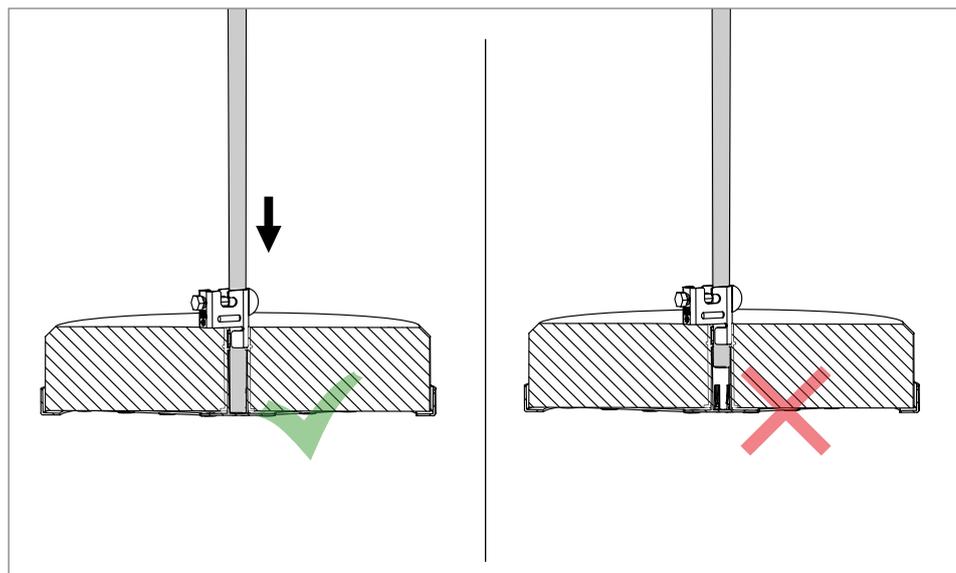


Fig. 5: Mounting the air-termination rod



WARNING

Reduced stability!

If the air-termination rod is not pushed into the anchor of the FangFix base, then the air-termination rod can disengage again. Push the air-termination rod completely into the anchor of the FangFix base.

4. Push the air-termination rod through the FangFix clamp and concrete block into the anchor of the base.

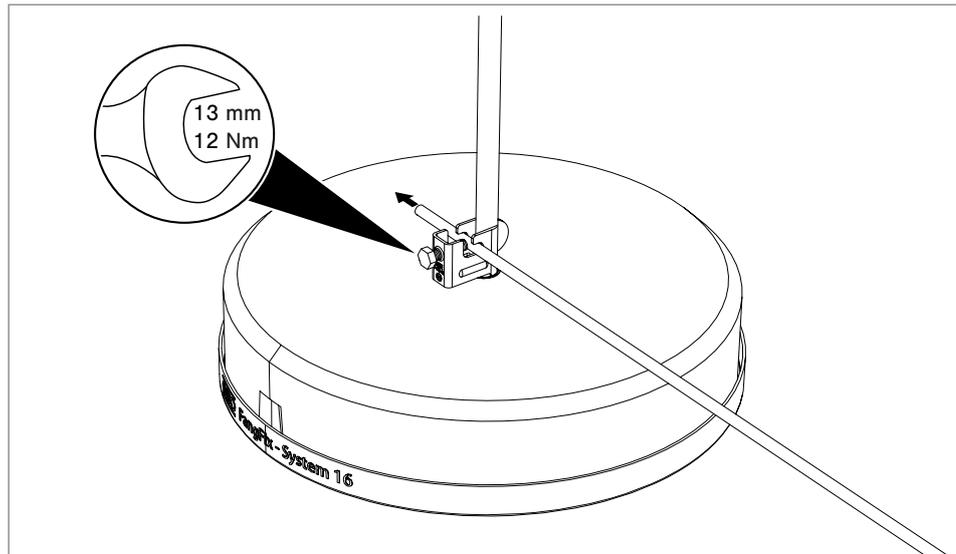


Fig. 6: Connecting the round conductor

5. Loosen the screw of the FangFix clamp.
6. Push the round conductor (Rd 8) through the FangFix clamp.
7. Tighten the screw of the FangFix clamp.
AF: 13 mm, tightening torque: 12 Nm.

7 Checking the FangFix system

The FangFix system must be checked as part of the testing of the entire lightning protection system according to IEC 62305-3 and EN 62305-3, Supplementary Sheet 5.

Protection class	Visual inspection	Comprehensive test	Comprehensive test in critical situations ¹⁾
I and II	Annually	Every 2 years	Annually
III and IV	Every 2 years	Every 4 years	Annually

¹⁾ Critical situations include structures containing sensitive systems, office and commercial buildings or places in which a large number of people meet.

8 Dismantling the FangFix system

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

9 Disposing of the FangFix system

Comply with the local waste disposal regulations.

- Air-termination rod and FangFix clamp: As scrap metal
- FangFix base: As plastic
- FangFix concrete block: As rubble
- Packaging: As plastic or cardboard

OBO Bettermann Holding GmbH & Co. KG

P.O. Box 1120
58694 Menden
GERMANY

Customer Service Germany

Tel.: +49 (0)2373 89-1700
Fax: +49 (0)2373 89-1238
E-mail: info@obo.de

www.obo-bettermann.com

OBORD 200078 Date 06/2020

Building Connections

