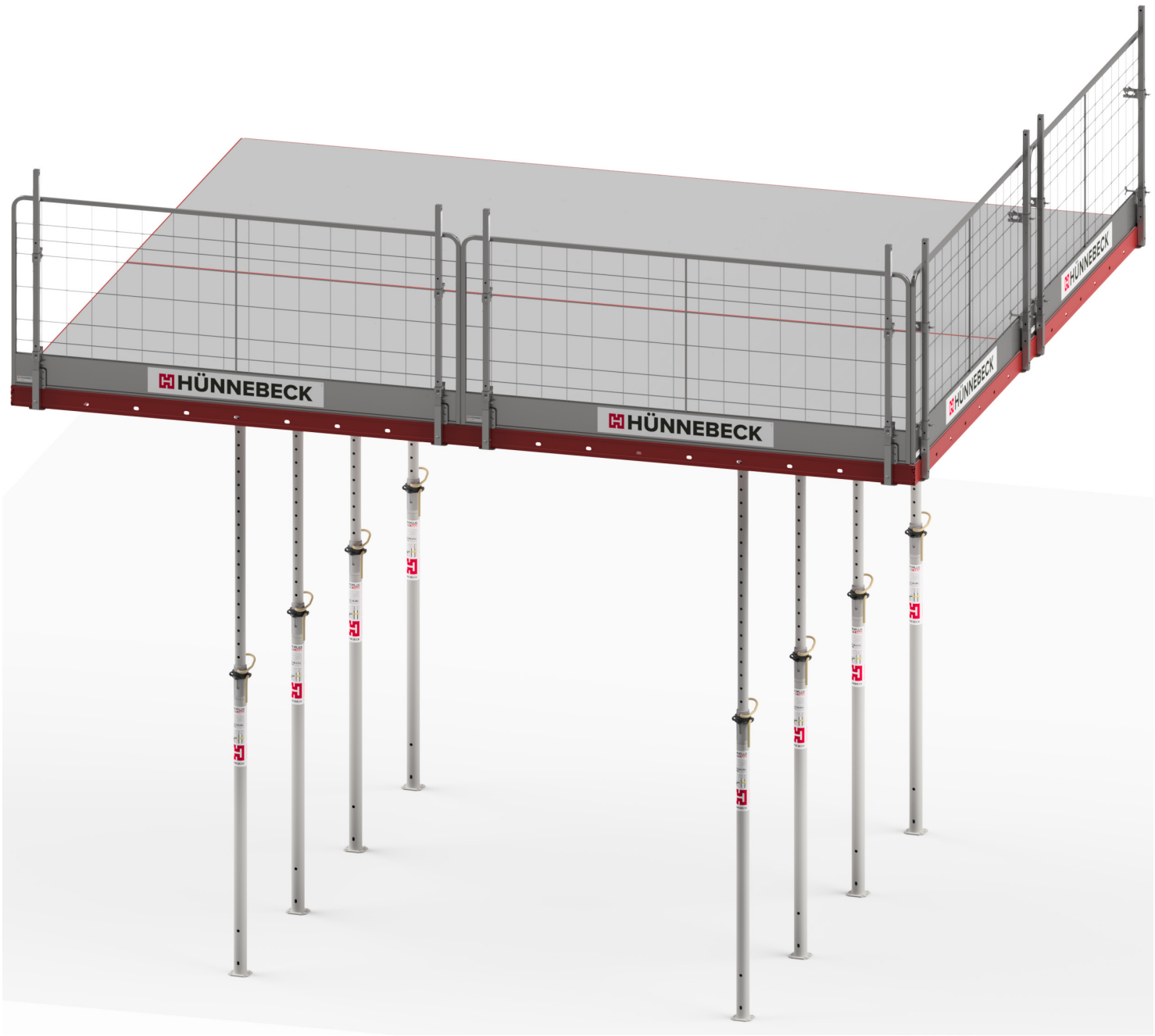
PROTECTO
Edge protection

User guide



HÜNNEBECK
BY BRANDSAFWAY

Contents

1 Product features

1.1 Introduction

PROTECTO complies to the product specifications and test procedures of the BS EN 13374:2013+A1:2018, Class A. The use of the PROTECTO system is permitted up to a peak velocity pressure of 0.60 kN/m^2. A use outside this range is in principle permissible, but requires separate structural proof.

PROTECTO is also used as temporary protection of staircases and accesses to elevator shafts.

1.2 Intended use

The PROTECTO system is based on the BS EN 13374:2013+A1:2018, Class A and is intended as temporary edge protection in order to keep people from falling and to prevent accidents caused by falling objects.

It is not designed for bearing loads or as any other kind of support. It must not be used as an attachment point for harnesses.

2 General information

This user guide for assembly and use contains important information regarding the assembly and use of the PROTECTO system, as well as safety advice. These instructions are created to support effective working processes on site when using the PROTECTO system, therefore carefully read this user guide before assembly and use of the system, always keep it at hand and archive it for future reference.

2.1 Safety instructions

It is the responsibility of the site Management / Supervisors to ensure that all operatives involved in the assembly of the PROTECTO system have been made aware of this document and that they understand the drawings (if supplied) and the function of the various components. The Contractor is also responsible for drawing up a comprehensive risk assessment and a set of installation instructions. The latter is not usually identical to the assembling instructions.

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 assembly instructions are an integral component of the PROTECTO construction and are a part of the installation instructions. They comprise safety guidelines, details of standard configurations and intended use as well as the system's description.

The functional instructions (standard configuration) contained in the assembly instructions are to be complied with as stated. Enhancements, deviations or changes represent a risk and therefore require separate verification with the help of a risk assessment or a set of instructions which comply with the relevant laws, standards and safety regulations. The same also applies in those cases where components are provided by the Contractor.

Availability of the assembly instructions

The Contractor has to ensure that the assembly instructions provided by the manufacturer or supplier are available at the place of use. Site personnel are to be informed of this before assembly and use takes place and that they are available at all times.

Detailed assembly

The method of erection / dismantling detailed is intended to be used as a general guide to inform the user about the product's details to enable safe use. It must not be used as a substitute for a contractor's specific risk assessment and method statement, and all relevant health and safety regulations must be adhered to. Due to the variety of possible configurations of temporary work systems, the method of erection or parts of it may differ from that shown. Additionally, alternative methods of erection may be preferred or developed in which case it is imperative that all relevant health and safety legislation is adhered to.

2.2 Method statement guidelines

Hünnebeck can provide further guidance and on-site assistance on any issues contained in this document that are not clear. IF IN DOUBT ASK.

Design Risk Assessment

Where relevant site-specific scheme designs are produced, they will generally be to a recognised standard arrangement otherwise calculations will be done to verify the design.

The Design Risk Assessment is an integral part of Hünnebeck's design process. The designer will assess the hazards and risks associated with erection, use and dismantling of the temporary works at an early stage of the design process. Hünnebeck will communicate where risks to health and safety remain by including a "Residual Risk Note" on the drawing. This note will be clearly visible and marked by the familiar black exclamation mark on a yellow triangle. The statement will be brief but clear to enable appropriate action by a competent contractor.

Hünnebeck draws attention to the following Health and Safety legislation:

- The Construction (Health, Safety and Welfare) Regulations 1996 (CHSW Regs);
- Construction (Design and Management) Regulations 2015 (CDM Regs);
- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER);
- Work at Height Regulations 2005 (WaH Regs);
- Manual Handling Operations Regulations 1992 (MHO Regs);
- The Personal Protective Equipment at Work (Amendment) Regulations 2022 (PPER 2022).

Work at Height Regulations - Hierarchy of Controls Avoiding Work at Height

Work at height can be reduced / eliminated by considering the method of assembly and use:

- Walkways that are designed to be re-used reduce the amount of time and effort dismantling and re-erecting;
- Walkways that can be pre-assembled on the ground and then raised by crane to an elevated position will remove some of the work at height;
- Installing completed walkways when the walkway is on the ground will remove work at height associated with the construction later on.

Preventing Falls - The use of guardrails and other collective measures

The use of PPE / Safety Harnesses.

Suitable PPE MUST be used at all times during assembly and dismantling of this equipment. Lanyards MUST always be secured to a suitable part of the structure. Always consider the attachment level and deployment (extension) of the lanyard when under load.

2.3 Equipment information

Material check

Material deliveries are to be checked on arrival at the construction site / place of destination, as well as before each use, to ensure it's in serviceable condition and functions correctly. Changes to the material are not permitted.

On-site preparations

The Contractor must ensure the appropriate environment and conditions for storage and the particular application of the system(s) supplied.

Storage and transportation

The special requirements of the PROTECTO system either as individual components and / or as pre-assembled parts regarding storage and transportation procedures must be complied with. This applies not only to and from the site but also to the movement of individual components and / or pre-assembled parts on the construction site / place of use.

Lifting

When applicable, the lifting requirements of the individual components and / or pre-assembled parts must be followed.

Genuine components

The information provided assumes that any product combinations will be between genuine Hünnebeck products or products supplied by Hünnebeck unless otherwise stated.

Combining components from different manufacturers carries certain risks. They are to be individually verified and a separate set of instructions for the installation of the equipment may be required.

Any unauthorised use in relation to third party products could give rise to a risk of collapse, damage, injury or death.

Spare parts and repairs

Only original components may be used as spare parts. Repairs are to be carried out by the manufacturer or by authorised facilities only.

2.4 Document information

Representations

The representations shown in the assembly instructions are in part, situations of assembly and not always complete in terms of safety considerations. The safety installations which have possibly not been included in these representations must be available and must be in accordance with the latest regulations. Overviews and diagrams are for illustrative purposes only and whilst we endeavour to ensure accuracy, we are not responsible for omissions or errors.

Safety symbols

Individual safety symbols are to be complied with. Examples:

 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.
NOTICE	**Notice!** NOTICE indicates a hazardous situation that, if not avoided, can cause property damage.
	This note indicates that an additional check, visual or otherwise, is required.
	This note shares practical experience with the user, e.g. how to more easily or quickly perform a task.
	This note draws the user‘s attention to particularly important information, e.g. that a pre-requisite must 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.

User guide compliance

Hünnebeck will not be liable for any damage to property, personal injury or any losses caused by failure to follow the instructions contained in this guide. It remains the responsibility of the user to comply with the applicable legislation.

2.5 Other information

This guide provides an overview of the PROTECTO system's instructions for assembly and use. More specific component data sheets are available upon request for some product lines. Hünnebeck reviews and updates its product guidance from time to time. Due to continuous development, it is important that only current documents are used.

Hünnebeck reserves the right to alter or amend, without notice, the design and / or specifications of products in the interests of improvement or when required to comply with new regulations, other safety guidances or industry advancements.

Hünnebeck also issues safety notes on its products or packaging where required. These notices may affect the manner in which products are used and should therefore be adhered to. The most recent published notice should prevail.

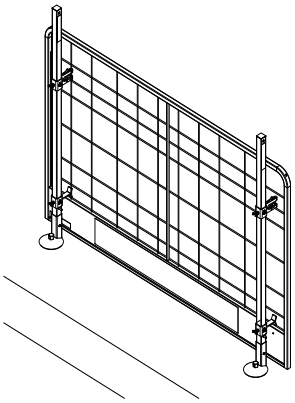
All information in this guide is correct at the time of going to press and / or other publication media.

For the latest version of this and other user guides please visit:

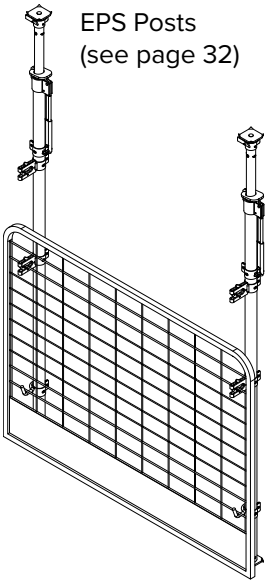
http://huennebeck.com/downloads

3 Overview

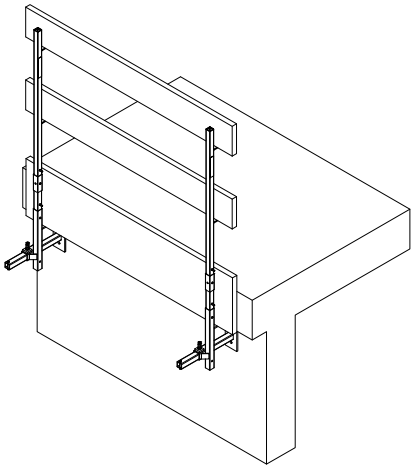
Concrete slabs
(see pages 24 and 28)



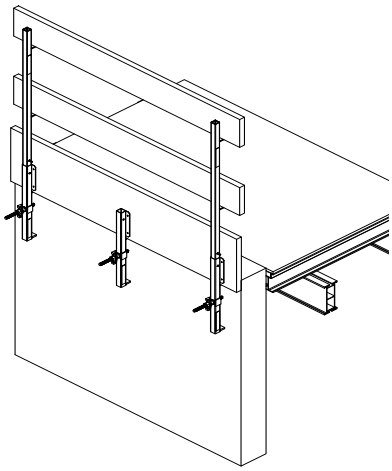
EPS Posts
(see page 32)



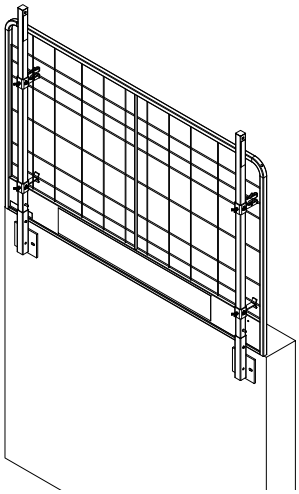
PROTECTO Post Holder Vari
(see page 38)



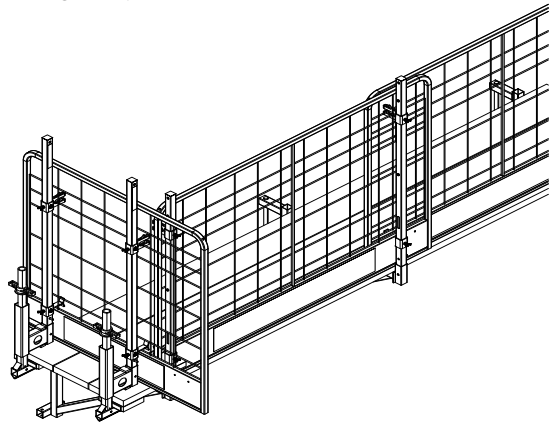
PROTECTO Front Attachment
(see page 43)



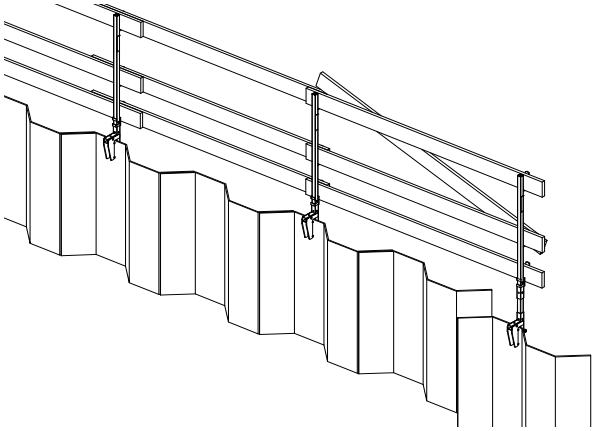
PROTECTO Screw-on Bracket
(see page 49)



PROTECTO Concrete Pouring Bracket
(see page 52)

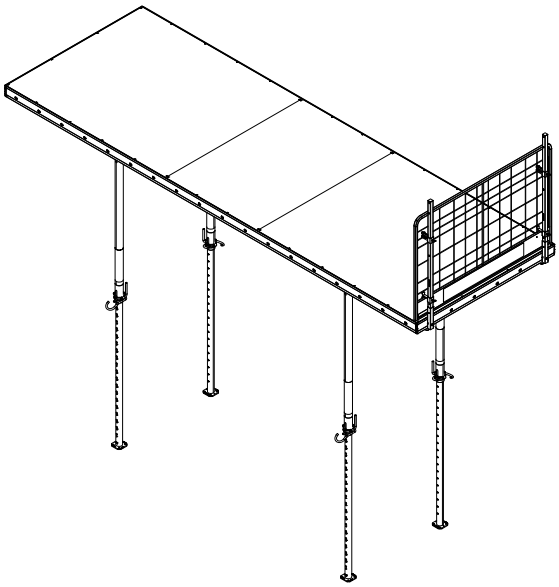


PROTECTO Sheet Pile Clamp
(see page 76)

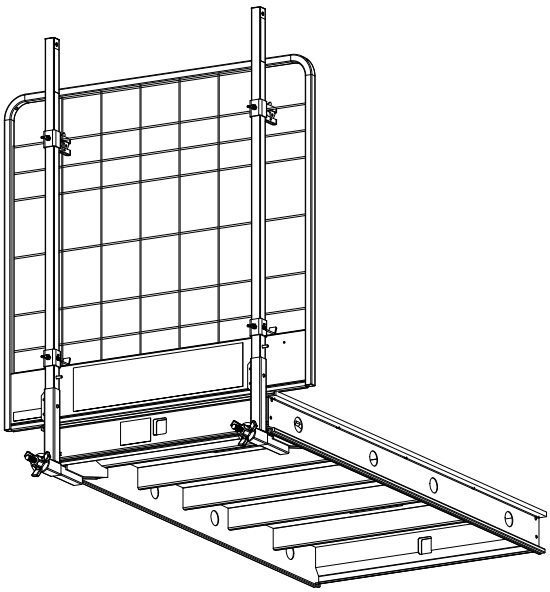


Unless stated otherwise, all dimensions are given in mm.

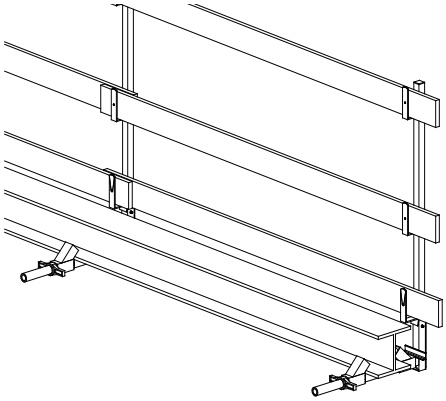
TOPMAX Post Fastener
(see page 65)



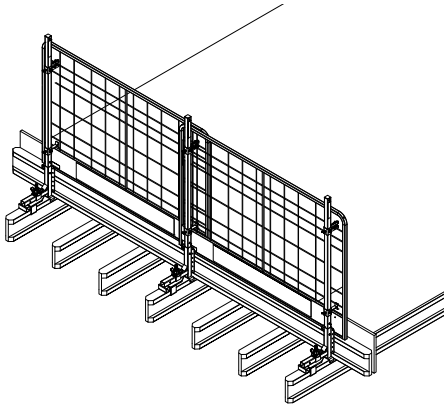
TOPEC P-Railing Shoe
(see page 69)



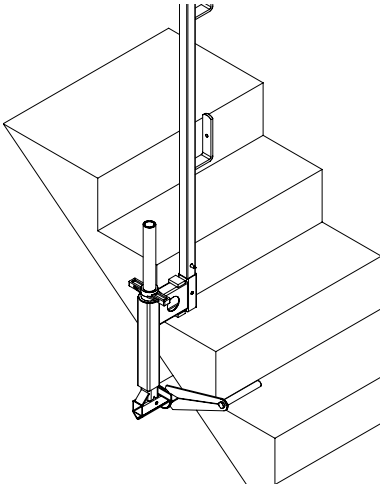
PROTECTO Beam Section Clamp
(see page 75)



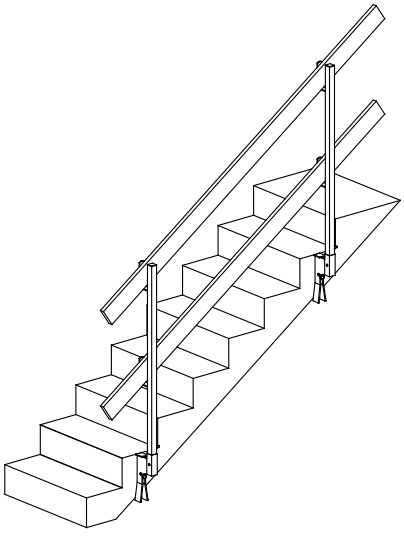
PROTECTO Timber Beam Connector
(see page 62)



PROTECTO Multiple Clamp
(see page 57)

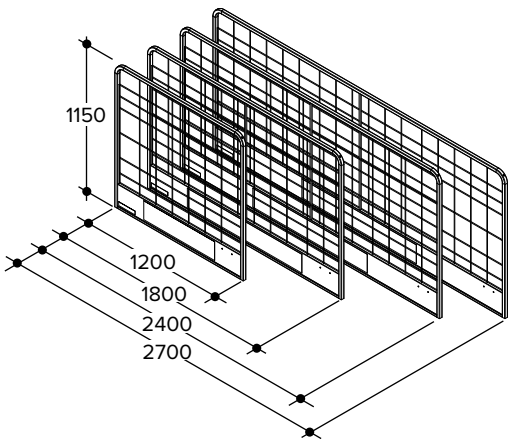


PROTECTO Staircase Bracket
(see page 58)



4 Components

4.1 Panels



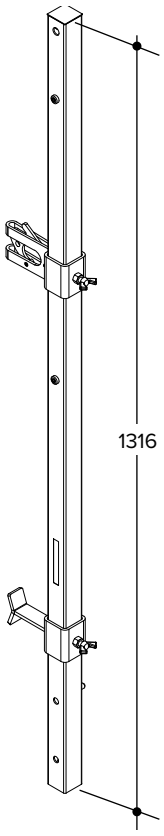
Component	Part code	Weight [kg]
PROTECTO Panel G2 270	**692778**	**21.00**
PROTECTO Panel G2 240	**692772**	**19.50**
PROTECTO Panel G2 180	**692766**	**14.50**
PROTECTO Panel G2 120	**692760**	**10.00**

Used in combination with the PROTECTO Post 130 Adjustable to provide edge protection.

Maximum allowable post spacing is 2.40 m (see page 20).

When used with the PROTECTO Post 130 Adjustable, the PROTECTO Panel G2 complies with BS EN 13374 Class A.

4.2 Posts and post ancillaries



Component	Part code	Weight [kg]
PROTECTO Post 130 Adjustable	**692750**	**4.50**

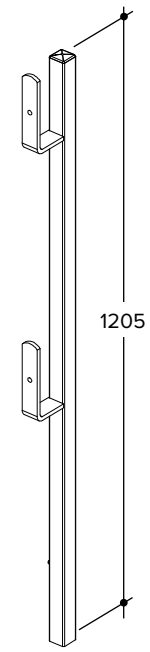
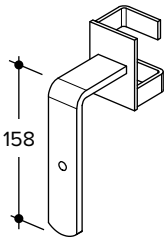
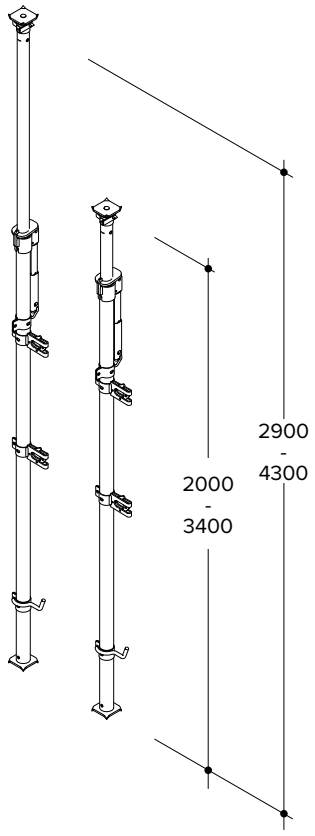
The PROTECTO Post 130 Adjustable is used in combination with the PROTECTO Panel G2 (see page 21).

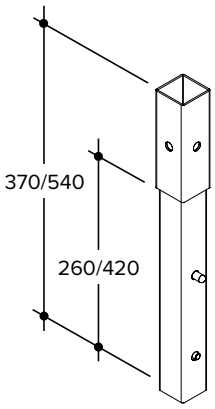
An integrated safety device secures the post automatically to the various retaining elements.

The PROTECTO Post 130 Adjustable complies with BS EN 13374 Class A when used with the PROTECTO Panels G2.

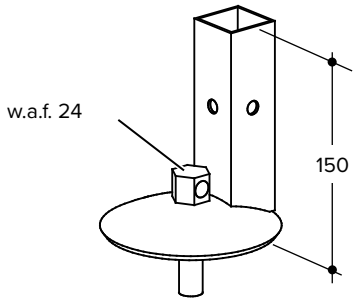
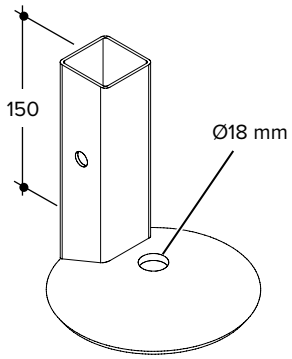
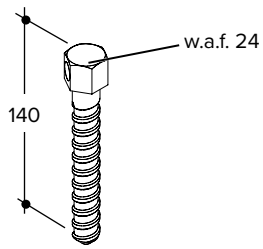
*only rental [1]no rental

Unless stated otherwise, all dimensions are given in mm.

	Component	Part code	Weight [kg]
	**PROTECTO Railing Post** The PROTECTO Railing Post is used in conjunction with plank railings (see page 22). An integrated safety device secures the post automatically to the various retaining elements (see page 23). The PROTECTO Railing Post complies with EN 13374 when used 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).	**601225**	**3.65**
	**PROTECTO Toeboard Retainer** Used with the PROTECTO Railing Post, this add-on secures the toeboard when using plank railings. The PROTECTO Toeboard Retainer can easily be attached to PROTECTO Railing Posts which have been already installed (see page 23).	**601227**	**0.69**
	**EPS Post 2000–3400 mm** **EPS Post Extra 2900–4300 mm** Used between concrete slabs to provide vertical support for the PROTECTO Panels G2 (see page 32). The EPS Post can extend up to 3.40 m and the EPS Post Extra up to 4.30 m. The posts can be identified by the colour of the handles, red on the EPS Post and blue on the EPS Post Extra. The EPS Post and the EPS Post Extra comply with BS EN 13374 Class A and Class B. Do not use as props.	**692550** **692551**	**12.00** **19.00**

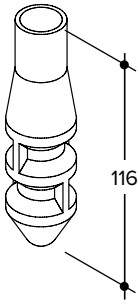
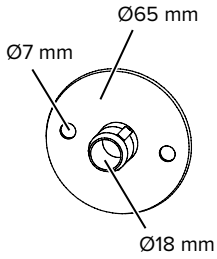
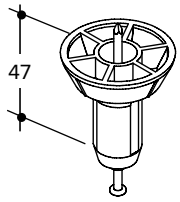
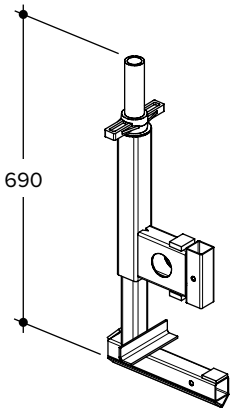
	Component	Part code	Weight [kg]
	**PROTECTO Post Extension 26** **PROTECTO Post Extension 42** The PROTECTO Post Extensions are used to increase the height of the PROTECTO Railing Post or the PROTECTO Post 130 Adjustable by 260 mm or 420 mm. The maximum spacing of the PROTECTO Post Extension 26 is 1.70 m, whereas the maximum spacing for the PROTECTO Post Extension 42 is 1.30 m.	**602111** **602580**	**0.93** **1.19**

4.3 Concrete slab ancillaries

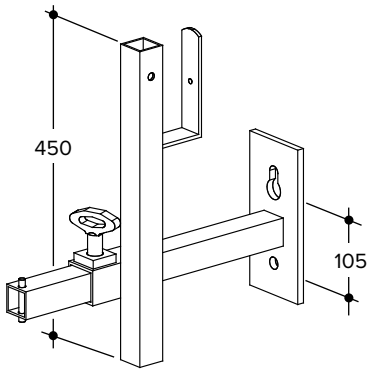
	Component	Part code	Weight [kg]
	**PROTECTO Screw Base Joint** Used to attach edge protection to a flat and stable concrete slab. The PROTECTO Screw Base Joint is attached to the concrete using the integrated M16 screw and a drop-in anchor with internal thread (see page 24).	**601228**	**1.02**
	**PROTECTO Screw Base Without Screw** The PROTECTO Screw Base Without Screw is used as an alternative to the PROTECTO Screw Base Joint in areas where drilling is not permitted. The PROTECTO Screw Base Without Screw is used in conjunction with the Tie Sleeve DW 15 and the PROTECTO SF Screw DW 15 (see page 28). The Tie Sleeve DW 15 and the PROTECTO SF Screw DW 15 must be ordered separately. Alternatively, the PROTECTO Screw Base Without Screw can be attached using self-tapping screw anchors.	**601258**	**0.90**
	**PROTECTO SF Screw DW 15** Used in connection with the Tie Sleeve DW 15 to attach the PROTECTO Screw Base Without Screw to the concrete structure (see page 28).	**602583**	**0.22**

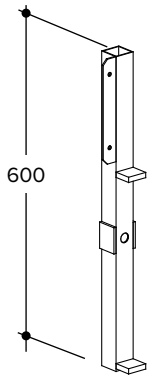
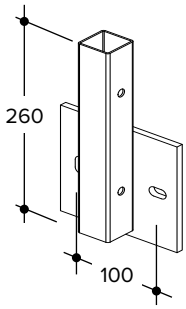
*only rental [1]no rental

Unless stated otherwise, all dimensions are given in mm.

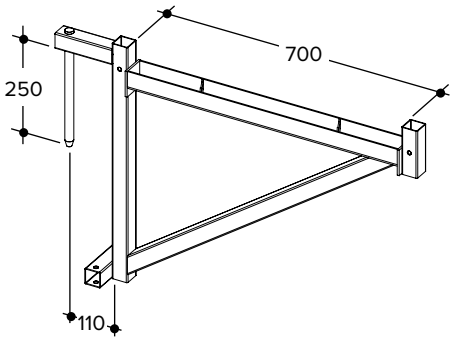
	Component	Part code	Weight [kg]
	**Tie Sleeve DW 15** The cast-in tie sleeve is an alternative fastening method to drop-in anchors. It is used in connection with the PROTECTO Screw Base Without Screw and the PROTECTO SF Screw DW15 (see page 28).	**602584**	**0.04**
	**Cap For Tie Sleeve** The cap covers the Tie Sleeve DW 15 when it is positioned and fixed in freshly poured concrete (see page 28).	**602026**	**0.01**
	**Fixing Cone For Tie Sleeve** Fixes the Tie Sleeve DW 15 to the formwork (see page 28).	**602025**	**0.02**
	**PROTECTO Multiple Clamp** This clamp can be used in a wide range of applications to attach PROTECTO posts to any structural component, such as slab edges, parapet walls, roof parapets and staircases. Adjustments within a range of 20 mm to 470 mm can be made by turning the movable clamping part (see page 36 and 57).	**601226**	**6.49**

4.4 Concrete wall ancillaries

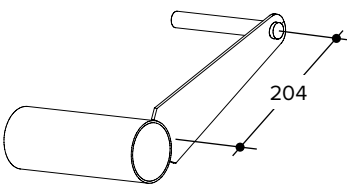
	Component	Part code	Weight [kg]
	**PROTECTO Post Holder Vari** This post bracket is mounted to exterior walls. This adjustable bracket in conjunction with timber planks can be used for slab edges with a cantilever of up to 270 mm (see page 38).	**602150**	**6.01**

	Component	Part code	Weight [kg]
	**PROTECTO Front Attachment** The PROTECTO Front Attachment is used in building façades as a post retainer for edge protection as well as a support form slab edge forms. The PROTECTO Front Attachment can be attached to a dowel or tie sleeve embedded on a concrete wall using a tie rod with a tie nut or with a screw (see page 43).	**601285**	**2.01**
	**PROTECTO Screw-on Bracket** This post bracket is attached to walls as a holder for PROTECTO posts (see page 49).	**601892**	**2.00**

4.5 Walkway brackets

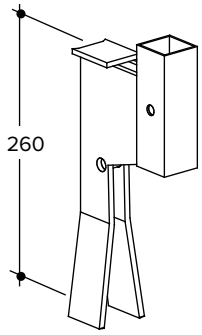
	Component	Part code	Weight [kg]
	**PROTECTO Concrete Pouring Bracket** The PROTECTO Concrete Pouring Brackets are hung to hollow walls. Used in conjunction with attached planks and mounted railings to create a safe working platform (see page 52).	**601894**	**8.52**

4.6 Staircase ancillaries

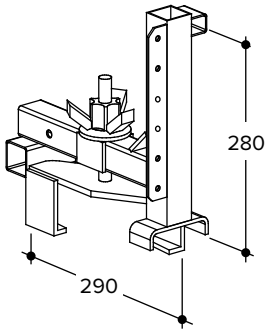
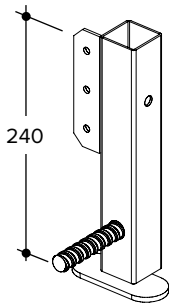
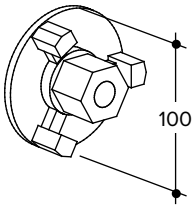
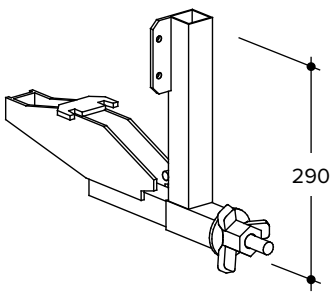
	Component	Part code	Weight [kg]
	**PROTECTO Fixing Device For Clamp** The PROTECTO Fixing Device For Clamp in combination with the PROTECTO Multiple Clamp allows the installation of edge protection on stairways (see page 58).	**601990**	**2.16**

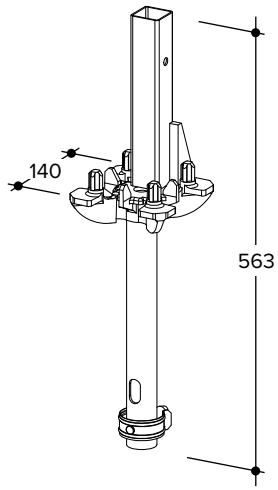
*only rental [1]no rental

Unless stated otherwise, all dimensions are given in mm.

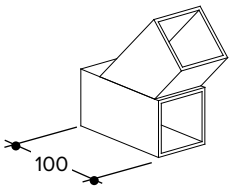
	Component	Part code	Weight [kg]
	**PROTECTO Staircase Bracket** This bracket is used for the installation of edge protection along a staircase. The bracket is attached by using one M12 bolt and a matching dowel. This provides safety and enough space for unhindered work on the stairs and in the staircase until the permanent railing is installed (see page 58).	**601229**	**2.02**

4.7 Formwork ancillaries

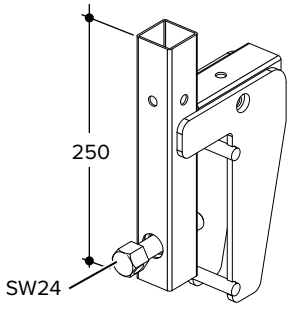
	Component	Part code	Weight [kg]
	**PROTECTO Timber Beam Connector** The PROTECTO Timber Beam Connector is used to mount PROTECTO Railing Posts to H 20 and R 24 beams. At the same time, the connector can be used as a support for slab edge forms. The beam side form can be nailed to the integrated nailing plate (see page 62).	**601291**	**4.20**
	**TOPMAX Post Fastener** Used to attach a PROTECTO post to a TOPMAX Floor Table. The TOPMAX Post Fastener is secured using a Centering Nut 100 (see page 65).	**603123**	**1.02**
	**Centering Nut 100** Used to secure tensile connections (see page 65).	**469566**	**0.80**
	**TOPEC P-Railing Shoe** Allows for a PROTECTO post to be attached before the TOPEC Panel is swivelled up (see page 69).	**606255**	**3.65**

	Component	Part code	Weight [kg]
	**TOPEC P-Bearing for Railing** For attaching a PROTECTO post to the longitudinal and lateral sides of the TOPEC panels (TOPEC Bolt included). The TOPEC P-Bearing for Railing is inserted into the steel prop (see page 73). Maximum load capacity: 15.90 kN	**606250**	**2.93**

4.8 Steel beams ancillaries

	Component	Part code	Weight [kg]
	**PROTECTO Beam Section Clamp** The PROTECTO Beam Section Clamp is used to attach the PROTECTO Multiple Clamp to horizontal and vertical I-beams. The standard clamping part of the PROTECTO Multiple Clamp must be replaced by two of these PROTECTO Beam Section Camps (see page 75).	**601310**	**0.79**

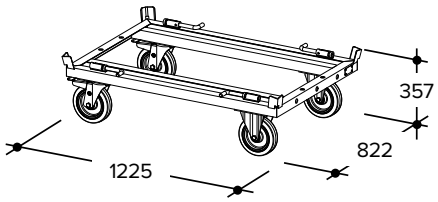
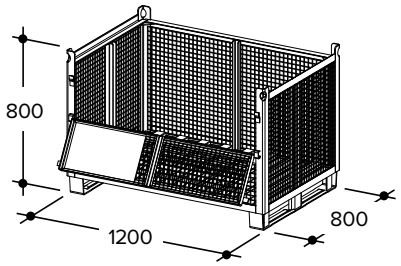
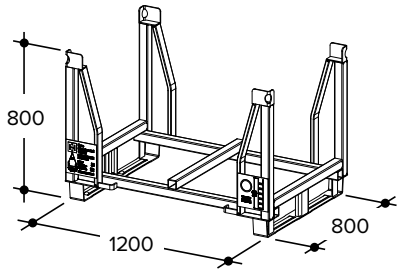
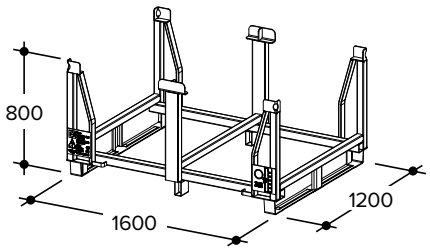
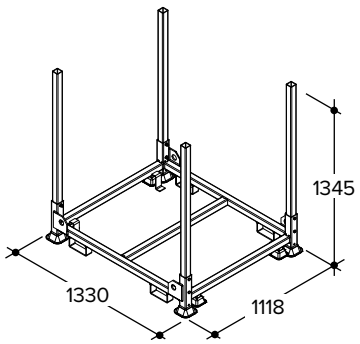
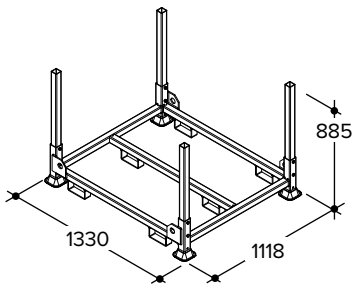
4.9 Sheet pile ancillaries

	Component	Part code	Weight [kg]
	**PROTECTO Sheet Pile Clamp** The PROTECTO Sheet Pile Clamp allows for PROTECTO edge protection to be attached to sheet piles at construction pits (see page 76).	**603546**	**2.93**

*only rental [1]no rental

Unless stated otherwise, all dimensions are given in mm.

4.10 Storage

	Component	Part code	Weight [kg]
	**Euro Trolley** Used to manually manoeuvre approved Hünnebeck transport equipment. The Euro Trolley has 2no. lockable swivel castors. Safe Working Load: 1,300 kg For more information refer to the separate Operating Instructions.	**607610**	**39.57**
	**Euro Lattice Box** Lattice box used to store and transport small items by crane. Can be moved using the Euro Trolley. Safe Working Load: 1,200 kg.	**548480**	**68.79**
	**Euro Stacking Frame 120/80** Stacking frame used to store and transport materials by crane. Can be moved using the Euro Trolley. Safe Working Load: 1,200 kg	**553689**	**54.47**
	**Euro Stacking Frame 160/120** Stacking frame used to store and transport materials by crane. Safe Working Load: 1,200 kg.	**566494**	**84.02**
	**PROTECTO Panel Stillage** Used to store and transport PROTECTO Panels G2. Safe Working Load: 1,200 kg.	**692740**	
	**EPS Post Stillage** Used to store and transport PROTECTO Post 130 Adjustable and EPS Posts. Safe Working Load: 1,200 kg.	**692639**	

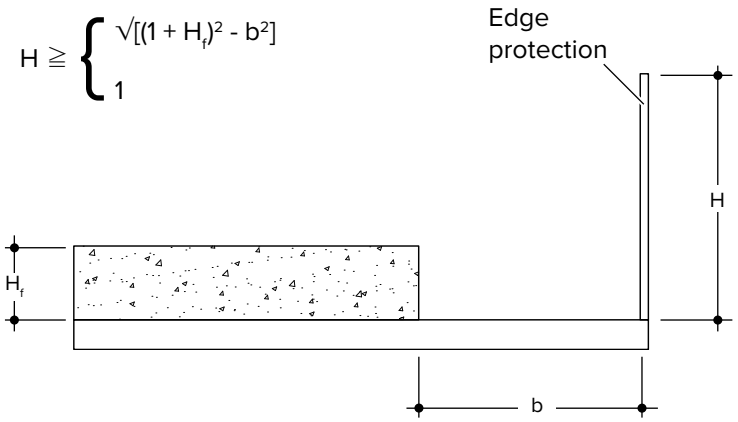
Unless stated otherwise, all dimensions are given in mm. *only rental [1]no rental

5 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 (H1) 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

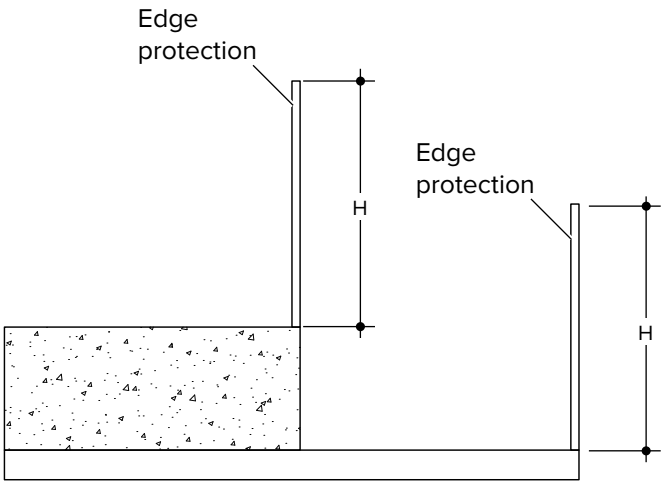
Values in white cell: BS EN 13374, minimum protection height 1.00m.

Values in shaded cell: PROTECTO Post 130 Adjustable with PROTECTO Panel G2, and PROTECTO Railing Post with timber railing. Provide protection to BS EN 13374.

Values in shaded cells and in bold:
PROTECTO Post 130 Adjustable with PROTECTO Panel G2, and PROTECTO Railing Post with timber railing as standard do not provide enough protection height. The access width may need to be increased, or PROTECTO Railing Post with timber railing used with appropriate extension socket (requires reduced post spacing) or secondary edge protection on the slab to be installed.

Unless stated otherwise, all dimensions are given in mm.

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.

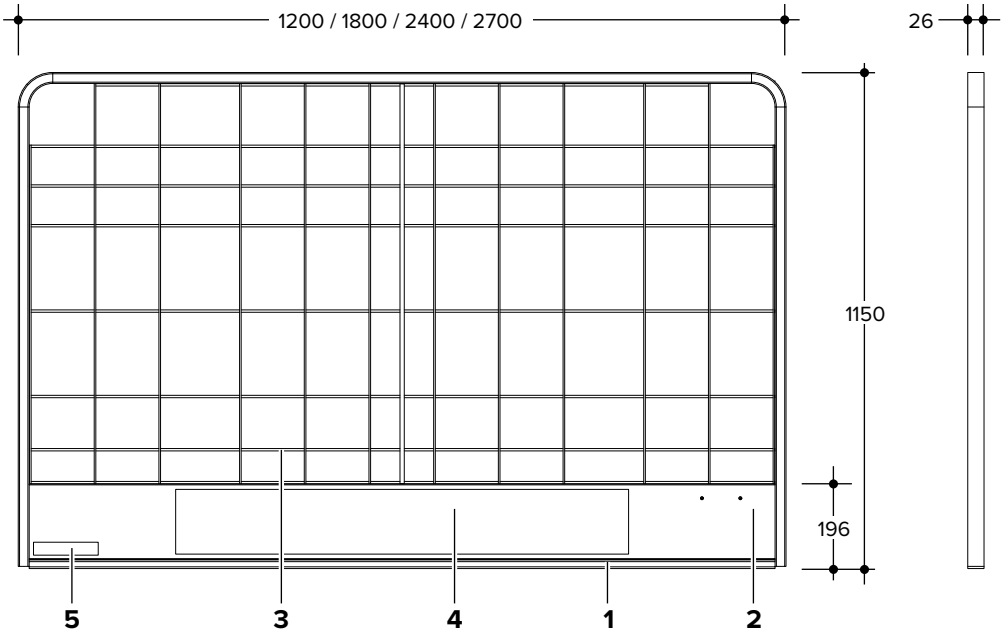
Customer to ensure that the concrete can take the extra imposed loads.

6 Applications

6.1 Panels and posts

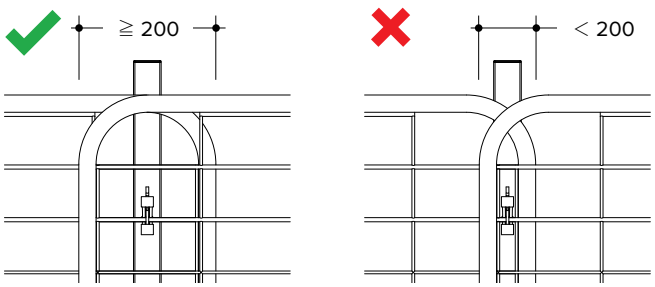
6.1.1 Panels

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.

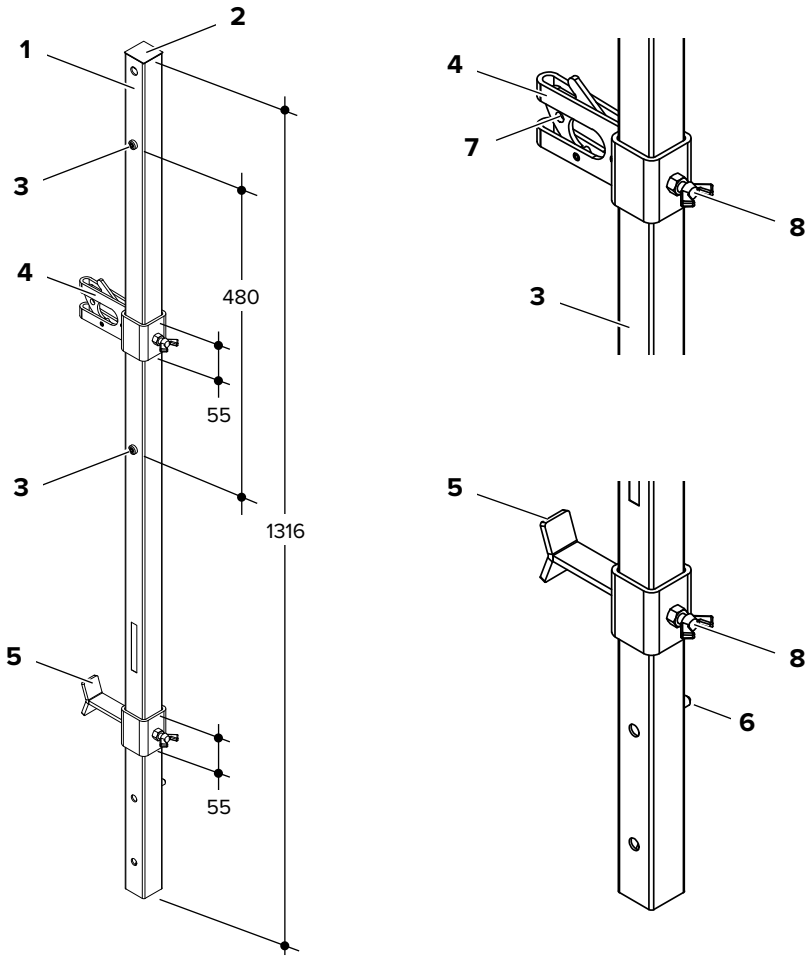


Unless stated otherwise, all dimensions are given in mm.

6.1.2 Posts

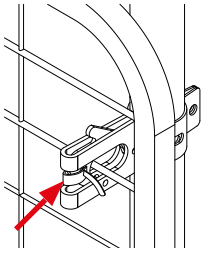
PROTECTO Post 130 Adjustable

The PROTECTO Post 130 Adjustable (code:692750) provides support for the PROTECTO Panels G2. The post has a cross-section of 35 x 35 mm which allows the PROTECTO Post 130 Adjustable (code:692750) to be used with the ancillaries of the PROTECTO Railing Post (code:601225).



1 SHS 35 x 35 x 2 mm
2 Plastic cap
3 Tapping screw as Ø12 mm stopper
4 Sliding latch
5 Sliding T latch
6 Safety device (not visible) - see page 23
7 Ø8 mm hole for plastic zip tie
8 Captive hexagonal nut and wing nut

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

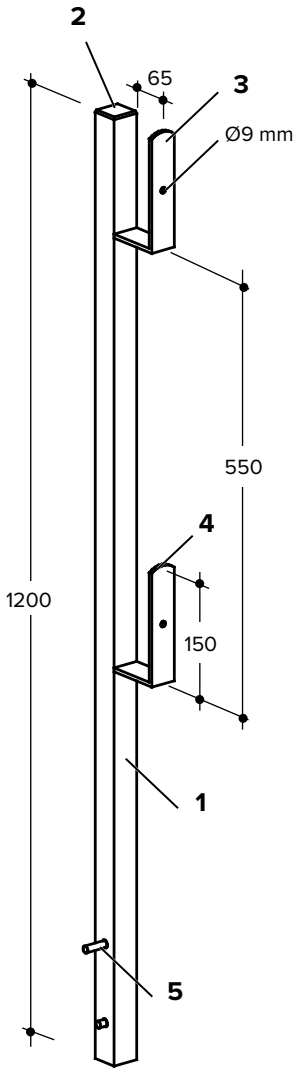


For additional security, a cable tie can be added (optional).

PROTECTO Railing Post

The PROTECTO Railing Post (code:601225) is used for when timber railing is an option as 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 x 35 x 2 mm
2 Plastic cap
3 Top bracket
4 Bottom bracket
5 Safety device - see page 23

The PROTECTO Railing Post (code:601225) complies with BS EN 13374 when used 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).

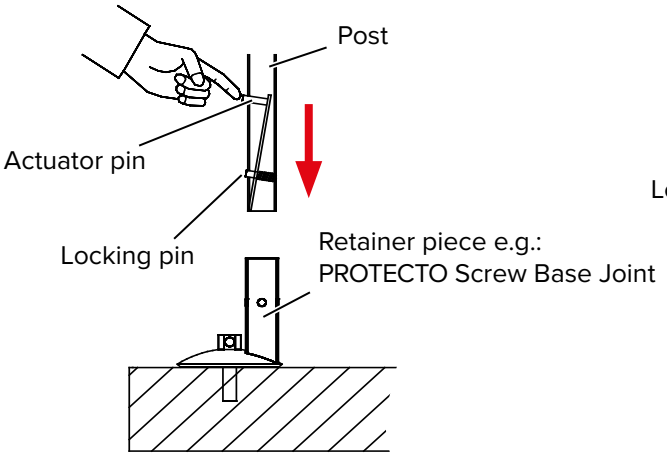
Do not use the PROTECTO Railing Post (code:601225) with the PROTECTO Panel G2.

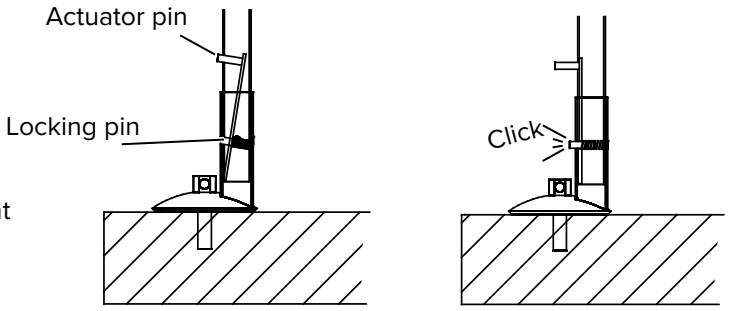
Unless stated otherwise, all dimensions are given in mm.

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

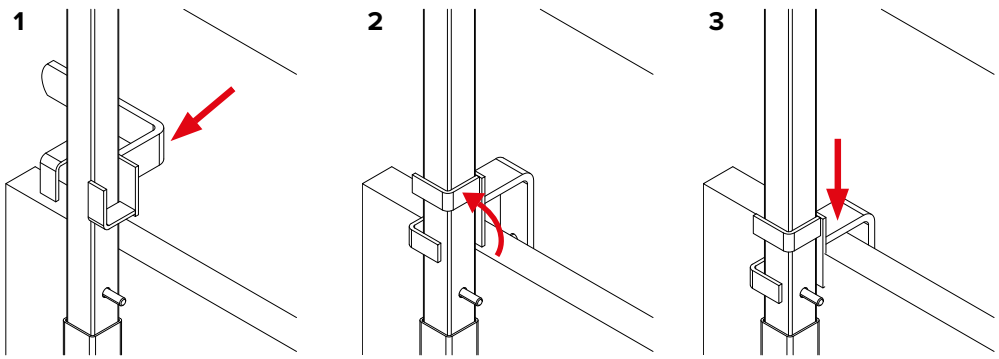
Risk of falling from height!

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

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

6.1.3 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).



6.2 Slabs with PROTECTO Screw Base Joint

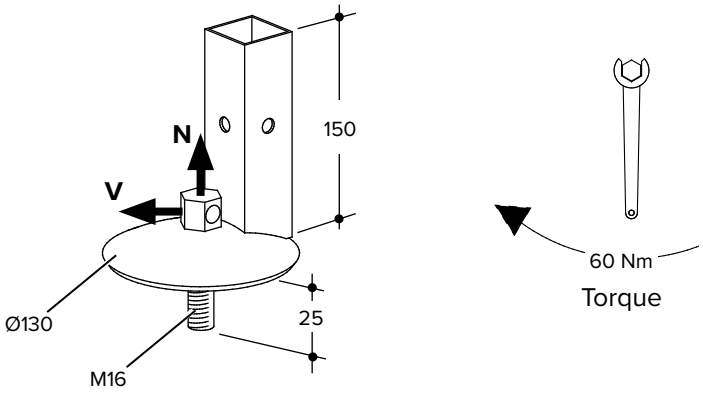
Edge protection can be installed on horizontal concrete slabs by using a PROTECTO Screw Base Joint (code:601228) using the integrated M16 screw to secure to an embedded dowel with internal thread. When using HILTI Drop-in anchor HKD M16 or Fischer ED II M16 hammerset anchors as anchors in uncracked concrete slabs of C20/25 quality (previously B25), the anchor loads have already been proven according to the example below. Equivalent drop-in anchors/hammerset anchors from other manufacturers may be used.

The requirements of the dowel approval must be kept.

Distance to edges and floor thickness must be taken from the approval of the dowel.

For anchor loads, calculate with the following values:

Horizontal load: V_k = 1.08 kN
Moment: M_k = 0.67 kNm
Tension force: N_k = 14.00 kN



The PROTECTO Screw Base Joint (code:601228) can be fastened to the slab by tightening the integrated M16 screw using the tip of a hammer or a 24 mm wrench.

Required components

The following components are required for this application:

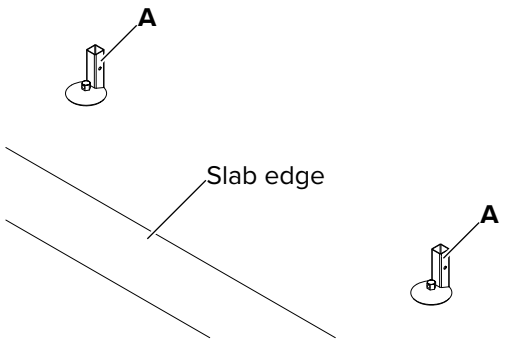
- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Screw Base Joint (code:601228)

Unless stated otherwise, all dimensions are given in mm.

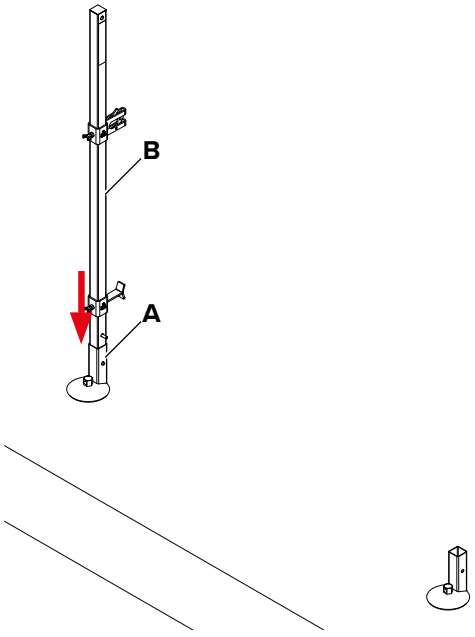
Typical assembly

Step 1 Install the PROTECTO Screw Base Joints (**A**) at the pre-determined centres. See page 24.

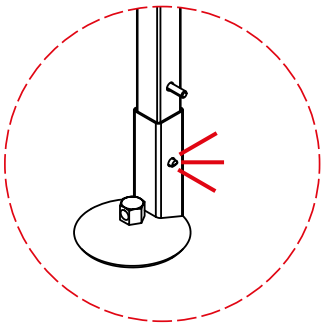
	For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.
	When using the PROTECTO Panels G2 as edge protection, the PROTECTO Post 130 Adjustable (code:692750) must not be placed more than 2.40 m apart.
	Adjust the PROTECTO Screw Base Joint (code:601228) before tightening the bolt.



Step 2 Insert the PROTECTO Post 130 Adjustable (**B**) into the PROTECTO Screw Base Joint (**A**).



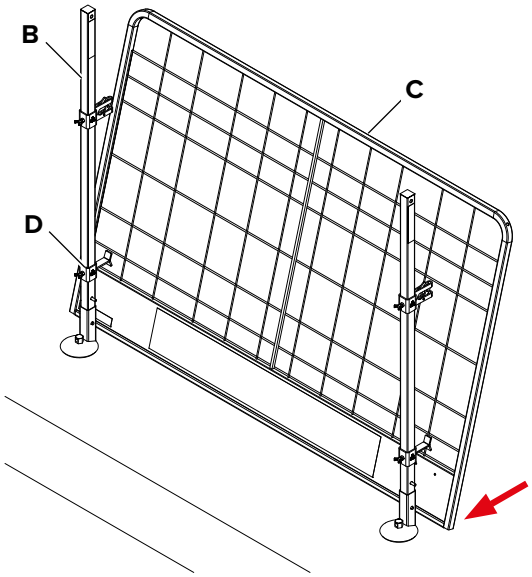
The PROTECTO Post 130 Adjustable is secure when the locking pin is located in the pin hole of the PROTECTO Screw Base Joint. A “click” sound is produced when the pin springs out of the hole (see page 23).



Ensure that the locking pin is properly engaged.

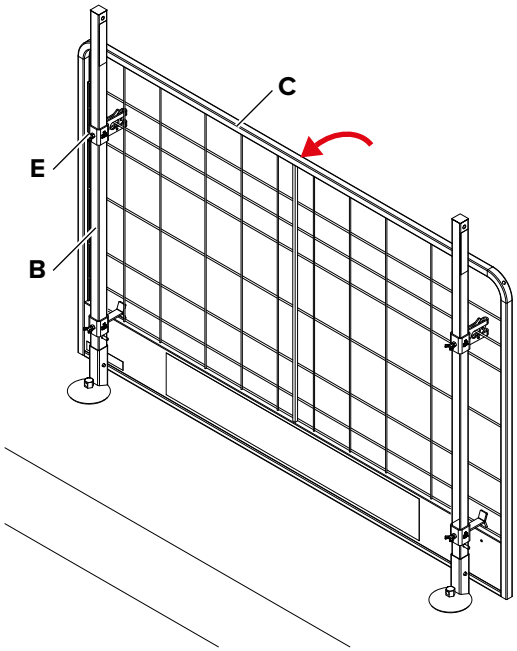
Step 3 Repeat step 2 for the other post position.

Step 4 Position the PROTECTO Panel G2 (**C**) at an angle, with the bottom part closest to the PROTECTO Post 130 Adjustable (**B**). Locate the bottom wire of the PROTECTO Panel G2 (**C**) on the top face of the PROTECTO Post 130 Adjustable T Latch (**D**). The T Latch (**D**) may require its position to be adjusted using the captive thumb screw.



Unless stated otherwise, all dimensions are given in mm.

Step 5 Rotate the top of the PROTECTO Panel G2 (**C**) towards the PROTECTO Post 130 Adjustable (**B**) so that the latches (**E**) capture the PROTECTO Panel G2 mesh. The PROTECTO Post latch (**E**) may require its position to be adjusted using the captive thumb screw.



	It is recommended to install plastic zip ties on the PROTECTO Post 130 Adjustable latches to prevent accidental opening and to prevent tampering.

	Ensure the PROTECTO Panel G2 bottom wire is horizontally restrained by the PROTECTO Post T latch (see **D** of step 4), and that the upper wire is captivated by the PROTECTO Post latch (see **E** of step 5). Alternatively the T latch can be moved downwards to rest over the top of the toe board with the thumb screw tightened to lock it in position. Ensure the PROTECTO Panel G2 (**C**) is sitting flush on the working platform or slab. Adjust latches as required.

The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.3 Slabs with PROTECTO Screw Base Without Screw

This base is designed as an alternative fastening element for the PROTECTO Post 130 Adjustable (code:692750). It is used in wall and slab areas where it is not permitted to use drop-in anchors. The base is fastened with the PROTECTO SF Screw DW 15 (code:602583) and the Tie Sleeve DW 15 (code:602584) which is set in concrete and is a lost part.

For Tie Sleeve DW 15, calculate with the following value:

N_k = 14.00 kN

Alternatively the PROTECTO Screw Base Without Screw can be attached using self-tapping screw anchors. When using Hünnebeck Anchor Bolt MM+ SSK 16x130 (code:443500) as anchors in cracked/non-cracked slabs of C20/25 quality, the anchor loads have already been proven according to the anchor load below.

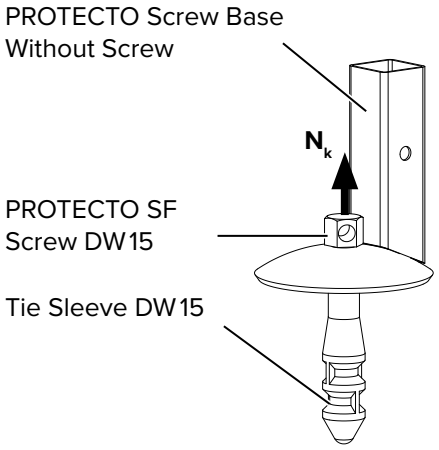
Equivalent anchors from other manufacturers may be used if all loading requirements are met.

The requirements of the anchor approval must be kept.

Distance to edges and floor thickness must be taken from the approval of the anchor.

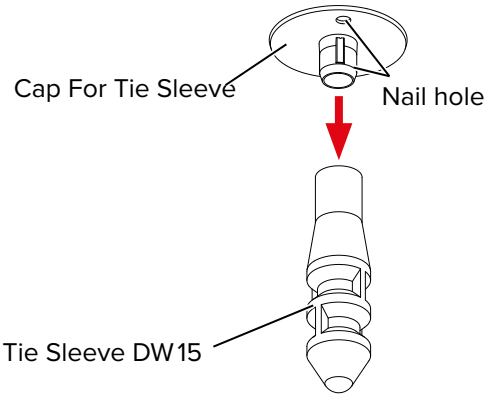
For anchor loads, calculate with the following values:

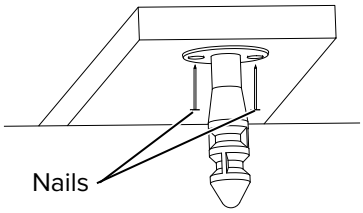
Horizontal load: V_k = 1.08 kN
Moment: M_k = 0.67 kNm
Tension force: N_k = 14.00 kN



Encase Tie Sleeve DW 15 in concrete

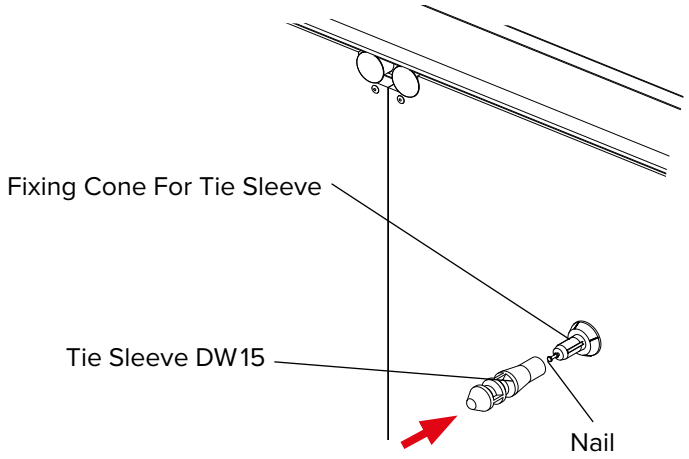
When inserting the Tie Sleeve DW 15 (code:602584) into fresh concrete from above, the DW 15 thread is covered with the Cap For Tie Sleeve (code:602026). Now the Tie Sleeve DW 15 (code:602584) is inserted into the fresh concrete. It is also possible to attach the Cap For Tie Sleeve (code:602026) with nails.





Unless stated otherwise, all dimensions are given in mm.

The Tie Sleeve DW 15 (code:602584) is fixed to the formwork with the Fixing Cone for Tie Sleeve (code:602025) by nails. After pouring, the fixing cone is removed during stripping. The PROTECTO Screw Base Without Screw (code:601258) is mounted with the PROTECTO SF Screw (code:602583).



WARNING

Warning!

When using the Tie Sleeve DW 15 (code:602584) a minimum distance to the concrete edge of 125 mm must be kept. Quality of concrete at least C16/20.

Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Screw Base Without Screw (code:601258)
- PROTECTO SF Screw DW 15 (code:602583)
- Tie Sleeve (code:602584)
- Cap For Tie Sleeve (code:602026)

For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

When using the PROTECTO Panels G2 as edge protection, the PROTECTO Post 130 Adjustable (code:692750) must not be placed more than 2.40 m apart.

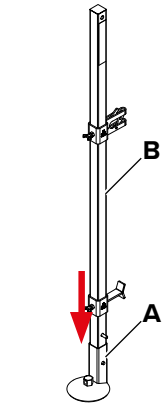
Typical assembly

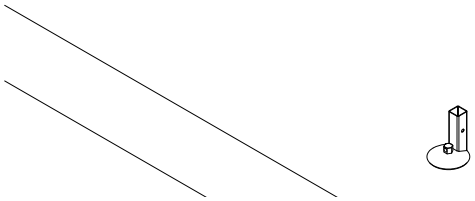
Step 1 Once the concrete is ready, remove the Cap For Tie Sleeve.

Step 2 Attach the PROTECTO Screw Base Without Screw to the Tie Sleeve DW 15 using the PROTECTO SF Screw DW 15, see page 28.

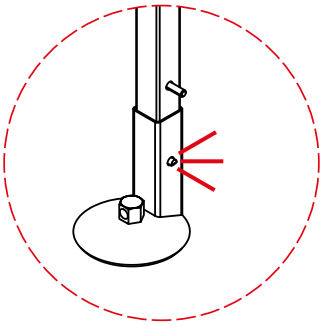
Step 3 Repeat steps 1–2 for the other position of the Tie Sleeve DW 15.

Step 4 Insert the PROTECTO Post 130 Adjustable (**B**) into the PROTECTO Screw Base Without Screw (**A**).





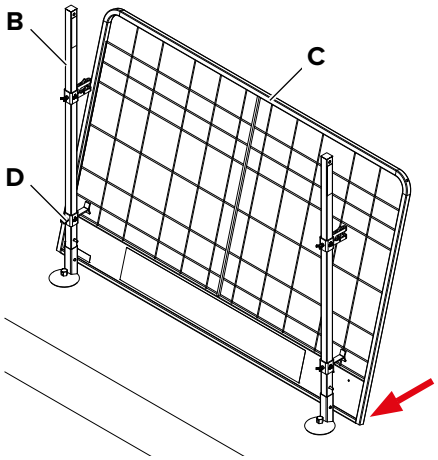
The PROTECTO Post 130 Adjustable is secure when the locking pin is located in the pin hole of the PROTECTO Screw Base Without Screw. A “click” sound is produced when the pin springs out of the hole (see page 23).



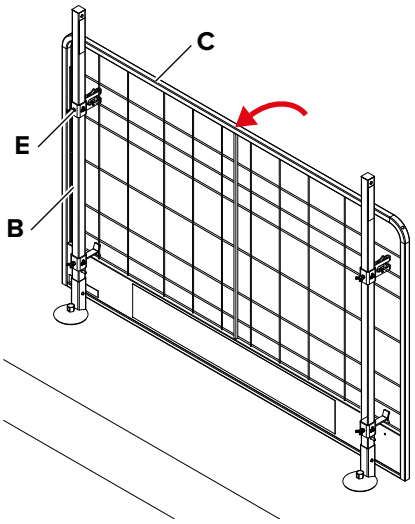
Ensure that the locking pin is properly engaged.

Step 5 Repeat step 4 for the other post position.

Step 6 Position the PROTECTO Panel G2 (**C**) at an angle, with the bottom part closest to the PROTECTO Post 130 Adjustable (**B**). Locate the bottom wire of the PROTECTO Panel G2 (**C**) on the top face of the PROTECTO Post 130 Adjustable T Latch (**D**). The T Latch (**D**) may require its position to be adjusted using the captive thumb screw.



Step 7 Rotate the top of the PROTECTO Panel G2 (**C**) towards the PROTECTO Post 130 Adjustable (**B**) so that the latches (**E**) capture the PROTECTO Panel G2 mesh. The PROTECTO Post latch (**E**) may require its position to be adjusted using the captive thumb screw.



It is recommended to install plastic zip ties on the PROTECTO Post 130 Adjustable latches to prevent accidental opening and to prevent tampering.

Ensure the PROTECTO Panel G2 (**C**) bottom wire is horizontally restrained by the PROTECTO Post T latch (**D**), and the upper wire is captivated by the PROTECTO Post latch (**E**) (alternatively the T latch can be moved downwards to locate over the top of the toe board with the thumb screw tightened to lock in position).

Ensure the PROTECTO Panel G2 (**C**) is sitting flush on the working platform or slab. Adjust latches as required.

The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

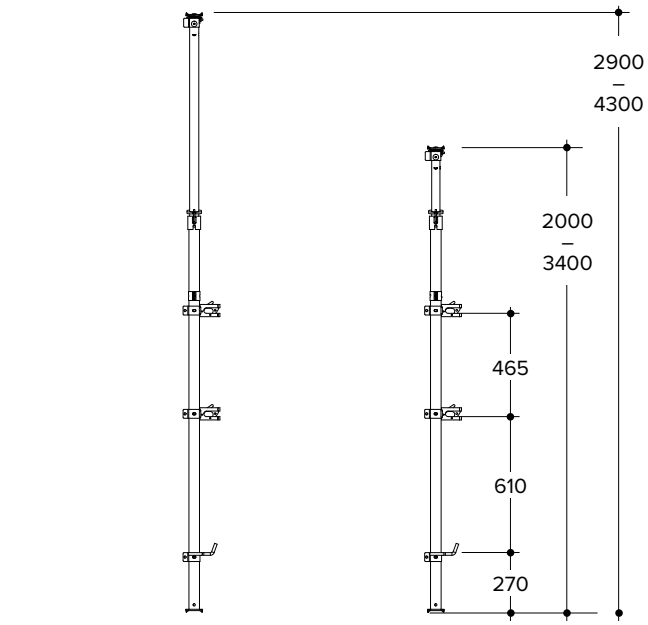
6.4 Slabs with EPS Post

Fixed between concrete slabs to provide support for the panels, the telescopic inner tube allows for adjustment in height.

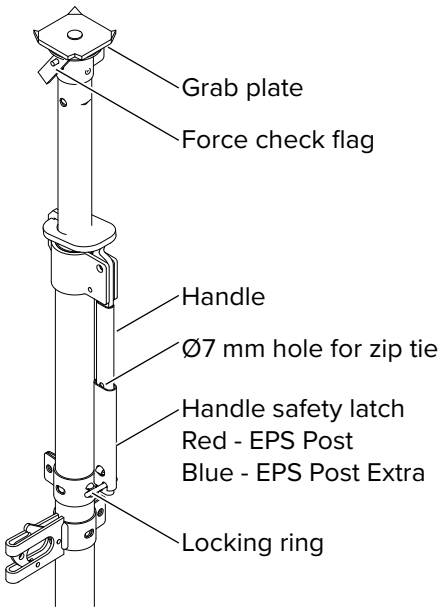
Required components

The following components are required for this application:

- EPS Post
- PROTECTO Panel G2



EPS Post Extra (code:692551) EPS Post (code:692550)



DANGER

Risk of collapse!

Do not use the EPS Posts as props.

Unless stated otherwise, all dimensions are given in mm.

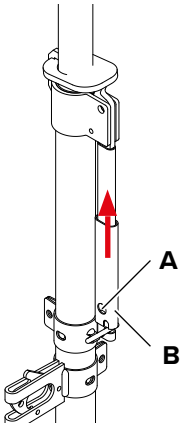
Typical assembly

Step 1 Determine the correct position to install the EPS Post.

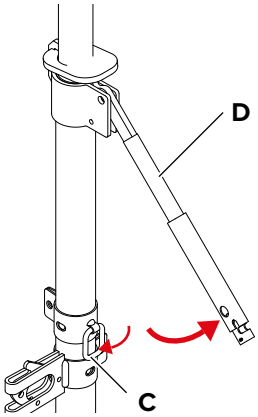
For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

When using the PROTECTO Panels G2 as edge protection, the EPS Posts must not be placed more than 2.40 m apart.

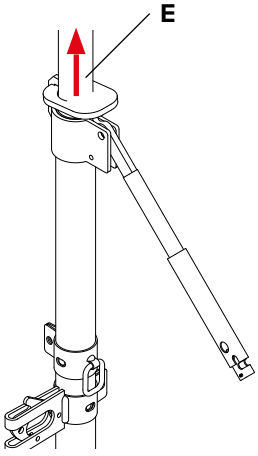
Step 2 Ensure that the telescopic inner tube is always at the top. Push the safety button (**A**) inwards and slide the handle safety latch (**B**) up.



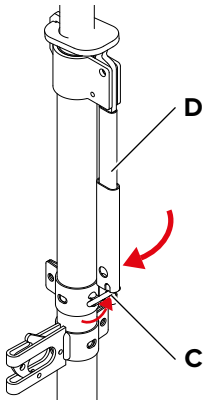
Step 3 Release the locking ring (**C**) from the handle (**D**) and rotate the handle upwards.



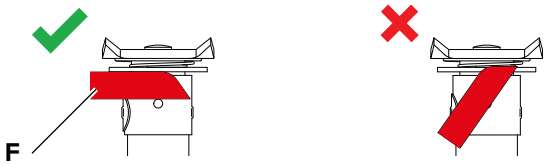
Step 4 Extend the post's telescopic inner tube (**E**) ensuring that the post is plumb and that all four prongs of the top and bottom grab plates are touching the floor / ceiling.



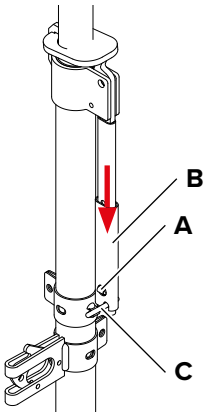
Step 5 Push the handle (**D**) down to lock the post in position. Swing the locking ring (**C**) into position.



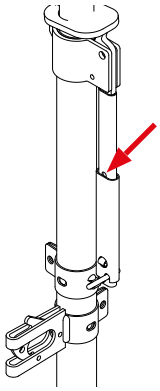
Ensure that the force check flag (**F**) at the top of the post is in the correct position (horizontal) as shown below. If force check flag (**F**) does not raise, repeat step 3.



Step 6 Slide the handle safety latch (**B**) down over the locking ring (**C**) until the safety button (**A**) pops out.



Step 7 Optionally, to prevent tampering, the hole above the handle can be used to pass a zip tie through to prevent the handle from lifting.

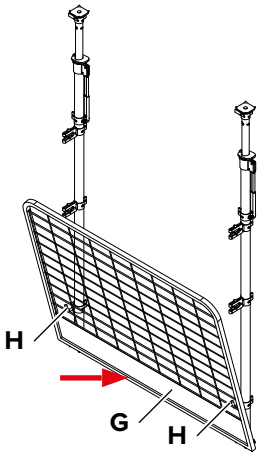


Step 8 Repeat steps 1–7 for the other EPS Post positions.

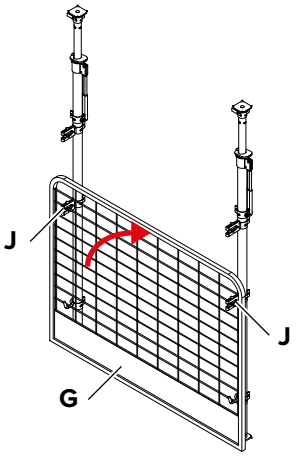
Unless stated otherwise, all dimensions are given in mm.

Step 9 Position the PROTECTO Panel G2 (**G**) at an angle, with the bottom part closest to the EPS Post.

Let the EPS Post hook (**H**) go through the mesh of the PROTECTO Panel G2 (**G**), at a position that allows the panel to be lowered to the slab.

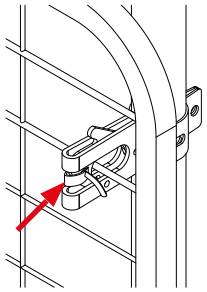


Step 10 Rotate the top of the PROTECTO Panel G2 (**G**) towards the EPS Post so that the latch (**J**) above the hook engages with the PROTECTO Panel G2 (**G**) mesh.



Ensure that the latch (**J**) of the EPS Post captures the mesh of the PROTECTO Panel G2 (**G**).

It is recommend that the sliding latch (**J**) is secured against accidental opening by using a plastic zip tie through the Ø8 mm hole.

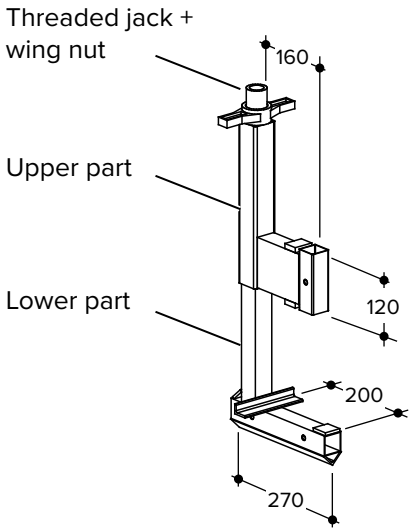


6.5 Slabs with PROTECTO Multiple Clamp

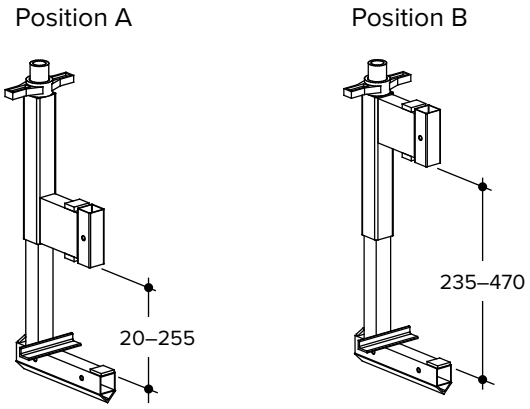
The PROTECTO Multiple Clamp (code:601226) is a flexible post fixture that can be used horizontally as well as vertically. With a clamping range between 20 to 470 mm, the clamp can be used on many construction components such as floor edges and parapets.

The PROTECTO Post 130 Adjustable (code:692750) and the PROTECTO Railing Post (code:601225) must be installed from above only. A hanging post is not permitted.

The PROTECTO Multiple Clamp (code:601226) must always be fully placed over and against the concrete structure.



The two broad clamping ranges of the PROTECTO Multiple Clamp (code:601226) can be set by rotating the upper part of the clamp. Position A is suitable for a range between 20 and 255 mm; position B is suitable for a range between 235 and 470 mm.



The robust thread and the smooth-running wing nut allow fast fixing and release of the clamp with a hammer.

Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Post Extension - if required
- PROTECTO Multiple Clamp (code:601226)

Unless stated otherwise, all dimensions are given in mm.

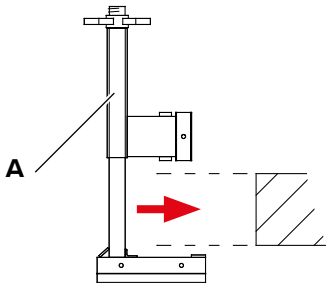
When using the PROTECTO Panels G2 as edge protection, the PROTECTO Multiple Clamp (code:601226) must not be placed more than 2.00 m apart.

The maximum spacing for the PROTECTO Post Extension 26 (code:602111) is 1.70 m, whereas the maximum spacing for the PROTECTO Post Extension 42 (code:602580) is 1.30 m.

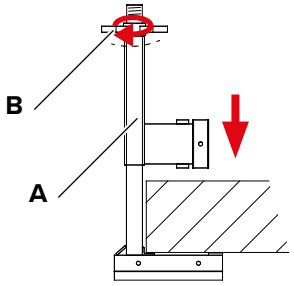
Typical assembly

Step 1 Position the PROTECTO Multiple Clamp (**A**) at the required location.

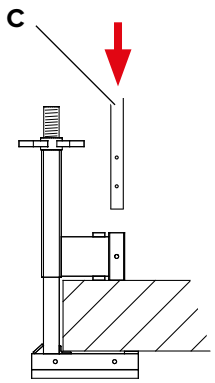
For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.



Step 2 Secure the PROTECTO Multiple Clamp (**A**) by tightening the wing nut (**B**).



Step 3 Attach the PROTECTO Post 130 Adjustable (**C**) to the PROTECTO Multiple Clamp (**A**), until the post engages (see page 23).



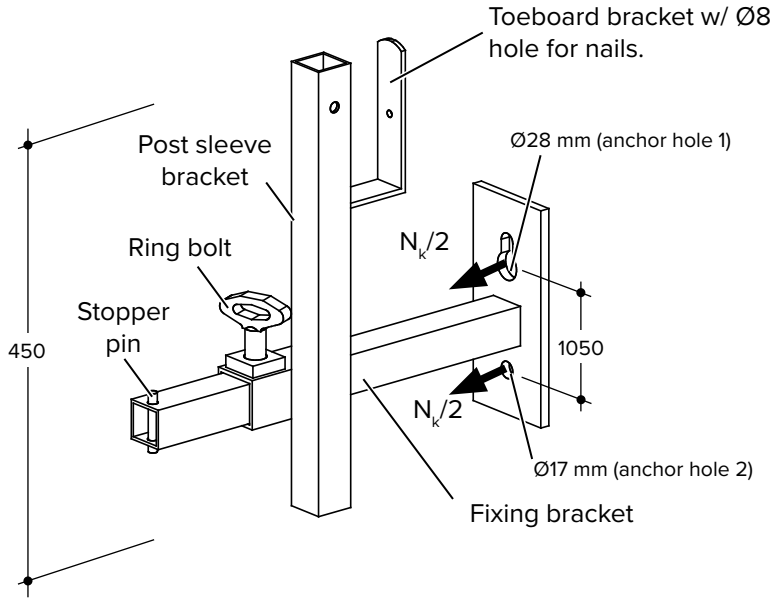
The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.6 Walls with PROTECTO Post Holder Vari

The PROTECTO Post Holder Vari (code:602150) is installed at slab projections. The PROTECTO Railing Post (code:601225) can be adjusted to a distance of 350 mm from the wall, allowing slab projections of up to 270 mm. The PROTECTO Post Holder Vari (code:602150) is fixed to concrete walls using drop-in anchors.

The characteristic tension force of the tying is:

N_k = 6.00 kN



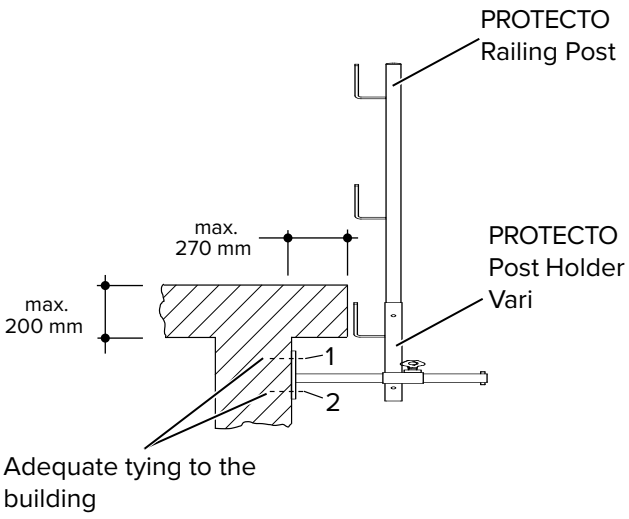
The PROTECTO Post Holder Vari (code:602150) must always be attached using both anchor holes (1 & 2).

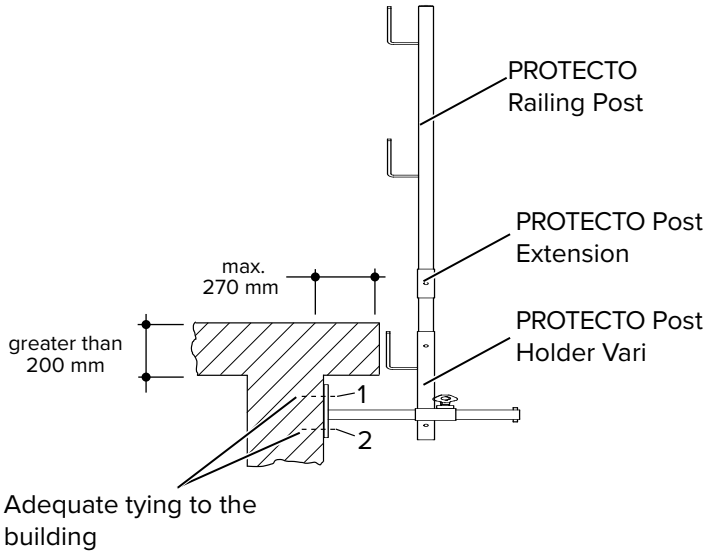
A PROTECTO Post Extension must be used if the slab thickness is greater than 200 mm.

WARNING

Risk of collapse and fall from height!

The maximum deformation must be checked when using the PROTECTO Post Holder Vari (code:602150) in combination with the PROTECTO Post Extension.





Unless stated otherwise, all dimensions are given in mm.

Required components

The following components are required for this application:

- PROTECTO Railing Post (code:601225)
- Timber planks
- PROTECTO Post Extension - if required
- PROTECTO Post Holder Vari (code:602150)

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).

When using the PROTECTO Railing Post (code:601225) as edge protection, the PROTECTO Post Holder Vari (code:602150) must not be placed more than 2.00 m apart.

The maximum spacing for the PROTECTO Post Extension 26 (code:602111) is 1.70 m, whereas the maximum spacing for the PROTECTO Post Extension 42 (code:602580) is 1.30 m.

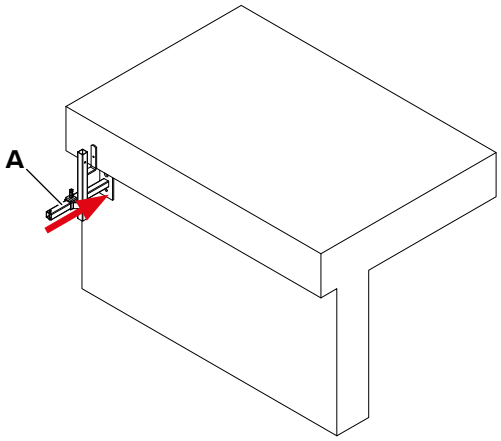
Typical assembly

Step 1 Identify the hole positions for the drop-in anchors on the wall.

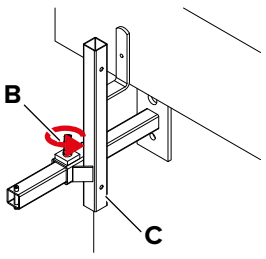
For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

Step 2 Drill the hole positions for the drop-in anchors for all PROTECTO Post Holder Vari positions.

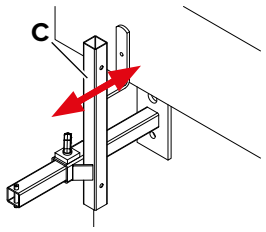
Step 3 Attach the PROTECTO Post Holder Vari (**A**) to the wall using suitable drop-in anchors (not shown), see page 36.



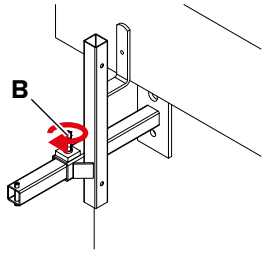
Step 4 Release the ring bolt (**B**) to adjust the position of the post sleeve bracket (**C**).



Step 5 Slide the post sleeve bracket (**C**) to the required position.

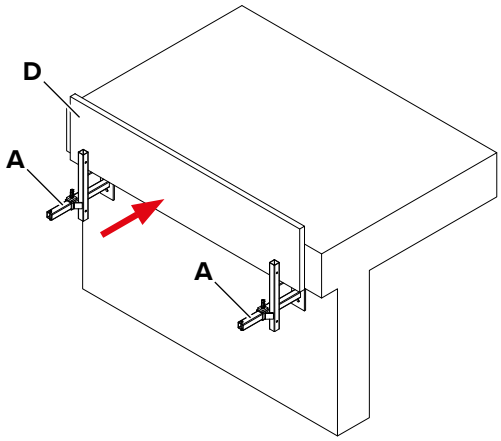


Step 6 Secure the post sleeve bracket (**C**) by tightening the ring bolt (**B**).



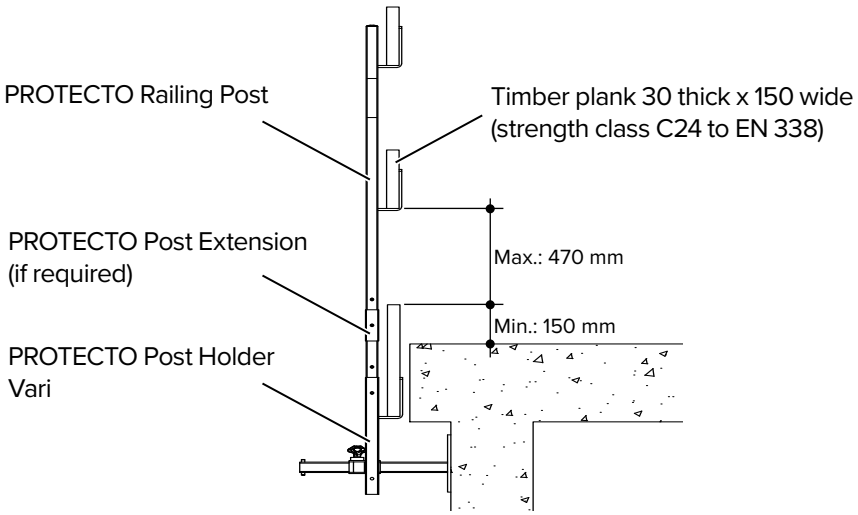
Step 7 Repeat steps 3–6 for the other PROTECTO Post Holder Vari positions.

Step 8 Attach a timber plank (**D**) to the PROTECTO Post Holder Vari (**A**). Secure using nails.



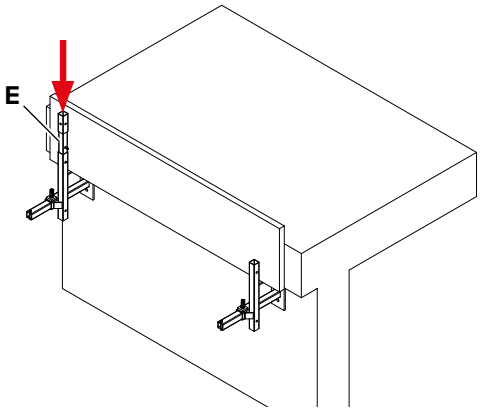
The timber plank used as toe board must be wide enough so that, when installed on its side, it will have enough height above the concrete slab.

Timber plank by Customer.

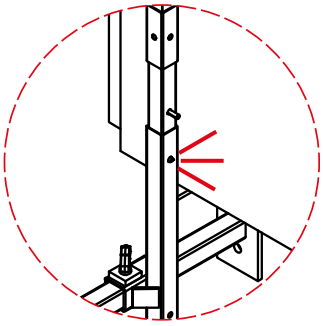


Unless stated otherwise, all dimensions are given in mm.

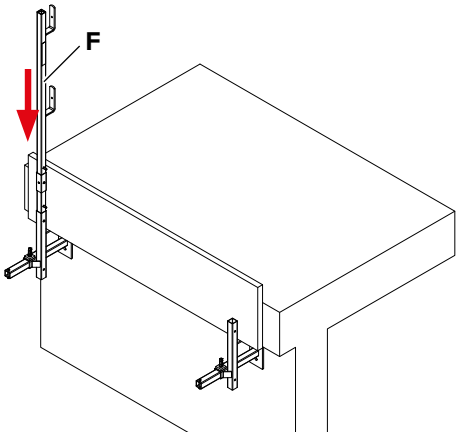
Step 9 Install the PROTECTO Post Extension (**E**) if required.



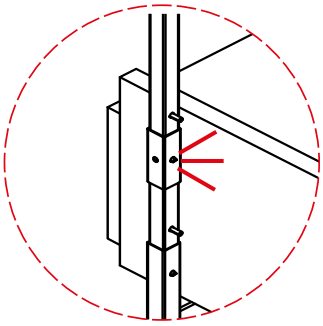
The PROTECTO Post Extension is secure when the locking pin is located on the pin hole on the PROTECTO Post Holder Vari. A “click” sound is produced when the pin springs out of the hole (see page 23).



Step 10 Install the PROTECTO Railing Post (**F**).

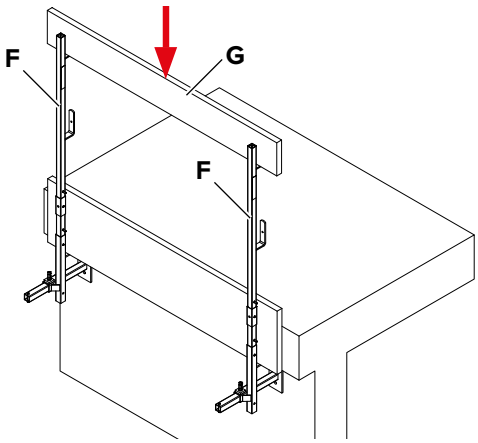


The PROTECTO Railing Post is secure when the locking pin is located on the pin hole on the PROTECTO Post Extension. A “click” sound is produced when the pin springs out of the hole (see page 23).

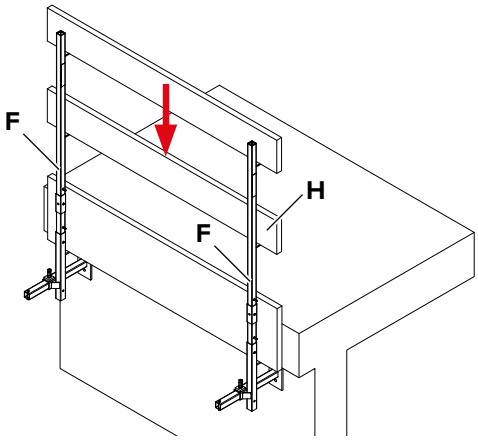


Step 11 Repeat steps 9–10 for the other post positions.

Step 12 Position the timber plank (**G**) on the top bracket of the PROTECTO Railing Post (**F**). Secure using nails.



Step 13 Position the timber plank (**H**) on the bottom bracket of the PROTECTO Railing Post (**F**). Secure using nails.

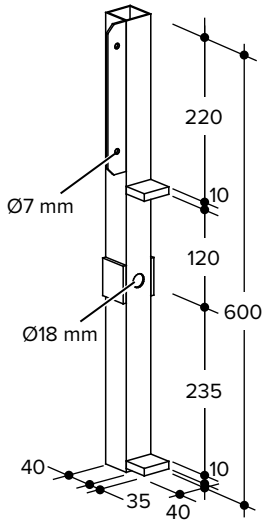


The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

Unless stated otherwise, all dimensions are given in mm.

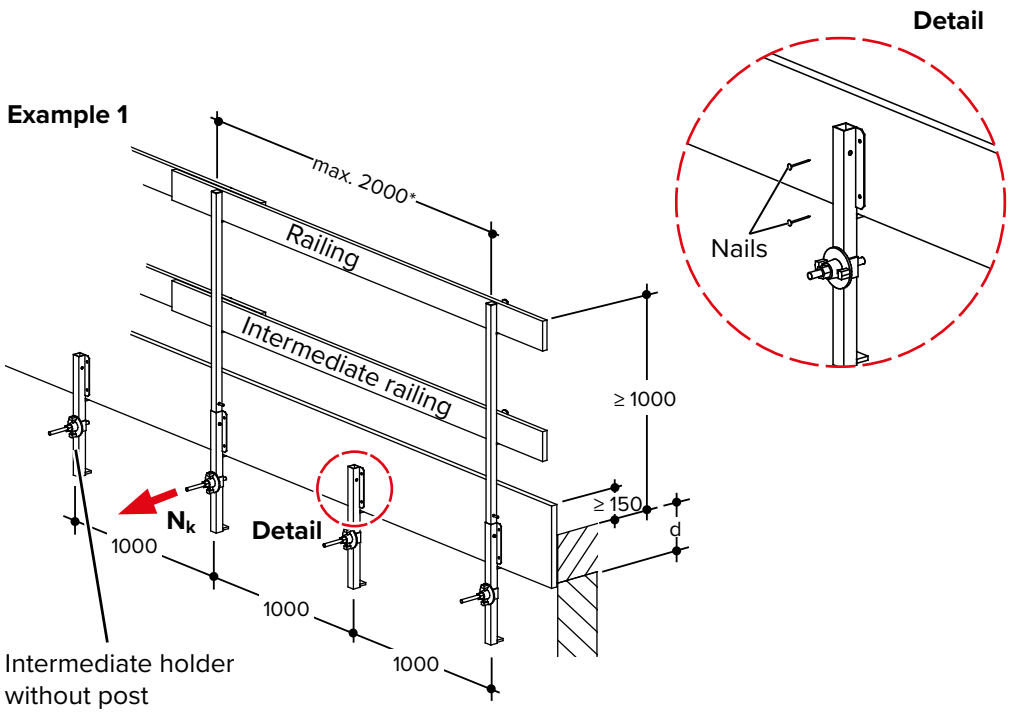
6.7 Walls with PROTECTO Front Attachment

The PROTECTO Front Attachment (code:601285) is used on building facades as a post retainer for guard railings as well as a support for slab edge forms. In order to mount the front attachment, only one bolt or an appropriate tie rod is required.



Use with post and slab edge formwork

Example 1: For each mentioned slab thickness, the front attachments with post must be mounted in a spacing of 2.00 m with an intermediate PROTECTO Front Attachment (code:601285) without post in mid span to support the slab edge formwork.

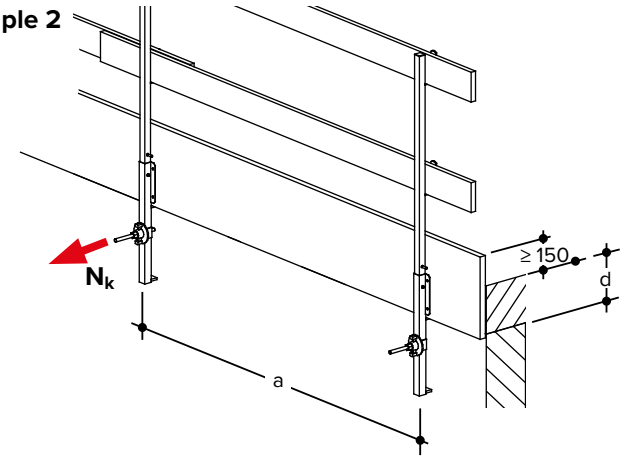


* max. 2.00 m when using the PROTECTO Front Attachment as a post holder with timber railing without slab edge form.

d [mm]	150	200	250	300
N_k [kN]	4.10	4.30	4.70	5.30

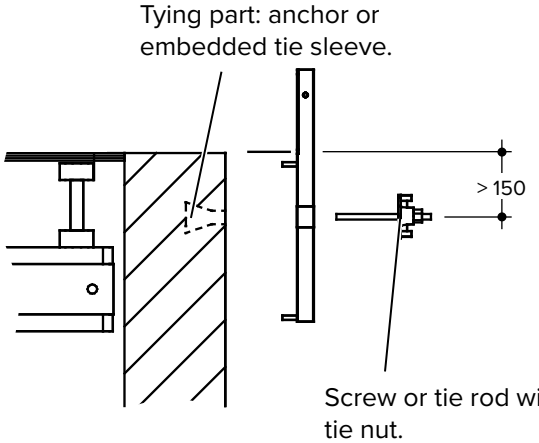
Example 2: The maximum distance depends on the thickness of the slab and the load carrying capacity of the selected tying method (see table). The characteristic loads for the fixings N_k must be taken from the corresponding table.

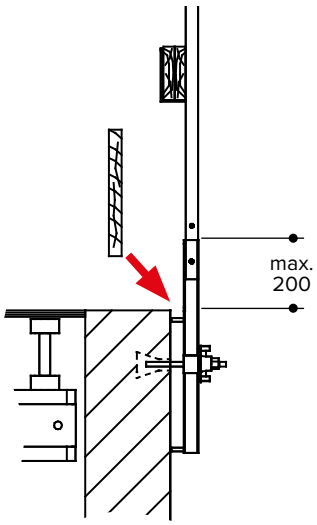
Example 2

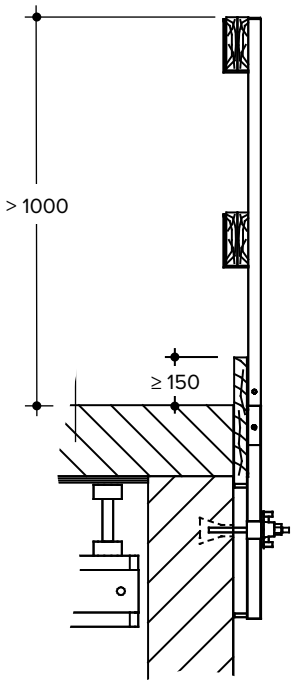


d [mm]	150	200	250	300
a [m]	1.80	1.70	1.60	1.30
N_k [kN]	5.10	5.10	5.30	5.60

Typical set-out distances







Unless stated otherwise, all dimensions are given in mm.

Required components

The following components are required for this application:

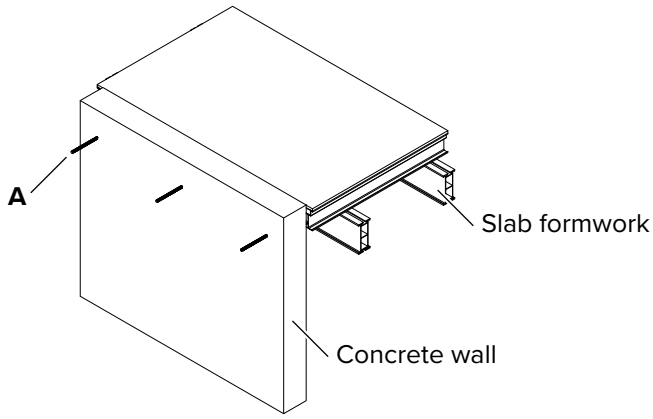
- PROTECTO Railing Post (code:601225)
- Timber planks
- PROTECTO Front Attachment (code:601285)

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).

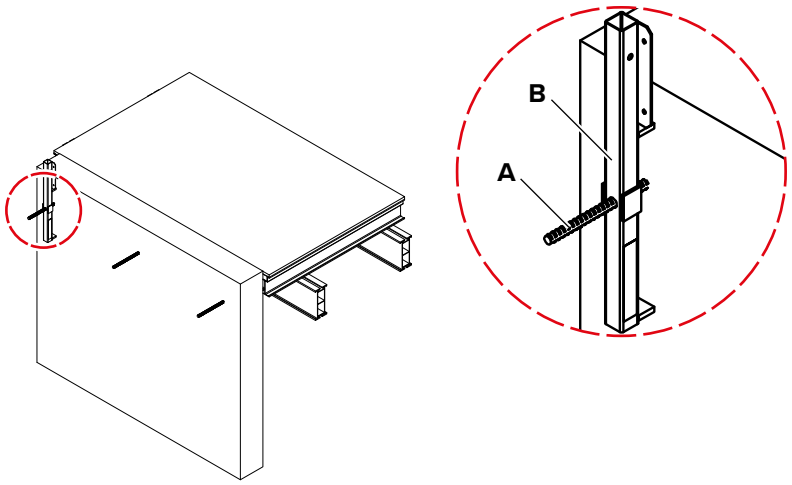
Typical assembly

Step 1 Install the appropriate tie rods (**A**) into the embedded tie sleeves or into the suitable drop-in anchors.

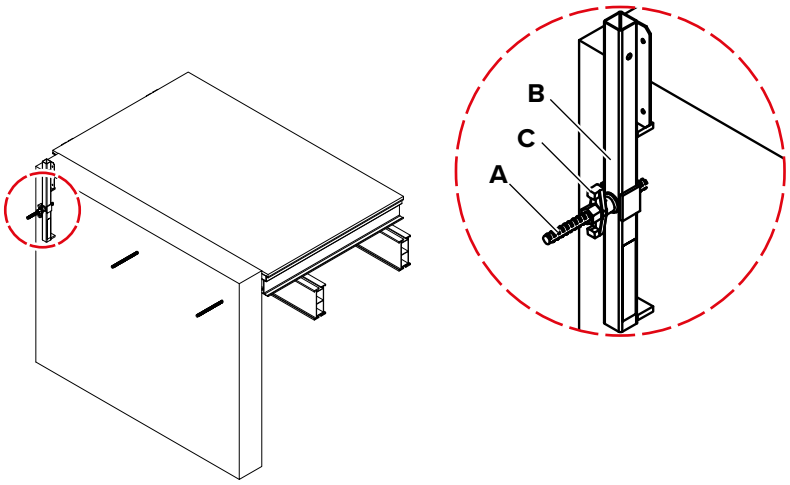
For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.



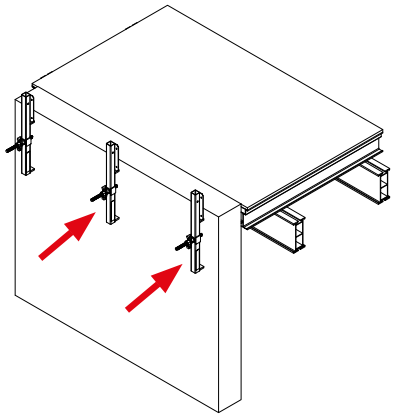
Step 2 Insert the PROTECTO Front Attachment (**B**) into the tie rod (**A**). The tie rod must go through the Ø18 mm hole of the PROTECTO Front Attachment.



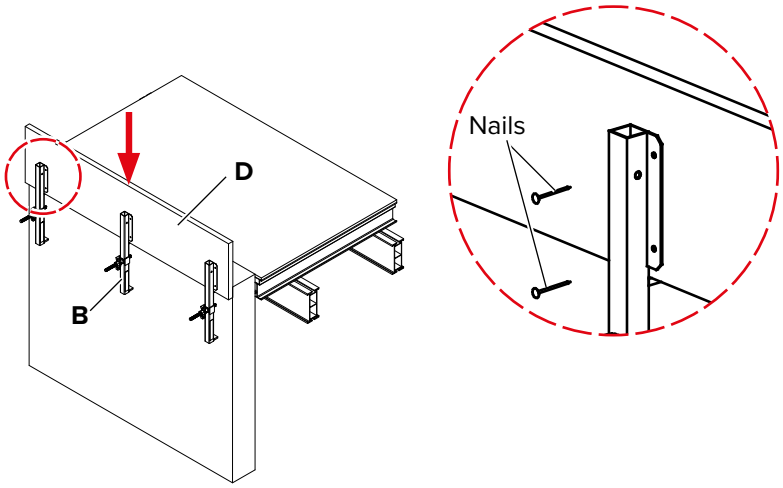
Step 3 Insert a suitable tie nut (**C**) into the tie rod (**A**) to secure the PROTECTO Front Attachment (**B**).



Step 4 Repeat steps 1–3 for the other PROTECTO Front Attachment positions.



Step 5 Attach a timber plank (**D**) to the PROTECTO Front Attachment (**B**). Secure in all the PROTECTO Front Attachment positions using nails.

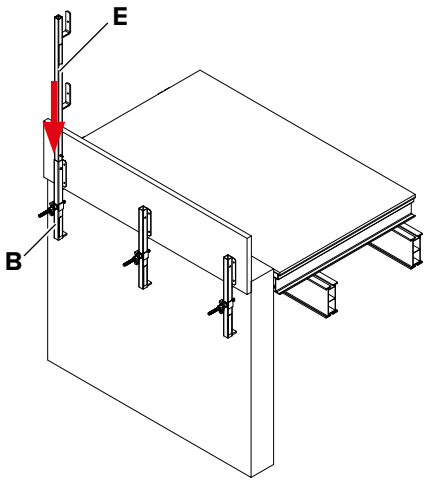


The timber plank used as toe board must be wide enough so that, when installed on its side, it will have enough height above the concrete slab (see page 44).

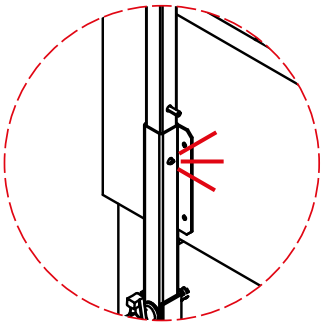
Timber plank by Customer.

Unless stated otherwise, all dimensions are given in mm.

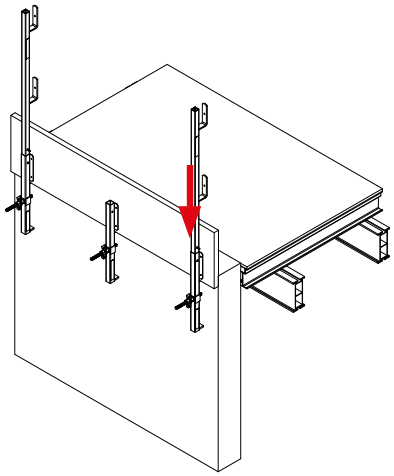
Step 6 Insert a PROTECTO Railing Post (**E**) into the PROTECTO Front Attachment (**B**).



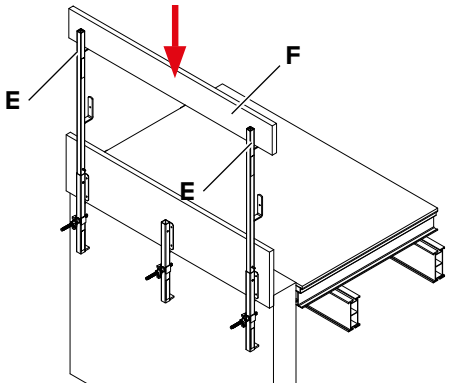
The PROTECTO Railing Post is secure when the locking pin is located on the pin hole on the PROTECTO Front Attachment. A “click” sound is produced when the pin springs out of the hole (see page 23).



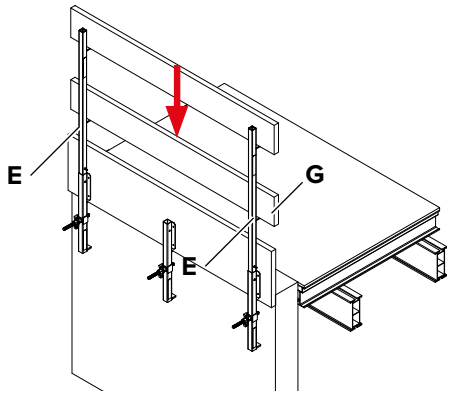
Step 7 Repeat step 6 for the other PROTECTO Railing Post positions.



Step 8 Position the timber plank (**F**) on the top bracket of the PROTECTO Railing Post (**E**). Secure using nails.

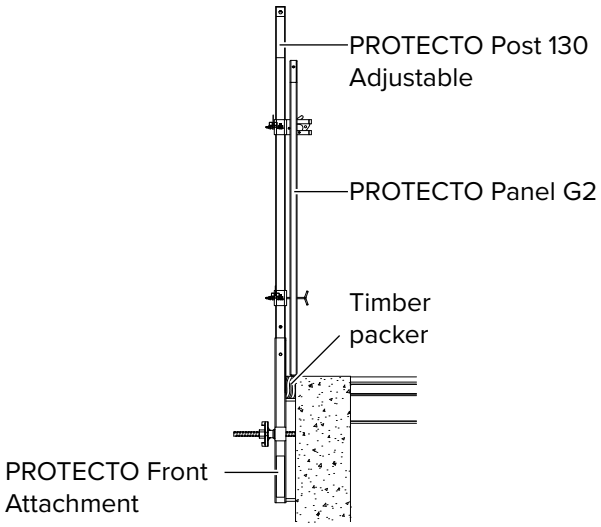


Step 9 Position the timber plank (**G**) on the bottom bracket of the PROTECTO Railing Post (**E**). Secure using nails.



The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

Alternatively, where a stop end is not required, the PROTECTO Post 130 Adjustable (code:692750) and the PROTECTO Panel G2 can be used for edge protection only.



Ensure the PROTECTO Panel G2 bottom wire is horizontally restrained by the PROTECTO Post T latch, and the upper wire is captivated by the PROTECTO Post latch (alternatively the T latch can be moved downwards to locate over the top of the toe board with the thumb screw tightened to lock in position).

Ensure the PROTECTO Panel G2 is sitting flush on the working platform or slab. Adjust latches as required.

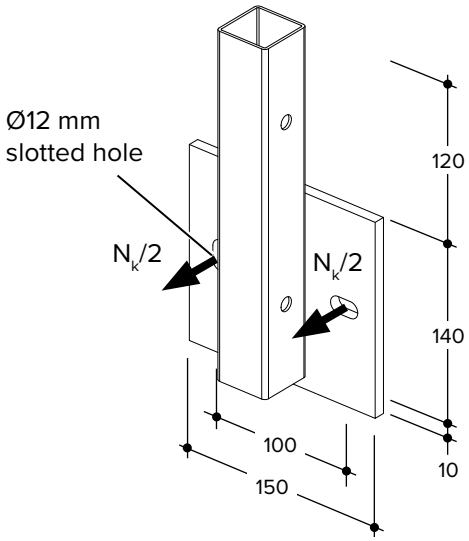
Unless stated otherwise, all dimensions are given in mm.

6.8 Walls with PROTECTO Screw-on Bracket

The PROTECTO Screw-on Bracket (code:601892) is used at walls that are flush with the slab.

The characteristic tension force of the tying per fixing is:

N_k = 6.80 kN



The PROTECTO Screw-on Bracket (code:601892) must always be attached using both holes.

Required components

The following components are required for this application:

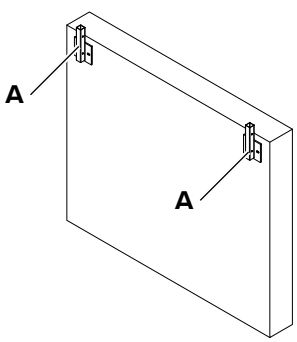
- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Screw-on Bracket (code:601892)

For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

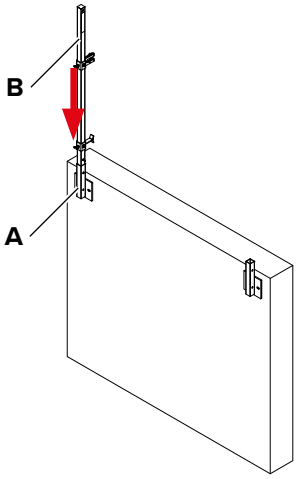
When using the PROTECTO Panels G2 as edge protection, the PROTECTO Post 130 Adjustable (code:692750) must not be placed more than 2.40 m apart.

Typical assembly

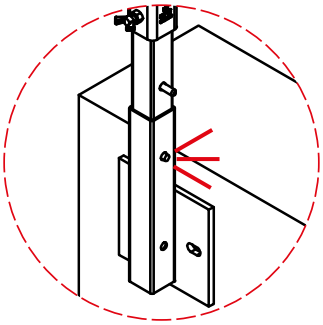
Step 1 Install the PROTECTO Screw-on Brackets (**A**) using suitable drop-in anchors (not shown).



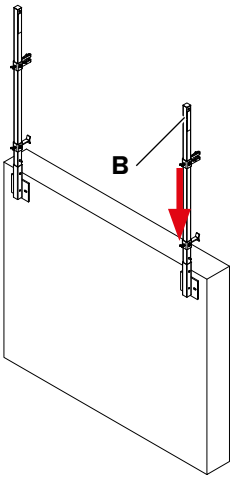
Step 2 Insert the PROTECTO Post 130 Adjustable (**B**) into the PROTECTO Screw-on Brackets (**A**).



The PROTECTO Post 130 Adjustable is secure when the locking pin is located in the pin hole of the PROTECTO Screw-on Bracket. A “click” sound is produced when the pin springs out of the hole (see page 23).

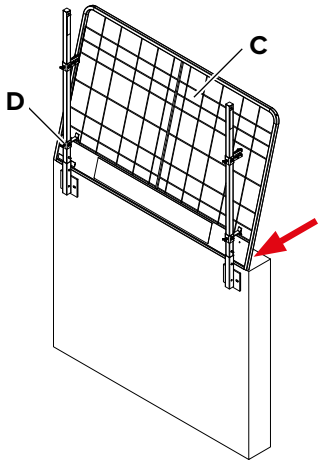


Step 3 Repeat step 2 for the other PROTECTO Post 130 Adjustable positions.

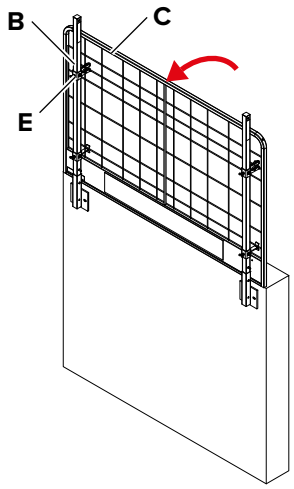


Unless stated otherwise, all dimensions are given in mm.

Step 4 Position the PROTECTO Panel G2 (**C**) at an angle, with the bottom part closest to the PROTECTO Post 130 Adjustable (**B**). Position the bottom wire of the PROTECTO Panel G2 (**C**) on the top face of the PROTECTO Post 130 Adjustable T Latch (**D**). The T Latch may require its position to be adjusted using the captive thumb screw.



Step 5 Rotate the top of the PROTECTO Panel G2 (**C**) towards the PROTECTO Post 130 Adjustable (**B**) so that the latches capture the PROTECTO Panel G2 mesh. The PROTECTO Post latch (**E**) may require its position to be adjusted using the captive thumb screw.



It is recommended to install plastic zip ties on the PROTECTO Post 130 Adjustable latches to prevent accidental opening and to prevent tampering.

Ensure the PROTECTO Panel G2 (**C**) bottom wire is horizontally restrained by the PROTECTO Post T latch (**D**), and the upper wire is captivated by the PROTECTO Post latch (**E**) (alternatively the T latch can be moved downwards to locate over the top of the toe board with the thumb screw tightened to lock in position).

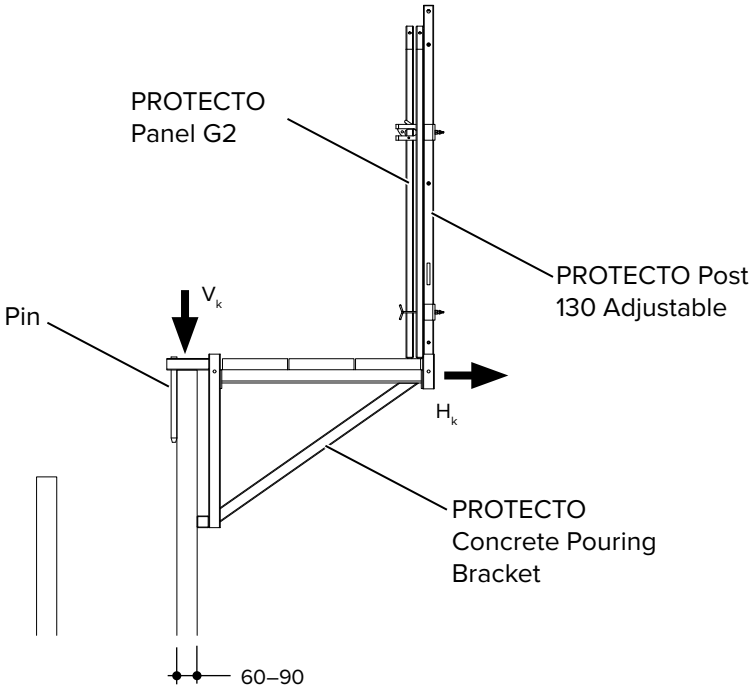
Ensure the PROTECTO Panel G2 (**C**) is sitting flush on the working platform or slab. Adjust latches as required.

The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.9 Walkway brackets

6.9.1 PROTECTO Concrete Pouring Bracket

The PROTECTO Concrete Pouring Bracket (code:601894) is used at hollow walls. The bracket is installed on the upper edge of a hollow wall and is equipped with a nailing strip to secure the planks with nails. The PROTECTO Post 130 Adjustable (code:692750) and PROTECTO Panels G2 complete the edge protection. To attach the posts and panels for the side edge protection, a PROTECTO Multiple Clamp (code:601226) is used.



Bracket centres [m]	Boundary forces [kN]	Load class acc. to DIN EN 12811-1	
		2 [1.50 kN/m²]	3 [2.00 kN/m²]
max.2.40 max.2.00	V_k	3.60	4.50
	H_k	5.20	6.00

When using the PROTECTO Post 130 Adjustable (code:692750) and PROTECTO Panels G2, or when reduced wind loads, the Concrete Pouring Bracket (code:601894) must not be placed more than 2.40 m apart.

When using the PROTECTO Railing Post (code:601225) and timber railings as edge protection, the PROTECTO Concrete Pouring Bracket (code:601894) must not be placed more than 2.00 m apart.

To allow easy removal of the bracket after pouring, cover the pin of the concrete pouring bracket with a plastic installation kit, e.g. Robusta-Gaukel (code:320699)

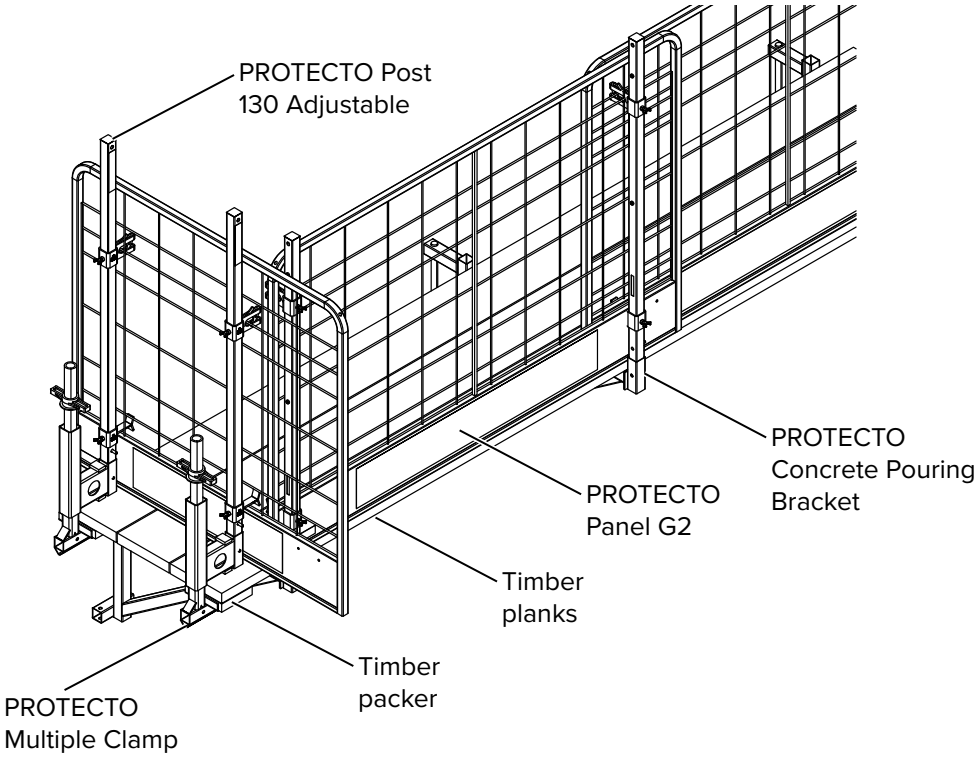
Unless stated otherwise, all dimensions are given in mm.

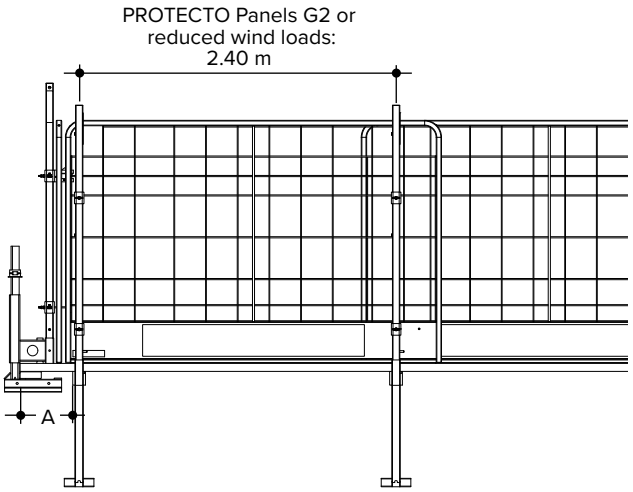
Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Concrete Pouring Bracket (code:601894)
- PROTECTO Multiple Clamp (code:601226)

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).





The timber planks must be nailed to the PROTECTO Concrete Pouring Bracket (code:601894) and the overhang (dim A above) must be kept to a minimum.

6.9.2 Other brackets

Walkway brackets from other systems can be used with the PROTECTO Post 130 Adjustable (code:692750) and the PROTECTO Panels G2 such as:

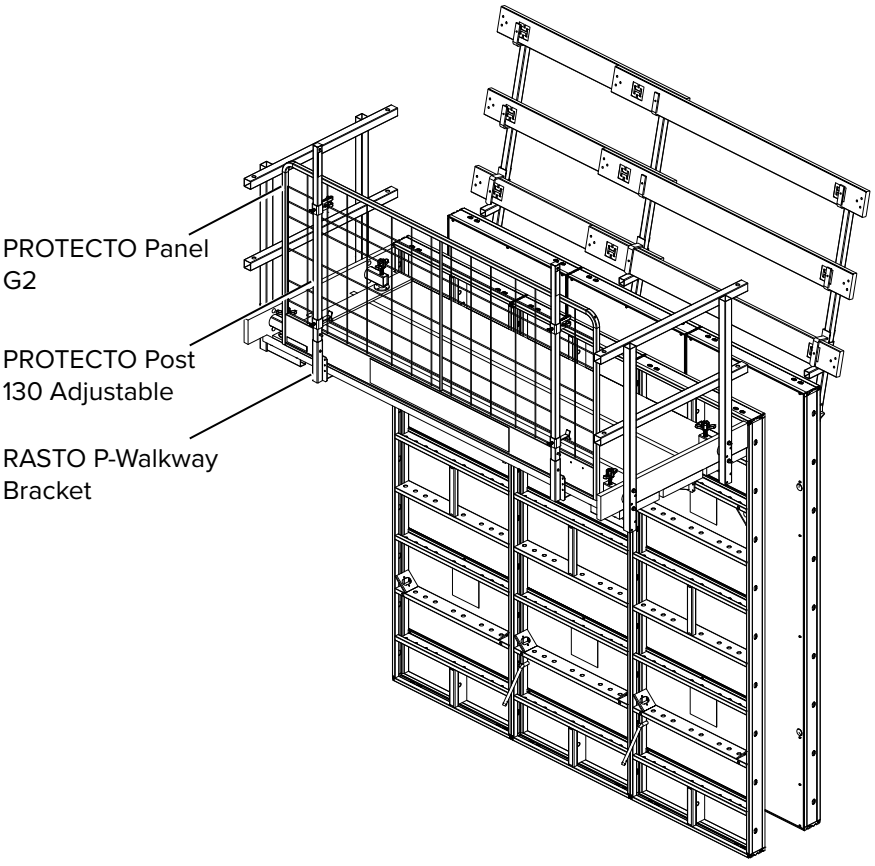
- RASTO P-Walkway Bracket (code:606245)
- MANTO P-Walkway Bracket (code:606240)
- HT P-Walkway Bracket (code:606260)

Some of these applications are shown in this section for reference only.

For more information regarding the components mentioned above, refer to the relevant user guides.

RASTO P-Walkway Bracket

A pouring platform 900 mm wide can be created using RASTO P-Walkway Brackets (code:606245). The permissible load on the pouring platform complies with load class 2 (150 kg/m^2) pursuant to DIN EN 12 811-1 and DIN 4420-1. The brackets can be mounted on horizontal or on vertical formwork. You will need an additional Waler Bolt D 20 (code:420000) when mounting on horizontal formwork.



Required components

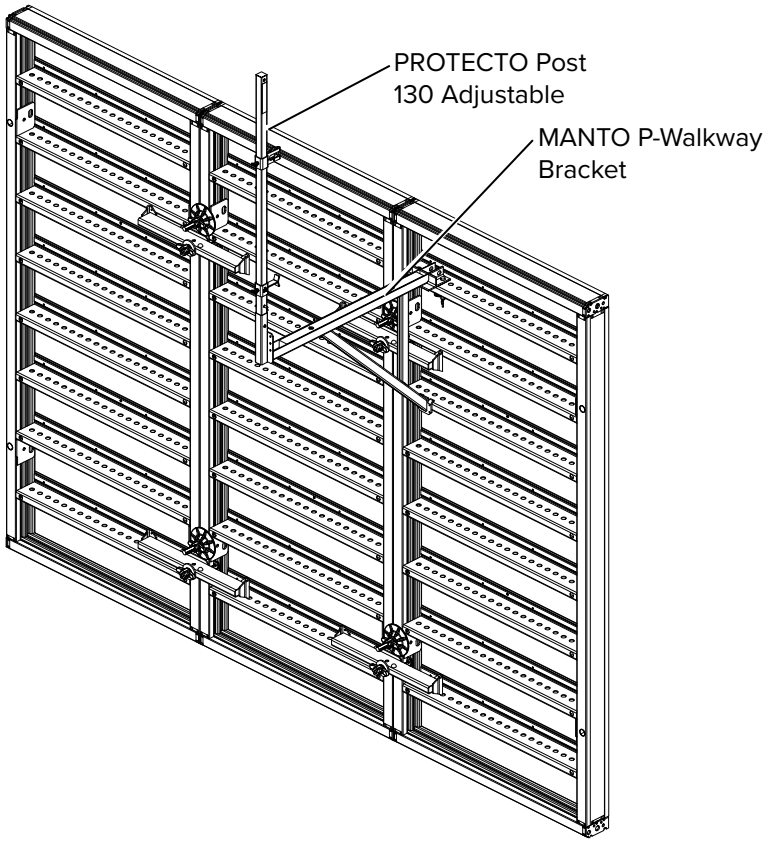
The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- RASTO P-Walkway Bracket (code:606245)

MANTO P-Walkway Bracket

Used to install a 900 mm wide platform. Simply attach the MANTO P-Walkway Bracket (code:606240) at the required height to the MANTO Panel by inserting the pins into a rib of the panel and securing with the Spring Pin.

The Walkway Bracket can be tied either to an upright or a horizontal formwork panel (with an additional Waler Bolt D20).



Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- MANTO P-Walkway Bracket (code:606240)

6.10 Parapets with PROTECTO Multiple Clamp

The PROTECTO Multiple Clamp (code:601226) is also capable of being used for edge protection to be installed on parapets.

The PROTECTO Multiple Clamp (code:601226) must always be fully placed over and against the concrete structure.

Required components

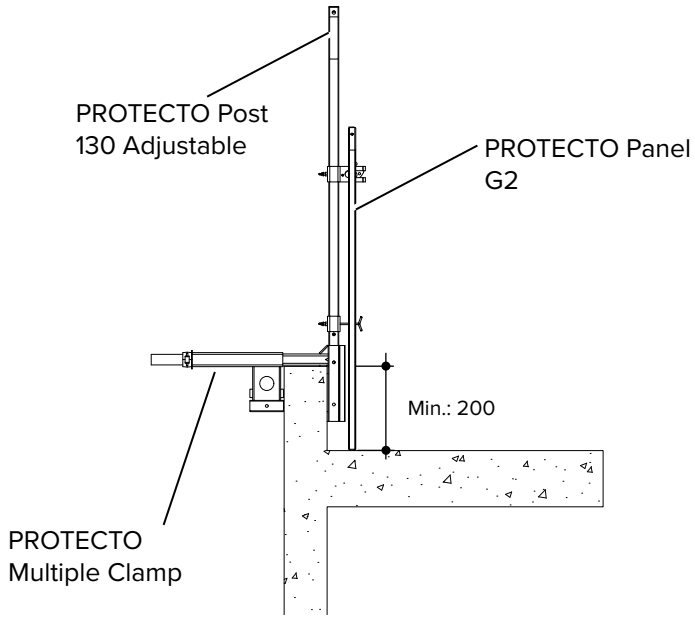
The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Multiple Clamp (code:601226)

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).

When using the PROTECTO Post 130 Adjustable (code:692750) as edge protection, the PROTECTO Multiple Clamp (code:601226) must not be placed more than 2.40 m apart.

Typical assembly

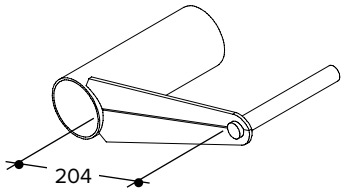


For more information regarding the PROTECTO Multiple Clamp, see page 36.

Unless stated otherwise, all dimensions are given in mm.

6.11 Staircases with PROTECTO Multiple Clamp

The PROTECTO Fixing Device for Clamp (code:601990) in conjunction with the PROTECTO Multiple Clamp (code:601226), allows the installation of a clamped guard railing to stairways.



The PROTECTO Multiple Clamp (code:601226) must be set to the position B (clamping range between 230 and 470 mm), see page 36.

Required components

The following components are required for this application:

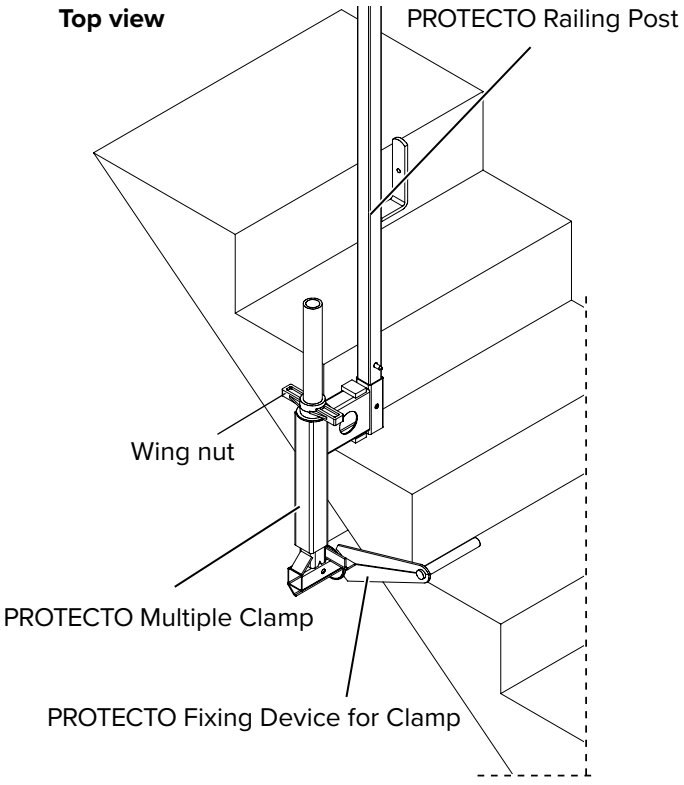
- PROTECTO Railing Post (code:601225)
- Timber planks
- PROTECTO Fixing Device For Clamp (code:601990)
- PROTECTO Multiple Clamp (code:601226)

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).

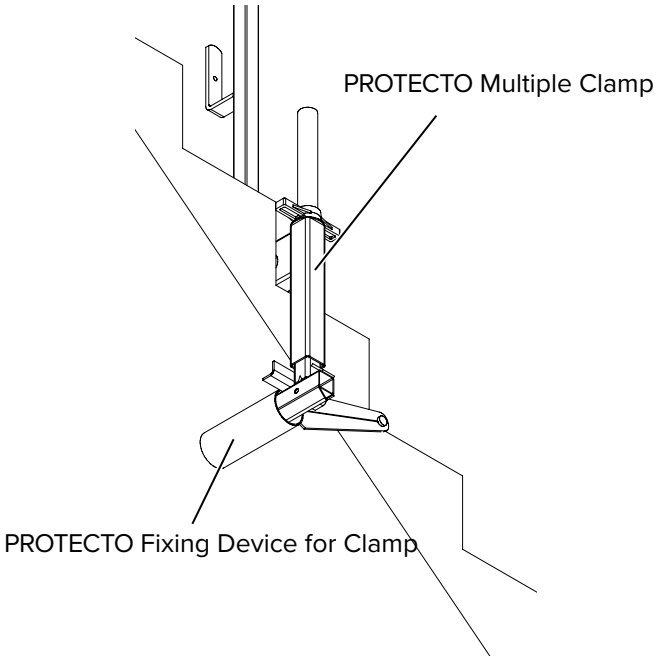
When using the PROTECTO Railing Post (code:601225) as edge protection, the PROTECTO Multiple Clamp (code:601226) must not be placed more than 2.00 m apart.

Typical assembly

Top view



Bottom view

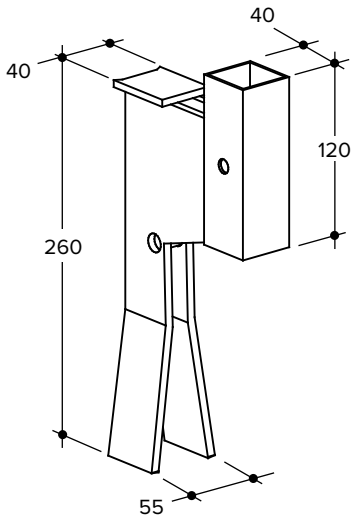


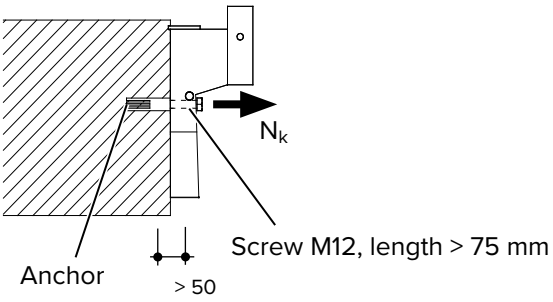
6.12 Staircases with PROTECTO Staircase Bracket

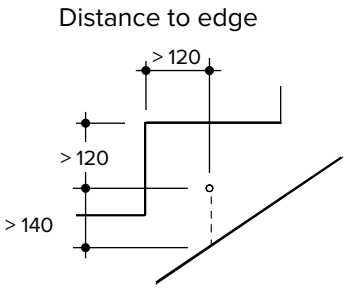
The PROTECTO Staircase Bracket (code:601229) allows the installation of an edge protection in stairways. The bracket is designed to allow construction work at stairs without interference during the complete construction of the shell structure.

The characteristic tension load of the anchors following the listed edge distances is:

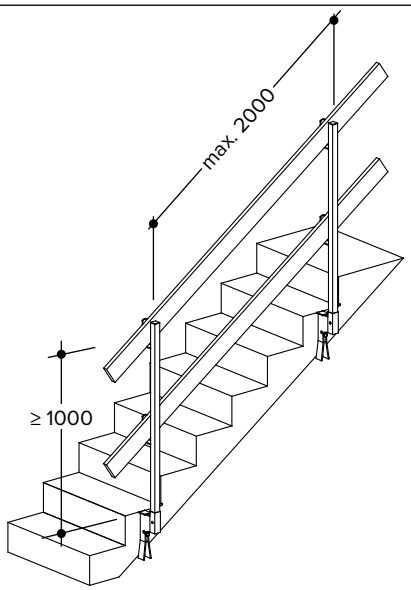
N_k = 5.70 kN (3.20 kN inside the building without wind loads)







Only use anchors that are approved for these tying loads considering the existing concrete strength and edge distances.



Unless stated otherwise, all dimensions are given in mm.

Required components

The following components are required for this application:

- PROTECTO Railing Post (code:601225)
- Timber planks
- PROTECTO Staircase Bracket (code:601229)

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).

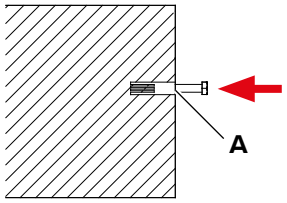
When using the PROTECTO Railing Post (code:601225) as edge protection, the PROTECTO Staircase Bracket (code:602229) must not be placed more than 2.00 m apart.

Typical assembly

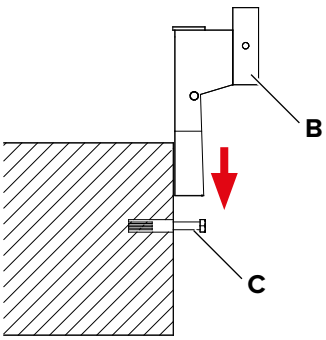
Step 1 Drill the hole positions for the drop-in anchors for all PROTECTO Staircase Bracket positions, see page 58.

For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

Step 2 Install the M12 screws and drop-in anchors (**A**) with an M12 inside thread to the stair stringer

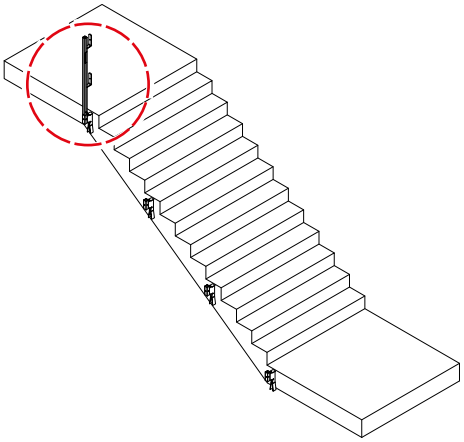


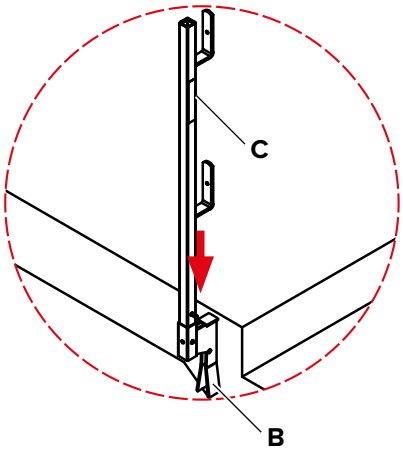
Step 3 Attach the PROTECTO Staircase Bracket (**B**) to the M12 screw (**C**) as shown below. Secure the PROTECTO Staircase Bracket (**B**) by tightening the M12 screw.



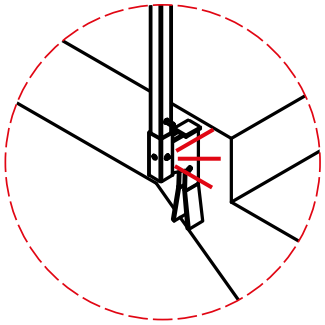
Step 4 Repeat step 3 for the other PROTECTO Staircase Bracket positions.

Step 5 Insert the PROTECTO Railing Post (**C**) into the PROTECTO Staircase Bracket (**B**).

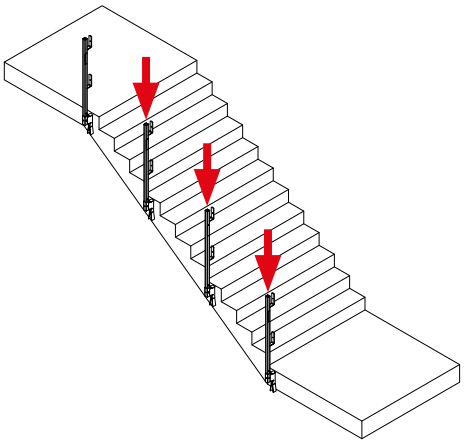




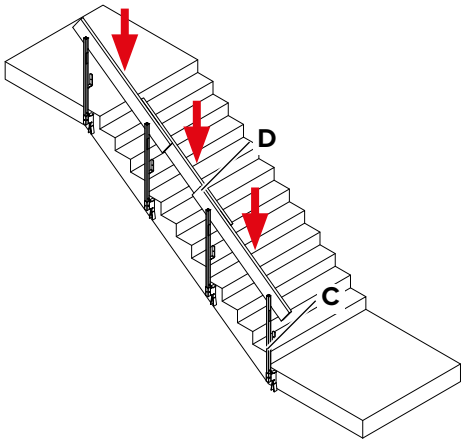
The PROTECTO Railing Post is secure when the locking pin is located on the pin hole on the PROTECTO Staircase Bracket. A “click” sound is produced when the pin springs out of the hole (see page 23).



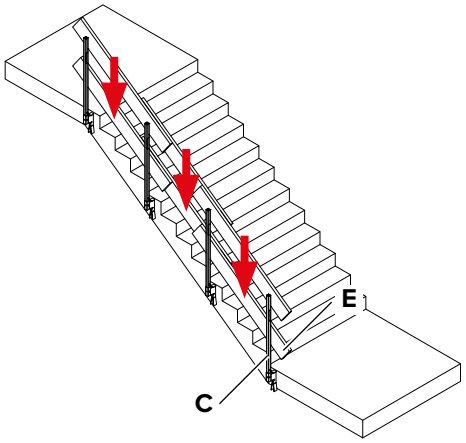
Step 6 Repeat step 5 for the other PROTECTO Railing Post positions.



Step 7 Position the timber plank (**D**) on the top bracket of the PROTECTO Railing Post (**C**). Secure using nails.



Step 8 Position the timber plank (**E**) on the bottom bracket of the PROTECTO Railing Post (**C**). Secure using nails.

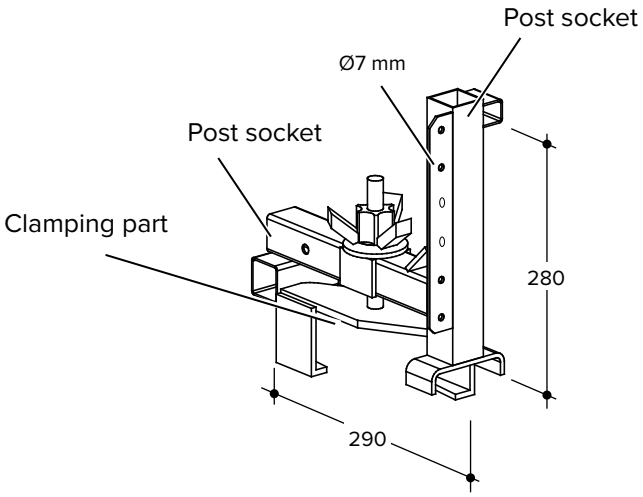


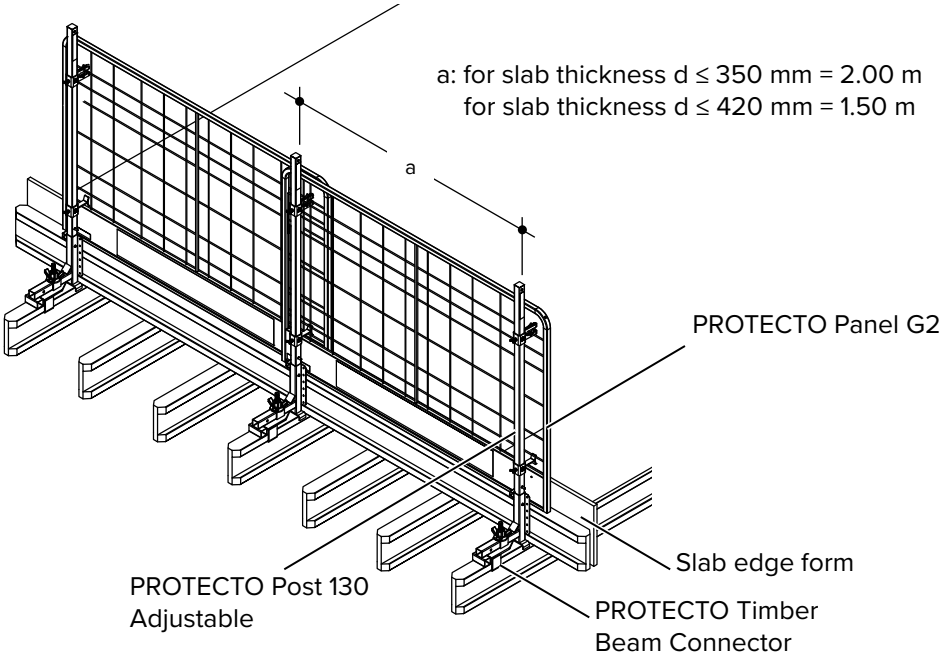
The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.13 Timber beams with PROTECTO Timber Beam Connector

The PROTECTO Timber Beam Connector (code: 601291) is a post bracket especially designed for the connection to conventionally available H 20 or R 24 beams. This connector allows the installation of the required guard railings at cantilevered slab formwork and can be used at the same time as a support bracket for slab edge forms.

The PROTECTO Timber Beam Connector (code:601291) can also be used for the installation of guard railings on vertical timber beams. This holder allows an easy and quick installation of guard railings at the opposite site of the pouring platforms on timber beam formwork systems.





WARNING

Risk of collapse and fall from height!

Secure the slab edge form with at least 2no. nails or screws.

Always check the proper seating of the clamping part.

Unless stated otherwise, all dimensions are given in mm.

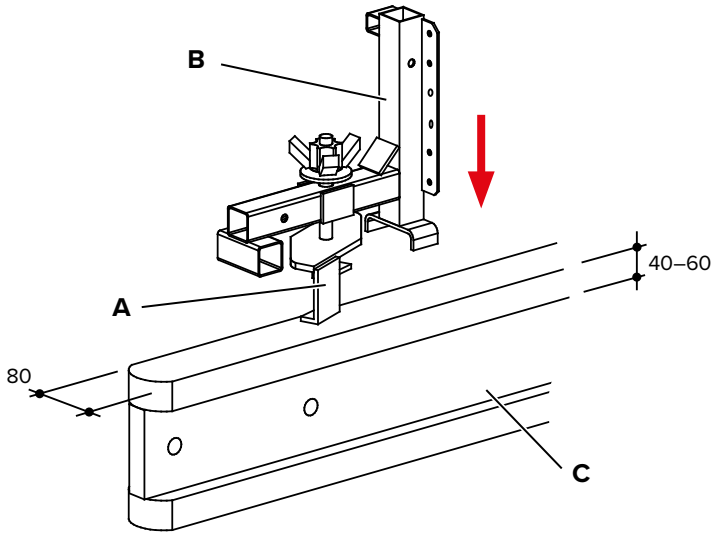
Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panels G2
- PROTECTO Post Extension - if required
- PROTECTO Timber Beam Connector (code:601291)

Typical assembly

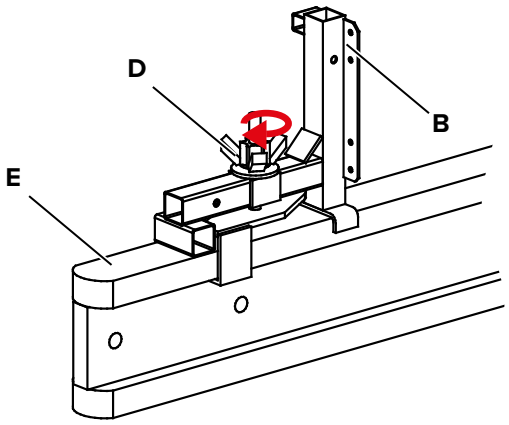
Step 1 Swivel the clamp (**A**) of the PROTECTO Timber Beam Connector (**B**) to a position that allows the connector to be attached to the timber beam (**C**).



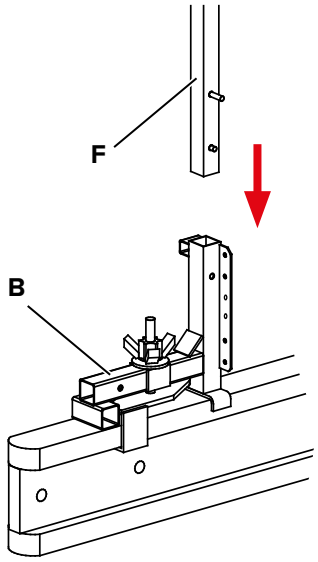
The PROTECTO Post Extension must be used when the slab thickness is greater than 250 mm.

For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

Step 2 Fasten the nut (**D**) by hand and tighten it with a hammer. The PROTECTO Timber Beam Connector (**B**) is now fixed to the flange (**E**) of the timber beam.



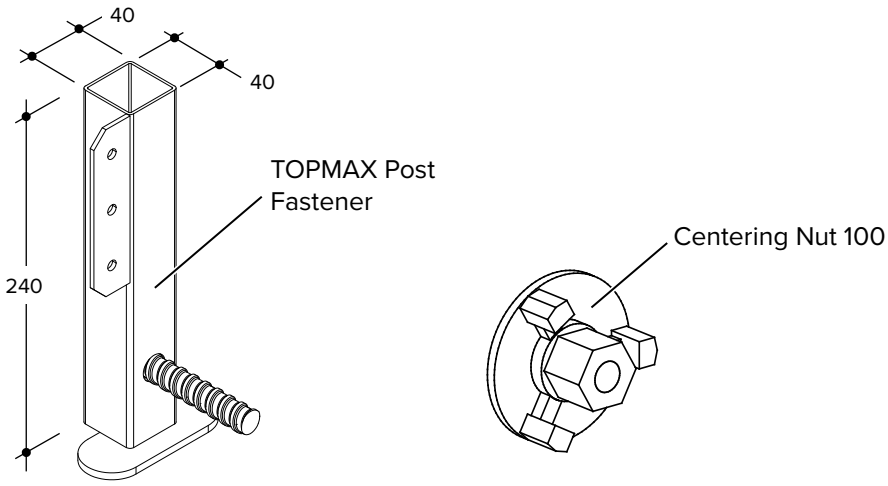
Step 3 Insert the PROTECTO Post 130 Adjustable (**F**) for the PROTECTO Panels G2 into the PROTECTO Timber Beam Connector (**B**) until the post engages (see page 23).



The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.14 TOPMAX table forms with TOPMAX Post Fastener

The TOPMAX Post Fastener (code:602123) in conjunction with a Centering Nut 100 (code:469566) allows for edge protection to be attached to a TOPMAX Table Form.



Required components

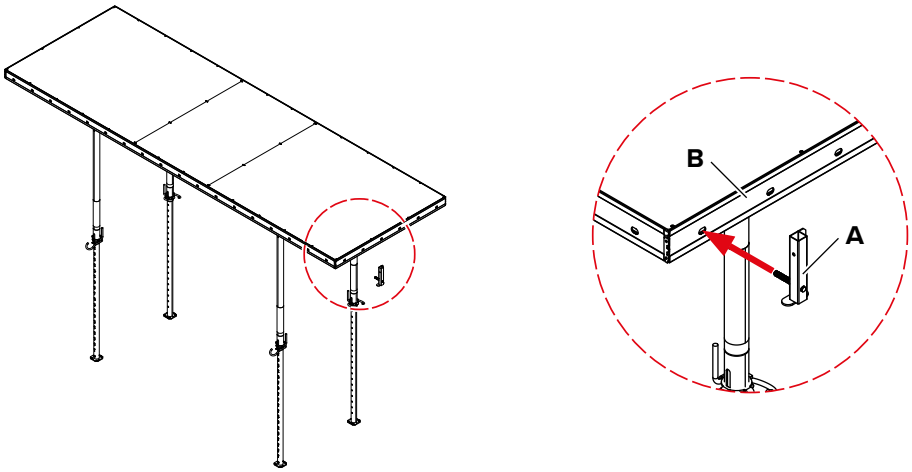
The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- Centering Nut 100 (code:469566)
- TOPMAX Post Fastener (code:602123)

When using the PROTECTO Panels G2 as edge protection, the PROTECTO Post 130 Adjustable (code:692750) must not be placed more than 2.40 m apart.

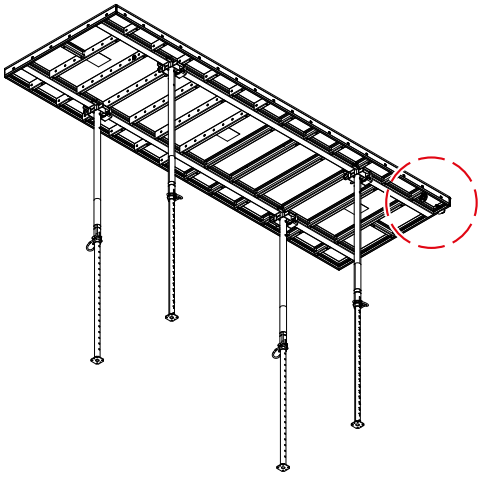
Typical assembly

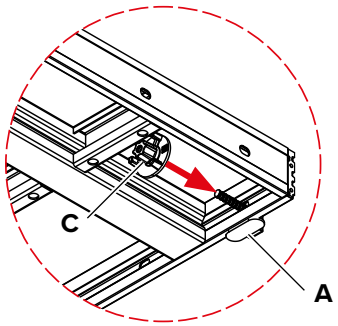
Step 1 Insert the threaded pin of the TOPMAX Post Fastener (**A**) into the hole position on the external profile of the TOPMAX Floor Table (**B**).



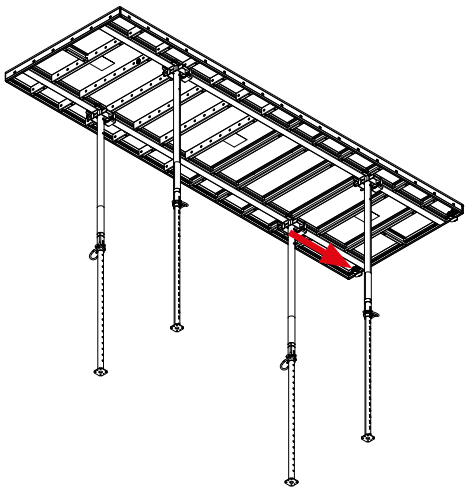
For more information regarding set-out, centre and edge distances, refer to the design scheme(s) supplied.

Step 2 Secure the TOPMAX Post Fastener (**A**) using a Centering Nut 100 (**C**) on the inside of the external profile of the TOPMAX Floor Table.

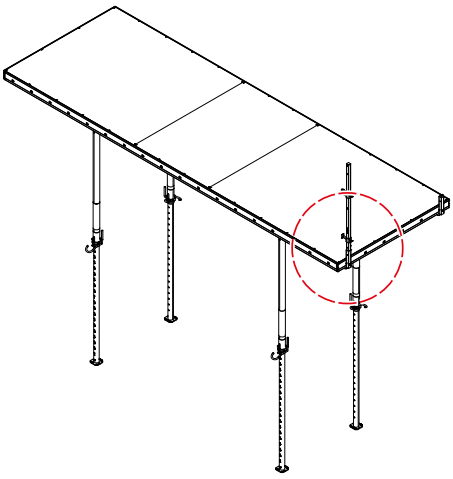


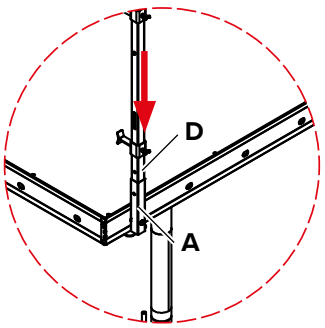


Step 3 Repeat steps 1–2 for the other positions of the post socket.



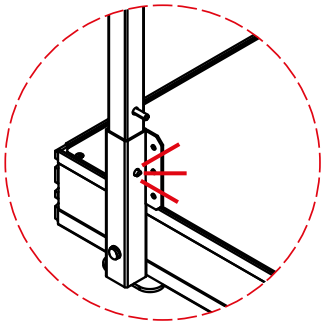
Step 4 Insert the PROTECTO Post 130 Adjustable (**D**) into the TOPMAX Post Fastener (**A**).





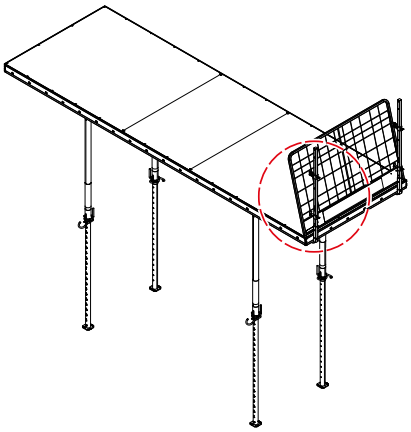
Unless stated otherwise, all dimensions are given in mm.

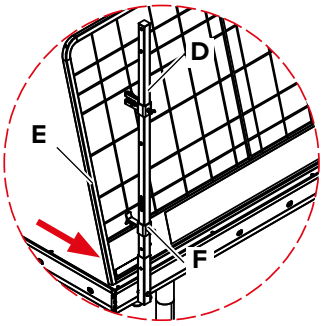
The post is secure when the locking pin is located in the pin hole of the TOPMAX Post Fastener (coded:602123). A "click" sound is produced when the pin springs out of the hole (see page 23).



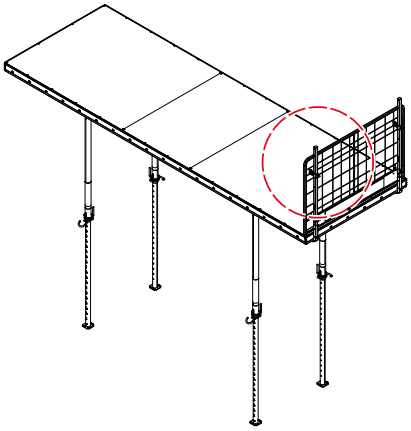
Step 5 Repeat step 4 for the other positions of the post.

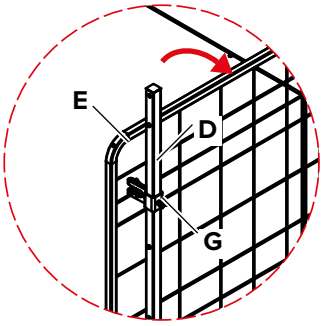
Step 6 Position the PROTECTO Panel G2 (**E**) at an angle, with the bottom part closest to the PROTECTO Post 130 Adjustable (**D**). Locate the bottom wire of the PROTECTO Panel G2 (**E**) on the top face of the PROTECTO Post 130 Adjustable T Latch (**F**). The T Latch may require its position to be adjusted using the captive thumb screw.





Step 7 Rotate the top of the PROTECTO Panel G2 (**E**) towards the PROTECTO Post 130 Adjustable (**D**) so that the latches capture the PROTECTO Panel G2 mesh. The PROTECTO Post latch (**G**) may require its position to be adjusted using the captive thumb screw.





It is recommended to install plastic zip ties on the PROTECTO Post 130 Adjustable latches to prevent accidental opening and to prevent tampering.

Ensure the PROTECTO Panel G2 (**E**) bottom wire is horizontally restrained by the PROTECTO Post T latch (**F**), and the upper wire is captivated by the PROTECTO Post latch (**G**) (alternatively the T latch can be moved downwards to locate over the top of the toe board with the thumb screw tightened to lock in position).

Ensure the PROTECTO Panel G2 (**E**) is sitting flush on the working platform or slab. Adjust latches as required.

The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.15 TOPEC panels with PROTECTO Multiple Clamp

PROTECTO Post 130 Adjustable (code:692750) and PROTECTO Panels G2 can be attached to cantilevered panels or between the steel props of the TOPEC Panels with the aid of the PROTECTO Multiple Clamp (code:601226).

The height of the edge protection can be increased by using PROTECTO Post Extensions.

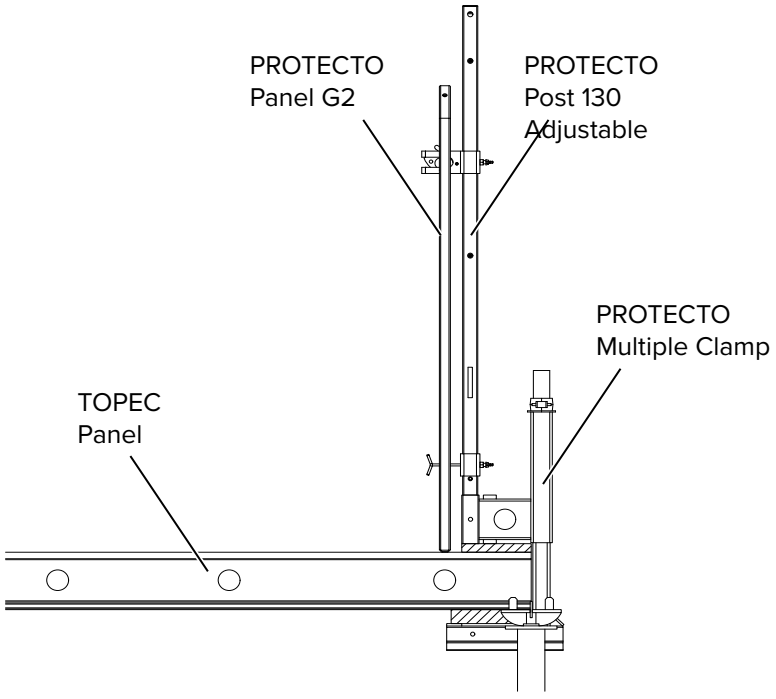
For more information regarding edge protection, see page 18.

Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- PROTECTO Multiple Clamp (code:601226)

When using the PROTECTO Panels G2 as edge protection, the PROTECTO Post 130 Adjustable (code:692750) must not be placed more than 2.40 m apart.

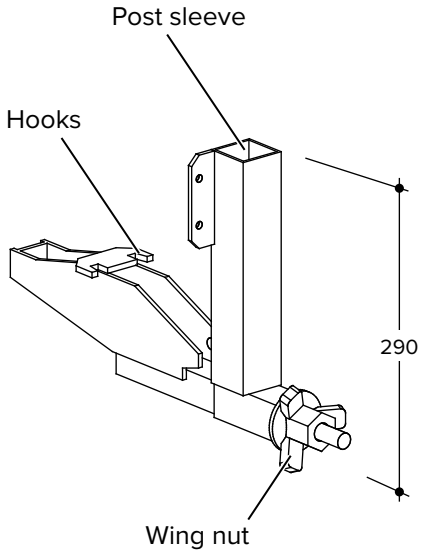


Unless stated otherwise, all dimensions are given in mm.

6.16 TOPEC panels with TOPEC P-Railing Shoe

The TOPEC P-Railing Shoe (code:606255) can be used on cantilevered TOPEC Panels. The TOPEC P-Railing Shoe (code:606255) can be attached along with the PROTECTO Post 130 Adjustable (code:692750) 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 (code:606255) can be used to construct edge protection on the front profiles (profiles with square hole) of cantilevered TOPEC Panels.



Required components

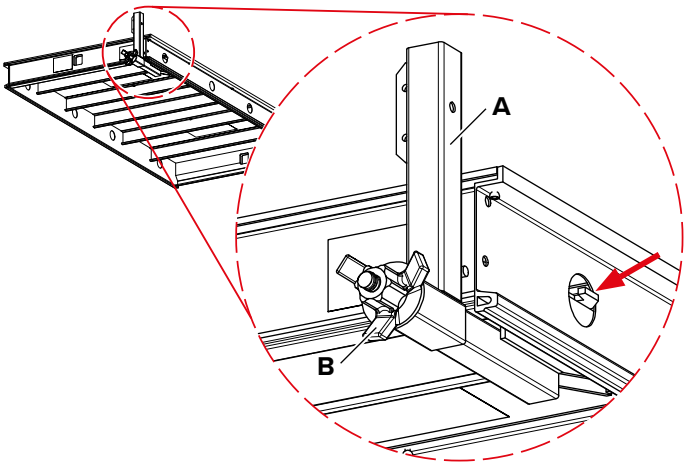
The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- TOPEC P-Railing Shoe (code:606255)

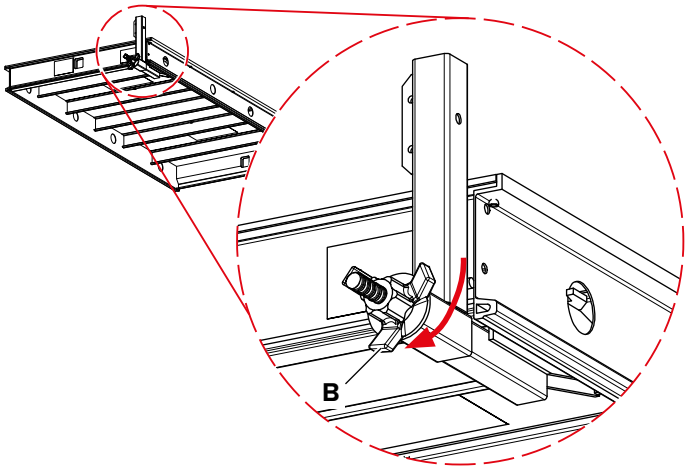
When using the PROTECTO Panels G2 as edge protection, the PROTECTO Post 130 Adjustable (code:692750) must not be placed more than 2.40 m apart.

Typical assembly

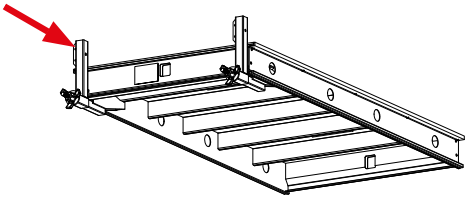
Step 1 Engage the hook of the TOPEC P-Railing Shoe (**A**) into the outermost round hole of the TOPEC Panel. If required, unscrew the wing nut far (**B**) enough to allow the TOPEC P-Railing Shoe to engage.



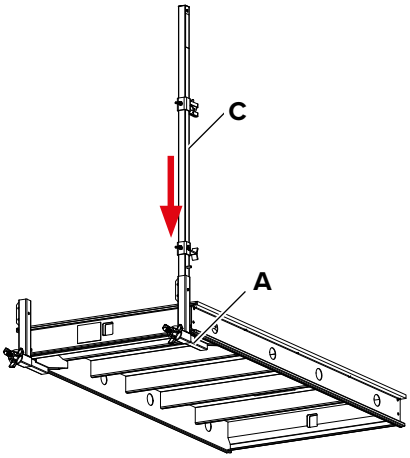
Step 2 Tighten the wing nut. The TOPEC P-Railing Shoe is now properly attached.



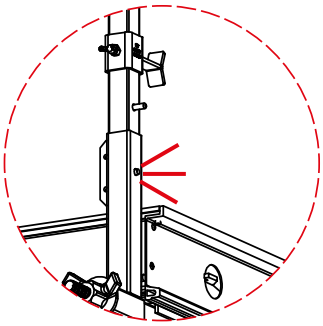
Step 3 Repeat steps 1–2 for the other TOPEC P-Railing Shoe positions



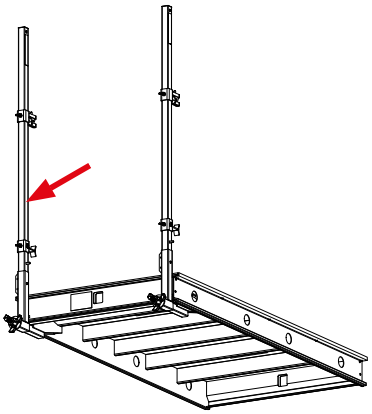
Step 4 Insert the PROTECTO Post 130 Adjustable (**C**) into the TOPEC P-Railing Shoe (**A**).



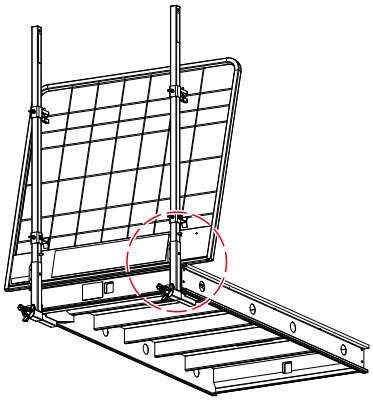
The post is secure when the locking pin is located in the pin hole of the PROTECTO P-Railing Shoe (coded:606255). A "click" sound is produced when the pin springs out of the hole (see page 23).

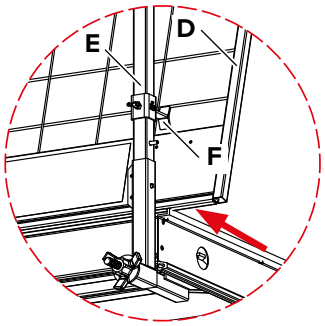


Step 5 Repeat step 4 for the other PROTECTO Post 130 Adjustable positions.

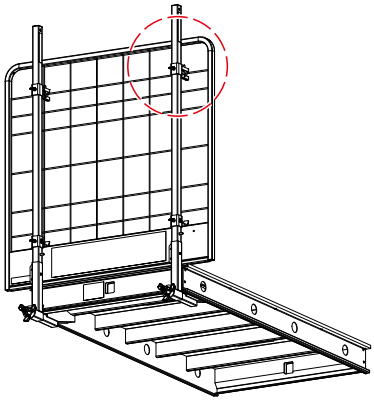


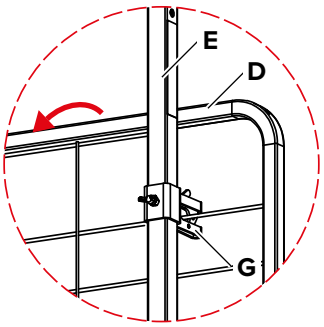
Step 6 Position the PROTECTO Panel G2 (**D**) at an angle, with the bottom part closest to the PROTECTO Post 130 Adjustable (**E**). Locate the bottom wire of the PROTECTO Panel G2 (**D**) on the top face of the PROTECTO Post 130 Adjustable T Latch (**F**). The T Latch may require its position to be adjusted using the captive thumb screw.





Step 7 Rotate the top of the PROTECTO Panel G2 (**D**) towards the PROTECTO Post 130 Adjustable (**E**) so that the latches capture the PROTECTO Panel G2 mesh. The PROTECTO Post latch (**G**) may require its position to be adjusted using the captive thumb screw.





Step 8

It is recommended to install plastic zip ties on the PROTECTO Post 130 Adjustable latches to prevent accidental opening and to prevent tampering.

Ensure the PROTECTO Panel G2 (**D**) bottom wire is horizontally restrained by the PROTECTO Post T latch (**F**), and the upper wire is captivated by the PROTECTO Post latch (**G**) (alternatively the T latch can be moved downwards to locate over the top of the toeboard with the thumb screw tightened to lock in position).

Ensure the PROTECTO Panel G2 (**D**) is sitting flush on the working platform or slab. Adjust latches as required.

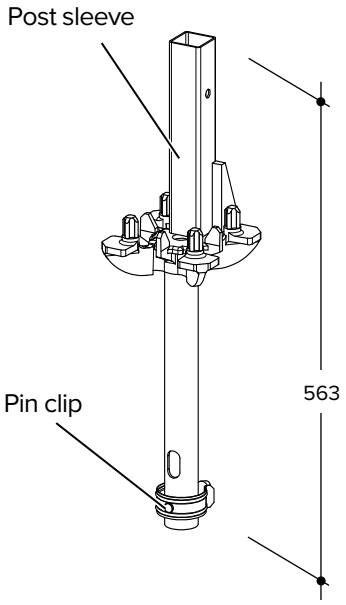
The assembly is now concluded. For disassembling the edge protection, follow the steps shown here in the reverse order.

6.17 TOPEC panels with TOPEC P-Bearing for Railing

If the TOPEC Panels are not cantilevered and instead end at the last steel prop, the edge protection can be constructed using the TOPEC P-Bearing for Railing (code:606250).

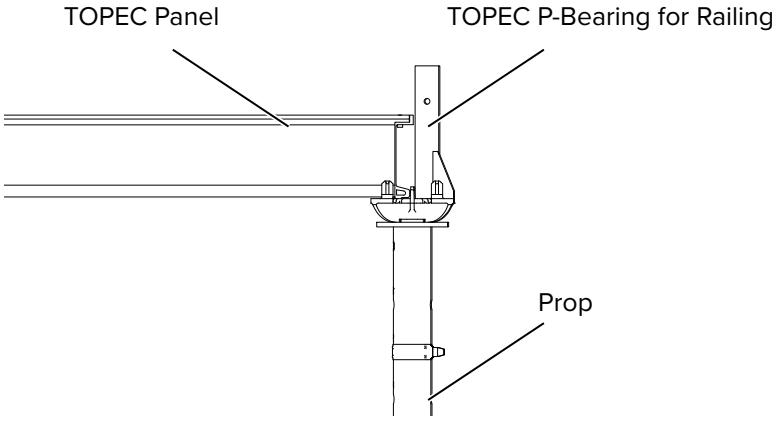
The TOPEC P-Bearing for Railing (code:606250) holds the TOPEC Panels and is where the PROTECTO Post 130 Adjustable (code:692750) is inserted. PROTECTO Panels G2 can be used to erect edge protection along the longitudinal and lateral sides of TOPEC Panels.

The TOPEC P-Bearing for Railing (code:606250) can be used for slabs up to 500 mm thick (only when completely retracted).



Insert the TOPEC P-Bearing for Railing (code:606250) into the outermost steel props. Secure using the suitable pin clip.

For more information regarding the pin clip, refer to the TOPEC User Guide.



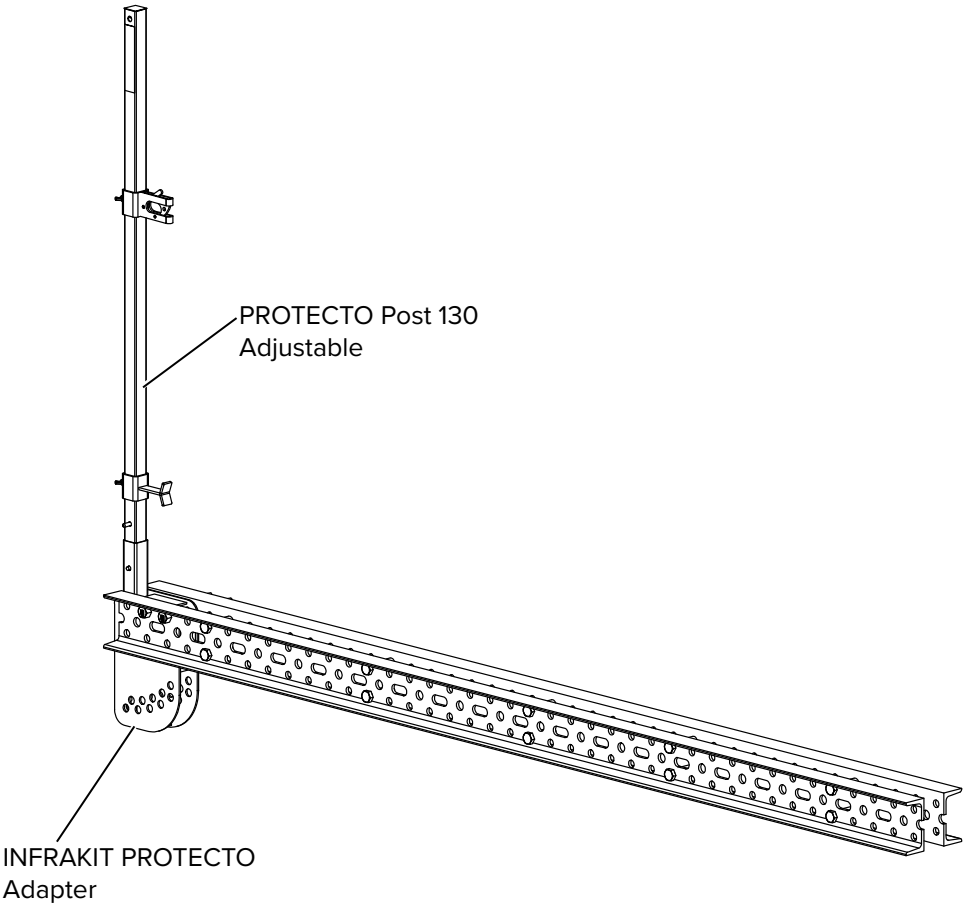
6.18 IK Walers

The PROTECTO Post 130 Adjustable (code:692750) and the PROTECTO Panels G2 can also be used to provide edge protection when using the IK Walers.

To secure a PROTECTO Post 130 Adjustable (code:692750) to an IK Waler L or IK Waler M, the IK PROTECTO Adapter (code:608410) is used.

This application meets the requirements for temporary edge protection systems as specified by BS EN 13374 - class A.

For more information regarding the components mentioned above, refer to the relevant user guides.



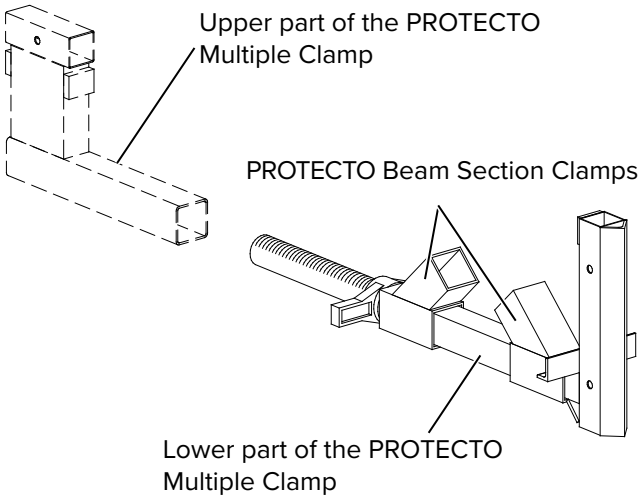
Required components

The following components are required for this application:

- PROTECTO Post 130 Adjustable (code:692750)
- PROTECTO Panel G2
- INFRAKIT PROTECTO Adapter (code:608410)

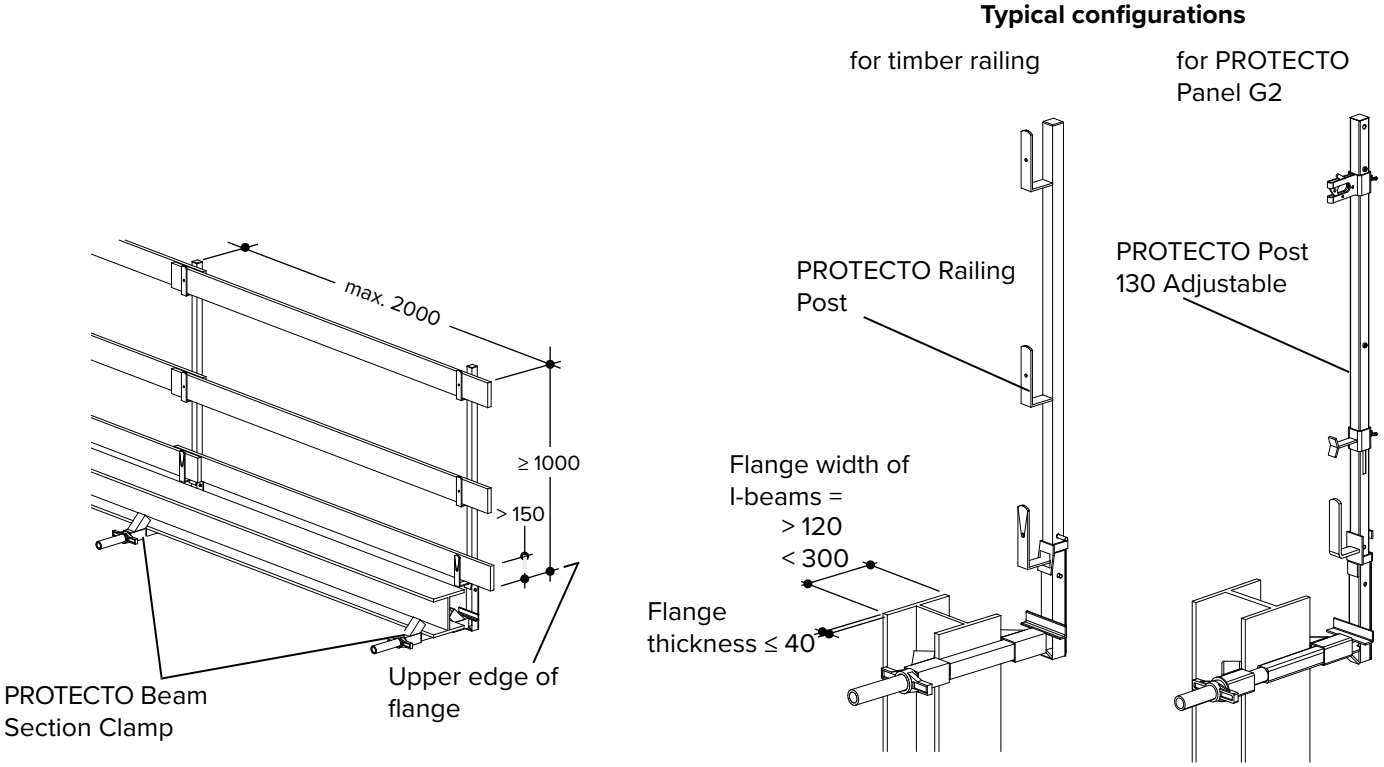
6.19 Steel beams with PROTECTO Beam Section Clamp

The PROTECTO Beam Section Clamp (code:601310) is used to install fall protection systems on steel structures (e.g. hall- and bridge constructions).



The PROTECTO Beam Section Clamp (code:601310) in conjunction with the PROTECTO Multiple Clamp (code:601226) create a flexible and safe connection element for I-beams. After removing the upper part of the PROTECTO Multiple Clamp (code:601226), 2no. PROTECTO Beam Section Clamps (code:601310) must be installed as shown above.

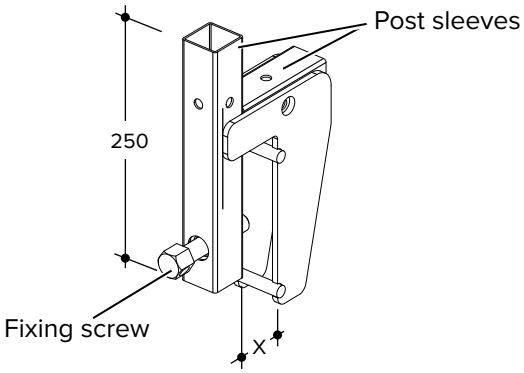
The illustration below shows the typical installation to a horizontal and a vertical I-beam. The PROTECTO Beam Section Clamps (code:601310) grip the lower flange of the beam, allowing unobstructed access to the upper flange. Rotate the PROTECTO Beam Section Clamps (code:601310) by 90° to attach the clamp to vertical steel beams.



In order to attach the lower railing board or the PROTECTO Panels G2, the PROTECTO Toeboard Retainer (code:601227) is mounted to the respective PROTECTO post in such a way that the PROTECTO Toeboard Retainer (code:601227) faces upwards and the railing board / panel can be attached safely.

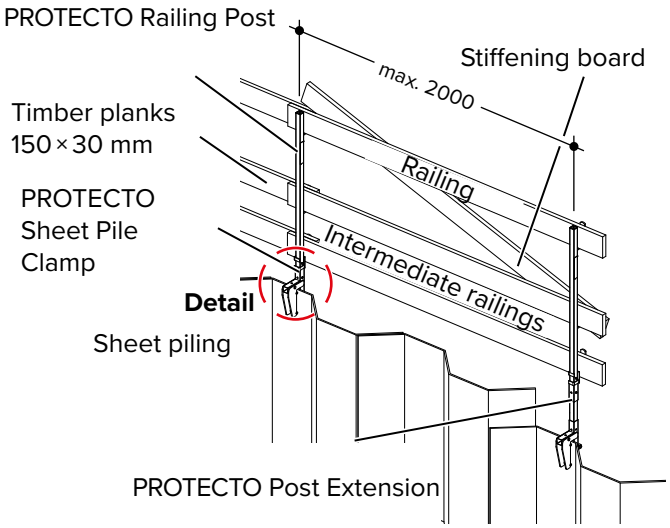
6.20 Sheet piles with PROTECTO Sheet Pile Clamp

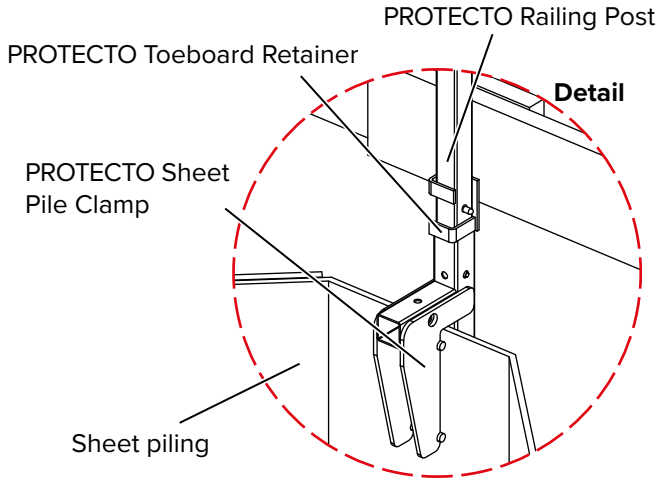
Guard railings on sheet piles, U- and I-profiles etc. can be installed easily by using the PROTECTO Sheet Pile Clamp (code:603546). The PROTECTO Sheet Pile Clamp (code:603546) can be used in a vertical or horizontal direction. Attach and secure the clamp with the fixing screw to a load carrying profile and insert the PROTECTO Railing Post (code:601225), see page 22, into the post sleeve.



Clamping range (X): 4–30 mm

The difference in height of various sheet piles can be compensated by using the PROTECTO Post Extension 26 (code:602111) or the PROTECTO Post Extension 42 (code:602580).



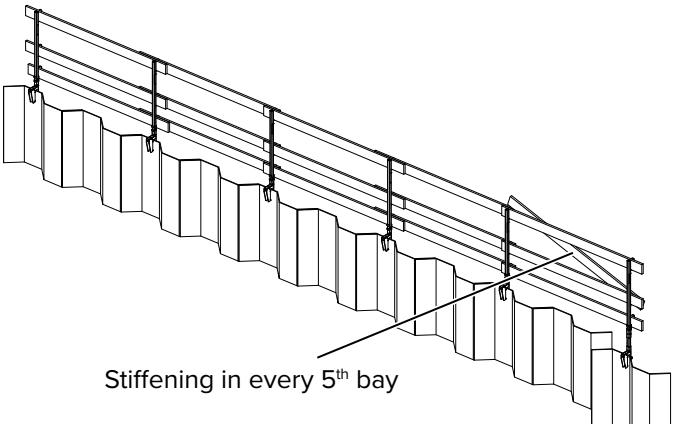


Unless stated otherwise, all dimensions are given in mm.

When using the PROTECTO Sheet Pile Clamp (code:603546), a diagonal stiffening board that is attached to the upper and the intermediate railing must be installed every 5th bay.

The timber planks must be 30 mm thick, 150 mm wide and meet the requirements of strength class C24 according to EN 338 (formerly S10).

All railing boards must be secured by nailing or screwing to the PROTECTO Railing Post (code:601225).



The PROTECTO Post 130 Adjustable (code:692750) with the PROTECTO Panels G2 can also be used with the PROTECTO Sheet Pile Clamp (code:603546). A PROTECTO Toeboard Retainer (code: 601227), assembled in an upside-down position, must also be used to support the panel.

7 Notes on structural analysis

Unless explicitly stated otherwise all load specifications in this document are safe working loads. This means that characteristic loads can be used for calculations.

The following safety factors are included in the safe working load (where applicable):

Load:

$\gamma_f = 1.5$

Resistances:

Steel:
$\gamma_m = 1.1$

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

Aluminium:
$\gamma_m = 1.1$

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

Timber:
$\gamma_m = 1.3$;
K_{mod} 0.9

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

Concrete:
$\gamma_m = 1.5$

Imperfections, load assumptions and additional rules:
According to DIN 1045 / DIN EN 12810 / DIN EN 12811 / DIN EN 12812 / DIN EN 1991

Concrete steel:
$\gamma_m = 1.15$

Imperfections, load assumptions and additional rules:
According to DIN 1045 / DIN EN 12810 / DIN EN 12811 / DIN EN 12812 / DIN EN 1991

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

An increase in the loads due to effects in the full system (e.g. Theory II, substitute horizontal loads, scaffolding class, etc.) must be taken into account.

8 Chronology

Changes since edition 2019-03	Page	Date
PROTECTO Panel G2 added	20	2022-04
PROTECTO Post 130 Adjustable added	21	2022-04
EPS Post added	32	2022-04
PROTECTO Protective Mesh panel removed	---	2022-04
Universal Protection Mesh removed	---	2022-04

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2250 EN 2022-06-07

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