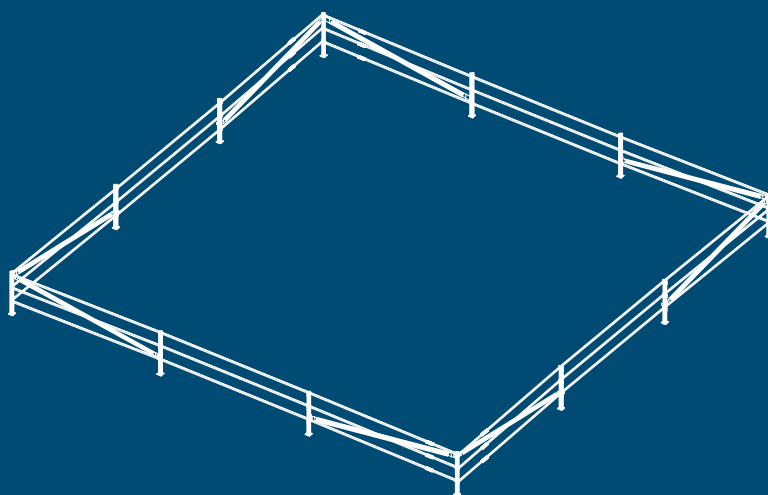


SpanSet[®]



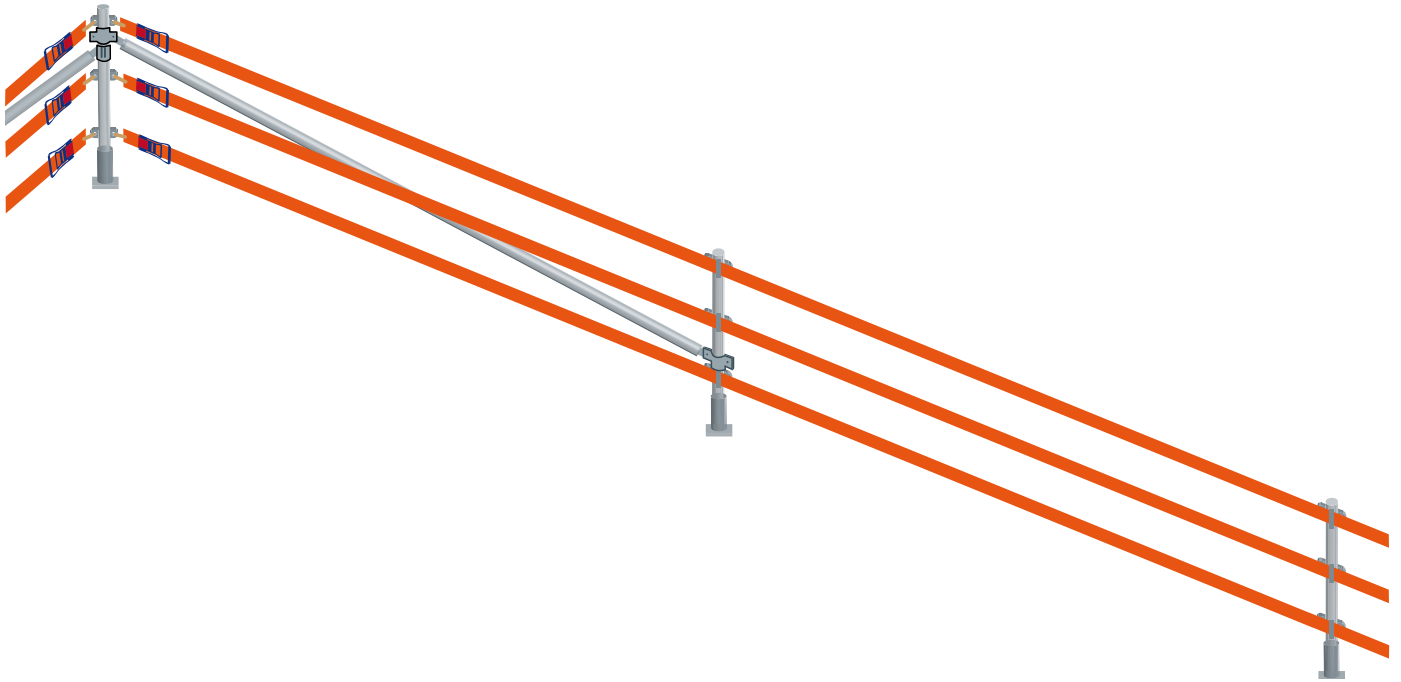
Instructions for installation and use SideXafe ROOF

**SpanSet
Certified
Safety**

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SideXafe ROOF per EN 13374- A



01 Instructions for installation and use

1. Use
 - 1.1 The SideXafe roof side protection system is intended to be used as a fall protection system on the outer edges of roofs with an incline of up to 10°. It is approved as a temporary side protection system per DIN EN 13374 – 2013 class A and complies with the requirements of the standard.
 - 1.2 The maximum distance of the safety posts shall not exceed 7.5 m with a pre-tensioning force of **1000 daN**. With spacing up to and including **6.0 m**, a pre-tensioning force of **750 daN** is adequate. With different field lengths, the largest field should always be used for the selection of the pre-tensioning. Note the descriptions under point 7 of these installation and usage instructions for this.

Because the side protection system is to be used without toe boards, the following restrictions apply for use: Use in accordance with these installation and usage instructions is not permitted in the case of concrete roofs (insofar as no wall elements project beyond the level of the roof in the wall areas), profile sheet roofs with bracket-mounted gutters, cold and double-skinned roofs as well as sandwich roofing elements.

02 Important safety information



Danger: Risk of falling!

When setting down the roof panel packages ensure that these are not laid over the edge beams on the gable end.

Also, when setting down the roof panels ensure that you do not step on the edge (gable end) beams. Up to this point in time there is an acute danger of falling at the roof edge area until the panels have been laid there.

After that it is essential that point 5 of these installation and usage instructions is complied with!

General

- 2.1 The side protection system shall be assembled and disassembled only by persons who have been trained with these installation and usage instructions.
- 2.2 The assembly of the side protection system shall be carried out only from safe working positions (e.g. lifting work platforms or mobile scaffolding) during the construction phase. With subsequent maintenance or repair work, a defined working procedure should be established for the assembly and disassembly.

Secured access to the roof must be planned and assured both for the construction phase and for subsequent work. (e.g. "scaffolding tower", see point 6)

- 2.3 The components must be checked for obvious defects by the user before each use.
Do **NOT** use damaged components! If damage is discovered during use, the damaged parts must be replaced immediately. Until this is done, the work area must be cordoned off.
- 2.4 When using the side protection system, the user must create a rescue plan in which all potential accidents associated with the work are taken into account.
- 2.5 Working in icy or snowy conditions with the side protection system is not permitted.
- 2.6 As a matter of principle, national regulations must be complied with when using the side protection system.

Please note in particular:

The use of sharp-edged tools and components in conjunction with the tensioned straps can result in the tensioning straps being damaged.

If a person or object stumbles or falls against the "SideXafe roof side protection system" or any of the accessory parts, the components involved must be withdrawn from service immediately and submitted to the manufacturer for checking.

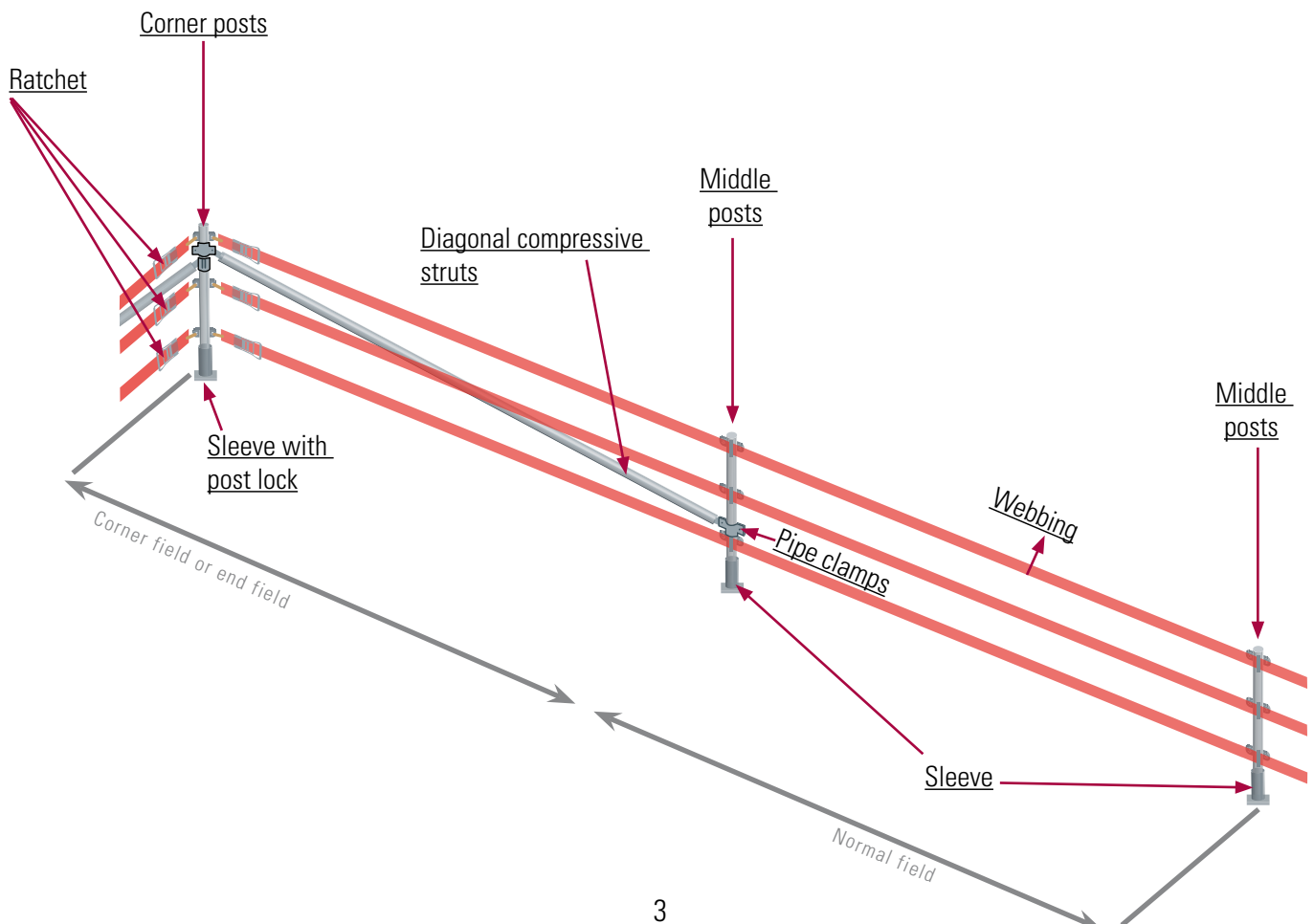
Openings between the side protection system and other constructions must be kept as small as possible and shall not exceed 120 mm in the case of guard rails and 20 mm for the toe board.

03 Individual parts

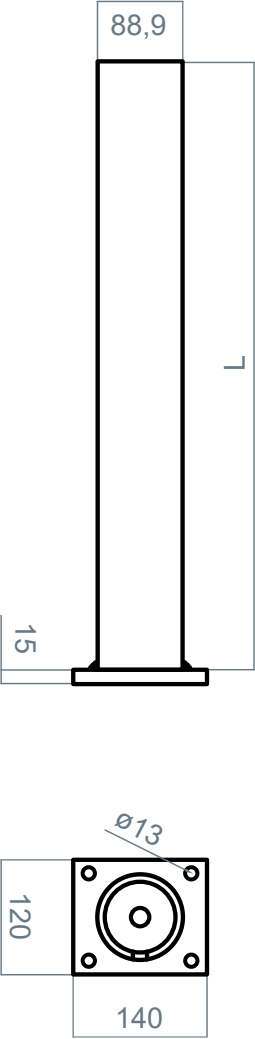
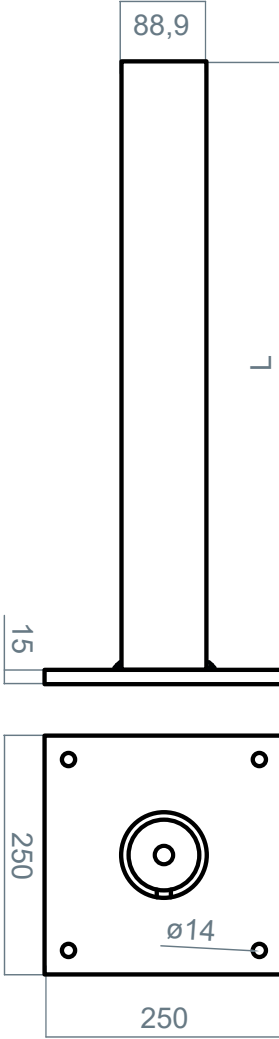
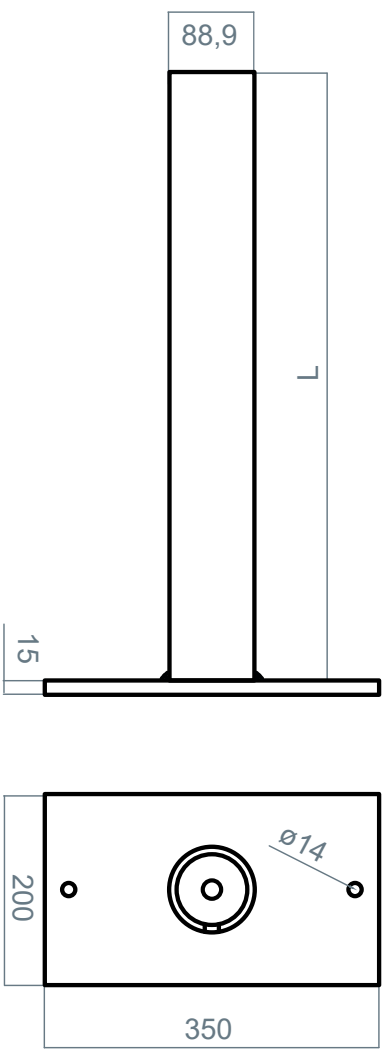
The components must be furnished with an identification label whose lettering is clearly legible.

Field length [m] (post pitch)	Required pre-tensioning force [daN]
Up to 6.0	750
6.0 to 7.50	1000

The controlling criterion for the pre-tensioning force is always the longest field length within the tensioning strap strand.



Sleeves

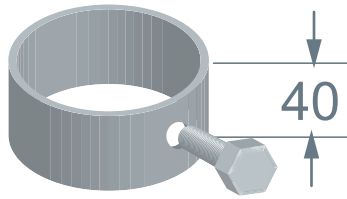
Sleeve 120 mm x 140 mm	Sleeve 250 mm x 250 mm for corner posts	Sleeve 350 mm x 200 mm
		
<p>Fastening to steel structures:</p> <p>L = 525 mm Art. 8134007</p>	<p>Fastening to concrete (quality min. C35/45)</p> <p>L = 620 mm Art. 8131813</p>	<p>Fastening to concrete (quality min. C35/45)</p> <p>L = 620 mm Art. 8131812</p>

Dimensions in mm

**Other tube lengths are possible (on request):
for L = 150 mm - 650 mm**

Other anchor systems are permitted if their fastening to the structure is structurally proven.

Post locks



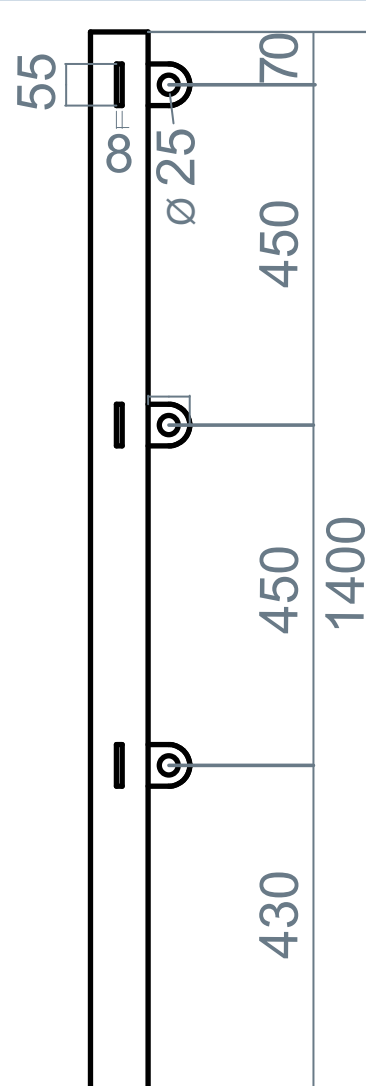
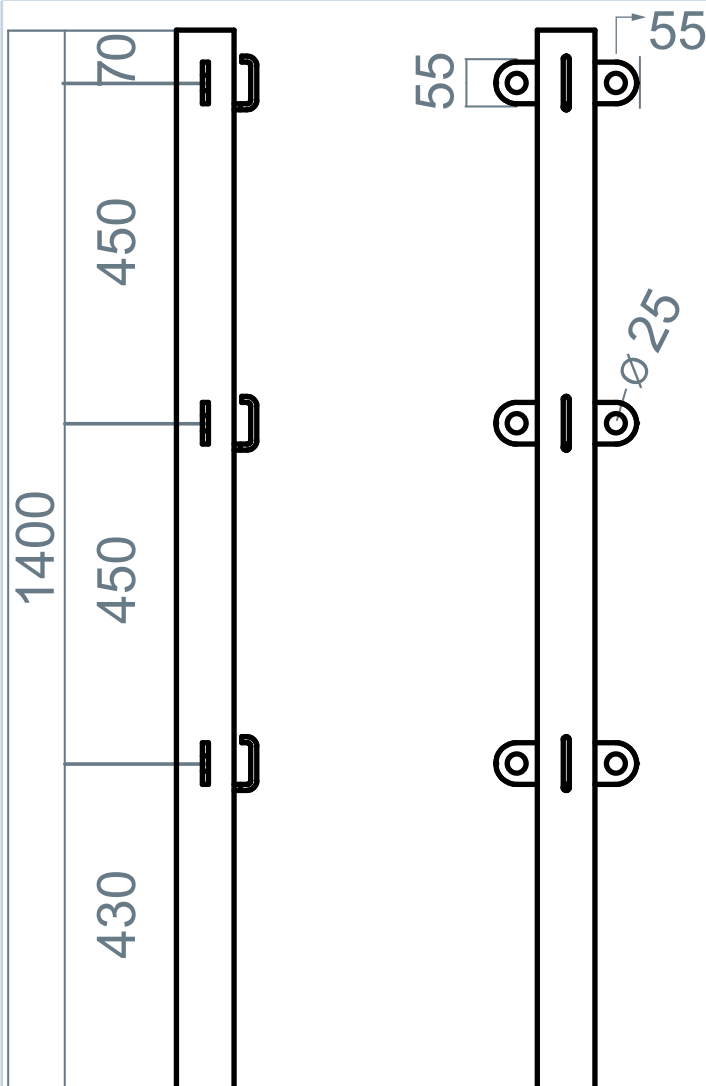
Tube 101.6 x 5 x 40 mm, with screw M10 x 25, 8.8

Art. 8123895

Posts

Middle posts

Corner posts

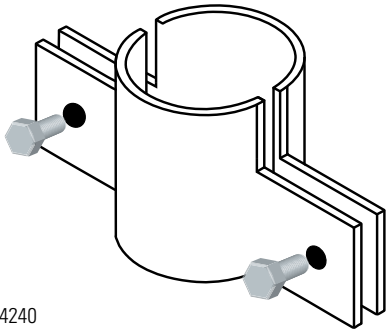


Art. 8129678



Art. 8129344

Clamp set with high-tensile screws



Art. 34240

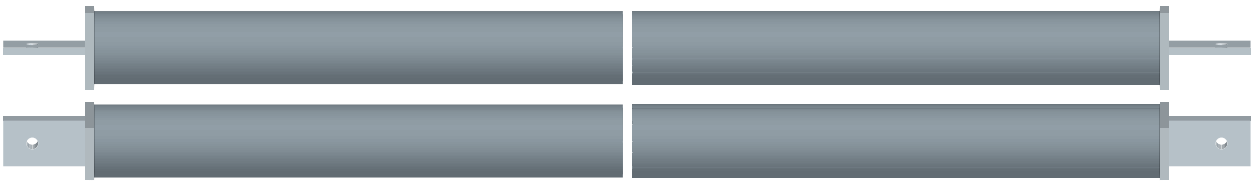
Thermal insulation covers for sleeves



Art. 34366

Diagonal compressive struts

4930 or 5922 mm



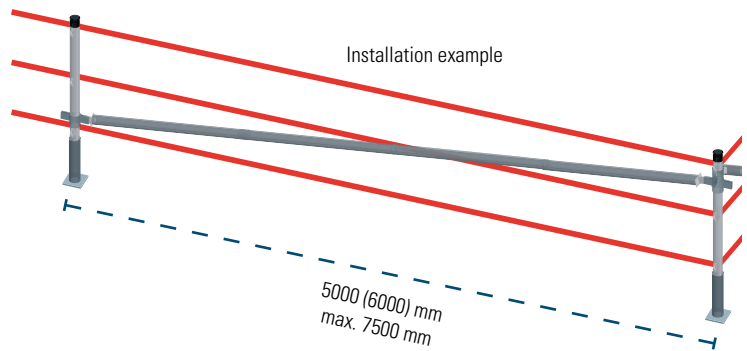
Field length a = 5.0m

Art. 34234

Field length a = 6.0m

Art. 34235

With field lengths of at least 1.0 m and max. 7.5 m, custom parts will be manufactured specially for the order.



Installation example

5000 (6000) mm
max. 7500 mm

Webbing



Art.D059937

04 Assembly procedure

4.1 This standard assembly procedure is only applicable if no other provisions have been set by the designer.

Before assembly, carry out a visual check of the components taking particular care to look for cracks and heavy corrosion on all of the steel elements. Furthermore, all discard criteria for the lashing straps per the conditions under point 7.6 must be taken into account.

4.2 a) The sleeves (Art. 8134007) are to be bolted to the existing steel structure with 4 screws (high-tensile screw M12x...-10.9) as mounting anchors for the posts.

b) On concrete elements, sleeves (Art. 8131813) are used for the corner posts and sleeves (Art. 8131812) for the middle and end posts!

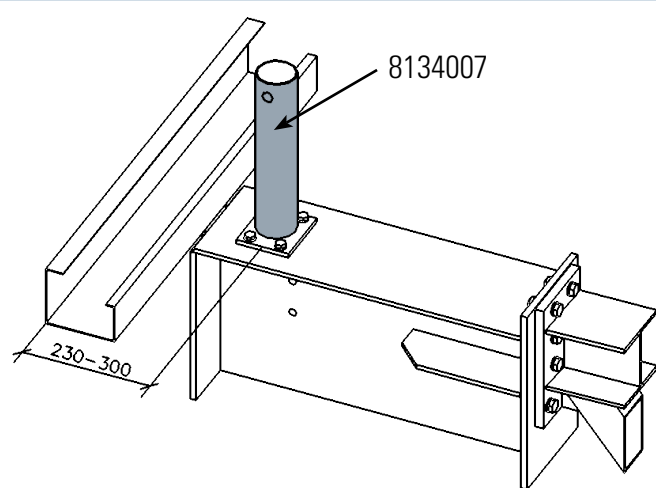
To do so, the corresponding holes must be drilled and cleaned.

Maintain a minimum edge distance of 60 mm.

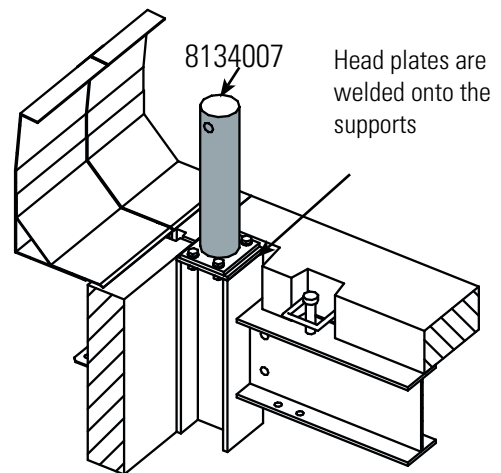
Only the screw anchors, type Hilti HUS3-H 10x110, provided are to be used for the fastening.

Ensure that the usage instructions for the screw anchors are complied with!

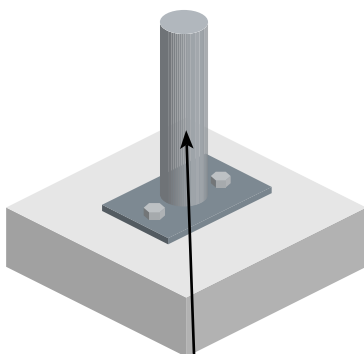
Sleeve installation situation on steel (4.2 a)



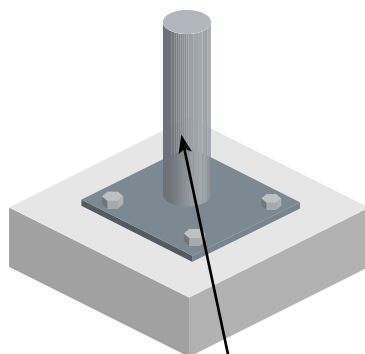
Sleeve installation situation on steel (4.2 a)



Sleeve installation situation on concrete (4.2 b)



8131812



8131813

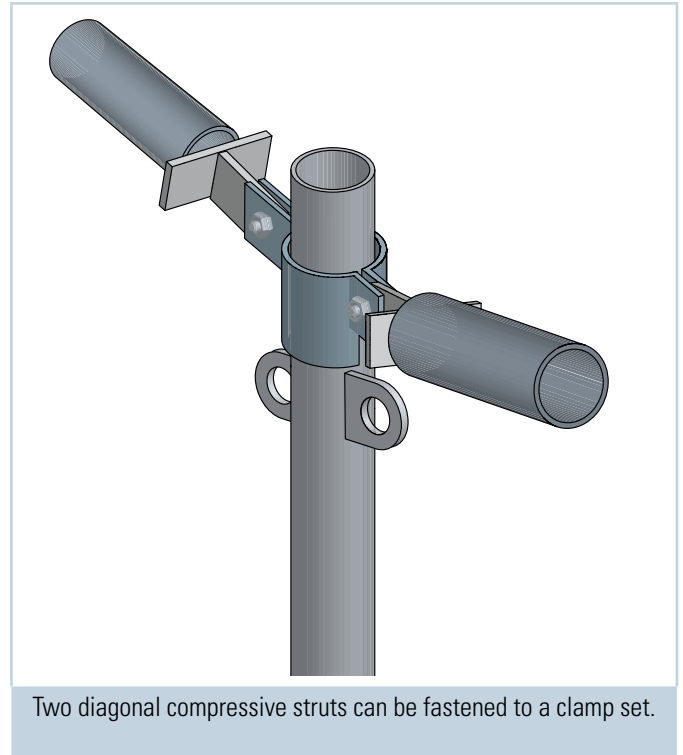
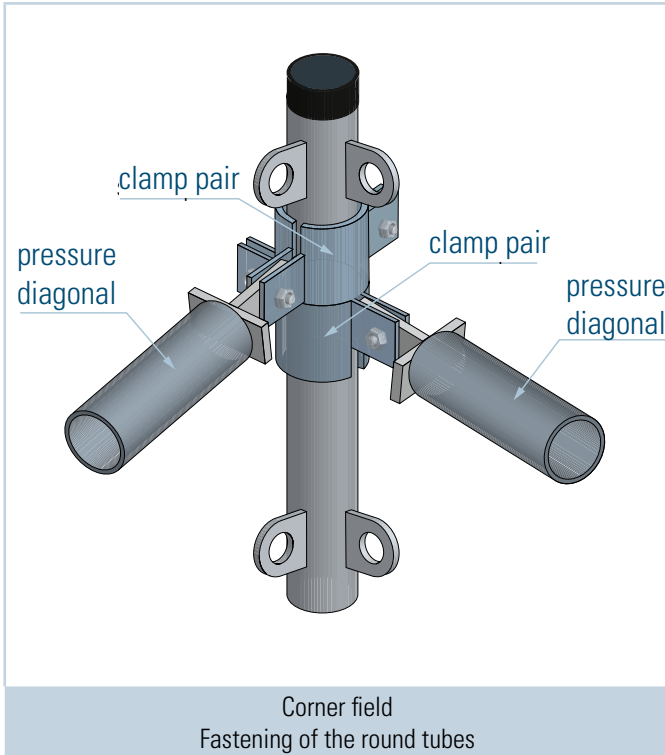


Hilti screw anchor
HUS3 - H 10 x 110mm

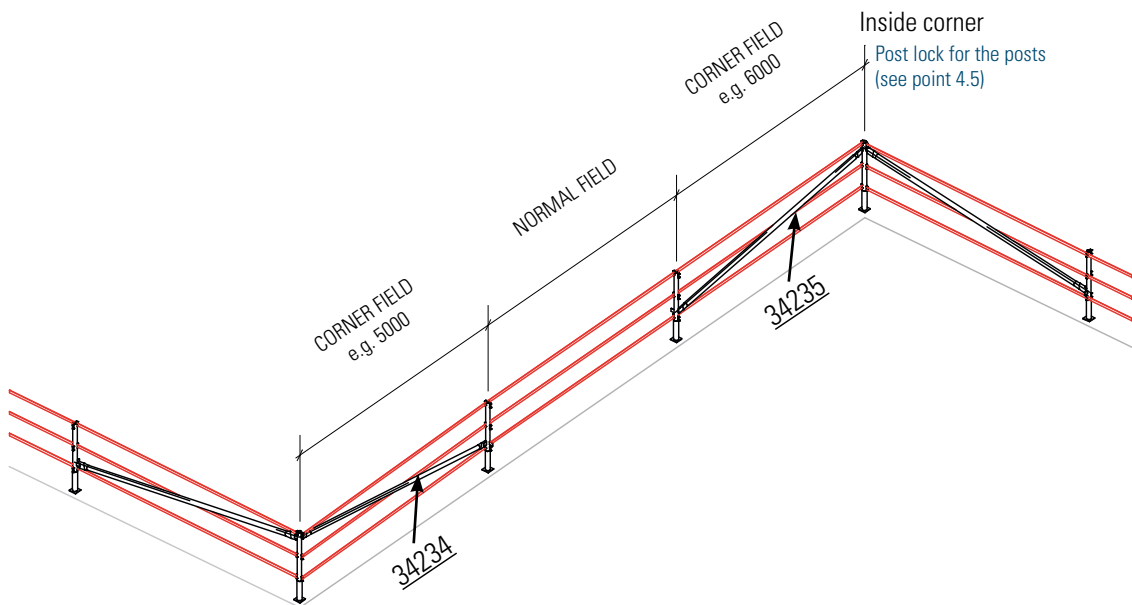
4.3 The middle posts (Art. 8129678) and the corner posts (Art.8129344) are inserted into the respective sleeves. (Observe the information under points 4.2 b and 4.4 for corner posts)

4.4 Diagonal compressive struts are used in the corner fields (inside and outside corners) in accordance with the instructions of the designers in order to brace the side protection system.

The diagonal compressive struts are fastened to the posts by means of clamp sets (Art. 34240).

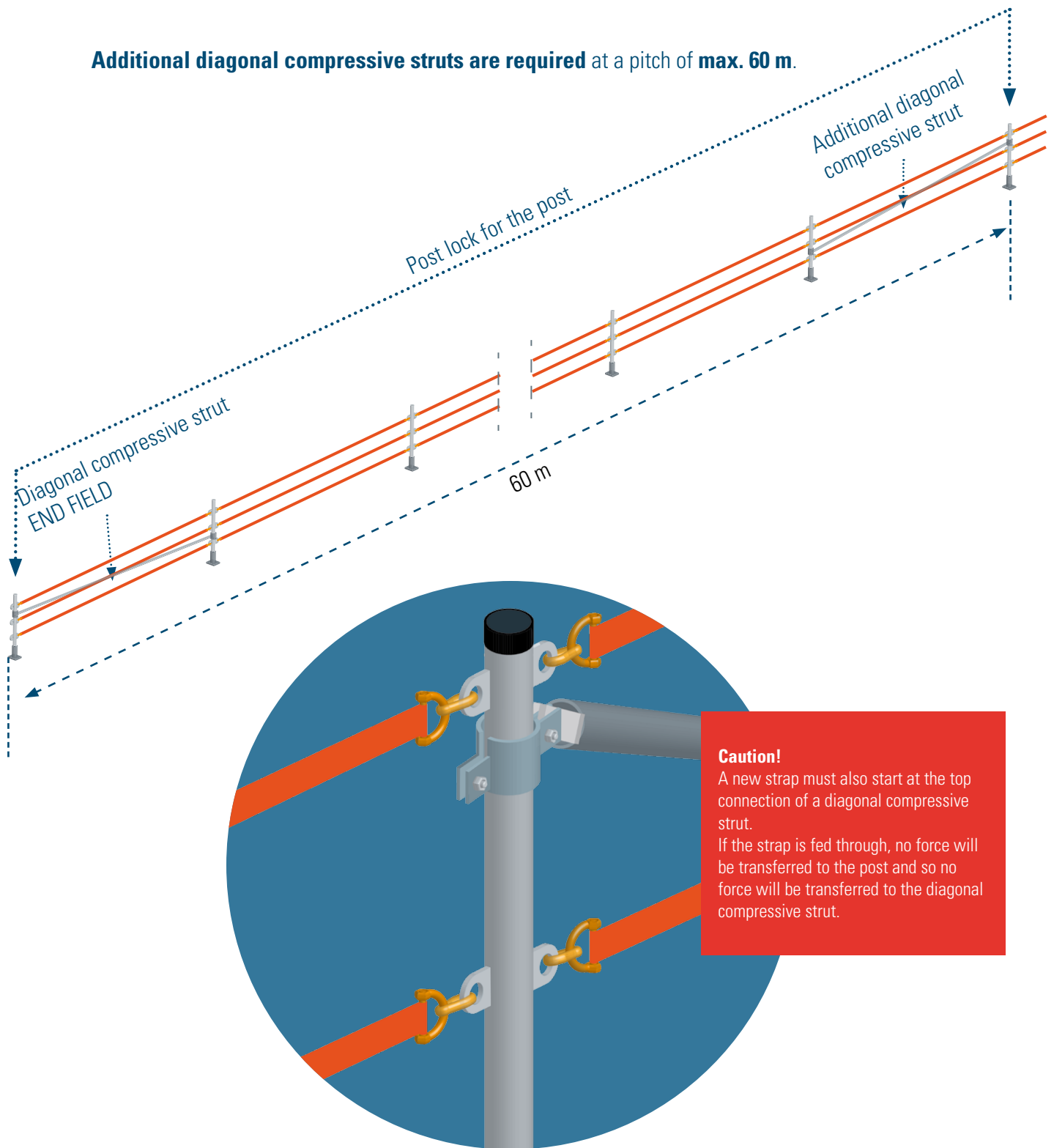


With a post pitch of 5000 mm use diagonal compressive struts Art. 34234, and with a post pitch of 6000 mm use diagonal compressive struts Art. 34235.



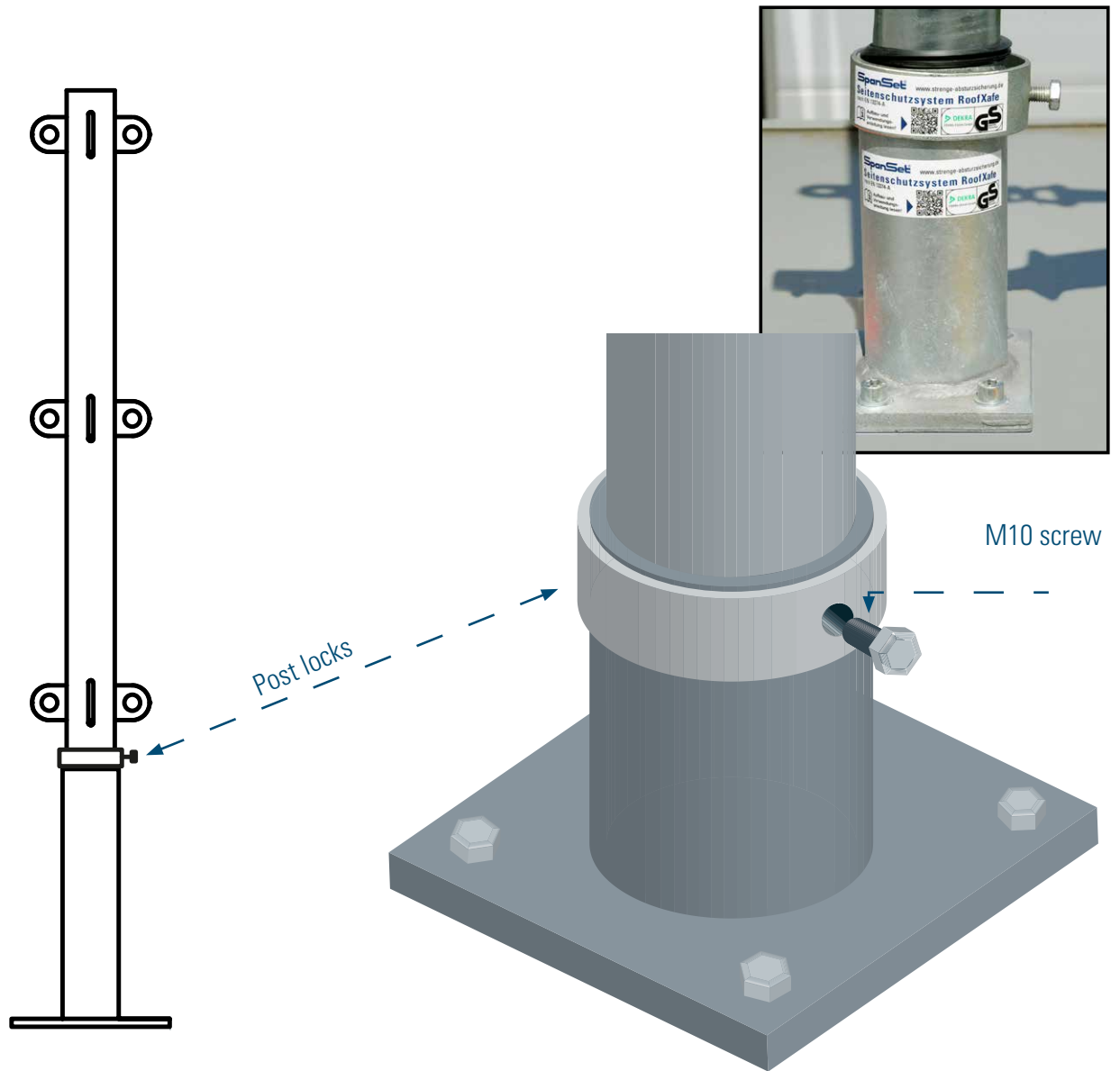
Outside corner
Post lock for the posts
(see point 4.5)

Additional diagonal compressive struts are required at a pitch of **max. 60 m**.

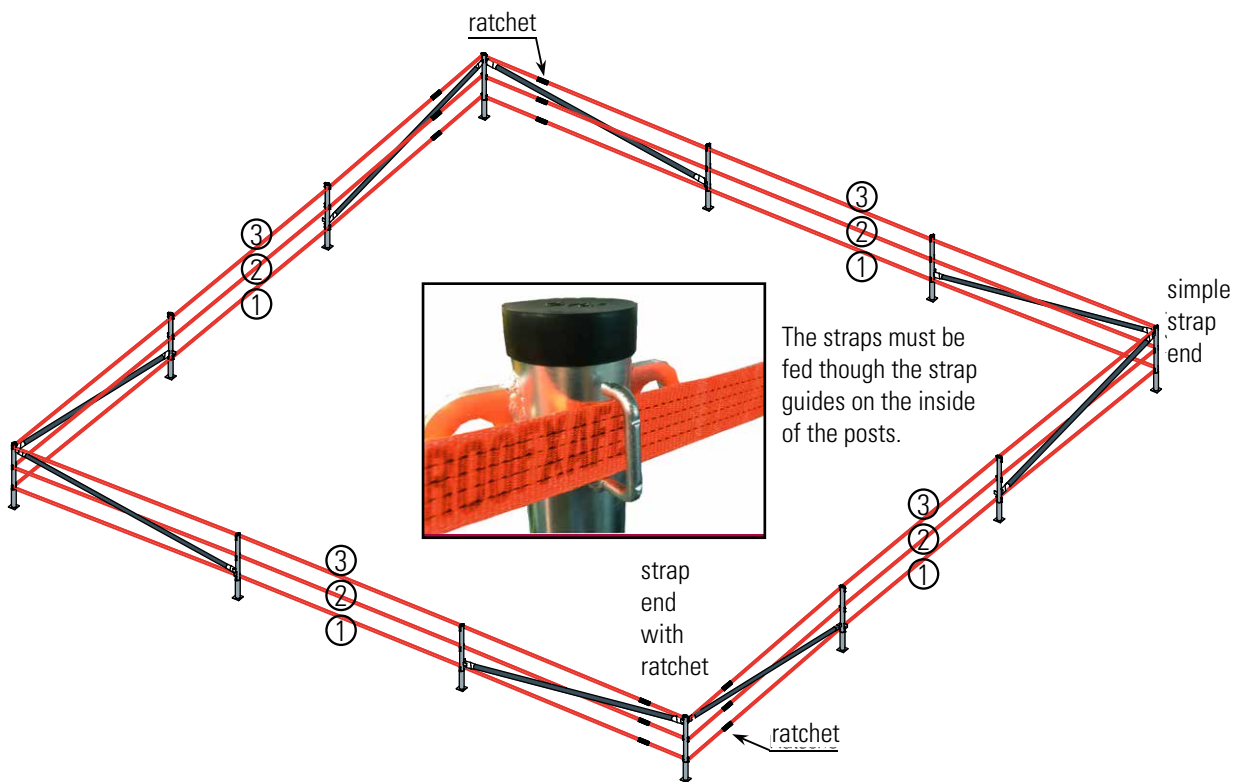


4.5 **Post locks:**

The posts bearing the top connection of a diagonal compressive strut must be secured with post locks (Art. 8123895) to prevent them being lifted out. To do so, the post lock should be incorporated before the posts are fitted. The screw must be screwed through the existing hole in the anchor tube so that the post is clamped.



- 4.6 Normal fields are assembled as described under points 4.2 and 4.3. There is no requirements to install diagonal compressive struts here.
- 4.7 Three tensioning straps are fitted to each post. At one side, the end piece with the ratchet and at the other side the simple, long strap end. A strap can be tensioned over a length of max. 18 m. When installing the straps ensure that they are installed on the roof surface side.
- 4.8 **ATTENTION:** It is not permitted for a tensioning strap to run around a corner. This means that all of the straps at an internal or external corner post must terminate at this post and not pass through it. Otherwise, the stipulated tensioning force cannot be applied.
- 4.9 The tensioning straps are threaded through and pre-tensioned all the way round from the bottom (strap ①) to the top (strap ③). They must be tensioned to the end value only in a second step, again starting from the bottom (strap ①).



Attaching the ends of the straps:



4.10 The side protection system must be checked by the respective user to ensure that it is in good condition every working day before use or after an extended interruption in the work. The check is carried out as a visual check taking particular care to look for cracks and heavy corrosion on all of the steel elements.

Furthermore, all components must be checked by a qualified person after each disassembly or at least once per year. Depending on the operating conditions and operational circumstances, intermediate testing may also be required. The discard criteria stipulated under point 7.6 of these installation and usage instructions apply to the tensioning straps.

Components must be withdrawn from service if damage is discovered. Furthermore, the weekday checks must also check that there is adequate tension in the tensioning straps. The tension can be checked via the TFI incorporated on the straps (see point 7.1 of these instructions for this).

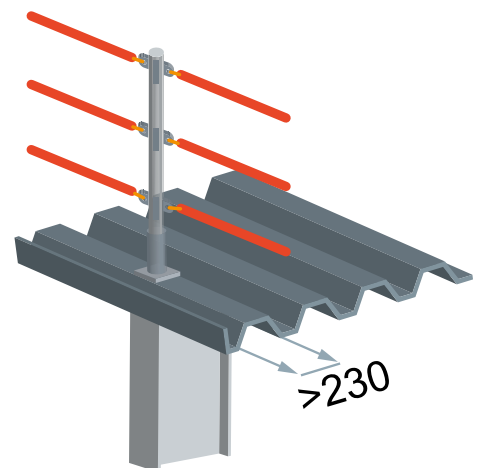
- 4.11 The removal of the bottom strap is only permitted once the wall elements have been installed.
- 4.12 The disassembly of the SideXafe roof side protection system (posts, diagonal compressive struts and tensioning straps) is only permitted once the roof work has been completed.
- 4.13 The tensioning straps are to be checked by a qualified person each time they come back from the construction site, however at least once per year.
- 4.14 With subsequent maintenance and repair work on the building, it is possible to re-install the SideXafe roof side protection system.
Water sacks or similar, but also existing anchor devices, should be used as fall protection for re-installing the side protection system.
Installation shall be carried out only by persons who have been specially trained and who have been examined per guideline 41 "working in areas where there is a risk of falling" from the trade associations.
The anchor tubes must be checked to ensure they are safe to use before being used.
- 4.15 It is not permitted to modify or add to the components of the SideXafe roof side protection system.
All repair works shall be carried out only in compliance with the measures stipulated by the manufacturer.
- 4.16 The disassembly of the SideXafe roof side protection system is carried out with the protective measures described in 4.14 or with lifting work platforms.

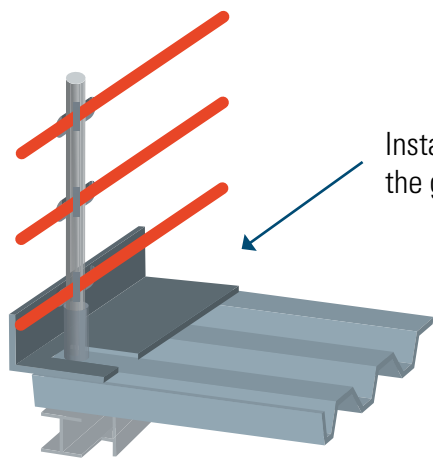
It is not permitted to cut through tensioning straps, loosen locking nuts or remove permanently installed components or to throw components off the roof.

05 'Step-back' safeguard

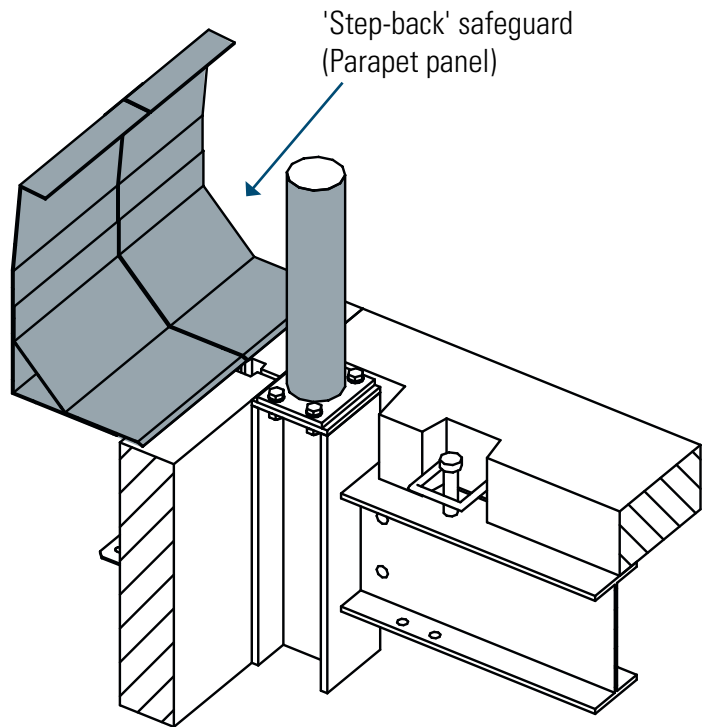
- 5.1 When is it necessary to install a safeguard against stepping back?

A 'step-back' safeguard is necessary if the distance between the axis of the posts and the falling edge is less than 230 mm.
- 5.2 The 'step-back' safeguard comprises a folded metal panel that serves for subsequent fastening of the façade.
- 5.3 Important! The metal panel must be installed immediately after the trapezoidal sheets are fitted. The metal panels must be fastened to the trapezoidal sheets with pop rivets. Parapet panels should be fitted for this in the case of multi-storey buildings with concrete ceiling slabs.
- 5.4 Only now is the roof area adequately secured for subsequent work.
Alternatively, observe point 6 of these installation and usage instructions.





Installation example for a 'step-back' safeguard e.g. at the gable end

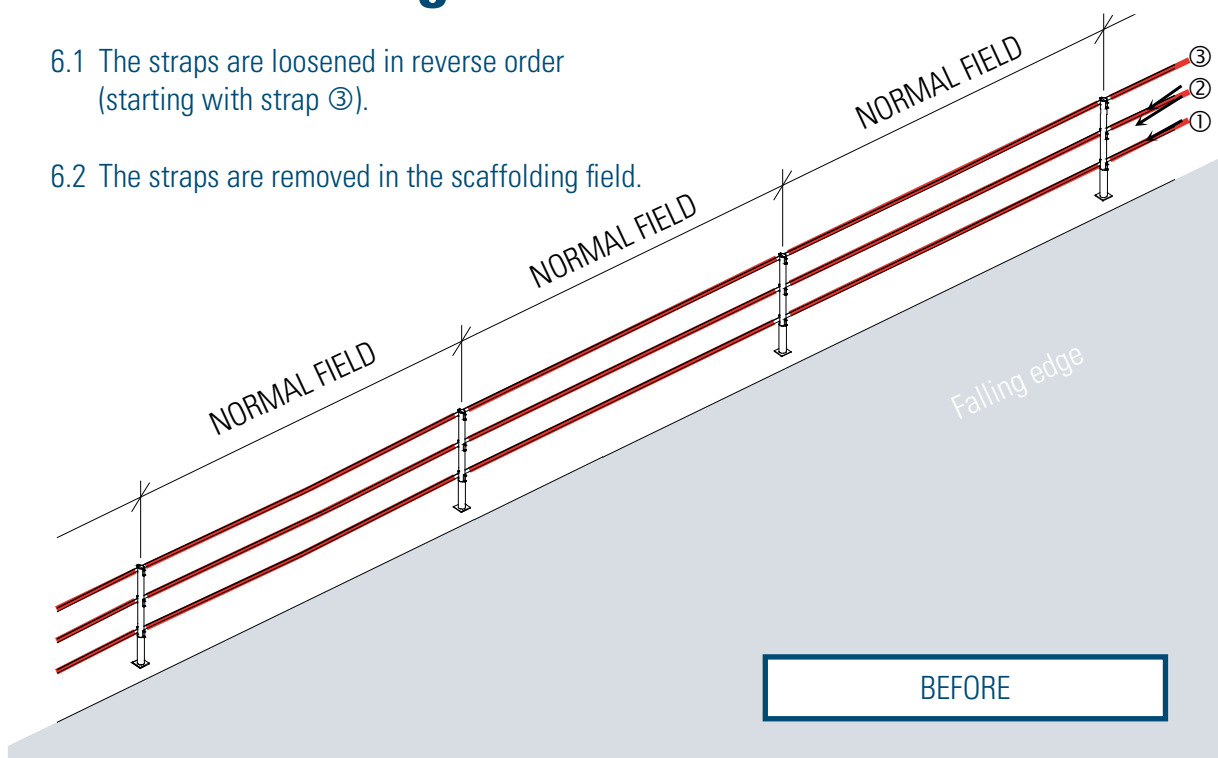


'Step-back' safeguard (Parapet panel)

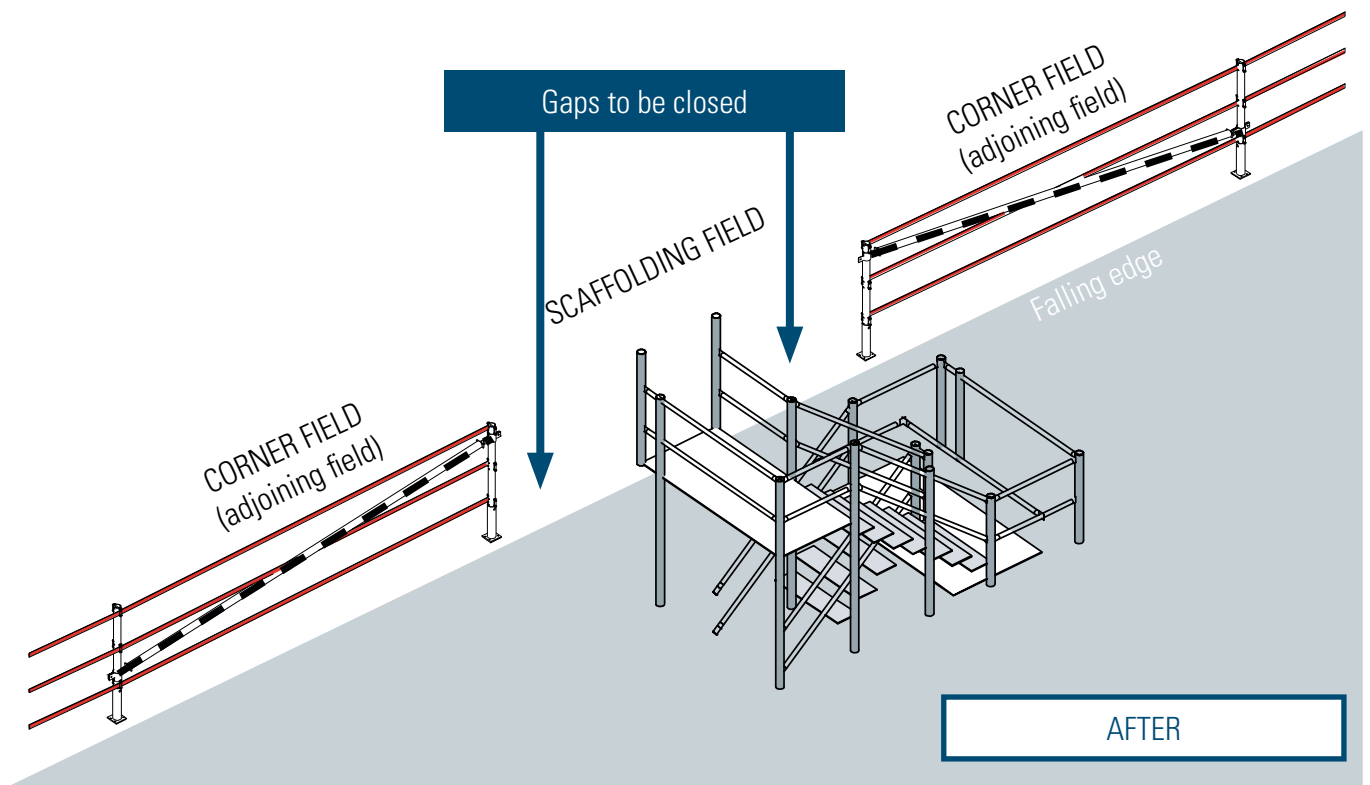
06 Scaffolding tower

6.1 The straps are loosened in reverse order (starting with strap ③).

6.2 The straps are removed in the scaffolding field.



- 6.3 Diagonal compressive struts are to be fitted in the adjoining fields, fastened to the existing posts by means of clamps (see also point 4.4).
- 6.4 Only now are the straps attached and pre-tensioned or set to their final tension, as described under point 4.6 - 4.9.
- 6.5 The gaps in the scaffolding field up to the corner fields must be properly closed by the scaffolding installation personnel with scaffolding elements, so that the roof area is secured for the subsequent work.



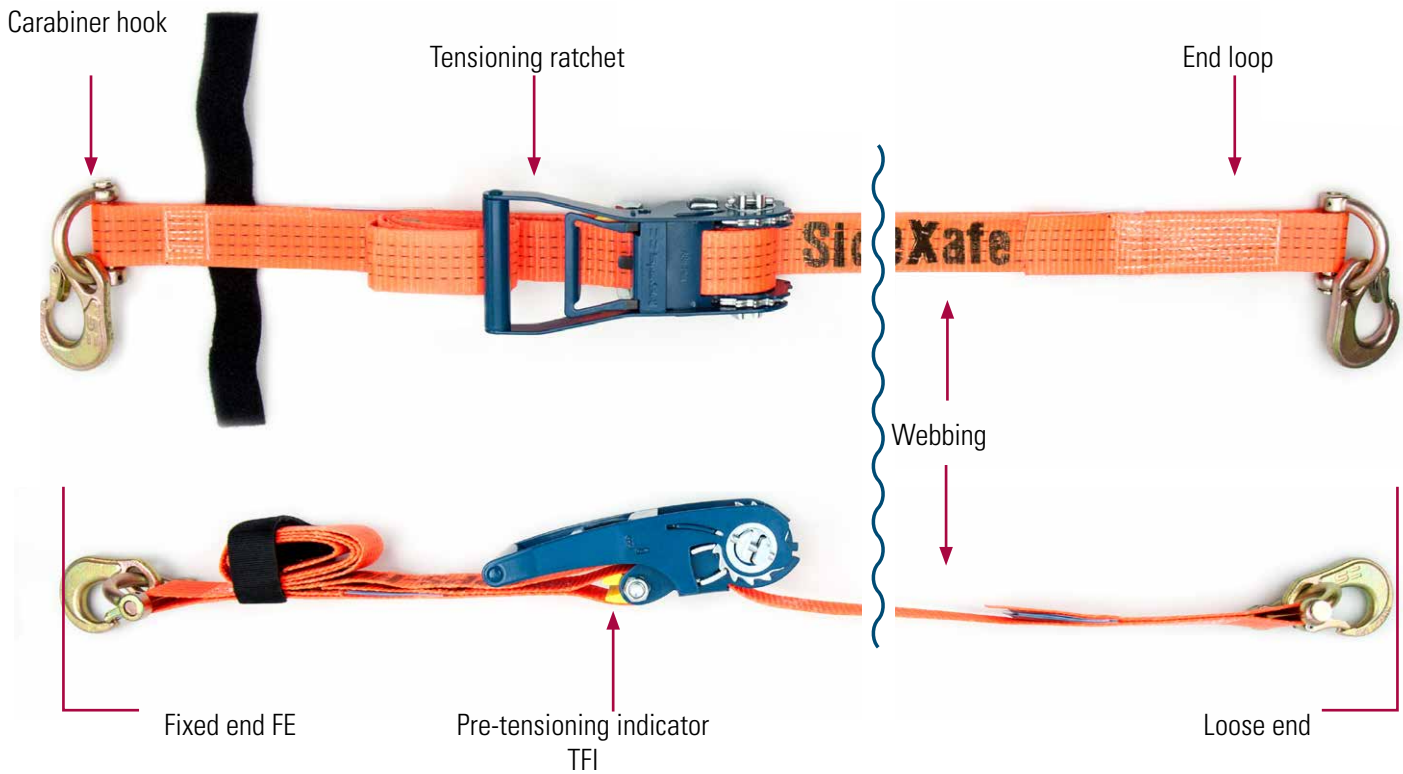
07 Operating instructions for the tensioning straps

Only a pressure ratchet with double slide for increased pre-tensioning force, with integrated pre-tensioning force indicator TFI, may be used with the SideXafe roof side protection system.

It is only permitted to use systems with no defects evident. The tensioning straps must be furnished with an identification label whose lettering is clearly legible.

7.1 Construction of the tensioning strap system

The system is a two-part tensioning system, comprising the fixed end (FE) and the coated webbing with carabiner hook, the tensioning ratchet with integrated pre-tension measurement indicator TFI, and the loose end (LE) made from coated webbing with carabiner hook.



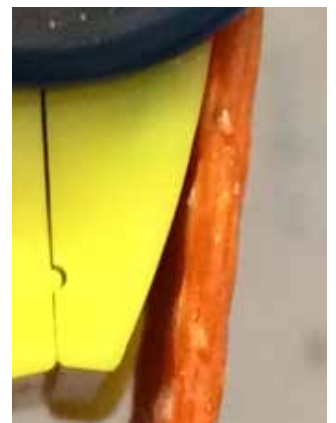
TFI indicator



Indicator open. Tensioning strap is not tensioned.



Indicator tensioned to the first marking. 750 daN of pre-tensioning force applied.

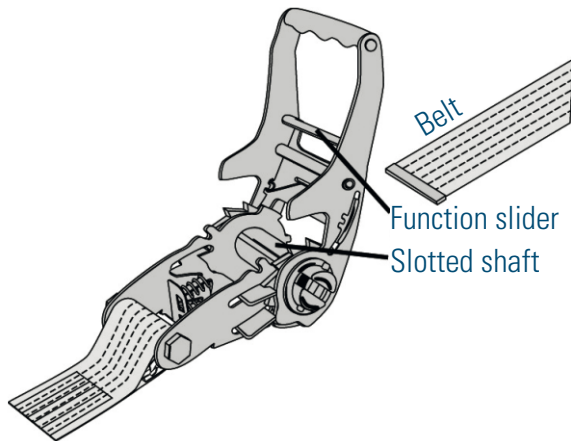


The TFI is completely closed. 1000 daN of pre-tensioning force is applied to the tensioning strap.

7.2 Assembling the tensioning strap for the side protection system

7.2.1 Starting state for the tensioning ratchet

In the starting condition, open the ratchet lever and position the empty slotted shaft in the threading position for the webbing.



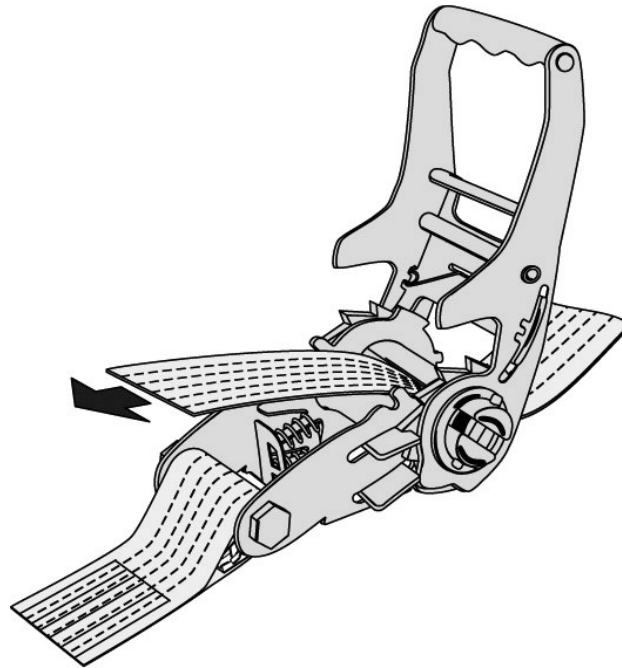
7.2.2 Fastening the tensioning strap

Position the tensioning strap and hook the carabiner hook securely through the lug. Ensure the carabiner safety latch stays closed!



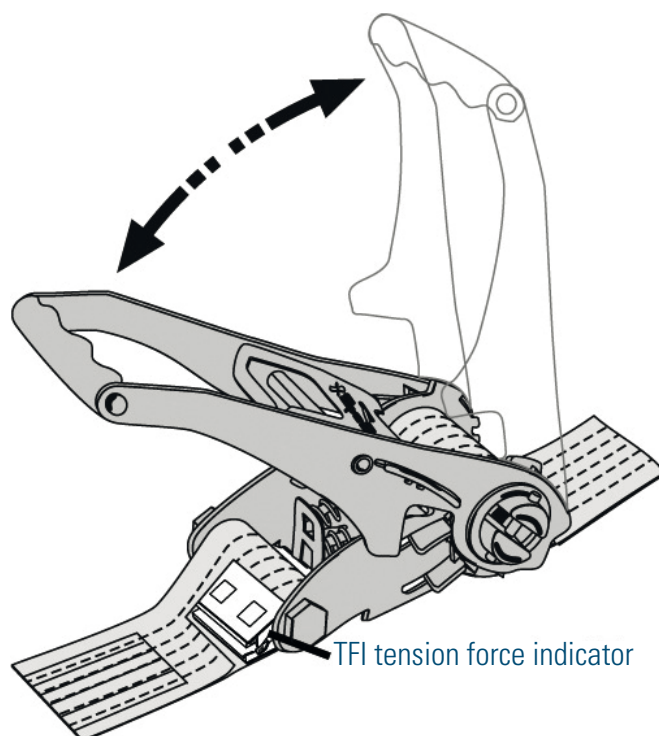
7.2.3 Adjusting the length of the tensioning strap

Thread the tensioning strap into the slotted shaft and pull it through until the strap is taut



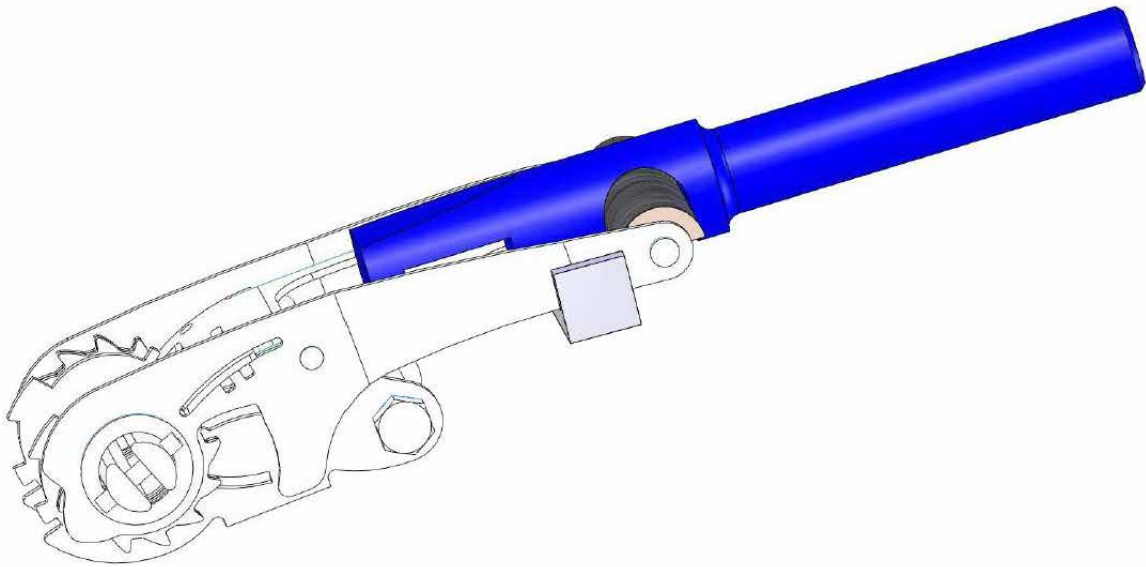
7.2.4 Tensioning the system

Tighten until the desired pre-tension is achieved. There must be at least 2 windings, but no more than 3, on the slotted shaft of the tensioning ratchet. Tensioning ratchets with pre-tension indicators show the pre-tensioning force applied. There must be at least 750 daN or 1000 daN (see points 1.2 and 3) indicated on the TFI on all three straps.



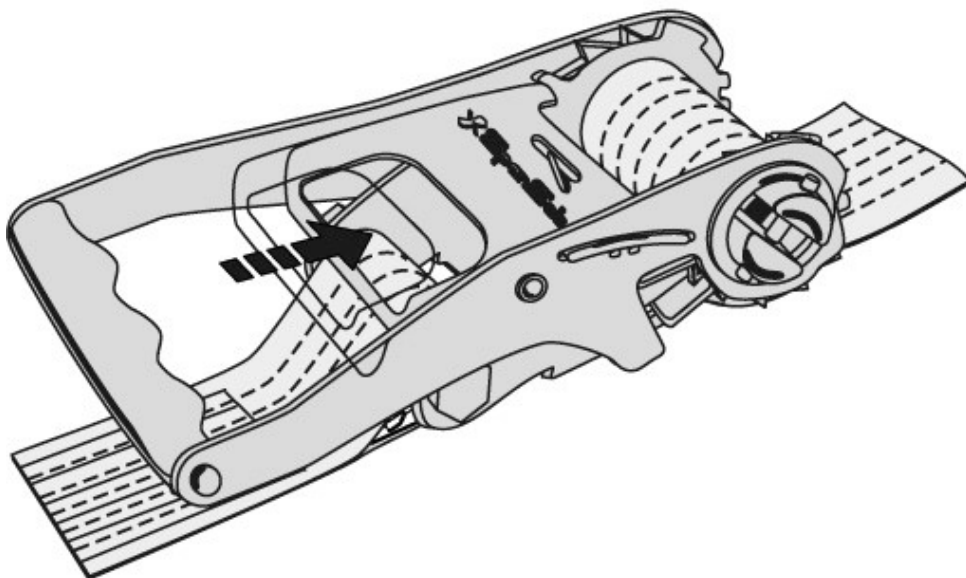
In order to make the tensioning easier, an approved SpanSet lever extension can be attached to the tensioning lever and used for tightening the strap.

Caution: Ratchet extensions such as pipes, timbers, etc. are forbidden!



7.2.5 **Secure tensioning ratchet**

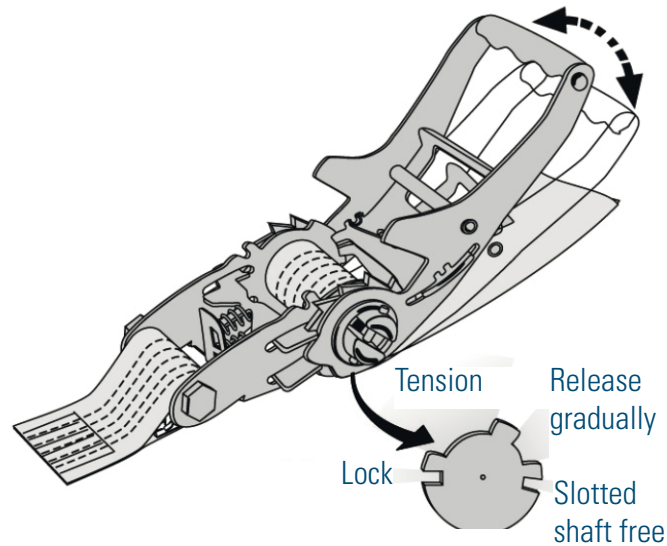
After tightening pull the function slider and turn the lever of the tensioning ratchet far enough into the closed position that the slide can engage in the safety recess. Now the closed and locked tensioning ratchet will not jump out even with heavy vibrations.



7.3 Disassembling the tensioning strap of the side protection system

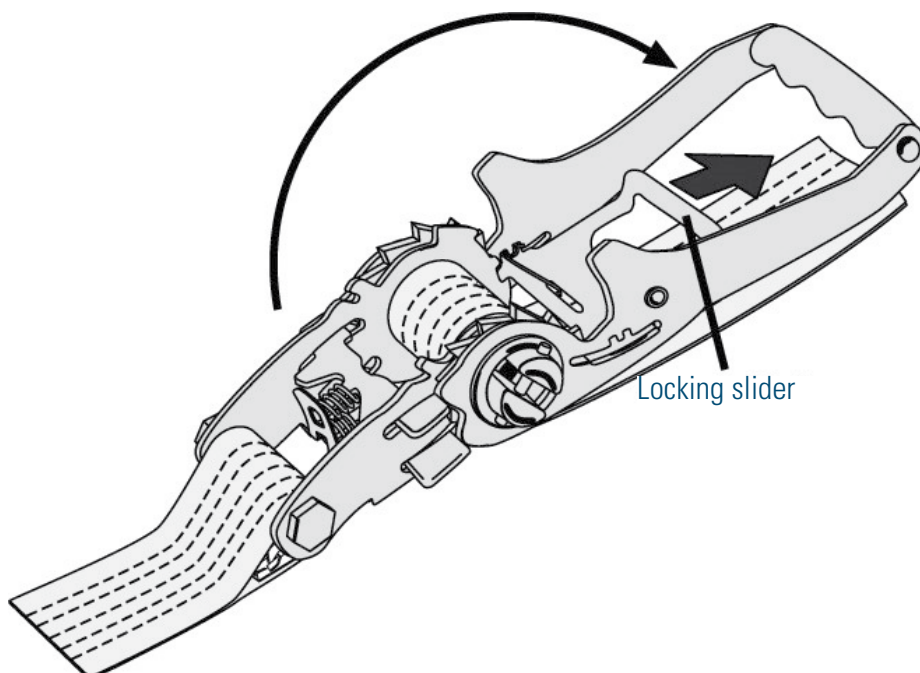
7.3.1 Loosening the tensioning strap

When releasing the tension, the tensioning strap allows the pre-tensioning force to be released in small steps. To do so, move the lever of the tensioning ratchet to the loosening position. Moving the function lever back and forth releases the pre-tensioning force step by step. Moving the tensioning ratchet lever to the maximum position allows the slotted shaft to move freely and the tensioning strap can then be easily pulled out.



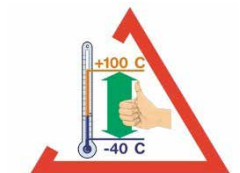
7.3.2 Loosening the tensioning ratchet

Pull the function slider and turn the tensioning ratchet lever ca. 180° to the end stop to let the slider latch into the last possible recess. Caution! All the pre-tensioning force will be released at once!



7.4 General safety instructions

- Tensioning devices and connecting elements shall not be positioned on edges, so that they are not subjected to bending forces.
- There must be at least two but no more than three windings of the tensioning strap at the tensioning ratchets.
- Tensioning straps shall no longer be used after a break or deformation of connecting elements and/or tensioning ratchet.
- Tensioning ratchets must be locked after the tensioning process.
- Only approved lever extensions shall be used.



7.5 **Monitoring and checking**

During use, check the tensioning system for visible defects. In particular, the ratchet gear should be checked for wear.

If a defect is discovered that may compromise safety, the system must be withdrawn from service.

If used or contaminated with aggressive substances or other hazardous substances, the tensioning system must be carefully inspected and may have to be checked by a qualified person. Furthermore, all tensioning systems must be checked by a qualified person after each disassembly or at least once per year. Depending on the operating conditions and operational circumstances, intermediate testing may also be required.

7.6 **Discard criteria**

The tensioning strap must be withdrawn from service in the event of:

1. Breakages or cuts in the webbing, in particular at the edges, or other questionable damage
2. Missing or illegible labelling
3. Damage to the connecting seams
4. Deformation due to the influence of heat
5. Damage due to the effects of aggressive substances

Connecting elements and clamping elements must be withdrawn from service in the event of:

1. Cracks, breakages or significant signs of corrosion or damage
2. Identifiable permanent deformations of load-bearing parts

7.7 **Storage**

Keep the tensioning system for the SideXafe side protection system clean, dry and well ventilated, and avoid direct sunlight and chemical influences. Do not expose to temperatures greater than +100°C. Wet, frozen systems must be freed of ice before use.

7.8 **Repair work**

Repairs on the side protection system tension systems shall be carried out exclusively by the manufacturer.

08 Check documentation

Number and year of the EN standard: EN 13374:2013

Side protection system class: Class A

Type and model of the side protection system: SideXafe roof side protection system

Manufacturer: SpanSet GmbH & Co. KG
 Jülicher Straße 49-51
 52531 Übach-Palenberg, Germany
 Tel: 02451 4831-0
 Fax: 02451 4831-207
 email: info@spanset.de

Year and month of manufacture: _____

- Posts
- Webbing
- Diagonal compressive struts
- Pipe clamps
- Post locks

Serial number: _____

Date of purchase: _____

Date of first use: _____

Maintenance interval: After each return from the construction site, however at least once per year

Date of check	Name of person qualified for check	Signature of person qualified for check	Date of next check	Remarks

(If there is no alternative documentation available, the aforementioned should be used)

09 Parts list for the individual parts & tools required

Art. D059937	Webbing with tensioning ratchet, 18.50 m long, as per the description in these installation and usage instructions
Art. 34240	Clamp set as per the description in these installation and usage instructions
Art. 8134007, 8131812, 8131813	Sleeves as per the description in these installation and usage instructions (depending of roof construction)
Art. 8129678, 8129344	Posts as per the description in these installation and usage instructions
Art. 34234, 34235	Diagonal compressive struts for bracing as per the description in these installation and usage instructions
Art. 8123895	Post locks as per the description in these installation and usage instructions

List of tools required for assembly:

Spanners for fastening the sleeves (high-tensile M12) and pipe clamps with the diagonals (high-tensile M12) as well as for the post locks (M10).
Cordless impact screwdriver (e.g Hilti SIW 22T-A) for fastening the sleeves (Hilti screw anchors).

A lashing strap winder is recommended for checking the webbing.

10 Explanations for the labelling

10.1 Stockable metal components
Order number (engraved) example: BE001234

10.2 Order-related metal components
Order number (engraved) example: BE001234

10.3 Labelling of the tensioning straps and clamping elements with tensioning strap



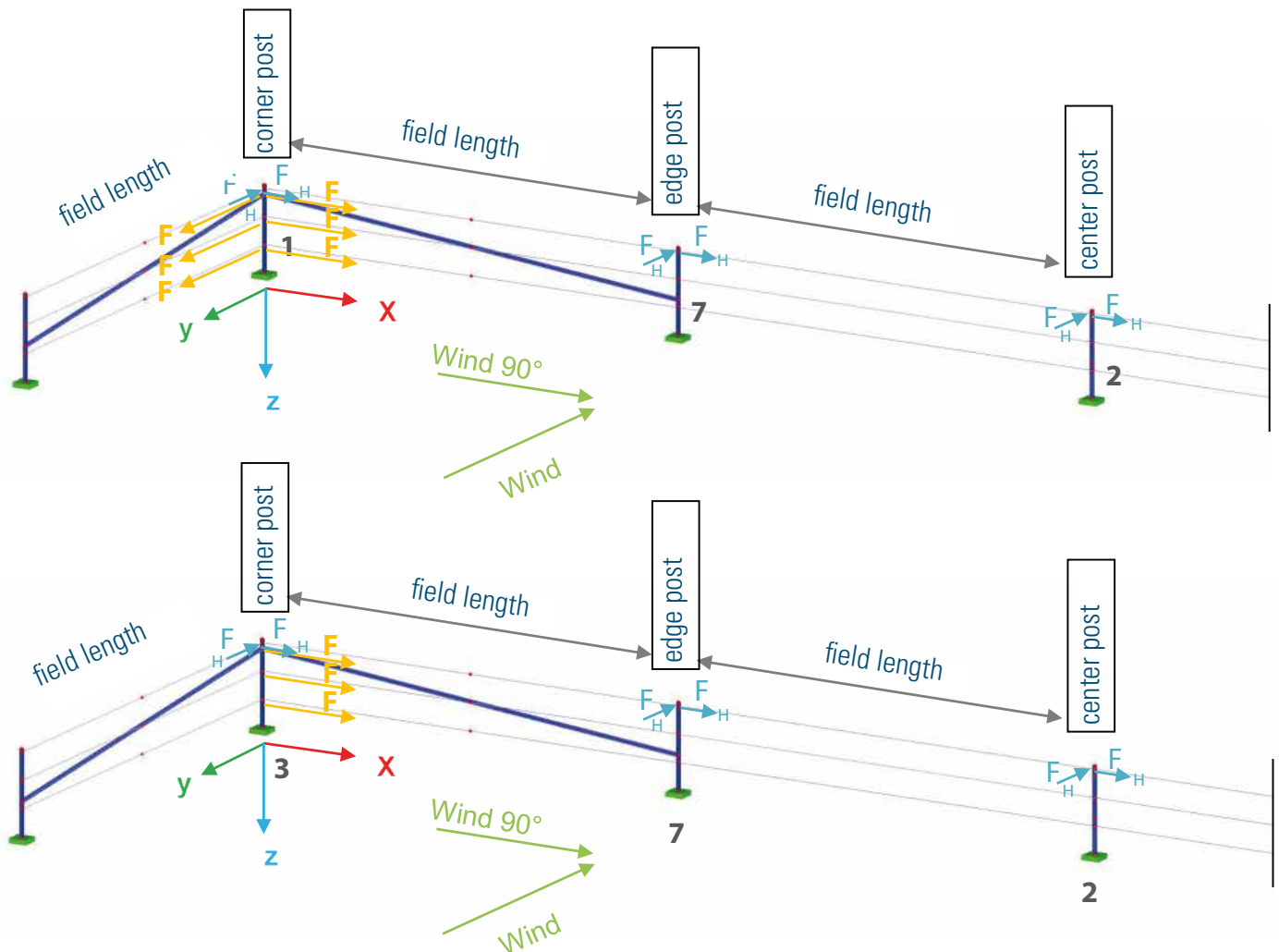
Label for clamping element with tensioning strap (fixed end)



Label for tensioning strap (loose end)

11 Introduction of forces / loading of the structure

Connection forces and moments for the side protection system posts as guideline values.



Loads and partial safety factors taken into account:

Strap tensioning force: $V_G = 1.0$ (strap tensioning force with ratchet applied and checked with TFI)

Field length up to 6.0 m: $F_G = 7.5$ kN per strap

Field length up to 7.5 m: $F_G = 10.0$ kN per strap

Further loads per DIN EN 13374. Temporary side protection system:

1. Wind loading on posts and straps
2. Horizontal load on posts: $F_{H1} = 0.3$ kN
3. Parallel loads on the posts: $F_{H3} = 0.2$ kN

Taken into account with the partial safety factor $\gamma = 1.5$

The following loads were not taken into account:

Vertical personnel load on the head of the posts: $F_D = 1.25$ kN, $\gamma = 1.0$

Max. field length: 7.50 m

Item	Strap tensioning force	Bearing forces (kN)			Bearing forces (kNm)	
		Px	Py	Pz	Mx	My
Corner posts	7.5 kN	6.56	6.53	-1.19	1.97	-2.04
	10.0 kN	9.45	9.42	-1.49	2.94	-3.01
Edge posts	7.5 kN	5.21	-0.54	0.58	-0.47	-3.09
	10.0 kN	8.10	-0.56	0.73	-0.48	-4.68
Middle posts	7.5 kN	0.30	-0.45	0.00	-0.40	0.40
	10.0 kN	0.30	-0.45	0.00	-0.40	0.40
End posts	7.5 kN	6.54	-0.09	-0.58	-0.07	-2.04
	10.0 kN	9.43	-0.11	-0.73	-0.08	-3.01

12 Disassembling and handling the components

The disassembly of the SideXafe roof side protection system is carried out with the protective measures described in 4.14 or with lifting work platforms.

Proceed as follows when dismantling:

- Loosen the tensioning straps in order, from bottom to top.
Ensure that the tensioning ratchets are loosened in a controlled manner as described under 7.3.
- Remove the straps from the posts.
(This is done in a similar manner to the description in 4.9.)
- After removing the straps, roll these up together.
- Now remove the diagonal compressive struts and the posts.
- The sleeves remain on the building.
- Place the thermal insulation covers (Art. 34366) over the sleeves to prevent moisture ingress.

It is not permitted to cut through tensioning straps, loosen locking nuts or remove permanently installed components or to throw components off the roof.

For transportation, pack the components in a suitable transport container such as pallets, pallet cages or transport frames.

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