

GOLDBECK - Flat roof protection EN 13374- A

Instructions for assembly and use

GOLDBECK Bauelemente Bielefeld SE, Ummelner Str. 4-6, 33649 Bielefeld

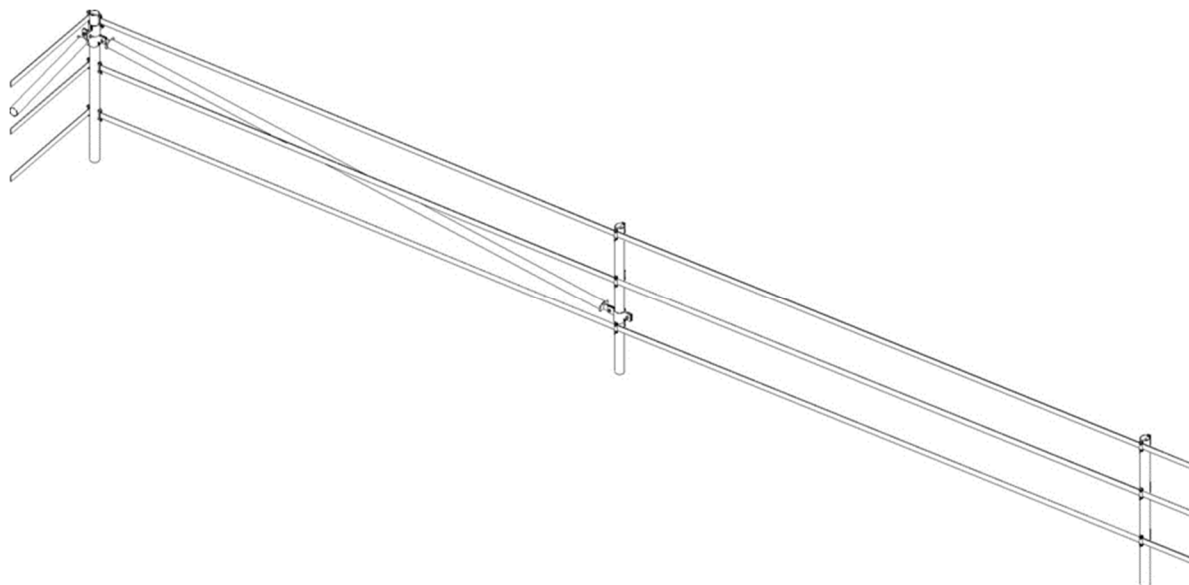


Table of contents

1	Use	2
2	General	2
3	Individual parts	3
4	Assembly procedure	5
5	Rear step lock	11
6	Roof access - scaffold tower	12
7	Clamping elements with patented preload measuring indicator TFI	13
8	Dismantling and handling the components	18
9	Required tools	18
10	Inspection documentation for GOLDBECK - flat roof protection	19
11	Data on the loading of the structure - pretensioning force of tensioning belts	20
12	Explanation of the markings	21

Index: d 21.01.2021 Wolf, Cornelius				created Eilers, Thomas			
Note "IMPORTANT!" inserted under point 4.4; 4.9 and 7.3				audited:			
				Type	Table 2	Sequence number	Index
Table 0	Table 1	Table 2	Table 3	D	Z11	0198	d

1 Use

- 1.1 The GOLDBECK "flat roof protection" is to be used as protection against falling on roof outer edges of roofs with a pitch of up to 15°. It has been tested according to DIN EN 13374 - 2013 as a temporary side protection system class A and meets the requirements of the standard.
- 1.2 The maximum spacing of the securing posts may not exceed a pretensioning force of **1000 daN** **7.5 m must** not be exceeded. For distances up to and including **6.0 m**, a pre-tensioning force of **750 daN** is sufficient. In the case of different panel lengths, the largest panel always applies for the selection of the pretensioning. Please refer to the descriptions under point 7 of these instructions for assembly and use.

As the flat roof protection is to be used without toe board, there are the following restrictions for its use: Concrete roofs (provided that no wall elements protrude above the roof level in the wall area), profiled panel roofs with curtain gutter, cold and double-skin roofs, as well as sandwich roof elements are not permitted to be used in accordance with these instructions for assembly and use.

Important safety instructions:



Caution: Danger of falling!

When laying out the roof sheet packages, make sure that they are not placed on the edge (verge) support on the gable side. When laying out the roof sheets, it must also be ensured that the edge (verge) support is not stepped on. There is an acute risk of falling in the edge area of the roof until the sheet metal has been laid out there. After that, it is essential to observe point 5 of these instructions for assembly and use!

2 General

- 2.1 The flat roof protection may only be installed and removed by persons who have been instructed in these instructions for installation and use.
- 2.2 During the construction phase, the installation of the flat roof protection may only be carried out from safe workplaces, e.g. lifting platforms or mobile scaffolds. For later maintenance or servicing work, a defined work sequence for assembly and disassembly must be established. A safe access to the roof must be planned and ensured both for the construction phase and for later work (e.g. "Roof access - scaffold tower" see point 6).
- 2.3 The components must be checked by the user for apparent defects before each use. Damaged components must **NOT** be used! If damaged components are detected during use, they must be replaced immediately. Until then, the work area must be blocked.
- 2.4 During the assembly and dismantling of the flat roof protection, a plan for rescue measures must be drawn up by those carrying out the work, taking into account all possible emergencies that may occur during the work.

2.5 Work in ice and snow is not permitted when using the flat roof protection.

2.6 In principle, the national regulations must be complied with when using flat roof protection.

Particularly noteworthy:

The use of sharp-edged tools and components in connection with the tension belts can lead to damage to the tension belts.

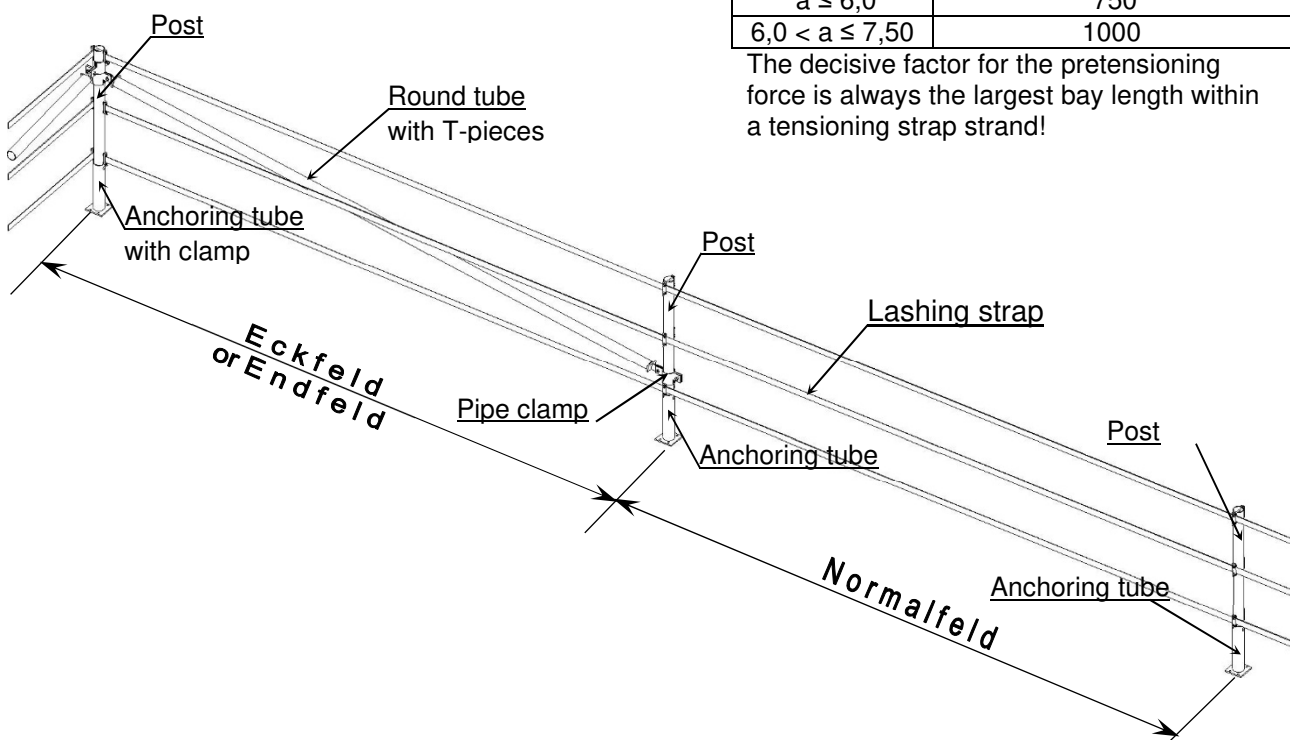
After a person has fallen or an object has fallen against or into the GOLDBECK flat roof safety device and accessories, the flat roof safety device component may only continue to be used after it has been inspected by a person qualified to carry out such inspections.


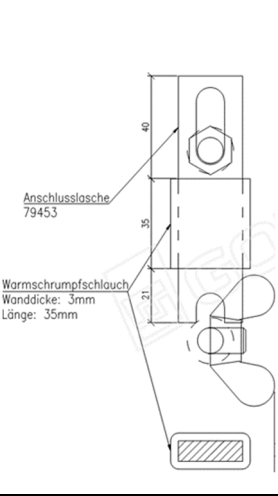
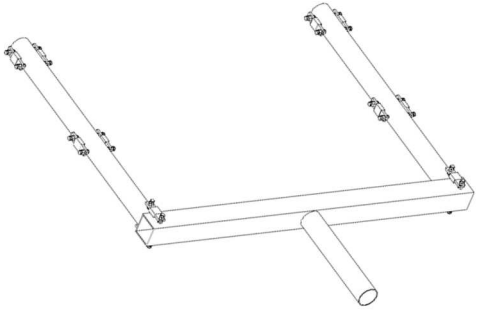

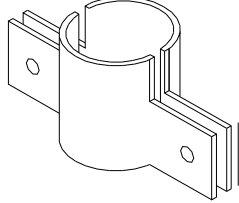
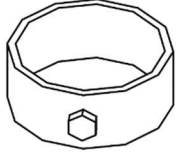
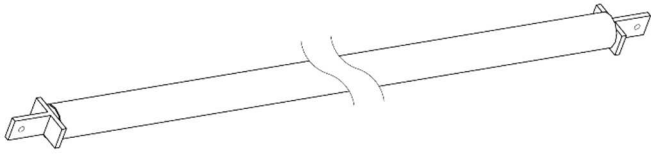
Openings between side guard systems and other structures shall be as small as possible, but shall not exceed 120 mm for guardrail rails and 20 mm for toe board.

3 Individual parts

Field length a [m] (centre distance)	Required pretensioning force [daN]
$a \leq 6,0$	750
$6,0 < a \leq 7,50$	1000

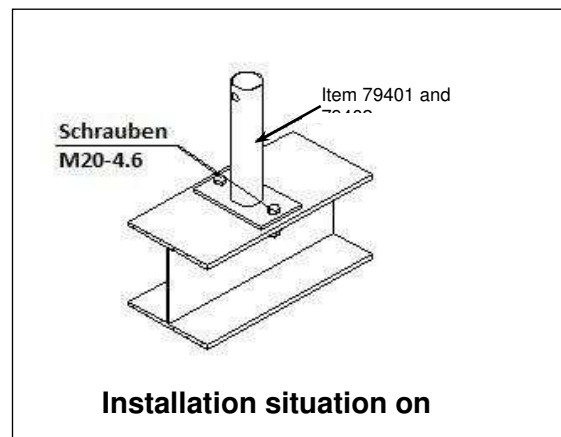
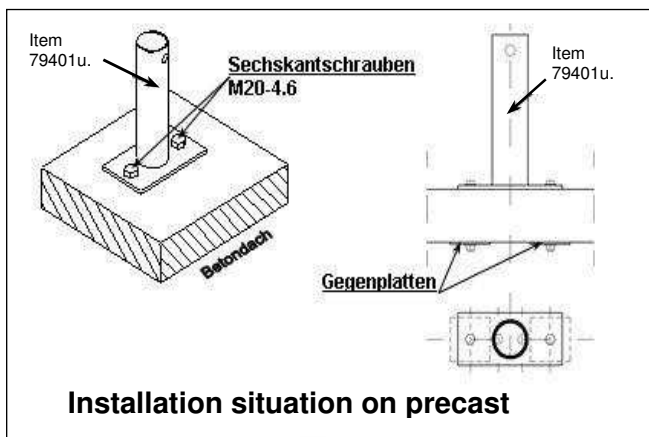
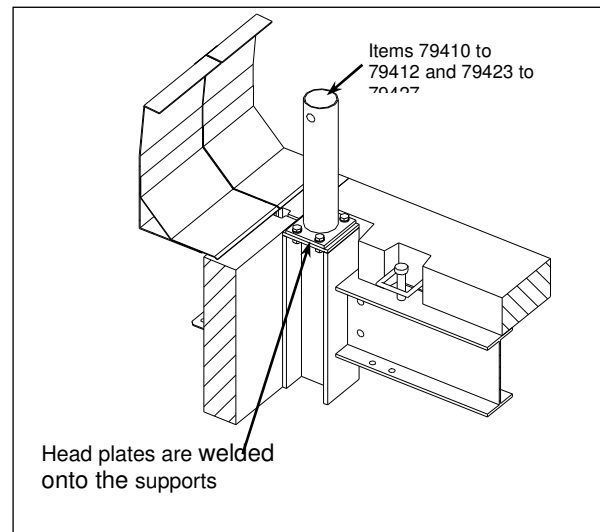
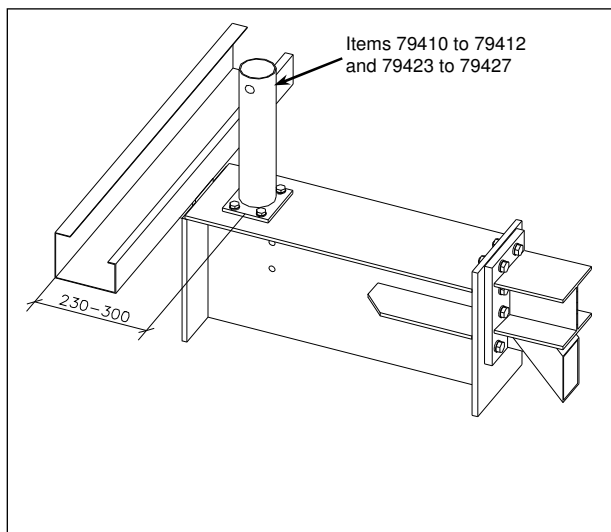
The decisive factor for the pretensioning force is always the largest bay length within a tensioning strap strand!



 <p>Post Item 79415</p>	 <p>Attachment to post Item 79415 one-sided with protective hose</p> <p>Anschlusslosche 79453</p> <p>Warmschrumpfschlauch Wanddicke: 3mm Länge: 35mm</p>	 <p>Roof access element Item 79430</p>
<p>Anchoring pipes (outer $\varnothing = 88.9\text{mm}$), with various connection plates, with and without PVC connection sleeve</p> <p>Fastening to steel structures: L = 400mmPos . 79423, Item 79410 (with PVC sleeve) L = 460mmPos . 79425 Item 79412 (with PVC sleeve) L = 525mmPos . 79424 Item 79411 (with PVC sleeve) L = 585mmPos . 79427 Item 79426 (with PVC sleeve) L = 200mmPos . 79419</p> <p>Fastening to concrete ceilings: L = 360mmPos . 79401 Item 79402 (with PVC sleeve)</p> <p>Other tube lengths are possible: t = 2.9mm for L = 360 - 650mm t = 5.0mm for L = 150 - 350mm</p> <p>Other anchorages are permissible if the attachment to the structure is statically proven.</p>	 <p>Lashing strap item 41025</p>	 <p>Pair of clamps 2x pos. 41038</p>
	 <p>Clamp Item 41026</p>	 <p>Round pipe with T-piece as pressure pipe</p> <p>Bay length a = 5.0m Item 79465 Bay length a = 6.0m Item 79466</p> <p>For other field lengths (min. 1.0m; max. 7.5m), order-related special parts are manufactured!</p>

4 Assembly process

- 4.1 This standard assembly sequence is valid unless otherwise specified by the designer. Before assembly, a visual inspection of the components is carried out, whereby attention must be paid to cracks and severe corrosion on the steel elements. Furthermore, the discard criteria for lashing straps according to the conditions under point 7.6 must be taken into account.
- 4.2 Steel tubes with connecting plates (items 79410 to 79412 and 79423 to 79427) are to be screwed onto the existing steel structure as anchoring for the posts with 4 screws (HV screws M12*...10.9) or items 79401 and 79402 with 2 screws M20*...4.6. Items 79401 and 79402 are used on concrete elements. For this purpose, a through hole is drilled for the anchoring and screwed tightly using 2 screws M20*...4.6 and a counter plate.



- 4.3 The posts pos. 79415 are inserted into the anchoring tubes. (Please note the instructions under item 4.4 for corner posts).

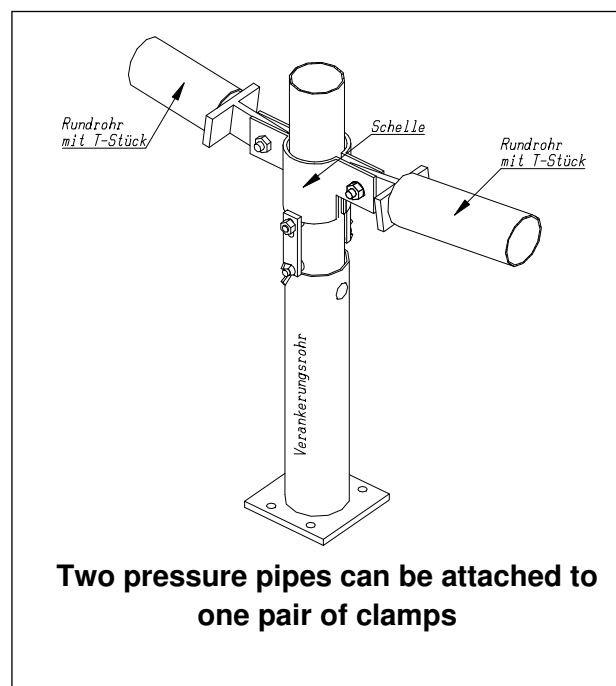
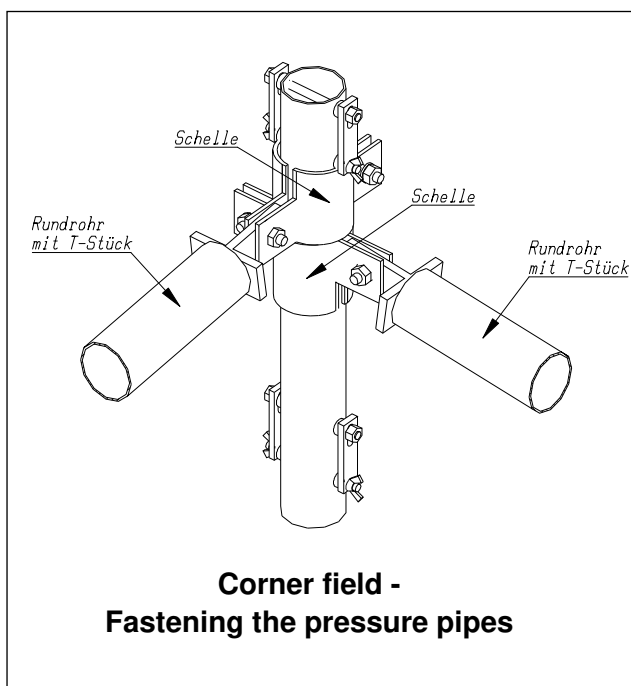
- 4.4 Round tubes with T-pieces are installed in the corner fields (inner and outer corners) according to the designer's specifications to brace the flat roof protection. The pressure diagonals are attached to the posts by means of clamps. The fastening is done with HV screws M12*45, 10.9.

Design: first mount the lower connection of the pressure diagonal, then the upper connection. This prevents the upper clamp from slipping.

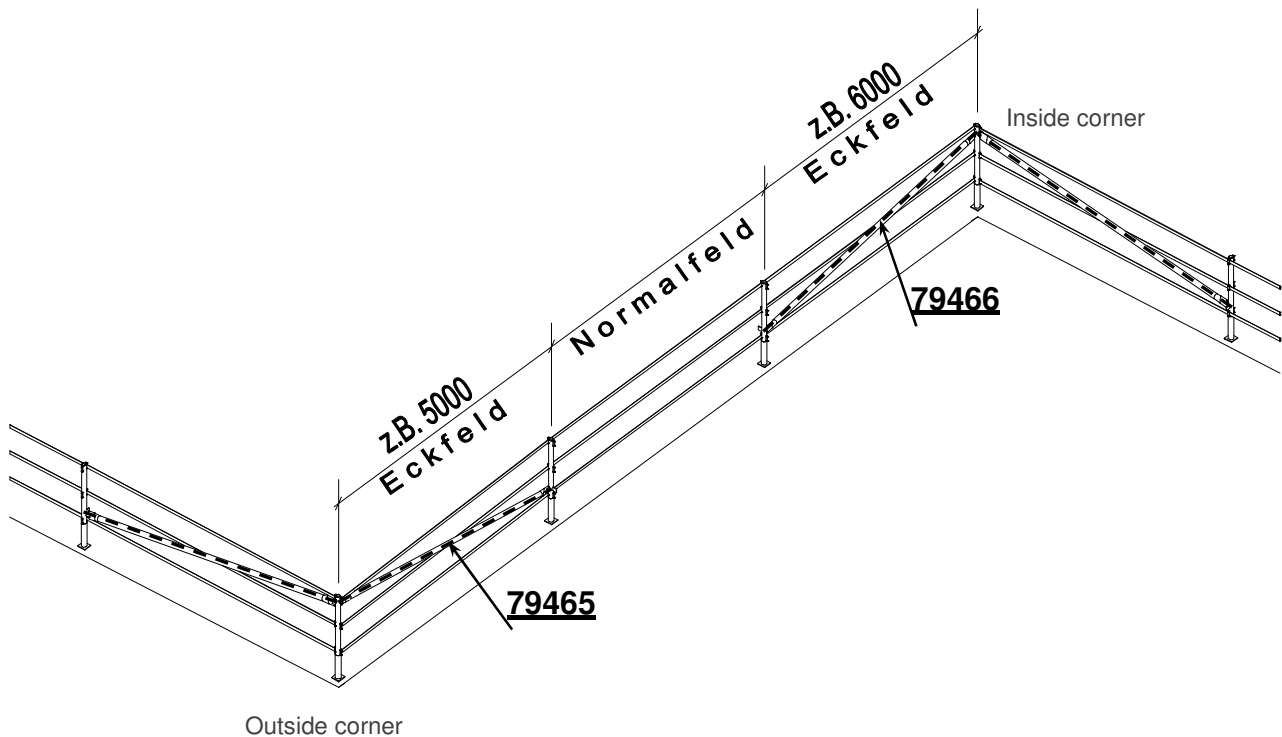
IMPORTANT!

The designer at the planning stage and the fitter at the construction site must ensure that the pressure diagonal is also executed as a diagonal!

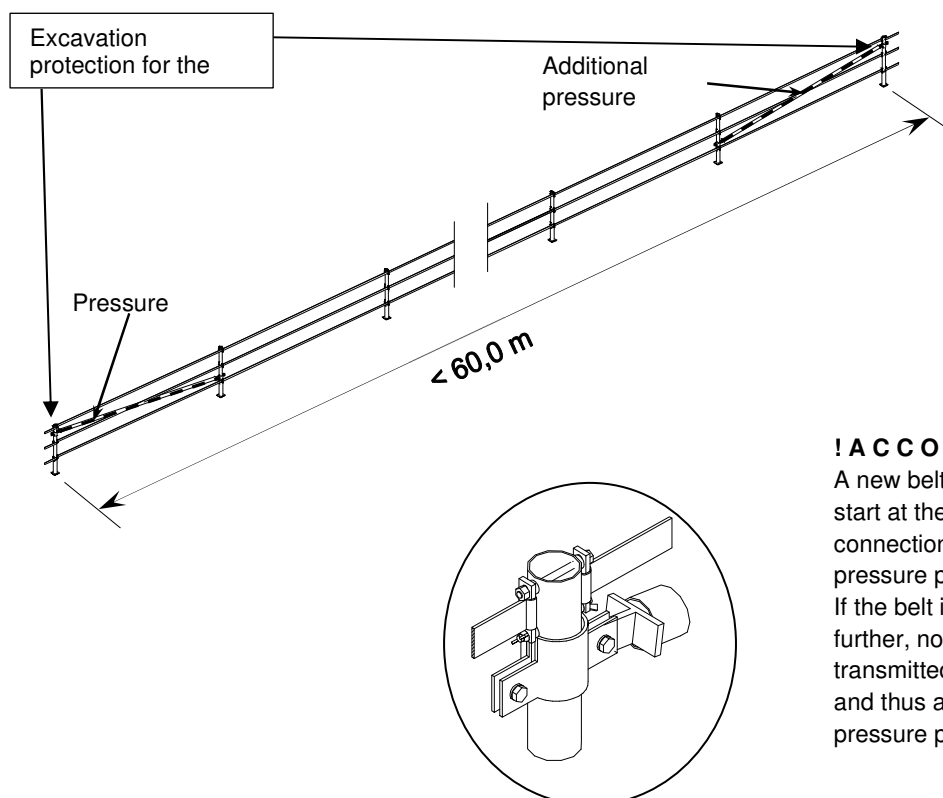
- ➔ At the end of the belt or in the corners, the pressure diagonal is to be placed at the very top directly below the topmost belt. The other side should be placed at the bottom above the lowest belt. (see following illustrations)



For an axis distance of 5000 mm, the pressure pipe pos. 79465 must be used, for an axis distance of 6000 mm pos. 79466.



Additional pressure diagonals are required at a distance of **max. 60.0 m**.

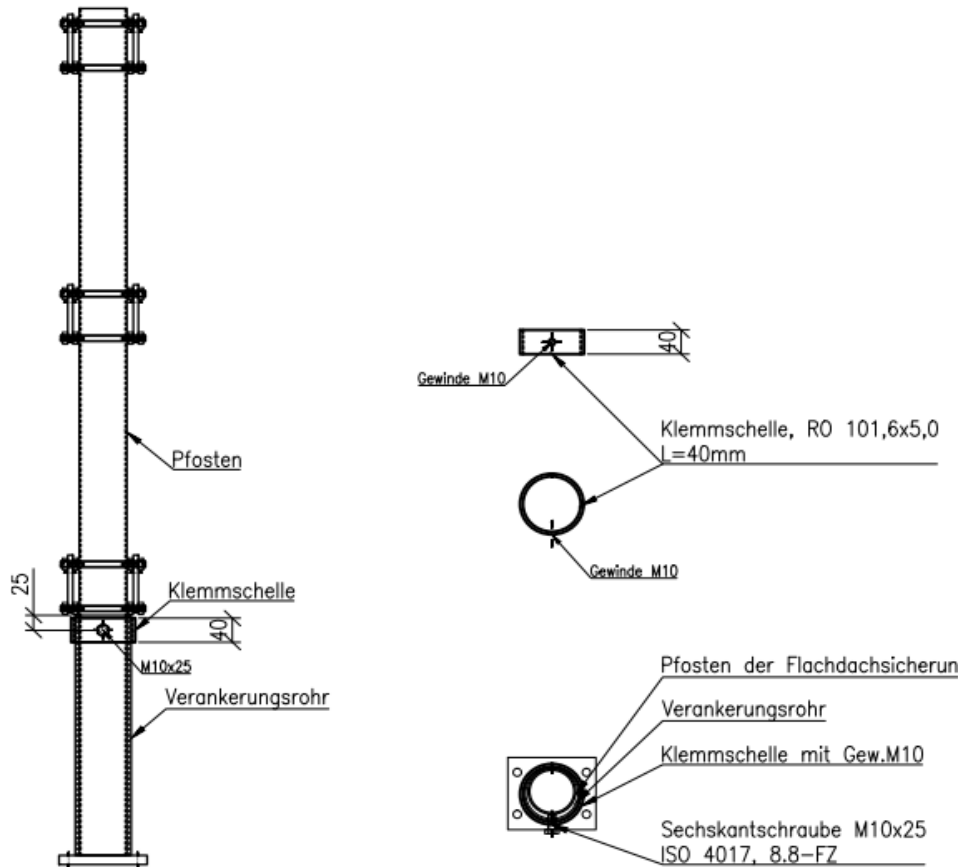


! ACCOUNT !

A new belt must also start at the upper connection of a pressure pipe. If the belt is guided further, no forces are transmitted to the post and thus also to the pressure pipe.

4.5 Excavation protection of the post:

The post on which the upper connection of a pressure pipe is located must be secured with a clamp item 41026 and a screw M 10x25. For this purpose it is mandatory to install the clamp before mounting the post. The screw must be screwed through the hole in the anchoring pipe so that the post is clamped.

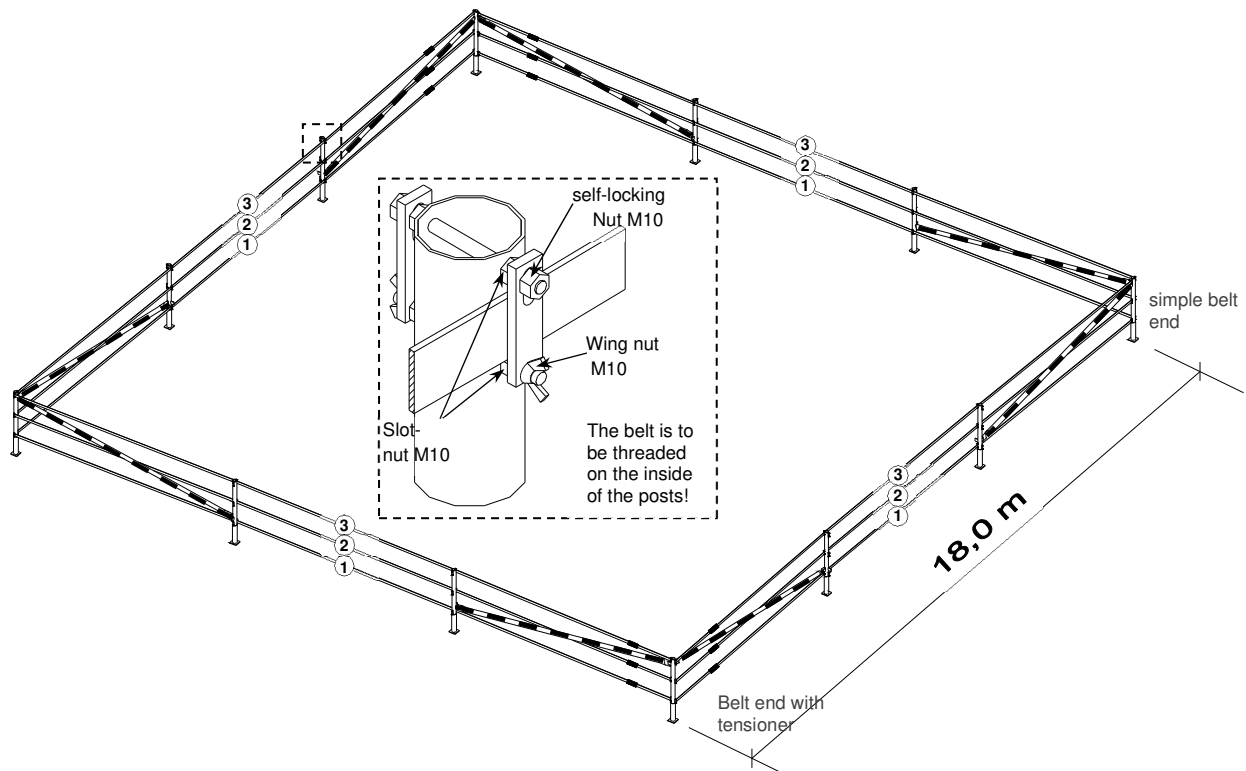


- 4.6 Normal panels are mounted as described in points 4.2 and 4.3. The installation of pressure diagonals is not necessary here.
- 4.7 Three tension straps are mounted on each post. On one side the end piece with tensioning element, on the other side the simple belt end. One belt can be tensioned over a maximum length of 18.0 m. When mounting the straps, make sure that they are installed on the side of the roof surface. The attachments on the posts are covered on one side with a protective tube. This side must always be on the side where the tensioning straps are attached.
- 4.8 **ATTENTION:** A tensioning strap must **not** run around the corner. This means that the strap must start or end in inner and outer corners, as well as at the ridge or throat. Otherwise, the prescribed tensile stress cannot be applied.

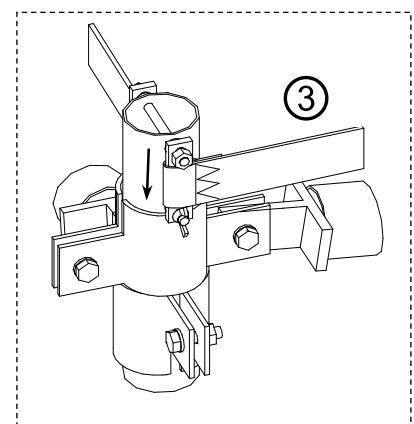
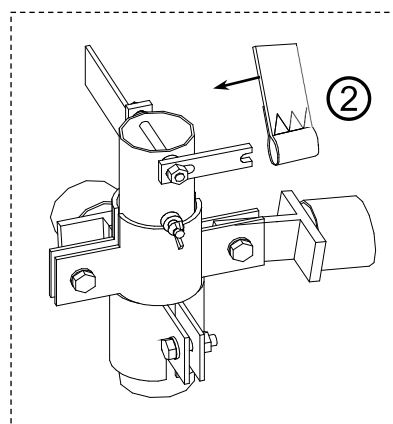
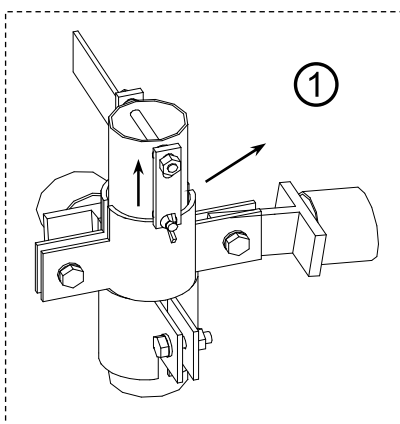
- 4.9 The tensioning straps are threaded completely around from the bottom (straps ①) to the top (straps ③) and **pre-tensioned**. Only in the second step do they have to be brought to their final tension, again starting from the bottom (belts).①

IMPORTANT!

When tensioning the belts, make sure that the belts are pulled tightly through the slotted shaft and that there are 2 to 3 windings (see point 7.3)!



Attach the belt ends:



- 4.10 The flat roof protection must be checked for proper condition by the respective user every working day, before use or after longer work interruptions.
The inspection is done by visual inspection, looking for cracks and severe corrosion on the steel elements.
In addition, the components must be inspected after each disassembly or at least once a year by a person qualified to carry out the inspection. Depending on the conditions of use and the operational circumstances, interim inspections may be necessary.
For the lashing straps, the conditions for discard readiness specified in point 7.6 of these instructions for erection and use apply.
The components are to be withdrawn from use if damage is detected.
Furthermore, make sure that the tension in the lashing straps is sufficient during the daily inspection. The tension can be checked via the TFI installed on the straps (see point 7.1 of these Assembly and Use Instructions).
- 4.11 Dismantling of the bottom chord is only permitted after the wall elements have been installed.
- 4.12 Dismantling of the GOLDBECK "flat roof protection" (posts, pressure diagonals and tensioning straps) is only permitted after the roof work has been completed.
- 4.13 The tensioning belts shall be inspected by a person qualified to inspect them after each return from the construction site, but at least once a year.
- 4.14 During subsequent maintenance and servicing work on the building, it is possible to re-install the GOLDBECK flat roof protection.
Water bags or similar, but also existing anchoring devices are to be used as fall protection for the installation work during the reconstruction of the flat roof protection.
Assembly may only be carried out by persons who have been specially instructed and examined in accordance with Principle 41 "Work involving a risk of falling" of the Employer's Liability Insurance Association.
Before use, the anchoring tubes must be checked for safe use.
- 4.15 No changes or additions may be made to the components of the GOLDBECK flat roof protection.
All repair work may only be carried out in accordance with the measures specified by the manufacturer.
- 4.16 Dismantling of the GOLDBECK flat roof protection is carried out with the protective measures described under point 4.14 or from lifting platforms.
It is not permitted to cut the lashing straps, loosen the locking nuts or remove permanently installed components or throw components off the roof.

5 Rear step protection

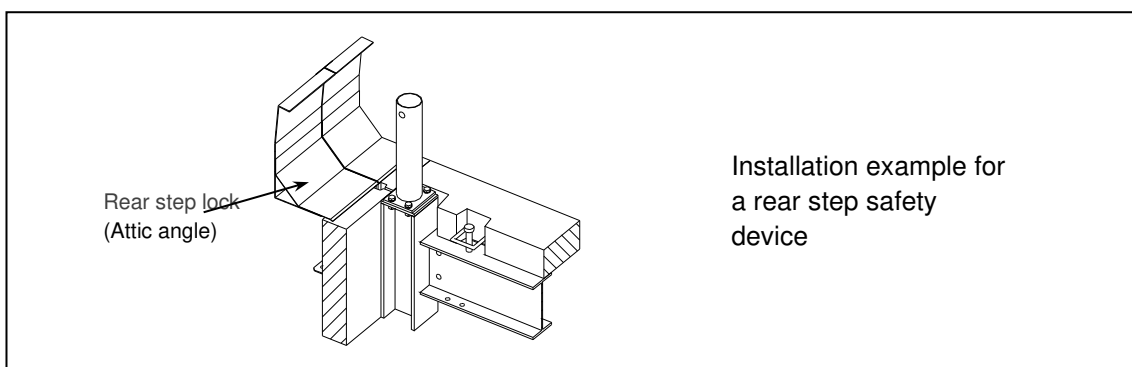
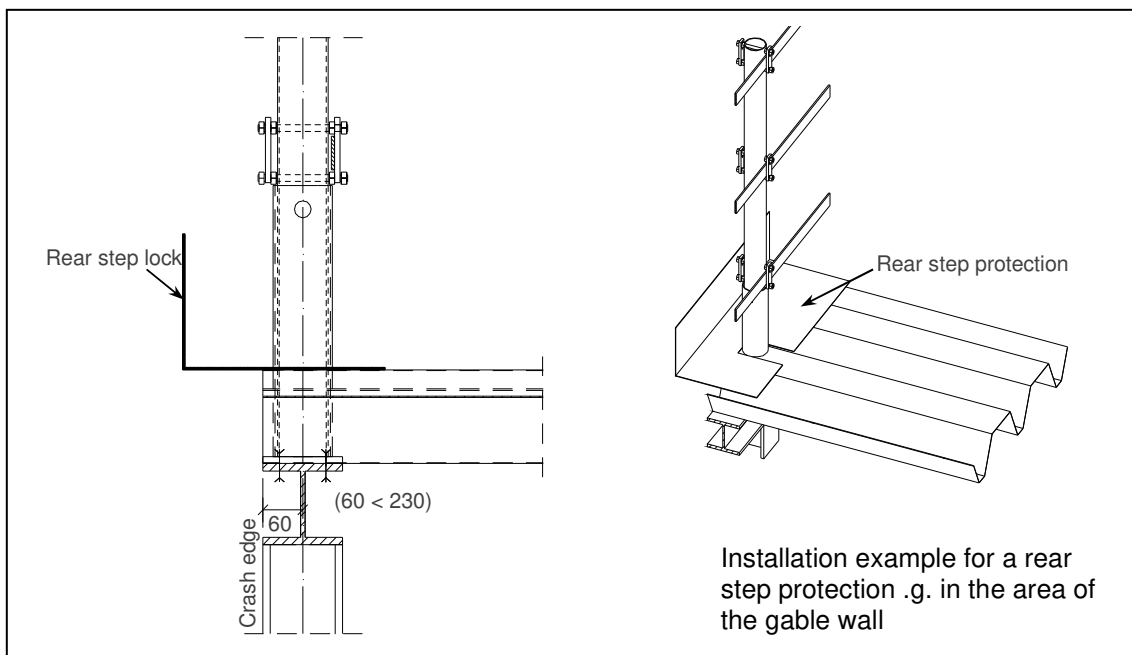
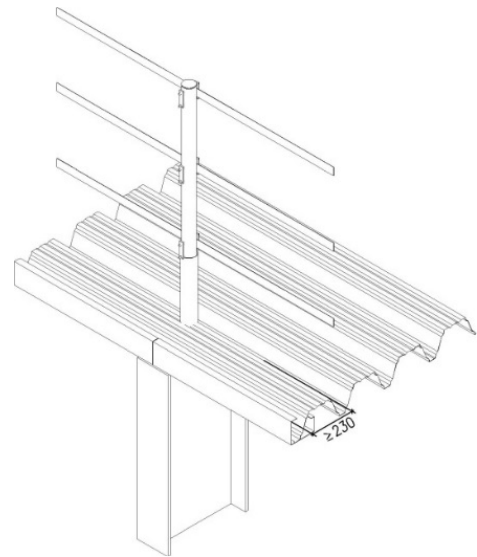
5.1 When is a rear step protection required?

A rear step guard is required if the distance from the axis of the post to the edge of the fall is less than 230 mm.

5.2 The rear step protection consists of a folded sheet metal angle, which serves the later fastening of the façade.

5.3 **Important!** The sheet metal angle must be installed immediately after laying the trapezoidal sheets. It must be fastened to the trapezoidal sheet with blind rivets. For storey buildings with concrete ceilings, the parapet angle must be installed for this purpose.

5.4 Only now is the roof surface sufficiently secured for subsequent work. Alternatively, please observe point 6 of these instructions for assembly and use.



6 Roof access - scaffold tower

Note: This design is protected by utility model law!

6.1 For the roof access, a location for a scaffold tower is determined. At this point, a roof access element is inserted into the anchoring tube instead of a post. The arrangement is possible from the 3rd prop away from the hall corner.

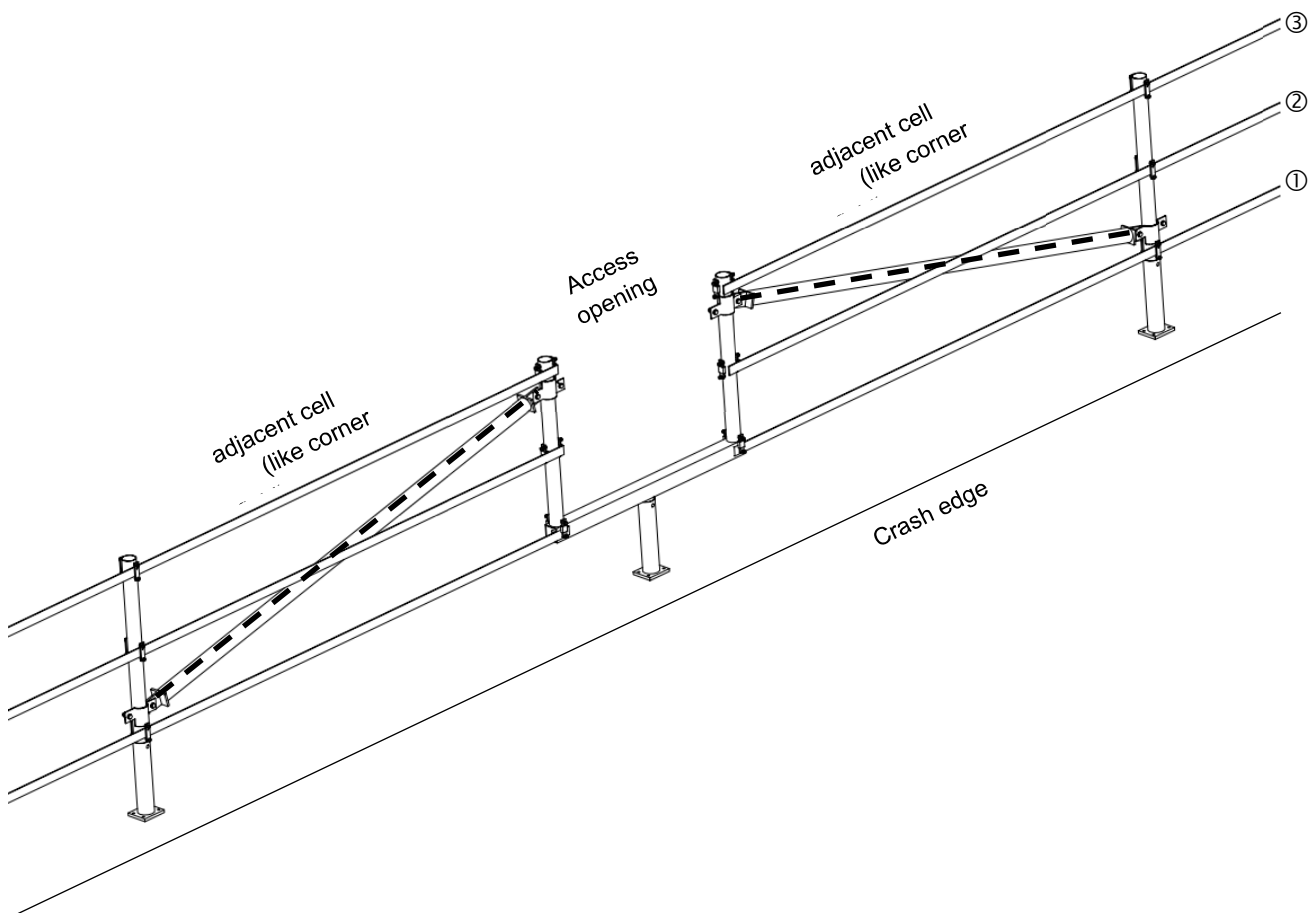
6.2 It is mandatory to install pressure diagonals in the adjoining fields, which are fastened to the existing posts and the roof access element by means of clamps (see also point 4.4).

Attention! The size of the roof access element must be taken into account for the length of the pressure diagonals!

6.3 Now the straps are also attached in this area as described in points 4.6 to 4.9 and pre-tensioned or brought to their final tension.

6.4 Attachment of the scaffold tower to the roof access or to the post of the GB flat roof protection is not permitted.

6.5 If the roof access element is to be used as a step, a slip-resistant foil must be applied. Alternatively, the access element can be built over by the scaffolder.



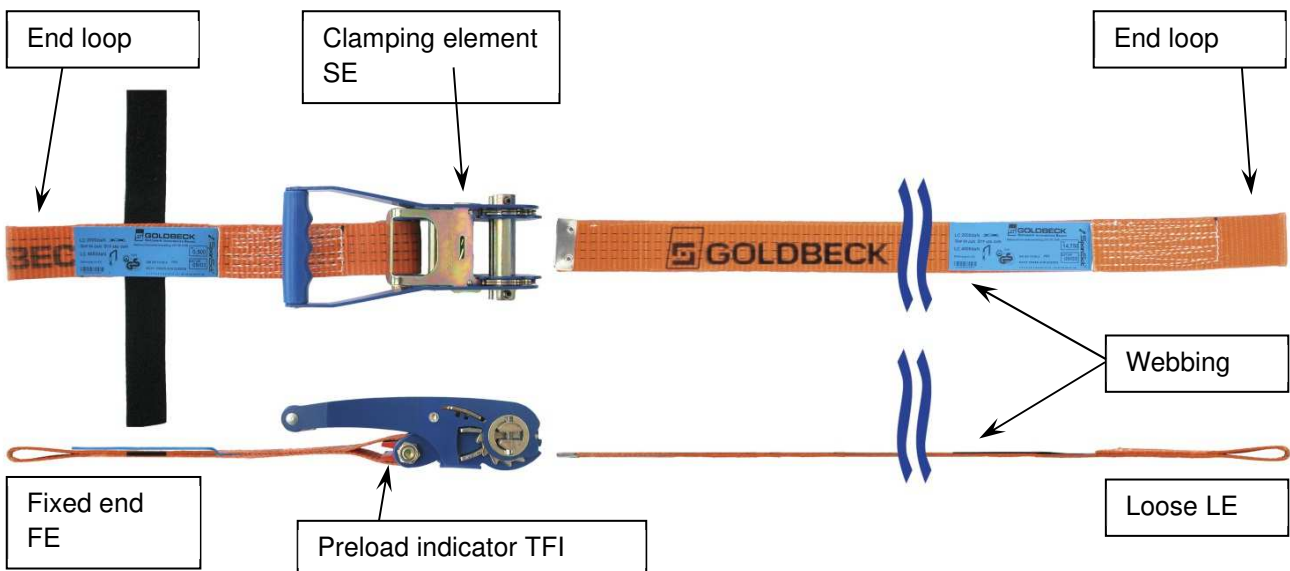
7 Clamping elements with patented preload measuring indicator TFI

7.1 Only a tensioning element with double slider for increased pretensioning forces with the integrated pretensioning measuring indicator TFI may be used for GOLDBECK - flat roof securing.

Only undamaged systems without obvious defects may be used. The flat roof securing systems must be provided with an identification label, the inscription of which must be clearly legible.

7.2 Construction of the tensioning strap system:

The system consists of a two-part tensioning system. Consisting of the fixed end (FE) and coated webbing with connecting loop, the tensioning element (SE) with integrated pre-tensioning indicator TFI. The loose end (LE), made of coated webbing with a sewn connection loop.



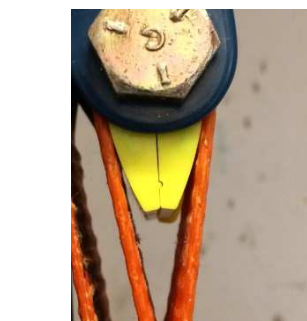
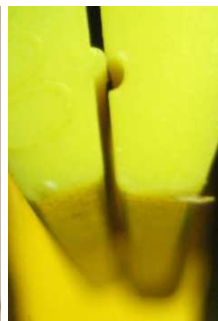
TFI Display



Display open. Webbing is not taut.



Display tightened up to the first mark. The pretensioning force applied is 750 daN.

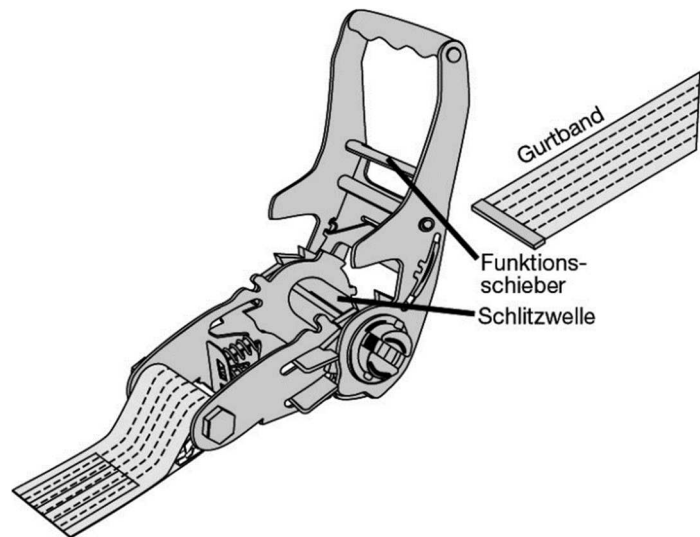


Both legs lie against each other and the bulge lies in the recess. The applied pretensioning force is 1000 daN.

7.3 Mounting the flat roof protection

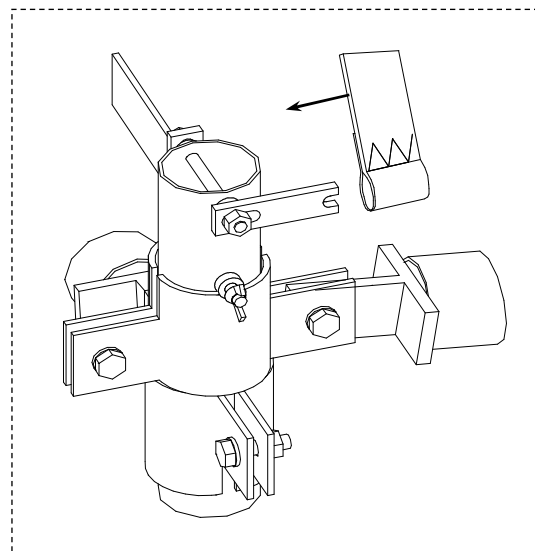
Normal position clamping element SE

In the home position, open the tensioner lever and bring the empty slotted shaft into threading position for the webbing.

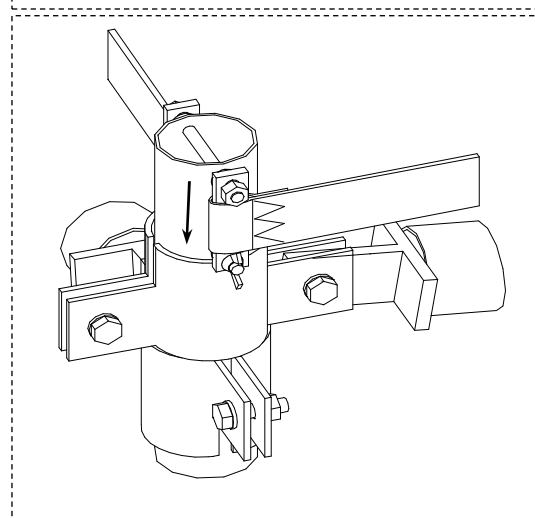


Fastening the tensioning straps

Put on the tensioning strap, hook the end loop securely into the posts.



After applying the tensioning strap, tighten the wing nuts by hand.

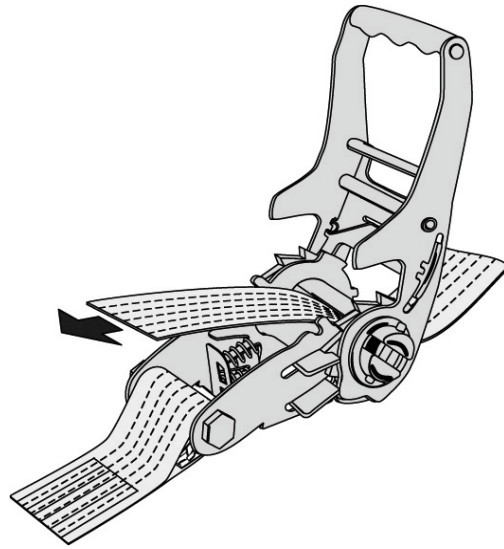


Length adjustment of the tensioning strap

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

IMPORTANT!

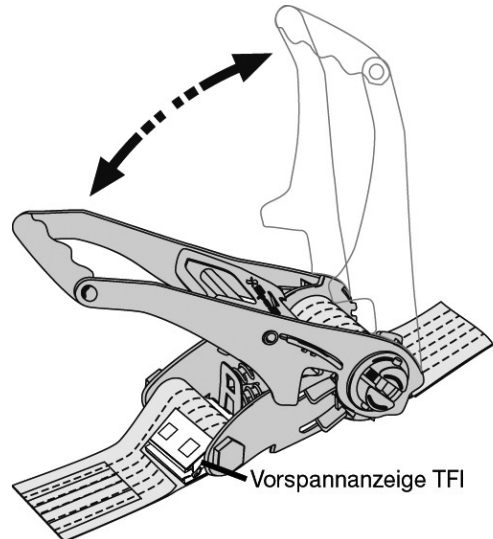
If the belt is not pulled tightly through the slotted shaft, tensioning with 2 to 3 wraps on the slotted shaft is not possible and also when the tensioning belt is released, the tensioning element is blocked by this!



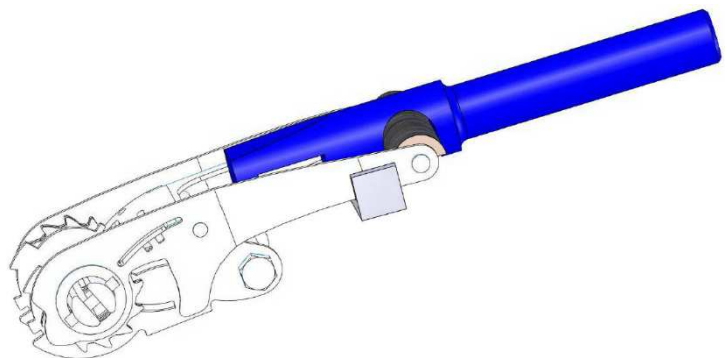
Tensioning the system

Tension until the desired pretension is reached. The SE must have **at least 2 windings, but no more than 3 windings on the slotted shaft.**

SE with pretensioning indicator show the applied pretensioning force. At least 750 daN or 1000 daN (see points 1.2 and 3) must be visible on the display of the TFI in all three straps of the flat roof securing.

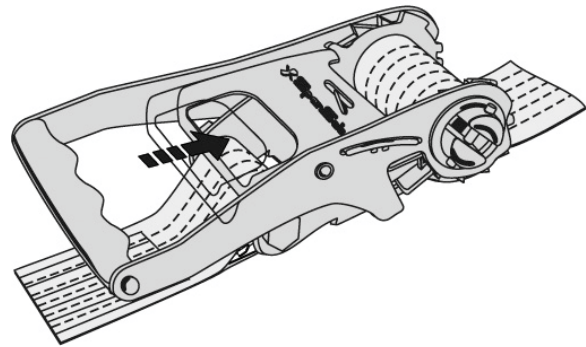


To facilitate tensioning, an **approved lever extension** (ratchet extension from Strenge, item no. 8124470) can be attached to the lever of the SE and used for tensioning. The instructions for use of the lever extension must be observed.



Secure clamping element

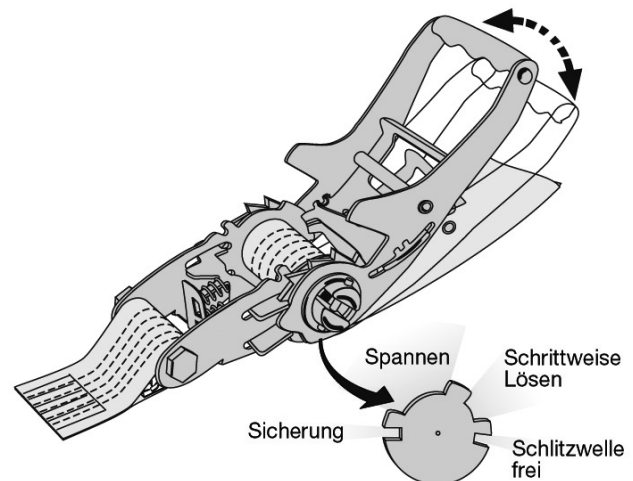
After tensioning, pull the function slide and swing the lever of the SE into the closed position until the slide can engage in the safety recess. The now closed and locked SE will not pop open even with strong shaking movements.



7.4 Dismantling the flat roof securing device

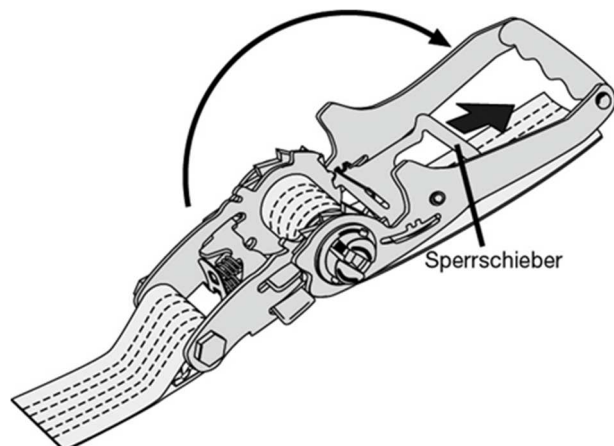
Loosening the tensioning straps

When releasing the pre-tensioning, the flat roof lock allows the pre-tensioning force applied to be released in small steps. To do this, move the lever of the SE into the release range. By moving the function lever back and forth, the pre-tensioning force is released step by step. By moving the lever of the SE to the maximum position, the slotted shaft becomes free to move and the tensioning belt can be easily pulled out.



Loosen clamping element

Pull the function slider and swivel the lever of the SE by approx. 180° around to the end stop to let the slider engage in the last possible recess. Attention! The pre-tensioning force is released with one blow.



7.5 General safety instructions



Clamping and connecting elements must not rest on the edges so that they are not subjected to bending stress.

For tensioning elements, not less than two and not more than three turns of the tensioning strap may be applied.

Tension straps must not be used further after a breakage or deformation of fasteners and/or tensioning elements.

Clamping elements must be locked after the clamping process.

Only approved lever extensions may be used.

7.6 Monitoring and testing

Clamping systems should be checked for obvious defects during use. In particular, the sprockets should be checked for wear.

If defects are found that impair safety, the systems must be withdrawn from further use.

Clamping systems that are contaminated with aggressive or other substances that are dangerous to use must be carefully inspected and, if necessary, checked (e.g. manufacturer).

In addition, the clamping systems must be inspected after each disassembly or at least once a year by a person authorised to carry out inspections. Depending on the conditions of use and the operational conditions, interim inspections may be necessary.

7.7 Discardable

The tensioning strap must be withdrawn from use when:

- Yarn breaks or yarn cuts, especially edge cuts or other questionable injuries.
- Missing or illegible marking
- Damage to the connecting seams
- Deformation due to heat influence
- Damage as a result of exposure to aggressive substances

Connecting and clamping elements are to be withdrawn from use in the case of:

- Cracks, fractures or significant signs of corrosion or damage
- Detectable permanent deformation on load-bearing parts

7.8 Storage

The tensioning systems for flat roof securing must be stored in a dry and ventilated place and protected against the effects of weather and aggressive substances.
Clamping systems must not be stored near fire and other parts. Temperatures of +100°C must not be exceeded. Remove ice from wet, frozen systems before use.

7.9 Repair work

Repairs to the flat roof tensioning systems may only be carried out by the manufacturer.

8 Dismantling and handling of the components

The GOLDBECK flat roof protection is dismantled using the protective measures described under 4.14 or from lifting platforms. Proceed as follows during disassembly:

- Release the tensioning straps in the order from bottom to top. Make sure that the tensioning elements are released in a controlled manner as described in 7.4.
- Remove the straps from the post. This is done in the same way as described in 4.9.
- After dismantling the belts, roll them up.
- Now remove the diagonal tubes and the posts
- The anchorage tubes remain in the structure
- Place the covers over the anchoring tubes to protect against moisture penetration.

Cutting through the tensioning straps, loosening the locking nuts or removing permanently installed components as well as throwing components off the roof is not permitted.

For transport, pack the components in suitable transport containers such as pallets, mesh boxes or transport racks.

9 Required tools

The following tools are required for GOLDBECK flat roof protection.

Spanner for fixing the anchoring pipes (HV M12) and pipe clamps with the diagonals (HV M12) as well as for the excavation protection (M10).

Lever extension of the clamping element manufacturer for applying the pre-tensioning force especially at 1000 daN (see tensioning of the system under 7.3).

➔ Ratchet extension by Streng, article no. 8124470

For maintenance and repair of the posts, a spanner for the slotted nuts (M10) and a spanner for the self-locking nuts (M10) are also required.

It is recommended to use a tensioning strap winder to test the tensioning straps.

10 Inspection documentation for GOLDBECK - flat roof protection

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

Class of side protection components: Class A

Type and model of side protection system: GOLDBECK - Flat roof protection

Manufacturer: GOLDBECK Bauelemente Bielefeld SE
Ummelner Str. 4-6
33649 Bielefeld
Phone: 0521 9488-0

Year and month of manufacture: _____

Post: ☐

Tension belt: ☐

Pressure diagonal: ☐

Pipe clamp: ☐

Serial number: _____

Date of purchase: _____

Date of first use: _____

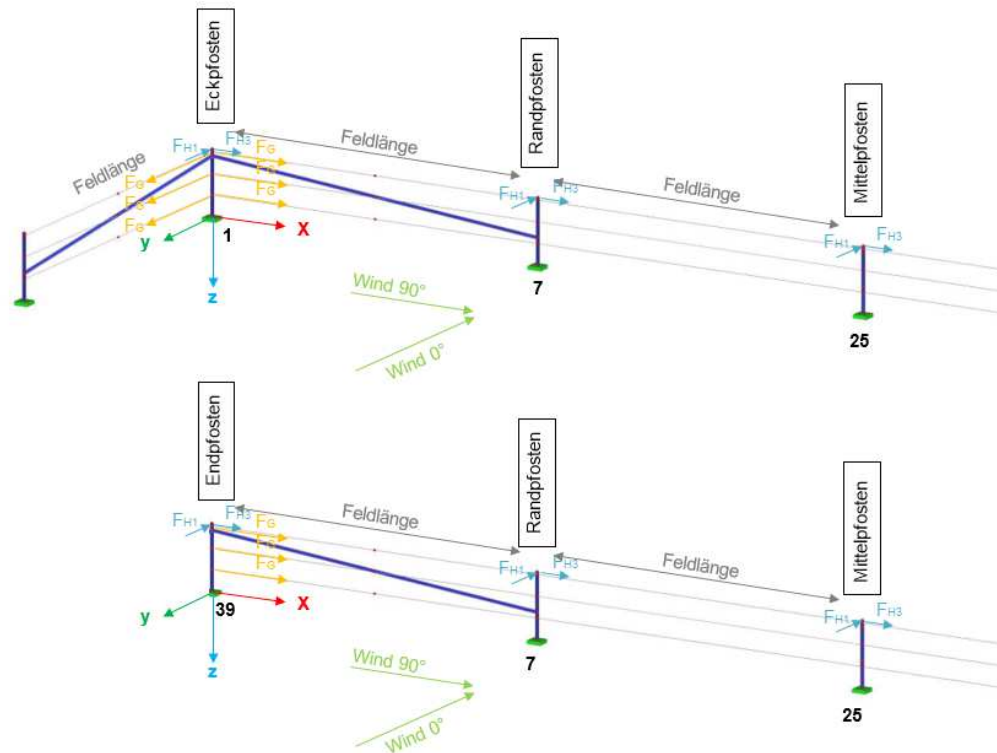
Maintenance intervals: After each return from the construction site or at least once a year.

Date of the examination	Name Person being examined	Signature Person being examined	Date next exam	Comments

(If no alternative documentation is available, use the one described above).

11 Details of the load on the structure - pretensioning force of tensioning straps

Connecting forces and moments of the posts of the flat roof protection as design values



Berücksichtigte Belastungen und Teilsicherheitsbeiwerte:

Gurtspannkraft: $\gamma_G = 1,0$ (Gurtspannkraft wird mit Ratsche aufgebracht und mit TFI geprüft)

- Feldlänge bis 6,0 m: $F_G = 7,5$ kN je Gurt
- Feldlänge bis 7,5 m: $F_G = 10,0$ kN je Gurt

Weitere Belastungen gemäß DIN EN 13374 - Temporäre Seitenschutzsysteme:

- Windbelastung auf Pfosten und Gurte
- Horizontallast am Pfosten: $F_{H1} = 0,3$ kN
- parallele Last am Pfosten: $F_{H3} = 0,2$ kN

berücksichtigt mit Teilsicherheitsbeiwert $\gamma = 1,5$

Folgende Belastung wurde nicht berücksichtigt:

- vertikale Personenaufast am Pfostenkopf: $F_D = 1,25$ kN, $\gamma = 1,0$

max. Feldlänge: 7,50 m

Position	Belt tensioning force	Bearing forces (kN)			Bearing forces (kNm)	
		Px	Py	Pz	Mx	My
Corner post	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
Centre post	7.5 kN	0,30	-0,45	0	-0,4	0,4
	10.0 kN	0,30	-0,45	0	-0,4	0,4
End post	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 Explanation of the markings

12.1 Stocked standard components (in-house production)

Standard part number - production batch Year of manufacture

Example:

Standard part number = 79410

Production lot (consecutive BOM number) = 20

Year of manufacture = 2018

Engraving: **79410 – 20
2018**

12.2 Stocked standard components (third-party production)

Standard part number Order number

Example:

Standard part number = 79410

Order number = BI 18 - 12125or VL 18 - 56617

The year of manufacture can be seen from the order number.

Engraving: **79410
BI 12 - 12125**

12.3 Order-related components (in-house production)

Order number - Component number Year of manufacture

Example:

Order number = BI 4711

Component number = 199 (can also be a standard component number)

Year of manufacture = 2018

Engraving: **BI 4711 - 199
2018**

12.4 Order-related components (external production)

Order number - Component number Order number

Example:

Order number = HH 1963

Component number = 151 (can also be a standard component number)

Order number = BI 18 - 12125or VL 18 - 56617

The year of manufacture can be seen from the order number.

Engraving: **HH 1963 - 151
BI 18 - 12125**

12.5 Marking of the tensioning straps and tensioning elements with tensioning strap



Label tensioning strap and element



Label lashing strap

Manufacturer of the GOLDBECK - flat roof protection:

GOLDBECK Building Elements Bielefeld SE
Ummelner Str. 4-6
33649 Bielefeld
Tel. : 0521 / 9488-0



The GOLDBECK - flat roof protection was tested by:

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Dinnendahlstraße 9
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Tel.: 0234 / 3696-0
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