The Formwork Experts.

Dokaflex

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

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Introduction</td>
</tr>
<tr>
<td>3</td>
<td>Timber-beam floor formwork</td>
</tr>
<tr>
<td>4</td>
<td>Elementary safety warnings</td>
</tr>
<tr>
<td>7</td>
<td>Services</td>
</tr>
<tr>
<td>8</td>
<td>System description</td>
</tr>
<tr>
<td>10</td>
<td>Adaptability</td>
</tr>
<tr>
<td>11</td>
<td>Structural design</td>
</tr>
<tr>
<td>11</td>
<td>Dokaflex 1-2-4 system logic</td>
</tr>
<tr>
<td>12</td>
<td>Optimised equipment usage – Dokaflex 20</td>
</tr>
<tr>
<td>14</td>
<td>Instructions for assembly and use (Method statement)</td>
</tr>
<tr>
<td>24</td>
<td>Measures for increasing the stability of floor-slab formwork</td>
</tr>
<tr>
<td>24</td>
<td>Bracing clamp B</td>
</tr>
<tr>
<td>25</td>
<td>Propping with Bracing frame Eurex 1.00m</td>
</tr>
<tr>
<td>27</td>
<td>Tie-back solutions</td>
</tr>
<tr>
<td>28</td>
<td>Secondary-beam stabilisers</td>
</tr>
<tr>
<td>29</td>
<td>Floor formwork around edges</td>
</tr>
<tr>
<td>29</td>
<td>Tableforms or load-bearing towers at edge of building</td>
</tr>
<tr>
<td>30</td>
<td>Dokaflex at edge of building</td>
</tr>
<tr>
<td>33</td>
<td>Slab stop-ends</td>
</tr>
<tr>
<td>36</td>
<td>Guardrail systems on the formwork</td>
</tr>
<tr>
<td>41</td>
<td>Edge protection with façade scaffolding</td>
</tr>
<tr>
<td>42</td>
<td>Fall-arrest systems on the structure</td>
</tr>
<tr>
<td>43</td>
<td>Drop beams</td>
</tr>
<tr>
<td>43</td>
<td>Beam forming support</td>
</tr>
<tr>
<td>45</td>
<td>Drop-beam not integrated into the floor-slab / stop-end formwork</td>
</tr>
<tr>
<td>46</td>
<td>Drop-beam integrated into the floor-slab</td>
</tr>
<tr>
<td>49</td>
<td>Downstand beam in mid-slab</td>
</tr>
<tr>
<td>50</td>
<td>General</td>
</tr>
<tr>
<td>50</td>
<td>Transporting, stacking and storing</td>
</tr>
<tr>
<td>56</td>
<td>Reshoring props, concrete technology and stripping out</td>
</tr>
<tr>
<td>59</td>
<td>Combining Doka table systems</td>
</tr>
<tr>
<td>60</td>
<td>Component overview</td>
</tr>
</tbody>
</table>
Introduction

Timber-beam floor formwork

The Dokaflex hand-set systems let you form custom floor-slabs, drop beams and filigree slabs easily and quickly, while offering full flexibility with regard to the layout.

Dokaflex

- **Dokaflex 1-2-4** The easy-to-use floor-slab formwork with a logical, built-in system for setting up the formwork
  - marks on the beams show you the maximum spacings between secondary beams, props and primary beams, for floor-slabs up to a thickness of 30 cm
  - having only 2 different lengths of beam facilitates logistics and reduces the time spent searching
  - you can tell at a glance whether the formwork has been set up correctly

- **Dokaflex 20** The tailor-made solution for your specific project requirements
  - very little equipment is needed thanks to statically optimised beam and prop spacings, which are in accordance with the room geometry and the loads that occur
  - drop beams and floor extensions can easily be managed 'within the system'
  - significant reduction in commissioning quantities thanks to the Doka Xtra head, which allows early stripping

- **Dokaflex 30 tec** The fast floor-slab formwork for forming large areas
  - fast working, as less equipment is needed
    - 1/3 fewer floor props needed because of the higher load-bearing capacity of the I tec 20 beam
    - smaller storage and transport volume
    - wide access paths beneath the floor-slab formwork
    - reduced follow-up costs
  - suitable for shoring filigree slabs

Follow the directions in the 'Dokaflex 30 tec' User Information booklet!
Elementary safety warnings

User target groups

▪ This booklet is aimed at all persons who will be working with the Doka product or system that it describes. It contains information on the standard design for setting up this system, and on correct, compliant utilisation of the system.

▪ All persons working with the product described herein must be familiar with the contents of this booklet and with all the safety instructions it contains.

▪ Persons who are incapable of reading and understanding this booklet, or who can do so only with difficulty, must be instructed and trained by the customer.

▪ The customer is to ensure that the information materials provided by Doka (e.g. User Information booklets, Instructions for Assembly and Use, Operating Instruction manuals, plans etc.) are up to date and available to all users, and that they have been made aware of them and have easy access to them at the usage location.

▪ In the relevant technical documentation and formwork utilisation plans, Doka shows the workplace safety precautions that are necessary in order to use the Doka products safely in the usage situations shown. In all cases, users are obliged to ensure compliance with national laws, standards and regulations throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

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

Remarks on this booklet

▪ This document can be used as general Instructions for Assembly and Use (Method Statement) or be incorporated into site-specific Instructions for Assembly and Use (Method Statement).

▪ The graphics, animations and videos in this document or app sometimes depict partially assembled assemblies and may require additional safety equipment and/or measures to comply with safety regulations.

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

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

Planning

▪ Provide safe workplaces for those using the formwork (e.g. for when it is being erected/dismantled, modified or repositioned etc). It must be possible to get to and from these workplaces via safe access routes!

▪ If you are considering any deviation from the details and instructions given in this booklet, or any application which goes beyond those described in the booklet, then revised static calculations must be produced for checking, as well as supplementary assembly instructions.

Regulations; industrial safety

▪ All laws, Standards, industrial safety regulations and other safety rules applying to the utilisation of our products in the country and/or region in which you are operating must be observed at all times.

▪ If a person or object falls against, or into, the side-guard component and/or any of its accessories, the component affected may only continue in use after it has been inspected and passed by an expert.
Rules applying during all phases of the assignment

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Assembly

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

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

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

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

Closing the formwork

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

Pouring

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

Stripping the formwork

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

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

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

- Observe all country-specific regulations applying to the handling of formwork and scaffolding. For system formwork the Doka slinging means stated in this booklet must be used – this is a mandatory requirement.
- If the type of sling is not specified in this document, the customer must use slinging means that are suitable for the application envisaged and that comply with the regulations.
- When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.
- Remove loose parts or secure them so that they cannot slip out of position and drop.
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this document!

Maintenance

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

Miscellaneous

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

Eurocodes at Doka

The permissible values stated in Doka documents (e.g. $F_{perm} = 70$ kN) are not design values (e.g. $F_{Rd} = 105$ kN)
- It is essential to avoid confusing permissible values with design values!
- Doka documents will continue to state the permissible values.
Allowance has been made for the following partial factors:
- $\gamma_c = 1.5$
- $\gamma_M, \text{timber} = 1.3$
- $\gamma_M, \text{steel} = 1.1$
- $k_{mod} = 0.9$
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 high-performing rental park. Doka Reconditioning cleans and overhauls both client-owned equipment and Doka rental equipment.

High performance, in all stages of the project

Tender

- Execution planning
- Cycle planning
- Structure modelling/3D-planning
- Assembly drawings
- Statics calculation
- Concrete

Consulting and training

- Project processing on-site
- Formwork instructor
- Training & consulting

Process optimisation

- Concrete
- 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 description

Dokaflex The versatile hand-set system for floor-slabs

Dokaflex: 1 system – 2 possible ways of using it

Dokaflex 1-2-4
The easy-to-use floor-slab formwork with a logical, built-in system for setting up the formwork

▪ marks on the beams show you the maximum spacings between secondary beams, props and primary beams, for floor-slabs up to a thickness of 30 cm
▪ having only 2 different lengths of beam facilitates logistics and reduces the time spent searching
▪ you can tell at a glance whether the formwork has been set up correctly

Dokaflex 20
The tailor-made solution for your specific project requirements:

▪ very little equipment is needed thanks to statically optimised beam and prop spacings, which are in accordance with the room geometry and the loads that occur
▪ drop beams and floor extensions can easily be managed 'within the system'
▪ significant reduction in commissioning quantities thanks to the Doka Xtra head, which allows early stripping

General features

The system is ideal for enclosed spaces where the formwork superstructure can rest up against walls on all sides.
Horizontal forces at exposed slab-edges, downturned beams or steps in ceiling slabs must be restrained by bracing or tie-backs.

General advantages of Dokaflex:

▪ infill zones are managed within the system, making it easy to adapt to walls and columns
▪ for shoring heights of up to 5.50 m
▪ any type of form-facing can be used
(A) Doka formwork sheet 3-SO

- choice timber and superior surface coating for a high-quality concrete finish
- all-round edge strip, so easier cleaning
- can be used on both sides

Follow the directions in the 'Formwork sheets' User Information booklet.

(B) Doka beam H20

- 1-2-4 method: easy-to-distinguish primary beams (3.90 m) and secondary beams (2.65 m) are used
- Dokaflex 20: also other beam lengths can be used
- when using H20 top:
  - pre-defined positioning points as reference marks for setting-up and checking the formwork
  - integrated shock absorber on the beam end piece for reduced damage and long service life

Follow the directions in the 'Timber formwork beams' User Information booklet!

(C) Lowering head H20

- integrated quick-lowering function for minimising damage when striking
- stabilises the primary beams so that these cannot tip over on their sides

(D) Supporting head H20 DF

- easy to mount to the floor prop
- for fixing intermediate props to the primary beam

Note:
The floor props can be lengthened with the Floor prop extension 0.50m (allow for the reduced load-bearing capacity).

Follow the directions in the 'Floor prop extension 0.50m' User Information booklet.

(E) Doka floor props Eurex

- approved in accordance with Z-8.311-905 and Z-8.311-942
- EN 1065-compliant floor prop
  - all extension lengths: Class D
  - up to 3.50 m: In addition, Class B
  - up to 4.00 m: In addition, Class C
    (see the approval or type-test for in-depth information)
- high load-bearing capacity
  - permitted capacity of Eurex 20: 20 kN
- numbered pegging holes for height adjustment
- special geometry of the thread makes the prop easier to release even under high load
- elbowed fastening clamps, reducing the risk of injury and making the props easier to operate

Follow the directions in the 'Floor props Eurex top' or 'Floor props Eurex eco' User Information booklet.

Note:
The Doka floor prop Eurex 20 top 700 is only allowed to be used with a limited extension length.

Follow the directions in the 'Doka floor prop Eurex 20 top 700' User Information booklet.

(F) Removable folding tripod top

- Set-up aid for floor props
- swing-out legs allow flexible placement in constricted situations such as along edges and in corners

Follow the directions in the 'Floor props Eurex top' or 'Floor props Eurex eco' User Information booklet.
Adaptability

Closures and adjustments

Infill zones are solved within the system - with no special accessories needed. The necessary adaptation is made by telescoping the Doka beams and inserting strips of formwork sheeting.

Grid and flexibility - in one system

Dokaflex also adapts to difficult layouts.

NOTICE

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

Dokaflex 1-2-4 system logic

The straightforward logic underlying the Dokaflex 1-2-4 system means that there is no need for planning and operations scheduling work. The quantities are simply computed using the materials slide-ruler

Spacing and positions of the component parts

No matter whether the beams are resting on, between or next to the marks, the maximum spacing is always plain to see. You can tell at a glance whether the formwork has been erected correctly, and without having to do any measuring.

Primary and secondary beams

The 3.90m long Doka beam H20 top is used as a primary beam, and the 2.65m long H20 top beam as a secondary beam.

Format of the formwork sheets

The Doka formwork sheets 3-SO, in formats of 200x50cm and 250x50cm (21 or 27mm), have just the right dimensions to fit exactly into the increment-grid of the Dokaflex system.
Optimised equipment usage – Dokaflex 20

Only one system in use on the site

The quantities of Dokaflex system components can be computed exactly, with reference to the thickness of slab. The beam and prop spacings are optimised depending on the layout, and in accordance with the slab load. On the site, the easy-to-use Dokaflex 20 slide-rule is ideal for determining the permissible spacing of primary beams and props.

Optimisation of beam and prop spacings

<table>
<thead>
<tr>
<th>Slab thickness [cm]</th>
<th>Slab load 1) [kN/m²]</th>
<th>Max. permitted primary-beam spacing 2) b [m] for a secondary-beam spacing 2) c [m] of 0.500 0.625 0.667 0.750</th>
<th>Max. permitted spacing of props 3) a [m] for the selected primary-beam spacing 2) b [m] of 1.00 1.25 1.50 1.75 2.00 2.25 2.50 2.75 3.00 3.50</th>
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<td>4.25</td>
<td>3.69 3.43 3.35 3.22</td>
<td>2.93 2.72 2.50 2.32 2.17 2.04 1.88 1.71 1.57 1.34</td>
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<td>4.74</td>
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<td>5.23</td>
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<td>5.72</td>
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<td>18</td>
<td>6.21</td>
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<td>1.38 1.10 0.92 0.79 0.69 — — — — — — —</td>
</tr>
</tbody>
</table>

1) In accordance with EN 12812, this allows for a service load of 0.75 kN/m² and a variable load of 10% of a massive concrete floor-slab, totalling at least 0.75 kN/m², but no more than 1.75 kN/m² (assuming a fresh-concrete density of 2500 kg/m³). Mid-span deflection has been limited to l/500. In the case of cavity flat-slab floors, significantly lower slab loads occur.

2) Doka beam to EN 13377.

3) Doka floor prop with a permitted loading capacity of ≥ 20 kN.

Max. spacing of secondary beams, according to the sheeting used

<table>
<thead>
<tr>
<th>Slab thickness [cm]</th>
<th>3-SO 21mm</th>
<th>3-SO 27mm</th>
<th>Dokaplex 18mm</th>
<th>Dokaplex 21mm</th>
<th>DokaPly eco 18mm</th>
<th>DokaPly eco 21mm</th>
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<td>Limit of deflection</td>
<td>l/500</td>
<td>l/350</td>
<td>l/500</td>
<td>l/350</td>
<td>l/500</td>
<td>l/350</td>
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<td>up to 18</td>
<td>0.667</td>
<td>0.75</td>
<td>0.75</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>up to 25</td>
<td>0.667</td>
<td>0.75</td>
<td>0.75</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>up to 30</td>
<td>0.625</td>
<td>0.667</td>
<td>0.75</td>
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<td>0.50</td>
<td>0.50</td>
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<tr>
<td>up to 40</td>
<td>0.50</td>
<td>0.625</td>
<td>0.667</td>
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<td>up to 50</td>
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<td>0.667</td>
<td>0.50</td>
<td>0.50</td>
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</tbody>
</table>

In accordance with EN 12812, a service load of 0.75 kN/m² and a variable load of 10% of a massive concrete floor-slab, totalling at least 0.75 kN/m², but no more than 1.75 kN/m², are allowed for (assuming a fresh-concrete density of 2500 kg/m³). Only the dead weight of the formwork and fresh concrete has been allowed for in calculating deflection. In the case of cavity flat-slab floors, the slab loads are considerably lower.
Close-up: primary-beam overlap / cantilevered length of secondary beams

d ... max. 50 cm or half of prop spacing
f ... min. 30 cm primary-beam overlap (measured from the prop axis)
g ... min. 15 cm cantilevered length of secondary beams (measured from the primary-beam axis)

E Primary-beam axis

A Floor prop Eurex + Lowering head H20 + Removable folding tripod
B Floor prop Eurex + Supporting head H20 DF
C Doka beam H20 top (secondary beam)
D Doka beam H20 top (primary beam)
NOTICE
As well as the instructions given here, you MUST follow the instructions in 'Reshoring props, concrete technology and stripping out'.

Wheel-around scaffold DF:
- collapsible wheel-around platform made of light alloy
- variable working heights of up to 3.50 m (max. platform height 1.50 m)
- width of scaffold: 0.75 m
- When work is being carried out near drop-off edges (i.e. at a distance of < 2 m), the 'Wheel-around scaffold DF accessory set' (consisting of a toeboard and intermediate guardrail) is needed.

For greater heights, the Working scaffold Modul is ideal.

Platform stairway 0.97m:
- Wheel-around, fold-down platform stairway made of light alloy
- Working heights of up to 3.00 m (height of top step 0.97 m)
- Stair width: 1.20 m
- Minimum distance a from drop-off edge: 2.00m

NOTICE
For manual transport, grip the floor prop only by the outer and inner tubes.

Closing the formwork

NOTICE
Windproofing
- For increased stability, in larger rooms, the full erection sequence of 'primary beams + secondary beams + formwork sheets' should be carried out progressively for successive sub-areas of the room. When doing this, provide suitable bracing to walls or columns.
- If there is any risk of the formwork being blown over, all free-standing, non-enclosed areas of slab formwork must be secured during work-breaks and when work finishes for the day.
Putting up floor props

➤ Using the 1-2-4 method: Lay the primary beams and secondary beams down on the ground, along the walls. The marks on the beams show you the maximum spacings:
- 4 marks for primary beams
- 6 marks for props with removable folding tripods (final prop spacing after installation of the intermediate props - 2 marks)
➤ Using Dokaflex 20: Measure up the positions of the floor props.
➤ Roughly adjust the height of the floor prop, using the fastening clamp. The pegging holes are all numbered, which makes it easier to adjust the props to the same height.

➤ Set up each removable folding tripod.

![Notice]

➤ Do not oil or grease wedged connections.

➤ Put the floor prop into the tripod and fix it in place with the clamping lever.

Setting up tripods in corners or against walls

If it is not possible to completely unfold the legs of the tripod – e.g. at the edges of a structure or at floor breakthroughs etc. – we recommend fastening this tripod to an adjacent floor prop instead, where there is room for the legs to be completely unfolded.

![Notice]

The lowering heads under edge primary beams must all be turned to the position in which the wedges can be knocked open when the formwork is stripped.

CAUTION

➤ If you do transport the floor props with the lowering heads still attached, you must secure these with a Spring locked connecting pin 16mm to prevent them dropping out. This is particularly important when they are transported in the horizontal.

➤ Insert a Lowering head H20 into the floor prop. Leave the correct amount of lowering play (a)!

Clearance a between wedge and head-plate:
6 cm
Inserting the primary beams

The lowering heads can support both single beams (on edge-of-room props) and double beams (at overlaps).

**WARNING**
 Loads applied non-centrally can cause overloading of the system.
 ➤ Ensure that all loads are applied centrally!

➤ Using beam-forks, place the primary beams into the lowering heads.

➤ Adjust the primary beams to the correct floor-slab height.

Placing the secondary beams on the primary beams

➤ Use the beam forks to place the secondary beams on the primary beams, with an overlap.

Using the 1-2-4 method: Maximum spacing of secondary beams - 1 mark.
Using Dokaflex 20: Measure up the positions of the secondary beams.

➤ If it is planned to lay the panels on the secondary beams working from below, always lay only as many secondary beams in place as are needed for placing the next row of panels.

Place a beam (or double beam) wherever there is to be a joint between the panels.

- Planks can be attached to the floor props as diagonal braces, using the Bracing clamp B.
- Bracing frame Eurex 1.00m can also be used as a set-up aid.

For details on set-up aids, see the section headed 'Measures for increasing the stability of floor-slab formwork'.
Putting up intermediate props

*NICE*

➤ Put up the intermediate props so that they force-fit. It is not allowed to make some props higher than others!

➤ Place the Supporting head H20 DF on the inside tube of the floor prop and secure it with the integral spring-steel stirrup.

➤ Put up the intermediate props. Using the 1-2-4 method: Maximum spacing of floor props: 2 marks. Using Dokaflex 20: Measure up the positions of the floor props.

Laying the formwork sheets

To prevent the secondary beams tipping on their sides while the panels are being laid on them, Secondary-beam stabilisers can be used.

*NICE*

**When working from below:**

➤ To lay Doka formwork sheets 3-SO on the secondary beams from below, always work from a Wheel-around scaffold DF, a Platform stairway 0.97 m or a standard mobile scaffold tower or platform ladder.

**NOTICE**

➤ When working from below:

To lay Doka formwork sheets 3-SO on the secondary beams from below, always work from a Wheel-around scaffold DF, a Platform stairway 0.97 m or a standard mobile scaffold tower or platform ladder.

**NOTICE**

**When working from above:**

➤ Even as early as when laying the formwork sheeting, comply with the warnings for stepping on to the surface of the formwork.

➤ Lay the Doka formwork sheets 3-SO at right angles to the secondary beams.

Where necessary (e.g. in edge zones), secure the formwork sheets with nails.

Recommended nail lengths

- Sheet thickness of 21 mm: approx. 50 mm
- Sheet thickness of 27 mm: approx. 60 mm
Instructions for assembly and use (Method statement)

➤ Mount guard rails around all exposed edges.
➤ Mount the slab stop-ends
For more information, see the section headed 'Floor formwork around edges'.
➤ Spray the formwork sheets 3-SO with release agent.

WARNING
➤ Before anybody steps onto the surface of the formwork, its stability must be ensured (for example with Bracing frames Eurex, bracing or back-staying). Follow the directions in the section headed 'Measures for increasing the stability of floor-slab formwork'.
➤ It is not permitted to set down loads on the floor-slab formwork (e.g. beams, formwork sheets, reinforcement steel) until after the intermediate props have been set up and adequate stability has been established!
➤ Transfer of horizontal loads during pouring must be ensured by other measures (e.g. by transferring these loads into the structure or using tie-backs). For details on how to make tie-backs with lashing straps, see 'Floor formwork around edges'.

NOTICE
➤ Use personal fall-arrest systems to protect against fall hazards when working on unsecured slab-edges (e.g. Doka personal fall-arrest set).

➤ Use at high floor-to-slab heights

WARNING
Stacked Dokaflex configurations lack stability! Stacked Dokaflex can lead to collapse and consequently these configurations are prohibited. Connecting floor props one on top of another is also prohibited.
➤ Use floor props of adequate length or load-bearing towers as propping.
Floor props of adequate length

Load-bearing tower

Pouring

➤ Before pouring, recheck all floor props.

- The fastening clamp (A) has to be pushed all the way into the floor prop.
- Adjusting nut (B) has to be tightened into contact with the fastening clamp.

To protect the surface of the form-facing, we recommend using a vibrator with a protective rubber cap.
**Stripping the formwork**

**NOTICE**
Comply with the stipulated stripping times.

Concremote provides reliable, standards-compliant information on the strength development of concrete on the site, in real-time.

Follow the directions in the 'Concremote' User Information booklet.

**Note:**
For further information, see the section headed 'Reshoring props, concrete technology and stripping out'.

**Lowering the floor-slab formwork**

**NOTICE**

**Basic rule:**
- Stress-release the floor props row by row.
- Stress-release should always be carried out working from one side towards the other, or from the middle of the floor slab (mid-span) towards the slab-edges.
- For wide spans, this procedure MUST be followed!
- Stress-release must NEVER be carried out from both sides towards the middle!

**Stress-releasing the first row**
- Remove the intermediate props and put them in the stacking pallet.
- Lower the floor-slab formwork by striking the wedge on the lowering head with a hammer.

**Stress-releasing next rows**
- Stress-release the next rows one after the other in the same way.
Removing parts that are no longer needed

➤ Turn the secondary beams over onto their sides, pull them out and put them in the stacking pallet.

➤ Leave enough beams in position to secure the formwork sheets.

➤ Remove the formwork sheets and put them in the stacking pallet.

➤ Remove the remaining secondary beams and the primary beams, and put them in the stacking pallet.

Removing the floor props

➤ Bring the floor prop into a horizontal position.
➤ If necessary, open the fastening clamp and push the inner tube into the outer tube.
➤ Put the removable folding tripods and floor props in the stacking pallet.

💡 It is best to keep floor props and lowering heads separate for repositioning (floor props on their own can be stacked closer together in the stacking pallet).

Reshoring

➤ Install reshoring before the slab is subjected to live load, or at the latest before the concrete for the next slab up is poured.

Note:
For further information, see the section headed 'Reshoring props, concrete technology and stripping out'.
Measures for increasing the stability of floor-slab formwork

Bracing clamp B

Planks can be attached to the floor props as diagonal braces, using the Bracing clamp B.

**NOTICE**
- Used as a set-up aid and takes horizontal loads during assembly.
- **Not suitable** for sustaining horizontal loads during pouring.
- Always hammer in the wedge from top to bottom!

### Possible plank/floor-prop combinations with the Bracing clamp B

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</tr>
</tbody>
</table>

Legend:
- **IT** Inner tube
- **OT** Outer tube
- ✓ Possible to combine
- — Not possible to combine
Propping with Bracing frame Eurex 1.00m

The Bracing frame Eurex 1.00m fixes the Doka floor props Eurex 20 and Eurex 30 and is a stable set-up aid - especially close to the edges of floor-slab formwork.

Features:
- Suitable for fixing to both the outer and inner tubes.
- Captively integrated quick-fixing mechanism for the Doka floor props.
- Can be used in combination with diagonal crosses.
- On uneven surfaces, higher stability is ensured during assembly.

**NOTICE**
- Used as a set-up aid and takes horizontal loads during assembly.
- **Not suitable** for sustaining horizontal loads during pouring.
- All the floor props must be plumb.
- The prop holders on the bracing frames must always be pointing in the same direction.

**Assembly**

- **NOTICE**
  - Always set up the bracing frames such that the end with the two safety catches (D) and (E) is at the bottom (see Close-up 1).
  - Join both bracing frames with diagonal crosses at top and bottom, and secure these with safety catches (Close-up 1).
  - Fasten floor props to the bracing frame with the quick-fixing mechanism (Close-up 2).

---

**Close-up 1**

- A Bracing frame Eurex 1.00m
- B Diagonal cross
- C Safety catch 1
- D Safety catch 2
- E Safety catch 3
- F Doka floor prop Eurex
- O Prop holder with quick-fixing mechanism

**Close-up 2**

- A Bracing frame Eurex 1.00m
- B Diagonal cross
- C Safety catch 1
- D Safety catch 2
- E Safety catch 3
- F Doka floor prop Eurex
- O Prop holder with quick-fixing mechanism

---

| a | 98.3 cm |
| --- |
| b | 80.3 cm |

---

| A | Bracing frame Eurex 1.00m |
| --- |
| B | Diagonal cross |
| C | Safety catch 1 |
| D | Safety catch 2 |
| E | Safety catch 3 |
| F | Doka floor prop Eurex |
| O | Prop holder with quick-fixing mechanism |
### Spacing of bracing frames Eurex

<table>
<thead>
<tr>
<th>Designation</th>
<th>Spacing of safety catches [cm]</th>
<th>Spacing of bracing frames c [cm]</th>
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</thead>
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<tr>
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<td>(a = 98.3)</td>
<td>(b = 80.3)</td>
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<tr>
<td>Diagonal cross 18.300</td>
<td>331.8</td>
<td>336.6</td>
</tr>
</tbody>
</table>
Tie-back solutions

For transferring low horizontal loads (stabilisation, V/100, windproofing etc.).

To a beam-hole

Tie-back attached to a diam. 20 mm tie-rod or reinforcement rod placed through a beam-hole

Max. tie-back load: 5 kN

Around formwork beam and Lowering head H20

Max. tie-back load: 5 kN

A Lashing strap 5.00m
B Diam. 20 mm tie-rod or reinforcement rod

WARNING
➤ Never attach the tie-back directly to head unit or floor prop

Lifting-bracket

Pre-mounted to primary beam.

Max. tie-back load: 5 kN

A Lashing strap 5.00m
D Lifting bracket

H Horizontal load
V Vertical load
A Tie-back force

A Lashing strap 5.00m
Secondary-beam stabilisers

The secondary-beam stabiliser can be used to prevent formwork beams from tilting while being sheeted out.

<table>
<thead>
<tr>
<th>Secondary-beam stabiliser 1</th>
<th>Secondary-beam stabiliser 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Secondary-beam stabiliser 1" /></td>
<td><img src="image2" alt="Secondary-beam stabiliser 2" /></td>
</tr>
</tbody>
</table>

Advantages:

- Special claws to prevent slippage on the beam-flange
- No work-platform scaffold needed, as the stabilisers can be mounted/dismounted from ground level using an Alu beam fork H20
- Needs only small commissioning quantities, as the Secondary-beam stabilisers can be re-set in tandem with the formwork erection cycle:
  - approx. 20 Secondary-beam stabilisers 1
  - approx. 10 Secondary-beam stabilisers 2

Note:

In certain special situations, (e.g. when forming inclined floor-slabs), Secondary-beam stabilisers can also be used for transferring horizontal loads.

For more information, please contact your Doka technician.

Assembly:

- Hang the Secondary-beam stabilisers into place with an Alu beam fork H20.

- Lay the formwork sheets.

- After the formwork sheets have been laid, unhook and remove the Secondary-beam stabilisers with an Alu beam fork H20.

The secondary beam is now held in place.
Floor formwork around edges

It can be advantageous to combine Dokaflex with Dokamatic tables, particularly in edge-zones. This is an easy, safe way of forming drop-beams and slab stop-ends, and of erecting safety railings. For more information, see the 'Dokamatic table', 'Dokaflex table', 'Doka load-bearing tower Staxo 40' or 'Doka load-bearing tower Staxo 100' User Information booklets.

Without edge drop-beam

Configuration with tableform

Supported by load-bearing tower

With edge drop-beam

Configuration with tableform

Supported by load-bearing tower

WARNING ➤ Where formwork beams cantilever out a long way, secure them against accidental lift-out.
Dokaflex at edge of building

If no separate edge tables are available, the following points must be remembered when using Dokaflex:

▪ In order to be able to transfer the horizontal forces, the superstructure components must be firmly attached to one another.
▪ The tie-down can be fastened to either the secondary or primary beam.

WARNING
➤ Before anybody steps onto the surface of the formwork, its stability must be ensured (for example with Bracing frames Eurex, bracing or back-staying). Follow the directions in the section headed 'Measures for increasing the stability of floor-slab formwork'.
➤ Secure cantilevered slab formwork to prevent lift-out and tipover.
➤ Secondary beams with stop-end formwork must be secured against horizontal pull-out.
➤ In addition, if necessary, put up a protection platform on the structure (e.g. Folding platform K).
Practical examples

Fixing in the direction of the primary beams

Fixing in the direction of the secondary beams

Legend

- △ Removable folding tripod top
- ← Fixing point (e.g. with Lashing strap 5.00m)
- ← Arrow = direction of the tie-back
- △ Bracing frames Eurex with diagonal crosses

NOTICE

One tie-back is required for each butt join between sheets!
Use with scissor-type elevated work platform

Formwork and edge protection can be erected from below if scissor-type elevated work platforms with telescoping platforms are used.

NOTICE

▪ When wheel-around scaffolds are used, the fall protection is installed by persons working on the surface of the formwork.

▪ Use personal fall-arrest systems to protect against fall hazards when working on unsecured slab-edges (e.g. Doka personal fall-arrest set).
Slab stop-ends

**WARNING**

➤ Secondary beams with stop-end formwork must be secured against horizontal pull-out.

**Universal end-shutter support 30cm**

**Configuration A: Fastened with nails**

- **A** Universal end-shutter support 30cm
- **B** Nail 3.1x80
- **C** Doka formwork sheet 3-SO

**Tip for stripping formwork:**

➤ Take out the nails on the stop-end side.
➤ Put the claw of a hammer under the corner (put a piece of wood under it to protect the formwork sheeting)
➤ Lever up the end-shutter support

**Configuration B: Fastened with Spax screws**

- **d** slab thickness max. 30 cm
- **A** Universal end-shutter support 30cm
- **C** Doka formwork sheet 3-SO
- **D** Spax screws 4x40 (fully threaded)
- **E** Doka beam H20

**Note:**

As a basic rule, it is forbidden to use formwork beams ‘horizontally’ (i.e. with the load-direction perpendicular to the web). However, the application shown here – with the end-shutter support – is allowed.

**Structural design**

<table>
<thead>
<tr>
<th>How fastened:</th>
<th>Configuration</th>
<th>Max. influence width: a for slab thickness of [cm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 nails 3.1x80</td>
<td>A</td>
<td>90, 50, 30</td>
</tr>
<tr>
<td>4 Spax screws 4x40 (fully threaded)</td>
<td>B</td>
<td>220, 190, 160</td>
</tr>
</tbody>
</table>
Doka floor end-shutter clamp

The Doka floor end-shutter clamp is used for fast, safe forming of slab stop-ends.

- For slab thicknesses of up to 60 cm
- 3 different fixing methods
- Various types of stop-end are possible
- Fits all standard Doka handrail posts (also complies with the requirements of DIN EN 13374)
- Can be mounted and dismounted from either above or below when the End-shutter shoe is used
- Low unit weight (can be separated into 2 parts)

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

System dimensions

Practical example

Note:
The edge railings must be mounted before the formwork sheets are laid out.
**Floor end-shutter profile XP**

The Floor end-shutter profile XP is used for fast, safe forming of slab stop-ends.
- For slab thicknesses of up to 30 cm
- Can be combined with Edge protection system XP.
- Various stop-ends (planks or formwork sheets) possible.
- Fits all standard Doka handrail posts (also complies with the requirements of DIN EN 13374)

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

**System dimensions**

- a ... 15.0 cm
- b ... slab thickness max. 30 cm

<table>
<thead>
<tr>
<th>A</th>
<th>Floor end-shutter profile XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Handrail post XP 1.20m</td>
</tr>
<tr>
<td>C</td>
<td>Protective grating XP</td>
</tr>
<tr>
<td>D</td>
<td>End-shuttering (5x20cm board)</td>
</tr>
<tr>
<td>E</td>
<td>End-shuttering (5x13cm board)</td>
</tr>
<tr>
<td>F</td>
<td>Spacer board (5x10cm)</td>
</tr>
</tbody>
</table>

- Slab stop-ends and safety barriers in one system

**Practical example**

**Beam forming support**

The Beam forming support 20 is the professional way of forming drop beams and slab stop-ends. In conjunction with the Extension for beam forming support 60cm, exact height adjustment to within 1 cm is possible.
- For slab thicknesses of up to 90 cm
- Secured directly to the secondary beam

For more information, see the section headed ‘Drop beams’.

**Examples**

- A Beam forming support 20

**A** Beam forming support 20
Guardrail systems on the formwork

**NOTICE**
- Working from below is the preferred method for installing fall protection.
- When mounting/dismounting edge protection from above, the crew must use a personal fall-arrest system (e.g. the Doka personal fall-arrest set).
- Suitable anchorage points must be defined by a skilled person appointed by the contractor.

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

### Railing clamp XP 40cm

The Railing clamp XP 40cm is for clamping the Handrail post XP to the end face of concrete slabs or to Doka beams.
- for railing heights of 1.20 m
- for railing heights 1.80 m with additional measures

#### Railing-height 1.20 m

**Assembly**

The Railing clamp XP 40cm can be attached in the direction of either the secondary or primary beams.

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

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

➤ Hammer in the wedge until the hammer rebounds.

### Clamping range: 2 - 43 cm

#### WARNING

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

#### WARNING

Risk of formwork beams tipping over!

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

#### WARNING

Risk of breaking the formwork sheets!

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

---

**NOTICE**

When Railing clamp XP is installed at right angles to the beam, the beam must be securely seated in the recesses of the clamp.
Position the fully pre-assembled beams as primary beams or secondary beams, as applicable.

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

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

![NOTICE]

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

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

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

   ![The locking mechanism must engage.]

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

![Fixing in the direction of the secondary beams]

Not possible for use with Protective grating XP.

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

A Load action
Fixing in the direction of the primary beams

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

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

A Load action

Railing-height 1.80 m

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

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

! NOTICE

A ... 2.5 cm

A Railing clamp XP 40cm
B Hardwood packer 65x20x190 mm (only for railing height 1.80m)
C Universal screw countersunk head Torx TG 5x80

WARNING

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

Use on the primary beam

Use on the secondary beam

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

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

a ... 2.5 cm

a ... Protruding length of formwork sheet ≤ 5 cm
Insertion adapter XP

Insertion adapters XP are used in combination with Protective gratings XP, guardrail boards or scaffold tubes, for putting up safety barriers.  
- Suitable for railing-heights of 1.20 m and 1.80 m.

![Image of Insertion adapter XP](image)

**WARNING**  
- Only fix the Insertion adapter XP to components that can reliably transfer the forces involved.

**WARNING**  
- Risk of formwork beams tipping over!  
- Only attach the Insertion adapter XP to formwork beams if there is no risk of these tipping over.

**Assembly**

- Mount the Insertion adapter XP in the ready-drilled holes in the beam.  
  (Can be used on both primary and secondary beams)
- Threaded-fastener material required  
  - 2 hexagon screws M20x90  
  - 2 hexagon nuts M20  
  - 2 washers 20 (DIN EN ISO 7094, on timber side)  
  (not included with product)
- Position the fully pre-assembled beam as primary beam or secondary beam, as applicable.

**NOTICE**

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

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

- The locking mechanism must engage.

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

![Diagram of assembly process](image)

<table>
<thead>
<tr>
<th>A</th>
<th>Insertion adapter XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Handrail post XP 0.60m or Handrail post XP 1.80m</td>
</tr>
<tr>
<td>C</td>
<td>Toeboard holder XP 0.60m (not needed when using the Protective grating XP)</td>
</tr>
<tr>
<td>D</td>
<td>Doka beam H20</td>
</tr>
<tr>
<td>E</td>
<td>Protective grating or guardrail boards (site-provided)</td>
</tr>
<tr>
<td>F</td>
<td>extra toeboard (wooden board 3x15 cm or 4x15 cm)</td>
</tr>
</tbody>
</table>

**WARNING**

- Only fix the Insertion adapter XP to components that can reliably transfer the forces involved.

- Risk of formwork beams tipping over!  
- Only attach the Insertion adapter XP to formwork beams if there is no risk of these tipping over.

- Make sure the loading direction is correct!  
  Subject the Insertion adapter XP to loading in its longitudinal direction only.  
  Subjection to loading in its transverse direction is prohibited!

![Diagram showing correct and incorrect loading](image)

<table>
<thead>
<tr>
<th>A</th>
<th>Insertion adapter XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Load action</td>
</tr>
</tbody>
</table>
### Structural design

**NOTICE**

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

- The span is the distance between the handrail-post uprights (posts).
- The permitted influence width of a handrail-post upright is stated in the respective tables.
- The actual influence width can only be determined by calculation, and corresponds to roughly the spacing ‘a’ between the handrail-post upright (posts).
- The span (a) of the handrail-post uprights is roughly equal to the influence width (e) if:
  - they are evenly spaced
  - the guardrail boards are either continuous or are jointed at the handrail posts, and
  - there are no cantilevering projections.
- The wind conditions likely to be encountered in Europe for a height up to 40m above ground level are covered by the dynamic pressure \( q = 0.6 \text{ kN/m}^2 \).

### Note:

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

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

#### Permitted cantilever (b) of edge-protection components

<table>
<thead>
<tr>
<th>Edge-protection component</th>
<th>Permitted cantilever [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dynamic pressure ( q ) [kN/m²]</td>
</tr>
<tr>
<td>Protective grating XP 2.70x1.20m</td>
<td>0.6 m</td>
</tr>
<tr>
<td>Guardrail board 2.5 x 12.5 cm</td>
<td>0.3 m</td>
</tr>
<tr>
<td>Guardrail board 2.4 x 15 cm</td>
<td>0.5 m</td>
</tr>
<tr>
<td>Guardrail board 3 x 15 cm</td>
<td>0.8 m</td>
</tr>
<tr>
<td>Guardrail board 4 x 15 cm</td>
<td>1.4 m</td>
</tr>
<tr>
<td>Guardrail board 3 x 20 cm</td>
<td>1.0 m</td>
</tr>
<tr>
<td>Guardrail board 4 x 20 cm</td>
<td>1.6 m</td>
</tr>
<tr>
<td>Guardrail board 5 x 20 cm</td>
<td>1.9 m</td>
</tr>
<tr>
<td>Scaffold tube 48.3mm</td>
<td>1.3 m</td>
</tr>
</tbody>
</table>

#### Railing clamp XP 40cm

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

#### Insertion adapter XP

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

#### Permissible influence width ’e’ [m]

<table>
<thead>
<tr>
<th>Dynamic pressure ( q ) [kN/m²]</th>
<th>Protective grating XP 2.70x1.20m</th>
<th>Guardrail boards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>1.1</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>2.2</td>
</tr>
</tbody>
</table>

1) with toeboard 5 x 20 cm

#### Permissible influence width ‘e’ [m]

<table>
<thead>
<tr>
<th>Dynamic pressure ( q ) [kN/m²]</th>
<th>Protective grating XP 2.70x1.20m</th>
<th>2.70x0.60m</th>
<th>Scaffold tubes 48.3mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>1.9</td>
<td>2.7</td>
<td>3.6</td>
</tr>
<tr>
<td>0.6</td>
<td>1.9</td>
<td>2.7</td>
<td>5.0</td>
</tr>
<tr>
<td>1.1</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>1.3</td>
<td>1.2</td>
<td>1.2</td>
<td>2.4</td>
</tr>
</tbody>
</table>

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

2) ... Toeboard 5 x 43 cm required (e.g., wooden board 5 x 20 cm + 5 x 23 cm).
Edge protection with façade scaffolding

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>... max. 30 cm</td>
</tr>
<tr>
<td>A</td>
<td>Bracing frame Eurex 1.00m</td>
</tr>
<tr>
<td>B</td>
<td>Diagonal cross</td>
</tr>
<tr>
<td>C</td>
<td>Removable folding tripod top</td>
</tr>
<tr>
<td>D</td>
<td>Doka floor prop Eurex</td>
</tr>
<tr>
<td>E</td>
<td>Lashing strap 5.00m</td>
</tr>
<tr>
<td>F</td>
<td>Reshoring props (only when necessary)</td>
</tr>
<tr>
<td>G</td>
<td>Facade scaffolding</td>
</tr>
</tbody>
</table>

**NOTICE**

- In order to be able to transfer the horizontal forces, the superstructure components must be firmly attached to the structure with a rigid, force-transmitting join.
- The tie-down can be fastened to either the secondary or primary beam.
Fall-arrest systems on the structure

**Doka floor end-shutter clamp**

- Slab stop-ends and fall-arrest barriers in one system

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

**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**

- Fixed in a 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 'Handrail clamp T' User Information booklet!

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

Beam forming support

The Beam forming support 20 is the professional way of forming drop beams and slab stop-ends. In conjunction with the Extension for beam forming support 60cm, exact height adjustment to within 1 cm is possible. This does away with time-consuming jobsite squared-timber constructions. The Beam forming support automatically clamps the formwork tight, resulting in clean concrete surfaces and grout-tight edges.

How to use the Beam forming support

➤ Place the Beam-forming support onto the H 20 secondary beam and push it up against the sidewall formwork.

The large bearing surface of the Beam-forming support gives the sidewall formwork a high degree of (90°) angle accuracy.

➤ Clamp the Beam forming support firmly into position

The diagonal bracing of the Beam-forming support ensures that the joint between the form-ply sheets is automatically pressed together tightly when the Beam forming support is clamped.

This results in a clean concrete surface.

A Beam forming support 20
B Extension for beam forming support 60cm
Formwork beams horizontal
(up to a height of 60 cm)

Note:
As a basic rule, it is forbidden to use formwork beams 'horizontally' (i.e. with the load-direction perpendicular to the web). However, the specific applications shown here, using the Beam forming support, are permitted.

Formwork beams vertical
(up to a height of 90 cm)

Structural design

Vertical load and horizontal load
When drop beam and slab are poured at the same time, the vertical loads and the horizontal loads act concurrently.

- Permitted vertical load: 3.0 kN
- Permitted horizontal load: 4.5 kN
- Permitted bending moment: 1.1 kNm

Vertical load
If the slab is not poured until the concrete of the drop beam has hardened, only the vertical loads act.

Permitted vertical load: 8.0 kN
Drop-beam not integrated into the floor-slab / stop-end formwork

All the data below apply where 3-SO 21 mm and 3-SO 27 mm formwork sheets are used.

Drop beams of between 10 and 30 cm in height

Sidewall formwork:
- Doka beam H20 top

<table>
<thead>
<tr>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.0 cm</td>
<td>On every 3rd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 30 and 47 cm in height

Sidewall formwork:
- Doka beam H20 top
- Squared timber 4/8 cm for drop beams of between 30 and 34 cm in height
- Squared timber 8/8 cm for drop beams of between 34 and 47 cm in height

<table>
<thead>
<tr>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.0 cm</td>
<td>On every other secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 47 and 70 cm in height

<table>
<thead>
<tr>
<th>h</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 60 cm</td>
<td>50.0 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
<tr>
<td>From 60 cm</td>
<td>33.3 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 70 and 90 cm in height

Where the dimensional requirements are especially stringent, we recommend placing a form-tie (A) through the sidewall formwork as an additional precaution.

Sidewall formwork:
- Doka formwork beams H20 in the upright

<table>
<thead>
<tr>
<th>h</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 85 cm</td>
<td>41.7 cm</td>
<td>On every secondary beam</td>
</tr>
<tr>
<td>From 85 cm</td>
<td>36.0 cm</td>
<td>On every secondary beam</td>
</tr>
</tbody>
</table>

h... Drop-beam height
b... Drop-beam width
l... Spacing of primary beams
Drop-beam integrated into the floor-slab

Secondary beams parallel to drop-beam

All the data below apply where 3-SO 21 mm and 3-SO 27 mm formwork sheets are used.

Drop beams of between 10 and 30 cm in height

![Diagram](image)

\[ b \ldots \text{max. 100 cm} \\
\text{l} \ldots \text{max. 150 cm} \]

Base formwork
- Height of squared timber \( = 30-h \) (cm)

Sidewall formwork:
- Doka beam H20 top
- Squared timber 10/8 cm

<table>
<thead>
<tr>
<th>Slab thickness ( d )</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>62.5 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>41.7 cm</td>
<td>On every 3rd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 30 and 47 cm in height

![Diagram](image)

\[ b \ldots \text{max. 100 cm} \\
\text{l} \ldots \text{max. 150 cm} \]

Sidewall formwork:
- Doka beam H20 top
- Squared timber 4/8 cm for drop beams of between 30 and 34 cm in height
- Squared timber 8/8 cm for drop beams of between 34 and 47 cm in height

<table>
<thead>
<tr>
<th>Slab thickness ( d )</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>41.7 cm</td>
<td>on every other secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>33.3 cm</td>
<td>on every other secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 47 and 60 cm in height

![Diagram](image)

\[ b \ldots \text{max. 100 cm} \\
\text{l} \ldots \text{max. 150 cm} \]

Sidewall formwork:
- 2 Doka beams H20 top

<table>
<thead>
<tr>
<th>Slab thickness ( d )</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>31.25 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>25.00 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 60 and 70 cm in height

![Diagram](image)

\[ b \ldots \text{max. 100 cm} \\
\text{l} \ldots \text{max. 150 cm} \]

Sidewall formwork:
- 2 Doka beams H20 top
- Height of squared timber = \( h-60 \) (cm)

<table>
<thead>
<tr>
<th>Slab thickness ( d )</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>40.0 cm</td>
<td>On every secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Slab thickness \( d \)
Spacing of secondary beams
Position of Beam forming support
Drop beams of between 10 and 30 cm in height

b ... max. 100 cm
l ... max. 150 cm

Base formwork
▪ Height of squared timber = 30-h (cm)

Sidewall formwork:
▪ Doka beam H20 top
▪ Squared timber 10/8 cm

<table>
<thead>
<tr>
<th>Slab thickness d</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>62.5 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>41.7 cm</td>
<td>On every 3rd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 30 and 40 cm in height

b ... max. 100 cm
l ... max. 150 cm

Sidewall formwork:
▪ Doka beam H20 top
▪ Height of squared timber = h-20 (cm)

<table>
<thead>
<tr>
<th>Slab thickness d</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>50.0 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>41.7 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 40 and 51 cm in height

b ... max. 100 cm
l ... max. 150 cm

Sidewall formwork:
▪ Doka beam H20 top
▪ Height of squared timber = h-40 (cm)

<table>
<thead>
<tr>
<th>Slab thickness d</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>41.70 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>31.25 cm</td>
<td>On every 2nd secondary beam</td>
</tr>
</tbody>
</table>

Drop beams of between 51 and 70 cm in height

b ... max. 100 cm
l ... max. 150 cm

Sidewall formwork:
▪ Doka beam H20 top
▪ Squared timber 5/8 cm for drop beams of between 51 and 60 cm in height
▪ Squared timber 10/8 cm for drop beams of between 60 and 70 cm in height

<table>
<thead>
<tr>
<th>Slab thickness d</th>
<th>Spacing of secondary beams</th>
<th>Position of Beam forming support</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 cm</td>
<td>40.0 cm</td>
<td>On every secondary beam</td>
</tr>
<tr>
<td>30 cm</td>
<td>31.25 cm</td>
<td>-</td>
</tr>
</tbody>
</table>

h... Drop-beam height
b... Drop-beam width
l... Spacing of primary beams
Downstand beam in mid-slab

A  Bracing frame Eurex 1.00m
B  Diagonal cross
C  Doka floor prop Eurex
D  Removable folding tripod top

NOTICE
Where necessary, the stability of the shoring construction during assembly can be increased by attaching crosswise tie-downs.
Transporting, stacking and storing

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

Doka skeleton transport box 1.70x0.80m

Storage and transport device for small items

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 $\beta$ 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.

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>5</td>
</tr>
</tbody>
</table>

It is 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.
Doka multi-trip transport box
Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m

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

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

A Slide-bolt for fixing the partition

Possible ways of dividing the box

<table>
<thead>
<tr>
<th>Multi-trip transport box partition</th>
<th>in the longitudinal direction</th>
<th>in the transverse direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.20m</td>
<td>max. 3 partitions</td>
<td>-</td>
</tr>
<tr>
<td>0.80m</td>
<td>-</td>
<td>max. 3 partitions</td>
</tr>
</tbody>
</table>

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 1.20x0.80m</td>
<td>Doka multi-trip transport box 1.20x0.80x0.41m</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>0.80m</td>
<td>10</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.

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.

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

Using Doka stacking pallets as storage units

Max. n° of units on top of one another

<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.

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°!

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.
Transporting Bracing frames Eurex

**NOTICE**
It is not allowed to mix different sizes of bracing frames!

Max. number of Bracing frames Eurex 1.00m per stacking pallet: 10

**Loading the pallet**
➤ Turn the prop-holders (= quick-fixing mechanisms) by 90°, fix them and place the frame into the Doka stacking pallet (see Close-up 1).

![Close-up 1](image1)

**Close-up 1**

A Bracing frame Eurex 1.00m  
B Prop-holder (= quick-fixing mechanism)  
C Doka stacking pallet 1.55x0.85m

➤ Stack the other bracing frames alternate ways round (as shown in Close-up 2).

![Close-up 2](image2)

**Close-up 2**

A Bracing frame Eurex 1.00m  
B Prop-holder (= quick-fixing mechanism)

Animation: [https://player.vimeo.com/video/262344460](https://player.vimeo.com/video/262344460)

➤ Fasten the load to the stacking pallet so that it cannot slide or tip out.

Notice
### Doka accessory boxes as storage units

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

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

### 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.

### Bolt-on castor set B

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

Suitable for drive-through access openings > 90 cm.

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

- Doka accessory box
- Doka stacking pallets

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

- Always use slings for lifting stacked sheets - do not use chains.
- Always use edge protectors when strapping sheets together. Edge protectors can be padding made of plastic, wood or cardboard.

![Image of stacked formwork sheets]

**NOTICE**
When transporting loose sheets without strapping, make sure that the sheets cannot slip!

Sheet stack

**NOTICE**
- Cover the sheet stack to protect the sheets against extremes of weather, for example direct sunlight or moisture. This reduces the tendency of cracks to form in the face ply.
- Do not attempt to place stacks of sheets one on top of another on the construction site.

- Always use edge protectors when strapping sheets together. Edge protectors can be padding made of plastic, cardboard or wood.

**Stack units ex works**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Sheets per stack</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/50 cm - 300/50 cm</td>
<td>100  80</td>
</tr>
<tr>
<td>350/50 cm - 600/50 cm</td>
<td>60  50</td>
</tr>
<tr>
<td>100/100 cm - 300/100 cm</td>
<td>50  40</td>
</tr>
<tr>
<td>350/100 cm - 600/100 cm</td>
<td>30  25</td>
</tr>
</tbody>
</table>

Stack strapped complete with wooden battens 8 x 8 cm

**Ground conditions for stacking**

- Maximum angle of inclination of ground 3%.
- The ground on which the stack is to be placed must be adequately firm and level. Best-case conditions are concreted or paved storage areas.
- Storage on asphalt: Depending on the parts stored, place wooden battens, strips of formwork sheeting or metal sheet between the parts and the asphalt surface to ensure that the weight is adequately spread.
- Storage on other surfaces (sand, gravel...): Adopt suitable measures for storage (e.g. place thick plywood sheets underneath the loads).
Reshoring props, concrete technology and stripping out

Follow the directions in the Calculation Guide entitled 'Stripping out formwork from floors in building construction', and/or ask your Doka technician.

When is the best time to strip out the formwork?

The concrete strength needed before the formwork can be stripped out will depend upon the load factor $\alpha$. This can be read off from the following table.

Load factor $\alpha$

This is calculated by:

$$\alpha = \frac{DL_{\text{concrete}} + LL_{\text{construction state}}}{DL_{\text{concrete}} + DL_{\text{finishing}} + LL_{\text{final state}}}$$

<table>
<thead>
<tr>
<th>Slab thickness d [m]</th>
<th>Dead load DL_{\text{concrete}} [kN/m$^2$]</th>
<th>Load factor $\alpha$</th>
<th>LL_{\text{final state}}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.00 kN/m$^2$</td>
<td>3.00 kN/m$^2$</td>
<td>4.00 kN/m$^2$</td>
</tr>
<tr>
<td>0.14</td>
<td>3.50</td>
<td>0.67</td>
<td>0.59</td>
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<tr>
<td>0.16</td>
<td>4.00</td>
<td>0.69</td>
<td>0.61</td>
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<tr>
<td>0.18</td>
<td>4.50</td>
<td>0.71</td>
<td>0.63</td>
</tr>
<tr>
<td>0.20</td>
<td>5.00</td>
<td>0.72</td>
<td>0.65</td>
</tr>
<tr>
<td>0.22</td>
<td>5.50</td>
<td>0.74</td>
<td>0.67</td>
</tr>
<tr>
<td>0.25</td>
<td>6.25</td>
<td>0.76</td>
<td>0.69</td>
</tr>
<tr>
<td>0.30</td>
<td>7.50</td>
<td>0.78</td>
<td>0.72</td>
</tr>
<tr>
<td>0.35</td>
<td>8.75</td>
<td>0.80</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Valid for a finishing-load $DL_{\text{finishing}} = 2.00$ kN/m$^2$ and a live load in the early-stripped state of $LL_{\text{construction state}} = 1.50$ kN/m$^2$

$DL_{\text{concrete}}$: calculated with $\gamma_{\text{concrete}} = 25$ kN/m$^3$
$DL_{\text{finishing}}$: load for floor finish, etc.

Example: Slab thickness 0.20 m with a final live load of 5.00 kN/m$^2$ results in a load factor $\alpha$ of 0.54.
This means that formwork removal / stress-release can take place once the concrete has reached 54% of its 28-day strength. The load-bearing capacity will then correspond to that of the finished structure.

Why put up reshoring props after stripping out the formwork?

After the formwork has been stripped and the slab has been stress-relieved or dismantled, the slab is able to bear its dead load and live loads resulting from the construction state, but not the concreting loads from subsequent floor-slabs.
The temporary reshoring serves to support the floor-slab and distribute the concreting loads across several floors.

Positioning the reshoring props correctly

Reshoring props have the job of spreading loads between the new floor-slab and the floor beneath it. This load distribution will depend on the relationship between the rigidities of these two floor-slabs.

NOTICE
Ask an expert!
As a rule, the question of using reshoring props should be referred to the responsible experts, regardless of the information given above.
Observe all local standards and regulations!

Strength development in the new concrete

Rough reference values can be found in DIN 1045-3:2008, Table 2. The length of time until 50 percent of the final (28-day) strength is reached can be read off from this Table as a function of the temperature and the type of concrete.
The values are only valid if the concrete is given correct, appropriate curing throughout the entire period.
For a concrete with medium strength development, the following inferred graph may thus be used.

Concrete-strength development – medium

![Concrete-strength development graph]

$A \theta \geq 15^\circ$
Deflection of the new concrete

The concrete’s modulus of elasticity develops faster than compressive strength. At 60% of its compressive strength $f_{ck}$, the concrete has already reached approximately 90% of its modulus of elasticity $E_c(28)$. The increase in the elastic deformation taking place in the new concrete is thus only negligible. The creep deformation, which only finally ceases after several years, is several times more than the elastic deformation. Early striking – e.g. after 3 days instead of 28 – thus only leads to an increase in the total deformation of less than 5%.

The part of this deformation accounted for by creep deformation, however, may be anything between 50% and 100% of the standard value, due to such variable influences as the strength of the aggregates, and the atmospheric humidity. This means that the total deflection of the floor-slab is practically independent of the time at which the formwork was struck.

Cracks in new concrete

The bonding strength between the reinforcement steel and the concrete develops more rapidly in the new concrete than does its compressive strength. This means that early stripping does not have any negative influence upon the size and distribution of cracks on the tension side of reinforced concrete constructions. Other cracking phenomena can be countered effectively by appropriate curing methods.

Curing of new concrete

New site-placed concrete is exposed to influences which may cause cracking and slow down its strength development:

- premature drying
- over-rapid cooling in the first few days
- excessively low temperatures or frost
- mechanical damage to the surface of the concrete
- hydration heat
- etc.

The simplest precaution is to leave the formwork on the concrete surface for longer. As well as the familiar extra curing measures, this measure should be carried out in any case.

Removing the load from the formwork from wide-spanned floor-slabs with support centres of over 7.5m

In the case of thin, wide-spanned concrete floor-slabs (e.g. in multistorey car parks), the following points must be remembered:

- When the formwork beneath these floor-slab spans is released (i.e. when the load is taken off the floor props), the floor props that are still in place are briefly subjected to additional loads. This may lead to overloading, and to the floor props being damaged.

- Please consult your Doka technician.

**NOTICE**

As a basic rule:

- Stress-release should always be carried out working from one side towards the other, or from the middle of the floor slab (mid-span) towards the slab-edges.

For wide spans, this procedure MUST be followed!

- Stress-release must NEVER be carried out from both sides towards the middle!

---

B $\theta \geq 10^\circ$

C $\theta \geq 5^\circ$

---

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Combining Doka table systems

Because the superstructures of all Doka floor-slab systems share the same basic structure, they can also be used together on the site.

Dokamatic and Dokaflex tables

The Doka tables are pre-assembled, and save on both labour and crane time. With the DoKart, the tables can easily be travelled to the next pouring section by just one man working on his own. The system is optimised to give the very shortest forming times on large areas, and copes well with varying structural-design and geometrical requirements.

For more information, see the 'Dokamatic table' and 'Dokaflex table' User Information booklets.

Doka Xtra

This value-for-money, high-speed system has a predefined stripping sequence which boosts efficiency and evens out the site crew's workload. Any type of form-facing can be used, enabling all architectural wishes regarding the concrete surface to be met.

For more information, please see the User Information booklet 'Doka Xtra'.
<table>
<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Description</th>
<th>Article N°</th>
<th>[kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doka floor prop Eurex 20 top 150</td>
<td>8.0</td>
<td>Galvanised 8.0</td>
<td>Doka floor prop Eurex 30 top 250</td>
<td>12.8</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 top 250</td>
<td>12.7</td>
<td>Galvanised 12.7</td>
<td>Doka floor prop Eurex 30 top 300</td>
<td>16.4</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 top 300</td>
<td>14.3</td>
<td>Galvanised 14.3</td>
<td>Doka floor prop Eurex 30 top 350</td>
<td>20.7</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 top 350</td>
<td>17.4</td>
<td>Galvanised 17.4</td>
<td>Doka floor prop Eurex 30 top 400</td>
<td>24.6</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 top 400</td>
<td>21.6</td>
<td>Galvanised 21.6</td>
<td>Doka floor prop Eurex 30 top 450</td>
<td>29.1</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 top 550</td>
<td>32.3</td>
<td>Galvanised 32.3</td>
<td>Doka floor prop Eurex 30 top 550</td>
<td>38.6</td>
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<tr>
<td>Doka floor prop Eurex 20 eco 250</td>
<td>11.5</td>
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<td>14.8</td>
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<tr>
<td>Doka floor prop Eurex 20 eco 300</td>
<td>14.0</td>
<td>Galvanised 14.0</td>
<td>Doka floor prop Eurex 30 eco 300</td>
<td>16.7</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 eco 350</td>
<td>16.9</td>
<td>Galvanised 16.9</td>
<td>Doka floor prop Eurex 30 eco 350</td>
<td>20.5</td>
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<tr>
<td>Doka floor prop Eurex 20 eco 400</td>
<td>20.5</td>
<td>Galvanised 20.5</td>
<td>Doka floor prop Eurex 30 eco 400</td>
<td>24.9</td>
</tr>
<tr>
<td>Doka floor prop Eurex 20 eco 450</td>
<td>24.1</td>
<td>Galvanised 24.1</td>
<td>Doka floor prop Eurex 30 eco 450</td>
<td>29.2</td>
</tr>
<tr>
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<td>32.0</td>
<td>Galvanised 32.0</td>
<td>Doka floor prop Eurex 30 eco 550</td>
<td>38.6</td>
</tr>
<tr>
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<td>12.9</td>
<td>Galvanised 12.9</td>
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</tr>
<tr>
<td>Doka floor prop Eco 20 300</td>
<td>15.3</td>
<td>Galvanised 15.3</td>
<td>Doka floor prop Eco 20 300</td>
<td>13.0</td>
</tr>
<tr>
<td>Doka floor prop Eco 20 350</td>
<td>17.8</td>
<td>Galvanised 17.8</td>
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<td>Galvanised 22.2</td>
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<tr>
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<td>Galvanised 34.6</td>
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<td>11.7</td>
</tr>
<tr>
<td>Doka-floor Eurex 20 eco</td>
<td>11.7</td>
<td>Galvanised 11.7</td>
<td>Doka-floor Eurex 20 eco</td>
<td>11.7</td>
</tr>
</tbody>
</table>

*Galvanised* indicates the material type for each product.
## Component overview

<table>
<thead>
<tr>
<th>Article</th>
<th>Article Number</th>
<th>Description</th>
<th>Weight</th>
<th>Material Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removable folding tripod top</td>
<td>586155500</td>
<td>Galvanised</td>
<td>12.0 kg</td>
<td>Height: 80 cm; Delivery condition: folded closed</td>
</tr>
<tr>
<td>Removable folding tripod Stützein</td>
<td>586155000</td>
<td>Galvanised</td>
<td>15.6 kg</td>
<td>Height: 80 cm; Delivery condition: folded closed</td>
</tr>
<tr>
<td>Lowering head H20</td>
<td>586174000</td>
<td>Galvanised</td>
<td>6.1 kg</td>
<td>Height: 38 cm; Width: 20 cm; Length: 25 cm</td>
</tr>
<tr>
<td>4-way head H20</td>
<td>586170000</td>
<td>Galvanised</td>
<td>4.0 kg</td>
<td>Height: 33 cm; Width: 20 cm; Length: 25 cm</td>
</tr>
<tr>
<td>Spring locked connecting pin 16mm</td>
<td>582528000</td>
<td>Galvanised</td>
<td>0.25 kg</td>
<td>Length: 15 cm</td>
</tr>
<tr>
<td>Supporting head H20 DF</td>
<td>586179000</td>
<td>Galvanised</td>
<td>0.77 kg</td>
<td>Height: 38.7 cm; Diameter: 1.6 cm</td>
</tr>
<tr>
<td>U-head 12.5cm</td>
<td>586171000</td>
<td>Galvanised</td>
<td>1.2 kg</td>
<td>Height: 23 cm</td>
</tr>
<tr>
<td>Bracing frame Eurex 1.00m A</td>
<td>586599000</td>
<td>Galvanised</td>
<td>15.0 kg</td>
<td>Height: 111 cm</td>
</tr>
<tr>
<td>Diagonal cross 9.060</td>
<td>582322000</td>
<td>Galvanised</td>
<td>3.1 kg</td>
<td>Height: 80 cm; Delivery condition: folded closed</td>
</tr>
<tr>
<td>Diagonal cross 9.100</td>
<td>582772000</td>
<td>Galvanised</td>
<td>4.1 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 9.150</td>
<td>582773000</td>
<td>Galvanised</td>
<td>5.2 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 9.175</td>
<td>582334000</td>
<td>Galvanised</td>
<td>6.1 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 9.200</td>
<td>582774000</td>
<td>Galvanised</td>
<td>6.6 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 9.250</td>
<td>582775000</td>
<td>Galvanised</td>
<td>7.7 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 9.300</td>
<td>582323000</td>
<td>Galvanised</td>
<td>9.0 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 12.060</td>
<td>582324000</td>
<td>Galvanised</td>
<td>4.0 kg</td>
<td></td>
</tr>
<tr>
<td>Diagonal cross 12.100</td>
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**Diagonal cross details:**

- **Height:** 80 cm
- **Delivery condition:** folded closed

**Combination cross details:**

- **Height:** 80 cm
- **Delivery condition:** folded closed

**Bracing frame Eurex 1.00m A:**

- **Width:** 20 cm
- **Height:** 111 cm

**Bracing frame Eurex 1.00m A details:**

- **Height:** 111 cm

**Bracing clamp B:**

- **Material:** Painted blue
- **Length:** 36 cm

**Lashing strap 5.00m:**

- **Material:** Yellow

**Doka express anchor 16x125mm:**

- **Material:** Galvanised
- **Follow the directions in the "Fitting instructions"!”

**Doka coil 16mm:**

- **Material:** Galvanised
- **Diameter:** 1.6 cm

**Secondary-beam stabiliser 1:**

- **Material:** Galvanised
- **Height:** 38.7 cm

**Secondary-beam stabiliser 2:**

- **Material:** Galvanised
- **Height:** 38.7 cm
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## Component overview

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## User Information Dokaflex

### Component overview

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<td>Doka-Mehrwegcontainer 1,20x0,80m</td>
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<td>Height: 78 cm</td>
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### Specific parts for UK

- Connector clip H20: Galvanised Height: 18 cm

### Multi-trip packaging

- Doka multi-trip transport box 1.20x0.80m: Galvanised Height: 78 cm
## Component overview

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- **Galvanised**
- **Timber parts varnished yellow**
- **Steel parts galvanised**
- **Length: 154 cm**
- **Width: 83 cm**
- **Height: 77 cm**
- **Height: 113 cm**
- **Painted blue**
- **Height: 77 cm**
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