

H TOPEC[®]

Modular slab formwork

User Guide



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1 Product features

1.1 Introduction

TOPEC by Hünnebeck is a frame panel formwork system that can be used to economically and safely erect slab formwork.

The aluminium-framed panels are lightweight and easy to handle. The framework of the panel is powder coated to reduce concrete adhesion and simplify cleaning. The high-performance form sheet is retained in special frame profiles around all edges and designed for greater longevity.

The TOPEC system uses EUROPLUS^{new} steel props. GASS props or older Hünnebeck steel props can be used as well.

1.2 Intended use

Hünnebeck TOPEC is a frame panel formwork system. It is intended to be used with suitable steel props, e.g. EUROPLUS^{new} props or GASS props, to create concrete slabs up to 500 mm thick. Thicker slabs can be poured if there is special certification of structural stability.

Hünnebeck products are intended to be used only by competent personnel and only for commercial purposes.

2 General information

2.1 Safety instructions

Notes on intended and safe use of formwork and falsework

The contractor is obligated to compile a risk assessment and assembly instructions.

Assembly instructions are not the same thing as a User Guide.

Risk assessment

The contractor is responsible for the compilation, documentation, implementation, and revision of a risk assessment for each construction site. His/her employees are obliged to implement the resulting measures in accordance with all legal requirements.

Assembly instructions

The contractor is responsible for compiling a written set of assembly instructions. The User Guide is a fundamental aspect of the assembly instructions.

User Guide

Formwork and falsework are technical work equipment intended for commercial use only. The equipment may be used only by properly trained personnel under the authority of qualified supervisors.

The User Guide is an essential component of the formwork. At a minimum, it contains safety notes, information on the standard configuration and the intended use, and a description of the system.

Carefully follow the instructions on use and assembly of the equipment (standard configurations) contained in the User Guide. Enhancements, deviations, or changes represent a potential risk and therefore require separate verification (with the help of a risk assessment) or a set of assembly instructions which comply with the relevant laws, standards, and safety regulations. The same applies in cases where formwork and falsework components are provided on site.

Availability of the User Guide

The contractor has to ensure that site personnel are familiar with the User Guide provided by the manufacturer or the formwork supplier and that it is readily accessible at all times.

Illustrations

Some of the illustrations in the assembly instructions are various states of assembly and not always complete in terms of safety considerations.

Safety devices may not always appear in the illustrations, but they are nevertheless mandatory.

Storage and transportation

The special requirements of the respective formwork constructions regarding transportation procedures as well as storage must be complied with. An example of such a requirement is the use of slings.

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. Modifications to the formwork materials are not permitted.

Spare parts and repairs

Only original components may be used as spare parts. Repairs may be performed only by the manufacturer or authorised facilities.

Use of other products

Combining formwork components from different manufacturers carries certain risks. Examine such components individually for suitability; they may require a separate User Guide.

Miscellaneous

We explicitly reserve the right to make changes resulting from technical improvements. 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 transport of the formwork and falsework along with their components. Inspect the entire structure during and upon completion of assembly.

2.2 About this User Guide

This User Guide contains important information regarding the assembly and use of Hünnebeck TOPEC formwork as well as safety procedures that are important for safe erection and use on site. This User Guide is intended to serve as an aid to working effectively with TOPEC slab formwork. Read this User Guide carefully prior to commencing work with the TOPEC slab formwork and save it for future 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 in the event that the equipment is used outside of this area.

2.2.1 Warnings and notes



DANGER

Danger!

Danger indicates a hazardous situation that, if not avoided, will cause death or serious injury.



WARNING

Warning!

Warning indicates a hazardous situation that, if not avoided, can cause death or serious injury.



CAUTION

Caution!

Caution indicates a hazardous situation that, if not avoided, can cause minor or moderate injury.

NOTE

Note!

Note indicates a hazard that can cause property damage.



This note indicates that an additional inspection is required.



This note shares practical experience with the user, e.g. how to perform a task more easily or quickly.



This note indicates particularly important information, e.g. that a requirement has to be fulfilled.



This symbol indicates that additional information from other documents is required. These documents could be User Guides or operating instructions for other products.

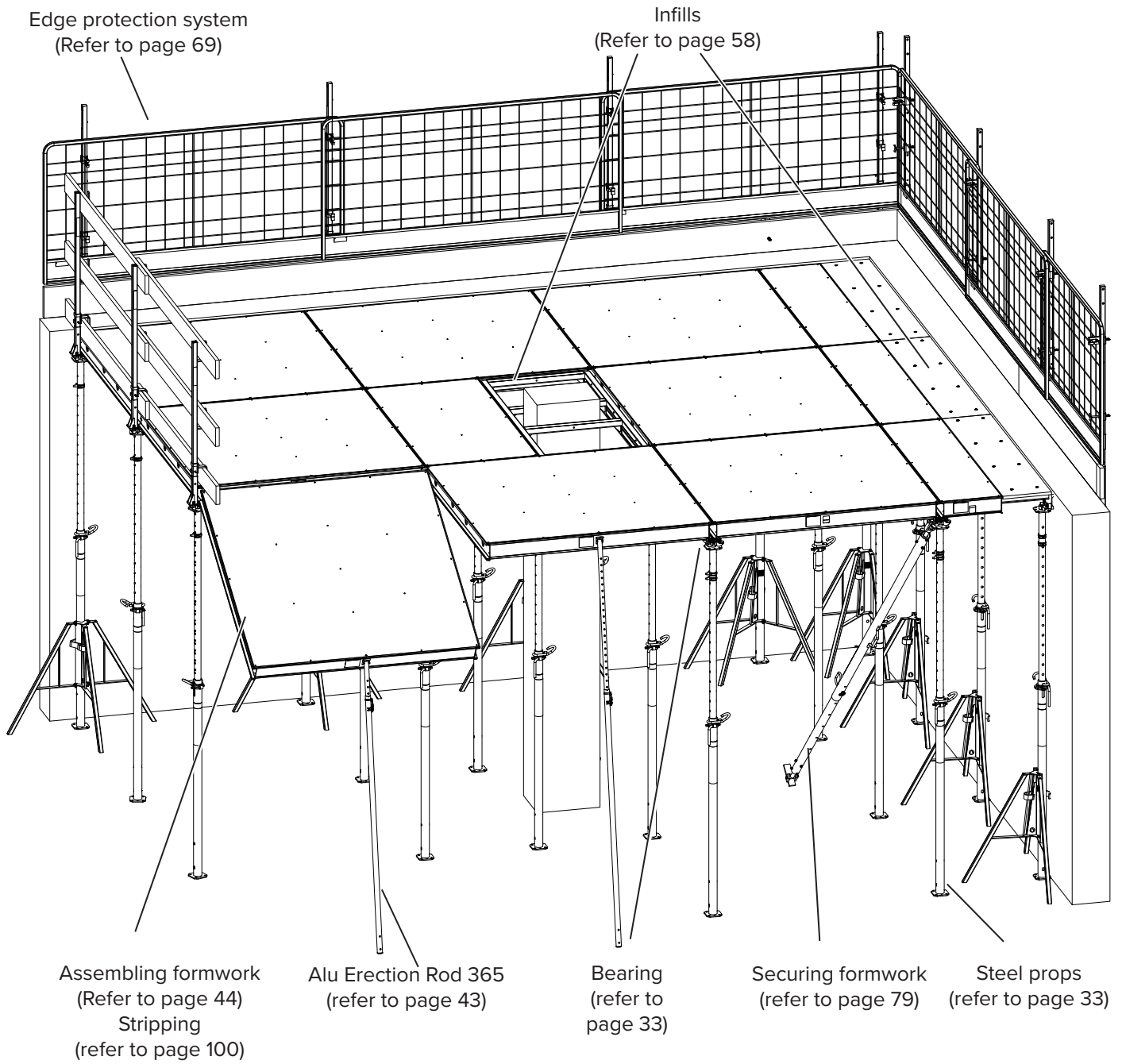
2.2.2 Instructions

Instructions are always identified with the word **Step** e.g.

Step 1 Insert the locking bolt into the hole from the outside.

Step 2 Secure the pin with the spring cotter pin.

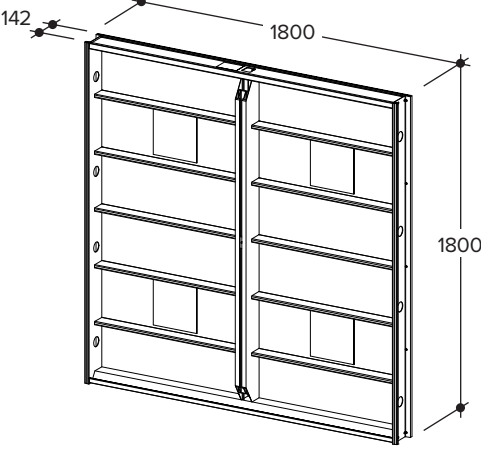
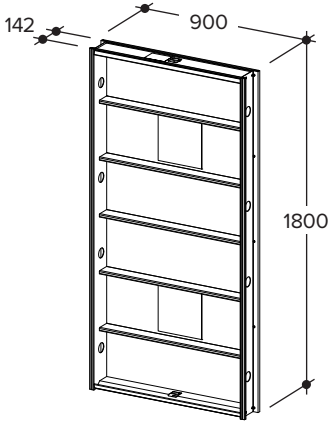
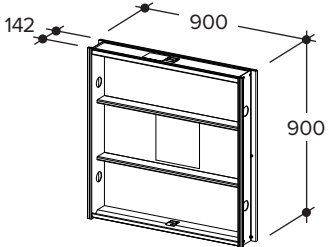
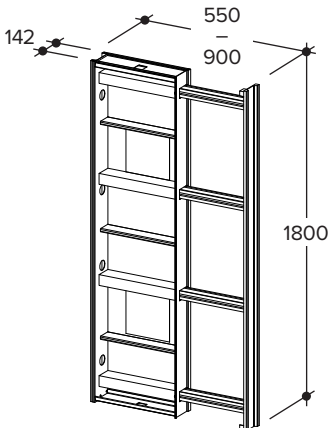
3 Overview

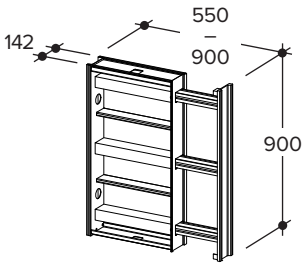
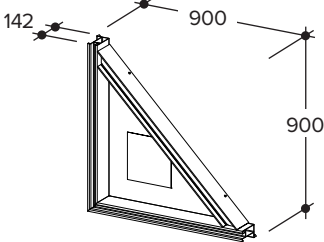


4 Quick reference guide

4.1 Panels with plastic form sheet

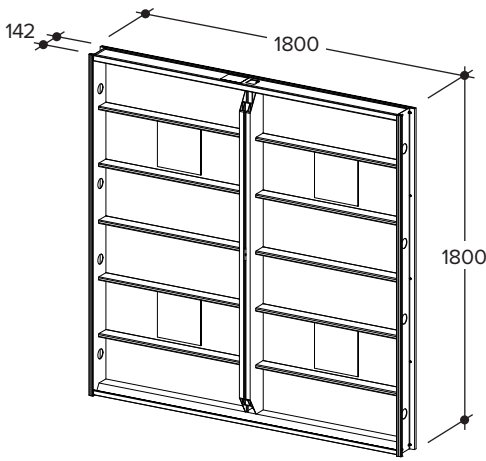
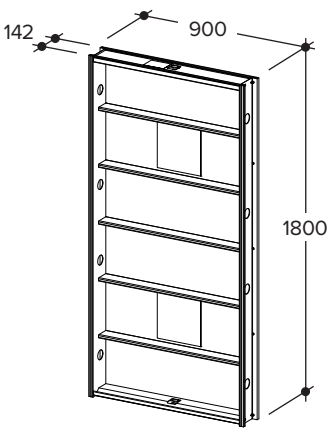
The panels shown here are all equipped with an EcoPLY 11 mm plastic form sheet.

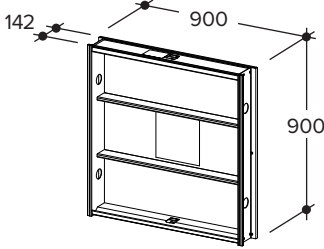
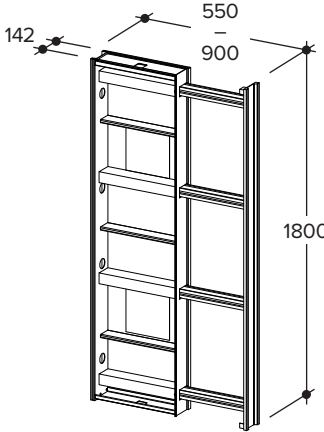
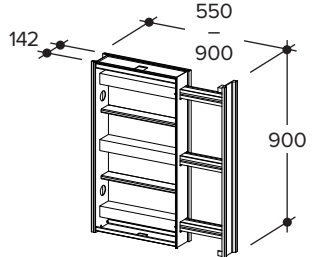
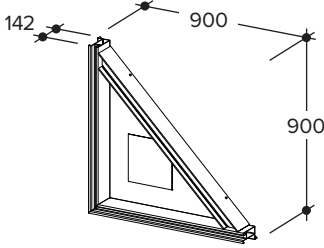
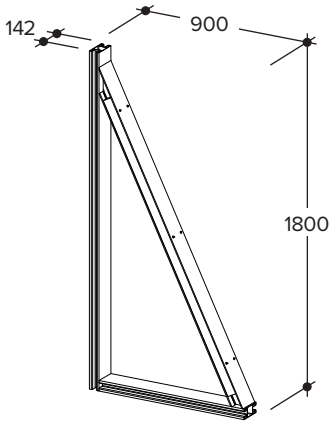
	Component	Part code	Weight [kg]
	TOPEC Giant Panel E 180/180 3,24 m ² forming area per panel reduces the number of parts (panels and props) and significantly accelerates falsework assembly. Refer to page 24.	602667	47.20
	TOPEC Panel E 180/90 TOPEC Panel E 180/75 TOPEC Panel E 180/60 TOPEC Panel E 180/45 Refer to page 24.	602668 602669 602670 602671	22.22 19.50 16.95 14.25
	TOPEC Panel E 90/90 TOPEC Panel E 90/75 TOPEC Panel E 90/60 TOPEC Panel E 90/45 Refer to page 24.	602672 602673 602674 602675	12.32 10.75 9.25 7.69
	TOPEC Adjustment Panel E 90/180 These panels can be extended to suit various slab depths between 550 and 900 mm. The strip of form lining (1.8 m long and 21 mm thick) can be nailed to the nailing strips that are integrated in the frame. Refer to pages 25 and 58.	602676	25.30

	Component	Part code	Weight [kg]
	TOPEC Adjustment Panel E 90/90 Similar to TOPEC Adjustment Panel 90/180, but 900 × 550/900 mm in size. Refer to pages 25 and 58.	602677	15.73
	TOPEC Corner Panel E 90/90 * Triangular TOPEC Panel for irregular adjustment areas. Only available for rental. No longer produced. Refer to page 68. Not available in the UK.	602678	15.56

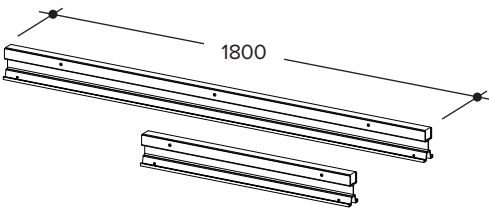
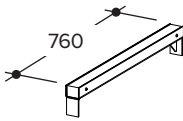
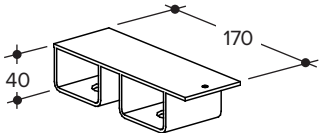
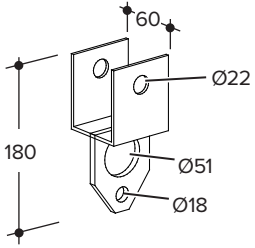
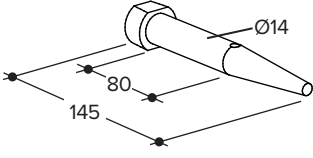

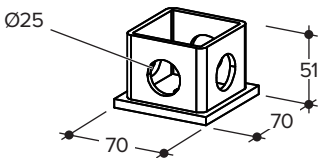
4.2 Panels with Multiplex plywood form sheet

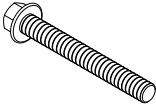

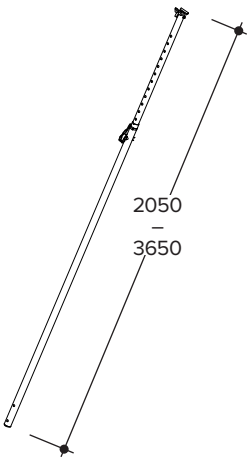
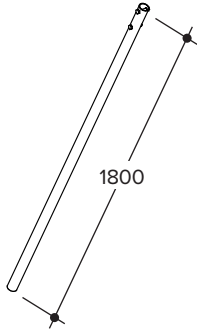
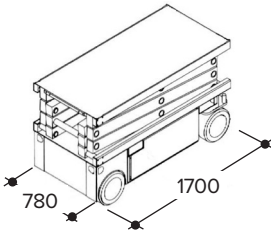
The panels shown here are all equipped with a 10 mm, 7-layer plywood form sheet.

	Component	Part code	Weight [kg]
	TOPEC Giant Panel 180/180 Refer to page 24.	554000	45.58
	TOPEC Panel 180/90 TOPEC Panel 180/75 TOPEC Panel 180/60 TOPEC Panel 180/45 Refer to page 24.	548001 548012 548023 548034	21.42 18.84 16.43 13.88

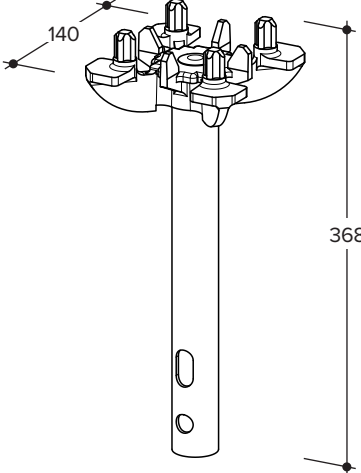
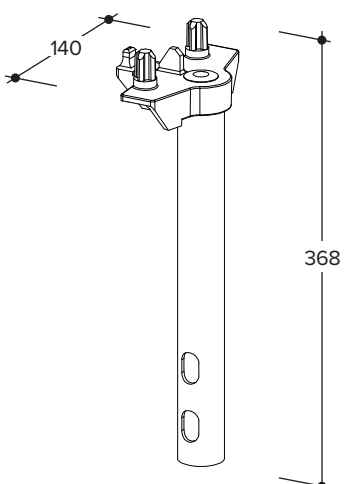
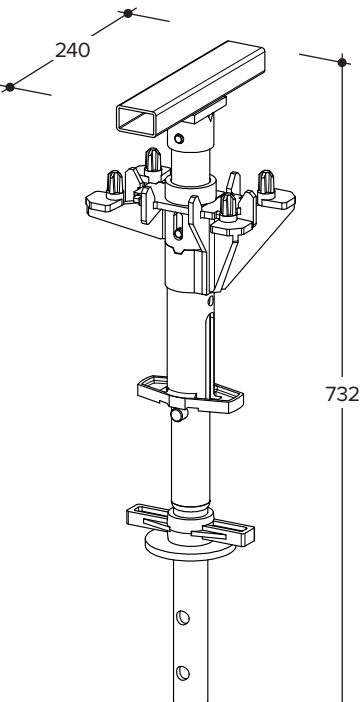
	Component	Part code	Weight [kg]
	TOPEC Panel 90/90	548090	11.93
	TOPEC Panel 90/75	548089	10.43
	TOPEC Panel 90/60	548104	9.00
	TOPEC Panel 90/45	548115	7.50
	Refer to page 24.		
	TOPEC Adjustment Panel 90/180	552310	24.88
	Refer to pages 25 and 58.		
	TOPEC Adjustment Panel 90/90	600241	15.43
	Refer to pages 25 and 58.		
	TOPEC Corner Panel 90/90 *	548160	15.15
	Only available for rental. No longer produced. Refer to page 68. Not available in the UK.		
	TOPEC Corner Frame 180/90 *	548332	17.50
	Triangular TOPEC Corner Frame for irregular adjustment areas; can be used from both sides. Form sheet not included. The corner frame is fitted on site with a 21 mm form sheet. Only available for rental. No longer produced. Refer to page 68. Not available in the UK.		

4.3 Formwork accessories

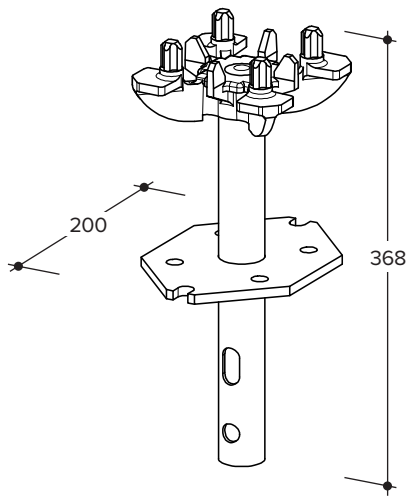
	Component	Part code	Weight [kg]
	TOPEC Adjustment Beam 180 TOPEC Adjustment Beam 90	487890 487880	7.20 3.60
	<p>Aluminium beam 120 mm high, with integrated nailing strip. It is positioned on top of the TOPEC Bearing next to the panel in infill areas and supports the 21 mm plywood.</p> <p>Refer to pages 61 and 65.</p>		
	TOPEC Transverse Beam	492806	4.34
	<p>Positioned perpendicular to the TOPEC Adjustment Beams in infill areas. It is equipped with a nailing strip. Used for infills 900 mm wide.</p> <p>Refer to page 65.</p>		
	TOPEC Head Support Shoe	422558	0.62
	<p>Positioned on the TOPEC Bearing or TOPEC Edge Support N and serves as a support for timber beams in infill areas.</p> <p>Refer to page 63.</p>		
	TOPEC Panel Tension Strap	600521	1.07
	<p>Used with alignment struts, chains, or straps to secure TOPEC Panels against H-loads, uplift, tilting or collapse.</p> <p>Refer to pages 82 and 89.</p>		
	Waler Bolt D20	420000	0.32
	<p>Used to secure the TOPEC Panel Tension Anchor to a panel's edge profile (with round holes).</p> <p>Refer to pages 82 and 89.</p>		
	Spring Cotter Pin 4	173776	0.02
	<p>Secures the Waler Bolt D20.</p> <p>Refer to pages 82 and 89.</p>		
	TOPEC Tension Anchor Slab Bracket	095050	0.50
	<p>Used to secure TOPEC Panels from uplift. Anchored to the ground with Anchor Bolt MULTI-MONTI+ SSK16x130.</p> <p>Refer to page 82.</p>		

	Component	Part code	Weight [kg]
	<p>Anchor Bolt MM+SSK 16 x 130 mm</p> <p>Used to temporarily secure the Panel Anchor Bracket to the existing structure.</p> <p>Only one Anchor Bolt is required per bracket.</p> <p>Refer to page 86</p>	443500	0.21
	<p>MMS+16 Thread Checking Gauge</p> <p>Used to check the reusability of the Anchor Bolt MM+SSK 16 x 130 mm.</p> <p>Refer to page 87.</p>	443501	0.04
	<p>TOPEC Alu Erection Rod 365</p> <p>Facilitates forming and stripping TOPEC Panels for floor heights up to 3.50 m.</p> <p>Telescopic within the range of 2.05–3.65 m in steps of 50 mm.</p> <p>Refer to page 43.</p>	565434	3.02
	<p>TOPEC Rod Extension 180</p> <p>For extending the TOPEC Alu Erection Rod 365. The TOPEC Rod Extension 180 is connected to the TOPEC Alu Erection Rod 365 using the two included bolts.</p> <p>Refer to page 44.</p>	570151	1.39
	<p>TOPEC Lift</p> <p>Electrical scissor lift for forming and stripping TOPEC Panels for floor heights up to 5.80 m.</p> <p>Refer to page 53.</p> <p>Not available in the UK.</p>	569844	1500.00

4.4 Supports and steel props

	Component	Part code	Weight [kg]
	<p>TOPEC Bearing</p> <p>Support for TOPEC panels. Includes TOPEC Bolt.</p> <p>Maximum load capacity: 40.00 kN</p> <p>Not for use in interior corners of walls!</p> <p>Depending on the diameter of the steel prop, a TOPEC Bolt D14 (code:604365) may be required in place of the TOPEC Bolt (refer to the table on page 41).</p> <p>The bolt serves only to prevent falling out.</p>	<p>465410</p>	<p>2.40</p>
	<p>TOPEC Edge Support N</p> <p>Support for TOPEC Panels along walls. Includes TOPEC Bolt.</p> <p>Maximum load capacity: 21.60 kN</p> <p>The TOPEC Edge Support N can be used at the edge of slabs up to 500 mm thick, since the tributary area is smaller.</p> <p>Depending on the diameter of the steel prop, a TOPEC Bolt D14 (code:604365) may be required in place of the TOPEC Bolt (refer to the table on page 41).</p> <p>The bolt serves only to prevent falling out.</p>	<p>487673</p>	<p>1.70</p>
	<p>TOPEC Drop Head</p> <p>Allows earlier stripping of the TOPEC Panels while maintaining slab support.</p> <p>Maximum load capacity: 40.00 kN</p> <p>Depending on the diameter of the steel prop, a TOPEC Bolt (code:470804) or a TOPEC Bolt D14 (code:604365) may be required.</p> <p>The bolt serves only to prevent falling out. Refer to page 106.</p>	<p>602120</p>	<p>9.55</p>

Component	Part code	Weight [kg]
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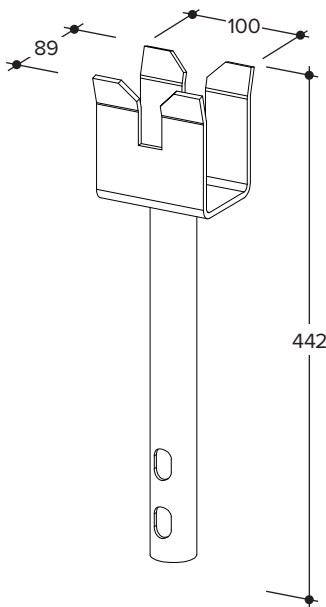


GASS TOPEC Bearing

602042

3.45

Support for TOPEC Panels when using GASS props.
 Maximum load capacity: 40.00 kN
 Fixed to the GASS props using GASS Ring Bolts (code:718901).
 Refer to page 115.

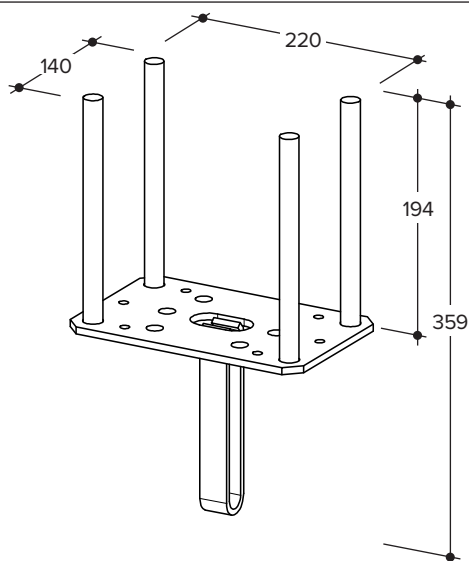


TOPEC Fixing Head

600522

1.89

Can be used to support cantilevered TOPEC Panels and to support the middle of TOPEC Panels 180/180. Prevents the prop from falling over.
 Refer to page 98.
 Maximum load capacity: 32.00 kN
 Depending on the diameter of the steel prop, a TOPEC Bolt (code:470804) or a TOPEC Bolt D14 (code:604365) may be required (refer to the table on page 41).
 The bolt serves only to prevent falling out.

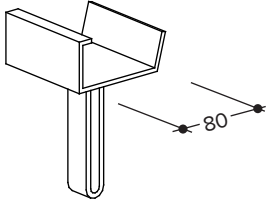
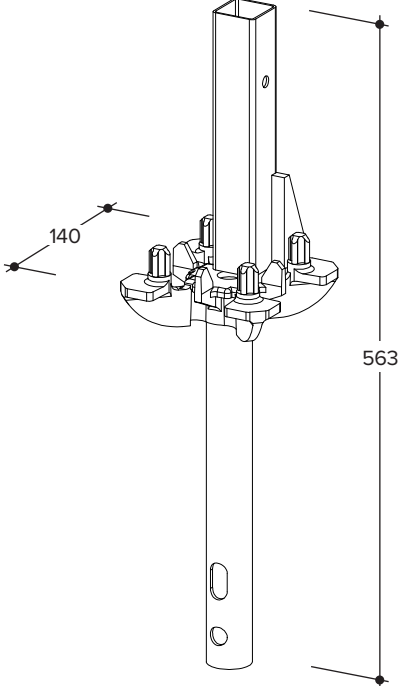
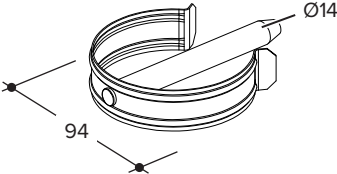
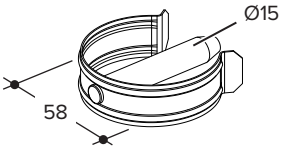


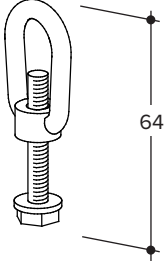
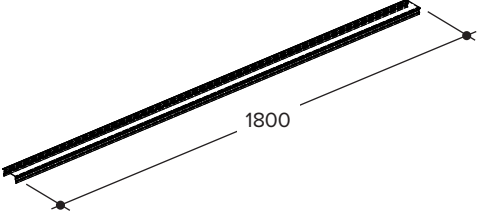

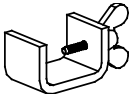

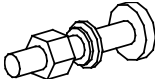
Fork Head 8/20

417565

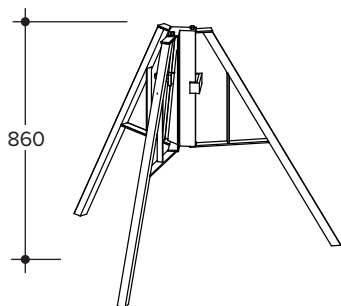
2.96

Secures the H 20 K beams on the support head plate when a centre primary beam is used.
 Maximum load capacity: 24.00 kN
 Depending on the diameter of the steel prop, a TOPEC Bolt (code:470804) or a TOPEC Bolt D14 (code:604365) may be required (refer to the table on page 41).
 The bolt serves only to prevent falling out.
 Refer to page 36.

	Component	Part code	Weight [kg]
	<p>Steel Prop Hanger 8</p> <p>Facilitates attaching additional props to the H 20 K beams. The props are clamped to the H 20 K beam with the aid of the Steel Prop Hanger 8 and are secured from tipping over.</p> <p>Depending on the diameter of the steel prop, a TOPEC Bolt (code:470804) or a TOPEC Bolt D14 (code:604365) may be required (refer to the table on page 41).</p> <p>The bolt serves only to prevent falling out.</p>	<p>510749</p>	<p>1.20</p>
	<p>TOPEC P-Bearing for Railing</p> <p>For attaching a PROTECTO Railing Post to the longitudinal and lateral sides of the panels.</p> <p>Includes TOPEC Bolt.</p> <p>The TOPEC P-Bearing for Railing is inserted into the steel prop. The PROTECTO Railing Post and the mesh panels must be purchased separately.</p> <p>Refer to page 78.</p> <p>Maximum load capacity: 15.90 kN</p> <p>Depending on the diameter of the steel prop, a TOPEC Bolt (code:470804) or a TOPEC Bolt D14 (code:604365) may be required (refer to the table on page 41).</p> <p>The bolt serves only to prevent falling out.</p>	<p>606250</p>	<p>2.93</p>
	<p>TOPEC Bolt D14</p> <p>For Steel prop diameter of 76,1 - 88,9 mm.</p> <p>For securing the TOPEC Bearings, Fixing Heads, Fork Heads, etc. inserted into steel props (refer to page 26).</p> <p>Used only to prevent falling out. Cannot transfer load from the framework when used with EUROPLUSnew props.</p> <p>Refer to page 38.</p>	<p>604365</p>	<p>0.18</p>
	<p>TOPEC Bolt</p> <p>For Steel prop diameter of 51 - 63,5 mm.</p> <p>For securing the TOPEC Bearings, Fixing Heads, Fork Heads, etc. inserted into steel props (refer to page 69).</p> <p>Serves only to prevent falling out. Cannot transfer load from the framework when used with EUROPLUSnew props.</p> <p>Refer to page 38.</p>	<p>470804</p>	<p>0.15</p>

	Component	Part code	Weight [kg]
	GASS Ring Bolt (Head-to-Head Plate) ¹⁾ For attaching the GASS TOPEC Bearing to GASS props. Refer to page 115.	718901	0.23
	TOPEC Plastic Infill 180 This plastic infill is used in conjunction with the TOPEC Drop Head to close the 60 mm gap between TOPEC Panels.	602350	0.70
	EUROPLUSnew 20-250 (1.47 m–2.50 m) 601390 13.15 EUROPLUSnew 20-300 (1.72 m–3.00 m) 601400 16.82 EUROPLUSnew 20-350 (1.98 m–3.50 m) 601410 20.52 EUROPLUSnew 20-400 (2.24 m–4.00 m) 601415 23.79 EUROPLUSnew 20-550 (3.03 m–5.50 m) 601425 36.07 EUROPLUSnew 30-150 (1.04 m–1.50 m) 601460 10.68 EUROPLUSnew 30-250 (1.47 m–2.50 m) 601430 16.19 EUROPLUSnew 30-300 (1.72 m–3.00 m) 601440 19.17 EUROPLUSnew 30-350 (1.98 m–3.50 m) 601445 24.24 EUROPLUSnew 30-400 (2.24 m–4.00 m) 601450 28.75		
	All EUROPLUSnew steel props feature a quick-lowering mechanism, anti-crush guard and protection against sliding out of the inner tube. The props are hot-dip galvanised for long-term protection from corrosion. For the safe working loads, refer to the tables beginning on page 112.		
	TOPEC Prop Retainer Prevents steel props from tipping over. Fastened to the TOPEC Panel. Refer to page 50.	452693	0.13
	TOPEC Retaining Clip Prevents the TOPEC Bearing from dropping out of the steel prop when the support is fully inserted (does not apply to EUROPLUSnew). Refer to page 116.	477151	0.03
	TOPEC Securing Bolt Can be inserted into the TOPEC Bearing to prevent wind uplift. Refer to page 87.	479415	0.08

	Component	Part code	Weight [kg]
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Uni Tripod

587377

11.83

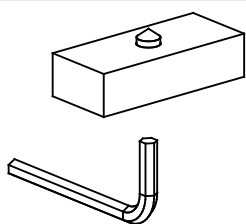
Makes it easier to erect the EUROPLUSnew props.

Ø_{min.}: 57 mm.

Ø_{max.}: 90 mm



The Uni Tripod may be used only as an assembly aid! Other appropriate methods must be used to transfer horizontal loads from the formwork, wind, concreting, etc. into the existing structure!



TOPEC Arresting Set

580272

0.65

Can be added if the built-in arresting piece is no longer in place.

Placed at the centre of TOPEC Panels 180/180 to prevent the middle support from tipping over.

The set includes 10no. arresting pieces and 1no. allen key 4 mm.

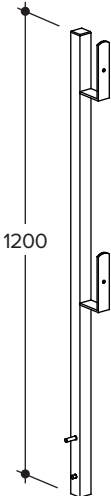
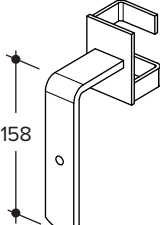
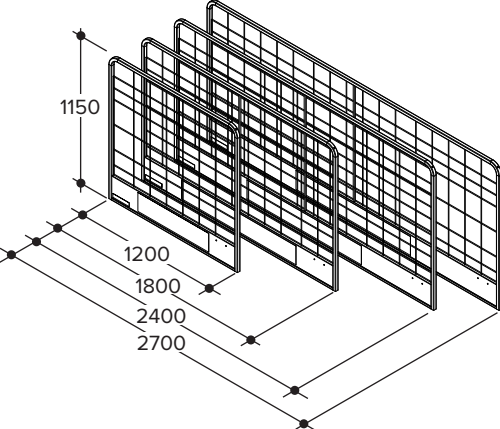
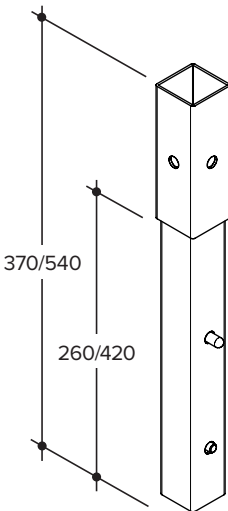
Refer to page 119.

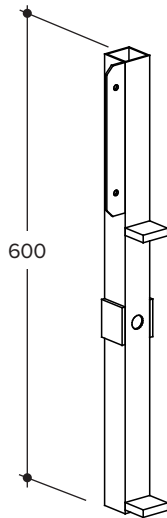
4.5 Edge protection accessories



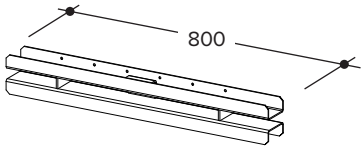
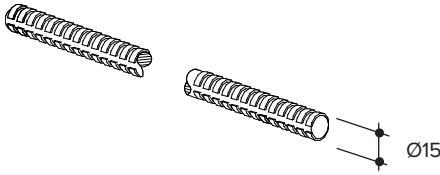
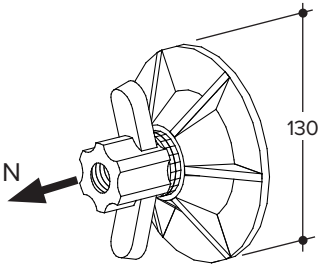
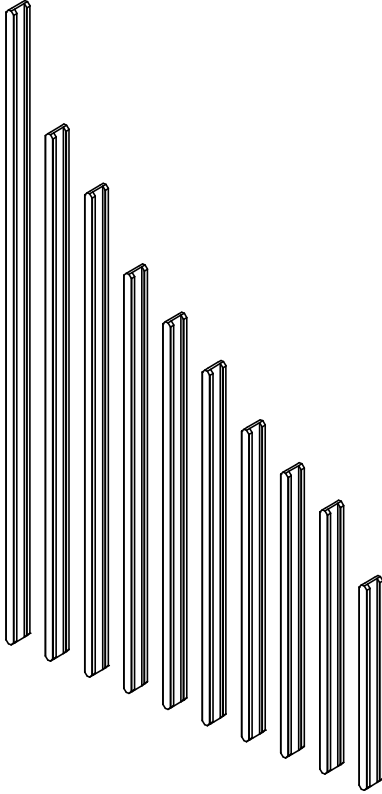
Please read and follow the instructions in the separate PROTECTO system User Guide.

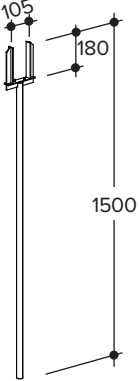
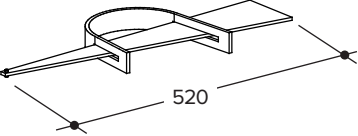


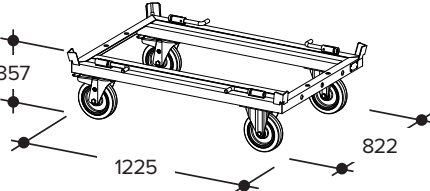
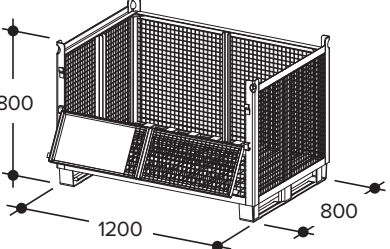
	Component	Part code	Weight [kg]
	<p>PROTECTO Multiple Clamp</p> <p>This bracket is used in a wide range of applications to clamp the PROTECTO Railing Post into place.</p> <p>Refer to page 69.</p>	601226	6.49
	<p>TOPEC P-Railing Shoe</p> <p>Allows connection of a railing post for edge protection before the TOPEC Panel is swivelled up. The PROTECTO Railing Post and the mesh panels must be purchased separately.</p> <p>Can transfer loads from the stopend with slabs up to 30 cm thick.</p> <p>Refer to page 76.</p>	606255	3.65
	<p>PROTECTO Post 130 Adjustable</p> <p>The PROTECTO Post 130 Adjustable is used in combination with the PROTECTO Panel G2.</p> <p>An integrated safety device secures the post automatically to the various retaining elements.</p> <p>The PROTECTO Post 130 Adjustable complies with BS EN 13374 Class A when used with the PROTECTO Panels G2.</p> <p>Refer to page 72.</p>	692750	4.50

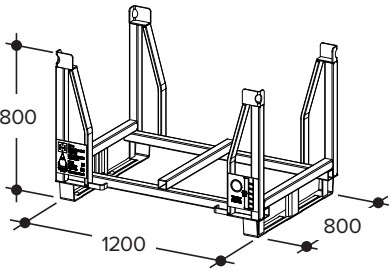
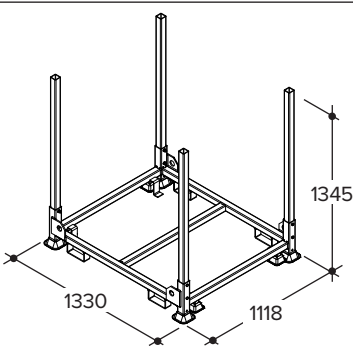
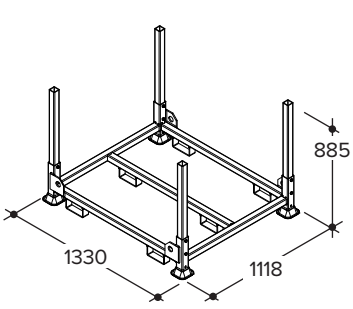
	Component	Part code	Weight [kg]
	<p>PROTECTO Railing Post</p> <p>The PROTECTO Railing Post is used to hold the PROTECTO mesh panels or handrail boards.</p> <p>An integrated safety device secures the post automatically to the various retaining elements.</p> <p>The PROTECTO Railing Post (code:601225) complies with BS EN 13374 when used with PROTECTO Panels or with plank railings. Refer to page 73.</p>	601225	3.65
	<p>PROTECTO Toe Board Retainer</p> <p>This additional piece for the PROTECTO Railing Post holds the toe board in place when board railings are used. The PROTECTO Toe Board Retainer can be easily attached even when the PROTECTO Railing Post is already in place.</p>	601227	0.69
	<p>PROTECTO Panel G2 270</p> <p>PROTECTO Panel G2 240</p> <p>PROTECTO Panel G2 180</p> <p>PROTECTO Panel G2 130</p> <p>Used in combination with the PROTECTO Post 130 Adjustable to provide edge protection.</p> <p>Maximum allowable post spacing is 2.40 m.</p> <p>When used with the PROTECTO Post 130 Adjustable, the PROTECTO Panel G2 complies with BS EN 13374 Class A.</p>	692778	21.00
	<p>PROTECTO Post Extension 26</p> <p>PROTECTO Post Extension 42</p> <p>These components enable the PROTECTO Railing Post to be extended by 260 mm or 420 mm.</p> <p>When post extensions are used with mesh panels, spacing may not exceed 2.40 m.</p> <p>When the Post Extension 26 is used with board railings, spacing may not exceed 1.70 m.</p> <p>When the Post Extension 42 is used with board railings, spacing may not exceed 1.30 m.</p> <p>Refer to page 69.</p>	602111	0.93
602580	1.19		

	Component	Part code	Weight [kg]
	<p>PROTECTO Front Attachment</p> <p>In conjunction with this retainer, the PROTECTO Railing Post can be used on the walls of a structure. It is secured to a building with a bolt or a tie rod. The PROTECTO Front Attachment also serves as a holder for a stopend. The integrated nail plate enables stopends to be attached.</p>	<p>601285</p>	<p>2.01</p>

4.6 Other accessories

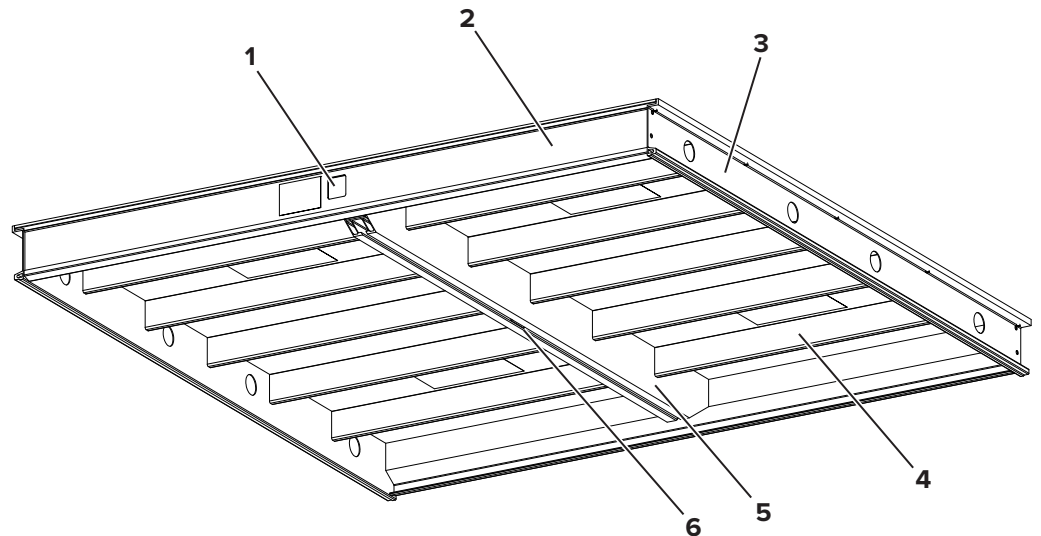
	Component	Part code	Weight [kg]
	Waler 80 Used to attach the TOPEC Panels to the structure. Refer to page 95.	586980	6.30
	Tie Rod 1.75 m¹⁾ (DW 15) Tie Rod 1.30 m¹⁾ (DW 15) Tie Rod 1.00 m¹⁾ (DW 15) Tie Rod 0.75 m¹⁾ (DW 15)	20470 20481 24387 437660	2.52 1.87 1.44 1.08
	MANTO Tie Nut (DW 15) Used to attach the TOPEC Panels to the structure. Use with a tie rod and Waler 80 or with timber beams. Refer to page 95. Safe Working Load (N): 90 kN.	464600	1.26
	H 20 K Beam 190 H 20 K Beam 245 H 20 K Beam 265 H 20 K Beam 290 H 20 K Beam 330 H 20 K Beam 360 H 20 K Beam 390 H 20 K Beam 450 H 20 K Beam 490 H 20 K Beam 590 H 20 K Beam per run meter Available in lengths up to 12.0 m upon request. Price calculated to the next full meter. 200 mm high by 80 mm wide. The following structural values are permitted: $M_{perm} = 5.00 \text{ kNm}$ $V_{perm} = 11.00 \text{ kN}$ The stiffness is: $E \times I = 500 \text{ kNm}^2$ Meets the requirements of EN 13377:2002-11	603190 603191 603192 603193 603194 603195 603196 603197 603198 603199 603200	8.74 11.27 12.19 13.34 15.18 16.56 17.94 20.70 22.54 27.14 4.60

	Component	Part code	Weight [kg]
	<p>Assembly Fork</p> <p>Makes moving and removing H 20 K beams easier.</p> <p>Not available in the UK.</p>	510554	3.51
	<p>Euro Bracing Clamp</p> <p>Used in conjunction with wooden boards to help set up steel props.</p> <p>Cannot be used to transfer horizontal loads!</p> <p>Refer to page 51.</p> <p>Not available in the UK.</p>	573810	1.83
	<p>TOPEC Stacking Angle</p> <p>The TOPEC Stacking Angle is used to stack and transport TOPEC Panels.</p> <p>Refer to page 121.</p>	575100	8.70
<div style="display: flex; align-items: center;">  <p>Always comply with the separate operating instructions for the TOPEC Stacking Angle!</p> </div>			
	<p>Euro Trolley</p> <p>Used to manually manoeuvre approved Hünnebeck transport equipment.</p> <p>The Euro Trolley has two lockable swivel castors.</p> <p>Safe Working Load: 1300 kg</p>	607610	39.57
	<p>Euro Lattice Box</p> <p>Used to store and transport small items.</p> <p>Can be moved using the Euro Trolley.</p> <p>Safe Working Load: 1200 kg.</p>	548480	68.76

	Component	Part code	Weight [kg]
	<p>Euro Stacking Frame 120/80</p> <p>Used to store and transport e.g. EUROPLUS^{new} props, DU-AL beams, H 20 K beams.</p> <p>Can be moved using the Euro Trolley.</p> <p>Safe Working Load: 1200 kg.</p>	<p>553689</p>	<p>54.47</p>
	<p>PROTECTO Panel Stillage</p> <p>Used to store and transport PROTECTO Panels G2.</p> <p>Safe Working Load: 1,200 kg.</p>	<p>692740</p>	<p>56.00</p>
	<p>EPS Post Stillage</p> <p>Used to store and transport PROTECTO Post 130 Adjustable and EPS Posts.</p> <p>Safe Working Load: 1,200 kg.</p>	<p>692639</p>	<p>41.00</p>

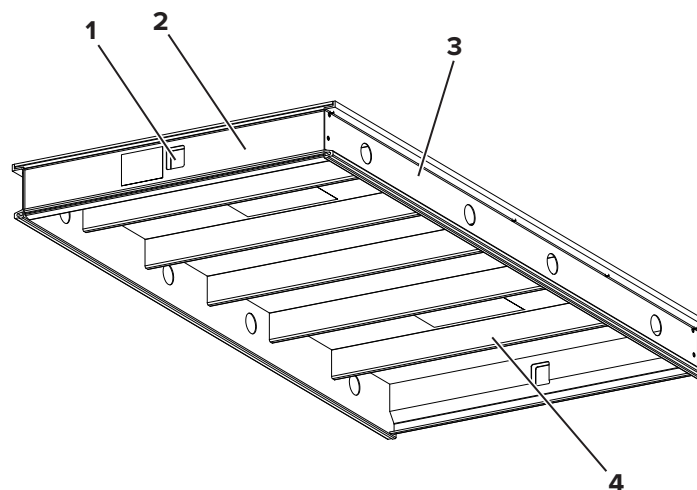
5 TOPEC Panels

5.1 TOPEC Giant Panel 180/180



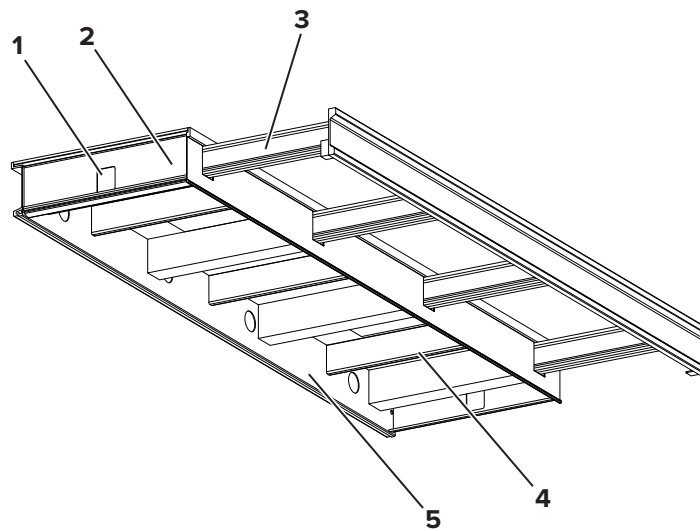
- 1 Square hole for the TOPEC Alu Erection Rod 365
- 2 Front profile (with square hole)
- 3 Edge profile (with round holes)
- 4 Ribs
- 5 Centre profile
- 6 Arresting piece, riveted, for securing a middle prop with TOPEC Bearings to prevent tipping over

5.2 TOPEC Panel 180/90 and smaller



- 1 Square hole for the TOPEC Alu Erection Rod 365
- 2 Front profile (with square hole)
- 3 Edge profile (with round holes)
- 4 Ribs

5.3 TOPEC Adjustment Panel 90/180 and smaller

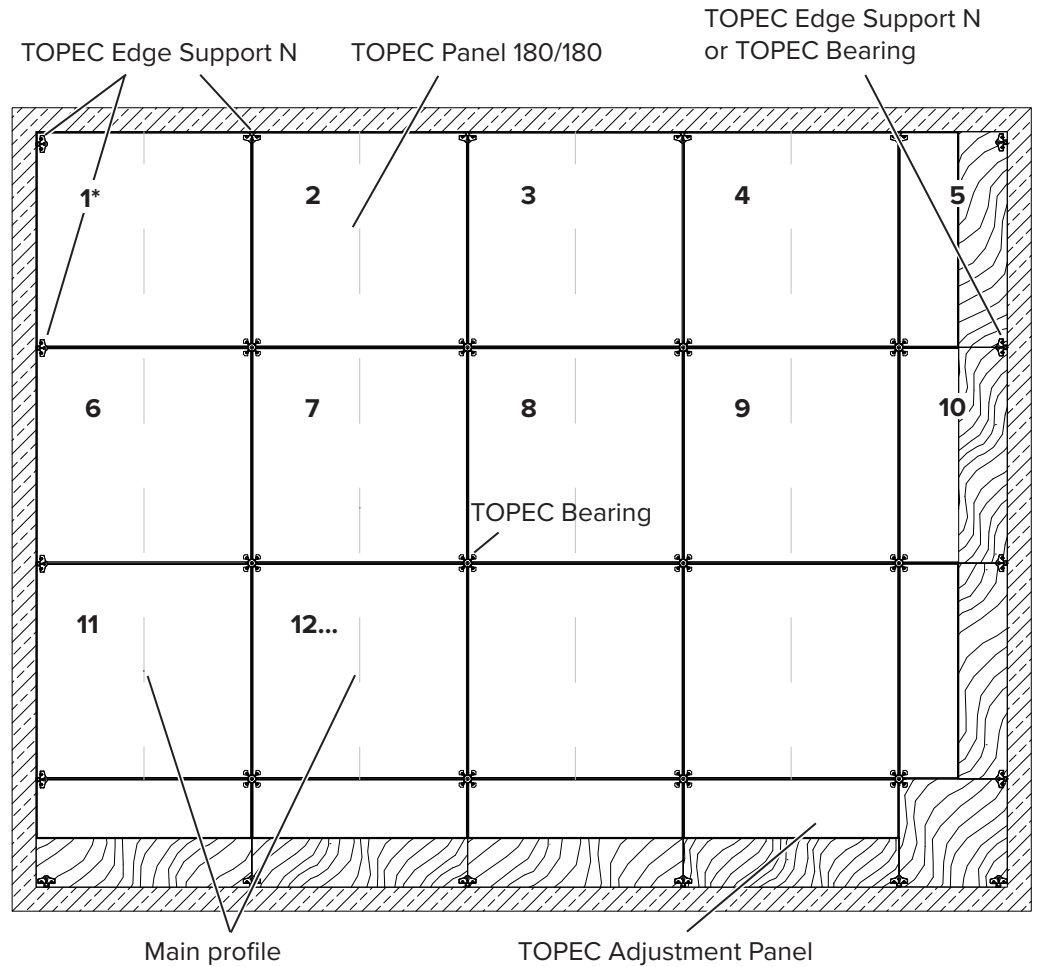


- 1 Square hole for the TOPEC Alu Erection Rod 365
- 2 Front profile (with square hole)
- 3 Telescoping piece with nailing strip; extendible
- 4 Ribs
- 5 Edge profile (with round holes)

6 Application planning

6.1 TOPEC Panel arrangements

As long as the footprint allows it, the most economical layout can be achieved by utilizing TOPEC Giant Panels 180/180. Infills between 550 and 900 mm (1080 mm, refer to page 58) can be created e.g. with the TOPEC Adjustment Panel 90/180. Smaller infills can be created using the TOPEC Adjustment Beam or the TOPEC Head Support Shoe along with timber beams and plywood. Timber and plywood are generally supplied on site.



*The numbers indicate the assembly sequence of the TOPEC Panels.



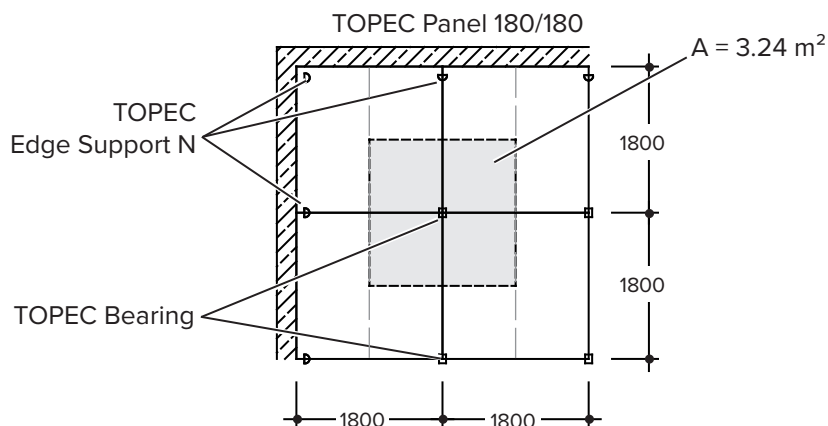
Install all the TOPEC Panels facing the same direction whenever possible. This allows efficient and quick progress during formwork erection.

6.2 Permitted slab thickness and deflection

6.2.1 TOPEC Giant Panel 180/180

When TOPEC Panels 180/180 are used on EUROPLUSnew props without supporting the middle of the panel, the slab may not be thicker than 40 cm (refer to the load tables on page 28). If a middle support or centre primary beam is used, the slab can be up to 50 cm thick (refer to the load tables on page 30).

The maximum area of influence for a steel prop is $A = 3.24 \text{ m}^2$. Always check deflection limits of TOPEC panels!



Giant Panel 180/180 – permitted deflection according to DIN 18202, Table 3

	Panel 180/180, slab thickness [cm]														
	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0
	Deflection by group														
Giant Panel 180/180 without middle support	Group 7			Group 6			Group 5			Not permitted!					
Giant Panel 180/180 with middle support	Group 7									Group 6					
Giant Panel 180/180 with centre primary beam H 20 and middle support	Group 7														



All the information contained in this section applies to a system that is restrained at the soffit level and is thus properly stabilized.



The states loads include the live load and the accumulated concrete pursuant to DIN EN 12812.



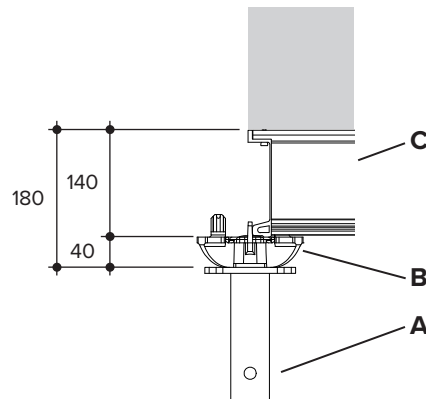
The load tables in this section apply to system-bound use of EUROPLUS^{new} props with a properly inserted TOPEC Bearing!

The requirements for system-bound use are described in EN 12812, section 9.

These requirements are e.g.:

- The User Guide has to be readily available on site.
- The documents containing information on structural stability (in this case, type test with data sheet) must be readily available wherever the equipment is used.
- Overview drawings that clearly specify the design and the cross-sections and that show essential details have to be part of the documentation.
- Information on the design loads and the building site also have to be included in the documentation.
- Assembly diagrams indicating the positions of the panels and the EUROPLUS^{new} props as well as the type of prop have to be created.
- A structural calculation for the specific case has to be prepared, including the structural stability of the EUROPLUS^{new} props.
- The specified EUROPLUS^{new} props may not be used together with other types of props.

The following table indicates the maximum permitted clearance. The clearance is the sum of the adjusted length of the EUROPLUS^{new} prop (A), the bearing (B) and the TOPEC Panel (C).



Giant Panel 180/180 without centre primary beam – permitted slab thickness and clearance, inner tube on top

EUROPLUS ^{new} prop used – Inner tube top	Panel 180/180, slab thickness d [cm] without middle support										
	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0
	Load N per EUROPLUS ^{new} prop [kN]										
	17.0	19.0	21.1	23.1	25.1	27.1	29.2	31.4	33.6	35.8	38.1
Maximum clearance permitted [m] – Inner tube top (Extended length EUROPLUS ^{new} prop plus height of support and TOPEC Panel)											
20-250	2.68	2.68	2.68	2.56	2.27	2.07	-	-	-	-	-
20-300	3.18	3.18	3.18	3.10	2.98	2.86	2.69	2.48	2.25	2.16	2.11
20-350	3.68	3.68	3.68	3.68	3.68	3.56	-	-	-	-	-
20-400	4.18	4.18	4.18	4.13	4.00	3.88	3.74	-	-	-	-
20-550	5.68	5.68	5.68	5.51	5.34	5.16	5.01	4.87	4.74	4.61	4.45
30-250	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.55	-	-
30-300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.17	3.00	-
30-350	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.63	3.54	3.45
30-400	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.15

Prop load N [kN] according to EN 12812, taking into consideration system-oriented use with TOPEC

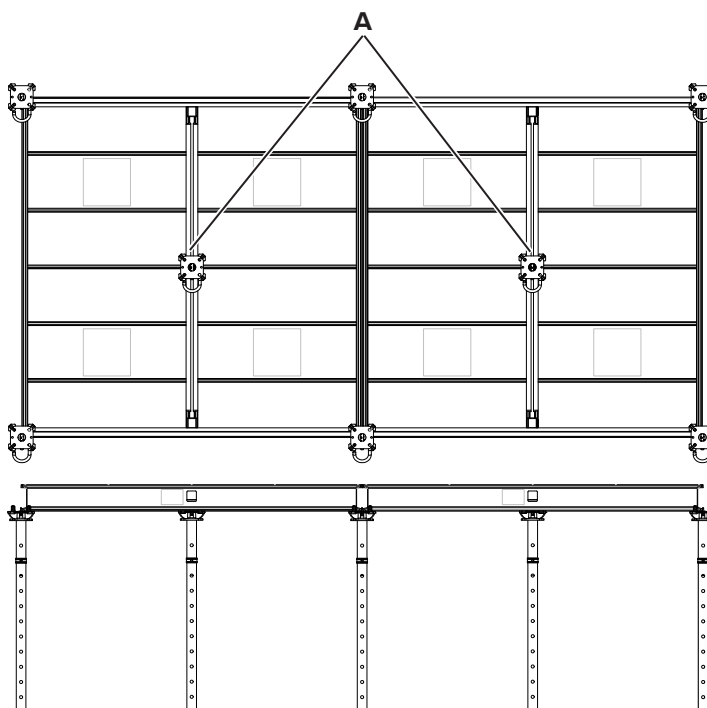
Giant Panel 180/180 without centre primary beam – permitted slab thickness and clearance, inner tube at the bottom

EUROPLUS ^{new} prop used – Inner tube at bottom	Panel 180/180, slab thickness d [cm] without middle support										
	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0
	Load N per EUROPLUS ^{new} prop [kN]										
	17.0	19.0	21.1	23.1	25.1	27.1	29.2	31.4	33.6	35.8	38.1
Maximum clearance permitted [m] – Inner tube at bottom (Extended length EUROPLUS ^{new} prop plus height of support and TOPEC Panel)											
20-250	2.68	2.68	2.68	2.68	2.68	2.61	-	-	-	-	-
20-300	3.18	3.18	3.18	3.18	3.18	3.10	3.02	2.92	2.84	2.77	2.70
20-350	3.68	3.68	3.68	3.68	3.68	3.68	-	-	-	-	-
20-400	4.18	4.18	4.18	4.18	4.18	4.09	3.98	-	-	-	-
20-550	5.68	5.68	5.68	5.68	5.65	5.50	5.34	5.18	5.04	4.95	4.84
30-250	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	-	-
30-300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	-
30-350	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.67	3.59
30-400	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18

Prop load N [kN] according to EN 12812, taking into consideration system-oriented use with TOPEC

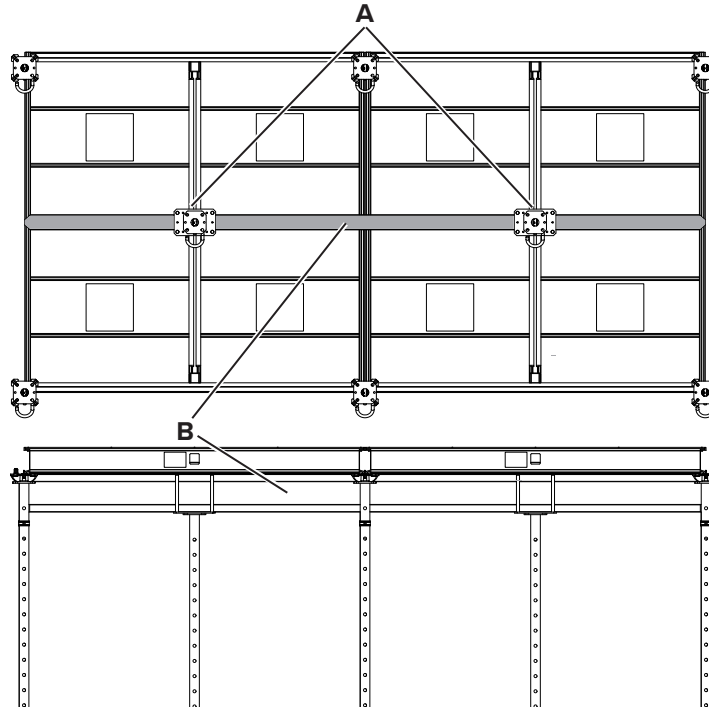
Giant Panel 180/180 with middle support (A)

Refer to the load tables on page 30 for the permitted slab thickness and clearance; refer to the table on page 27 for the permitted deflection.



Giant Panel 180/180 with middle support (A) and centre primary beam H 20 (B)

Refer to the load tables on page 30 for the permitted slab thickness and clearance; refer to the table on page 27 for the permitted deflection.



When using the centre primary beam, ensure that the centre profiles and edge profiles (with round holes) of the Giant Panels 180/180 are properly supported!



The centre primary beam is needed only to meet the flatness requirements according to group 7, DIN 18202.

Giant Panel 180/180 with middle support or centre primary beam – permitted slab thickness and clearance, inner tube on top

EUROPLUS ^{new} prop used, inner tube top	Panel 180/180, slab thickness d [cm] with middle support / centre primary beam H 20			
	42.5	45.0	47.5	50.0
	Load N per EUROPLUS ^{new} prop [kN]			
	20.1	21.3	22.4	23.5
Maximum clearance permitted [m] – Inner tube top (Extended length EUROPLUS ^{new} prop plus height of support and TOPEC Panel)				
20-250	2.68	2.68	2.65	2.51
20-300	3.18	3.18	3.14	3.07
20-350	3.68	3.68	3.68	3.68
20-400	4.18	4.18	4.17	4.10
20-550	5.68	5.66	5.57	5.47
30-250	2.68	2.68	2.68	2.68
30-300	3.18	3.18	3.18	3.18
30-350	3.68	3.68	3.68	3.68
30-400	4.18	4.18	4.18	4.18
Prop load N [kN] according to EN 12812, taking into consideration system-oriented use with TOPEC				

Giant Panel 180 with middle support or centre primary beam – permitted slab thickness and clearance, inner tube at the bottom

EUROPLUS ^{new} prop used, inner tube at bottom	Panel 180/180, slab thickness d [cm] with middle support / centre primary beam H 20			
	42.5	45.0	47.5	50.0
	Load N per EUROPLUS ^{new} prop [kN]			
	20.1	21.3	22.4	23.5
	Maximum clearance permitted [m] – Inner tube at bottom (Extended length EUROPLUS ^{new} prop plus height of support and TOPEC Panel)			
20-250	2.68	2.68	2.68	2.68
20-300	3.18	3.18	3.18	3.18
20-350	3.68	3.68	3.68	3.68
20-400	4.18	4.18	4.18	4.18
20-550	5.68	5.68	5.68	5.68
30-250	2.68	2.68	2.68	2.68
30-300	3.18	3.18	3.18	3.18
30-350	3.68	3.68	3.68	3.68
30-400	4.18	4.18	4.18	4.18
Prop load N [kN] according to EN 12812, taking into consideration system-oriented use with TOPEC				

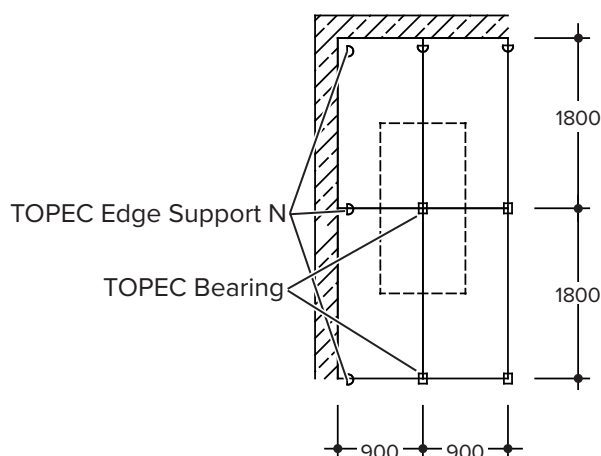


The tables show the maximum loads that can be imposed on the props subjected to the most strain.

6.2.2 TOPEC Panel 180/90

When TOPEC Panels 180/90 are used on steel props, the slab may not be thicker than 500 mm. The same applies to smaller TOPEC Panels.

The maximum area of influence for a steel prop is $A = 1.62 \text{ m}^2$. Always check permitted deflection of TOPEC Panels!



Panel 180/90 – permitted deflection according to DIN 18202, Table 3

	Panel 180/90, slab thickness [cm]														
	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0
	Deflection by group														
TOPEC Panel 180/90	Group 7					Group 6					Group 5				

Panel 180/90 – permitted slab thickness and clearance, inner tube on top

EUROPLUS ^{new} prop used, Inner tube top	Panel 180/90, slab thickness d [cm]														
	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45	47.5	50
	Load N per EUROPLUS ^{new} prop [kN]														
	8.5	9.5	10.5	11.5	12.6	13.6	14.6	15.7	16.8	17.9	19.0	20.1	21.3	22.4	23.5
Maximum clearance permitted [m] – Inner tube top (Extended length EUROPLUS ^{new} prop plus height of support and TOPEC Panel)															
20-250	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.66	2.51
20-300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.14	3.07
20-350	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
20-400	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.17	4.10
20-550	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.67	5.57	5.47
30-250	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68
30-300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
30-350	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
30-400	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18
Prop load N [kN] according to EN 12812, taking into consideration system-oriented use with TOPEC															

Panel 180/90 – permitted slab thickness and clearance, inner tube at the bottom

EUROPLUS ^{new} prop used, inner tube at bottom	Panel 180/90, slab thickness d [cm]														
	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45	47.5	50
	Load N per EUROPLUS ^{new} prop [kN]														
	8.5	9.5	10.5	11.5	12.6	13.6	14.6	15.7	16.8	17.9	19.0	20.1	21.3	22.4	23.5
Maximum clearance permitted [m] – Inner tube at bottom (Extended length EUROPLUS ^{new} prop plus height of support and TOPEC Panel)															
20-250	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68
20-300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
20-350	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
20-400	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18
20-550	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
30-250	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68
30-300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
30-350	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
30-400	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18
Prop load N [kN] according to EN 12812, taking into consideration system-oriented use with TOPEC															



The tables show the maximum loads that can be imposed on the props subjected to the most strain.

7 Assembling formwork

7.1 Preparing steel props

7.1.1 Selecting support

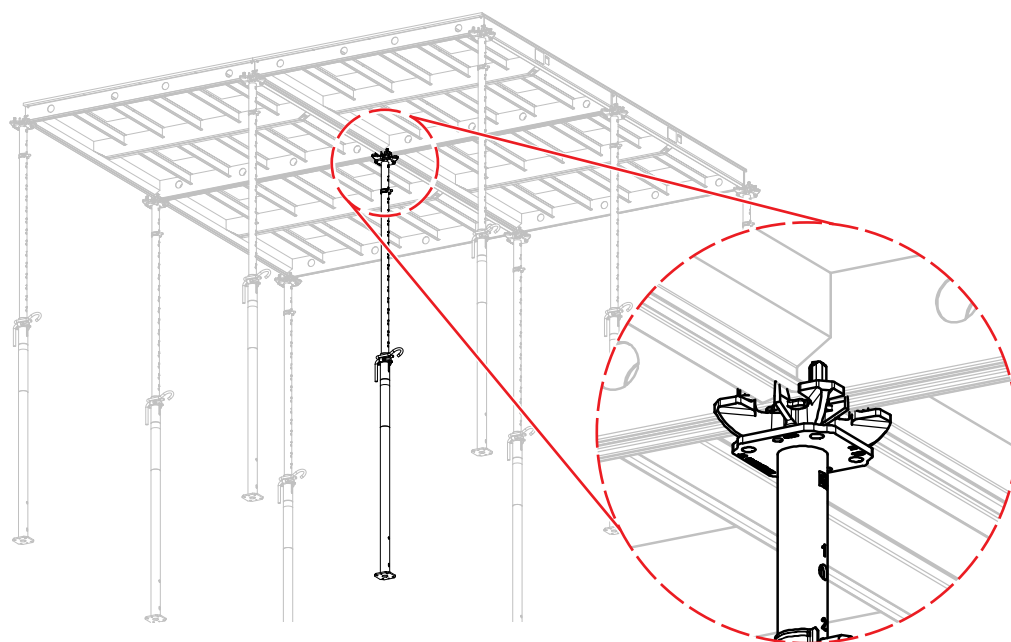
Choose the support best suited for the intended function of the steel prop. This can be one or more of the options shown here. Use the following table as an aid to selecting the correct type of support. For information regarding the use of the TOPEC Drop Head, refer to page 106.

For instructions on how to attach a support to a steel prop, refer to page 38.

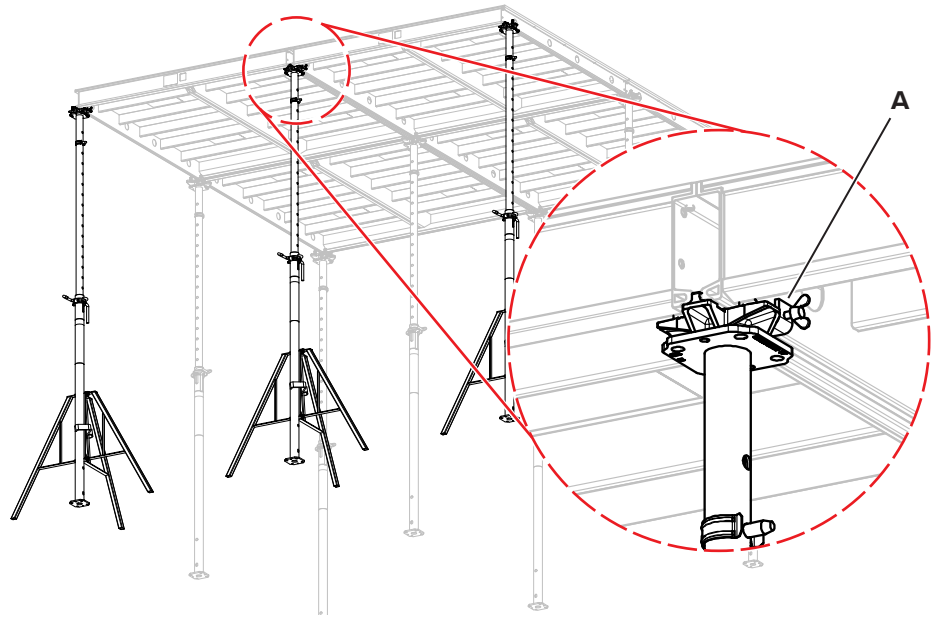
Use	TOPEC Bearing	TOPEC Edge Support N	TOPEC Fixing Head	TOPEC P-Bearing for Railing	Fork Head 8/20
At the intersection of 4no. TOPEC Panels	✓	–	–	–	–
At the edge	✓*	✓	–	–	–
In the corner	–	✓	–	–	–
As middle support for TOPEC Panels 180/180	✓	–	✓	–	–
As support for centre primary beams	–	–	–	–	✓
As support for cantilevered TOPEC Panels	✓	✓**	✓	–	–
To erect edge protection	–	–	–	✓	–

* Only at the ends, TOPEC Bearing under edge profile, refer to section 7.1.5
 ** Observe lower SWL of TOPEC Edge Support N, refer to section 7.1.9

7.1.2 At the intersection of 4no. TOPEC Panels – TOPEC Bearing



7.1.3 At the edge – TOPEC Edge Support N on front profile (with square hole)

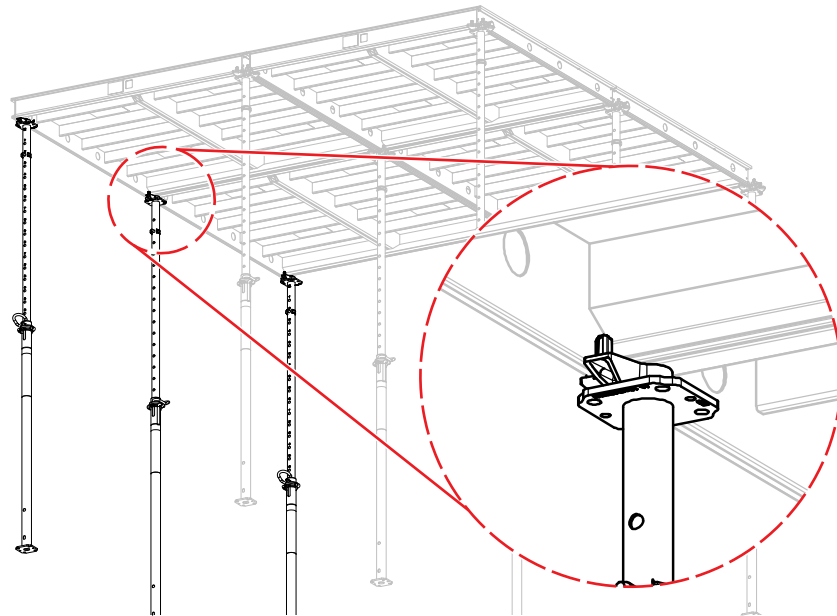


Secure the steel prop with a prop retainer (A) or a tripod to prevent it from collapsing!

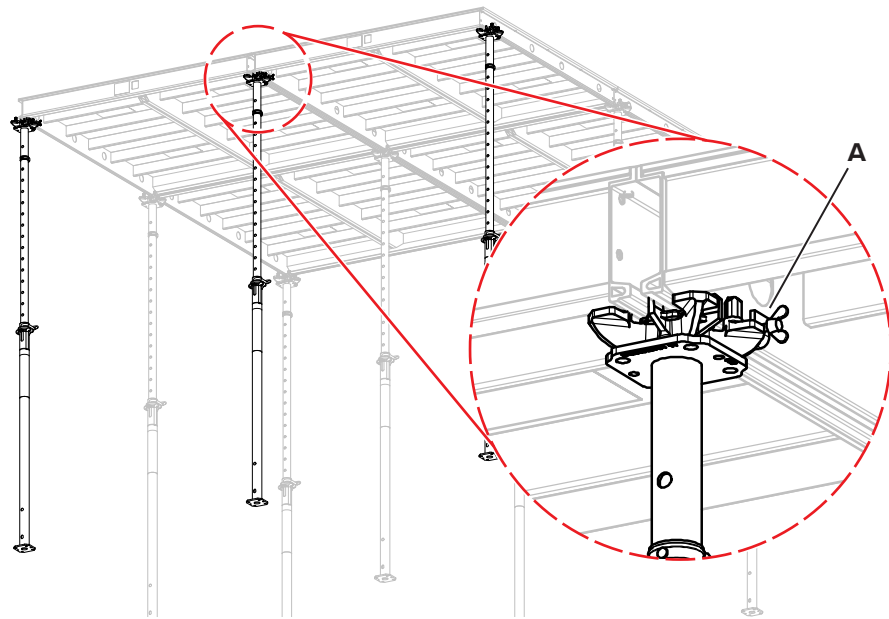


The TOPEC Bearing can be used at the edge instead.

7.1.4 At the edge – TOPEC Edge Support N on edge profile (with round holes)

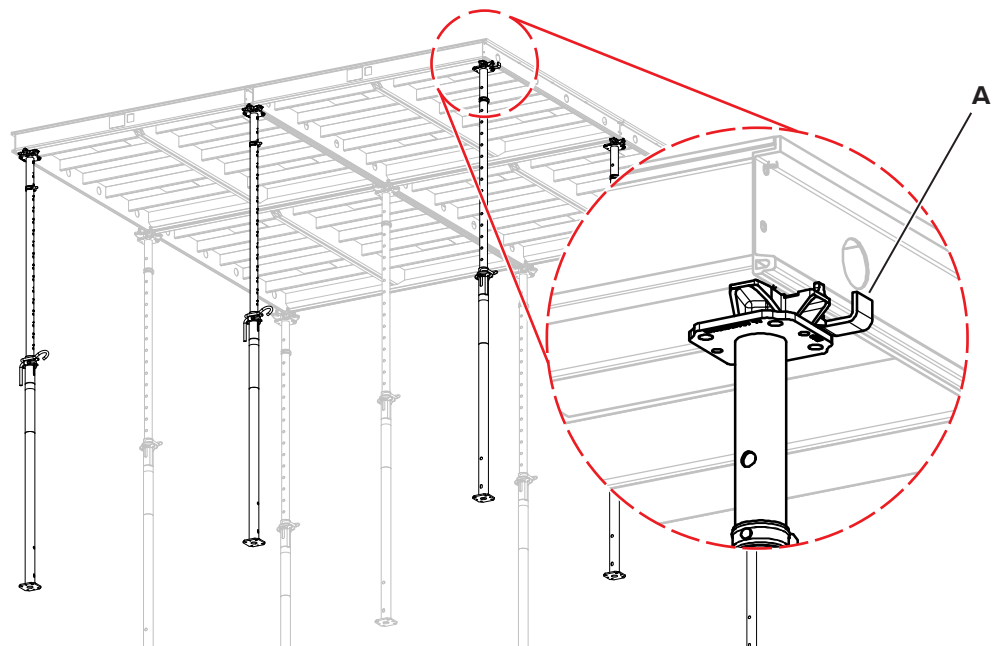


7.1.5 At the edge – TOPEC Bearing at end (with square hole, TOPEC Bearing under edge profile)



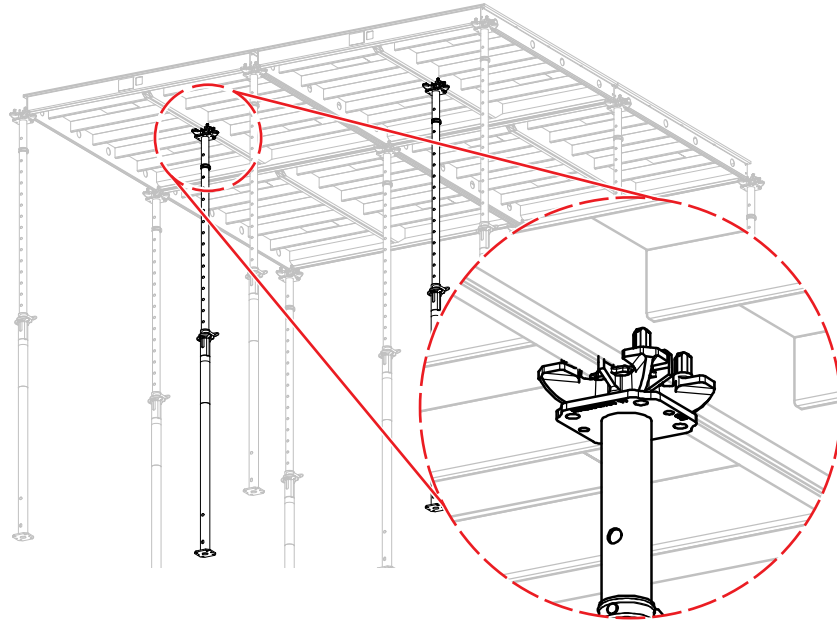
Secure the steel prop to prevent it from collapsing (**A**)!
Place the steel prop as close as possible to the edge of the panel!

7.1.6 In the corner – TOPEC Edge Support N



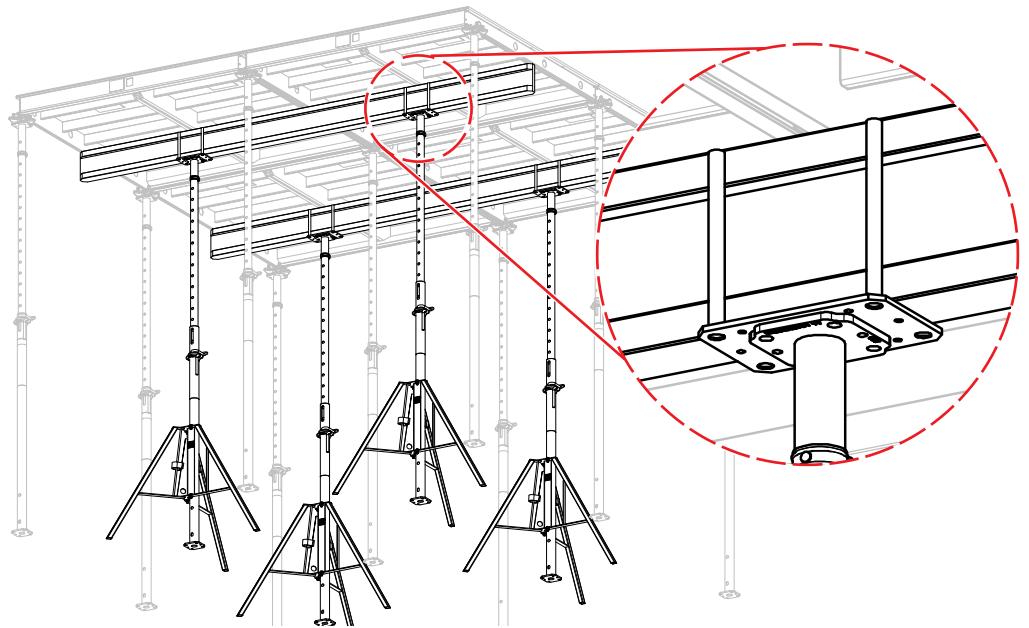
Secure the steel prop to prevent it from collapsing (**A**)!

7.1.7 As middle support for TOPEC Panels 180/180 – TOPEC Bearing



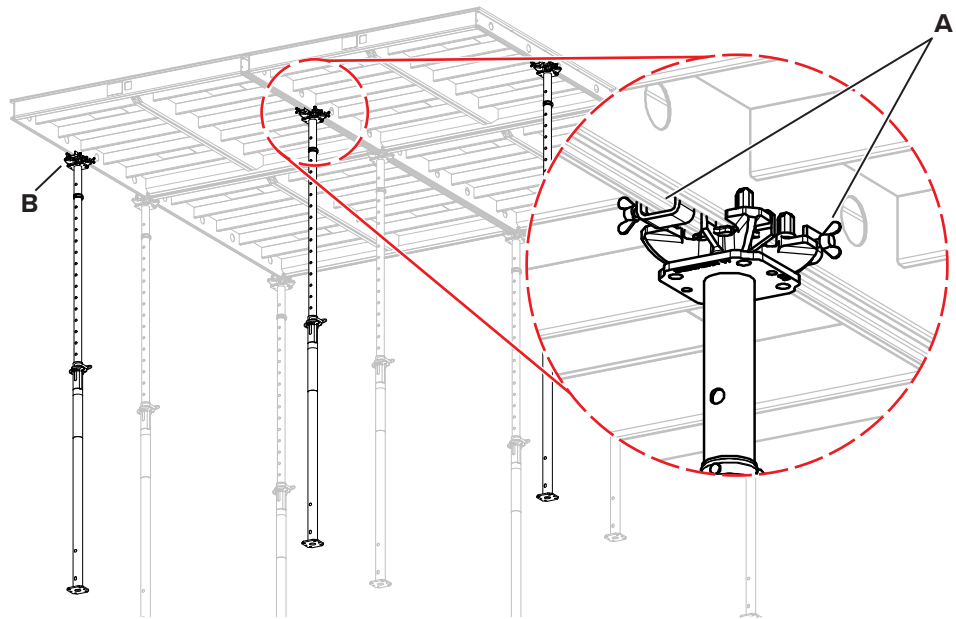
An arresting piece is usually attached to prevent the steel prop from collapsing. If there is not already an arresting piece in place, attach one (code:580272) (refer to page 119) or support the steel prop in some other way to prevent it from collapsing!

7.1.8 As support for centre primary beams – Fork Head 8/20



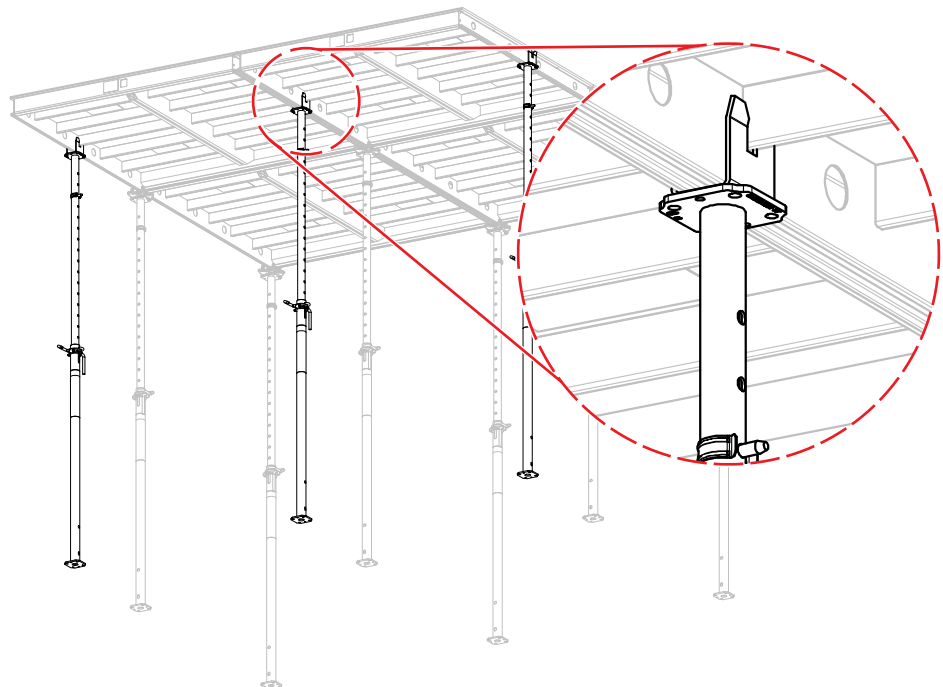
Support the steel prop with a Uni Tripod to prevent it from collapsing!

7.1.9 Support for cantilevered TOPEC Panels at edge profile (with round holes) – TOPEC Bearing



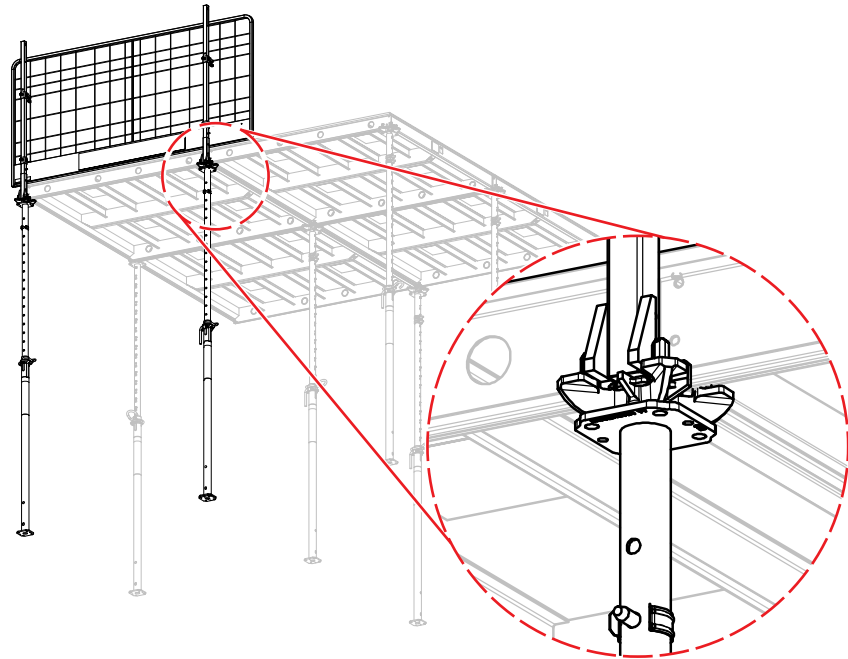
Secure the steel prop to prevent it from collapsing **(A)**!
 Secure cantilevered panels to prevent them from collapsing!
 At the edge **(B)**, cantilevered panels can also be supported with the TOPEC Edge Support N. Observe lower SWL of TOPEC Edge Support N!

7.1.10 As support for cantilevered TOPEC Panels – TOPEC Fixing Head



Secure cantilevered panels to prevent them from collapsing (refer to section 12.3)!

7.1.11 For erecting edge protection – TOPEC P-Bearing for Railing



7.1.12 Attaching Bearings



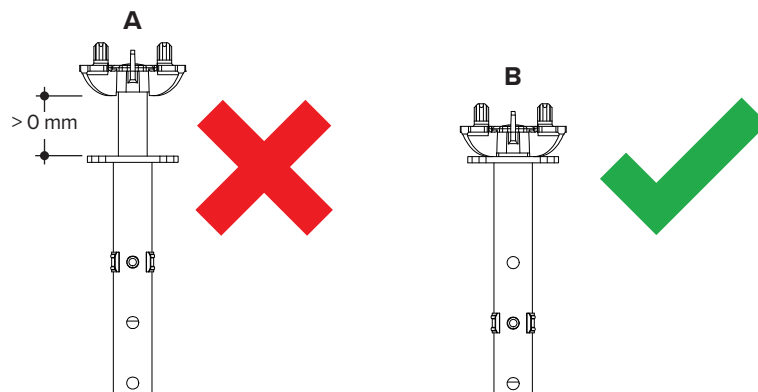
WARNING

Formwork can collapse!

When extended Bearings (A) are used in conjunction with EUROPLUSnew props, the load that the props can bear is significantly less. The load tables in Section 6.2 then no longer apply. The system will fail when it is overloaded!

The formwork can collapse, which can result in injury or death!

Always slide the TOPEC Bearing and all other bearings all the way into the EUROPLUSnew prop (B)!



CAUTION

Risk of crushing!

When adjusting prop inner tubes with a TOPEC Bolt or TOPEC Bolt D14 attached to it, there is a risk of crushing fingers!

Slide steel props in carefully!

When adjusting a steel prop, do not hold it at the transition from inner tube to outer tube!

CAUTION

The support can fall out of the prop!

Unsecured supports such as TOPEC Bearings can fall out during handling. This can result in injury!

When stripping or before lateral transport, verify that supports are always secured with TOPEC Bolts or TOPEC Bolts D14! Before transport, unsecured supports have to be secured to prevent them from falling out or they have to be transported separately!

NOTE

Bolts can sustain damage!

If the TOPEC Bolt or TOPEC Bolt D14 is pounded into the hole in the steel prop with a hammer, the bolt can detach from the clip.

The bolt is then destroyed.

Slide in bolts only by hand.

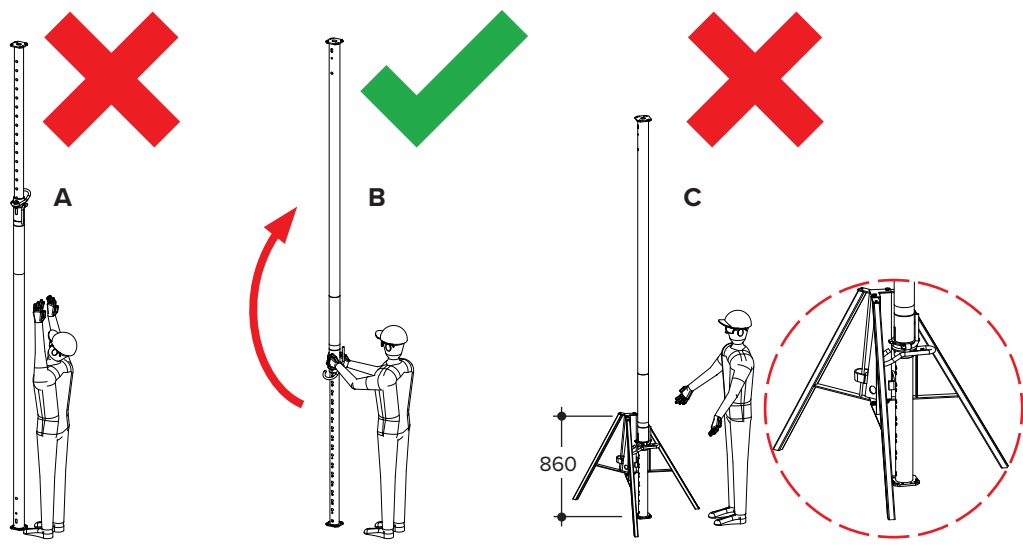
If the hole in the steel prop is dirty, clean it before sliding in the bolt.



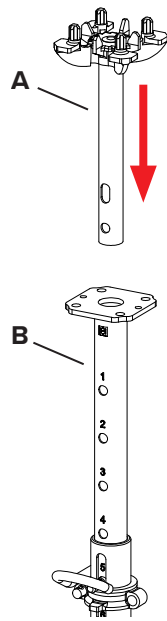
If the TOPEC formwork has to be protected from uplift using the TOPEC Securing Bolt, the TOPEC Securing Bolt may have to be attached to the support before putting the support into place (refer to Section 11.6).



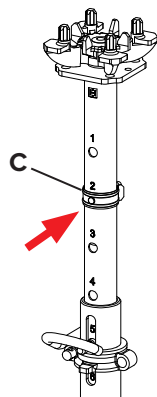
On long steel props, the quick-release bolts and nuts are very high on the outer tube (A). If the steel prop is positioned with the outer tube at the bottom, the quick-release bolts and nuts can only be accessed from a platform ladder in some cases. To make operation easier, the steel prop can be placed at the bottom along with the inner tube (B). However, it may no longer be possible to support the steel prop with a Uni Tripod to prevent it from collapsing (C).



Step 1 Insert the required support (A) all the way into the steel prop (B).



Step 2 Secure the support with a correct bolt (C). Refer to the following table for the proper bolt.



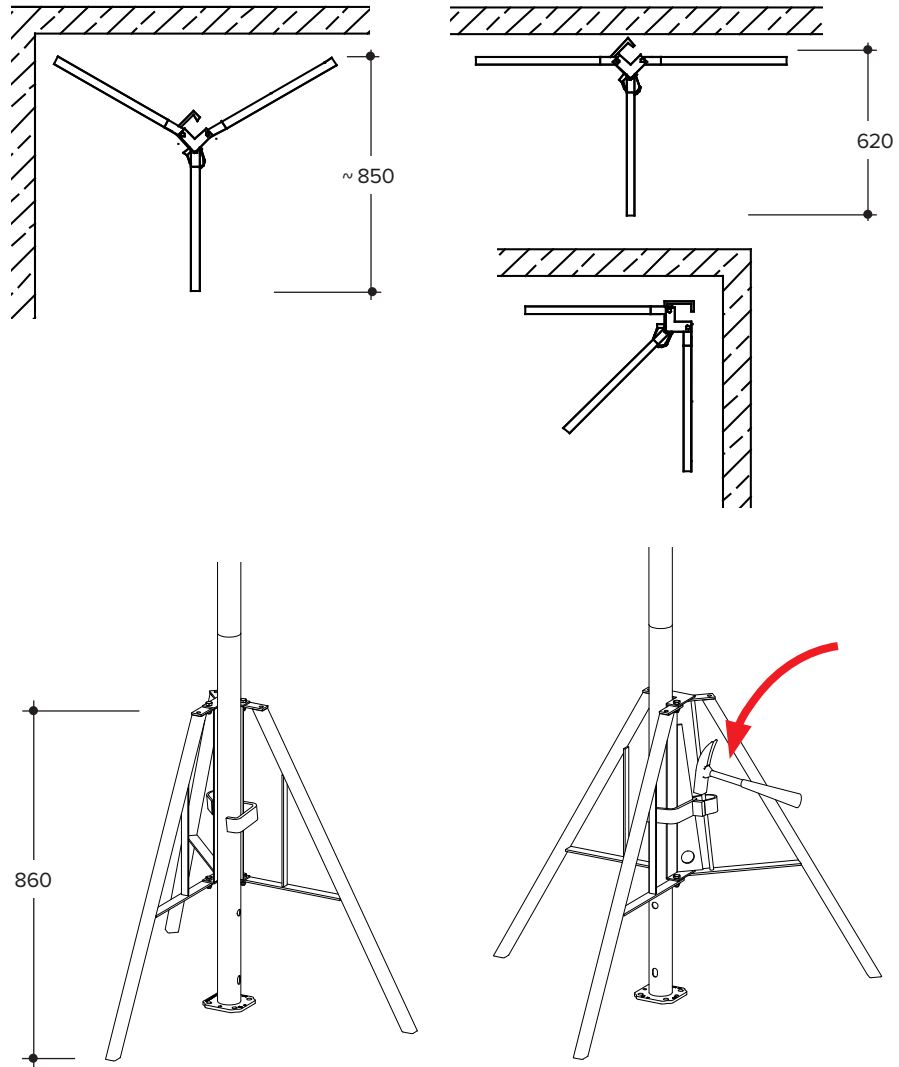
The following table shows the bolt used to secure the respective type of steel prop.

Designation	Code.	Orientation	TOPEC Bolt (code:470804)	TOPEC Bolt D14 (code:604365)
EUROPLUS ^{new} 20-250	601390	Inner tube top	X	-
		Outer tube top	X	-
EUROPLUS ^{new} 20-300	601400	Inner tube top	X	-
		Outer tube top	X	-
EUROPLUS ^{new} 20-350	601410	Inner tube top	X	-
		Outer tube top	-	X
EUROPLUS ^{new} 20-400	601415	Inner tube top	X	-
		Outer tube top	-	X
EUROPLUS ^{new} 20-550	601425	Inner tube top	-	X
		Outer tube top	-	X
EUROPLUS ^{new} 30-250	601430	Inner tube top	X	-
		Outer tube top	-	X
EUROPLUS ^{new} 30-300	601440	Inner tube top	X	-
		Outer tube top	-	X

Designation	Code.	Orientation	TOPEC Bolt (code:470804)	TOPEC Bolt D14 (code:604365)
EUROPLUS ^{new} 30-350	601445	Inner tube top	X	-
		Outer tube top	-	X
EUROPLUS ^{new} 30-400	601450	Inner tube top	-	X
		Outer tube top	-	X
EUROPLUS 260 DB/DIN	463021	Inner tube top	X	-
		Outer tube top	No hole	
EUROPLUS 300 DB/DIN	555118	Inner tube top	X	-
EUROPLUS 350 DB/DIN	552147	Inner tube top	X	-
EUROPLUS 400 EC	583780	Inner tube top	-	X
EUROPLUS 550 DC	583725	Inner tube top	-	X

7.1.13 Using steel props with Uni Tripod

The Uni Tripod facilitates erection of steel props during formwork assembly. The steel prop can simply be placed in the open tripod and secured with the clamp. Tap the top of the clamp lightly with a hammer to secure it. The Uni Tripod can be used with almost all types of steel props.

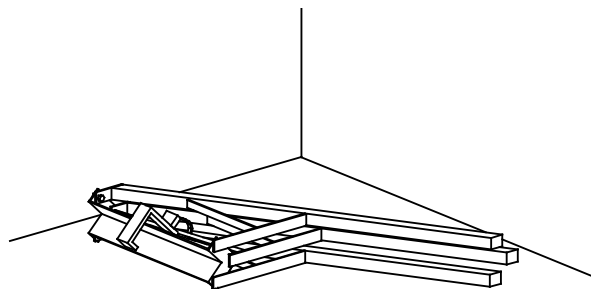


WARNING

Warning!

Use the Uni Tripod only as an aid when erecting props! Other appropriate methods must be used to transfer horizontal loads from the formwork, wind, concreting, etc. into the existing structure!

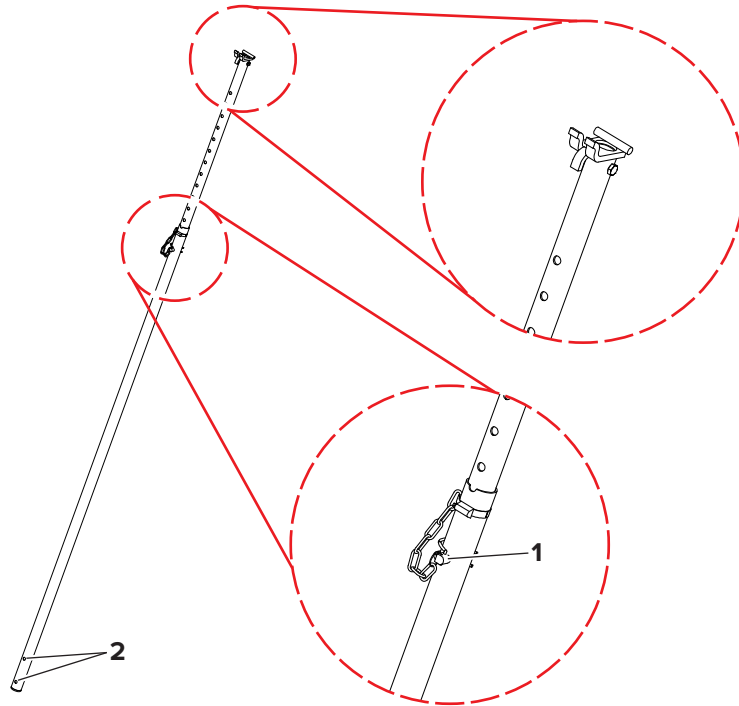
When the Uni Tripod is not in use, it can be folded up to save space.



7.2 Preparing TOPEC Alu Erection Rod 365

Use the Alu Erection Rod 365 to swivel up the TOPEC Panels once the panels have been placed on the steel props. Pull out the Alu Erection Rod 365 to the required length (2.05 m – 3.65 m) and extend it if necessary (3.70 m – 5.30 m).

7.2.1 TOPEC Alu Erection Rod 365



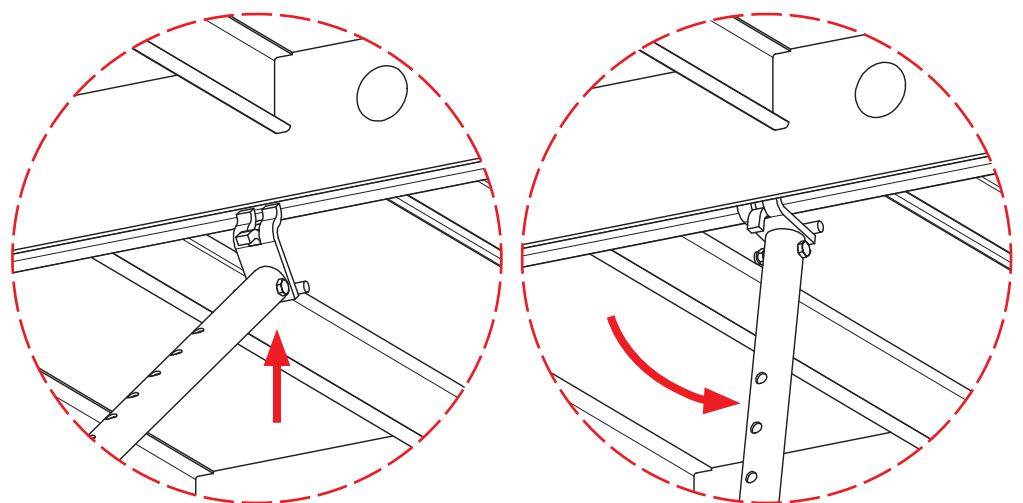
- 1 Lynch pin with lanyard
- 2 Holes for attaching the Rod Extension 180



Extend the Alu Erection Rod 365 to match the room height.



The Alu Erection Rod 365 can also be used to pry off TOPEC Panels stuck to the concrete.



7.2.2 Adjusting TOPEC Alu Erection Rod 365

The Alu Erection Rod 365 can be extended to a length of 3.65 m.

Step 1 Remove the lynch pin.

Step 2 Extend the Alu Erection Rod 365 to the desired length and secure it with the lynch pin.

7.2.3 Extending TOPEC Alu Erection Rod 365

The Alu Erection Rod 365 can be extended to a length of 5.30 m with the aid of the Rod Extension 180.

Step 1 Remove both screws from the Rod Extension 180.

Step 2 Attach the Rod Extension 180 to the Alu Erection Rod 365.

Step 3 Use the bolts to connect the Rod Extension 180 to the Alu Erection Rod 365.

7.3 Assembling formwork for floor heights up to 3.50 m

Formwork for floor heights up to 3.50 m can generally be assembled from the ground. Always comply with the relevant health and safety regulations. Whenever possible, begin assembling the formwork at the corner of existing walls. This allows the TOPEC Panels to be secured to the wall after they are put in place and the height to be set precisely, thus preventing them from tipping over. If there is no wall yet, the first TOPEC Panel has to be immediately protected from horizontal loads as soon as it is in place (refer to section 11).



WARNING

Formwork can collapse!

Steel props and formwork cannot transfer horizontal loads (H-loads) if they are not secured in other ways! When unsecured formwork is subjected to horizontal loads, caused e.g. by wind, material, persons or concreting, the formwork will collapse! This can cause personal injury or death!

Always make sure that the formwork assembled with TOPEC Panels is horizontally restrained!



WARNING

Risk of falling!

All edges, including those at the edge of the structure, must be equipped with fall protection in compliance with the current health and safety regulations.

NOTE

Panels can be damaged!

If the TOPEC Panel is placed on the first two supports and then allowed to hang down, the TOPEC Panel will be damaged!

Do not let the panels hang in the supports!

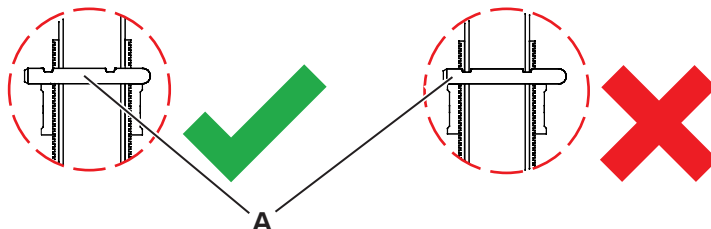
Always swivel the TOPEC Panel directly up and support the panel with the Alu Erection Rod 365 or with steel props!

NOTE

Difficult stripping!

If the inner tube of the steel prop is not resting with its whole diameter on the pin (A) of the quick-lowering mechanism but is resting in the two grooves instead, the quick-lowering mechanism does not work properly when stripping.

When installing the steel props, check that the pin is positioned properly. This is the only way to ensure that the quick-lowering mechanism can later be used for stripping.



Always extend the steel props a little more than necessary. This makes it easier to compensate for uneven ground. When steel props are subjected to load, it is easier to retract them than to extend them.



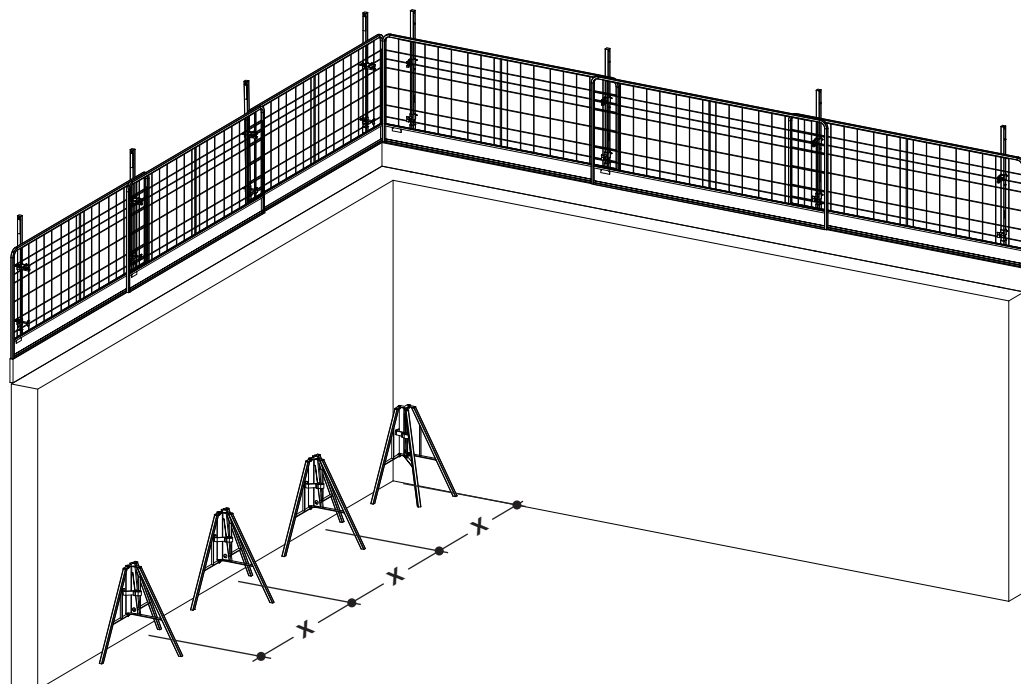
When the TOPEC P-Railing Shoe is used, edge protection can be attached to the TOPEC Panels on the ground. Then the TOPEC Panels with edge protection can be swivelled up.



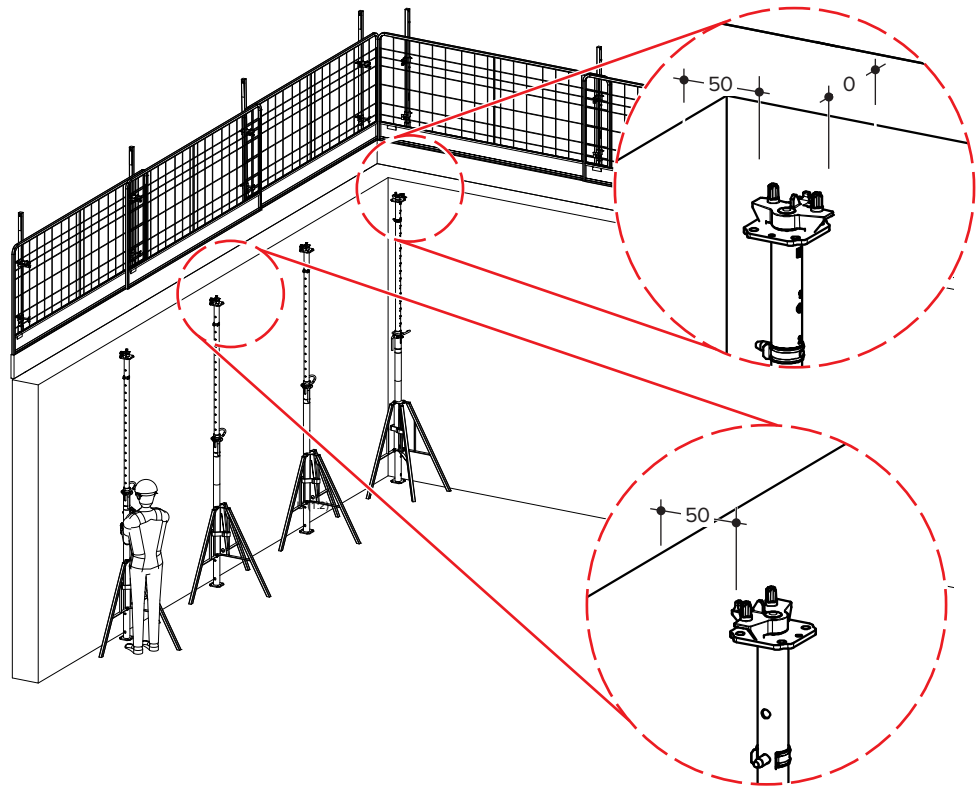
Depending on the conditions on site, it may be helpful to use aids such as platform ladders or mobile scaffolds, even when the soffit is less than 3.50 m high (refer to page 55).

7.3.1 Erecting steel props

- Step 1** Set up Uni Tripods along a wall in the intended positions. Place Uni Tripods along the wall and space them to suit the width (X) of the TOPEC Panels.
- Step 2** Attach the supports to the steel props (refer to page 38).

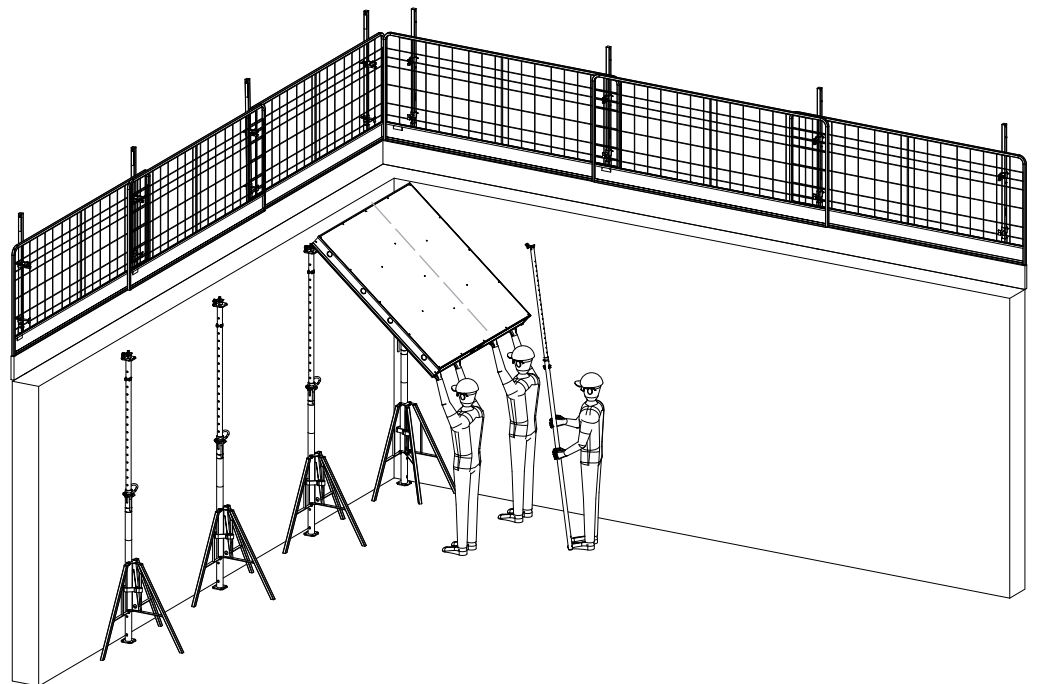


Step 3 Place the steel props with supports in the tripods and lock them into place. Verify that the steel props and supports are aligned properly. The quick-release bolt always has to be perpendicular to the wall.

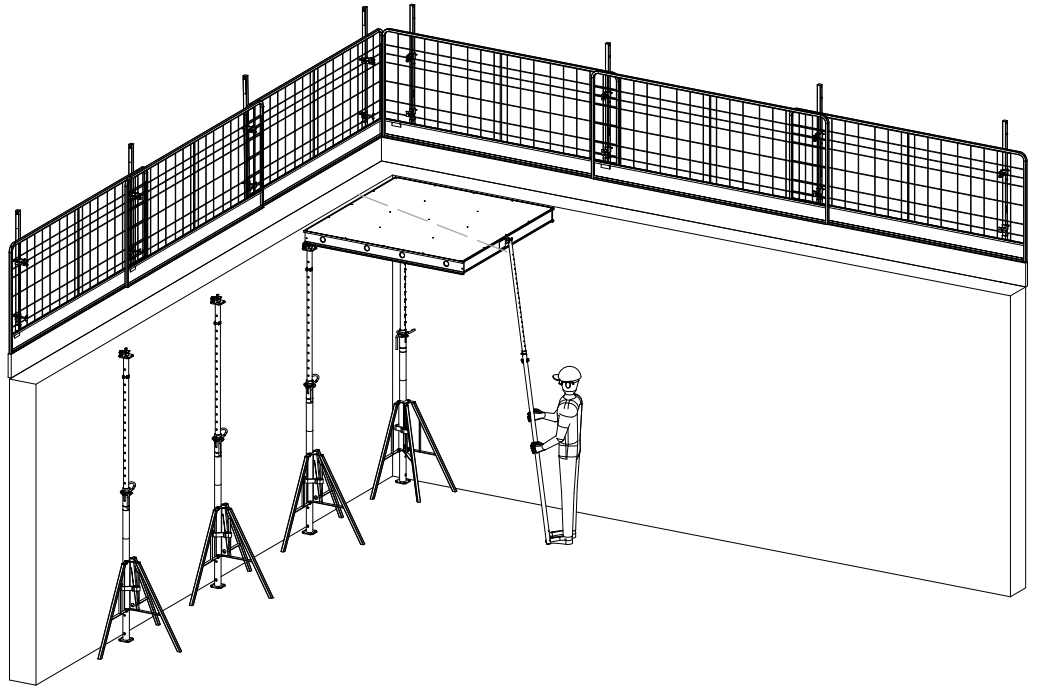


7.3.2 Installing TOPEC Panels

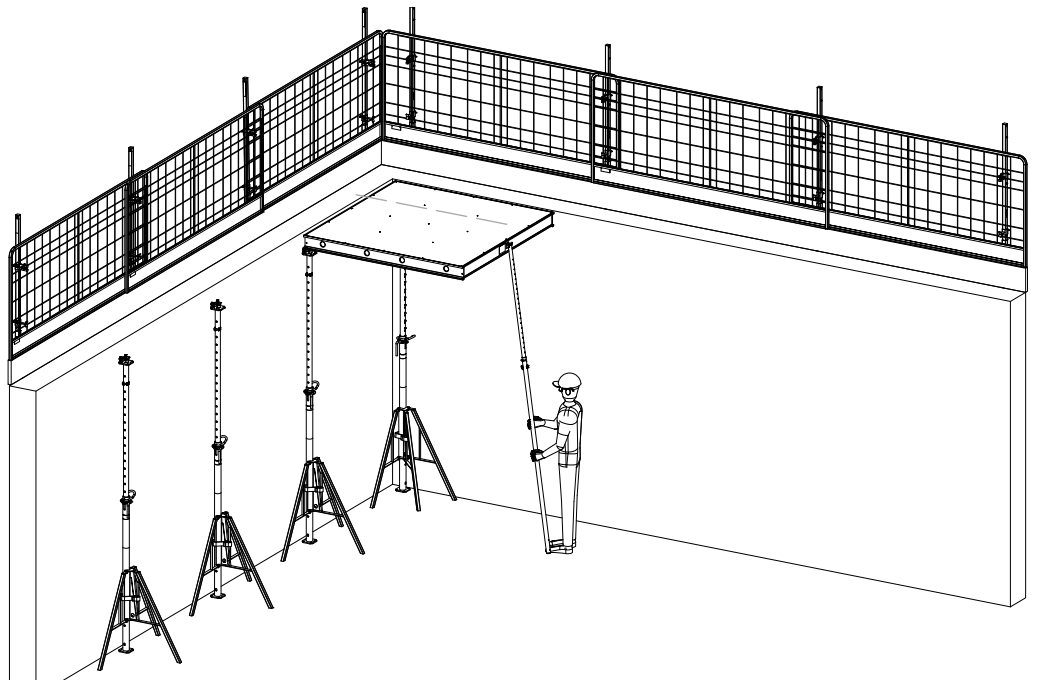
Step 1 Place the front profile (with square hole) of the TOPEC Panels on the supports on the first two steel props. The dashed line in the illustration indicates the centre profile of the TOPEC Panel.



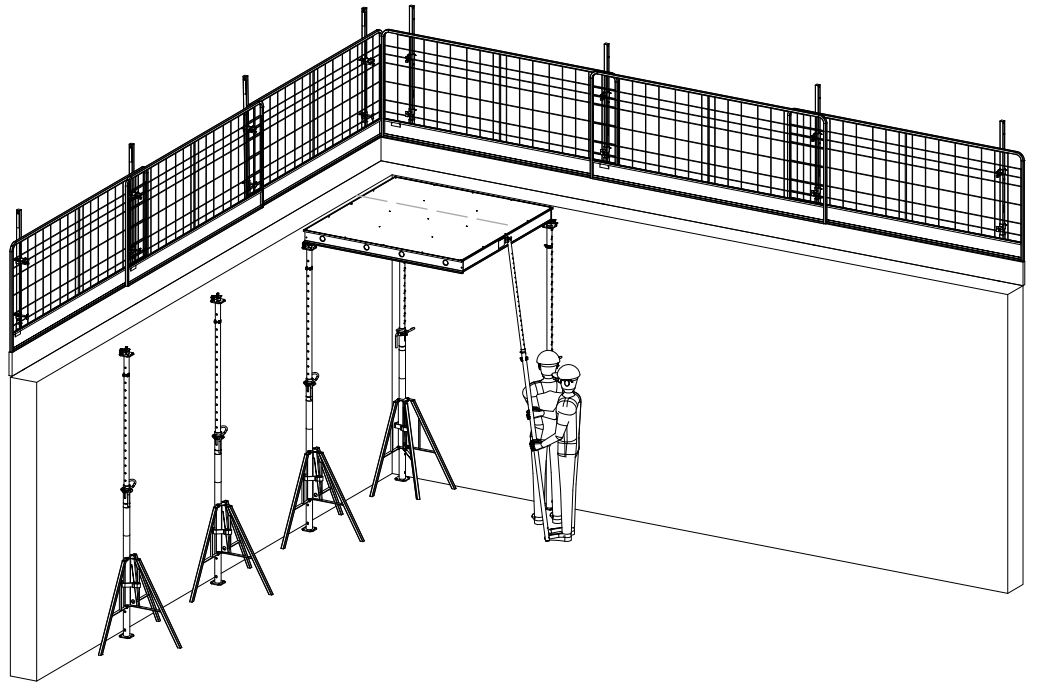
Step 2 Hook the Alu Erection Rod 365 in the opening for the Alu Erection Rod 365 and swivel up the TOPEC Panel.



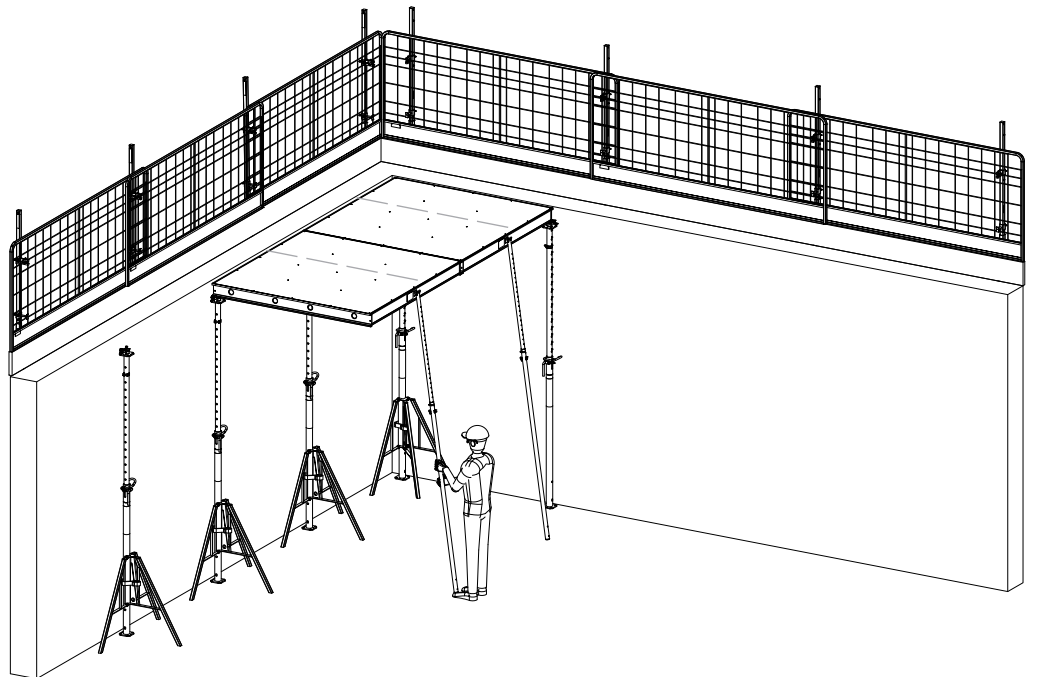
Step 3 Swivel the TOPEC Panel up to the horizontal position and rest it on the Alu Erection Rod 365. Ensure that the Alu Erection Rod 365 cannot slide away.



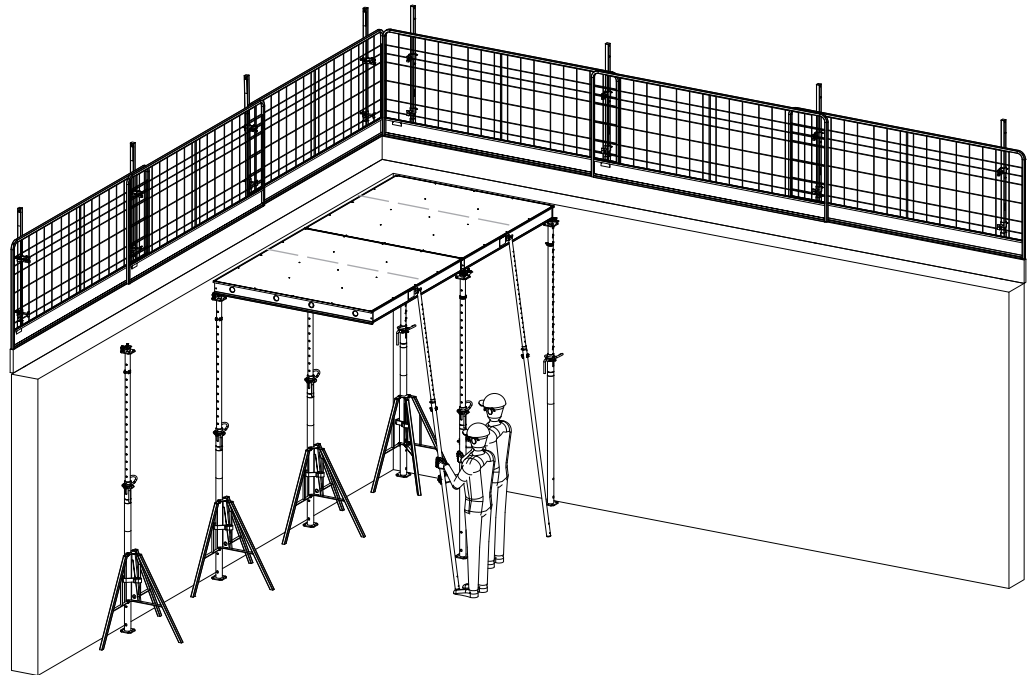
Step 4 Prop up the TOPEC Panel with a third steel prop.



Step 5 Hook the second TOPEC Panel in the support, swivel it up to the horizontal position and rest it on the Alu Erection Rod 365.

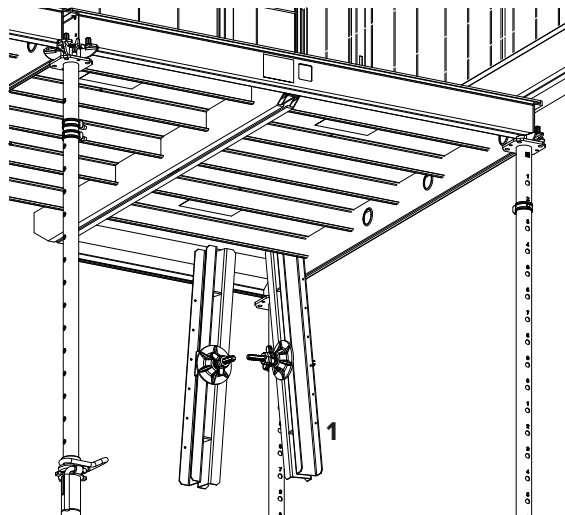


Step 6 Place another steel prop at the joint of the two TOPEC Panels to support them.



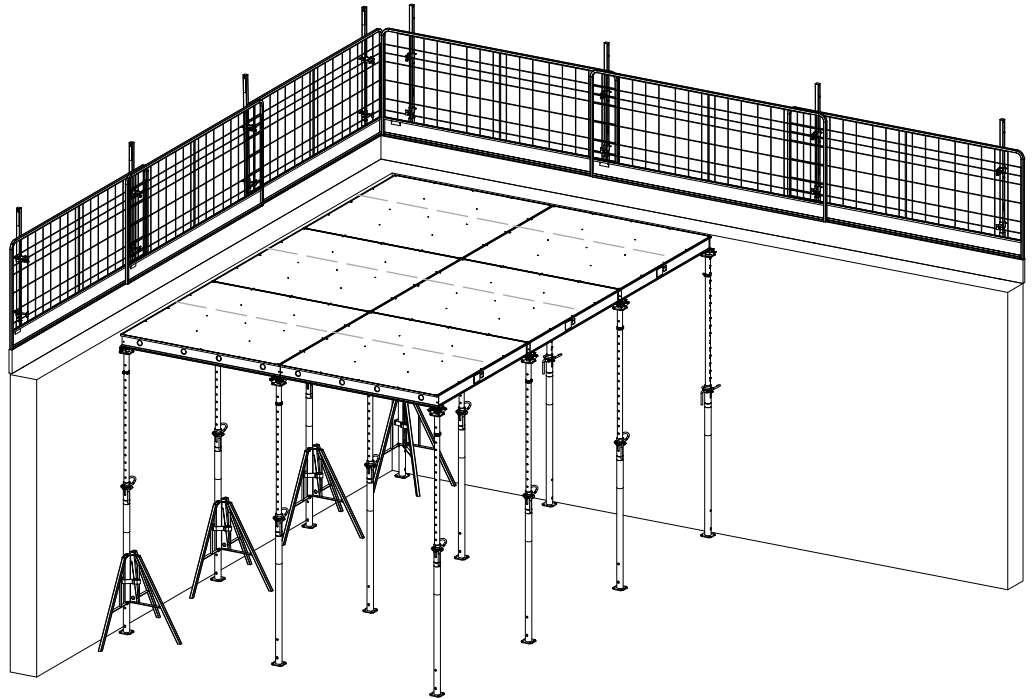
Step 7 Precisely align the height of the first TOPEC Panel, e.g. using a laser range finder. The distance from the ground to the edge profile (with round holes), plus 140 mm, is the clearance. The front profile (with square hole) is 3 mm thinner.

Step 8 If possible, tie the first TOPEC Panel to both walls that form the corner of the structure (refer to Section 11).



The tie **(1)** on the edge profile (with round holes) of the TOPEC Panels is used only to stabilize the structure during erection! The edge profile cannot transfer any H-loads resulting from live loads or concreting into the structure!

Step 9 Continue assembling the formwork in the same way. After putting each TOPEC Panel into place, align the height precisely in the same way. Tie the TOPEC Panels to the existing structure at regular intervals.



Step 10 Secure the formwork from horizontal loads (refer to Section 11).

7.4 Securing steel props to prevent collapsing

Steel props are not secured against overturning at some of the assembly positions under the TOPEC panels. In this case, the steel props have to be secured to prevent them from falling over. Use either Uni Tripods (refer to page 42), prop retainers, timber bracing, tube bracing or other appropriate methods.

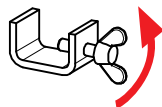
7.4.1 With prop retainers

Prop retainers can be fastened to the edge profiles (with round holes) of TOPEC Panels and to the centre profiles of the TOPEC Panels 180/180. Depending on the position of the steel props, 1no. or 2no. prop retainers are needed.

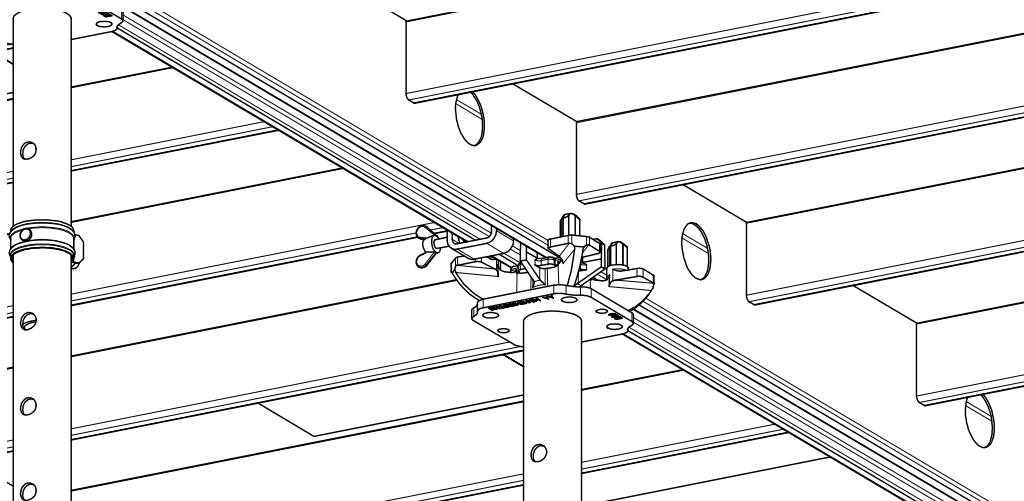


Prop retainers cannot be used on the front profiles of TOPEC Panels (profiles with square hole). Secure the steel props at these positions with tripods or other appropriate means.

Step 1 Unscrew the prop retainer to the required width.



Step 2 Slide the prop retainer onto the profile of the TOPEC Panel right next to the bearing in the steel prop.



Step 3 Screw the prop retainer into place.

Step 4 If necessary, attach another prop retainer to the other side of the steel prop. The steel prop is secured to prevent it from falling over.

7.4.2 With timber bracing

Secure wooden boards to the steel props using Euro Bracing Clamps. This prevents the steel props from tipping over.



WARNING

Formwork can collapse!

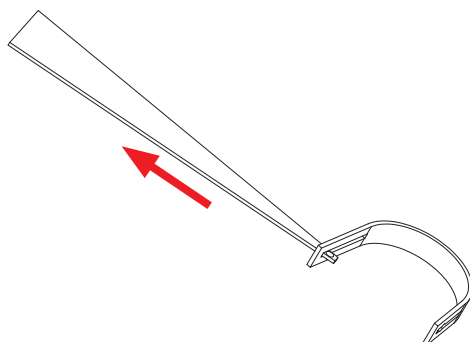
If only timber bracing is used to divert H-loads from the formwork, the formwork can collapse.

This can cause personal injury or death!

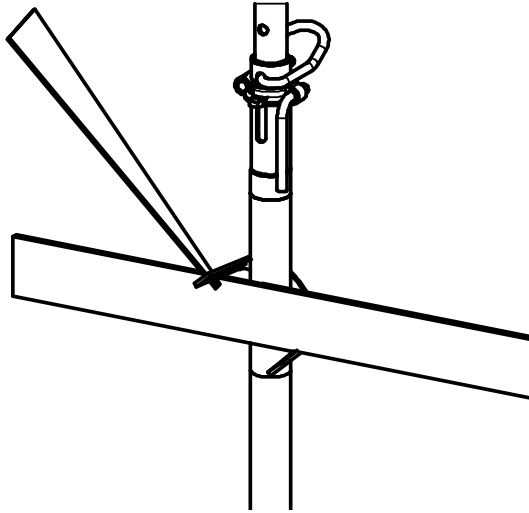
Timber bracing cannot transfer H-loads from the formwork and serves only as an assembly aid.

Always protect the formwork from H-loads with other means (refer to Section 11).

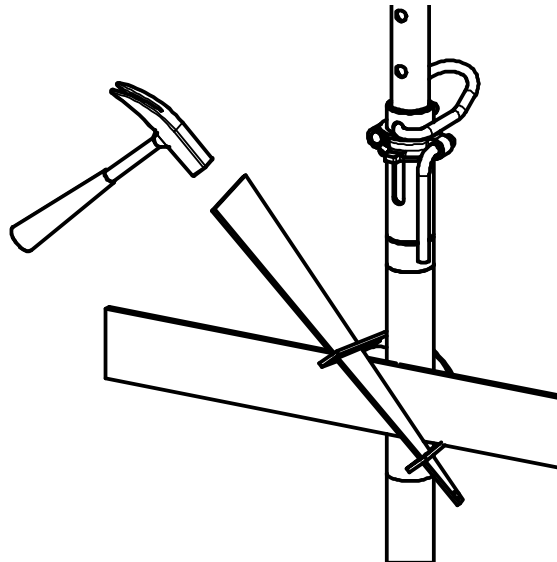
Step 1 Open the Euro Bracing Clamp.



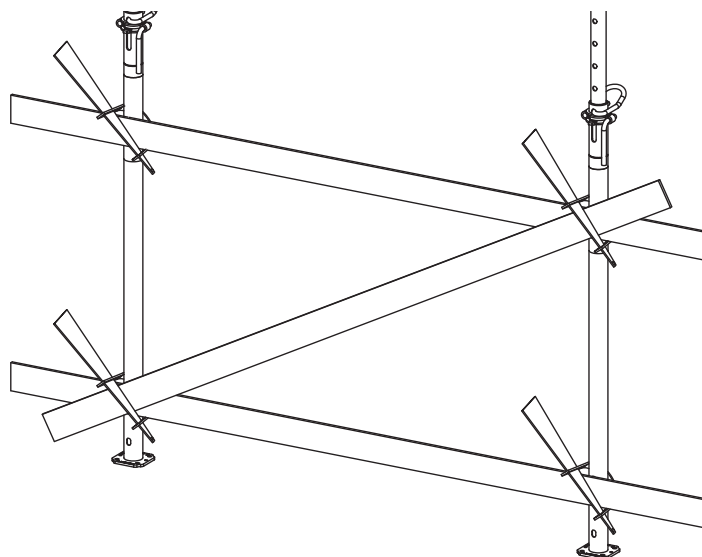
Step 2 Place the Euro Bracing Clamp over the steel prop and the board.



Step 3 Close the Euro Bracing Clamp and hit it with a hammer to secure it.



Step 4 Brace the steel props horizontally and diagonally.



7.5 Assembling formwork over 3.50 m in height

When rooms are more than 3.50 m high, TOPEC Panels cannot be placed on the steel props from ground level. For assembling higher formwork, we recommend using the Hünnebeck TOPEC Lift (only for TOPEC Panels 180/180). The TOPEC Panels can also be put into place working from e.g. platform ladders or mobile scaffolds.



WARNING

Formwork can collapse!

Steel props and formwork cannot transfer horizontal loads if they are not secured in other ways! When unsecured formwork is subjected to horizontal loads, caused e.g. by wind, material, access or concreting, the formwork will fall over! This can cause personal injury or death!

Always make sure that the formwork assembled with TOPEC Panels is horizontally restrained!



WARNING

Risk of falling!

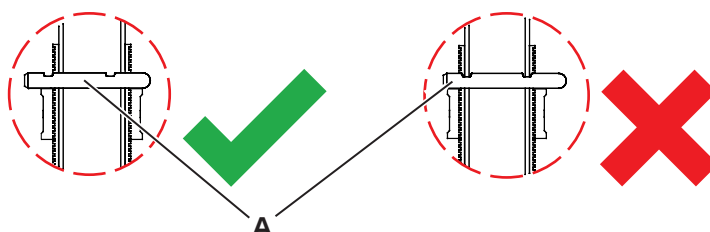
All edges, including those at the edge of the structure, must be equipped with fall protection in compliance with the current health and safety regulations.

NOTE

Difficult stripping!

If the inner tube of the steel prop is not resting with its whole diameter on the pin (A) of the quick-lowering mechanism but is resting in the two grooves instead, the quick-lowering mechanism does not work properly when stripping.

When installing the steel props, check that the pin is positioned properly. This is the only way to ensure that the quick-lowering mechanism can later be used for stripping.



Always extend the steel props a little more than necessary. This makes it easier to compensate for uneven ground. When steel props are subjected to load, it is easier to retract them than to extend them.



When the TOPEC P-Railing Shoe is used, edge protection can be attached to the TOPEC Panels on the ground. Then the TOPEC Panels with edge protection can be swivelled up.



Depending on the conditions on site, it may be necessary to use aids such as platform ladders or mobile scaffolds even when the room is less than 3.50 m high (refer to page 55).

7.5.1 With TOPEC Lift

TOPEC Panels 180/180 can be placed on the steel props up to a height of 5.80 m using the TOPEC Lift.

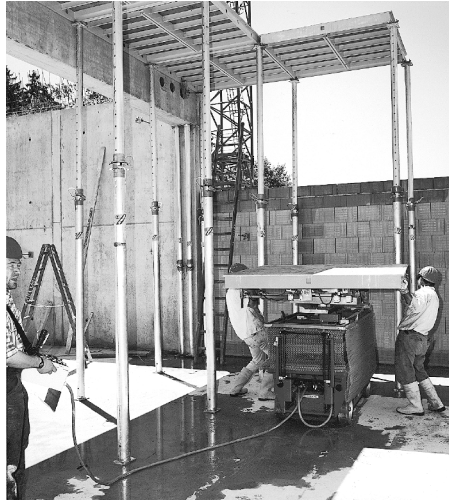
The TOPEC Lift is a motorized scissor lift operated by a remote control.



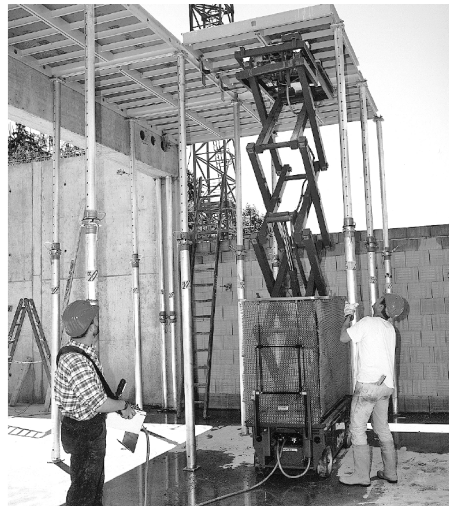
Always comply with the separate operating instructions for the TOPEC Lift! It contains essential information on safe startup, use and maintenance.

Step 1 Move the TOPEC Lift to the approximate position where it will be used.

Step 2 Place the TOPEC Panel on the positioning frame of the TOPEC Lift.



Step 3 Raise the TOPEC Panel into place with the TOPEC Lift.

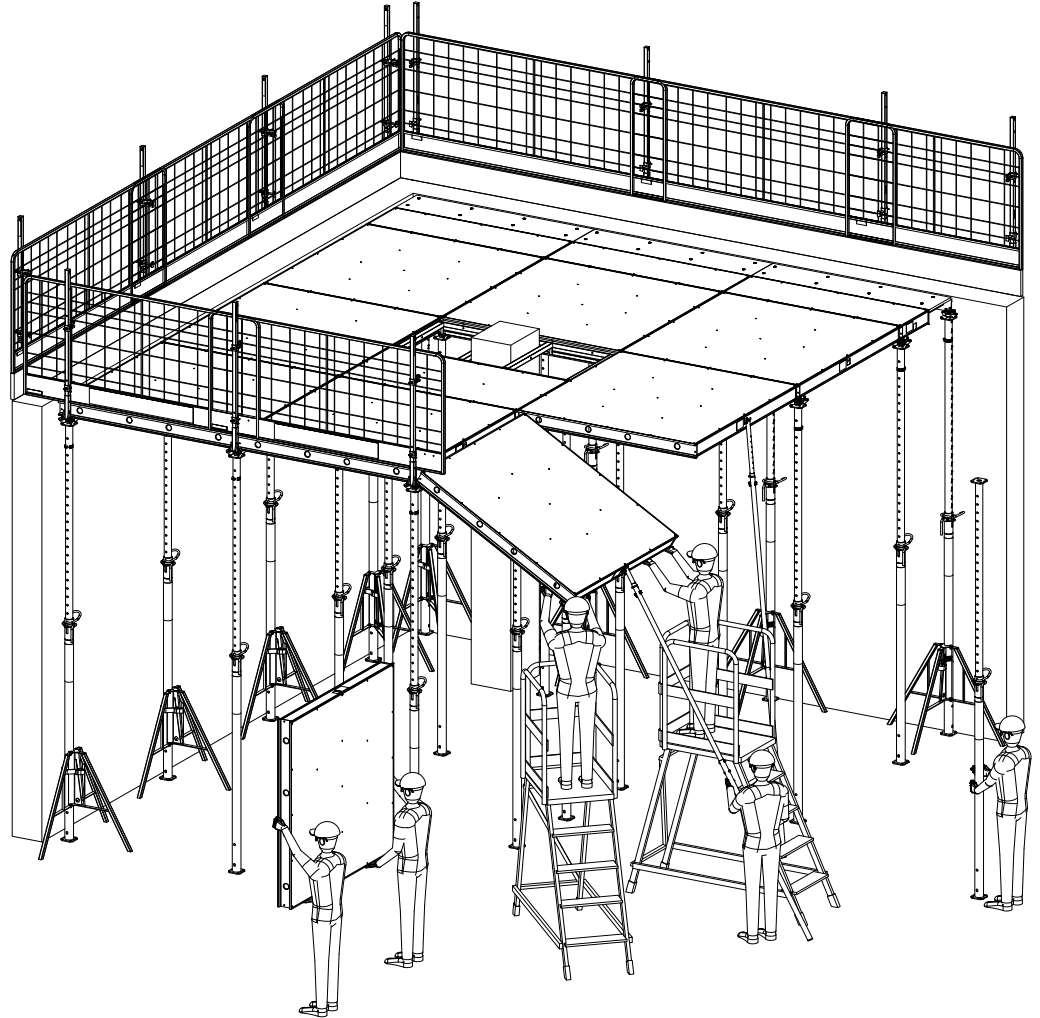


Step 4 Use the positioning frame to move the TOPEC Panel to the exact position.

Step 5 Prop up the TOPEC Panel with the remaining steel props.

7.5.2 Manually

Assembling the formwork e.g. from a platform ladder or a mobile scaffold is done in the same way as described in Section 7.3. The only difference is that hanging the TOPEC Panels into place is done from an elevated place. Then, working from ground level, the TOPEC Panel is swivelled into a horizontal position using the Alu Erection Rod 365 with Rod Extension 180 and then supported with steel props.



7.6 Assembling formwork with centre primary beam

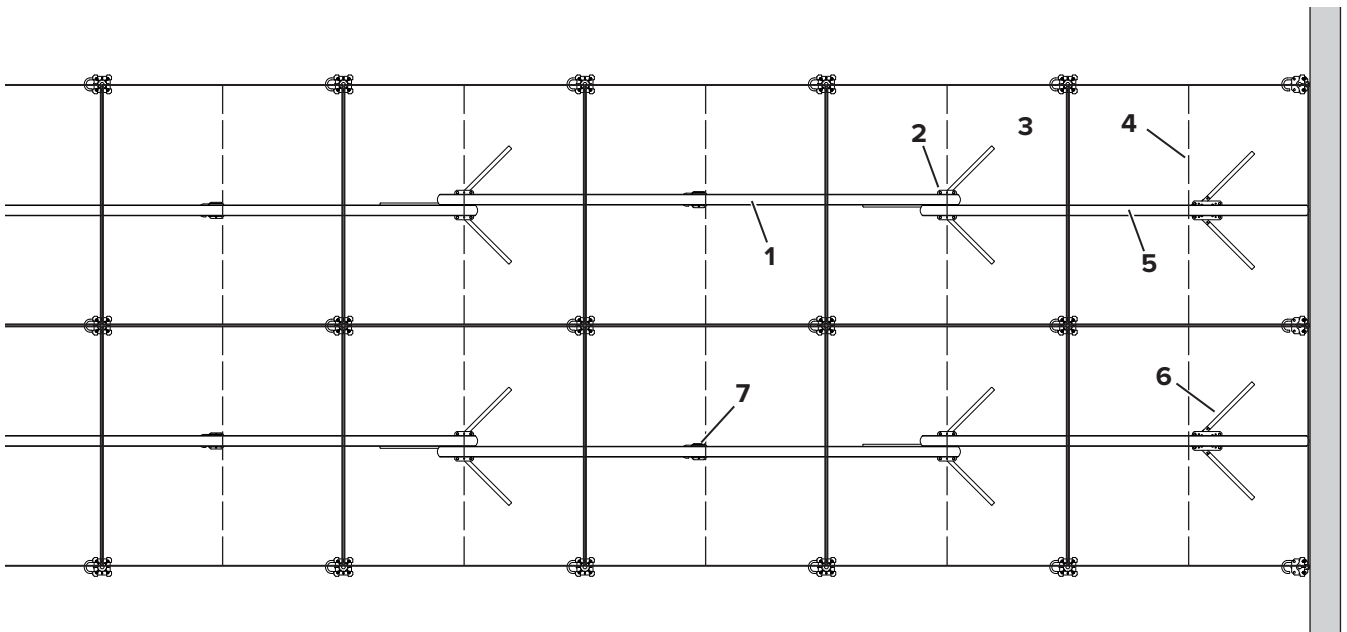
When supporting TOPEC Panels with a centre primary beam consisting of H 20 K Beams, it is important that the centre and edge profiles (with round holes) on the panels are supported along the entire length. Start at the wall with an H 20 K Beam 290 (code:603193) and continue the line of beams with H 20 K Beams 390 (code:603196).

Centre the steel props for the H 20 K Beams under the TOPEC Panels. Steel props by the wall may not be more than 80 cm away from the wall.

Always lay the H 20 K Beams in Fork Heads 8/20 (code:417565). This prevents the H 20 K Beams from falling off. Always use Uni Tripods to support props with Fork Heads 8/20 to prevent them from collapsing. The Assembly Fork (code:510554) facilitates putting the H 20 K Beams into place.

Additional props can be attached to the H 20 K Beams with the Steel Prop Hanger 8 (code:510749).

Example of application



- 1 H 20 K Beam 390 (code:603196)
- 2 Fork Head 8/20 (code:417565) on steel prop
- 3 TOPEC Giant Panel 180/180 (code:554000)
- 4 Centre profile of TOPEC Panel 180/180
- 5 H 20 K Beam 290 (code:603193)
- 6 Uni Tripod (code:587377)
- 7 Steel Prop Hanger 8 (code:510749)

8 Creating stopends on site

If concrete cannot be poured against the existing building or other structures, a stopend has to be created on the TOPEC Panels on site.

When the slab is no thicker than 20 cm, the loads from the stopend can be transferred with the TOPEC P-Railing Shoe (code:606255). The TOPEC P-Railing Shoes may be spaced no more than 900 mm apart for slabs up to 30 cm thick.

Refer to Section 10.3 for information on how to attach the TOPEC P-Railing Shoe.



WARNING

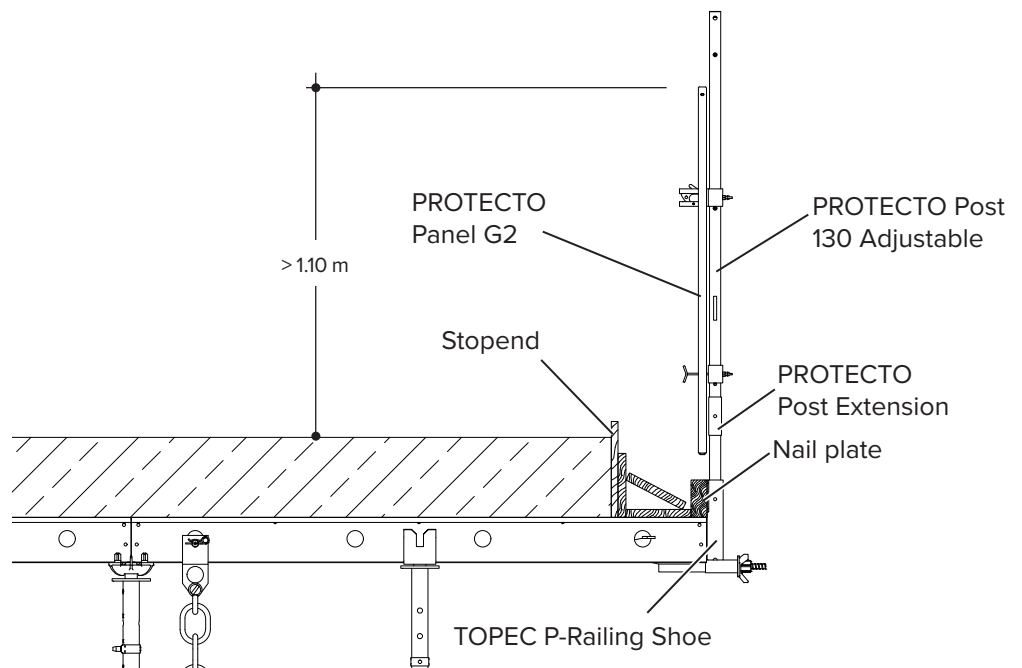
TOPEC P-Railing Shoe can fail!

If excessive load from the stopend is diverted to the TOPEC P-Railing Shoe, the TOPEC P-Railing Shoe can detach and fall off. The stopend, railing and concrete would fall as well.

This can cause personal injury or death!

Do not exceed the maximum slab thickness permitted.

Step 1 Create a stopend as shown in the illustration and nail it to the TOPEC P-Railing Shoe.



9 Assembling infills

9.1 Using TOPEC Adjustment Panels 90/180 and 90/90

The TOPEC Adjustment Panels (**A**) can be used to construct infills from 550 mm to 900 mm (1080 mm with an additional Adjustment Beam and projecting plywood). The Adjustment Panels have a telescoping piece with wooden strips (**B**). Place a 21 mm form sheet (**C**), created on site, on the telescoping piece and then nail the form sheet to the wooden strips. Assemble and disassemble the Adjustment Panels in the same way as the conventional TOPEC Panels.

The plywood form sheet can project up to 100 mm beyond the TOPEC Adjustment Panel or other support, e.g. a deck support hanger with timber beam (**D**). When additional support is used, e.g. steel props or timber beams nailed to the structure, the maximum infill widths specified on page 62 apply.



WARNING

Form sheets and Adjustment Panels can fall off!

If the form sheet is not properly nailed to the telescoping piece, the form sheet can fall off! The telescoping piece is then no longer protected from being retracted! The Adjustment Panel can then fall off as well!

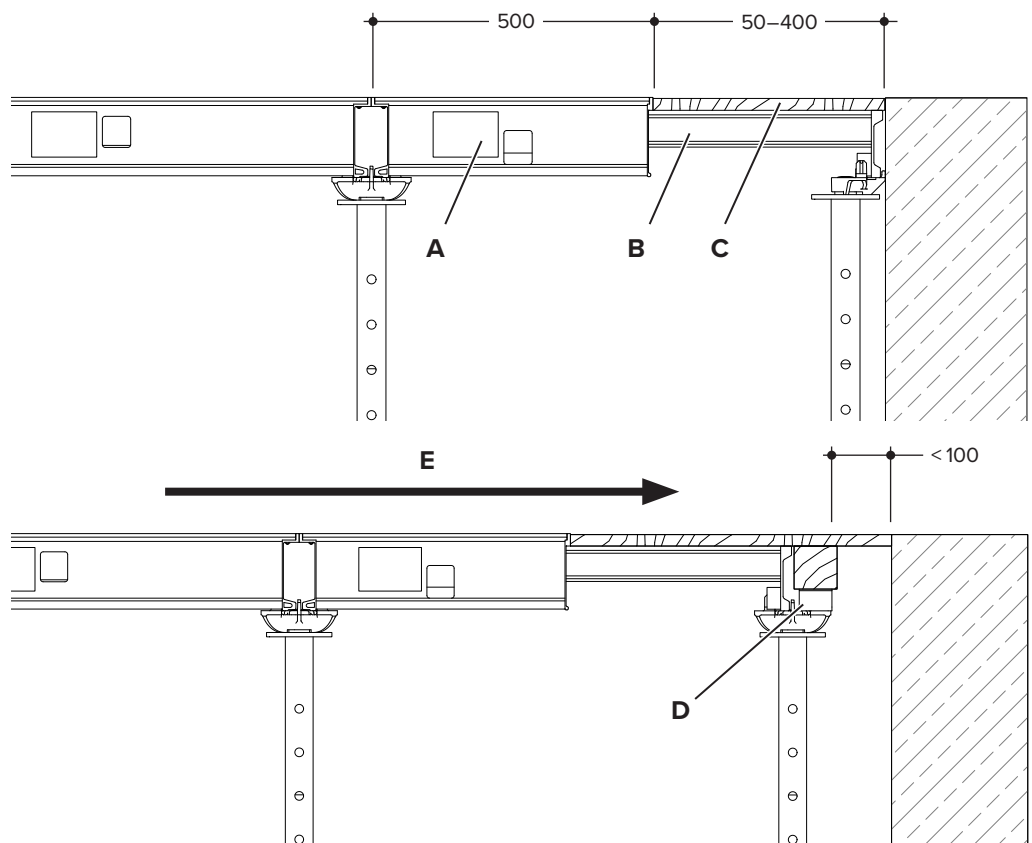
This can cause personal injury or death!

Always nail the form sheet to the telescoping piece!



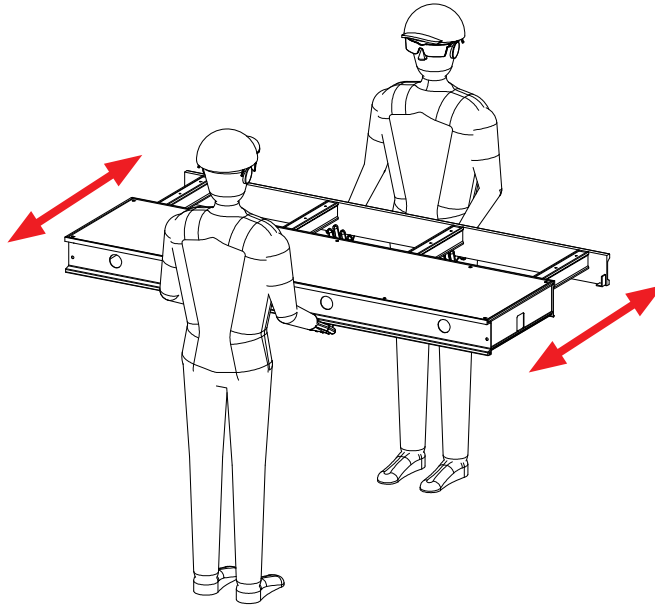
Do not place any spacers for the reinforcement near the cantilevered panels!

Pour concrete in the proper direction (**E**)! Do not begin pouring concrete in cantilevered sections!

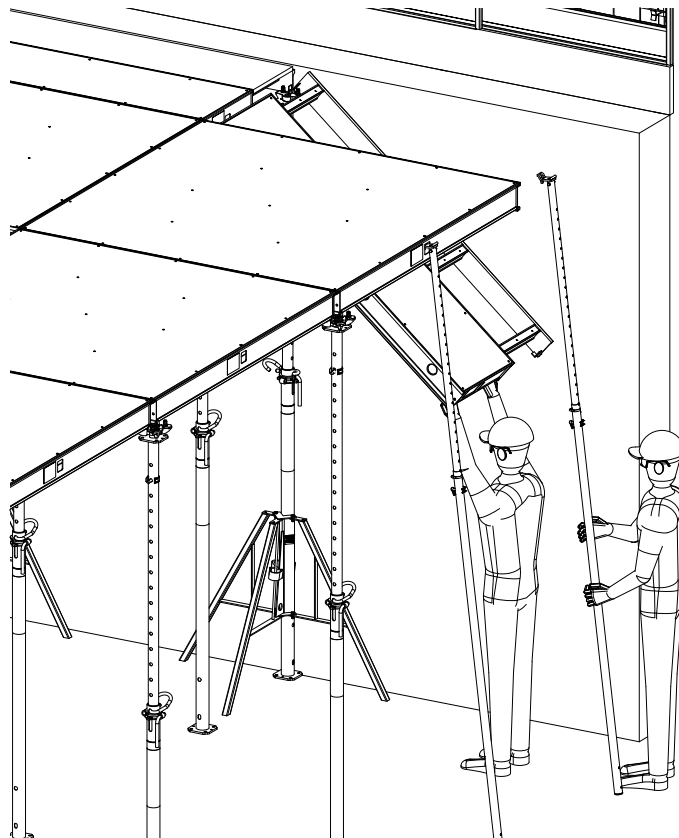


Step 1 Assemble formwork using TOPEC Panels up to the infill area.

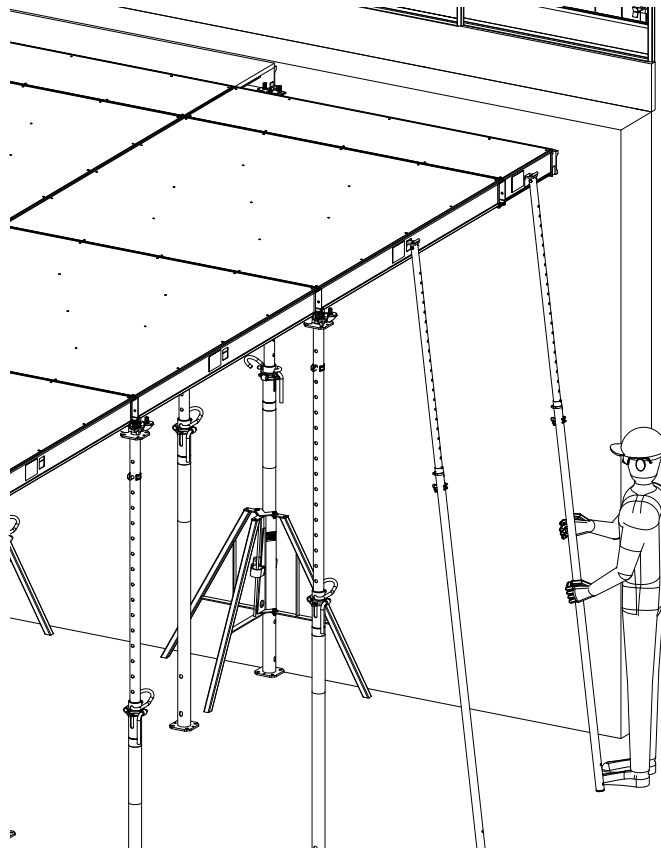
Step 2 Pull out the TOPEC Adjustment Panel to the required width.



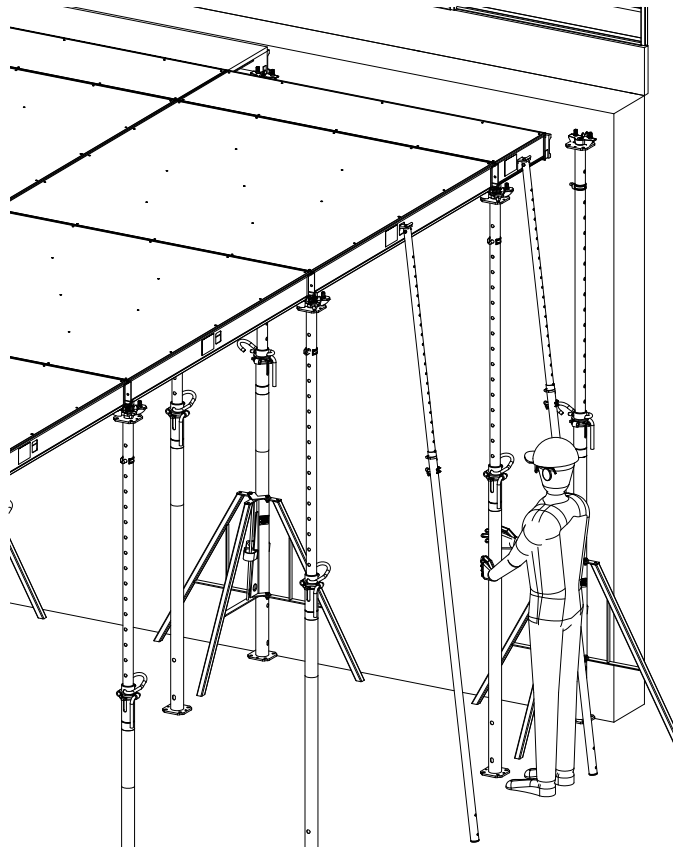
Step 3 Place the TOPEC Adjustment Panel on the supports on the steel props.



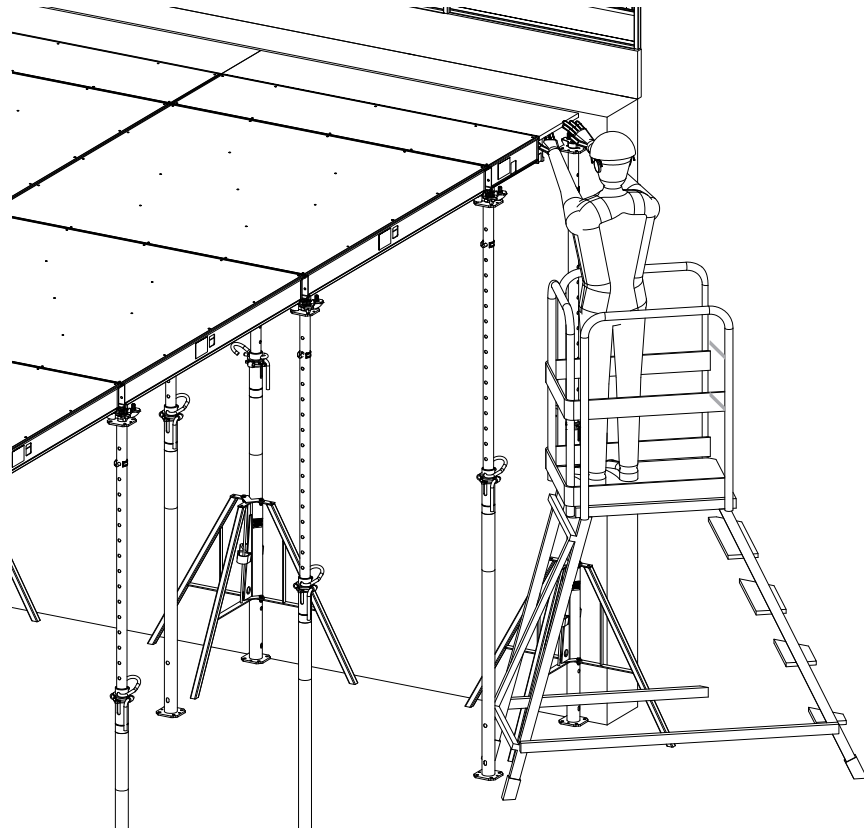
Step 4 Use the Alu Erection Rod 365 to swivel the TOPEC Adjustment Panel to the horizontal position and rest the panel on the Alu Erection Rod 365.



Step 5 Support TOPEC Adjustment Panels with adjacent TOPEC Panels using steel props.



Step 6 Working from a safe position, place the cut-to-size plywood on the telescoping piece of the TOPEC Adjustment Panel and nail to secure.

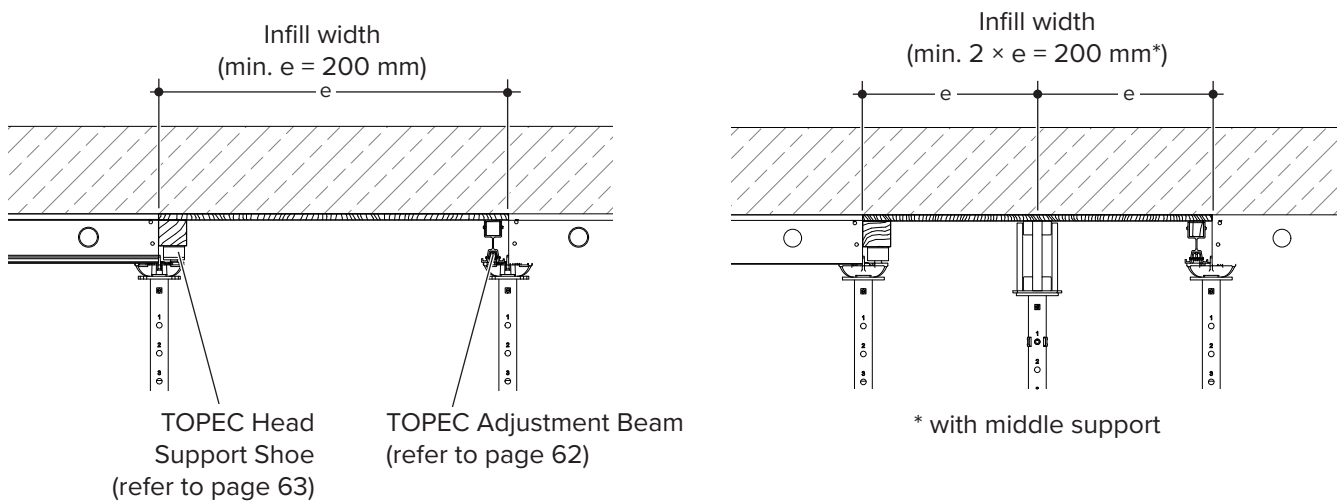


9.2 Using TOPEC Adjustment Beams or TOPEC Head Support Shoe

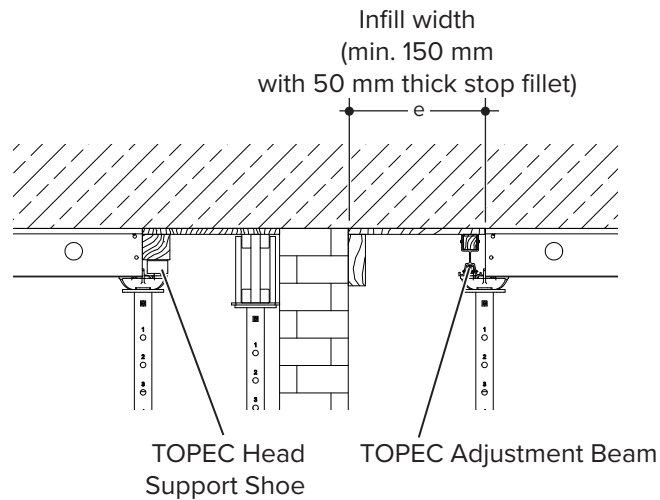
Infills can be constructed on site using TOPEC Adjustment Beams or TOPEC Head Support Shoes.

Larger infill areas can be created using additional middle supports. Refer to the table below for the maximum infill widths.

Infills between TOPEC Panels



Edge infills



Maximum infill width

The following table shows the maximum infill widths for the various slab thicknesses using a 21 mm multi-layer board according to DIN 68792 (grade F25/10).

e_{\max} = max. prop spacing

Slab thickness [cm]	e_{\max} [m]
15	0.67
20	0.63
25	0.60
30	0.57
35	0.55
40	0.53
45	0.52
50	0.50

9.2.1 TOPEC Adjustment Beam

The aluminium TOPEC Adjustment Beam has a wooden strip on it. A 21 mm plywood form sheet can be nailed onto the wooden strip. The Adjustment Beams can be positioned either way (longitudinally or laterally) in relation to the TOPEC Panels. Pins at each end secure the Adjustment Beam longitudinally.

Additional Transverse Beams can be added to the Adjustment Beams, e.g. to create infills around columns. How to use Transverse Beams is described in Section 9.3.



WARNING

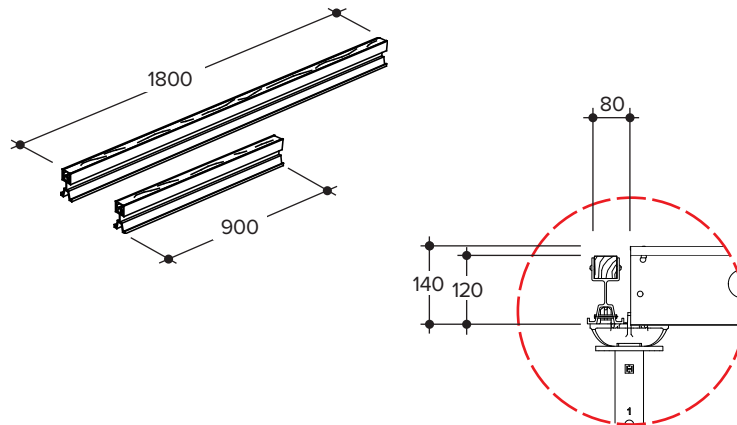
Adjustment Beam falls off!

Under adverse conditions the Adjustment Beam can fall off if it is not yet secured by the plywood.

This can cause personal injury or death!

Prior to assembly, secure the working area!

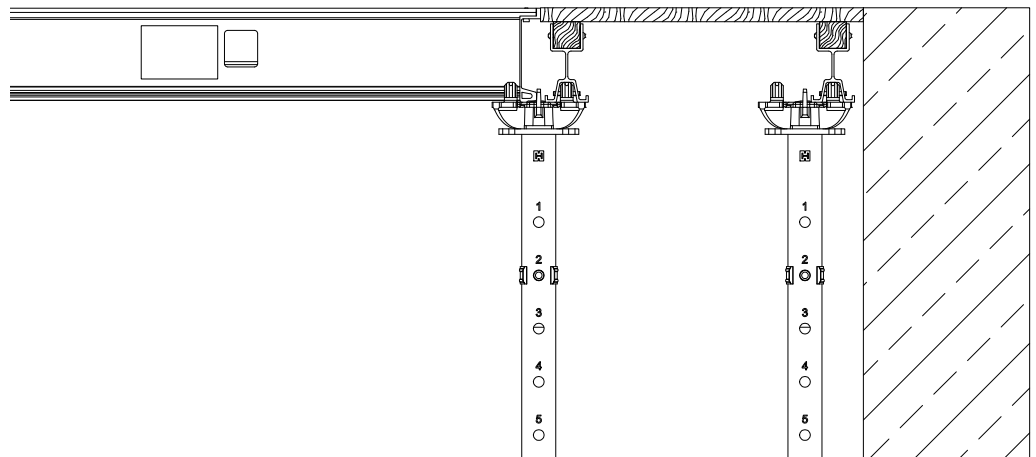
Nail the plywood to the Adjustment Beam as soon as it is put into place! This secures the Adjustment Beam, and the area can be accessed again.



Safe working load:

$M_{perm.} = 3.00 \text{ kNm}$
 $V_{perm.} = 15.00 \text{ kN}$

Example of application



9.2.2 TOPEC Head Support Shoe

Infills can also be constructed with the TOPEC Head Support Shoe and a timber beam.



WARNING

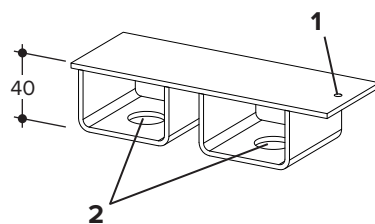
The Head Support Shoe and timber beam can fall off!

Under adverse conditions the Head Support Shoe and timber beam can fall off if not yet secured by the plywood!

This can cause personal injury or death!

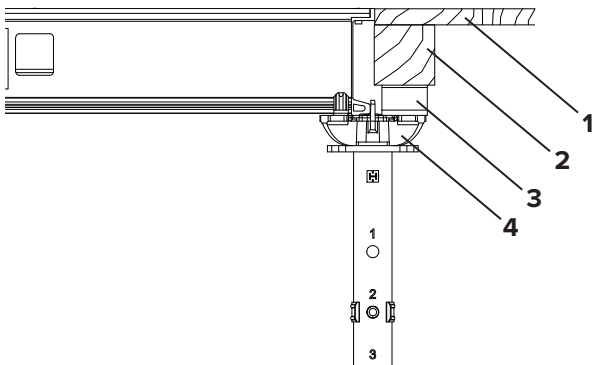
Prior to assembly, secure the working area under the Head Support Shoe and timber beam!

Nail the form sheet to the timber beam as soon as it is put into place! This secures the Head Support Shoe and timber beam, and the area can be accessed again.

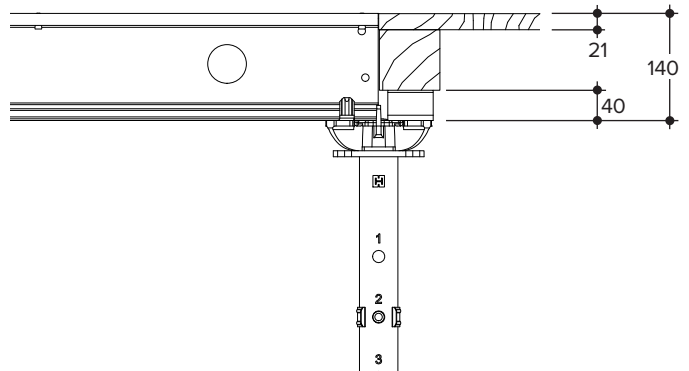


- 1** Nail hole for attaching timber beam to Head Support Shoe
- 2** Holes for attaching to the TOPEC Bearing

Head Support Shoe on edge profile (with round holes)

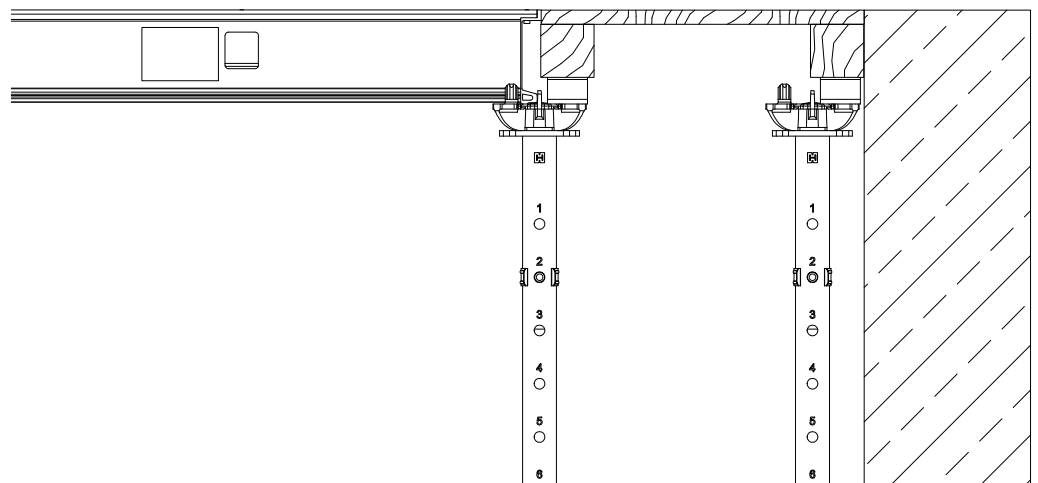


Head Support Shoe on front profile (with square hole)



- 1 Plywood, 21 mm thick
- 2 Timber beam, 80 mm high
- 3 TOPEC Head Support Shoe
- 4 TOPEC Bearing

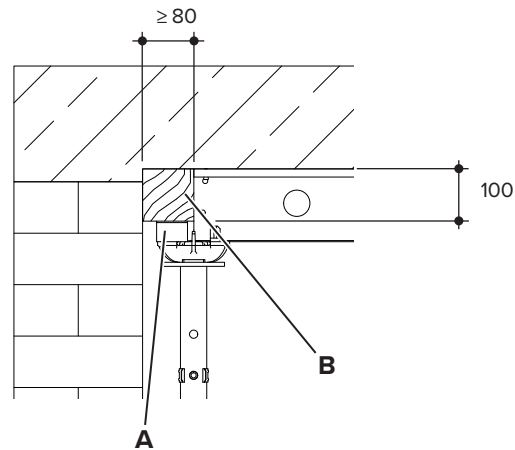
Example of application



Nail the underside of the timber beam to the Head Support Shoe! This prevents the timber beam from falling off.

Example of application with TOPEC Head Support Shoe by brick walls

When walls are made of masonry (residential construction), it often happens that the walls are several centimetres lower than the required floor height. TOPEC Head Support Shoes (A) can be used to close the resulting gaps at the edge. Do this by placing the timber beams (B) 80 × 100 mm or 100 × 100 mm on the Head Support Shoe. The timber beams serve as formwork and prevent concrete from escaping.



9.3 Using TOPEC Adjustment Beams and TOPEC Transverse Beams

TOPEC Transverse Beams can be used for 900 mm wide infills within a panel grid, e.g. for creating formwork around columns. The recessed areas are created using 2no. TOPEC Adjustment Beams and 2no. TOPEC Transverse Beams. The beams have a wooden strip onto which 21 mm plywood can be nailed. The spacing of Transverse Beams is dictated by the plywood capacity. (refer to section 9.2).



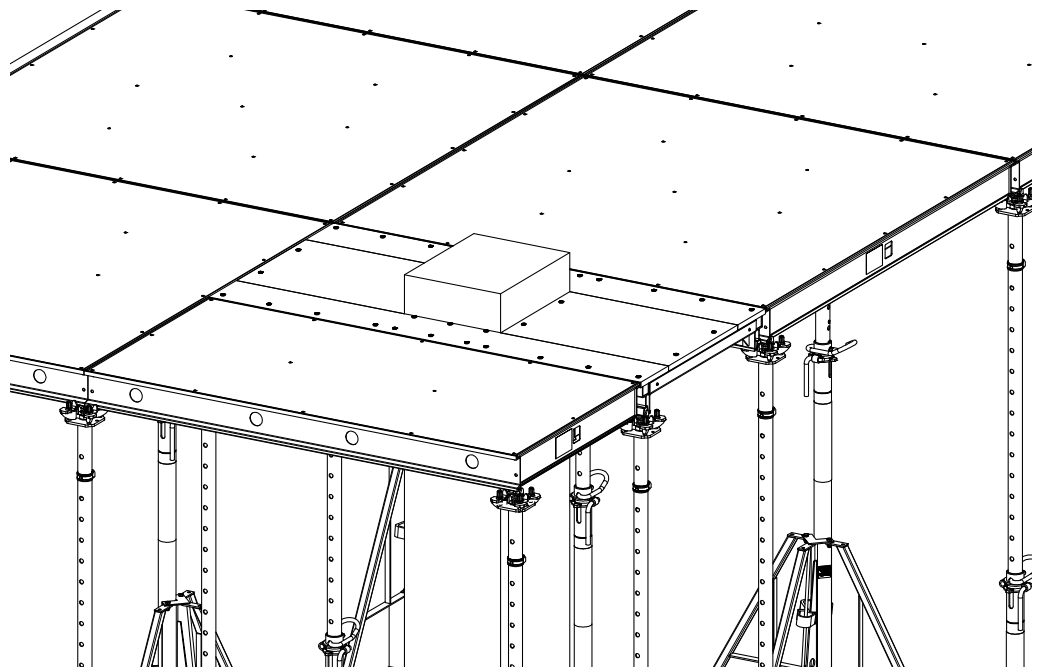
WARNING

Adjustment Beam falls off!

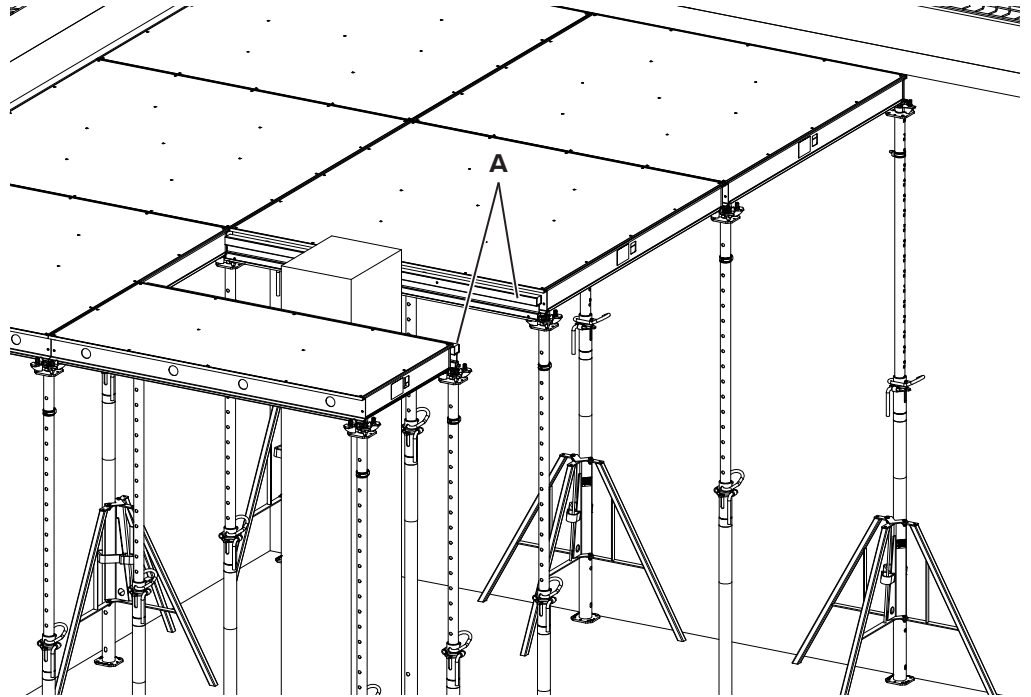
Under adverse conditions the Adjustment Beam can fall off, if it is not yet secured by the Transverse Beams.

This can cause personal injury or death!

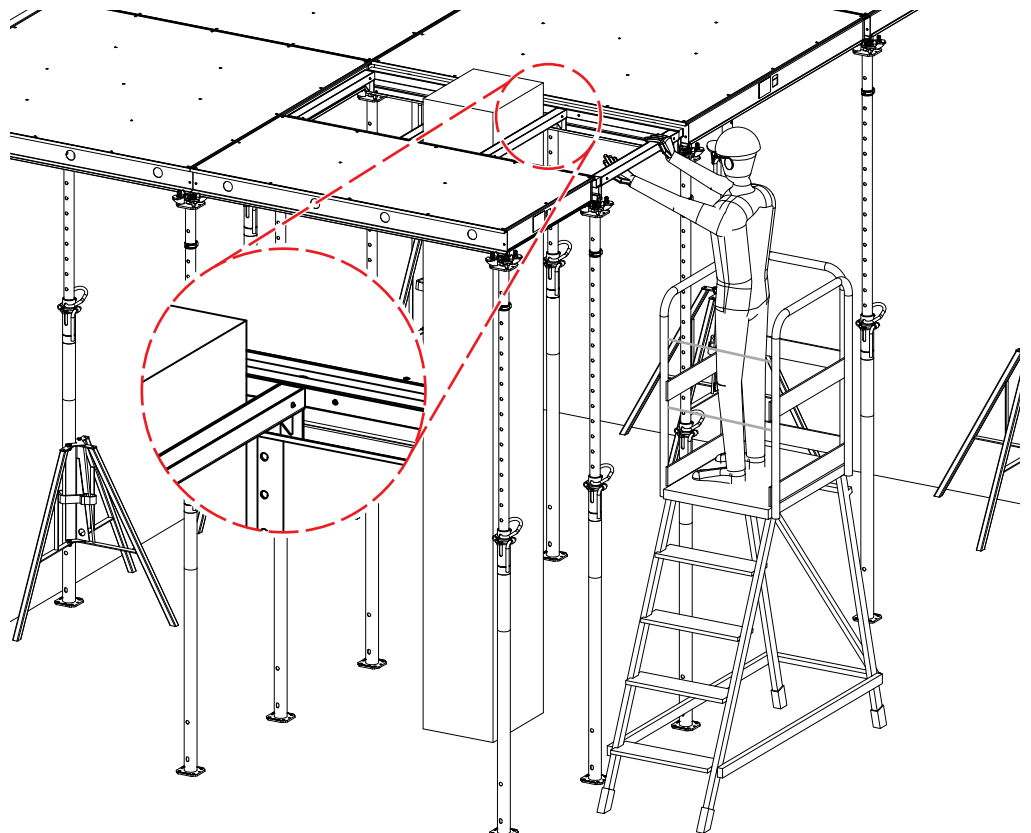
Attach the Transverse Beam as soon as the Adjustment Beam is in place!



Step 1 Use TOPEC Adjustment Beams (A) to construct the infill (refer to Section 9.2.1).



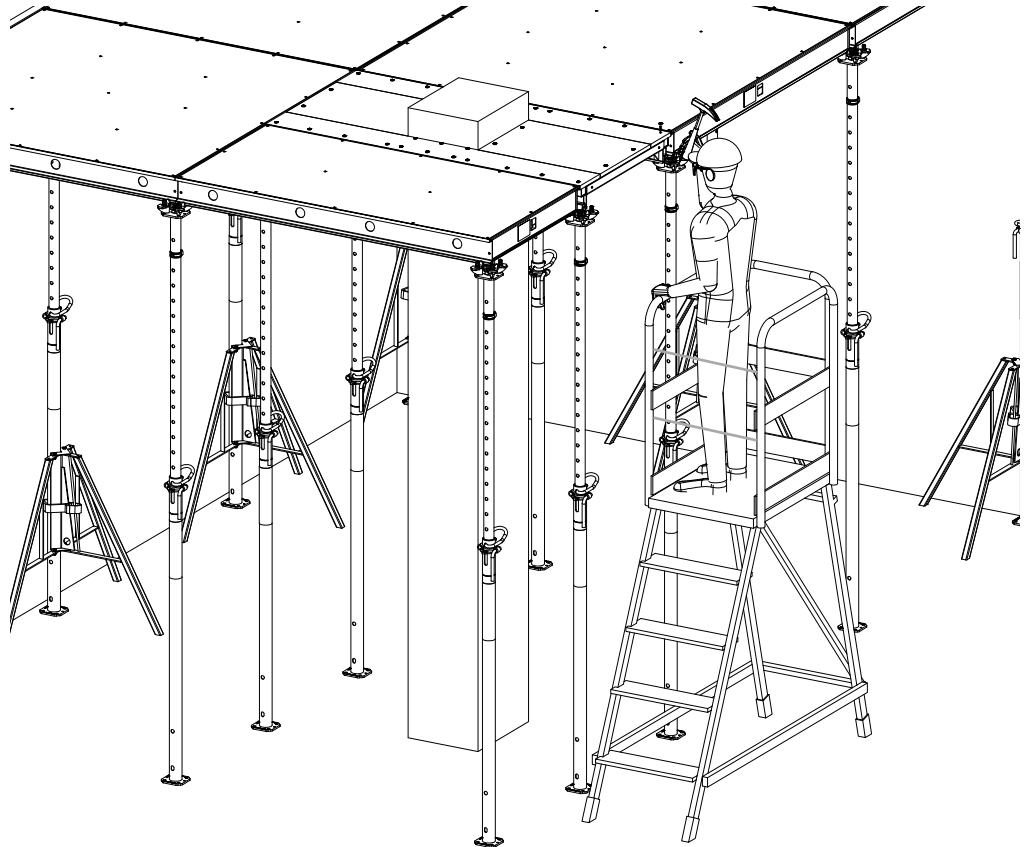
Step 2 Hook the required number of TOPEC Transverse Beams in the TOPEC Adjustment Beams.



Step 3 Working from a safe position, place 21 mm plywood on the Adjustment Beams and nail it.

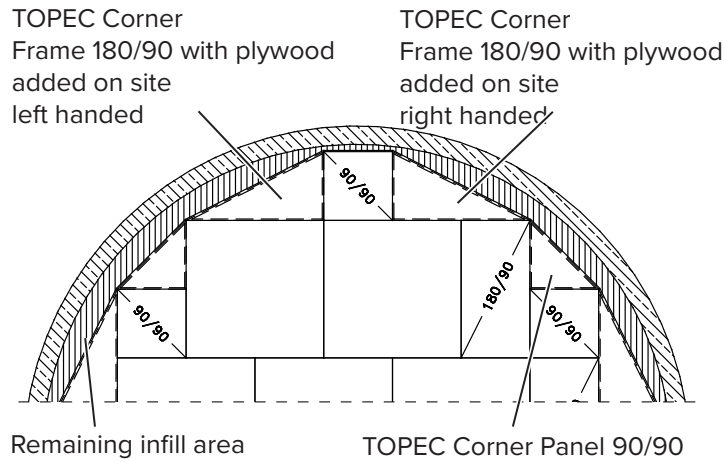
**WARNING****Risk of falling!**

Do not step onto the formwork until it is secured from lateral loads and collapsing!



9.4 Using TOPEC Corner Panels

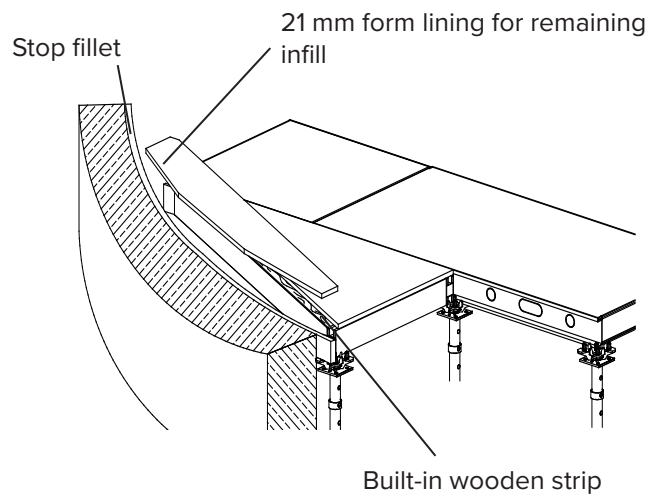
Infills can be created for complicated slabs using the TOPEC Corner Panel 90/90 or the TOPEC Corner Frame 180/90 and plywood available on site.



The TOPEC Corner Panel 90/90 is covered with a form sheet, but a 21 mm form sheet constructed on site is needed for each TOPEC Corner Frame 180/90.

The form sheet can be attached to either side of the aluminium profile. This allows you to choose between a left or a right constellation.

Place the TOPEC Corner Panel and the TOPEC Corner Frame on the TOPEC Bearing, just like the other panels. Additional support is not necessary. The diagonal profiles on the TOPEC Corner Panel and the TOPEC Corner Frame have a wooden strip where the remaining infill is attached.

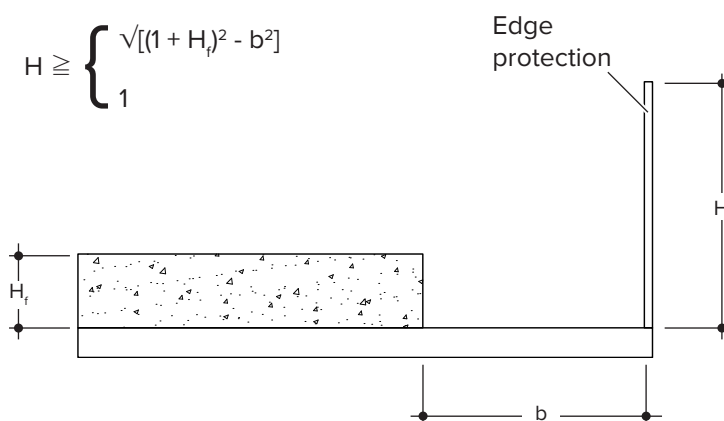


10 Edge Protection

As specified in BS EN 13374 Temporary Edge Protection Systems, the minimum height between the working area and the top of the edge protection should be 1.00 m. This may vary if the top of the slab is to be considered as the working area instead of the top of the formwork panel, which will depend on how close the slab end is to the edge of the panel.

Height of edge protection

In accordance with BS EN 13374 Temporary Edge Protection Systems, the height of the edge protection should be determined as follows:



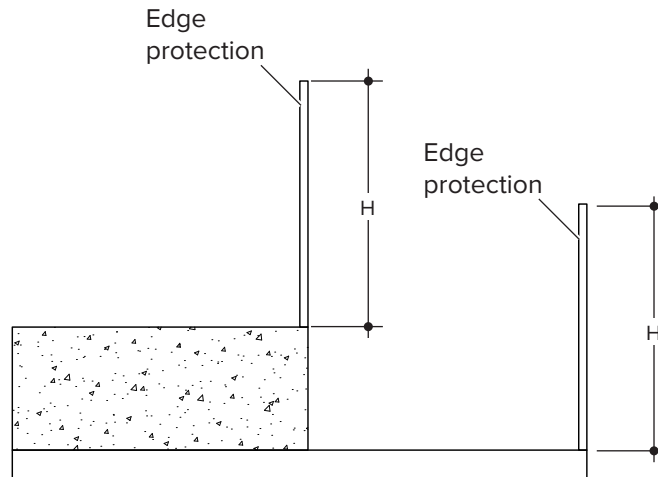
The value of the height (H) determined by the formula above should be the highest of the two values.

As a reference, the below table shows the required edge protection height (H) when both the slab height (H_f) and access width (b) are considered.

		Access width, b [m]									
		0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10
Level change, H_f [m]	0.10	1.08	1.06	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.15	1.13	1.11	1.08	1.04	1.00	1.00	1.00	1.00	1.00	1.00
	0.20	1.18	1.16	1.13	1.09	1.04	1.00	1.00	1.00	1.00	1.00
	0.25	1.23	1.21	1.18	1.15	1.10	1.04	1.00	1.00	1.00	1.00
	0.30	1.28	1.26	1.24	1.20	1.15	1.10	1.02	1.00	1.00	1.00
	0.40	1.39	1.37	1.34	1.31	1.26	1.21	1.15	1.07	1.00	1.00
	0.50	1.49	1.47	1.45	1.41	1.37	1.33	1.27	1.20	1.12	1.02

Values in white cells:	BS EN 13374, minimum protection height 1.00 m.
Values in shaded cells:	PROTECTO posts with PROTECTO Panel G2 or with timber railing. Provide protection to BS EN 13374.
Values in shaded cells and in bold:	PROTECTO posts with PROTECTO Panels G2 or with timber railings as standard do not provide enough protection height. The access width may need to be increased, or the PROTECTO posts used with appropriate extension socket (requires reduced post spacing) or secondary edge protection on the slab to be installed.

However, if the height of the slab is such that it becomes a fall hazard, then a secondary edge protection is required regardless of the distance between the slab edge and the formwork edge. The height of this secondary edge protection must be 1.00 m measured from the top of the slab.



Although these are some of the most common cases used on site, other solutions which comply with the current standard may be used depending on the individual job requirements.



The minimum height of the edge protection may vary from region to region. In Germany for example, the minimum height of the edge protection will change from 1.00 m to 1.10 m if the drop height is more than 12.00 m.

Refer to your local regulation for more information.



WARNING

Risk of fall from height!

Suitable protective measures must be in place during the installation of the edge protection systems. It is assumed that the operatives are protected by these measures during assembly and disassembly of the edge protection systems.

The performance of an edge protection system is directly related to the structure to which it is attached. The structure must withstand the extra imposed loads.



WARNING

Risk of collapse and fall from height!

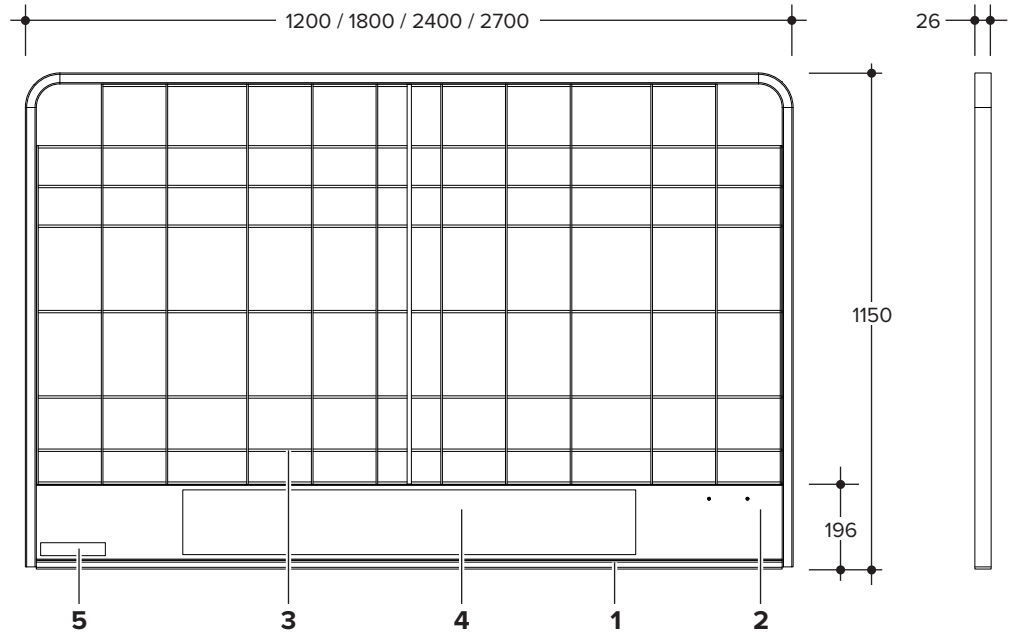
All fixings of the edge protection system to the existing structure must suit the specific application and be selected by a competent person.

Customer to ensure that the concrete can take the extra imposed loads.

10.1 Panels and posts

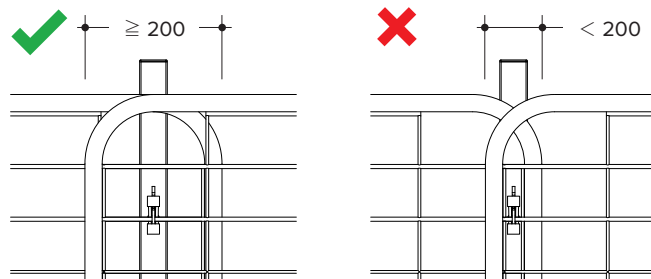
10.1.1 Panels

The PROTECTO Panel G2 can be used for edge protection on both wet deck and dry deck applications. The PROTECTO Panel G2 is to be used with the PROTECTO Post 130 Adjustable (code:692750) and depending on the application the required ancillary components will vary.



- 1 Steel frame
- 2 Steel toeboard
- 3 Steel wire Ø5.5 mm (horizontal) Ø3.75 mm (vertical)
- 4 Centre sticker (company branding)
- 5 Small sticker (item information)

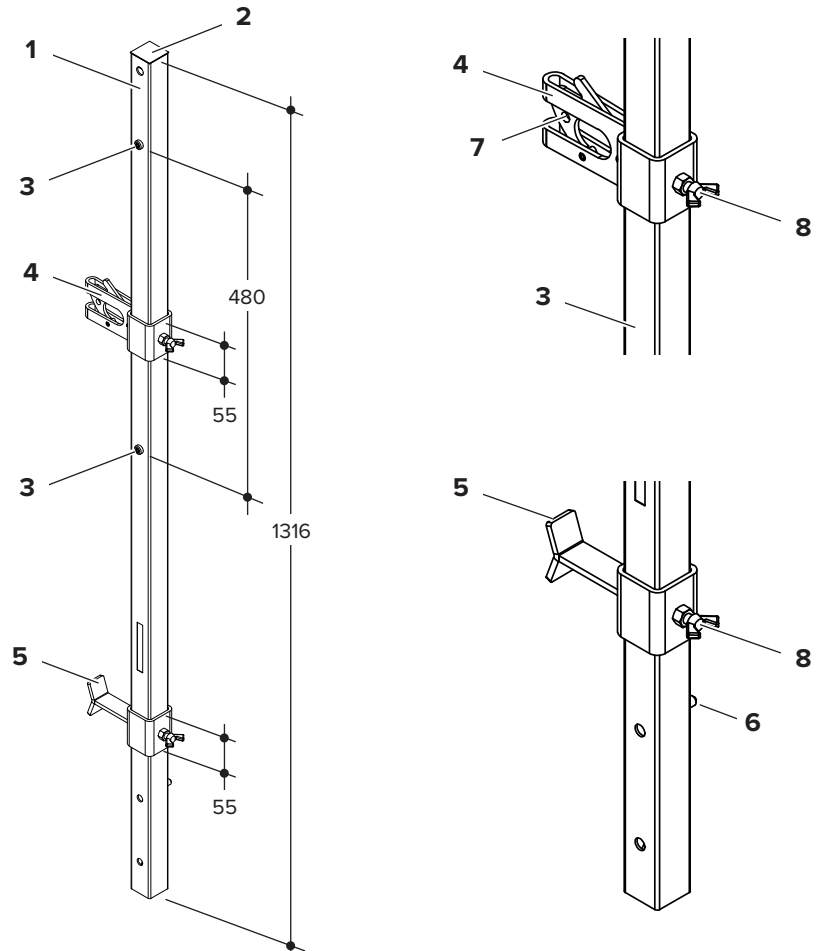
The minimum required panel overlap is 200 mm as shown below.



10.1.2 Posts

PROTECTO Post 130 Adjustable

The PROTECTO Post 130 Adjustable (code:692750) is used to hold the PROTECTO Panels G2. Its cross-section allows it to be used with the ancillaries of the PROTECTO Railing Post (code:601225).

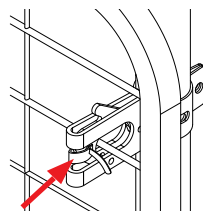


- 1 SHS 35 × 2 mm
- 2 Plastic cap
- 3 Stopper (tapping screw)
- 4 Sliding latch
- 5 Sliding T latch
- 6 Safety device (not visible) - see page 74
- 7 Ø8 mm hole for plastic zip tie
- 8 Captive hexagonal nut and wing nut

The PROTECTO Post 130 Adjustable (code:692750) complies with BS EN 13374 when used with the PROTECTO Panels G2.



It is recommended that the sliding latch is secured against accidental opening by using a plastic zip tie through the Ø8 mm hole.

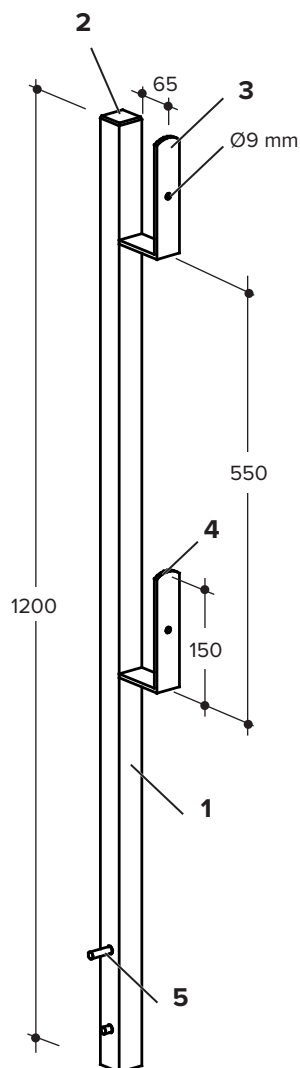


Latch can be secured with a cable optionally

PROTECTO Railing Post

The PROTECTO Railing Post (code:601225) can be used with the PROTECTO Panels G2 and the timber railing as an option for edge protection.

It is equipped with 2no. brackets for plank railings with dimensions of 150 × 30 mm. The post is secured by correctly inserting the integrated safety lock.



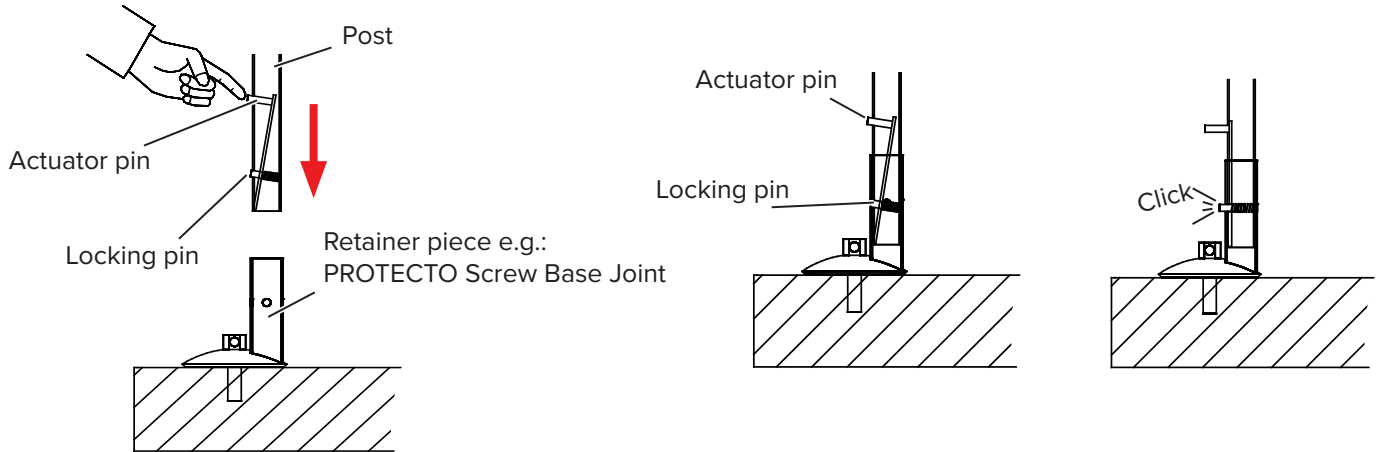
- 1** RHS 35 × 35 × 2 mm
- 2** Plastic cap
- 3** Top bracket
- 4** Bottom bracket
- 5** Safety device - see page 74

The PROTECTO Railing Post (code:601225) complies with BS EN 13374 when used with the PROTECTO Panels G2 and with plank railings. The planks used for railing must be 30 mm thick, 150 mm high and meet the requirements of strength class C24 according to EN 338 (formerly: S10).

Safety device

The safety device is used to prevent accidental displacement of the PROTECTO posts. Both the PROTECTO Post 130 Adjustable (code:692750) and the PROTECTO Railing Post (code:601225) have a safety device.

To correctly install the PROTECTO posts, insert the post into the retainer and press the actuator pin of the safety lock. The locking pin retracts inside the post and the post can be inserted into the retainer. When the locking pin is inside the retainer piece, release the actuator pin. Insert the post into the retainer until the spring mechanism can be heard and seen as fully locked. Test the proper seating of the post by pulling and inspect visually the correct engagement of the locking pin.



WARNING

Risk of falling from height!

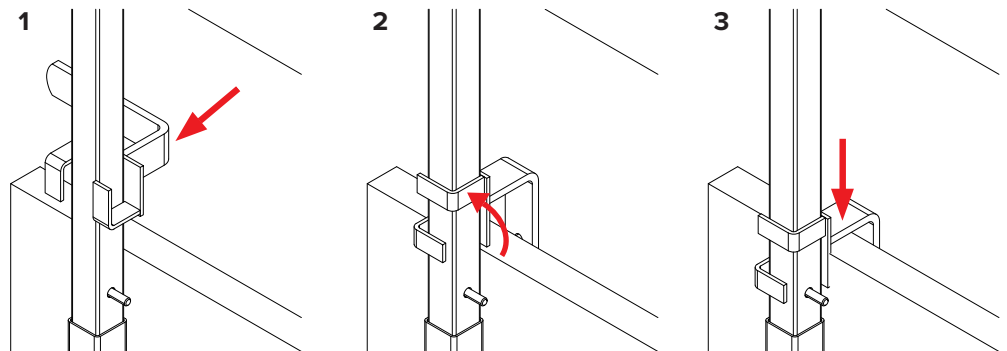
Do not use a post with a damaged or missing safety device.



Ensure that the locking pin is properly engaged to the retainer piece.

10.1.3 Toeboard retainer

The PROTECTO Toeboard Retainer (code:601227) is used in conjunction with the PROTECTO Railing Post (code:601225) to allow for a timber plank to be used as a toeboard. No tools are required to install the PROTECTO Toeboard Retainer (code:601227).



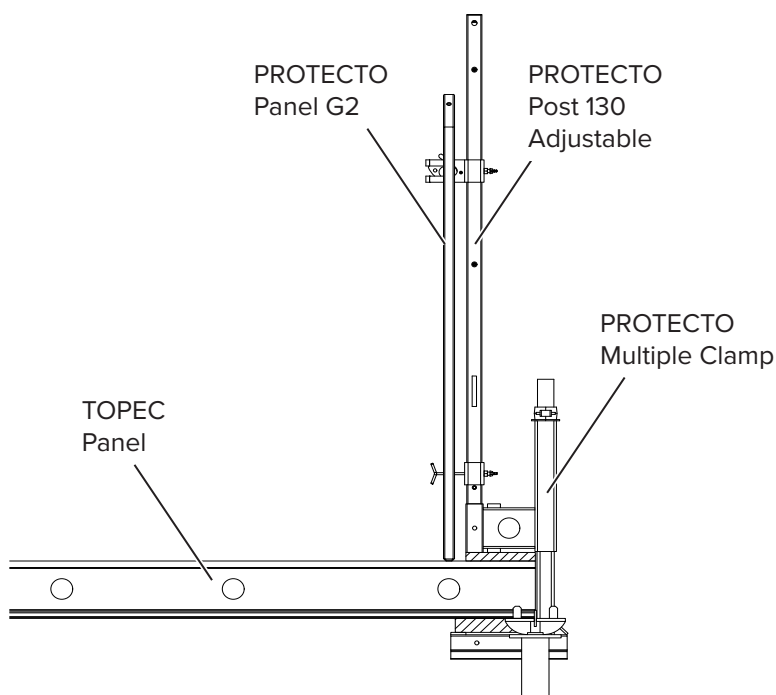
10.2 With the PROTECTO Multiple Clamp

PROTECTO Posts and mesh panels can be attached to cantilevered panels or between the steel props of the TOPEC Panels with the aid of the PROTECTO Multiple Clamp.

EN 13374 specifies that the edge protection has to be at least 1.00 m high, measured from the standing area. At heights greater than 12 m, the edge protection has to be 1.10 m high (for Germany: ASR 2.1). Always take into account the thickness of the slab. The height of the edge protection can be increased by using PROTECTO Post Extensions.



Always comply with local health and safety regulations!



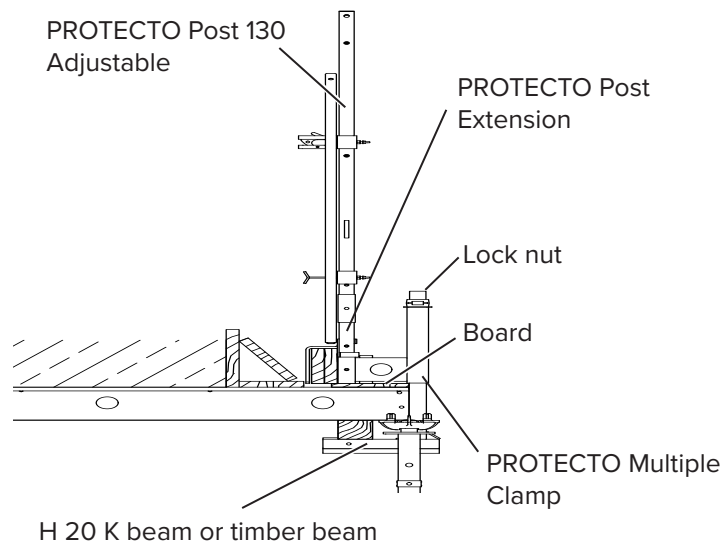
When PROTECTO Railing Posts are used without Post Extensions, the posts may not be spaced more than 2.40 m apart in conjunction with protective mesh panels or more than 2.00 m in conjunction with board railings.

When Post Extensions are used with mesh panels, spacing may not exceed 2.40 m.

When the Post Extension 26 is used with board railings, spacing may not exceed 1.70 m.

When the Post Extension 42 is used with board railings, spacing may not exceed 1.30 m.

An H 20 K Beam or a timber beam has to be clamped between the underside of the panel and the Multiple Clamp to be able to use the Multiple Clamp on TOPEC Panels. Also place a board on top of the TOPEC Panel to protect the form sheet. Attach the Multiple Clamp no more than 250 mm from an edge profile (with round holes).



Reading the instructions in the separate PROTECTO system User Guide is essential!

- Step 1** Attach the Multiple Clamps to the TOPEC Panels along with the H 20 K Beam (bottom) and the board (top).
- Step 2** If necessary, insert the Post Extension into the Multiple Clamp.
- Step 3** Insert the PROTECTO Post into the Multiple Clamp or Post Extension.
- Step 4** Hang the protective mesh panel on the PROTECTO Post.



Check that the pins on the Post Extensions and on the PROTECTO Post lock into place properly.

10.3 With the TOPEC P-Railing Shoe

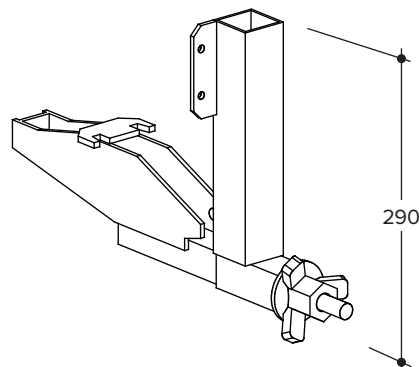
The TOPEC P-Railing Shoe can be used on cantilevered TOPEC Panels. The TOPEC P-Railing Shoe can be attached along with the PROTECTO Railing Post to TOPEC Panels 180/90 while the panels are still on the ground. Then erect the formwork in the usual way.



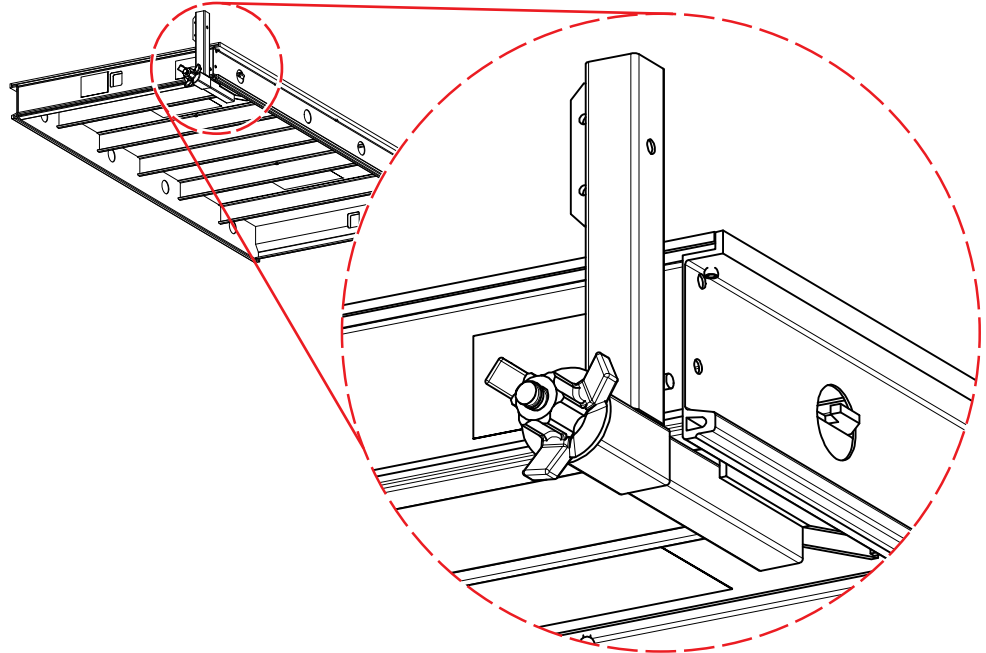
The TOPEC P-Railing Shoe can be used to construct edge protection on the front profiles (profiles with square hole) of cantilevered TOPEC Panels.

Working from a safe position, hang the protective mesh panels on the PROTECTO Railing Posts.

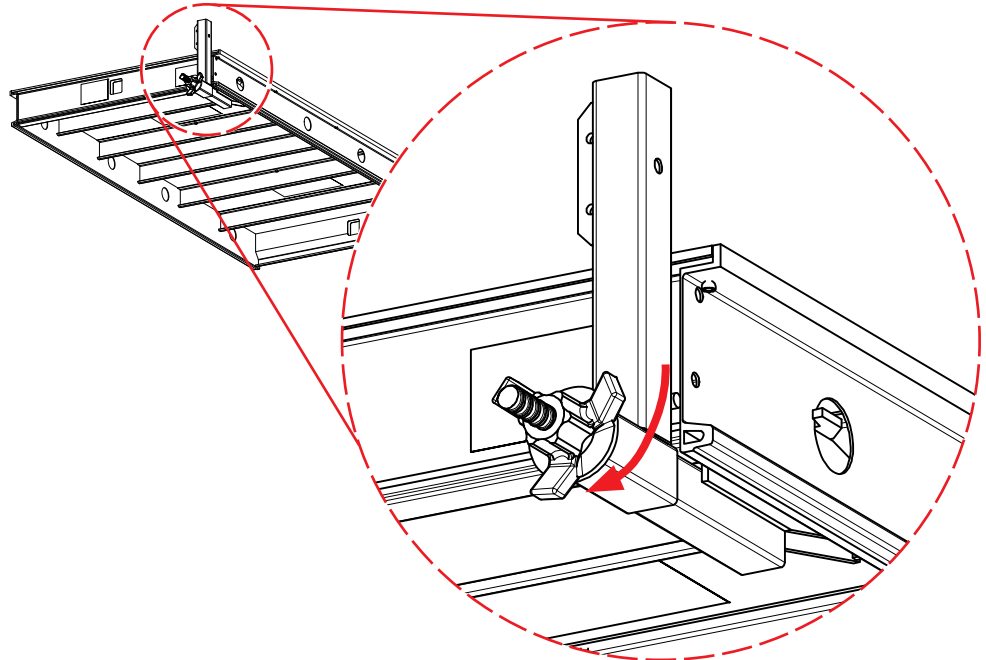
TOPEC P-Railing Shoe



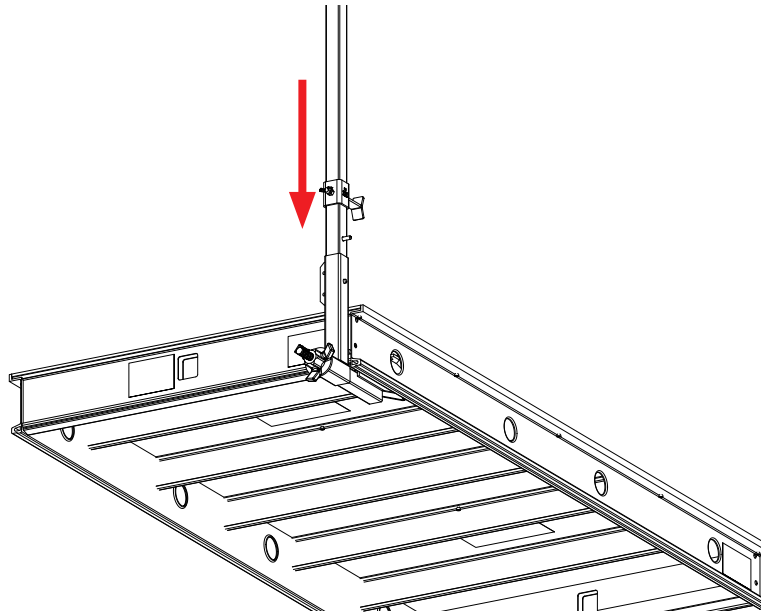
Step 1 Hook the TOPEC P-Railing Shoe into the outermost round hole in the TOPEC Panel with the hook. If necessary, unscrew the wing nut far enough that the TOPEC P-Railing Shoe fits onto the panel.



Step 2 Tighten the wing nut. The TOPEC P-Railing Shoe is now properly attached.



Step 3 Insert the PROTECTO Post. The pin on the PROTECTO Post has to lock into the TOPEC P-Railing Shoe.



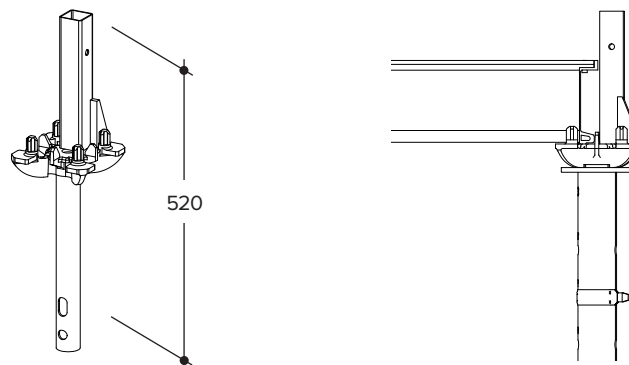
The hook on the TOPEC P-Railing Shoe has to engage in the outermost round hole in the outer rib of the TOPEC Panel.

10.4 With the TOPEC P-Bearing for Railing

If the TOPEC Panels are not cantilevered and instead end at the last steel prop, edge protection can be constructed using the TOPEC P-Bearing for Railing.

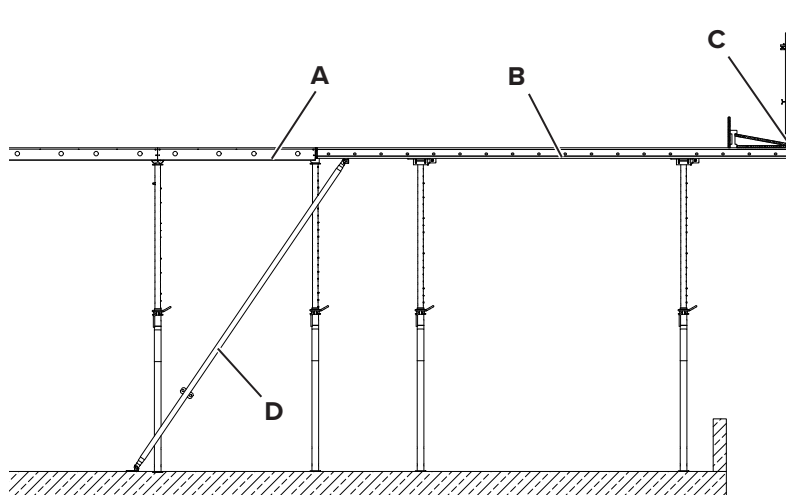
Insert the TOPEC P-Bearing for Railing into the outermost steel props. It holds the TOPEC Panels and is where the PROTECTO Railing Post is inserted. Handrail boards can be used to erect edge protection along the longitudinal and lateral sides of TOPEC Panels.

The TOPEC P-Bearing for Railing can be used for slabs up to 50 cm thick (only when completely retracted).



10.5 With TOPMAX Table Forms

When TOPMAX Table Forms (**B**) are used near the edges of TOPEC formwork (**A**), edge protection can be constructed with the aid of the TOPMAX Post Fastener (code:603123, **C**). Always secure cantilevered formwork to prevent it from tilting or collapsing, e.g. with wall struts (**D**)!



Always refer to the TOPMAX User Guide for information on TOPMAX components! The User Guide contains information on connecting TOPEC Panels to TOPMAX Table Forms as well as on bracing TOPMAX Table Forms.

11 Formwork restraint

Depending on the operating conditions, the formwork may need to be restrained, e.g. for these reasons:

- Protection from uplift
- Protection of cantilevered panels from tilting or collapsing
- Protection from horizontal loads resulting from live loads, traffic loads, wind, etc.

There are various ways to secure the formwork:

- With straps (uplift)
- By placing kentledge on the formwork (uplift)
- With the TOPEC Securing Bolt (uplift)
- With alignment struts (horizontal loads)
- By tying to the structure (horizontal loads)



WARNING

Formwork can collapse!

When the TOPEC Panels are protected from horizontal loads or uplift with straps, alignment struts or timber beams, the panels are subjected to additional force. This reduces the load rating of the TOPEC Panels, and it may also reduce the maximum slab thickness permitted.

The formwork can collapse when it is overloaded, which can result in injury or death!

Always take into consideration the diverted force resulting from securing the formwork when dimensioning the formwork. Precisely comply with the configuration limits when erecting the formwork and securing it.

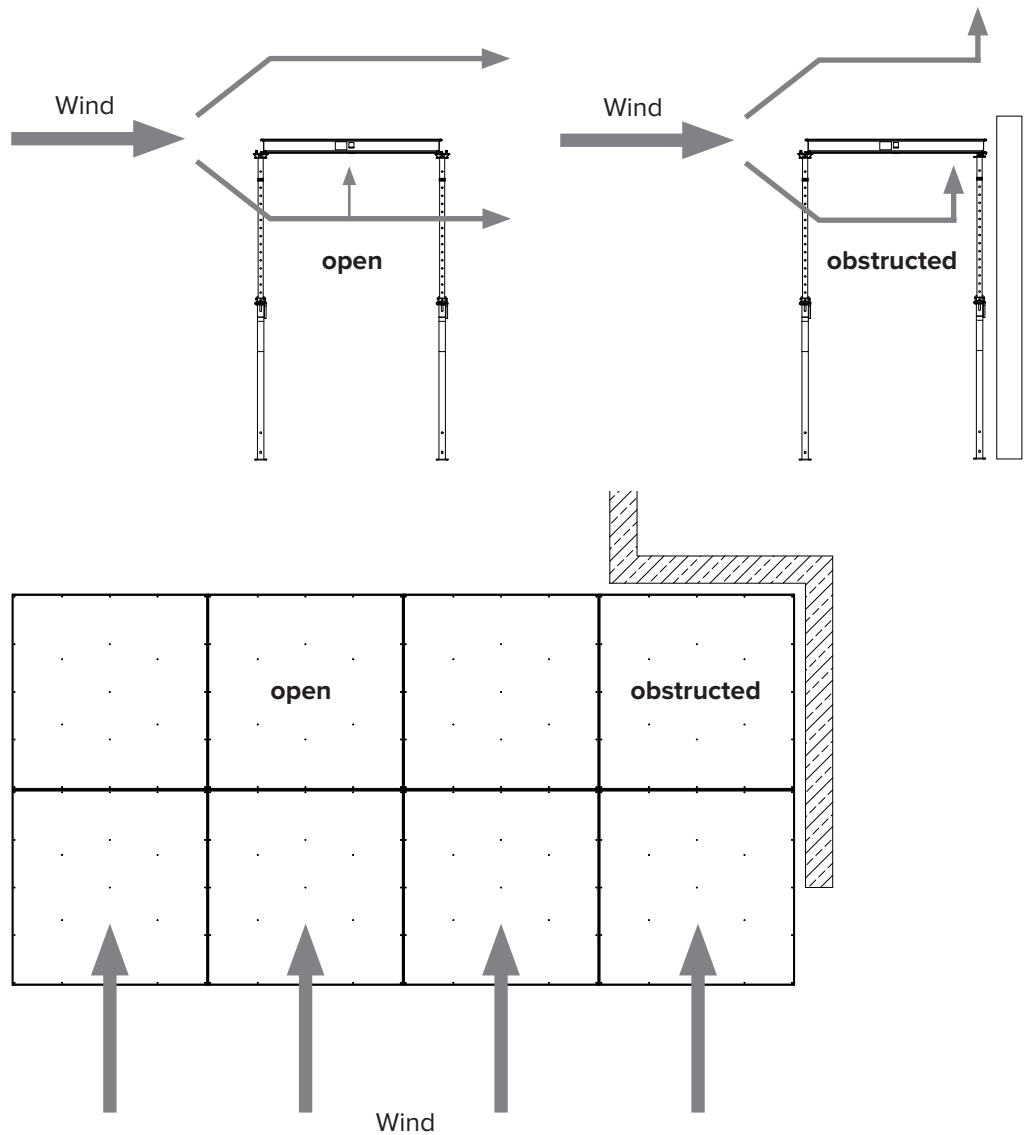
11.1 Uplift

Wind can cause the TOPEC formwork to be lifted.

Additional measures to protect from uplift are generally not necessary in an open structure at normal working wind (approx. 65 km/h, 0.20 kN/m²). If the wind is stronger, the formwork has to be secured to resist the anticipated wind load.

It is necessary to include weather monitoring data in the construction scheduling. Precautionary measures against uplift (refer to section 11.3) may be necessary including the deconstruction of the formworks depending on local conditions, such as location environment, building height and building geometry, etc. and must be checked on site.

If the building geometry is particularly unfavourable, e.g. in obstructed areas where the wind can face resistance or swirl, additional measures may be needed to protect the structure from uplift even at low speeds (refer to section 11.3).



11.2 Information on horizontal loads

The formwork is always subjected to horizontal loads, e.g. from

- Wind
- Fresh concrete pressure, particularly by stopends, upstands, steps in slabs, etc.
- Construction operation loads
- Out-of-plumb props
- Sloping soffit

The formwork always has to be protected from the effects of horizontal loads (H-loads). EN 12812 defines the various horizontal loads.



WARNING

Formwork can collapse!

If the formwork is not properly secured, H-loads can cause it to collapse!

This can cause personal injury or death!

Always secure the formwork as indicated.



The maximum horizontal load to which the TOPEC Bearing may be subjected is 4.50 kN.

11.3 Preventing uplift with reinforcement/kentledge

Reinforcement steel mesh is a secure way to protect the formwork from uplift.



WARNING

Formwork can collapse!

If materials are placed on formwork that is not protected from H-loads, the formwork can collapse!

This can cause personal injury or death!

Always make sure the formwork is horizontally restrained before stepping onto the formwork or placing materials on the formwork!

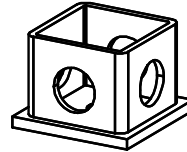
Step 1 Secure the formwork against lateral movement.

Step 2 Place reinforcement steel mesh on the formwork. Distribute the reinforcement steel mesh such that all the panels are sufficiently weighted down.

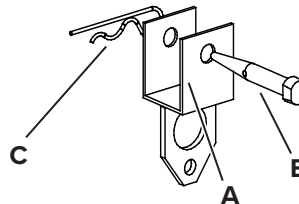
11.4 Preventing uplift with straps

TOPEC Panels can be protected from uplift with 1no. TOPEC Tension Anchor Slab Bracket, up to 4no. TOPEC Panel Tension Straps and 4no. straps.

Use a suitable anchor M16 (w.a.f. 24) to tie the TOPEC Tension Anchor Slab Bracket. For an overview of the SWLs as a function of the concrete compressive strength see 86.



Secure the TOPEC Panel Tension Strap (**A**) to the round holes in the TOPEC Panels using a Waler Bolt D20 (**B**) and spring cotter pin 4 (**C**). The TOPEC Tension Strap can be attached only at the joint between 2no. TOPEC Panels and only to the edge profiles (with round holes) of TOPEC Panels.



Once they are in place, use straps to connect up to 4no. TOPEC Tension Straps to the TOPEC Tension Anchor Slab Bracket.



Textile straps with a minimum tensile force of 1,000 kg are recommended as Tension Straps.



WARNING

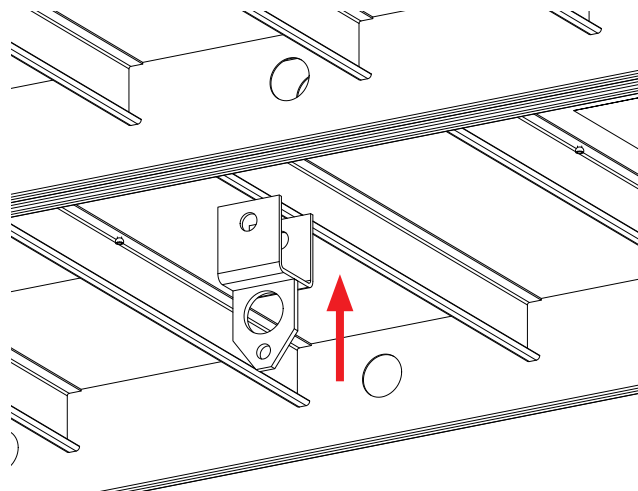
Formwork can collapse!

If the straps are over-tightened, the TOPEC Panels or the steel props will be overloaded when the concrete is poured, causing the formwork to collapse.

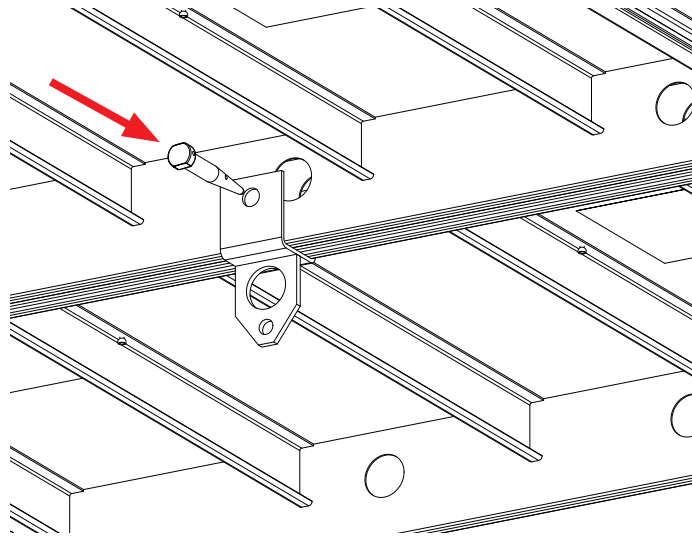
This can cause personal injury or death!

Tension the belts only as much as needed to protect the formwork elements from uplift!

Step 1 Slide the TOPEC Tension Strap over the joint (edge profiles, with round holes) between 2no. TOPEC Panels.

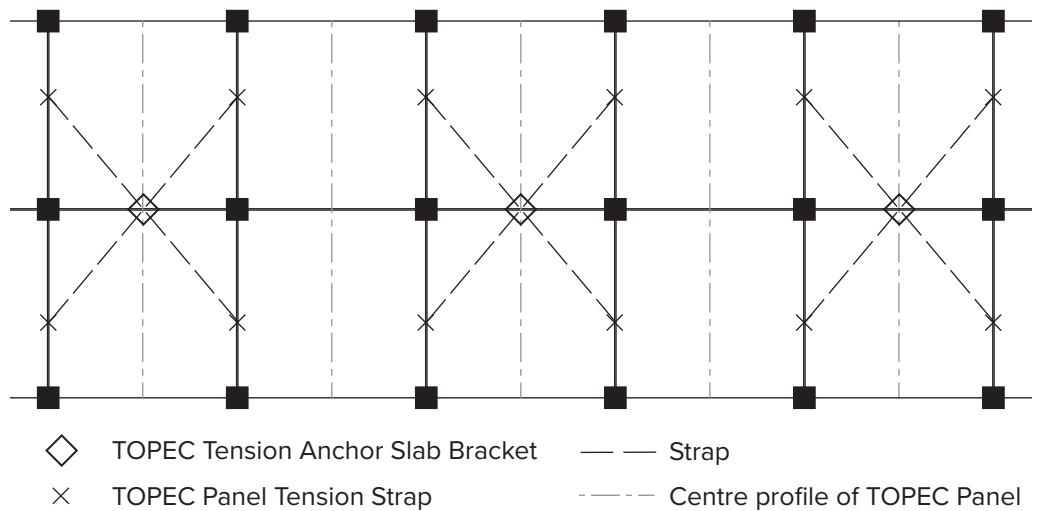


Step 2 Use a Waler Bolt D 20 to attach the TOPEC Tension Strap to the middle round holes in the TOPEC Panels. The distance to the front profile (with square hole) is about 700 mm. Secure the Waler Bolt with a spring cotter pin.

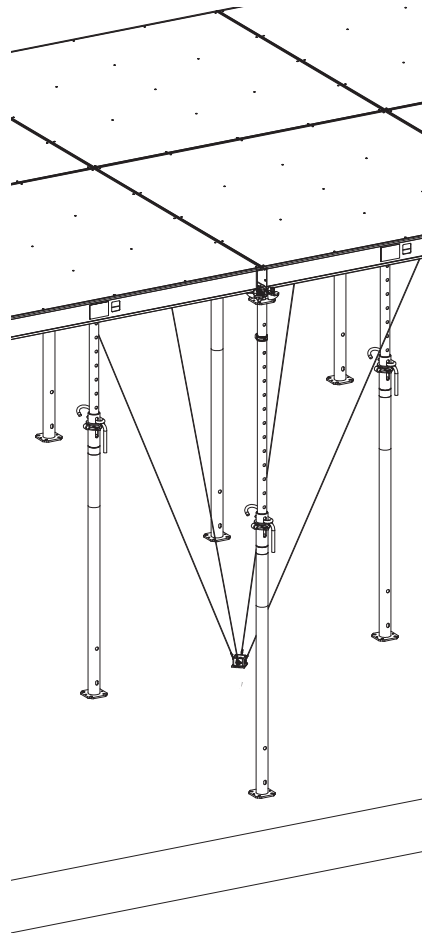
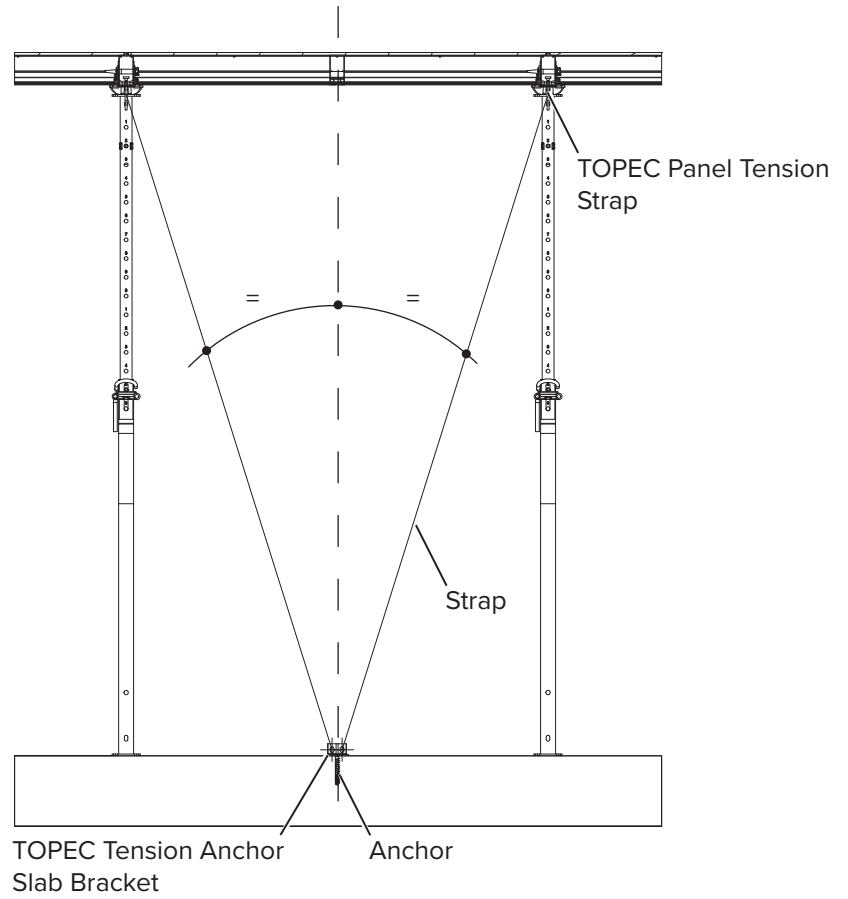


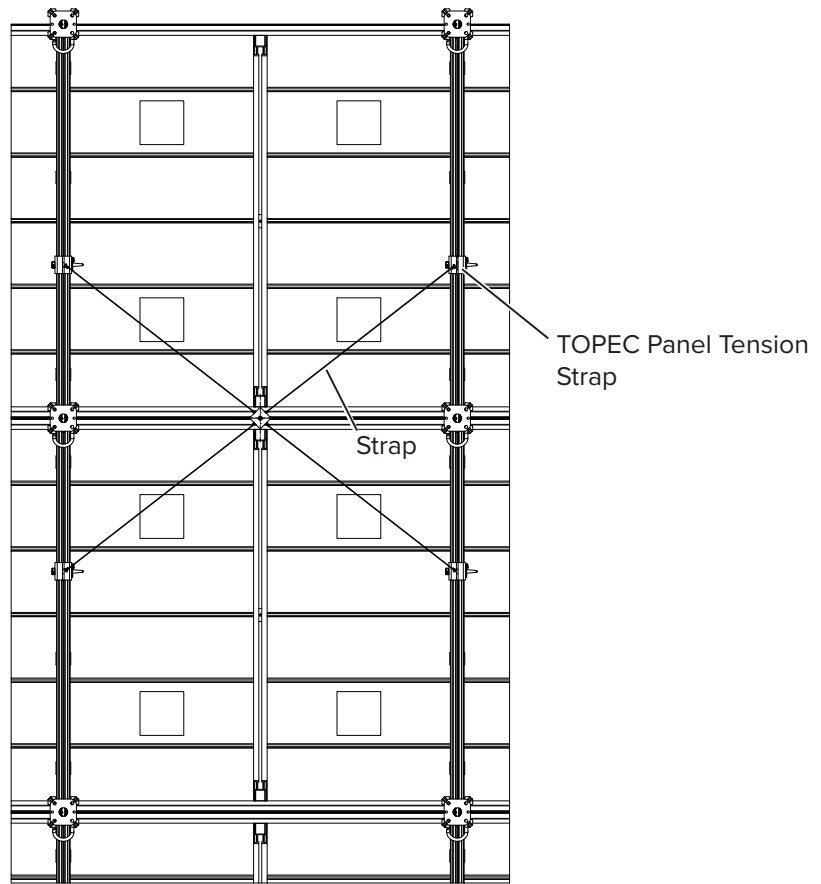
Step 3 Use suitable anchor bolts to tie the TOPEC Tension Anchor Slab Bracket to the ground.

Step 4 For example, brace the TOPEC Panels with straps as shown in the drawing. Do not overtighten the straps.



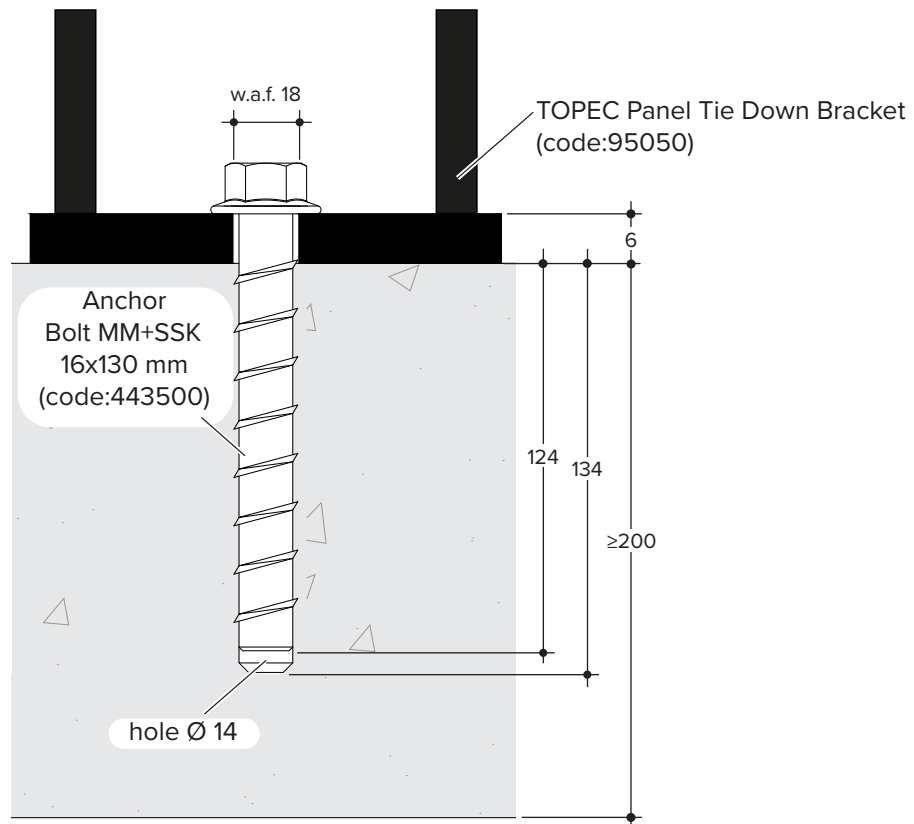
Depending on the TOPEC Panel layout and wind load, the position and number of TOPEC Tension Anchor Slab Brackets may vary. With a low wind load, the number of straps to tie down the TOPEC Tension Anchor Slab Brackets can be reduced (e.g. to every third panel). However, a TOPEC Panel Tension Strap should still be attached to each panel joint.





11.5 Anchoring of the TOPEC Panel Tie Down Bracket (to prevent uplifting)

With the Anchor Bolt MM+SSK 16x130 mm (Part Code: 443500) components like the TOPEC Panel Tie Down Bracket and Alignment Struts can be temporarily secured.

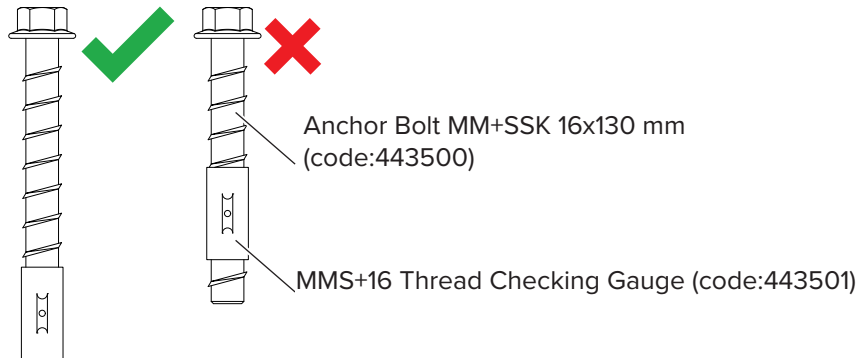


Anchor Bolt MM+SSK 16x130 mm (code:443500)		
Specifications		
Length	L	130 mm
Drilling-diameter [Ø]	d0	14 mm
Width between flats	SW	24 mm
Minimum distance between drilling holes	s	≥645 mm
Minimum edge spacing	c	60 mm
Minimum concrete thickness	d	≥200 mm

Permissible traction of the Anchor Bolt MM+SSK 16x130 mm (code:443500) in kN at concrete compressive strength F_{ck}			
≥10 N/mm ²	≥15 N/mm ²	≥20 N/mm ²	≥25 N/mm ²
12.5	15.3	17.7	19.8

Reuse of Anchor Bolt

Anchor Bolt must always be reviewed with the MMS+16 Thread Checking Gauge.



When a hole has been incorrectly drilled, a new hole must be drilled at a distance of twice the actual depth of the original hole.

Anchor Bolts may be reused, but holes may not.

11.6 Preventing uplift with TOPEC Securing Bolts

Fasten the TOPEC Securing Bolt to the TOPEC Bearing. The TOPEC Securing Bolt secures the TOPEC Panels to the Bearing and to the steel prop. The additional weight of the steel props prevents the formwork from uplift.

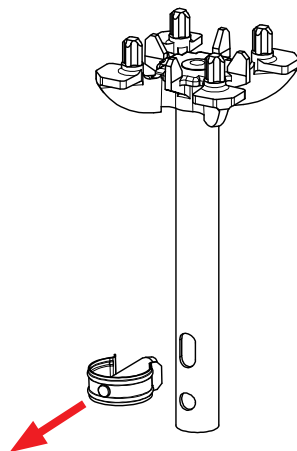
TOPEC Bearings with a securing bolt attached to them can be used only in these positions:

- At the intersection of 4no. TOPEC Panels (refer to page 33).
- At the edge, where 2no. edge profiles (with round holes) of TOPEC Panels come together (refer to page 35).

A ratchet with a 300 mm extension and an 18 mm wrench socket are needed to attach the Securing Bolt to the TOPEC Bearing or TOPEC Edge Support N.

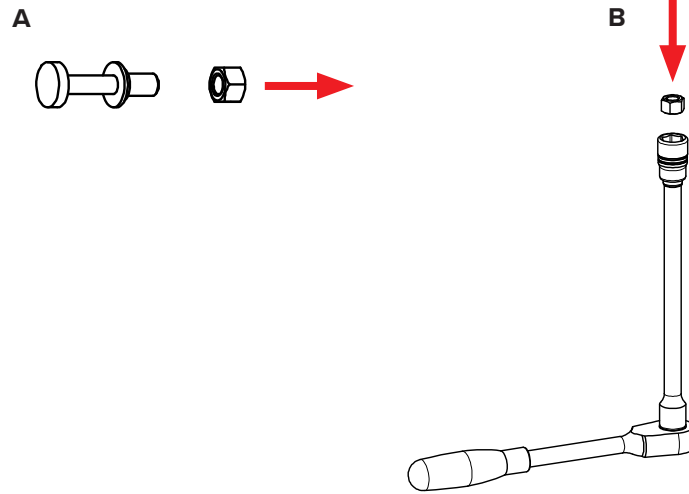
To be able to attach the Securing Bolt, the Bearing may not be mounted on a steel prop.

Step 1 Remove the TOPEC Bolt or the TOPEC Bolt D14 from the Bearing.

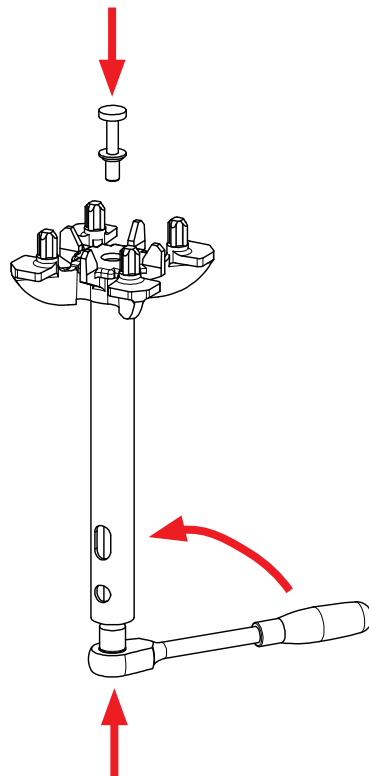


Step 2 Remove the plug from the top of the TOPEC Bearing.

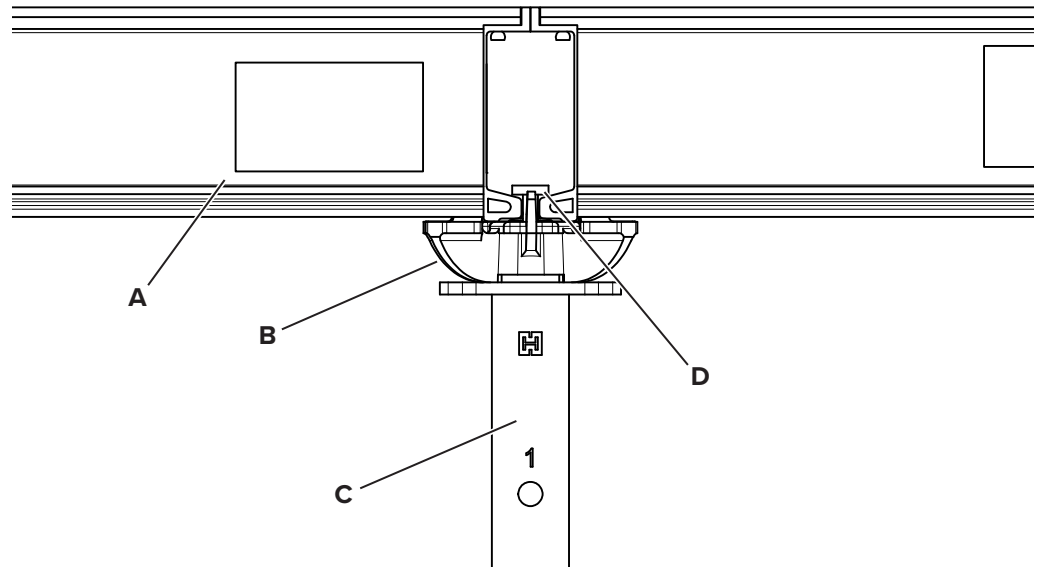
Step 3 Remove the nut from the TOPEC Securing Bolt (A) and place it in the 18 mm wrench socket (B).



Step 4 Guide the wrench socket into the TOPEC Bearing from below and screw the Securing Bolt into the nut from above. Tighten the nut hand tight.



Step 5 Insert the Bearing (B) into the steel prop (C) and use the steel prop in the usual manner. When placing the TOPEC Panels (A) on the Bearing, ensure that the edge profiles (with round holes) of the panels reach under the head of the TOPEC Securing Bolt (D).



When the Securing Bolts are attached, TOPEC panels can be swivelled into the TOPEC Bearing, but cannot be placed from above.

11.7 Preventing uplift with alignment struts

TOPEC Panels can be protected from horizontal loads with the aid of alignment struts and the TOPEC Panel Tension Strap (A).

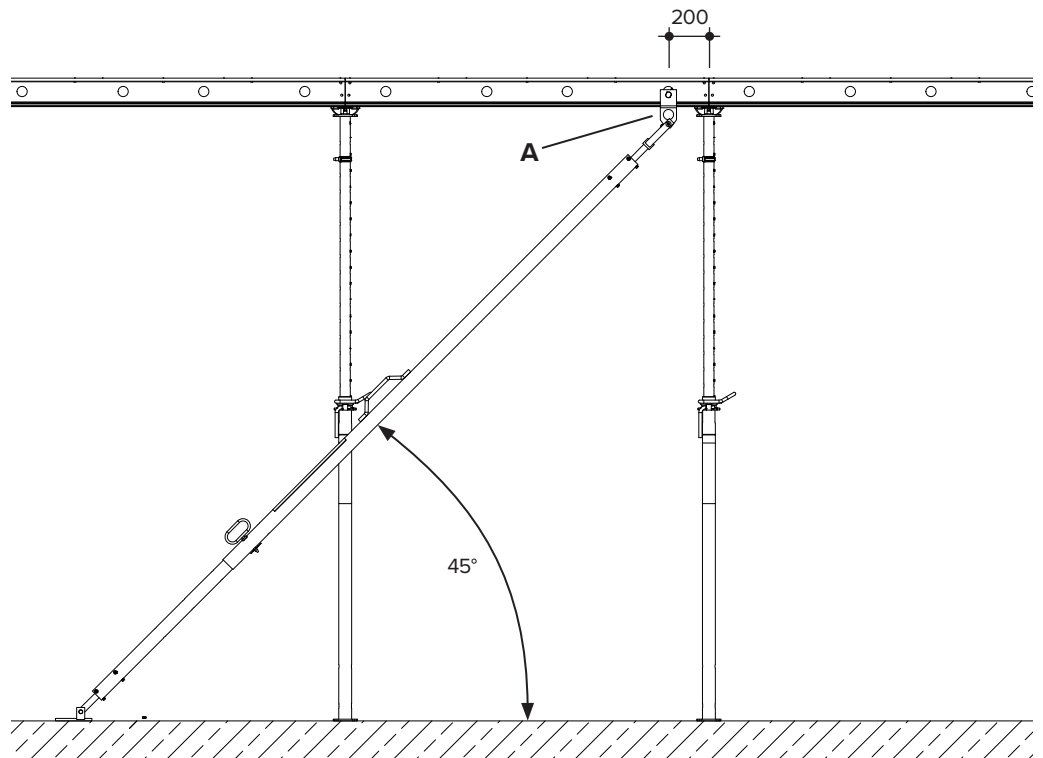
Always attach the TOPEC Panel Tension Strap to the panel joint. In the following illustration the TOPEC Panels in the foreground have been omitted for a clearer understanding.

The alignment strut can restrain the greatest load when it is placed at an angle of 45° (refer to the following table).

Alignment struts can be placed at angles up to 60°. However, as the angle flattens, the horizontal load that the TOPEC Panel Tension Strap can withstand decreases. The following table indicates the reduction with various angles:



Angle of alignment strut	Reduction of permitted H-load by
45°	0 %
50°	8 %
55°	16 %
60°	22 %



11.7.1 Load tables for TOPEC Panels 180/180

The following tables show the maximum horizontal loads that can be restrained with an alignment strut and a TOPEC Panel Tension Strap.

The tables apply to the use of alignment struts. Any other components that have proven capable of restraining H-loads or other parts of the structure such as columns can also be used to restrain H-loads. The safe working load and the usability of such parts must be verified separately!

Restraining H-loads with alignment struts – TOPEC Panel 180/180					
Number of steel props under panel	Slab thickness [cm]	Prop load EN 12812 [kN]	Permitted horizontal load H_{perm} [kN] ¹⁾	Prop load incl. H-force	Strut load [kN] ¹⁾
4	20	21.10	4.50	24.80	6.40
	25	25.10	4.50	28.90	6.40
	30	29.20	4.50	32.90	6.40
	35	33.60	4.50	37.40	6.40
	40	38.10	2.20	40.00	3.10
5 (with middle support)	45	21.30	4.50	25.10	6.40
	50	23.50	3.70	26.60	5.20

Maximum load capacity of TOPEC Support: 40.00 kN; prop load may not be greater!
¹⁾ Values apply to strut inclination of 45°. Refer to the table on page 90 for information on strut angles greater than 45°, up to 60°!

11.7.2 Load tables for TOPEC Panels 180/90

The following tables apply to the use of alignment struts. Any other components that have proven capable of restraining H-loads or other parts of the structure such as columns can also be used to restrain H-loads. The safe working load of such parts must be verified separately!

Restraining H-loads with alignment struts – TOPEC Panel 180/90					
Number of steel props under panel	Slab thickness [cm]	Prop load EN 12812 [kN]	Permitted horizontal load H_{perm} [kN] ¹⁾	Prop load incl. H-force	Strut load [kN] ¹⁾
4	20	10.50	4.50	14.30	6.40
	25	12.60	4.50	16.30	6.40
	30	14.60	4.50	18.40	6.40
	35	16.80	4.50	20.60	6.40
	40	19.00	4.50	22.80	6.40
	45	21.30	4.50	25.10	6.40
	50	23.50	3.60	26.60	5.20

* Values apply to strut inclination of 45°. Refer to the table on page 90 for information on strut angles greater than 45°, up to 60°!

11.7.3 Application tables for TOPEC Panels 180/180 and 180/90

Restraining H-loads with alignment struts Application table according to EN 12812 with an H-force of 2/100 – with wind loads ²⁾							
Slab thickness	V-load	H-load ¹⁾	Formwork area that can be secured with an alignment strut [m ²]				
			V _{b,0} = 0 m/s	V _{b,0} = 22.5 m/s (wind zone 1)		V _{b,0} = 25.0 m/s (wind zone 2)	
				Height < 20 m	Height < 40 m	Height < 20 m ³⁾	Height < 40 m ³⁾
[cm]	[kN/m ²]	[kN/m ²]	[m ²]	[m ²]	[m ²]	[m ²]	[m ²]
20	6.50	0.15	30.10	15.94	11.90	11.90	7.85
25	7.75	0.18	25.20	13.37	9.98	9.98	6.58
30	9.00	0.21	21.70	11.51	8.59	8.59	5.67
35	10.38	0.24	18.90	9.99	7.45	7.45	4.92
40	11.75	0.27	16.70	8.82	6.58	6.58	4.34
45	13.13	0.30	14.90	7.89	5.89	5.89	3.89
50	14.50	0.33	13.50	7.15	5.33	5.33	3.52

¹⁾ Design class B2

²⁾ Three-part edge protection is assumed for calculation of the wind loads.

³⁾ Brace panels with an alignment strut every 3.60 m (refer to the illustrations below).

V_{b,0}: Basic wind velocity – Values for possible surface areas apply to the peak velocity pressure as a factor of the building height.

Comply with local regulations regarding calculation of H-forces! Refer to the following application table for an H-force of 2.5%. Refer to Section 11.7.4 for a sample calculation for different H-loads.

Restraining H-loads with alignment struts Application table for simplified use with an H-force of 2.5/100 – with wind loads ²⁾							
Slab thickness	V-load	H-load ³⁾	Formwork area that can be secured with an alignment strut [m ²]				
			V _{b,0} = 0 m/s	V _{b,0} = 22.5 m/s (wind zone 1)		V _{b,0} = 25.0 m/s (wind zone 2)	
				Height < 20 m	Height < 40 m	Height < 20 m ¹⁾	Height < 40 m ¹⁾
[cm]	[kN/m ²]	[kN/m ²]	[m ²]	[m ²]	[m ²]	[m ²]	[m ²]
20	6.50	0.15	27.69	14.67	10.94	10.94	7.22
25	7.75	0.19	23.23	12.30	9.18	9.18	6.06
30	9.00	0.23	20.00	10.59	7.90	7.90	5.22
35	10.38	0.26	17.35	9.19	6.86	6.86	4.52
40	11.75	0.29	15.32	8.11	6.05	6.05	4.00
45	13.13	0.33	13.71	7.26	5.42	5.42	3.58
50	14.50	0.36	12.41	6.57	4.91	4.91	3.24

¹⁾ Brace panels with an alignment strut every 3.60 m (refer to the illustration below).

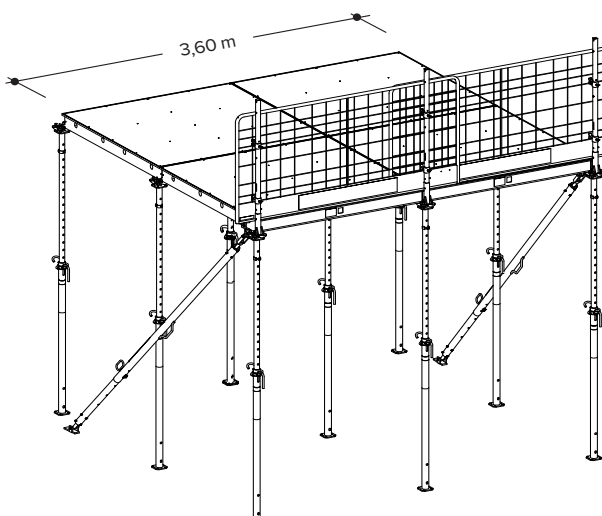
²⁾ Three-part edge protection is assumed for calculation of the wind loads.

³⁾ The values do not include the safety factor of 1.15 prescribed in design class B2.

V_{b,0}: Basic wind velocity – Values for possible surface areas apply to the peak velocity pressure as a factor of the building height.

Comply with local regulations regarding calculation of H-forces! Refer to the previous application table for an H-force of 2% (EN 12812). Refer to Section 11.7.4 for a sample calculation for different H-loads.

Illustration – alignment strut every 3.60 m



11.7.4 Sample calculation for H-forces not covered by EN 12812



The factor of safety for design class B2 is not included in the following calculations!

Example

Slab thickness 20 cm ($V = 6.50 \text{ kN/m}^2$), H-force 2.50 % of V-load

H-load: 2.50 % of $6.50 \text{ kN/m}^2 = 0.16 \text{ kN/m}^2$

$$\begin{aligned} \text{Maximum formwork area [m}^2\text{]} \\ \text{that one alignment strut} \\ \text{can secure} \end{aligned} = \frac{\text{Permitted H-load [kN]} \\ \text{(refer to tables in sections 11.7.1 and 11.7.2)}}{\text{Actual H-load [kN/m}^2\text{]}}$$

$$\text{Maximum formwork area} = \frac{4.50 \text{ kN}}{0.16 \text{ kN/m}^2} = 27.70 \text{ m}^2$$

11.7.5 Attaching alignment struts to TOPEC Panels



WARNING

Steel props can fail!

When H-loads are restrained, the load to which the steel props are subjected increases, and the props can fail!

This can cause personal injury or death!

Always take into consideration the additional load to which the steel props are subjected!

Rule of thumb: 1 kN horizontal load increases the load applied to the steel prop near the Panel Tension Strap by 0.85 kN.



WARNING

Formwork can collapse!

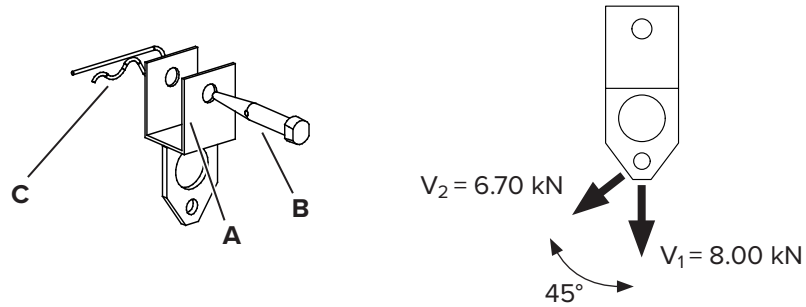
If the Panel Tension Strap is attached to a round hole near the centre of the panel, the profile will be overloaded when concrete is poured, and the panel can fail!

This can cause personal injury or death!

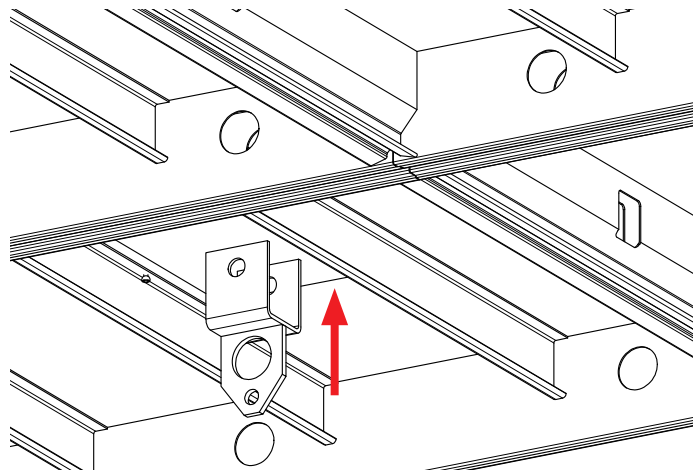
Attach the Panel Tension Strap only to the outermost round hole. The distance to the front profile (with square hole) is approx. 200 mm!

Secure the TOPEC Panel Tension Strap to a round hole in the TOPEC Panels using a Waler Bolt D20 (B) and spring cotter pin 4 (C). The TOPEC Panel Tension Strap can be attached only at the joint between 2no. TOPEC Panels and only to the edge profiles (with round holes) of TOPEC Panels.

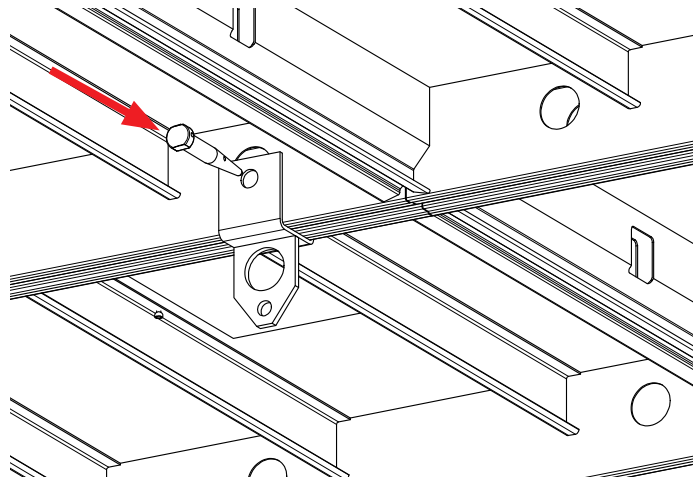
Attach the alignment struts, e.g. alignment struts K 440 or K 660, to the TOPEC Panel Tension Strap and tie them to the ground.



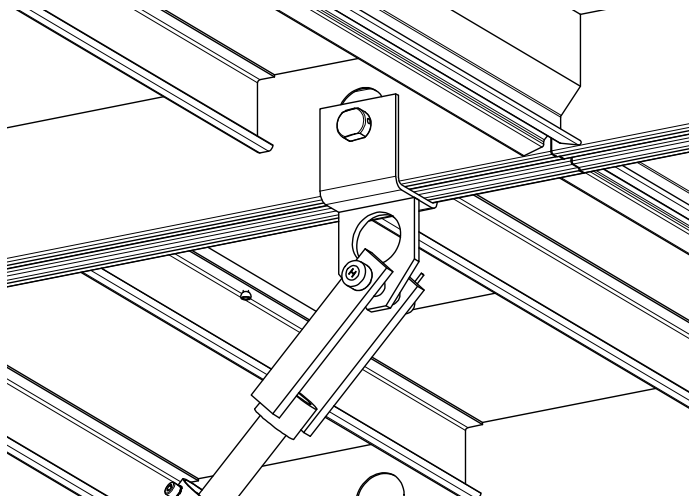
Step 1 Slide the TOPEC Panel Tension Strap over the joint (edge profiles, with round holes) between 2no. TOPEC Panels.



Step 2 Use a Waler Bolt D20 to attach the TOPEC Panel Tension Strap to the outermost round holes in the TOPEC Panels. The distance to the front profile (with square hole) is about 200 mm. Secure the Waler Bolt with a spring cotter pin.



Step 3 Use the bolt and spring cotter pin 4 to attach the alignment strut to the lowermost hole of the TOPEC Panel Tension Strap. The bolt and spring cotter pin 4 are included with the alignment strut.



Step 4 Use the spindle to set the alignment strut to the required length. The alignment strut should be placed at about a 45° angle to the ground. Otherwise the permitted horizontal load will be less (refer to information and table on page 89).

Step 5 Use suitable anchor bolts to tie the alignment strut to the ground.

11.8 Preventing lateral movement by tying to structure

When structures can sustain the load, the front profile (with round hole) of TOPEC Panels can be tied to the structure to protect them from horizontal loads. This also stabilises the entire panel construction. The first TOPEC Panel of a panel assembly should be tied to the building whenever possible.

Use the Waler 80 (code:586980) or an adequate timber beam, e.g. 120 × 120 mm, to tie. The waler or timber beam can be secured to a tie hole with a tie rod and tie nut. Always take into consideration the respective H-loads, the distance between the tie hole and the TOPEC Panel and, when applicable, the cross-section of the timber beam.



WARNING

Formwork can collapse!

When TOPEC Panels are tied to the wall in the middle of the panel structure, the profiles on the TOPEC Panels can become overloaded and fail. The formwork can collapse, which can result in injury or death!

Tie max. 300 mm away from the next main profile!



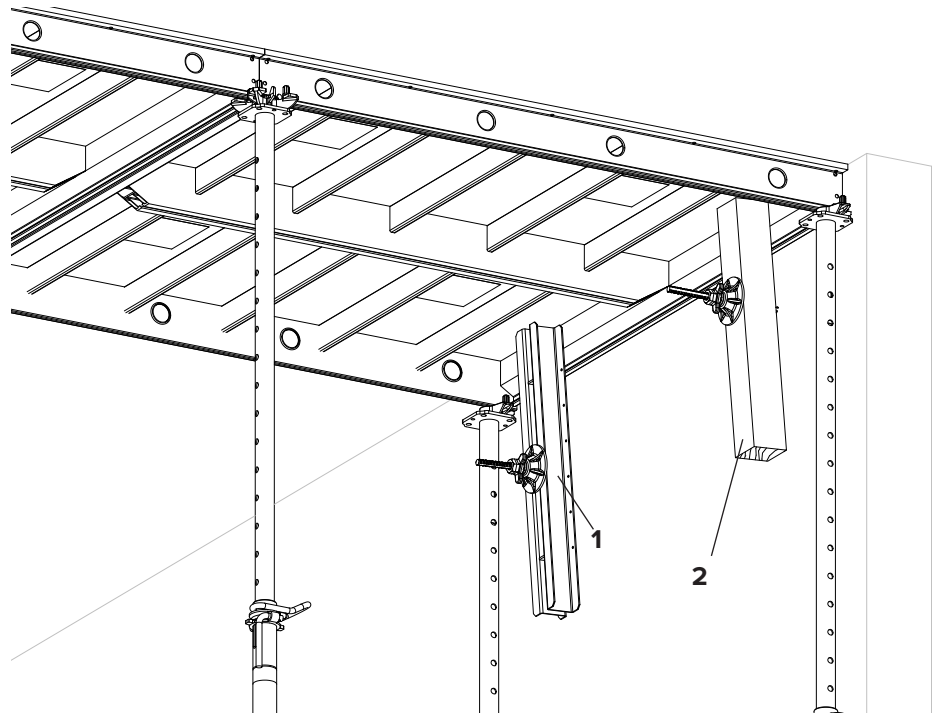
WARNING

Formwork can collapse!

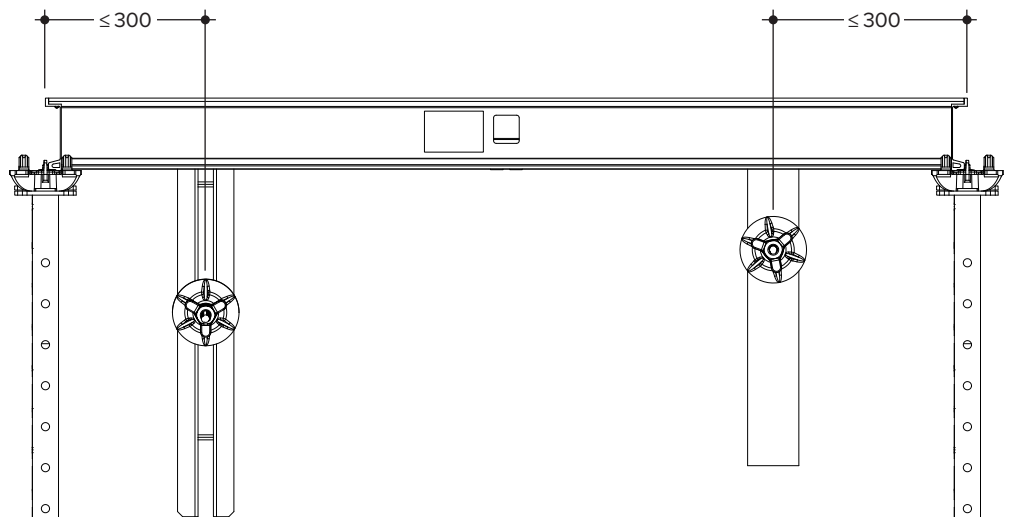
If the edge profile (with round holes) of TOPEC Panels is tied to the wall, excessive load can cause the edge profile to fail. The formwork can collapse, which can result in injury or death!

Tie TOPEC Panels to the wall only at the front profile (with square hole)! Tie at the edge profile (with round holes) only to stabilize the panels during erection.

The waler or timber beam should be placed max. 300 mm away from the next main profile of the TOPEC Panel!



- 1 Waler 80
- 2 Timber beam (alternatively)



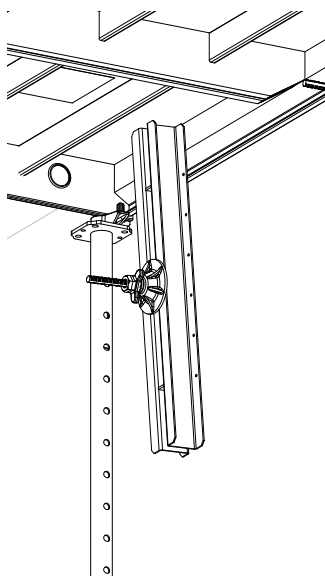
The following tables show the maximum horizontal loads that can be restrained with a waler or timber beam.

TOPEC Panel 180/180		
Number of steel props under panel	Slab thickness [cm]	Horizontal load H_{perm} [kN]
4	20	4.50
	25	4.50
	30	3.80
	35	2.70
	40	1.60
5	45	4.50
	50	4.50

TOPEC Panel 180/90		
Number of steel props under panel	Slab thickness [cm]	Horizontal load H_{perm} [kN]
4	20–50	2.00

Step 1 Erect the formwork.

Step 2 Fasten the waler or timber beam to the structure as shown.



12 Cantilevered panels

TOPEC Panels 180/90 and 180/180 can be cantilevered up to 900 mm when subjected to the maximum load. When they are cantilevered 100 mm or more, TOPEC Panels have to be secured to prevent them from tilting or collapsing (refer to Section 11).

Support cantilevered panels as close as possible to the projecting section using TOPEC Fixing Heads and steel props. The Fixing Heads can be placed at the intersections of the edge profiles (with round holes) and the panel ribs.

To support the TOPEC Panels under the edge profiles (with round holes) between the panel ribs, the steel props have to be used in conjunction with TOPEC Bearings. The TOPEC Bearing then has to be secured with TOPEC Prop Retainers (refer to Section 7.1.9).

12.1 Safety instructions



WARNING

Formwork can collapse!

The TOPEC Panels can be cantilevered only with the edge profiles (with round holes) resting on the fixing heads! Never allow the front profiles (with square hole) of cantilevered panels to rest on the fixing heads! The panel ribs always have to run parallel to the edge of the building on which the TOPEC Panels are cantilevered!

The TOPEC Panels have to be secured with vertical chains or comparable means to prevent them from tilting or collapsing!

Follow the instructions in Section 6.2.

Use TOPEC Bearings to secure steel props placed amongst the TOPEC Panels (refer to section 7.4)!

NOTE

Formwork uplift!

When working in open structures, always take measures to prevent uplift (refer to Section 11).



WARNING

Formwork can tilt or collapse!

Do not begin pouring concrete near the edge or cantilevered sections. This could cause the formwork to tilt or collapse!

Before pouring concrete, determine a safe sequence! Always pour concrete beginning with a supported section and working towards the cantilevered section. Do not place loads on cantilevered sections.



WARNING

Formwork can collapse!

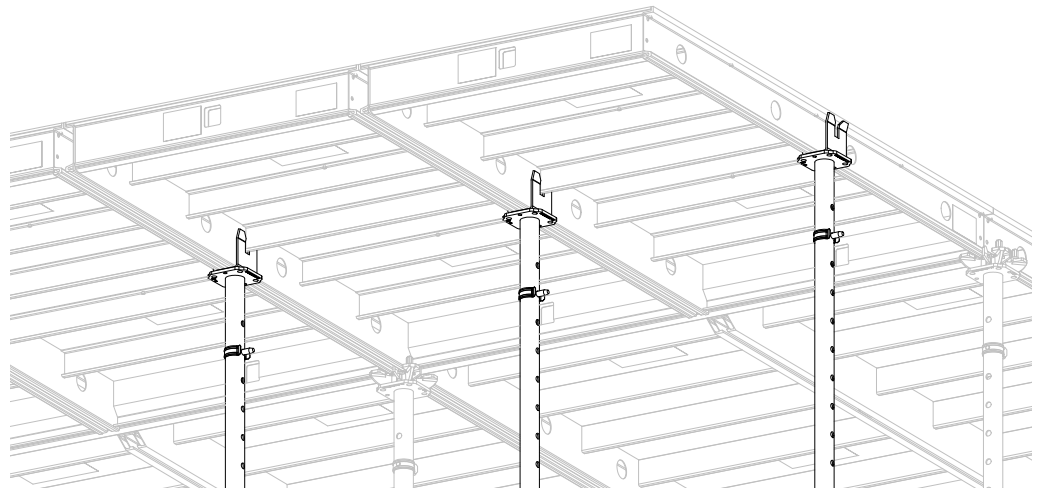
If concrete is poured or loads are placed on formwork that is not protected from H-loads, the formwork can collapse!

Before subjecting the formwork to any type of load, always secure from H-loads!

12.2 Supporting cantilevered panels

- Step 1** Insert the TOPEC Fixing Head all the way into the steel prop and secure it with the TOPEC Bolt or TOPEC Bolt D14.

Step 2 Place the steel prop at the intersection of the frame profile and panel rib. The TOPEC Fixing Head encloses the rib profile and prevents the steel prop from falling over.

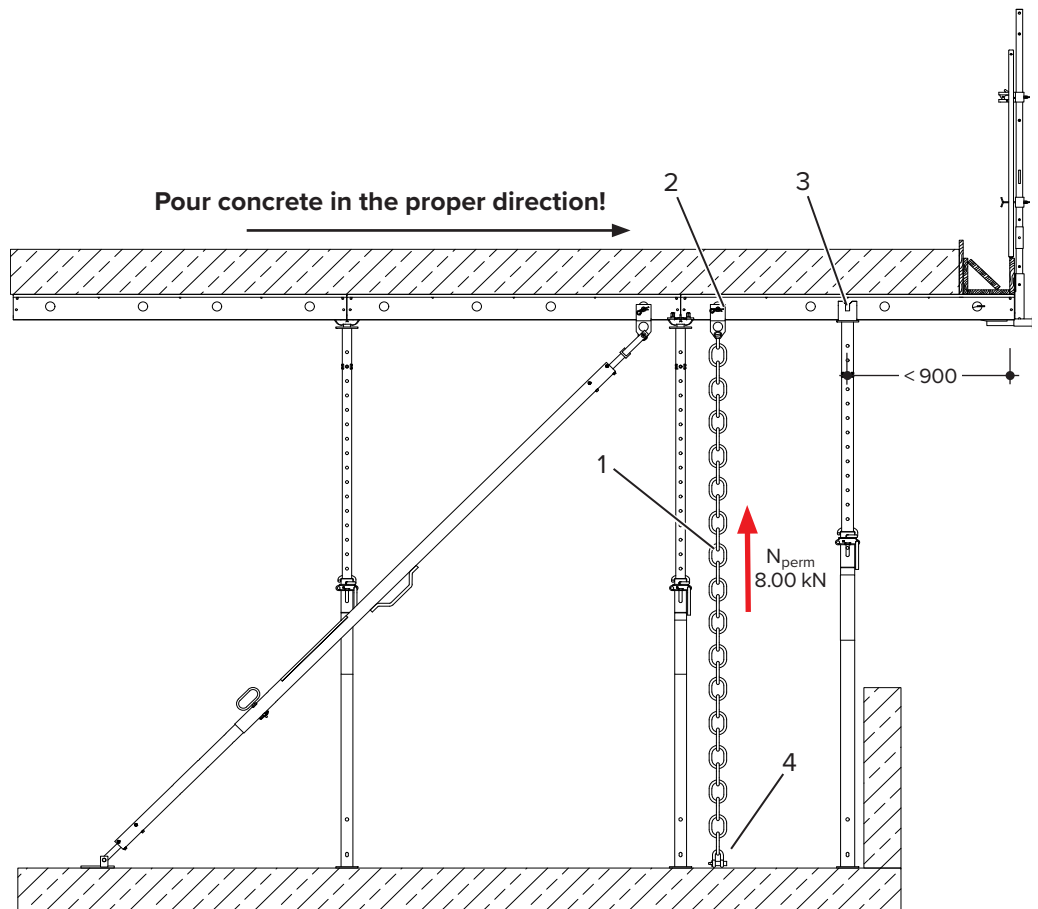


Step 3 Restrain the formwork (refer to the next section).

12.3 Securing cantilevered panels to prevent tilting



Consider the anticipated load when selecting the chain and anchor.
Comply with regulations applicable to inspection and use of the chain!



- 1** Chain or comparable tensioning
- 2** TOPEC Panel Tension Strap
- 3** TOPEC Fixing Head
- 4** TOPEC Tension Anchor Slab Bracket

13 Stripping

Once the slab has reached the required concrete strength, the slab can be stripped. Depending on the concrete strength and additional strain from work at a higher level, back-propping may need to be erected.

Before subjecting the slab to additional load, e.g. formwork at the next-higher level, the slab has to be able to support itself. First relieve all the steel props in the section to be stripped, then place the back-propping. Otherwise the steel props will be overloaded if they have to absorb the weight of the slab and the loads above it.

Slabs can be stripped at heights up to 3.50 m working from the ground, without having to use an auxiliary scaffold. The TOPEC Lift or e.g. a platform ladder or mobile scaffold has to be used to strip slabs at heights greater than 3.50 m.

13.1 Safety instructions



CAUTION

Risk of crushing!

When adjusting prop inner tubes with a TOPEC Bolt or TOPEC Bolt D14 attached to it, there is a risk of crushing fingers!

Slide steel props in carefully!

When adjusting a steel prop, do not hold it at the transition from inner tube to outer tube!



CAUTION

The support can fall out of the prop!

Unsecured supports such as TOPEC Bearings can fall out during handling. This can result in injury!

When stripping or before lateral transport, verify that supports are always secured with TOPEC Bolts or TOPEC Bolts D14! Before transport, unsecured supports have to be secured to prevent them from falling out or they have to be transported separately!

NOTE

Note!

To prevent damage to the steep props during stripping, strike the quick-release bolts with a hammer to relieve the steel props before retracting them.

NOTE

Bolts can sustain damage!

If the TOPEC Bolt or TOPEC Bolt D14 is pounded into the hole in the steel prop with a hammer, the bolt can detach from the clip. The bolt is then destroyed.

Slide in bolts only by hand.

If the hole in the steel prop is dirty, clean it before sliding in the bolt.

NOTE

Bolts can sustain damage!

If the inner tube is allowed to slide into the outer tube without restraint, the TOPEC Bolt or TOPEC Bolt D14 will collide with the outer tube. This will damage the bolt.

Always allow the inner tube to slide gently into the outer tube.

NOTE

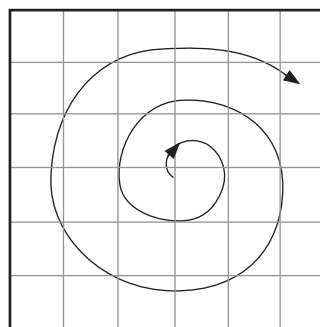
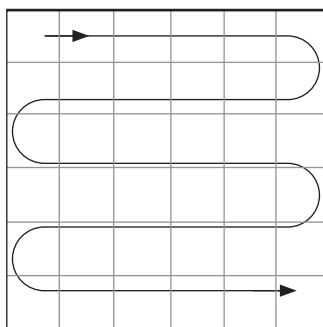
Note!

Always comply with the specifications in the planning documents and the structural calculations of the structural engineers for the time and sequence of stripping!

NOTE

Note!

Always release the props in one of the sequences shown here!



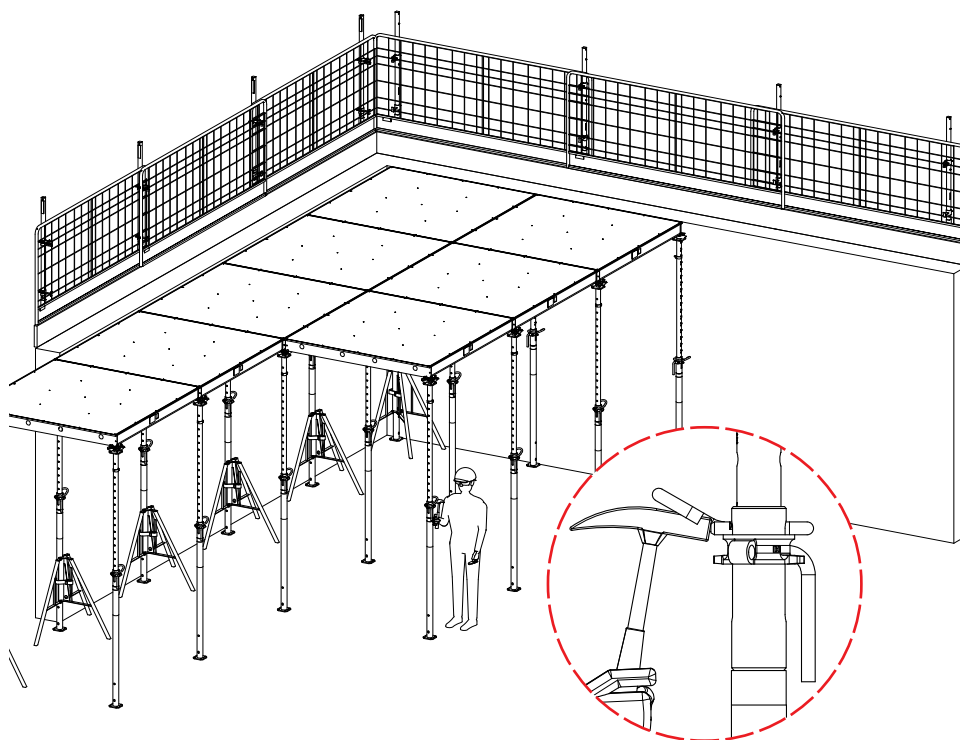
NOTE

Note!

For information on the single components, refer to section 20 or to the respective transport and packaging regulations.

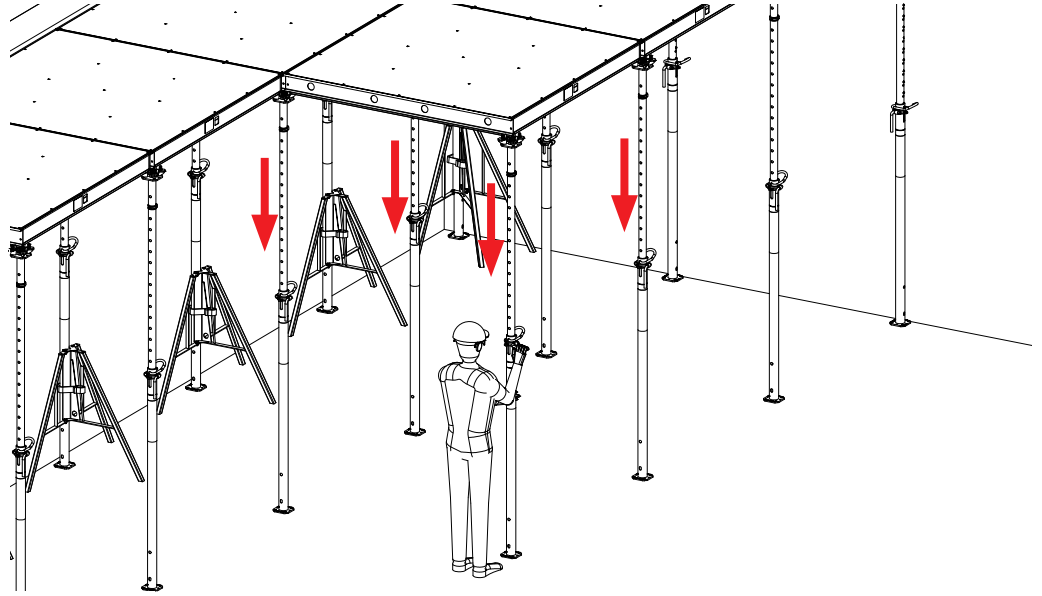
13.2 Stripping by hand

- Step 1** Strike the quick-lowering mechanism on the first steel prop with a hammer to retract it until the inner tube of the prop slides into the grooves on the quick-lowering mechanism. The load on the steel prop is now released.

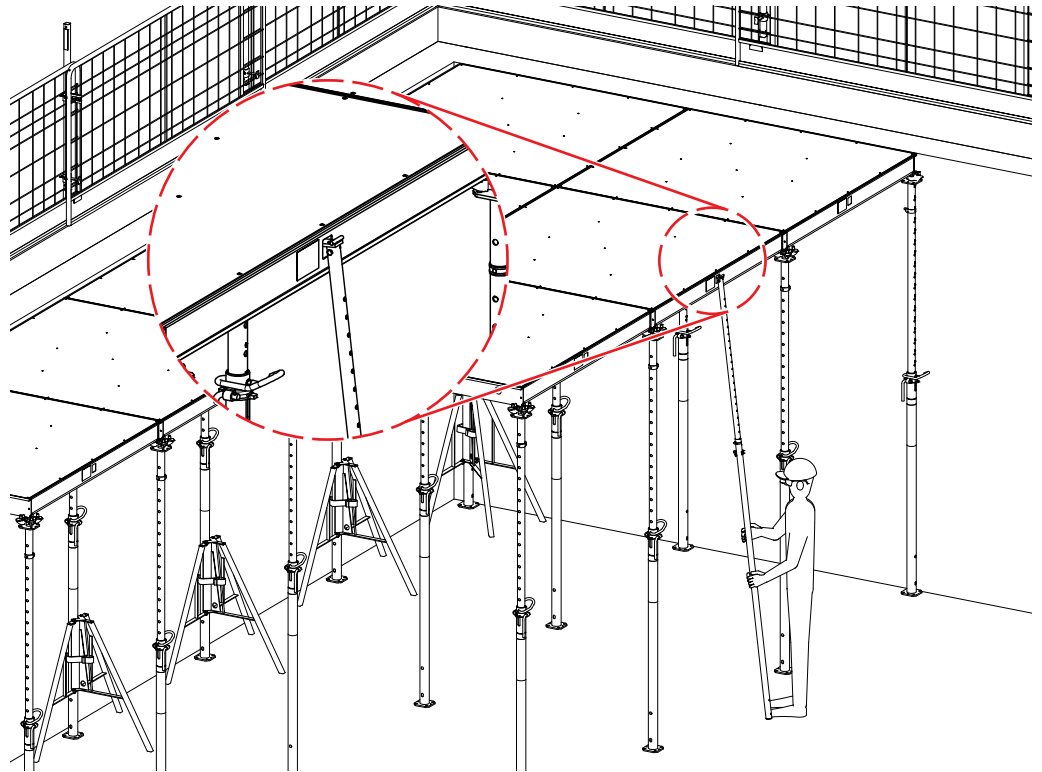


- Step 2** Relieve the remaining steel props from the section to be stripped in the same way.

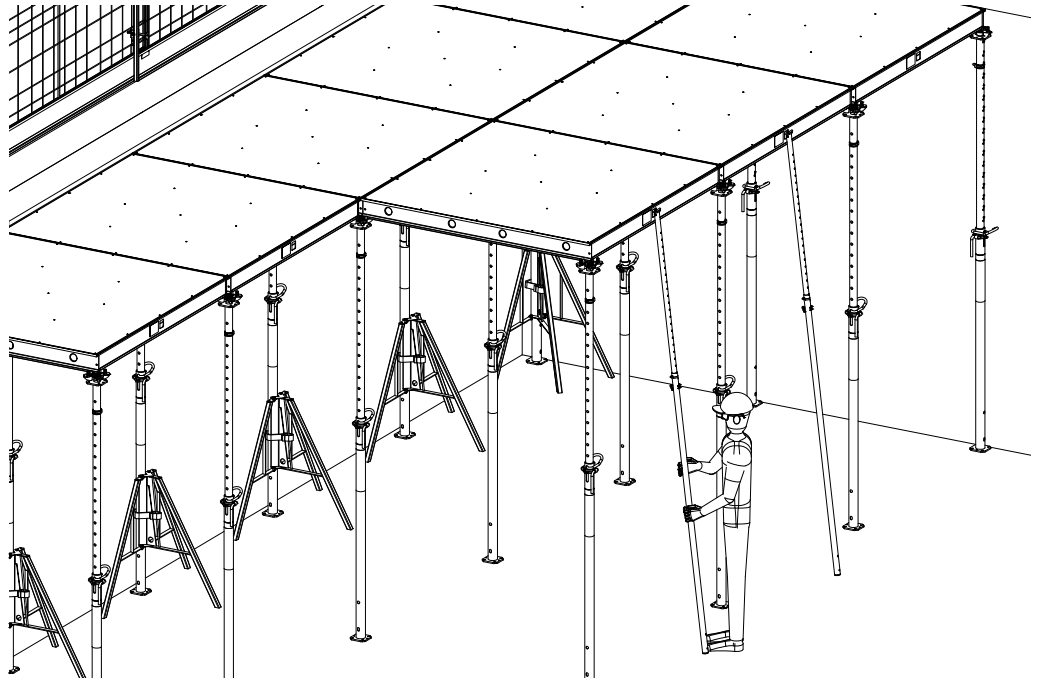
Step 3 Retract the steel props under the panels to be stripped by turning the nut 2-3 turns.



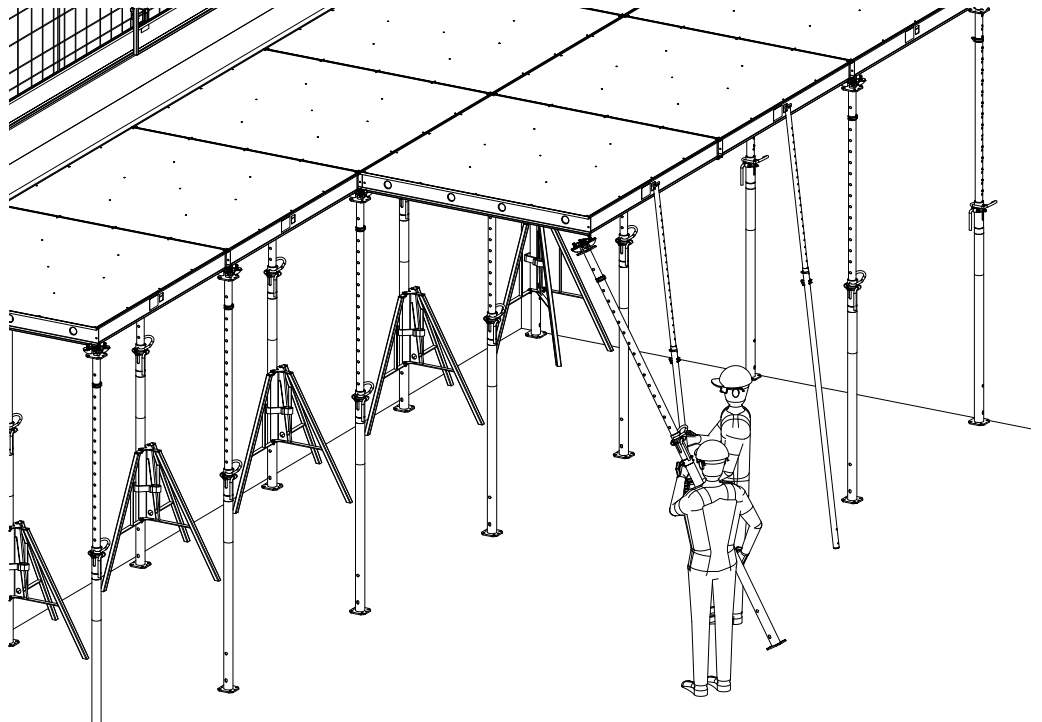
Step 4 Hook the Alu Erection Rod 365 to the adjacent TOPEC Panel and support the panel.



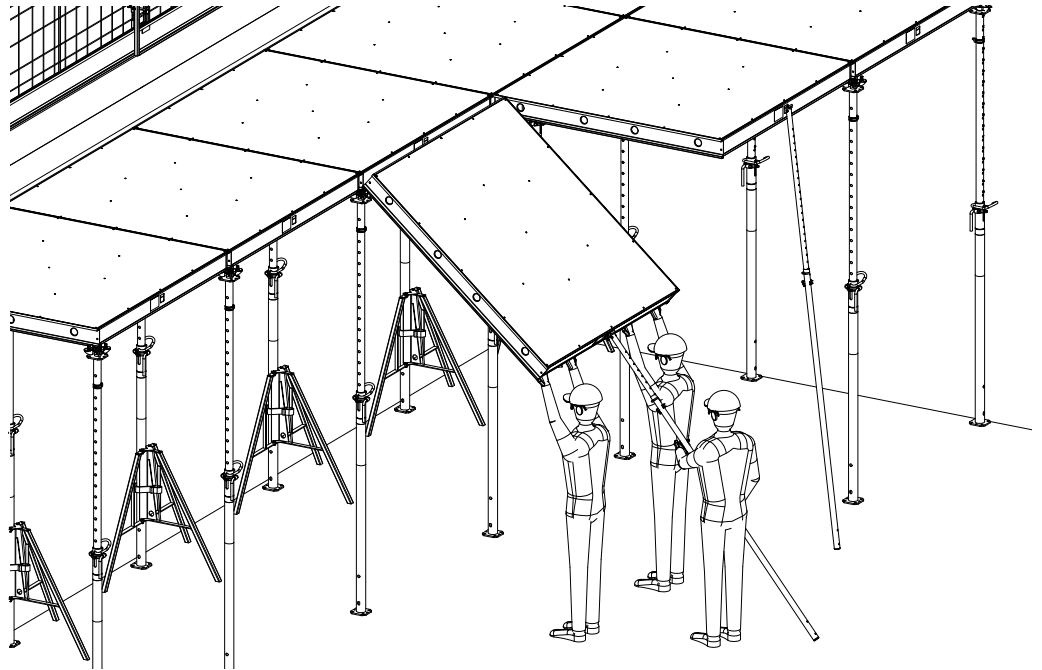
Step 5 Hook the Alu Erection Rod 365 to the TOPEC Panel to be stripped and support the panel.



Step 6 Remove the two front steel props.



Step 7 Use the Alu Erection Rod 365 to carefully swivel down the TOPEC Panel.



NOTE

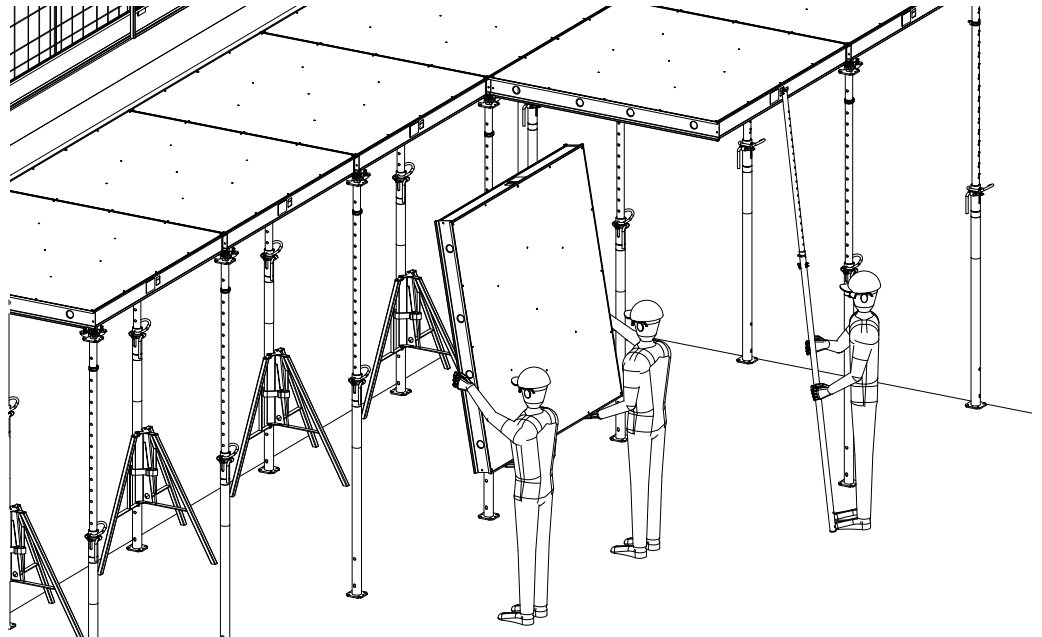
Panels can be damaged!

If the TOPEC Panel is allowed to hang in the supports after swivelling it down, the TOPEC Panel will be damaged!

Do not let the panel hang in the supports!

Always immediately lift the TOPEC Panel out of the supports.

Step 8 Unhook the TOPEC Panel from the back two steel props and remove it.



Step 9 Strip the remaining TOPEC Panels in the same way.

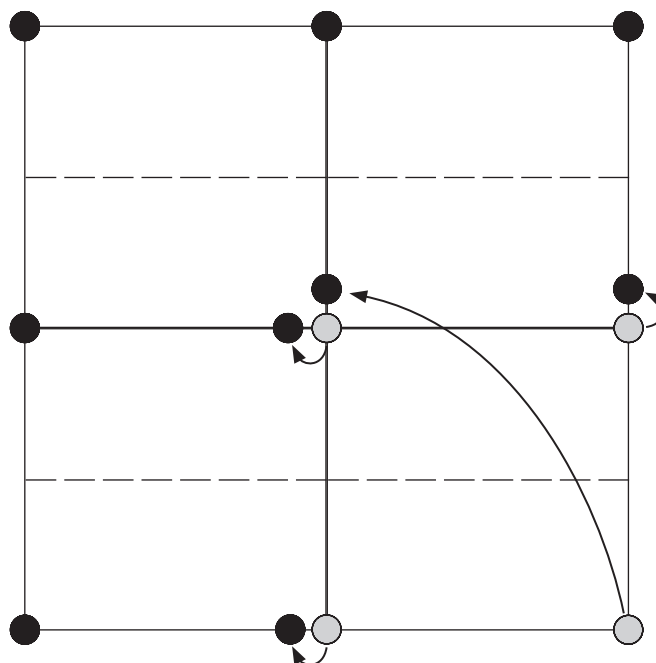
13.3 Stripping with the TOPEC Lift

The TOPEC Lift can be used to strip TOPEC Panels 180/180 up to a height of 5.80 m. The TOPEC Lift is a motorized scissor lift operated by a remote control.



Always comply with the separate operating instructions for the TOPEC Lift! It contains essential information on safe startup, use and maintenance.

- Step 1** Relieve the steel props under the TOPEC Panels to be stripped with the aid of the quick-lowering mechanism.
- Step 2** Manoeuvre the TOPEC Lift under the TOPEC Panels to be removed.
- Step 3** Raise the positioning frame of the TOPEC Lift and adjust it, if necessary, such that the grippers can grasp the TOPEC Panel.
- Step 4** Let the TOPEC Panel rest on the TOPEC Lift.
- Step 5** Retract the steel props under the TOPEC Panels to be removed one after the other, moving them to the adjacent panels as shown in the illustration below. Support the steel props with Uni Tripods to prevent them from collapsing!



- Steel props for TOPEC Panels to be stripped; before moving
- Steel props; after moving

- Step 6** Lower the TOPEC Panel on the TOPEC Lift and then remove it from the positioning unit.
- Step 7** Strip other TOPEC Panels in the same way.

14 Early stripping

Certification of structural stability, taking into consideration the concrete quality, the reinforcement, and the sequence of construction, is required for early stripping.

Hünnebeck is not responsible for the design and method of auxiliary supports. Before beginning work on site, the contractor has to verify with the structural designer that the auxiliary support and the load distribution are safe.

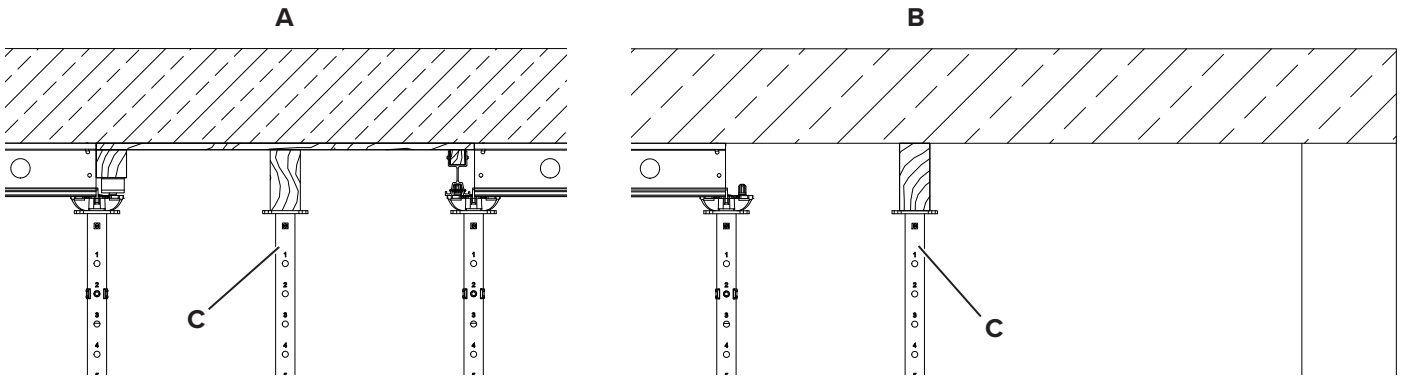


Before subjecting the auxiliary props to loads from the next-higher level, briefly relieve the auxiliary props, and then screw them back into place under the panels.

14.1 With auxiliary support

The use of auxiliary props in Germany is regulated by DIN 1045-3. The auxiliary props should be arranged in mid-span of the slab and in the same location on the other levels. There are two ways to erect auxiliary supports (C):

- Single steel props remain in place when stripping. These steel props may not be directly under TOPEC Panels, because then the TOPEC Panels could not be stripped. Plan infills from the start and place the auxiliary props under the infills (A).
- Do not erect the auxiliary props until stripping (B).

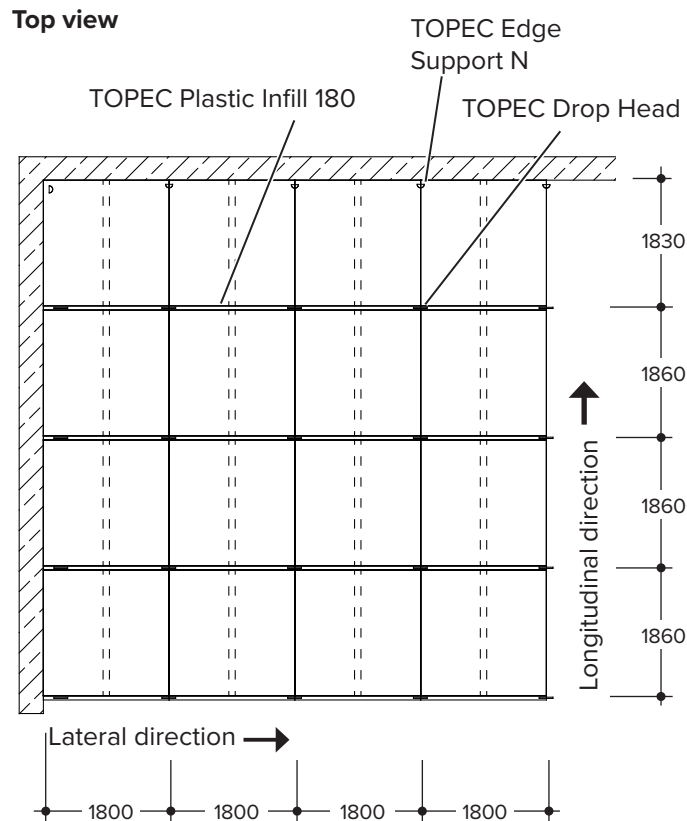


14.2 Using the TOPEC Drop Head

When the panels are stripped early, the steel props remain in place along with the infills when using the TOPEC Drop Head system. The panels can still be swivelled down, removed, and used for the next cycle while the slab remains supported.

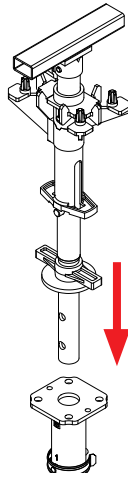


When using the TOPEC Drop Head, the load tables in Section 6.2 apply.

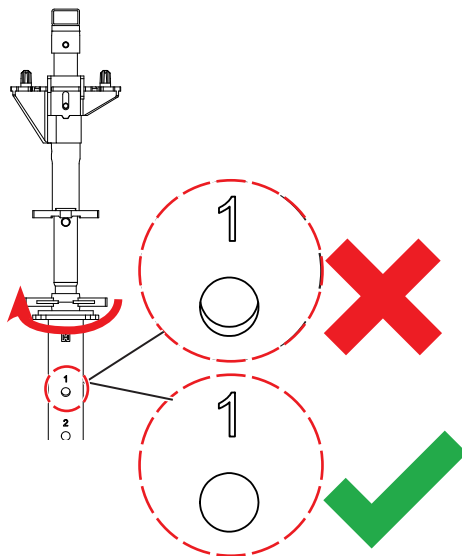


14.2.1 Attaching TOPEC Drop Head to steel prop

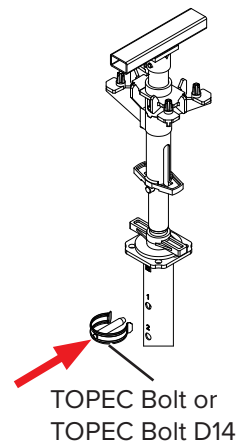
Step 1 Screw the drop head lock nut up and insert the TOPEC Drop Head in the steel prop.



Step 2 Turn the drop head lock nut far enough that the hole in the TOPEC Drop Head lines up with the uppermost hole in the steel prop.

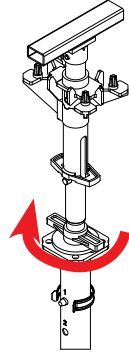


Step 3 Depending on the diameter of the tube in the steel prop, the TOPEC Drop Head is secured with either the TOPEC Bolt or the TOPEC Bolt D14.



Step 4 Tighten the drop head lock nut hand tight and then tighten by striking it with a hammer to clamp the TOPEC Drop Head to the steel prop.

The TOPEC Drop Head is now securely connected to the steel prop with the TOPEC Bolt or the TOPEC Bolt D14.



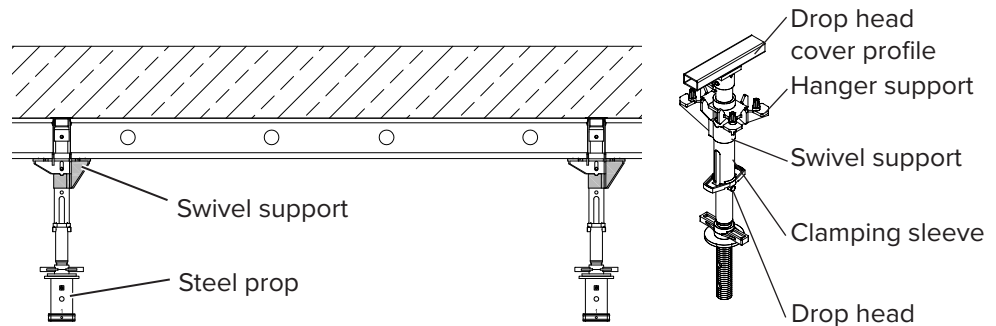
14.2.2 Assembling formwork

General instructions on assembling TOPEC formwork can be found beginning on page 33.

The clamping sleeve rests on the drop head bolt and the supports are at the same level.

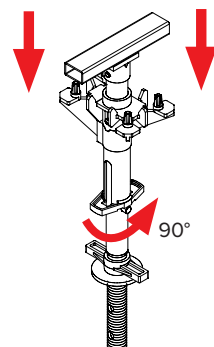


The swivel supports of the TOPEC Drop Head should always be facing the same direction when assembling formwork. Otherwise the TOPEC Panels cannot be stripped!

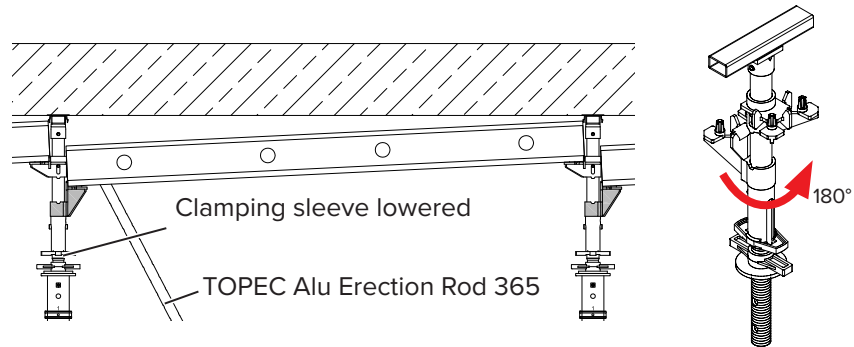


14.2.3 Stripping

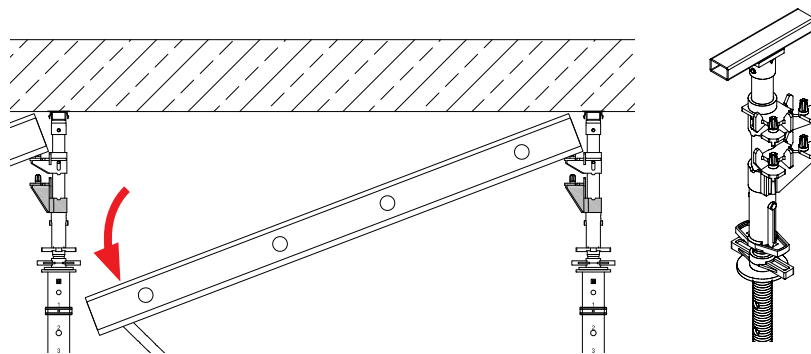
Step 1 Rotate the clamping sleeve 90°. This lowers the swivel support 100 mm and the hanger support 20 mm. The drop head cover profile continues to support the slab.



Step 2 Use the Alu Erection Rod 365 to lift the TOPEC Panel slightly and turn the swivel support 180°. The swivel support is now directly below the hanger support.



Step 3 Swivel down and strip the TOPEC Panel. The drop head cover profile continues to support the concrete slab.



WARNING

Risk of collapsing!

If the slab does not carry, the steel props can fail when the slab is subjected to load!

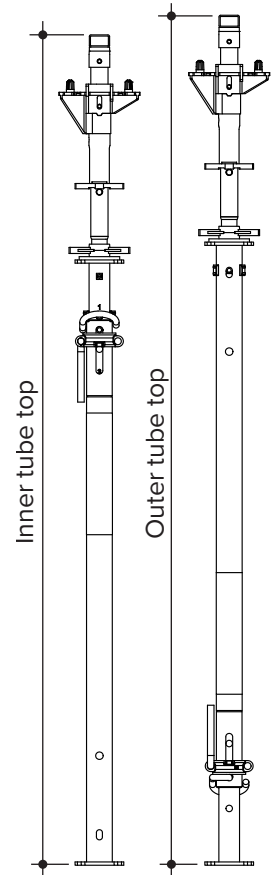
The slab can collapse, which can result in serious injury or death!

Therefore, first release all steel props so the slab is allowed to carry its own weight!

Relieve all the steel props and remove them, then erect auxiliary props to hold the slab.

Minimum clearance when using the TOPEC Drop Head

Prop type	Code	Orientation	TOPEC Bolt (470804)	TOPEC Bolt D14 (604365)	Min. clearance [m]
EUROPLUS ^{new} 20-250	601390	Inner tube top	X	-	2.10
		Outer tube top	X	-	2.15
EUROPLUS ^{new} 20-300	601400	Inner tube top	X	-	2.36
		Outer tube top	X	-	2.40
EUROPLUS ^{new} 20-350	601410	Inner tube top	X	-	2.62
		Outer tube top	-	X	2.66
EUROPLUS ^{new} 20-400	601415	Inner tube top	X	-	2.88
		Outer tube top	-	X	2.93
EUROPLUS ^{new} 20-550	601425	Inner tube top	-	X	3.66
		Outer tube top	-	X	3.72
EUROPLUS ^{new} 30-150	601460	Inner tube top	X	-	1.58
		Outer tube top	X	-	1.68
EUROPLUS ^{new} 30-250	601430	Inner tube top	X	-	2.10
		Outer tube top	-	X	2.15
EUROPLUS ^{new} 30-300	601440	Inner tube top	X	-	2.36
		Outer tube top	-	X	2.40
EUROPLUS ^{new} 30-350	601445	Inner tube top	X	-	2.62
		Outer tube top	-	X	2.66
EUROPLUS ^{new} 30-400	601450	Inner tube top	-	X	2.88
		Outer tube top	-	X	2.94



15 Example of use with inclined slabs

Depending on the ground on which the steel props are standing, slabs with an inclination up to 5 % can be created with TOPEC formwork. The ground can be horizontal or inclined.



WARNING

Formwork can collapse!

Inclined slabs expose the formwork to higher horizontal loads (H-loads) compared to flat slabs!

If the formwork is not properly secured, H-loads can cause it to collapse!

This can cause personal injury or death!

Always protect the formwork from anticipated H-loads!

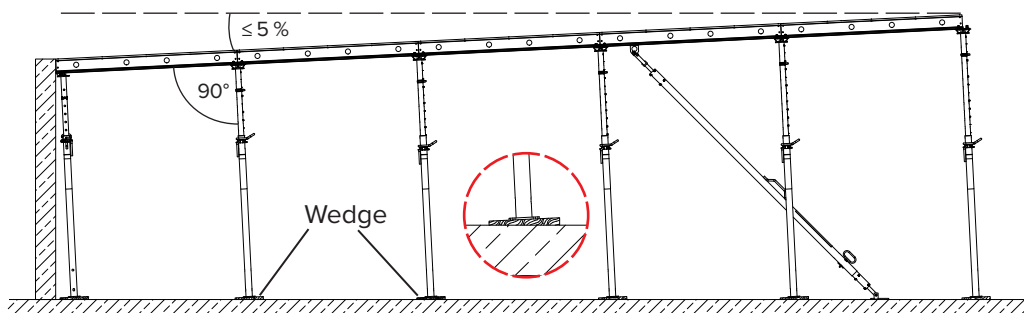


The steel props always have to be at a right angle to the TOPEC Panels. When the formwork is inclined, the steel props have to be braced by placing hardwood wedges under the base plate. The full base plate has to rest on the hardwood wedges.

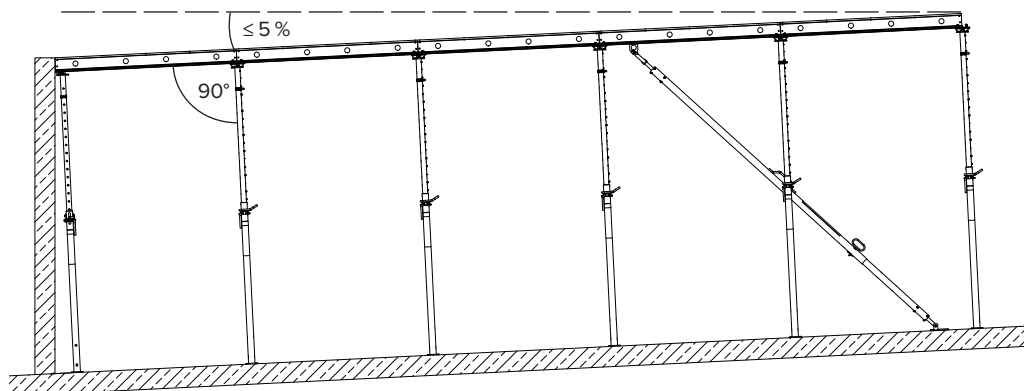


The structures shown here are examples only. Protection from H-loads has to be adapted for the respective situation. The formwork may need to be secured from H-loads in both directions. The load bearing capacity of the various components must be sufficient to withstand the concrete pressure.

15.1 Example of use on horizontal ground



15.2 Example of use on inclined ground



16 Permitted Prop Loads for EUROPLUSnew props



The following tables show the permitted prop load of EUROPLUSnew props pursuant to DIN EN 1065. The special SWLs when using with TOPEC and the SWLs of the various TOPEC bearings are not taken into consideration.

Hünnebeck EUROPLUSnew Permitted Safe Working Load [kN] pursuant to approval certificate Z-8.311-1007										
Prop type	20-250		20-300		20-350		20-400		20-550	
L _{min.} -L _{max.}	1.47 m–2.50 m		1.72 m–3.00 m		1.98 m–3.50 m		2.24 m–4.00 m		3.04 m–5.50 m	
Position of inner tube Length [m]	IT _{top}	IT _{bottom}	IT _{top}	IT _{bottom}	IT _{top}	IT _{bottom}	IT _{top}	IT _{bottom}	IT _{top}	IT _{bottom}
	1.50	27.76	27.76							
1.60	27.76	27.76								
1.70	26.54	27.76								
1.80	25.02	27.76	38.48	38.48						
1.90	24.02	27.76	38.48	38.48						
2.00	23.12	27.76	35.09	38.48	27.76	27.76				
2.10	22.72	27.76	32.52	38.48	27.76	27.76				
2.20	22.32	27.76	30.91	38.48	27.76	27.76				
2.30	21.80	27.76	29.30	38.48	27.76	27.76	30.97	30.97		
2.40	21.21	26.52	28.01	38.48	27.76	27.76	30.97	30.97		
2.50	20.61	24.73	27.21	38.48	27.76	27.76	30.97	30.97		
2.60			26.40	35.55	27.76	27.76	30.97	30.97		
2.70			25.44	32.42	27.76	27.76	30.97	30.97		
2.80			23.83	29.69	27.76	27.76	30.97	30.97		
2.90			22.22	26.95	27.76	27.76	30.97	30.97		
3.00			20.61	24.21	27.76	27.76	30.97	30.97		
3.10					27.76	27.76	30.97	30.97	38.48	38.48
3.20					27.76	27.76	30.97	30.97	38.48	38.48
3.30					27.19	27.76	30.37	30.97	38.48	38.48
3.40					25.70	27.76	29.19	30.97	38.48	38.48
3.50					24.21	27.76	28.02	30.97	38.48	38.48
3.60							26.75	30.97	38.48	38.48
3.70							25.35	30.97	38.48	38.48
3.80							23.94	28.95	38.48	38.48
3.90							22.53	26.84	38.48	38.48
4.00							21.12	24.73	38.48	38.48
4.10									38.48	38.48
4.20									38.29	38.48
4.30									36.58	38.48
4.40									34.99	38.48
4.50									33.40	38.48
4.60									31.82	38.48
4.70									30.23	36.71
4.80									28.64	34.12
4.90									27.13	31.71
5.00									26.04	30.29
5.10									24.95	28.87
5.20									23.87	27.45
5.30									22.78	26.03
5.40									21.69	24.60
5.50									20.61	23.18

Hünnebeck EUROPLUS ^{new} Permitted Safe Working Load [kN] pursuant to approval certificate Z-8.311-1007										
Prop type	30 - 150		30-250		30-300		30-350		30-400	
L _{min.} -L _{max.}	1.04 m-1.50 m		1.47 m-2.50 m		1.72 m-3.00 m		1.98 m-3.50 m		2.24 m-4.00 m	
Position of inner tube Length [m]	IT _{top} IT _{bottom}		IT _{top} IT _{bottom}		IT _{top} IT _{bottom}		IT _{top} IT _{bottom}		IT _{top} IT _{bottom}	
	1.10	36.06	38.48							
1.20	35.63	38.48								
1.30	35.03	38.48								
1.40	35.03	38.48								
1.50	35.03	38.48	33.33	33.33						
1.60			33.33	33.33						
1.70			33.33	33.33						
1.80			33.33	33.33	37.21	37.21				
1.90			33.33	33.33	37.21	37.21				
2.00			33.33	33.33	37.21	37.21	49.45	49.45		
2.10			33.33	33.33	37.21	37.21	49.45	49.45		
2.20			33.22	33.33	37.21	37.21	49.45	49.45		
2.30			32.74	33.33	37.21	37.21	49.45	49.45	38.48	38.48
2.40			32.34	33.33	36.83	37.21	48.91	49.45	38.48	38.48
2.50			31.94	33.33	36.19	37.21	47.56	49.45	38.48	38.48
2.60					35.55	37.21	46.20	49.45	38.48	38.48
2.70					34.77	37.21	44.85	49.45	38.48	38.48
2.80					33.48	37.21	43.57	48.56	38.48	38.48
2.90					32.20	37.21	42.35	47.07	38.48	38.48
3.00					30.91	36.58	41.13	45.58	38.48	38.48
3.10							39.91	44.09	38.48	38.48
3.20							37.82	41.73	38.48	38.48
3.30							35.52	39.15	38.48	38.48
3.40							33.21	36.58	38.48	38.48
3.50							30.91	34.00	38.48	38.48
3.60									38.48	38.48
3.70									38.48	38.48
3.80									38.48	38.48
3.90									37.94	38.48
4.00									36.06	38.48

Hünnebeck EUROPLUS^{new}

Permitted Safe Working Load [kN] in vertical position as auxiliary support pursuant to approval certificate Z-8.311-1007
– Inner tube down

Prop type	20-250	20-300	20-350	20-400	20-550	30-250	30-300	30-350	30-400
$L_{\min.} - L_{\max.}$ Length [m]	1.47 m –2.50 m	1.72 m –3.00 m	1.98 m –3.50 m	2.24 m –4.00 m	3.04 m –5.50 m	1.47 m –2.50 m	1.72 m –3.00 m	1.98 m –3.50 m	2.24 m –4.00 m
1.50	27.76					33.33			
1.60	27.76					33.33			
1.70	27.76					33.33			
1.80	27.76	38.48				33.33	37.21		
1.90	27.76	38.48				33.33	37.21		
2.00	27.76	38.48	27.76			33.33	37.21	49.95	
2.10	27.76	38.48	27.76			33.33	37.21	49.95	
2.20	27.76	38.48	27.76			33.33	37.21	49.95	
2.30	27.76	38.48	27.76	30.97		33.33	37.21	49.95	38.48
2.40	27.76	38.48	27.76	30.97		33.33	37.21	49.95	38.48
2.50	27.76	38.48	27.76	30.97		33.33	37.21	49.95	38.48
2.60		38.48	27.76	30.97			37.21	49.95	38.48
2.70		38.16	27.76	30.97			37.21	49.95	38.48
2.80		35.75	27.76	30.97			37.21	49.95	38.48
2.90		33.33	27.76	30.97			37.21	49.95	38.48
3.00		30.92	27.76	30.97			37.21	49.95	38.48
3.10			27.76	30.97	38.48			49.95	38.48
3.20			27.76	30.97	38.48			49.95	38.48
3.30			27.76	30.97	38.48			49.95	38.48
3.40			27.76	30.97	38.48			49.82	38.48
3.50			27.76	30.97	38.48			46.37	38.48
3.60				30.97	38.48				38.48
3.70				30.97	38.48				38.48
3.80				30.97	38.48				38.48
3.90				30.97	38.48				38.48
4.00				30.97	38.48				38.48
4.10					38.48				
4.20					38.48				
4.30					38.48				
4.40					38.48				
4.50					38.48				
4.60					38.48				
4.70					38.48				
4.80					38.48				
4.90					38.48				
5.00					38.48				
5.10					37.43				
5.20					35.81				
5.30					34.17				
5.40					32.54				
5.50					30.92				



All the information contained in this section applies to a system that is restrained at the soffit level and is thus properly stabilized. Auxiliary support is propping the concrete slab after stripping. It must be ensured on site that the structure to be loaded can absorb and withstand the occurring loads.

The EUROPLUS^{new} props must not be underlaid with wood or similar! The support must have direct contact with the structure!

17 TOPEC with GASS support

TOPEC Panels can be placed on GASS props when the GASS TOPEC Bearing is used. The GASS TOPEC Bearing can be fastened to GASS props or GASS base jacks, e.g. with the aid of the GASS Ring Bolt (Head-to-Head Plate). Then place the TOPEC Panels on the TOPEC GASS Bearings in the usual manner.



For more information on the GASS system, including assembly and safe working loads, please refer to the separate GASS User Guide.

18 Older EUROPLUS Props

All EUROPLUS Props have a quick-lowering mechanism, an anti-crush guard and protection against the inner tube sliding out, and they are hot-dip galvanised for long-term protection from corrosion.

	Component	Part code	Weight [kg]
	EUROPLUS 260 DB/DIN 154 cm - 260 cm	463021	15.88
	EUROPLUS 300 DB/DIN 172 cm - 300 cm	555118	17.53
	EUROPLUS 350 DB/DIN 198 cm - 350 cm Load*: Up to 30.00 kN class B, depending on extended length or 20.00 kN class D for any extended length	552147	21.34
	EUROPLUS 400 EC 224 cm - 400 cm Load*: Up to 35.00 kN class C, depending on extended length or 30.00 kN class E for any extended length.	583780	27.11
	EUROPLUS 550 DC 303 cm - 550 cm Load*: Up to 35.00 kN class C, depending on extended length or 20.00 kN class D for any extended length.	583725	36.08

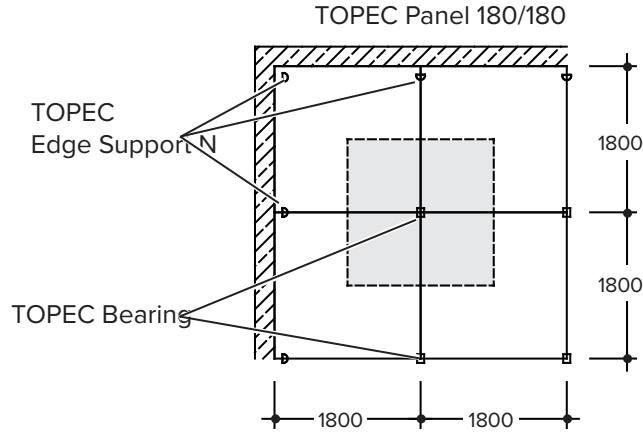
18.1 Floor heights with older EUROPLUS Props

18.1.1 TOPEC Giant Panel 180/180

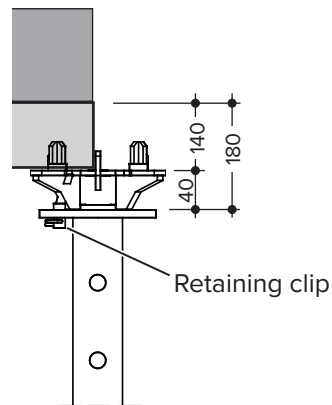
All the information applies to a system that is restrained at the soffit level and is thus properly stabilized.

Max. slab thickness: 40 cm, 50 cm with centre primary beam or middle support

Maximum area of influence for a steel prop: $A = 3.24 \text{ m}^2$



Clear room height



When using EUROPLUS^{new} props, the supports must be completely retracted! Support may be extended only when using the EUROPLUS Props stated at the beginning of this section!

TOPEC Panel 180/180

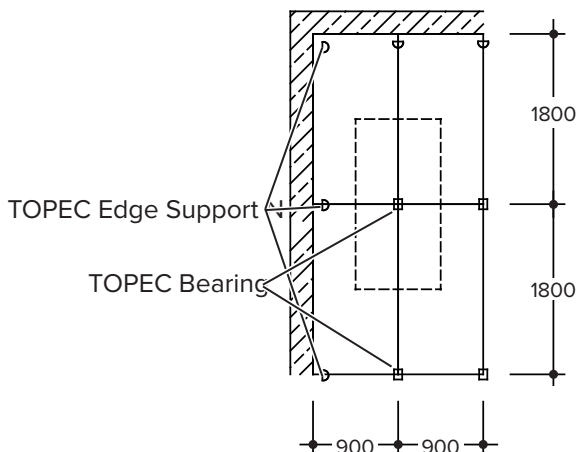
Maximum clearance h [m] EN 12812 design class B1								
Slab thickness [cm]	15	20	25	30	35	40	45	50
							With centre primary beam	
EUROPLUS Props								
EUROPLUS 260 DB/DIN code:463021	2.78	2.78	2.78	2.67	2.27	-	2.78	2.78
Europlus 300 DB/DIN code:555118	2.97	2.97	2.97	2.74	-	-	3.18	3.06
EUROPLUS 350 DB/DIN code:552147	3.63	3.63	3.63	3.41	-	-	3.68	3.68
EUROPLUS 400 EC code:583780	4.18	4.18	4.18	4.18	4.18	-	4.18	4.18
EUROPLUS 550 DC code:583725	5.68	5.61	5.26	4.96	4.69	4.37	5.59	5.40

18.1.2 TOPEC Panels 180/90

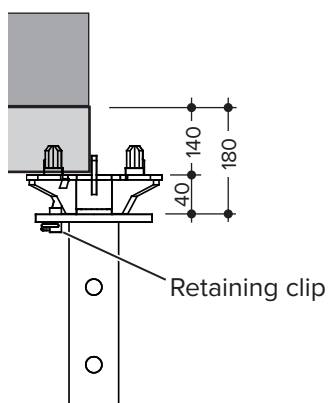
All the information applies to a system that is restrained at the soffit level and is thus properly stabilized.

Max. slab thickness: 50 cm

The maximum area of influence for a steel prop is: $A = 1.62 \text{ m}^2$



Clear room height

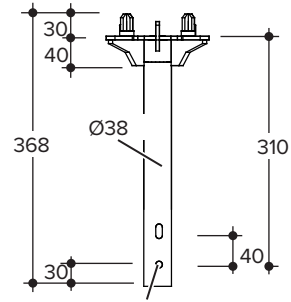


When using EUROPLUSnew props, the supports must be completely retracted!

TOPEC Panel 180/90

Maximum room height h [m] EN 12812, design class B1								
Slab thickness [cm]	15	20	25	30	35	40	45	50
EUROPLUS Props								
EUROPLUS 260 DB/DIN code:463021	2,78	2,78	2,78	2,78	2,78	2,78	2,78	2,78
EUROPLUS 300 DB/DIN code:555118	3,18	3,18	3,18	3,18	3,18	3,18	3,18	3,06
EUROPLUS 350 DB/DIN code:552147	3,68	3,68	3,68	3,68	3,68	3,68	3,68	3,68
EUROPLUS 400 EC code:583780	4,18	4,18	4,18	4,18	4,18	4,18	4,18	4,18
EUROPLUS 550 DC code:583725	5,68	5,68	5,68	5,68	5,68	5,68	5,55	5,40

TOPEC Bearing



Hole for TOPEC Bolt

Maximum room height [m] with retracted TOPEC Bearing			
EUROPLUS	Code	Min.	max.
260 DB/DIN	463021	1.72	2.78
300 DB/DIN	555118	2.06	3.18
350 DB/DIN	552147	2.33	3.68
550 DC	583725	3.36	5.68
400 EC	583780	2.58	4.18



This table takes into consideration only the actual dimensions of the steel props and not the load to which they may be subjected!

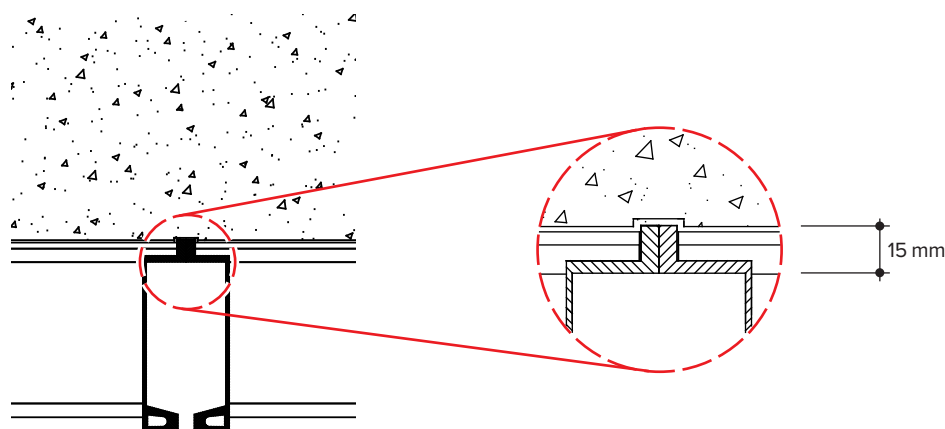
19 Cleaning and maintenance

19.1 Cleaning

When using the TOPEC system, it is essential that the 15 mm contact edge between the frames of the panels is clean. Remove any concrete residue or dirt before using the panels. Spray formwork oil on the form sheet and the contact edges of the TOPEC Panels before using the panels. This makes it easier to strip and clean the TOPEC Panels.



Check the 15 mm contact edges before each use to verify that they are clean.



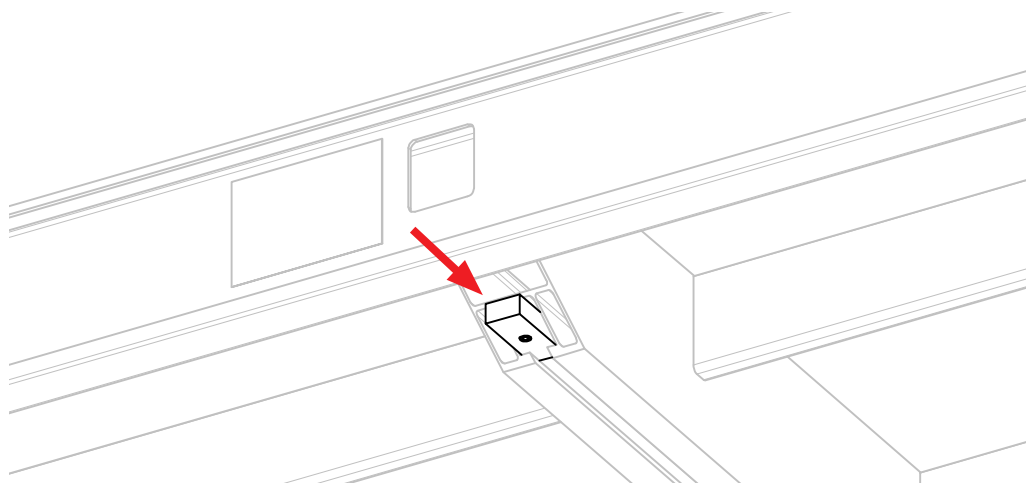
Professional cleaning

Taking advantage of the Hünnebeck cleaning service is advisable when the formwork needs professional final cleaning. Special modern cleaning systems ensure gentle and environmentally safe cleaning suitable to the materials of which the equipment is made.

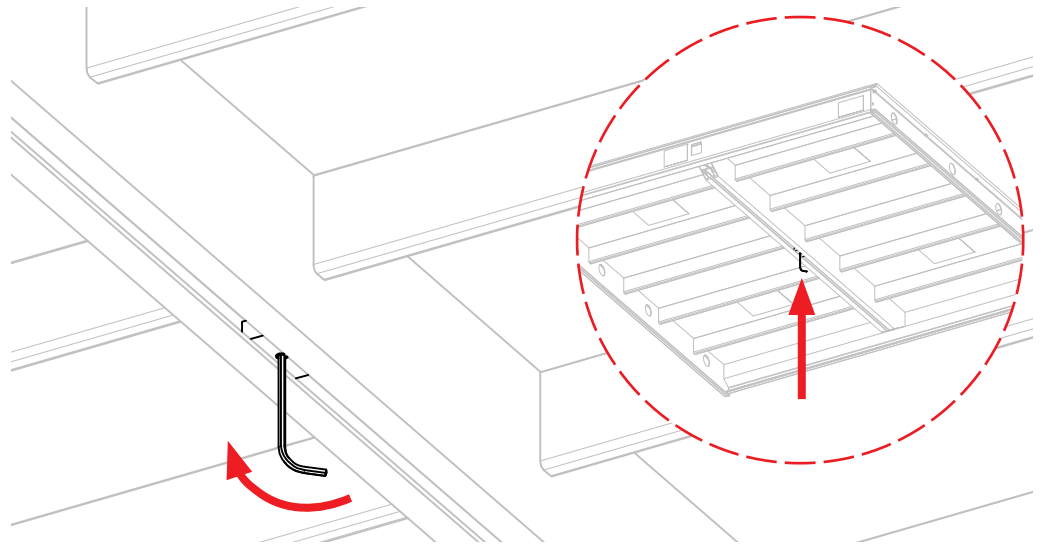
19.2 Attaching arresting piece to TOPEC Giant Panel 180/180

The arresting piece in TOPEC Giant Panels 180/180 prevents the steel props from falling over. If the arresting piece is missing, it can be retrofitted (set of arresting pieces, code:580272). The set contains 10no. arresting pieces and a 4 mm Allen key.

Step 1 Slide the arresting piece into the centre profile of the TOPEC Giant Panel 180/180.



Step 2 Push the arresting piece to the centre of the panel and tighten the grub screw. Use the included 4 mm Allen key to do this.



20 Storage and transport

20.1 With the TOPEC Stacking Angle

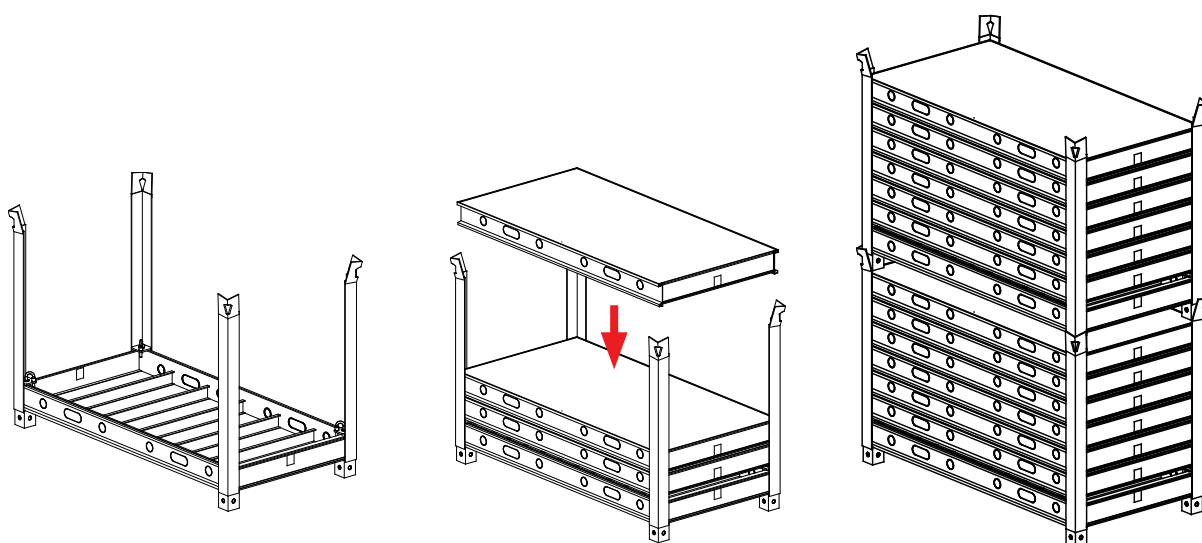
The TOPEC Stacking Angle allows 2no. to 7no. TOPEC Panels to be handled as a single unit. The unit can be transported by forklift or crane. Separate operating instructions describe in detail how to use the TOPEC Stacking Angle.



Always comply with the separate operating instructions for the TOPEC Stacking Angle!



Use Stacking Angles only to transport panels that are all the same size! Never transport panels of different sizes!



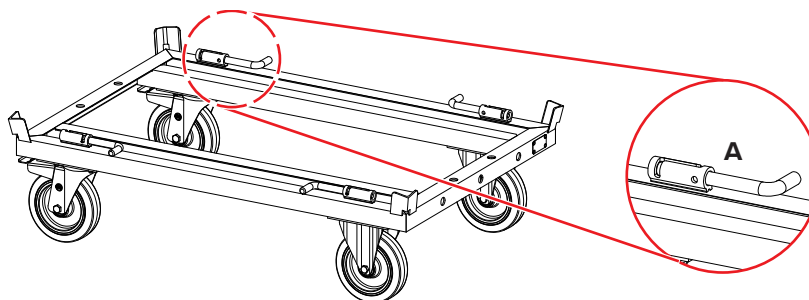
20.2 Other components

All the components should be stored in the proper transport equipment. Most of the transport equipment can be moved with the Euro Trolley (code:607610) and transported with the crane on site.



Always follow the directions in the Euro Trolley operating instructions.

Always use the latch (**A**, shown opened here) on the Euro Trolley to secure the transport equipment.



20.2.1 Components < 1.00 m long and loose parts

Components < 1.00 m long and loose parts should be stored in the Euro Lattice Box (code:548480). The Euro Lattice Box can be moved with the Euro Trolley.

20.2.2 Components > 1.00 m long

Components > 1.00 m long such as EUROPLUSnew Props, PROTECTO Railing Posts, etc. should be stored and transported on the Euro Stacking Frame 120/80 (code:553689). Always secure the components with straps or similar protection to prevent them from slipping when being transported. The Euro Stacking Frame can be moved with the Euro Trolley.

21 Note on structural analysis

Unless explicitly indicated otherwise, all load specifications in this document are safe working loads. This means that characteristic loads can be used for calculations. The following partial safety factors are included in the safe working load (where applicable):

Load:

$$\gamma_f = 1.50$$

Resistances:

Steel:

$$\gamma_m = 1.10$$

Imperfections, load assumptions and additional rules:
according to EN 1993/EN 12810/EN 12811/EN 12812/EN 1991

Aluminium:

$$\gamma_m = 1.10$$

Imperfections, load assumptions and additional rules:
according to EN 1999/EN 12810/EN 12811/EN 12812/EN 1991

Timber:

$$\gamma_m = 1.30;$$

$$K_{mod} = 0-90$$

Imperfections, load assumptions and additional rules:
according to EN 1995/EN 12810/EN 12811/EN 12812/EN 1991

Concrete:

$$\gamma_m = 1.50$$

Imperfections, load assumptions and additional rules:
according to EN 1992/EN 12810/EN 12811/EN 12812/EN 1991

Reinforcing steel:

$$\gamma_m = 1.15$$

Imperfections, load assumptions and additional rules:
according to EN 1992/EN 12810/EN 12811/EN 12812/EN 1991

These values only include those loads that derive from the respective part itself (unless indicated otherwise).

An increase in the loads due to effects in the full system (e.g. theory II, substitute horizontal loads, scaffolding class...) must always be considered.

22 Chronology

Changes since edition 2022-09	Page	Date
PROTECTO Panels G2 included (assembly sequences).		2023-11-20
Section 11.4 updated.	82	2023-11-20
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