

CS 240 L Climbing formwork

User guide



Content

1	Product features	3
1.1	General information.....	3
1.2	Safety Instructions	4
2	Overview	6
3	Components	7
3.1	Aligning beam.....	7
3.2	Climbing bracket	8
3.3	Bracket anchoring.....	11
3.4	Trailing platform.....	13
3.5	Guard railing.....	15
3.6	Accessories	16
4	Assembly	18
5	Climbing sequence	37
6	Suspension for crane	40
7	Anchoring	41
8	Loading assumptions	48
9	Graph for load-bearing capacity	49
10	Permissible anchoring loads	51
11	Application example – extended trailing platform	53

1 Product features

The HÜNNEBECK Climbing System

CS 240 L with retractable formwork is a crane-dependent system which may be used as load-bearing scaffold accord. to DIN 4421 on the one hand and as working and safety scaffold on the other hand (in compliance with DIN 4420, Part 1) when being used for reinforcement, concreting and subsequent treatment work.

The steel structure is completely hot-dip galvanized.

A high adaptability to given structures can be achieved by project-related assembly of the climbing scaffold units.

Wall formwork and brackets are connected together to form complete units to be shifted by crane.

Owing to the move-off carriage on the CS 240 L bracket, the formwork can be retracted up to approx. 83 cm (depending on type of formwork). The formwork may also be tilted by means of a separate tilting device.

All required fair-faced concrete finishes can be realized by using the proper type of formwork (either frame panel or timber beam wall formwork)

Depending on the width of the scaffold, the Climbing System is applicable to heights of more than 100 m over ground and allows a maximum formwork height of up to 5.40 m.

The application is based on vertical formwork on both sides of the concrete to be placed tied with through wall ties.

The standard statical proof for the Climbing Scaffold has been prepared and is available. A separate design calculation for special cases has to be worked out when necessary.

The proof of the anchoring (suspension) of the climbing brackets can be taken from the relevant documents.

Using the CS 240 L System, the German Standards DIN 4421 (8/82) for falsework, DIN 4420, Part 1 (12/90) for working and safety scaffolds, and the accident prevention regulations of the BBG must be adhered to.

1.1 General information

This user guide contains important information regarding the assembly and use of CS240L of HÜNNEBECK as well as safety instructions that are important for a safe application on site.

Those instructions are created to support effective working processes on site with CS240L. Therefore read this user guide before assembly and use of CS240L carefully, keep it always at hand and archive it for reference.

This user guide is designed for commercial users with proper professional training. The information and procedures described here comply with the laws and the occupational health and safety regulations of Germany and Austria. HÜNNEBECK assumes no liability in the event of deviations from the information and procedures described in the user guide or when the equipment is used outside of this area.

HÜNNEBECK products are exclusively designed for commercial use by technically suitable users.

1.2 Safety Instructions


Important information regarding the intended use and safe application of formwork and falsework


The contractor is responsible for drawing up a comprehensive risk assessment and a set of installation instructions. The latter is not usually identical to the user guide.


- **Risk Assessment**
The contractor is responsible for the compilation, documentation, implementation and revision of a risk assessment for each construction site. His employees are obliged to implement the measures resulting from this in accordance with all legal requirements.
- **Installation Instructions**
The contractor is responsible for compiling a written set of installation instructions. The user guide forms part of the basis for the compilation of a set of installation instructions.
- **User guide**
Formwork is technical work equipment which is intended for commercial use only. The intended use must take place exclusively through properly trained personnel and appropriately qualified supervising personnel. The user guide is an integral component of the formwork construction. It comprises at least safety guidelines, details on the standard configuration and intended use, as well as the system description. The functional instructions (standard configuration) contained in the user guide are to be complied with as stated. Enhancements, deviations or changes represent a potential risk and therefore require separate verification (with the help of a risk assessment) or a set of installation instructions which comply with the relevant laws, standards and safety regulations. The same applies in those cases where formwork and/or falsework components are provided by the contractor.
- **Availability of the user guide**
The contractor has to ensure that the user guide provided by the manufacturer or formwork supplier is available at the place of use. Site personnel are to be informed of this before assembly and use takes place, and that it is available at all times.
- **Representations**
The representations shown in the user guide are, in part, situations of assembly and not always complete in terms of safety considerations. The safety installations which have possibly not been shown in these representations must nevertheless be available.
- **Storage and Transportation**
The special requirements of the respective formwork constructions regarding transportation procedures as well as storage must be complied with. By way of example, name the appropriate lifting gear to be used.
- **Material Check**
Formwork and falsework material deliveries are to be checked on arrival at the construction site/place of destination as well as before each use to ensure that they are in perfect condition and function correctly. Changes to the formwork materials are not permitted.
- **Spare Parts and Repairs**
Only original components may be used as spare parts. Repairs are to be carried out by the manufacturer or authorized repair facilities only.
- **Use of Other Products**
Combining formwork components from different manufacturers carries certain risks. They are to be individually verified and can result in the compilation of a separate set of assembly instructions required for the installation of the equipment.

- Safety Symbols
Individual safety symbols are to be complied with.


Examples:

 DANGER	DANGER! DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
---	---

 WARNING	WARNING! WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
--	--

 CAUTION	CAUTION! CAUTION used with the safety alert symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
--	---

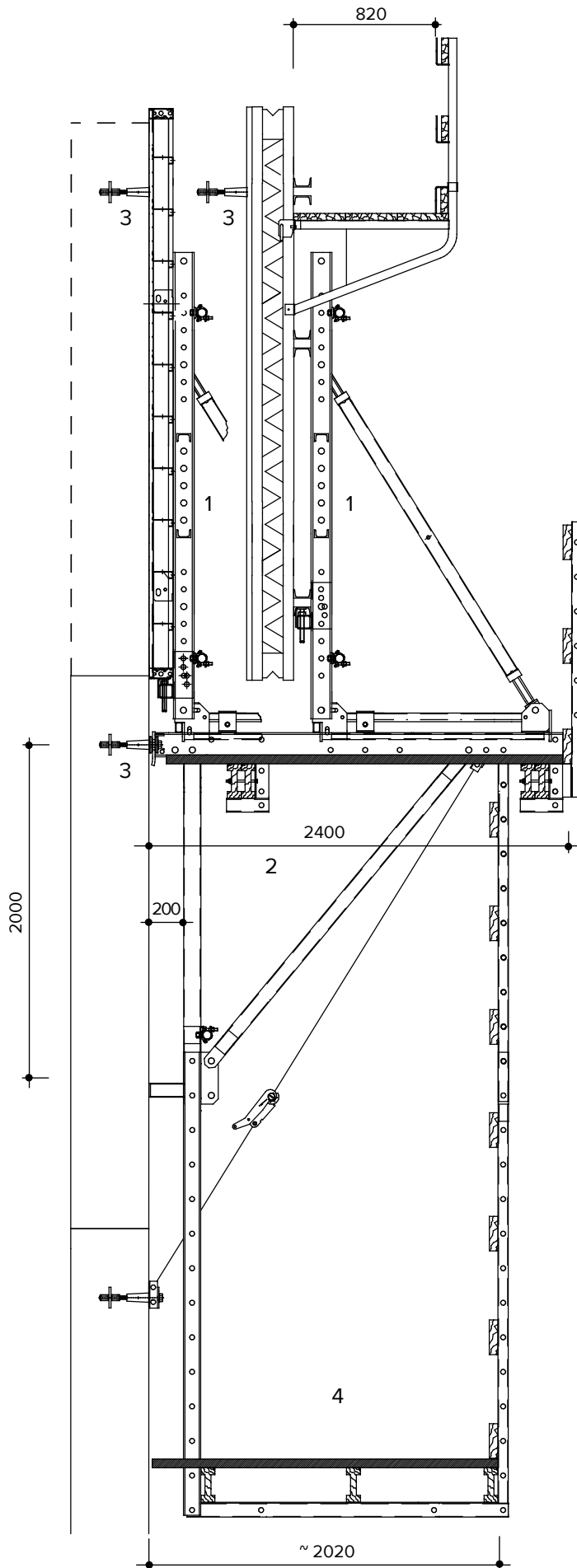
NOTE	NOTE NOTE refers to practices not related to personal injury.
-------------	---

 VISUAL CHECK	VISUAL CHECK refers to a visual check and is not related to personal injury.
---	--

- Miscellaneous
Technical improvements and modifications are subject to change without notice. For the safety-related application and use of the products, all current country-specific laws, standards as well as other safety regulations are to be complied with without exception. They form a part of the obligations of employers and employees regarding industrial safety. This results in, among other things, the responsibility of the contractor to ensure the stability of the formwork and falsework constructions as well as the structure during all stages of construction.
- This also includes the basic assembly, dismantling and the transport of the formwork and falsework constructions or their components. The complete construction is to be checked during and after assembly.

Copyright:
Güteschutzverband Betonschalungen e.V.
PO BOX 10 41 60
40852 Ratingen
Germany

2 Overview



Product code

1 Aligning beam

U 120 Formwork beam 370, cpl.	600368
U 120 Formwork beam 270, cpl.	600548
Spindle	600295
Levelling adaptor, cpl.	600344
Bracing of tubes and couplers	-

2 Climbing bracket

Working platform beam, cpl.	600378
Move-off carriage CSL, cpl.	600327
Detachable adjusting unit	600365
Guard rail post, cpl.	600311
Vertical beam, cpl.	600320
Diagonal, cpl.	600304
Wind load securing device, cpl.	600390
Bracing of tubes and couplers	-
Guard railing	-
Planking (on bracket)	-

3 Bracket anchoring

Counter plate 12/12/1.5	600530
Hexagon nut 15/50	164535
Tie rod 15 (cut-to-length)	164811
Tie cone M27 / D&W 15	600494
Fit-bolt M27 x 90 Z, DIN 7968,8.8	600484
Bracket bearing roll 27	600386
Nailable disk 27	600531

4 Trailing platform

V - Beam extension, cpl.	600313
Suspension profile, cpl.	600309
Extension to suspension profile, cpl.	600310
Trailing platform, cpl.	600306
Guard railing	-
Platform planking	-
Screw set CS 240	600363
10 Saucer-head screws M8-130 with nut, Z 4.6	DIN 603
2 Hexagon bolt + nut ISO 4017 - 4017 - 8.8	
Adaptor	600678

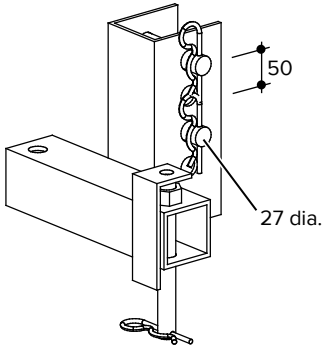
Supplementary part

Auxiliary support	600677
-------------------	--------

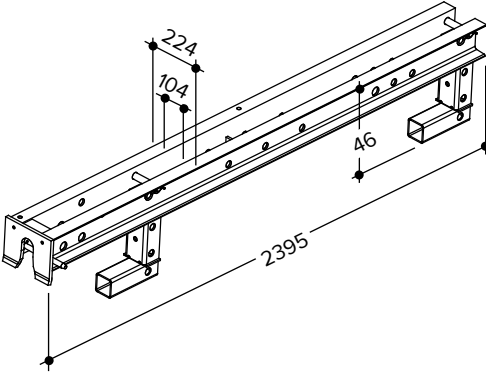
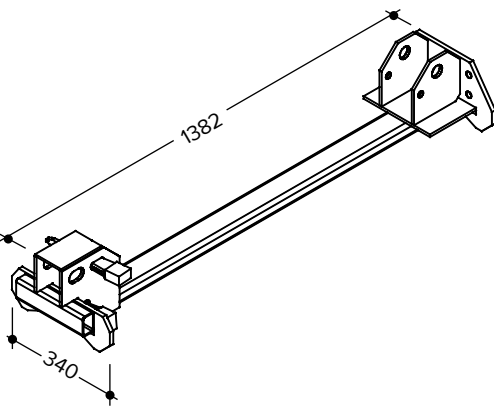
3 Components

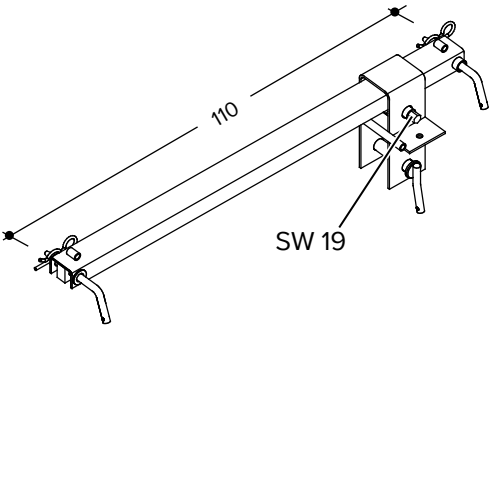
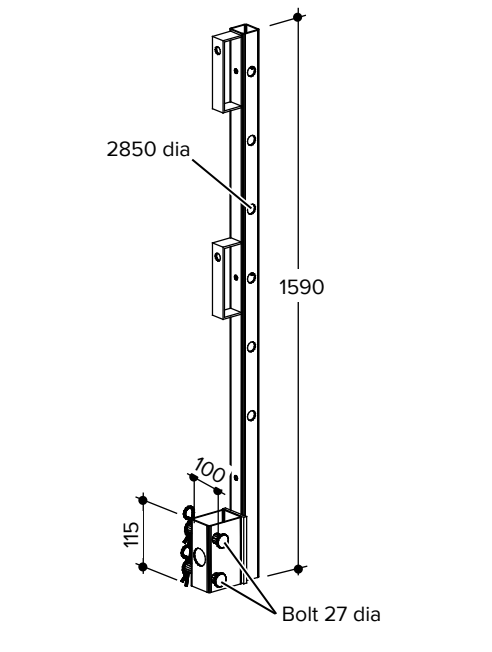
3.1 Aligning beam

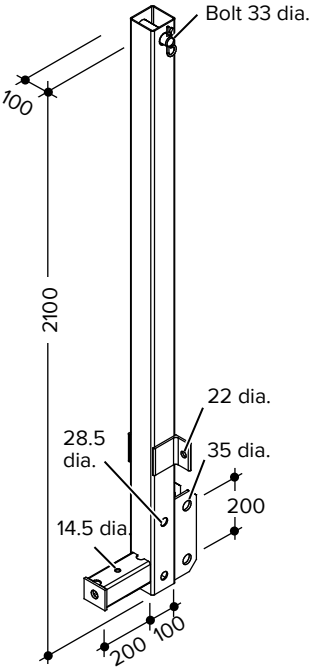
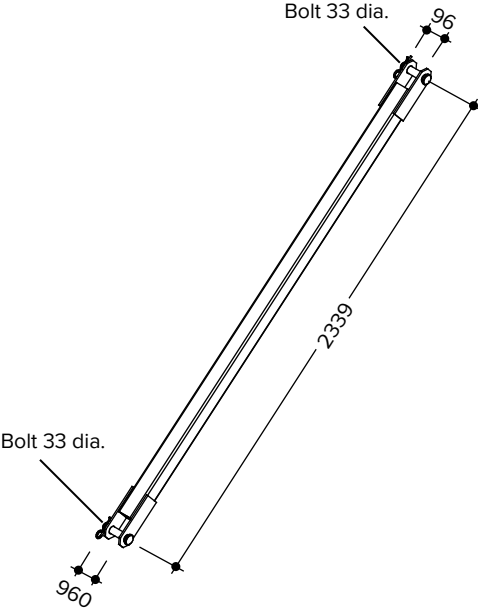
	Description	Product code	Weight [kg]
	<p>U 120 Formwork beam 370, cpl. U 120 Formwork beam 270, cpl.</p> <p>Different types of formwork can be attached to the U 120 formwork beam. The U 120 formwork beam generally provides two bolts with a diameter of 3.3 cm.</p> <p>The symmetrical design of the U 120 formwork beam ensures a faultless assembly.</p> <p>The upper bolt (3.3 cm dia.) is used as suspension point for the crane tackle.</p> <p>The U 120 Formwork beam 370 is applicable to formwork heights starting at 3.60 m up to 5.40 m.</p> <p>The U 120 Formwork beam 270 can be used for formwork heights up to 3.60 m.</p> <p>Permissible load: max. F = 26 kN at an angle of inclination of < 30°</p>	<p>600368 600548</p>	<p>106.19 78.85</p>
	<p>Spindle</p> <p>The Spindle is used for supporting and aligning purposes and removing the formwork from the concrete before retracting the wall formwork unit.</p> <p>The adjustment range stretches from 204.5 to 254.5 cm and makes tilting angles of the formwork of + 15° possible.</p> <p>The spindle is equipped with two standard bolts of 3.3 cm dia.</p> <p>(See also page 28).</p>	<p>600295</p>	<p>27.40</p>

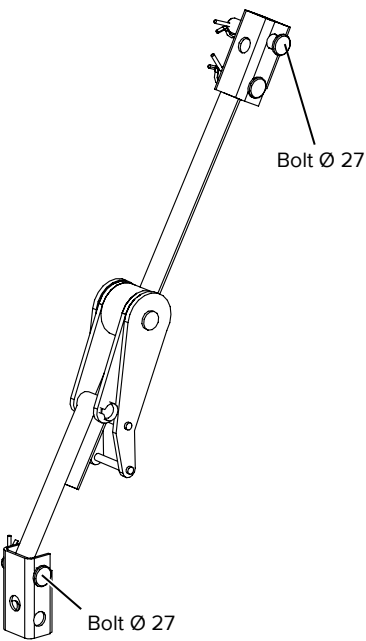
	Description	Product code	Weight [kg]
	<p>Levelling adaptor, cpl.</p> <p>By using the levelling adaptor, the formwork structures can be adjusted to the required height.</p> <p>The range of the spindle is 7 cm.</p> <p>Due to the the 5 cm grid of holes and the various possibilities of pinning it to the U 120 formwork beam 370, a wide range of applications are assured.</p> <p>The levelling adaptor must be attached to the U 120 formwork beam by using the two integrated bolts of 2.7 cm dia.</p> <p>(See also page 29).</p>	<p>600344</p>	<p>8.90</p>

3.2 Climbing bracket

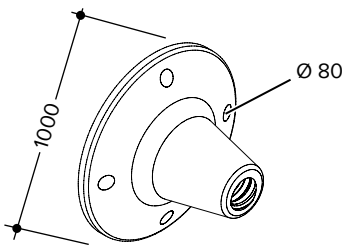
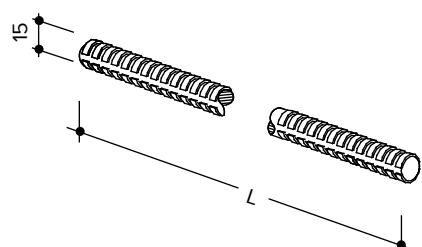
	Description	Product code	Weight [kg]
	<p>Working platform beam, cpl.</p> <p>It is the basic part of the climbing bracket CS 240 L and is equipped with all the necessary connection possibilities.</p> <p>The working platform beam can simply be stacked and allows a space-saving storage.</p> <p>Two bolts 2.7 cm dia. belong to this platform beam. They are used for bolting two stacked beams or attaching the crane tackle.</p> <p>Perm. load: 15.0 kN.</p> <p>Angle of inclination: < 30°.</p>	<p>600378</p>	<p>98.40</p>
	<p>Move-off carriage CSL, cpl.</p> <p>The Move-off carriage CSL, cpl. supports and carries the formwork beam, the spindle and the detachable adjusting unit. The maximum retraction way of the formwork from the wall is 83 cm (depends on type and design of formwork).</p>	<p>600327</p>	<p>29.20</p>

	Description	Product code	Weight [kg]
	<p>Detachable adjusting unit</p> <p>Connect this detachable adjusting unit to the move-off carriage CSL and the working platform beam by simply pinning it together.</p> <p>All functional parts for operations are integrated and cannot be lost. After moving the formwork, the adjusting unit can be detached and used at another bracket.</p> <p>This procedure reduces the number of required parts. A locking pin ensures the correct positioning of the adjusting unit to the working platform beam (see also page 36).</p>	<p>600365</p>	<p>19.75</p>
	<p>Guard rail post, cpl.</p> <p>The guard rail post is equipped with two serial bolts with a diameter of 2.7 cm which are used for fastening of the guard railing post to the working platform beam.</p> <p>The guard railing post allows a guard railing height of up to at least 120 cm. (See also page 22).</p>	<p>600311</p>	<p>14.97</p>

	Description	Product code	Weight [kg]
	<p>Vertical beam, cpl.</p> <p>The vertical beam is connected to the working platform beam with the integrated bolt of 3.3 cm dia.</p> <p>The vertical beam is designed for the connection of the diagonal, cpl., the V-Beam extension, cpl. and the bracing made of tubes and couplers.</p> <p>The distance from the wall is 20 cm. In the spacer-profile is a hole with a diameter of 1.45 cm to realise a fixing point for timber beams.</p> <p>(See also page 24).</p>	600320	34.86
	<p>Diagonal, cpl.</p> <p>The diagonal cpl. is used for the bracing of the working platform beam.</p> <p>It is pinned to the other components with the two integrated serial bolts of 3.3 cm dia.</p> <p>(See also page 24).</p>	600304	27.70

	Description	Product code	Weight [kg]
	<p>Wind load securing device, cpl.</p> <p>The Wind load securing device, cpl. is used to secure the climbing bracket against wind load to the climbing structure.</p> <p>Permissible tension load: max. 40 kN. (See also page 48).</p>	600390	7.95

3.3 Bracket anchoring

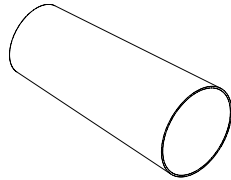
	Description	Product code	Weight [kg]
	<p>Collar nut DW15</p> <p>Is used with the tie rod as anchoring for the anchor cone and replaces the counter plate 12/12/1.5.</p>	602091	0.91
	<p>1 running meter tie rod (DW15)</p> <p>Lost anchoring part. Is cut to length on site and is embedded into the concrete together with the collar nut DW15 and the anchor cone.</p> <p>Follow the installation instructions!</p>	164811	1.50

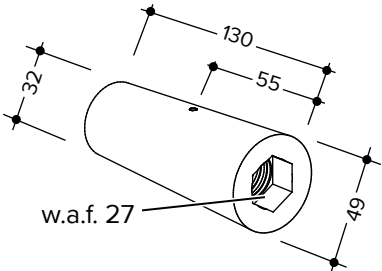
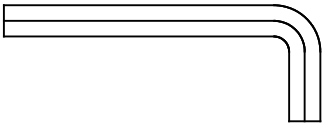
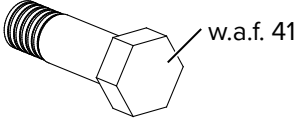

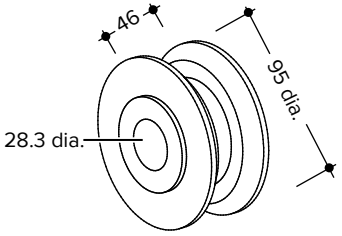
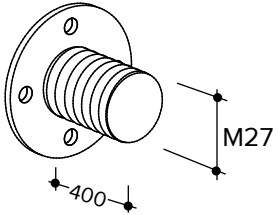


WARNING

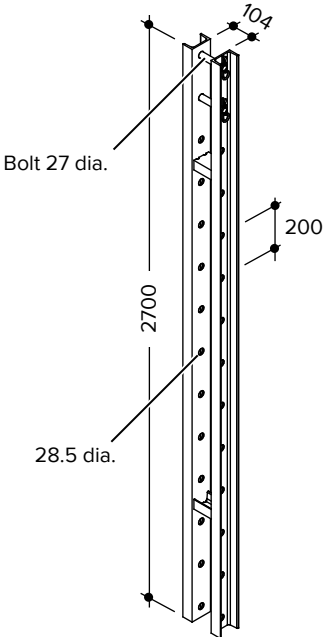
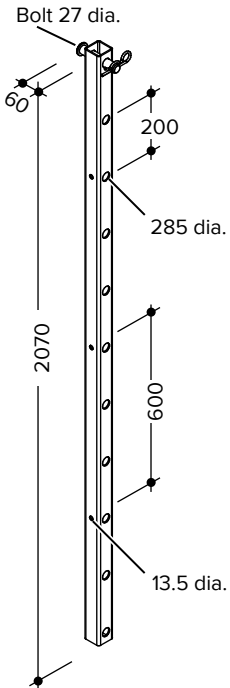
WARNING!

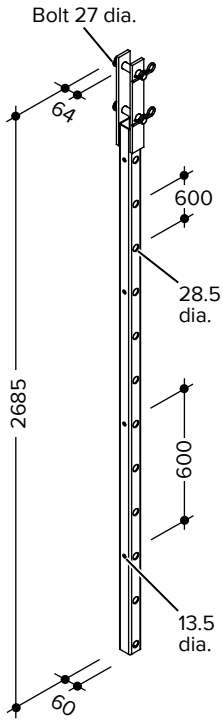
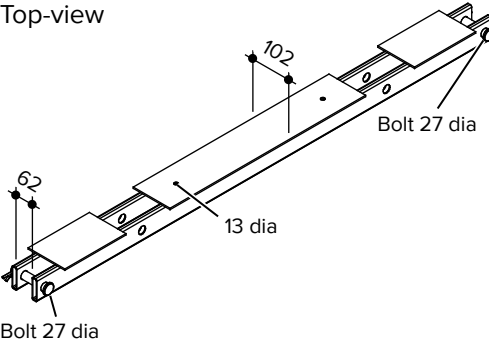
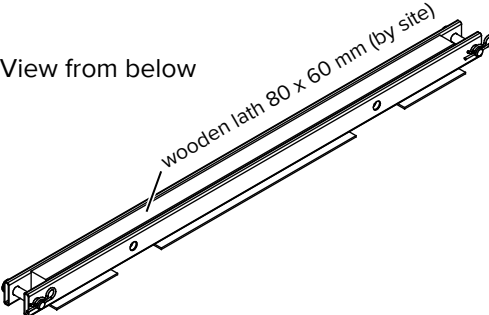
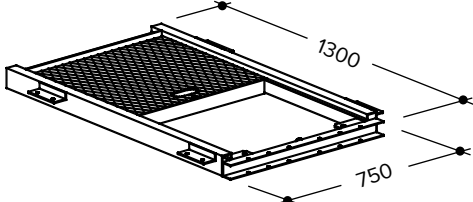
Do not weld or heat Tie rods, otherwise risk of unheralded failure!

	<p>Stripping aid M27/DW15</p> <p>Allows easy removal of the anchor cone (see also page 48).</p>	602529	0.03
---	--	---------------	-------------

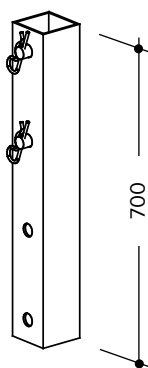
	Description	Product code	Weight [kg]
	<p>Anchor cone M27/DW15</p> <p>This tie cone is used as pre-fixed part. The return anchoring is effected by the tie rod D&W 15 and the Collar nut. (See also page 41).</p>	<p>600494</p>	<p>1.25</p>
	<p>Allen key 27 mm</p>	<p>In preparation</p>	
	<p>Fit bolt M27 x 90 Z 10.9</p> <p>Fixes the bearing bearing roll 27 to the anchor cone. A ratchet and a 41 mm socket is required for mounting.</p>	<p>600484</p>	<p>0.75</p>
 <p>WARNING</p>	<p>WARNING!</p> <p>The bracket bearing roll 27 has to be fixed to the tie cone M27 / D&W 15 only by using this relevant fit bolt M27 x 90 Z 10.9!</p>		
<p>NOTE</p>	<p>NOTE</p> <p>Attention: Not for rental! Sales only!</p>		
	<p>Bracket bearing roll 27</p> <p>The bracket bearing roll 27 is the supporting part for the climbing bracket (See also page 41).</p>	<p>600386</p>	<p>0.85</p>
	<p>Nailable disk M27</p> <p>Is nailed to the form sheet to secure the anchor cone. A 14 mm allen key is required for disassembly. (See also page 41).</p>	<p>600531</p>	<p>0.20</p>

3.4 Trailing platform

	Description	Product code	Weight [kg]
 <p>Technical drawing of the V-Beam extension component. It shows a vertical beam with a series of holes. Dimensions include a bolt diameter of 27 mm, a hole diameter of 28.5 mm, a total length of 2700 mm, a hole spacing of 104 mm, and a distance of 200 mm between the top hole and the top edge.</p>	<p>V-Beam extension, cpl.</p> <p>The V-Beam extension must be attached to the vertical beam (cpl.) with the integrated bolt 2.7 cm dia.</p> <p>Due to the 20 cm grid of holes (2.85 cm dia.) it is possible to arrange the trailing platform at different heights.</p> <p>(See also page 33).</p>	<p>600313</p>	<p>60.87</p>
 <p>Technical drawing of the Suspension profile component. It shows a vertical beam with a series of holes. Dimensions include a bolt diameter of 27 mm, a hole diameter of 28.5 mm, a total length of 2070 mm, a hole spacing of 60 mm, a distance of 200 mm between the top hole and the top edge, and a distance of 600 mm between two specific holes. The diameter of the holes is 13.5 mm.</p>	<p>Suspension profile, cpl.</p> <p>The Suspension profile, cpl. must be connected with the incorporated bolt (2.7 cm dia.) to the working platform beam.</p> <p>The suspension profile allows the assembly of a continuous guard railing at the given levels (distance 60 cm). The diameter of the holes is 1.35 cm. (see also page 33).</p>	<p>600309</p>	<p>14.90</p>

	Description	Product code	Weight [kg]
	<p>Extension to suspension profile, cpl.</p> <p>To be connected to the suspension profile with the integrated bolts (2.7 cm dia.) as shown.</p> <p>This extension allows the assembly of a continuous guard railing at the given levels (distance 60 cm). The diameter of the drill holes is 1.35 cm.</p> <p>(See also page 33).</p>	<p>600310</p>	<p>22.17</p>
<p>Top-view</p>  <p>View from below</p> 	<p>Trailing platform, cpl.</p> <p>Delivered to job-site as complete unit with two bolts 2.7 cm dia.</p> <p>The required timber beams are connected to the trailing platform with H20 timber beam clamps (product code 568048) or by nailing them to the wooden lath (8 x 6 cm) which has to be provided by site and positioned into the box profile.</p> <p>Two drill-holes (1.3 cm dia.) are in the plate for fastening the wooden lath.</p> <p>(See also page 33).</p>	<p>600306</p>	<p>27.02</p>
	<p>Passage hatch</p> <p>It assures a safe ascent and quick passing from one platform to the other.</p> <p>(See also page 35).</p>	<p>600672</p>	<p>43.30</p>

	Description	Product code	Weight [kg]
--	-------------	--------------	-------------



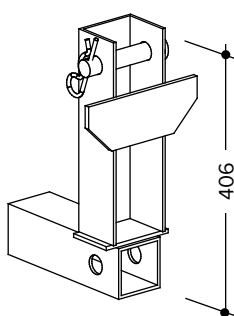
Adaptor

600678

11.68

It connects two V-Beam extensions with each other (See also page 53).

	Description	Product code	Weight [kg]
--	-------------	--------------	-------------



Auxiliary support

600677

9.80

This part additionally supports the planking of the working platform.



WARNING

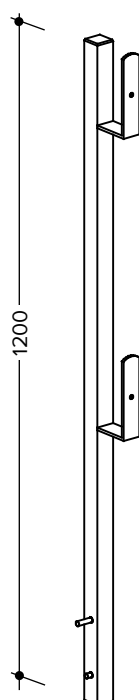
WARNING!

Use the Auxiliary support when width between the supports is > 4,20 m and when using as Protection scaffold!

3.5 Guard railing

For climbing bracket and trailing platform

	Description	Product code	Weight [kg]
--	-------------	--------------	-------------

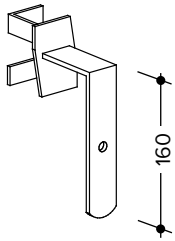


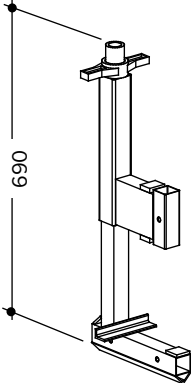
PROTECTO Railing post

601225

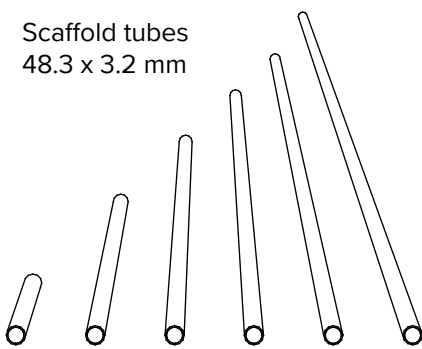
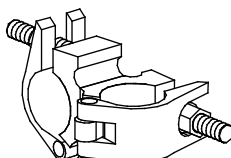
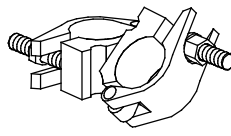
3.73

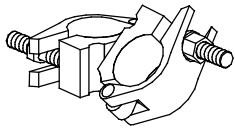
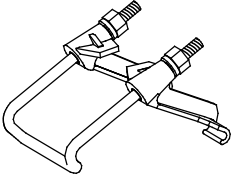
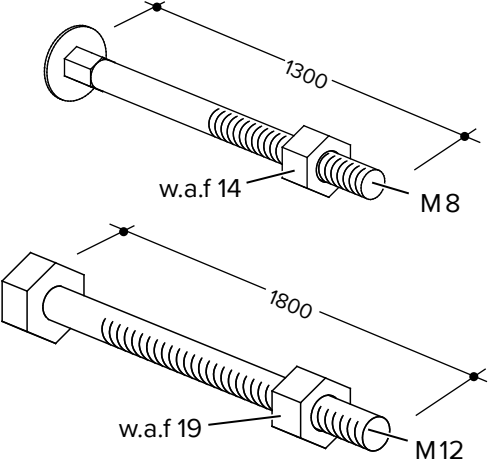
The railing post must be inserted into the PROTECTO Multiple clamp. A locking spring will automatically fix and lock the post (See also page 22).

	Description	Product code	Weight [kg]
	PROTECTO Toe board retainer	601227	0.69
	<p>This item serves as a supplementary part to the railing post and secures the toe board of the board railing. The PROTECTO toe board retainer can even be attached to the railing post afterwards.</p>		

	PROTECTO Multiple clamp	601226	7.49
	<p>A universal holding device for the PROTECTO railing post. It can be attached to many parts of the structure like slab edges, parapets or roof parapets. It is also possible to attach this clamp to structural parts made of timber or steel. The whole range of the multiple clamp is 1 to 47 cm. The “grip” of the clamp can be varied by simply turning the movable jaw of it.</p>		

3.6 Accessories

	Description	Product code	Weight [kg]
	mm cm		
	Scaffold tube 48.3 x 50	169001	1.90
	Scaffold tube 48.3 x 100	169012	3.81
	Scaffold tube 48.3 x 150	169023	5.72
	Scaffold tube 48.3 x 200	169034	7.53
	Scaffold tube 48.3 x 250	169045	9.53
	Scaffold tube 48.3 x 300	169056	11.43
	Scaffold tube 48.3 x 350	169067	13.34
	Scaffold tube 48.3 x 400	169078	15.24
	Scaffold tube 48.3 x 450	169089	17.15
	Scaffold tube 48.3 x 500	169090	19.05
	(See also page 32).		
	Rigid coupler 48/48 w.a.f. 22 mm	2514	1.18
	Rigid coupler 48/48 w.a.f. 19 mm	801135	1.20
	Permissible load: 9 kN. Torque: 50 Nm.		
	Swivel coupler 48/48 w.a.f. 22 mm	2525	1.37
	Swivel coupler 48/48 w.a.f. 19 mm	801146	1.40
	Permissible load: 5 kN. Torque: 50 Nm. (See also page 32).		

	Description	Product code	Weight [kg]
	<p>Half coupler 48 M20 x 30 w.a.f. 22 mm Product code: 2488 Weight: 0.90 Permissible load: 5 kN. Torque: 50 Nm. (See also page 32).</p>		
	<p>H 20 Timber beam clamp (w.a.f. 19) Product code: 568048 Weight: 0.82 Used for fastening H 20 timber beams to steel walers (2 x U 100) or used for attaching H 20 timber beams to the trailing platform.</p>		
	<p>Screw set Product code: 600563 Weight: 0.50 Mushroom head bolts (DIN 603, 4.6) 10 x M8 x 130 with nut. Required for railings and toe boards. 2 x Hexagon bolt + nut ISO 4017 - M12x180 - 8.8 Used for fastening of H 20 timber beams to the working platform beam. (See also page 21).</p>		

4 Assembly

Working platform

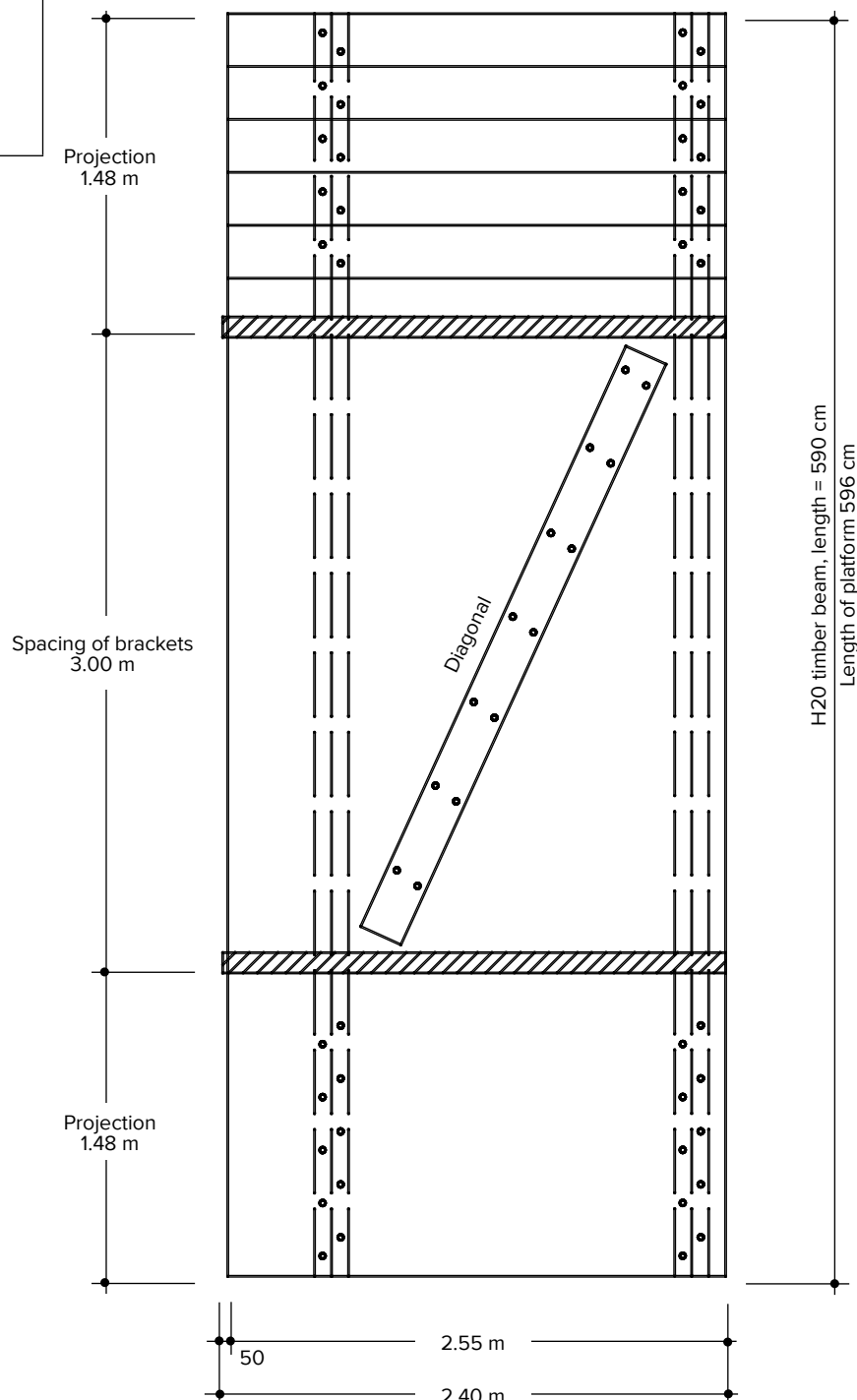
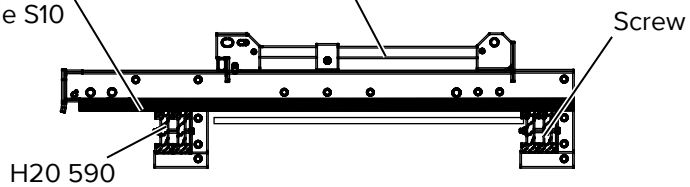
WARNING

WARNING!

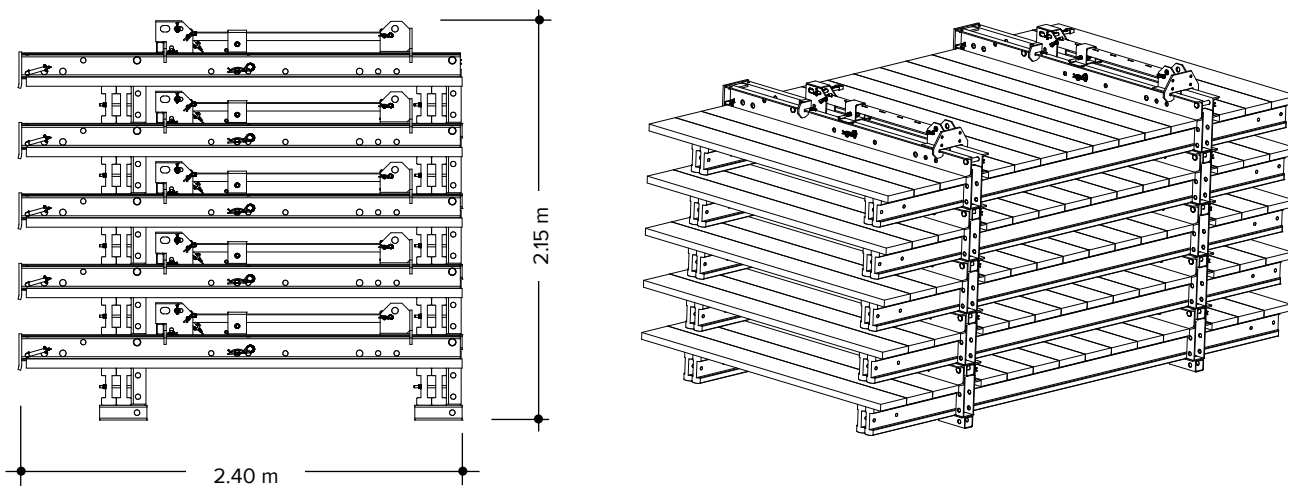
The planks must have at least a thickness of 5 cm and be marked with an official quality mark (= sign of approval)!
In Germany: The Ü- Sign shows the approval.

Planks 5 x 28 cm,
L = 2.35 m
Grade S10

Move-off carriage



Working platform (during transport)

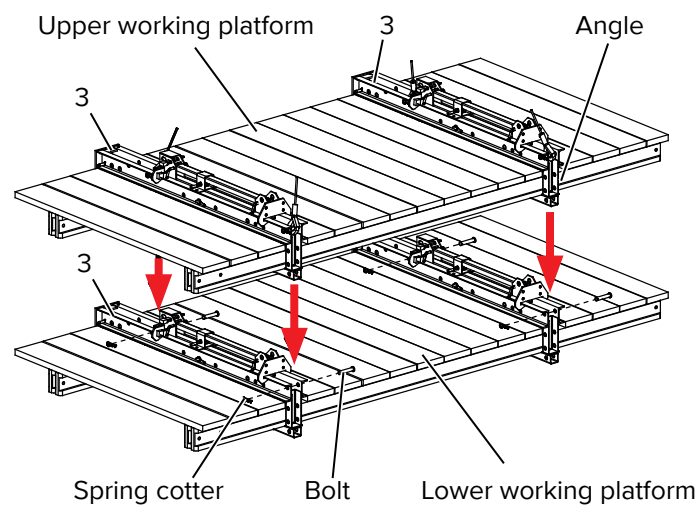


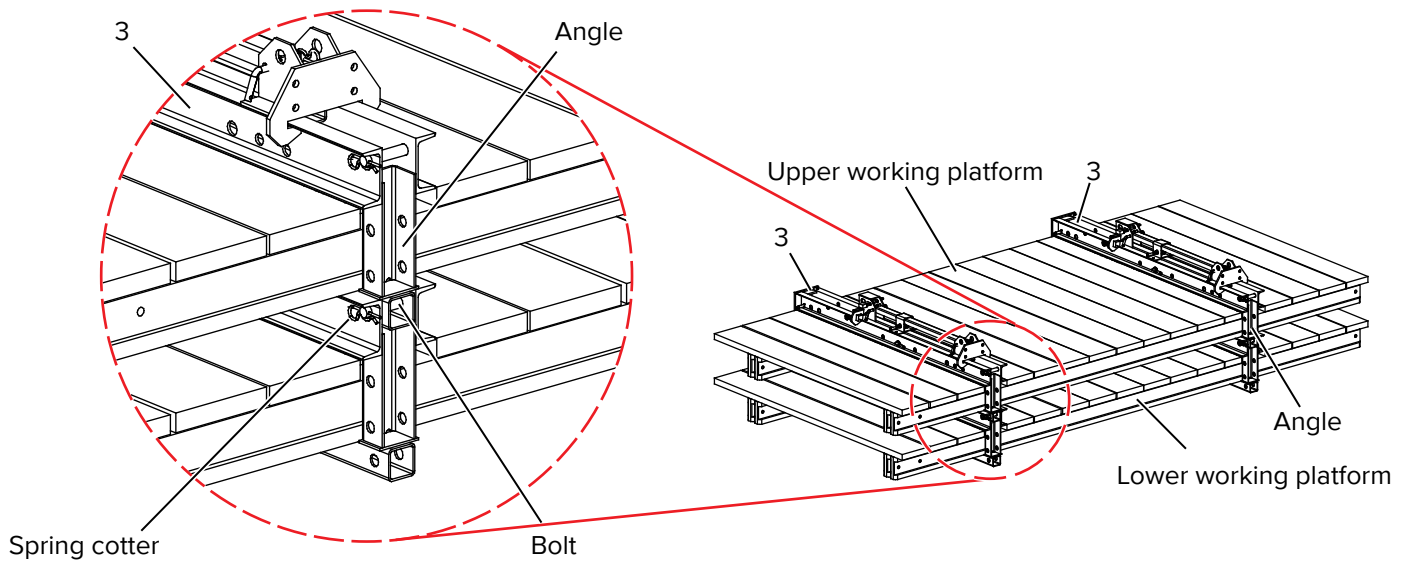
WARNING

WARNING!

Stack maximum 5 working platforms

During the transport (loading and unloading) of climbing bracket units of the same length, the upper working platform must be locked or unlocked to the lower working platform. The bolts and spring cotters of the lower working platform beams (3) must be removed to ensure that the outer angles of the upper working platform beams (3) can be correctly positioned on the lower working platform beams (3).





VISUAL CHECK

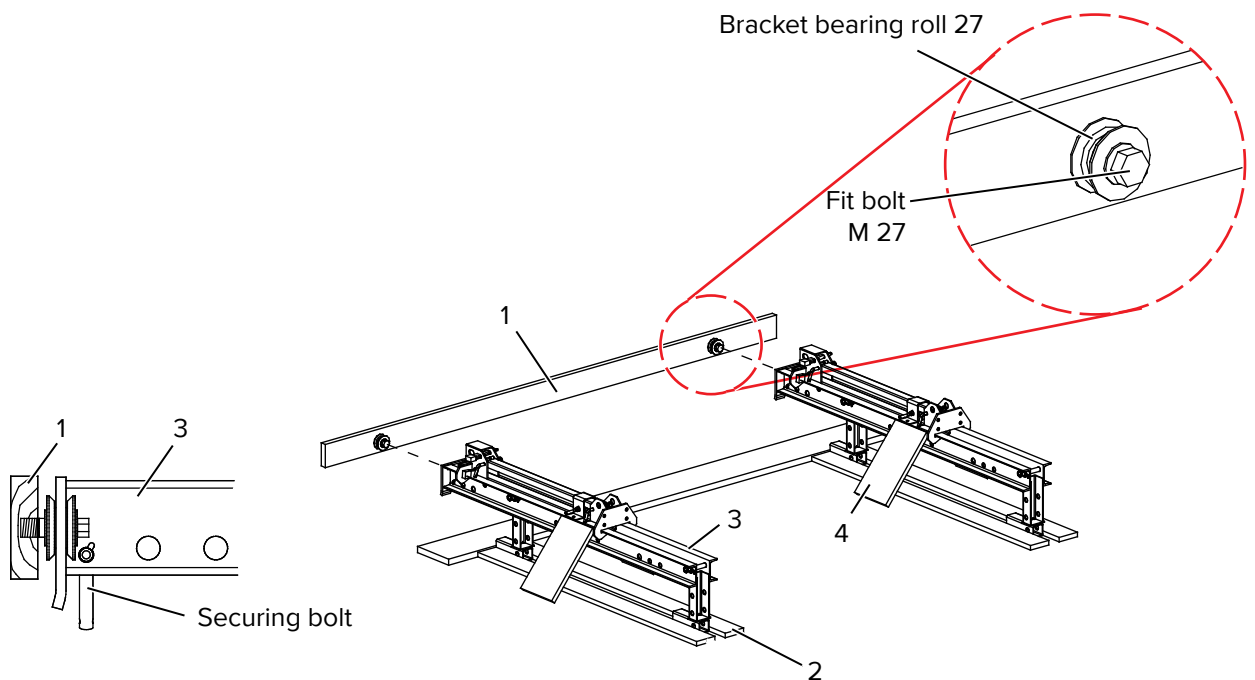
Make sure that the bolt and the spring cotter are inserted correctly!

Mount the bracket bearing roll 27 with the fit bolt to a board. This board is used as distance template (1) for the correct assembly.

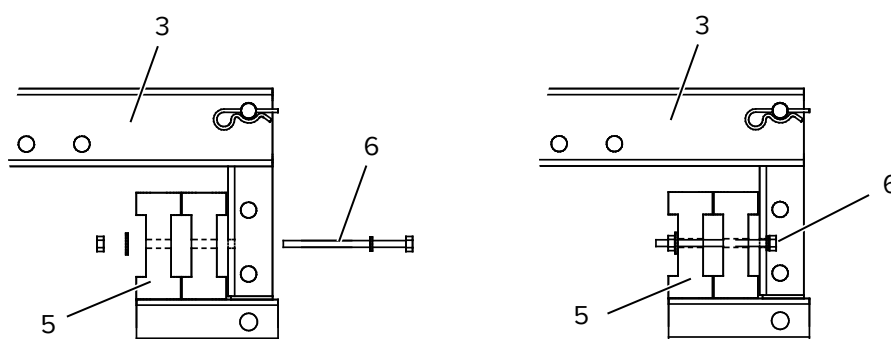
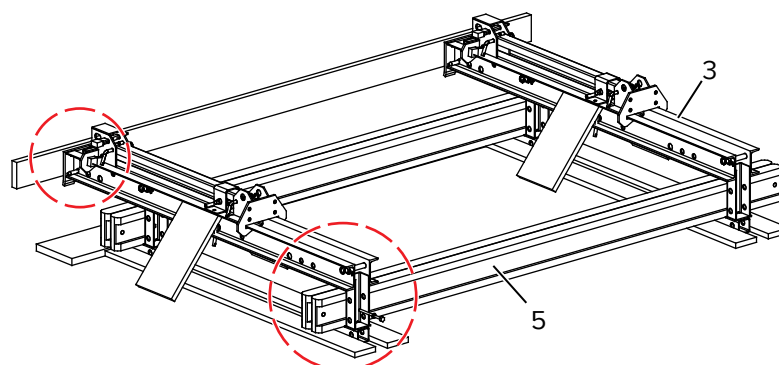
Fasten this board template with the securing bolt.

Boards (2) must be nailed onto an even assembly floor in order to place the working platform beams (3) in the correct distance and position.

Short wooden struts (4) are used for stabilizing the working platform beams and prevent them from tilting.



Insert four H20 beams (5) into the working platform beams (3) and bolt them with the hexagon bolts (6), ISO 4017 - M12 x 180 - 8.8 with nuts, taken from the screw set (Product code 600563).



VISUAL CHECK

Make sure that the H20 beams are secured correctly!

Nail the planks (7) onto the H20 timber beams (5).

Insert the guard rail posts (8) into the gaps of the working platform beams (3) and secure them with bolts and spring cotters.

Attach the PROTECTO multiple clamp (9) between the guard rail posts (8) in midway position to the planks (7).

Insert the PROTECTO Railing post (10) into the sleeve of the multiple clamp (9). Attach the PROTECTO toe board retainer (11) to the post.

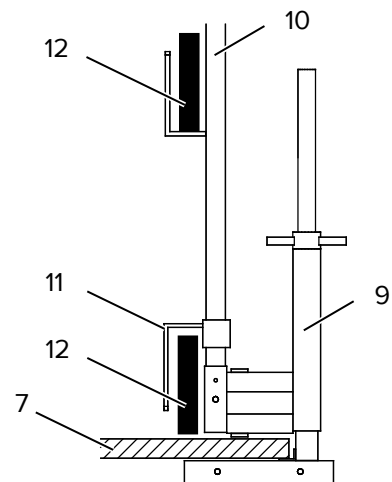
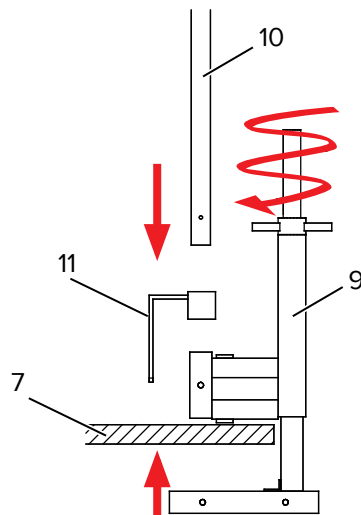
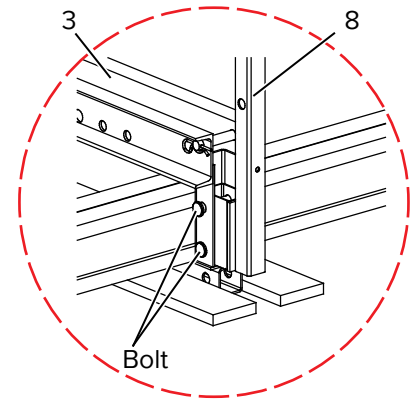
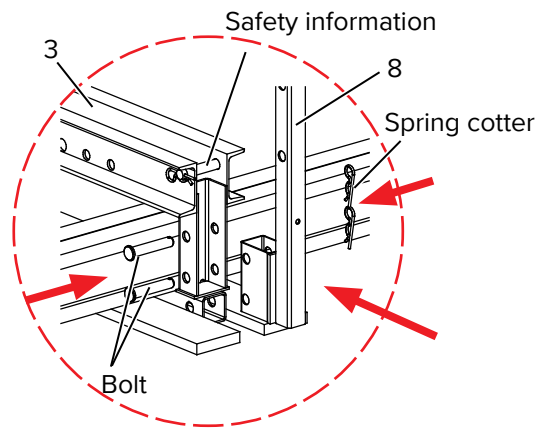
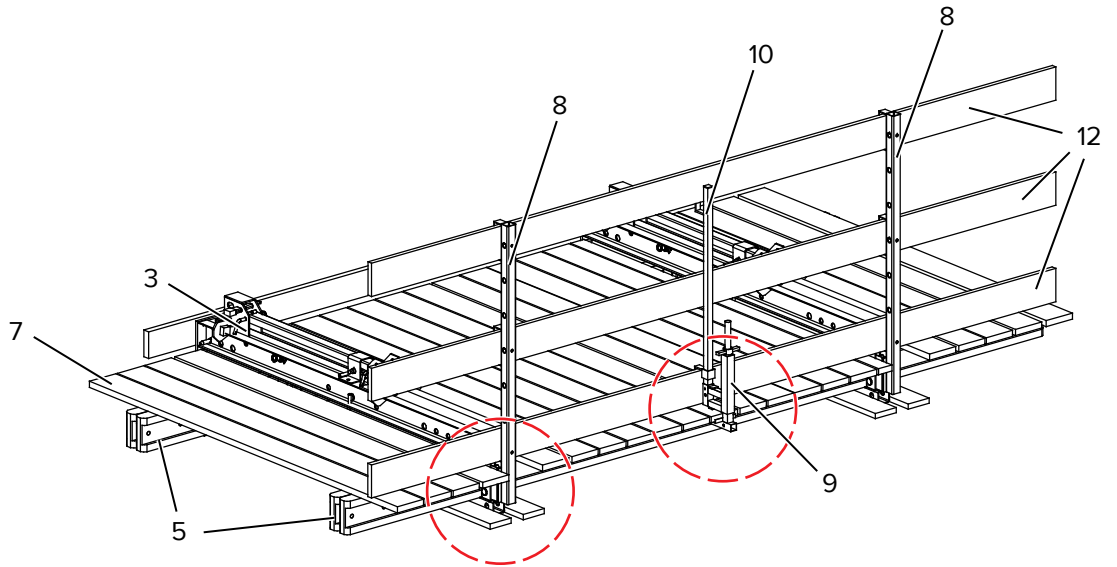
Place the toe board and two railing boards (12) in the holding devices of the posts (8) and (10) and secure them.

WARNING

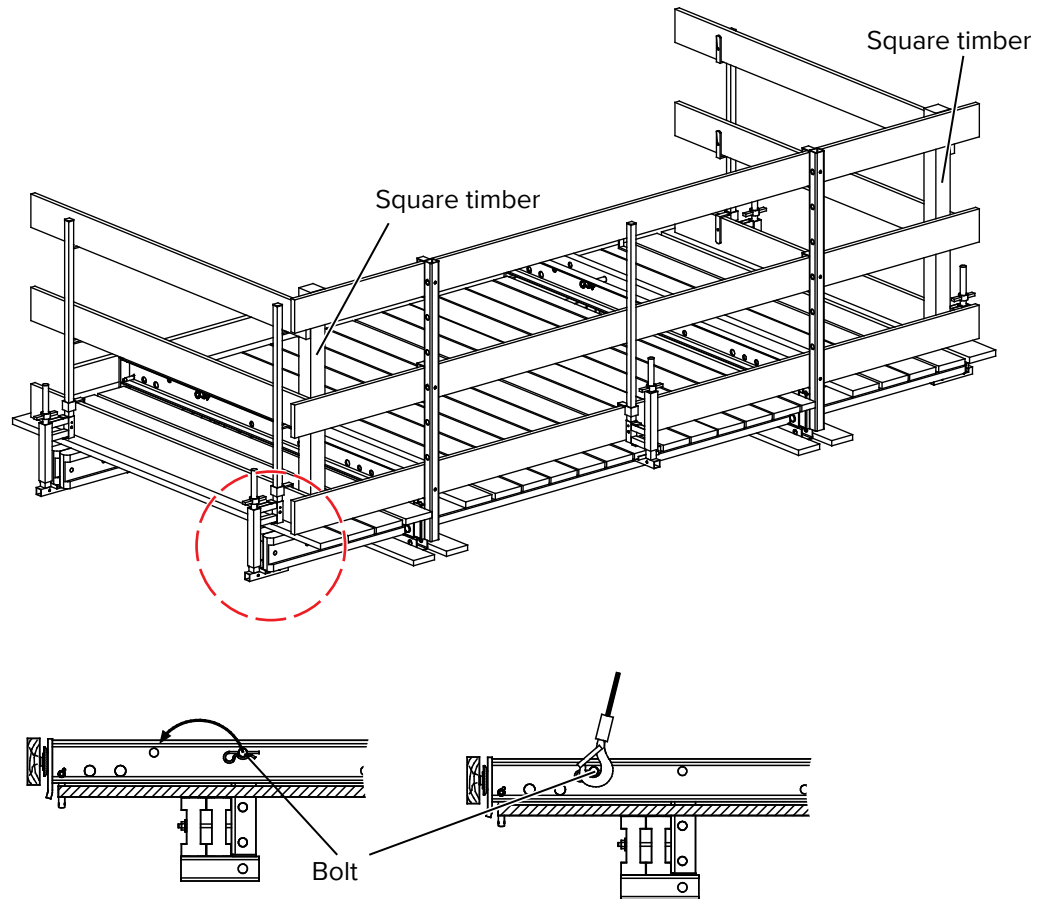
WARNING!

Do not remove this bolt!

It serves as suspension part for the crane tackle and as a stopper for the move-off carriage. The planks must have at least a thickness of 5 cm and be marked with an official quality mark (= sign of approval)! In Germany: The Ü- Sign



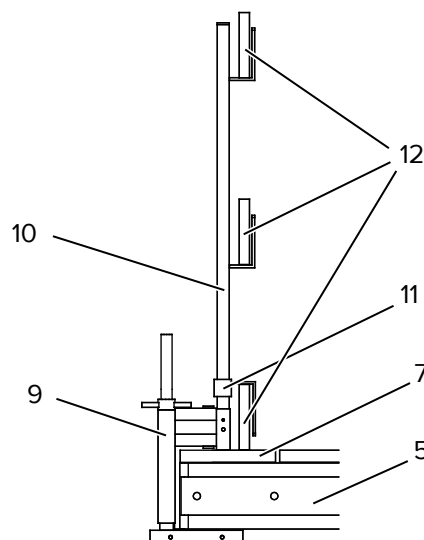
The PROTECTO Multiple clamps (9), the PROTECTO Railing posts (10) with the Toe board retainers (11) and the three railing boards (12) form the transverse guard railing. The PROTECTO Multiple clamp (9) is fixed to H20 beams (5) or to the planks (7). In order to stabilize the transverse guard railing, all railing boards (12) must be nailed to the square timbers in the corners.



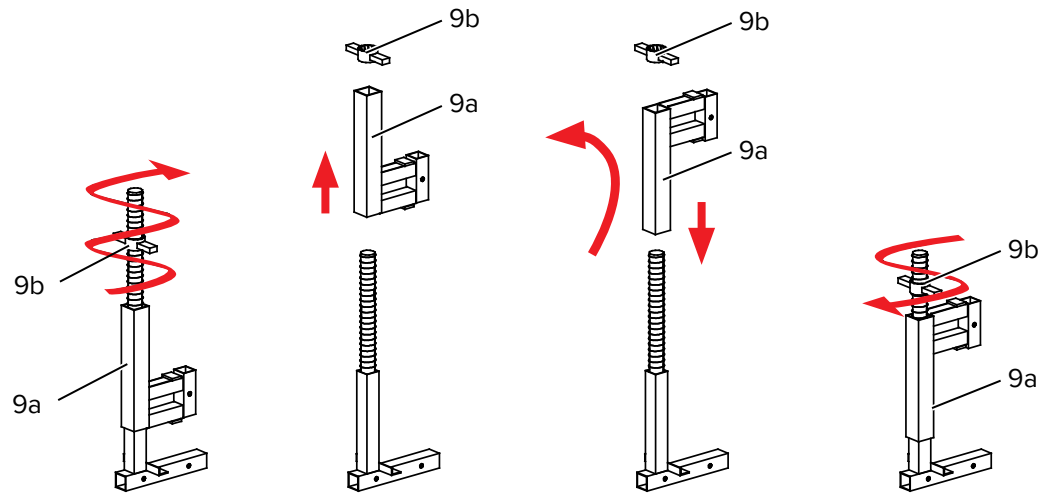
WARNING

WARNING!

The bolt must be relocated



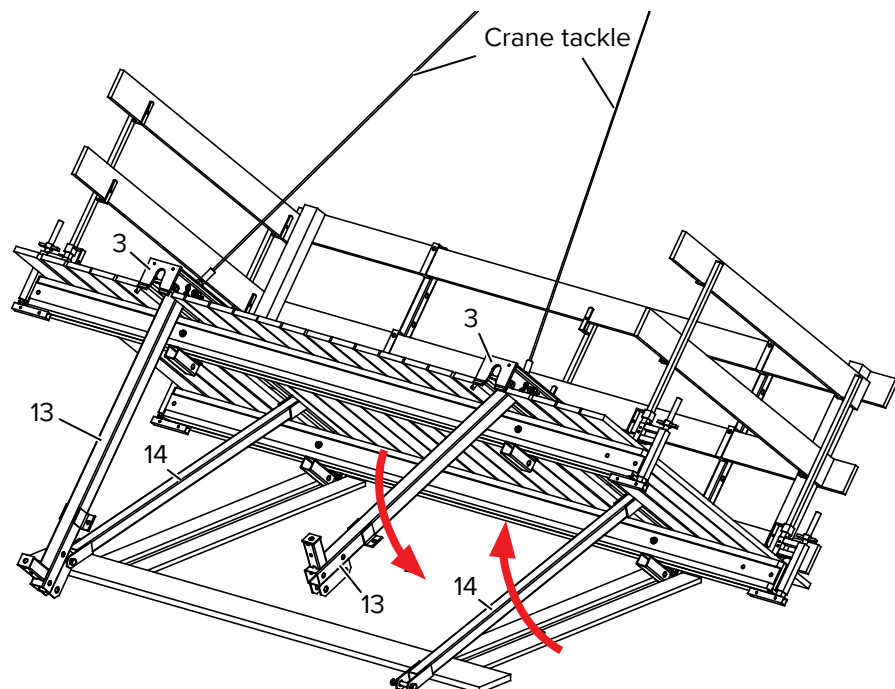
In order to adjust the right clamping opening of the PROTECTO multiple clamp (9) loosen the wing nut (9b) completely and remove the clamping fixture (9a). Turn the clamping fixture (9a) by 180° and slide it onto the basic unit again. Then tighten the wing nut (9b) again.

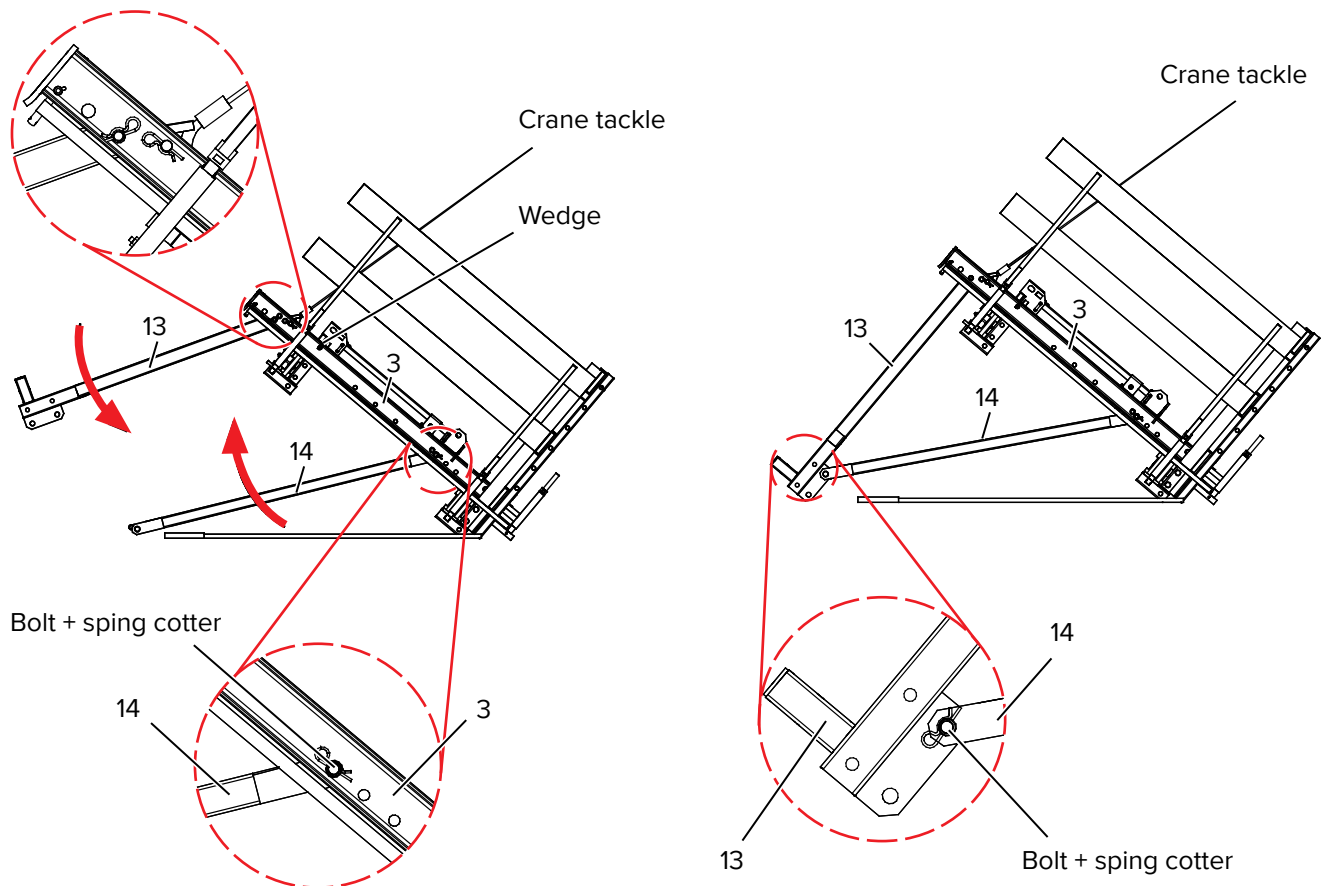


The assembled working platform unit must be lifted by crane.

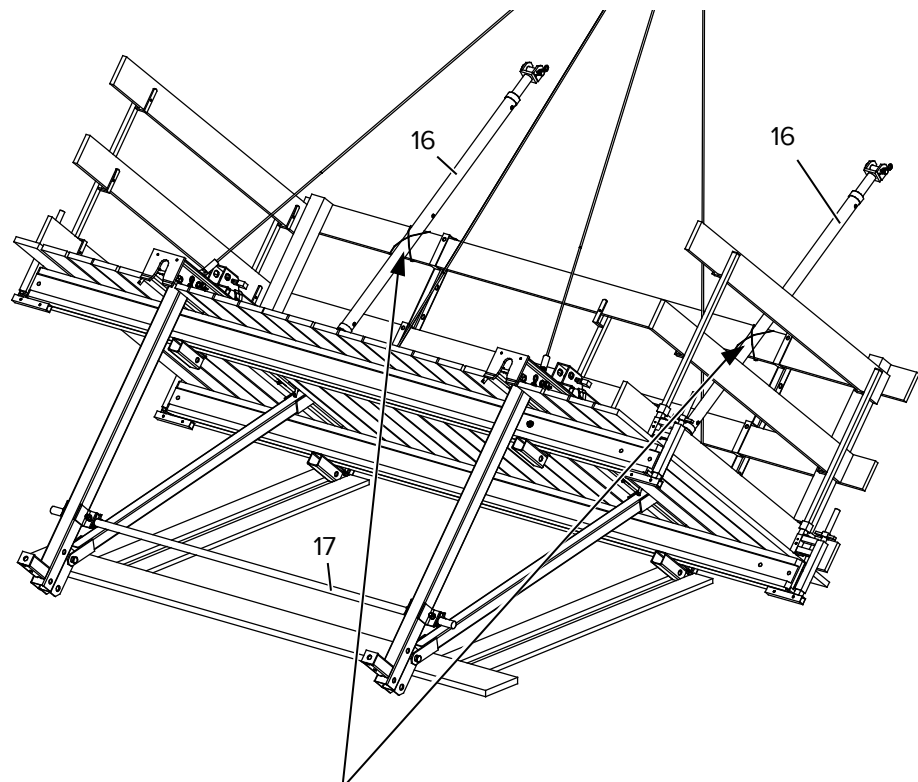
Now, the vertical beam (13) and the diagonal (14) are inserted into the slot of the working platform beam (3) and are fixed with of the integrated bolts.

Then the vertical beam (13) and the diagonal (14) are joined at the bottom, bolted and secured (bolt + spring cotter).





The spindle (16) is mounted to the move-off carriage (15) by fixing and securing it with the integrated bolt and spring cotter. The second pair of crane tackle must be attached to the rear side of the working platform beam (3).



WARNING

WARNING!

The spindle must be secured to the railing with wire before lifting the unit!

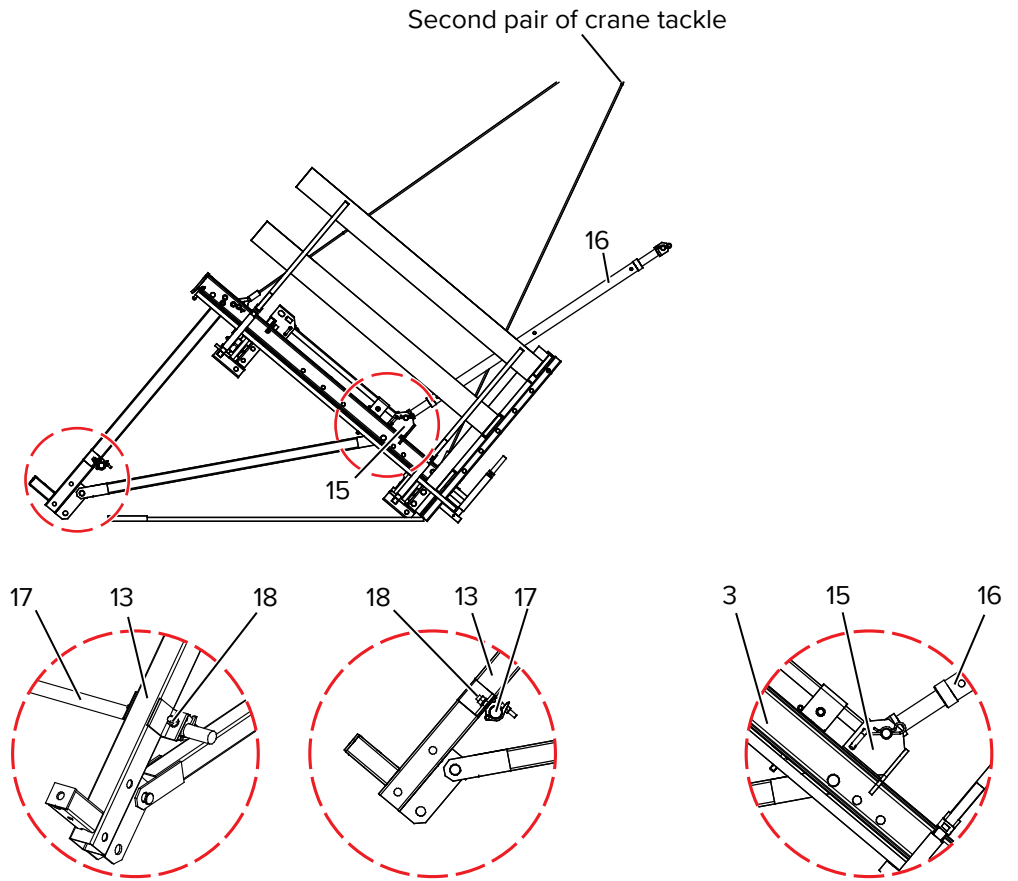
Fasten the scaffold tube (17) with half couplers (18) to the vertical beam (13).



WARNING

WARNING!

4 half couplers must be mounted to each vertical beam.



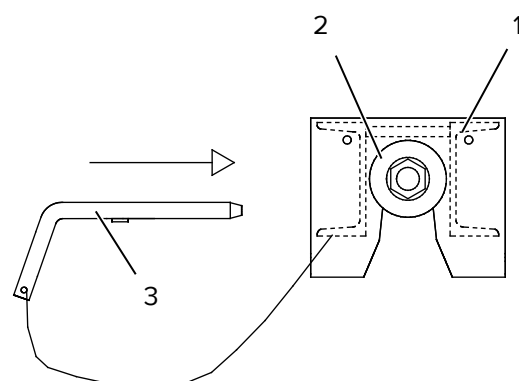
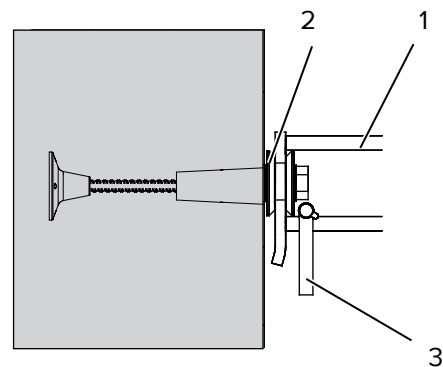
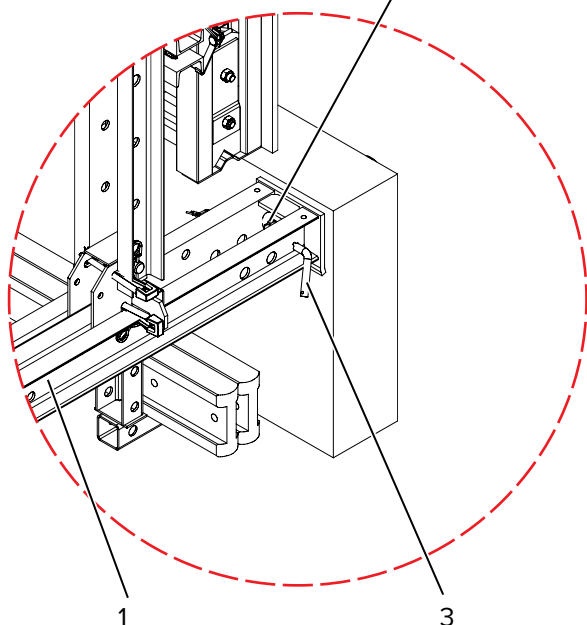
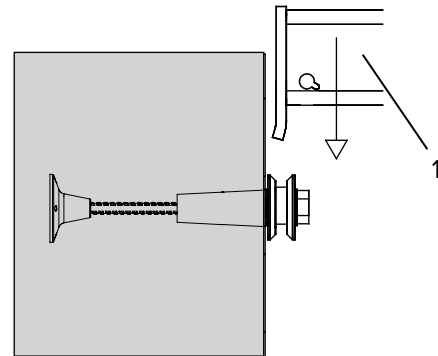
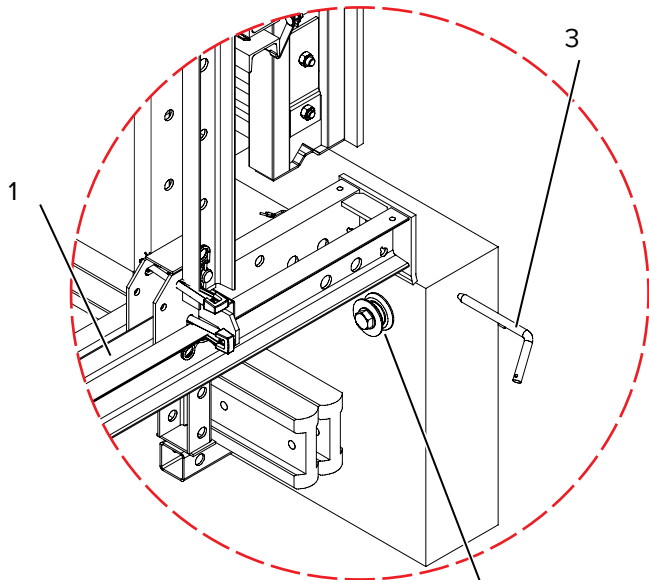
Hanging in and securing the bracket

The climbing scaffold (1) must be placed onto the bracket bearing roll (2) and then secured with the securing bolt (3).

1 Climbing scaffold unit

2 Bracket bearing roll

3 Securing bolt

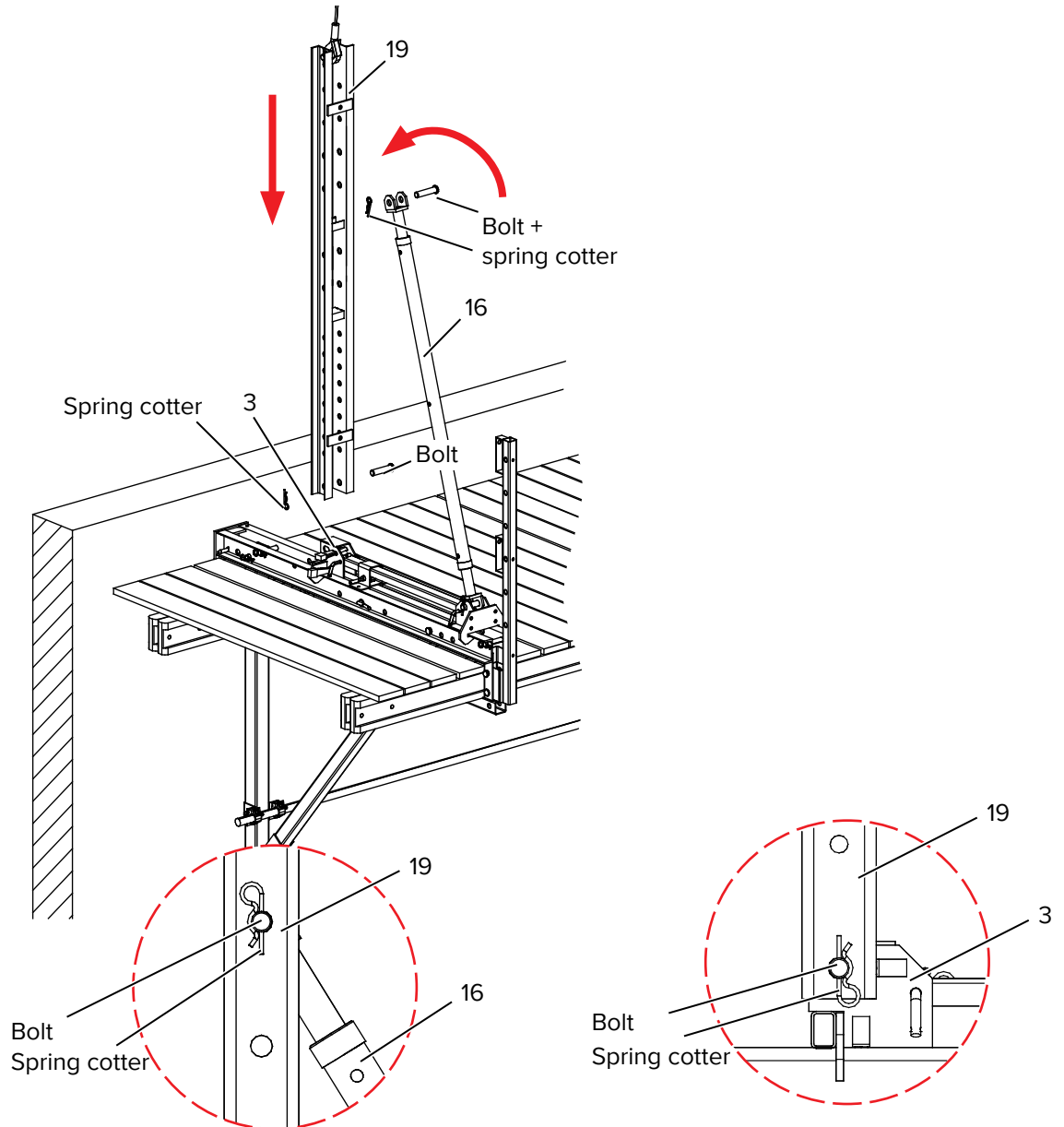


See also the chapter „Anchoring“.

Mounting the U 120 formwork beam

The U 120 formwork beam (19) is placed onto the Move-off carriage (3) and then fixed and secured with the relevant bolt and spring cotter.

Swivel in the spindle (16) and mount it to the U 120 formwork beam (19) by using the bolt and the spring cotter.

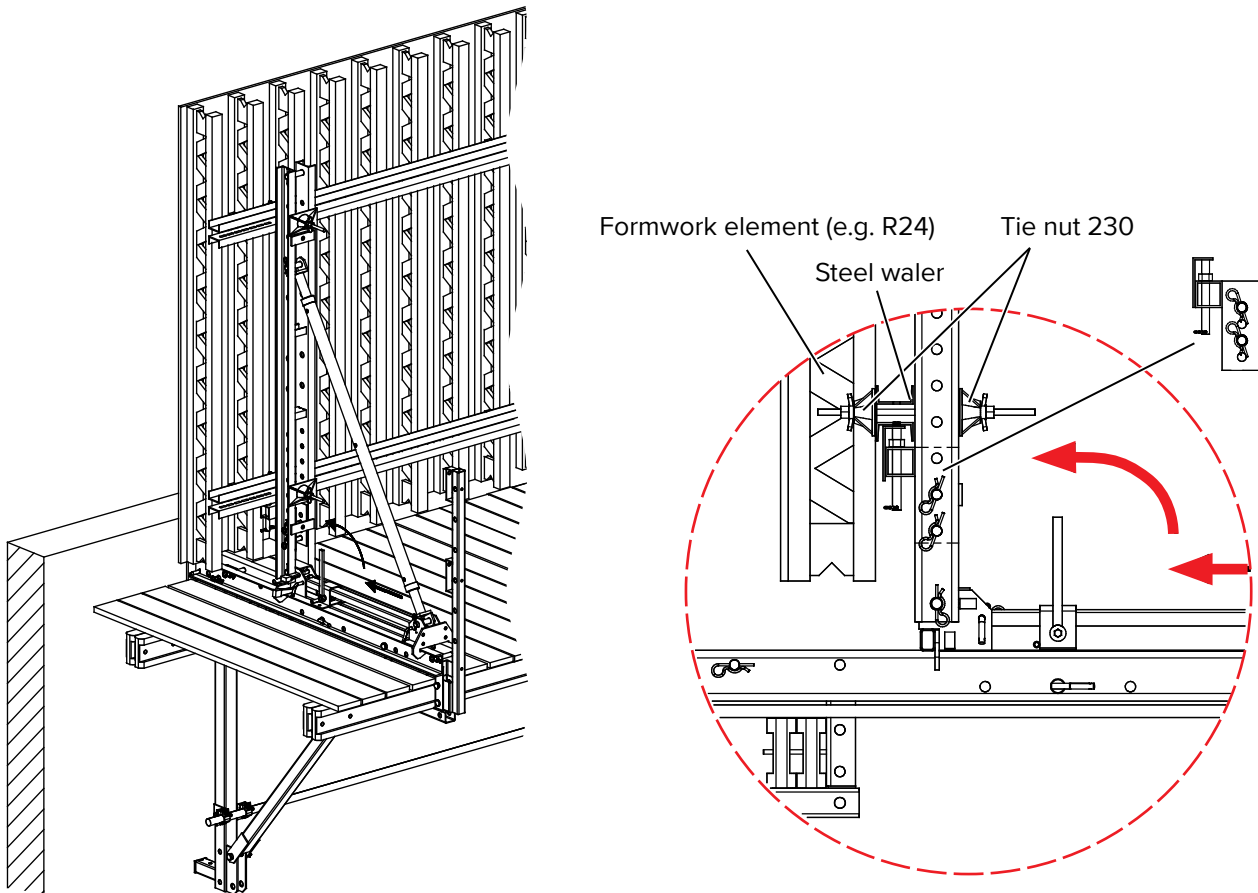


Installation of the levelling adaptor

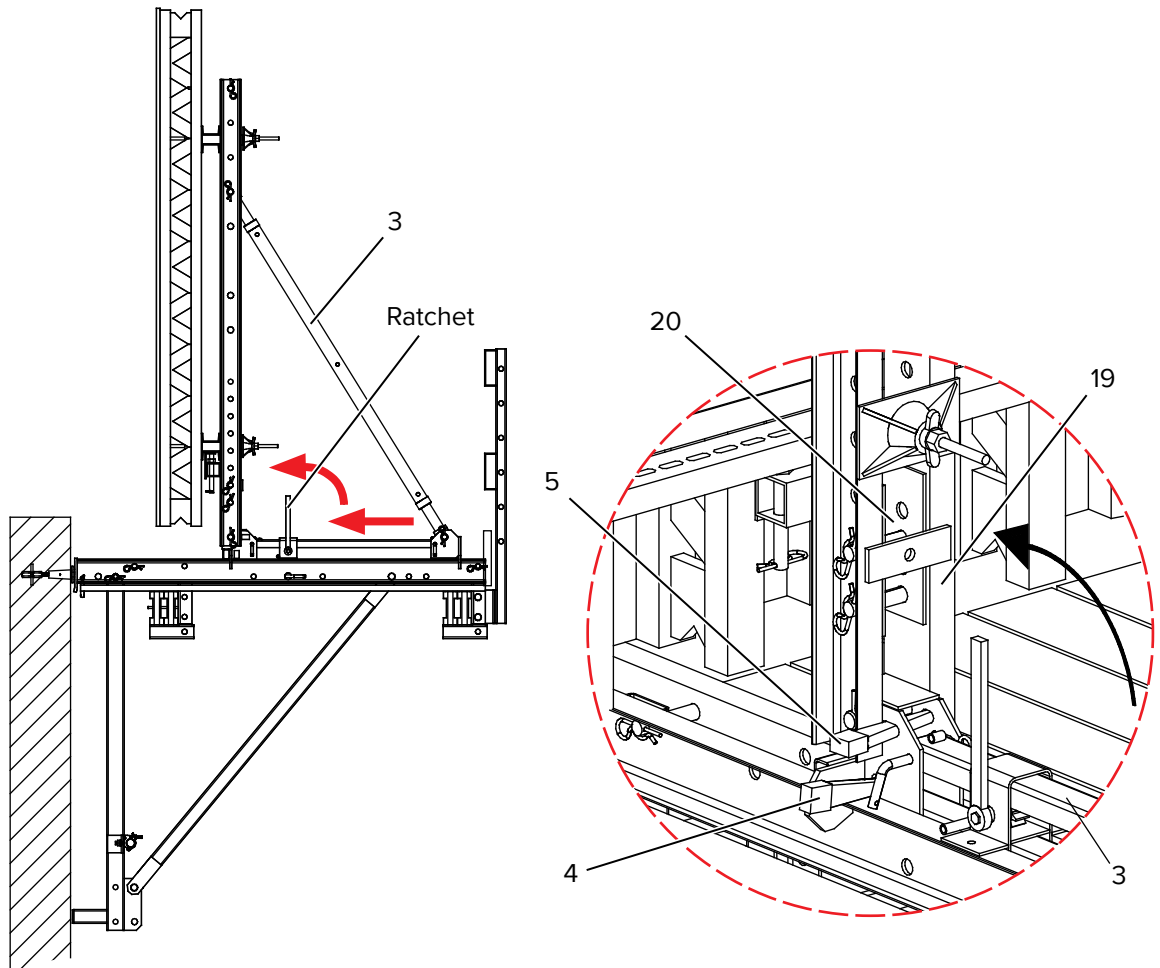
When using timber beam formwork (e.g. R 24)

The levelling adaptor (20) must be installed as shown below when using it for timber beam wall formwork.

The timber beam wall element is placed onto the levelling adaptor (20). Connected every U 120 formwork beam with a tie rod and two tie nuts to each formwork beam.



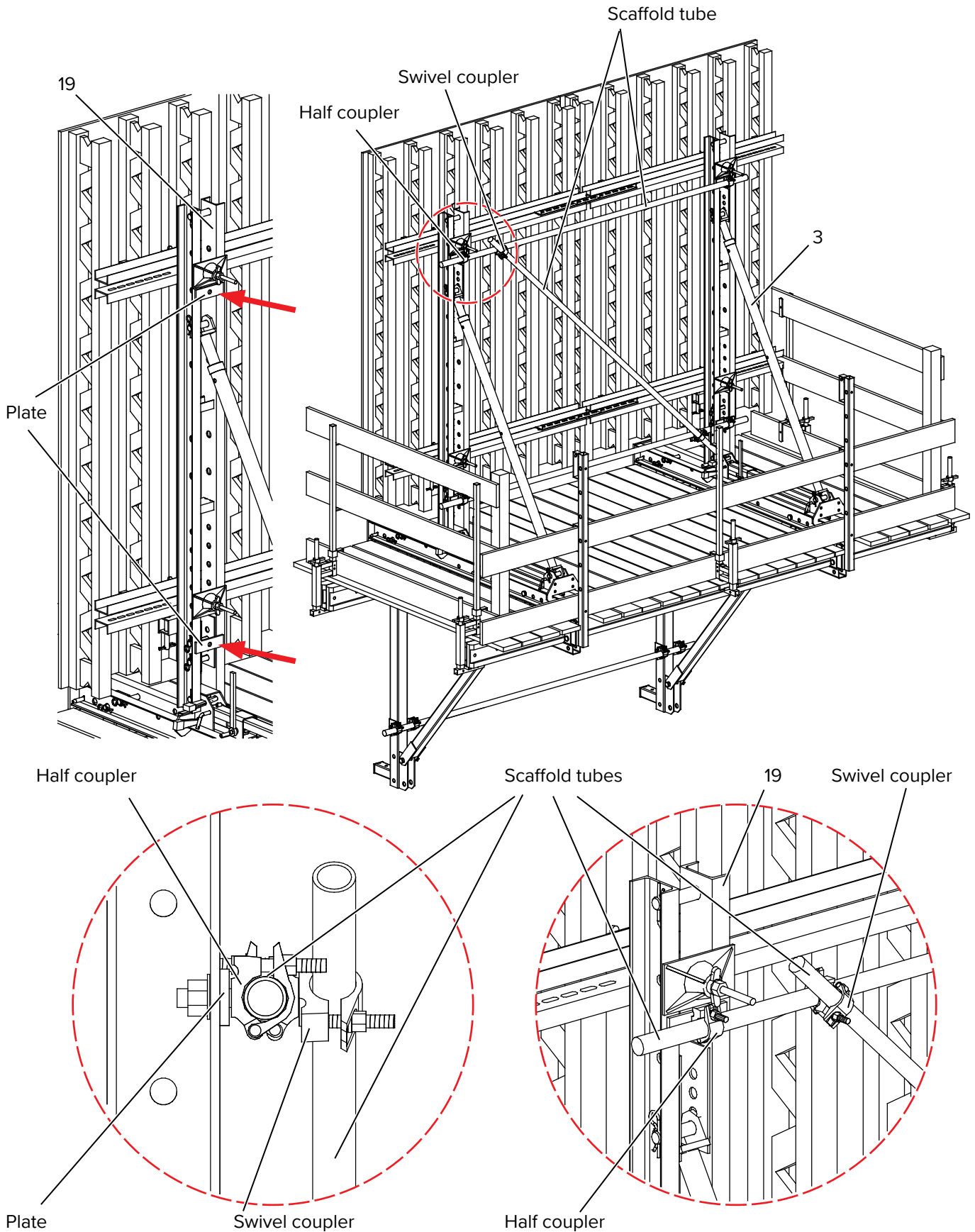
The complete carriage unit (3) is moved in direction to the building by using the ratchet (see detail). After having reached the correct position, the entire carriage unit (3) must be locked by the integrated lower wedge (4). When fastening the upper wedge (5), the formwork element is pushed against the wall.



Installation of the bracing

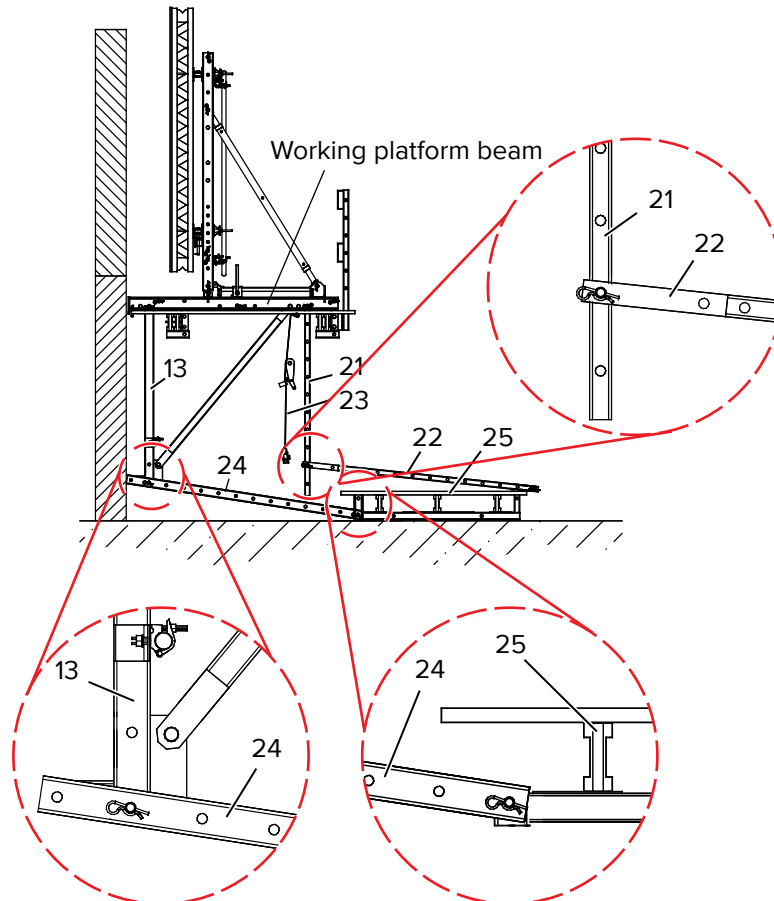
Two half couplers are required for each move-off carriage (3) which must be connected to the U 120 formwork beam (19).

The half couplers are used for fastening the horizontal tube. The diagonal tube is connected to the horizontal tubes with swivel couplers.

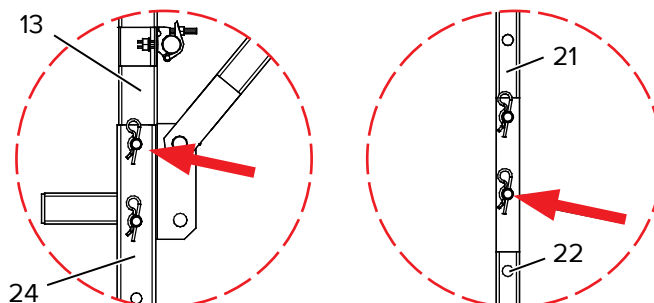


Mounting the trailing platform

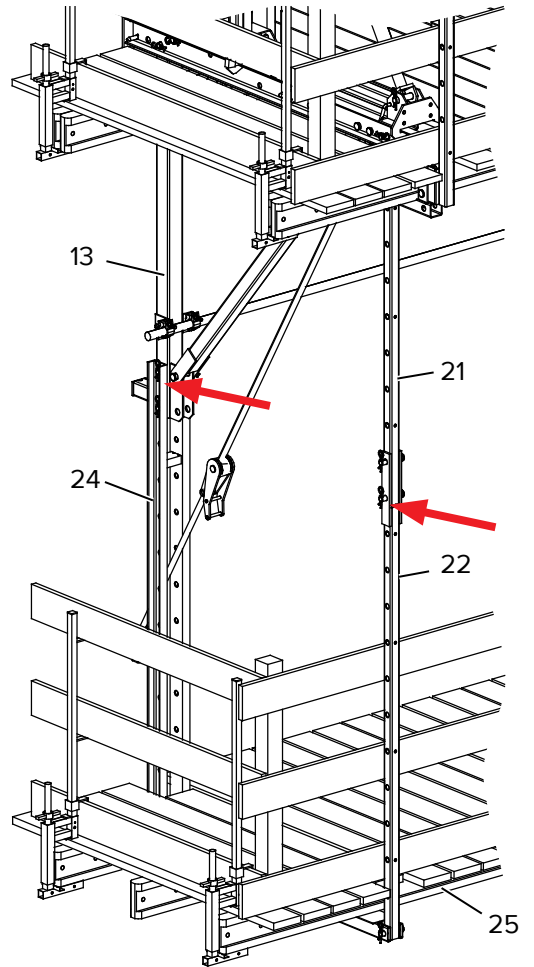
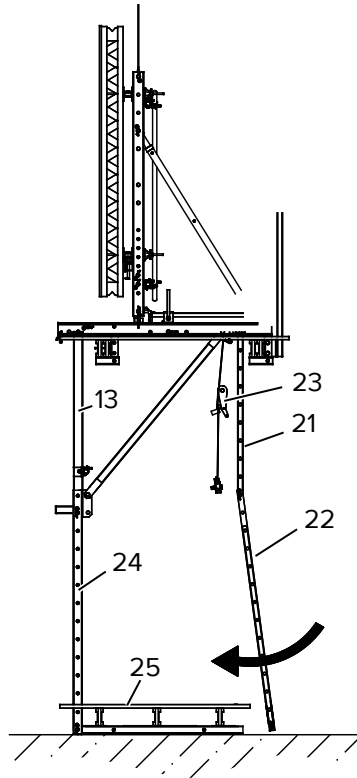
The suspension profile (21) and the extension to suspension profile (22) as well as the wind load securing device are all connected to the working platform beam. The extension profile (22) is fixed with one bolt only. The V-Beam extension (24) is also fixed with one bolt only to the vertical beam (13). The H20 timber beams have to be fastened to the trailing platform by H 20 timber beam clamps. The trailing platform (25) must be bolted to the V-Beam extension (24).



Finally, the second bolt must be completed both to the suspension profile (21) /extension to suspension profile (22) and to the vertical beam (13) / V-Beam extension (24) as shown in the details.



The entire climbing bracket unit is lifted by crane until the extension profile (22) can be pinned to the premounted trailing



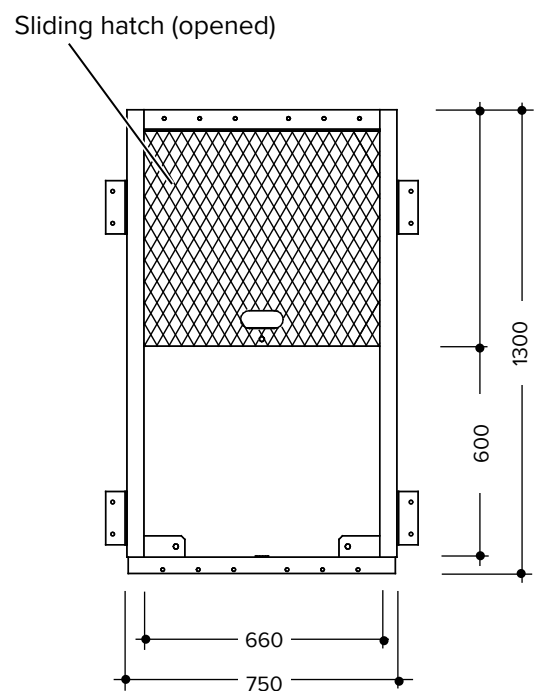
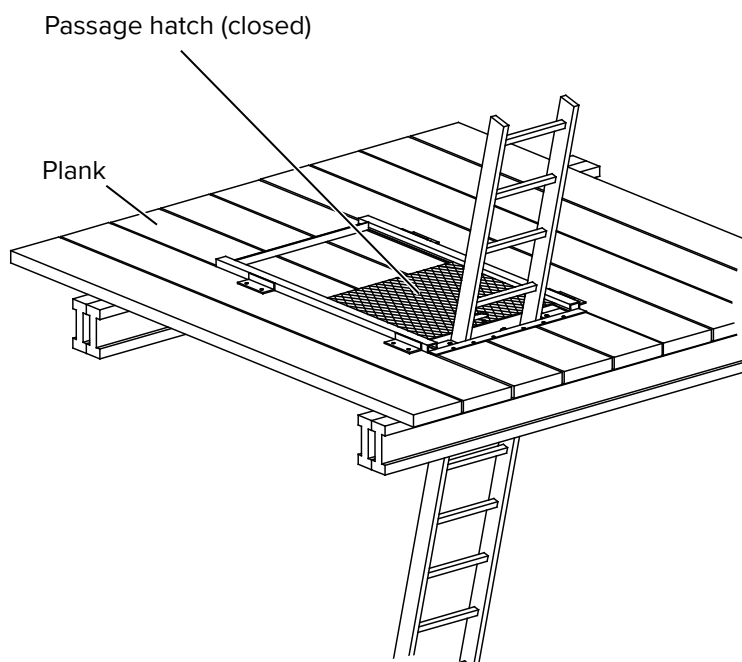
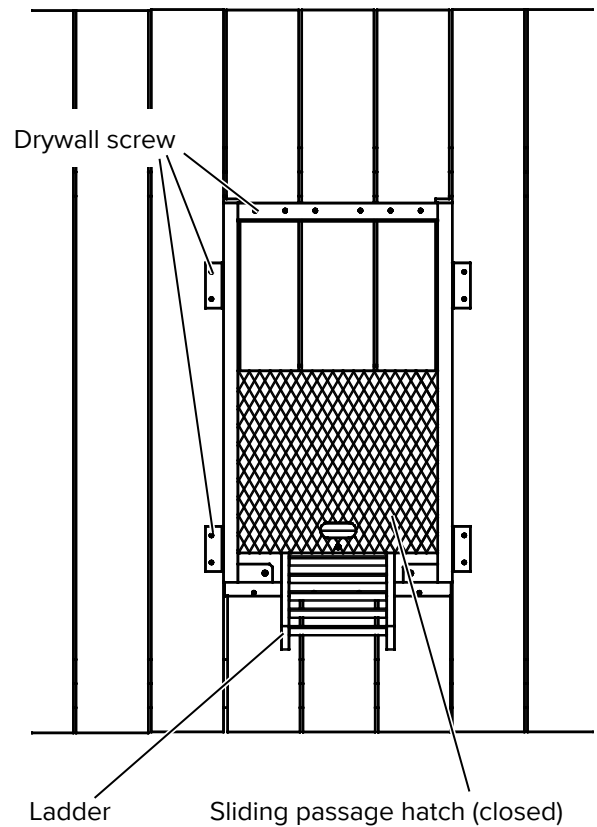
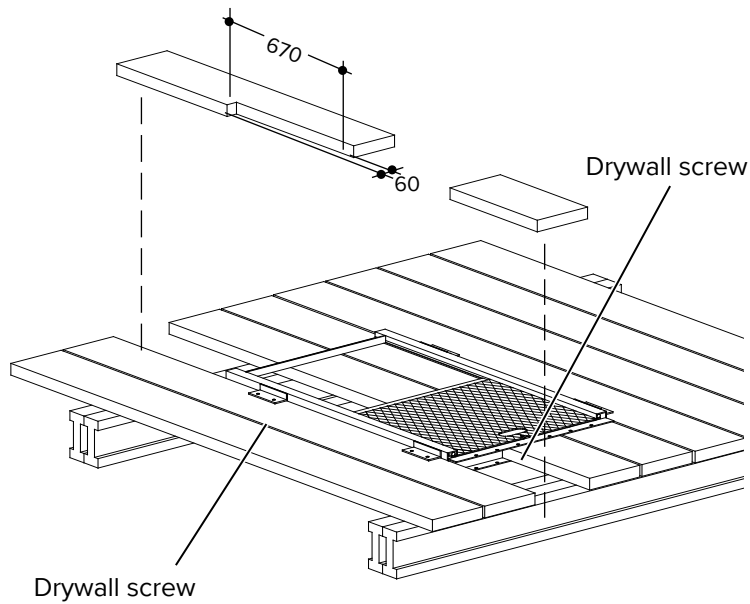
Installation of the passage hatch

In order to install the passage hatch in a professional way, the planks must be cut out as shown below.

NOTE

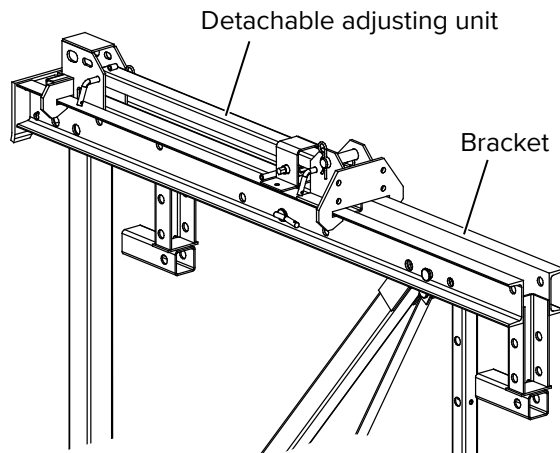
NOTE

It is not allowed to deposit loads in the area of the passage hatch!

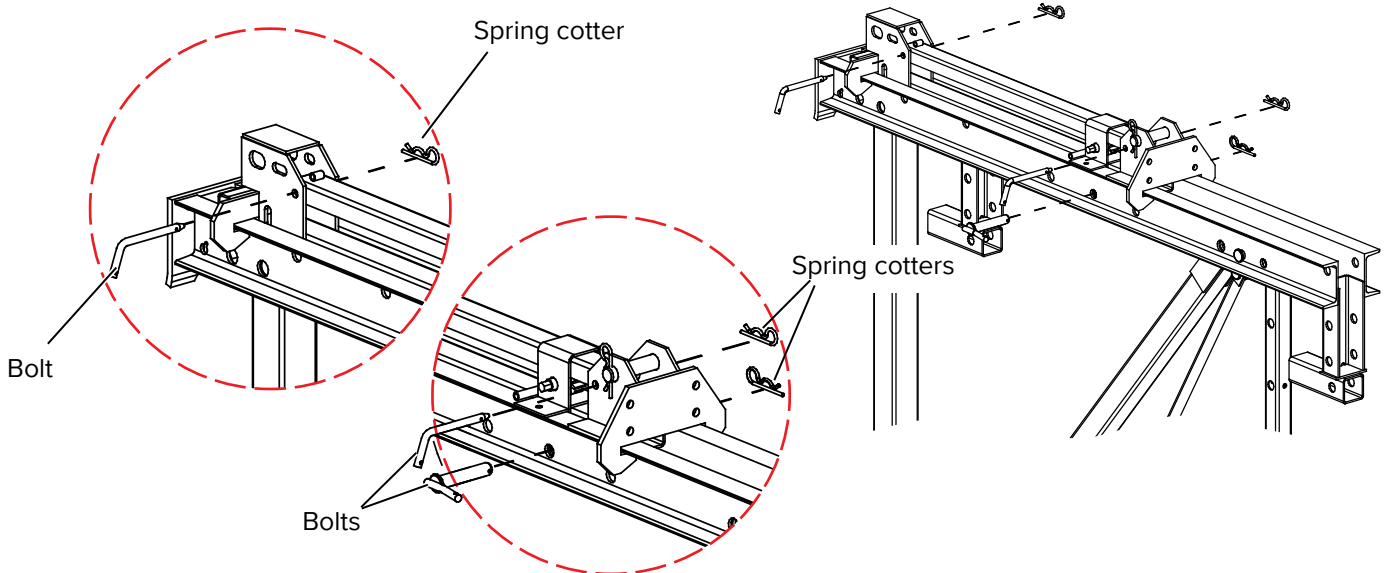


Disassembly / reassembly of the detachable adjusting unit

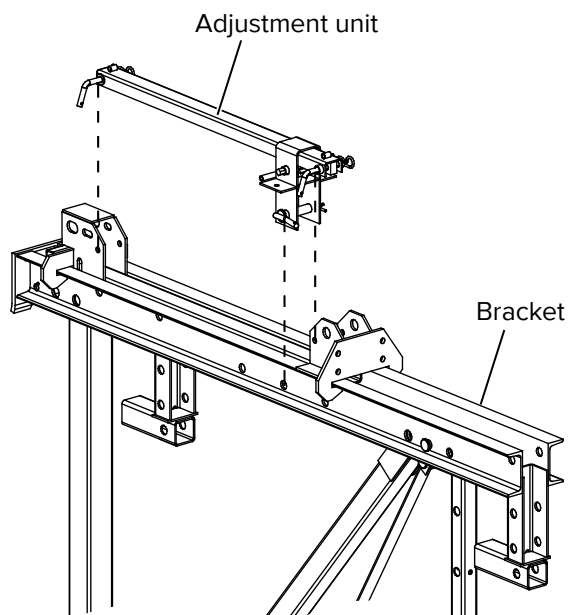
It is possible to disassemble the built-in adjusting unit (state of delivery) in order to install and use it for operations at another bracket.



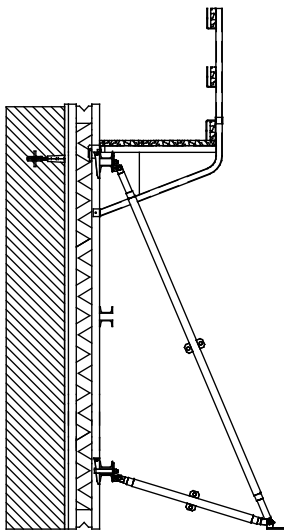
Remove the spring cotters to loosen the three bolts



Remove the adjusting unit and mount it to the basic part of the move-off carriage of another bracket.

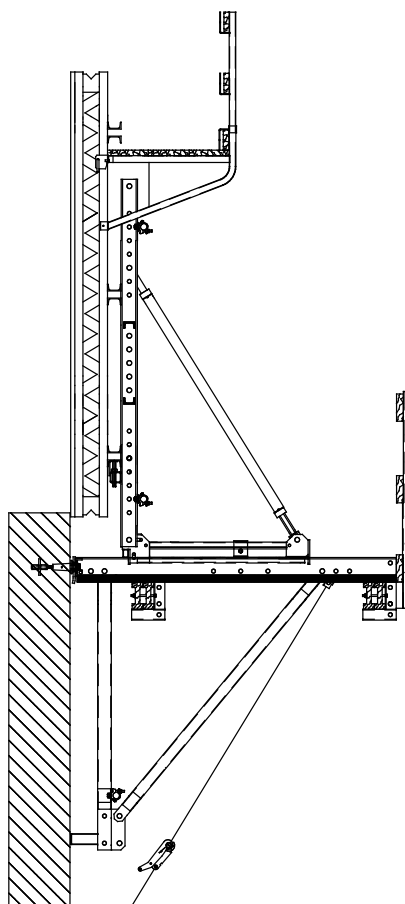


5 Climbing sequence



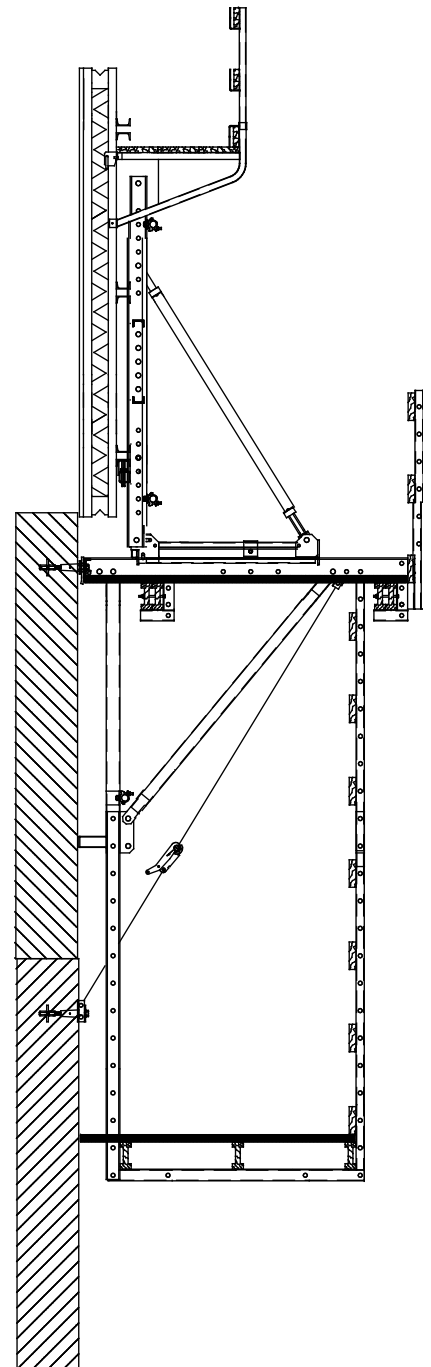
1st Concreting step

The first concreting step must be shuttered with the intended wall elements (e.g. R 24 timber beams or MANTO frame panel formwork) and has to be exactly aligned with adjusting struts.



2nd Concreting step

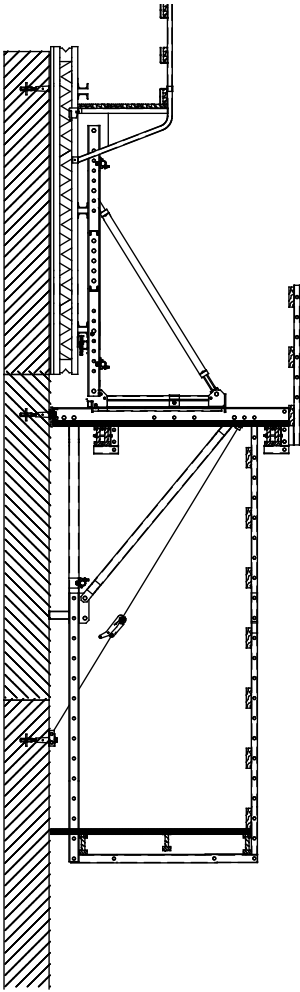
The completely preassembled climbing scaffold unit, consisting of climbing brackets with planks and bracing (made of tubes and couplers) has to be attached and secured to the anchoring of the brackets. Then the formwork with aligning beam and the move-off carriage must be positioned and fixed onto the brackets.



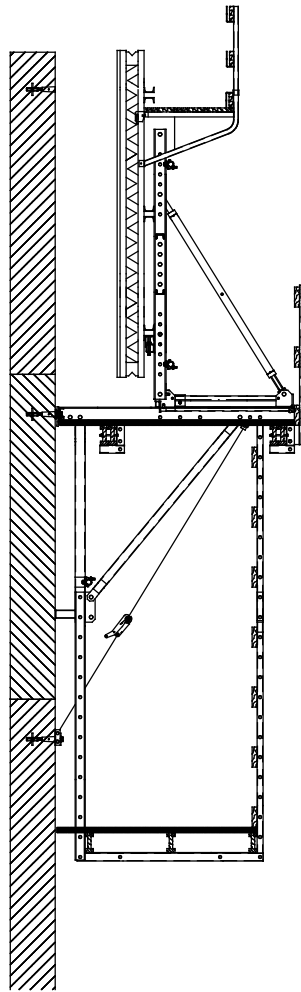
3rd Concreting step

After shifting the climbing scaffold unit to the next concreting step the trailing platform must be mounted to the brackets to complete the climbing system.

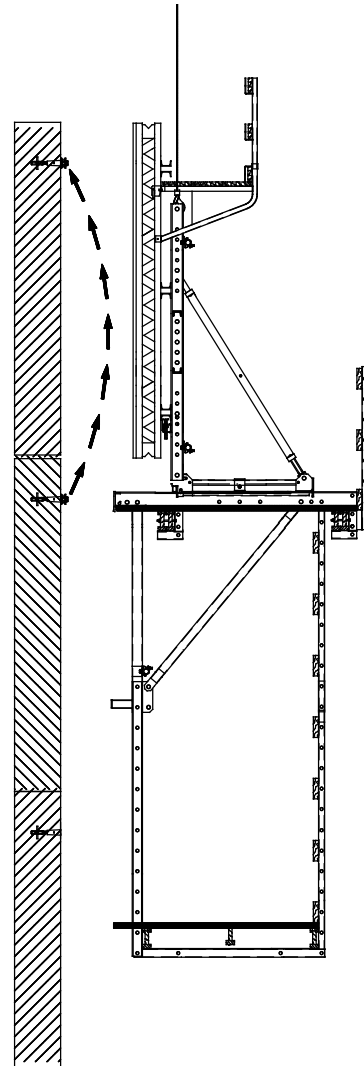
Climbing sequence



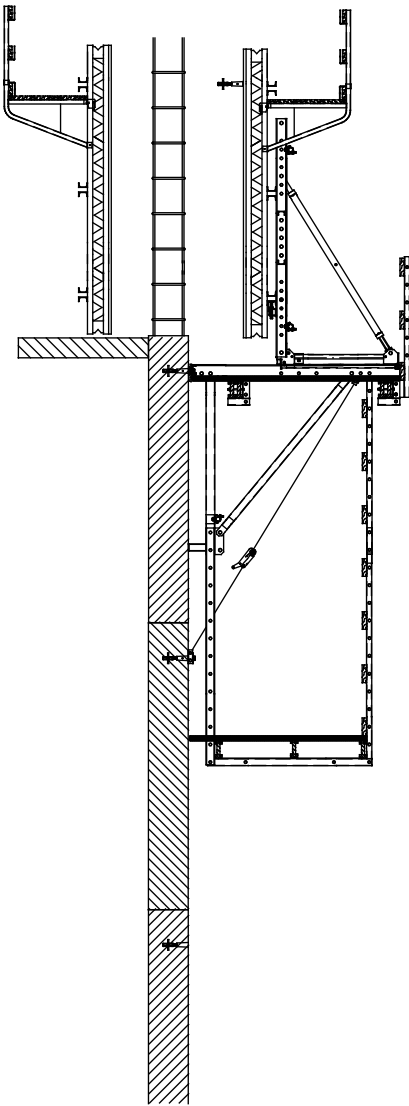
- Loosen wall ties.
- Loosen the wedges of the move-off carriage.



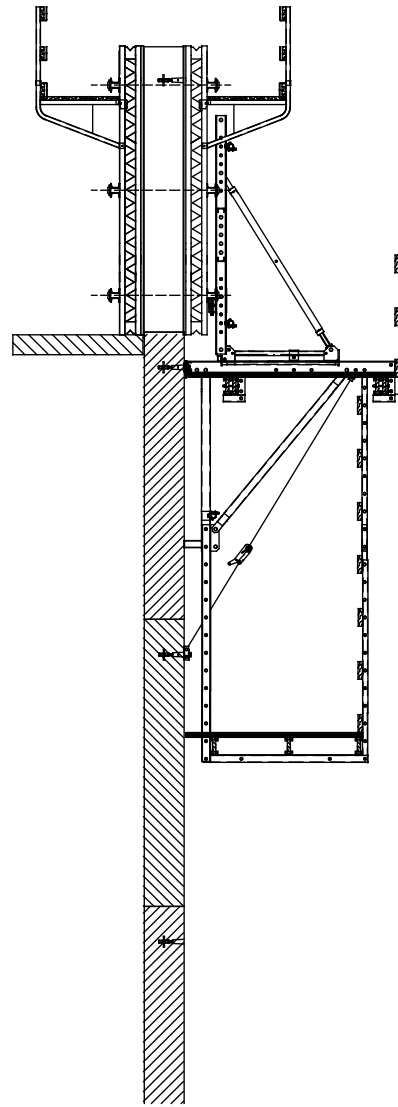
- Retract the carriage unit and lock it with the wedge.
- Install upper bracket bearing roll.
- Loosen wind securing device.
- Remove the lower tie cone.



- Push the carriage unit to the center of gravity and lock it again.
- Loosen the securing bolts of the bracket suspensions.
- Shift the climbing scaffold unit by crane and attach it to the next tie cones which are equipped with the bracket bearing roll.
- Insert and lock the securing bolts at the suspension of the brackets again.
- Install wind load securing device.

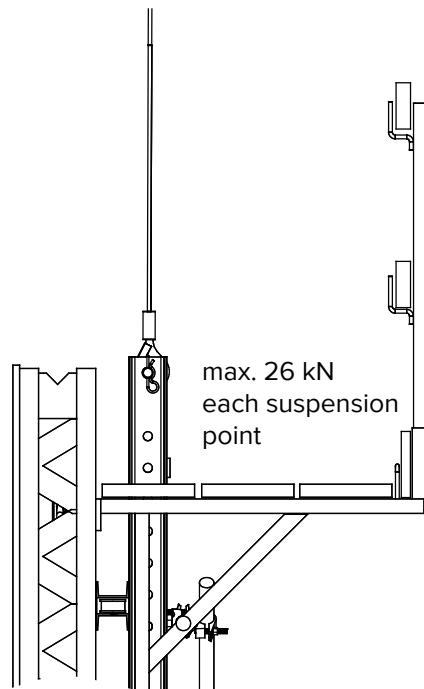


- Retract carriage unit and secure it again with the wedge.
- Clean the shuttering skin
- Install concrete reinforcement.



- Push the carriage unit to the wall and secure it with the wedge.
- Install tie rods for the wall formwork.
- Pour the wall.

6 Suspension for crane



WARNING

WARNING!

When shifting the climbing bracket only attach the crane to the intended suspension point at the U120 Formwork beam with a suitable crane ropes
Do not connect the crane or the crane ropes directly to the formwork!
The load (self-weight) at the suspension point must be checked individually and must be limited to 26 kN!
During the shifting operation with the crane no persons are allowed on the load/brackets.
The relating safe working regulations must be adhered to strictly.

7 Anchoring

Installation of cone anchoring

To ensure a safe bearing for the CS 240 L climbing formwork the cone anchoring must be installed carefully.

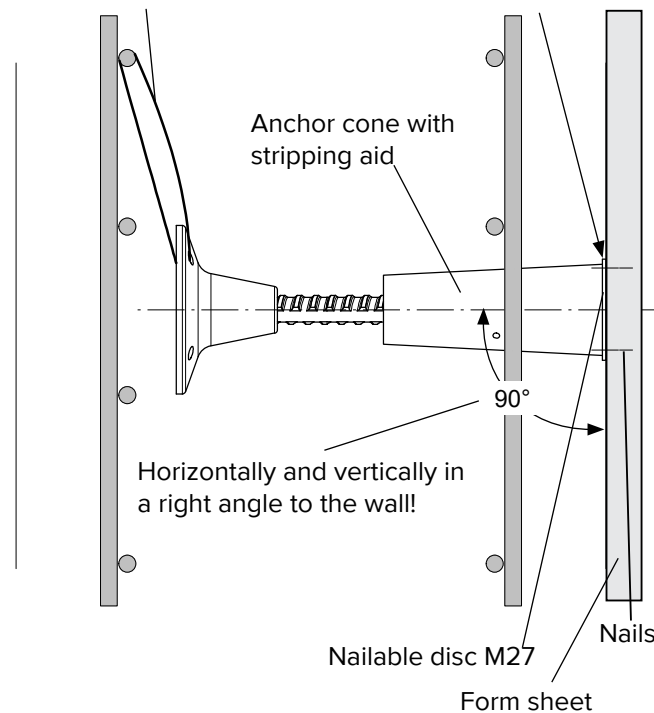
The cone anchoring consists of anchor cone, tie rod and collar nut.

The anchor cone can be fixed with the nailable disc M27 to the form sheet.

Installation with nailable disc

Tie up cone anchoring to the reinforcement!

The anchor cone must fit plane to the form sheet!



It is also permitted to fix the anchor cone with the fit bolt M27 x 90 10.91 to the form sheet.

Therefore the form sheet must be supported with an additional piece of wood at the correct position.

The thickness of the additional piece of wood can be determined as follows:

A: Shaft of M27 x 90 = 55.5 mm

B: Thickness of form sheet

C: Thickness of additional piece of wood

$C = A - B + 1.5 \text{ mm}$

Then drill a hole of $\varnothing 28 \text{ mm}$ into the form sheet and the additional piece of wood and fix the cone with the fit bolt.

NOTE

NOTE

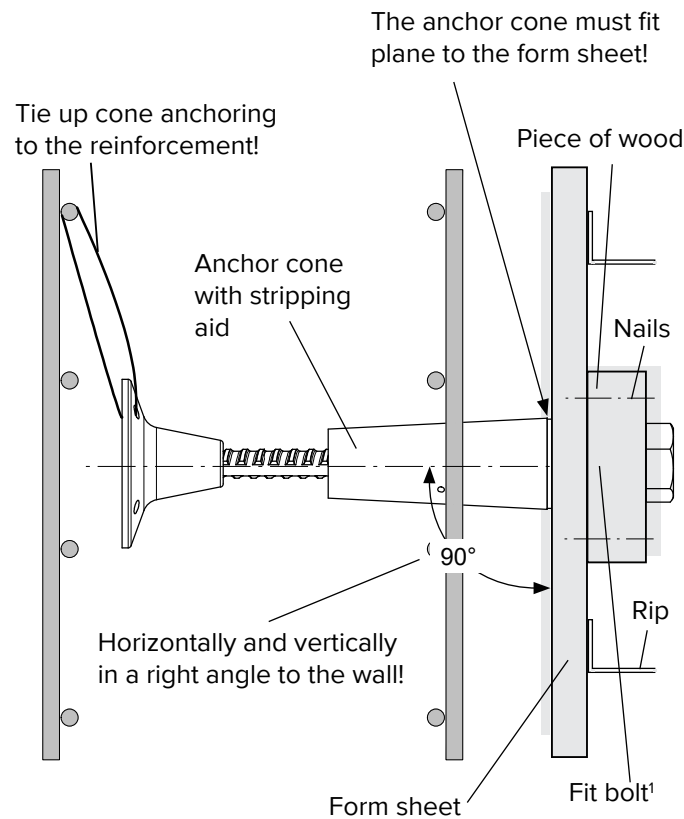
Make sure that the profiles or ribs of the formwork does not hinder the mounting of the cones.

NOTE

NOTE

Make sure to remove the fit bolt before stripping.

Installation with fit bolt



During shuttering make sure that:

1. the anchor cone fits flat to the form sheet to make sure that the bracket bearing roll is in plane contact to the cone later
2. the anchor cone with the anchoring is mounted horizontally and vertically in a right angle to the form sheet
3. the cone anchoring is fixed to the reinforcement of the wall

NOTE

NOTE

Fix the cone anchoring in such a way that it cannot tilt during pouring.

If the cone anchoring is not mounted flush and rectangular, the fit bolt is overloaded due to shear forces and bending!



DANGER

DANGER!

By not following these instructions as a result the fit bolt can be overloaded and break!
This can lead to a crash of the platform!

Professional anchoring ensures safety with each climbing formwork.

Mounting of bracket bearing roll

- | | |
|---------------------------|-----------------|
| 1 Socket spanner (wrench) | 5 Tie rod |
| 2 Hexagon fit bolt | 6 Hexagon nut |
| 3 Bracket bearing roll 27 | 7 Counter plate |
| 4 Tie cone M27 / D&W 15 | |



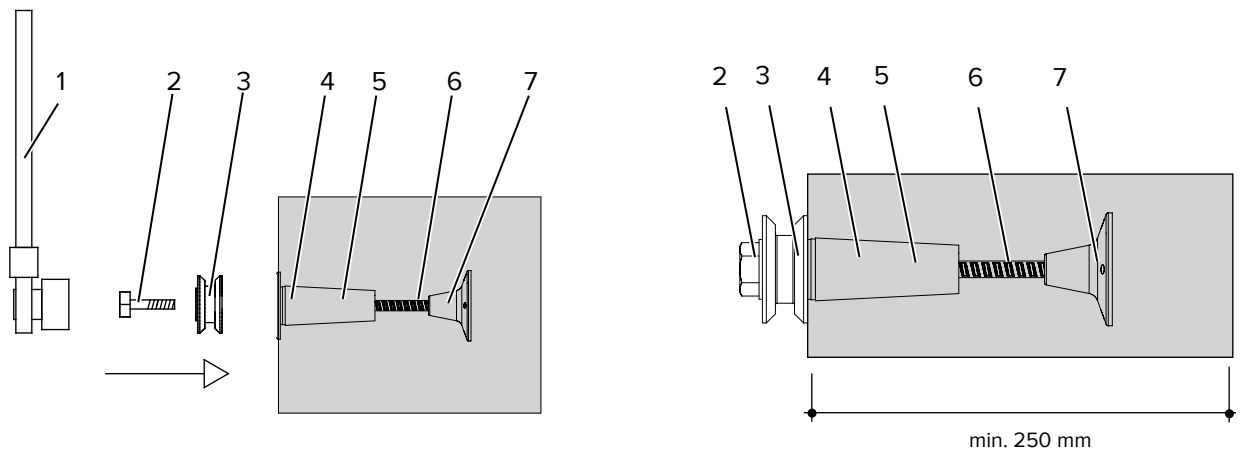
WARNING

WARNING!

The proof of the anchoring only comprises the local transmission of the loads (forces) into the concrete.

Minimum grade of concrete under load: B 25.

The transfer of loads (reaction forces) within the concrete structure against punching and the proof of stability for the concrete member have to be checked separately for each application.

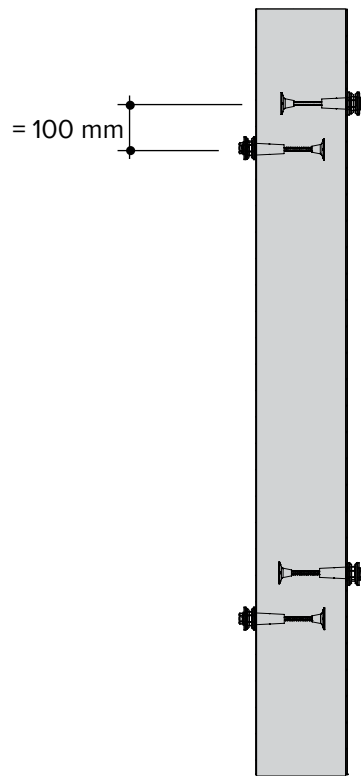


NOTE

NOTE

Only use fit bolt M 27 x 90 Z, DIN 7968, 10.9 (part no.: 600484) to fasten the bracket bearing roll 27. It is not allowed to use other bolts!

In case of using the climbing formwork on both sides of the wall, the anchoring must be positioned independently from each other in displaced positions (as shown below).



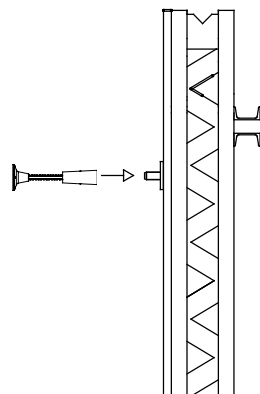
For permissible anchoring loads see page 51.

Installing the anchor for next lift (lead cone)

Without drilling through the shuttering skin.

(using the nailable disk)

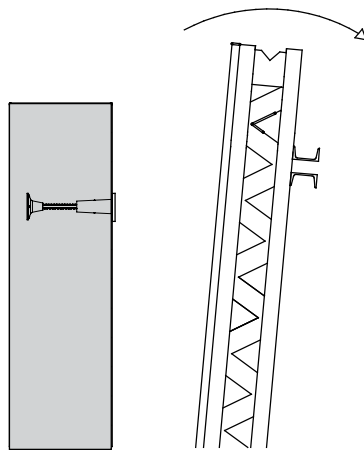
- Step 1** Nail the nailable disk to the shuttering skin (plywood).
- Step 2** The tie cone with the tie rod and counter plate now can be screwed to the thread of the nailable disk.



For dismantling loosen the formwork from the wall.

The nailable disk remains fixed to the tie cone and must be removed with an allen key (w.a.f. 14 mm).

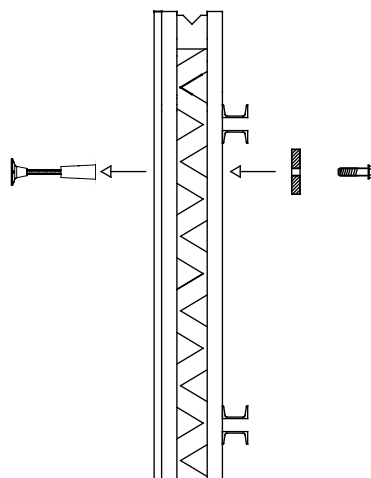
Fasten bracket bearing roll with hexagon fit bolt M 27 (product code: 600484).



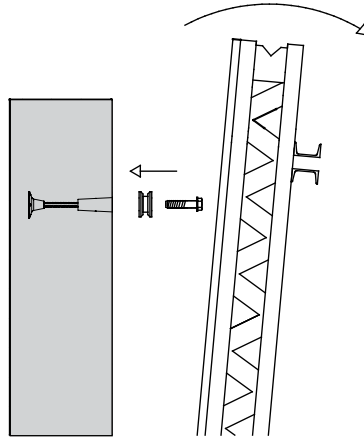
Drilling a through hole in the plywood.

(using the fit bolt M 27 x 90)

- Step 1** The shuttering skin must be provided with a drill hole (28 mm dia.) at the correct anchoring point.
- Step 2** Then the lead cone (for next lift) must be screwed to the plywood by using the fit bolt M 27 from the rear side of the shuttering skin.
- Step 3** A small plywood pad with a drill hole (28 mm dia.) some times is necessary between the rear side of the plywood and the head of the screw as an adjustment piece (by site).

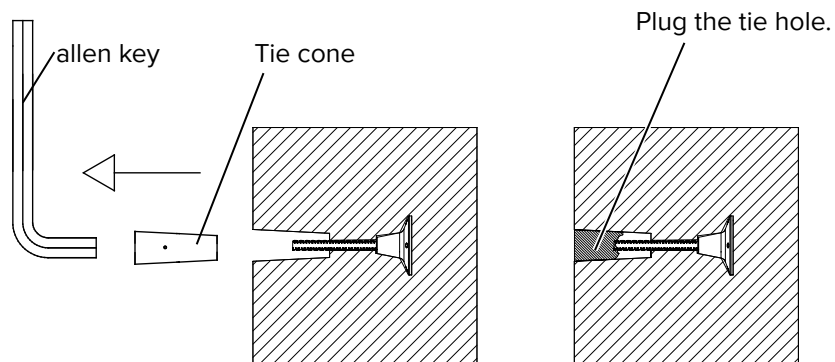


- Step 4** The fit bolt M 27 must be unscrewed and removed to loosen the formwork from the wall when striking the wall element.
- Step 5** Again the bracket bearing roll is fastened with the hexagon fit bolt M 27 (product code: 600484).



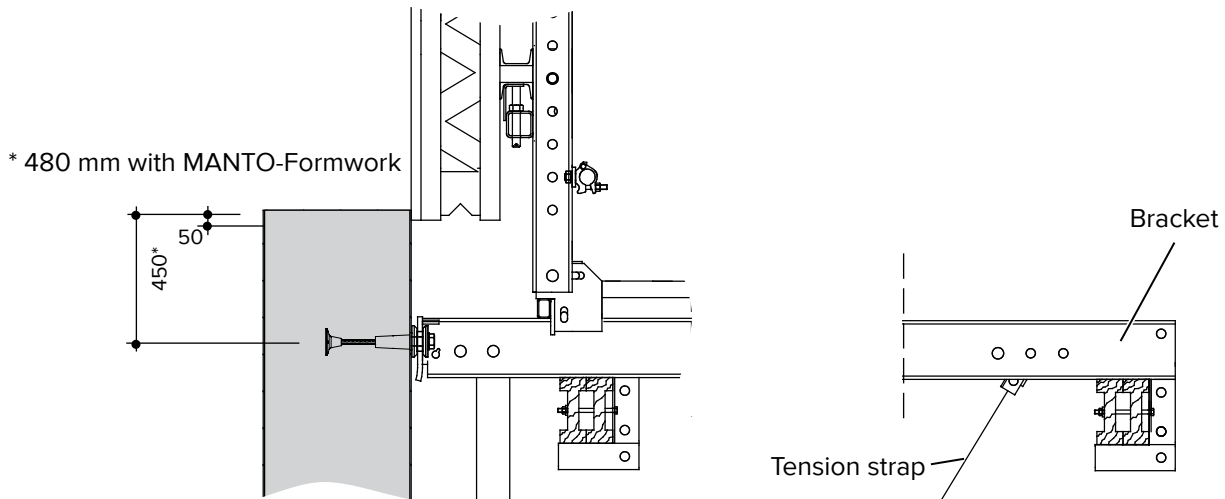
Recovering the tie cone.

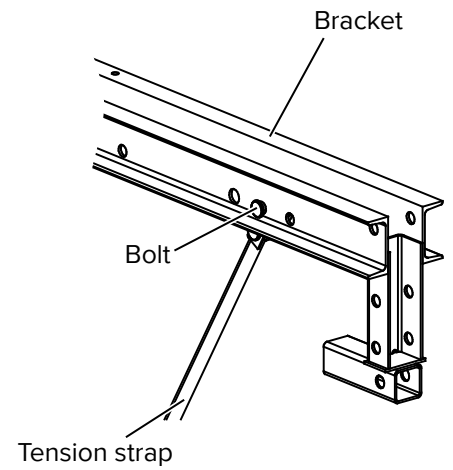
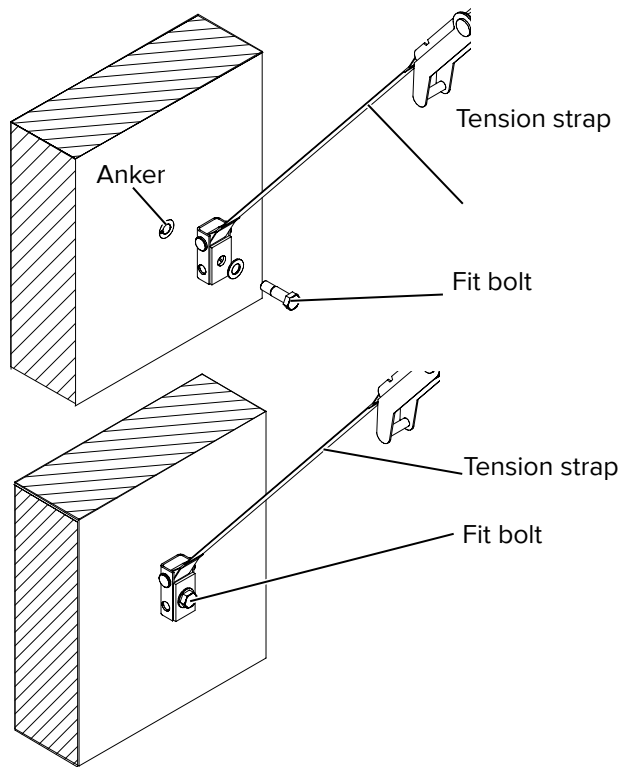
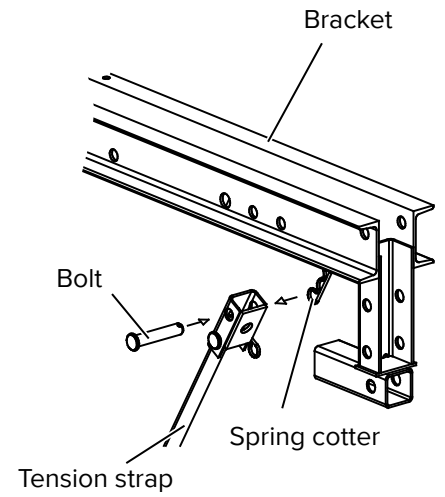
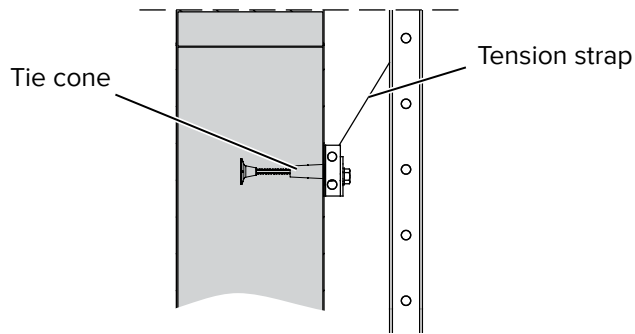
After unscrewing the hexagon fit bolt, the tie cone can be turned and removed from the concrete wall with an allen key (w.a.f. 27).



Dimensions for anchoring the scaffold brackets and attaching the wind load securing device.

Structural dimensions for the scaffold CS240L with move-off carriage in (cm).





8 Loading assumptions

Determination of dead weight of the climbing scaffold units

For a rough calculation of the resulting load use the following dead loads:

Wall formwork with accessories	60 kg/m ²
Climbing bracket, complete (2)	233 kg/bracket
Aligning beam (1)	143 kg/bracket
Trailing platform, complete (4)	125 kg/bracket
Supplementary parts and bracings	90 kg/bracket

Planks and guard railing (walkway brackets)	49 kg/m run
Planks and guard railing (main bracket)	84 kg/m run
Planks and guard railing (trailing platform)	77 kg/m run

If the crane capacity on the construction site is insufficient reduce the distances between the brackets or build smaller shifting units after the correct determination of the total weight.

Wind load

Height over ground H [m]	Pressure q [kN/m ²]	Coefficient cw
wind during operations (independent of working level)	0.2	1.3
full wind load up to 100 m	1.1	1.3
full wind load beyond 100 m	1.3	1.3

As per DIN 4421, chapter 6.3.2.2, reduced wind loads are applied during the travelling procedure.

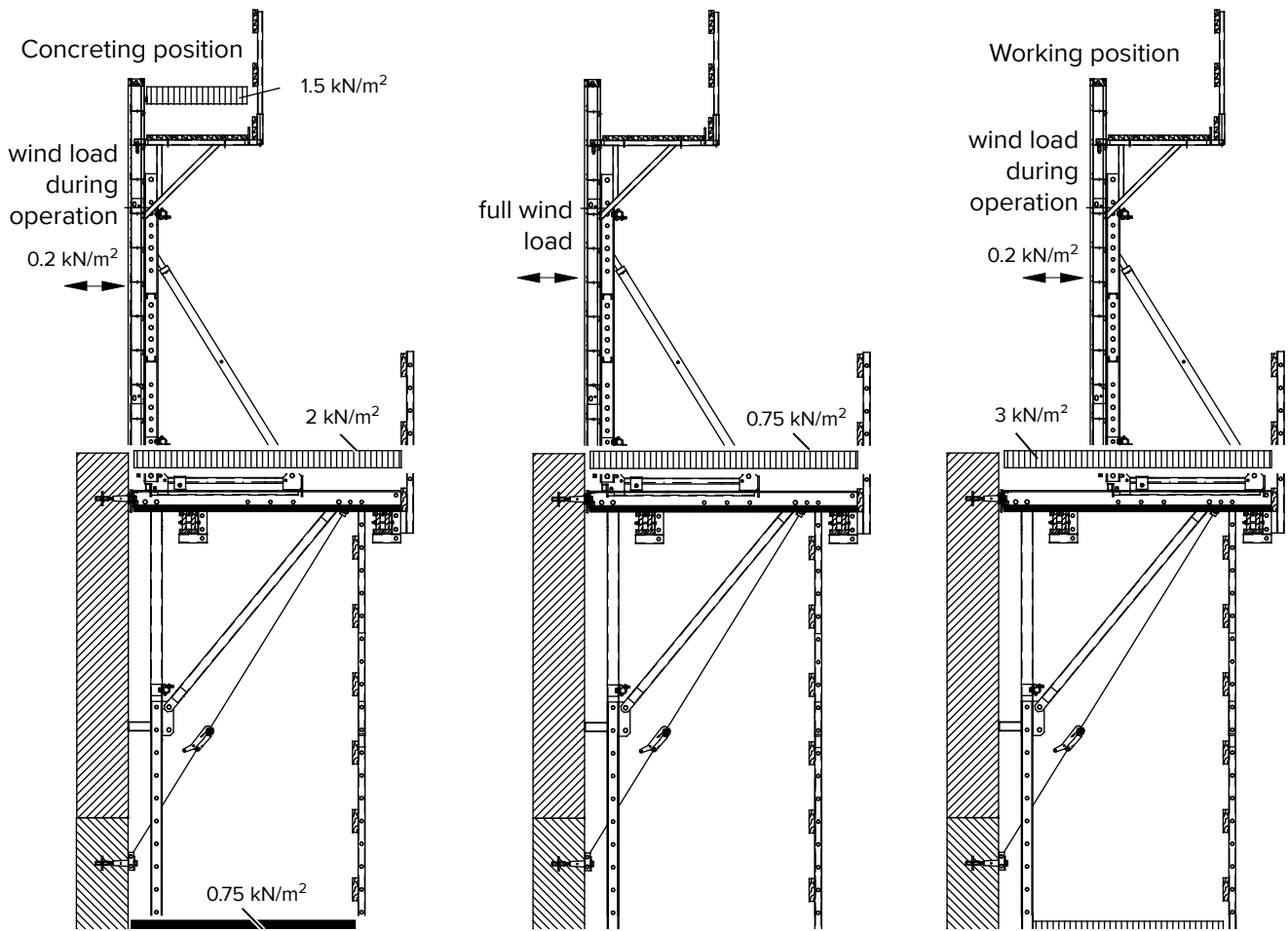


WARNING

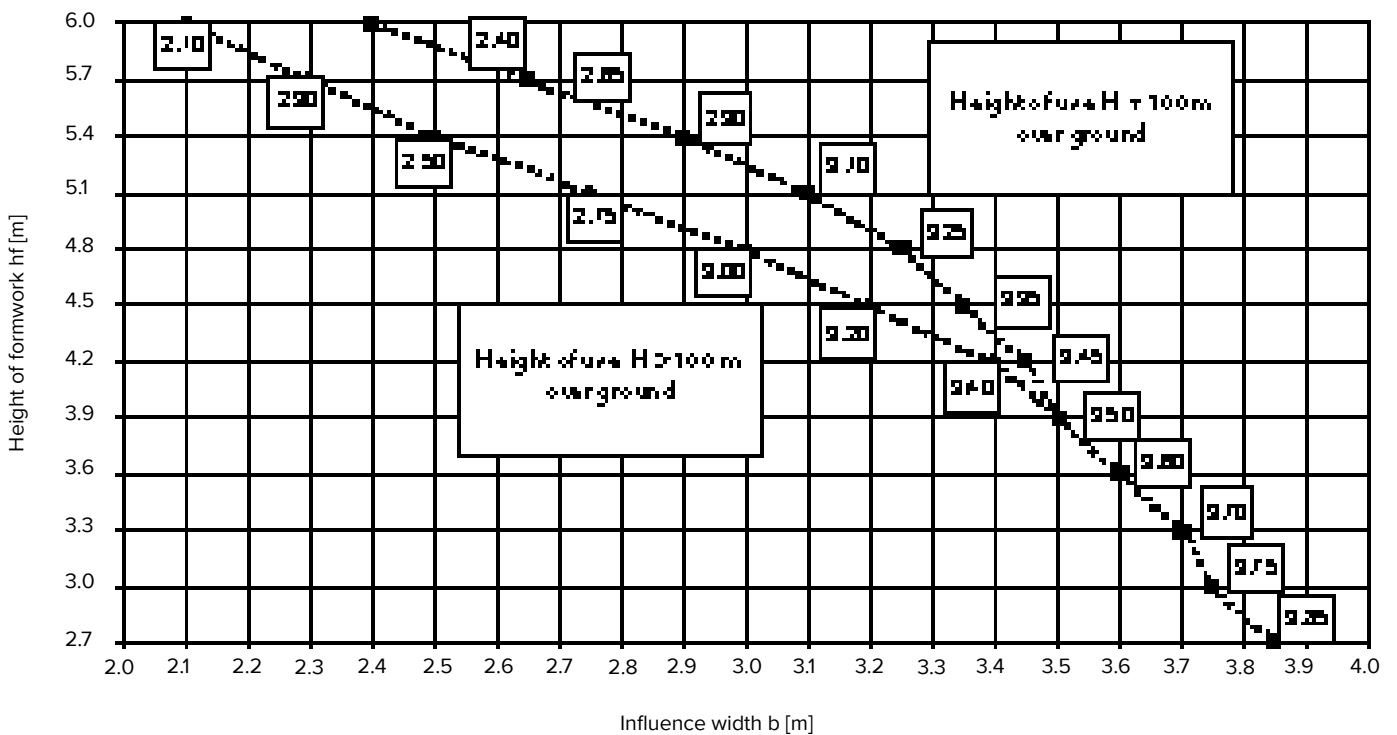
WARNING!

With wind speed higher than 20 m/sec, working operations must be stopped and the formwork must be pushed against the structure and aligned vertically. The climbing bracket units must be kept free from high snow and/or ice load. These loads have to be removed before starting operations, if necessary.

Live loads

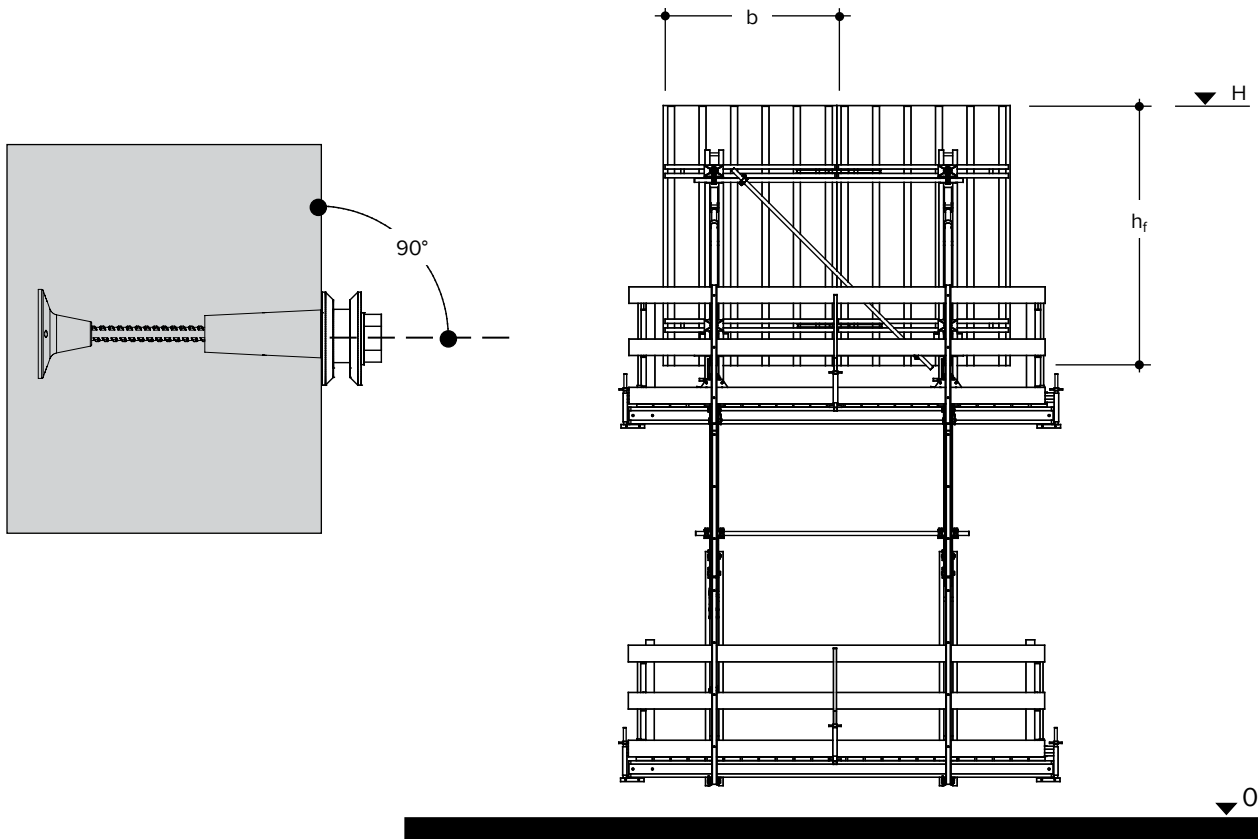


9 Graph for load-bearing capacity



Graph for load-bearing capacity

The statical proof of the anchoring must be worked out on the basis of the details given on Page 51!



WARNING

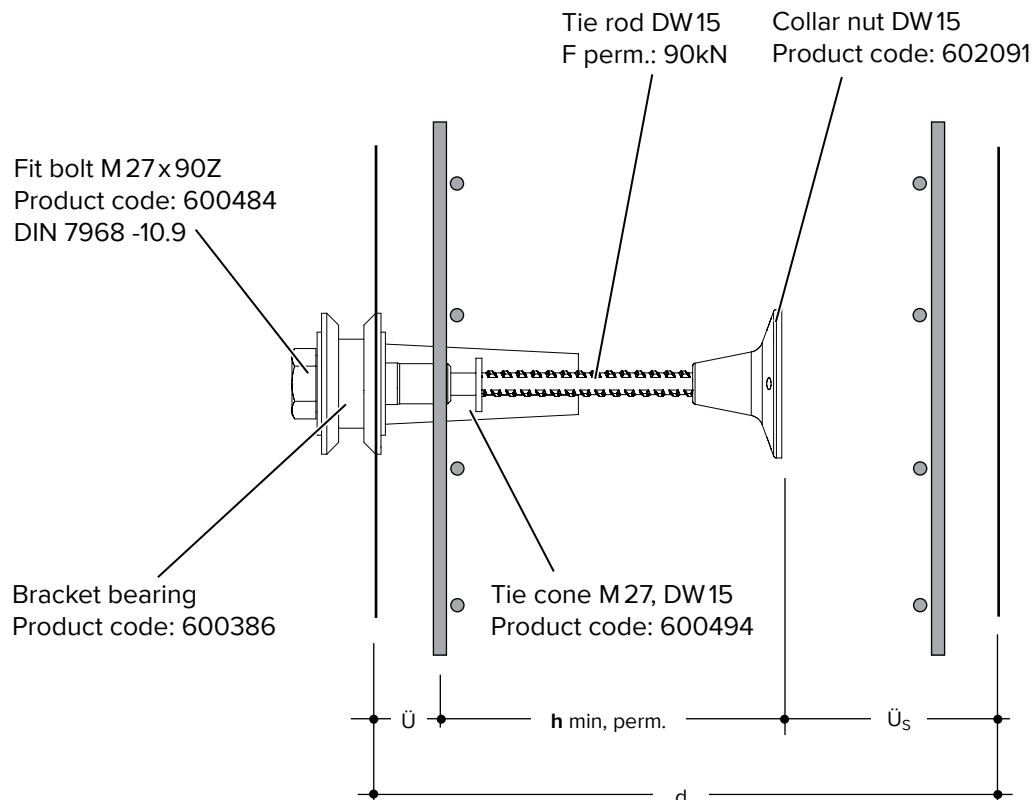
WARNING!

The tie cone has to be installed in such a way that it forms a 90° angle to the wall!

10 Permissible anchoring loads

Permissible tension loads (as per DIN 1045, Chapter 22.7, Proof against punching).

Structural design of anchoring



WARNING

WARNING!

All individual parts must be bolted firmly to a complete stop.
The collar nut must be secured against unintended loosening

Requirements:

Reinforcing steel: B ST 500
Strength of concrete: B 25

Example:

In order to allow the maximum tension load of $F = 90 \text{ kN}$, the required length "h min." has to be taken into consideration with $h \text{ min.} = 15.4 \text{ cm}$ depending on the relevant ratio of reinforcement of "0.5 %".

The required wall thickness for this example is as follows:

$\ddot{U} = 2.5 \text{ cm}$ (supposed concrete cover) and $\ddot{U}_s = 7.0 \text{ cm}$ (supposed design measure)
Minimum wall thickness $d = 2.5 + 15.4 + 7.0 = 25 \text{ cm}$.

Permissible vertical load

perm. $V = 77 \text{ kN}$ (at B 25 strength of concrete)

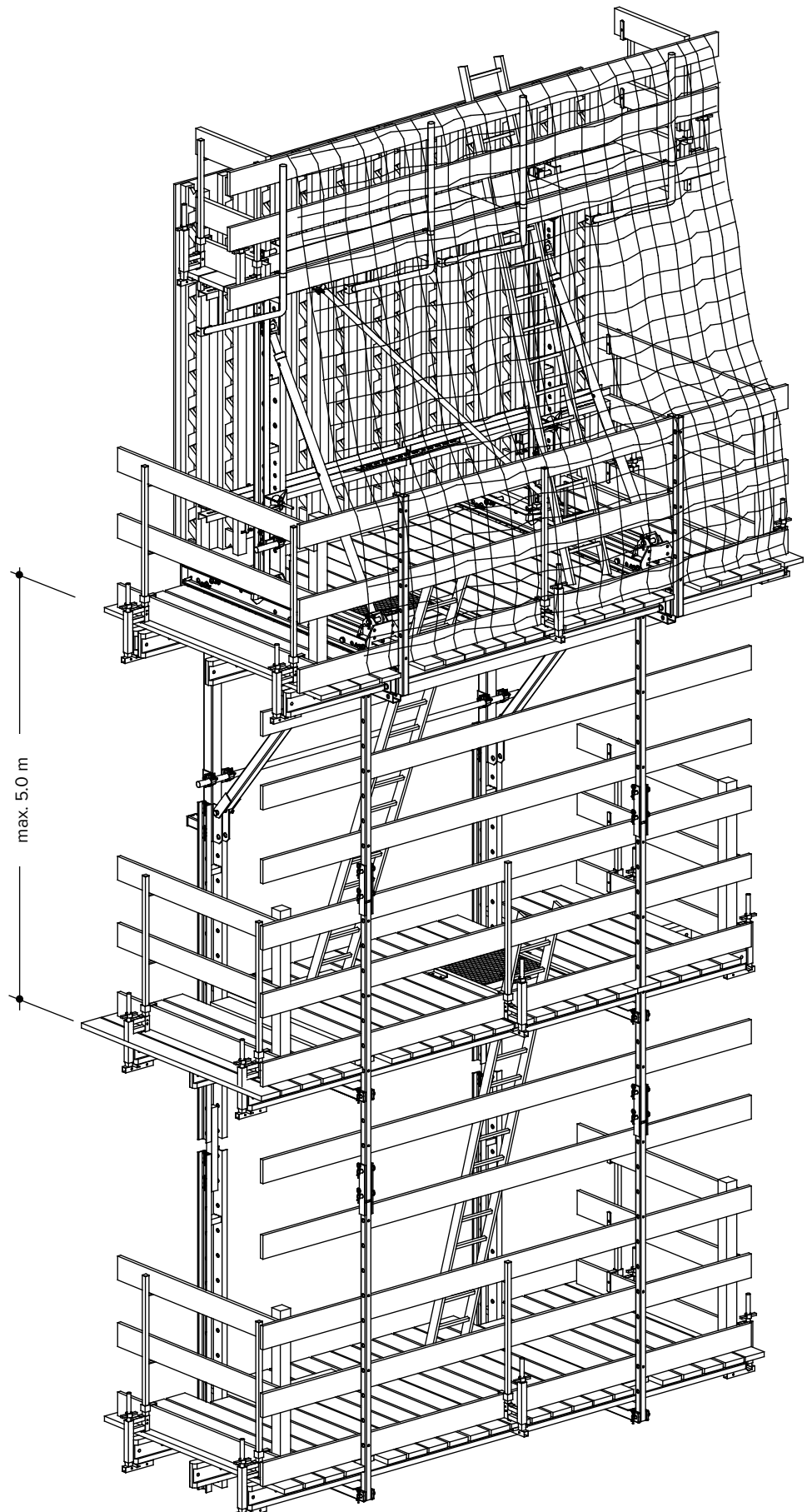
Maximum tension load (F) depending on ratio of reinforcement and h min (h, required length)

Permissible anchoring loads

Ratio of reinforcement μ [%]	h min(required) [cm]	F perm. [kN]
0.05	31.3	90
0.075	27.8	90
0.1	25.5	90
0.15	22.5	90
0.25	19.2	90
0.5	15.4	90
0.75	13.5	90

11 Application example – extended trailing platform

The maximum difference between the platform levels must not exceed 5.0 metres. For height differences of more than 5.0 m a further trailing platform must be mounted.



**Hünnebeck
Deutschland GmbH**
Rehhecke 80
D-40885 Ratingen
+49 2102 9371
info_de@huennebeck.com
www.huennebeck.com

The copyright in these instructions for assembly and use belongs to BrandSafway. All the trademarks named in these instructions for assembly and use are the property of BrandSafway, unless marked as third-party rights or identifiable as such in another way. Hünnebeck, SGB and Aluma Systems are trademarks of BrandSafway. Furthermore, all rights are reserved, particularly with regard to patent grant or utility model registration. The unauthorized use of these instructions for assembly and use, of the trademarks contained therein and other intellectual property rights is expressly prohibited and represents an infringement of copyright, trademark rights and other industrial property rights.

The illustrations in this brochure depict actual site conditions which may not always conform with applicable safety rules and regulations.

Last updated: January 2019
Keep for later use!