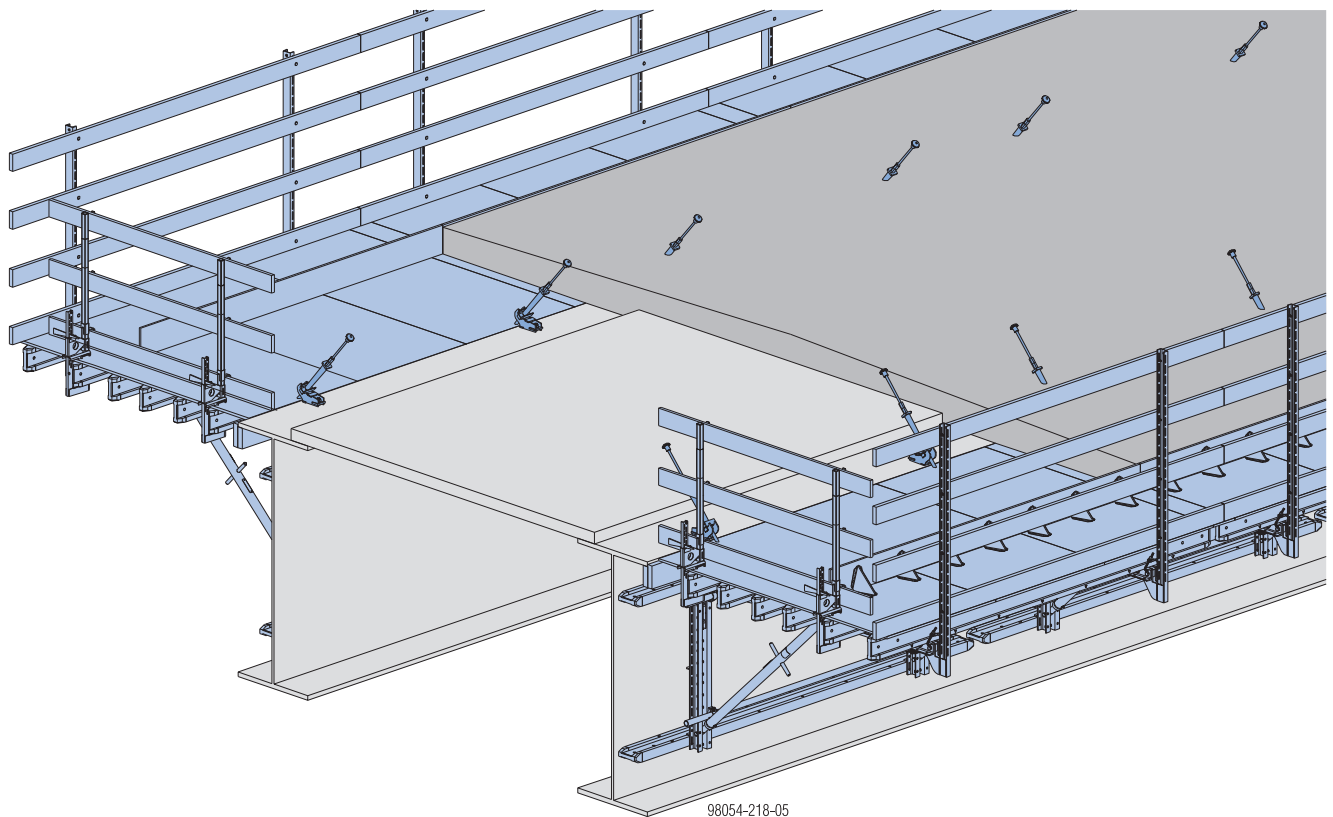


The Formwork Experts.

Bridge formwork ParaTop

User Information

Instructions for assembly and use (Method statement)



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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 side-guard 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.
- 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.
- 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. $F_{perm} = 70 \text{ kN}$) are not design values (e.g. $F_{Rd} = 105 \text{ kN}$)!

- 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:

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

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.

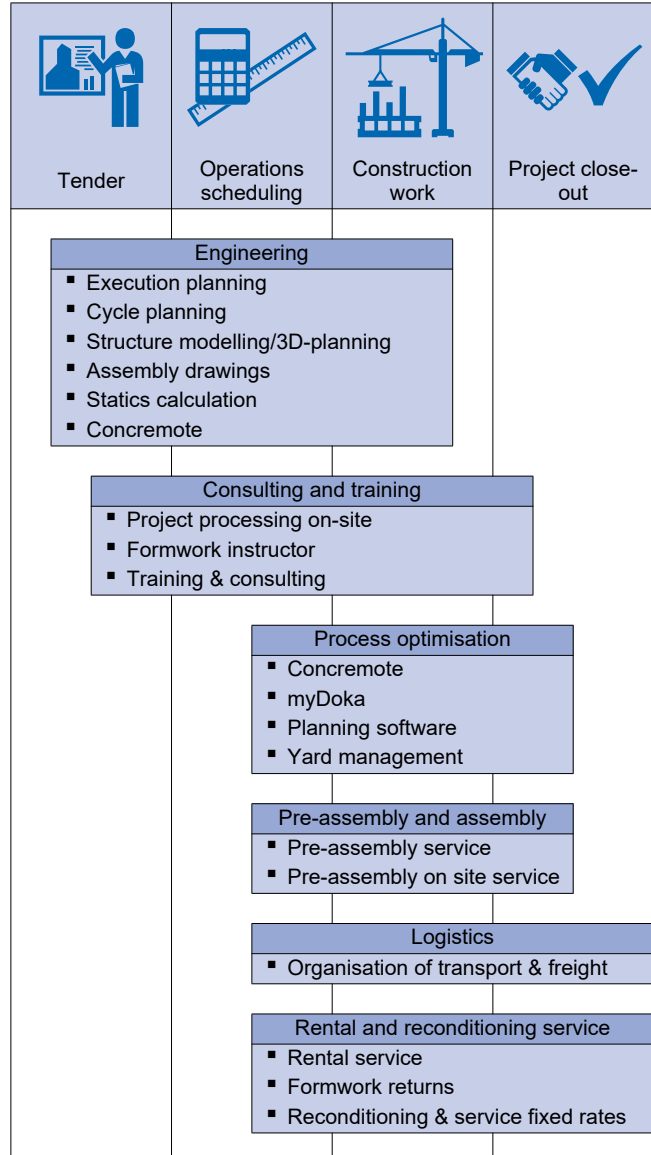
Just-in-time availability

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



upbeat construction digital services for higher productivity

From planning through to completion - with upbeat construction we'll be moving construction forward and upping the beat for more productive building with all our digital services. Our digital portfolio covers the entire construction process and is being extended all the time. To find out more about our specially developed solutions go to doka.com/upbeatconstruction.

System description

Bridge formwork ParaTop - for cost-efficient, safe forming of roadway slabs

Bridge formwork ParaTop is a modular formwork system for use on steel composite bridges and pre-cast concrete bridges. The operations needed for erecting and aligning the formwork, reinforcing, pouring and striking can all be performed directly from the bridge superstructure.

Great flexibility for a broad spectrum of utilisation

- Can be used on both pre-cast concrete members and steel girders
- Modular design concept makes it easy to adapt to many different cross-sections of roadway slab

Highly cost-efficient

- Less equipment and labour needed, thanks to the large influence widths of the suspension points
- Bolted connections for fast, accurate assembly / pre-assembly
- Utilises re-usable Top 50 system components

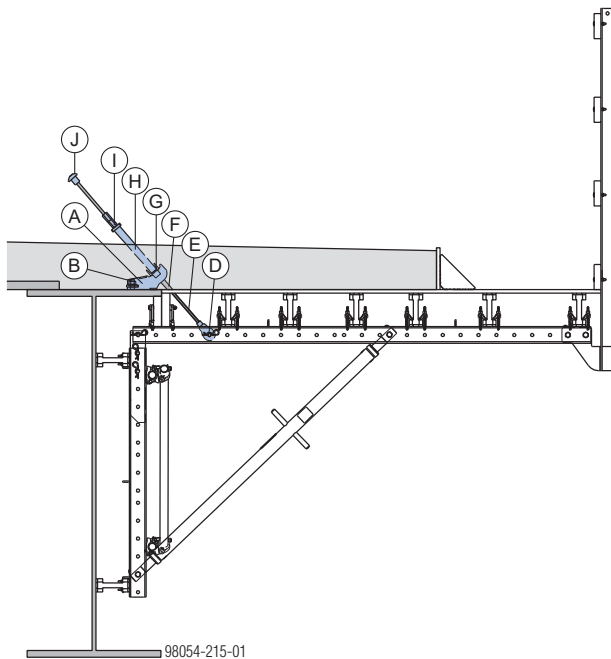
High safety

- Any type of edge protection is possible, from scaffold tubes to guard-rail boards, through the Edge protection system XP to full enclosures
- No need to access the underside of the formwork, as it can be operated from above
- The open design of the ParaTop insert-shoes allows the pre-assembled Top 50 platforms to be hung into place very quickly

System overview

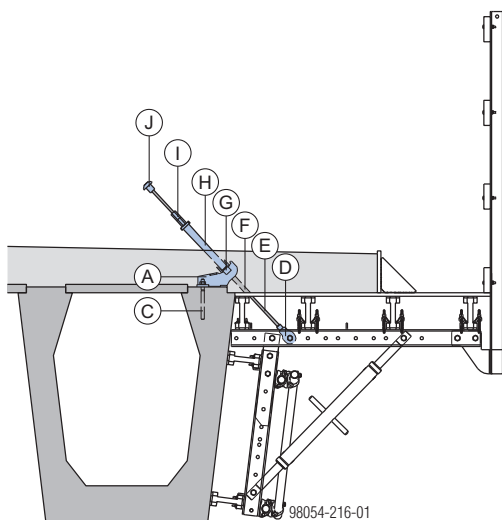
Standard solution with eye-lug tie rod anchor and ParaTop insert-cone

Used on steel girders



- A ParaTop insert-shoe steel (expendable part)
- B Threaded stud (expendable part)
- D Eye-lug anchor 15.0 without tie rod
- E Tie rod 15.0mm
- F Plastic tube 22mm (expendable part)
- G ParaTop insert-channel U65 (expendable part)
- H ParaTop insert-cone
- I Hexagon nut 15.0
- J Protective cap 15.0/20.0

Used on pre-cast concrete members



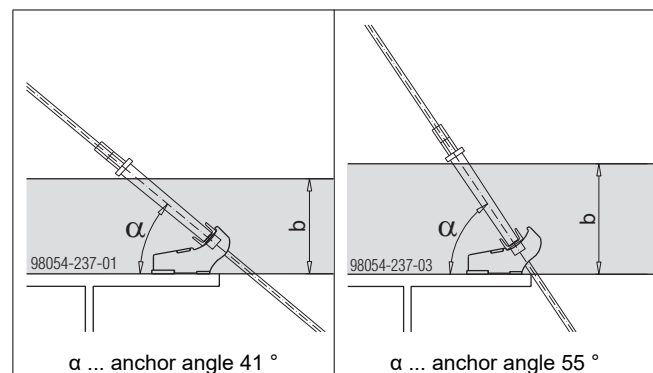
- A ParaTop insert-shoe concrete (expendable part)
- C Anchor-bolt (expendable part)
- D Eye-lug anchor 15.0 without tie rod
- E Tie rod 15.0mm
- F Plastic tube 22mm (expendable part)
- G ParaTop insert-channel U65 (expendable part)

- H ParaTop insert-cone
- I Hexagon nut 15.0
- J Protective cap 15.0/20.0

The ParaTop insert-shoe allows an anchor angle of 41° - 55° . ParaTop insert-cones are available in 2 different lengths for various thicknesses of slab. The maximum possible slab thicknesses depend upon the anchor angle.

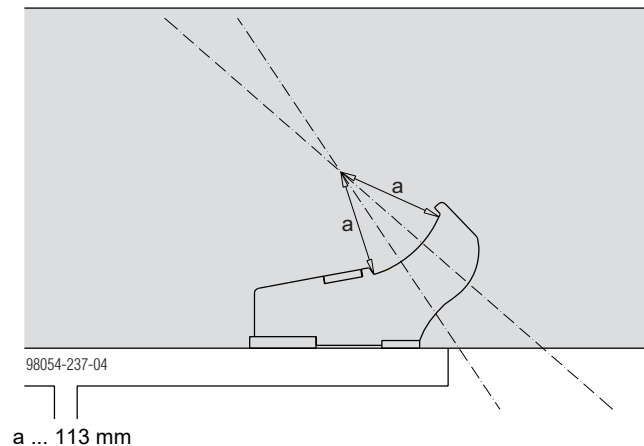
b ... max. slab thickness

	α ... anchor angle		
	41°	45°	55°
ParaTop insert-cone 0.35m	310 mm	325 mm	360 mm
ParaTop insert-cone 0.65m	500 mm	525 mm	600 mm

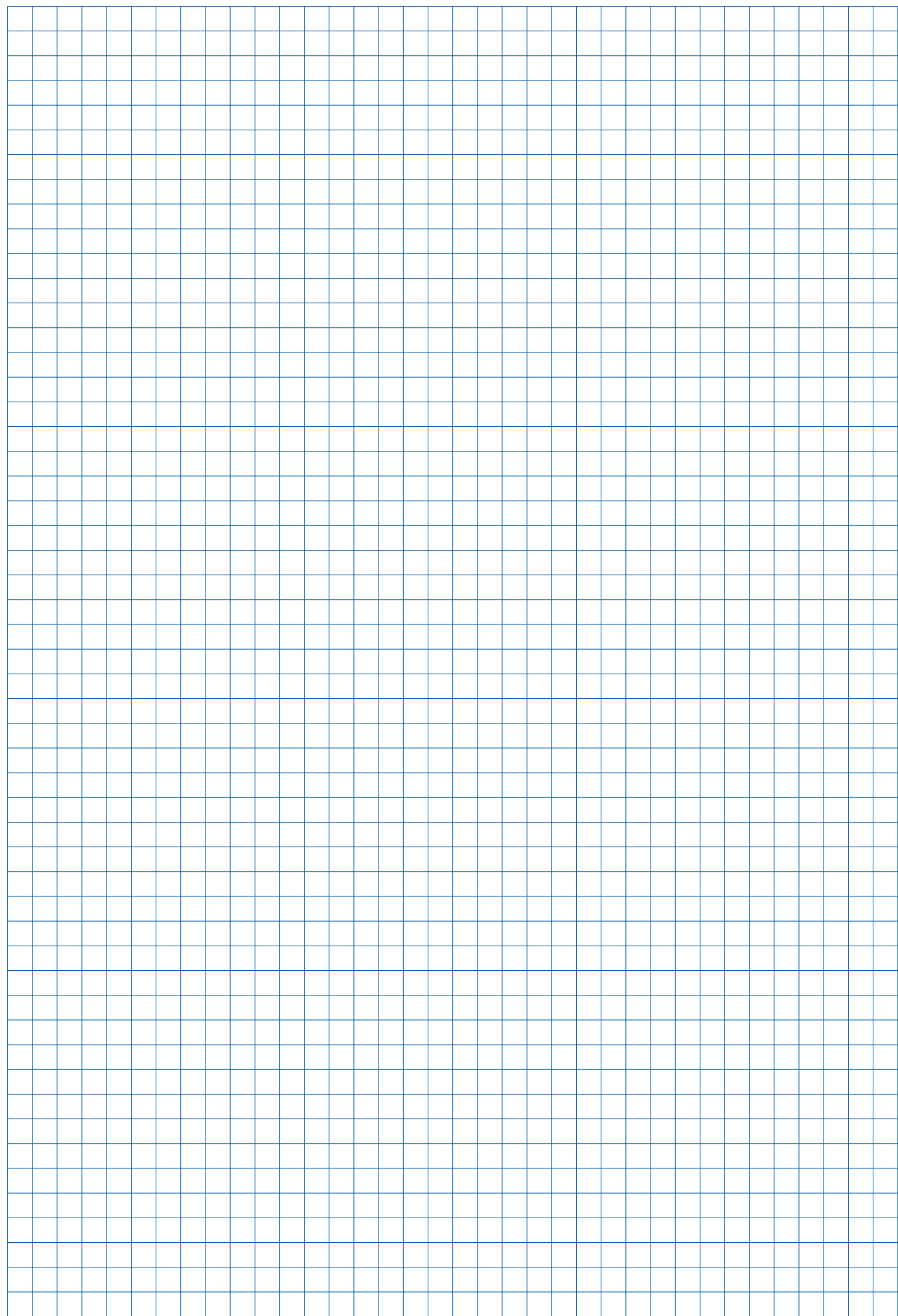


Note:

The axis of the anchor is aligned with the centre of the curved section of the ParaTop insert-shoe.



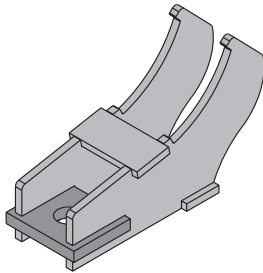
a ... 113 mm



Anchoring on the structure

Used on steel girders

ParaTop insert-shoes steel are used for suspending Top 50 platforms from steel girders.



NOTICE

When creating the detailed final drawings for steel bridges, pay attention to the following places where snags may occur:

- vertical transversal braces between the top and bottom flanges
- shear-connectors on the top of the flange (if their position cannot be changed)
- varying widths and thicknesses of flange



NOTICE

Do not confuse the 'ParaTop insert-shoe steel' with the 'ParaTop insert-shoe concrete'!

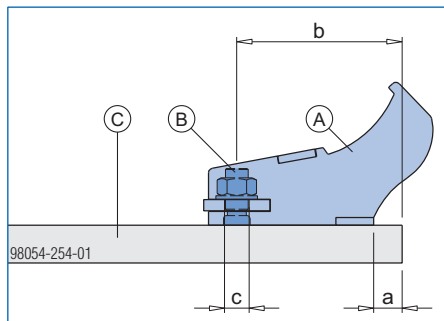
Distinguishing features of ParaTop insert-shoe steel:

- gap between anchor plate and steel girder

- The introduction of the forces, onward transfer of these forces within the structure, and the stability of the overall construction, must all be verified by the structural designer.

Bolting insert-shoe to threaded stud

- Bolt the ParaTop insert-shoe steel to the threaded stud.



- a ... concrete cover (project-specific)
- b ... concrete cover (a) + 145 mm
- c ... diam. 26 mm hole in anchor plate

A ParaTop insert-shoe steel

B Threaded stud M24

(e.g. KÖCO RD M24 60 strength class 4.8, art. n° 003-0524-001)

C Flange of the bridge girder

Threaded-fastener material required (expendable parts)

- Washer ISO 7089 24 St-200 HV galv.
- Hexagon nut ISO 4032 M24 8 galv.

Determine the required load-bearing capacity of the threaded studs separately for each project!

Follow the manufacturers' applicable fitting instructions.

Note:

To secure ParaTop insert-shoes steel, use only M24 threaded studs.

Minimum length: 60mm

In order to weld the threaded stud on properly, a ceramic ferrule is required that is consumed during the welding-on operation.

(This item is included with the threaded stud by the suppliers KÖCO - Köster & Co. GmbH.)

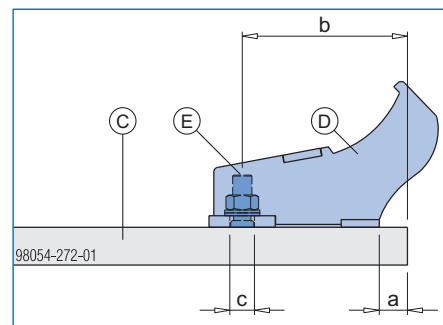


Obtain and follow further information from your Doka engineer!

Configuration for projects in Germany

Restriction applicable when used in Germany:

- For securing with threaded stud, use the **ParaTop insert-shoe concrete** in combination with the **Köco threaded stud K800 PD M20x55**.



- a ... concrete cover (project-specific)
- b ... concrete cover (a) + 145 mm
- c ... diam. 26 mm hole in anchor plate

C Flange of the bridge girder

D ParaTop insert-shoe concrete

E Köco threaded stud K800 PD M20x55

Threaded-fastener material required (expendable parts)

- 2 washers ISO 7089 20 St-200 HV galv.
- 1 hexagon nut ISO 4032 M20 8 galv.

Welding insert-shoe to bridge girder

Applications:

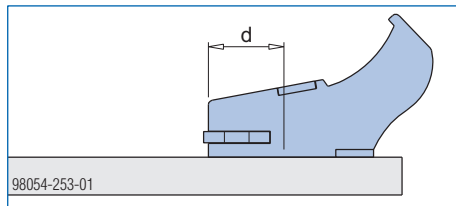
- Load-bearing capacity of the threaded studs insufficient
- Required concrete cover not achieved, because the ParaTop insert-shoe has to be installed at the end of the bridge girder

Example of welding an insert-shoe onto the girder

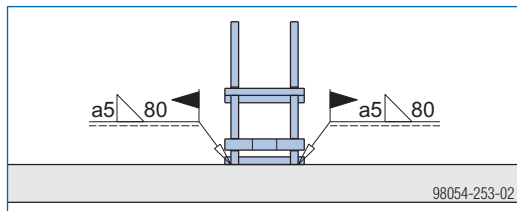
Boundary conditions for the example:

- Anchor load: 70 kN
- Steel grade of the steel girder: S235
- Anchor angle: $41^\circ - 55^\circ$

(The steel grade of the ParaTop insert-shoes is S355)



d ... length of the weld seam: 80 mm

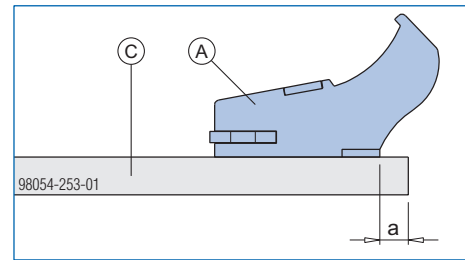


Welding insert-shoe into position on site



CAUTION

- Observe all the standards and regulations applying to on-site welding work!



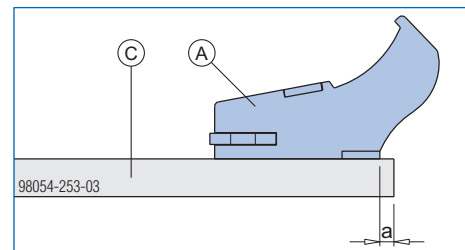
a ... concrete cover (project-specific)

- A** ParaTop insert-shoe steel
- C** Flange of the bridge girder

Welding insert-shoe into position in the steelworks



The required concrete cover does not have to be complied with if the ParaTop insert-shoes are painted along with the bridge girder. This means that the ParaTop insert-shoes have to be welded to the girder in the steelworks.



a ... concrete cover (does not have to be complied with)

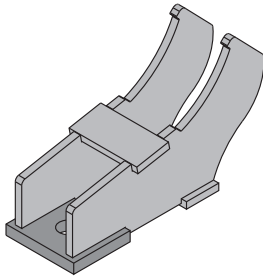
- A** ParaTop insert-shoe steel
- C** Flange of the bridge girder

Note:

In countries where construction codes specify thicker concrete coverage (e.g. Central and Northern Europe), adopt this procedure by preference.

Used on pre-cast concrete members

'ParaTop insert-shoes concrete' are used for suspending Top 50 platforms from pre-cast concrete girders.



NOTICE

Do not confuse the 'ParaTop insert-shoe concrete' with the 'ParaTop insert-shoe steel'!

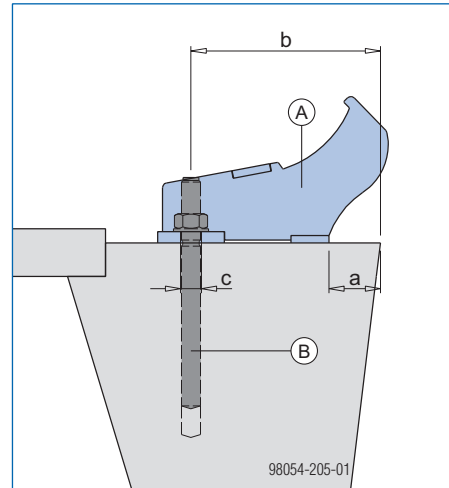
Distinguishing features of ParaTop insert-shoe concrete:

- Anchor plate sets directly on the concrete

- ▶ The introduction of the forces, onward transfer of these forces within the structure, and the stability of the overall construction, must all be verified by the structural designer.

Securing insert-shoe with anchor rods

- ▶ Anchor the 'ParaTop insert-shoe concrete' to the pre-cast concrete member.



a ... concrete cover (project-specific)

b ... concrete cover (a) + 145 mm

c ... dia. 26 mm hole in anchor plate

A ParaTop insert-shoe concrete

B Anchor rod for injection M24/M20 (e.g. Hilti HIT-V)

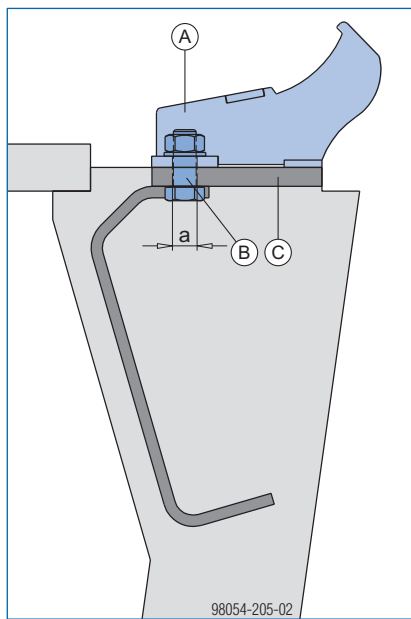
Determine the required load-bearing capacity of the anchor rods separately for each project!

Follow the manufacturers' applicable fitting instructions.

Note:

When using a dia. 20 mm anchor rod for injection, fill the gap between anchor rod and the edge of the hole in the plate with an adhesive mortar of adequate strength. Because the load-bearing capacity of the anchor rod on pre-cast concrete members is lower than that of the threaded stud on structural steelwork, the load-bearing capacity of the suspension point is also lower.

Securing insert-shoe to an anchor plate



a ... diam. 26 mm hole in anchor plate

A ParaTop insert-shoe concrete

B Hexagon bolt ISO 4017 M24x60 8.8

C Anchor plate set in concrete, with length of reinforcing bar welded on



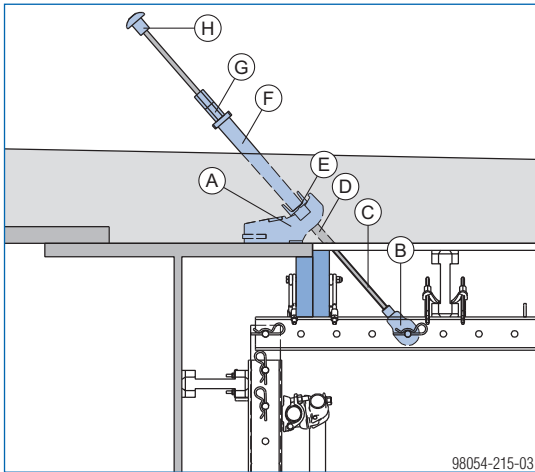
Obtain and follow further information from your Doka engineer!

Fixing options for securing the Top 50 platform to the insert-shoe

Note:

These illustrations show the fixing options with a steel girder by way of example. With the ParaTop insert-shoe concrete these solutions can also be used in the same way for securing to concrete precastings.

Standard solution with eye-lug tie rod anchor and ParaTop insert-cone



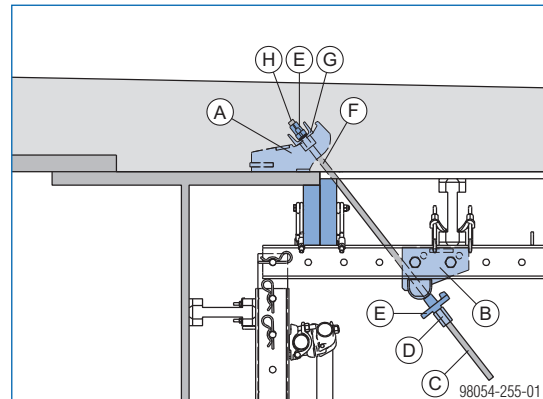
- A** ParaTop insert-shoe steel (expendable part)
- B** Eye-lug anchor 15.0 without tie rod
- C** Tie rod 15.0mm
- D** Plastic tube 22mm (expendable part)
- E** ParaTop insert-channel U65 (expendable part)
- F** ParaTop insert-cone
- G** Hexagon nut 15.0
- H** Protective cap 15.0/20.0

Project-specific suspension points

Suspension points flush with the roadway slab

Operation of the suspension point from below

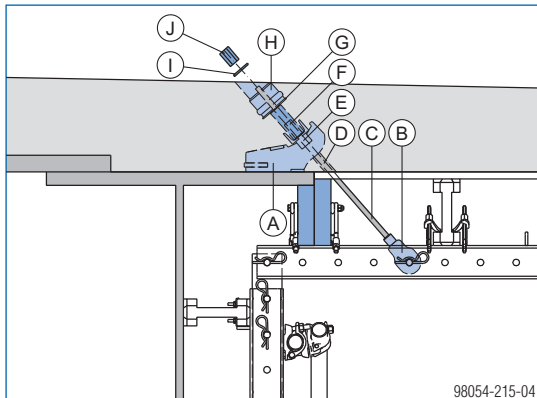
- No parts protruding above the roadway slab
- The surface of the concrete can be screeded with a full-width vibrator plate
- The suspension point has to be disassembled from below



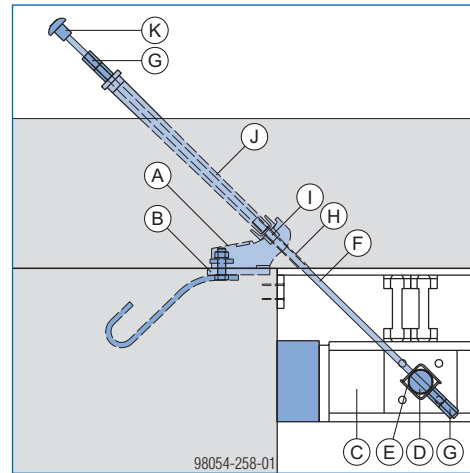
- A** ParaTop insert-shoe steel (expendable part)
- B** Universal angle tie bracket
- C** Tie rod 15.0mm
- D** Hexagon nut 15.0
- E** Wing nut 15.0
- F** Plastic tube 22mm (expendable part)
- G** ParaTop insert-channel U65 (expendable part)
- H** Tape wrapping round the tie rod as protection against the concrete

Operation of the suspension point from above

- No parts protruding above the roadway slab
- The surface of the concrete can be screeded with a full-width vibrator plate
- The suspension point can be operated from the supporting structure.



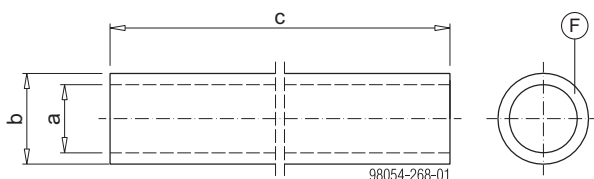
- A** ParaTop insert-shoe steel (expendable part)
B Eye-lug anchor 15.0 without tie rod
C Tie rod 15.0mm
D Plastic tube 22mm (expendable part)
E ParaTop insert-channel U65 (expendable part)
F ParaTop insert-tube 40x5 (custom component, expendable part)
G Cap, diam. 75 mm HTEM DN75x1.9 (site-provided, expendable part)
H Pipe, diam. 75 mm HTEM DN75x1.9 (site-provided, expendable part)
I Washer ISO 7094 16 St-100 HV galv.
J Hexagon nut 15.0

Suspension for small frame structures

- A** ParaTop insert-shoe steel (expendable part)
B Anchor plate with length of reinforcing bar (site-provided)
C System beam SL-1
D Bracing bolt SL-1
E Distance piece SL-1
F Tie rod 15.0mm
G Hexagon nut 15.0
H Plastic tube 22mm (expendable part)
I ParaTop insert-channel U65 (expendable part)
J ParaTop insert-cone
K Protective cap 15.0/20.0



Obtain and follow further information from your Doka engineer!

**Anchor plate, installed condition:****ParaTop insert-tube 40x5**

- a ... diam. 30 mm
b ... diam. 40 mm
c ... length, project-specific

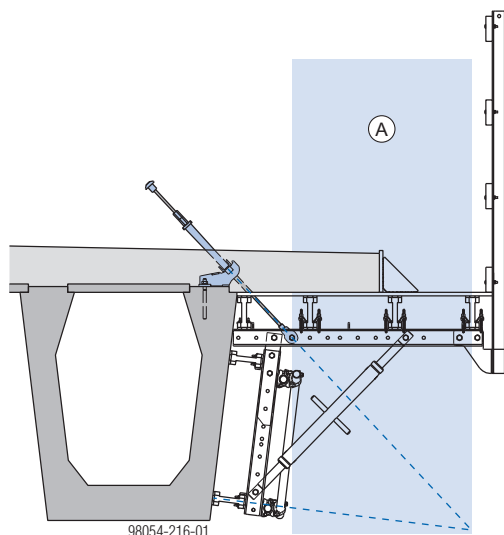
- F** Pipe 40x5 S355 DIN EN 10210 (ID number 010464)

Structural design



NOTICE

- The structural design shown here only applies if the load centre is situated inside the zone marked 'A'.
- The Top 50 system components (Multi-purpose walings WS10, spindle struts) and the railings must be verified for each project separately.



A Permitted zone for the load centre

The following load situations must be allowed for:

- live load only
- full load
- storm winds (without live load)



NOTICE

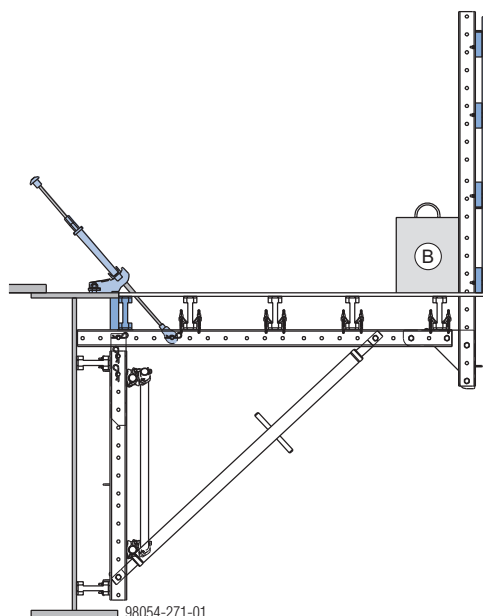
As a general rule, a separate statics test is necessary for the load case 'storm winds (without live load)'!



CAUTION

Risk of the Top 50 platforms being lifted by **high-velocity winds**, particularly if the platforms are carrying railings with full enclosures.

- ▶ Check whether a ballast weight is needed to secure the empty Top 50 platform in storm winds.



B Ballast weight

What to do if the load centre is situated outside Zone 'A':

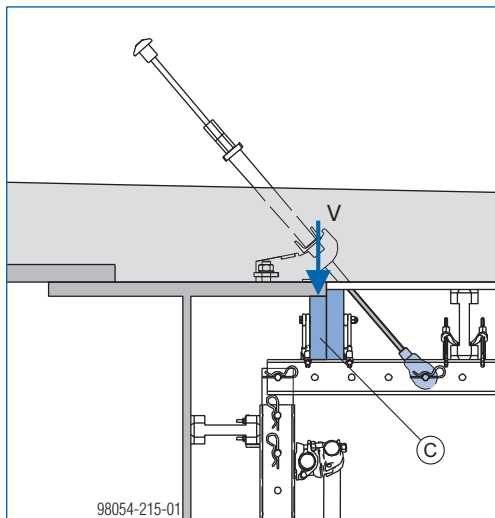
- Provide a vertical support that the Top 50 platform can be braced against.
- Consult the responsible Statical Calculation Dept. at Doka to determine the project-specific anchor load.



It is possible to enlarge Zone 'A' by using a smaller anchor angle.

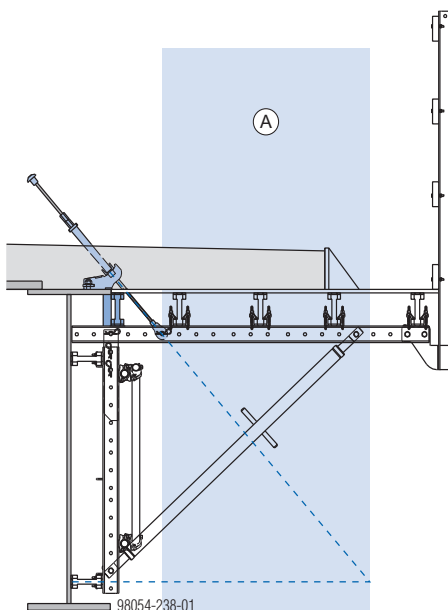
Note:

Smaller anchor angles lead to higher anchor loads.

**C Vertical support**

If possible, also provide vertical supports on platforms where the load centre is situated inside Zone 'A'.

This makes it easier to pull tight the joint between the main beam and the Top 50 platform.



Determining the anchoring forces



NOTICE

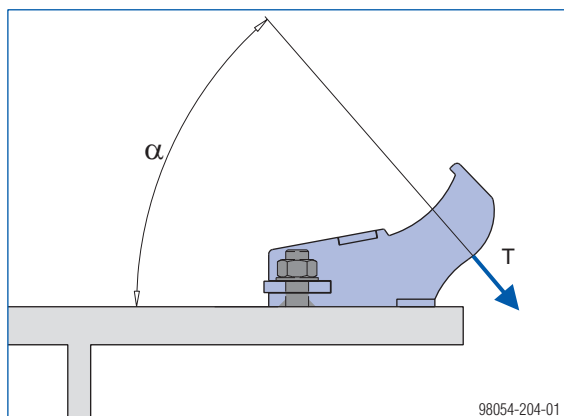
The structural design shown here only applies if the load centre is situated inside Zone 'A' (see the section headed 'Structural design').

- Calculate vertical load (concrete load, self-weight load, live load).
- Determine the factor, as a function of the anchor angle.

α ... anchor angle	Factor
41.00°	1.52
42.50°	1.48
43.75°	1.45
45.00°	1.41
46.25°	1.38
47.50°	1.36
48.75°	1.33
50.00°	1.31
51.25°	1.28
52.50°	1.26
53.75°	1.24
55.00°	1.22

If an intermediate value is obtained, use factor for the smaller anchor angle.

- Determine the anchor load.
Anchor load 'T' = vertical load x factor



α ... 41° - 55°

- Depending on the anchor load, use the relevant curve (A) to (I) in the 'Diagrams for determining the anchoring forces on the ParaTop insert-shoe'.

	Anchor load [kN]								
	30	35	40	45	50	55	60	65	70
Curve	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)

T ... permissible anchor load: 70 kN

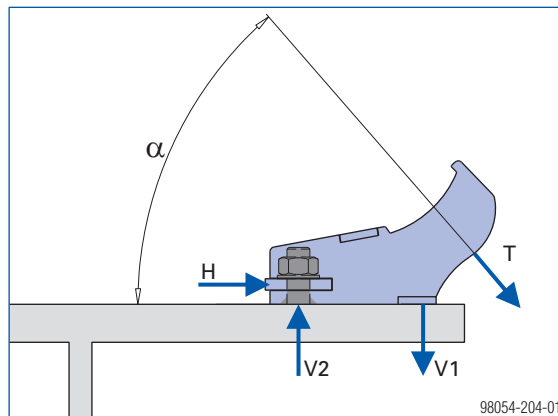
Note:

When using threaded studs, the permitted horizontal load is limited to 45 kN.

Precondition:

The component to which the studs are welded must be made of min. S 355-grade steel.

- Determine the anchoring forces H, V2 and V1 from the 'Diagrams for determining the anchoring forces'.

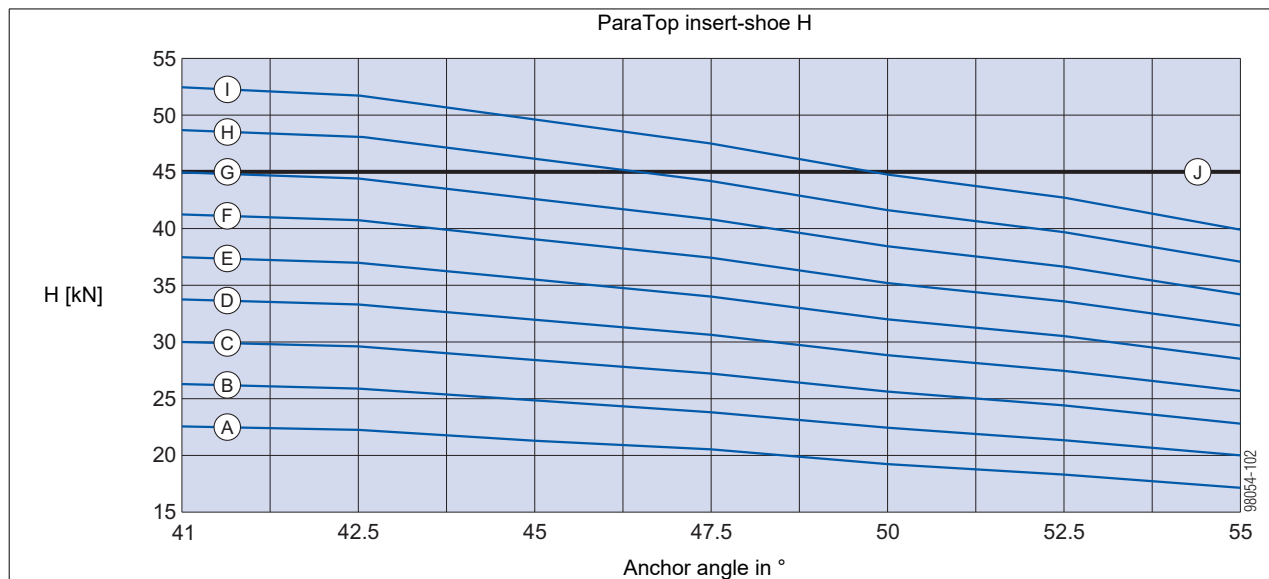


α ... 41° - 55°

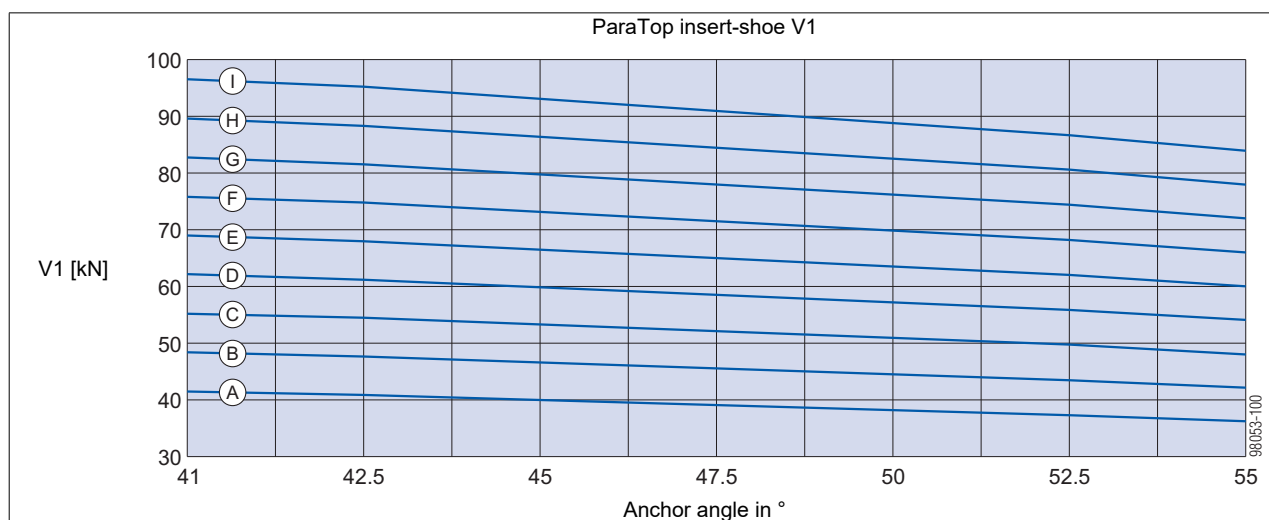
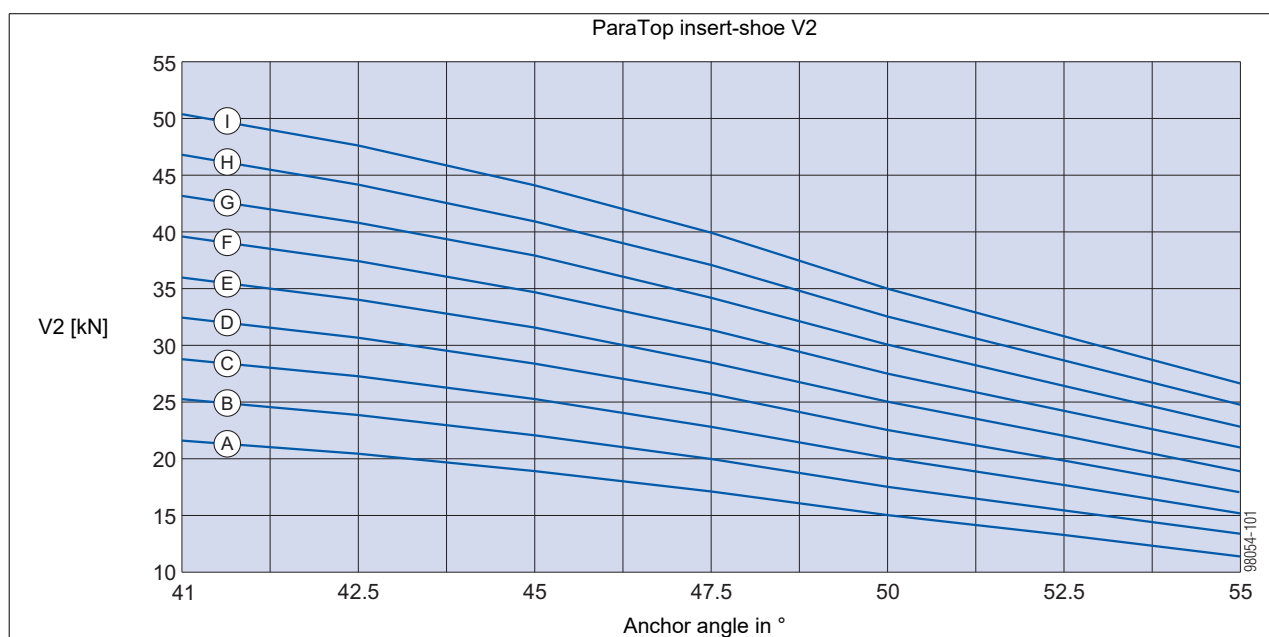
Example

- Basic data:
 - Curve (G) (anchor load = 60 kN)
 - anchor angle: 47.5°
- Result:
 - H = 41 kN
 - V2 = 34 kN
 - V1 = 78 kN

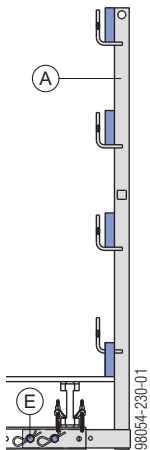
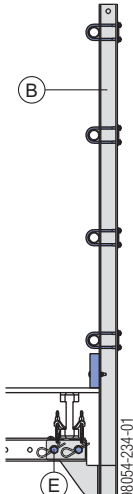
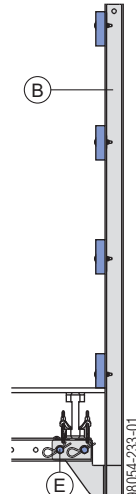
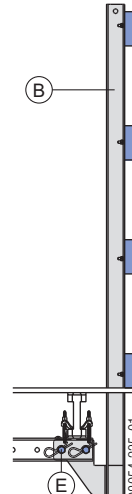
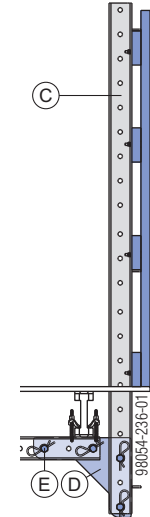
Diagrams for determining the anchoring forces on the ParaTop insert-shoe



J Permissible horizontal load for threaded stud: max. 45 kN
(e.g. KÖCO RD M24 60 strength class 4.8 / Köco K800 PD M20x55)



Max. influence width per handrail-post upright

	Handrail post T 1.80m		Universal railing SK 2.00m			Multi-purpose waling WS 10 with Corner connecting plate SK		
	Guard-rail board		Scaffold tube	Guard-rail board	Full-area enclosure	Full-area enclosure		
Dynamic pressure $q_{(ze)}$								
	Height of guard-rail boards:			Height of guard-rail boards:				
		≤15 cm	≤20 cm		≤15 cm	≤20 cm		
	≤ 1.1 kN/m ²	1.83 m	1.33 m	5.0 m	3.5 m	3.1 m	1.3 m	3.5 m
≤ 1.3 kN/m ²	1.55 m	1.13 m	5.0 m	3.4 m	2.6 m	1.1 m	3.0 m	
≤ 1.7 kN/m ²	1.18 m	0.86 m	5.0 m	2.6 m	2.0 m	0.8 m	2.3 m	

A Handrail post T 1.80m

B Universal railing SK 2.00m

C Multi-purpose waling WS10 Top50 2.25m

D Corner connecting plate SK

E Connecting pin 10cm + Spring cotter 5mm

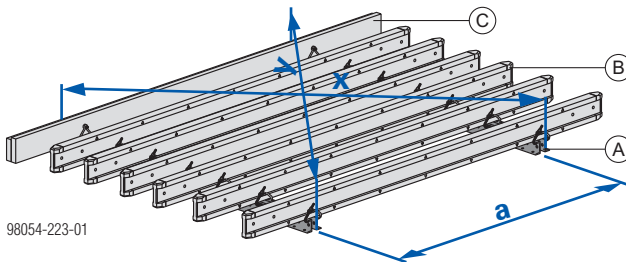


Edge protection system XP can also be used as an alternative to the railings illustrated above (see the section headed 'Assembly').

Assembly

Pre-assembling the Top 50 platform

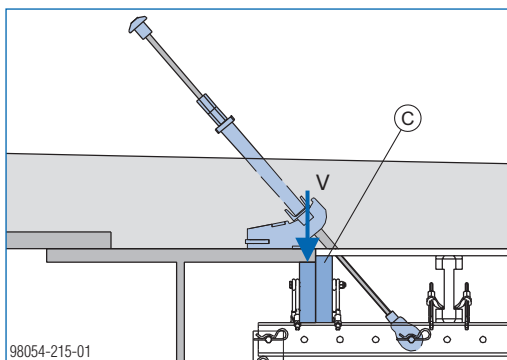
- Lay down Multi-purpose walings WS10, spaced apart by the exact centre-to-centre distance.



a ... centre-to-centre distance
x = y ... diagonals

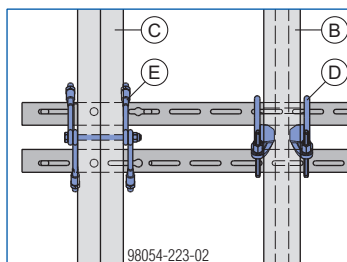
- A** Multi-purpose waling WS10 Top50
- B** Doka beam H20
- C** Squared timbers

- Use squared timbers to adapt the Top 50 platform to the steel girder.



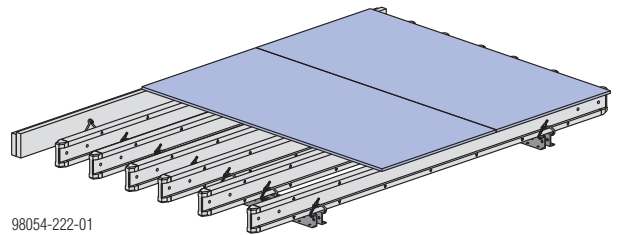
- C** Squared timbers

- Mount Doka beams H20 and squared timbers to the Multi-purpose walings WS10.



- B** Doka beam H20
- C** Squared timbers
- D** Flange clamp H20
- E** Flange claw

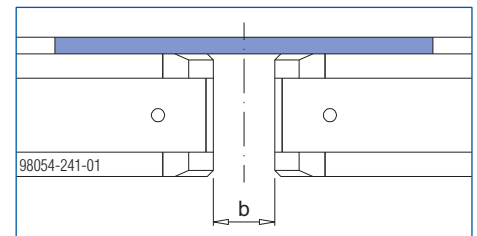
- Fasten formwork sheets to the Doka beams with universal countersunk screws 6x60.



Do a sight-check to make sure that the formwork sheets have been fixed properly!

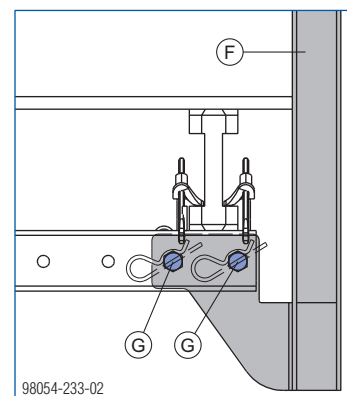


The sheet-covered area must be slightly shorter than the overall width of the platform. The gap between two Top 50 platforms can later be closed with a fitting-board.



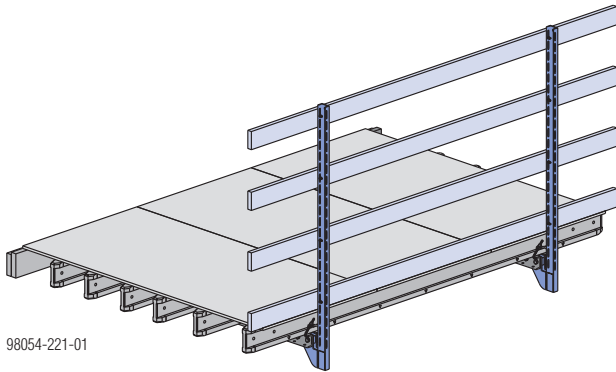
b ... approx. 100 mm

- Pin the Universal railings into the Multi-purpose walings WS10 with Connecting pins 10cm and secure these with Spring cotters 5mm.

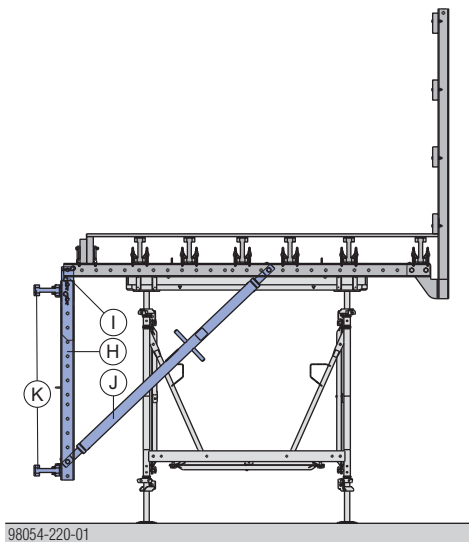


- F** Universal railing SK 2.00m
- G** Connecting pin 10cm + Spring cotter 5mm

- Fasten guard-rail boards to the Universal railings SK 2.00m.

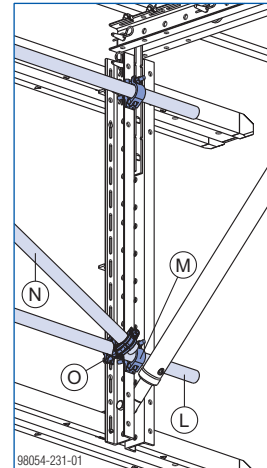


- Place the Top 50 platform on a temporary support.
- Bolt a 'Formwork element connector' to the vertical Multi-purpose waling WS10 with Connecting pins 10cm, and secure these with Spring cotters 5mm.
- Pin the spindle strut to the Multi-purpose walings WS10 with Connecting pins 10cm, and secure these with Spring cotters 5mm.
- Adjust the spindle strut to the length shown in the shop drawing / assembly plan.
- Mount Doka beams H20 to the vertical Multi-purpose walings WS10.



- H** Multi-purpose waling WS10 Top50
- I** Formwork element connector FF20/50 Z / Splice plate SKE50 plus
- J** Spindle strut T7
- K** Doka beam H20

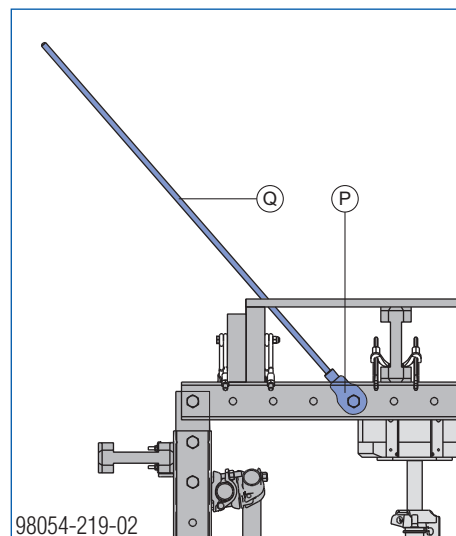
- Brace the vertical Multi-purpose walings in the horizontal and the diagonal.



- L** Scaffold tube 48.3mm (horizontal)
- M** Screw-on coupler 48mm 50
- N** Scaffold tube 48.3mm (diagonal)
- O** Swivel coupler 48mm

Distance between swivel coupler and screw-on coupler: max. 160 mm.

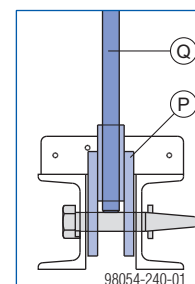
- Screw the tie rod all the way into the eye-lug anchor.
- Bolt the eye-lug anchor to the Multi-purpose waling with a Connecting pin 10cm and secure this with a Spring cotter 5mm (position as shown in shop drawing / assembly plan).



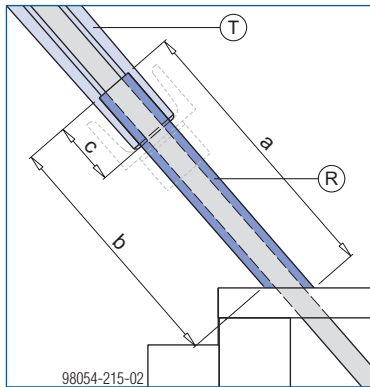
- P** Eye-lug anchor 15.0 without tie rod
- Q** Tie rod 15.0mm



The tie rod must be resting against the Connecting pin.



- Cut a plastic tube to length at the angle shown in the shop drawing / assembly plan.
The ParaTop insert-cone is drilled open down to a depth of 45 mm so that the plastic tube can be inserted.
The plastic tube must push up against the bottom of this drilled opening, so that its other end is pressed down tightly against the form-facing during assembly.
- Push the plastic tube onto the tie rod.

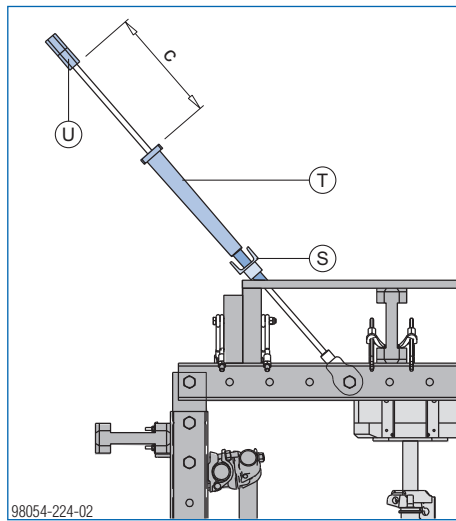


a, b... project-dependent
c ... 45 mm

R Plastic tube 22mm

T ParaTop insert-cone 0.35m

- Push the ParaTop insert-channel onto the tie rod.
- Push the ParaTop insert-cone onto the tie rod.
- Screw two Hexagon nuts 15.0 onto the tie rod.



c ... approx. 120 mm

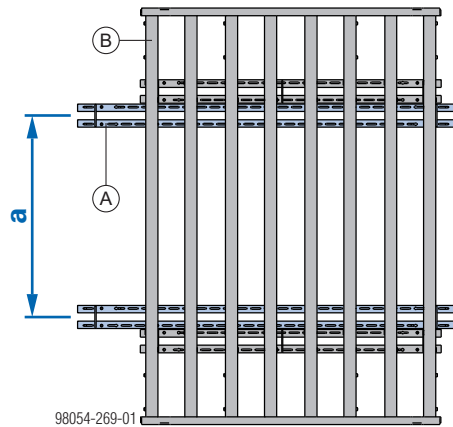
S ParaTop insert-channel U65 (expendable part)

T ParaTop insert-cone 0.35m

U Hexagon nut 15.0

Pre-assembling platform with Formwork elements FF20

- Lay down Multi-purpose walings WS10, spaced apart by the exact centre-to-centre distance.



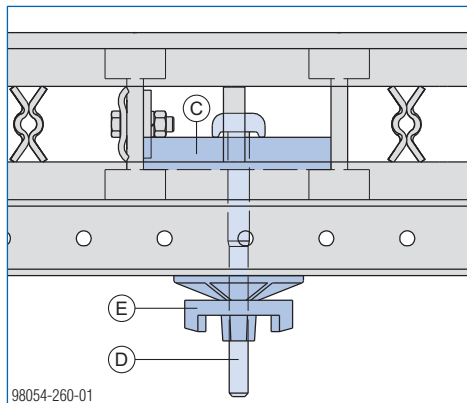
a ... centre-to-centre distance

A Multi-purpose waling WS10 Top50

B Formwork element FF20 2.00x2.75m (without form-facing)

- Secure the Formwork element FF20 to the Multi-purpose walings WS10.

Clamping connection



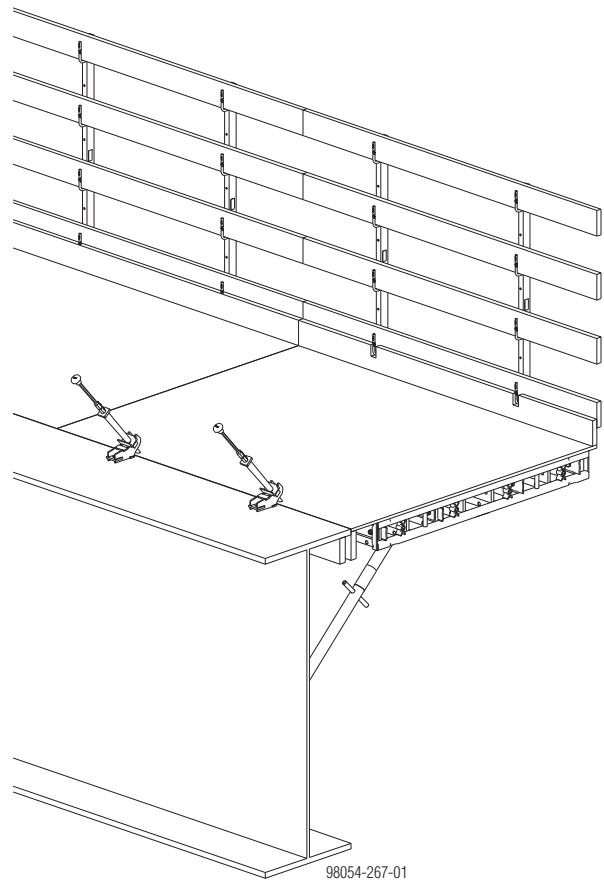
C Plank

D Framax universal fixing bolt 10-16cm

E Super plate 15.0

Note:

From this point on, the procedure for pre-assembling the platform is the same as that for the Top 50 platform.



Edge protection system XP

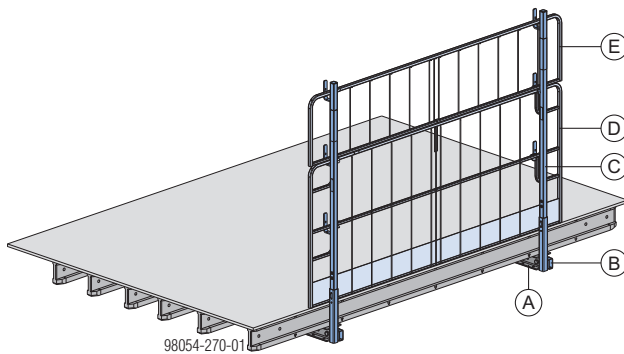


Follow the directions in the 'Edge protection system XP' User Information booklet!

Insertion adapter XP

The **Insertion adapter XP** is used in combination with the Handrail post XP, for erecting safety barriers on multi-purpose walings.

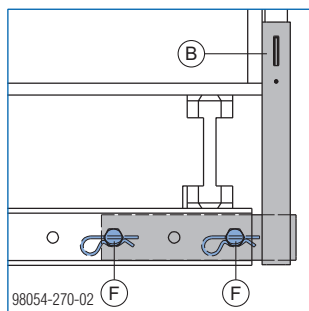
- Suitable for railing-heights of 1.20 m and 1.80 m.



- A Multi-purpose waling WS10 Top50
- B Insertion adapter XP
- C Handrail post XP
- D Protective grating XP 2.70x1.20m
- E Protective grating XP 2.70x0.60m

Assembly:

- Attach the Insertion adapter XP to the multi-purpose waling with 2 Connecting pins 10cm and secure each of these with a Spring cotter 5mm.



- B Insertion adapter XP
- F Connecting pin 10cm + Spring cotter 5mm

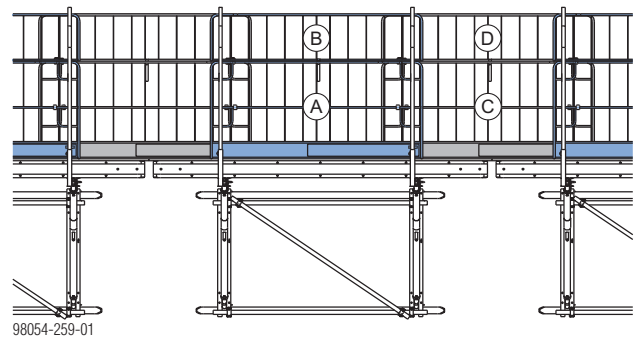
- Working from below, push the Toeboard holder XP 1.20m onto the Handrail post XP 1.80m (not needed when using the Protective grating XP).
- Push the Handrail post XP into the post-holding fixture on the Insertion adapter XP until the locking mechanism engages.



The locking mechanism must engage.

- Fit on a Protective grating XP or guard-rail boards, and fix them in place.

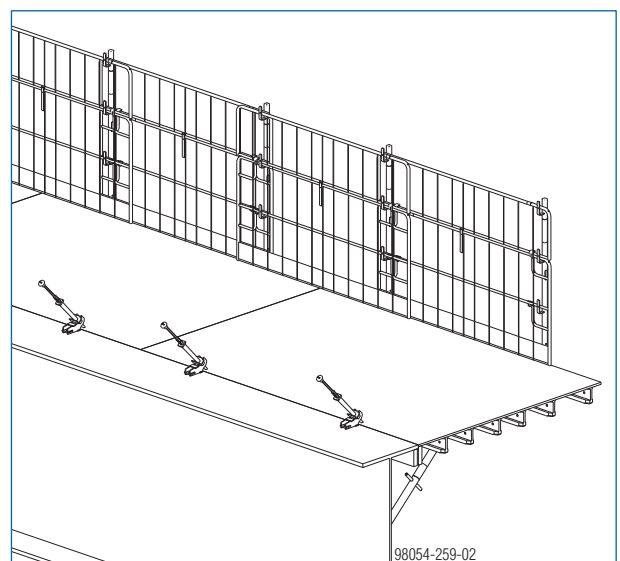
Structural design



- A Protective grating XP 2.50x1.20m
- B Protective grating XP 2.50x0.60m
- C Protective grating XP 2.00x1.20m
- D Protective grating XP 2.00x0.60m

Dynamic pressure q [kN/m²]	Permissible influence width 'e' [m]			
	Protective gratings XP 2.70x1.20m and 2.70x0.60m	Guard-rail boards		
		2.4 x 15 cm	3 x 15 cm	4 x 15 cm
0.2	2.5	1.9	2.7	3.6
0.6		1.9	2.7	2.8
1.1		1.5	1.5	1.5
1.3		1.2	1.2	1.2
		Scaffold tubes 48.3mm ¹⁾		

¹⁾ Toeboard 5 x 43 cm required



Starting up

The modular design of the Bridge formwork ParaTop system means that many different combinations are possible.

Depending on the project, the actual design may thus differ very greatly from the basic type described here.

- In these cases, you should discuss the assembly procedure with your Doka technician.
- Follow the shop drawing / assembly plan.



NOTICE

- A hard, flat, firm surface is needed!
- Prepare a sufficiently large assembly area.
- Tightening torque of the couplers for the bracing tubes: 50 Nm
- During all assembly and dismantling work on the Bridge formwork ParaTop that is carried out on the structure itself, the operators must use fall-arrest equipment (e.g. the Doka personal fall-arrest set).

Fixing the Top 50 platform to the insert-shoes

General instructions on repositioning

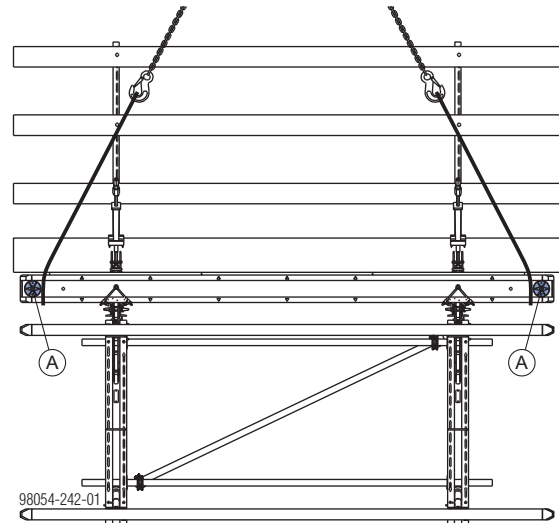


NOTICE

- **Before lifting:** Remove any loose items from the formwork and platforms, or secure them firmly.
- 'Passenger transportation' is forbidden!
- Use lifting slings with sufficient carrying capacity.
- It is only possible to attach the lifting slings if the Doka beams project sufficiently far beyond the sheet-covered area.

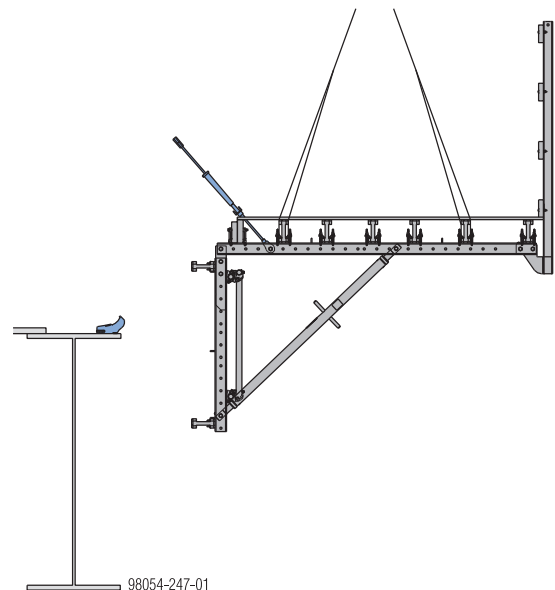
Mounting to the structure:

- Attach the Top 50 platform to the crane with 4 lifting slings
- Secure the lifting slings so that they cannot slip off.



A Anti-slipoff protection for lifting-slings

- Fly the Top 50 platform to the ParaTop insert-shoes.

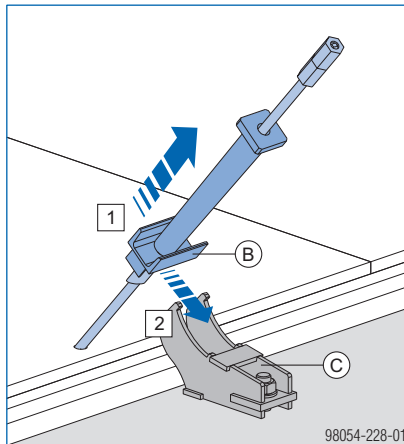


**NOTICE**

- ▶ Do not bend tie rods.

The insert-channel must snap into the insert-shoe without having to be forced.

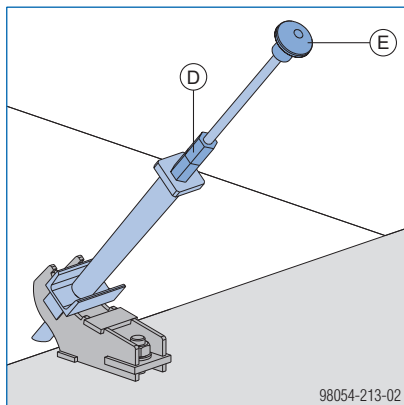
- ▶ Raise the insert-channel and fit it in place in the insert-shoe.



B ParaTop insert-channel U65

C ParaTop insert-shoe steel

- ▶ Tighten the hexagon nut to pull the Top 50 platform towards the bridge superstructure.
Width across flats 30 mm
- ▶ Lock the hexagon nut 15.0 with a second hexagon nut 15.0.
- ▶ Fit a protective cap to the tie rod.



D Hexagon nut 15.0

E Protective cap 15.0/20.0

- ▶ Secure the 2nd anchor of the formwork unit in the same way.
- ▶ Detach the lifting slings from the Top 50 platform.
- ▶ When aligning and adjusting, fix the tie rod with a tie-rod wrench to prevent it turning.
- ▶ Insert fitting-boards between the Top 50 platforms and fix these with nails if necessary.
- ▶ If necessary, place ballast weights on the Top 50 platforms to prevent them tipping over.
- ▶ Mount the stop-end formwork.
- ▶ Spray the formwork sheets and insert-cones with concrete release agent.
- ▶ Place the reinforcement.

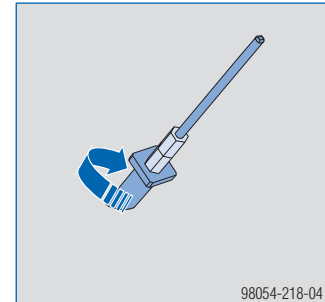
Pouring

- ▶ Remove the ballast from the formwork construction, if this is necessary for statical reasons.
- ▶ Pour from the inside towards the outside.



As soon as the concrete is strong enough to be walked on:

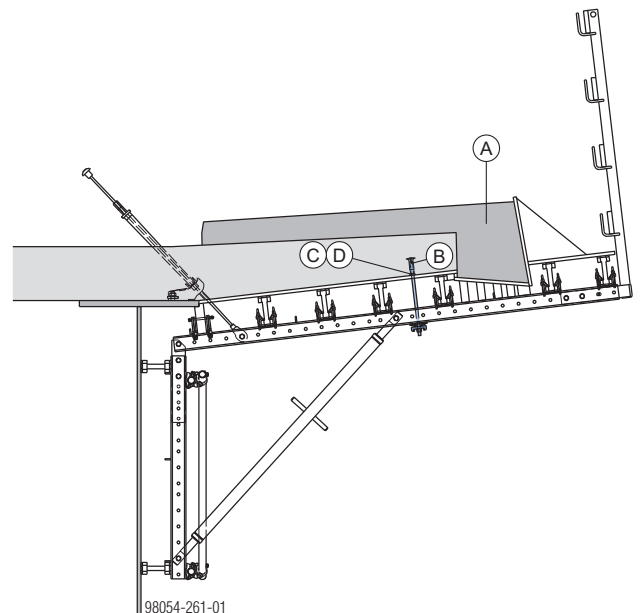
Turn the anchoring cones clockwise by approx. 90°, to make it easier to remove them when the formwork is stripped.



2nd casting section for cantilevered parapets

The following measures are necessary if the bracket is not calculated for the entire cross-section and there are 2 pouring operations:

- relieve the load on the bracket before the 2nd pouring operation or
- install a bridge edge beam anchor to take the loads from the 2nd casting section



A Cross-section for the 2nd pouring operation

B Bridge edge beam anchor 15.0

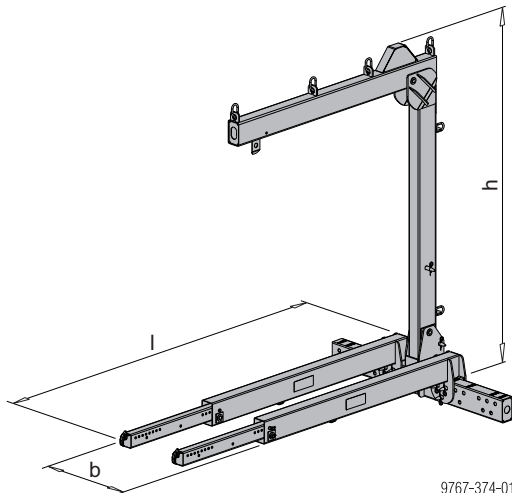
C Fibre-concrete tube 22mm

D Universal cone 22mm

Dismantling

Dismounting with transport fork

- Adjustable fork width and fork length
- Integrated tag-lines
- Three attachment possibilities for 2-part lifting chains for optimum (horizontal) transport of the platforms
- Attaching/detaching the 2-part lifting chain is easy in the parking position (bracket tilts down when lowered to the ground)



b ... 90, 137, 204 or 227 cm
l ... 275, 324, 373 or 422 cm
h ... 385 cm

9767-374-01

Max. load-bearing capacity: 1300 kg (2870 lbs)



Follow the directions in the 'Transport fork 1.3t adjustable' Operating Instructions.

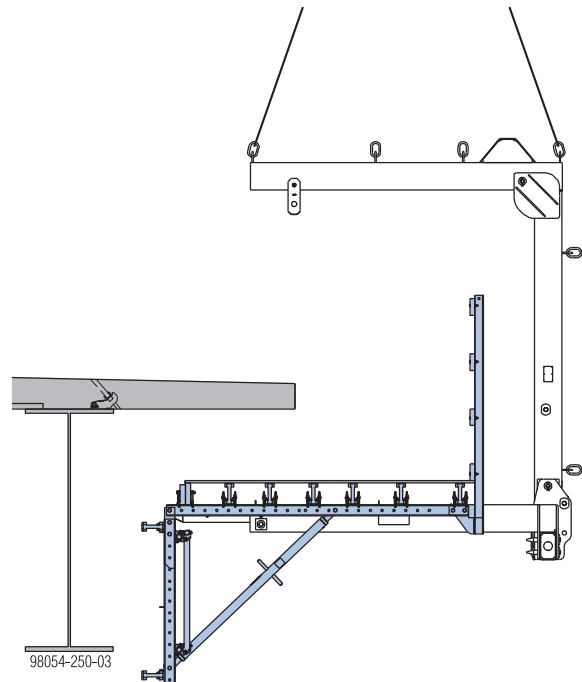
- Support the Top 50 platform with the transport fork.



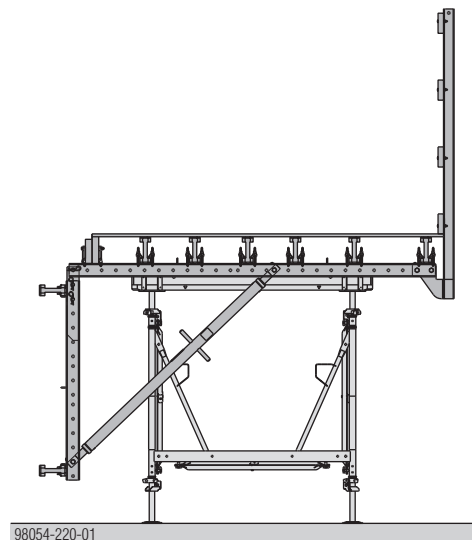
NOTICE

- When loosening the nuts, fix the tie rod with a tie-rod wrench.
- Slacken the hexagon nuts at the suspension point and unscrew them from the tie rod. The Top 50 platform is now resting on the transport fork.
- Remove the tie rod with the tie-rod wrench.

- Lift the formwork construction away on the transport fork, and set it down on the temporary support.



- Detach the insert-cone from the concrete.
- The rest of the dismantling sequence is done at ground level, in reverse order.



Dismounting with load balancer

A load balancer can be used if it is not possible to dismount the Top 50 platform with a transport fork.

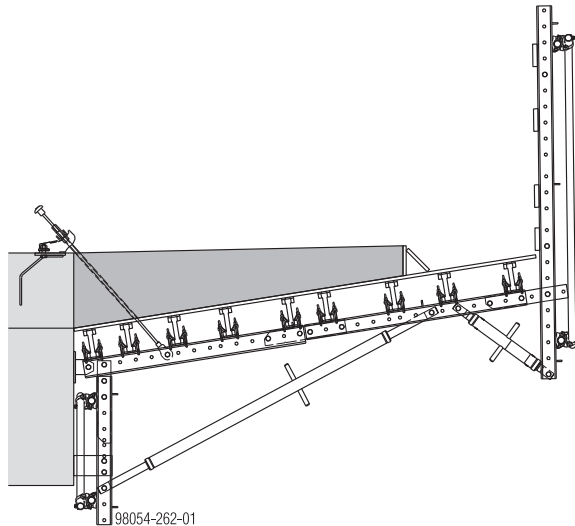


NOTICE

A separate statics check is necessary for the load balancer and the bracket.



Follow the directions in the project-specific Operating Instructions for the load balancer!



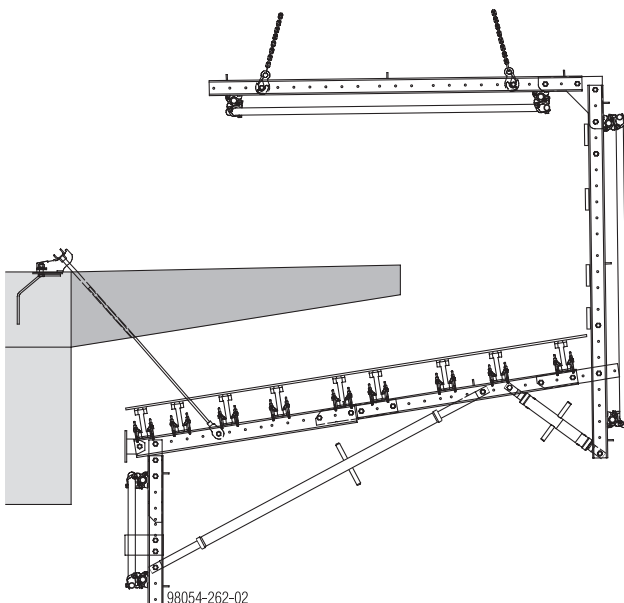
- Pin the load balancer to the Top 50 platform.



NOTICE

- When loosening the nuts, fix the tie rod with a tie-rod wrench.

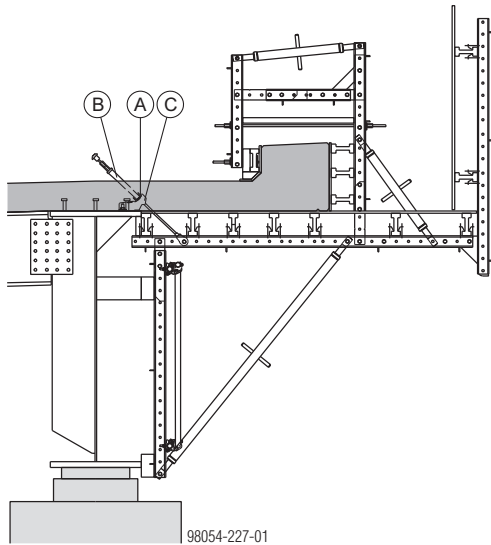
- Slacken the hexagon nuts at the suspension point and unscrew them from the tie rod.
- Carefully lower the formwork structure, guiding the tie rods out of the suspension points.
- Lift the formwork construction clear with the load balancer and set it down on the temporary support.
- Detach the insert-cone (if present) from the concrete.



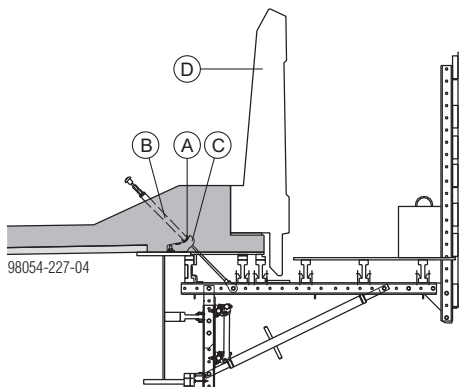
General

Design variants

Used on steel girders

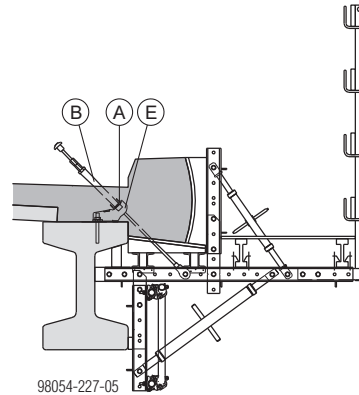


- A** ParaTop insert-channel U65 (expendable part)
- B** ParaTop insert-cone 0.35m
- C** ParaTop insert-shoe steel (expendable part)

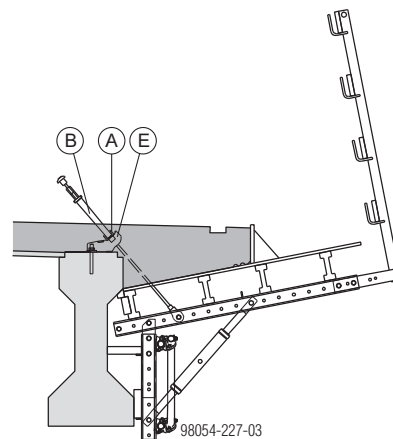


- A** ParaTop insert-channel U65 (expendable part)
- B** ParaTop insert-cone 0.35m
- C** ParaTop insert-shoe steel (expendable part)
- D** Pre-cast member (retrofitted)

Used on pre-cast concrete members

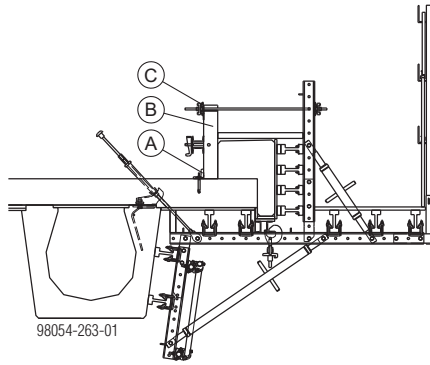


- A** ParaTop insert-channel U65 (expendable part)
- B** ParaTop insert-cone 0.35m
- E** ParaTop insert-shoe concrete (expendable part)



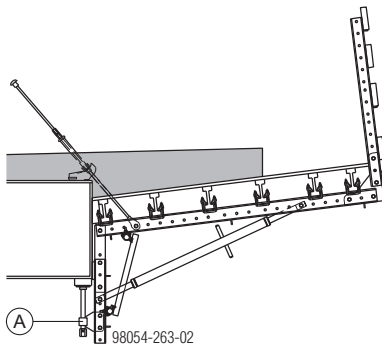
- A** ParaTop insert-channel U65 (expendable part)
- B** ParaTop insert-cone 0.35m
- E** ParaTop insert-shoe concrete (expendable part)

End shuttering with Framax



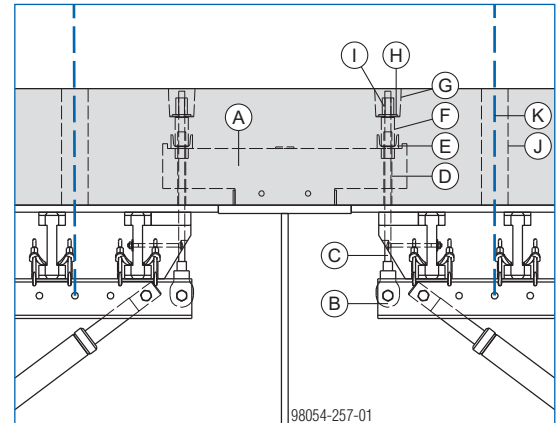
- A** Framax floor fixing plate
- B** Framax Xlife panel
- C** Framax tie-holder bracket

Vertical pressure point, low structures



- A** Height adjuster WS10-WU16

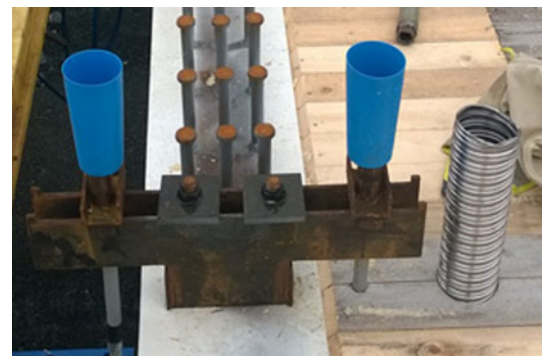
Vertical anchorage



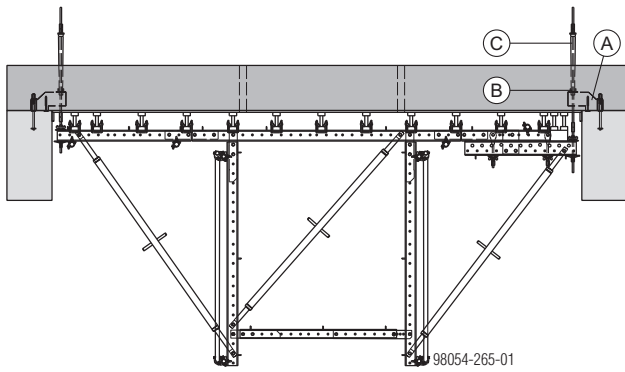
- A** Custom ParaTop insert-shoe steel (expendable part)
- B** Eye-lug anchor 15.0 without tie rod
- C** Tie rod 15.0mm
- D** Plastic tube 22mm (expendable part)
- E** ParaTop insert-channel U65 (expendable part)
- F** ParaTop insert-tube 40x5 (custom component, expendable part)
- G** Sealing sleeve SCP 20.0
- H** Washer ISO 7094 - 16 - 100 HV galvanised
- I** Hexagon nut 15.0
- J** Tube (site-provided, e.g. ribbed sheathing, DN102)
- K** Round sling

Note:

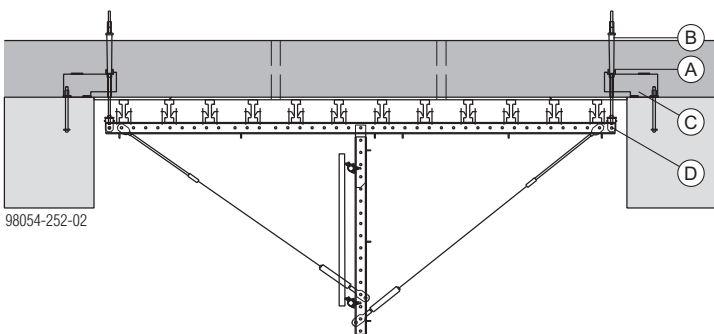
Tubes inserted in the axis of the girderframe unit enable the formwork to be lowered in the dismantling process.



Used between 2 downstand beams

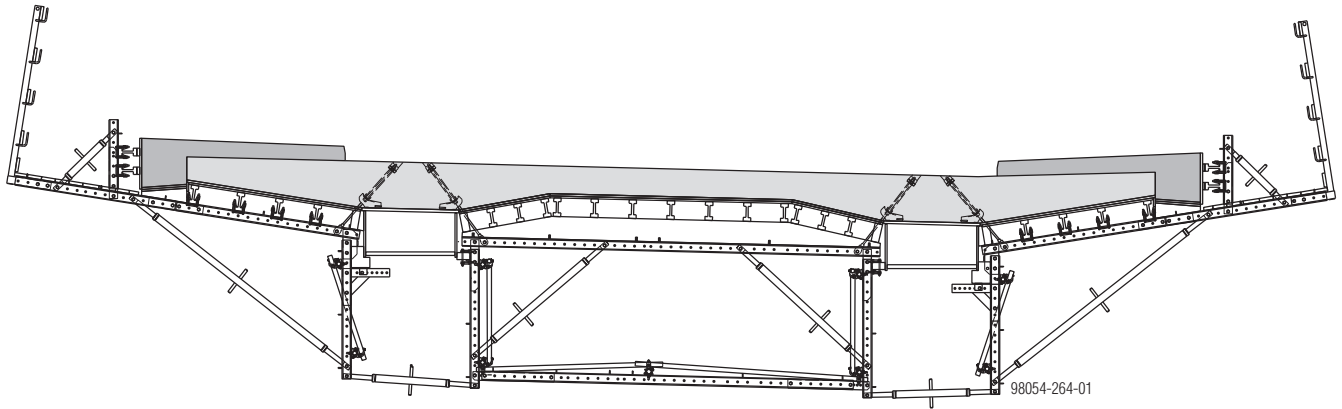


- A** ParaTop special shoe (expendable part)
- B** ParaTop insert-channel U65 (expendable part)
- C** ParaTop insert-cone 0.35m



- A** ParaTop insert-channel U65 (expendable part)
- B** ParaTop insert-cone 0.35m
- C** ParaTop special shoe (expendable part)
- D** Eye-lug anchor NG

Used for steel girders with low height



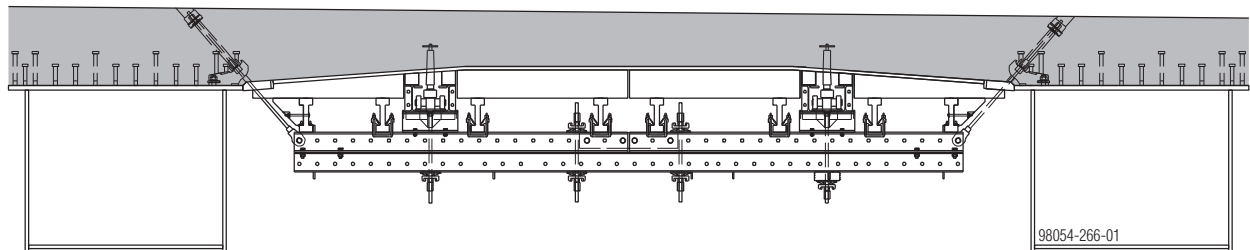
Movable inside formwork

The movable inside formwork is based on the drawer principle of the Composite forming carriage.

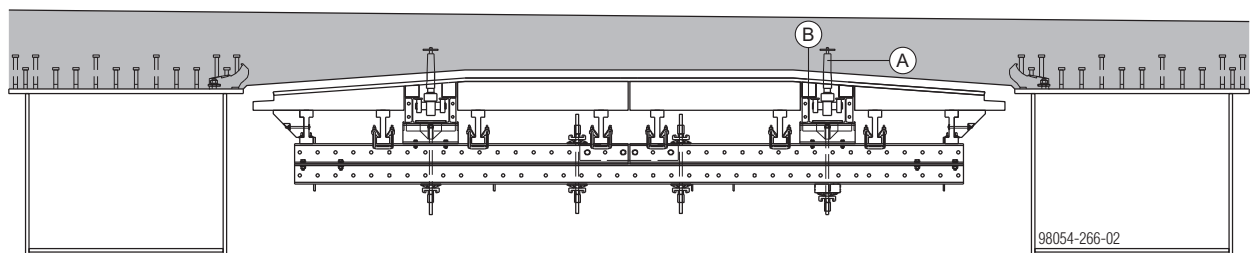


Follow the directions in the 'Composite forming carriage' User Information booklet!

Situation during pouring



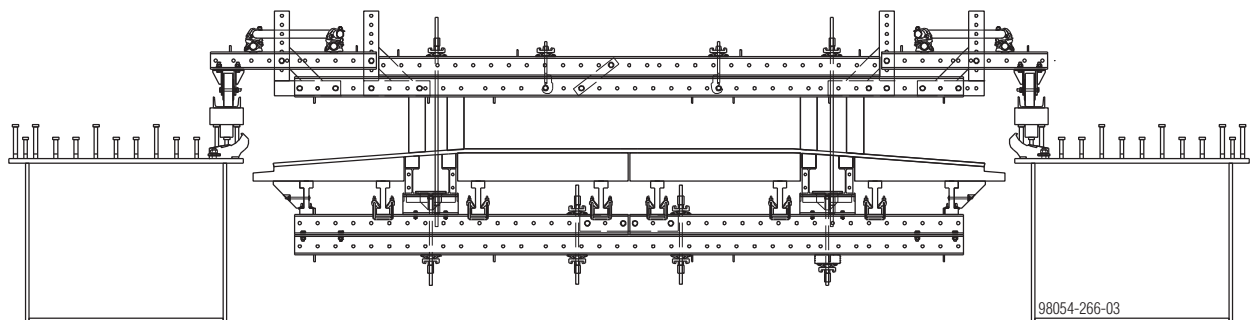
Situation for moving underneath the finished roadway slab



A Roller supports for inside formwork

B Roller girder IPE160 5.00m

Situation for moving outside the finished roadway slab



Sideguards on exposed platform-ends

On platforms that do not completely encircle the structure, suitable sideguards must be placed across exposed end-of-platform zones.

Note:

The plank and board thicknesses given here comply with the C24 category of EN 338.

Observe all national regulations applying to deck-boards and guard-rail boards.

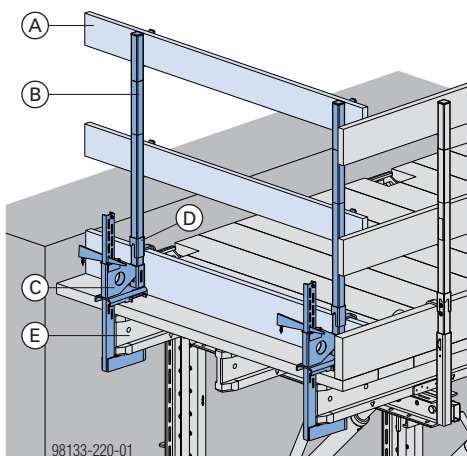
Edge protection system XP



Follow the directions in the 'Edge protection system XP' User Information booklet.

Assembly:

- Fasten Railing clamps XP onto the decking of the working platform, by tightening the wedge (clamping range 2 to 43 cm).
- Working from below, push a Toeboard holder XP 1.20m onto the Handrail post XP 1.20m.
- Push the Handrail post XP 1.20m into the post-holding fixture on the Railing clamps XP until the locking mechanism engages.
- Insert and secure the guardrail boards.



A Guardrail board min. 15/3 cm (site-provided)

B Handrail post XP 1.20m

C Railing clamp XP 40cm

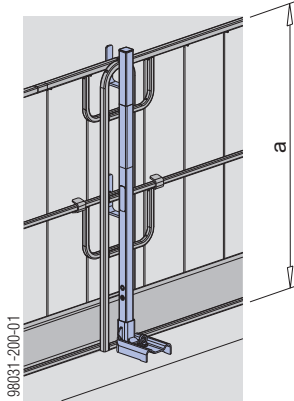
D Toeboard holder XP 1.20m

E Working platform assembled from system components

Fall-arrest systems on the structure

Handrail post XP 1.20m

- Attached with Screw-on shoe XP, railing clamp, Handrail-post shoe or Step bracket XP
- Protective grating XP, guard-rail boards or scaffold tubes can be used as the safety barrier



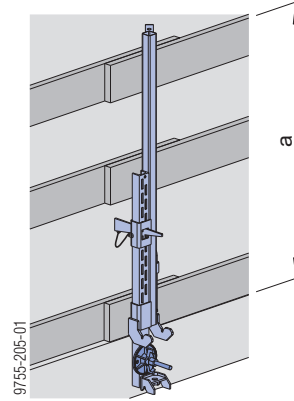
a ... > 1.00 m



Follow the directions in the 'Edge protection system XP' User Information booklet!

Handrail clamp T

- Fixed in embedded anchoring components or reinforcement hoops
- Guard-rail boards or scaffold tubes can be used as the safety barrier



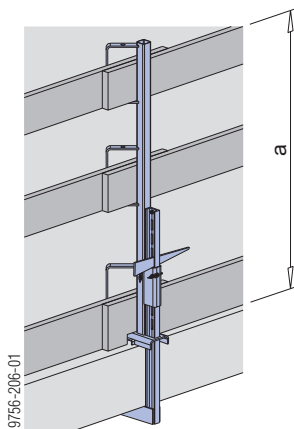
a ... > 1.00 m



Follow the directions in the 'Handrail clamp T' User Information!

Handrail clamp S

- Attached with integral clamp
- Guard-rail boards or scaffold tubes can be used as the safety barrier



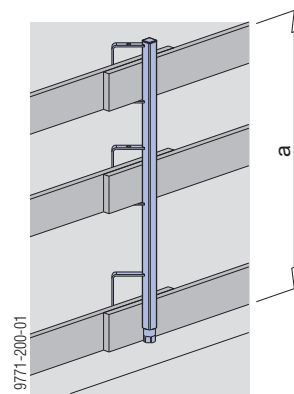
a ... > 1.00 m



Follow the directions in the "Handrail clamp S" User information!

Handrail post 1.10m

- Fixed in a Screw sleeve 20.0 or Attachable sleeve 24mm
- Guard-rail boards or scaffold tubes can be used as the safety barrier



a ... > 1.00 m



Follow the directions in the 'Handrail post 1.10m' User Information!

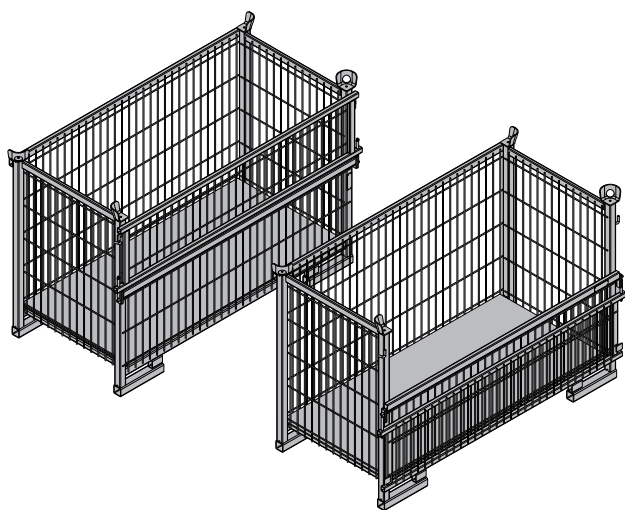
Transporting, stacking and storing

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.

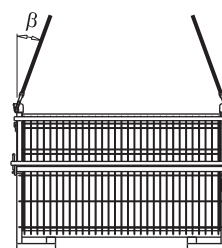
Using Doka skeleton transport boxes 1.70x0.80m as transport devices

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 load-bearing capacity.
- Spread angle β max. 30°!



9234-203-01

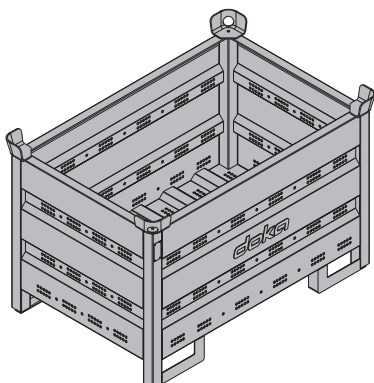
Repositioning by forklift truck or pallet stacking truck

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

Doka multi-trip transport box

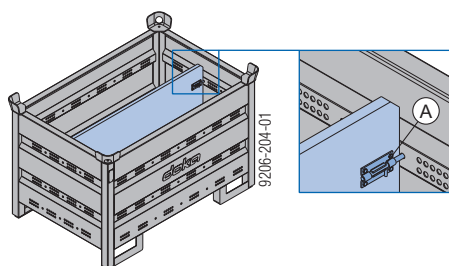
Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m



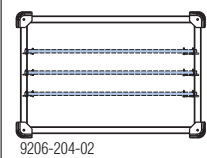
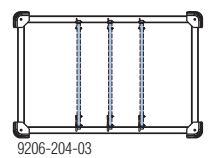
Max. carrying capacity: 1500 kg (3300 lbs)
Permitted imposed load: 7850 kg (17300 lbs)

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**.

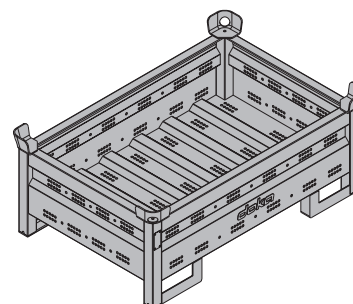


A Slide-bolt for fixing the partition

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
		

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)		Indoors	
Floor gradients up to 3%		Floor gradients up to 1%	
Doka multi-trip transport box 1.20x0.80m	Doka multi-trip transport box 1.20x0.80x0.41m	Doka multi-trip transport box 1.20x0.80m	Doka multi-trip transport box 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.

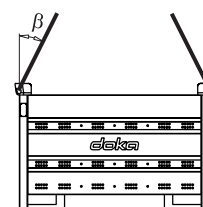
Using Doka multi-trip transport boxes as transport devices

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 load-bearing capacity.
- Spread angle β max. 30°!



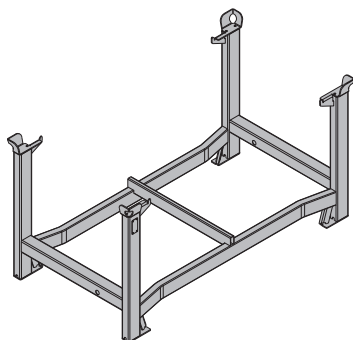
9206-202-01

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 caster set mounted to it.

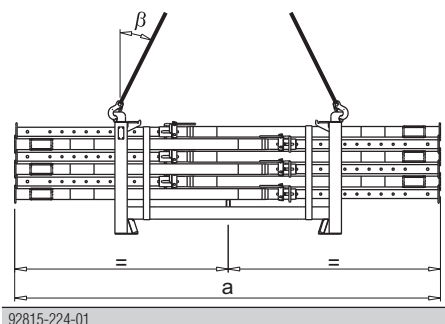
Using Doka stacking pallets as transport devices

Lifting by crane



NOTICE

- Multi-trip packaging items may only be lifted one at a time.
- Use a suitable crane suspension tackle (e.g. Doka 4-part chain 3.20m). Do not exceed the permitted load-bearing capacity.
- Load the items centrally.
- Fasten the load to the stacking pallet so that it cannot slide or tip out.
- Spread 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

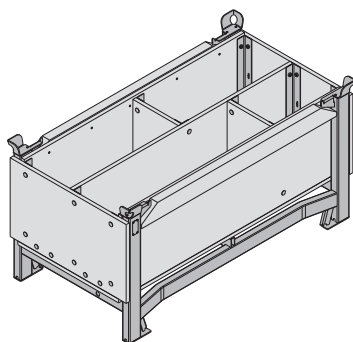


NOTICE

- Load the items centrally.
- Fasten the load to the stacking pallet 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) Floor gradients up to 3%	Indoors 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 castor set mounted to it.

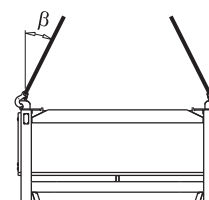
Doka accessory box as transport devices

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 load-bearing capacity.
- Spread angle β max. 30°!



92816-206-01

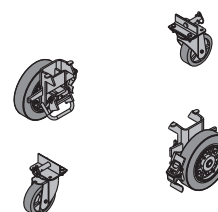
Repositioning by forklift truck or pallet stacking truck

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

Bolt-on castor set B

The Bolt-on caster set B turns the stacking pallet into a fast and manoeuvrable transport device.

Suitable for drive-through access openings > 90 cm.

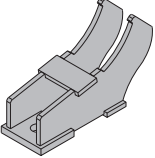
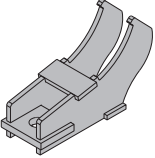
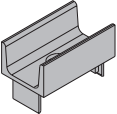
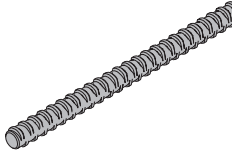
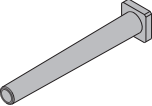
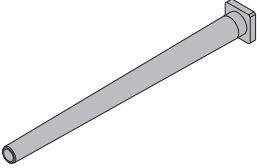

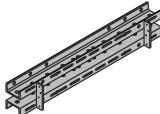
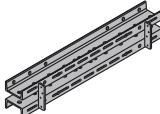


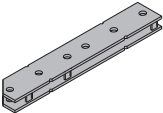
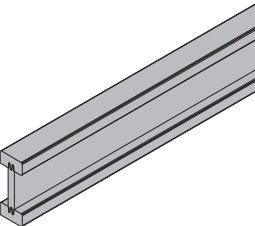
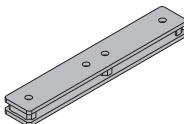
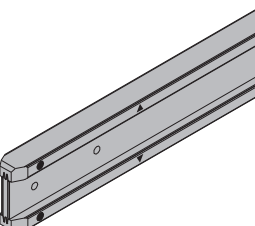
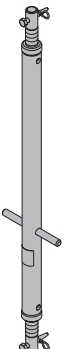
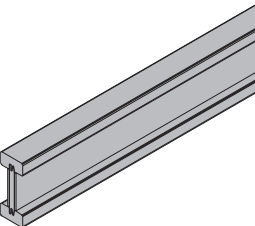
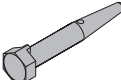
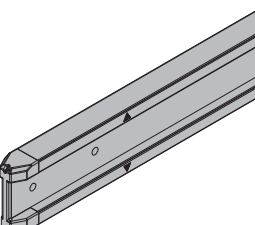

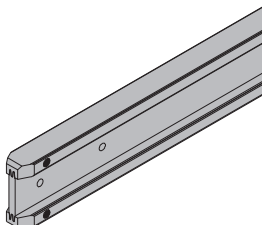
The Bolt-on caster set B can be mounted to the following multi-trip packaging items:

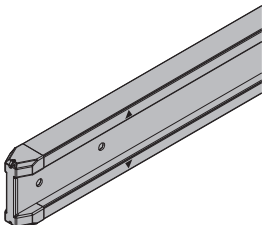
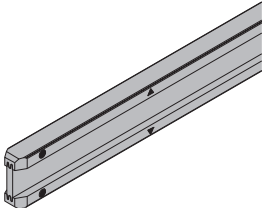
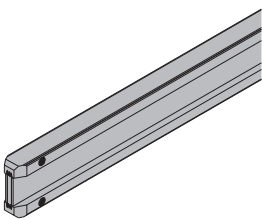

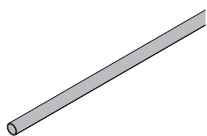
- Doka accessory box
- Doka stacking pallets


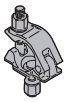
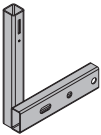
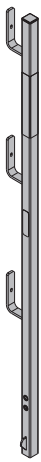
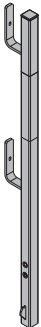
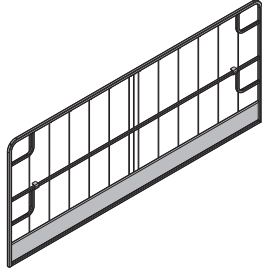

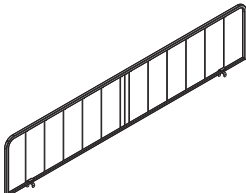


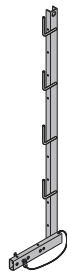

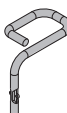




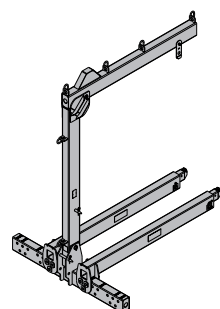

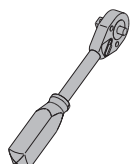
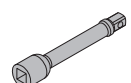


Follow the directions in the 'Bolt-on castor set B' Operating Instructions!

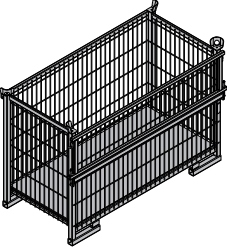
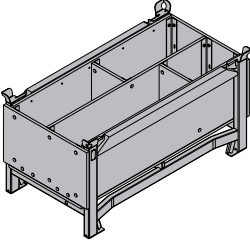
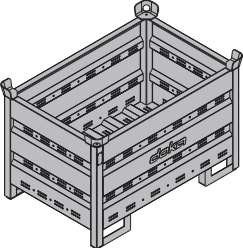
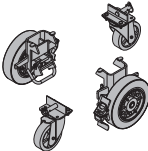
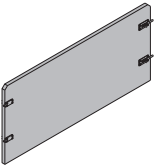
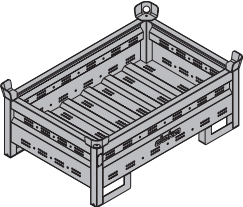
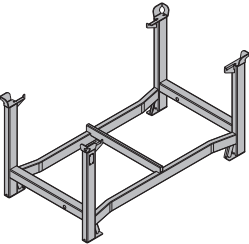
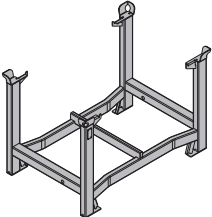
	[kg]	Article N°		[kg]	Article N°
ParaTop insert-shoe concrete ParaTop-Einbauschuh Beton	3.1	584444000	 Non-treated	Tie rod 15.0mm galvanised 0.50m 0.72 581821000 Tie rod 15.0mm galvanised 0.75m 1.1 581822000 Tie rod 15.0mm galvanised 1.00m 1.4 581823000 Tie rod 15.0mm galvanised 1.25m 1.8 581826000 Tie 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 galvanisedm 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-treatedm 1.4 581873000	
ParaTop insert-shoe steel ParaTop-Einbauschuh Stahl	3.1	584443000	 Non-treated		
ParaTop insert-channel U65 ParaTop-Einbauprofil U65	0.89	584442000	 Non-treated	 Ankerstab 15,0mm	DIN 18216
ParaTop insert-cone 0.35m ParaTop-Einbaukonus 0,35m	2.9	584441000	 Chrome-plated Length: 36 cm	Hexagon nut 15.0 Sechskantmutter 15,0	0.23 581964000 Galvanised Length: 5 cm Width-across: 30 mm DIN 18216
ParaTop insert-cone 0.65m ParaTop-Einbaukonus 0,65m	6.2	584447000	 Chrome-plated Length: 66 cm	Sealing sleeve SCP 20.0 Dichtungshülse SCP 20,0	0.07 581650000 Blue Length: 19.5 cm Diameter: 9 cm
Eye-lug anchor 15.0 without tie rod Ösenanker 15,0 ohne Ankerstab	1.2	580649000	 Galvanised Length: 11 cm	Multi-purpose waling WS10 Top50 0.50m 10.2 580001000 Multi-purpose waling WS10 Top50 0.75m 14.9 580002000 Multi-purpose waling WS10 Top50 1.00m 19.6 580003000 Multi-purpose waling WS10 Top50 1.25m 24.7 580004000 Multi-purpose waling WS10 Top50 1.50m 29.7 580005000 Multi-purpose waling WS10 Top50 1.75m 35.0 580006000 Multi-purpose waling WS10 Top50 2.00m 38.9 580007000 Multi-purpose waling WS10 Top50 2.25m 44.2 580008000 Multi-purpose waling WS10 Top50 2.50m 48.7 580009000 Multi-purpose waling WS10 Top50 2.75m 54.2 580010000 Multi-purpose waling WS10 Top50 3.00m 60.2 580011000 Multi-purpose waling WS10 Top50 3.50m 68.4 580012000 Multi-purpose waling WS10 Top50 4.00m 79.4 580013000 Multi-purpose waling WS10 Top50 4.50m 89.1 580014000 Multi-purpose waling WS10 Top50 5.00m 102.0 580015000 Multi-purpose waling WS10 Top50 5.50m 112.4 580016000 Multi-purpose waling WS10 Top50 6.00m 118.0 580017000 Mehrzweckriegel WS10 Top50	
			 Painted blue		
			Multi-purpose waling WU12 Top50 1.00m 25.3 580018000 Multi-purpose waling WU12 Top50 1.25m 32.0 580019000 Multi-purpose waling WU12 Top50 1.50m 37.5 580020000 Multi-purpose waling WU12 Top50 1.75m 44.2 580021000 Multi-purpose waling WU12 Top50 2.00m 50.0 580022000 Multi-purpose waling WU12 Top50 2.50m 63.1 580023000 Multi-purpose waling WU12 Top50 3.00m 75.7 580024000 Multi-purpose waling WU12 Top50 3.50m 90.7 580025000 Multi-purpose waling WU12 Top50 4.00m 103.4 580026000 Mehrzweckriegel WU12 Top50		
			 Painted blue		

	[kg]	Article N°		[kg]	Article N°
Formwork element connector FF20/50 Z Elementverbinder FF20/50 Z  Painted blue Length: 55 cm	6.0	587533000	Doka beam H20 eco P 1.25m Doka beam H20 eco P 12.00m Doka-Träger H20 eco P  Varnished yellow	6.6 63.6	189939000 189993000
Splice plate SKE50 plus Verbindungsplatte SKE50 plus  Painted blue Length: 60 cm Width: 10 cm	10.6	581523000	Doka beam H20 eco N 1.80m Doka beam H20 eco N 2.45m Doka beam H20 eco N 2.65m Doka beam H20 eco N 2.90m Doka beam H20 eco N 3.30m Doka beam H20 eco N 3.60m Doka beam H20 eco N 3.90m Doka beam H20 eco N 4.50m Doka beam H20 eco N 4.90m Doka beam H20 eco N 5.90m Doka beam H20 eco Nm Doka beam H20 eco Nm BS Doka-Träger H20 eco N  Varnished yellow	8.5 11.5 12.5 13.6 15.5 16.9 18.3 21.2 23.0 27.7 4.7 4.7	189283000 189271000 189272000 189273000 189284000 189285000 189276000 189286000 189277000 189287000 189299000 189289000
Spindle strut T7 75/110cm Spindle strut T7 100/150cm Spindle strut T7 150/200cm Spindle strut T7 200/250cm Spindle strut T7 250/300cm Spindle strut T7 305/355cm Spindelstrebe T7  Galvanised	13.2 16.8 21.6 26.2 29.4 35.0	584308000 584309000 584324000 584325000 584326000 584327000	Doka beam H20 eco N 1.25m Doka beam H20 eco N 12.00m Doka-Träger H20 eco N  Varnished yellow	5.9 56.4	189282000 189288000
Connecting pin 10cm Verbindungsbolzen 10cm  Galvanised Length: 14 cm	0.34	580201000	Doka beam H20 top P 1.80m Doka beam H20 top P 2.45m Doka beam H20 top P 2.65m Doka beam H20 top P 2.90m Doka beam H20 top P 3.30m Doka beam H20 top P 3.60m Doka beam H20 top P 3.90m Doka beam H20 top P 4.50m Doka beam H20 top P 4.90m Doka beam H20 top P 5.90m Doka beam H20 top Pm Doka beam H20 top Pm BS Doka-Träger H20 top P  Varnished yellow	9.5 13.0 14.1 15.4 17.5 19.1 20.7 23.9 26.0 31.3 46.8 5.3 5.3	189701000 189702000 189703000 189704000 189705000 189706000 189707000 189708000 189709000 189710000 189700000 189711000
Spring cotter 5mm Federvorstecker 5mm  Galvanised Length: 13 cm	0.03	580204000			
Doka beam H20 eco P 1.80m Doka beam H20 eco P 2.45m Doka beam H20 eco P 2.65m Doka beam H20 eco P 2.90m Doka beam H20 eco P 3.30m Doka beam H20 eco P 3.60m Doka beam H20 eco P 3.90m Doka beam H20 eco P 4.50m Doka beam H20 eco P 4.90m Doka beam H20 eco P 5.90m Doka beam H20 eco P 9.00m Doka beam H20 eco Pm Doka beam H20 eco Pm BS Doka-Träger H20 eco P  Varnished yellow	9.5 13.0 14.1 15.4 17.5 19.1 20.7 23.9 26.0 31.3 46.8 5.3 5.3	189940000 189936000 189937000 189930000 189941000 189942000 189931000 189943000 189932000 189955000 189956000 189999000 189957000			

	[kg]	Article N°		[kg]	Article N°
Doka beam H20 top N 1.80m	8.5	189011000	Doka formwork sheet 3-SO 21mm 100/50cm	4.9	186007000
Doka beam H20 top N 2.45m	11.5	189012000	Doka formwork sheet 3-SO 21mm 150/50cm	7.3	186008000
Doka beam H20 top N 2.65m	12.5	189013000	Doka formwork sheet 3-SO 21mm 200/50cm	9.7	186009000
Doka beam H20 top N 2.90m	13.6	189014000	Doka formwork sheet 3-SO 21mm 250/50cm	12.1	186011000
Doka beam H20 top N 3.30m	15.5	189015000	Doka formwork sheet 3-SO 21mm 300/50cm	14.6	186012000
Doka beam H20 top N 3.60m	16.9	189016000	Doka formwork sheet 3-SO 21mm 350/50cm	17.0	186028000
Doka beam H20 top N 3.90m	18.3	189017000	Doka formwork sheet 3-SO 21mm 400/50cm	19.4	186013000
Doka beam H20 top N 4.50m	21.2	189018000	Doka formwork sheet 3-SO 21mm 450/50cm	21.8	186029000
Doka beam H20 top N 4.90m	23.0	189019000	Doka formwork sheet 3-SO 21mm 500/50cm	24.3	186014000
Doka beam H20 top N 5.90m	27.7	189020000	Doka formwork sheet 3-SO 21mm 550/50cm	26.7	186023000
Doka beam H20 top Nm	4.7	189010000	Doka formwork sheet 3-SO 21mm 600/50cm	29.1	186027000
Doka beam H20 top Nm BS	4.7	189021000	Doka formwork sheet 3-SO 21mm 100/100cm	9.7	186015000
Doka-Träger H20 top N			Doka formwork sheet 3-SO 21mm 150/100cm	14.6	186016000
 Varnished yellow			Doka formwork sheet 3-SO 21mm 200/100cm	19.4	186017000
Doka beam H16 P 1.80m	6.7	189969000	Doka formwork sheet 3-SO 21mm 250/100cm	24.3	186018000
Doka beam H16 P 2.45m	9.1	189961000	Doka formwork sheet 3-SO 21mm 300/100cm	29.1	186019000
Doka beam H16 P 2.90m	10.7	189962000	Doka formwork sheet 3-SO 21mm 350/100cm	34.0	186030000
Doka beam H16 P 3.30m	12.2	189963000	Doka formwork sheet 3-SO 21mm 400/100cm	38.8	186020000
Doka beam H16 P 3.90m	14.4	189966000	Doka formwork sheet 3-SO 21mm 450/100cm	43.7	186031000
Doka beam H16 P 4.90m	18.1	189967000	Doka formwork sheet 3-SO 21mm 500/100cm	48.5	186021000
Doka beam H16 P 9.00m	33.3	189970000	Doka formwork sheet 3-SO 21mm 550/100cm	53.4	186022000
Doka beam H16 Pm	4.3	189960000	Doka formwork sheet 3-SO 21mm 600/100cm	58.2	186024000
Doka-Träger H16 P			Doka formwork sheet 3-SO 21mm 250/125cm	30.3	186097000
 Varnished yellow			Doka formwork sheet 3-SO 21mm 300/150cm	43.7	186098000
Doka beam H16 N 1.80m	6.3	189851000	Doka formwork sheet 3-SO 21mm 600/150cm	87.3	186099000
Doka beam H16 N 2.45m	8.6	189802000	Doka formwork sheet 3-SO 21mm 150/50cm BS	7.3	186008100
Doka beam H16 N 2.90m	10.2	189803000	Doka formwork sheet 3-SO 21mm 200/50cm BS	9.7	186009100
Doka beam H16 N 3.30m	11.6	189807000	Doka formwork sheet 3-SO 21mm 250/50cm BS	12.1	186011100
Doka beam H16 N 3.90m	13.7	189805000	Doka formwork sheet 3-SO 21mm 300/50cm BS	14.6	186012100
Doka beam H16 N 4.90m	17.2	189813000	Doka-Schalungsplatte 3-SO 21mm		
Doka beam H16 N 9.00m	31.5	189852000	Doka formwork sheet 3-SO 27mm 100/50cm	6.1	187007000
Doka beam H16 Nm	3.5	189850000	Doka formwork sheet 3-SO 27mm 150/50cm	9.1	187008000
Doka-Träger H16 N			Doka formwork sheet 3-SO 27mm 200/50cm	12.1	187009000
 Varnished yellow			Doka formwork sheet 3-SO 27mm 250/50cm	15.1	187011000
Beam screw H 8/70	0.06	580117000	Doka formwork sheet 3-SO 27mm 300/50cm	18.2	187012000
Riegelverschraubung H 8/70			Doka formwork sheet 3-SO 27mm 350/50cm	21.2	187028000
 Galvanised			Doka formwork sheet 3-SO 27mm 400/100cm	24.2	187013000
Length: 8 cm			Doka formwork sheet 3-SO 27mm 450/100cm	27.2	187029000
Width-across: 13 mm			Doka formwork sheet 3-SO 27mm 500/100cm	30.3	187014000
			Doka formwork sheet 3-SO 27mm 550/100cm	33.3	187023000
			Doka formwork sheet 3-SO 27mm 600/100cm	36.3	187027000
			Doka formwork sheet 3-SO 27mm 600/150cm	12.1	187015000
			Doka formwork sheet 3-SO 27mm 100/100cm	18.2	187016000
			Doka formwork sheet 3-SO 27mm 150/100cm	24.2	187017000
			Doka formwork sheet 3-SO 27mm 200/100cm	30.3	187018000
			Doka formwork sheet 3-SO 27mm 250/100cm	36.3	187019000
			Doka formwork sheet 3-SO 27mm 300/100cm	42.4	187030000
			Doka formwork sheet 3-SO 27mm 350/100cm	48.4	187020000
			Doka formwork sheet 3-SO 27mm 400/100cm	54.5	187031000
			Doka formwork sheet 3-SO 27mm 450/100cm	60.5	187021000
			Doka formwork sheet 3-SO 27mm 500/100cm	66.6	187022000
			Doka formwork sheet 3-SO 27mm 550/100cm	72.6	187024000
			Doka formwork sheet 3-SO 27mm 600/100cm	37.8	187106000
			Doka formwork sheet 3-SO 27mm 250/125cm	54.5	187107000
			Doka formwork sheet 3-SO 27mm 300/150cm	108.9	187108000
			Doka formwork sheet 3-SO 27mm 600/150cm	9.1	187008100
			Doka formwork sheet 3-SO 27mm 150/50cm BS	12.1	187009100
			Doka formwork sheet 3-SO 27mm 200/50cm BS	15.1	187011100
			Doka formwork sheet 3-SO 27mm 250/50cm BS	18.2	187012100
			Doka formwork sheet 3-SO 27mm 300/50cm BS		
			Doka-Schalungsplatte 3-SO 27mm		
			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 48.3mmm	3.6	682001000
			Gerüstrohr 48,3mm		
			 Galvanised		

	[kg]	Article N°		[kg]	Article N°
Scaffold tube connection Gerüstrohranschluss	0.27	584375000		Handrail post XP 0.60m Geländersteher XP 0,60m	5.0 586462000
Galvanised Height: 7 cm			Galvanised Height: 68 cm		
Screw-on coupler 48mm 50 Anschraubkupplung 48mm 50	0.84	682002000		Toeboard holder XP 0.60m Fußwehrhalter XP 0,60m	0.77 586463000
Galvanised Width-across: 22 mm Follow the directions in the "Fitting instructions"!			Galvanised Height: 21 cm		
Insertion adapter XP Einschubadapter XP	4.1	586478000		Railing clamp XP 40cm Geländerzwinge XP 40cm	7.7 586456000
Galvanised Height: 43 cm			Galvanised Height: 73 cm		
Handrail post XP 1.80m Geländersteher XP 1,80m	6.0	586482000		Railing clamp XP 85cm Geländerzwinge XP 85cm	9.3 586468000
Galvanised Height: 176 cm			Galvanised Height: 115 cm		
Handrail post XP 1.20m Geländersteher XP 1,20m	4.1	586460000		Protective grating XP 2.70x1.20m Protective grating XP 2.50x1.20m Protective grating XP 2.00x1.20m Protective grating XP 1.20x1.20m Schutzgitter XP	22.2 586450000 20.5 586451000 17.4 586452000 12.0 586453000
Galvanised Height: 118 cm			Galvanised		
Toeboard holder XP 1.20m Fußwehrhalter XP 1,20m	0.64	586461000		Protective grating XP 2.70x0.60m Protective grating XP 2.50x0.60m Protective grating XP 2.00x0.60m Protective grating XP 1.20x0.60m Schutzgitter XP	10.1 586466000 9.5 586472000 8.0 586473000 5.0 586491000
Galvanised Height: 21 cm			Galvanised		

		[kg]	Article N°			[kg]	Article N°	
Handrail post T 1.80m Einschubgeländer T 1,80m		Galvanised	17.7	584373000	Handrail post 1.10m Schutzgeländer 1,10m	 Galvanised Height: 134 cm	5.5	584384000
Toeboard holder T 1.80m Fußwehrhalter T 1,80m		Galvanised Height: 13.5 cm	0.53	584392000	Attachable sleeve 24mm Steckhülse 24mm	 PVC PE Grey Length: 16.5 cm Diameter: 2.7 cm	0.03	584385000
Universal railing SK 2.00m Universal-Geländer SK 2,00m		Galvanised	22.8	581325000	Screw sleeve 20.0 Schraubhülse 20,0	 PP Yellow Length: 20 cm Diameter: 3.1 cm	0.03	584386000
Handrail clamp S Schutzgeländerzwinge S		Galvanised Height: 123 - 171 cm	11.5	580470000	Transport fork 1.3t adjustable Umsetzgabel 1,3t verstellbar	 Galvanised Delivery condition: folded closed Follow the directions in the "Operating Instructions"! CE	731.0	586234000
Handrail clamp T Schutzgeländerzwinge T		Galvanised Height: 122 - 155 cm	12.3	584381000	Reversible ratchet 1/2" Umschaltknarre 1/2"	 Galvanised Length: 30 cm	0.73	580580000
					Extension 11cm 1/2" Verlängerung 11cm 1/2"		0.20	580581000
					Box nut 30 1/2" Stecknuss 30 1/2"		0.20	580575000
					Doka personal fall-arrest set Doka-Auffanggurt	 Follow the directions in the "Operating Instructions"! CE	3.6	583022000

	[kg]	Article N°		[kg]	Article N°
Multi-trip packaging					
Doka skeleton transport box 1.70x0.80m Doka-Gitterbox 1,70x0,80m  Galvanised Height: 113 cm	87.0	583012000	Doka accessory box Doka-Kleinteilebox  Timber parts varnished yellow Steel parts galvanised Length: 154 cm Width: 83 cm Height: 77 cm	106.4	583010000
Doka multi-trip transport box 1.20x0.80m Doka-Mehrwegcontainer 1,20x0,80m  Galvanised Height: 78 cm	70.0	583011000	Bolt-on castor set B Anklemm-Radsatz B  Painted blue	33.6	586168000
Multi-trip transport box partition 0.80m Multi-trip transport box partition 1.20m Mehrwegcontainer Unterteilung  Steel parts galvanised Timber parts varnished yellow	3.7 5.5	583018000 583017000			
Doka multi-trip transport box 1.20x0.80x0.41m Doka-Mehrwegcontainer 1,20x0,80x0,41m Galvanised 	42.5	583009000			
Doka stacking pallet 1.55x0.85m Doka-Stapelpalette 1,55x0,85m  Galvanised Height: 77 cm	41.0	586151000			
Doka stacking pallet 1.20x0.80m Doka-Stapelpalette 1,20x0,80m  Galvanised Height: 77 cm	38.0	583016000			

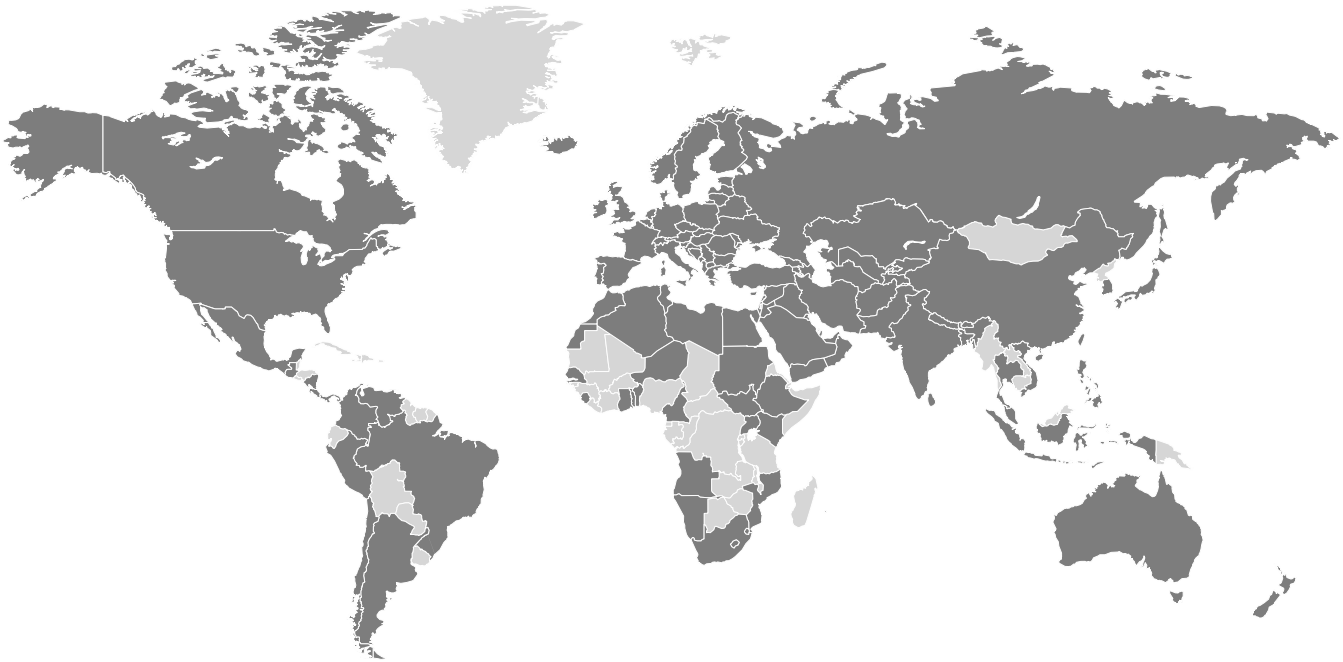
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