

Formwork & Scaffolding. We make it work.

# 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 backlet converse on the basis for the site opening.

This booklet serves as the basis for the site-specific hazard assessment, and for the instructions given to users on how to prepare and utilise the system. It does not substitute for these, however.

## **Remarks on this booklet**

- This document can be used as general Instructions for Assembly and Use (Method Statement) or be incorporated into site-specific Instructions for Assembly and Use (Method Statement).
- The graphics, animations and videos in this document or app sometimes depict partially assembled assemblies and may require additional safety equipment and/or measures to comply with safety regulations.

The customer must ensure all applicable regulations are complied with, even if they are not shown or implied in the graphics, animations and videos provided.

 Individual sections contain further safety instructions and/or special warnings as applicable.

## Planning

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

## Regulations; industrial safety

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

# Rules applying during all phases of the assignment

- The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose in accordance with the applicable laws, standards and rules, under the direction and supervision of suitably skilled persons. These persons' mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.
- Doka products are technical working appliances which are intended for industrial / commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.
- The stability and load-bearing capacity of all components and units must be ensured during all phases of the construction work!
- Do not step on or apply strain to cantilevers, closures, etc. until suitable measures to ensure their stability have been correctly implemented (e.g. by tie-backs).
- Strict attention to and compliance with the functional instructions, safety instructions and load specifications are required. Non-compliance can cause accidents and severe injury (risk of fatality) and considerable damage to property.
- Sources of fire in the vicinity of the formwork are prohibited. Heaters are permissible only when used correctly and situated a correspondingly safe distance from the formwork.
- Customer must give due consideration to any and all effects of the weather on the equipment and regards both its use and storage (e.g. slippery surfaces, risk of slipping, effects of the wind, etc.) and implement appropriate precautionary measures to secure the equipment and surrounding areas and to protect workers.
- All connections must be checked at regular intervals to ensure that they are secure and in full working order.

In particular threaded connections and wedged connections have to be checked and retightened as necessary in accordance with activity on the jobsite and especially after out-of-the-ordinary occurrences (e.g. after a storm).

 It is strictly forbidden to weld Doka products – in particular anchoring/tying components, suspension components, connector components and castings etc. – or otherwise subject them to heating.

Welding causes serious change in the microstructure of the materials from which these components are made. This leads to a dramatic drop in the failure load, representing a very great risk to safety.

It is permissible to cut individual tie rods to length with metal cutting discs (introduction of heat at the end of the rod only), but it is important to ensure that flying sparks do not heat and thus damage other tie rods.

The only articles which are allowed to be welded are those for which the Doka literature expressly points out that welding is permitted.

## Assembly

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

## **Closing the formwork**

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

## Pouring

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

## Stripping the formwork

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



## Transporting, stacking and storing

 Observe all country-specific regulations applying to the handling of formwork and scaffolding. For system formwork the Doka slinging means stated in this booklet must be used – this is a mandatory requirement.

If the type of sling is not specified in this document, the customer must use slinging means that are suitable for the application envisaged and that comply with the regulations.

- When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.
- Remove loose parts or secure them so that they cannot slip out of position and drop.
- When lifting formwork or formwork accessories with a crane, no persons must be carried along, e.g. on working platforms or in multi-trip packaging.
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this document!

## Maintenance

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

## **Miscellaneous**

The weights as stated are averages for new material; actual weights can differ, depending on material tolerances. Dirt accretions, moisture saturation, etc. can also affect weight.

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

## **Eurocodes at Doka**

The permissible values stated in Doka documents (e.g.  $F_{perm} = 70 \text{ kN}$ ) are not design values (e.g.  $F_{Rd} = 105 \text{ kN}$ ), unless specified!

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

Allowance has been made for the following partial factors:

γ<sub>F</sub> = 1.5

- γ<sub>M, timber</sub> = 1.3
- γ<sub>M, steel</sub> = 1.1
- k<sub>mod</sub> = 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:

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

#### WARNING

DANGER

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.

## System description

## Intended use

The Bridge formwork ParaTop is a formwork system for the production of deck slabs for composite and precast concrete bridges.

The Bridge formwork ParaTop is designed for the repositioning of pre-assembled platforms using a crane, working from the bridge supporting structure.

Boundary conditions: project-specific

In special cases, boundary conditions can vary. The relevant information in the Doka technical documents must be observed.

Any other use or use going beyond that stated above is contrary to the intended use and requires a risk assessment, revised static calculations as well as supplementary assembly instructions!

## Areas of use

## Used on steel girders



## Used on pre-cast concrete members



## System overview

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



- A Top 50 platform
- **B** Edge protection
- **C** ParaTop insert-shoe (consumable part)
- D ParaTop threaded stud M20x55 PD K800 (consumable part)
- E Eye-lug anchor 15.0 without tie rod
- F Tie rod 15.0mm
- G Plastic tube 22mm (consumable part)
- H ParaTop insert-channel U65 (consumable part)
- I ParaTop insert-cone
- J Hexagon nut 15.0
- K Protective cap 15.0/20.0

#### Note:

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



#### a ... 113 mm

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

## Anchoring on the structure

## Used on steel girders

#### NOTICE I

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
- > 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

### Installing the threaded studs on the steel girder

Attach the ParaTop threaded studs to the bridge girder by stud welding in accordance with EN ISO 14555.



- a ... concrete cover (project-specific)
- b ... concrete cover (a) + 145 mm
- c ... diam. 26 mm hole in anchor plate
- A ParaTop insert-shoe
- B ParaTop threaded stud M20x55 PD K800
- **C** Flange of the bridge girder

#### Note:

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

(This item is included in the scope of supply of the threaded stud.)



Comply with Approval 'Z-14.4-585'!

## Checking the load-bearing capacity of the threaded studs



## WARNING

$\overline{}$	Falling hazard due to failure of the weld seam
	on the threaded stud.

Check each threaded stud by means of a test load to ensure the required load-bearing capacity.

#### Test force for

ParaTop threaded stud M20x55 PD K800: 110 kN

#### Note:

Use Tensioning instrument 300kN to test the load-bearing capacity.

The Tensioning instrument 300kN consists of:

- 1 hollow-plunger cylinder
- 1 hydraulic hand pump 700 bar, including hose, fittings and manometer
- I pressure support
- 1 carrying case
- Position the hollow-plunger cylinder with pressure support over the threaded stud.
- Install the Tensioning tool M20 on the threaded stud.



- A Pressure support
- B Hollow-plunger cylinder
- C Tensioning tool M20
- D Hand pump



> Apply the test force by operating the hand pump.



## NOTICE

I

Replace a damaged threaded stud (e.g. a stud with cracks or deformation) or a stud that does not withstand the test load with a new stud.

- Clean the welding point, weld on a new threaded stud and test again.
- > Relieve the hollow-plunger cylinder again after testing the load-bearing capacity of the threaded studs.

## Bolting insert-shoe to threaded stud

Bolt the ParaTop insert-shoe 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
- **B** ParaTop threaded stud M20x55 PD K800
- C Flange of the bridge girder

Bolting items required (consumable 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 to a girder

- Boundary conditions for the example:
- Anchor load: 70 kN
- Steel grade of the steel girder: S235
- Anchor angle: 41° 55°

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



d ... Length of the weld seam: 70 mm



## Welding insert-shoe into position on site

## 

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



a ... concrete cover (project-specific)

- A ParaTop insert-shoe
- 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 together 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
- **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

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 to an anchor plate

# Securing insert-shoe with anchor rods

Anchor the ParaTop insert-shoe to the precast concrete member.



- a ... concrete cover (project-specific)
- b ... concrete cover (a) + 145 mm c ... diam. 26 mm hole in anchor plate
- A ParaTop insert-shoe
- **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 diam. 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 precast concrete members is lower than that of the threaded stud on structural steelwork, the load-bearing capacity of the suspension point is also lower.



- A ParaTop insert-shoe
- 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. The solutions can be used in the same way on precast concrete members.

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



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



## 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)

### Suspension for small frame structures



- A ParaTop insert-shoe (consumable 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 (consumable part)
- I ParaTop insert-channel U65 (consumable part)
- J ParaTop insert-cone
- K Protective cap 15.0/20.0

Obtain and follow further information from yourDoka engineer!

#### Anchor plate, installed condition:



## Structural design



- 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 Structural Engineering 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.



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## **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 <u>Structural design</u>).

- Calculate vertical load (concrete load, dead 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 the 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 'Graphs for determining the anchoring forces on the ParaTop insert-shoe'.



Т	permissible	anchor	load:	70 kN	
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## Note:

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

Precondition:

The component to which the threaded stud is welded must be made of min. S 355-grade steel.

Determine the anchoring forces H, V2 and V1 from the 'Graphs 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 ParaTop threaded stud M20x55 PD K800: 45 kN





#### Max. influence width per handrail post

	Handrail po	ost T 1.80m		Universal rail	ing SK 2.00m		Multi-purpose waling WS 10 with Corner connect- ing plate SK
	Guardra	ail board	Scaffold tube	Guardra	ail board	Full enclosure	Full enclosure
Peak velocity pressure q <sub>(ze)</sub>	A E Height of gua	rdrail boards:		B ,	rdrail boards:		
	≤15 cm	≤20 cm	5.0	≤15 cm	≤20 cm		0.5
$\leq$ 1.1 kN/m <sup>2</sup>	1.83 m	1.33 m	5.0 m	3.5 m	3.1 m	1.3 m	3.5 m
$\leq 1.3 \text{ kN/m}^2$	1.55 m	1.13 m	5.0 m	3.4 m	2.6 m	1.1 m	3.0 m
$\leq$ 1.7 kN/m <sup>2</sup>	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 <u>Assembly</u>).



## 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 with Spring cotters 5mm.



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

 Fasten guardrail 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 with Spring cotters 5mm.
- Adjust the spindle strut to the length shown in the shop drawing / assembly drawing.
- 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 drawing).



- 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 drawing. 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
- 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 (consumable 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.



## Xsafe edge protection XP



Follow the directions in the 'Xsafe edge protection 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



1) Toeboard 5 x 43 cm required



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## 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 differ significantly from that described here.

- In such cases, discuss the assembly sequence with your Doka technician.
- Follow the directions in the shop drawing / assembly drawing.

## NOTICE

- There must be a flat, firm base capable of supporting the load.
- Prepare a sufficiently large assembly area.
- Tightening torque of the bracing tube couplers: 50 Nm
- During all assembly and dismantling work on the Bridge formwork ParaTop carried out on the structure itself, the operators must use personal fall-arrest systems (e.g. safety harness).

# Fixing the Top 50 platform to the insert-shoes

## General instructions on repositioning

1	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
- Reposition the Top 50 platform to the ParaTop insert-shoes.







Do not bend tie rods.

The insert-channel must snap into the insertshoe 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
- 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 tierod 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

# 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

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.



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## **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

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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 (consumable part)
- **B** ParaTop insert-cone 0.35m
- **C** ParaTop insert-shoe (consumable part)



- A ParaTop insert-channel U65 (consumable part)
- **B** ParaTop insert-cone 0.35m
- C ParaTop insert-shoe (consumable part)
- **D** Precast member (retrofitted)

## Used on pre-cast concrete members



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



- A ParaTop insert-channel U65 (consumable part)
- B ParaTop insert-cone 0.35m
- E ParaTop insert-shoe (consumable 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 dismounting 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.

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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 deckboards and guard-rail boards.

## Xsafe edge protection XP

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Follow the directions in the 'Xsafe edge protection 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 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 protection on the structure

## Handrail post XP 1.20m

- Attached with screw-on shoe, railing clamp, handrail-post shoe or Step bracket XP
- Protective grating XP, guardrail boards or scaffold tubes can be used as the safety barrier



## a ... > 1.00 m



Follow the directions in the 'Xsafe edge protection 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 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. To make the Doka skeleton transport box easier to load and unload, one of its sidewalls can be opened.

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

# Using Doka skeleton transport boxes 1.70x0.80m 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%
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 must be lifted individually.
- Only lift the boxes when their sidewalls are closed!
- Use suitable lifting chains:
  - e.g. Doka 4-part chain 3.20m
  - Do not exceed the permitted working load limit of the lifting chains.
- Sling angle β max. 30°!



# Repositioning by forklift truck or pallet stacking truck

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

## Doka multi-trip transport box

Storage and transport device for small items

### Doka multi-trip transport box 1.20x0.80m



Permitted load-bearing capacity: 1500 kg (3300 lbs) Permitted imposed stacking load: 7850 kg (17300 lbs)

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



A Slide-bolt for fixing the partition

#### Possible ways of dividing the box



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



Permitted load-bearing capacity: 750 kg (1650 lbs) Permitted imposed stacking load: 7200 kg (15870 lbs)

# Using Doka multi-trip transport boxes as storage units

#### Max. n° of units on top of one another

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

## NOTICE

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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 suitable lifting chains:
  - e.g. Doka 4-part chain 3.20m
  - Do not exceed the permitted working load limit of the lifting chains.
- Sling angle β max. 30°!



# Repositioning by forklift truck or pallet stacking truck

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

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

Storage and transport device for long items.



Permitted load-bearing capacity: 1100 kg (2420 lbs) Permitted imposed stacking load: 5900 kg (13000 lbs)

## Using Doka stacking pallets 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%
2	6
It is not allowed to stack empty pallets on top of one another!	

#### NOTICE

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

# Using Doka stacking pallets as transport devices

#### Lifting by crane

### NOTICE

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



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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



#### Load the items centrically.

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

## Doka accessory box

Storage and transport device for small items.



Permitted load-bearing capacity: 1000 kg (2200 lbs) Permitted imposed stacking load: 5530 kg (12190 lbs)

## Doka accessory boxes as storage units

#### Max. n° of units on top of one another

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

#### NOTICE

!

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

## Doka accessory box as transport devices

#### Lifting by crane

#### NOTICE

- Multi-trip packaging items must be lifted individually.
- Use suitable lifting chains:
  - e.g. Doka 4-part chain 3.20m
  - Do not exceed the permitted working load limit of the lifting chains.
- When lifting units to which Bolt-on castor sets B have been attached, you must also follow the directions in the 'Bolt-on castor set B' User information booklet!
- Sling angle β max. 30°!



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# Repositioning by forklift truck or pallet stacking truck

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

## **Bolt-on castor set B**

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



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

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



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

	[kg]	Article N°			[kg]	Article N°
ParaTop insert-shoe ParaTop-Einbauschuh Non-treated	3.1	584444000	Hexagon nut 15.0 Sechskantmutter 15,0	Galvanised	0.23	581964000
			() manual	Length: 5 cm Width-across: 30 mm		<b>DIN</b> 18216
			Sealing sleeve SCP 20.0 Dichtungshülse SCP 20,0	Blue	0.07	581650000
ParaTop insort channel USE	0 90	584442000		Length: 19.5 cm Diameter: 9 cm		
ParaTop-Einbauprofil U65 Non-treated	0.05	504442000	$\bigcirc$			
			Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10	Top50 0.50m Top50 0.75m Top50 1.00m Top50 1.25m Top50 1.50m Top50 1.75m	10.2 14.9 19.6 24.7 29.7 35.0	580001000 580002000 580003000 580004000 580005000 580005000
ParaTop threaded stud M20x55 PD K800 ParaTop-Gewindebolzen M20x55 PD K800	0.13	584487000	Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10	Top50 2.00m Top50 2.25m Top50 2.50m Top50 2.75m Top50 3.00m Top50 3.50m	38.9 44.2 48.7 54.2 60.2 68.4	580007000 580008000 580009000 580010000 580010000 580012000
ParaTop insert-cone 0.35m ParaTop-Einbaukonus 0,35m Chrome-plated Length: 36 cm	2.9	584441000	Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Multi-purpose waling WS10 Mehrzweckriegel WS10 Top50	Top50 4.00m Top50 4.50m Top50 5.00m Top50 5.50m Top50 6.00m	79.4 89.1 102.0 112.4 118.0	580013000 580014000 580015000 580016000 580017000
0						
ParaTop insert-cone 0.65m ParaTop-Einbaukonus 0,65m	6.2	584447000				
Chrome-plated Length: 66 cm			Multi-purpose waling WU12 Multi-purpose waling WU12	Top50 1.00m Top50 1.25m Top50 1.50m Top50 2.00m Top50 2.50m Top50 2.50m Top50 3.50m	25.3 32.0 37.5 44.2 50.0 63.1 75.7 90.7	580018000 580019000 580020000 580021000 580022000 580023000 580024000 580025000
Eye-lug anchor 15.0 without tie rod Ösenanker 15,0 ohne Ankerstab	1.2	580649000	Multi-purpose waiing w012 Mehrzweckriegel WU12 Top50	Painted blue	103.4	580026000
Length: 11 cm			A CONTRACTOR OF A CONTRACTOR OFTA CONT			
Tie rod 15.0mm galvanised 0.50m Tie rod 15.0mm galvanised 0.75m Tie rod 15.0mm galvanised 1.00m Tie rod 15.0mm galvanised 1.25m Tie rod 15.0mm galvanised 1.50m Tie rod 15.0mm galvanised 2.00m Tie rod 15.0mm galvanised 2.50m Tie rod 15.0mm galvanisedm Tie rod 15.0mm non-treated 0.50m Tie rod 15.0mm non-treated 0.50m	0.72 1.1 1.4 2.2 2.5 2.9 3.6 1.4 0.73 1 1	581821000 581822000 581823000 581826000 581827000 581827000 581829000 581852000 581852000 581824000 581871000	Formwork element connect Elementverbinder FF20/50 Z	or FF20/50 Z Painted blue Length: 55 cm	6.0	587533000
Tie rod 15.0mm non-treated 1.00m Tie rod 15.0mm non-treated 1.25m Tie rod 15.0mm non-treated 1.50m Tie rod 15.0mm non-treated 1.75m Tie rod 15.0mm non-treated 2.00m Tie rod 15.0mm non-treated 2.50m Tie rod 15.0mm non-treated 3.00m Tie rod 15.0mm non-treated 4.00m Tie rod 15.0mm non-treated 5.00m Tie rod 15.0mm non-treated 6.00m Tie rod 15.0mm non-treated 6.00m Tie rod 15.0mm non-treated .00m Tie rod 15.0mm non-treated .00m Tie rod 15.0mm non-treated .00m Tie rod 15.0mm non-treated .00m Tie rod 15.0mm non-treated .00m	1.4 1.4 2.1 2.5 2.9 3.6 4.3 5.0 5.7 7.2 8.6 1.4	581874000 581886000 581876000 581875000 581875000 581877000 581877000 58188000 58188000 58188000 581881000 581881000	Splice plate SKE50 plus Verbindungslasche SKE50 plus	Painted blue Length: 60 cm Width: 10 cm	10.6	581523000
A MARINA DA		<b>DIN</b> 18216				



		[kg]	Article N°			[kg]	Article N°
Beam screw H 8/70 Riegelverschraubung H 8/70		0.06	580117000	Scaffold tube connection Gerüstrohranschluss		0.27	584375000
and a second	Galvanised Length: 8 cm Width-across: 13 mm			0	Galvanised Height: 7 cm		
Doka formwork sheet 3-SO Doka formwork sheet 3-SO	21mm 100/50cm 21mm 150/50cm 21mm 200/50cm 21mm 200/50cm 21mm 300/50cm 21mm 350/50cm 21mm 450/50cm 21mm 550/50cm	4.9 7.3 9.7 12.1 14.6 17.0 19.4 21.8 26.7	186007000 186008000 186019000 186012000 186028000 186028000 186029000 186023000	Screw-on coupler 48mm 50 Anschraubkupplung 48mm 50	Galvanised Width-across: 22 mm	0.8	682002000
Doka formwork sheet 3-SO Doka formwork sheet 3-SO	21mm 000/100cm 21mm 150/100cm 21mm 250/100cm 21mm 250/100cm 21mm 350/100cm 21mm 400/100cm 21mm 450/100cm 21mm 550/100cm 21mm 550/100cm	9.7 9.7 14.6 19.4 24.3 29.1 34.0 38.8 43.7 48.5 53.4	186015000 186015000 186016000 186017000 186019000 186030000 186020000 186021000 186022000	Insertion adapter XP Einschubadapter XP	Galvanised Height: 43 cm	4.1	586478000
Doka formwork sheet 3-SO Doka formwork sheet 3-SO 21mm	21mm 600/100cm 21mm 250/125cm 21mm 300/150cm 21mm 600/150cm 21mm 150/50cm BS 21mm 200/50cm BS 21mm 250/50cm BS 21mm 300/50cm BS	58.2 30.3 43.7 87.3 7.3 9.7 12.1 14.6	186024000 186097000 186098000 186099000 186008100 186009100 186011100 186012100	Handrail post XP 1.80m Geländersteher XP 1,80m	Galvanised Height: 176 cm	6.0	586482000
Doka formwork sheet 3-SO Doka formwork sheet 3-SO	27mm 100/50cm 27mm 200/50cm 27mm 200/50cm 27mm 300/50cm 27mm 350/50cm 27mm 450/50cm 27mm 450/50cm 27mm 500/50cm 27mm 550/50cm 27mm 550/50cm 27mm 150/100cm 27mm 150/100cm 27mm 250/100cm	6.1 9.1 12.1 15.1 18.2 21.2 27.2 27.2 27.2 30.3 33.3 36.3 12.1 18.2 24.2 24.2 30.3 36.3	187007000 187008000 187019000 187012000 187012000 187028000 187028000 187014000 187023000 187027000 187015000 187015000 187017000 187018000				
Doka formwork sheet 3-SO Doka formwork sheet 3-SO	27mm 300/100cm 27mm 450/100cm 27mm 450/100cm 27mm 550/100cm 27mm 550/100cm 27mm 550/100cm 27mm 200/100cm 27mm 300/150cm 27mm 300/150cm 27mm 150/50cm BS 27mm 200/50cm BS 27mm 250/50cm BS 27mm 300/50cm BS	36.3 42.4 48.4 54.5 60.5 66.5 72.6 37.8 54.5 108.9 9.1 125.1 15.1 18.2	187019000 187030000 187020000 187021000 187021000 187022000 187024000 187106000 187106000 187108000 187108000 187009100 187011100 187012100	Handrail post XP 1.20m Geländersteher XP 1,20m	Galvanised Height: 118 cm	4.1	586460000
Scaffold tube 48.3mm 0.50m Scaffold tube 48.3mm 1.00m Scaffold tube 48.3mm 1.50m Scaffold tube 48.3mm 2.50m Scaffold tube 48.3mm 2.50m Scaffold tube 48.3mm 3.50m Scaffold tube 48.3mm 4.50m Scaffold tube 48.3mm 4.50m Scaffold tube 48.3mm 5.50m Scaffold tube 48.3mm 6.00m Scaffold tube 48.3mmm Gerüstrohr 48,3mm	n n n n n n n Galvanised	1.7 3.6 5.4 10.8 12.6 14.4 16.0 19.8 21.6 3.6	682026000 682014000 682015000 682017000 682019000 682021000 682022000 682022000 682022000 682022000 682024000 682025000 682001000	Under the second	Galvanised Height: 21 cm	0.64	586461000





[kg] Article N°

User Information Bridge for	mwork ParaTop	
	[kg]	Article N°
Doka accessory box Doka-Kleinteilebox	106.4 Timber parts varnished yellow Steel parts galvanised Length: 154 cm Width: 83 cm Height: 77 cm	583010000
Universal castor wheel for t Universal-Lenkrolle Transportgebi	ransport pallet 6.0 inde Galvanised Height: 28.8 cm	584043000
	Painted blue	



Formwork & Scaffolding. We make it work.



www.doka.com/paratop