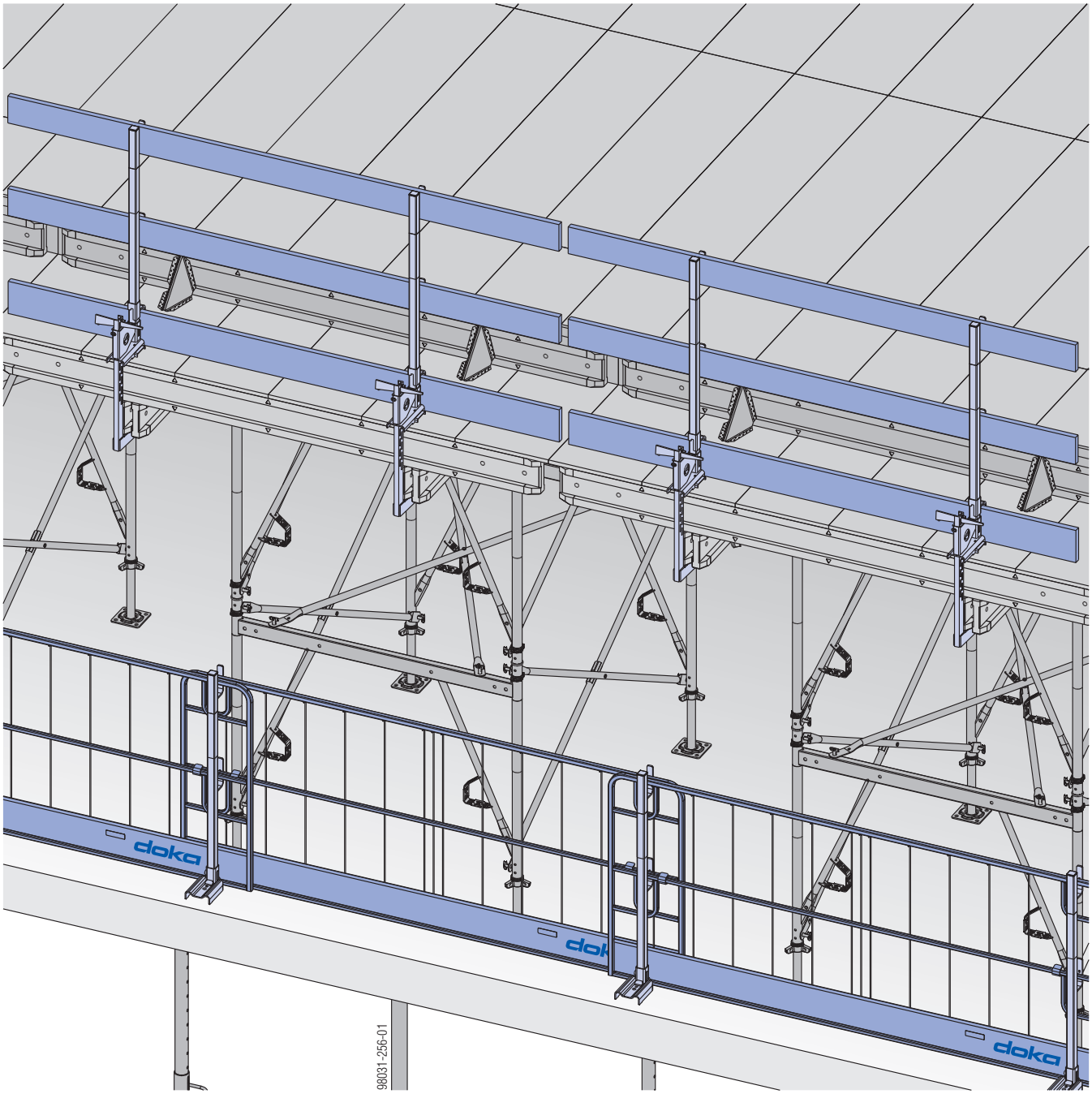
999803102 - 07/2023
en-GB

The Formwork Experts.

Xsafe edge protection XP

User Information

Instructions for assembly and use (Method statement)



Contents

Introduction

Elementary safety warnings

User target groups

- This booklet is aimed at all persons who will be working with the Doka product or system that it describes. It contains information on the standard design for setting up this system, and on correct, compliant utilisation of the system.
- All persons working with the product described herein must be familiar with the contents of this booklet and with all the safety instructions it contains.
- Persons who are incapable of reading and understanding this booklet, or who can do so only with difficulty, must be instructed and trained by the customer.
- The customer is to ensure that the information materials provided by Doka (e.g. User Information booklets, Instructions for Assembly and Use, Operating Instruction manuals, plans etc.) are up to date and available to all users, and that they have been made aware of them and have easy access to them at the usage location.
- In the relevant technical documentation and formwork utilisation plans, Doka shows the workplace safety precautions that are necessary in order to use the Doka products safely in the usage situations shown.
  In all cases, users are obliged to ensure compliance with national laws, standards and regulations throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

- The customer is responsible for drawing up, documenting, implementing and continually updating a hazard assessment at every job-site.
  This booklet serves as the basis for the site-specific hazard assessment, and for the instructions given to users on how to prepare and utilise the system. It does not substitute for these, however.

Remarks on this booklet

- This document can be used as general Instructions for Assembly and Use (Method Statement) or be incorporated into site-specific Instructions for Assembly and Use (Method Statement).
- **The graphics, animations and videos in this document or app sometimes depict partially assembled assemblies and may require additional safety equipment and/or measures to comply with safety regulations.**
  The customer must ensure all applicable regulations are complied with, even if they are not shown or implied in the graphics, animations and videos provided.
- **Individual sections contain further safety instructions and/or special warnings as applicable.**

Planning

- Provide safe workplaces for those using the formwork (e.g. for when it is being erected/dismantled, modified or repositioned etc). It must be possible to get to and from these workplaces via safe access routes!
- **If you are considering any deviation from the details and instructions given in this booklet, or any application which goes beyond those described in the booklet, then revised static calculations must be produced for checking, as well as supplementary assembly instructions.**

Regulations; industrial safety

- All laws, Standards, industrial safety regulations and other safety rules applying to the utilisation of our products in the country and/or region in which you are operating must be observed at all times.
- If a person or object falls against, or into, the sideguard component and/or any of its accessories, the component affected may only continue in use after it has been inspected and passed by an expert.

Rules applying during all phases of the assignment

- The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose in accordance with the applicable laws, standards and rules, under the direction and supervision of suitably skilled persons.
  These persons' mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.
- Doka products are technical working appliances which are intended for industrial / commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.
- The stability and load-bearing capacity of all components and units must be ensured during all phases of the construction work!
- Do not step on or apply strain to cantilevers, closures, etc. until suitable measures to ensure their stability have been correctly implemented (e.g. by tie-backs).
- Strict attention to and compliance with the functional instructions, safety instructions and load specifications are required. Non-compliance can cause accidents and severe injury (risk of fatality) and considerable damage to property.
- Sources of fire in the vicinity of the formwork are prohibited. Heaters are permissible only when used correctly and situated a correspondingly safe distance from the formwork.
- Customer must give due consideration to any and all effects of the weather on the equipment and regards both its use and storage (e.g. slippery surfaces, risk of slipping, effects of the wind, etc.) and implement appropriate precautionary measures to secure the equipment and surrounding areas and to protect workers.
- All connections must be checked at regular intervals to ensure that they are secure and in full working order.
  In particular threaded connections and wedged connections have to be checked and retightened as necessary in accordance with activity on the jobsite and especially after out-of-the-ordinary occurrences (e.g. after a storm).
- It is strictly forbidden to weld Doka products – in particular anchoring/tying components, suspension components, connector components and castings etc. – or otherwise subject them to heating.
  Welding causes serious change in the microstructure of the materials from which these components are made. This leads to a dramatic drop in the failure load, representing a very great risk to safety.
  It is permissible to cut individual tie rods to length with metal cutting discs (introduction of heat at the end of the rod only), but it is important to ensure that flying sparks do not heat and thus damage other tie rods.
  The only articles which are allowed to be welded are those for which the Doka literature expressly points out that welding is permitted.

Assembly

- The equipment/system must be inspected by the customer before use, to ensure that it is in an acceptable condition. Steps must be taken to exclude components that are damaged, deformed, or weakened due to wear, corrosion or rot (e.g. fungal decay).
- Using our safety and formwork systems together with those of other manufacturers can create risks that may lead to injury and damage to property. This requires separate verification by the user.
- The equipment/system must be assembled and erected in accordance with the applicable laws, standards and rules by trained customer personnel whilst maintaining any applicable safety inspections that may be required.
- It is not permitted to modify Doka products; such modifications constitute a safety risk.

Closing the formwork

- Doka products and systems must be set up so that all loads acting upon them are safely transferred!

Pouring

- Do not exceed the permitted fresh-concrete pressures. Over-high pouring rates overload the formwork, cause greater deflection and risk breakage.

Stripping the formwork

- Do not strip out the formwork until the concrete has reached sufficient strength and the person in charge has given the order for the formwork to be stripped out!
- When stripping out the formwork, never use the crane to break concrete cohesion. Use suitable tools such as timber wedges, special pry-bars or system features such as Framax stripping corners.
- When stripping out the formwork, do not endanger the stability of any part of the structure, or of any scaffolding, platforms or formwork that is still in place!

Transporting, stacking and storing

- Observe all country-specific regulations applying to the handling of formwork and scaffolding. For system formwork the Doka slinging means stated in this booklet must be used – this is a mandatory requirement.
  If the type of sling is not specified in this document, the customer must use slinging means that are suitable for the application envisaged and that comply with the regulations.
- When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.
- Remove loose parts or secure them so that they cannot slip out of position and drop.
- When lifting formwork or formwork accessories with a crane, no persons must be carried along, e.g. on working platforms or in multi-trip packaging.
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this document!

Maintenance

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

Miscellaneous

The weights as stated are averages for new material; actual weights can differ, depending on material tolerances. Dirt accretions, moisture saturation, etc. can also affect weight.
We reserve the right to make alterations in the interests of technical progress.

Eurocodes at Doka

The permissible values stated in Doka documents (e.g. F_{perm} = 70 kN) **are not design values** (e.g. F_{Rd} = 105 kN)**!**

- It is essential to avoid confusing permissible values with design values!
- Doka documents will continue to state the permissible values.

Allowance has been made for the following partial factors:

- γ_F = 1.5
- $\gamma_{M,\ timber}$ = 1.3
- $\gamma_{M,\ steel}$ = 1.1
- k_{mod} = 0.9

Consequently, all the design values for an EC design calculation can be determined from the permissible values.

Symbols used

The following symbols are used in this document:

DANGER
This is a notifier drawing attention to an extremely dangerous situation in which non-compliance with this notifier will lead to death or severe, irreversible injury.

WARNING
This is a notifier drawing attention to a dangerous situation in which non-compliance with this notifier can lead to death or severe, irreversible injury.

CAUTION
This is a notifier drawing attention to a dangerous situation in which non-compliance with this notifier can lead to slight, reversible injury.

NOTICE
This is a notifier drawing attention to a situation in which non-compliance with this notifier can lead to malfunctions or damage to property.

Instruction
Indicates that actions have to be performed by the user.

Sight-check
Indicates that you need to do a sight-check to make sure that necessary actions have been carried out.

Tip
Points out useful practical tips.

Reference
Cross-references other documents.

Services

Support in every stage of the project

- Project success assured by products and services from a single source.
- Competent support from planning through to assembly directly on site.

Project assistance from start to finish

Every single project is unique and calls for individualised solutions. When it comes to the forming operations, the Doka team can help you with its consulting, planning and ancillary services in the field, enabling you to carry out your project effectively, safely and reliably. Doka assists you with individual consulting services and customised training courses.

Efficient planning for a safe project sequence

Efficient formwork solutions can only be developed economically if there is an understanding of project requirements and construction processes. This understanding is the basis of Doka engineering services.

Optimise construction workflows with Doka

Doka offers special tools that help you in designing transparent processes. This is the way to speed up pouring processes, optimise inventories and create more efficient formwork planning processes.

Custom formwork and on-site assembly

To complement its system formwork range, Doka offers customised formwork units. And specially trained personnel assemble load-bearing towers and formwork on site.

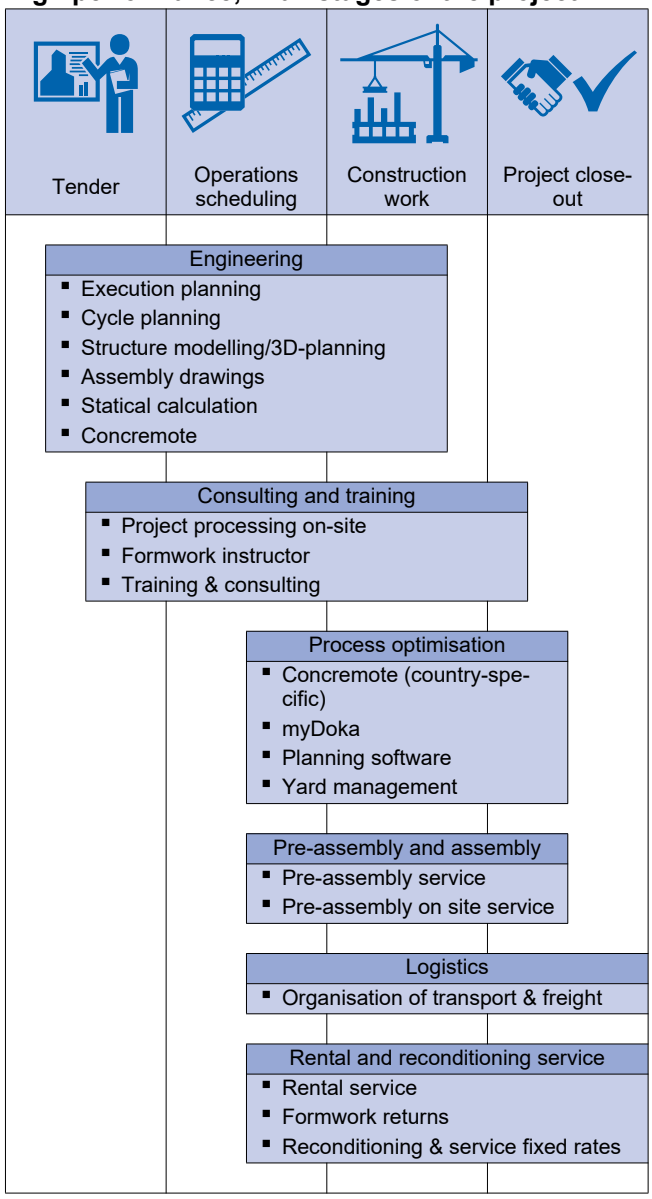
Just-in-time availability

Formwork availability is a crucial factor in realising your project on time and on budget. The worldwide logistics network puts the necessary formwork quantities on site at the agreed time.

Rental and reconditioning service

The formwork material needed for any particular project can be rented from Doka's high-performing rental park. Doka Reconditioning cleans and overhauls both client-owned equipment and Doka rental equipment.

High performance, in all stages of the project



Digital Services
for higher productivity in construction

From planning to completion of construction - with our digital services we want to set the pace for boosting productivity in construction. Our digital portfolio includes solutions for planning, procuring and managing to performing on site. Learn more about our digital offer at doka.com/digital.

System description

This system is the universal safety solution for all edge protection needs. It fits in ideally with Doka systems – be they wall or floor formwork – for safeguarding slab edges or as guardrail systems on the structure shell.

All-in-one system for fall protection

on both formwork and structure shell

Versatile

- with one single post for all the different kinds of side protection
- for formwork, stairways and structure edges
- thanks to its different connectors covering all applications

Installation is quick and easy

because the easy-click function improves productivity

Ergonomically engineered

- with a logical set-up procedure that makes the system quick and self-explanatory to use
- for easy handling
- thanks to sturdy lightweight construction
- with captively integrated parts, which also cuts costs

Revolutionary bottom-fixed height extenders for the uprights

for grating heights of up to 1.80 m, with 20 % fewer uprights.

This ingenious system

- provides full safety up to 1.20 m, with only one upright
- can be extended to 1.80 m simply by adding a specially developed bottom-fixed height extender for the upright
- covers all applications perfectly with just two types of upright, obviating the need to keep many different types available on-site

Tested safety

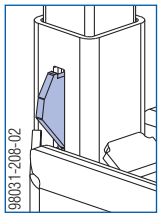
Buy or rent

Rent it to get experience with it, and purchase as needed

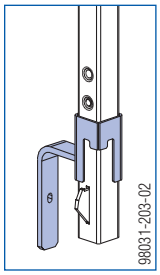
- Hot-dip galvanised and extremely strong
- Conforms to EN 13374 Class A
- Conforms to EN 12811-1
- Detailed User Information booklets
- Dimensioning graphs incl. wind-loads

Handrail post XP in detail

- **1 type of upright for all types of safety barrier:**
  - Protective grating XP
  - Guardrail boards
  - Scaffold tubes
  - Gap-free boarding
- **"Easy-Click function":**
  - makes it quick and easy to mount and dismount the Handrail post XP 1.20m, with no tools needed
  - locks automatically to prevent accidental lift-out



- **Optional Toeboard holder XP:**
  - for fixing a toeboard to safety barriers that use guardrail boards or scaffold tubes
  - the Toeboard holder XP can be mounted and dismounted quickly and easily, with no tools needed



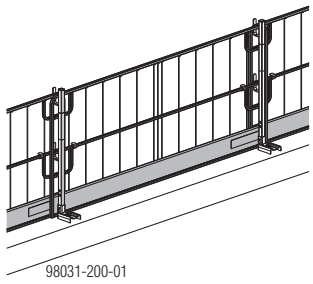
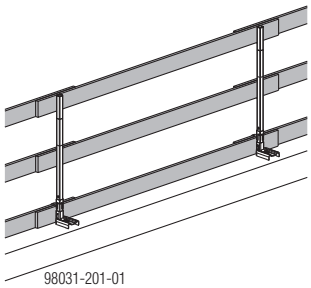
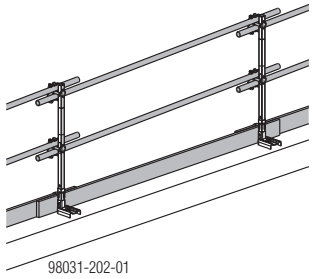
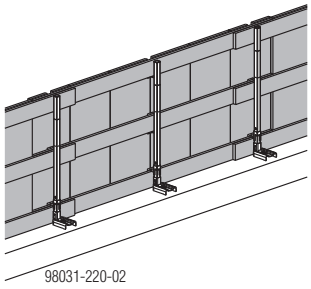
- Handrail posts XP available in 3 heights:
  - 1.80m
  - 1.20m
  - 0.60m

Handrail post XP in detail

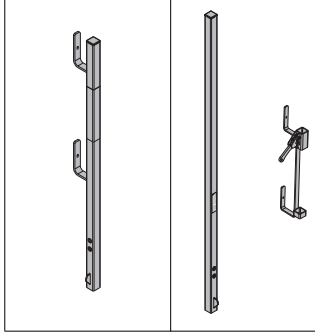
- Galvanised hollow frame for more stability and long lifespan.
- Toeboard and handles for safety and versatility.
- Stacking stirrups prevent the Protective gratings XP from slipping.
- Available formats: Lengths 2.70 m, 2.50 m, 2.00 m and 1.20 m, each with heights 1.20 m and 0.60 m.

Edge protection on the structure – railing-height up to 1.20 m

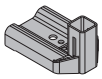
Safety barriers

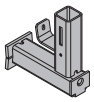
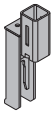
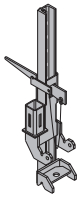
Protective grating XP	Guardrail boards	Scaffold tubes	Gap-free boarding
			
Railing height: 114 cm	Railing height: 119 cm (with 15 cm wide guardrail boards)	Railing height: 110 cm	Railing height: 119 cm (with 15 cm wide guardrail boards)

Please note: With all these barrier variants, it is permissible to install netting to screen the crew from view and to prevent small items from falling. Statically, this is the equivalent of gap-free boarding. However, it is not permissible to use the Xsafe edge protection XP for stretching net systems as fall protection in accordance with EN 13374!

Handrail post XP 1.20m or Handrail post XP flex 1.60m + Railing holder XP flex


Means of attachment	Areas of use	Anchorages
Railing clamp XP 40cm 	▪ Clamping range: 2 - 43 cm ▪ Fastened at end-face of concrete floor-slabs ▪ Fastened to concrete parapets	—
Railing clamp XP 85cm 	▪ Clamping range: 2 - 85 cm ▪ Fastened to end-face of e.g. cantilevered parapets on bridges	—
Screw-on shoe XP 	▪ Floor-mounted on concrete floor-slabs	▪ in a Screw sleeve 20.0 ▪ in an Attachable sleeve 24mm ▪ in a hole subsequently drilled in the concrete

Means of attachment	Areas of use	Anchorages
Handrail-post shoe XP 	▪ Floor-mounted on concrete floor-slabs	▪ with Doka express anchor 16x125mm ▪ with an alternative anchor-bolt

Means of attachment	Areas of use	Anchorages
Balcony adapter XP 	▪ End-face attachment for balconies	▪ with Bridge edge beam anchor 15.0
Floor end-shutter profile XP 	▪ Attachment to the wall for slab top-ends	▪ with Tie rod 15.0 and Super plate 15.0 ▪ with Bridge edge beam anchor 15.0
Step bracket XP 	▪ End-face attachment for stairways ▪ Fastened at end-face of concrete floor-slabs	▪ with Doka express anchor 16x125mm ▪ with an alternative anchor-bolt
Bridge-deck clamp XP 	▪ Clamping range: 12 - 35 cm ▪ Fastened to end-face in reinforcement hoops, e.g. on bridge superstructures	—

Mounting the Handrail post XP 1.20m

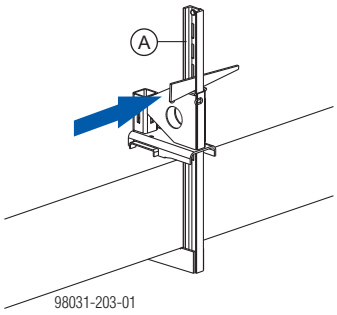
NOTICE

- If no fall protection (such as a facade scaffold or platform) is in place when the side-guards are being mounted or dismounted, a personal fall-arrest system (PFAS) must be used.
- Suitable anchorage points must be defined by an approved person appointed by the contractor.
- Only fix the connectors to components that can reliably transfer the forces involved.
- The permitted influence widths of the Handrail post XP and the permitted loads on the anchorages are given in the section headed 'Structural design'.

Note:
Railing clamp XP 40cm and Railing clamp XP 85cm can also be mounted on steel.

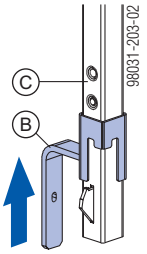
with Railing clamp XP 40cm

➤ To adjust the clamping range of the Railing clamp XP 40cm, first take the wedge out of the wedge-slot.
➤ Push the Railing clamp XP 40cm onto the floor-slab until it is pressed against the end face of the slab.
➤ Hammer in the wedge until the hammer rebounds.



A Railing clamp XP 40cm

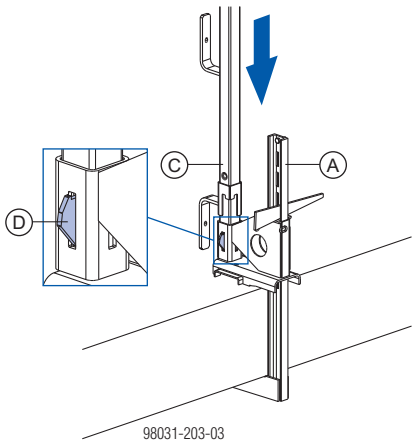
➤ Working from below, push the Toeboard holder XP 1.20m onto the Handrail post XP 1.20m (not needed when using the Protective grating XP).



B Toeboard holder XP 1.20m
C Handrail post XP 1.20m

The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ Push on the Handrail post XP 1.20m until it locks ("Easy-Click" function).



A Railing clamp XP 40cm
C Handrail post XP 1.20m
D Locking mechanism

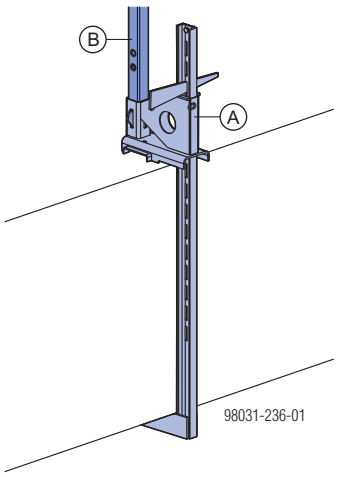
- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Mount the safety barriers (see the section headed "Mounting the safety barriers").

with Railing clamp XP 85cm

➤ The procedure for mounting the Handrail post XP 1.20m with the Railing clamp XP 85cm is the same as with the Railing clamp XP 40cm.

Practical example



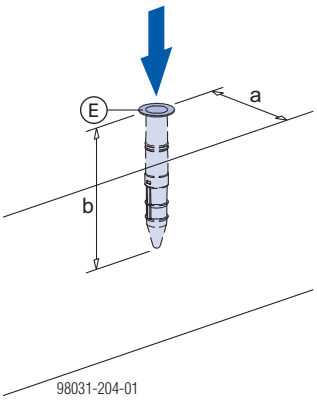
A Railing clamp XP 85cm
B Handrail post XP 1.20m

with Screw-on shoe XP

3 fixing options:
- in a "Screw sleeve 20.0"
- in an "Attachable sleeve 24mm"
- in a hole subsequently drilled in the concrete

Fixed in a "Screw sleeve 20.0"

➤ Push the Screw sleeve 20.0 into the freshly poured concrete.

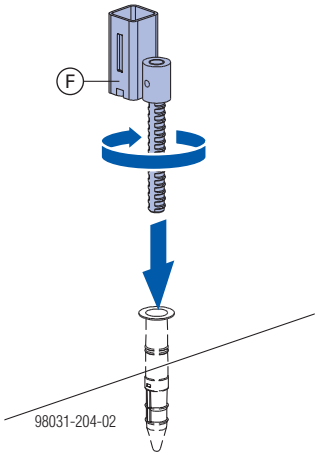


a ... distance from edge min. 10 cm
b ... 19.4 cm

E Screw sleeve 20.0

➤ After a concrete strength of B10 has been reached (characteristic cube compressive strength $f_{ck\ cube} \geq 10\ N/mm^2$):
Punch through the cap of the Screw sleeve 20.0 with the threaded rod of the Screw-on shoe XP.

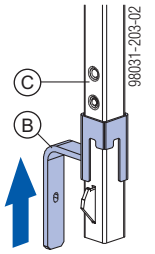
➤ Push in the Screw-on shoe XP as far as the start of the thread in the screw-sleeve, then give it approx. 3 complete turns (i.e. until fully engaged) to secure it against being lifted out.



F Screw-on shoe XP

The handrail-post holder must be facing towards the inside of the building.

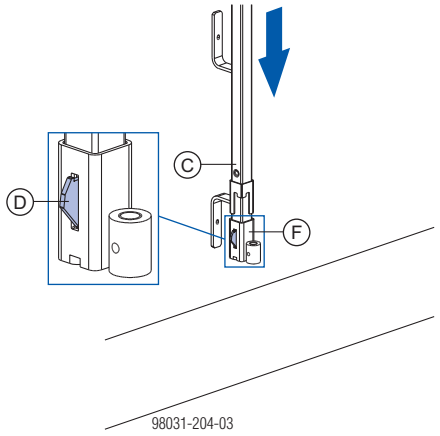
➤ Working from below, push the Toeboard holder XP 1.20m onto the Handrail post XP 1.20m (not needed when using the Protective grating XP).



B Toeboard holder XP 1.20m
C Handrail post XP 1.20m

The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ Push on the Handrail post XP 1.20m until it locks ("Easy-Click" function).



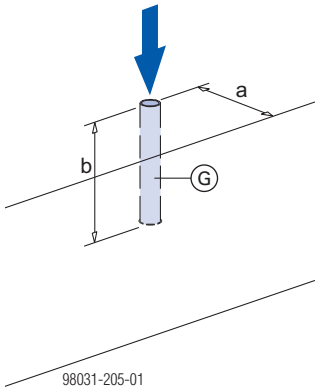
C Handrail post XP 1.20m
D Locking mechanism
F Screw-on shoe XP

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Mount the safety barriers (see the section headed "Mounting the safety barriers").

Fixed in an "Attachable sleeve 24mm"

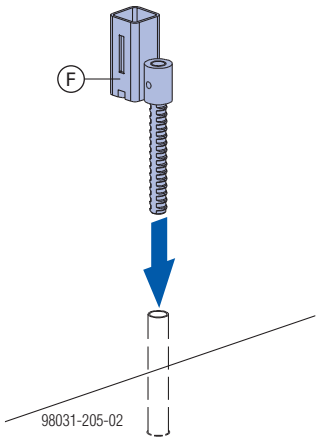
➤ Push the Attachable sleeve 24mm into the freshly poured concrete.



a ... distance from edge min. 10 cm
b ... 16.5 cm

G Attachable sleeve 24mm

➤ After a concrete strength of B10 has been reached (characteristic cube compressive strength $f_{ck\ cube} \geq 10\ N/mm^2$):
Remove the plug from the Attachable sleeve 24mm and push in the Screw-on shoe XP 1.20m until it is fully engaged.



F Screw-on shoe XP

The handrail-post holder must be facing towards the inside of the building.

➤ From now on, all the other steps are the same as with the Screw sleeve 20.0.

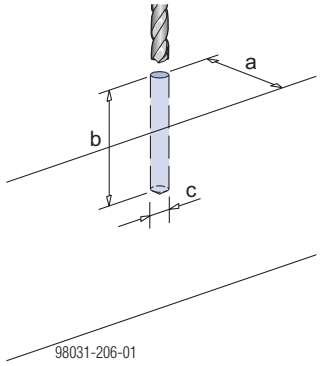
NOTICE

Additional precautions needed where stricter requirements are made regarding lift-out protection for the safety barrier than in DIN EN 13374:

- Provide additional fixing to both the outside Screw-on shoes XP of the safety barrier unit (e.g. by gluing in the Screw-on shoes XP with polyurethane foam).
- Alternatively, use Screw sleeves 20.0 for the outside Screw-on shoes XP instead of the Attachable sleeves 24mm.

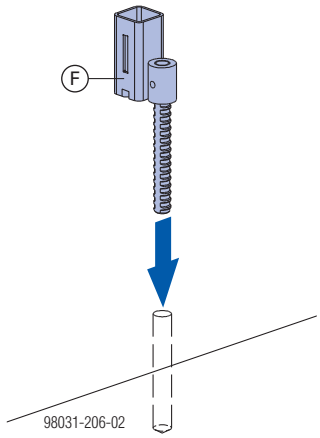
Fixed in a hole subsequently drilled in the concrete

➤ Drill the hole, and clean it out.



a ... distance from edge min. 10 cm
b ... Depth of drilled hole min. 16 cm
c ... Diameter of drilled hole 24 mm

➤ Push the Screw-on shoe XP into the drilled hole until it fully engages.



F Screw-on shoe XP

The handrail-post holder must be facing towards the inside of the building.

➤ From now on, all the other steps are the same as with the Screw sleeve 20.0.

NOTICE

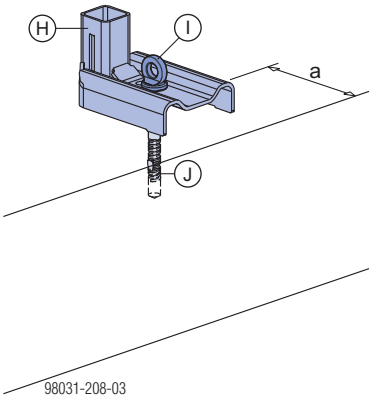
Additional precautions needed where stricter requirements are made regarding lift-out protection for the safety barrier than in DIN EN 13374:

- Provide additional fixing to both the outside Screw-on shoes XP of the safety barrier unit (e.g. by gluing in the Screw-on shoes XP with polyurethane foam).
- Alternatively, use Screw sleeves 20.0 for the outside Screw-on shoes XP instead of the Attachable sleeves 24mm.

with Handrail-post shoe XP

Follow the "Doka Express anchor 16x125mm" fitting instructions or the fitting instructions for the alternative anchor-bolt!

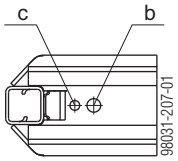
➤ Fix the Handrail-post shoe XP using a Doka Express anchor 16x125mm or an alternative anchor-bolt with a minimum clamping length of 3 cm (e.g. Hilti push-in anchor M12x50).



a ... distance from edge min. 15 cm (with Doka-Express anchor 16x125mm)

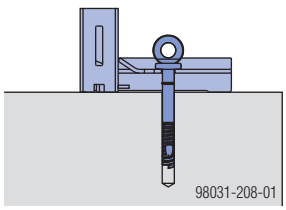
H	Handrail-post shoe XP
I	Doka Express anchor 16x125mm
J	Doka coil 16mm

Holes in the Handrail-post shoe XP

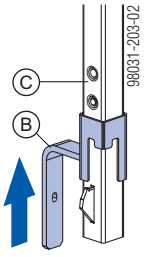


b ... diam. 18 mm (for Doka Express anchor 16x125mm)
c ... diam. 13 mm (for alternative anchor-bolt)

The handrail-post holder must be facing towards the inside of the building.



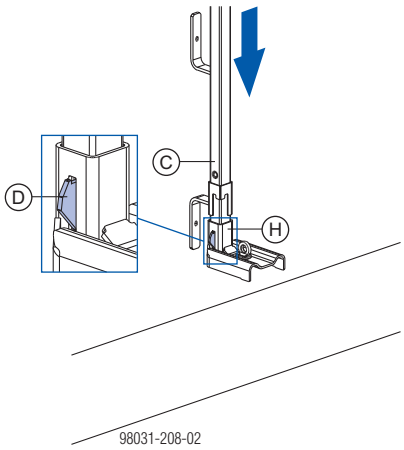
➤ Working from below, push the Toeboard holder XP 1.20m onto the Handrail post XP 1.20m (not needed when using the Protective grating XP).



B	Toeboard holder XP 1.20m
C	Handrail post XP 1.20m

The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ Push on the Handrail post XP 1.20m until it locks ("Easy-Click" function).



C	Handrail post XP 1.20m
D	Locking mechanism
H	Handrail-post shoe XP

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Mount the safety barriers (see the section headed "Mounting the safety barriers").

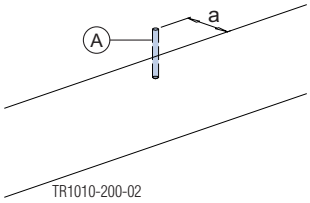
Handrail-post shoe XP box-out

The retrievable Handrail-post shoe XP box-out is for forming a recess around handrail-post shoes if an extra layer of concrete (max. 5 cm thick) has to be subsequently applied to the raw concrete slab.

NOTICE

- If no fall protection (such as a facade scaffold or platform) is in place when this item is being mounted or dismounted, a personal fall-arrest system (PFAS) must be used (e.g. safety harness).
- Suitable anchorage points must be defined by an approved person appointed by the contractor.
- Only fix the connectors to components that can reliably transfer the forces involved.

➤ Drill a suitable hole in the concrete floor-slab, and clean out the hole.

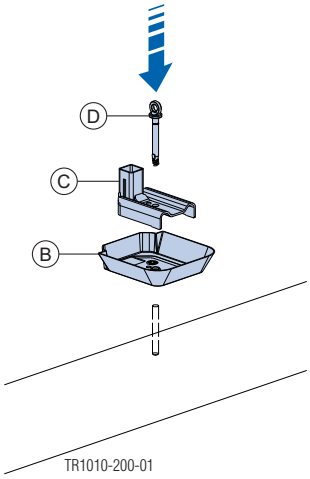


a ... distance from edge min. 15 cm

➤ Place the Handrail-post shoe XP box-out onto the concrete (i.e. the drilled hole).

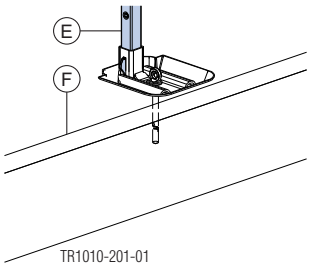
➤ Place a Handrail-post shoe XP into the box-out.

➤ Anchor in the concrete using a Doka express anchor 16x125mm or an alternative anchor-bolt.



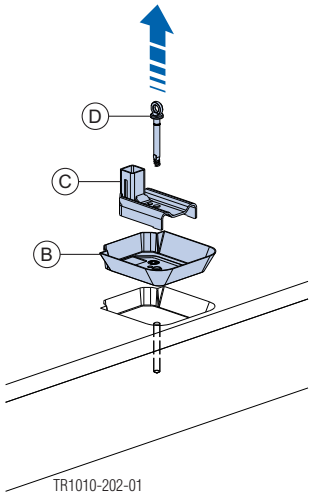
➤ Insert a Handrail post XP and erect the safety barrier.

➤ Apply the extra concrete layer.

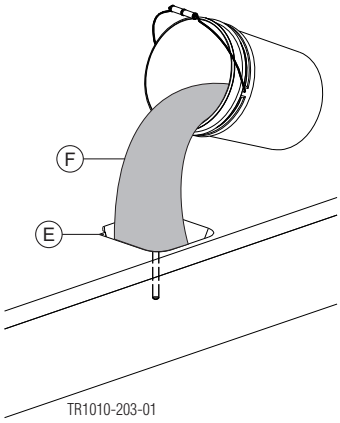


➤ After pouring, dismount the safety barrier and the Handrail post XP.

➤ Undo the Doka express anchor 16x125mm and remove both the Handrail-post shoe XP and the box-out.



➤ Fill out the recess in the concrete, flush with the surrounding surface.



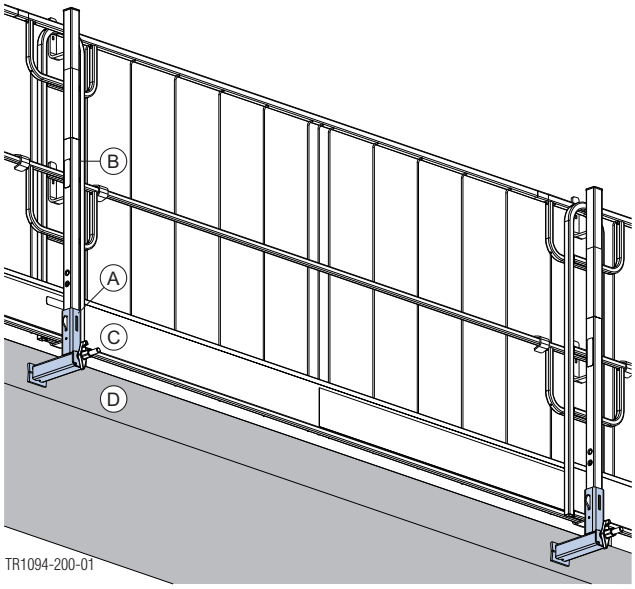
A	Drilled hole
B	Handrail-post shoe XP box-out
C	Handrail-post shoe XP
D	Doka express anchor 16x125mm
E	Handrail post XP
F	Concrete (max. 5 cm thick)

with Balcony adapter XP

Balcony adapter XP is for cordoning off at the slab edge on balconies. End-face attachment of the Balcony adapter XP to the balcony slab leaves space between the balcony and the protective grating so that the special cover angles commonly used for balconies can be installed.

- Slab thickness 16 cm or more (14 cm or more in the case of prefabricated concrete members)
- Used with Protective grating XP, guardrail boards or scaffold tubes
- Anchoring with Bridge edge beam anchor 15.0

Practical example



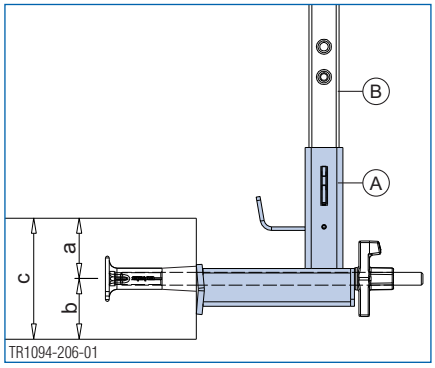
View from below

A	Balcony adapter XP
B	Handrail post XP 1.20m
C	e.g. Protective grating XP 2.70x1.20m
D	Floor-slab

Please note:

- Minimum concrete strength required: B10
- Minimum anchor distance from edge vertically: 8 cm
- Minimum anchor distance from edge, horizontally (at the corner): 25 cm

Close-up:



a ... 8 cm
b ... ≥ 8 cm
c ... ≥ 16 cm

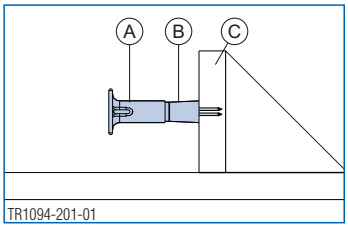
A	Balcony adapter XP
B	Handrail post XP 1.20m

Note:

When using pre-cast concrete members, dimension **a** can be reduced to 6 cm if necessary (slab thickness **c** 14 cm).

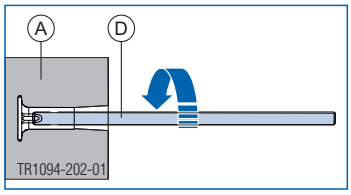
Assembly

➤ Position the Bridge edge beam anchor 15.0 with the Nailing cone 15.0 on the stop-end formwork and embed them in the concrete.



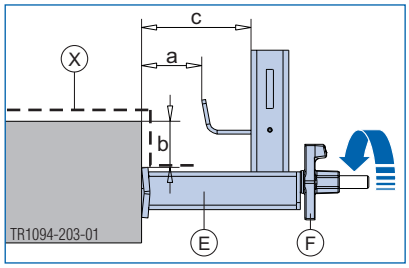
A	Bridge edge beam anchor 15.0
B	Nailing cone 15.0
C	Formwork sheeting of the stop-end formwork

➤ Remove the Nailing cone 15.0 and screw the Tie rod 15.0 into the bridge edge beam anchor (0.50m).



A	Bridge edge beam anchor 15.0
D	Tie rod 15.0 0.5m

➤ Push the Balcony adapter XP onto the tie rod as far as the floor-slab and tighten it using the Wing nut 15.0.



a ... Space for mounting the cover angle: 8 cm
b ... Space for mounting the cover angle: 5 cm
c ... 14.4 cm

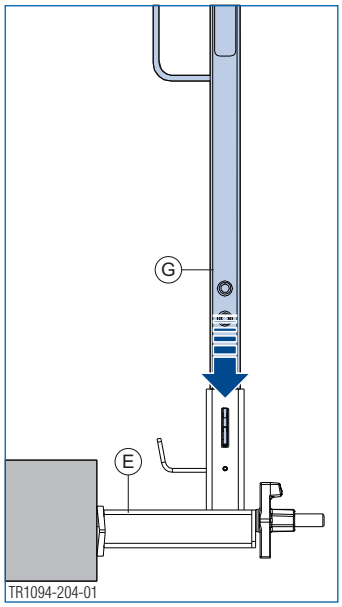
E	Balcony adapter XP
F	Wing nut or Super plate 15.0
X	Cover angle for balcony

Make sure that the Balcony adapter XP is secure!

Note:

Use timber on site to close the gap between the concrete and the railing. The timber may only be removed when work is carried out on the cover angle.

➤ Push on the Handrail post XP 1.20m until it locks ('Easy-Click' function).



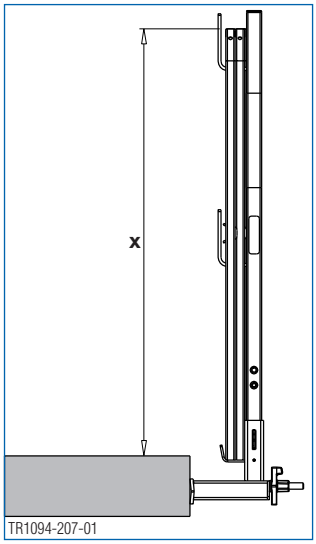
E Balcony adapter XP

G Handrail post XP 1.20m

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

Depending on barrier type, barrier height **x** is as follows:

- Protective grating XP: 113 cm
- Scaffold tubes: 107 cm
- Guardrail boards 15 cm: 118 cm

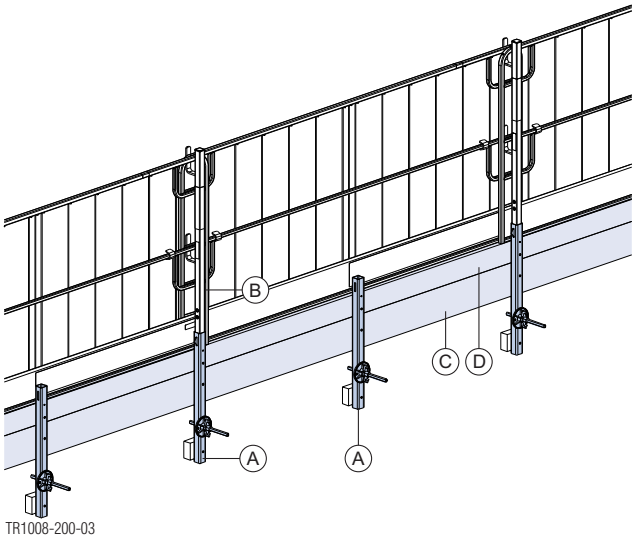


with Floor end-shutter profile XP

The Floor end-shutter profile XP is used for fast, safe forming of slab stop-ends.

- For slab thicknesses of up to 30 cm
- Slabs can be end-shuttered with either boards or formwork sheeting.

Practical example



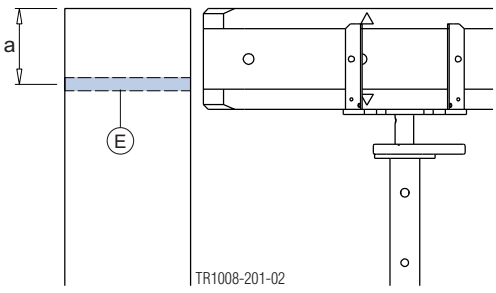
A	Floor end-shutter profile XP
B	Handrail post XP 1.20m
C	End-shuttering (5x20 cm board)
D	Slab stop-end (5x13 cm board)

Assembly

NOTICE

- If no fall protection (such as a facade scaffold or platform) is in place when this item is being mounted or dismounted, a personal fall-arrest system (PFAS) must be used (e.g. personal fall-arrest set).
- Suitable anchorage points must be defined by a skilled person appointed by the contractor.
- Only fix the connectors to components that can reliably transfer the forces involved.

➤ Provide a suitable tie-hole in the concrete wall for a Tie rod 15.0.

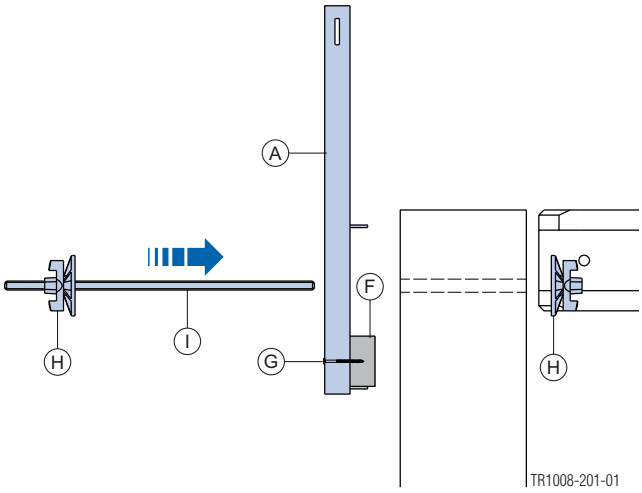


a ... 15 cm

E	Prepared or subsequently drilled tie-hole

➤ Place a 5 x 10 cm spacer board on the appropriate bracket of Floor end-shutter profile XP and secure it to the Floor end-shutter profile XP.

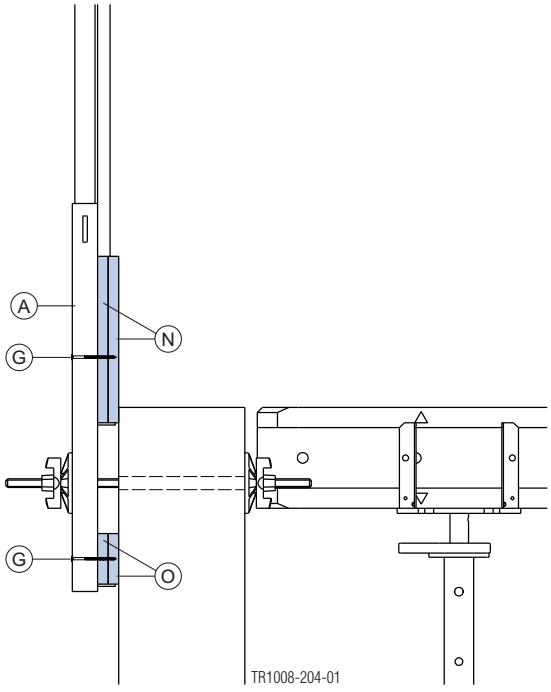
➤ Mount the Floor end-shutter profile XP to the concrete wall with a Tie rod 15.0 and 2 Super plates 15.0, but do not tighten these yet.



A	Floor end-shutter profile XP
F	Spacer board (5 x 10 cm)
G	Screw (site-provided) to fix the spacer board in position
H	Super plate 15.0
I	Tie rod 15.0

➤ Place a 5 x 20 cm + 5 x 13 cm cm board (or a 5 x 33 cm board) onto the top bracket of the Floor end-shutter profile XP, and fix them onto the Floor end-shutter profile XP with screws.

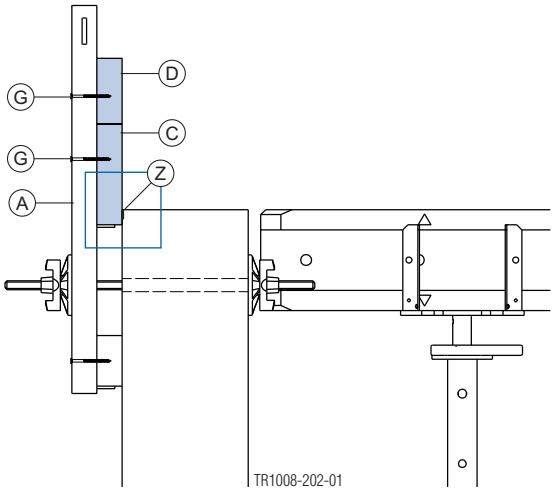
The slabs can also be end-shuttered with (doubled-up) Doka formwork sheets 3-SO 21mm.

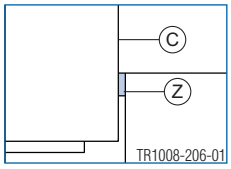


A	Floor end-shutter profile XP
G	Screw (site-provided) to fix the spacer board in position
N	2 Doka formwork sheets 3-SO 21mm (33 cm high)
O	2 Doka formwork sheets 3-SO 21mm (10 x 10 cm)

➤ Then pull the Floor end-shutter profile XP, with the boards mounted to it, tightly against the concrete wall.

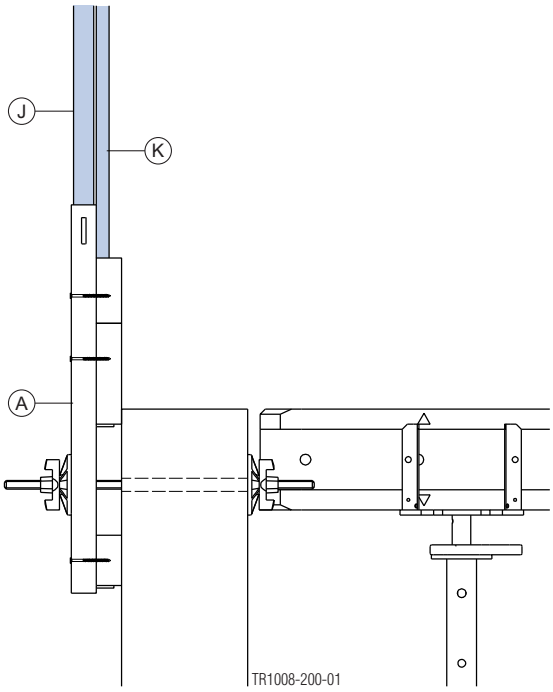
Note:
The Sealing tape KS at the slab stop-end (board 5 x 20 cm) is necessary and it prevents the escape of cement slurry (possible bending of the slab stop-end of max. 3 mm taken into account).





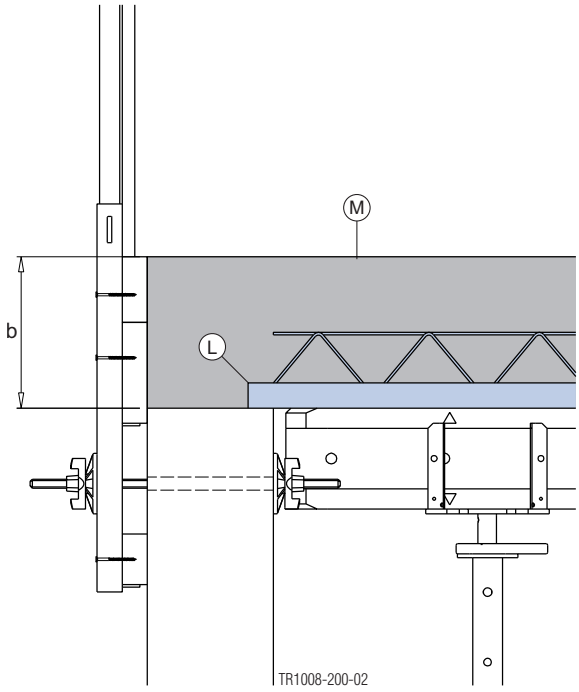
A Floor end-shutter profile XP
C Slab stop-end (5 x 20 cm board)
D Slab stop-end (5 x 13 cm board)
G Screw (site-provided) to fix the spacer board in position
Z Sealing tape KS 10x3mm 10m

➤ Push a Handrail post XP 1.20m onto the Floor end-shutter profile XP until it locks ('Easy-Click' function).
➤ Hook in a Protective grating XP 2.70x1.20m.



A Floor end-shutter profile XP
J Handrail post XP 1.20m
K Protective grating XP 2.70x1.20m

Practical example with slab made of prefabricated concrete members, slab thickness 30 cm



b ... slab thickness max. 30 cm

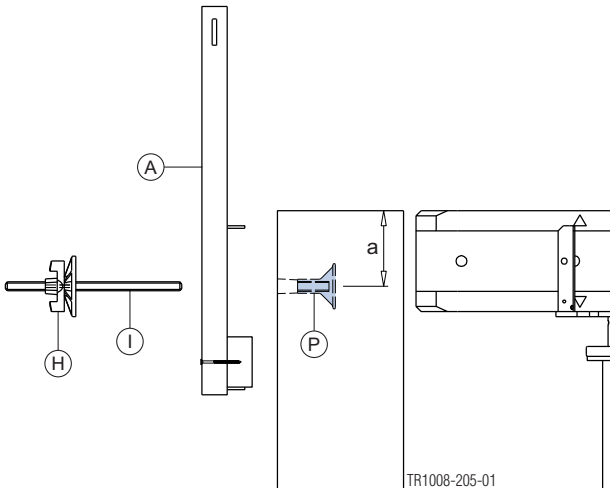
L Slab made of prefabricated concrete members
M Slab (cast-in-place concrete)

Alternative anchoring methods

2 possibilities:

- The Floor end-shutter profile XP can also be fixed to the wall with a Bridge edge beam anchor, tie rod and super plate (single-sided anchorage).
- Any other type of anchorage which ensures that the forces occurring are safely transferred.

  Follow the manufacturers' applicable fitting instructions.



a ... 15 cm

A	Floor end-shutter profile XP
H	Super plate 15.0
I	Tie rod 15.0
P	Bridge edge beam anchor 15.0

Max. tensile force allowed to occur in the anchorage: 11 kN

with Step bracket XP

When the Step bracket XP is used, tiles or flagstones which project by up to 4 cm can be laid on the steps without making it necessary to remove the guard rails.
Barrier with scaffold tubes or guardrail boards possible.

The Step bracket XP can also be used for horizontal barriers at the slab edge. In this case Protective grating XP can also be used.

Follow the 'Doka express anchor 16x125mm' fitting instructions or the fitting instructions for the alternative anchor-bolt!

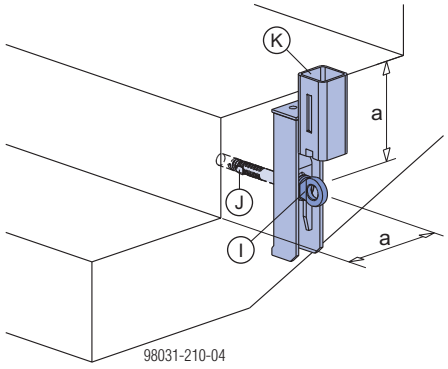
NOTICE

A board-smooth concrete surface is needed for anchoring the Step bracket XP.

➤ Fix the Step bracket XP using a Doka express anchor 16x125mm or an alternative anchor-bolt (M16 at max.) with a minimum clamping length of 3 cm (e.g. Hilti push-in anchor M12x50).

Required minimum tightening torque of Doka express anchor 16x125mm: 120 Nm (corresponds to approx. 25 kg with a 50 cm extension)

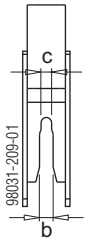
Tighten the bolted joints regularly (depending on the stresses to which they are subjected).



a ... distance from edge min. 15 cm (with Doka-Express anchor 16x125mm)

I	Doka express anchor 16x125mm
J	Doka coil 16mm
K	Step bracket XP

Holes in the Step bracket XP



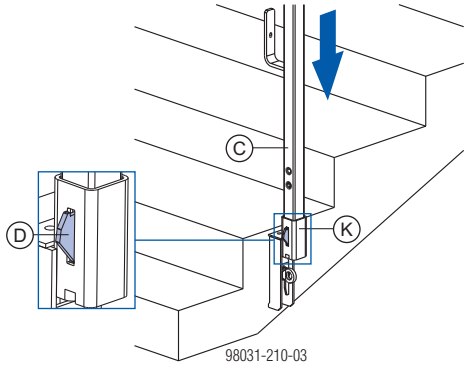
b ... 18 mm (for Doka express anchor 16x125mm)
c ... 14 mm (for alternative anchor-bolt)

The handrail-post holder must be facing towards the outside of the stairway.

Easier fixing method:

➤ Pre-mount a Doka express anchor 16x125mm, fit the Step bracket XP onto it and tighten.

➤ Push on the Handrail post XP 1.20m until it locks ('Easy-Click' function).



C	Handrail post XP 1.20m
D	Retainer
K	Step bracket XP

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

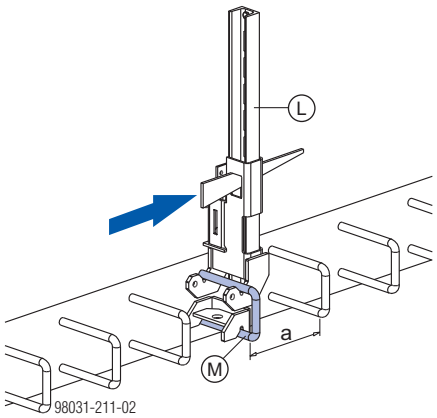
➤ Mount the safety barriers (see the section headed 'Mounting the safety barriers').

with Bridge-deck clamp XP

➤ To adjust the clamping range of the Bridge-deck clamp XP, first take the wedge out of the wedge-slot.
➤ Hook both clamping plates of the Bridge-deck clamp XP into the reinforcement hoop, and wedge them in place firmly.

The Bridge-deck clamp XP must be resting against the structure.

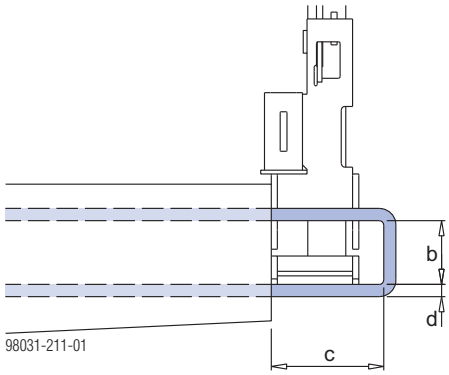
➤ Hammer in the wedge until the hammer rebounds.



a ... clear gap between the reinforcement hoops min. 13 cm

L Bridge-deck clamp XP
M Reinforcement hoop

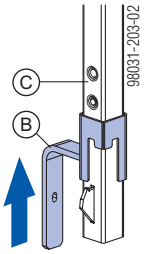
Dimensions of the reinforcement hoop



b ... 12 cm - 35 cm
c ... min. 12 cm
d ... min. 1 cm

The handrail-post holder must be facing towards the inside of the building.

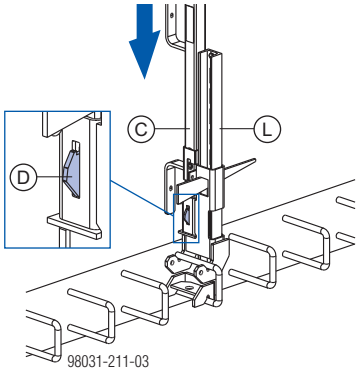
➤ Working from below, push the Toeboard holder XP 1.20m onto the Handrail post XP 1.20m (not needed when using the Protective grating XP).



B Toeboard holder XP 1.20m
C Handrail post XP 1.20m

The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ Push on the Handrail post XP 1.20m until it locks ("Easy-Click" function).



C Handrail post XP 1.20m
D Locking mechanism
L Bridge-deck clamp XP

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

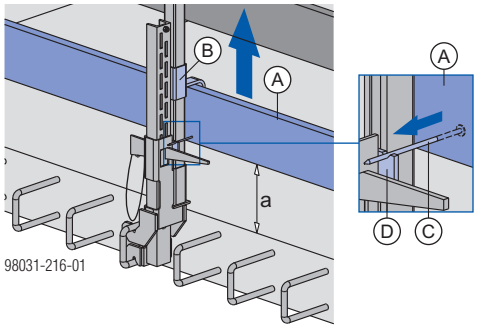
➤ Mount the safety barriers (see the section headed "Mounting the safety barriers").

Raising the safety barrier

Note:
Lifting and fixing the toeboard is only possible in combination with the Bridge-deck clamp XP.

WARNING
Because the Protective grating XP is now raised, objects can fall off the edge of the structure.
➤ Take any loose items away from the edge.
➤ Only raise the grating very briefly, e.g. while carrying out necessary work on the slab edge.

➤ Raise the toeboard and Toeboard holder XP.
➤ Fix the toeboard with a nail resting on the support plate.



a ... 15 cm

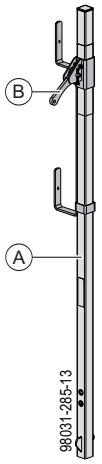
A Toeboard
B Toeboard holder XP
C Nail
D Support plate

Handrail post XP flex 1.60m and Railing holder XP flex

The post consists of the Handrail post XP flex 1.60m and the Railing holder XP flex for attachment of the safety barriers.

Possible types of safety barrier:

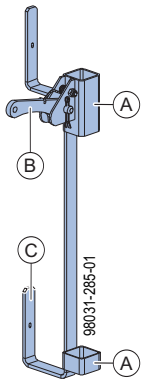
- Protective grating XP 1.20m
- Protective barrier Z 1.20m
- Guardrail boards



A Handrail post XP flex 1.60m
B Railing holder XP flex

Railing holder XP flex for height adjustment

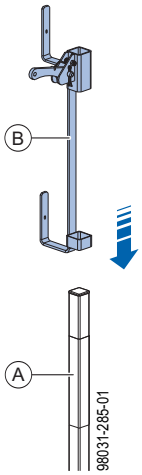
The handrail post XP flex consists of a guide with lever and 2 railing shackles for steplessly height-adjustable attachment of the safety barriers.



A Guide
B Lever
C Railing shackle

Assembly

➤ Push the railing holder on to the handrail post.

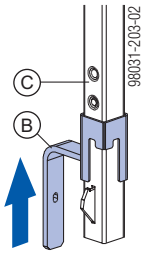


A Handrail post XP flex 1.60m
B Railing holder XP flex

NOTICE

The procedure for installing the Handrail post XP flex 1.60m is the same as that for installing the Handrail post XP 1.20m.

➤ Working from below, push the toeboard holder onto the handrail post (not needed when using the Protective grating XP).

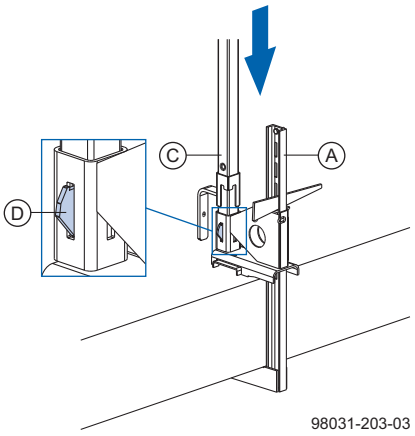


B Toeboard holder XP 1.20m
C Handrail post XP flex 1.60m

How to install, for example with the Railing clamp XP 40cm:

➤ Push the handrail post into the connector until the locking mechanism engages ('Easy-Click' function).

Practical example:



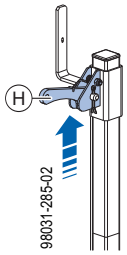
A Railing clamp XP 40cm
C Handrail post XP flex 1.60m
D Locking mechanism

- The locking mechanism must engage.
- The railing shackles must be facing towards the inside of the building.

➤ Mount the safety barriers (see the section headed 'Mounting the safety barriers').

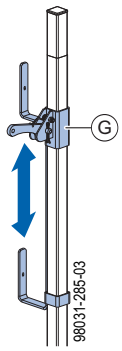
Height adjustment

➤ Lift the lever to unlock.



H Lever of Railing holder XP flex (open)

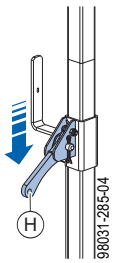
➤ Adjust the height of the railing holder.



G Railing holder XP flex

NOTICE
Do not use a hammer to close the lever!

➤ Close the lever hand-tight.



H Lever of Railing holder XP flex (closed)

Practical examples

Note:
For practical examples see the section headed ‘Safety barriers at slab edge of precast concrete floors’

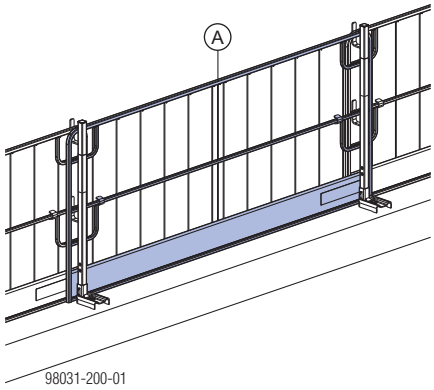
Installing the safety barriers

with Protective gratings XP

Product features:

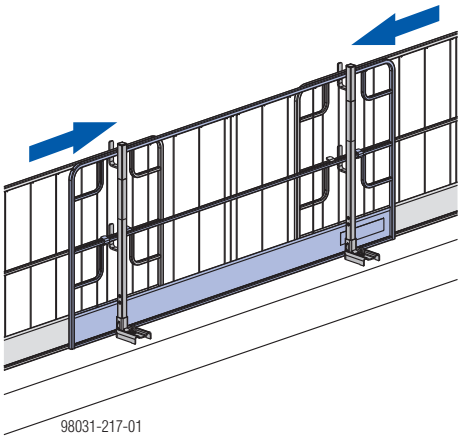
- Integral toeboard
- Individual Protective gratings XP can easily be taken out and slotted back into place for short-term jobs such as handling materials and equipment.
- Integrated U-bracket for raising the grating, e.g. when work needs to be performed at the slab edge
- Available in the widths 2.70 m, 2.50 m, 2.00 m and 1.20 m.

➤ Hang the Protective grating XP into place in all 4 Handrail-post plates.



A e.g. Protective grating XP 2.70x1.20m

- If the handrail posts are closer together, the Protective gratings XP can also be overlapped further.



Raising the Protective grating XP

Required spacing of the handrail posts: 2.50 m (with Protective grating XP 2.70x1.20m)

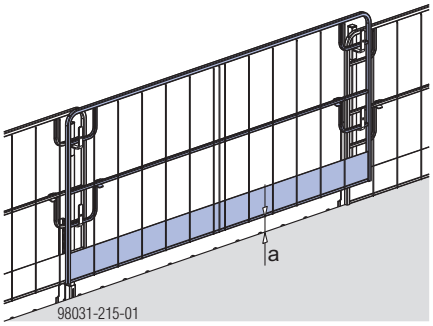
WARNING

Because the Protective grating XP is now raised, objects can fall off the edge of the structure.

➤ Take any loose items away from the edge.

➤ Only raise the grating very briefly, e.g. while carrying out necessary work on the slab edge.

➤ Raise the Protective grating XP into the position shown here.



a ... max. 15 cm

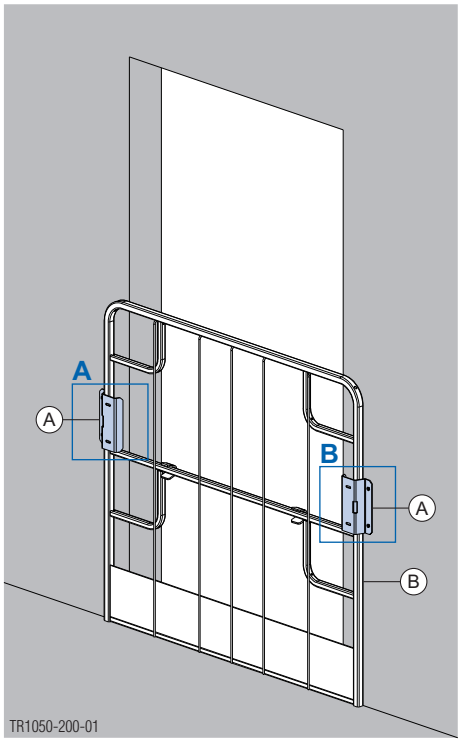
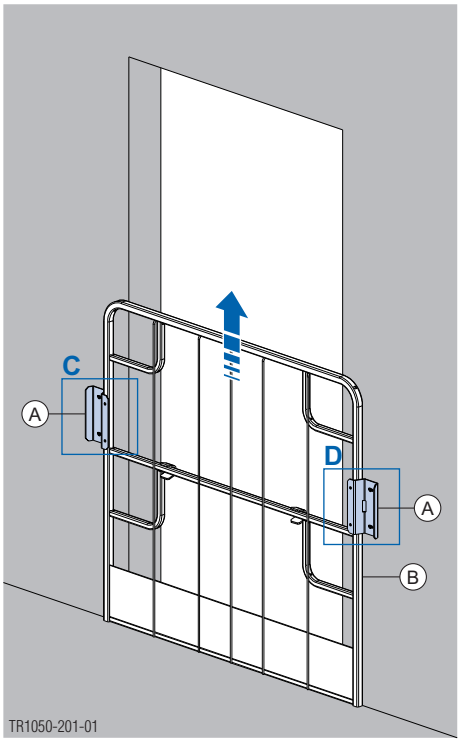
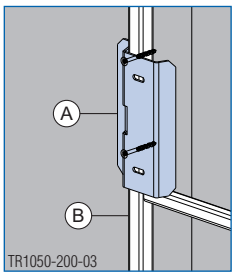
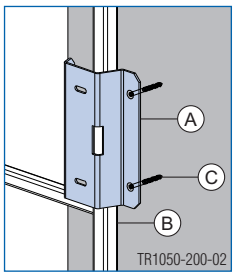
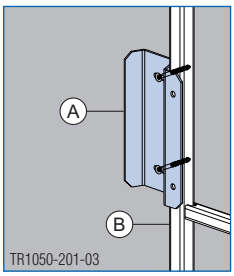
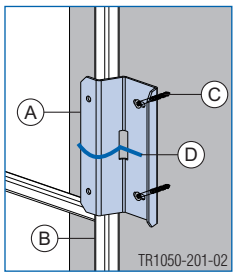
Protective grating holder XP

The Protective grating holder XP is used to affix the Protective grating XP to walls with sufficient load-bearing strength, e.g. as fall protection for door openings, shafts and balconies. Protective grating XP 1.20x1.20m is eminently suitable for this.

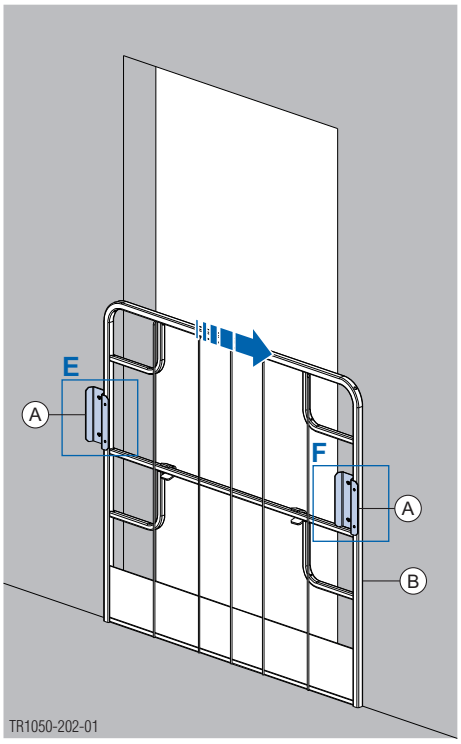
Depending on how they are installed, the Protective grating holders XP can be used to install protective gratings as quickly removable or semi-permanent guardrail systems.

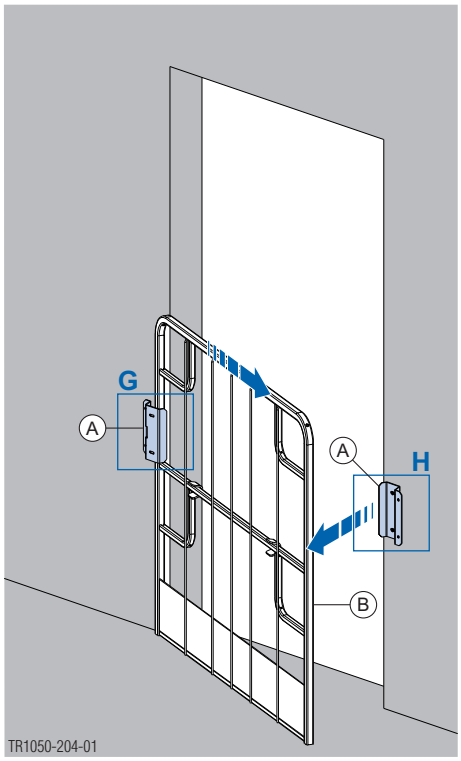
WARNING

- The Protective grating holders XP must always be installed in such a way that if load is applied, the Protective grating XP is supported by the building's structure.
- Installation versions B, C and D permit quick temporary removal and the Protective grating XP must be secured to the Protective grating holders XP with cable ties (holes provided for the purpose) in such a way that the grating cannot be inadvertently opened or pushed aside.
- If Protective gratings XP are removed, use personal protective equipment as applicable to prevent falls, for example a personal fall-arrest set can be used for this purpose.

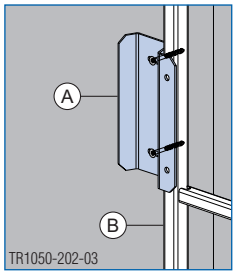
Version A	Version B
The Protective grating XP can be secured semi-permanently to the masonry wall with the Protective grating holders XP.	The Protective grating XP can be lifted up and temporarily removed.
	
Close-up A 	**Close-up B** 
Close-up C 	**Close-up D** 

Version C	Version D
The Protective grating XP can be pushed aside and temporarily removed.	The Protective grating XP can be pushed aside (disengages after being moved approx. 2 cm, see Close-up I) and then swung inward (door function).

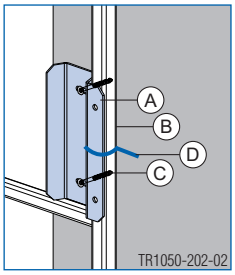




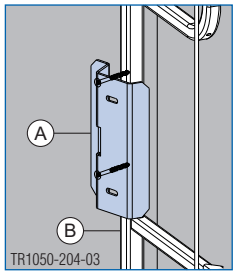
Close-up E



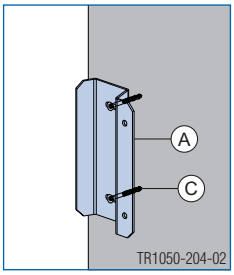
Close-up F



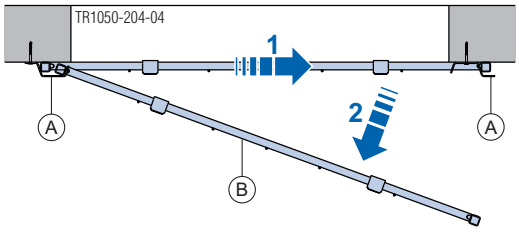
Close-up G



Close-up H



Close-up I



A Protective grating holder XP

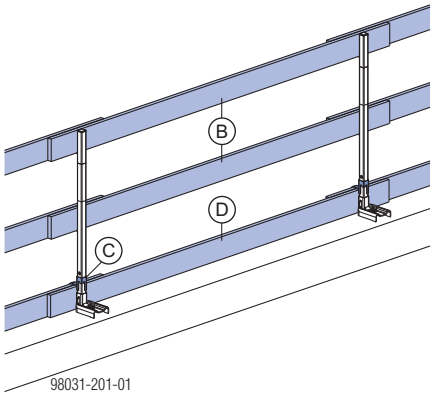
B e.g. Protective grating XP 1.20x1.20m

C Wall plugs and screws (diameter 6 mm) or bolt-firing tool (comply with manufacturer's instructions and fitting instructions)

D Cable tie

with guard-rail boards

- ➤ Place guardrail boards on the handrail-post plates and secure them with nails.
- ➤ Raise the Toeboard holder XP, place the toeboard up against the Handrail post XP and lower the Toeboard holder XP onto it.
- ➤ Secure the toeboard with nails.



B Guardrail boards
C Toeboard holder XP
D Toeboard

with Scaffold-tube holder D34mm/48mm

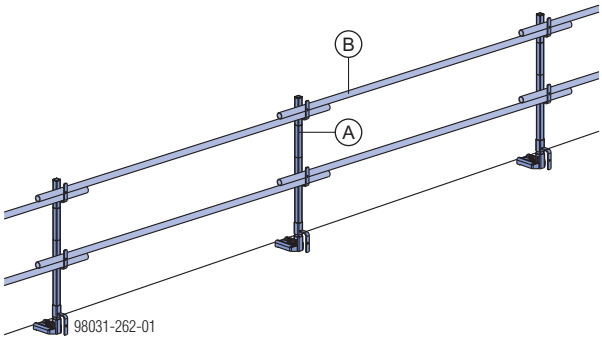
The Scaffold tube holder D34/48mm makes it possible to attach scaffold tubes to the Handrail post XP.

- Can be used for both D34mm and D48mm scaffold tubes.
- Allows scaffold tubes to be fixed in the diagonal (e.g. beside stairways).
- Fixes both scaffold tubes when tubes are arranged in parallel.

NOTICE

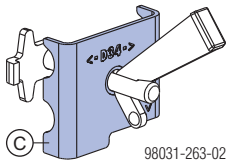
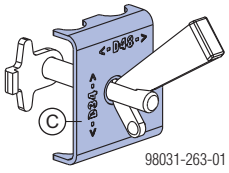
- ➤ A scaffold-tube holder must be mounted as an anti-liftout guard on every handrail-post plate.
- ➤ Every scaffold tube must be fixed with the wedge of the scaffold-tube holder, to prevent it slipping sideways.

- ➤ Place the scaffold tubes into the handrail-post plates of the Handrail posts XP.



A Handrail post XP 1.20m
B Scaffold tube D34mm or D48mm

- ➤ Turn the clamping plate of the scaffold-tube holder into the correct position (as shown by the punched direction-marks for the respective tube diameter).

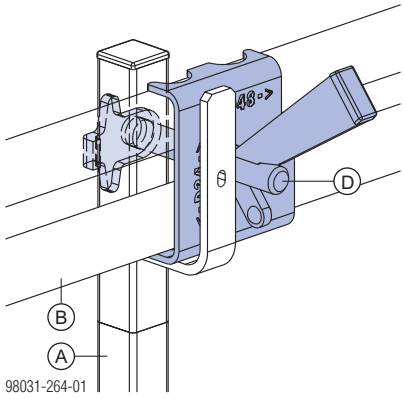
Position of the clamping plate	
on D34mm scaffold tubes	on D48mm scaffold tubes
	

Note on D34mm scaffold tubes:

- If the clamping plate is rotated 180° (so that the 'heel' is pointing upwards), the vertical position of the D34mm scaffold tube can be changed by 14 mm. This makes it possible to obtain the 47 cm gap permitted in the vertical between the waist-level guard rail and the intermediate guard rail.
- The permitted influence widths must be specially dimensioned, as a function of the wall thickness and the strength of the material.

C Clamping plate of the Scaffold-tube holder D34/48mm

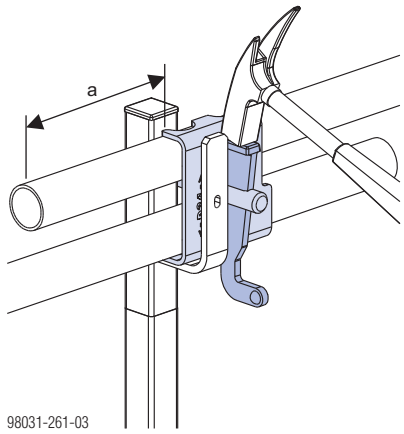
- ➤ Pass the scaffold-tube holder between the scaffold tubes and hang it into place at the back of the Handrail post XP.



A Handrail post XP 1.20m

B Scaffold tube D34mm or D48mm
D Scaffold tube holder D34/48mm

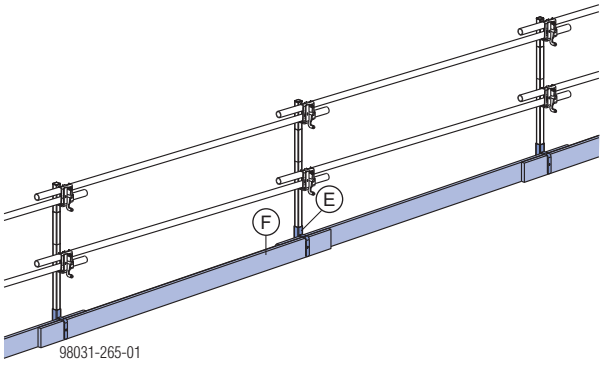
➤ Wedge the scaffold-tube holder firmly into place.



a ... min. excess length 10 cm

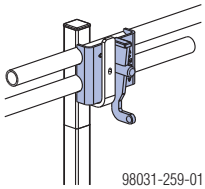
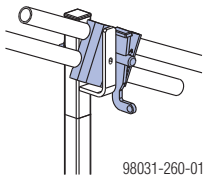
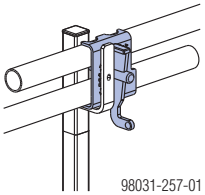
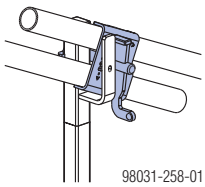
➤ Raise the Toeboard holder XP, place the toeboard up against the Handrail post XP and lower the Toeboard holder XP onto it.

➤ Secure the toeboard with nails.



E Toeboard holder XP
F Toeboard

Practical examples

Scaffold tubes	Scaffold-tube arrangement	
	Straight	Angled
D34mm	 98031-259-01	 98031-260-01
D48mm	 98031-257-01	 98031-258-01

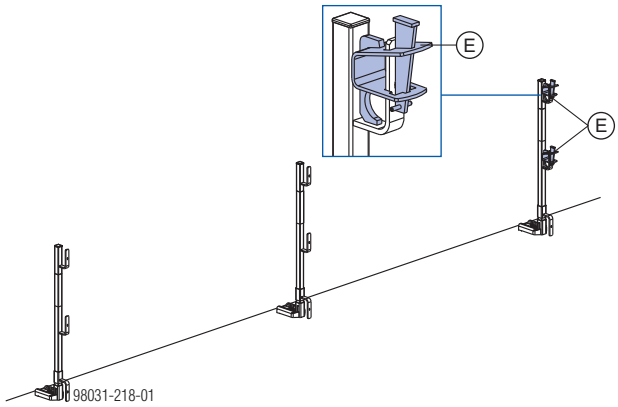
with Scaffold tube holder D48mm

NOTICE

➤ A scaffold-tube holder must be mounted as an anti-liftout guard on every handrail-post plate.

➤ Every scaffold tube must be fixed with the wedge of the scaffold-tube holder, to prevent it slipping sideways.

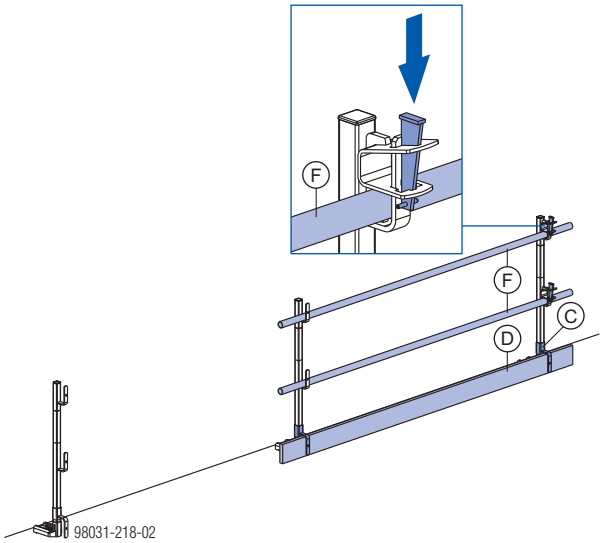
➤ Push the Scaffold tube holder D48mm onto the handrail post plate.



E Scaffold tube holder D48mm

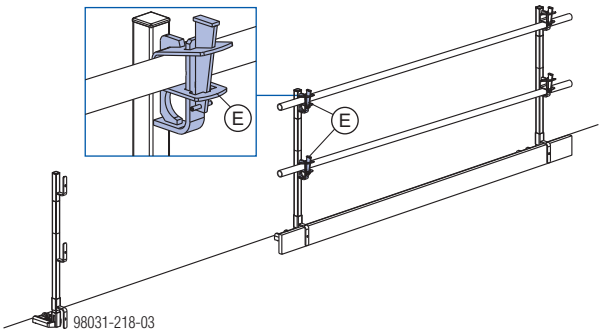
➤ Insert scaffold tubes through the Scaffold-tube holders D48mm and wedge them in place firmly.

➤ Raise the Toeboard holder XP, place the toeboard up against the Handrail post XP and lower the Toeboard holder XP onto it.



C Toeboard holder XP
D Toeboard
F Scaffold tube

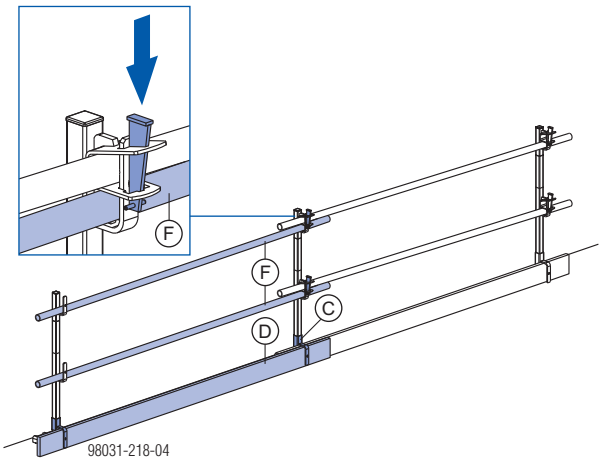
➤ Push a Scaffold tube holder D48mm onto the other end of each scaffold tube and fix it onto the handrail post plate.



E Scaffold tube holder D48mm

➤ Insert the scaffold tubes for the next section through the Scaffold-tube holders D48mm and wedge them in place firmly.

➤ Raise the Toeboard holder XP, place the toeboard up against the Handrail post XP and lower the Toeboard holder XP onto it.



C Toeboard holder XP

D Toeboard

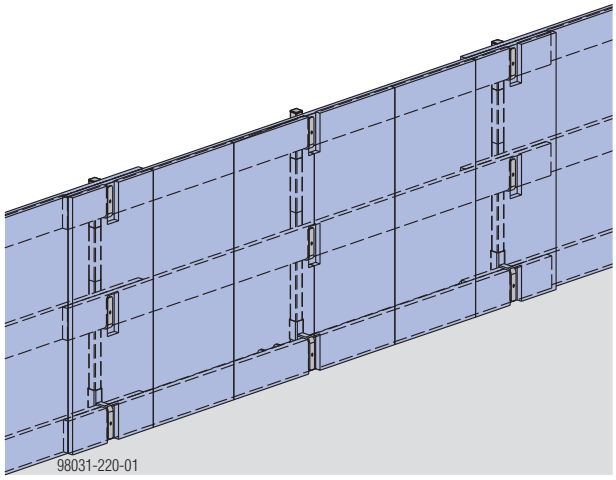
F Scaffold tube

➤ From now on, repeat Steps 4 to 6 until you reach the end of the safety barrier.

➤ At the end of the safety barrier, fix the scaffold tubes with the wedges of the Scaffold tube holders D48mm.

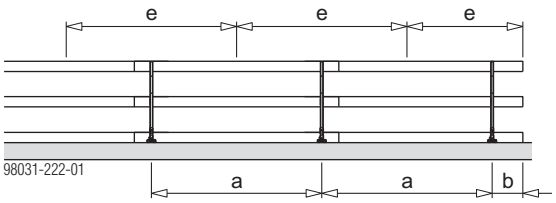
with gap-free boarding

Field-built solution using e.g. Doka formwork sheets.



Structural design

General notes on structural design



a ... Span
b ... Cantilever
e ... Influence width

NOTICE

A fundamental distinction must be made between the span **(a)** and the influence width **(e)**:

- The span is the distance between the handrail posts.
- The permitted influence width of a handrail post is stated in the respective tables.
- The actual influence width can only be determined by calculation, and corresponds to roughly the spacing 'a' between the handrail posts, and in the cantilever-arm zone to around b + a/2.

- The span **(a)** of the handrail posts is roughly equal to the influence width **(e)** if
  - they are evenly spaced
  - the guardrail boards are either continuous or are jointed at the handrail posts, and
  - there are no cantilevering projections.
- The wind conditions likely to be encountered in Europe, in accordance with EN 13374, are largely recognised by the peak velocity pressure q=0.6 kN/m² (highlighted grey in the tables).

Note:

The plank and board thicknesses stated comply with the EN 338 C24 timber.

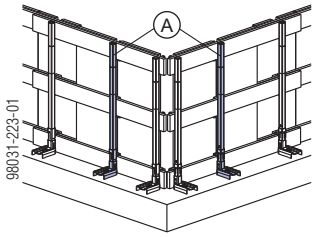
Observe all national regulations applying to deck and guardrail boards.

Permitted cantilever (b) of edge-protection components

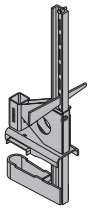
Edge-protection component	Permitted cantilever			
	Peak velocity pressure q [kN/m²]			
	0.2	0.6	1.1	1.3
Protective grating XP 2.70x1.20m	0.6 m	0.6 m	0.4 m	0.1 m
Guardrail board 2.5 x 12.5 cm	0.3 m			
Guardrail board 2.4 x 15 cm	0.5 m			
Guardrail board 3 x 15 cm	0.8 m			
Guardrail board 4 x 15 cm	1.4 m			
Guardrail board 3 x 20 cm	1.0 m			
Guardrail board 4 x 20 cm	1.6 m			
Guardrail board 5 x 20 cm	1.9 m			
Scaffold tube 48.3mm	1.3 m			

NOTICE

When gap-free boarding is used, 2 extra Handrail posts XP **(A)** must be mounted at the corners.



Railing clamp XP 40cm Railing clamp XP 85cm



Clamped to concrete

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective gratings XP 2.70x1.20m	Guardrail boards						Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15cm	3 x 15cm	4 x 15cm	3 x 20cm	4 x 20cm	5 x 20cm	
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4	5.0	1.8
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4	5.0	1.3
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3	5.0	0.7
1.3		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.4	0.6

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Screw-on shoe XP

Anchored in B10 grade concrete

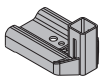
Distance of anchorage point from edge: min. 10 cm

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective grating XP 2.70x1.20m	Guardrail boards							Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.8	1.9	2.7	3.0	2.2	2.2	2.2	5.0	1.2
0.6		1.8	1.9	2.7	2.8	2.0	2.0	2.0	5.0	1.1
1.1		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.3	0.6
1.3		1.6	1.3	1.3	1.3	0.9	0.9	0.9	3.7	0.5

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Handrail-post shoe XP



Anchored by Doka express anchor 16x125mm in "green" (new) concrete

Characteristic cube compressive strength of the new concrete ($f_{ck,\ cube}$): ≥ 14 N/mm²

Distance of anchorage point from edge: min. 15 cm

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective grating XP 2.70x1.20m	Guardrail boards							Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4	5.0	1.8
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4	5.0	1.3
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3	5.0	0.7
1.3		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.4	0.6

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Actual tensile force in Express anchor:
E_d = 13. kN (F = 9.1 kN)

Anchored with an alternative anchor-bolt, e.g. Hilti push-in anchor M12x50, in C20/25 grade concrete

Distance of anchor from edge: min. 12 cm, structural element thickness 15 cm or more

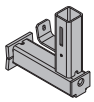
Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective grating XP 2.70x1.20m	Guardrail boards							Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.8	1.9	3.0	3.0	2.0	2.0	2.0	5.0	1.1
0.6		1.8	1.9	2.7	2.7	1.9	1.9	1.9	5.0	1.0
1.1		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.1	0.5
1.3		1.5	1.2	1.0	1.2	0.9	0.9	0.9	3.5	0.5

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Required safe working load of alternative anchor-bolts:
R_d ≥ 9.9 kN (F_{perm} ≥ 6.6 kN)
Follow the manufacturers' applicable fitting instructions.

Balcony adapter XP



Anchored in B10 grade concrete with Bridge edge beam anchor 15.0

Distance of anchor from edge: min. 8 cm, structural element thickness 16 cm or more (14 cm or more in the case of prefabricated concrete members)

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.0	3.0	5.0
0.6		1.8	1.9	2.7	3.2	2.3	2.3	2.3	5.0
1.1		1.8	1.7	1.7	1.7	1.2	1.2	1.2	4.8
1.3		1.7	1.5	1.5	1.5	1.0	1.0	1.0	4.0

Floor end-shutter profile XP

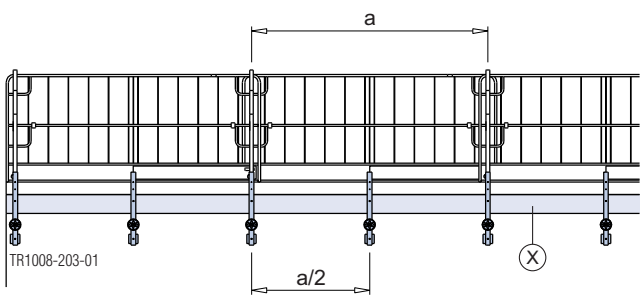
NOTICE

- Allowance must be made for the permitted cantilever of the edge protection and of the end-shuttering.
- Points to observe when two Formwork sheets 3-SO 21mm are used as the end-shuttering:
  - Permitted span between Floor end-shutter profiles XP: 1.00 m
  - Use threaded fasteners to make cantilever arms flexurally rigid.
- The use of alternative formwork sheets as slab end-shuttering **(X)** must be verified for each project separately.

Max. tensile force occurring in the anchorage with alternative means of anchorage, for example with Bridge edge beam anchor 15.0: 11 kN

Follow the manufacturers' applicable fitting instructions.

With additional Floor end-shutter profile XP

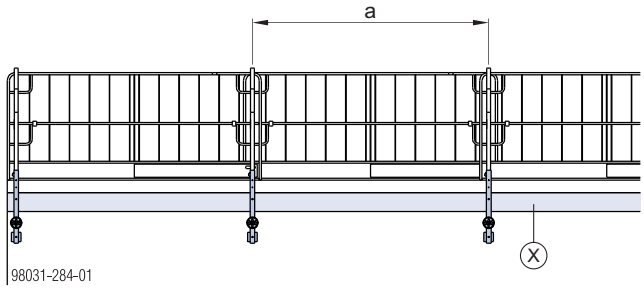


a ... span

X Slab stop-end

Peak velocity pressure q [kN/m²]	Permitted span (a) [m] of Handrail-posts XP 1.20m								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2,5 x 12.5 cm	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm
0.2	2.5	1.8	1.9	2.5	2.5	2.5	2.5	2.5	2.5
0.6		1.8	1.9	2.5	2.5	2.5	2.5	2.5	2.5
1.1		1.8	1.9	2.0	2.0	1.5	1.5	1.5	2.5
1.3		1.8	1.7	1.7	1.7	1.2	1.2	1.2	2.5

Without additional Floor end-shutter profile XP

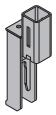


a ... span

X Slab stop-end

Peak velocity pressure q [kN/m²]	Permitted span (a) [m] of Handrail-posts XP 1.20m								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm	2,4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm
0.2	2.4	1.8	1.9	2.1	2.1	1.9	1.9	1.9	2.5
0.6		1.8	1.9	2.1	2.1	1.9	1.9	1.9	2.5
1.1		1.8	1.9	2.0	2.0	1.5	1.5	1.5	2.5
1.3		1.8	1.7	1.7	1.7	1.2	1.2	1.2	2.5

Step bracket XP



Anchored by Doka Express anchor 16x125mm in C20/25 grade concrete

Distance of anchorage point from edge: min. 15 cm

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]							
	Protective grating XP 2.70x1.20m [2]	Guardrail boards						
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3
1.3		1.8	1.5	1.5	1.5	1.1	1.1	1.1

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] Use possible only at horizontal stop-ends at the slab edge.

Actual tensile force in Express anchor:
E_d = 15.1 kN (F = 10.1 kN)

Anchored with an alternative anchor-bolt, e.g. Hilti push-in anchor M12x50, in C20/25 grade concrete

Distance of anchorage point from edge: min. 12 cm

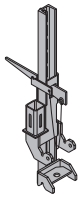
Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]							
	Protective grating XP 2.70x1.20m [2]	Guardrail boards						
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm
0.2	2.5	1.8	1.9	2.7	2.7	1.8	1.8	1.8
0.6		1.8	1.9	2.6	2.6	1.9	1.9	1.9
1.1		1.7	1.4	1.4	1.4	1.0	1.0	1.0
1.3		1.4	1.2	1.2	1.2	0.9	0.9	0.9

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] Use possible only at horizontal stop-ends at the slab edge.

Required safe working load of alternative anchor-bolts:
$R_d \geq 9.9$ kN ($F_{perm} \geq 6.6$ kN)
Follow the manufacturers' applicable fitting instructions.

Bridge-deck clamp XP



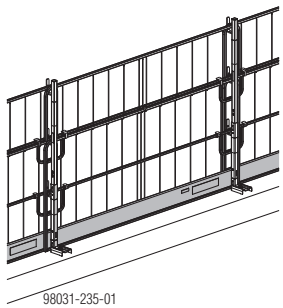
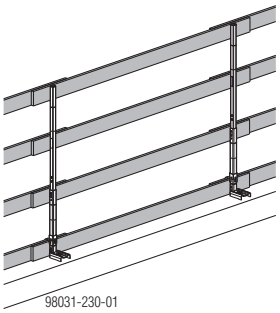
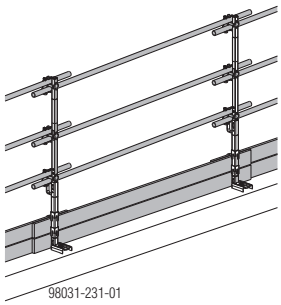
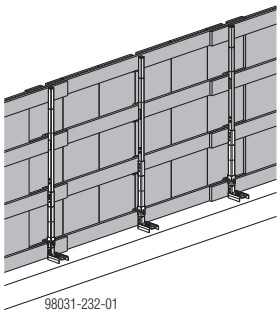
Fastened to reinforcement hoops

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards						Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	
0.2	2.5	1.8	1.9	2.7	3.0	2.2	2.2	2.2	5.0	1.2
0.6		1.8	1.9	2.7	2.8	2.0	2.0	2.0	5.0	1.1
1.1		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.3	0.6
1.3		1.6	1.3	1.3	1.3	0.9	0.9	0.9	3.7	0.5

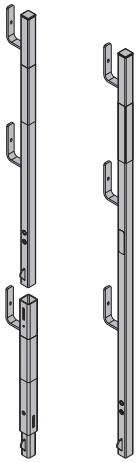
[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

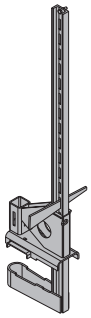
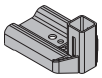
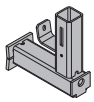
[2] with toeboard 5 x 20 cm

Edge protection on the structure – railing-height up to 1.80 m

Safety barriers	Protective grating XP	Guardrail boards	Scaffold tubes	Gap-free boarding
				
	Railing height: 170 cm	Railing height: 177 cm (with 15 cm wide guardrail boards)	Railing height: 167 cm	Railing height: 177 cm (with 15 cm wide guardrail boards)

Please note: With all these barrier variants, it is permissible to install netting to screen the crew from view and to prevent small items from falling. Statically, this is the equivalent of gap-free boarding. However, it is not permissible to use the Xsafe edge protection XP for stretching net systems as fall protection in accordance with EN 13374!

Handrail post XP 1.20m and Handrail post XP 0.60m or Handrail post XP 1.80m


Fixing devices	Railing clamp XP 40cm	Railing clamp XP 85cm	Handrail-post shoe XP	Balcony adapter XP
				
Areas of use	▪ Clamping range: 2 - 43 cm ▪ Fastened at end-face of concrete floor-slabs	▪ Clamping range: 2 - 85 cm ▪ Fastened to end-face of e.g. cantilevered parapets on bridges	▪ Floor-mounted on concrete floor-slabs	▪ End-face attachment for balconies
Anchorages	—	—	▪ with Doka express anchor 16x125mm	▪ with Bridge edge beam anchor 15.0

Installing the Handrail post XP

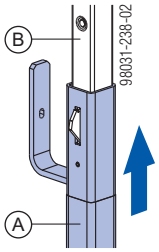
Handrail posts XP 1.20m and 0.60m

NOTICE

The basic features of the system (mounting method, safety barriers etc.) are the same as for railing-height 1.20 m.

Used with Protective gratings XP or guard-rail boards

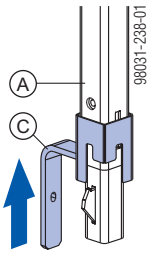
➤ Working from below, push the Handrail post XP 0.60m up into the Handrail post XP 1.20m until the locking mechanism engages (= "Easy-Click" function).



A Handrail post XP 0.60m
B Handrail post XP 1.20m

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Working from below, push the Toeboard holder XP 0.60m onto the Handrail post XP 0.60m (not needed when using the Protective grating XP).



A Handrail post XP 0.60m
C Toeboard holder XP 0.60m

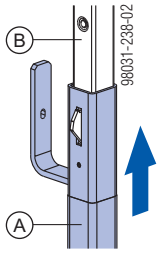
The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ The handrail post is fixed to the structure in the same way as for railing-height 1.20 m.

Used with scaffold tubes

Scaffold tube holder D34/48mm

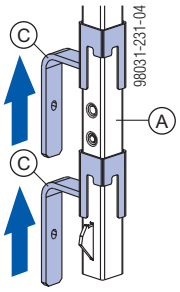
➤ Working from below, push the Handrail post XP 0.60m up into the Handrail post XP 1.20m until the locking mechanism engages (= "Easy-Click" function).



A Handrail post XP 0.60m
B Handrail post XP 1.20m

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Working from below, push 2 Toeboard holders XP 0.60m onto the Handrail post XP 0.60m.



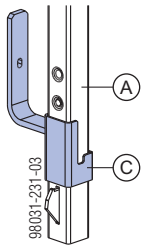
A Handrail post XP 0.60m
C Toeboard holder XP 0.60m

The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ The handrail post is fixed to the structure in the same way as for railing-height 1.20 m.

Scaffold tube holder D48mm

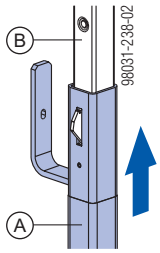
➤ Working from below, push a Toeboard holder XP 1.20m onto the Handrail post XP 1.20m.



A Handrail post XP 1.20m
C Toeboard holder XP 1.20m

The bracket of the toeboard holder must be pointing upward, facing the inside of the building.

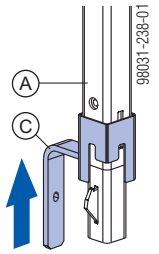
➤ Working from below, push the Handrail post XP 0.60m up into the Handrail post XP 1.20m until the locking mechanism engages (= "Easy-Click" function).



A Handrail post XP 0.60m
B Handrail post XP 1.20m

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Working from below, push the Toeboard holder XP 0.60m onto the Handrail post XP 0.60m (not needed when using the Protective grating XP).



A Handrail post XP 0.60m
C Toeboard holder XP 0.60m

The bracket of the toeboard holder must be pointing downward, facing the inside of the building.

➤ The handrail post is fixed to the structure in the same way as for railing-height 1.20 m.

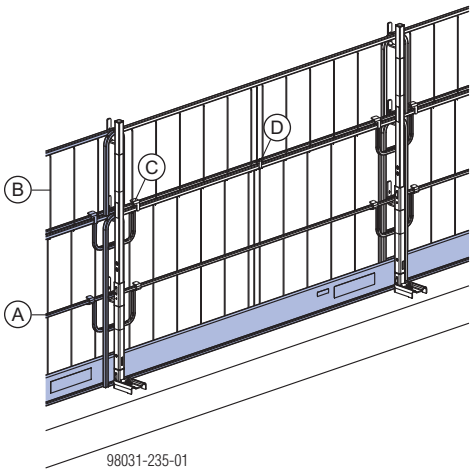
Handrail post XP 1.80m

- The procedure for installing the Handrail post XP 1.80m is the same as that for installing the Handrail post XP 1.20m.
- If other types of safety barrier are mounted instead of 'Protective gratings XP', Toeboard holders XP 1.20m have to be used as well.

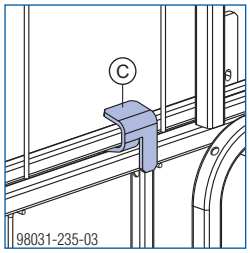
Installing the safety barriers

with Protective gratings XP (height 1.20m and 0.60m)

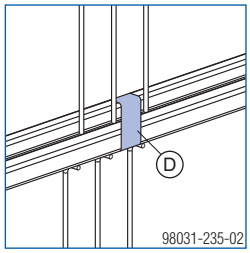
➤ Fit the Protective grating XP (height 1.20m) into the bottom 4 handrail-post plates.
➤ Fit the Protective grating XP (height 0.60m) into the two top handrail-post plates in such a way that the stacking stirrups are resting on the bottom protective grating.
➤ Tie the two protective gratings together with a Velcro® fastener.



Close-up of stacking stirrup



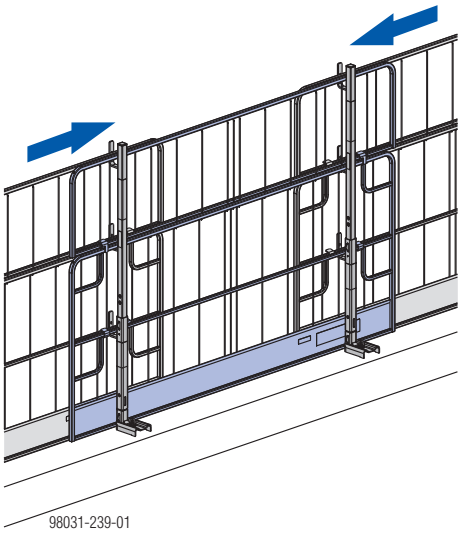
Close-up of Velcro® fastener



A	Protective grating XP (height 1.20m)
B	Protective grating XP (height 0.60m)
C	Stacking stirrup
D	Velcro fastener 30x380mm (included with Protective grating XP (height 0.60m))

Note:
It is not possible to raise the safety barrier as is the case with railing-height 1.20 m.

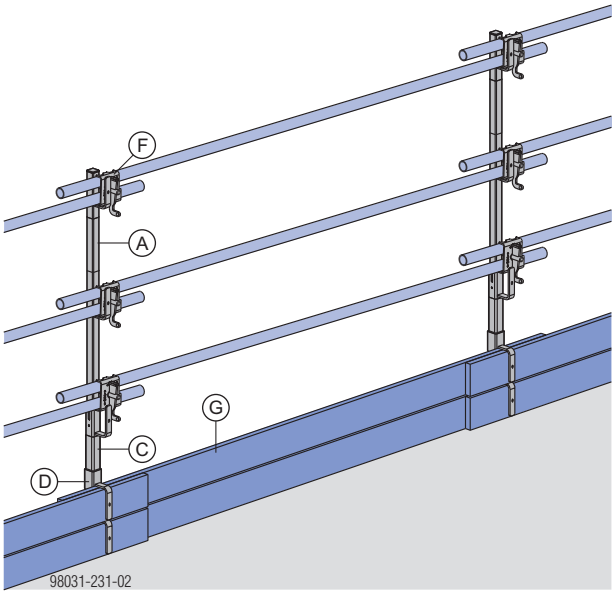
- If the handrail posts are closer together, the Protective gratings XP can also be overlapped further.



with guard-rail boards, scaffold tubes or gap-free boarding

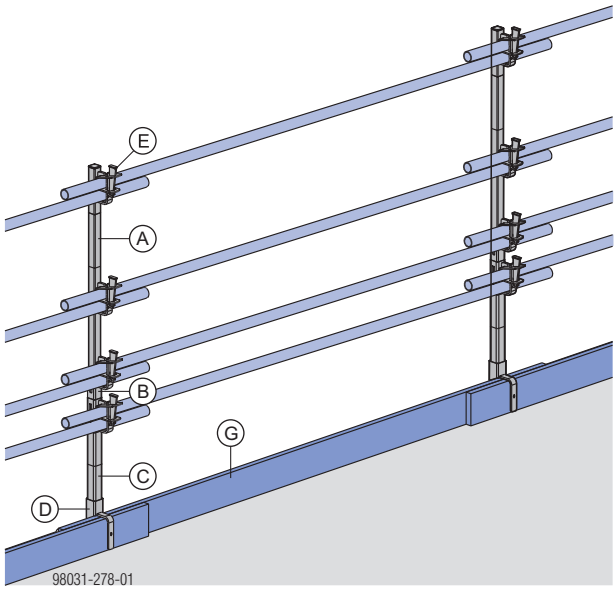
➤ The guard-rail boards, scaffold tubes or gap-free boarding are mounted in the same way as on railing-height 1.20 m.

Practical example with scaffold tubes and Scaffold tube holder D34/48mm



A	Handrail post XP 1.20m
C	Handrail post XP 0.60m
D	Toeboard holder XP 0.60m (2 needed for each handrail post)
F	Scaffold tube holder D34/48mm
G	Toeboard (2 planks above one another)

Practical example with scaffold tubes and Scaffold tube holder D48mm

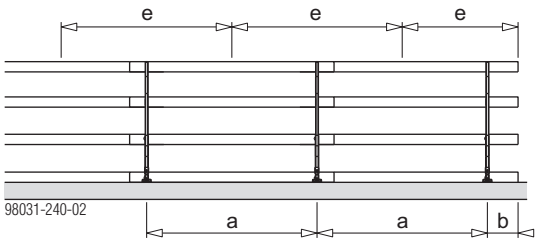


A	Handrail post XP 1.20m
B	Toeboard holder XP 1.20m
C	Handrail post XP 0.60m
D	Toeboard holder XP 0.60m
E	Scaffold tube holder D48mm
G	Toeboard

Structural design

General notes on structural design

Note:
This dimensioning applies for edge protection made with Handrail posts XP 1.20m and 0.60m and also with Handrail posts 1.80m.



a ... Span
b ... Cantilever
e ... Influence width

NOTICE

A fundamental distinction must be made between the span **(a)** and the influence width **(e)**:

- The span is the distance between the handrail posts.
- The permitted influence width of a handrail post is stated in the respective tables.
- The actual influence width can only be determined by calculation, and corresponds to roughly the spacing 'a' between the handrail posts, and in the cantilever-arm zone to around b + a/2.

- The span **(a)** of the handrail posts is roughly equal to the influence width **(e)** if
  - they are evenly spaced
  - the guardrail boards are either continuous or are jointed at the handrail posts, and
  - there are no cantilevering projections.
- The wind conditions likely to be encountered in Europe, in accordance with EN 13374, are largely recognised by the peak velocity pressure q=0.6 kN/m² (highlighted grey in the tables).

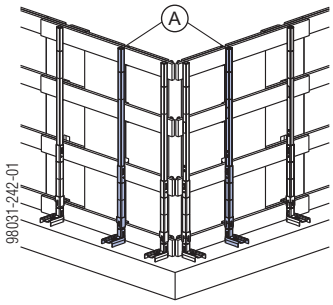
Note:
The plank and board thicknesses stated comply with the EN 338 C24 timber.
Observe all national regulations applying to deck and guardrail boards.

Permitted cantilever (b) of edge-protection components

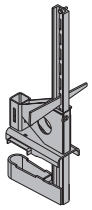
Edge-protection component	Permitted cantilever Peak velocity pressure q [kN/m²]			
	0.2	0.6	1.1	1.3
Protective grating XP 2.70x1.20m	0.6 m	0.6 m	0.4 m	0.1 m
Guardrail board 2.5 x 12.5 cm	0.3 m			
Guardrail board 2.4 x 15 cm	0.5 m			
Guardrail board 3 x 15 cm	0.8 m			
Guardrail board 4 x 15 cm	1.4 m			
Guardrail board 3 x 20 cm	1.0 m			
Guardrail board 4 x 20 cm	1.6 m			
Guardrail board 5 x 20 cm	1.9 m			
Scaffold tube 48.3mm	1.3 m			

NOTICE

When gap-free boarding is used, 2 extra Handrail posts XP **(A)** must be mounted at the corners.



Railing clamp XP 40cm Railing clamp XP 85cm



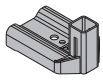
Clamped to concrete

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guardrail boards								Scaffold tubes 48.3mm [2]
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.6	1.3	1.3	1.3	0.9	0.9	0.9		3.2
0.6		1.6	1.3	1.3	1.3	0.9	0.9	0.9		3.2
1.1		1.1	0.9	0.9	0.9	0.7	0.7	0.7		2.3
1.3	2.3	0.9	0.8	0.8	0.8	0.6	0.6	0.6		1.9

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Handrail-post shoe XP



Anchored by Doka express anchor 16x125mm in "green" (new) concrete

Characteristic cube compressive strength of the new concrete ($f_{ck,\ cube}$): ≥ 14 N/mm²

Distance of anchorage point from edge: min. 15 cm

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guardrail boards								Scaffold tubes 48.3mm [2]
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.6	1.3	1.3	1.3	0.9	0.9	0.9		3.2
0.6		1.6	1.3	1.3	1.3	0.9	0.9	0.9		3.2
1.1		1.1	0.9	0.9	0.9	0.7	0.7	0.7		2.3
1.3	2.3	0.9	0.8	0.8	0.8	0.6	0.6	0.6		1.9

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Actual tensile force in Express anchor:
E_d = 14.0 kN (F = 9.0 kN)

Anchored by Doka Express anchor 16x125mm in C20/25 grade concrete

Distance of anchorage point from edge: min. 15 cm

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]										
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guardrail boards								Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm			
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.3	3.3		5.0	1.5
0.6		1.8	1.9	2.7	2.8	2.1	2.1	2.1		5.0	0.9
1.1		1.8	1.5	1.5	1.5	1.1	1.1	1.1		3.7	0.5
1.3		1.6	1.3	1.3	1.3	1.0	1.0	1.0		3.2	0.4

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Actual tensile force in Express anchor:
E_d = 22.9 kN (F = 15.3 kN)

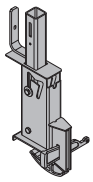
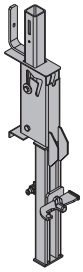
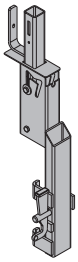
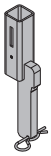
Balcony adapter XP

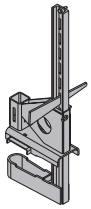
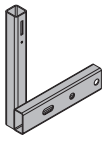
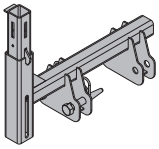
Anchored in B10 grade concrete with Bridge edge beam anchor 15.0

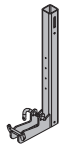
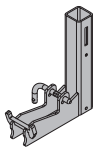
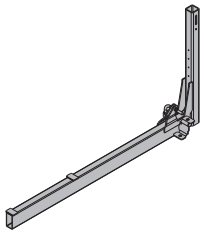
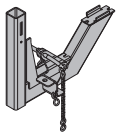
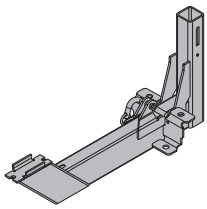
Distance of anchor from edge: min. 8 cm, structural element thickness 16 cm or more (14 cm or more in the case of precast concrete members)

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]	
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Scaffold tubes 48.3mm
0.2	1.4	2.1
0.6	1.4	2.1
1.1	1.4	2.1
1.3	1.1	1.7

Edge protection on the formwork in accordance with EN 12811-1

Adapter XP	Areas of application/formwork system
Framax adapter XP 	▪ Framed formwork Framax Xlife plus ▪ Framed formwork Framax Xlife ▪ Framed formwork Alu-Framax Xlife
Frami adapter XP 	▪ Framed formwork Frami Xlife
Timber-beam formwork adapter XP 	▪ Large-area formwork Top 50 ▪ Large-area formwork Top 100 tec ▪ Wall formwork FF20 ▪ Beam formwork FF100 tec ▪ Circular formwork H20
Bracket adapter XP FRR 50/30 	▪ Framax bracket 90 or Framax bracket 90 EP ▪ Frami adjustment frame ▪ Bridge edge beam support T 1.40m ▪ Insertion beam T 0.20m ▪ Bridge edge beam waling T 2.70m

Adapter XP	Areas of application/formwork system
Railing clamp XP 40cm 	▪ Doka floor-slab formworks ▪ Doka ready-to-use platforms ▪ Deck-boards ▪ Clamping range: 2 - 43 cm
Insertion adapter XP 	▪ Multi-purpose waling ▪ Top100 tec waling ▪ Dokaflex 1-2-4 ▪ Doka beam H20 ▪ Dokamatic table ▪ Bridge edge beam waling T 2.70m
Dokamatic adapter XP 	▪ Dokamatic table

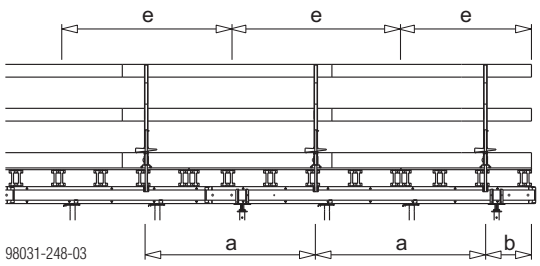
Adapter XP	Areas of application/formwork system
Dokadek handrail-post shoe short 	▪ Panel floor formwork Dokadek 30
Dokadek handrail-post shoe short 1.20m 	▪ Panel floor formwork Dokadek 30 ▪ Panel floor formwork Dokadek 20
Dokadek handrail-post shoe - long 	▪ Panel floor formwork Dokadek 30
Dokadek handrail-post shoe long 1.20m 	▪ Panel floor formwork Dokadek 30
Dokadek 20 handrail-post shoe long 1.20m 	▪ Panel floor formwork Dokadek 20

NOTICE

The basic features of the system (mounting method, safety barriers etc.) are the same as for 'Edge protection on the structure'.

For details on installation of the XP adapters, consult the relevant User Information booklets.

General notes on structural design



a ... Span
b ... Cantilever
e ... Influence width

NOTICE

A fundamental distinction must be made between the span **(a)** and the influence width **(e)**:

- The span is the distance between the handrail posts.
- The permitted influence width of a handrail post is stated in the respective tables.
- The actual influence width can only be determined by calculation, and corresponds to roughly the spacing 'a' between the handrail posts, and in the cantilever-arm zone to around b + a/2.

- The span **(a)** of the handrail posts is roughly equal to the influence width **(e)** if
  - they are evenly spaced
  - the guardrail boards are either continuous or are jointed at the handrail posts, and
  - there are no cantilevering projections.
- The wind conditions likely to be encountered in Europe, in accordance with EN 13374, are largely recognised by the peak velocity pressure q=0.6 kN/m² (highlighted grey in the tables).

Note:

The Xsafe edge protection XP is compliant with design standard EN 12811-1 for use on formwork.

Note:

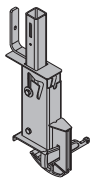
The plank and board thicknesses stated comply with the EN 338 C24 timber.

Observe all national regulations applying to deck and guardrail boards.

Permitted cantilever (b) of edge-protection components

Edge-protection component	Permitted cantilever			
	Peak velocity pressure q [kN/m²]			
	0.2	0.6	1.1	1.3
Protective grating XP 2.70x1.20m	0.6 m	0.6 m	0.4 m	0.1 m
Guardrail board 2.5 x 12.5 cm	0.3 m			
Guardrail board 2.4 x 15 cm	0.5 m			
Guardrail board 3 x 15 cm	0.8 m			
Guardrail board 4 x 15 cm	1.4 m			
Guardrail board 3 x 20 cm	1.0 m			
Guardrail board 4 x 20 cm	1.6 m			
Guardrail board 5 x 20 cm	1.9 m			
Scaffold tube 48.3mm	1.3 m			

Framax adapter XP

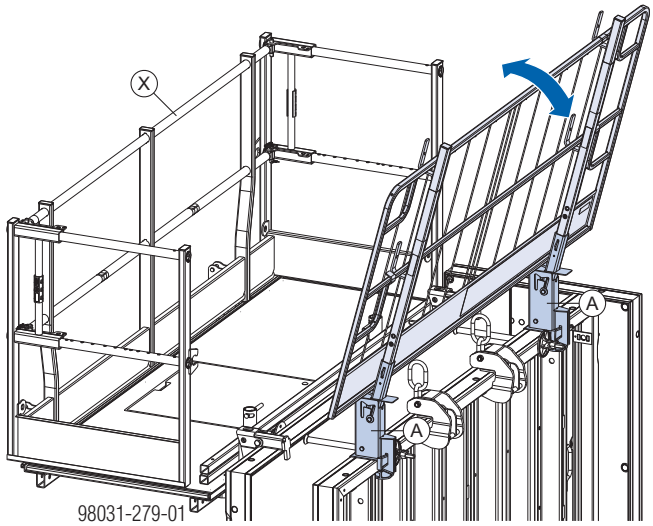


Framax adapter XP is used for putting up safety railings on the opposing formwork.

Features:

- Can be mounted to formwork when this is placed flat on the ground.
- Safety right from the start.
- Can be mounted on all sizes of upright or horizontal panel.
- Integral tilt function (15°) for enlarging the workspace (e.g. during pouring).

Practical example



A Framax adapter XP

X e.g. Xsafe plus platform

Structural design

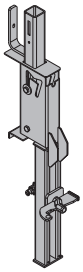
Framed formwork Framax Xlife

Peak velocity pressure q [kN/m²]	perm. span a [m]			
	Protective grating XP 2.70x1.20m	Guardrail boards		
		2.4 x 15 cm	3 x 15 cm	4 x 15 cm
0.2	2.5	1.9	2.7	3.3
0.6				
1.1				
1.3	—			

Framed formwork Alu-Framax Xlife

Peak velocity pressure q [kN/m²]	perm. span a [m]			
	Protective grating XP 2.70x1.20m	Guardrail boards		
		2.4 x 15 cm	3 x 15 cm	4 x 15 cm
0.2	2.5	1.9	2.7	3.3
0.6				
1.1				3.1
1.3	—		2.6	2.6

Frami adapter XP

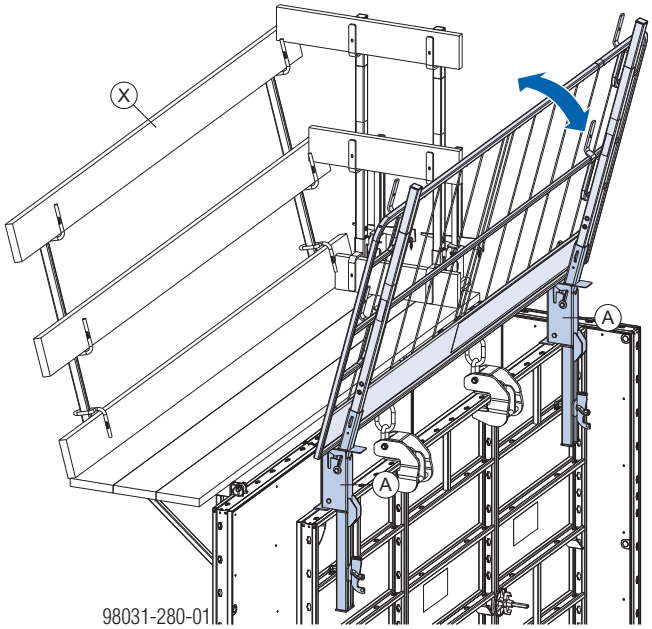


Frami adapter XP is used for putting up safety railings on the opposing formwork.

Features:

- Can be mounted to formwork when this is placed flat on the ground.
- Safety right from the start.
- Can be mounted on all sizes of upright or horizontal panel.
- Integral tilt function (15°) for enlarging the workspace (e.g. during pouring).

Practical example



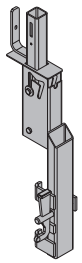
A Frami adapter XP
X e.g. Xsafe plus platform

Structural design

Framed formwork Frami Xlife

Peak velocity pressure q [kN/m²]	perm. span a [m]			
	Protective grating XP 2.70x1.20m	Guardrail boards		
		2.4 x 15 cm	3 x 15 cm	4 x 15 cm
0.2	2.5	1.9	2.7	3.3
0.6				
1.1				
1.3	—			

Timber-beam formwork adapter XP



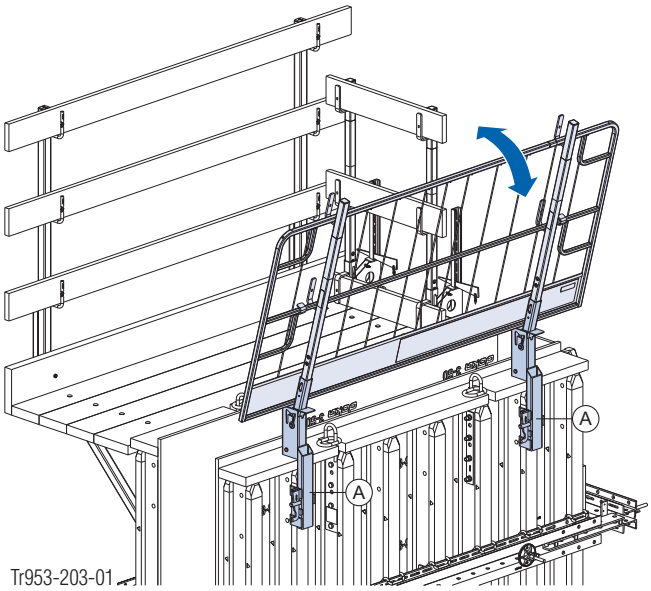
Timber-beam formwork adapter are used for putting up safety railings on the opposing formwork.

Features:

- Can be installed on formwork laid flat on the ground.
- Safety right from the start.
- Can be used on all sizes of upright element.
- Integral tilt function (15°) for enlarging the workspace (e.g. during pouring).
- With Circular formwork H20, there may be various limitations due to different formwork radii and to the use of outside and inside elements.

  Separate checks must be made for each such project to establish whether the adapter can be used.

Practical example
Large-area formwork Top 50



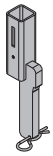
A Timber-beam formwork adapter XP

Structural design

Large-area formwork Top 50, Top 100 tec, FF20, FF100 tec and Circular formwork H20

Peak velocity pressure q [kN/m²]	perm. span a [m]			
	Protective grating XP 2.70x1.20m	Guardrail boards		
		2.4 x 15 cm	3 x 15 cm	4 x 15 cm
0.2	2.5	1.9	2.7	3.3
0.6				
1.1	2.0		2.4	2.4
1.3	—		2.0	2.0

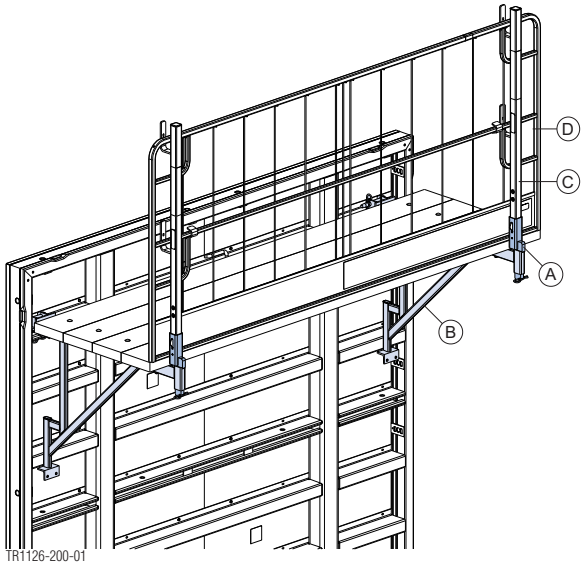
Bracket adapter XP FRR 50/30



The Bracket adapter XP FRR 50/30 is an alternative to the Handrail post 1.00m for mounting the Xsafe edge protection XP on platforms.

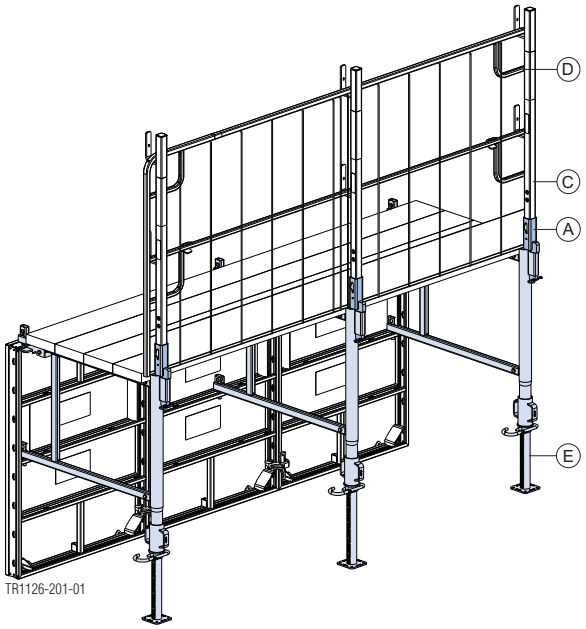
- for railing heights of 1.20 m

Practical example with Framax bracket 90



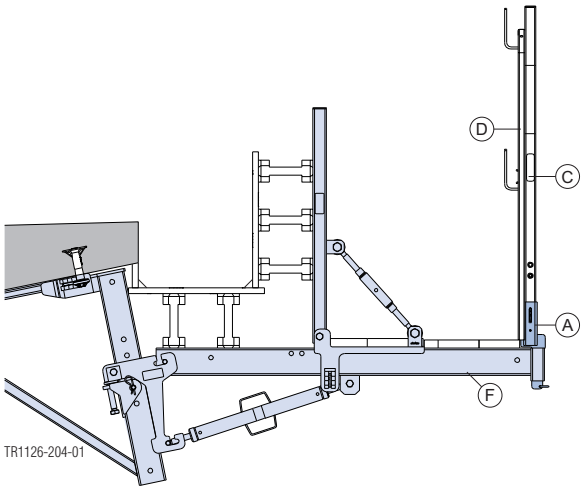
A	Bracket adapter XP FRR 50/30
B	Framax bracket 90
C	Handrail post XP 1.20m
D	Protective grating XP

Practical example with Frami adjustment frame



A	Bracket adapter XP FRR 50/30
C	Handrail post XP 1.20m
D	Protective grating XP
E	Frami adjustment frame

Practical example with Doka bridge edge beam formwork T



A	Bracket adapter XP FRR 50/30
C	Handrail post XP 1.20m
D	Protective grating XP
F	Bridge edge beam support T 1.40m

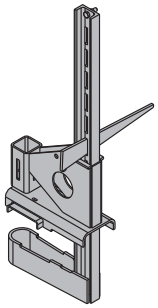
Structural design

The permitted influence widths of the brackets are not influenced by the Edge protection system XP.
Follow the directions in the relevant User Information booklets!

Railing clamp XP 40cm

The Railing clamp XP 40cm is for clamping the Handrail post XP to the end face of concrete slabs or to Doka beams.

- for railing heights of 1.20 m
- for railing heights 1.80 m with additional measures



Clamping range: 2 - 43 cm

WARNING

➤ Only clamp the Railing clamp XP 40cm to components that can reliably transfer the forces involved!

WARNING

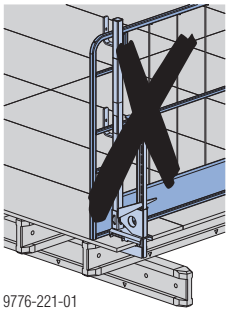
Risk of formwork beams tipping over!

➤ Only attach the Railing clamp XP 40cm to formwork beams if there is no risk of these tipping over.

WARNING

Risk of breaking the formwork sheets!

➤ It is forbidden to fasten the clamp to the formwork sheeting only.



Edge protection on floor-slab formwork

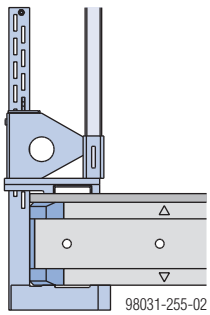
Railing-height 1.20 m

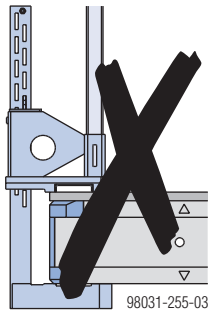
NOTICE

The railing clamp can be installed either in parallel with or transverse to the beam direction. **Do not install the railing clamp at an angle!**

➤ To adjust the clamping range of the Railing clamp XP 40cm, first take the wedge out of the wedge-slot.

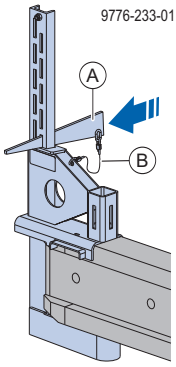
➤ Push the Railing clamp XP 40cm onto the Doka beam until it is pressed against the end face of the slab.





NOTICE

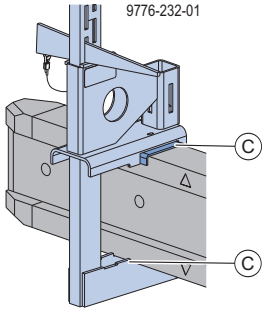
When installing the wedge **(A)** in the wedge slot, note the position of the securing cable **(B)** !



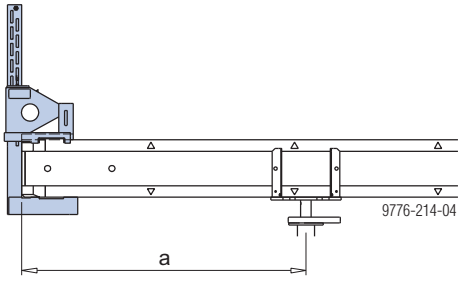
➤ Hammer in the wedge until the hammer rebounds.

NOTICE

When Railing clamp XP is installed at right angles to the beam, the beam must be securely seated in the recesses **(C)** of the railing clamp XP.



➤ Position the fully pre-assembled beams as primary beams or secondary beams, as applicable.



a ... max. cantilever length of Doka beam H20 3.90m: 109.0 cm

NOTICE

- Secure cantilevering beams to prevent lift-out and tipover.
- The superstructure has to be completed before the remaining steps in the railing assembly procedure are carried out.

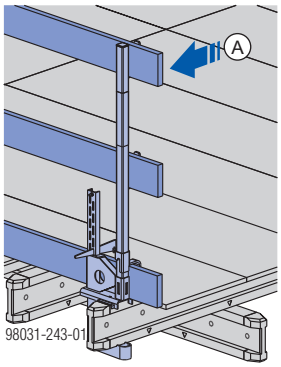
➤ Working from below, push the Toeboard holder XP onto the Handrail post XP (not needed when using the Protective grating XP).

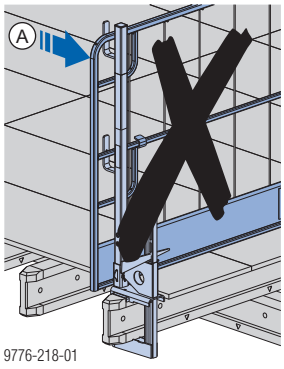
➤ Push the Handrail post XP into the post holder of the Railing clamp XP 40cm until the locking mechanism engages (= 'Easy-Click' function).

The locking mechanism must engage.

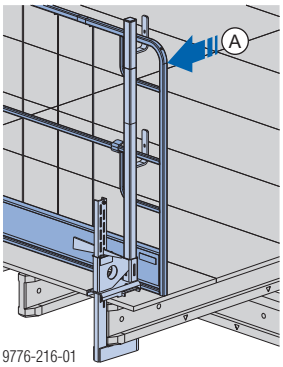
➤ Fit on a Protective grating XP or guardrail boards, and fix them in place.

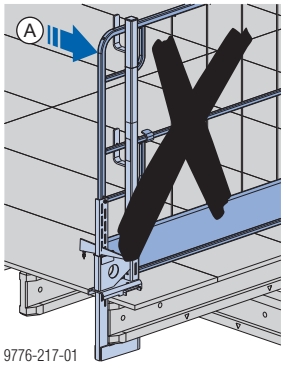
Fixing in the direction of the secondary beams





Not possible for use with Protective grating XP.

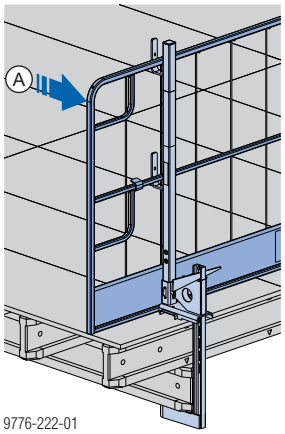




Can be mounted to formwork beam either with or without formwork sheet.

A Load action

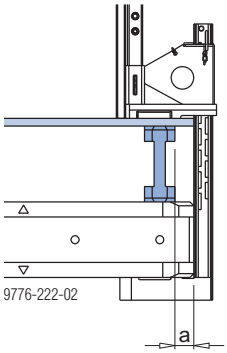
Fixing in the direction of the primary beams



Only allowed to be mounted to formwork beams to which formwork sheeting is attached.

Usual on-site nailing of the formwork sheet: 1 nail/0.5 m²

A Load action



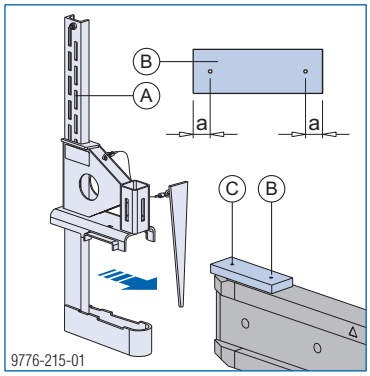
a ... Protruding length of formwork sheet ≤ 5 cm

Railing-height 1.80 m

For railing height 1.80m, also proceed in accordance with the instructions below when using the Railing clamp XP.

NOTICE

Insertion of a hardwood packer on top of the Doka beam H20 is absolutely essential for safe transfer of the loads.

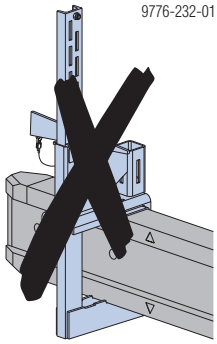


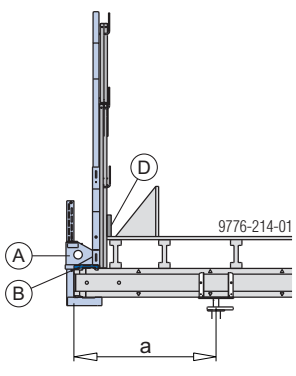
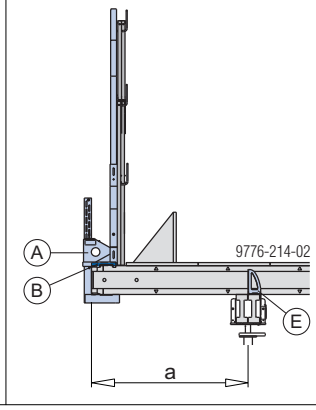
a ... 2.5 cm

A	Railing clamp XP 40cm
B	Hardwood packer 65x20x190 mm
C	Universal screw countersunk head Torx TG 5x80

WARNING

➤ Installation at right angles to the beam is prohibited when the railing height is 1.80 m.

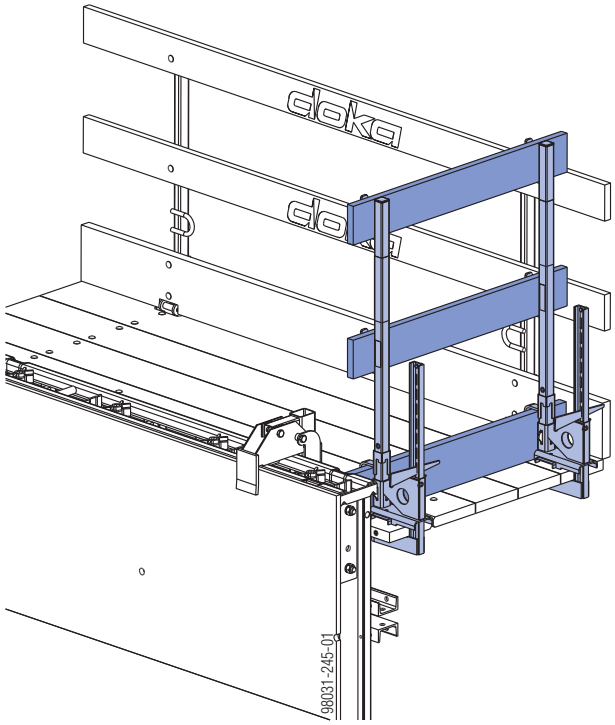


Use on the primary beam	Use on the secondary beam
	

a ... max. cantilever length of Doka beam H20 3.90m: 109.0 cm

A	Railing clamp XP 40cm
B	Hardwood packer 65x20x190 mm (only for railing height 1.80m)
D	Toeboard (plank 150mm), site-provided
E	Secondary-beam stabilisers

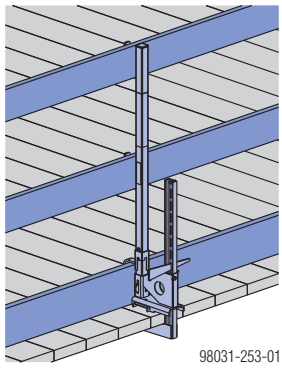
Edge protection on Doka ready-to-use platforms

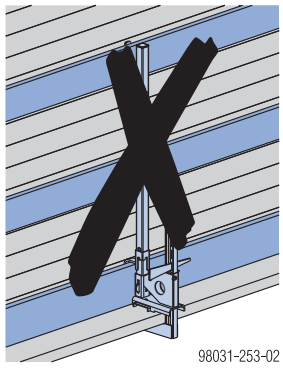


Edge protection on deck-boards

NOTICE

- Min. cross section of deck-boards: 5 x 20 cm
- Make sure that the deck-boards are screwed on adequately.





Structural design

used in combination with Handrail post XP 1.20m

Used in direction of either secondary or primary beams

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]			
	Protective grating XP 2.70x1.20m	Guardrail boards		
		3 x 15 cm	4 x 15 cm	Scaffold tubes 48.3mm [1]
0.2	2.5	2.0	2.0	5.0
0.6		2.0	2.0	5.0
1.1		—	—	3.5
1.3	2.2	—	—	2.9

[1] with toeboard 5 x 20 cm

Used on deck-boards 5 x 20 cm

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	2.5	1.8	1.6	1.6	1.6	1.0	1.0	1.0	4.6
0.6		1.8	1.6	1.6	1.6	1.0	1.0	1.0	4.6
1.1		1.5	1.2	1.2	1.2	0.9	0.9	0.9	3.5
1.3		1.3	1.0	1.0	1.0	0.7	0.7	0.7	2.9

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

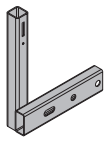
[2] with toeboard 5 x 20 cm

used in combination with Handrail post XP 1.20m and 0.60m or Handrail post XP 1.80m

Used in direction of either secondary or primary beams

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]	
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Scaffold tubes 48.3mm
0.2	2.0	2.0
0.6	2.0	2.0
1.1	—	—
1.3	—	—

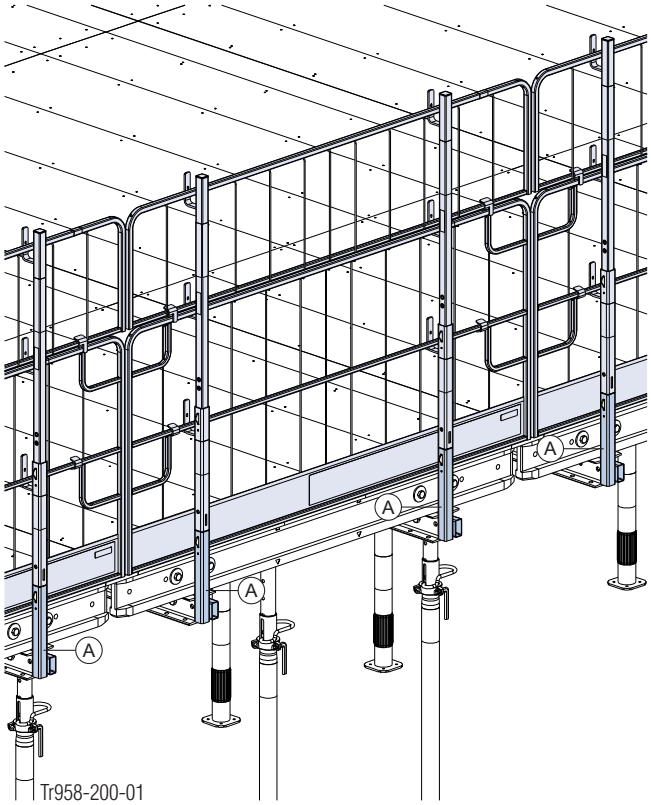
Insertion adapter XP



Features:

- Suitable for railing-heights of 1.20 m and 1.80 m.

Practical example
Dokamatic table



A Insertion adapter XP

Structural design

NOTICE

- Used in direction of either secondary or primary beams
- The structural design (influence width) only refers to the safety barrier.
- The structural design of the formwork system being used in each case must be complied with as stipulated in the respective User Information booklet.

Suitable for a railing height of 1.20m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m 1)	Guardrail boards							
		2.5 x 12.5 cm	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm 2)
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.9	4.9	5.0
0.6		1.8	1.9	2.7	3.6	2.9	3.6	3.6	5.0
1.1		1.8	1.9	2.5	2.5	1.9	1.9	1.9	3.8
1.3		1.8	1.9	2.1	2.1	1.6	1.6	1.6	3.2

1) ... Additional toeboard
(wooden board 3 x 15 cm or 4 x 15 cm) required in some cases.

2) ... Toeboard 5 x 43 cm required
(e.g. wooden board 5 x 20 cm + 5 x 23 cm).

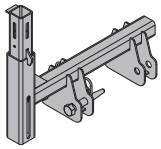
Suitable for a railing height of 1.80m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective gratings XP 2.70x1.20m and 2.70x0.60m 1)	Guardrail boards							
		2.5 x 12.5 cm	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm 2)
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.9	3.9	5.0
0.6	2.5	1.8	1.9	2.7	2.7	2.1	2.1	2.1	5.0
1.1	2.4	1.7	1.5	1.5	1.5	1.1	1.1	1.1	2.8
1.3	2.0	1.5	1.2	1.2	1.2	1.0	1.0	1.0	2.4

1) ... Additional toeboard
(wooden board 3 x 15 cm or 4 x 15 cm) required in some cases.

2) ... Toeboard 5 x 43 cm required
(e.g. wooden board 5 x 20 cm + 5 x 23 cm).

Dokamatic adapter XP



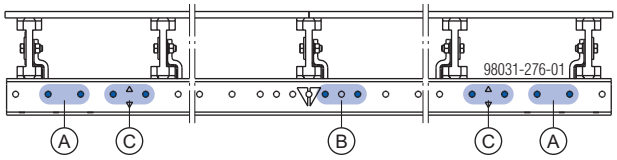
The Dokamatic adapter XP makes it possible to attach a Handrail post XP to a Dokamatic table.

- Suitable for all sizes of table.
- Integrated lowering function:
  - Tables can be stacked and stored without having to dismount the Dokamatic adapters XP.
  - Tables can be placed next to one another even if there are Dokamatic adapters XP mounted along abutting edges.
- Suitable for railing heights of 1.20 m and 1.80 m.
- When bolted in place, they are suitable for both lengthways and sideways safety barriers.

Note:
Mount the sideguards while the table elements (to which the Dokamatic table platforms have previously been mounted) are still on the stack.

Assembly

Possible positions on the Dokamatic table waling

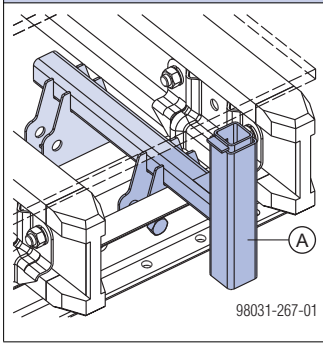
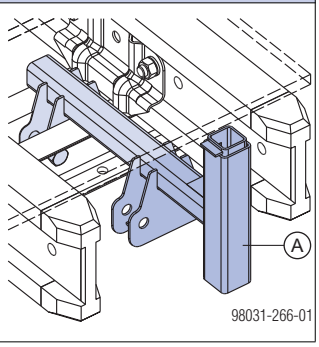


The positions B and C shown here only apply to standard tables. On tables with 2 or 4 intermediate props, positions B and C may be changed as needed.

A	Standard upright for lengthways or sideways safety barrier
B	Extra upright for lengthways safety barrier
C	Extra upright for lengthways AND sideways safety barrier

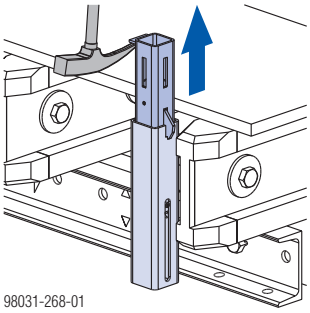
➤ Bolt the Dokamatic adapter XP to the desired position on the Dokamatic table waling with 2 connecting pins and secure these with spring cotters.

Installation situation of the Dokamatic adapter

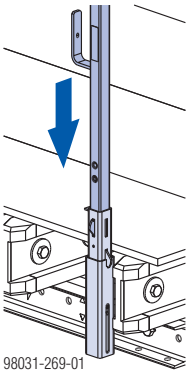
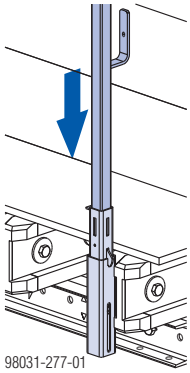
on 2.00m wide tables	on 2.50m wide tables
	
98031-267-01	98031-266-01

A	Dokamatic adapter XP

➤ Use a hammer to pull out the recessed adapter-piece until the locking mechanism engages.



➤ Push the Handrail post XP into the adapter until the locking mechanism engages ('Easy-Click' function).

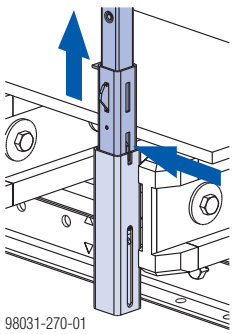
Alignment of Handrail post XP for sideways safety barrier	Alignment of Handrail post XP for lengthways safety barrier
 98031-269-01	 98031-277-01

- The locking mechanism must engage.
- The Handrail-post plates must be facing towards the inside of the barrier.

➤ Mount the safety barriers (see the section headed 'Mounting the safety barriers').

Dismantling

➤ Slightly lift the Handrail post XP and press in the bottom locking mechanism.



➤ Lower the Handrail post XP. This deactivates the Easy-Click function.

➤ Then pull out the Handrail post XP straight upwards.

Installing the safety barriers

with Protective gratings XP

Recommended lengths of grating

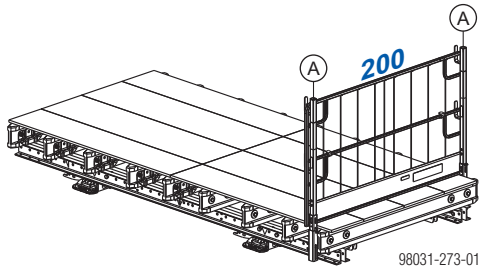
	Dokamatic table			
	2.00x4.00m	2.00x5.00m	2.50x4.00m	2.50x5.00m
Sideways	2.00m	2.00m	2.50m	2.50m
Lengthways	2.00 + 2.50m [1)]	2.50 + 2.70m [1)]	2.00 + 2.50m [1)]	2.50 + 2.70m [1)]

[1)] only 1 Handrail post XP required in middle

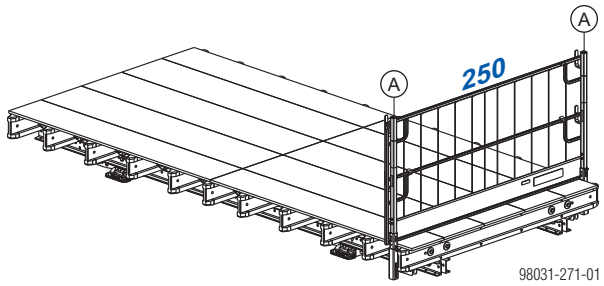
Practical examples

Sideways safety barrier

Dokamatic table 2.00x4.00m

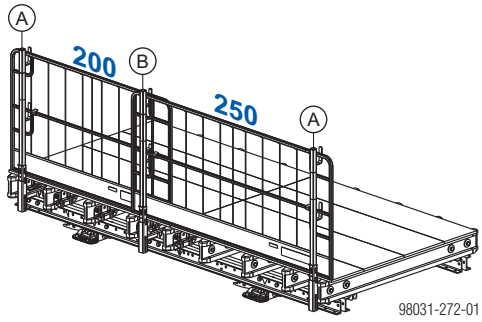


Dokamatic table 2.50x5.00m

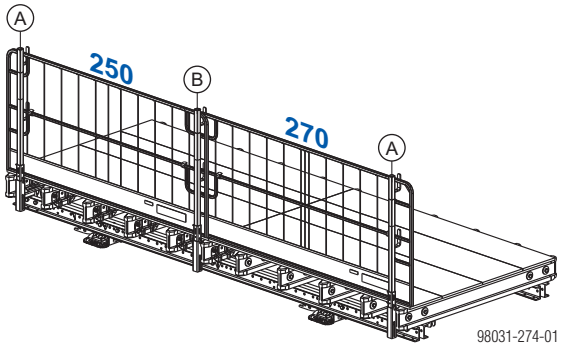


Lengthways safety barrier

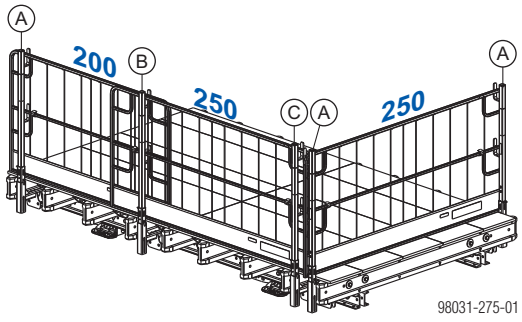
Dokamatic table 2.00x4.00m



Dokamatic table 2.00x5.00m



Corner safety barrier



A Standard upright for lengthways or sideways safety barrier

B Extra upright for lengthways safety barrier

C Extra upright for lengthways AND sideways safety barrier

Note:
The safety barrier can also be erected with guard-rail boards or scaffold tubes.

Structural design

used in combination with Handrail post XP 1.20m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective gratings XP 2.70x1.20m	Guardrail boards								
		2.5 x 12.5 cm [1]	2.4 x 15cm	3 x 15cm	4 x 15cm	3 x 20cm	4 x 20cm	5 x 20cm	Scaffold tubes 48.3mm [2]	Gap-free boarding
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4	5.0	1.8
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4	5.0	1.3
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3	5.0	0.7
1.3		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.4	0.6

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

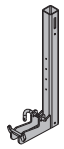
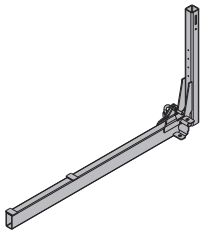
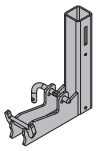
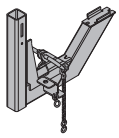
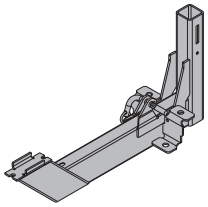
used in combination with Handrail post XP 1.20m and 0.60m or Handrail post XP 1.80m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guardrail boards								
		2.5 x 12.5 cm [1]	2.4 x 15cm	3 x 15cm	4 x 15cm	3 x 20cm	4 x 20cm	5 x 20cm	Scaffold tubes 48.3mm [2]	Gap-free boarding
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.3	3.3	5.0	1.5
0.6		1.8	1.9	2.7	2.8	2.1	2.1	2.1	5.0	0.9
1.1		1.8	1.5	1.5	1.5	1.1	1.1	1.1	3.7	0.5
1.3		1.6	1.3	1.3	1.3	1.0	1.0	1.0	3.2	0.4

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Dokadek handrail-post shoes

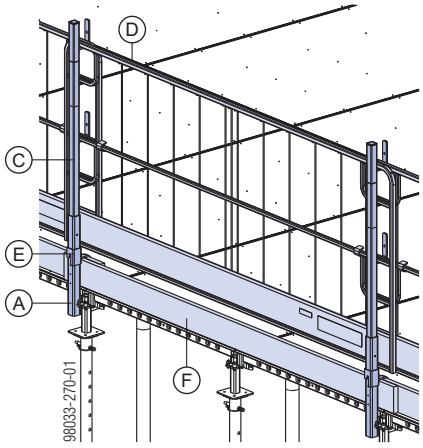
Dokadek handrail-post shoe short	Dokadek handrail-post shoe long
	
Dokadek handrail-post shoe short 1.20m	**Dokadek handrail-post shoe long 1.20m**
	
	Dokadek 20 handrail-post shoe long 1.20m
	

The Dokadek handrail-post shoes enable Handrail posts XP to be secured to the Dokadek panel.

Features:

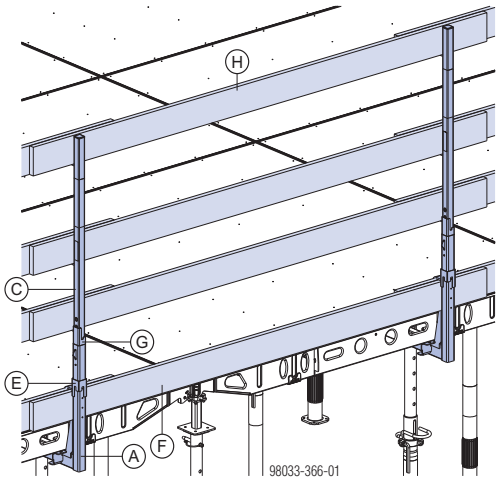
- For longside and shortside safety barriers, with or without transfer of concreting loads (depending on which handrail post shoe is used).
- Suitable for railing height 1.20 m or, as applicable, 1.80 m (depending on which type of handrail post shoe is used).

Example of use with Dokadek handrail post shoe short



A	Dokadek handrail-post shoe short
C	Handrail post XP 1.20m
D	Protective grating XP 2.70x1.20m
E	Toeboard holder XP 0.60m
F	Toeboard

Example of use with Dokadek handrail post shoe short



A	Dokadek handrail-post shoe long
C	Handrail post XP 1.20m
E	Toeboard holder XP 0.60m
F	Toeboard
G	Toeboard holder XP 1.20m
H	Guardrail boards

Structural design with Dokadek 30

Dokadek handrail-post shoe short 1.20m and Dokadek handrail-post shoe long

Permitted influence width [cm] of the handrail-post shoes with Handrail posts XP 1.20m for slab thicknesses up to 32 cm (without additional precautions)

	Safety barrier			
	Guardrail board 15 cm[1]	Guardrail board 20 cm[1]	Scaffold tube 48.3mm	Protective grating XP 2.70x1.20m
Peak velocity pressure q [kN/m²]	With concrete load			
0.2	137	137	137	137
	Without concrete load			
0.2	259	259	259	259
0.6	259	137	259	259
1.1	137	—	259	259
1.3	—	—	259	244

[1] Minimum thickness 3 cm for influence width greater than 137 cm.

Permitted influence width [cm] of the handrail-post shoes with Handrail posts XP 1.20m for slab thicknesses up to 50 cm (with additional precautions)

	Safety barrier		
	Guardrail board 15 cm[1] [2]	Guardrail board 20 cm[1] [2]	Protective grating XP 2.70x1.20m
Peak velocity pressure q [kN/m²]	With concrete load		
0.2	137 [2]	137	137
	Without concrete load		
0.2	259 [2]	259	259
0.6	259 [2]	137	259
1.1	137 [2]	—	259
1.3	—	—	244

[1] Minimum thickness 3 cm for influence width greater than 137 cm.

[2] Guardrail boards 15 cm are only permitted up to a slab thickness of 45 cm.

Dokadek handrail-post shoe short 1.20m and Dokadek handrail-post shoe long 1.20m

Permitted influence width [cm] of the handrail-post shoes with Handrail posts XP 1.20m

	Safety barrier			
	Guardrail board 15 cm[1]	Guardrail board 20 cm[1]	Scaffold tube 48.3mm	Protective grating XP 2.70x1.20m
Peak velocity pressure q [kN/m²]	Without concrete load			
0.2	259	259	259	259
0.6	259	137	259	259
1.1	137	—	259	259
1.3	—	—	259	244

[1] Minimum thickness 3 cm for influence width greater than 137 cm.

Permitted influence width [cm] of the handrail-post shoe short 1.20m with Handrail post XP 1.80m

	Safety barrier			
	Guardrail board 15 cm[1]	Guardrail board 20 cm[1]	Scaffold tube 48.3mm	Protective gratings XP 2.70x1.20m + 2.70x0.60m
Peak velocity pressure q [kN/m²]	Without concrete load			
0.2	259	244	259	259
0.6	259	137	259	259
1.1	122	61	259	259
1.3	61	61	259	244

[1] Minimum thickness 3 cm for influence width greater than 137 cm.

Structural design with Dokadek 20

Dokadek handrail-post shoe short 1.20m and Dokadek 20 handrail-post shoe long 1.20m

Permitted influence width [cm] of the handrail-post shoes with Handrail posts XP 1.20m

	Safety barrier				
	Guardrail board 15 cm	Guardrail board 20 cm	Scaffold tube 33.7mm[1)]	Scaffold tube 48.3mm	Protective grating XP 2.50x1.20m
Peak velocity pressure q [kN/m²]	Without concrete load				
0.2	200	200	200	200	200
0.6	200	100	200	200	200
1.1	100	—	200	200	200
1.3	—	—	200	200	200

[1)] Min. section thickness 2.0 mm for steel grade S355
Min. section thickness 3.0 mm for steel grade S235

Permitted influence width [cm] of the handrail-post shoe short XP 1.20m with Handrail post XP 1.80 m

	Safety barrier				
	Guardrail board 15 cm	Guardrail board 20 cm	Scaffold tube 33.7mm[1)]	Scaffold tube 48.3mm	Protective gratings XP 2.50x1.20m + 2.50x0.60m
Peak velocity pressure q [kN/m²]	Without concrete load				
0.2	200	200	200	200	200
0.6	200	100	200	200	200
1.1	100	—	200	200	200
1.3	—	—	200	200	200

[1)] Min. section thickness 2.0 mm for steel grade S355
Min. section thickness 3.0 mm for steel grade S235

Overview of safety-barrier heights with slab formwork

Dokaflex

Railing clamp XP 40cm

Type of railing	Longside safety barrier[1] with Handrail post XP		Shortside safety barrier[2] with Handrail post XP	
	1.20m	1.20m+0.60m or 1.80m	1.20m	1.20m+0.60m or 1.80m
Guardrail board 15 cm	118	176	—	—
Guardrail board 20 cm	123	181	103	—
Scaffold tube 48.3mm	109	166	—	146
Scaffold tube 33.7mm	109	167	—	147
Protective grating XP	111	168	—	148

Insertion adapter XP

Type of railing	Longside safety barrier[1] with Handrail post XP		Shortside safety barrier[2] with Handrail post XP	
	1.20m	1.20m+0.60m or 1.80m	1.20m	1.20m+0.60m or 1.80m
Guardrail board 15 cm	134	191	113	171
Guardrail board 20 cm	139	196	118	176
Scaffold tube 48.3mm	124	181	104	161
Scaffold tube 33.7mm	124	182	104	162
Protective grating XP	129	186	102	163

[1] Parallel to the primary beams

[2] Parallel to the secondary beams

Dokamatic table

Dokamatic adapter XP

Type of railing	Longside safety barrier with Handrail post XP		Shortside safety barrier with Handrail post XP	
	1.20m	1.20m+0.60m or 1.80m	1.20m	1.20m+0.60m or 1.80m
Guardrail board 15 cm	118	176	118	176
Guardrail board 20 cm	123	181	123	181
Scaffold tube 48.3mm	109	167	109	167
Scaffold tube 33.7mm	109	167	109	167
Protective grating XP	114	170	114	170

Insertion adapter XP

Type of railing	Longside safety barrier with Handrail post XP		Shortside safety barrier with Handrail post XP	
	1.20m	1.20m+0.60m or 1.80m	1.20m	1.20m+0.60m or 1.80m
Guardrail board 15 cm	134	191	118	176
Guardrail board 20 cm	139	196	123	181
Scaffold tube 48.3mm	124	181	109	167
Scaffold tube 33.7mm	124	182	109	167
Protective grating XP	129	186	114	170

Panel floor formwork

Panel floor formwork Dokadek 30

Type of railing	Longside safety barrier with Handrail post XP 1.20m and		Shortside safety barrier with Handrail post XP 1.20m and	
	Dokadek handrail-post shoe long	Dokadek handrail-post shoe long 1.20m	Dokadek handrail-post shoe short	Dokadek handrail-post shoe short 1.20m
Guardrail board 15 cm	149	120	149	120
Guardrail board 20 cm	154	125	154	125
Scaffold tube 48.3mm	140	112	140	112
Scaffold tube 33.7mm	140	111	140	111
Protective grating XP 2.50x1.20m	157	114	157	114

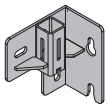
Panel floor formwork Dokadek 20

Type of railing	Longside safety barrier with Handrail post XP 1.20m and	Shortside safety barrier with Handrail post XP 1.20m and	
	Dokadek 20 handrail-post shoe long 1.20m	Dokadek handrail-post shoe short	Dokadek handrail-post shoe short 1.20m
Guardrail board 15 cm	120	149	120
Guardrail board 20 cm	125	154	125
Scaffold tube 48.3mm	112	140	112
Scaffold tube 33.7mm	111	140	111
Protective grating XP 2.50x1.20m	114	157	114

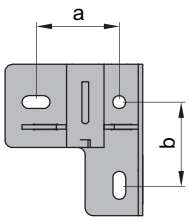
Dimensions in cm

Additional areas of use

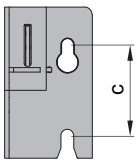
Safety barriers at slab edge of precast concrete floors



The Multi precast connector XP is used for erecting safety barriers at the slab edge of precast floor slabs with slab thickness ≥ 100 mm. It can be used with the Handrail post XP flex 1.60m, the Railing holder XP flex and the Protective grating XP 1.20m.



98031-285-12

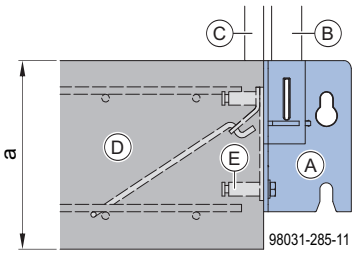


98031-285-11

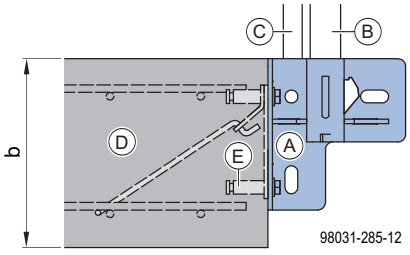
a ...100-120 mm
b ...100-120 mm
c .. 120 mm

NOTICE

The transport anchors pre-installed in the precast floor members are used for attachment of the Multi precast connector XP.



98031-285-11



98031-285-12

a ... slab thickness ≤ 220 mm
b ... slab thickness ≥ 220 mm

A	Multi precast connector XP
B	Handrail post XP flex 1.60m
C	Protective grating XP 1.20m
D	Precast concrete floor
E	Transport anchor

Slab thickness

Different hole grid combinations can be used to match the Multi precast concrete connector XP to slab thickness.

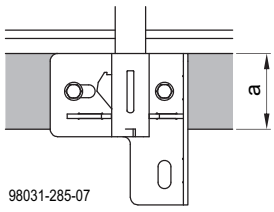
Threaded-fastener material required
slab thickness ≤ 220 mm

- 2 hexagon bolts M12x40 8.8 ISO 4017
- 2 hexagon bolts M12x40 8.8 ISO 4017 and 2 washers d13 DIN 9021

Threaded-fastener material required
slab thickness ≥ 220 mm

- 2 hexagon bolts M16x40 8.8 ISO 4017

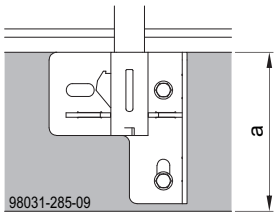
Slab thickness ≥ 100 mm



98031-285-07

a ... ≥ 100 mm slab thickness

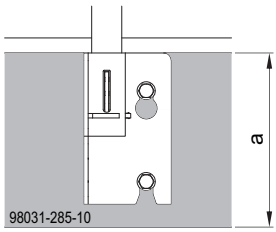
Slab thickness ≥ 200 mm



98031-285-09

a ... ≥ 200 mm slab thickness

Slab thickness ≥ 220 mm

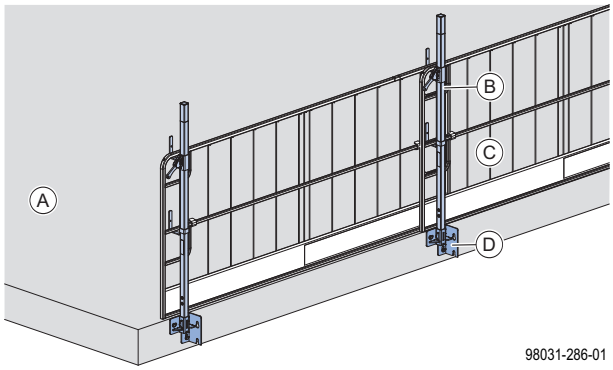


98031-285-10

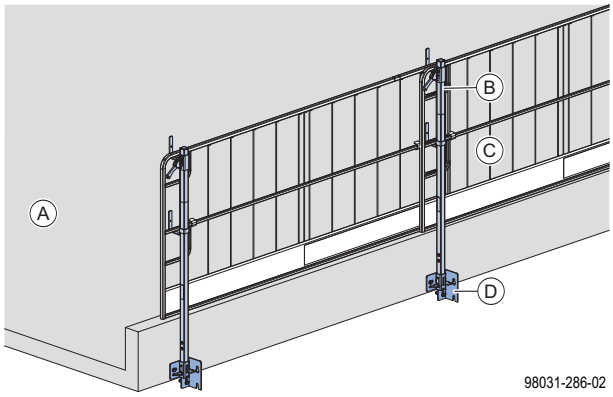
a ... ≥ 220 mm slab thickness

Practical examples

with Protective grating XP 1.20m

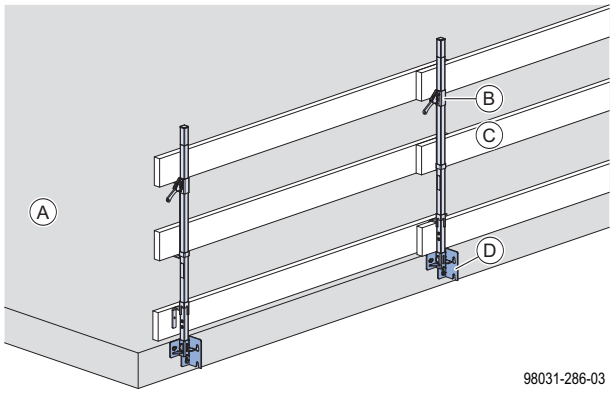


A	Precast concrete floor
B	Handrail post XP flex 1.60m with Railing holder XP flex
C	Protective grating XP 1.20m
D	Multi precast connector XP

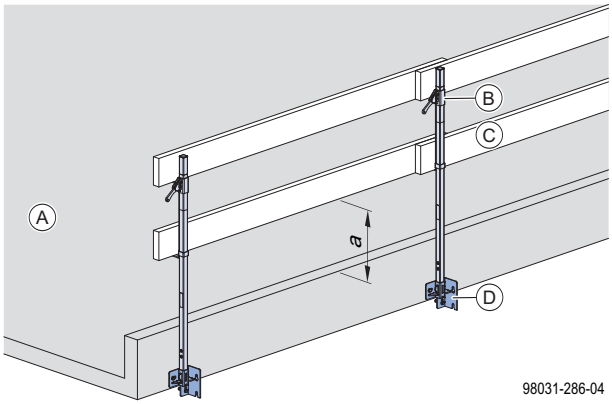


A	Precast concrete floor with slab stop-end
B	Handrail post XP flex 1.60m with Railing holder XP flex
C	Protective grating XP 1.20m
D	Multi precast connector XP

with guardrail boards



A	Precast concrete floor
B	Handrail post XP flex 1.60m with Railing holder XP flex
C	Guardrail boards
D	Multi precast connector XP



a ... max. 47.0 cm

A	Precast concrete floor with slab stop-end
B	Handrail post XP flex 1.60m with Railing holder XP flex
C	Guardrail boards
D	Multi precast connector XP

NOTICE

Note the maximum permitted gap of 47.0 cm between the guardrail boards!

Safety barriers on parapets

The Parapet adapter XP allows the Xsafe edge protection XP to be mounted on parapets (only reinforced-concrete parapets that are between 12 cm and 85 cm thick).

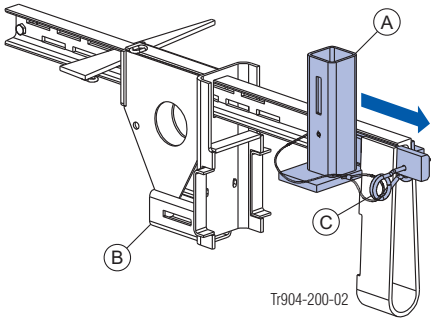
This makes it possible to put up safety barriers of 1.20 m or 0.60 m in height.

Possible types of safety barrier:

- Protective grating XP
- Guardrail boards
- Scaffold tubes
- Gap-free boarding

Assembly

➤ Push the Parapet adapter XP into the profile of the Railing clamp XP and secure it with a Spring cotter d5 (included with product).

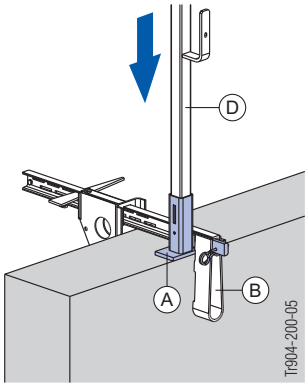


➤ To adjust the clamping range of the Railing clamp XP 40cm, first take the wedge out of the wedge-slot.

➤ Mount the Parapet adapter XP to the parapet with the Railing clamp XP.

➤ Hammer in the wedge until the hammer rebounds.

➤ Push on the Handrail post XP 1.20m until it locks ('Easy-Click' function).



A	Parapet adapter XP
B	Railing clamp XP 40cm or Railing clamp XP 85cm
C	Spring cotter d5
D	Handrail posts XP 1.20m or 0.60m

- The locking mechanism must engage.
- The handrail-post plates must be facing towards the inside of the building.

➤ Mount the safety barriers (see the section headed 'Mounting the safety barriers').

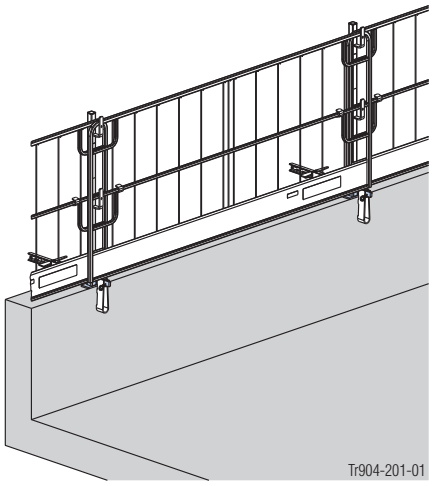
Structural design

The permitted influence widths are the same as those for the Railing clamp XP 40cm (see the section headed 'Edge protection on the structure – railing-height 1.20 m - Structural design').

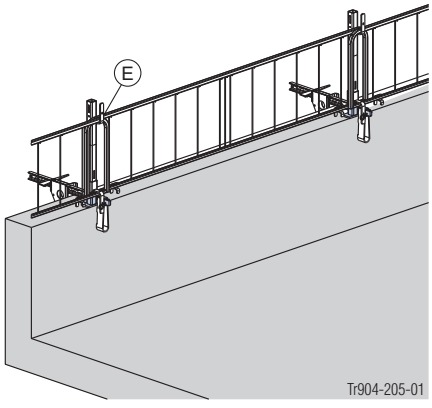
These data are also permissible for a railing-height of 0.60 m.

Practical examples

with Protective grating XP 2.70x1.20m and Protective grating XP 1.20m



with Protective grating XP 2.70x0.60m and Protective grating XP 0.60m

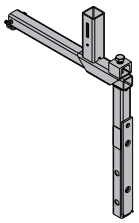


NOTICE

Secure the Protective grating XP 2.70x0.60m against accidental lift-out with a Velcro fastener **(E)** (included with product).

Safety barriers on concrete walls

Parapet bracket XP



Parapet bracket XP is used for installing safety barriers on concrete walls in precast and cast-in-place concrete construction, for example for the construction of roof parapets.

- Horizontally adjustable safety barrier with integral adjusting screw.
- Protective grating XP, guardrail boards or scaffold tubes can be used as the safety barrier
- Use as stop-end element is possible as an option.

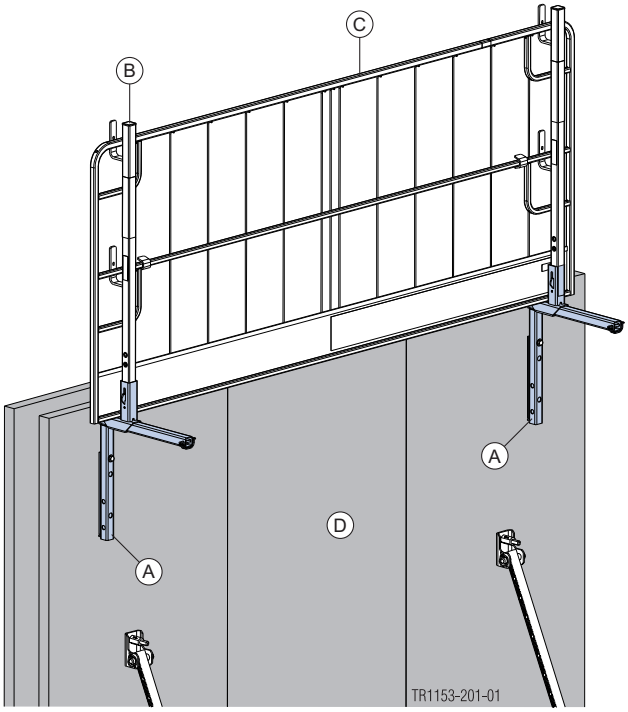
NOTICE

- Use of the Handrail post XP 1.80m is prohibited!
- If possible, the Parapet bracket XP should be mounted on the precast hollow-wall element while the element is lying flat on the ground.

WARNING

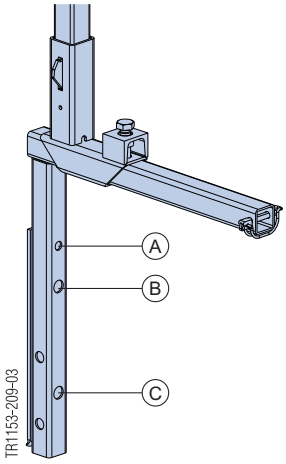
- ➤ It is not permissible to use the Parapet bracket XP as a working scaffold!
- ➤ It is not permissible to step on or place materials on a site-provided cover over the gap between wall and safety barrier!
- ➤ Make sure that the concrete walls have adequate shoring!

Practical example with precast hollow wall



A	Parapet bracket XP
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m
D	Precast hollow wall

Fixing points



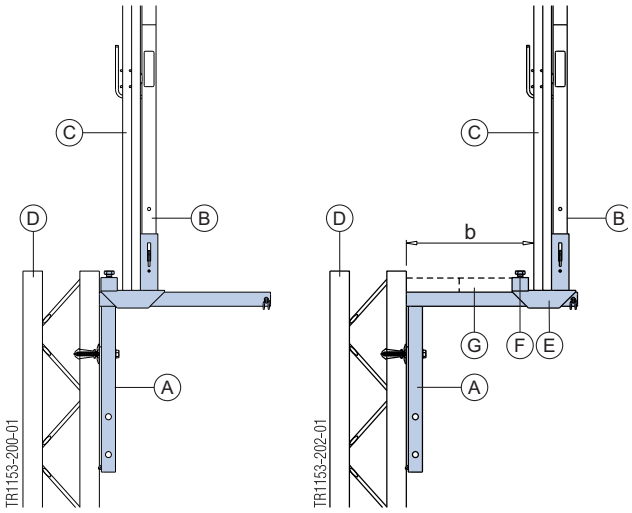
A	Dia. 13 mm, max. tensile load = 4.0 kN (see the section headed 'Practical example: Attachment point A')
B	Dia. 19 mm, max. tensile load = 6.0 kN (see the section headed 'Practical example: Attachment point B' and under 'Additional areas of use' the section headed 'Stop-end for concrete slabs')
C	Dia. 19 mm, max. tensile load = 16.0 kN (see the section headed 'Practical example: Attachment point C')

Adjusting range

When the hexagon screw in the adjusting unit of the Parapet bracket XP is slackened, the distance between structure and safety barrier can be varied for optimum adjustment to any stage of construction. Consequently, in most cases it is possible to dispense with an optional site-provided cover for the gap between wall and safety barrier.

NOTICE

- Always make sure that the adjusting unit is securely tightened!
- Recommended tightening torque of the hexagon bolt: 30 Nm (overtightening can damage the hollow section).



a ... min. 67 mm
b ... max. 367 mm

A	Parapet bracket XP
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m
D	Precast hollow wall
E	Adjusting unit of the Parapet bracket XP
F	Hexagon bolt ISO 4017 M16x50 8.8 galv.
G	Cover (site-provided)

CAUTION

➤ Do **not** step onto or place materials on the site-provided cover!

Assembly

➤ Drill the dia. 18 mm hole (100 mm from the bottom edge) for the tie rod in the Overtec system roof-parapet panel.

➤ Screw the tie rod into the bridge edge beam anchor until seated.

➤ Push the distance sleeve on to the tie rod.

➤ From the back (concrete side) push the pre-assembled unit (consisting of Bridge edge beam anchor 15.0, distance sleeve and Tie rod 15.0) through the hole in the roof-parapet panel.

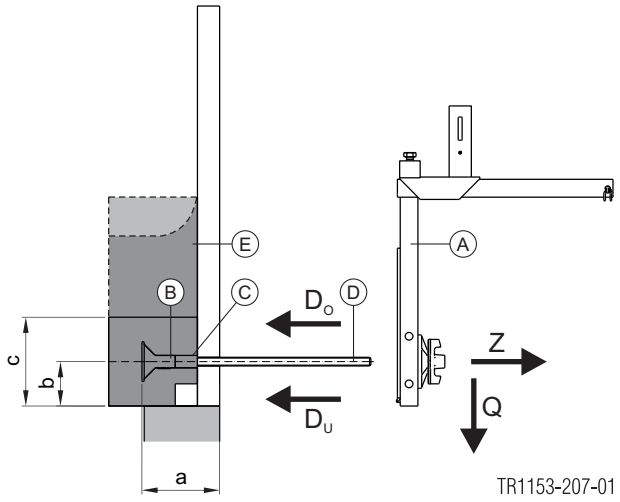
➤ Push the Parapet bracket XP on to the tie rod and secure it with a Super plate or a Star grip nut 15.0. Make sure that everything is secure.

➤ Lift the pre-assembled unit (consisting of roof-parapet panel and Roof-parapet bracket XP) into position.

➤ When the concrete slab has attained adequate load-bearing capacity, mount the Safety barriers XP on the Parapet brackets XP (see the section headed 'Installing the safety barriers').

NOTICE

Do **not** subject the Parapet bracket XP to load **until** the concrete has been poured and the slab has hardened to the point at which its load-bearing capacity is adequate!



a ... 125 mm
b ... 100 mm
c ... ≥200 mm

A	Parapet bracket XP
B	Bridge edge beam anchor 15.0
C	Distance sleeve Ø28x5/L=50 mm (special-component art. n° 551369072)
D	Tie rod 15.0
E	Overtec system roof-parapet panel

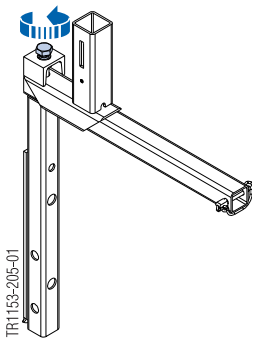
Max. tensile force Z in the tie rod: 16.0 kN
Max. shear force Q in the tie rod: 2.0 kN
Max. compressive force D_O on the concrete: 11.0 kN
Max. compressive force D_U on the concrete: 15.5 kN
(D_O and D_U do not act at the same time.)

'Stop-end for concrete slabs' additional application

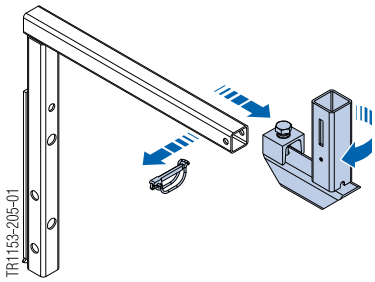
Use as a stop-end for concrete slabs is possible if the requirements for the appearance of the concrete are not high.
For this purpose the parapet bracket has to be modified in such a way that the adjusting unit (socket) for the handrail post XP faces toward the concrete slab.

Modification instructions

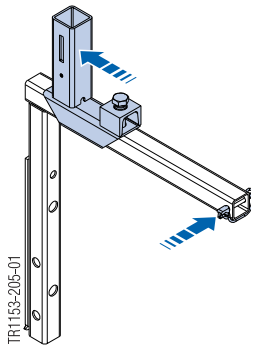
➤ Slacken the hexagon bolt.



➤ Pull out the tube linch pin, remove the adjusting unit and turn it through 180 °.



➤ Install the adjusting unit, tighten the hexagon bolt and insert the tube linch pin to secure.



Assembly instructions

➤ Screw the tie rod into the bridge edge beam anchor.
➤ Work the Parapet bracket XP into position.
➤ Engage a Super plate 15.0 and tighten it securely.
➤ Clamp a wooden board between the adjusting unit and the concrete wall.
➤ Push the adjusting unit against the board and tighten the hexagon bolt.

- Make sure that the adjusting unit is securely seated.
- Recommended tightening torque of the hexagon bolt: 30 Nm. (Overtightening can damage the hollow section).

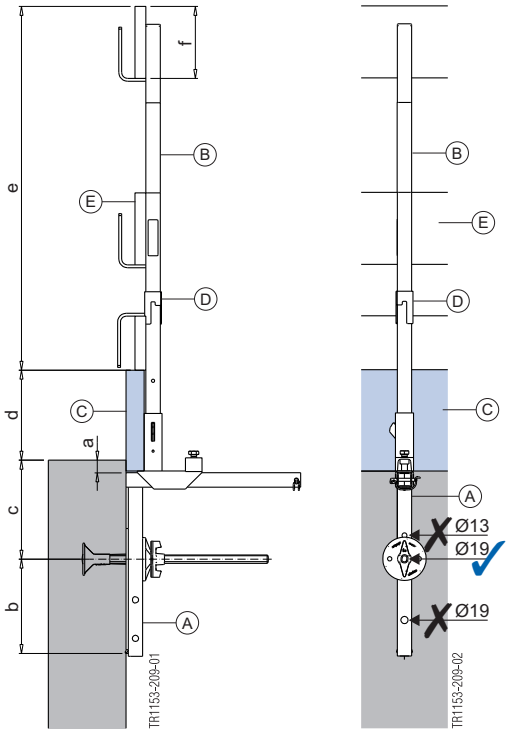
The Sealing tape KS at the wooden end stop prevents the escape of cement slurry.

NOTICE

- In this application, for reasons of geometry it is not possible to use Protective gratings XP.
- Using the **bottom** hole (dia. 19 mm) would cause more deformation in the area of the end stop and this is the reason why this hole is not to be used.

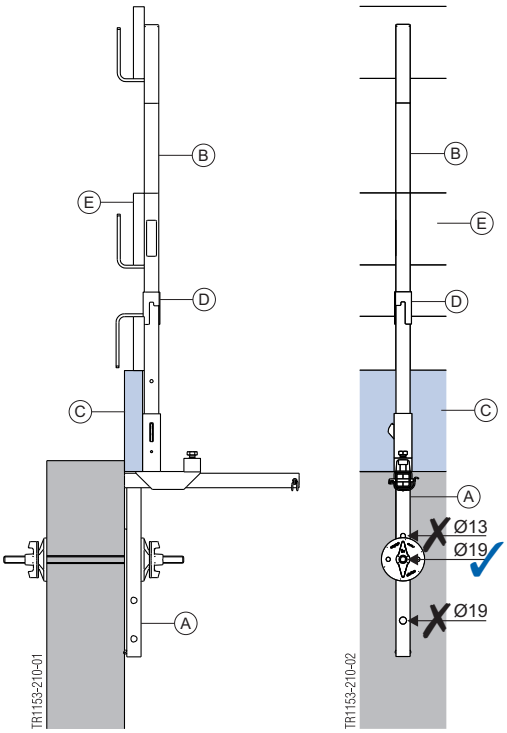
Max. slab thickness: 25 cm
Max. influence width: 1.00 m
Max. peak velocity pressure (wind): 0.6 kN/m²

Anchorage with Bridge edge beam anchor 15.0



a ... 35 mm
b ... 262 mm
c ... 275 mm
d ... max. 250 mm
e ... 1010 mm
f ... 200 mm (slab thickness 200 mm or thicker)

Anchorage with Tie rod 15.0



A	Parapet bracket XP
B	Handrail post XP 1.20m
C	Wooden end stop 5cm
D	Toeboard holder XP 1.20m
E	Guardrail board

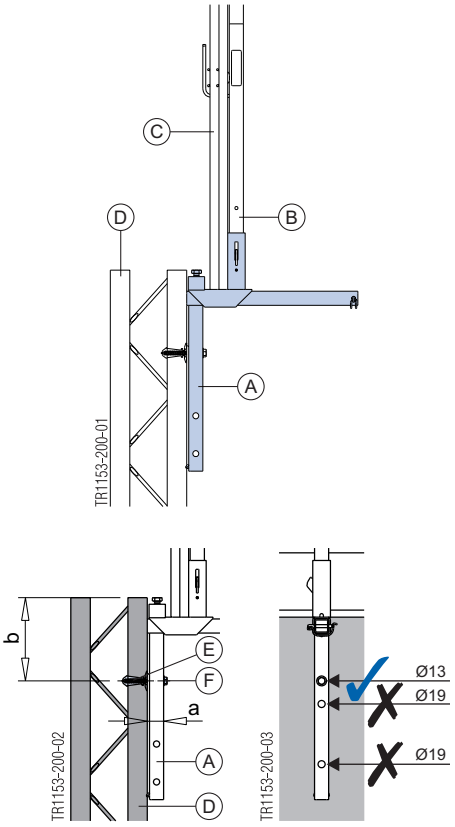
Practical example: Attachment point A

CAUTION

- When using with site-provided screws for plastic wall plugs, use only the top hole (dia. 13 mm)!
- Do not use the two bottom holes (dia. 19 mm) for this purpose, as the plastic wall-plug would be overloaded!
- Comply with the warnings on the yellow safety label!

Required permissible load-bearing capacity of the site-provided plastic wall-plug for precast cavity walls: **4.0 kN**

Precast cavity wall



a ... 46 mm
b ... min. 275 mm

A	Parapet bracket XP
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m
D	Precast cavity wall
E	Plastic wall plug M12 (site-provided)
F	Screw for plastic wall plug (site-provided)

NOTICE

- When selecting screw length, add installed dimension 'a' of the roof-parapet bracket to the minimum screw-in depth stated by the wall-plug manufacturer.
- For installation and use of the site-provided anchor for precast cavity walls, always observe the directions in the valid issue of the manufacturer's installation instructions.

Practical example: Attachment point B

NOTICE

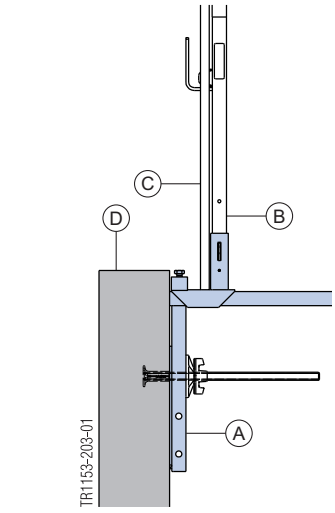
When using with bridge edge beam anchor and tie rod, use only one of the two holes (dia. 19 mm).

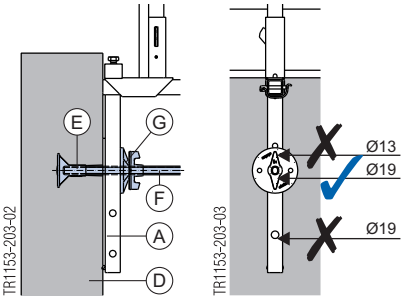
Follow the directions in the 'Bridge edge beam anchor 15.0' Fitting Instructions.

Required permissible load-bearing capacity of the tie: **6.0 kN**

Required concrete strength at the time of loading: $f_{ck,\ cube,\ current}$ ≥10 N/mm²

Solid wall





a ... 46 mm
b ... min. 275 mm

A	Parapet bracket XP
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m
D	Solid wall (e.g. cast-in-place concrete)
E	Bridge edge beam anchor 15.0
F	Tie rod 15.0
G	Super plate 15.0

NOTICE

- When selecting screw length, add installed dimension 'a' of the roof-parapet bracket to the minimum screw-in depth stated by the wall-plug manufacturer.
- For installation and use of the site-provided anchor for precast cavity walls, always observe the directions in the valid issue of the manufacturer's installation instructions.

Practical example: Attachment point C

NOTICE

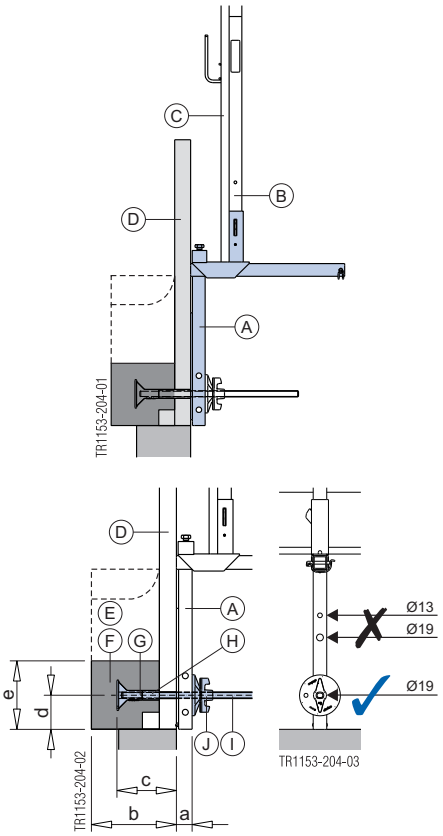
- Do **not** subject the Parapet bracket XP to load **until** the concrete has been poured and the slab has hardened to the point at which its load-bearing capacity is adequate!
- In this arrangement with bridge edge beam anchor 15.0 and tie rod, use only the **bottom** hole (dia. 19 mm).

Follow the directions in the 'Bridge edge beam anchor 15.0' Fitting Instructions.

Required permissible load-bearing capacity of the tie: **16.0 kN**

Required concrete strength at the time of loading: $f_{ck,\ cube,\ current}$ ≥10 N/mm²

Parapet bracket XP with Overtec system roof-parapet panel



a ... 46 mm
b ... min. 250 mm
c ... 125 mm
d ... 100 mm
e ... ≥ 200 mm

A Parapet bracket XP
B Handrail post XP 1.20m
C Protective grating XP 2.70x1.20m
D Overtec system roof-parapet panel
E Construction of flat roof
F CIP concrete slab
G Bridge edge beam anchor 15.0
H Distance sleeve Ø28x5/L=50 mm (special-component art. n° 551369072)
I Tie rod 15.0
J Super plate 15.0

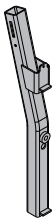
Structural design

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	2.5	1.8	1.9	2.5	2.5	1.7	1.7	1.7	2.5
0.6		1.8	1.9	2.5	2.5	2.0	2.0	2.0	2.5
1.1		1.4	1.4	1.4	1.4	1.0	1.0	1.0	2.5
1.3		1.2	1.2	1.2	1.2	0.9	0.9	0.9	2.4

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Precast member adapter XP



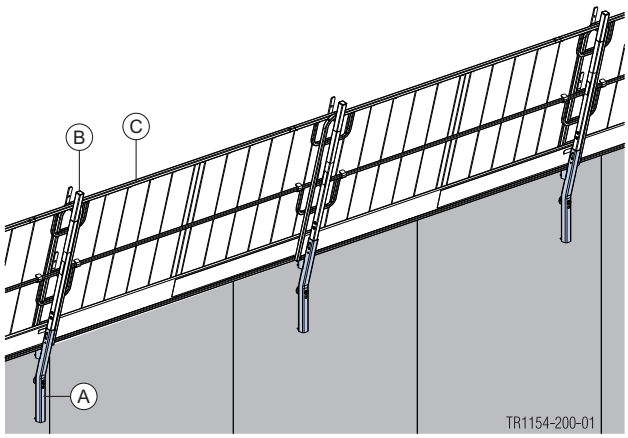
Precast member adapter XP is used for installing edge protection for concrete walls in precast and cast-in-place concrete construction.

- Protective grating XP, guardrail boards or scaffold tubes can be used as the safety barrier
- Can be combined with the Xsafe edge protection XP.

NOTICE

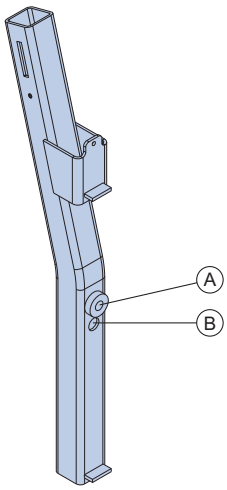
- Use of the Handrail post XP 1.80m is prohibited!

Practical example
e.g. Precast cavity wall:



A Precast member adapter XP
B Handrail post XP 1.20m
C Protective grating XP 2.70x1.20m
D Precast cavity wall

Fixing points



A Dia. 13 mm, max. tensile load = 4.0 kN
(see the 'Precast hollow wall' practical example)
B Dia. 18 mm, max. tensile load = 4.0 kN
(see the 'Solid wall ' practical example)

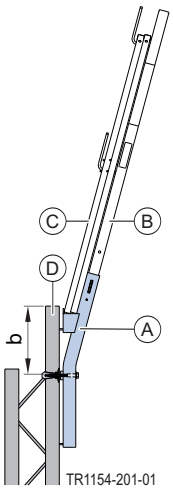
Practical example: Attachment point A

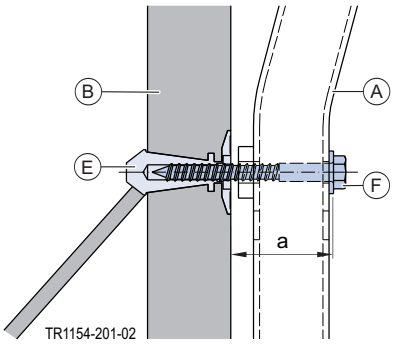
CAUTION

➤ When using with site-provided screws for plastic wall plugs, use only the top hole (dia. 13 mm)!

Required permissible load-bearing capacity of the site-provided plastic wall-plug for precast cavity walls: **4.0 kN**

Precast cavity wall





a ... 65 mm
b ... min. 275 mm

A Precast member adapter XP
B Handrail post XP 1.20m
C Protective grating XP 2.70x1.20m
D Precast cavity wall
E Plastic wall plug M12 (site-provided)
F Screw for plastic wall plug (site-provided)

NOTICE

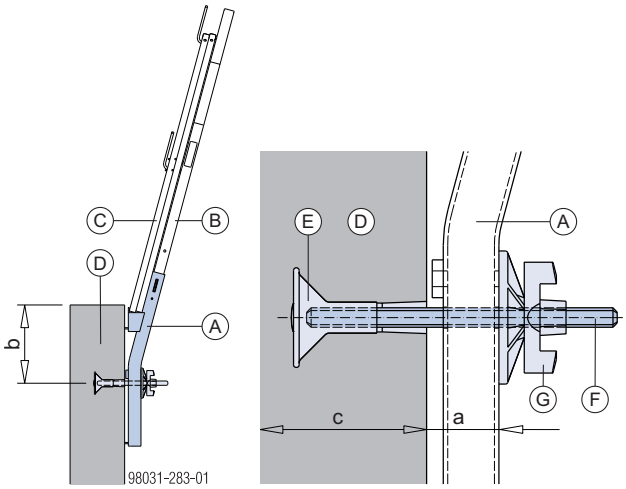
- When selecting screw length, add installed dimension 'a' of the precast member adapter to the minimum screw-in depth stated by the wall-plug manufacturer.
- For installation and use of the site-provided anchor for precast cavity walls, always observe the directions in the valid issue of the manufacturer's installation instructions.

Practical example: Attachment point B

Follow the directions in the 'Bridge edge beam anchor 15.0' Fitting Instructions.

Required permissible load-bearing capacity of the site-provided anchorage: **4.0 kN**

Solid wall

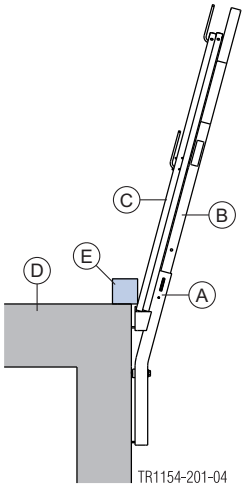


a ... 65 mm
b ... 310 mm
c ... min. 150 mm

A	Precast member adapter XP
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m
D	Solid wall (e.g. cast-in-place concrete)
E	Bridge edge beam anchor 15.0
F	Tie rod 15.0
G	Super plate 15.0

NOTICE

Use site-provided squared timber to close the gap between the concrete and the railing.



A	Precast member adapter XP
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m
D	Floor-slab
E	Squared timber (site-provided)

Structural design

Anchorage with site-provided screw

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.6	3.6	4.9
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4	4.9
1.1		1.8	1.9	1.9	1.9	1.3	1.3	1.3	3.7
1.3		1.8	1.6	1.6	1.6	1.1	1.1	1.1	3.2

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Anchorage with Bridge edge beam anchor 15.0

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	2.5	1.8	1.9	2.7	3.4	2.4	2.4	2.4	4.9
0.6		1.8	1.9	2.5	2.5	1.8	1.8	1.8	4.5
1.1		1.6	1.4	1.4	1.4	1.0	1.0	1.0	2.6
1.3	2.3	1.4	1.2	1.2	1.2	0.8	0.8	0.8	2.2

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

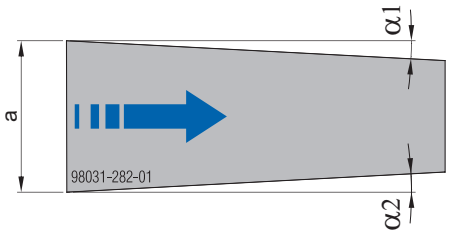
[2] with toeboard 5 x 20 cm

Safety barriers on inclined concrete surfaces

Railing clamps XP can also be clamped to inclined (non-parallel) concrete surfaces. Extra precautions are necessary.

NOTICE

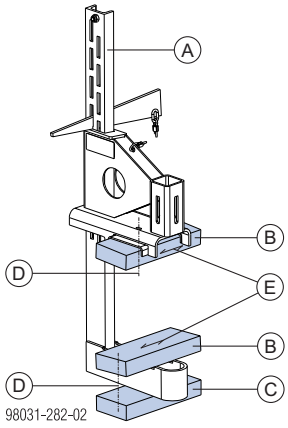
- Suitable for railing-heights of up to 1.80 m.
- The concrete component must be able to safely transfer the loads!
- Do not attempt to clamp the Railing clamp XP to inclined (non-parallel) concrete surfaces without inserting wooden boards!
- Minimum clamping thickness of the concrete: min. 18 cm
- Install the Railing clamp XP only in the direction shown here.
- At regular intervals, check the security of the railing clamps.
- Max. angle of inclination (α1+ α2) = 7°



a ... min. 180 mm

Pre-assembly:

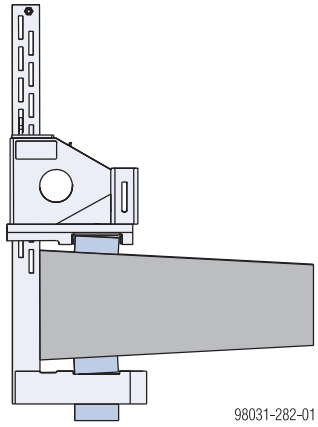
➤ Use wood-screws to secure two lengths of spruce batten 3 x 8 x 20 cm and a counter-batten to the Railing clamp XP (wood grain of all battens running in longitudinal direction).



A	Railing clamps XP 40cm or Railing clamps XP 85cm
B	Spruce batten 3 x 8 x 20 cm
C	Counter-batten
D	Wood-screw
E	Direction of grain in batten

➤ Push the Railing clamp XP onto the floor-slab until it is pressed against the end face of the slab.

➤ Hammer in the wedge until the hammer rebounds.



➤ Mount the safety barriers (see the section headed 'Mounting the safety barriers').

Structural design

Railing height 1.20 m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective grating XP 2.70x1.20m	Guardrail boards							Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4	5.0	1.8
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4	5.0	1.3
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3	5.0	0.7
1.3		1.8	1.5	1.5	1.5	1.1	1.1	1.1	4.4	0.6

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

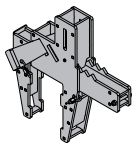
Railing height 1.80 m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]							
	Guardrail boards							Scaffold tubes 48.3mm [2]
	2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	
0.2	1.5	1.2	1.2	1.2	0.8	0.8	0.8	3.0
0.6	1.5	1.2	1.2	1.2	0.8	0.8	0.8	3.0
1.1	1.0	0.8	0.8	0.8	0.6	0.6	0.6	2.2
1.3	0.8	0.7	0.7	0.7	0.5	0.5	0.5	1.8

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Safety barriers on trench box panels and precast hollow-wall panels



The Trench box adapter XP is used for installing edge protection for working with trench box panels and pre-cast hollow-wall panels.

- Protective grating XP, guardrail boards or scaffold tubes can be used as the safety barrier
- Clamping range: 5 - 20 cm
- Suitable for railing heights up to 1.80 m when used on trench box panels.
- Suitable for railing heights up to 1.20 m when used on precast hollow-wall panels.
- Required minimum strength of the concrete: 30 N/mm²

Note:

- To transfer possible lateral horizontal loads , install diagonals (wooden boards) and/or use Velcro fasteners 30x380mm to secure the protective gratings to the Handrail posts XP.
- Given that, on account of the unclear friction conditions applying. The Trench box adapter XP can transfer only an undefined load in the direction parallel to the safety barrier, it is preferable to use the Protective grating XP because it 'locks' itself in place.
- When using with scaffold tubes or guardrail boards, implement structural measures, such as bracing for example, to secure against movement in the direction parallel to the safety barrier.
- When using with precast hollow-wall panels, this aspect has to be evaluated separately by the manufacturer of the precast hollow-wall panels, because it might be necessary to insert extra reinforcement (at a depth of approx. 5 cm, measured from above) in the precastings.
- When using on out-of-level surfaces, make sure that the underside of the protective grating does not come into contact, for example with the ground or planks.
- To ensure that the adapters can be removed from precast hollow-wall panels, a suitable wrapping (e.g. painter's masking tape) has to be wound round the part of the adapter that embeds in the concrete.

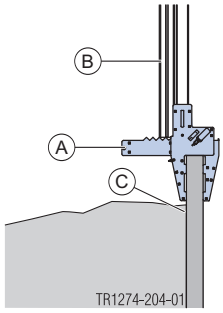
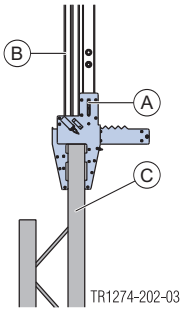
CAUTION

➤ After shaking of the walls (vibrations), check the security of the trench box adapters; re-secure as necessary.

Assembly

NOTICE

Make sure that the trench box adapter and the safety barrier are correctly positioned!

Use on trench box panels	Use on pre-cast hollow-wall panels
	

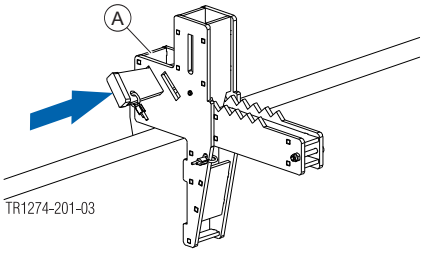
A Trench box adapter XP
B Safety barrier
C Outer face of the trench box panel or of the pre-cast hollow-wall panel, as applicable

Example with a railing height of 1.20m:

➤ To adjust the clamping range of the Trench box adapter XP, first take the wedge out of the wedge-slot.

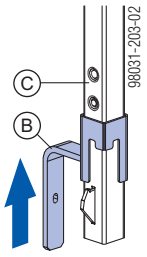
➤ Push the Trench box adapter XP on to the trench box panel or pre-cast hollow-wall panel, as applicable, until it is seated against the end face.

➤ Knock the wedge into the appropriate wedge slot until the hammer rebounds.



A Trench box adapter XP

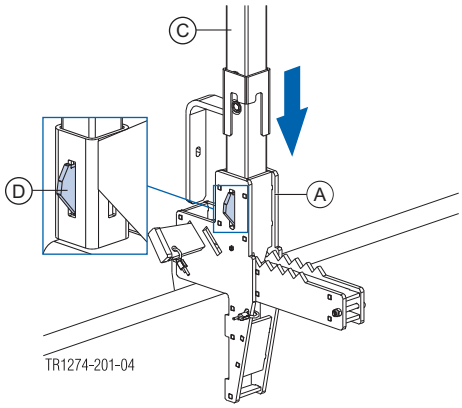
➤ Working from below, push the Toeboard holder XP 1.20m onto the Handrail post XP 1.20m (not needed when using the Protective grating XP).



B Toeboard holder XP 1.20m
C Handrail post XP 1.20m

The bracket of the toeboard holder must be pointing downward.

➤ Push on the Handrail post XP 1.20m until it locks ('Easy-Click' function).



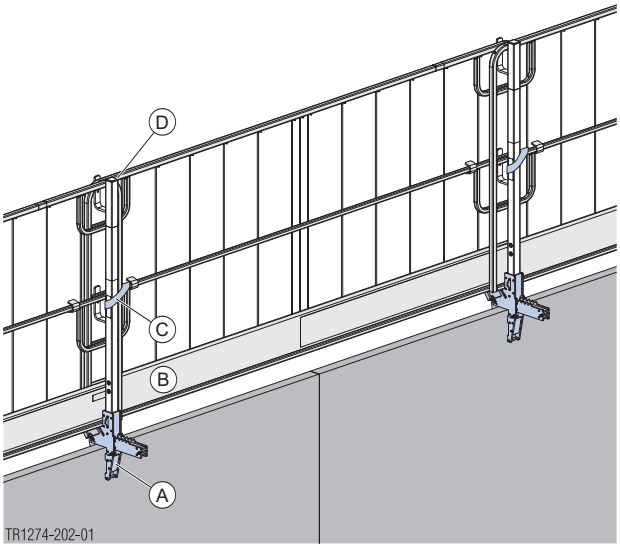
A	Trench box adapter XP
C	Handrail post XP 1.20m
D	Locking mechanism

The locking mechanism must engage.

➤ Mount the safety barriers (see the section headed 'Mounting the safety barriers').

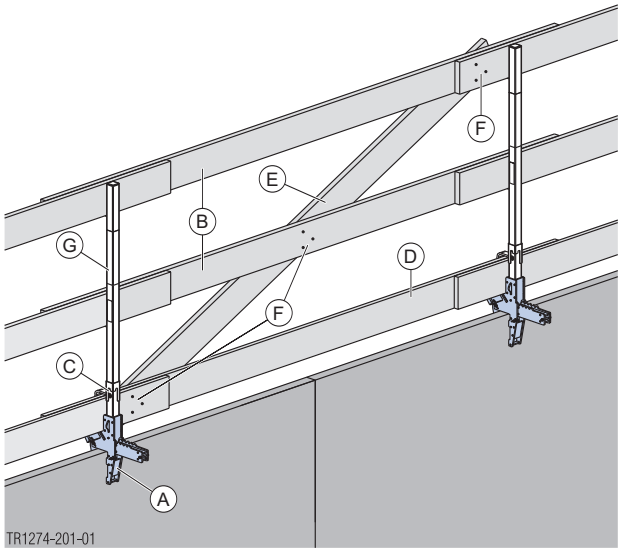
Practical examples pre-cast hollow-wall panel

with Protective gratings XP



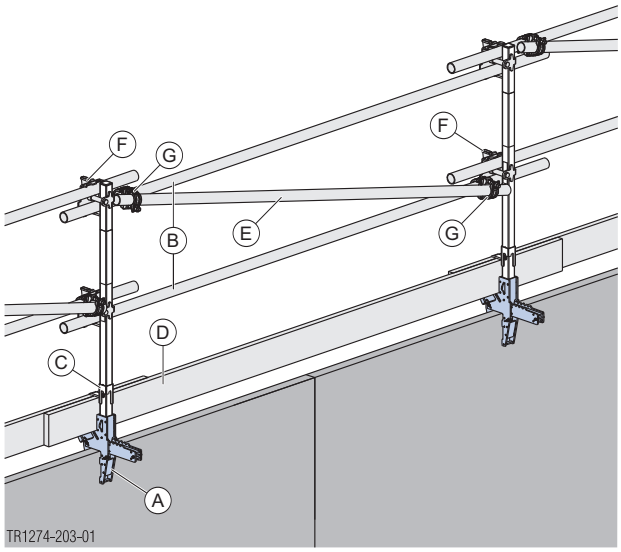
A	Trench box adapter XP
B	Protective grating XP
C	Velcro fastener 30x380mm (to secure the Protective grating XP)
D	Handrail post XP

with guard-rail boards



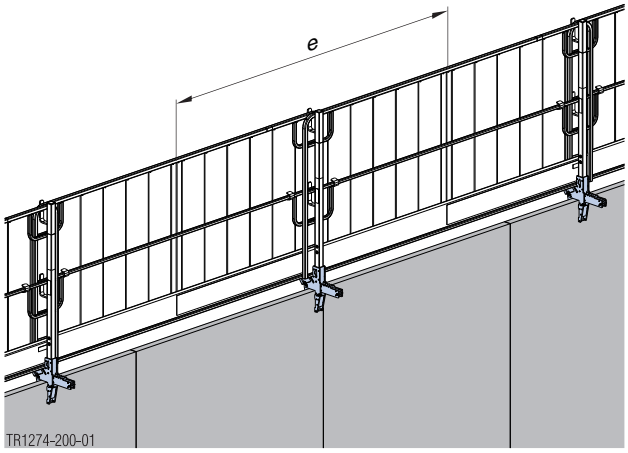
A	Trench box adapter XP
B	Guardrail boards
C	Toeboard holder XP
D	Toeboard
E	Guardrail board for bracing
F	Attachment with nails or screws
G	Handrail post XP

with Scaffold tubes 48.3mm



A	Trench box adapter XP
B	Scaffold tube 48.3mm
C	Toeboard holder XP
D	Toeboard
E	Scaffold tube 48.3mm for bracing
F	Scaffold tube holder D34/48mm
G	Swivel coupler 48mm

Structural design



e ... permitted influence width

Permitted influence width 'e' [m] of the Handrail posts 1.20m

Peak velocity pressure q [kN/m²]	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4	5.0
0.6		1.8	1.9	2.7	3.4	2.4	2.4	2.4	5.0
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3	5.0
1.3		1.8	1.6	1.6	1.6	1.1	1.1	1.1	4.4

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Permitted influence width 'e' [m] of the Handrail posts 1,80m

Peak velocity pressure q [kN/m²]	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	1.9	1.3	1.1	1.1	1.1	0.8	0.8	0.8	3.5
0.6	1.9	1.3	1.1	1.1	1.1	0.8	0.8	0.8	3.5
1.1	1.4	1.0	0.9	0.9	0.9	0.6	0.6	0.6	2.7
1.3	1.2	0.9	0.7	0.7	0.7	0.5	0.5	0.5	2.3

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

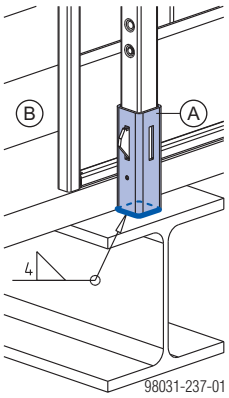
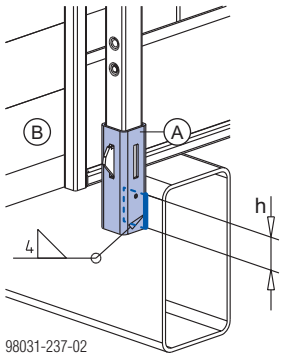
Safety barriers on steel components

The Weld-on connecting piece XP can be used for fixing the Handrail post XP to steel components.

WARNING

- For all fixing-situations other than those shown here, the weld-seam must be individually designed in each case.
- Make sure that the Weld-on connecting piece XP is attached in the correct mounting position!
- Observe all the standards and regulations applying to on-site welding work!
- The Weld-on connecting piece XP must be welded onto the steel component with a fillet weld (a = 4 mm) on all 4 sides.
- Only fix the Weld-on connecting piece XP to steel parts that can reliably transfer the forces involved.

Practical examples

Underside of Weld-on connecting piece XP welded to e.g. an I-section girder	Rear of Weld-on connecting piece XP welded to e.g. a squared tube
	

h ... 5 cm

A Weld-on connecting piece XP

B Decking board

Structural design

Railing height 1.20 m

Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective grating XP 2.70x1.20m	Guardrail boards							Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.4	3.4	5.0	1.8
0.6		1.8	1.9	2.7	3.3	2.4	2.4	2.4	5.0	1.3
1.1		1.8	1.8	1.8	1.8	1.3	1.3	1.3	5.0	0.7
1.3		1.6	1.5	1.5	1.5	1.1	1.1	1.1	4.4	0.6

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Acting moment M_{Ed}: 112 kNcm

Railing height 1.80 m

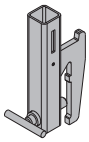
Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]									
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guardrail boards							Scaffold tubes 48.3mm [2]	Gap-free boarding
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm		
0.2	2.5	1.8	1.9	2.7	3.6	2.9	3.3	3.3	5.0	1.5
0.6		1.8	1.9	2.7	2.8	2.1	2.1	2.1	5.0	0.9
1.1		1.8	1.5	1.5	1.5	1.1	1.1	1.1	3.7	0.5
1.3		1.6	1.3	1.3	1.3	1.0	1.0	1.0	3.2	0.4

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Acting moment M_{Ed}: 191 kNcm

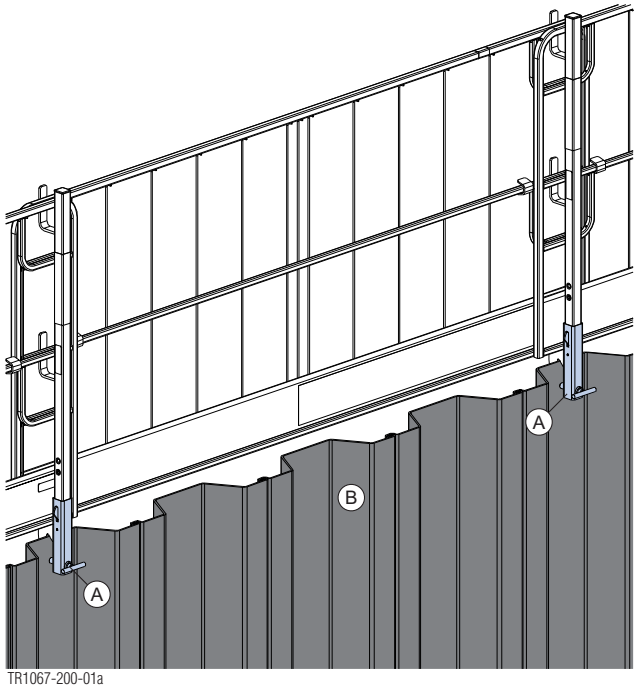
Safety barriers on sheeting walls



The Sheet pile adapter XP is for erecting safety barriers on sheeting walls.

- For sheeting wall thicknesses from 10 - 20 mm.
- Suitable for railing-heights of up to 1.20 m.

Practical example



TR1067-200-01a

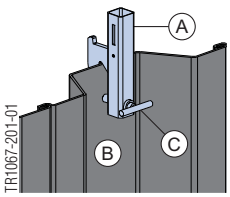
A Sheet pile adapter XP
B Sheeting wall

Assembly

➤ Push Sheet pile adapter XP down on to the sheeting wall.

Make sure that the adapter is seated firmly against the top of the sheeting wall!

➤ Use a hammer to tighten the toggle clamp.



TR1067-201-01

A Sheet pile adapter XP
B Sheeting wall
C Toggle clamp

Structural design

Railing height 1.20 m

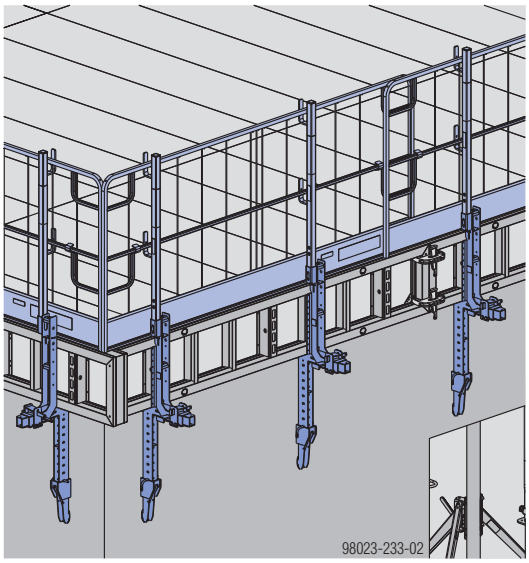
Peak velocity pressure q [kN/m²]	Permissible influence width 'e' [m]								
	Protective grating XP 2.70x1.20m	Guardrail boards							
		2.5 x 12.5 cm [1]	2.4 x 15 cm	3 x 15 cm	4 x 15 cm	3 x 20 cm	4 x 20 cm	5 x 20 cm	Scaffold tubes 48.3mm [2]
0.2	2.5	1.8	1.9	2.1	2.1	1.3	1.3	1.3	5.0
0.6		1.8	1.9	2.1	2.1	1.3	1.3	1.3	5.0
1.1		1.5	1.3	1.3	1.3	0.9	0.9	0.9	3.3
1.3	2.3	1.3	1.1	1.1	1.1	0.8	0.8	0.8	2.8

[1] with toeboard 3 x 20 cm, 4 x 20 cm or 5 x 20 cm

[2] with toeboard 5 x 20 cm

Safety barriers on Doka floor end-shutter clamp

Follow the directions in the "Doka floor end-shutter clamp" User Information booklet!



Note:
The edge railings must be mounted before the formwork sheets are laid out.

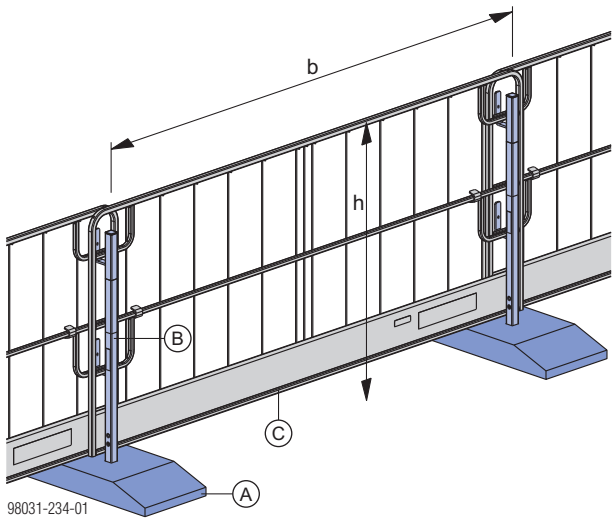
Barriers demarcating working areas

When combined with fence-feet baseblocks, the Xsafe edge protection XP can also be used to demarcate different working areas within a jobsite.

Required spacing of the handrail posts: 2.50 m (as the Protective gratings XP have to be mounted in a higher position).

Requirements for fence-feet baseblocks:

- Dead weight min. 25 kg; length of baseblock foot 80 cm
- Recess for 40 x 40 mm squared tube



b ... 250 cm
h ... max. 130 cm

A	Fence-feet baseblock (site-provided)
B	Handrail post XP 1.20m
C	Protective grating XP 2.70x1.20m

NOTICE

- This demarcation fence is not a guardrail system as defined by EN 13374!
- Ensure that it has sufficient stability against overturning, and allow for wind loads!
- When used as a safety guard and demarcation fence for fall-hazard locations, it must be placed min. 2.00 m from the drop-off edge!
- Observe all local standards and regulations!

General

Individual design options

Mounting advertising signboards

Advertising signboards can be attached to the Protective grating XP on-site.

NOTICE

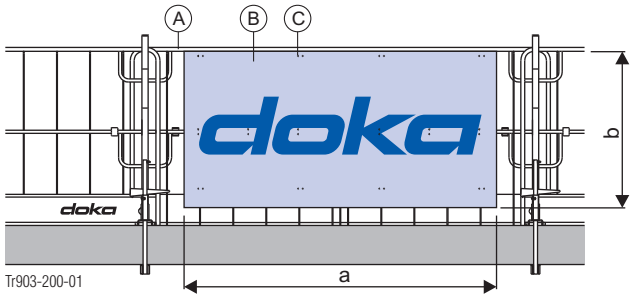
- It is only allowed to fit signboards to 1.20 m high Protective gratings XP.
- On Protective gratings XP being used for structure-mounted safety barriers, signboards are only allowed if the gratings are fixed with Railing clamps XP or Handrail-post shoes XP.
- Size of signboard (width x height): max. 2.00x1.00m
- Peak velocity pressure ‘q’: max. 0.6 kN/m²
- Always fix the signboard to the grating-bar side (provides a better support surface so signboard can be fixed more firmly).
  - This means that the Protective grating XP has to be mounted the other way round (i.e. turned 180° with Doka logo on toeboard facing inwards).
- Mounting signboards on two adjacent Protective gratings XP is not allowed (must be spaced at least one grating apart).
- Fasten the signboard to the Protective grating XP centrally, using cable ties.
  - Tie it 4x at the top, 6x in the middle and 4x at the bottom, (only applies to signboards measuring 2.00x1.00 m).
- The holes for fixing the signboard must be drilled on-site.
- Vertical stacking with Protective gratings XP 0.60m is still possible.
- The stacking height will depend on how thick the advertising signboard is.
- When the signboards are stacked, some of them may end up being scratched.

Note:

In cases where the edge protection is designed with gap-free boarding, the points mentioned above no longer apply.

Alternatively, advertising nets or tarpaulins can also be attached (attachment method will depend on the type of net or tarp).

Practical example



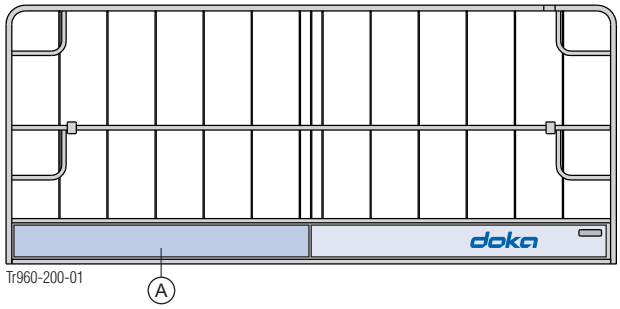
a ... 200 cm
b ... 100 cm

A	Protective grating XP 2.70x1.20m
B	Advertising signboard, 2.00x1.00m
C	Fixing points for cable ties (width min. 4.6 mm)

Colour scheme and customer logo

- Protective gratings XP can be ordered in various colours (all RAL colours possible). They are galvanised and one side is powder-coated.
- On request, the empty area on the left-hand side **(A)** of the toeboard can also be used for affixing customer stickers.

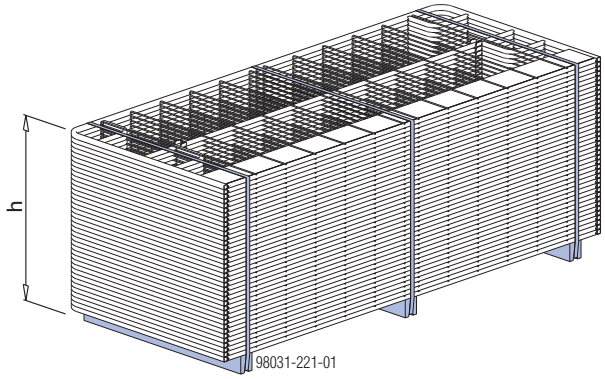
For more information, please contact your Doka technician.



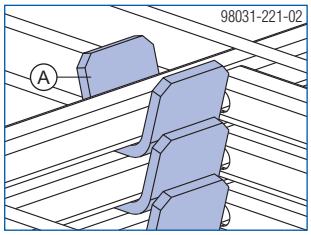
Transporting, stacking and storing

Bundling the Protective gratings XP

➤ Use metal banding to strap max. 38 Protective gratings XP together with 3 battens of hardwood blocking.



h ... 105 cm



A Stacking stirrup

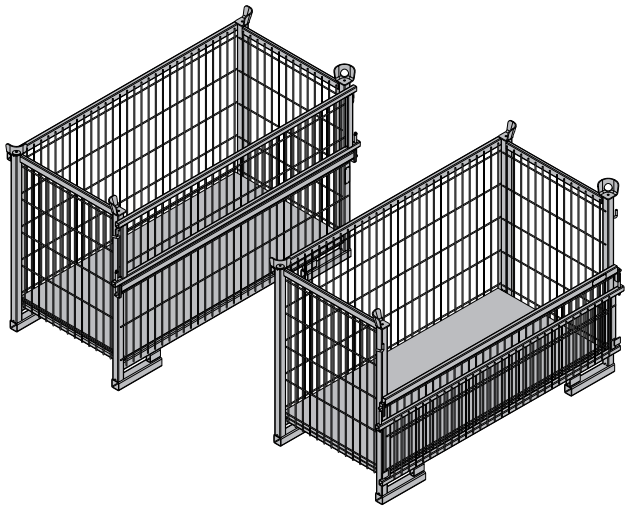
The integral stacking stirrups prevent the Protective gratings XP from slipping.

Doka multi-trip packaging

Utilise the benefits of Doka multi-trip packaging on your site.
Multi-trip packaging such as containers, stacking pallets and skeleton transport boxes keep everything in place on the site, minimise time wasted searching for parts, and streamline the storage and transport of system components, small items and accessories.

Doka skeleton transport box 1.70x0.80m

Storage and transport device for small items



Max. load-bearing capacity: 700 kg (1540 lbs)
Permitted imposed load: 3150 kg (6950 lbs)

To make the Doka skeleton transport box easier to load and unload, one of its sidewalls can be opened.

Using Doka skeleton transport boxes 1.70x0.80m as storage units

Max. n° of units on top of one another

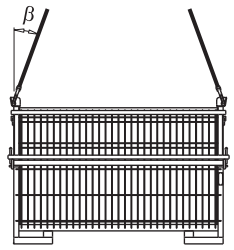
Outdoors (on the site) Floor gradients up to 3%	Indoors Floor gradients up to 1%
2	5
It is not allowed to stack empty pallets on top of one another!	

NOTICE
Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.

Using Doka skeleton transport boxes 1.70x0.80m as transport devices

Lifting by crane

NOTICE
- Multi-trip packaging items may only be lifted one at a time.
- Only lift the boxes when their sidewalls are closed!
- Use a suitable crane suspension tackle (e.g. Doka 4-part chain 3.20m).
  Do not exceed the permitted working load limit.
- Sling angle β max. 30°!



9234-203-01

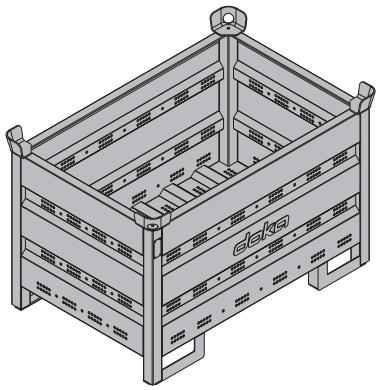
Repositioning by forklift truck or pallet stacking truck

The forks can be inserted under either the broadside or the narrowside of the containers.

Doka multi-trip transport box

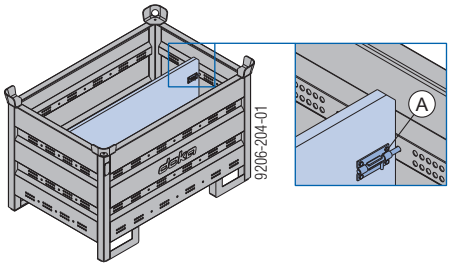
Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m



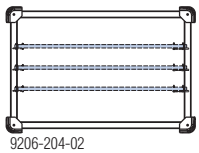
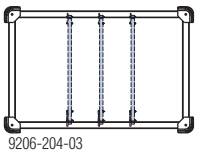
Max. carrying capacity: 1500 kg (3300 lbs)
Permitted imposed load: 7850 kg (17300 lbs)

Different items in the Doka multi-trip transport box can be kept separate with the **Multi-trip transport box partitions 1.20m or 0.80m**.

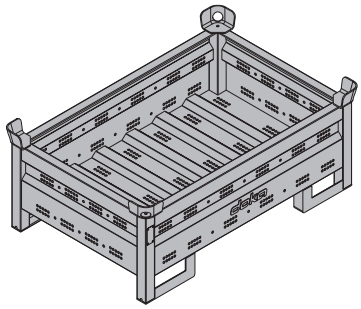


A Slide-bolt for fixing the partition

Possible ways of dividing the box

Multi-trip transport box partition	in the longitudinal direction	in the transverse direction
1.20m	max. 3 partitions	-
0.80m	-	max. 3 partitions
	 9206-204-02	 9206-204-03

Doka multi-trip transport box 1.20x0.80mx0.41m



Max. carrying capacity: 750 kg (1650 lbs)
Permitted imposed load: 7200 kg (15870 lbs)

Using Doka multi-trip transport boxes as storage units

Max. n° of units on top of one another

Outdoors (on the site) Floor gradients up to 3%		Indoors Floor gradients up to 1%	
Doka multi-trip transport box		Doka multi-trip transport box	
1.20x0.80m	1.20x0.80x0.41m	1.20x0.80m	1.20x0.80x0.41m
3	5	6	10
It is not allowed to stack empty pallets on top of one another!			

NOTICE

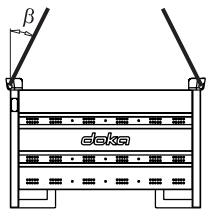
Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.

Using Doka multi-trip transport boxes as transport devices

Lifting by crane

NOTICE

- Multi-trip packaging items must be lifted individually.
- Use a suitable crane lifting tackle (e.g. Doka 4-part chain 3.20m). Do not exceed the permitted working load limit.
- Sling angle β max. 30°!



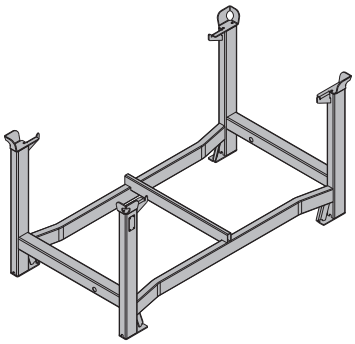
9206-202-01

Repositioning by forklift truck or pallet stacking truck

The forks can be inserted under either the broadside or the narrowside of the containers.

Doka stacking pallet 1.55x0.85m and 1.20x0.80m

Storage and transport devices for long items.



Max. carrying capacity: 1100 kg (2420 lbs)
Permitted imposed load: 5900 kg (12980 lbs)

Using Doka stacking pallets as storage units

Max. n° of units on top of one another

Outdoors (on the site) Floor gradients up to 3%	Indoors Floor gradients up to 1%
2	6
It is not allowed to stack empty pallets on top of one another!	

NOTICE

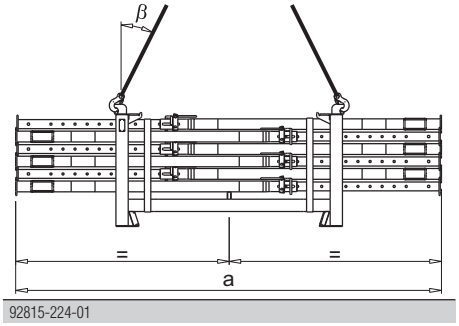
- Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.
- **How to use with Bolt-on castor set B:**
  - Always apply the fixing brake when the container is 'parked'.
  - When Doka stacking pallets are stacked, the bottom pallet must NOT be one with a bolt-on castor set mounted to it.

Using Doka stacking pallets as transport devices

Lifting by crane

NOTICE

- Multi-trip packaging items must be lifted individually.
- Use a suitable crane lifting tackle (e.g. Doka 4-part chain 3.20m). Do not exceed the permitted working load limit.
- Load the items centrically.
- Fasten the load to the stacking pallet (e.g. with strapping tape or lashing strap) so that it cannot slide or tip out.
- Sling angle β max. 30°!



	a
Doka stacking pallet 1.55x0.85m	max. 4.5 m
Doka stacking pallet 1.20x0.80m	max. 3.0 m

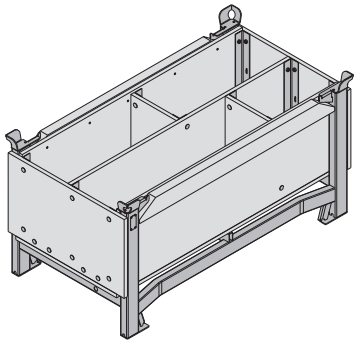
Repositioning by forklift truck or pallet stacking truck

NOTICE

- Load the items centrically.
- Fasten the load to the stacking pallet (e.g. with strapping tape or lashing strap) so that it cannot slide or tip out.

Doka accessory box

Storage and transport device for small items



Max. carrying capacity: 1000 kg (2200 lbs)
Permitted imposed load: 5530 kg (12191 lbs)

Doka accessory boxes as storage units

Max. n° of units on top of one another

Outdoors (on the site)	Indoors
Floor gradients up to 3%	Floor gradients up to 1%
3	6
It is not allowed to stack empty pallets on top of one another!	

NOTICE

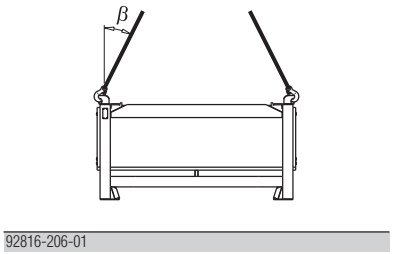
- Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.
- **How to use with Bolt-on castor set B:**
  - Always apply the fixing brake when the container is 'parked'.
  - When Doka stacking pallets are stacked, the bottom pallet must NOT be one with a bolt-on caster set mounted to it.

Doka accessory box as transport devices

Lifting by crane

NOTICE

- Multi-trip packaging items must be lifted individually.
- Use a suitable crane lifting tackle (e.g. Doka 4-part chain 3.20m). Do not exceed the permitted working load limit.
- When lifting accessory boxes to which Bolt-on castor sets B have been attached, you must also follow the 'Bolt-on castor set B' User Information booklet!
- Sling angle β max. 30°!

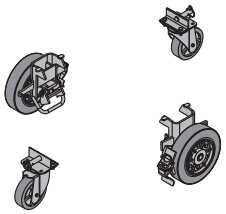


Repositioning by forklift truck or pallet stacking truck

The forks can be inserted under either the broadside or the narrowside of the containers.

Bolt-on castor set B

The Bolt-on castor set B turns multi-trip packaging items into fast and manoeuvrable transport devices.
Suitable for drive-through access openings > 90 cm.



The Bolt-on castor set B can be mounted to the following multi-trip packaging items:

- Doka accessory box
- Doka stacking pallets
- Protective barrier Z pallets

Follow the directions in the 'Bolt-on castor set B' User Information booklet!

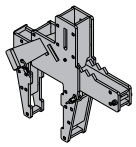
	[kg]	Article N°
Handrail post XP 1.20m Geländersteher XP 1,20m Galvanised Height: 118 cm	**4.1**	**586460000**
Toeboard holder XP 1.20m Fußwehrhalter XP 1,20m Galvanised Height: 21 cm	**0.64**	**586461000**
Handrail post XP 0.60m Geländersteher XP 0,60m Galvanised Height: 68 cm	**5.0**	**586462000**
Toeboard holder XP 0.60m Fußwehrhalter XP 0,60m Galvanised Height: 21 cm	**0.77**	**586463000**
Handrail post XP 1.80m Geländersteher XP 1,80m Galvanised Height: 176 cm	**6.0**	**586482000**
Handrail post XP flex 1.60m Geländersteher XP flex 1,60m Galvanised	**4.6**	**586494000**

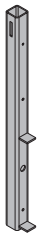
	[kg]	Article N°
Railing holder XP flex Geländerhalter XP flex Galvanised Height: 66.6 cm	**2.5**	**586495000**
Railing clamp XP 40cm Geländerzwinge XP 40cm Galvanised Height: 73 cm	**7.7**	**586456000**
Railing clamp XP 85cm Geländerzwinge XP 85cm Galvanised Height: 115 cm	**9.3**	**586468000**
Handrail-post shoe XP Geländerschuh XP Galvanised Length: 20 cm	**2.2**	**586457000**
Handrail-post shoe XP box-out Aussparung Geländerschuh XP Black Length: 25.8 cm Width: 24.4 cm Height: 5.5 cm	**0.18**	**586480000**
Screw-on shoe XP Schraubschuh XP Galvanised Height: 27 cm	**1.5**	**586458000**
Screw sleeve 20.0 Schraubhülse 20,0 PP Yellow Length: 20 cm Diameter: 3.1 cm	**0.03**	**584386000**
Attachable sleeve 24mm Steckhülse 24mm PVC PE Grey Length: 16.5 cm Diameter: 2.7 cm	**0.03**	**584385000**

	[kg]	Article N°
Step bracket XP Treppenkonsole XP Galvanised Height: 27 cm	**1.6**	**586459000**
Framax adapter XP Framax-Adapter XP Galvanised Height: 56 cm	**8.0**	**586475000**
Frami adapter XP Frami-Adapter XP Galvanised Height: 91.5 cm	**10.0**	**586477000**
Timber-beam formwork adapter XP Trägerschalungsadapter XP Galvanised Height: 83.5 cm	**9.5**	**586476000**
Bridge-deck clamp XP Tragwerkzwinge XP Galvanised Height: 68 cm	**7.4**	**586465000**
Dokamatic adapter XP Dokamatic-Adapter XP Galvanised Length: 54 cm	**10.2**	**586474000**
Insertion adapter XP Einschubadapter XP Galvanised Height: 43 cm	**4.1**	**586478000**

	[kg]	Article N°
Parapet adapter XP Brüstungsadapter XP Galvanised Height: 17 cm	**2.9**	**586469000**
Balcony adapter XP Balkonadapter XP Galvanised Length: 20.9 cm Width: 8.0 cm Height: 22.1 cm	**2.4**	**586485000**
Precast member adapter XP Fertigteiladapter XP Galvanised Height: 68.2 cm	**4.5**	**586487000**
Multi precast connector XP Multi-Fertigteilanschluss XP Galvanised Height: 20 cm	**2.9**	**586493000**
Parapet bracket XP Attikakonsole XP Galvanised Length: 48.5 cm Height: 67.5 cm	**6.0**	**586488000**
Weld-on connecting piece XP Anschweißstutzen XP Non-treated Height: 16 cm	**0.81**	**586467000**
Sheet pile adapter XP Spundwandadapter XP Galvanised Length: 11 cm Width: 10 cm Height: 29 cm	**2.6**	**586484000**
Bracket adapter XP FRR 50/30 Konsolenadapter XP FRR 50/30 Galvanised Height: 32 cm	**2.4**	**586486000**

	[kg]	Article N°

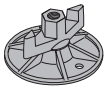
Trench box adapter XP 6.5 586492000
Verbauplattenadapter XP
Galvanised
Length: 32 cm


Floor end-shutter profile XP 4.2 586481000
Deckenabschalprofil XP
Galvanised
Height: 77 cm


Tie rod 15.0mm galvanised 0.50m	**0.72**	**581821000**
Tie rod 15.0mm galvanised 0.75m	**1.1**	**581822000**
Tie rod 15.0mm galvanised 1.00m	**1.4**	**581823000**
Tie rod 15.0mm galvanised 1.25m	**1.8**	**581826000**
Tie rod 15.0mm galvanised 1.50m	**2.2**	**581827000**
Tie rod 15.0mm galvanised 1.75m	**2.5**	**581828000**
Tie rod 15.0mm galvanised 2.00m	**2.9**	**581829000**
Tie rod 15.0mm galvanised 2.50m	**3.6**	**581852000**
Tie rod 15.0mm galvanised .....m	**1.4**	**581824000**
Tie rod 15.0mm non-treated 0.50m	**0.73**	**581870000**
Tie rod 15.0mm non-treated 0.75m	**1.1**	**581871000**
Tie rod 15.0mm non-treated 1.00m	**1.4**	**581874000**
Tie rod 15.0mm non-treated 1.25m	**1.8**	**581886000**
Tie rod 15.0mm non-treated 1.50m	**2.1**	**581876000**
Tie rod 15.0mm non-treated 1.75m	**2.5**	**581887000**
Tie rod 15.0mm non-treated 2.00m	**2.9**	**581875000**
Tie rod 15.0mm non-treated 2.50m	**3.6**	**581877000**
Tie rod 15.0mm non-treated 3.00m	**4.3**	**581878000**
Tie rod 15.0mm non-treated 3.50m	**5.0**	**581888000**
Tie rod 15.0mm non-treated 4.00m	**5.7**	**581879000**
Tie rod 15.0mm non-treated 5.00m	**7.2**	**581880000**
Tie rod 15.0mm non-treated 6.00m	**8.6**	**581881000**
Tie rod 15.0mm non-treated 7.50m	**10.7**	**581882000**
Tie rod 15.0mm non-treated .....m	**1.4**	**581873000**

Ankerstab 15,0mm

DIN 18216

Super plate 15.0 1.1 581966000
Superplatte 15,0
Galvanised
Height: 6 cm
Diameter: 12 cm
Width-across: 27 mm

DIN 18216

Wing nut 15.0 0.31 581961000
Flügelmutter 15,0
Galvanised
Length: 10 cm
Height: 5 cm
Width-across: 27 mm

DIN 18216

Bridge edge beam anchor 15.0 0.45 581896000
Bridge edge beam anchor 15.0 galv. 0.44 581890000
Gesimsanker 15,0
Length: 7 cm

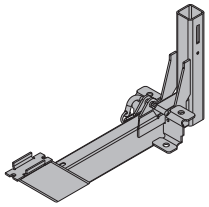

Nailing cone 15.0 0.02 581897000
Nagelkonus 15,0
Black
Length: 7 cm

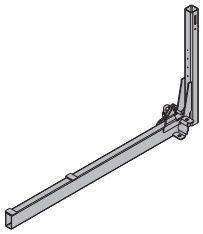

	[kg]	Article N°

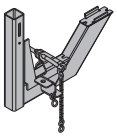
Doka express anchor 16x125mm 0.31 588631000
Doka-Expressanker 16x125mm
Galvanised
Length: 18 cm

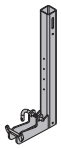

Doka coil 16mm 0.009 588633000
Doka-Coil 16mm
Galvanised
Diameter: 1.6 cm

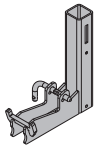

Information plate for express anchor 0.10 588630000
Plakette Expressanker
PS
Width: 8 cm
Height: 7.5 cm


Dokadek 20 handrail-post shoe long 1.20m 5.5 586587000
Dokadek 20-Längsgeländerschuh 1,20m
Galvanised
Painted blue
Length: 62 cm
Height: 31 cm


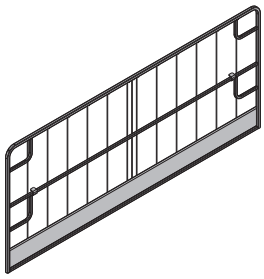
Dokadek handrail-post shoe long 10.1 586520000
Dokadek-Längsgeländerschuh
Galvanised
Length: 125 cm
Height: 66 cm


Dokadek handrail-post shoe long 1.20m 5.7 586560000
Dokadek-Längsgeländerschuh 1,20m
Galvanised
Length: 47 cm
Height: 37 cm


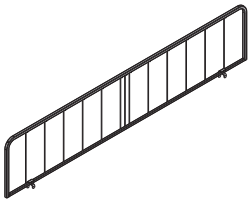
Dokadek handrail-post shoe short 4.3 586519000
Dokadek-Stirngeländerschuh
Galvanised
Length: 23 cm
Height: 56 cm


Dokadek handrail-post shoe short 1.20m 3.0 586598000
Dokadek-Stirngeländerschuh 1,20m
Galvanised
Length: 23 cm
Height: 27 cm


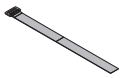
	[kg]	Article N°
Protective grating XP 2.70x1.20m	**22.2**	**586450000**
Protective grating XP 2.50x1.20m	**20.5**	**586451000**
Protective grating XP 2.00x1.20m	**17.4**	**586452000**
Protective grating XP 1.20x1.20m	**12.0**	**586453000**
Schutzgitter XP		
Galvanised		



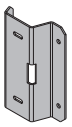
	[kg]	Article N°
Protective grating XP 2.70x0.60m	**10.1**	**586466000**
Protective grating XP 2.50x0.60m	**9.5**	**586472000**
Protective grating XP 2.00x0.60m	**8.0**	**586473000**
Protective grating XP 1.20x0.60m	**5.0**	**586491000**
Schutzgitter XP		
Galvanised		



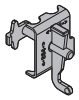
	[kg]	Article N°
Velcro fastener 30x380mm	**0.02**	**586470000**
Klettverschluss 30x380mm		
Yellow		



	[kg]	Article N°
Protective grating holder XP	**0.66**	**586483000**
Schutzgitterhalter XP		
Galvanised		
Width: 12 cm		
Height: 19 cm		

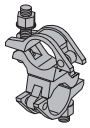


	[kg]	Article N°
Scaffold tube holder D34/48mm	**1.8**	**586471000**
Gerüstrohrhalter D34/48mm		
Galvanised		
Height: 18 cm		



	[kg]	Article N°
Scaffold tube 48.3mm 0.50m	**1.7**	**682026000**
Scaffold tube 48.3mm 1.00m	**3.6**	**682014000**
Scaffold tube 48.3mm 1.50m	**5.4**	**682015000**
Scaffold tube 48.3mm 2.00m	**7.2**	**682016000**
Scaffold tube 48.3mm 2.50m	**9.0**	**682017000**
Scaffold tube 48.3mm 3.00m	**10.8**	**682018000**
Scaffold tube 48.3mm 3.50m	**12.6**	**682019000**
Scaffold tube 48.3mm 4.00m	**14.4**	**682021000**
Scaffold tube 48.3mm 4.50m	**16.2**	**682022000**
Scaffold tube 48.3mm 5.00m	**18.0**	**682023000**
Scaffold tube 48.3mm 5.50m	**19.8**	**682024000**
Scaffold tube 48.3mm 6.00m	**21.6**	**682025000**
Scaffold tube 48.3mm .....m	**3.6**	**682001000**
Gerüstrohr 48,3mm		
Galvanised		

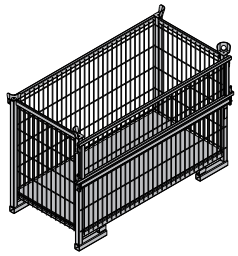
	[kg]	Article N°
Swivel coupler 48mm	**1.5**	**582560000**
Drehkupplung 48mm		
Galvanised		
Width-across: 22 mm		



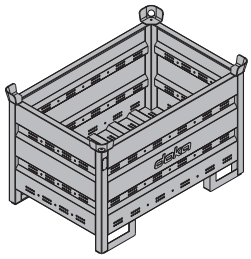
	[kg]	Article N°
Doka 4-part chain 3.20m	**15.0**	**588620000**
Doka-Vierstrangkette 3,20m		
Follow the directions in the "Operating Instructions"!		

Multi-trip packaging

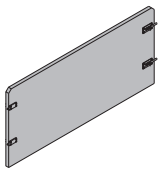
	[kg]	Article N°
Doka skeleton transport box 1.70x0.80m	**87.0**	**583012000**
Doka-Gitterbox 1,70x0,80m		
Galvanised		
Height: 113 cm		



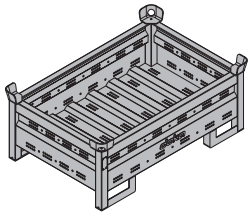
	[kg]	Article N°
Doka multi-trip transport box 1.20x0.80m	**70.0**	**583011000**
Doka-Mehrwegcontainer 1,20x0,80m		
Galvanised		
Height: 78 cm		



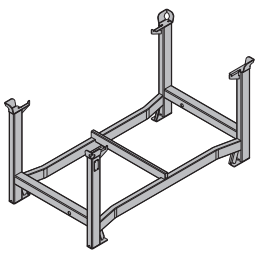
	[kg]	Article N°
Multi-trip transport box partition 0.80m	**3.7**	**583018000**
Multi-trip transport box partition 1.20m	**5.5**	**583017000**
Mehrwegcontainer Unterteilung		
Steel parts galvanised		
Timber parts varnished yellow		

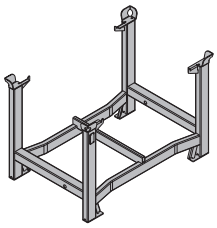
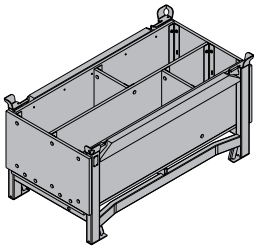
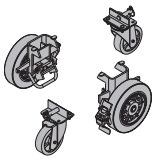


	[kg]	Article N°
Doka multi-trip transport box 1.20x0.80x0.41m	**42.5**	**583009000**
Doka-Mehrwegcontainer 1,20x0,80x0,41m		
Galvanised		



	[kg]	Article N°
Doka stacking pallet 1.55x0.85m	**41.0**	**586151000**
Doka-Stapelpalette 1,55x0,85m		
Galvanised		
Height: 77 cm		



	[kg]	Article N°
Doka stacking pallet 1.20x0.80m Doka-Stapelpalette 1,20x0,80m Galvanised Height: 77 cm 	**38.0**	**583016000**
Doka accessory box Doka-Kleinteilebox Timber parts varnished yellow Steel parts galvanised Length: 154 cm Width: 83 cm Height: 77 cm 	**106.4**	**583010000**
Bolt-on castor set B Anklemm-Radsatz B Painted blue 	**33.6**	**586168000**

[kg]	Article N°

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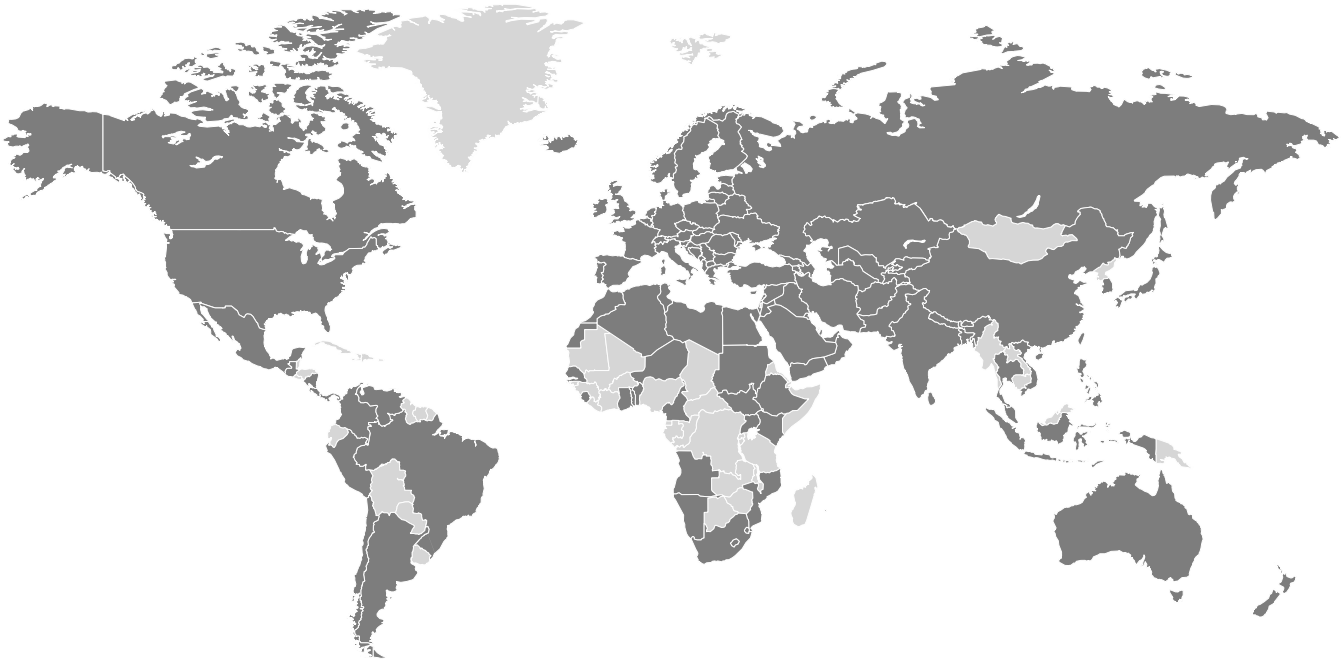
Doka is one of the world leaders in developing, manufacturing and distributing formwork technology for use in all fields of the construction sector.

With more than 160 sales and logistics facilities in over 70 countries, the Doka Group has a highly efficient distribution network which ensures that equipment and technical support are provided swiftly and professionally.

An enterprise forming part of the Umdasch Group, the Doka Group employs a worldwide workforce of more than 6000.



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