Large-area formwork Top 50

User Information
Instructions for assembly and use (Method statement)
## Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Introduction</td>
</tr>
<tr>
<td>7</td>
<td>Services</td>
</tr>
<tr>
<td>8</td>
<td>System overview</td>
</tr>
<tr>
<td>9</td>
<td>Wall formwork</td>
</tr>
<tr>
<td>12</td>
<td>Top 50 element in detail</td>
</tr>
<tr>
<td>14</td>
<td>Flexibility</td>
</tr>
<tr>
<td>15</td>
<td>Tie rod system</td>
</tr>
<tr>
<td>17</td>
<td>Inter-panel connections</td>
</tr>
<tr>
<td>18</td>
<td>Length adjustment using closures</td>
</tr>
<tr>
<td>23</td>
<td>Height adjustment</td>
</tr>
<tr>
<td>24</td>
<td>90 degree corners</td>
</tr>
<tr>
<td>28</td>
<td>Acute &amp; obtuse-angled corners</td>
</tr>
<tr>
<td>30</td>
<td>Stop-end formwork</td>
</tr>
<tr>
<td>31</td>
<td>Window and door openings</td>
</tr>
<tr>
<td>33</td>
<td>Vertical stacking of panels</td>
</tr>
<tr>
<td>34</td>
<td>Shaft formwork</td>
</tr>
<tr>
<td>39</td>
<td>Circular formwork</td>
</tr>
<tr>
<td>40</td>
<td>Plumbing accessories</td>
</tr>
<tr>
<td>44</td>
<td>Pouring platforms with single brackets</td>
</tr>
<tr>
<td>47</td>
<td>Pouring platforms</td>
</tr>
<tr>
<td>53</td>
<td>Opposing guard-rail</td>
</tr>
<tr>
<td>56</td>
<td>Wall formwork at the edge of the structure</td>
</tr>
<tr>
<td>58</td>
<td>Ladder system</td>
</tr>
<tr>
<td>62</td>
<td>Combining different formwork systems</td>
</tr>
<tr>
<td>63</td>
<td>Lifting by crane</td>
</tr>
<tr>
<td>64</td>
<td>Enhanced requirements for fair-faced concrete</td>
</tr>
<tr>
<td>66</td>
<td>Other possible areas of use</td>
</tr>
<tr>
<td>66</td>
<td>Column formwork Top 50</td>
</tr>
<tr>
<td>67</td>
<td>Top 50 as a superstructure and tunnel formwork</td>
</tr>
<tr>
<td>70</td>
<td>Platforms assembled from system components with Universal suspension head</td>
</tr>
<tr>
<td>71</td>
<td>Possible ways of connecting to the multipurpose waling</td>
</tr>
<tr>
<td>72</td>
<td>Utilising self-compacting concrete</td>
</tr>
<tr>
<td>73</td>
<td>Element assembly</td>
</tr>
<tr>
<td>79</td>
<td>Doka Pre-assembly Service</td>
</tr>
<tr>
<td>80</td>
<td>Structural design</td>
</tr>
<tr>
<td>80</td>
<td>Deflection diagrams</td>
</tr>
<tr>
<td>84</td>
<td>Top 50 elements</td>
</tr>
<tr>
<td>88</td>
<td>Struts</td>
</tr>
<tr>
<td>89</td>
<td>General</td>
</tr>
<tr>
<td>89</td>
<td>Top 50 combined with . . .</td>
</tr>
<tr>
<td>93</td>
<td>Fall-arrest systems on the structure</td>
</tr>
<tr>
<td>94</td>
<td>Doka multi-trip packaging</td>
</tr>
<tr>
<td>98</td>
<td>Cleaning and care of your equipment</td>
</tr>
<tr>
<td>101</td>
<td>Component overview</td>
</tr>
</tbody>
</table>
Introduction

Elementary safety warnings

User target groups

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

In all cases, users are obliged to ensure compliance with national laws, standards and regulations throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

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

Remarks on this booklet

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

The customer must ensure all applicable regulations are complied with, even if they are not shown or implied in the graphics, animations and videos provided.
- Individual sections contain further safety instructions and/or special warnings as applicable.

Planning

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

Regulations; industrial safety

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

▪ The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose in accordance with the applicable laws, standards and rules, under the direction and supervision of suitably skilled persons.

These persons’ mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.

▪ Doka products are technical working appliances which are intended for industrial / commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.

▪ The stability and load-bearing capacity of all components and units must be ensured during all phases of the construction work!

▪ Do not step on or apply strain to cantilevers, closures, etc. until suitable measures to ensure their stability have been correctly implemented (e.g. by tie-backs).

▪ Strict attention to and compliance with the functional instructions, safety instructions and load specifications are required. Non-compliance can cause accidents and severe injury (risk of fatality) and considerable damage to property.

▪ Sources of fire in the vicinity of the formwork are prohibited. Heaters are permissible only when used correctly and situated a correspondingly safe distance from the formwork.

▪ Customer must give due consideration to any and all effects of the weather on the equipment and regards both its use and storage (e.g. slippery surfaces, risk of slipping, effects of the wind, etc.) and implement appropriate precautionary measures to secure the equipment and surrounding areas and to protect workers.

▪ All connections must be checked at regular intervals to ensure that they are secure and in full working order.

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

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

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

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

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

Assembly

▪ The equipment/system must be inspected by the customer before use, to ensure that it is in an acceptable condition. Steps must be taken to exclude components that are damaged, deformed, or weakened due to wear, corrosion or rot (e.g. fungal decay).

▪ Using our safety and formwork systems together with those of other manufacturers can create risks that may lead to injury and damage to property. This requires separate verification.

▪ The equipment/system must be assembled and erected in accordance with the applicable laws, standards and rules by trained customer personnel whilst maintaining any applicable safety inspections that may be required.

▪ It is not permitted to modify Doka products; such modifications constitute a safety risk.

Closing the formwork

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

Pouring

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

Stripping the formwork

▪ Do not strip out the formwork until the concrete has reached sufficient strength and the person in charge has given the order for the formwork to be stripped out!

▪ When stripping out the formwork, never use the crane to break concrete cohesion. Use suitable tools such as timber wedges, special pry-bars or system features such as Framax stripping corners.

▪ When stripping out the formwork, do not endanger the stability of any part of the structure, or of any scaffolding, platforms or formwork that is still in place!
Introduction

User Information

Large-area formwork Top 50

Transporting, stacking and storing

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

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

▪ When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.

▪ Remove loose parts or secure them so that they cannot slip out of position and drop.

▪ All components must be stored safely, following all the special Doka instructions given in the relevant sections of this document!

Maintenance

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

Miscellaneous

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

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

Eurocodes at Doka

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

▪ It is essential to avoid confusing permissible values with design values!

▪ Doka documents will continue to state the permissible values.

Allowance has been made for the following partial factors:

▪ $\gamma_c = 1.5$

▪ $\gamma_M, \text{ timber} = 1.3$

▪ $\gamma_M, \text{ steel} = 1.1$

▪ $k_{mod} = 0.9$

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

Symbols used

The following symbols are used in this document:

![DANGER]

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

![WARNING]

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

![CAUTION]

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

![NOTICE]

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

![Instruction]

Indicates that actions have to be performed by the user.

![Sight-check]

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

![Tip]

Points out useful practical tips.

![Reference]

Cross-references other documents.
Services

Support in every stage of the project

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

Project assistance from start to finish

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

Efficient planning for a safe project sequence

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

Optimise construction workflows with Doka

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

Custom formwork and on-site assembly

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

Just-in-time availability

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

Rental and reconditioning service

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

High performance, in all stages of the project

Tender
Operations scheduling
Construction work
Project close-out

Engineering
▪ Execution planning
▪ Cycle planning
▪ Structure modelling/3D-planning
▪ Assembly drawings
▪ Statics calculation
▪ Concremote

Consulting and training
▪ Project processing on-site
▪ Formwork instructor
▪ Training & consulting

Process optimisation
▪ Concremote
▪ myDoka
▪ Planning software
▪ Yard management

Pre-assembly and assembly
▪ Pre-assembly service
▪ Pre-assembly on site service

Logistics
▪ Organisation of transport & freight

Rental and reconditioning service
▪ Rental service
▪ Formwork returns
▪ Reconditioning & service fixed rates

upbeat construction digital services for higher productivity

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

Doka large-area formwork Top 50 - for any shape and any load

Doka large-area formwork Top 50 is designed to be tailored to many very diverse types of task - so it gives you ideal scope for adapting the shapes and sizes of the elements to suit your structure.

The element size-grid and tie-hole pattern provide the adaptability needed to accommodate architectural demands. The large-area elements and exact joins make for a perfect joint pattern.

You can choose whichever form-face material best meets your requirements - e.g. for smooth fair-faced concrete, wood-textured surfaces, intensive re-use etc.

A range of practical accessories makes work on the site a lot easier and does away with the need for costly jobsite improvisations.

Doka will plan the most economical solution for you. Also, having your formwork pre-assembled by the Doka Pre-assembly Service saves time and space on site.

A Tie rod system (Page 15)
B Inter-panel connections (Page 17)
C Length adjustment (Page 18)
D 90 degree corners (Page 24)
E Acute and obtuse-angled corners (Page 28)
F Stop-end formwork (Page 30)
G Plumbing accessories (Page 40)
H Pouring platforms (Page 44)
I Opposing guard-rail (Page 53)
J Ladder system (Page 58)
K Resetting by crane (Page 63)
L Element assembly (Page 73)
Wall formwork

Instructions for assembly and use (Method statement)

The sequence shown here is based on a straight wall. However, you should always start from the corner outwards.

Ladders must be located so as to create viable 'traffic routes' in the horizontal. (On a straight wall, for example, one ladder on the first element and another on the last).

**Preconditions for use:**
Platforms and all accessories must only be mounted to the element when this is face-down on the ground.

It must be possible for all formwork set-up, pouring and stripping operations to be carried out from safe workplaces.

**Pre-assembly**

➤ Pre-assemble the elements face-down on a prepared flat area (see the section headed 'Element assembly').

The professionals from the Doka Pre-assembly Service plan and assemble **ready-to-use and custom formworks** exactly to your specifications.

➤ Mount the platforms to the face-down element (see the section headed 'Pouring-platforms with single brackets').

➤ Mount the ladder system to the face-down element (see the section headed 'Ladder system').

➤ Mount panel struts to the face-down element (see the section headed 'Plumbing accessories').

➤ Pick up the element by crane.

➤ Spray the formwork sheet with release agent (see the section headed 'Cleaning and care of your equipment').

➤ Fly the element to its new location.

**CAUTION**

Never use a sledge-hammer to plumb and align the elements!
This would damage the elements.

➤ Use only proper plumbing tools (e.g. a special pry-bar) that cannot cause any damage.

➤ Fix the panel struts firmly to the ground (see the section headed 'Plumbing accessories').

➤ Mount the top guardrail board.

The element is now stable and can be plumbed and aligned exactly, with no need for the crane.

**WARNING**

There is not yet an opposing guard-rail on the formwork!
Danger to life from fatal falls!

➤ Either use personal protective equipment to protect against falls (e.g. Doka personal fall-arrest set) or mount an opposing guard-rail to the gang-form while this is still being pre-assembled in a flat position.

➤ Detach the element from the crane.

➤ Continue lining up elements in this way, and link them together (see the section headed 'Inter-panel connections').
Erecting the opposing formwork:

Once the reinforcement has been placed, the formwork can be closed.
➢ Spray the formwork sheet with release agent (see the section headed 'Cleaning and care of your equipment').
➢ Lift the opposing formwork by crane to its next location.
➢ Working from the ground, insert the bottom rows of form ties (see the section headed 'Tie rod system').

WARNING
There is not yet an opposing guard-rail on the formwork!
Danger to life from fatal falls!
➢ Use personal protective equipment to protect against falls (e.g. Doka personal fall-arrest set).

Before disconnecting from the crane:
➢ If there are no panel struts on the opposing formwork, do not disconnect the element from the crane until a large enough number of form ties have been installed to keep it safely in the upright.
➢ Detach the element from the crane.
➢ Insert the remaining form ties. These form-tie locations can be reached from the platforms.
➢ Continue lining up elements in this way, and link them together (see the section headed 'Inter-panel connections').

Pouring

NOTICE
➢ Do not exceed the maximum permissible rate of placing.
➢ See also ‘Pressure of fresh concrete on vertical formwork, DIN 18218’ in the Doka Calculation Guide.
➢ Perm. fresh-concrete pressure: depends on the dimensioning of the elements - see also project plan
➢ Pour the concrete.
➢ Make only moderate use of vibrators, carefully coordinating the times and locations of vibrator use.
**Stripping the formwork**

**NOTICE**
- Comply with the stipulated stripping times.
- Remove any loose items from the formwork and platforms, or secure them firmly.

**Begin work on stripping the formwork on the opposing formwork:**
- Undo the connectors to the adjacent elements.

**WARNING**
- There must be at least as many form ties left in place as are needed to keep the element safely in the upright.

- Take out the form ties from the top rows of ties. These form-tie locations can be reached from the platforms.
- Attach the element (incl. platforms) to the crane.
- Working from the ground, take out the bottom rows of form ties.

**WARNING**
- The formwork tends to adhere to the concrete. When stripping the formwork, do not try to break concrete cohesion using the crane! Risk of crane overload.
- Use suitable tools such as timber wedges or a special pry-bar to detach the formwork from the concrete.

- Lift the element away and to its next location, or place it face-down for intermediate storage.
- Clean residual concrete off the formwork sheet (see the section headed 'Cleaning and care of your equipment').

**WARNING**
- There is not yet an opposing guard-rail on the formwork! Danger to life from fatal falls!
- Use personal protective equipment to protect against falls (e.g. Doka personal fall-arrest set).

- Where the element has panel struts attached to it, first attach this element to the crane, and only then detach the floor anchorages of the panel struts.
Top 50 element in detail

Form-facing

- No restrictions on what form-ply you choose - e.g. for smooth fair-faced concrete, wood-textured surfaces, repetitive re-use etc.
- The sheets are quick and easy to change
- Custom versions possible with profiled timber formers, open formwork and tongue-and-groove formwork

Follow the directions in the 'Formwork sheeting’ User Information booklet!

Steel walings (multipurpose walings)

- hold the Doka H 20 beams in place and give the element rigidity
- sustain the forces from the form-ties
- make the elements easy to join, using plates and connecting pins

Tie-holes

can be located anywhere along the middle of the waling between the Doka beams

Doka beam H20 top

Innovative end-reinforcement:
- reduces damage to the ends of the beams
- greatly lengthens the service life

Fastening the beams

Flange-clamp H20
- Where more frequent alterations are needed
- Can be mounted anywhere on the waling

Beam screw
- For bolting the Doka beams directly onto the waling
- Can be mounted anywhere on the waling

See the section headed 'Element assembly' for alternative ways of fixing the Doka beams.

Crane slinging

- by mounting a lifting bracket and a top plank (pressure bracing); see the section headed 'Element assembly'.
Anchorage points for personal fall arrest systems (PFAS)

**WARNING**

➤ The anchorage point must be at or above the minimum height required for the fall arrest to work.

➤ The Top 50 element must consist of at least 4 H20 beams.

➤ Make sure that the steel walings are adequately secured with flange clamps.

➤ Install the hoisting point at a distance of at least two H20 beams in from the edge of the element.

---

**Diagram:**

- A Lifting bracket
- B Connecting pin 10cm
- C Spring cotter 5mm
Flexibility

Size

Top 50 elements can be assembled in widths of up to 6 m and in heights of up to 12 m.

Pressure of fresh concrete

Depending on the concrete pressure required, the Doka beams and the walings are spaced closer together or further apart. This ensures optimum formwork design and the greatest economy of materials. For more information on structural design of Top 50 elements, see the section headed 'Structural design'.

- e.g. fresh-concrete pressure 40 kN/m²
- e.g. fresh-concrete pressure 90 kN/m²

Shape

Creating complex concrete shapes demands a high degree of formwork flexibility. On the large-area formwork Top 50, this is achieved by the use of profiled timber formers.

Surface

Any type of form-ply can be used, as required:
- Doka formwork sheets 3-SO
- Dokaplex formwork sheets
- Doka textured formwork sheets
- Xlife sheets
- Xface sheets
- Tongue-and-groove board formwork etc.

The tie-hole pattern and the element size-grid are easily adapted to suit architectural demands. The large-area elements and exact joins deliver perfect joint patterns.
User Information Large-area formwork Top 50

Tie rod system

WARNING
Sensitive rod steel!
➤ Never weld or heat tie rods.
➤ Tie rods that are damaged or have been weakened by corrosion or wear must be withdrawn from use.

NOTICE
Allow for elongation of long or coupled tie rods (see the Calculation Guide ‘Doka formwork engineering’)! For correct positioning of the form ties, see the section headed ‘Top 50 elements’ and/or the relevant project plan.
Doka also offers economical solutions for creating watertight wall-ties.

Tie-rod wrench 15.0/20.0
For turning and holding the tie rods.

Tie rod system 15.0

A Top 50 element
B Tie rod 15.0
C Super plate 15.0
D Plastic tube 22mm
E Universal cone 22mm

Note:
The Plastic tubes 22mm are left in the concrete and are sealed off with Plugs 22mm.

As an alternative to the plastic tube with universal cone, Doka also offers a distance piece designed as an all-in-one form-tie distance tube.

The plugs for sealing the ends of each distance piece are supplied with it.

Tie rod 15.0mm:
Permitted capacity, allowing a 1.6 : 1 factor of safety against failure: 120 kN
Permitted capacity to DIN 18216: 90 kN

The friction-type ratchet SW27 or Box spanner 27 0.65m can be used for low-noise releasing and tightening of the following anchoring components:
• Super plate 15.0
• Wing nut 15.0
• Star grip nut 15.0
Form-ply protection

The Form-ply protector 22mm protects the form-ply from damage at form-tie points. This is a particular advantage for formwork with high numbers of repeat uses.

Possible thicknesses of form-ply: 18 - 27 mm
In order to fit the form-ply protector, a 30 mm diameter hole must be drilled in the form-ply first.
If necessary, the form-ply protector fitted into the form-ply can be closed off with the Framax plug R20/25.

Operating the form-tie from one side

The Top50 form-tie nut 15.0 or Top100 tec form-tie nut 20.0 makes it possible to operate the form-tie from one end of the tie (e.g. where space is tight).
Suitable for U100, U120 and U140 walings with a 50 mm waling-gap.
The form-tie nut has an integrated stopper plate for the tie-rod.

Tie rod system 20.0

How to mount:
➤ Hook the form-tie nut onto the waling and clamp it on firmly with the integrated star-grip nut.
➤ Screw in the tie-rod of the opposing formwork as far as the stopper plate.
➤ Fix the form-tie with the super plate.

Note:
The Plastic tubes 26mm are left in the concrete and are sealed off with Plugs 26mm.
Inter-panel connections

The elements are linked and aligned horizontally using **Formwork element connectors FF20/50 Z** and **Connecting pins 10cm**:
- fast, dropout-proof joints between elements
- additionally, the inter-element joint can be pulled tight in 2 stages
- a hammer is the only tool needed

**Section modulus**: 21.6 cm³
**Moment of inertia**: 97.2 cm⁴

The 3 zones of the **Connecting pin 10cm**:

![Diagram showing the 3 zones of the connecting pin](image)

**A** Head: (hammer)
**B** Shank: (hold)
**C** Cone: (pull tight)

**NOTICE**
When the connecting pin is used in a horizontal position, secure it with a **Spring cotter 5mm**.

**To fit normally**

**To pull tight half the way**

**To pull tight all the way**

**Note:**
Only pull tight where there actually is a gap to close!

**Other possible types of inter-panel connection**

- Splice plate Top50 Z - with pull-tight function
- Formwork element connector FF20/50 - without pull-tight function
- Anchoring plate FF20/50 - without pull-tight function (for details of how to use on inside corners, see the section headed '90 degree corners')
- Splice plate with join adjustment - with pull-tight function (5 mm and 1.5 mm)

For more information, please contact your Doka technician.
Length adjustment using closures

Adjustable waling extensions are used for obtaining tension-proof and slippage-free links between the Top 50 elements.

**NOTICE**

When connecting short elements to the closure zone, watch out for possible collisions between the adjustable waling extensions and the formwork element connectors.

<table>
<thead>
<tr>
<th>Adjustable waling extension FF20/50 and 1.40m Top50:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section modulus: 21.6 cm³</td>
</tr>
<tr>
<td>Moment of inertia: 97.2 cm⁴</td>
</tr>
</tbody>
</table>

For closures of up to 50 cm

with Adjustable waling extension FF20/50 and formwork sheeting in the infill zone

**Up to 23 cm**

**23 - 50 cm**

---

A Doka beam H20
B Doka formwork sheet
C Nailed-on timber stud to add support to the infill
D Adjustable waling extension FF20/50
E Beam clamp Top50
F Connecting pin 10cm

---

A Adjustable waling extension FF20/50
B Where statically necessary - place a tie through the closure.
Determining the pin-fixing positions

Note:
Only the pin-fixing position on the 1st element needs to be determined.
After the 2nd element has been aligned, all the other pin-fixing positions will automatically be apparent.

Example:
- Closure needed: 264 mm

Result:
- pin-holes in waling: D and E or E and F
- pin-holes in Adjustable waling extension: 3 and 6
For closures of 50 - 64 cm

with Adjustable waling extension 1.40m Top50 and formwork sheeting in the infill zone

Beam clamp Top50

For fastening the Doka beams H20 to the Adjustable waling extensions. The beam clamp is held in place by a Connecting pin 10cm.

Determining the pin-fixing positions

Note:
Only the pin-fixing position on the 1st element needs to be determined. After the 2nd element has been aligned, all the other pin-fixing positions will automatically be apparent.
Example:
- Closure needed: 433 mm

Result:
- Pin-holes in waling: 2x 'C'
- Pin-holes in Adjustable waling extension: 2x '3'
For closures of 3 - 11 cm

with Adjustable waling extension FF20/50 and Joint plate in the infill zone

To make the formwork easier to strip: Approx. 2 hours after pouring, loosen the joint plate and pull it out a short way by crane.

A Joint plate
B Adjustable waling extension FF20/50
Height adjustment

using Height adjuster for formwork beams

The Height adjuster for formwork beams is used for vertical adjustment of upright Top 50 elements, e.g. on shafts.

Adjusting range: max. 24.5 cm

- A Height adjuster for formwork beams (incl. bolting items)
- B Doka beam
- C Stiffening board between 2 adjacent beams (site-provided)
- D Sliding plate (site-provided)

Max. load-bearing capacity: 1000 kg

Ways of operating:
- Box nut 50 3/4” and Reversible ratchet 3/4” (with lengthening-piece if needed)
- Tie rod 15.0mm or round steel bar (max. diam. 17 mm)
  There are holes in the hexagonal nut of the spindle for inserting a tie rod.

For custom applications, the footplate can also be fixed on e.g multi-purpose walings.

NOTICE

When using the height adjuster on shaft formwork, ensure that the platform decking is adequately dimensioned, as the loads act on the decking in a concentrated manner via the spindles!

Elements can be moved and relocated more easily using sliding plates.

using Height adjuster WS10-WU16

The Height adjuster WS10-WU16 is used for vertical adjustment of timber-beam formwork elements used in the horizontal.

Adjusting range: max. 24.5 cm

- A Height adjuster WS10-WU16
- B Connecting pin 10cm and Spring cotter 5mm
- C Multipurpose waling

Max. load: 3000 kg

Ways of operating:
- Box nut 50 3/4” and Reversible ratchet 3/4” (with lengthening-piece if needed)
- Tie-rod 15.0mm or round steel bar (max. diam. 17 mm)
  There are holes in the hexagonal nut of the spindle for inserting a tie-rod.

using Adjusting spindle M36

The Adjusting spindle M36 is used for vertical adjustment of horizontal Top 50 elements.

Adjusting range: max. 22 cm

- A Adjusting spindle M36 (incl. nuts & bolts etc)
- B Multi-purpose waling
- C Steel plate (site-provided), e.g. 150x100x10 mm

Max. load: 1000 kg

Ways of operating:
- Box nut 24 and Reversible ratchet 1/2”
90 degree corners

Outside corners

The elements are clamped together with the **Universal angle tie bracket** and Tie rods 15.0.

The flange reinforcement prevents the flange of the beam breaking when exposed to high oblique pull from the tie rod.

Fit 2 flange reinforcements (strips of formwork sheeting) between the flanges of the outside beam, so that the form-ply of the second corner element is supported.
Inside corners

with Corner waling 20

With the Corner waling 20, it is possible to make a genuine inside-corner element. The Doka beams give the element the necessary rigidity, and also ensure dimensional accuracy. The adjacent Top 50 elements are fastened with the normal connector components.

Note:
See the section headed 'Element assembly' for more information on how to mount the inside corner.

Tying in the Corner waling 20

Corner walings 20 manufactured from 2010 onwards can also be tied using the Eye-lug tie rod 15.0.

NOTICE
When connecting the Corner waling 20 to adjacent elements, please remember:
If the Adjustable waling extension reaches a long way into the Corner waling 20, no Formwork element connector FF20/50 Z may be used on the 2nd leg. Because of the 'pull-tight function hole-grid', this connector cannot be installed one hole-grid further along.
In this case, use an Anchoring plate FF20/50 instead.
with Internal angle plate H20 Top50

An economical way of making inside corners with a closure function. (For closures of up to 32 cm in 1 cm increments)
By nailing a form-ply to the end face of standard elements, these are turned into corner elements. The concrete pressure on the end face is transferred by means of reinforcements (e.g. Fastening plate) on the edge beam.

with Corner plate H20/H36 Top50

Same function as Internal angle plate H20 Top50, but without the closure function.

with Shaft corner waling WS10 Top50

The Shaft corner waling WS10 Top50 is a 90°-welded multi-purpose waling used for making sturdy corner elements. This special waling is custom-built on a project-specific basis.
The Shaft corner waling is often used for shaft formwork (see the section headed 'Shaft formwork').
T-junction

with Corner waling 20

The Corner waling 20 allows the form-ties to cross over in the corner zone. This avoids an excessively wide spacing between the form-ties on the opposing element.

Corner connections

NOTICE

Do a static check to determine whether shoring/tension anchoring is required to restrain the formwork (horizontal forces on short walls/large wall thicknesses).

Rounded surfaces in corner zones

using Offset plate FF20/50

The Offset plate FF20/50 makes it possible to arrange Multipurpose walings WS10 Top50 in parallel, for forming large rounded surfaces in corner zones.
**Acute & obtuse-angled corners**

For non-right-angled corners, too, the standard components of the Large-area formwork Top 50 will always provide an optimum solution.

**Outside corners**

In a similar way to the right-angled corners, on outside corners the elements are also mainly connected using **Universal angle tie brackets**.

**Inside corners**

**with Half splice plate**

Half splice plates are used for fabricating low-cost corner plates, with any angle, directly on the site. To make a corner plate in this way, two Half splice plates are needed. After the formwork has been plumbed at the prescribed angle, these two plates must be welded firmly together.

➤ The user is responsible for the integrity of the welded joint!

**with Swivel joint plate**

The Swivel joint plate is an alternative to using two Half splice plates welded onto one another.

- Angles of between 45° and 180° are possible.
- Rough adjustment is carried out in 35.7 mm increments (= 1/3 of the hole-grid of the Multipurpose wal- ing).
- Fine adjustment is carried out using the integral adjusting thread, with a max. theoretical formwork deviation of ±2.5 mm.
- Use suitable sealing tapes on any gaps which occur at joints.

**Dimensioning diagram**

![Dimensioning diagram](image-url)
Angular waling WS10 Top50

The angular waling is a welded multipurpose waling for constructing strong corner elements. The legs are rigidly fixed at any desired angle other than 90°. This special waling is custom-built on a project-specific basis.

A Angular waling WS10 Top50
B Connecting pin 10cm
C Multi-purpose waling
D Universal angle tie bracket
E Splice plate
Stop-end formwork

The Large-area formwork Top 50 is a complete formwork system. As such, it also offers practical solutions for e.g. the stop-end formwork.

⚠️ NOTICE
Do a static check to determine whether shor-ing/tension anchoring is required to restrain the formwork (horizontal forces on short walls/large wall thicknesses).

Walls up to approx. 20 cm thick

Planks are simply nailed onto the Top 50 element and a strip of formwork sheeting is inserted.

**Walls thicker than approx. 20 cm**

The **Anchoring plate FF 20/50** ensures that the loads are safely transferred into the waling system of the Top 50 elements.

- Maximum permitted load where 2 Connecting pins 10cm are used: 56 kN
- Section modulus: 21.6 cm³
- Moment of inertia: 97.2 cm⁴

The tie rods are screwed into the Anchoring plate, and the correct spacing of the stop-end element is adjusted using the Super plate 15.0.

The Anchoring plate FF20/50 can also be used as a normal element connector (no pull-tight function).

Combining a **Corner connecting plate 90/50** with an Anchoring plate makes it possible to lift the stop-end element jointly with the wall element.

Anchoring plates are used on one side, and Corner connecting plates on the other.
Window and door openings

Window and door box-outs can be formed quickly and stripped out non-destructively with **box-out clamps**. Planks are fixed in the box-out clamps by means of the integrated star grip nuts.

**Close-up A:**

- a ... clear width of opening
- l ... length of plank = a minus 12 cm
- s ... plank width = wall thickness

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>Box-out clamp</td>
<td>Top 50 element</td>
<td>Doka floor prop</td>
<td>Plank (wall thickness/2-5 cm)</td>
<td>Board (10/3 cm)</td>
<td>Double-headed nail</td>
</tr>
</tbody>
</table>

**How to mount:**

- Place the box-out clamps on the ground, fit boards into them and tighten the star grip nuts.
- Fasten the box-outs to the wall formwork with boards 10/3 cm and nails.
- Brace vertically and horizontally with suitable floor props (as statically required).
Vertical stacking of panels

The vertical-stacking methods shown here are only suitable for:
▪ lifting
▪ setting down and
▪ crane-handling the formwork.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>On account of the reduced load-bearing capacity and possible deformation, the application of load from fresh-concrete pressure or concrete weight on the vertical stacking joint is only conditionally permissible.</td>
</tr>
</tbody>
</table>

Consequently, one of the following measures has to be implemented:
▪ Whenever possible, make the cantilevers short and symmetrical at the beam joints.
▪ Provide additional waling planes.
▪ Position the vertical stacking joint at the zero point of the moments.
▪ Model the vertical stacking joint as an articulation in the statical calculation.

with Stacking plate H20

The Stacking plate H20 serves as a bolt-on longitudinal connector for Doka beams, and is used for vertical stacking of formwork panels. The plate is bolted onto the beams through the pre-drilled holes at either end of the beam.

The number of Stacking plates H20 needed will depend on the overall height of the gang-form:
▪ **Up to an overall height of 6.0m:** a Stacking plate H20 must be fastened to every 2nd beam.
▪ **Up to an overall height of 8.0 m:** a Stacking plate H20 must be fastened to every beam.
▪ **Over 8.0 m, up to a max. overall height of 14.0 m:** a Stacking plate H20 must be fastened to every beam.

Included in scope of supply:
▪ 4 hexagon bolts M20x70 (width across flats: 30 mm)
▪ 4 hexagon nuts M20
▪ 4 spring washers A20

Note: Make sure that the bolted connections are tightened firmly!

with board-plates

An in-situ solution that often works well in practice. The existing holes at the end of the beam can be used for making the bolted connections.

<table>
<thead>
<tr>
<th>Items needed for each beam join:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plank:* 115/25, l_{min} = 80.0 cm</td>
</tr>
<tr>
<td>Hexagonal bolt M20x110</td>
</tr>
<tr>
<td>Hexagon nut M20</td>
</tr>
<tr>
<td>Washer 22</td>
</tr>
</tbody>
</table>

*) It is also possible to use strips of 3-SO 21 or 27 mm formwork sheet instead of the planks.
Shaft formwork

Shaft formwork with Stripping corner I and Transition plate

With the Stripping corner I, the entire shaft formwork unit is detached from the wall, in one piece, before being lifted and reset by crane.

Product features:
- No negative impression in the concrete.
- Formwork set-up and stripping function integrated in the inside corner (no need for crane – uses stripping spindles).
- Entire shaft formwork unit is lifted and reset in one piece (with lifting-brackets and four-part lifting chain).

Two different types of stripping spindle can be used for setting up and stripping the formwork:
- Framax stripping spindle I with ratchet
- Framax stripping spindle I

The Transition plate makes it possible to use the Framax stripping corner I with Large-area formwork Top 50.

Vertical stacking of Framax stripping corners I

- Pull out the coupling bolt.
- Manoeuvre the stripping corner I into place so that it is flush with the one below it.
- Push the coupling bolt back in.
- Bolt the stripping corners I together with 2 hexagonal bolts.

Mounting the Framax stripping spindles I

These mounting instructions apply to both Stripping spindles I and Stripping spindles I with ratchet.
1) Pull out the U-bolt from the stripping spindle.
2) Place the stripping spindle on the centring stud of the stripping corner.
3) Twist the stripping spindle clockwise until fully engaged.
4) Position the ratchet or spindle nut between the holes in the push-rod.
5) Fix the stripping spindle with the U-bolt.

Operating the Framax stripping spindle I with ratchet

- Screw a Tie-rod 15.0mm into the Weldable coupler 15.0 of the ratchet.
- Setting up:
  - shift the change-over lever into the 'L' position
  - turn the ratchet clockwise
- Stripping:
  - shift the change-over lever into the 'R' position
  - turn the ratchet anti-clockwise.
Operating the Framax stripping spindle I

➤ Push a Tie-rod 15.0mm through one of the holes in the spindle nut.
➤ Setting up: Twist the spindle nut clockwise.
➤ Stripping: Twist the spindle nut anti-clockwise.

Adjustment range of Transition plate

![Diagram of Framax stripping spindle]

- A Tie-rod 15.0mm
- B Spindle nut

Possible sizes of shaft

<table>
<thead>
<tr>
<th>Length of WS10 Top50 waling [cm]</th>
<th>Width of shaft [min. [cm]]</th>
<th>Width of shaft [max. [cm]]</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>160</td>
<td>185</td>
</tr>
<tr>
<td>100</td>
<td>185</td>
<td>210</td>
</tr>
<tr>
<td>125</td>
<td>210</td>
<td>235</td>
</tr>
<tr>
<td>150</td>
<td>235</td>
<td>260</td>
</tr>
<tr>
<td>175</td>
<td>260</td>
<td>285</td>
</tr>
<tr>
<td>200</td>
<td>285</td>
<td>310</td>
</tr>
<tr>
<td>225</td>
<td>310</td>
<td>335</td>
</tr>
<tr>
<td>250</td>
<td>335</td>
<td>360</td>
</tr>
<tr>
<td>275</td>
<td>360</td>
<td>385</td>
</tr>
<tr>
<td>300</td>
<td>385</td>
<td>410</td>
</tr>
</tbody>
</table>

Connections

- C Connecting pin 10 cm with Spring cotter
- E Framax quick acting clamp RU
- F Framax screws (not included in scope of supply)

**NOTICE**

In order to obtain the full available stripping-play, make sure that the Framax quick acting clamps RU are mounted at staggered heights (i.e. not opposite one another).

Max. spacing c [cm] between 2 transition plates (form-ply not supported by Framax moulded timber or squared timber)

<table>
<thead>
<tr>
<th>Formwork sheet</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-ply sheet 21mm</td>
<td>15</td>
<td>10</td>
<td>10</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3-ply sheet 27mm</td>
<td>25</td>
<td>20</td>
<td>15</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Multi-ply sheet 18mm</td>
<td>40</td>
<td>30</td>
<td>25</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Multi-ply sheet 21mm</td>
<td>50</td>
<td>40</td>
<td>35</td>
<td>30</td>
<td>25</td>
</tr>
</tbody>
</table>

Number of quick acting clamps RU needed where form-ply is supported by Framax moulded timber or square timber

<table>
<thead>
<tr>
<th>Spacing c [cm]</th>
<th>Number of quick acting clamps RU</th>
</tr>
</thead>
<tbody>
<tr>
<td>max. 30</td>
<td>1</td>
</tr>
<tr>
<td>max. 60</td>
<td>2</td>
</tr>
<tr>
<td>max. 90</td>
<td>3</td>
</tr>
</tbody>
</table>

Supporting the plywood face

![Diagram of plywood support]

- A Transition plate
- B Framax quick acting clamp RU
- C Framax moulded timber or squared timber
Shaft formwork closed ready for pour

Shaft formwork stripped ready for lifting

Form-tie zones:

\[ x \ldots 16.5 - 22.0 \text{ cm} \]

\[ \text{NOTICE} \]

- Only tie through the waling.
- It is not permitted to tie through the Transition plate.
- The outside and inside formwork must be dimensioned in line with the structural-design requirements for the Large-area formwork Top 50 and a permitted waling load of 90 kN/m!

Stripping play:

\[ a \ldots 3.0 \text{ cm} \]
\[ b \ldots 6.0 \text{ cm} \]
Shaft formwork with Corner spindle, Shaft waling squaring plate and Inside corner plate

For inside formwork in narrow cross-sections (e.g. lift shafts, stairwells etc.), the
- Corner spindle,
- Shaft waling squaring plate and
- Inside corner plate
can be used to enable rapid striking of the formwork and lifting of the complete shaft formwork, in one piece.

Permitted weight of the shaft formwork:
4000 kg with 4 lifting-brackets
Reason: 15° oblique pull in both directions

The elements of the inside formwork incorporate:
- Shaft corner walings or
- Multipurpose walings with Corner walings 20
Opening the formwork

➤ Loosen the form-ties on one half of the formwork.
➤ Remove the form-ties from the other half of the formwork.
➤ Remove all 4 connecting pins from the Shaft waling squaring plates.
➤ Loosen the Corner spindles and Inside corner plates.
➤ Pull out the Inside corner plates by crane.
➤ Use the Corner spindles to pull the Inside formwork approx. 2 - 3 cm together.
➤ Remove the remaining form-ties.
➤ Use the Corner spindles to pull the Inside formwork approx. 2 - 3 cm further together.
➤ Lift and reposition the entire inside formwork.

Lifting by crane

Use suitably long lifting-chains or 3 two-part lifting chains in order to avoid oblique pull (depending on the size of the shaft).

If there is too much oblique pull, a stiffening reinforcement will be needed.
For further information, see the section headed 'Resetting by crane'.

Doka shaft platform

With its telescopic shaft beams, this platform can accommodate any dimension of structure. The inside formwork can be 'parked' on the platform and repositioned together with the platform.

Follow the directions in the 'Shaft platform' User Information booklet.

To make the formwork easier to strip: Approx. 2 hours after pouring, loosen the Inside corner plate and pull it out a short way by crane.
Circular formwork

Curved structures can be formed with Half splice plates or Swivel joint plates. For more detailed information on these plates, see the section headed 'Acute and obtuse-angled corners. Profiled timber formers are placed between the Doka beams and the form-ply to provide the desired shape.

Minimum bending radii of Doka formwork sheets:

<table>
<thead>
<tr>
<th>Formwork sheet</th>
<th>Grain direction of face layer</th>
<th>Min. radius [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dokaplex 9mm</td>
<td>Transverse</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Longitudinal</td>
<td>3.5</td>
</tr>
<tr>
<td>Dokaplex 18mm</td>
<td>Transverse</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Longitudinal</td>
<td>7.0</td>
</tr>
<tr>
<td>Dokaplex 21mm</td>
<td>Transverse</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Longitudinal</td>
<td>8.0</td>
</tr>
<tr>
<td>Doka 3-SO 21mm</td>
<td>Transverse</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Longitudinal</td>
<td>8.0</td>
</tr>
<tr>
<td>Doka 3-SO 27mm</td>
<td>Transverse</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Longitudinal</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Smaller radii can be achieved by cutting into the formwork sheets or by using strips of formwork sheeting.

with Half splice plate

Example - formwork for a circular tank

with Swivel joint plate

A  Swivel joint plate
B  Connecting pin 10cm
C  Profiled timber former
D  Doka beam
E  Multi-purpose waling
F  Weld here after the formwork has been plumbed and aligned
Plumbing accessories

Plumbing accessories brace the formwork against wind loads and make it easier to plumb and align.

**WARNING**
Risk of the formwork tipping over!

- Formwork elements must be held stable in every phase of construction work!
- Observe all applicable safety regulations!
- If high wind speeds are likely, and when work finishes for the day or before prolonged work-breaks, always take extra precautions to fix the formwork in place.

**Suitable precautions:**
- set up the opposing formwork
- place the formwork against a wall
- anchor the formwork to the ground

**Permitted spacings [m] of the plumbing accessories:**

<table>
<thead>
<tr>
<th>Formwork height [m]</th>
<th>Panel strut 340</th>
<th>Panel strut 540</th>
<th>Eurex 60 550</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.00</td>
<td></td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>6.00</td>
<td></td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>7.00</td>
<td>4.00</td>
<td></td>
<td>4.00</td>
</tr>
<tr>
<td>8.00</td>
<td>3.00</td>
<td></td>
<td>4.00</td>
</tr>
</tbody>
</table>

The values apply where the wind pressure \( w_w = 0.65 \text{ kN/m}^2 \). This results in an impact pressure \( q_p = 0.5 \text{ kN/m}^2 \) (102 km/h) where \( c_{p, \text{ref}} = 1.3 \). The greater wind loads encountered at exposed formwork-ends must be restrained by additional plumbing accessories (e.g. struts or pipe-braces). In cases where higher wind pressure is encountered, the number of struts must be determined by statical calculation!

**Note:**
Every gang-form must be supported by at least 2 plumbing accessories.

Example: Where the formwork height is 7.00 m, the following are needed for every 8.00 m wide gang-form:

- 2 panel struts 340
- 2 Eurex 60 550

**Universal dismantling tool**
The easy way to turn the spindle nuts.

**Possible ways of connecting to the multipurpose waling**

<table>
<thead>
<tr>
<th>Horizontal waling</th>
<th>Vertical waling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>Option 2</td>
</tr>
</tbody>
</table>

**Fixing to the ground**

- Anchor the plumbing accessories in such a way as to resist tensile and compressive forces!

**Drilled holes in footplate**

<table>
<thead>
<tr>
<th>Panel struts</th>
<th>Eurex 60 550</th>
</tr>
</thead>
<tbody>
<tr>
<td>a ... diam. 26 mm</td>
<td></td>
</tr>
<tr>
<td>b ... diam. 18 mm (suitable for Doka express anchors)</td>
<td></td>
</tr>
<tr>
<td>c ... diam. 28 mm</td>
<td></td>
</tr>
<tr>
<td>d ... diam. 18 mm (suitable for Doka express anchors)</td>
<td></td>
</tr>
</tbody>
</table>

For more information, see the Calculation Guide 'Wind loads to the Eurocodes', or consult your Doka technician!
Anchoring the footplate

The Doka express anchor can be re-used many times over.

Characteristic cube compressive strength of the concrete ($f_{ck,cube}$):
min. 15 N/mm² (C12/15 grade concrete)

Follow the Fitting Instructions!

Required safe working load of alternative anchors for footplates:
$R_d \geq 20.3$ kN ($F_{permissible} \geq 13.5$ kN)
Follow the manufacturers' applicable fitting instructions.

Panel struts

Product features:
- can be extended in 8 cm increments
- Fine adjustment by screw-thread
- All parts are captive, including the telescopic tube which has a safety stop to prevent dropout

Panel strut 340
- Panel strut 340 IB
- Panel strut 540 IB
- Prop head EB

Panel strut 540
- Panel strut 340 IB
- Panel strut 540 IB
- Prop head EB
Eurex 60 550 used as a shoring & plumbing accessory

As the Doka plumbing strut Eurex 60 550 - fitted with the appropriate accessories - this prop can also be used for shoring high wall formwork.

- Can be connected directly – without modification – to Doka framed formwork and Doka timber-beam formwork
- The 'Adjusting strut 540 Eurex 60 IB' makes handling much easier, especially when the formwork is being transferred.
- Can be telescoped in 10 cm increments, with continuous fine adjustment.

Follow the directions in the 'Eurex 60 550' User Information booklet!

Example of a possible combination of Type 4

A good rule of thumb here is:
The length of the shoring & plumbing accessory (i.e. the complete Eurex 60 550 plumbing-strut assembly) = the height of the element to be shored.

<table>
<thead>
<tr>
<th>Type</th>
<th>Extension length L [m]</th>
<th>Plumbing strut Eurex 60 550 (A)</th>
<th>Extension Eurex 60 2.00m (B)</th>
<th>Coupler Eurex 60 (C)</th>
<th>Connector Eurex 60 IB (D)</th>
<th>Plumbing strut shoe Eurex 60 EB (E)</th>
<th>Adjusting strut 540 Eurex 60 IB (F)</th>
<th>Prop head EB (G)</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.79 - 5.89</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>91.1</td>
</tr>
<tr>
<td>2</td>
<td>5.79 - 7.89</td>
<td>1 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>112.4</td>
</tr>
<tr>
<td>3</td>
<td>7.79 - 9.89</td>
<td>1 2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>133.7</td>
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<td>4</td>
<td>7.22 - 11.42</td>
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<td>—</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>142.5</td>
</tr>
<tr>
<td>5</td>
<td>9.22 - 13.42</td>
<td>2 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>163.8</td>
</tr>
</tbody>
</table>
Pouring platforms with single brackets

Doka brackets can be used to make pouring platforms that can easily be assembled by hand. They can be attached to any point on the Doka beam. This also makes it possible to erect intermediate platforms.

Universal brackets

<table>
<thead>
<tr>
<th>Width b</th>
<th>Height h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal bracket 90</td>
<td>87</td>
</tr>
<tr>
<td>Universal bracket 60</td>
<td>57</td>
</tr>
</tbody>
</table>

Permitted service load: 1.5 kN/m² (150 kg/m²)
Load Class 2 to EN 12811-1:2003
Max. influence width: 2.00 m

Precondition for use

Observe all applicable safety regulations.

Only fit pouring platforms to formwork structures of adequate stability ensuring that the expected loads can be taken.

Ensure that the formwork gang is sufficiently rigid.

Brace the formwork in a windproof manner when erecting it or when it is temporarily placed in the standing position.

NOTICE

The brackets must be secured against accidental lift-out.

Note:
The plank and board thicknesses stated comply with the EN 338 C24 timber.
Observe all national regulations applying to deck and guardrail boards.
Universal bracket 90

Board thicknesses for spans of up to 2.50 m:
- Deck-boards min. 20x5 cm
- Railing planking min. 15/3 cm

**Deck-boards and guard-rail boards:** Per 1 metre length of platform, 0.9 m² of deck-boards and 0.8 m² of guard-rail boards are needed (site-provided).

**Fastening the deck-boards:** with 5 square bolts M10x70 and 1 square bolt M10x180 per bracket (included with product).

**Fastening the guard-rail boards:** with 4 nails per bracket (not included with product).

**Using scaffold tubes**

![Diagram of Universal bracket 90]

Tools: Fork spanner 22 for mounting the couplers and scaffold tubes.

A Screw-on coupler 48mm 95
B Scaffold tube 48.3mm

Universal bracket 60

Board thicknesses for centre-to-centre spans up to 2.50 m:
- Deck-boards min. 20/5 cm
- Guard-rail boards min. 15/3 cm

**Deck-boards and guard-rail boards:** Per 1 metre length of platform, 0.6 m² of deck-boards and 0.6 m² of guard-rail boards are needed (site-provided).

**Fastening the deck-boards:** with 3 square bolts M10x120 per bracket (not included with product).

**Fastening the guard-rail boards:** with nails

**Using scaffold tubes**

![Diagram of Universal bracket 60]

Tools: Fork wrench 22 for mounting the couplers and scaffold tubes.

A Scaffold tube connection
B Scaffold tube 48.3mm
C Screw-on coupler 48mm 50
D Hexagon bolt M14x40 + hexagon nut M14
   (not included with product)
**Possible ways of fixing**

**WARNING**
Risk of accidental lift-out if the Universal bracket is fixed to a multipurpose waling!

➤ Fix the bottom strut of every bracket with 28x60 nails or a hexagon screw M10x140 and hexagon nut M10, on both sides of the strut.

**CAUTION**
➤ In the case of H20 N and P Doka beams where the first drilled hole is 5 cm from the end of the beam, it is not allowed to fix the bracket in the top hole in the beam!

**Sideguards on exposed platform-ends**

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

**Edge protection system XP**

![Diagram of edge protection system XP]

**Installation:**
➤ Fasten Railing clamps XP onto the decking of the pouring platform, by tightening the wedge (clamping range 2 to 43 cm).
➤ Working from below, push a Toeboard holder XP 1.20m onto the Handrail post XP 1.20m.
➤ Push the Handrail post XP 1.20m into the post-holding fixture on the Railing clamps XP until the locking mechanism engages.
➤ Fix guardrail boards to the Handrail-post plates with nails (diam. 5 mm).

Animation: [https://player.vimeo.com/video/276197020](https://player.vimeo.com/video/276197020)

**Handrail clamp S**

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

can be quickly readied for use, and make concreting both easy and safe.

Xsafe plus platform

These pre-assembled, fold-out working platforms with their integral side railings, self-closing man-hole lids and integrable ladders are ready for immediate use and greatly improve workplace safety.

Follow the directions in the 'Platform system Xsafe plus' User Information booklet!

Preconditions for using the Xsafe plus platform with the Xsafe plus lifting adapter:

- max. one platform level
- max. element height when assembled face-down on the ground, with a gang-form width of 2.50 m: 6.00 m

Mounting the lifting adapter onto the platform:

➤ Use a Connecting pin 10cm and Spring cotter 5mm to mount the lifting adapter to the platform.

Permitted service load: 1.5 kN/m² (150 kg/m²)
Load Class 2 to EN 12811-1:2003

Preconditions for use:

Only fix the pouring platform onto formwork constructions that are sufficiently stable to transfer the expected loads.

Shore the formwork in a windproof manner when erecting it and when it is temporarily placed in the standing position.

Ensure that the formwork gang has sufficient stiffness.

Observe all applicable safety regulations.
Lifting the platform onto the formwork:
➤ Lift the lifting bracket by hand to easily attach the Doka 4-part chain.
➤ Attach a four-part lifting chain (e.g. Doka 4-part chain 3.20m) to the platform and hoist it towards the formwork.
➤ Fix the platform in the top waling.
➤ Detach the four-part lifting chain. The safety hooks latch into place automatically.

Lifting the platform off the formwork:
➤ Attach a four-part lifting chain to the platform and raise it. When the platform is raised by the four-part lifting chain on the safety hook, the platform is automatically unlocked.
➤ Do a sight check to make sure that the safety hooks have been unlocked!

The platform is now secured against accidental lift-out.
Extending the platform to either side

The platform can be lengthened at either end by using the Xsafe plus platform extension 0.60m.

⚠️ CAUTION ⚠️
Platforms with platform extensions can tip up. Falling hazard!
- Do not step onto the platform extension until the safety hooks have been fixed in place.
- Fix the safety hooks of both Lifting adapters in place with the Connecting pins 10cm and the Spring cotters 5mm.

Moving the formwork and the platform in one piece

The formwork and the Xsafe plus platform can be moved / lifted in one piece.

⚠️ NOTICE ⚠️
If the formwork is lifted with the pouring platform still mounted to it, the platform must be secured so that it cannot slip to either side.

Repositioning:

Represents the repositioning process with diagrams.

D Lifting bracket

Lifting / laying down:

Represents the lifting or laying down process with diagrams.

⚠️ CAUTION ⚠️
It is not permitted to lift or lay down formwork units with heights of >6.00 m!
- In these cases, remove the platform before lifting / laying down the formwork.
**Framax pouring platform U**

**1.25/2.70m**

**NOTICE**

- It is not permissible to lay the formwork down flat together with the pouring platform!
- Planks can be used to bridge decking-to-decking gaps up to 50 cm for length adaptation. Minimum plank overlap 25 cm.

A pre-assembled, foldable, ready-to-use platform, 1.25 m wide, for convenient and safe working.

**Preparing the pouring platform:**

- Tilt up the guard rails and lock them in position.
- Put both side stops into position.
- Close the decking with the tilt-back board.

**Mounting the adapter:**

- Using a four-part lifting tackle, slightly raise the pouring platform.
- Remove the screw from the platform connector of the adapter.
- Push the telescopic tube of the adapter into the bottom tubular opening on the Pouring platform U.
- Replace and tighten the screw on the platform connector of the adapter.
- An extra plank can be mounted where necessary (leave recesses for the adapters).
- When you have mounted the adapters on the Pouring platform U, lay it back on the ground.

**Permitted service load: 1.5 kN/m² (150 kg/m²)**

Load Class 2 to EN 12811-1:2003

Other possible areas of use for the Framax pouring platform U:

- Doka framed formwork Framax Xlife and Alu-Framax Xlife
- Wall formwork FF20 (with FF20 adapter for Framax pouring platform U)

- The guard rail can be locked in either of two positions:
  - vertical
  - tilted by 15°

- With the aid of the Top50 adapter for Framax pouring platform U, the Framax pouring platform U can be fixed in the waling of the Top 50 elements (2 adapters per pouring platform).
Lifting the platform onto the formwork:
➤ Attach a four-part lifting tackle to the hoisting points of the adapters at the front, and to the lifting brackets of the platform railings at the rear.

➤ Raise the safety catches of the adapters and latch them into the rear position.
➤ Move the supporting profiles into the horizontal and slot the Pouring platform U onto the adapters on the multi-purpose walings.

➤ Secure the platform against accidental lift-out:
Raise the safety catches and latch them into the front position (the claw grips behind the multi-purpose waling).

Check that the safety catches (A) are in the right position!

➤ Detach the four-part lifting chain.

Lifting the platform off the formwork:
➤ Attach a four-part lifting tackle to the hoisting points of the adapters at the front, and to the lifting brackets of the platform railings at the rear.
➤ Release the safety catch by hand.
➤ Lift the pouring platform out of the way.

WARNING
➤ The anchorage point must be at or above the minimum height required for the fall arrest to work.

➤ Loop a suitable strap round the vertical profile of the pouring platform and attach the personal fall-arrest system to this strap.

Anchorage points for personal fall arrest systems (PFAS)

Anchorage points for personal fall arrest systems (PFAS)

Transporting, stacking and storing

Stack of 10 Framax pouring platforms U
Single collapsed platform

A Vertical profile of the pouring platform
B Strap

A Safety plate
B Supporting profile

c ... 10 x 18.7 cm
d ... 31 cm
e ... approx. 218 cm
f ... 142 cm
g ... 50 cm

a ... 268 cm
b ... 295 cm
c ... 10 x 18.7 cm
d ... 31 cm
e ... approx. 218 cm
f ... 142 cm
g ... 50 cm

A Safety plate
B Supporting profile

9732-358-05
9732-358-03
9732-569-01
9727-398-01
9727-393-01
9727-396-01
9727-390-01
**Sideguards on exposed platform-ends**

On pouring 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 stated comply with the EN 338 C24 timber. Observe all national regulations applying to deck and guardrail boards.

**Side handrail clamping unit T**

Assembly:
- Use the wedge (clamping range 4 to 6 cm) to fasten the clamping part to the decking of the pouring platform.
- Slot in the guardrail planks.
- Extend the telescopic railing to the desired length and secure it.
- Insert footguard (guardrail plank).

Animation: [https://player.vimeo.com/video/274887351](https://player.vimeo.com/video/274887351)
Opposing guard-rail

If there are work platforms mounted on one side of the formwork only, then a fall-protection barrier must be mounted to the opposing formwork.

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

### Edge protection system XP

If necessary (e.g. to enlarge the available work-space during pouring), the safety barrier can be tilted outward by 15°.

➤ Push up the safety bolt on the Adapters XP until the spring snaps into place (allow for overlap between protective gratings and/or guardrail boards).

D Safety bolt

The safety bolt now automatically drops and secures the tilted barrier unit.

Do a sight-check to make sure that the safety bolt is in the correct position!

**Types of safety barrier:**

<table>
<thead>
<tr>
<th>A</th>
<th>Handrail post XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Timber-beam formwork adapter XP</td>
</tr>
<tr>
<td>C</td>
<td>Protective grating XP or guardrail boards</td>
</tr>
</tbody>
</table>

** NOTICE**

- When Protective gratings XP 0.60m are used to make the safety barrier, note the necessary minimum distance of 100 cm from platform decking to top of railing!
- When guardrail boards are used to make the safety barrier, it is not permissible to install guardrail boards in the top handrail-post plates.
Assembly

The opposing guard-rail can be mounted to both upright and face-down (ground-assembled) gang-forms.

➤ Mount the Timber-beam formwork adapter XP to the Top 50 element, fixing it on firmly with the wedge.

➤ Push the Handrail post XP into the post-holding fixture on the Timber-beam formwork adapter XP until the locking mechanism engages.

➤ Fit on a Protective grating XP or guardrail boards.

➤ Use Velcro® fasteners 30x380mm to secure the Protective gratings XP to the Handrail posts XP, or use nails (diam. 5 mm) to secure guardrail boards.

Lifting by crane

When lifting gang-forms together with opposing guardrails assembled from the Edge protection system XP, remember the following points:

▪ The guard rails must be in the vertical position when the gang-form is raised or laid down.

▪ Elastic deformation of the guard rails may occur because the 4-part chain is resting against the protective grating or guardrail boards while the gang-form is being lifted.

▪ When a gang-form is lifted, repositioned or laid down, the 4-part chain must not be led around the protective grating or the guardrail board.

Make sure that the 4-part chain is in the right position:

▪ Placing down onto the form-ply side

▪ Picking up from this position

▪ Placing down onto the back-face of the formwork (e.g. for cleaning the form-facing)

▪ Picking up from the cleaning position

▪ Repositioning the upright gang-form
Structural design

Note:
The wind conditions likely to be encountered in Europe, in accordance with EN 13374, are largely recognised by the dynamic pressure q=0.6 kN/m² (highlighted in the tables).

Permitted support centres (a)

<table>
<thead>
<tr>
<th>Dynamic pressure q [kN/m²]</th>
<th>0.2</th>
<th>0.6</th>
<th>1.1</th>
<th>1.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective grating XP</td>
<td>2.5 m</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guard-rail board 2.4 x 15 cm</td>
<td>1.9 m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guard-rail board 3 x 15 cm</td>
<td>2.7 m</td>
<td>2.4 m</td>
<td>2.0 m</td>
<td></td>
</tr>
<tr>
<td>Guard-rail board 4 x 15 cm</td>
<td>3.3 m</td>
<td>2.4 m</td>
<td>2.0 m</td>
<td></td>
</tr>
</tbody>
</table>

Permitted cantilever (b)

<table>
<thead>
<tr>
<th>Dynamic pressure q [kN/m²]</th>
<th>0.2</th>
<th>0.6</th>
<th>1.1</th>
<th>1.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective grating XP</td>
<td>0.6 m</td>
<td>0.4 m</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Guard-rail board 2.4 x 15 cm</td>
<td>0.5 m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guard-rail board 3 x 15 cm</td>
<td>0.8 m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guard-rail board 4 x 15 cm</td>
<td>1.4 m</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Wall formwork at the edge of the structure

The Wall-formwork support angle is a support for positioning wall formwork at the edge of the structure if there is no suitable load-bearing base (e.g. platform).

![Diagram of Wall-formwork support angle]

**Characteristic cube compressive strength of the concrete (f_{\text{ck,cube}}):**
min. 15 N/mm² (C12/15 grade concrete)

**NOTICE**
- Static verification is required!
- Make sure that the bottom plank is securely and solidly fixed to the formwork element!
- Installation of the support angle and tying of the elements are jobs undertaken by crew members working from the leading façade scaffolding!

**Note:**
A Bridge edge beam anchor 15.0 has to be set into the concrete when the preceding section is poured so that the support angle can be secured to it.

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

**Installation:**
- Remove the nailing cone from the bridge edge beam anchor.
- Secure the support angle to the bridge edge beam anchor with a Screw-in cone 15.0 (but do not yet tighten).
- Use the star grip nut for adjusting to the necessary level (b).
- Tighten the Screw-in cone 15.0.

**Max. load-bearing capacity:**
2000 kg / Wall-formwork support angle
Position the holding formwork.  
Lower the opposing formwork on to the support angle by crane.  
Use a wedge to tighten the bottom plank of the opposing formwork against the wall/slab.

Check that the support angle is correctly seated flat against the wall.

Fit the anchors.

Before disconnecting from the crane:

- Do not disconnect the element from the crane until a large enough number of form ties have been installed to keep it safely in the upright.

- Detach the gang-form from the crane.
Ladder system

The Ladder system XS permits safe vertical access to and from the intermediate platforms and pouring platforms:

▪ when attaching/detaching the formwork to/from the crane tackle
▪ when opening/closing the formwork
▪ when placing the reinforcement
▪ during pouring

Note:
The Ladder system XS must be implemented in such a way that all national regulations are complied with.

WARNING
➤ The Ladders XS may only be used as part of the XS system, and must NOT be used separately (as ‘lean-to’ ladders).

Assembly

Preparing the formwork

➤ Pre-assemble elements face-down on an assembly bench (see 'Inter-panel connections').
➤ Only mount the platforms and panel struts to the element when this is in the flat position (see 'Pouring platforms' and 'Plumbing accessories').

Attaching connectors to the formwork

NOTICE
➤ The Ladder system XS is normally mounted inside an element (i.e. not to either side of it).
➤ If this is not possible (e.g. because of a supporting construction frame), then a beam grille (consisting of min. 4 Doka beams) can be attached on one side of the element to make this possible. This also makes it possible to change quickly to another position.

Fastening variant 1:

Fastening variant 2:

A Connector XS wall formwork
B Super plate 15.0
C Tie rod 15.0 (length = 0.40 m)
D Locking rod 15.0 330mm
E Anchor plate 12/12 or 15/20
➤ Place the Connector XS wall formwork onto the multi-purpose waling near the top of the formwork and place a squared timber under it (pressure point). Nail the squared timber to the Doka beams.
➤ Secure the Connector XS Wall formwork.

➤ Place the Connector XS wall formwork onto the multi-purpose waling near the bottom of the formwork (no need for a squared timber).

**Note:**
For formwork heights above 5.85 m, an extra Connector XS wall formwork is required approximately midway up the formwork. This extra connector prevents the ladder swaying when site crew climb up or down it.

**Fixing the ladder**

**to the top Connector XS Wall formwork**
➤ Pull out the push-in bolt, and pivot the two safety hooks out of the way.
➤ Place the System ladder XS 4.40m onto the Connector XS, with the hooking brackets facing downwards.
➤ Close the safety hooks.
➤ Insert the push-in bolt into whichever rung of the ladder is suitable for the height of the formwork, and secure it with a linch pin.

**to the bottom Connector XS Wall formwork**
➤ Pull out the push-in bolt, pivot both safety hooks out of the way, and place the ladder onto the Connector XS.
➤ Close the safety hooks, re-insert the push-in bolt and secure it with a linch pin.

- in the front position (a)
  A Push-in bolt
  B Safety hooks
  C System ladder XS 4.40m

- in the front position (a) for one single ladder
  B Safety hooks
  C Ladder XS

- in the rear position (b) in the telescoping zone (for 2 ladders)
  B Safety hooks
Mount the Securing barrier XS to the ladder, with fixing hooks and wing-nuts.

The components needed for mounting the Securing barrier XS are captively attached to it.

Ladder system XS for heights above 3.75 m

Telescoping ladder extension (for adjusting to ground level)

To telescope the ladders past one another, lift the safety latch on the ladder and fix the Ladder extension XS 2.30m onto the desired rung of the other ladder.

Close-up

A telescoping join between two Ladder extensions XS 2.30m can be made in the same way.

Permanently fixed ladder extension

Insert the Ladder extension XS 2.30m into the uprights of the System ladder XS 4.40m, with its hooking brackets facing downwards, and fasten it. Tighten the screws only very slightly!

Screws (C) are included in the scope of supply of the System ladder XS 4.40m and the Ladder extension XS 2.30m.

NOTICE

Always observe all relevant safety regulations applying to the use of the Ladder cage XS in the country in which you are operating (e.g. in Germany: BGV D 36).

Attach the Ladder cage exit XS (the bottom of the cage must always be at the same height as the platform). The safety latches prevent the cage from being accidentally lifted out.
Attach further ladder cages, in each case to the next available rung.

Exit onto an intermediate platform

Basic rule:
- The number of Connectors XS wall formwork and ladder components is shown in the 'Items needed' table.
- For each additional exit, one Ladder cage exit XS and one Securing barrier XS are required.
- Any over-large openings above the intermediate exit must be reduced with a Ladder cage XS 0.25m.

Mounting the Ladder cage XS 0.25m
- Hook the ladder cage into an empty rung and secure it against accidental lift-out.

Items needed

<table>
<thead>
<tr>
<th>Connectors + ladder</th>
<th>Formwork height</th>
<th>Formwork height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.70-3.25 m</td>
<td>&gt;3.25-6.00 m</td>
</tr>
<tr>
<td>Connector XS wall formwork</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>System ladder XS 4.40m</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ladder extension XS 2.30m</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Tie-rod 15.0 galvanised (length: 0.40 m)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Super plate 15.0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Squared timber 10x10 cm</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ladder cage</th>
<th>Formwork height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.70-3.15 m</td>
</tr>
<tr>
<td>Ladder cage exit XS 1)</td>
<td>1</td>
</tr>
<tr>
<td>Securing barrier XS 1)</td>
<td>1</td>
</tr>
<tr>
<td>Ladder cage XS 1.00m 1)</td>
<td>0</td>
</tr>
</tbody>
</table>

1) No allowance made here for intermediate exits.
Combining different formwork systems

Top 50 and FF20 timber-beam formwork can be combined with the following formwork systems:
- Framed formwork Framax Xlife
- Framed formwork Alu-Framax Xlife
- Circular formwork H20

The Transition plate 18mm, 21mm or 27mm is needed for this.

Example of combination with Framax Xlife framed formwork

Example of combination with Circular formwork H20

Can be combined with Doka wall formwork FF20:
If the spacing of the walings is suitably adjusted, Top 50 elements can be combined with FF20 ready-assembled elements. This enables users to supplement the available formwork with existing FF100 tec equipment at short notice.
Lifting by crane with lifting-brackets and pressure bracing

The crane cables for lifting the elements are fastened to the lifting brackets. These are bolted onto the webs of the Doka beams.

If necessary, the Lifting brackets can also be connected to the holes in the multi-purpose walings (e.g. where elements are being used with vertical walings).

Max. load-bearing capacity:
- 1300 kg per lifting bracket for waling centre-to-centre spacing x less than 0.75 m
- 1000 kg per lifting bracket for waling centre-to-centre spacing x 0.75 to 1.00 m

CAUTION
\>
- It is strictly prohibited to lift the formwork without pressure bracing.

NOTICE
- Spread angle $\beta$ of slinging chains: max. 30°.
- Brace the formwork in a windproof manner when erecting it or when it is temporarily placed in the standing position.
Enhanced requirements for fair-faced concrete

Examples of enhanced requirements:
- Architectural requirements
- Special requirements regarding planeness of the concrete surface

For more information on the topic of fair-faced concrete, please refer to the 'Practical Information' brochure entitled 'Forming fair-faced concrete'.

Formwork sheets screwed on from rear

Advantages:
- High-grade concrete surfaces can be formed, without any screw imprints.
- Less finishing-work needs to be done on the concrete surfaces.
- The surfaces of the formwork sheets can easily be cleaned.

There are two possible ways of fixing the formwork sheets to the Doka beams:
- **Open formwork**
  - gives the elements high rigidity
  - flange-clamps can be retrofitted
  - for long construction periods
- **H20 screw-on brackets for formwork sheets**
  - no swelling
  - rentable
  - for short construction periods

A Open formwork
B Beam grille
C Formwork sheet
H20 screw-on bracket for formwork sheets

The H20 screw-on bracket for formwork sheets makes it possible to fix formwork sheets to Doka beams from the backside.

Advantages:
- Can be used with various different thicknesses of formwork sheet, from 18 to 27 mm.
- Can be dismounted quickly, leaving no damage.

NOTICE
- On 18 mm thick sheets, the brackets can only be used together with an extra 3 mm thick packing strip (otherwise the screws might protrude on the other side of the sheet).
- While being screwed onto the H20 screw-on brackets for formwork sheets, the formwork sheet must be secured against being lifted off the beams.

Approx. five H20 screw-on brackets for formwork sheets per m² are needed for attaching the formwork sheeting.

Practical example

Bolts required per H20 screw-on bracket for formwork sheets:

<table>
<thead>
<tr>
<th>Type of formwork sheet</th>
<th>Framax screw 6.7x20.6 (on formwork sheet)</th>
<th>Universal countersunk-head screw Torx TG 5x50 (on formwork beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-ply formwork sheet (Dokaplex or equivalent)</td>
<td>2 (in the middle of the sheet)</td>
<td>2</td>
</tr>
<tr>
<td>3-ply sheet (3-SO or equivalent)</td>
<td>4 (At joints between sheets)</td>
<td>2</td>
</tr>
</tbody>
</table>

Attachment of multi-ply formwork sheet:

<table>
<thead>
<tr>
<th>In the middle of the sheet</th>
<th>At joints between sheets</th>
</tr>
</thead>
</table>

Permitted pull-out force per Framax screw 6.7x20.6

<table>
<thead>
<tr>
<th>Type of formwork sheet</th>
<th>Screw-in depth</th>
<th>Permitted pull-out force 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-ply formwork sheet (e.g. Dokaplex 18 or 21mm)</td>
<td>15 mm</td>
<td>0.5 kN</td>
</tr>
<tr>
<td>3-ply sheet (e.g. 3-SO 21 or 27mm)</td>
<td>18 mm</td>
<td>0.2 kN</td>
</tr>
</tbody>
</table>

1) Values obtained when sheet was in moisture-penetrated state
Other possible areas of use

Column formwork Top 50

The proven Doka beams, multipurpose walings and Doka formwork sheets are also used for column formwork.

- Cross-sections continuously adjustable up to 120 x 120 cm
- No form-ties through the column
- Clean, smooth concrete surfaces
- Easy assembly and handling

Follow the directions in the 'Column formwork Top 50' User Information booklet.
Top 50 as a superstructure and tunnel formwork

The modular system of the Doka large-area formwork Top 50 opens up a huge range of uses - from straight-forward wall formwork all the way up to tunnel formwork travellers and bridge superstructure formwork.

The Doka large-area formwork is adapted using the following additional components:

▪ Universal support Top50 – This is a special support plate for joining the multi-purpose walings together. It is custom-made on a project-specific basis.

▪ Together with the multi-purpose walings, Universal struts Top50 and spindle struts are used to make trussed bearing elements for bridges or large-area travelling formworks.

For more information, see the section headed 'Struts'.

▪ Universal spindle foot T8 for transferring vertical forces of up to 80 kN.

▪ The T-ledge 21/42 2.00m is a plastic ledge for covering up stripping cracks.

Adjusting plate T

The Adjusting plate T enables stepless height and angle adjustments of Top50 elements, for example for bridge superstructures.

![Diagram of Adjusting plate T](image)

**NOTICE**

Make sure that the connection plate on the multi-purpose waling does not collide with the Adjusting plate T!

Multi-purpose waling WS10 and WU12 in detail

![Diagram of Multi-purpose waling](image)

α ... max. 23°

<table>
<thead>
<tr>
<th>A</th>
<th>Adjusting plate T</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Connecting pin 10cm + Spring cotter 5mm</td>
</tr>
<tr>
<td>C</td>
<td>Multi-purpose waling WS10 and WU12</td>
</tr>
<tr>
<td>E</td>
<td>Connection plate of multi-purpose waling</td>
</tr>
<tr>
<td>G</td>
<td>Spindle, width-across 24 (max. adjusting range 107 mm)</td>
</tr>
</tbody>
</table>

\[ F_{\text{permissible}} = 37 \text{ kN} \]

Tools needed for operating the spindle:

▪ Reversible ratchet 1/2”
▪ Box nut 24 1/2”
**Other possible areas of use**

**Bridge superstructure formwork**

- A Multi-purpose waling
- B Doka beam
- C Spindle strut
- D Bracing
- E Handrail post 1.50m / Handrail post T 1.80m
- F Profiled timber formers

---

- A Multi-purpose waling WS10 Top50
- B Doka beam
- C Spindle strut
- D Bracing
- E Handrail post 1.50m / Handrail post T 1.80m
- F Universal support Top50
- G Doka load-bearing tower Staxo
Tunnel formwork

A Screw-on access bracket
B Doka beam
C I-beam
D Spindle strut
E Lowering wedge
F Armour-plated roller

A Multi-purpose waling
B Doka beam
C Spindle strut
D Bracing
E e.g. Tunnel system DokaCC
F Lowering wedge
Platforms assembled from system components with Universal suspension head

Easy to use and versatile. With the Universal suspension head and the Doka system components, platforms can be perfectly adapted to widely differing project requirements. The area of application of the Universal suspension head extends from applications in simple storage and working platforms, pouring platforms and bridge edge beam brackets for vertical walls to customer applications for inclined structures or narrow shafts.

Practical example:

Follow the directions in the 'Platforms assembled from system components' User Information booklet.
Possible ways of connecting to the multipurpose waling

Connected to a spindle or strut along a continuous hole-grid.

Connected to a Universal spindle foot T8

Bolted together at right-angles via the rear-located flange holes

Connected to bracing tubes by screw-on couplers

a ... 113±2 mm
Where the walings are bolted together one across the other, using 4 bolts, we recommend using hexagonal bolts M12x45 and n° 13 limpet washers. If hexagonal bolts M16x45 are needed, we recommend planning to assemble the element on an assembly bench.

A Multi-purpose waling WS10 Top50
B Strut
C Hexagonal bolt M16x45 with hexagon nut and washer (not included with product)
A Multi-purpose waling WS10 Top50
B Strut
C Adapter (special component - project-specific)
D Hexagonal bolt M16x45 with hexagon nut and washer
Utilising self-compacting concrete

Advantages:
- Concrete is placed from below
- No vibrating needed
- Walls can be poured up against existing floor-slabs
- Little or no soiling of the formwork
- Only a small number of pouring platforms are needed

Filler neck GF SCC

The Filler neck GF SCC enables Top 50 formworks to be filled with self-compacting concrete. The concrete is pumped in and forced upward.
- Possible thickness of form-ply: 2 - 6 cm
- Required centre-to-centre distance of the adjacent beam-pair: 26.6 cm
- Can be fitted between any pair of adjacent beams

Panel closure tool D125 SCC

The Panel closure tool D125 SCC is mounted on the end of the pump hose.
Functions:
- To connect the pump hose to the Filler neck GF SCC
- To shut off the pump hose

Note:
For more information, please contact your Doka technician.
Element assembly

To optimise the concrete finish and to ensure that the Doka large-area formwork Top 50 functions at its best, the elements must be assembled correctly and precisely.

Doka beams and walings are quickly assembled into finished elements, using simple connecting devices - either on-site or by the Doka Pre-assembly Service.

Assembly bench with stop bars

There must be a flat assembly bench within reach of the crane, for assembling the formwork elements on.

➤ Attach the end stop-bar for the Doka beams.
➤ Nail on the stop-bars for the multipurpose walings (as per the prescribed spacing of the walings).
➤ Attach the end stop-bar for multipurpose walings.

Placing the walings

➤ Use pins to fix Assembly angles Top50 into the multipurpose walings (the multipurpose walings with connection plates facing upwards).
The assembly angles are used to ensure exact alignment of the Doka beams, and as stop-bars for the formwork sheets.

➤ Clean the assembly bench.
➤ Place the multipurpose walings, complete with the mounted assembly angles, onto the assembly bench.

Drilling extra holes in Doka beams

➤ Prepare the required number of Doka beams with such extra holes as are needed. Extra holes must be drilled for lifting-brackets, Universal brackets, Top scaffold brackets and stacking-plates.

We recommend a carbide-tipped bit for drilling through the Doka beam H 20 P.

Removing the detachable spacer batten makes it possible to mount e.g. a bottom plank without having to move the element first.

Use nails to prevent the walings sliding off.
### Mounting the lifting-brackets

**WARNING**
- Doka beams which have lifting brackets mounted to them must be attached to the multi-purpose walings by means of threaded joints or flange clamps. Simply nailing them only to the connection plate is not sufficient.

➤ Bolt the lifting bracket into 4 drilled holes.
Tools needed: Reversible ratchet 1/2", Box nut 24, Fork spanner 24

<table>
<thead>
<tr>
<th>Distance of outermost hole from edge of beam</th>
<th>9 cm</th>
<th>5 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>a ... 20.0 cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b ... 22.4 cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c ... 11.2 cm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTICE**
Be careful to ensure that the Lifting brackets are mounted in the correct position!

### Extra protection for the bottom ends of Doka beams H20 eco

➤ Fasten on a Protective cap H20 with nails 3.4x50. Instead of protective caps, a bottom plank can be fitted (see the section headed ‘Mounting a bottom plank’).

![A Protective cap H20]

### Placing and attaching the Doka beams

➤ Fasten on the Doka beams at the desired centres.

### Various ways of fastening the Doka beams

<table>
<thead>
<tr>
<th>Tools needed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Reversible ratchet 1/2&quot;</td>
</tr>
<tr>
<td>- Box nut 19 1/2&quot; L</td>
</tr>
<tr>
<td>- Extension 22 cm</td>
</tr>
<tr>
<td>Push the Flange clamps H20 onto the Doka beams.</td>
</tr>
<tr>
<td>Before tightening them to the steel waling, make sure that they are centrally positioned.</td>
</tr>
<tr>
<td>Gently tighten on one side. Tap the stirrup with a hammer to ensure that the clamp is sitting correctly.</td>
</tr>
</tbody>
</table>

**Flange-clamp H20**

– for fastening the Doka beam H20 anywhere on the multi-purpose waling.

**NOTICE**
When using the Flange clamp H20, make sure that a space of at least 5 cm is left between the form tie and the Doka beam.
➤ Tighten the clamp on the other side and tap the stirrup with the hammer.
➤ Tighten the first side of the clamp completely.

**Flange-clamp G**

For fastening the Doka beam anywhere on the waling. Can also be used on steel girders such as I-girders etc.

**Note:**
First push the flange-clamps onto the Doka beam, and only then place the Doka beam onto the waling.

**Tools needed:**
- Reversible ratchet 1/2"
- Box nut 19 1/2" L

**Clamping ranges [cm]**

<table>
<thead>
<tr>
<th>b</th>
<th>0</th>
<th>0.5</th>
<th>1.0</th>
<th>1.5</th>
<th>2.0</th>
<th>2.5</th>
<th>3.0</th>
<th>3.5</th>
<th>4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>a_{min}</td>
<td>15.8</td>
<td>15.5</td>
<td>15.0</td>
<td>14.5</td>
<td>14.0</td>
<td>13.5</td>
<td>13.0</td>
<td>12.5</td>
<td>12.0</td>
</tr>
<tr>
<td>a_{max}</td>
<td>23.8</td>
<td>23.5</td>
<td>23.0</td>
<td>22.5</td>
<td>22.0</td>
<td>21.5</td>
<td>21.0</td>
<td>20.5</td>
<td>20.0</td>
</tr>
</tbody>
</table>

**Fastening plate**

For formwork elements intended for high numbers of repeat uses, or for providing stiffening reinforcement and for transferring longitudinal forces. Can only be screwed onto the ends of the waling (in the case of walings of 1.00 m and above), to the left or right of the connection plate, in the flanges.

**Tools needed:**
- Drill bit, diam. 17 mm
- Reversible ratchet 1/2"
- Box nut 24 1/2" L
- Fork spanner 24
Double-headed nails 80mm

**WARNING**

➤ Doka beams which have lifting-brackets mounted to them must be attached to the multipurpose walings by means of threaded joints or flange-clamps. Simply nailing them only to the Connection plate is not sufficient.

The connection plates serve as stop-bars for the edge beams and can also be used for fixing the beams in place.

Fasten the Doka beam to the connection plate with 4 double-headed nails.

---

Waling clamp 2G

For clamping the Doka beam at any point along the multipurpose waling, independently of the waling’s hole-grid. Subsequent installation of beam and waling also possible.

**Tools needed:**
- Reversible ratchet 1/2”
- Box nut 19 1/2”
- Extension 22 cm

---

Beam screw S8/70

- for screwing Doka beams H20 anywhere onto the Multi-purpose waling.

**Tools needed:**
- Drill bit, diam. 10 mm
- Fork spanner 13/17

---

Beam screws H8/70

- for screwing any type of Doka beam to any point on the waling. The hammerhead is for slotting into the oblong holes in the waling.

---

Positioning rail with hole gauge Top50

This speeds up the work of assembling the elements where beam-screws are being used between the Doka beams and the walings. The hole-gauge plates can be steplessly adjusted in line with the required spacing between the beam-screws.
Mounting a bottom plank

As an alternative to the Protective cap H20, a bottom plank can also be fitted to the bottom ends of the Doka beams.

➤ Remove the detachable spacer batten from the assembly bench.
➤ Fasten the bottom plank to each beam-flange using a 3.1x90 nail.

Mounting the top plank (pressure bracing)

➤ Fasten the top plank (pressure bracing) to each beam-flange using a 3.1x90 nail.

Fixing the formwork sheets

➤ Place the formwork sheets up against the assembly angles and nail them onto each Doka beam. Make sure that the grain of the face layer runs at right angles to the supports (i.e. to the Doka beams).

CAUTION
➤ There must always be a pressure bracing between the Lifting brackets.
➤ The gap between the two Lifting brackets must be firmly braced, without any play, to prevent any oblique pull being applied to the Doka beams.
This means that the recesses must be profiled very precisely into the web of the beam.

➤ If the lifting-bracket is mounted on the 2nd beam from the outside, the top plank must be supported where it has been recessed.
➤ Nail a supporting board onto the formwork beam.

The Strip tensioner B 6.00m presses the joints between the sheets tightly together prior to fixing.
Drilling the form-tie holes

➤ Drill as specified in the formwork plan.
   - Form-tie system 15.0: Ø 20 mm
     (can be sealed with Universal plug R20/25)
   - Form-tie system 20.0: Ø 24 mm
➤ Seal cut edges, and around holes, with edge varnish.

Mounting profiled timber formers

Up to a max. nailing thickness (a) of 5.0 cm, the profiled timber formers can be nailed directly onto the beam. Where the profiled timber formers are thicker than this, they are nailed from the side through blocks screwed onto the beams. These ‘beam-blocks’ also prevent the profiled timber formers from tipping over on their sides. The blocks are cut to size from used Doka beams.

Mounting the inside corner with the Corner waling 20

Doka beams, squared timbers and web boards are screwed together and onto the Corner waling 20 to make a dimensionally stable corner element.

| A | Corner waling 20 |
| B | Doka beam |
| C | Squared timber |
| D | 2 timber-former sheets 3-S 31mm or 3 Doka formwork sheets 3-SO 21mm or 3 Dokaplex formwork sheets 21mm |
| E | Doka formwork sheet |
| F | Countersunk chipboard screw 6x60, partial thread (every 100 mm) |
| G | Square bolt M10x90 |

Angle connector 9x5cm and Rafter plates right / left

Can be used for various timber joints such as Doka beams that cross over one another, or joints between Doka beams and squared timbers or profiled timber formers.
Doka Pre-assembly Service

Ready-to-use formworks - for even the most unusual assignments

Whatever it is you need to construct from concrete, the Doka Pre-assembly Service can put together the right formwork for you - quickly, and in guaranteed Doka quality.

No matter whether you are looking for a special concrete finish or a custom solution for a tunnel or bridge. The professionals from the Doka Pre-assembly Service plan and make ready-to-use standard and custom formworks exactly to your specifications.

By delivering 'just-in-time', straight to your site, we save space on your site and reduce the amount of planning and assembly work that you have to do.

We'll be pleased to inform you about all that the Doka Pre-assembly Service can do for you. Your local/regional Doka branch would also be happy to draw up a tender for your next project.
Structural design

Deflection diagrams

If the moisture content is higher than shown in the diagrams below, the modulus of elasticity diminishes significantly (i.e. deformation increases), and this is accompanied by a reduction in strength. This, in consequence, means a reduction in the ability to bear loads.

Doka formwork sheets 3-SO Doka
textured formwork sheets 3-SO

NOTICE
The grain of the face layer (A) must run at right angles to the supports (B).

Doka beam H20

M ... permitted bending moment
Q ... permitted shear force
p ... actual load (service load)
**Dokaplex formwork sheets**

**Note:**
The grain of the face layer can be arranged in any direction relative to the supports.

**18 mm**

<table>
<thead>
<tr>
<th>Deflection [mm]</th>
<th>Span L [cm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>20</td>
</tr>
<tr>
<td>1.0</td>
<td>30</td>
</tr>
<tr>
<td>1.5</td>
<td>40</td>
</tr>
<tr>
<td>2.0</td>
<td>50</td>
</tr>
<tr>
<td>2.5</td>
<td>60</td>
</tr>
</tbody>
</table>

Flexural stiffness $EI = 3.1 \text{ kNm}^2/\text{m}$ (15% timber moisture content)

- $M$ ... permitted bending moment
- $Q$ ... permitted shear force

**18 mm - detailed view**

<table>
<thead>
<tr>
<th>Deflection [mm]</th>
<th>Span L [cm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>1.0</td>
<td>12</td>
</tr>
<tr>
<td>1.5</td>
<td>14</td>
</tr>
<tr>
<td>2.0</td>
<td>16</td>
</tr>
<tr>
<td>2.5</td>
<td>18</td>
</tr>
</tbody>
</table>

Flexural stiffness $EI = 3.1 \text{ kNm}^2/\text{m}$ (15% timber moisture content)

- $M$ ... permitted bending moment
- $Q$ ... permitted shear force

**21 mm**

<table>
<thead>
<tr>
<th>Deflection [mm]</th>
<th>Span L [cm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>20</td>
</tr>
<tr>
<td>1.0</td>
<td>30</td>
</tr>
<tr>
<td>1.5</td>
<td>40</td>
</tr>
<tr>
<td>2.0</td>
<td>50</td>
</tr>
<tr>
<td>2.5</td>
<td>60</td>
</tr>
</tbody>
</table>

Flexural stiffness $EI = 4.7 \text{ kNm}^2/\text{m}$ (15% timber moisture content)

- $M$ ... permitted bending moment
- $Q$ ... permitted shear force

**21 mm - detailed view**

<table>
<thead>
<tr>
<th>Deflection [mm]</th>
<th>Span L [cm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>1.0</td>
<td>12</td>
</tr>
<tr>
<td>1.5</td>
<td>14</td>
</tr>
<tr>
<td>2.0</td>
<td>16</td>
</tr>
<tr>
<td>2.5</td>
<td>18</td>
</tr>
</tbody>
</table>

Flexural stiffness $EI = 4.7 \text{ kNm}^2/\text{m}$ (15% timber moisture content)

- $M$ ... permitted bending moment
- $Q$ ... permitted shear force

The Dokaplex formwork sheet 9mm is only used for facing profiled timber formers, e.g. as a simple way of forming curved surfaces.
DokaPly Birch

Note:
The grain of the face layer can be arranged in any direction relative to the supports.

18 mm

Flexural stiffness $EI = 3.0 \text{kNm}^2/\text{m}$ (15% timber moisture content)

M ... permitted bending moment
Q ... permitted shear force

21 mm

Flexural stiffness $EI = 4.9 \text{kNm}^2/\text{m}$ (15% timber moisture content)

M ... permitted bending moment
Q ... permitted shear force
NOTICE

The deflection characteristics of the Xlife sheet in the longitudinal are different from those in the transverse direction. The only way to tell which is the longitudinal and which is the transverse direction is by the direction of the lettering on the formwork sheets.

For the purpose of the following diagrams, then, be sure to know which way round the Xlife sheets are placed in relation to the supports (e.g. Doka beams).

Large Doka logos of the sheet lettering at right angles to the beam axis (Xlife sheet longside horizontal)

Large Doka logos of the sheet lettering parallel to the beam axis (Xlife sheet longside vertical)

A Support
B Sheet lettering (large Doka logos)

M ... permitted bending moment
### Top 50 elements

#### Doka beam H20

**Formwork height 1.90 m**

<table>
<thead>
<tr>
<th>Perm. fresh-concrete pressure $\sigma_{hk,\text{max}}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>71</td>
<td>63</td>
<td>62</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0.4</td>
<td>0.4</td>
<td>0.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>27</td>
<td>33</td>
<td>35</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Formwork height 2.50 m**

<table>
<thead>
<tr>
<th>Perm. fresh-concrete pressure $\sigma_{hk,\text{max}}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>63</td>
<td>48</td>
<td>42</td>
<td>41</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.7</td>
<td>0.7</td>
<td>0.6</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>30</td>
<td>31</td>
<td>31</td>
<td>31</td>
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<td>-</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>34</td>
<td>45</td>
<td>54</td>
<td>59</td>
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</table>

**Formwork height 3.00 m**

<table>
<thead>
<tr>
<th>Perm. fresh-concrete pressure $\sigma_{hk,\text{max}}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
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</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>47</td>
<td>35</td>
<td>29</td>
<td>26</td>
<td>26</td>
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</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>1.5</td>
<td>1.6</td>
<td>1.5</td>
<td>1.3</td>
<td>1.2</td>
<td>-</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>35</td>
<td>38</td>
<td>40</td>
<td>39</td>
<td>39</td>
<td>-</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>37</td>
<td>50</td>
<td>60</td>
<td>69</td>
<td>73</td>
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### Formwork height 3.40 m

<table>
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<tr>
<th>Perm. fresh-concrete pressure $\sigma_{h,k,max}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>54</td>
<td>44</td>
<td>36</td>
<td>31</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Waling load $C_k$ [kN/m]</td>
<td>15</td>
<td>14.4</td>
<td>13.8</td>
<td>13.7</td>
<td>13.9</td>
<td>13.9</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>39</td>
<td>49</td>
<td>55</td>
<td>56</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>31</td>
<td>41</td>
<td>52</td>
<td>62</td>
<td>71</td>
<td>75</td>
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</tbody>
</table>

### Formwork height 3.70 m

<table>
<thead>
<tr>
<th>Perm. fresh-concrete pressure $\sigma_{h,k,max}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
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<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>52</td>
<td>39</td>
<td>33</td>
<td>28</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.3</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Waling load $C_k$ [kN/m]</td>
<td>30</td>
<td>32</td>
<td>31</td>
<td>31</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>41</td>
<td>55</td>
<td>66</td>
<td>74</td>
<td>77</td>
<td>74</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>31</td>
<td>41</td>
<td>52</td>
<td>63</td>
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### Formwork height 4.00 m

<table>
<thead>
<tr>
<th>Perm. fresh-concrete pressure $\sigma_{h,k,max}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
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</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>55</td>
<td>44</td>
<td>35</td>
<td>29</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Waling load $D_k$ [kN/m]</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Waling load $C_k$ [kN/m]</td>
<td>39</td>
<td>47</td>
<td>53</td>
<td>54</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>37</td>
<td>49</td>
<td>62</td>
<td>74</td>
<td>84</td>
<td>90</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>31</td>
<td>41</td>
<td>51</td>
<td>62</td>
<td>72</td>
<td>83</td>
</tr>
</tbody>
</table>

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**User Information**

- Large-area formwork Top 50
- Structural design
### Formwork height 5.00 m

<table>
<thead>
<tr>
<th>Perm. fresh-concrete pressure $\sigma_{hk,max}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
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<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>60</td>
<td>44</td>
<td>35</td>
<td>29</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0.8</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Waling load $D_k$ [kN/m]</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Waling load $C_k$ [kN/m]</td>
<td>36</td>
<td>48</td>
<td>57</td>
<td>62</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>37</td>
<td>49</td>
<td>62</td>
<td>77</td>
<td>87</td>
<td>96</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>31</td>
<td>41</td>
<td>52</td>
<td>62</td>
<td>72</td>
<td>83</td>
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</table>

### Formwork height 6.00 m

<table>
<thead>
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<th>Perm. fresh-concrete pressure $\sigma_{hk,max}$ [kN/m²]</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam centres [cm]</td>
<td>44</td>
<td>33</td>
<td>27</td>
<td>22</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>Max. span deflection [mm]</td>
<td>0.7</td>
<td>0.7</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Max. cantilever deflection [mm]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Waling load $D_k$ [kN/m]</td>
<td>32</td>
<td>34</td>
<td>35</td>
<td>35</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>Waling load $C_k$ [kN/m]</td>
<td>48</td>
<td>65</td>
<td>79</td>
<td>89</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>Waling load $B_k$ [kN/m]</td>
<td>48</td>
<td>64</td>
<td>80</td>
<td>97</td>
<td>114</td>
<td>129</td>
</tr>
<tr>
<td>Waling load $A_k$ [kN/m]</td>
<td>34</td>
<td>45</td>
<td>56</td>
<td>67</td>
<td>78</td>
<td>90</td>
</tr>
</tbody>
</table>
## Multi-purpose waling WS10 Top50

<table>
<thead>
<tr>
<th>Length [m]</th>
<th>Spacing of form-ties on standard elements</th>
<th>Max. perm. waling load [kN/m]</th>
<th>Characteristic anchor force [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75*</td>
<td>20, 35, 20</td>
<td>577</td>
<td>216</td>
</tr>
<tr>
<td>1.00*</td>
<td>25, 50, 25</td>
<td>369</td>
<td>185</td>
</tr>
<tr>
<td>1.25</td>
<td>25, 75, 25</td>
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<td>184</td>
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<tr>
<td>1.50</td>
<td>30, 90, 30</td>
<td>205</td>
<td>154</td>
</tr>
<tr>
<td>1.75</td>
<td>30, 115, 30</td>
<td>96</td>
<td>84</td>
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<td>2.00</td>
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<td>84</td>
<td>84</td>
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<tr>
<td>2.25</td>
<td>55, 115, 55</td>
<td>76</td>
<td>86</td>
</tr>
<tr>
<td>2.50</td>
<td>55, 140, 55</td>
<td>76</td>
<td>95</td>
</tr>
<tr>
<td>2.75</td>
<td>55, 82.5, 82.5, 55</td>
<td>76</td>
<td>86</td>
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<tr>
<td>3.00</td>
<td>55, 95, 95, 55</td>
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<td>87</td>
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<tr>
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<td>90</td>
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<td>87</td>
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<td>4.50</td>
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<td>102</td>
</tr>
</tbody>
</table>

*) Normally only used as a compensating element, with one central form-tie
Struts

Fixed struts

Min. angle $\alpha$ between strut and waling = 30°

A Strut
B Bracing

Universal strut T5/5 .....mm

<table>
<thead>
<tr>
<th>Length of strut [m]</th>
<th>Permitted load [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>1.5</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>2.5</td>
<td>50</td>
</tr>
</tbody>
</table>

A With no bracing on the strut
   Ensure that the parallel frame sections are adequately braced!
B With bracing on the strut
C With bracing on the strut + 2% longitudinal bridge slope
D With bracing on the strut + 4% longitudinal bridge slope

Spindle struts

Min. angle $\alpha$ between strut and waling = 30°

A Spindle strut
B Bracing

Spindle strut T6 100/150cm
Spindle strut T7 150/200cm
Spindle strut T7 200/250cm
Spindle strut T7 250/300cm
Spindle strut T7 305/355cm
Spindle strut T10 350/400cm
Spindle strut T10 .....mm (specify min. length of strut)

<table>
<thead>
<tr>
<th>Length of strut [m]</th>
<th>Permitted load [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>1.5</td>
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</tr>
<tr>
<td>2</td>
<td>30</td>
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<tr>
<td>2.5</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>3.5</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>70</td>
</tr>
</tbody>
</table>

A Spindle strut T6 73/110cm
B Spindle strut GS T5 65/101cm
C Spindle strut GS T6 95/140cm
D Spindle strut GS T7 109/166cm
General

Top 50 combined with . . .

Doka folding platforms

The high capacity of these working and safety scaffolds means that the formwork can safely be stood on the folding platforms.

Adding a few standard parts converts a working platform into a climbing formwork unit which can be shifted as a complete form and access-platform in one single operation.

This makes work at great heights faster and more efficient.

Doka climbing formwork MF240

Climbing formwork MF240 proves its versatility on all tall structures. The formwork and climbing scaffold are linked together as a single unit which can be repositioned in one single crane cycle.

A Top 50 element
B Folding platform K, A or B
C Panel strut
D Universal bracket

Follow the directions in the 'Folding platform K and 'Climbing formwork K' User Information booklets!

Follow the directions in the 'Climbing formwork MF240' User Information booklet!
**Doka automatic climbing formwork**

With their modular design concept, these crane-independent automatic climbing formwork systems provide an efficient solution for every type of structure.

**Doka dam formwork**

Doka dam formwork is used for building mass concrete structures that have to be constructed in several casting sections, such as dams, barrages and navigation locks etc. The pressure of the fresh concrete is transferred into the previous casting section by the climbing scaffold, meaning that no form-ties are needed.

---

**Diagram labels**

- **A** Top 50 element
- **B** Automatic climber SKE50
- **C** Climbing bracket MF240
- **D** Suspended platform SKE/MF 425
- **E** Travelling unit MF
- **F** Screw-on access bracket MF75
Doka supporting construction frames

The Doka supporting construct. frame Universal F or Doka supporting construct. frame "Variable" also enable the sturdy elements to be used as single-sided wall formwork.

A Top 50 element
B Supporting construct. frame Universal F 4.50m
C Attachable frame F 1.50m
D Bracing
E Tension anchoring

Follow the directions in the 'Supporting construction frame "Variable"' and/or 'Supporting construction frame "Universal"' User Information booklets!
Platform system Xsafe plus

These pre-assembled, fold-out working platforms with their integral side railings, self-closing manhole lids and integrable ladders are ready for immediate use and greatly improve workplace safety.

Easy to use

- pre-assembled, fold-out working platforms
- time and cost-savings as so little assembly work is needed

Safe working

- high safety, as side and end guards are integrated in the platform
- integrable ladder system

An economical solution

- its perfect stackability cuts storage and freight costs
- simplified planning, from using a single platform con-

Follow the directions in the ‘Platform system Xsafe plus’ User Information booklet!
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

Handrail clamp S

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

Handrail clamp T

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

Handrail post 1.10m

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

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

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

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

Follow the directions in the 'Handrail post 1.10m' User Information!
Doka multi-trip packaging

Utilise the benefits of Doka multi-trip packaging on your site.

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

Doka skeleton transport box
1.70x0.80m

Storage and transport device for small items

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

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

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

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

Lifting by crane

NOTICE

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

Repositioning by forklift truck or pallet stacking truck

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

<table>
<thead>
<tr>
<th>Max. n° of units on top of one another</th>
<th>Outdoors (on the site)</th>
<th>Indoors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor gradients up to 3%</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Floor gradients up to 1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is not allowed to stack empty pallets on top of one another!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTICE

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

Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m

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

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

Using Doka multi-trip transport boxes as storage units

Max. n° of units on top of one another

<table>
<thead>
<tr>
<th>Outdoors (on the site)</th>
<th>Indoors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor gradients up to 3%</td>
<td>Floor gradients up to 1%</td>
</tr>
<tr>
<td>Doka multi-trip transport box</td>
<td>Doka multi-trip transport box</td>
</tr>
<tr>
<td>1.20x0.80m</td>
<td>1.20x0.80x0.41m</td>
</tr>
<tr>
<td>1.20x0.80m</td>
<td>1.20x0.80x0.41m</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
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</tbody>
</table>

It is not allowed to stack empty pallets on top of one another!

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

Using Doka multi-trip transport boxes as transport devices

Lifting by crane

NOTICE

- Multi-trip packaging items must be lifted individually.
- Use a suitable crane lifting tackle (e.g. Doka 4-part chain 3.20m). Do not exceed the permitted load-bearing capacity.
- Spread angle $\beta$ 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 devices for long items.

---

**Using Doka stacking pallets as transport devices**

**Lifting by crane**

**NOTICE**
- Multi-trip packaging items may only be lifted one at a time.
- Use a suitable crane suspension tackle (e.g. Doka 4-part chain 3.20m).
  Do not exceed the permitted load-bearing capacity.
- Load the items centrically.
- Fasten the load to the stacking pallet so that it cannot slide or tip out.
- Spread angle $\beta$ max. 30°!

---

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

<table>
<thead>
<tr>
<th>Outdoors (on the site)</th>
<th>Indoors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor gradients up to 3%</td>
<td>Floor gradients up to 1%</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

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.

---

**Repositioning by forklift truck or pallet stacking truck**

**NOTICE**
- 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 device for small items

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

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

Doka accessory boxes as storage units

<table>
<thead>
<tr>
<th>Max. n° of units on top of one another</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoors (on the site)</td>
</tr>
<tr>
<td>Floor gradients up to 3%</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>Indoors</td>
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<tr>
<td>Floor gradients up to 1%</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>It is not allowed to stack empty pallets on top of one another!</td>
</tr>
</tbody>
</table>

NOTICE

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 the stacking pallet into a fast and manoeuvrable transport device.
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

Follow the directions in the 'Bolt-on castor set B' Operating Instructions!
Cleaning and care of your equipment

Release agents

Doka-Trenn or Doka-OptiX is applied using the Doka release-agent sprayer.

Follow the directions in the 'Doka release-agent sprayer' Operating Instructions and on the containers of release agent.

NOTICE

- Before every pour:
  - Apply release agent to the formwork sheet and the end faces extremely thinly, evenly and in a continuous layer.
  - Make sure there are no drips of release-agent running down the formwork sheet.
  - Applying too much release agent will spoil the concrete finish.

To determine the right dosage and to make sure that you are using the agent correctly, test it on less important parts of the structure first.

Cleaning

NOTICE

- Immediately after pouring:
  - Remove any blobs of concrete from the back-face of the formwork, using water (without any added sand).
  - Immediately after stripping out the formwork:
    - Clean the formwork with a high-pressure washer and a concrete scraper.
  - Do not use any chemical cleaning agents!

Cleaning high formwork:

Provide a service tower at a suitable cleaning location.

- Wheel-around scaffold DF (up to a formwork height of 3.90 m)
- Working scaffold Modul (up to a formwork height of 6.70 m)
- Load-bearing tower Staxo 40 (for formwork of over 6.70 m in height)
Cleaning equipment

High-pressure spray cleaner

**NOTICE**
- Appliance pressure rating: 200 to max. 300 bar
- Keep the water-jet the correct distance from the formwork, and move it at the right speed:
  - The higher the pressure, the further away from the formwork you must keep the jet and the faster you must move it across the surface.
- Do not aim the jet at one place for too long.

Concrete scraper

For removing any concrete remnants, we recommend using a **Double scraper Xlife** and a spatula.

**Functional description:**

A Blade for dealing with heavy soiling
B Blade for dealing with slight soiling

**NOTICE**
Do not use pointed or sharp objects, wire brushes, abrasive disks or cup brushes.
## Component overview

<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Multi-purpose waling WS10 Top50 0.50m</th>
<th>10.2</th>
<th>580010000</th>
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</thead>
<tbody>
<tr>
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| Article N° | [kg] | Multi-purpose waling WS10 Top50 0.625m | 24.0 | 580275000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 0.75m | 26.5 | 580276000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 1.00m | 35.0 | 580277000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 1.25m | 44.5 | 580278000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 1.50m | 53.0 | 580279000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 1.75m | 67.0 | 580280000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 2.00m | 72.1 | 580281000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 2.25m | 86.0 | 580282000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 2.50m | 99.9 | 580283000 |
| Article N° | [kg] | Multi-purpose waling WS10 Top50 3.00m | 107.0 | 580288000 |

| Article N° | [kg] | Corner waling 20 | 23.5 | 580031000 |

| Article N° | [kg] | Shaft corner waling WS10 Top50 0.50m | 20.5 | 580069000 |

| Article N° | [kg] | Waling clamp H20 | 0.22 | 580114000 |
| Article N° | [kg] | Waling clamp 2G | 0.45 | 580118000 |

| Article N° | [kg] | Beam screw S 8/70 | 0.06 | 580116500 |
| Article N° | [kg] | Beam screw H 8/70 | 0.06 | 580117000 |

| Article N° | [kg] | Fastening plate | 2.7 | 580110000 |

<p>| Article N° | [kg] | Protective cap H20 | 0.36 | 587248000 |</p>
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<tr>
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<th>Description</th>
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<tr>
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<tr>
<td>Adjustable waling extension FF20/50</td>
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<td>Splice plate with join adjustment</td>
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<td>Offset plate FF20</td>
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<tr>
<td>Internal angle plate H20 Top50</td>
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<td>Corner plate H20/H36 Top50</td>
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<td>Shaft waling squaring plate</td>
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<td></td>
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<td>Leg length: 80 cm</td>
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<tr>
<td>Transition plate 18mm</td>
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<td>Transition plate 21mm</td>
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<td>Transition plate 27mm</td>
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<td>Height: 51 cm</td>
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<tr>
<td>Waling connector SL-1 WU16 0.75m</td>
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<tr>
<td>Corner spindle</td>
<td>Corner connecting plate 90/50</td>
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<tr>
<td>Eckspindel</td>
<td>Winkellasche 90/50</td>
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<td>17.5</td>
<td>13.8</td>
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<td>580264000</td>
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<tr>
<td>Galvanised</td>
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<tr>
<td>Length: 65 cm</td>
<td>Length: 51 cm</td>
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<tr>
<td>Height: 31 cm</td>
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| Universal angle tie bracket | Angle tie bracket 20.0 SL-1 WU16 |
| Universal-Winkelspanner | Winkelspanner 20.0 SL-1 WU16 |
| 4.4 | 8.1 |
| 580604000 | 587543000 |
| Painted blue | Painted blue |
| Length: 20 cm | Length: 24 cm |

| Swivel joint plate | Connecting pin 10cm |
| Drengelenklasche | Verbindungsbolzen 10cm |
| 20.0 | 0.34 |
| 587542000 | 580201000 |
| Galvanised | Galvanised |
| Length: 155 cm | Length: 14 cm |

| Connecting pin 25cm | Spring cotter 5mm |
| Verbindungsbolzen 25cm | Federvorstecker 5mm |
| 0.58 | 0.03 |
| 580202000 | 580204000 |
| Galvanised | Galvanised |
| Length: 25 cm | Length: 13 cm |

| Stacking plate H20 | Inside corner plate 3.00m |
| Aufstöcklasche H20 | Eckschiene |
| 8.3 | 53.0 |
| 580310000 | 580282000 |
| Galvanised | Powder-coated blue |
| Length: 68.8 cm | |
| Width-across: 30 mm | |

| Inside corner plate 4.00m | Joint plate 3.00m |
| Eckschiene | Ausgleichsschiene |
| 69.0 | 36.8 |
| 580284000 | 580332000 |
| Powder-coated blue | Powder-coated blue |

| Joint plate 4.00m | T ledge 21/42 2.00m |
| Ausgleichsschiene | T-Leiste 21/42 2,00m |
| 47.7 | 0.34 |
| 580334000 | 580196000 |
| Grey | Grey |

| Box-out clamp 24cm | Box-out clamp 25cm |
| Aussparungsklemme | Aussparungsklemme |
| 3.4 | 3.4 |
| 580063000 | 580064000 |
| Galvanised | Galvanised |
| Leg length: 10 cm | Leg length: 10 cm |

| Box-out clamp 30cm | Box-out clamp type 1 .....cm |
| Aussparungsklemme | Aussparungsklemme Typ 1 .....cm |
| 3.9 | 17.4 |
| 580065000 | 580066000 |
| Galvanised | Painted blue |
| Leg length: 10 cm | Leg length: 10 cm |
### Component overview

<table>
<thead>
<tr>
<th>Article N°</th>
<th>Article N°</th>
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<tbody>
<tr>
<td><strong>Box-out clamp type 2 cm</strong></td>
<td>17.4</td>
</tr>
<tr>
<td><strong>Wall-formwork support angle</strong></td>
<td>6.6</td>
</tr>
</tbody>
</table>

#### Panel strut 340 IB

Elementstütze 340 IB consisting of:

(A) Plumbing strut 340 IB
- Galvanised
- Length: 190.8 - 341.8 cm
- Leg length: 10 cm
- Diameter: 12.8 cm

(B) Adjusting strut 120 IB
- Galvanised
- Length: 81.5 - 130.6 cm
- Delivery condition: folded closed

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<tr>
<td>7.6 588248500</td>
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</table>

#### Panel strut 540 IB

Elementstütze 540 IB consisting of:

(A) Plumbing strut 540 IB
- Galvanised
- Length: 310.5 - 549.2 cm
- Leg length: 10 cm
- Diameter: 12.8 cm

(B) Adjusting strut 220 IB
- Galvanised
- Length: 172.5 - 221.1 cm
- Delivery condition: folded closed

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<thead>
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<tr>
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<tr>
<td>10.9 588251500</td>
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</table>

#### Eurex 60 550

Eurex 60 550 depending on length, comprising:

(A) Plumbing strut Eurex 60 550
- Powder-coated blue
- Length: 343 - 553 cm

(B) Extension Eurex 60 2.00 m
- Powder-coated blue
- Length: 250 cm

(C) Coupler Eurex 60
- Aluminium
- Length: 100 cm
- Diameter: 12.8 cm

(D) Connector Eurex 60 IB
- Galvanised
- Length: 15 cm
- Width: 15 cm
- Height: 30 cm

(E) Plumbing strut shoe Eurex 60 EB
- Galvanised
- Length: 31 cm
- Width: 12 cm
- Height: 33 cm

(F) Adjusting strut 540 Eurex 60 IB
- Galvanised
- Length: 303.5 - 542.2 cm
- Delivery condition: separate parts

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<tr>
<td>42.5 582658000</td>
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<tr>
<td>21.3 582651000</td>
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<tr>
<td>8.6 582652000</td>
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<tr>
<td>4.2 582657500</td>
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#### Prop head EB

Stützenkopf EB
- Galvanised
- Length: 40.8 cm
- Width: 11.8 cm
- Height: 17.6 cm

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<th>Article N°</th>
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<tbody>
<tr>
<td>3.1 588244500</td>
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#### Prop head Eurex 60 Top50

Stützenkopf Eurex 60 Top50
- Galvanised
- Height: 50 cm

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<tbody>
<tr>
<td>7.1 582665000</td>
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</table>

#### Universal dismantling tool

Universal-Lösewerkzeug
- Galvanised
- Length: 75.5 cm

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<th>Article N°</th>
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<tr>
<td>3.7 582768000</td>
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## Component overview

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<th>Article N°</th>
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<th>[kg]</th>
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<td>587153000</td>
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<td>Doka coil 16mm</td>
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<td>Universal corner bracket 90 right</td>
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<td>Top scaffold bracket L</td>
<td>587153500</td>
<td>12.6</td>
<td>588377000</td>
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### Doka express anchor 16x125mm
- **Doka-Expressanker 16x125mm**
- Galvanised
- Length: 18 cm
- Follow the directions in the "Fitting instructions"!

### Doka coil 16mm
- **Doka-Coil 16mm**
- Galvanised
- Diameter: 1.6 cm

### Universal bracket 60
- **Universal-Konsole 60**
- Galvanised
- Length: 66 cm
- Height: 181 cm

### Universal bracket 90
- **Universal-Konsole 90**
- Galvanised
- Length: 121 cm
- Height: 235 cm

### Universal corner bracket 90 right
- **Universal-Eckkonsole 90**
- Galvanised
- Length: 152 cm
- Height: 235 cm

### Top scaffold bracket L
- **Betonierkonsole L**
- Galvanised
- Length: 101 cm
- Height: 159 cm

### Top scaffold bracket L painted
- **Betonierkonsole L lackiert**
- Painted blue
- Length: 101 cm
- Height: 159 cm

### Universal railing shackle
- **Universal-Geländerbügel**
- Galvanised
- Height: 20 cm

### Scaffold tube connection
- **Gerüstrohranschluss**
- Galvanised
- Height: 7 cm

### Scaffold tube 48.3mm
- **Gerüstrohr 48,3mm**
- Length: 18 cm
- Diameter: 1.6 cm
- Length: 86 cm
- Height: 181 cm
- Length: 121 cm
- Height: 235 cm
- Length: 152 cm
- Height: 235 cm
- Length: 101 cm
- Height: 159 cm
- Length: 101 cm
- Height: 159 cm
- Length: 121 cm
- Height: 235 cm
- Length: 152 cm
- Height: 235 cm
- Length: 101 cm
- Height: 159 cm
- Length: 101 cm
- Height: 159 cm
- Length: 121 cm
- Height: 235 cm
- Length: 152 cm
- Height: 235 cm
- Length: 101 cm
- Height: 159 cm

### Screw-on coupler 48mm 50
- **Anschaubkupplung 48mm 50**
- Galvanised
- Width: 22 mm
- Follow the directions in the "Fitting instructions"!

### Xsafe plus lifting adapter for beam formwork
- **Xsafe plus-Umsetzadapter Trägerschalung**
- Galvanised
- Width: 66 cm
- Height: 89 cm

### Framax pouring platform U 1.25/2.70m
- **Framax-Betonierbühne U 1,25/2,70m**
- Steel parts galvanised
- Timber parts varnished yellow
- Delivery condition: folded closed
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<thead>
<tr>
<th>Article N°</th>
<th>Article N°</th>
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<td>Top50 adapter for Framax pouring platform U</td>
<td>Top50 Adapter für Framax-Betonierbühne U</td>
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<tr>
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<tr>
<td>Velcro fastener 30x380mm</td>
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<td>Kläckverschluss 30x380mm</td>
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| Protective grating XP 2.70x1.20m | 22.2 | 586450000 |
| Protective grating XP 2.50x1.20m | 20.5 | 586451000 |
| Protective grating XP 2.00x1.20m | 17.4 | 586452000 |
| Protective grating XP 1.20x1.20m | 12.0 | 586453000 |
| Schutzgitter XP | Galvanised |
| Height: 21 cm |

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|**Handrail post T 1.80m**  
Einschubgeländer T 1,80m | 17.7 584373000 |
| Toeboard holder T 1.80m  
Fußwehrhalter T 1,80m | 0.53 584392000 |
| Handrail post 1.50m  
Geländer 1,50m | 12.4 582754000 |
| Doka 4-part chain 3.20m  
Doka-Vierstrangkette 3,20m | 15.0 588620000 |
| Universal strut T5/5 .....mm  
Strebe T5/5 .....mm | 6.5 584311000 |
| Spindle strut T6 73/110cm  
Spindelstrebe T6 | Galvanised |
| Spindle strut GS T6 95/140cm | 10.3 584340000 |
| Spindle strut T6 100/150cm  
Spindelstrebe T6 | Galvanised |
| Spindle strut GS T6 95/140cm | Galvanised |
| Spindle strut T7 75/110cm  
Spindelstrebe T7 | 13.2 584308000 |
| Spindle strut T7 100/150cm  
Spindelstrebe T7 | 16.8 584309000 |
| Spindle strut T7 150/200cm  
Spindelstrebe T7 | 21.6 584324000 |
| Spindle strut T7 200/250cm  
Spindelstrebe T7 | 26.2 584325000 |
| Spindle strut T7 250/300cm  
Spindelstrebe T7 | 29.4 584326000 |
| Spindle strut T7 305/355cm  
Spindelstrebe T7 | 35.0 584327000 |

- **Galvanised**
- **Follow the directions in the "Operating Instructions"!
- **Painted blue**
- **Weight per linear metre**
## Component overview

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<tr>
<th>Item Description</th>
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### User Information: Large-area formwork Top 50

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<td>Weight per linear metre</td>
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<td>Length: 23.5 cm</td>
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### Included in scope of supply:

- **(A)** Reversible ratchet 1/2”
  - Galvanised
  - Length: 30 cm
- **(B)** Fork wrench 13/17
  - 0.08 580577000
- **(C)** Fork wrench 22/24
  - 0.22 580577000
- **(D)** Fork wrench 30/32
  - 0.80 580587000
- **(E)** Ring spanner 17/19
  - 0.27 580590000
- **(F)** Extension 11cm 1/2”
  - 0.20 580581000
- **(G)** Extension 22cm 1/2”
  - 0.31 580582000
- **(H)** Universal joint coupling 1/2”
  - 0.16 580583000
- **(I)** Box nut 19 1/2” L
  - 0.16 580598000
- **(J)** Box nut 13 1/2”
  - 0.06 580576000
- **(K)** Box nut 24 1/2”
  - 0.12 580584000
- **(L)** Box nut 30 1/2”
  - 0.20 580575000

- **(M)** Ring spanner 24/27
  - 0.32 580585000
- **(N)** Extension 30cm 1/2”
  - 0.40 580586000
- **(O)** Universal joint coupling 1/2”
  - 0.18 580587000
- **(P)** Box nut 28 1/2”
  - 0.08 580588000
- **(Q)** Box nut 35 1/2”
  - 0.14 580589000
- **(R)** Extension 40cm 1/2”
  - 0.50 580590000

### Tool box GF

GF-Werkzeugbox included in scope of supply:

- **(A)** Reversible ratchet 1/2”
  - Galvanised
  - Length: 30 cm
- **(B)** Fork wrench 13/17
  - 0.08 580577000
- **(C)** Fork wrench 22/24
  - 0.22 580577000
- **(D)** Fork wrench 30/32
  - 0.80 580587000
- **(E)** Ring spanner 17/19
  - 0.27 580590000
- **(F)** Extension 11cm 1/2”
  - 0.20 580581000
- **(G)** Extension 22cm 1/2”
  - 0.31 580582000
- **(H)** Universal joint coupling 1/2”
  - 0.16 580583000
- **(I)** Box nut 19 1/2” L
  - 0.16 580598000
- **(J)** Box nut 13 1/2”
  - 0.06 580576000
- **(K)** Box nut 24 1/2”
  - 0.12 580584000
- **(L)** Box nut 30 1/2”
  - 0.20 580575000

- **(M)** Ring spanner 24/27
  - 0.32 580585000
- **(N)** Extension 30cm 1/2”
  - 0.40 580586000
- **(O)** Universal joint coupling 1/2”
  - 0.18 580587000
- **(P)** Box nut 28 1/2”
  - 0.08 580588000
- **(Q)** Box nut 35 1/2”
  - 0.14 580589000
- **(R)** Extension 40cm 1/2”
  - 0.50 580590000
### User Information Large-area formwork Top 50

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<th>Dimensions</th>
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<td>Panel closure tool D125 SCC</td>
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**Painted blue**

**Varnished yellow**
## Component overview

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**Doka beam H20 eco N 2.90m**  
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**Doka beam H20 eco N 5.90m**  
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**Doka-Ply Birch DC 18mm**  
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**DokaPly Birch DC 18mm 250/50cm**  
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**DokaPly Birch DC 18mm 322/44cm**  
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**DokaPly Birch DC 18mm 355/25cm**  
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**DokaPly Birch DC 18mm ......cm**  
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## Large-area formwork Top 50

### Component overview

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<td>User Information</td>
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<td>Xlife sheet 21mm 325/145cm</td>
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<td>Double scraper Xlife 100/150mm 1.40m</td>
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<td>588674000</td>
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<tr>
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<td>Securing barrier XS</td>
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<tr>
<td>Ladder cage XS 1.00m</td>
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<td>Ladder cage XS 0.25m</td>
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<tr>
<td>Ladder cage exit XS</td>
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### Additional Information

- **Height**: 19.2 cm
- **Width**: 89 cm
- **Height**: 63 cm
- **Length**: 80 cm
- **Height**: 132 cm
- **Galvanised**

---

**DokaPly Birch SC 18mm 122/244cm**

**DokaPly Birch SC 18mm 125/250cm**

**DokaPly Birch SC 18mm 150/300cm**

**DokaPly Birch SC 18mm 150/300cm**

**DokaPly Birch DC 21mm 62.5/250cm**

**DokaPly Birch DC 21mm 122/244cm**

**DokaPly Birch DC 21mm 125/250cm**

**DokaPly Birch DC 21mm 150/300cm**

**DokaPly Birch DC 21mm 150/300cm**

**DokaPly Birch SC 21mm 122/244cm**

**DokaPly Birch SC 21mm 125/250cm**

**DokaPly Birch SC 21mm 150/300cm**

**DokaPly Birch SC 21mm 150/300cm**

**Xlife sheet 21mm 265/145cm**

**Xlife sheet 21mm 325/145cm**

**Edge varnish SW-910 RAL 7004 2.5l**

**Xlife edge varnish 2.5l**

**Shaping wood board 3-S 27mm 600/150cm**

**H20 screw-on bracket for formwork sheets**

**Double scraper Xlife 100/150mm 1.40m**

**Ladder system XS**

**Connector XS Wall formwork**

---

**System ladder XS 4.40m**

**Ladder extension XS 2.30m**

**Securing barrier XS**

**Ladder cage XS 1.00m**

**Ladder cage XS 0.25m**

**Ladder cage exit XS**

---

**DokaPly Birch SC 18mm 122/244cm**

**DokaPly Birch SC 18mm 125/250cm**

**DokaPly Birch SC 18mm 150/300cm**

**DokaPly Birch SC 18mm 150/300cm**

**DokaPly Birch DC 21mm 62.5/250cm**

**DokaPly Birch DC 21mm 122/244cm**

**DokaPly Birch DC 21mm 125/250cm**

**DokaPly Birch DC 21mm 150/300cm**

**DokaPly Birch DC 21mm 150/300cm**

**DokaPly Birch SC 21mm 122/244cm**

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**System ladder XS 4.40m**

**Ladder extension XS 2.30m**

**Securing barrier XS**

**Ladder cage XS 1.00m**

**Ladder cage XS 0.25m**

**Ladder cage exit XS**

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## Component overview

<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
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<tbody>
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<td>Tie rod 15.0mm galvanised 0.50m</td>
<td>0.72</td>
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<td>Tie rod 15.0mm galvanised 1.00m</td>
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<tr>
<td>Tie rod 15.0mm galvanised 1.25m</td>
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<td>Tie rod 15.0mm galvanised 1.50m</td>
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<td>Tie rod 15.0mm galvanised 1.75m</td>
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### Angle anchor plate 12/12

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### Plastic tube 22mm 2.50m

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### Universal cone 22mm

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### Wing nut 15.0

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### Hexagon nut 15.0

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### Locking rod 15.0 330mm

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### Anchor plate 12/12

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### Anchor plate 15/20

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### Eye-lug anchor 15.0 without tie rod

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### Super plate 15.0

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### Universal plug R20/25

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### Form-ply protector 22mm

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### Protective cap 15.0/20.0

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### Tie-rod wrench 15.0/20.0

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## User Information

**Large-area formwork Top 50**

### Component overview

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#### Tie rod system 20.0

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<tbody>
<tr>
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<td>2.0</td>
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#### Other components

<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Description</th>
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<tbody>
<tr>
<td>581420000</td>
<td>0.40</td>
<td>Hexagon nut 20.0 (Galvanised)</td>
</tr>
<tr>
<td>581425000</td>
<td>1.7</td>
<td>Anchor plate 20.0 (Galvanised)</td>
</tr>
<tr>
<td>586934000</td>
<td>4.8</td>
<td>Top100 tec form-tie nut 20.0 (Galvanised)</td>
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<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
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<tbody>
<tr>
<td>5818463000</td>
<td>0.59</td>
<td>Plastic tube 26mm 2.00m (PVC, Grey)</td>
</tr>
<tr>
<td>5818464000</td>
<td>0.008</td>
<td>Universal cone 26mm (Grey)</td>
</tr>
<tr>
<td>5818465000</td>
<td>0.006</td>
<td>Plug 26mm (PE)</td>
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</table>

#### Water stop connector 20.0

<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Description</th>
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<tbody>
<tr>
<td>581467000</td>
<td>1.3</td>
<td>Water stop connector 20.0 (Non-treated)</td>
</tr>
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#### Rock anchor spreader unit 20.0

<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Description</th>
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<tbody>
<tr>
<td>581467000</td>
<td>1.3</td>
<td>Rock anchor spreader unit 20.0 (Galvanised)</td>
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#### Fibre concrete plug 27mm

<table>
<thead>
<tr>
<th>Article N°</th>
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<th>Description</th>
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<tbody>
<tr>
<td>581473000</td>
<td>0.03</td>
<td>Fibre concrete plug 27mm (Grey)</td>
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</tbody>
</table>

#### Weldable coupler 20.0

<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Description</th>
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<tbody>
<tr>
<td>581474000</td>
<td>0.55</td>
<td>Weldable coupler 20.0 (Non-treated)</td>
</tr>
</tbody>
</table>
## Component overview

### Protective cap 15.0/20.0
- **Weight**: 0.03 kg
- **Article No.**: 581858000
- **Description**: Schutzkappe 15.0/20.0
- **Color**: Yellow
- **Dimensions**: Length: 6 cm, Diameter: 6.7 cm

### Multi-trip packaging

#### Doka skeleton transport box 1.70x0.80m
- **Weight**: 87.0 kg
- **Article No.**: 583012000
- **Description**: Doka-Gitterbox 1,70x0,80m
- **Material**: Galvanised
- **Height**: 113 cm

#### Doka multi-trip transport box 1.20x0.80m
- **Weight**: 70.0 kg
- **Article No.**: 583011000
- **Description**: Doka-Mehrwegcontainer 1,20x0,80m
- **Material**: Galvanised
- **Height**: 78 cm

#### Multi-trip transport box partition 0.80m
- **Weight**: 3.7 kg
- **Article No.**: 583018000
- **Description**: Mehrwegcontainer Unterteilung
- **Material**: Steel parts galvanised, Timber parts varnished yellow

#### Doka multi-trip transport box 1.20x0.80x0.41m
- **Weight**: 42.5 kg
- **Article No.**: 583009000
- **Description**: Doka-Mehrwegcontainer 1,20x0,80x0,41m
- **Material**: Galvanised

#### Doka stacking pallet 1.55x0.85m
- **Weight**: 41.0 kg
- **Article No.**: 586151000
- **Description**: Doka-Stapelpalette 1,55x0,85m
- **Material**: Galvanised
- **Height**: 77 cm

#### Doka stacking pallet 1.20x0.80m
- **Weight**: 38.0 kg
- **Article No.**: 583016000
- **Description**: Doka-Stapelpalette 1,20x0,80m
- **Material**: Galvanised
- **Height**: 77 cm

#### Doka accessory box
- **Weight**: 106.4 kg
- **Article No.**: 583010000
- **Description**: Doka-Kleinteilebox
- **Material**: Timber parts varnished yellow, Steel parts galvanised
- **Dimensions**: Length: 154 cm, Width: 83 cm, Height: 77 cm

#### Bolt-on castor set B
- **Weight**: 33.6 kg
- **Article No.**: 586168000
- **Description**: Anklemm-Radsatz B
- **Material**: Painted blue

### Specific parts for France

#### Trägerlasche H20
- **Weight**: 8.5 kg
- **Article No.**: 847655000
- **Description**: Galvanised
- **Dimensions**: Length: 60 cm, Width: 12 cm

#### Prop head
- **Weight**: 3.5 kg
- **Article No.**: 588244000
- **Description**: Stützenkopf
- **Material**: Galvanised
- **Dimensions**: Length: 40.8 cm, Width: 11.8 cm, Height: 17.6 cm

#### Panel strut 340 IB
- **Weight**: 24.3 kg
- **Article No.**: 580365000
- **Description**: Elementstütze 340 IB consisting of:
  - **Plumbing strut 340 IB**
    - **Weight**: 16.7 kg
    - **Article No.**: 588696000
    - **Dimensions**: Length: 190.8 - 341.8 cm
  - **Adjusting strut 120 IB**
    - **Weight**: 7.6 kg
    - **Article No.**: 588248500
    - **Dimensions**: Length: 81.5 - 130.6 cm
- **Material**: Galvanised
- **Delivery condition**: folded closed
### Panel strut 540 IB

**Elements of the strut 540 IB**:
- **(A) Plumbing strut 540 IB**
  - Galvanised
  - Length: 310.5 - 549.2 cm
- **(B) Adjusting strut 220 IB**
  - Galvanised
  - Length: 172.5 - 221.1 cm

#### Component Overview

<table>
<thead>
<tr>
<th>[kg]</th>
<th>Article N°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel strut 540 IB</td>
<td>41.4 580366000</td>
</tr>
<tr>
<td>Plumbing strut 540 IB</td>
<td>30.7 588697000</td>
</tr>
<tr>
<td>Adjusting strut 220 IB</td>
<td>10.9 588251500</td>
</tr>
</tbody>
</table>

- **Delivery condition**: folded closed

![Diagram of panel strut and adjuster strut](image-url)
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