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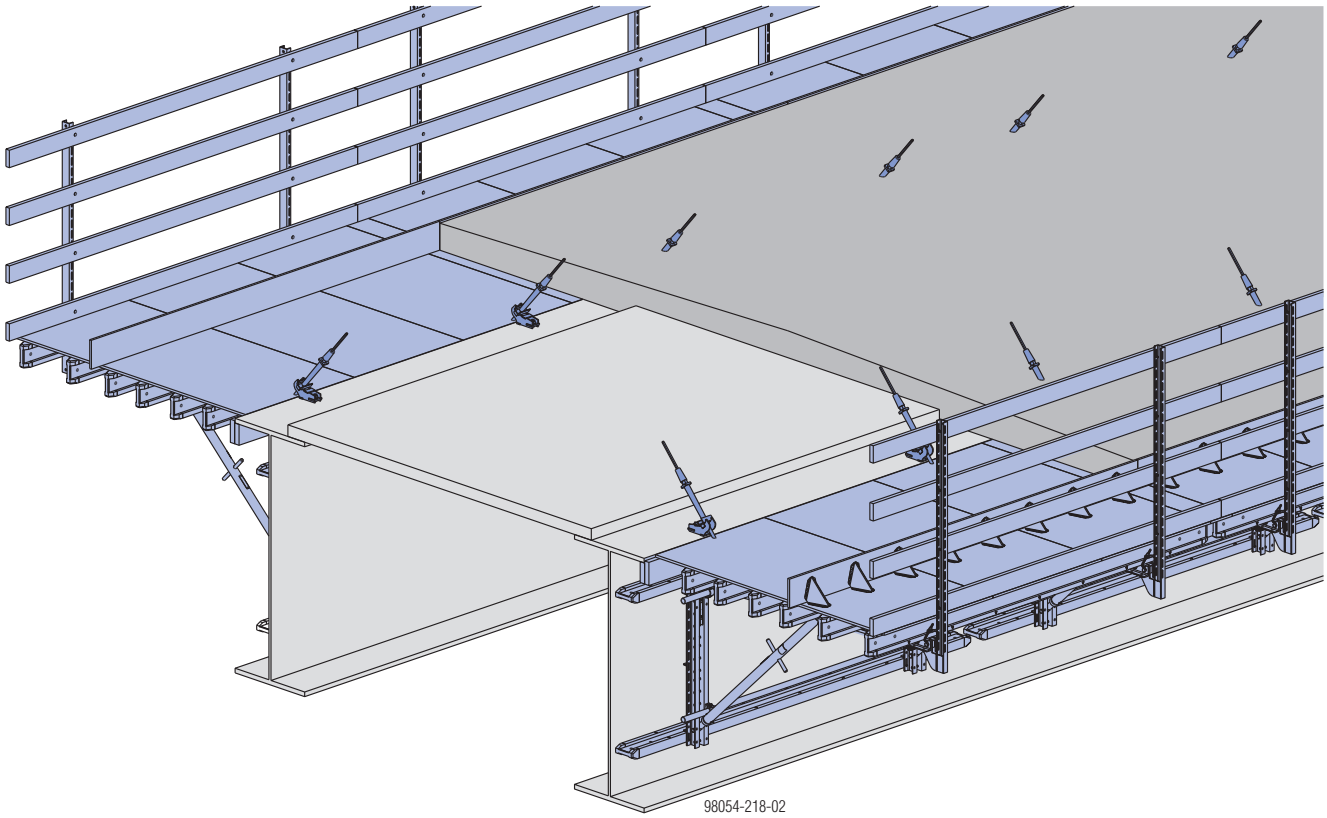
Method statement

Bridge formwork ParaTop



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doka

The Formwork Experts

Contents

Elementary safety warnings

User target groups

- This manual 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 manual 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 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 OH&S (occupational health and safety) rules 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 document 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 document

- This manual can also be used as a generic method statement or incorporated with a site-specific method statement.
- **Many of the illustrations in this booklet show the situation during formwork assembly and are therefore not always complete from the safety point of view.**
  Any safety accessories not shown in these illustrations must still be used by the customer, in accordance with the applicable rules and regulations.
- **Further safety instructions, especially warnings, will be found in the individual sections of this document!**

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.**

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 under the direction and supervision of suitably skilled persons with the authority to issue instructions.
  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 of all components and units must be ensured during all phases of the construction work!
- The functional/technical instructions, safety warnings and loading data must all be strictly observed and complied with. Failure to do so can cause accidents and severe (even life-threatening) damage to health, as well as very great material damage.
- Fire-sources are not permitted anywhere near the formwork. Heating appliances are only allowed if properly and expertly used, and set up a safe distance away from the formwork.
- The work must take account of the weather conditions (e.g. risk of slippage). In extreme weather, steps must be taken in good time to safeguard the equipment, and the immediate vicinity of the equipment, and to protect employees.
- All connections must be checked regularly to ensure that they still fit properly and are functioning correctly.
  It is very important to check all screw-type connections and wedge-clamped joins whenever the construction operations require (particularly after exceptional events such as storms), and to tighten them if necessary.

Assembly

- The equipment/system must be inspected by the customer before use, to ensure that it is in suitable condition. Steps must be taken to rule out the use of any components that are damaged, deformed, or weakened due to wear, corrosion or rot.
- Combining our formwork systems with those of other manufacturers could be dangerous, risking damage to both health and property. If you intend to combine different systems, please contact Doka for advice first.
- The assembly work must be carried out by suitably qualified employees of the client's.
- It is not permitted to modify Doka products; any such modifications constitute a safety risk.

Erecting the formwork

- Doka products and systems must be set up in such a way that all loads acting upon them are safely transferred!

Pouring

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

Striking the formwork

- Do not strike the formwork until the concrete has reached sufficient strength and the person in charge has given the order for the formwork to be struck!
- When striking 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 striking 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 regulations applying to the handling of formwork and scaffolding. In addition, the Doka slinging means must be used - this is a mandatory requirement.
- Remove any loose parts or fix them in place so that they cannot be dislodged or fall free!
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this manual!

Regulations; industrial safety

- Always observe all industrial safety regulations and other safety rules applying to the application and utilisation of our products in the country and/or region in which you are operating.
- 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.

Maintenance

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

Symbols used

The following symbols are used in this booklet:

Important note
Failure to observe this may lead to malfunction or damage.

CAUTION / WARNING / DANGER
Failure to observe this may lead to material damage, and to injury to health which may range up to the severe or even life-threatening.

Instruction
This symbol indicates that actions need to be taken 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
Refers to other documents and materials.

Miscellaneous

We reserve the right to make alterations in the interests of technical progress.

Eurocodes at Doka

In Europe, a uniform series of Standards known as **Eurocodes** (EC) was developed for the construction field by the end of 2007. These are intended to provide a uniform basis, valid throughout Europe, for product specifications, tenders and mathematical verification.

The EC are the world's most highly developed Standards in the construction field.

In the Doka Group, the EC are to be used as standard from the end of 2008. They will thus supersede the DIN norms as the "Doka standard" for product design.

The widely used "Permissible stress design" (comparing the actual stresses with the permissible stresses) has been superseded by a new safety concept in the EC.

The EC contrast the actions (loads) with the resistance (capacity). The previous safety factor in the permissible stresses is now divided into several partial factors. The safety level remains the same!

$$E_d \leq R_d$$

E_d **Design value of effect of actions**
(E ... effect; d ... design)
Internal forces from action F_d
(V_{Ed}, N_{Ed}, M_{Ed})

F_d **Design value of an action**
$F_d = \gamma_F \cdot F_k$
(F ... force)

F_k **Characteristic value of an action**
"actual load", service load
(k ... characteristic)
e.g. dead weight, live load, concrete pressure, wind

γ_F **Partial factor for actions**
(in terms of load; F ... force)
e.g. for dead weight, live load, concrete pressure, wind
Values from EN 12812

R_d **Design value of the resistance**
(R ... resistance; d ... design)
Design capacity of cross-section
(V_{Rd}, N_{Rd}, M_{Rd})

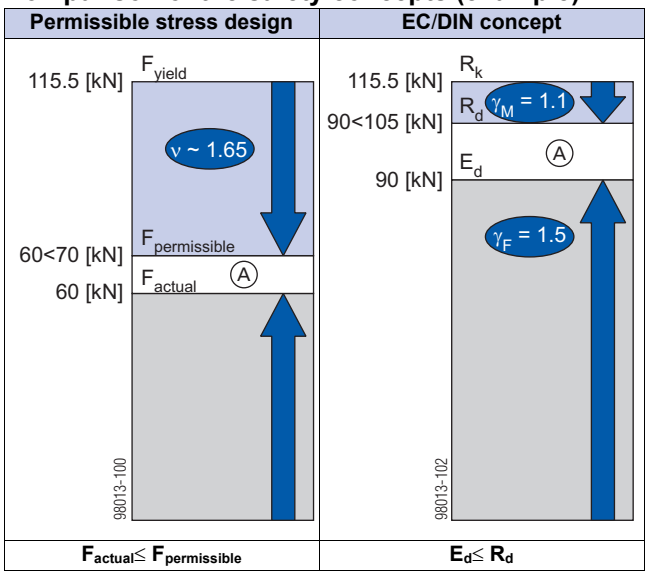
Steel: $R_d = \frac{R_k}{\gamma_M}$ Timber: $R_d = k_{mod} \cdot \frac{R_k}{\gamma_M}$

R_k **Characteristic value of the resistance**
e.g. moment resistance to yield stress

γ_M **Partial factor for a material property**
(in terms of material; M...material)
e.g. for steel or timber
Values from EN 12812

k_{mod} **Modification factor** (only for timber – to take account of the moisture and the duration of load action)
e.g. for Doka beam H20
Values as given in EN 1995-1-1 and EN 13377

Comparison of the safety concepts (example)



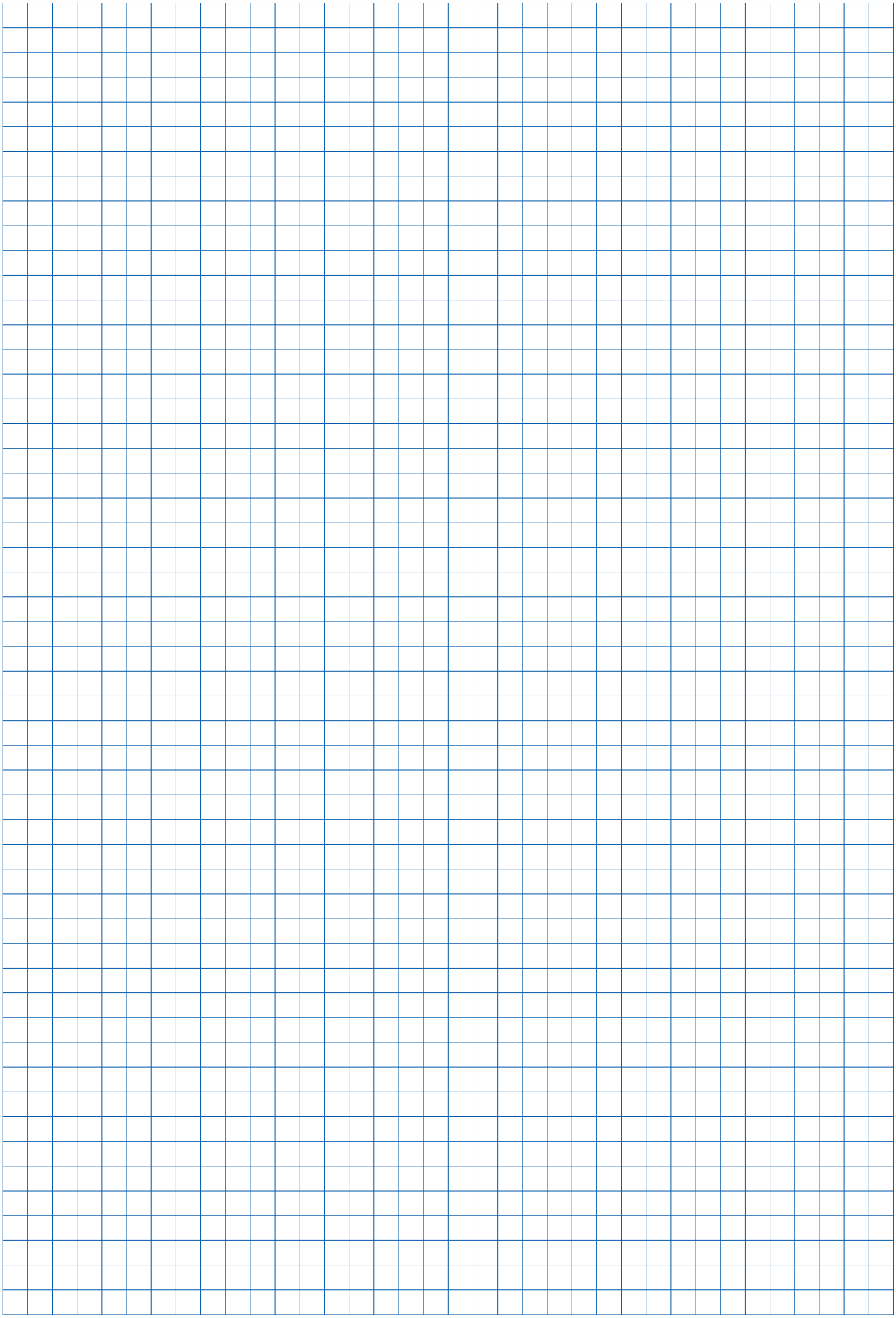
A Utilisation factor

The "permissible values" communicated in Doka documents (e.g.: $Q_{permissible}$ = 70 kN) do not correspond to the design values (e.g.: V_{Rd} = 105 kN)!

- Avoid any confusion between the two!
- Our documents will continue to state the permissible values.

Allowance has been made for the following partial factors:
γ_F = 1.5
$\gamma_{M,\ timber}$ = 1.3
$\gamma_{M,\ steel}$ = 1.1
k_{mod} = 0.9

In this way, all the design values needed in an EC design calculation can be ascertained from the permissible values.



Doka services

Support in every stage of the project

Doka offers a broad spectrum of services, all with a single aim: to help you succeed on the site.

Every project is unique. Nevertheless, there is one thing that all construction projects have in common – and that is a basic structure with five stages. We at Doka know our clients' varying requirements. With our consulting, planning and other services, we help you achieve effective implementation of your formwork assignment using our formwork products – in every one of these stages.

Project Development Stage

Taking well-founded decisions thanks to professional advice and consulting

Find precisely the right formwork solutions, with the aid of

- help with the bid invitation
- in-depth analysis of the initial situation
- objective evaluation of the planning, execution, and time-risks

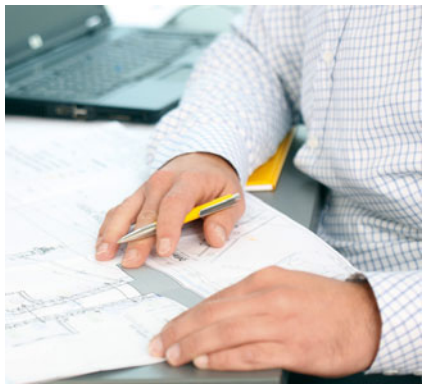
Bidding Stage

Optimising the preliminary work with Doka as an experienced partner

Draw up potentially winning bids, by

- basing them on realistically calculated guideline prices
- making the right formwork choices
- having an optimum time-calculation basis

Project Management Planning Stage

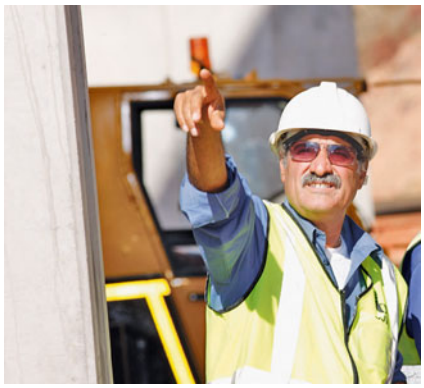


Controlled, regular forming operations, for greater efficiency resulting from realistically calculated formwork concepts

Plan cost-effectively right from the outset, thanks to

- detailed offers
- determination of the commissioning quantities
- co-ordination of lead-times and handover deadlines

Concrete Construction Stage



Optimum resource utilisation
with assistance from the Doka Formwork Experts

Workflow optimisation, thanks to

- thorough utilisation planning
- internationally experienced project technicians
- appropriate transport logistics
- on-site support

Project Close-out Stage

Seeing things through to a positive conclusion
with professional support

Doka Services are a byword for transparency and efficiency here, offering

- jointly handled return of rented formwork
- professional dismantling
- efficient cleaning and reconditioning using special equipment

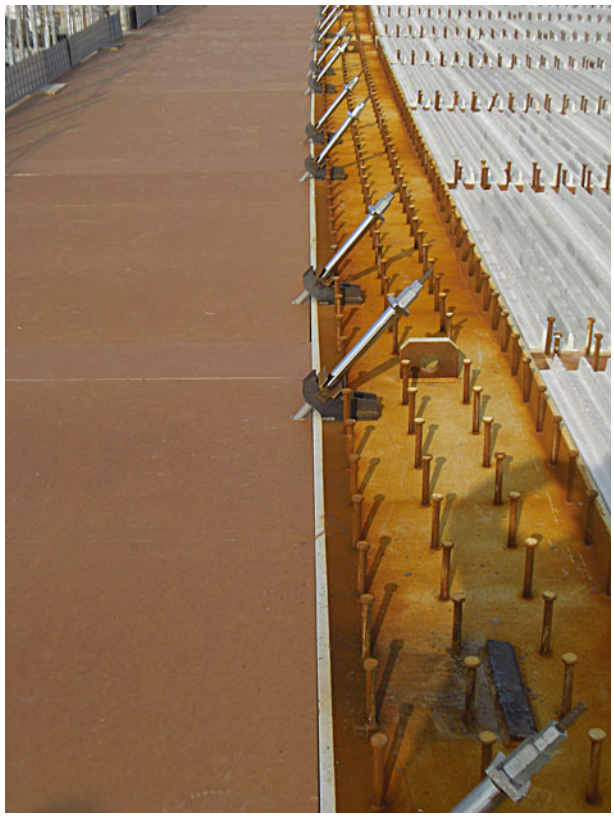
The advantages for you
thanks to professional advice and consulting

- **Cost savings and time gains**
  When we advise and support you right from the word "go", we can make sure that the right formwork systems are chosen and then used as planned. This lets you achieve optimum utilisation of the formwork equipment, and effective forming operations because your workflows will be correct.
- **Maximised workplace safety**
  The advice and support we can give you in how to use the equipment correctly, and as planned, leads to greater safety on the job.
- **Transparency**
  Because our services and costs are completely transparent, there is no need for improvisation during the project – and no unpleasant surprises at the end of it.
- **Reduced close-out costs**
  Our professional advice on the selection, quality and correct use of the equipment helps you avoid damage, and minimise wear-and-tear.

System description

Bridge formwork ParaTop - for cost-efficient, safe forming of cantilever 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 cantilever slab

Highly cost-efficient

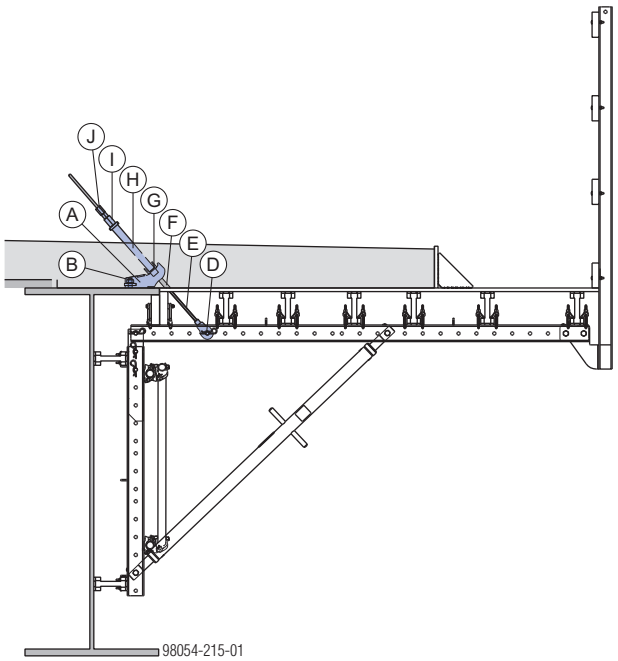
- Less equipment and labour needed, thanks to the large influence widths of the brackets
- Bolted connections for fast, accurate assembly / pre-assembly
- Utilises re-usable Top 50 system components

High safety

- Any type of side protection is possible, from scaffold tubes to guard-rail boards to full-area 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

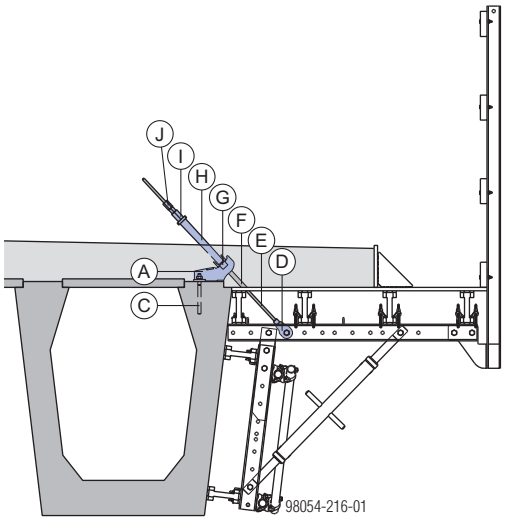
System overview

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	Split nut SL-1 15.0
J	Hexagon nut 15.0

Used on pre-cast concrete members

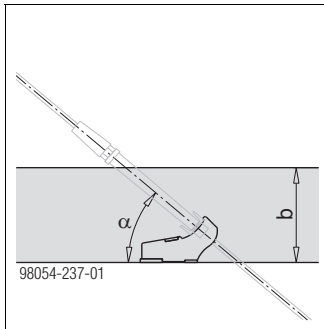


A	ParaTop insert-shoe - concrete (expendable part)
C	Anchor-bolt (expendable part)
D	Eye-lug anchor 15.0 without tie-rod
E	Tie-rod 15.0mm
F	Plastic tube 22mm (expendable part)
G	ParaTop insert-channel U65 (expendable part)
H	ParaTop insert-cone
I	Split nut SL-1 15.0
J	Hexagon nut 15.0

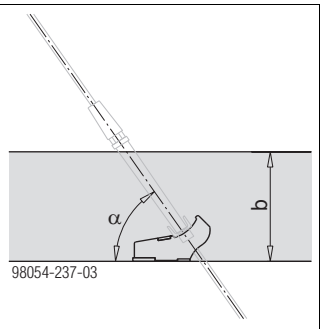
The ParaTop insert-shoe allows an anchor angle of 41°-55°. ParaTop insert-cones are available in 2 different lengths for various thicknesses of slab. The maximum possible slab thicknesses depend upon the anchor angle.

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



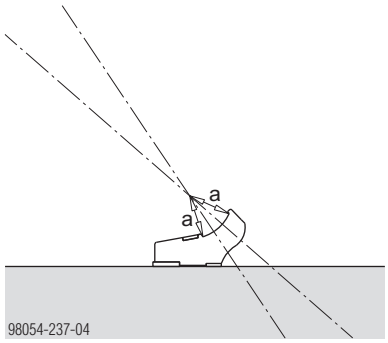
α ... anchor angle 41°



α ... anchor angle 55°

Note:

The axis of the anchor is measured from the centre of the curved section of the ParaTop insert-shoe.

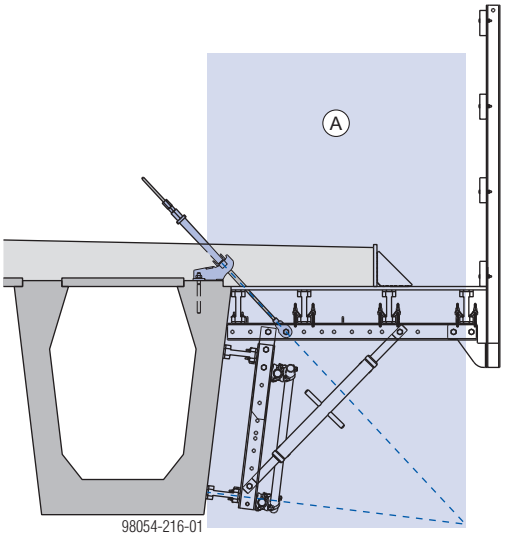


a ... 113 mm

Structural design

Important note:

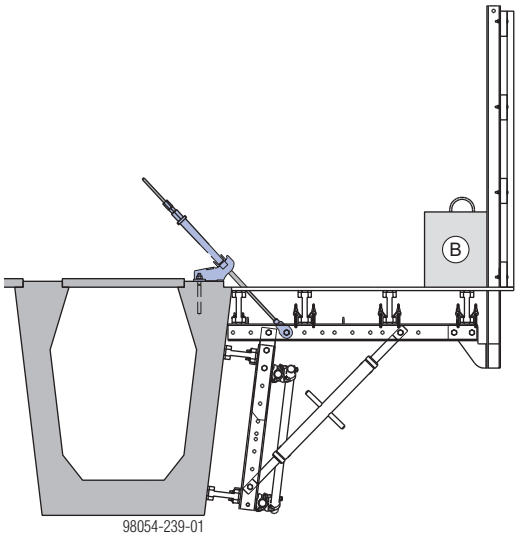
- The structural design shown here only applies if the load centre is situated inside the zone marked "A".
- The Top 50 system components (Multi-purpose walings WS10, spindle struts) and the railings must be verified for each project separately.



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)



B Ballast weight

CAUTION

There is a risk of the formwork tipping over **in high winds**.

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

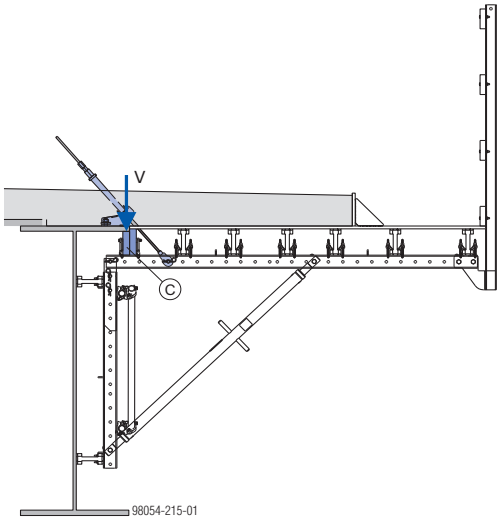
What to do if the load centre is situated outside Zone "A":

- Provide a vertical support that the Top 50 platform can be braced against.
- Consult with 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:

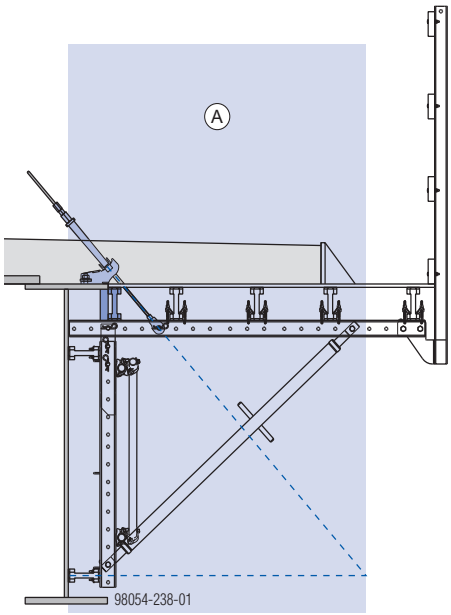
Smaller anchor angles lead to higher anchor loads.

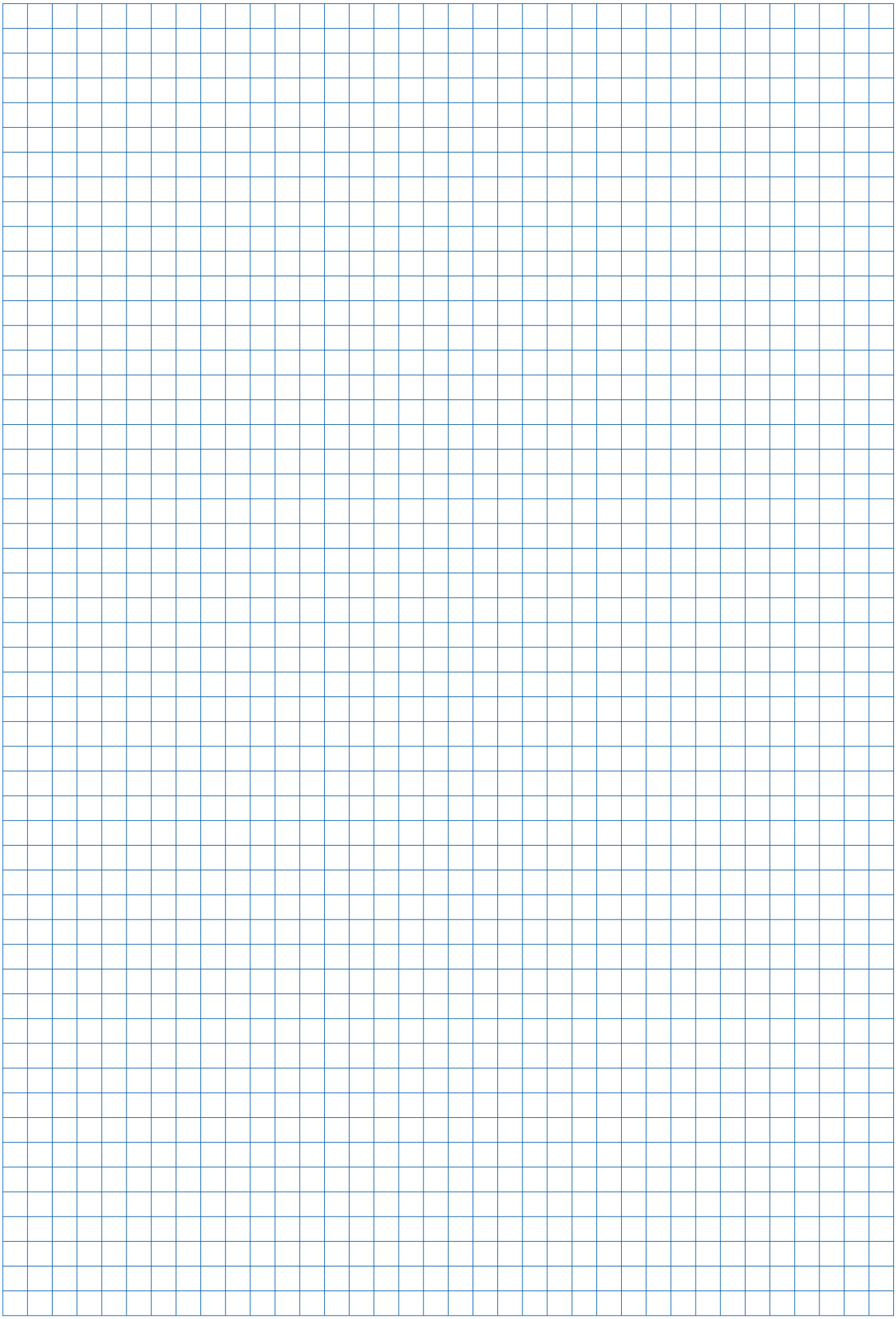


C Vertical support

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

Important note:

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

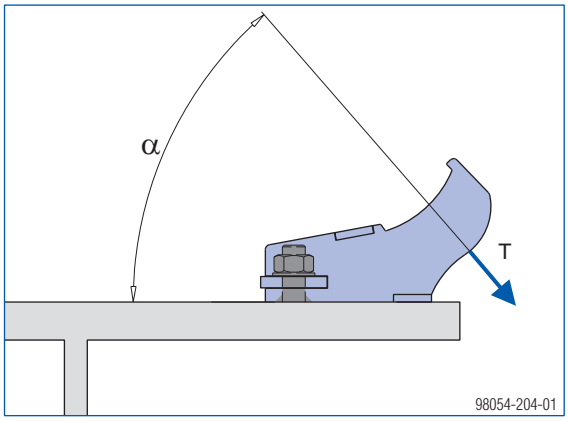
➤ Determine the vertical load.

➤ 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, the factor for the smaller anchor angle should be chosen.

➤ 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)**

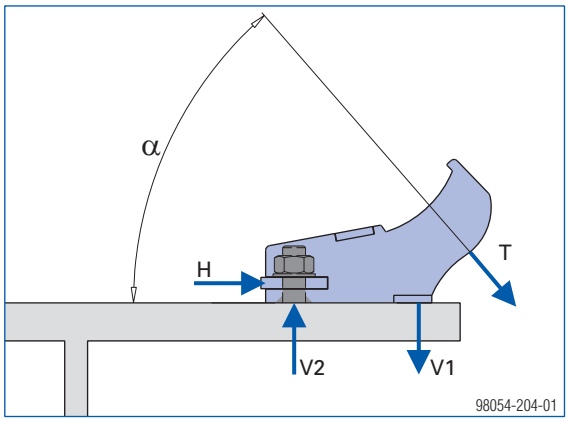
T ... permitted anchor load: 70 kN

Note:

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

Necessary 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".

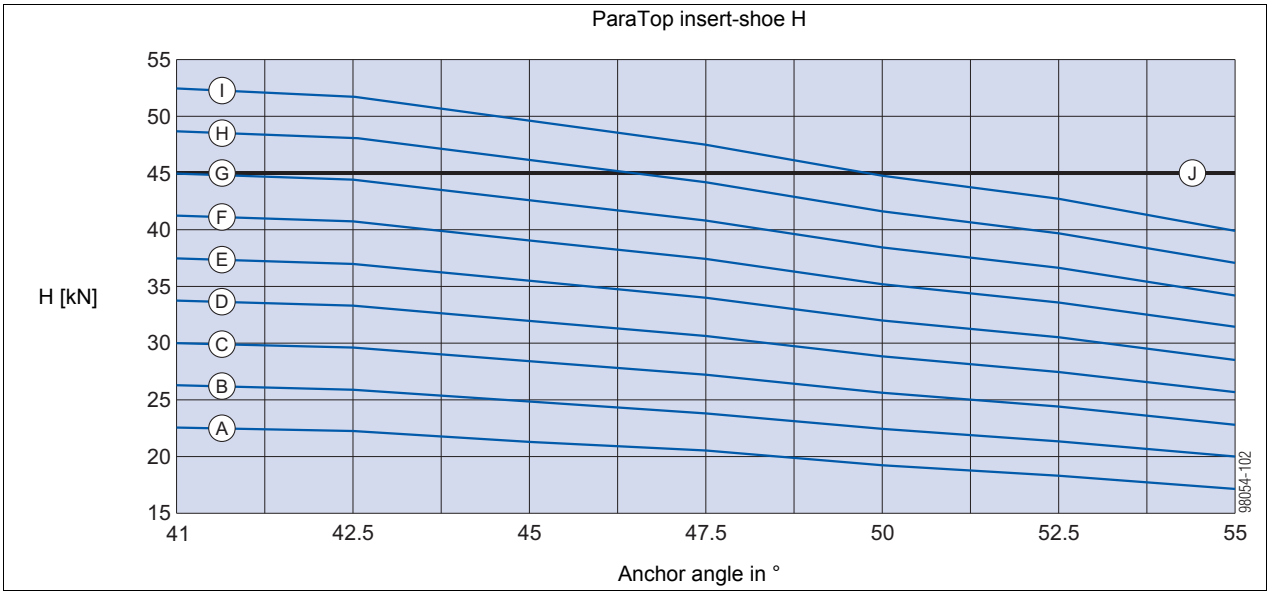


α ... 41° - 55°

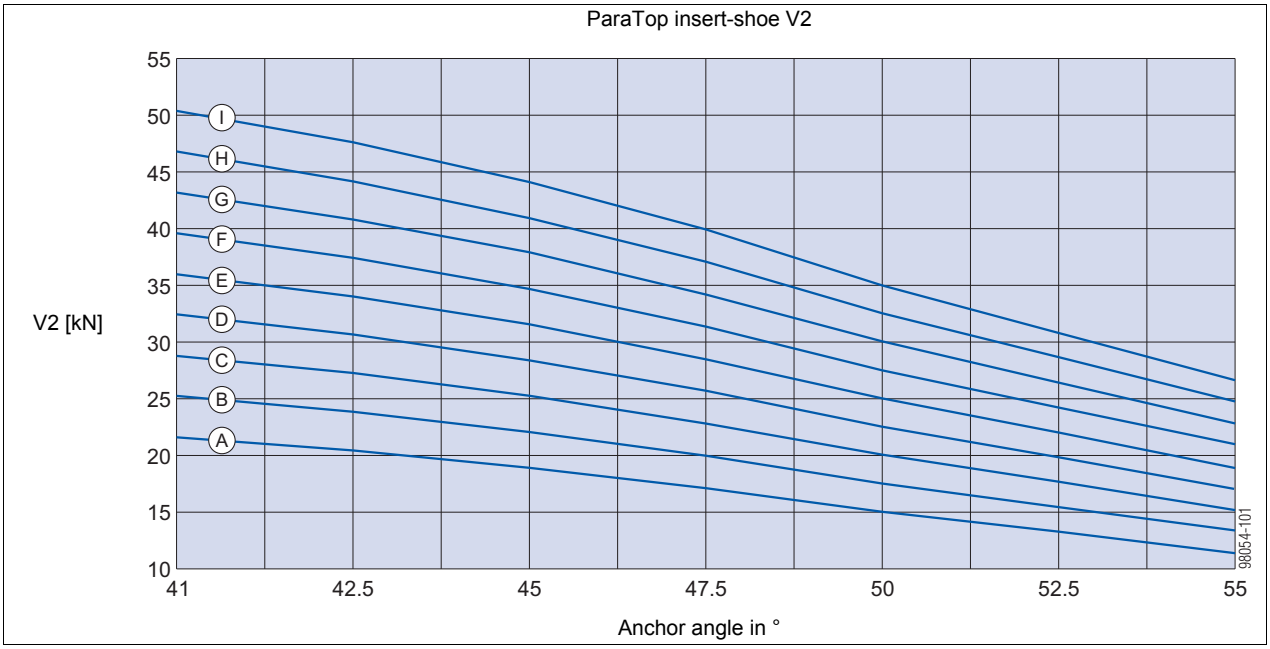
Example

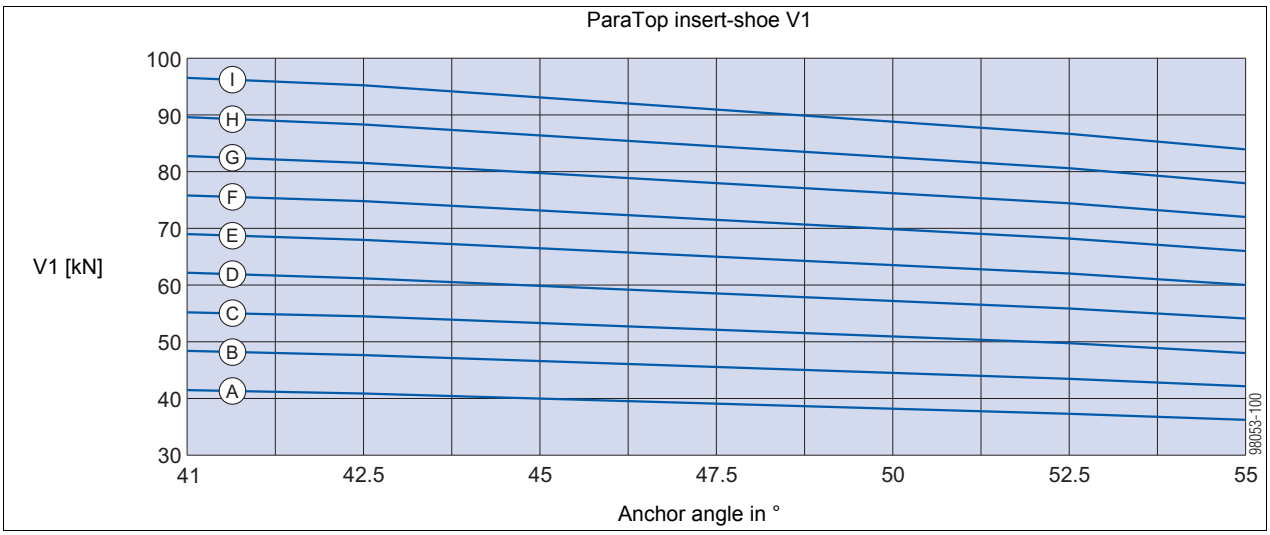
- Basic data:
  - Curve **(G)** (anchor load = 60 kN)
  - anchor angle: 47.5°
- Result:
  - H = 41 kN
  - V2 = 34 kN
  - V1 = 78 kN

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

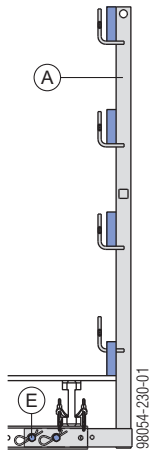
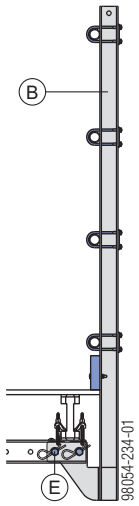
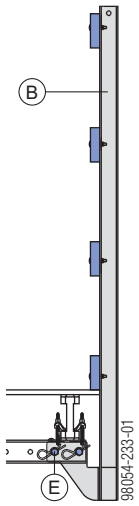
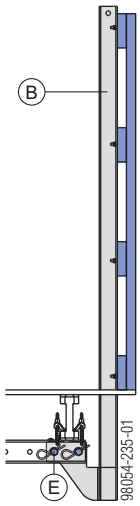
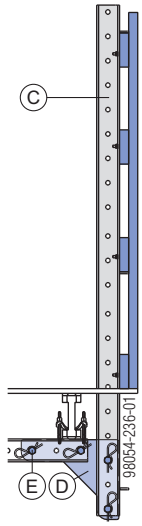


J Permitted horizontal load for threaded studs: max. 45 kN
(e.g. KÖCO RD M24 60 strength-grade 4.8)





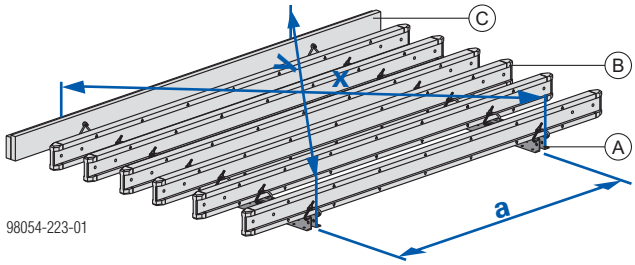
Max. influence width per handrail-post upright

	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/m²	1.83 m	1.33 m	5.0 m	3.5 m	3.1 m	1.3 m	3.5 m
≤ 1.3 kN/m²	1.55 m	1.13 m	5.0 m	3.4 m	2.6 m	1.1 m	3.0 m
≤ 1.7 kN/m²	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

Pre-assembling the Top 50 platform

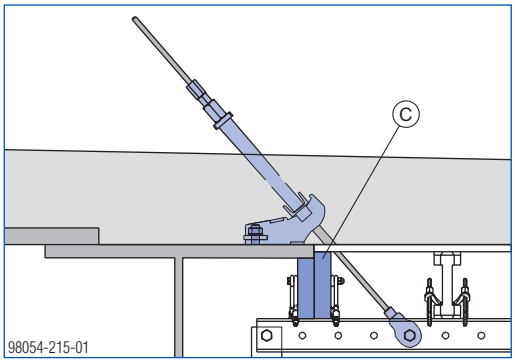
➤ Lay down Multi-purpose walings WS10, spaced apart by the exact centre-to-centre distance.



a ... centre-to-centre spacing (tolerance max. ±5 mm)
x = y ... diagonals (tolerance max. ±10 mm)

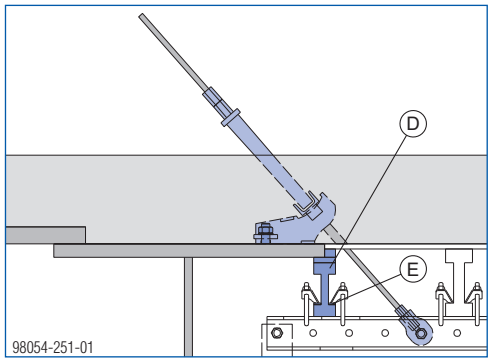
A Multi-purpose waling WS10 Top50
B Doka beam H20
C Squared timbers

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



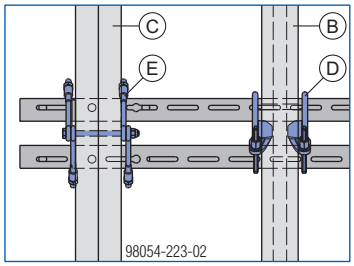
C Squared timbers

Alternatively, Doka H16 beams can be used.



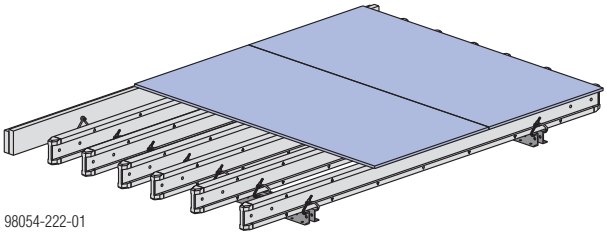
D Doka beam H16
E Washer 5mm

➤ Mount Doka beams H20 and squared timbers to the Multipurpose walings WS10.



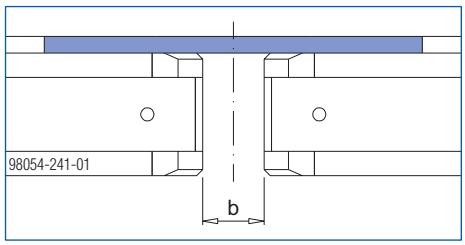
B Doka beam H20
C Squared timbers
D Flange-clamp H20
E Flange claw

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



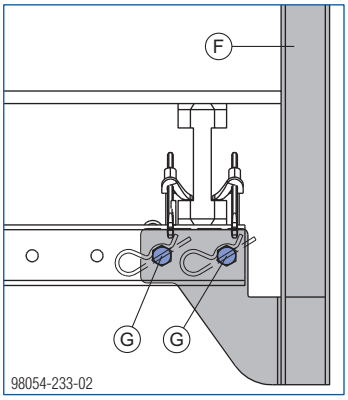
Do a sight-check to make sure that the formwork sheets have been fixed properly!

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.



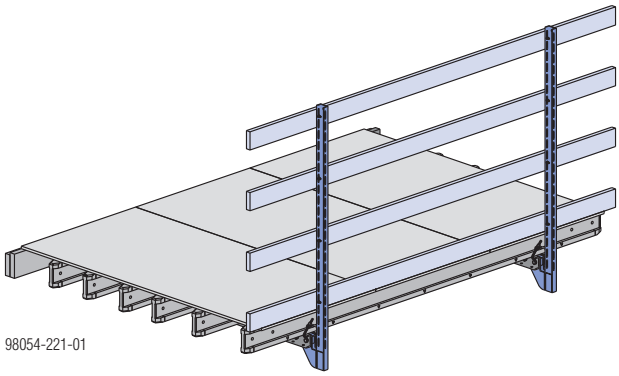
b ... approx. 100 mm

➤ Bolt the Universal railings into the Multipurpose walings WS10 with Connecting pins 10cm and secure these with Spring cotters 5mm.

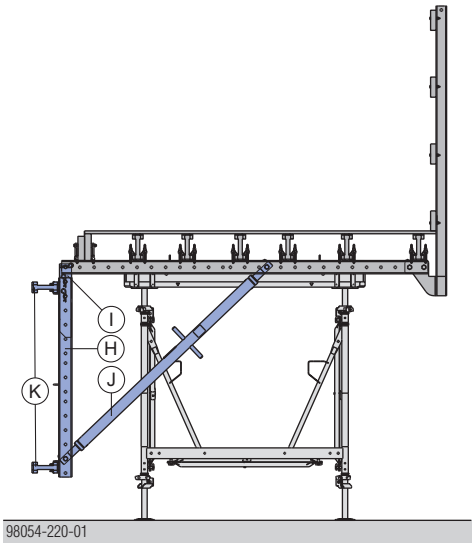


F Universal railing SK 2.00m
G Connecting pin 10cm + Spring cotter 5mm

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

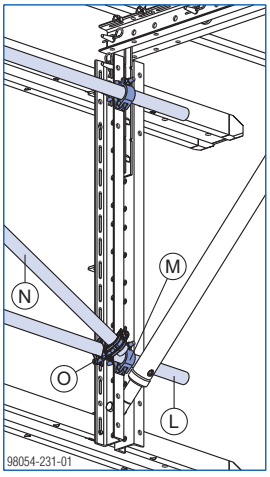


➤ Place the Top 50 platform on a temporary support.
➤ Bolt a 'Formwork element connector' to the vertical Multi-purpose waling WS10 with Connecting pins 10cm, and secure these with Spring cotters 5mm.
➤ Bolt the spindle strut to the Multipurpose walings WS10 with Connecting pins 10cm, and secure these 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
J Spindle strut T7
K Doka beam H20

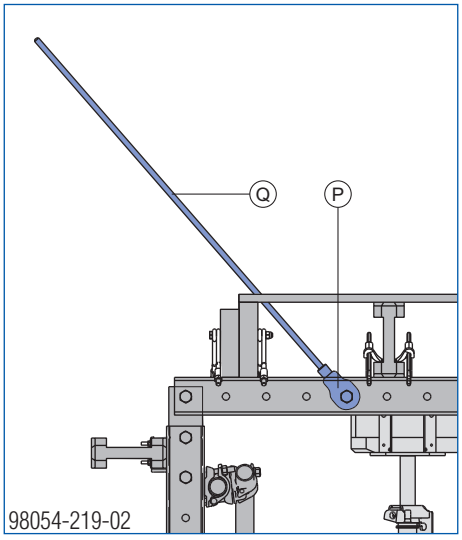
➤ Brace the vertical Multi-purpose walings in the horizontal and the diagonal.



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

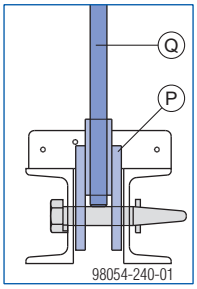
Distance between screw-on coupler and swivel coupler: max. 160 mm.

➤ 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).

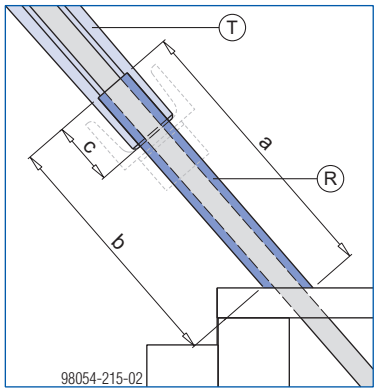


P Eye-lug anchor 15.0 without tie-rod
Q Tie-rod 15.0mm

The tie-rod must be resting against the Connecting pin.



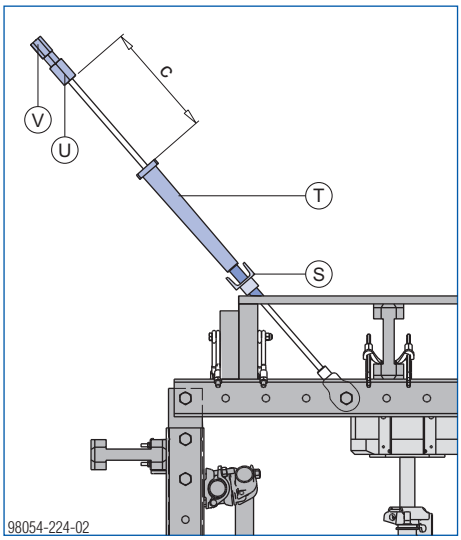
➤ Cut a plastic tube to length at the angle shown in the shop drawing / assembly plan.
The ParaTop insert-cone is drilled open down to a depth of 45 mm so that the plastic tube can be inserted.
The plastic tube must push up against the bottom of this drilled opening, so that its other end is pressed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



a, b... project-specific
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 the Split nut SL-1 and the hexagon nut onto the tie-rod.



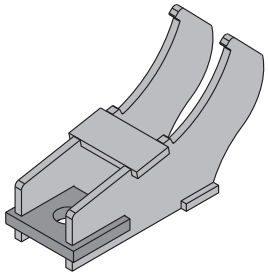
c ... min. 120 mm

S ParaTop insert-channel U65 (expendable part)
T ParaTop insert-cone 0.35m
U Split nut SL-1 15.0
V Hexagon nut 15.0

Anchoring on the structure

Used on steel girders

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



Important note:

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

Distinguishing features of "ParaTop insert-shoes - steel":

- gap between anchor-plate and steel girder
- diam. 26 mm hole in anchor-plate

➤ 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.

Necessary precondition

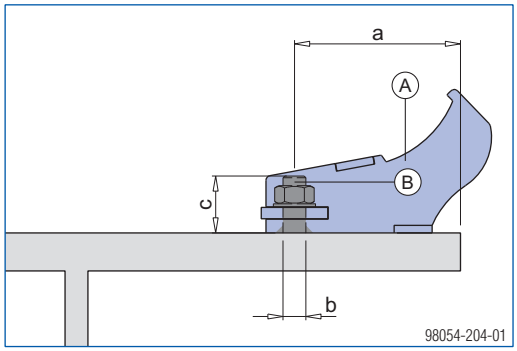
To fix the ParaTop insert-shoes to steel girders, threaded studs are needed.

Ideally, these studs will already have been welded on by the manufacturer of the steelwork decking, together with the head bolts. This speeds up the workflow on the site.

➤ Plan this, and the delivery times, sufficiently far in advance.

How to attach:

➤ Bolt the "ParaTop insert-shoe - steel" onto the threaded stud.



a ... 175 mm
b ... 24 mm
c ... min. 60 mm

A ParaTop insert-shoe - steel

B Threaded stud
(e.g. KÖCO RD M24 60 strength-grade 4.8, Art.n° 003-0524-001)

Required fixing materials (expendable parts)

- Washer 24
- Hexagon nut M24

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

Follow the manufacturer's applicable fitting instructions.

Note:

Use only threaded studs of size M24.

Minimum length: 60 mm

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.)
For more details on fixing the threaded stud to the structural steelwork, please contact the Composite Bridge Competence Centre.

Welding the "ParaTop insert-shoes - steel" on directly

Note:

In principle, it is possible to weld the "ParaTop insert-shoes - steel" directly onto the girder (e.g. if the threaded stud would not have sufficient load-bearing capacity).

Steel-grade of ParaTop insert-shoes: S355

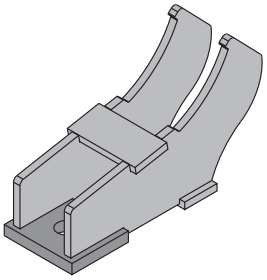
CAUTION

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

➤ In these cases, you should discuss the assembly procedure with your Doka technician.

Used on pre-cast concrete members

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



Important note:

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

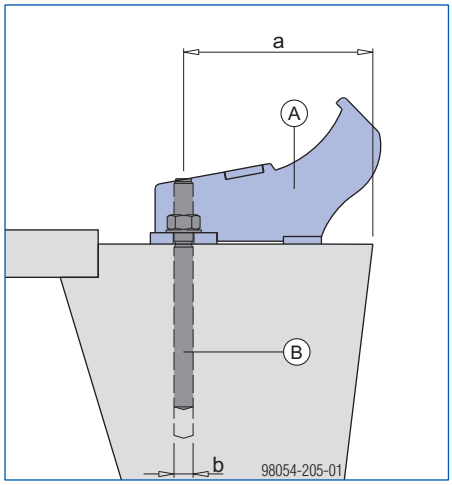
Distinguishing features of "ParaTop insert-shoes - concrete":

- Anchor plate rests directly on the concrete
- diam. 22 mm hole in anchor-plate

➤ 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.

How to attach:

➤ Anchor the "ParaTop insert-shoe - concrete" to the pre-cast concrete member.



a ... 175 mm
b ... 20 mm

A	ParaTop insert-shoe - concrete
B	Anchor-bolt (e.g. Hilti HIT-HY 150 chemical anchor + HAS-E (8.8)-M20 anchor-rod or Fischer RG M20x330 E (8.8)

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

Follow the manufacturer's applicable fitting instructions.

Note:

Allow for the anchor-bolt diameter of 20 mm.

Because the load-bearing capacity of the anchor-bolt 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.

Used on CIP concrete

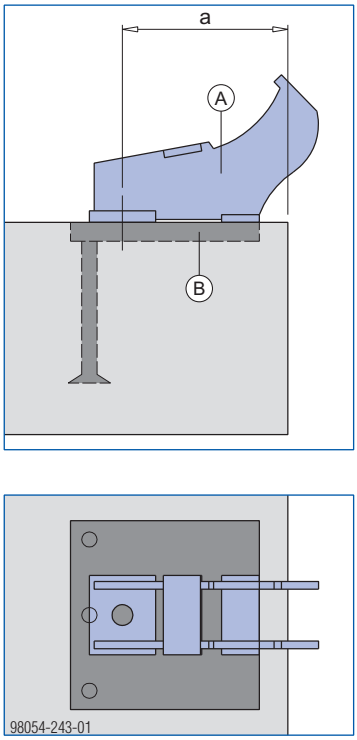
On cracked concretes of medium strength, it is advisable to fasten the ParaTop insert-shoe to embedded suspension points. There are several possible ways of preparing these suspension points. The method to be used should be agreed with the client/structural designer, before bid submission whenever possible, as the method used will directly affect the possible centre-distances of the brackets.

Variant 1: Fastened with ordinary anchor-plate

The position of the anchor-plate may vary depending on individual project requirements.

The design calculation for the anchor-plate is done by the anchor-plate manufacturer!

Follow the manufacturer's applicable fitting instructions.



A ParaTop insert-shoe - concrete (welded onto anchor plate)

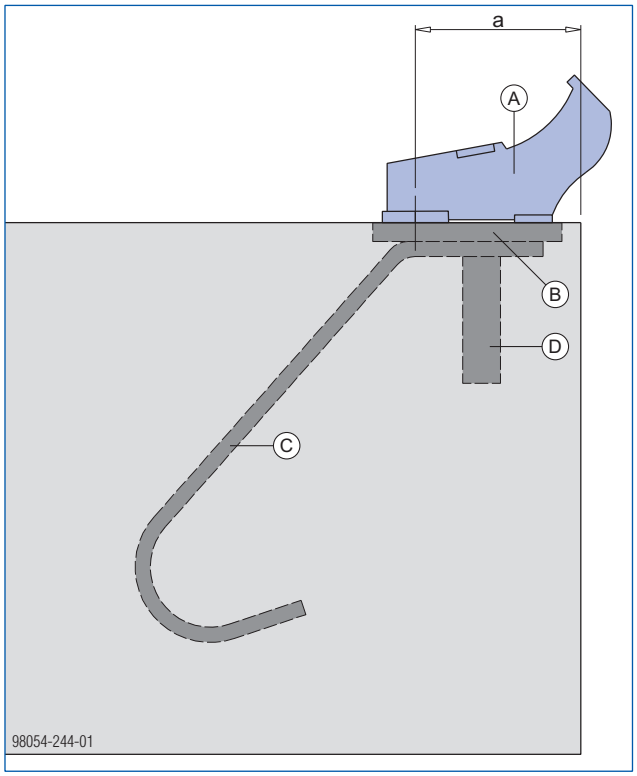
B Anchor plate (e.g. Peikko fastening plate: 200x200x20mm, S355 3xJPL studs 16x150mm)

Variant 2: Fastened with site-provided anchor-plate with reinforcement (only for massive components)

The position of the anchor-plate may vary depending on individual project requirements.

The design calculation for the anchor-plate is done by the anchor-plate manufacturer!

Follow the manufacturer's applicable fitting instructions.



A ParaTop insert-shoe - concrete (welded onto anchor plate)

B Special anchor-plate with:

C Reinforcement

D Shear stud

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 exactly.

Important note:

- 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

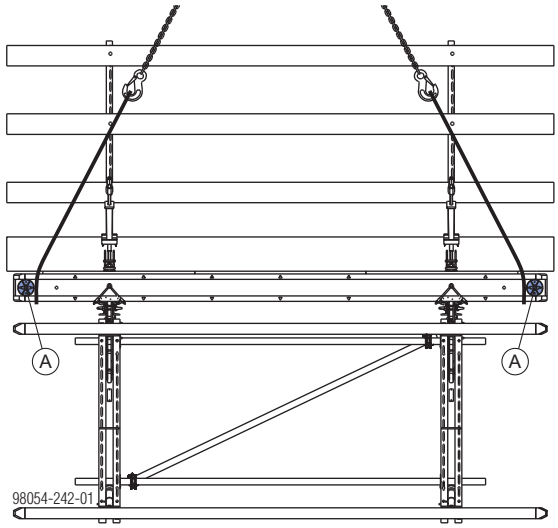
Important note:

- **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:

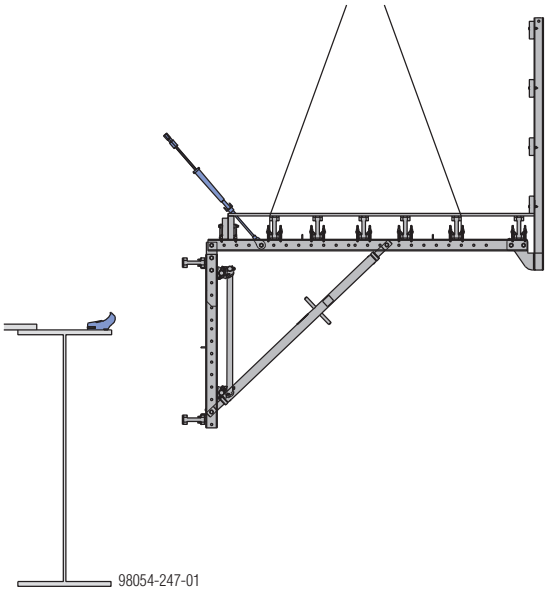
➤ Attach the Top 50 platform to the crane with 4 lifting slings

➤ Secure the lifting slings so that they cannot slip off.

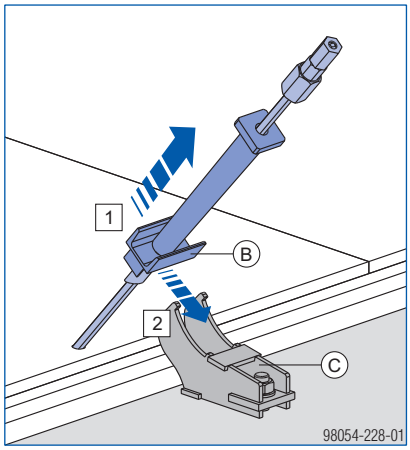


A Anti-slipoff protection for lifting-slings

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



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

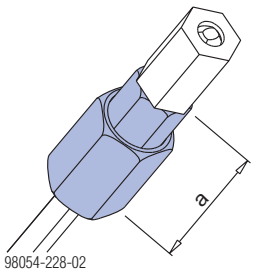


B ParaTop insert-channel U65

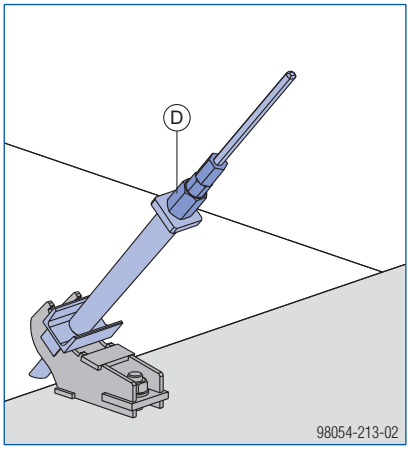
C ParaTop insert-shoe - steel

➤ Do not bend tie rods.
The insert-channel must snap into the insert-shoe without having to be forced.

➤ Screw the Split nut SL-1 together completely, by hand.
Overall length a = 90 mm



➤ Tighten the split nut with a size 30 combination wrench to pull the Top 50 platform towards the bridge superstructure.



D Split nut SL-1 15.0

The Split nut SL-1 permits the following functions:

- last-millimetre fine adjustment
- reducing load on Top 50 platform

If these functions are not needed, the Split nut SL-1 15.0 can be replaced by a hexagon nut.

Note:

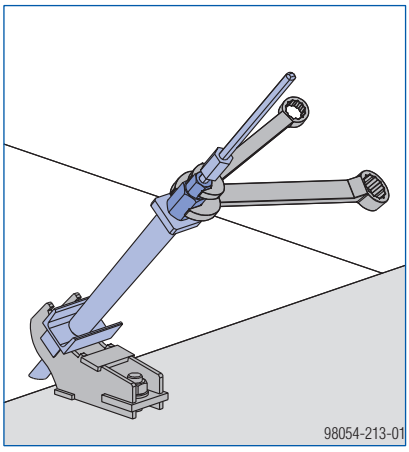
It is necessary to reduce the load on the bracket if upturn beams have to be cast on the cantilever slab in a 2nd pouring operation and the bracket has not been calculated for the whole concrete cross-section.

➤ Fix the 2nd anchor of the formwork unit in the same way.

➤ Detach the lifting chain from the Top 50 platform.

Fine-adjusting the Top 50 platform:

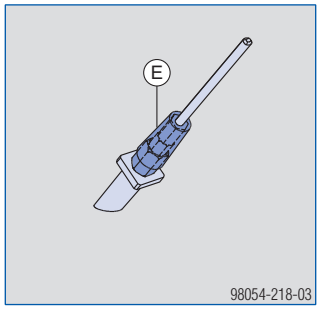
Tighten the split nut with a size 41 combination wrench so as to tension the tie-rod. When doing this, hold the inside of the split nut with a size 30 combination wrench to prevent it turning.
1 rotation = 1.5 mm
Tensioning distance max. 20 mm



- When aligning and adjusting, fix the tie-rod with a "Spanner for tie-rod" to prevent it turning.
- Counter (lock) the Split nut SL-1 with a hexagon nut.
- Make a coloured mark on the tie-rod.
  This makes it easier to check that the anchoring components have been fitted correctly.
- 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.

With reference to the coloured mark, check that the anchoring components have been fitted correctly.

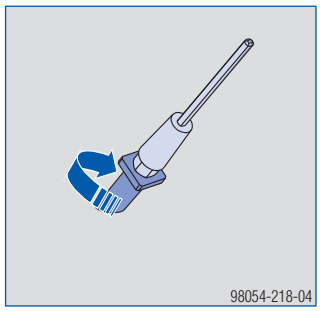
Place a Sealing sleeve K over the Split nut SL-1 to protect it from soiling.



Pouring

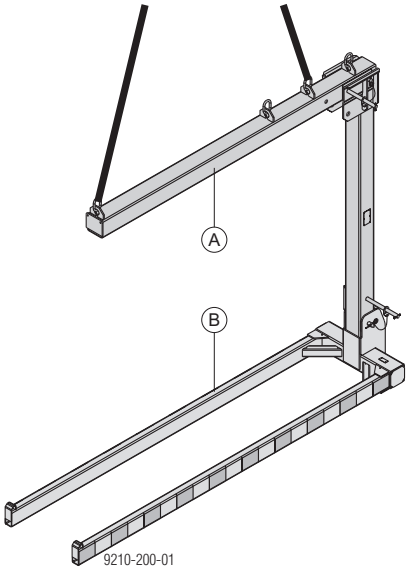
- Remove the ballast from the formwork construction, if this is necessary for statical reasons.
- Pour from the inside towards the outside.

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.



Dismantling

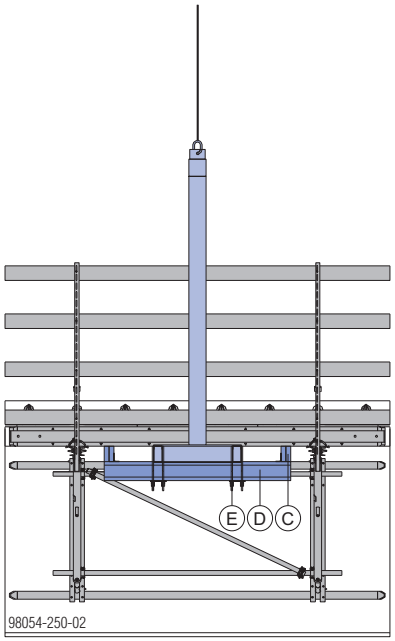
The Top 50 platform is dismounted using a transport fork.



A Lifting extension bracket DF 1t
B Transport fork DF 1t/0.90m

Follow the directions in the 'Lifting extension bracket DF and Transport fork DF' Operating Instructions!

➤ Widen the fork to safeguard the Top 50 platform against tipping over.



C Squared timber
D Doka beam H20
E Brace stirrup 8 + Anti-twisting plate for Brace stirrup 8

How far the fork needs to be widened will depend on the inter-bracket spacings, so is different for each project.

Follow the directions in the project-specific Operating Instructions for widened transport forks!

➤ Support the Top 50 platform with the transport fork.

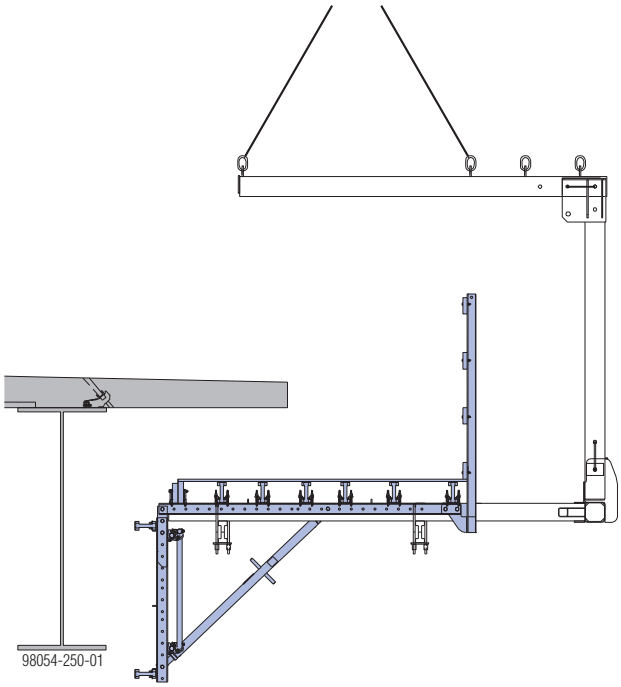
Important note:

➤ When loosening the nuts, fix the tie-rod with a "Spanner for tie-rod".

➤ Loosen the check-nut and Split nut SL-1 and unscrew them from the tie-rod.
The Top 50 platform is now resting on the transport fork.

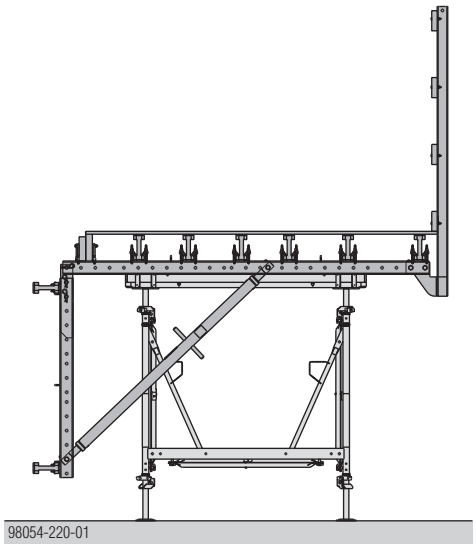
➤ Remove the tie-rod with the "Spanner for tie-rod".

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



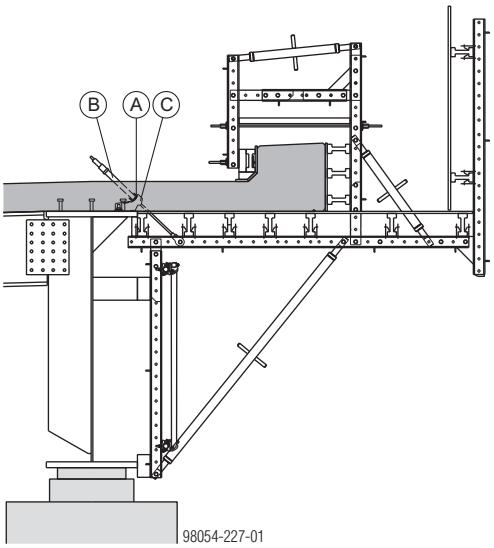
➤ Detach the insert-cone from the concrete.

➤ The rest of the dismantling sequence is done at ground level, in reverse order.

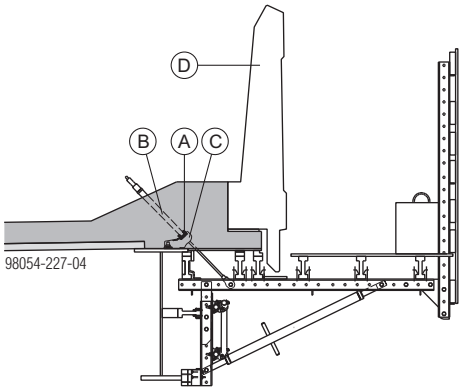


Design variants

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)

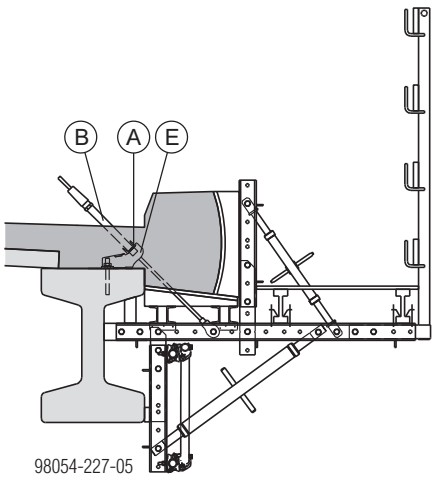
Important note:

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

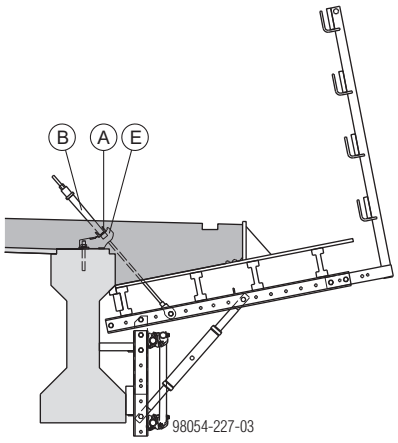
- vertical transversal braces between the top and bottom flanges
- head bolts on the top of the flange (if their position cannot be changed)
- varying widths and thicknesses of flange

Used on pre-cast concrete members

Used on pre-cast concrete members



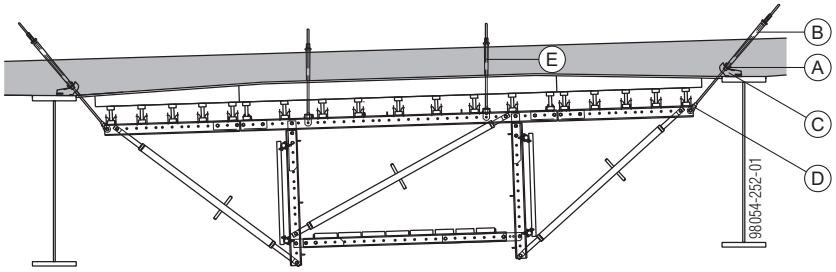
A ParaTop insert-channel U65 (expendable part)
B ParaTop insert-cone 0.35m
E ParaTop insert-shoe - concrete (expendable part)



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

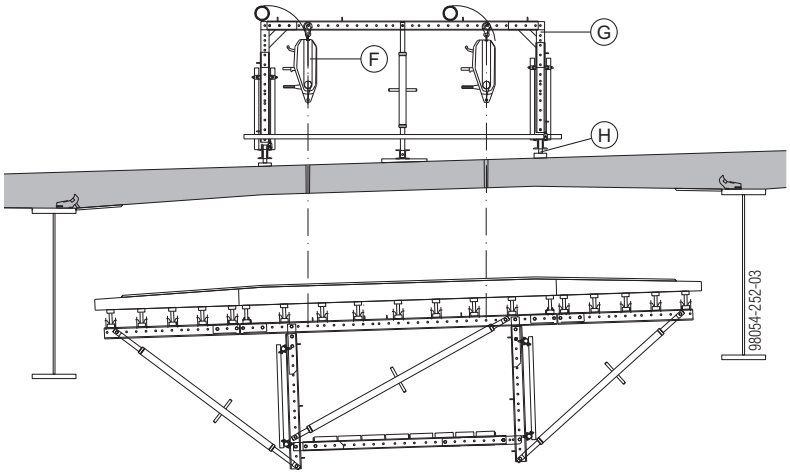
Used between 2 steel girders

Situation after pouring



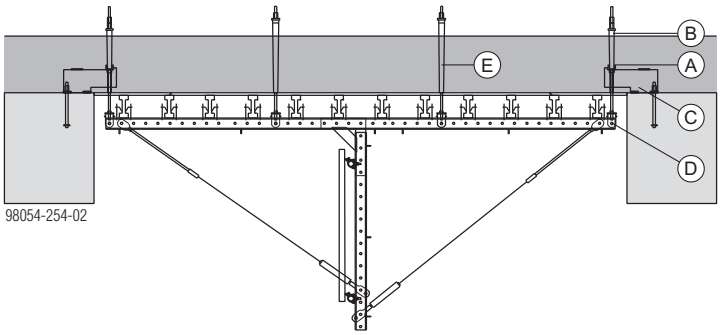
A	ParaTop insert-channel U65 (expendable part)
B	ParaTop insert-cone 0.65m
C	ParaTop insert-shoe - steel (expendable part)
D	Eye-lug anchor 15.0 without tie-rod
E	ParaTop insert-cone 0.35m as positioning-point for lowering the formwork by grip-hoist or winch (optional)

Formwork removal



F	Grip hoist (site-provided)
G	WS10 frame (wheelable)
H	Roller SL-1 D 200x50

Used between 2 downstand beams



A	ParaTop insert-channel U65 (expendable part)
B	ParaTop insert-cone 0.35m
C	ParaTop special shoe (expendable part)
D	Eye-lug tie-rod anchor NG
E	ParaTop insert-cone 0.65m as positioning-point for lowering the formwork by winch (optional)

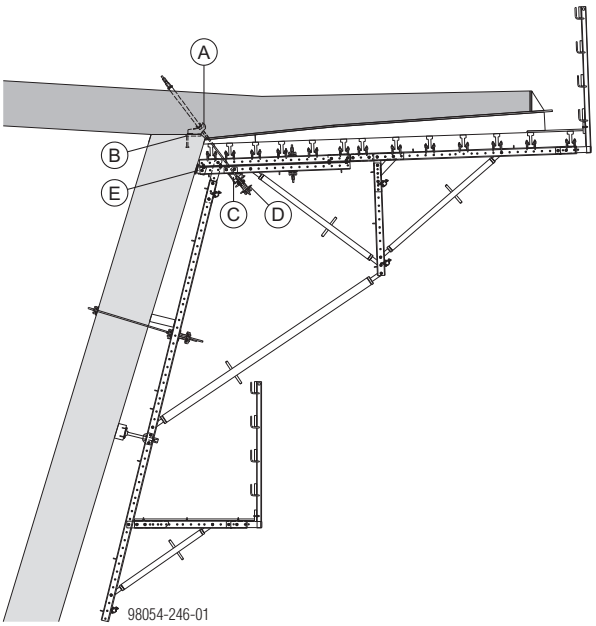
Suspending brackets from 2 suspension shoes

On bridges with long cantilever arms, the high loads necessitate the use of 2 suspension shoes per bracket.

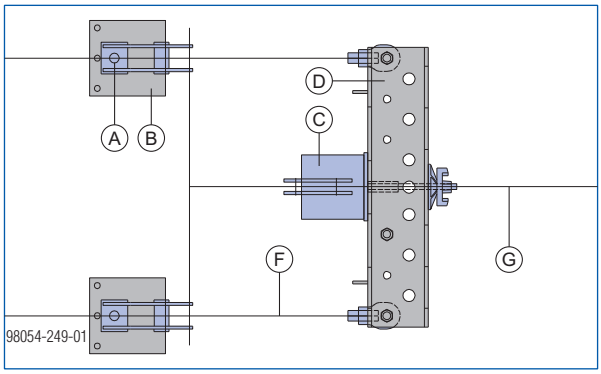
Examples

Cast-in-place bridge:

- Cantilever forming traveller (CFT) in the typical zone
- Bridge formwork ParaTop in the pier-head zone



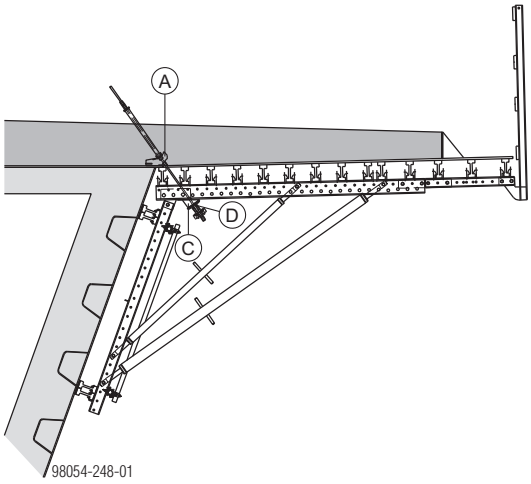
Anchoring point (schematic top view)

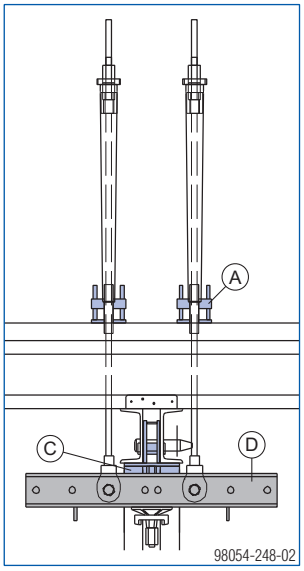


A	ParaTop insert-shoe - concrete (expendable part)
B	Anchor plate
C	Anchoring shoe (custom component)
D	Multipurpose waling
E	Anchoring shoe (custom component)
F	Anchor plane
G	Bracket plane

Steel composite bridge with approach viaducts and arched or cable-stayed zones:

- Composite forming carriage in the foreland zone
- Bridge formwork ParaTop in the arched or cable-stayed zones



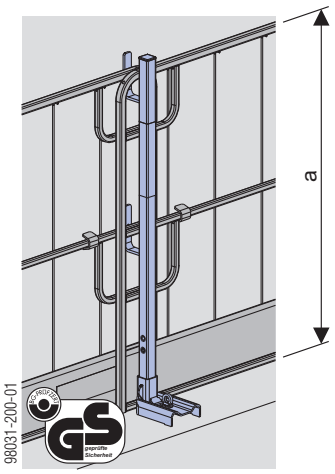


A	ParaTop insert-shoe - steel (expendable part)
C	Anchoring shoe (custom component)
D	Multipurpose waling

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

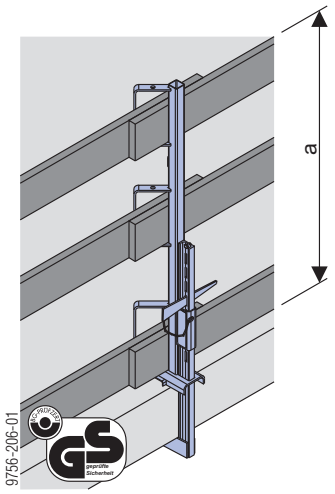


a ... > 1.00 m

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

Handrail clamp S

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

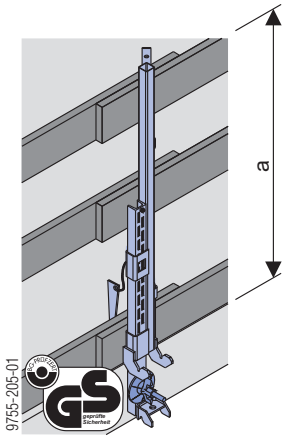


a ... > 1.00 m

Follow the directions in the “Handrail clamp S” User information!

Handrail clamp T

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

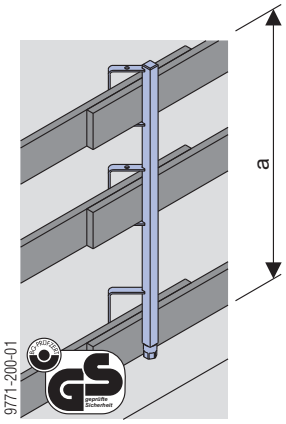


a ... > 1.00 m

Follow the directions in the "Handrail clamp T" User Information!

Handrail 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



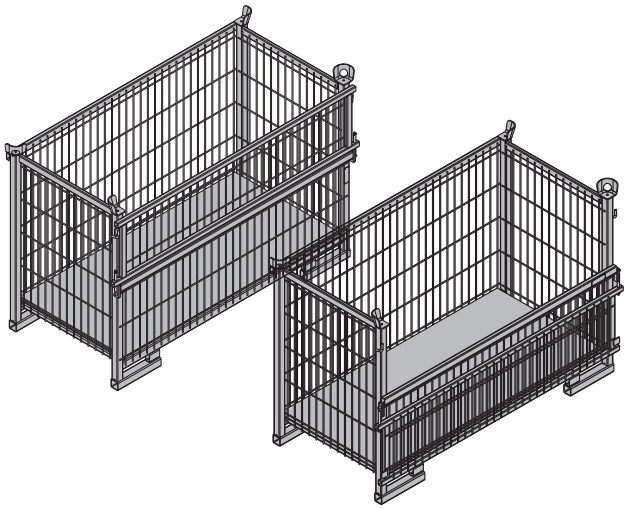
a ... > 1.00 m

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 devices for small items:
- durable
- stackable

Suitable transport appliances:
- crane
- pallet stacking truck
- forklift truck

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

Max. load: 700 kg Permitted imposed load: 3150 kg

- Multi-trip packaging items that each contain very different loads must be stacked with the heaviest ones at the bottom and the lightest ones at the top!
- Rating plate must be in place and clearly legible

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

Max. n° of boxes on top of one another

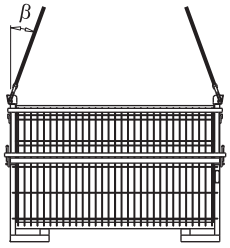
Outdoors (on the site) Floor gradient up to 3%	Indoors Floor gradient up to 1%
2	5
It is not allowed to stack empty pallets on top of one another!	

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

Lifting by crane

➤ Only lift the boxes when their sidewalls are closed!

- Multi-trip packaging items may only be lifted one at a time.
- Use a suitable lifting chain. (Do not exceed the permitted load capacity). e.g: Doka 4-part chain 3.20m.
- Spread-angle β max. 30°!

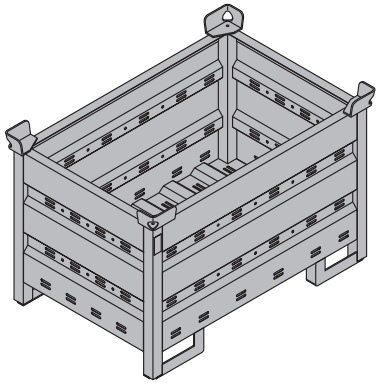


9234-203-01

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 1.20x0.80m galv.



Storage and transport devices for small items:

- durable
- stackable

Suitable transport appliances:

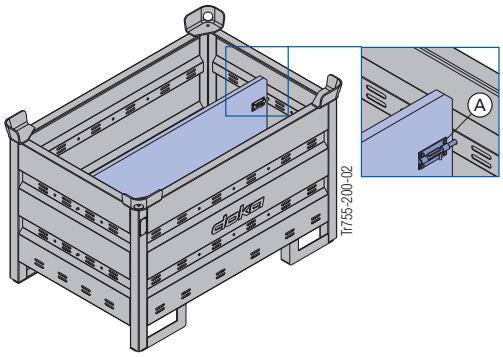
- crane
- pallet stacking truck
- forklift truck

Max. load: 1500 kg Permitted imposed load: 7900 kg

- Multi-trip packaging items that each contain very different loads must be stacked with the heaviest ones at the bottom and the lightest ones at the top!
- Rating plate must be in place and clearly legible

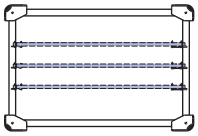
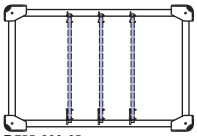
Multi-trip transport box partition

Different items in the 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	Lengthways	Crossways
1.20m	max. 3 partitions	-
0.80m	-	max. 3 partitions
	 Tr755-200-04	 Tr755-200-05

Using Doka multi-trip transport boxes as storage units

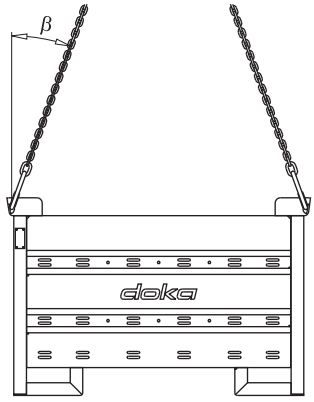
Max. n° of boxes on top of one another

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

Using Doka multi-trip transport boxes as transport devices

Lifting by crane

- Multi-trip packaging items may only be lifted one at a time.
- Use a suitable lifting chain. (Do not exceed the permitted load capacity). e.g: Doka 4-part chain 3.20m.
- 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.

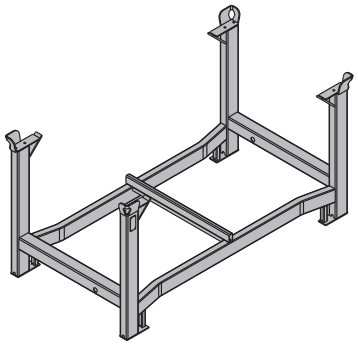
Doka stacking pallet 1.55x0.85m and 1.20x0.80m

Storage and transport devices for long items:
- durable
- stackable

Suitable transport appliances:
- crane
- pallet stacking truck
- forklift truck

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

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



Max. load: 1100 kg Permitted imposed load: 5900 kg

- Multi-trip packaging items that each contain very different loads must be stacked with the heaviest ones at the bottom and the lightest ones at the top!
- Rating plate must be in place and clearly legible

Using Doka stacking pallets as storage units

Max. n° of units on top of one another

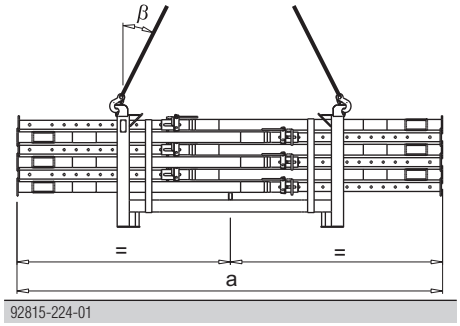
Outdoors (on the site) Floor gradient up to 3%	Indoors Floor gradient up to 1%
2	6
It is not allowed to stack empty pallets on top of one another!	

- **How to use with bolt-on castor set:**
  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

- Multi-trip packaging items may only be lifted one at a time.
- Use a suitable lifting chain. (Do not exceed the permitted load capacity). e.g: Doka 4-part chain 3.20m.
- Load the items centrically.
- Fasten the load to the stacking pallet so that it cannot slide or tip out.
- When lifting stacking pallets to which Bolt-on castor sets B have been attached, you must also follow the directions in these Operating Instructions!
- Spread-angle β max. 30°!



	a
Doka stacking pallet 1.55x0.85m	max. 4.0 m
Doka stacking pallet 1.20x0.80m	max. 3.0 m

Repositioning by forklift truck or pallet stacking truck

- Load the items centrically.
- Fasten the load to the stacking pallet so that it cannot slide or tip out.

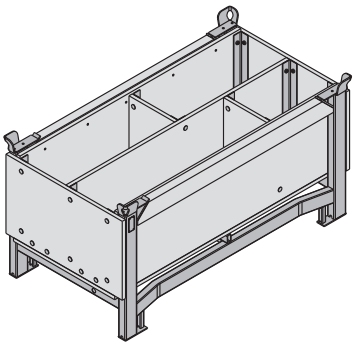
Doka accessory box

Storage and transport devices for small items:
- durable
- stackable

Suitable transport appliances:
- crane
- pallet stacking truck
- forklift truck

The Doka accessory box is the tidy, easy-to-find way of storing and stacking all interconnection and form-tie components.
The Bolt-on caster set B turns the stacking pallet into a fast and manoeuvrable transport trolley.

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



Max. load: 1000 kg Permitted imposed load: 5530 kg

- Multi-trip packaging items that each contain very different loads must be stacked with the heaviest ones at the bottom and the lightest ones at the top!
- Rating plate must be in place and clearly legible

Doka accessory box as storage units

Max. n° of boxes on top of one another

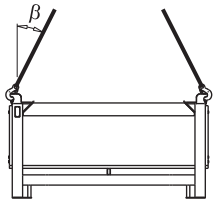
Outdoors (on the site) Floor gradient up to 3%	Indoors Floor gradient up to 1%
3	6
It is not allowed to stack empty pallets on top of one another!	

- **How to use with bolt-on castor set:**
  Always apply the fixing brake when the container is "parked".
  When Doka accessory boxes are stacked, the bottom box must NOT be one with a bolt-on castor set mounted to it.

Doka accessory box as transport devices

Lifting by crane

- Multi-trip packaging items may only be lifted one at a time.
- Use a suitable lifting chain. (Do not exceed the permitted load capacity). e.g: Doka 4-part chain 3.20m.
- When lifting stacking pallets to which Bolt-on castor sets B have been attached, you must also follow the directions in these Operating Instructions!
- Spread-angle β max. 30°!



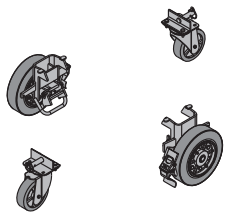
92816-206-01

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 trolley.
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 Operating Instructions!

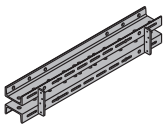
	[kg]	Article n°
ParaTop insert-shoe concrete ParaTop-Einbauschuh Beton Non-treated	**3.1**	**584444000**
ParaTop insert-shoe steel ParaTop-Einbauschuh Stahl Non-treated	**3.1**	**584443000**
ParaTop insert-channel U65 ParaTop-Einbauprofil U65 Non-treated	**0.89**	**584442000**
ParaTop insert-cone 0.35m ParaTop-Einbaukonus 0,35m chrome-plated Length: 36 cm	**2.9**	**584441000**
ParaTop insert-cone 0.65m ParaTop-Einbaukonus 0,65m chrome-plated Length: 66 cm	**6.2**	**584447000**
Eye-lug anchor 15.0 without tie rod Ösenanker 15,0 ohne Ankerstab Galvanised Length: 11 cm	**1.2**	**580649000**

	[kg]	Article n°
Tie rod 15.0mm galvanised 0.50m	**0.72**	**581821000**
Tie rod 15.0mm galvanised 0.75m	**1.1**	**581822000**
Tie rod 15.0mm galvanised 1.00m	**1.4**	**581823000**
Tie rod 15.0mm galvanised 1.25m	**1.8**	**581826000**
Tie rod 15.0mm galvanised 1.50m	**2.2**	**581827000**
Tie rod 15.0mm galvanised 1.75m	**2.5**	**581828000**
Tie rod 15.0mm galvanised 2.00m	**2.9**	**581829000**
Tie rod 15.0mm galvanised 2.50m	**3.6**	**581852000**
Tie rod 15.0mm galvanised .....m	**1.4**	**581824000**
Tie rod 15.0mm non-treated 0.50m	**0.73**	**581870000**
Tie rod 15.0mm non-treated 0.75m	**1.1**	**581871000**
Tie rod 15.0mm non-treated 1.00m	**1.4**	**581874000**
Tie rod 15.0mm non-treated 1.25m	**1.8**	**581886000**
Tie rod 15.0mm non-treated 1.50m	**2.1**	**581876000**
Tie rod 15.0mm non-treated 1.75m	**2.5**	**581887000**
Tie rod 15.0mm non-treated 2.00m	**2.9**	**581875000**
Tie rod 15.0mm non-treated 2.50m	**3.6**	**581877000**
Tie rod 15.0mm non-treated 3.00m	**4.3**	**581878000**
Tie rod 15.0mm non-treated 3.50m	**5.0**	**581888000**
Tie rod 15.0mm non-treated 4.00m	**5.7**	**581879000**
Tie rod 15.0mm non-treated 5.00m	**7.2**	**581880000**
Tie rod 15.0mm non-treated 6.00m	**8.6**	**581881000**
Tie rod 15.0mm non-treated 7.50m	**10.7**	**581882000**
Tie rod 15.0mm non-treated .....m	**1.4**	**581873000**
Ankerstab 15,0mm		
Split nut SL-1 15.0 Spannmutter SL-1 15,0 Galvanised Length: 9-11 cm Width-across: 30/41 mm	**0.70**	**582835000**
Hexagon nut 15.0 Sechskantmutter 15,0 Galvanised Length: 5 cm Width-across: 30 mm	**0.23**	**581964000**
Sealing sleeve K 15.0 Dichtungshülse K 15,0 Orange Length: 12 cm Diameter: 6 cm	**0.03**	**581976000**
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		

	[kg]	Article n°
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

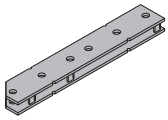


Formwork element connector FF20/50 Z	**6.0**	**587533000**

Elementverbinder FF20/50 Z

Painted blue

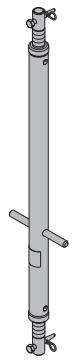
Length: 55 cm



Spindle strut T7 75/110cm	**13.2**	**584308000**
Spindle strut T7 100/150cm	**16.8**	**584309000**
Spindle strut T7 150/200cm	**21.6**	**584324000**
Spindle strut T7 200/250cm	**26.2**	**584325000**
Spindle strut T7 250/300cm	**29.4**	**584326000**
Spindle strut T7 305/355cm	**35.0**	**584327000**

Spindelstrebe T7

Galvanised

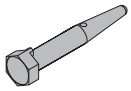


Connecting pin 10cm	**0.34**	**580201000**

Verbindungsbolzen 10cm

Galvanised

Length: 14 cm



Spring cotter 5mm	**0.05**	**580204000**

Federvorstecker 5mm

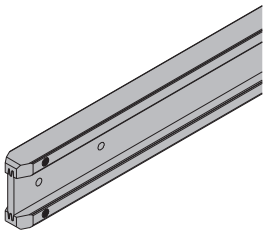
Galvanised

Length: 13 cm

	[kg]	Article n°
Doka beam H20 eco P 1.80m	**9.4**	**189940000**
Doka beam H20 eco P 2.45m	**12.7**	**189936000**
Doka beam H20 eco P 2.65m	**13.8**	**189937000**
Doka beam H20 eco P 2.90m	**15.1**	**189930000**
Doka beam H20 eco P 3.30m	**17.2**	**189941000**
Doka beam H20 eco P 3.60m	**18.7**	**189942000**
Doka beam H20 eco P 3.90m	**20.3**	**189931000**
Doka beam H20 eco P 4.50m	**23.4**	**189943000**
Doka beam H20 eco P 4.90m	**25.5**	**189932000**
Doka beam H20 eco P 5.90m	**30.7**	**189955000**
Doka beam H20 eco P 9.00m	**46.8**	**189956000**
Doka beam H20 eco P .....m	**5.2**	**189999000**
Doka beam H20 eco P .....m BS	**5.2**	**189957000**

Doka-Träger H20 eco P

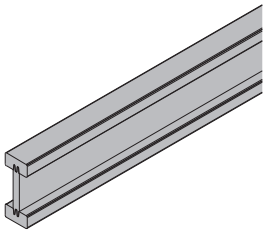
Varnished yellow



Doka beam H20 eco P 1.25m	**6.5**	**189939000**
Doka beam H20 eco P 12.00m	**62.4**	**189993000**

Doka-Träger H20 eco P

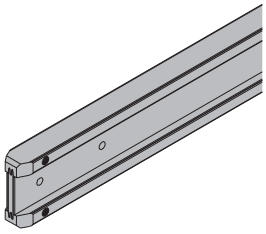
Varnished yellow



Doka beam H20 eco N 1.80m	**9.0**	**189283000**
Doka beam H20 eco N 2.45m	**12.3**	**189271000**
Doka beam H20 eco N 2.65m	**13.3**	**189272000**
Doka beam H20 eco N 2.90m	**14.5**	**189273000**
Doka beam H20 eco N 3.30m	**16.5**	**189284000**
Doka beam H20 eco N 3.60m	**18.0**	**189285000**
Doka beam H20 eco N 3.90m	**19.5**	**189276000**
Doka beam H20 eco N 4.50m	**22.5**	**189286000**
Doka beam H20 eco N 4.90m	**24.5**	**189277000**
Doka beam H20 eco N 5.90m	**29.5**	**189287000**
Doka beam H20 eco N .....m	**5.0**	**189299000**
Doka beam H20 eco N .....m BS	**5.0**	**189289000**

Doka-Träger H20 eco N

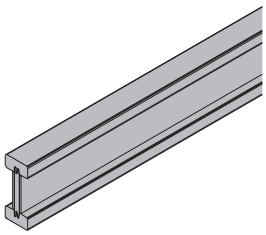
Varnished yellow



Doka beam H20 eco N 1.25m	**6.3**	**189282000**
Doka beam H20 eco N 12.00m	**60.3**	**189288000**

Doka-Träger H20 eco N

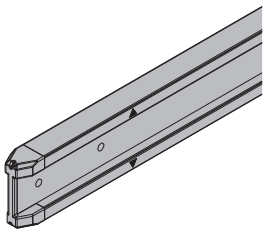
Varnished yellow



	[kg]	Article n°
Doka beam H20 top P 1.80m	**9.9**	**189701000**
Doka beam H20 top P 2.45m	**13.2**	**189702000**
Doka beam H20 top P 2.65m	**14.3**	**189703000**
Doka beam H20 top P 2.90m	**15.6**	**189704000**
Doka beam H20 top P 3.30m	**17.7**	**189705000**
Doka beam H20 top P 3.60m	**19.2**	**189706000**
Doka beam H20 top P 3.90m	**20.8**	**189707000**
Doka beam H20 top P 4.50m	**23.9**	**189708000**
Doka beam H20 top P 4.90m	**26.0**	**189709000**
Doka beam H20 top P 5.90m	**31.2**	**189710000**
Doka beam H20 top P .....m	**5.4**	**189700000**
Doka beam H20 top P .....m BS	**5.4**	**189711000**

Doka-Träger H20 top P

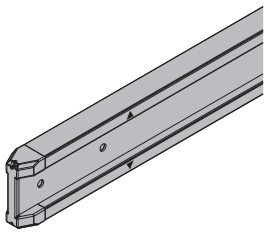
Varnished yellow



Doka beam H20 top N 1.80m	**9.5**	**189011000**
Doka beam H20 top N 2.45m	**12.8**	**189012000**
Doka beam H20 top N 2.65m	**13.8**	**189013000**
Doka beam H20 top N 2.90m	**15.0**	**189014000**
Doka beam H20 top N 3.30m	**17.0**	**189015000**
Doka beam H20 top N 3.60m	**18.5**	**189016000**
Doka beam H20 top N 3.90m	**20.0**	**189017000**
Doka beam H20 top N 4.50m	**23.0**	**189018000**
Doka beam H20 top N 4.90m	**25.0**	**189019000**
Doka beam H20 top N 5.90m	**30.0**	**189020000**
Doka beam H20 top N .....m	**5.2**	**189010000**
Doka beam H20 top N .....m BS	**5.2**	**189021000**

Doka-Träger H20 top N

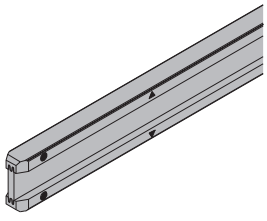
Varnished yellow



Doka beam H16 P 1.80m	**6.7**	**189969000**
Doka beam H16 P 2.45m	**9.1**	**189961000**
Doka beam H16 P 2.90m	**10.7**	**189962000**
Doka beam H16 P 3.30m	**12.2**	**189963000**
Doka beam H16 P 3.90m	**14.4**	**189966000**
Doka beam H16 P 4.90m	**18.1**	**189967000**
Doka beam H16 P 9.00m	**33.3**	**189970000**
Doka beam H16 P .....m	**4.3**	**189960000**

Doka-Träger H16 P

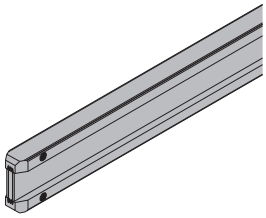
Varnished yellow



	[kg]	Article n°
Doka beam H16 N 1.80m	**6.3**	**189851000**
Doka beam H16 N 2.45m	**8.6**	**189802000**
Doka beam H16 N 2.90m	**10.2**	**189803000**
Doka beam H16 N 3.30m	**11.6**	**189807000**
Doka beam H16 N 3.90m	**13.7**	**189805000**
Doka beam H16 N 4.90m	**17.2**	**189813000**
Doka beam H16 N 9.00m	**31.5**	**189852000**
Doka beam H16 N .....m	**3.5**	**189850000**

Doka-Träger H16 N

Varnished yellow



Beam screw H 8/70	**0.06**	**580117000**

Riegelverschraubung H 8/70

Galvanised
Length: 8 cm
Width-across: 13 mm

Doka formwork sheet 3-SO 21mm 100/50cm	**5.3**	**186007000**
Doka formwork sheet 3-SO 21mm 150/50cm	**7.9**	**186008000**
Doka formwork sheet 3-SO 21mm 200/50cm	**10.5**	**186009000**
Doka formwork sheet 3-SO 21mm 250/50cm	**13.1**	**186011000**
Doka formwork sheet 3-SO 21mm 300/50cm	**15.8**	**186012000**
Doka formwork sheet 3-SO 21mm 350/50cm	**18.4**	**186028000**
Doka formwork sheet 3-SO 21mm 400/50cm	**21.0**	**186013000**
Doka formwork sheet 3-SO 21mm 450/50cm	**23.6**	**186029000**
Doka formwork sheet 3-SO 21mm 500/50cm	**26.3**	**186014000**
Doka formwork sheet 3-SO 21mm 550/50cm	**28.9**	**186023000**
Doka formwork sheet 3-SO 21mm 600/50cm	**31.5**	**186027000**
Doka formwork sheet 3-SO 21mm 100/100cm	**10.5**	**186015000**
Doka formwork sheet 3-SO 21mm 150/100cm	**15.8**	**186016000**
Doka formwork sheet 3-SO 21mm 200/100cm	**21.0**	**186017000**
Doka formwork sheet 3-SO 21mm 250/100cm	**26.3**	**186018000**
Doka formwork sheet 3-SO 21mm 300/100cm	**31.5**	**186019000**
Doka formwork sheet 3-SO 21mm 350/100cm	**36.8**	**186030000**
Doka formwork sheet 3-SO 21mm 400/100cm	**42.0**	**186020000**
Doka formwork sheet 3-SO 21mm 450/100cm	**47.3**	**186031000**
Doka formwork sheet 3-SO 21mm 500/100cm	**52.5**	**186021000**
Doka formwork sheet 3-SO 21mm 550/100cm	**57.8**	**186022000**
Doka formwork sheet 3-SO 21mm 600/100cm	**63.0**	**186024000**
Doka formwork sheet 3-SO 21mm 250/125cm	**32.8**	**186097000**
Doka formwork sheet 3-SO 21mm 300/150cm	**47.3**	**186098000**
Doka formwork sheet 3-SO 21mm 600/150cm	**94.5**	**186099000**
Doka formwork sheet 3-SO 21mm 150/50cm BS	**7.9**	**186008100**
Doka formwork sheet 3-SO 21mm 200/50cm BS	**10.5**	**186009100**
Doka formwork sheet 3-SO 21mm 250/50cm BS	**13.1**	**186011100**
Doka formwork sheet 3-SO 21mm 300/50cm BS	**15.8**	**186012100**

Doka-Schalungsplatte 3-SO 21mm

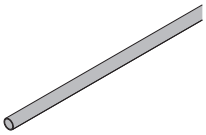
Doka formwork sheet 3-SO 27mm 100/50cm	**6.5**	**187007000**
Doka formwork sheet 3-SO 27mm 150/50cm	**9.8**	**187008000**
Doka formwork sheet 3-SO 27mm 200/50cm	**13.0**	**187009000**
Doka formwork sheet 3-SO 27mm 250/50cm	**16.3**	**187011000**
Doka formwork sheet 3-SO 27mm 300/50cm	**19.5**	**187012000**
Doka formwork sheet 3-SO 27mm 350/50cm	**22.8**	**187028000**
Doka formwork sheet 3-SO 27mm 400/50cm	**26.0**	**187013000**
Doka formwork sheet 3-SO 27mm 450/50cm	**29.3**	**187029000**
Doka formwork sheet 3-SO 27mm 500/50cm	**32.5**	**187014000**
Doka formwork sheet 3-SO 27mm 550/50cm	**35.8**	**187023000**
Doka formwork sheet 3-SO 27mm 600/50cm	**39.0**	**187027000**
Doka formwork sheet 3-SO 27mm 100/100cm	**13.0**	**187015000**
Doka formwork sheet 3-SO 27mm 150/100cm	**19.5**	**187016000**
Doka formwork sheet 3-SO 27mm 200/100cm	**26.0**	**187017000**
Doka formwork sheet 3-SO 27mm 250/100cm	**32.5**	**187018000**
Doka formwork sheet 3-SO 27mm 300/100cm	**39.0**	**187019000**
Doka formwork sheet 3-SO 27mm 350/100cm	**45.5**	**187030000**
Doka formwork sheet 3-SO 27mm 400/100cm	**52.0**	**187020000**
Doka formwork sheet 3-SO 27mm 450/100cm	**58.5**	**187031000**
Doka formwork sheet 3-SO 27mm 500/100cm	**65.0**	**187021000**
Doka formwork sheet 3-SO 27mm 550/100cm	**71.5**	**187022000**
Doka formwork sheet 3-SO 27mm 600/100cm	**78.0**	**187024000**
Doka formwork sheet 3-SO 27mm 250/125cm	**40.6**	**187106000**
Doka formwork sheet 3-SO 27mm 300/150cm	**58.5**	**187107000**
Doka formwork sheet 3-SO 27mm 600/150cm	**117.0**	**187108000**
Doka formwork sheet 3-SO 27mm 150/50cm BS	**9.8**	**187008100**
Doka formwork sheet 3-SO 27mm 200/50cm BS	**13.0**	**187009100**
Doka formwork sheet 3-SO 27mm 250/50cm BS	**16.3**	**187011100**
Doka formwork sheet 3-SO 27mm 300/50cm BS	**19.5**	**187012100**

Doka-Schalungsplatte 3-SO 27mm

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

Gerüstrohr 48,3mm

Galvanised



Scaffold tube connection **0.27** **584375000**

Gerüstrohranschluss

Galvanised

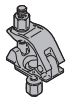
Height: 7 cm

Screw-on coupler 48mm 50 **0.84** **682002000**

Anschraubkupplung 48mm 50

Galvanised

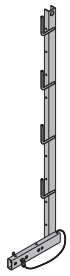
Width-across: 22 mm



Handrail post T 1.80m **17.7** **584373000**

Einschubgeländer T 1,80m

Galvanised

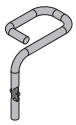


Toeboard holder T 1.80m **0.53** **584392000**

Fußwehrhalter T 1,80m

Galvanised

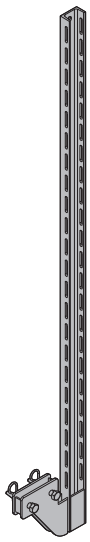
Height: 13.5 cm



	[kg]	Article n°
Universal railing SK 2.00m	**22.8**	**581325000**

Universal-Geländer SK 2,00m

Galvanised



Handrail clamp S **11.5** **580470000**

Schutzgeländerzwinge S

Galvanised

Height: 123 - 171 cm

Handrail clamp T **12.3** **584381000**

Schutzgeländerzwinge T

Galvanised

Height: 122 - 155 cm

Handrail post 1.10m **5.5** **584384000**

Schutzgeländer 1,10m

Galvanised

Height: 134 cm

Attachable sleeve 24mm **0.03** **584385000**

Steckhülse 24mm

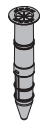
Grey

Length: 16.5 cm

Diameter: 2.7 cm

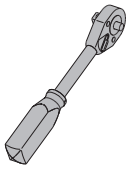
	[kg]	Article n°

Screw sleeve 20.0 0.03 584386000
Schraubhülse 20,0



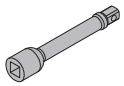
Yellow
Length: 20 cm
Diameter: 3.1 cm

Reversible ratchet 1/2" 0.73 580580000
Umschaltknarre 1/2"



Galvanised
Length: 30 cm

Extension 11cm 1/2" 0.20 580581000
Verlängerung 11cm 1/2"



Box nut 30 1/2" 0.20 580575000
Stecknuss 30 1/2"

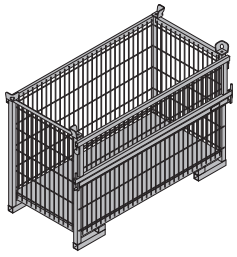
Doka personal fall-arrest set 3.6 583022000
Doka-Sicherheitsgeschirr

Follow the directions in the "Operating Instructions"!

CE

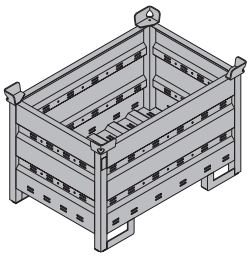
Multi-trip packaging

Doka skeleton transport box 1.70x0.80m 87.0 583012000
Doka-Gitterbox 1,70x0,80m



Galvanised
Height: 113 cm
Follow the directions in the "Operating Instructions"!

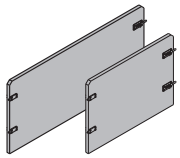
Doka multi-trip transport box 1.20x0.80m 75.0 583011000
Doka-Mehrwegcontainer 1,20x0,80m



Galvanised
Height: 78 cm
Follow the directions in the "Operating Instructions"!

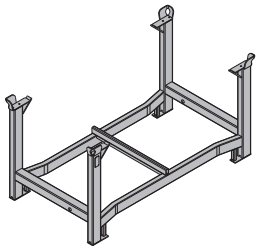
	[kg]	Article n°

Multi-trip transport box partition 0.80m 3.7 583018000
Multi-trip transport box partition 1.20m 5.5 583017000
Mehrwegcontainer Unterteilung



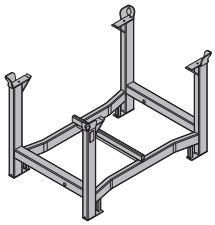
Timber parts varnished yellow
Steel parts galvanised

Doka stacking pallet 1.55x0.85m 42.0 586151000
Doka-Stapelpalette 1,55x0,85m



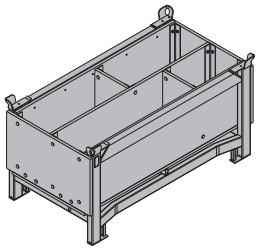
Galvanised
Height: 77 cm
Follow the directions in the "Operating Instructions"!

Doka stacking pallet 1.20x0.80m 39.5 583016000
Doka-Stapelpalette 1,20x0,80m



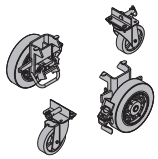
Galvanised
Height: 77 cm
Follow the directions in the "Operating Instructions"!

Doka accessory box 106.4 583010000
Doka-Kleinteilebox



Timber parts varnished yellow
Steel parts galvanised
Length: 154 cm
Width: 83 cm
Height: 77 cm
Follow the directions in the "Operating Instructions"!

Bolt-on castor set B 33.6 586168000
Anklemm-Radsatz B



Painted blue

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

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

Bridge formwork ParaTop is available for rental, leasing or purchase.

At any of the Doka branches in your region.

Why not give us a call?

The Doka Group's central plant at Amstetten, Austria

Zertifiziert nach ISO 9001

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