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Method statement

Panel floor formwork Dokadek 30





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Elementary safety warnings

User target groups

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

In all cases, users are obliged to ensure compliance with national OH&S (occupational health and safety) rules throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

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

Remarks on this document

- This User Information booklet can also be used as a generic method statement or incorporated with a site-specific method statement.
- Many of the illustrations in this booklet show the situation during formwork assembly and are therefore not always complete from the safety point of view.

Any safety accessories not shown in these illustrations must still be used by the customer, in accordance with the applicable rules and regulations.

 Further safety instructions, especially warnings, will be found in the individual sections of this document!

Planning

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

Rules applying during all phases of the assignment:

 The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose under the direction and supervision of suitably skilled persons with the authority to issue instructions.

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

- Doka products are technical working appliances which are intended for industrial/commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.
- The stability of all components and units must be ensured during all phases of the construction work!
- The functional/technical instructions, safety warnings and loading data must all be strictly observed and complied with. Failure to do so can cause accidents and severe (even life-threatening) damage to health, as well as very great material damage.
- Fire-sources are not permitted anywhere near the formwork. Heating appliances are only allowed if properly and expertly used, and set up a safe distance away from the formwork.
- The work must take account of the weather conditions (e.g. risk of slippage). In extreme weather, steps must be taken in good time to safeguard the equipment, and the immediate vicinity of the equipment, and to protect employees.
- All connections must be checked regularly to ensure that they still fit properly and are functioning correctly.

It is very important to check all screw-type connections and wedge-clamped joins whenever the construction operations require (particularly after exceptional events such as storms), and to tighten them if necessary.



Assembly

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

Erecting the formwork

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

Pouring

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

Striking the formwork

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

Transporting, stacking and storing

- Observe all regulations applying to the handling of formwork and scaffolding. In addition, the Doka slinging means must be used - this is a mandatory requirement.
- Remove any loose parts or fix them in place so that they cannot be dislodged or fall free!
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this User Information booklet!

Regulations; industrial safety

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

Instruction as required by EN 13374:

 If a person or object falls against, or into, the edge protection system and/or any of its accessories, the edge protection component affected may only continue in use after it has been inspected and passed by an expert.

Maintenance

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

Symbols used

The following symbols are used in this booklet:



Important note

Failure to observe this may lead to malfunction or damage.



CAUTION / WARNING / DANGER

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



Instruction

This symbol indicates that actions need to be taken by the user.



Sight-check

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



Tip Points out useful practical tips.



Reference

Refers to other documents and materials.

Miscellaneous

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



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Doka services

Support in every phase of the project

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

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







Project development phase



Taking well-founded decisions thanks to professional advice and consulting

Find precisely the right formwork solutions, with the aid of

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

Tendering phase



Optimising the preliminary work with Doka as an experienced partner

Draw up potentially winning bids, by

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

Operations scheduling phase



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

Plan cost-effectively right from the outset, thanks to

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



(Shell) construction phase



Optimum resource utilisation with assistance from the Doka Formwork Experts

Workflow optimisation, thanks to

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



(Shell) completion phase



Seeing things through to a positive conclusion with professional support

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

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

The advantages for you thanks to professional advice and consulting

- Cost savings and time gains When we advise and support you right from the word "go", we can make sure that the right formwork systems are chosen and then used as planned. This lets you achieve optimum utilisation of the formwork equipment, and effective forming operations because your workflows will be correct.
- Maximised workplace safety The advice and support we can give you in how to use the equipment correctly, and as planned, leads to greater safety on the job.
- Transparency Because our services and costs are completely transparent, there is no need for improvisation during the project – and no unpleas-

ant surprises at the end of it.

Reduced close-out costs
 Our professional advice on the selection, quality and correct use of the equipment helps you avoid damage, and minimise wear-and-tear.



Eurocodes at Doka

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

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

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

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

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

- $E_d \le R_d$
- Ed Design value of effect of actions (E ... effect; d ... design) Internal forces from action F_d (V_{Ed}, N_{Ed}, M_{Ed})
- Design value of an action F_d $F_d = \gamma_F \cdot F_k$ (F ... force)
- F_k Characteristic value of an action "actual load". service load (k ... characteristic) e.g. dead weight, live load, concrete pressure, wind
- Partial factor for actions γF (in terms of load; F ... force) e.g. for dead weight, live load, concrete pressure, wind Values from EN 12812

Comparison of the safety concepts (example)



A Utilisation factor

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

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

- R⊧ Characteristic value of the resistance e.g. moment resistance to yield stress
- Partial factor for a material property γм (in terms of material; M...material) e.g. for steel or timber Values from EN 12812
- k_{mod} **Modification factor** (only for timber – to take account of the moisture and the duration of load action) e.g. for Doka beam H20

Values as given in EN 1995-1-1 and EN 13377

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

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

Allowance has been made for the following partial factors:

 $\gamma_{\rm F} = 1.5$

$$\gamma_{M, \text{ timber}} = 1.3$$

 $\gamma_{M, \text{ steel}} = 1.1$

 $k_{mod} = 0.9$

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



- Dokadek 30 is a panel floor formwork system for constructing cast-in-place concrete floor slabs up to a thickness of 30 cm. When additional measures are taken, slab thicknesses of up to 50 cm are possible.
- The panel frames consist of a lightweight welded steel construction with riveted wood/plastic composite sheets whose sides are completely enclosed in the frame construction. The steel frames are galvanised and powder-coated (= long service life).
- Only 2 sizes of panel: 2.44x1.22m and 2.44x0.81m (simplifies logistics). The system is erected in safety, working from ground level. The approx. 3 m² large panels make for short forming-times.
- The floor-formwork panels are supported by Doka floor props Eurex 30 top and by support heads that are fixed to these props.
- In corners and alongside walls, special system heads are fixed to the props, making it possible to start placing the panels directly against the wall.

- For infill zones along edges and around columns, there are system infill beams in lengths of 2.44 m, 1.22 m and 0.81 m.
- Larger infill zones are formed using Dokaflex system components. To do this, Dokadek suspension clamps H20 are fitted to the infill beams, making an ideal system transition from Dokadek 30 to Dokaflex.
- The pins on the various types of prop head, on which the panels are supported, are undercut. These pins interact with the corner components of the panels to activate the anti-liftout guard when the panels are tilted up and the floor props are swivelled into place.
- The panel floor formwork can be erected and dismantled by 2 persons, either manually or with the DekLift P 4.00m. The DekLift P 4.00m makes the forming operations much easier, especially for larger room heights.

Max. slab thickness: 30 cm without additional measures



Typical sequence





System overview

Basic design concept



- A Dokadek panels
- B Dokadek heads
- C Dokadek infill beams
- D Dokadek suspension clamp H20
- E Doka floor props Eurex 30 top
- F Removable folding tripod
- G Dokadek wall clamp
- H Dokadek handrail-post shoes

The Dokadek 30 system components

Dokadek panels

- galvanised, yellow powder-coated steel frames with riveted wood/plastic composite sheets
- delivered on Dokadek panel pallets



Dokadek heads

- for holding the Dokadek panels safely
- with a built-in anti-liftout guard for the Dokadek panels



Spring-locked connecting pin 16 mm

Dokadek infill beams

- for infilling along edges and around columns
- available for formwork-sheet thicknesses of 18mm, 21mm and 27mm
- delivered on Dokadek infill-beam pallets





Dokadek suspension clamp H20

These are hooked into the infill beams and make it possible to transition from the Dokadek 30 system to the Dokaflex system.



Doka floor props Eurex 30 top

- DIB (German Institute of Construction Engineering) approval n° Z-8.311-905
- EN 1065-compliant prop



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Their high load-bearing capacity is complemented by many practical details making them very easy to handle:

- numbered pegging holes, for easier height adjustment
- elbowed fastening clamps, reducing the risk of injury and making the props easier to operate
- special thread geometry, which makes the prop easier to release even when it is under high load



Follow the directions in the "Eurex top floor props" User Information booklet!

WARNING

It is not permitted to use the Floor prop extension 0.50m.

Removable folding tripod

- for holding floor props upright
- swing-out legs allow flexible placement in constricted situations such as along edges and in corners



Setting up tripods in corners or up against walls



Dokadek wall clamp

- for holding floor props upright next to walls
- with an integrated template for measuring-up the right spacing of the floor props



Dokadek handrail-post shoes

These are used with Handrail posts XP 1.20m to set up fall-arrest barriers on the narrowside and broadside of the Dokadek panel.





Ground rules

Dokadek heads

The Dokadek heads must always be bolted to the floor prop with the correct bolt.

Position of the Dokadek heads



Legend



¹⁾ Spring-locked connecting pin 16 mm (not included with product)

Important note:

When placing the panels onto the heads, make sure that the panels are correctly fixed in the heads.

Installation examples Support head Spring-locked connecting pin 16 mm (not included with product) Corner head L Corner head R Corner hea

Doka floor props Eurex 30 top

Floor props must not be used extended to their full lengths!

This means that the props must be shortened, as follows, before being used:

- minus 16 cm when used with support head
- minus 40 cm when used with corner head or wall head

Example: A Eurex 30 top 300 prop with a support head can be extended to max. 284 cm (for a max. room height of 308.5 cm).



Removable folding tripods and Dokadek wall clamps

Shoring height	Type of Removable folding tripod	To be fixed with wall clamp:	
Up to 3.50 m	Removable folding tripod	2 floor props in the start-up zone and 2 in each corner	
3.50 m to 4.00 m	Removable folding tripod 1.20m	2 floor props in the start-up zone and 2 in each corner	
Over 4.00 m	Removable folding tripod 1.20m	Every floor prop along the edges	

Removable folding tripod

Floor props to be fixed in a Removable folding tripod:

- every floor prop in the 1st row of props
- every other floor prop in the 2nd row of props.
- From the 3rd row of props onwards, Removable folding tripods are no longer needed.



CAUTION

Risk of floor props tipping over when Dokadek panel is tilted up!

- Make sure that the Removable folding tripod is facing in the right direction.
- The leg with the clamping lever must be pointing in the longitudinal direction of the panels.
- Before anybody steps onto the formwork, check again to make sure that the props have been correctly fixed in the tripods.
- Once the 1st row of panels has been fixed (e.g. with wall clamps) so that it cannot tip over, the Removable folding tripods can be removed.

However, before the formwork is struck, the Removable folding tripods MUST be put up again!

Dokadek wall clamp

Determining the required spacing of the floor props



Head on 1st prop is in Position A	Width of panel to be shored	Position of 2nd prop	
Corner head L or R	0.81m	В	
Wall head	0.81m	С	
Corner head L or R	1.22m	D	
Wall head	1.22m	E	

Forming up and striking

Direction of panel set-up



- Start by setting up the panels row by row until only the planned infill zone is left unformed.
- 2) Then install the wall connections and fillers.

If necessary, you can start setting up the panels working from more than one side. The separate

sections that have been formed with Dokadek are then joined by fillers (see the section headed "Forming infill zones").



The formwork is struck in the same way, but in reverse order.





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Method statement overview

Panel floor formwork Dokadek 30



For floor-slab heights of up to approx. 3.50 m For floor-slab heights of up to approx. 4.00 m



Operating with Dokadek assembling tool

Forming up

Preparations

Set at least two Dokadek assembling tools to the required length (= approx. the height of the floorslab).

WARNING

Floor props must not be used extended to their full lengths!

See also the section headed "Ground rules".

 Roughly adjust the height of the floor prop, using the fastening clamp.



Required length= room height minus 'a'



The pegging holes are all numbered, which makes it easier to adjust the props to the same height.

Fit the Dokadek head onto the floor prop and secure it with the bolt.

Putting up the 1st row of floor props

> Put up each removable folding tripod.



- Risk of floor props tipping over when Dokadek panel is tilted up!
 - Make sure that the Removable folding tripod is facing in the right direction.
 - The leg with the clamping lever must be pointing in the longitudinal direction of the panels.
 - Before anybody steps onto the formwork, check again to make sure that the props have been correctly fixed in the tripods.
- Put up floor props (complete with corner and wall heads) directly against the wall and secure them with Removable folding tripods.
- Refer to the wall clamp to find out how far apart the floor props have to be spaced.



Risk of damage to the panel!

- Make sure that the tie-rod does not stick out too far from the wall clamp, as this would get in the way when the panel is lifted onto the heads.
- Adjust the 1st and 2nd floor props to the right height and fix them with a wall clamp to prevent them from tipping over. To do this, mount the wall clamp as high up the wall as possible, using a tie-rod and Superplate. If there are tie-holes near the top of the wall, use these.



 $a_1 \dots 122$ cm for Dokadek panel 1.22x2.44m $a_2 \dots 81$ cm for Dokadek panel 0.81x2.44m



Mounting the 1st row of panels

Mount the 1st panel

Persons 1 and 2: Hook the panel onto the corner head and the wall head.





Make sure that the panel is correctly fitted in the two heads.

Corner head



Wall head



- > Person 1: Tilt the panel up.
- Person 2: Hook the Dokadek assembling tool into the middle of the outside cross profile of the panel, raise the panel and secure the assembling tool so that it cannot tip over.



- Person 1: Shore the panel with a floor prop (complete with head).
 - Make sure that the panel is correctly fitted onto the pin of the head.



Person 1: Secure the floor prop with a Removable folding tripod. The Dokadek assembling tool stays in position, as it still has a shoring function.





Mount further panels

> Persons 1 and 2: Hook the next panel into the heads.



Make sure that the panel is correctly fitted onto the pins of both heads.



- > Person 1: Tilt the panel up.
- Person 2: Hook the Dokadek assembling tool into the middle of the outside cross profile of the panel, raise the panel and secure the assembling tool so that it cannot tip over.



Person 1: Shore both panels with a floor prop (complete with head).



Make sure that the panels are correctly fitted onto the pins of the head.



Person 2: Remove the Dokadek assembling tool from the 1st panel. The assembling tool under the 2nd panel stays in place.



Set up further panels in the same way, until only the planned infill zone is left unformed. Secure every other floor prop with a Removable folding tripod.





Putting up further rows of panels

Set up further rows of panels in the same way, until only the planned infill zone is left unformed. However, Removable folding tripods are no longer needed.





Make sure that the panel is correctly fitted in the two heads.

Support head



Wall head







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Levelling and aligning the formwork

Adjust the panels at the corners to the desired floorslab height (= room height minus 6.5 cm), with reference to the frame cross-profile





Securing the formwork against tip-over

WARNING

- Before anybody steps onto the surface of the formwork, its stability must be ensured by e.g. wall clamps or lashing straps.
- > Transfer of horizontal loads as defined by DIN EN 12812 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".
- > Formwork next to walls must be secured against tipover as shown in the illustrations.

Mounting fall-arrest barriers

See "Fall-arrest protection".

Mounting fillers

See the section headed "Forming infill zones".

Pouring

Max. slab thickness: 30 cm without additional measures

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



Practical example Tip-over protection using lashing straps



- A Fixing point using wall clamps or lashing straps
- B Lashing strap 5.00m
- C Doka express anchor 16x125mm



Important note:

Tie-back only allowed in the direction of the profile - must only be attached to an end-hole on the profile!



Striking the formwork

Important note:

- Observe all stipulated stripping times!
- Always strike the formwork in reverse order.
- As well as the instructions given here, the section headed "Reshoring props, concrete technology and striking" MUST be followed.

The Wheel-around scaffold DF makes for safe, simple formwork set-up and removal in rooms of medium height.



- collapsible wheelaround 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

For greater heights than this, the **Doka mobile scaffold tower Z** is ideal.

Preparations

Important note:

- Before striking the formwork, make sure that the floor props in the last row of panels to be struck are still fixed with Removable folding tripods and a wall clamp.
- Set at least two Dokadek assembling tools to the required length (= approx. the height of the floorslab).
- Dismount all closure and infill zones (take the load off the floor props, and remove the sheets and formwork beams).

Before doing this, secure any loose formwork beams and sheets so that they cannot drop off accidentally.

Dismantling the floor props and panels

- Lower the floor props in the first row of panels to be struck, by max. 2 cm (= approx. 1 turn of the adjusting nut).
- Place Dokadek assembling tools beneath the 1st and 2nd panels.
- Remove the 1st and 2nd floor props and place them in a stacking pallet.
- Using the Dokadek assembling tool, lower the panel until the 2nd person can take hold of it and tilt it all the way down.
- Lift the panel off the prop-heads and set it down.
- Place a Dokadek assembling tool support beneath the 3rd panel, remove the 3rd floor prop and place it in the stacking pallet.
- Unhook the 2nd panel and place it on a panel pallet.
- Take down all the other panels in the same way.

Cleaning the formwork

See the section headed "Cleaning and care of your equipment".

Repropping

- Before pouring the next floor-slab (i.e. above the one that has just been stripped), put up reshoring props.
- See "Reshoring props, concrete technology and striking".



Operating with DekLift P 4.00m

The DekLift may only be used for easier handling of single Dokadek panels during formwork set-up and removal, especially on larger room heights.





Important note:

- Travelling only permitted up to a gradient of 3 %.
- The floor must be stable, firm and sufficiently smooth (e.g. concrete).
- Max. speed 4 km/h (walking pace)

Follow the directions in the "DekLift P 4.00m" **Operating Instructions!**

Forming up

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Mounting the 1st row of panels



Important note:

- The 1st row of panels is put up in the same way as described under the heading "Operating with Dokadek assembling tool".
- From room heights of 3.80 m upward, the Dokadek assembling tool extension 2.00m is also needed.

Putting up further rows of panels

> Persons 1 and 2: Place the panel down centrally on the DekLift.





- Bottom: on frame cross-profile
- Top: in 2nd inside cross-profile from top



Person 1: Wheel DekLift to usage location.





Person 1: Turn the crank-handle of the DekLift to raise the panel and hook it into the heads.



Make sure that the panel is correctly fitted onto the pins of both heads.

Support head



Wall head



Person 1: Lower the DekLift until the panel-fixing studs have come all the way out of the holes in the cross-profile.



Person 2: Tilt the panel up slightly (use the Dokadek assembling tool if necessary).





Risk of accidental lift-out!

- With DekLift, always raise the panel by the end-field (last inside cross-profile).
- Do not raise the panel by the middle panelfields, as this might lift it out of the prop heads.
- Person 1: Lower the DekLift, wheel it forward and turn the crank-handle to raise the panel, held in the middle of the last panel-field.







Person 2: Shore the panel with a floor prop (complete with head).



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Make sure that the panel is correctly fitted onto the pin of the head.



- Person 2: Place a Dokadek assembling tool beneath the panel.
- Put up the next panel, using the DekLift.



Person 2: Shore both panels with a floor prop (complete with head).



Make sure that the panels are correctly fitted onto the pins of the head.



Person 2: Remove the Dokadek assembling tool and use it to support the next panel.



Set up further rows of panels in the same way, until only the planned infill zone is left unformed. However, Removable folding tripods are no longer needed.

Levelling and aligning the formwork

Adjust the panels at the corners to the desired floorslab height (= room height minus 6.5 cm), with reference to the frame cross-profile



Securing the formwork against tip-over

See "Operating with Dokadek assembling tool".

Mounting fall-arrest barriers

See "Fall-arrest protection".

Mounting fillers

> See the section headed "Forming infill zones".

Pouring

Max. slab thickness: 30 cm without additional measures

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





Striking the formwork

Important note:

- Observe all stipulated stripping times!
- Always strike the formwork in reverse order.
- As well as the instructions given here, the section headed "Reshoring props, concrete technology and striking" MUST be followed.

The **Doka mobile scaffold tower Z** makes safe, easy work of **setting up and stripping the formwork in rooms with larger heights**.

Preparations

Important note:

- Before striking the formwork, make sure that the floor props in the last row of panels to be struck are still fixed with Removable folding tripods and a wall clamp.
- Set at least two Dokadek assembling tools to the required length (= approx. the height of the floorslab).
- Dismount all closure and infill zones (take the load off the floor props, and remove the sheets and formwork beams).

Before doing this, secure any loose formwork beams and sheets so that they cannot drop off accidentally.

Dismantling the floor props and panels

- Lower the floor props in the first row of panels to be struck, by max. 2 cm (= approx. 1 turn of the adjusting nut).
- Person 1: Wheel the DekLift beneath the middle of the last field of the 1st panel. Turn the crank-handle to raise it until it reaches the panel.



- Person 2: Place a Dokadek assembling tool beneath the 2nd panel.
- Person 2: Remove the 1st and 2nd floor props and place them in a stacking pallet.
- Person 1: With the DekLift, lower the 1st panel until Person 2 is able to take hold of it.
- > Person 2: Hold the panel steady.
- Person 1: Wheel back the DekLift until Person 2 is able to tilt down the panel and set it down on the Dek-Lift.
 - Make sure that the panel has been set down correctly on the DekLift (wind bracing):
 - Bottom: on frame cross-profile
 - Top: in 2nd inside cross-profile from top



- Person 1: Turn the crank-handle on the DekLift to raise the panel and unhook it from the head. After this, lower it again.
- Persons 1 and 2: Take the panel off the DekLift and place it on a panel pallet.
- Person 1: Wheel the DekLift beneath the middle of the last inside cross-profile of the 2nd panel. Turn the crank-handle to raise it until it reaches the panel.
- Remove the Dokadek assembling tool from the 2nd panel and place it beneath the 3rd panel.
- Remove the 3rd floor prop and place it in a stacking pallet.
- The dismantling procedure for the 2nd panel is the same as for the 1st panel.
- Take down all the other panels in the same way.

Cleaning the formwork

See the section headed "Cleaning and care of your equipment".

Repropping

- Before pouring the next floor-slab (i.e. above the one that has just been stripped), put up reshoring props.
- See "Reshoring props, concrete technology and striking".

Forming infill zones

Important note:

- Ideally, infill zones should be formed from below (e.g. using a Wheel-around scaffold DF or Doka mobile scaffold tower Z).
- If infill zones have to be formed from above, the crew must use a personal fall arrest system (PFAS).
- Suitable anchorage points must be defined by a skilled person appointed by the contractor.

Areas where infilling may be needed:

- wall connections
- between 2 Dokadek forming-sections
- around columns

WARNING

- Falling hazard! Do not step onto loose sheets and infill beams!
- > Only step onto these once the entire infill zone has been closed and secured by nailing!

Recommended nail lengths:

- Sheet thickness 18 mm: approx. 60 mm
- Sheet thickness 21 mm: approx. 65 mm
- Sheet thickness 27 mm: approx. 70 mm

Dokadek system components for infill zones

Dokadek panel 0.81x2.44m

If Dokadek panels 1.22x2.44m are combined with Dokadek panels 0.81x2.44m, the max. infill width can generally be reduced to 41 cm.

The Dokadek panels 0.81x2.44m are mounted in the same way as the Dokadek panels 1.22x2.44m.



- A Dokadek panel 0.81x2.44m
- B Infill zone (max. width 41 cm)

Dokadek infill beams



- Permitted moment: 5 kNm
- Permitted shear force: 11 kN
- Flexural stiffness EI: 320 kNm²
- Permissible imposed load where supported by floor prop in mid-span: 22 kN

Identification mark on infill beam to show matching sheet thickness





Adjusting the Dokadek infoll beams



Dokadek suspension clamp H20



Permitted shear force: 11 kN

Form-facing

Infill zones can be faced quickly and economically with Doka formwork sheets 3-SO 21mm or 27mm 244/122cm.

- A Cheek plate (silver)
- **B** Locking mechanism (red)
- C Position for optional extra anti-liftout guard with spring cotter (included with product)



Infilling along wall connections

Variant 1

• Infill width a = 10 - 20 cm

How to mount:

 Hook the infill beams into the support heads (cheek plate at top).



> Mount the fillers.



- A Dokadek infill beam
- **B** Doka floor prop Eurex 30 top + Removable folding tripod
- C Supporting head H20 DF
- D Doka beam H20 or plank
- E Formwork sheeting

Variant 2

Infill width a > 20 cm

Max. infill width 'a' for slab thicknesses of up to 30 cm

	Type of sheet		
Sheet thickness	Doka formwork sheet Multi-ply form 3-SO ¹) sheet ²)		
18 mm	—	55 cm	
21 mm	41 cm	61 cm	
27 mm	61 cm	—	

¹⁾ The computed values apply to the secondary (i.e. weaker) loadbearing direction, with the longitudinal direction of the sheet parallel to the edge of the floor-slab.

 $^{2)}$ Mean flexural modulus of elasticity where sheet moisture content is 10±2%: \geq 5600 N/mm²

Characteristic flexural strength where sheet moisture content is 10±2%: \geq 19 N/mm^2

How to mount:

Hook the infill beams into the support heads (cheek plate at top).



Mount the fillers.



- A Dokadek infill beam
- **B** Doka floor prop Eurex 30 top + Removable folding tripod
- C Lowering head H20
- Doka beam H20 2.90m (recommended) (Here shown 'telescoped', i.e. side-by-side and overlapping. For narrower infill gaps, the beams can also be laid end-to-end.)
- E Formwork sheeting



> Mount the fillers.

Variant 3

Infill width 'a' for slab thicknesses of up to 30 cm

Primary beam	Infill width 'a'	Recommended sec- ondary beam	
1.10m	55 - 100 cm		
1.80m	90 - 170 cm	2.90m	
2.90m	145 - 280 cm		
max. spacing of secondary beams: 0.50m			
max. spacing of props: 0.90m			

How to mount:

Hook the infill beams into the support heads (cheek plate at top).



Hook the suspension clamps into the infill beams as close to the floor props as possible.

Number of suspension clamps needed:

- next to every floor prop in the longitudinal direction
- next to every other floor prop in the transverse direction





- A Dokadek infill beam
- **B** Dokadek suspension clamp H20
- C Doka floor prop Eurex 30 top + Removable folding tripod
- D Lowering head H20
- E Doka beam H20 used as primary beam
- (e.g. Dokadek system beam H20 eco P 1.10m) **F** Doka beam H20 used as secondary beam
- **G** Formwork sheeting



Infilling between 2 Dokadek formingsections

Infill width a > 17 cm

Variant 1

Max. infill width 'a' for slab thicknesses of up to 30 cm

	Type of sheet		
Sheet thickness	Doka formwork sheet 3-SO 1)	Multi-ply formwork sheet 2)	
18 mm	—	55 cm	
21 mm	41 cm	61 cm	
27 mm	61 cm	_	

¹⁾ The computed values apply to the secondary (i.e. weaker) loadbearing direction, with the longitudinal direction of the sheet parallel to the edge of the floor-slab.

 $^{2)}$ Mean flexural modulus of elasticity where sheet moisture content is 10±2%: \geq 5600 N/mm²

Characteristic flexural strength where sheet moisture content is 10±2%: \geq 19 N/mm²

How to mount:

 Hook the infill beams into the support heads (cheek plate at top).



> Mount the fillers.



A Dokadek infill beam

B Formwork sheeting

Variant 2

Infill width 'a' for slab thicknesses of up to 30 cm

Primary beam	Infill width 'a'	Recommended sec- ondary beam	
1.10m	55 - 100 cm		
1.80m	90 - 170 cm	2.90m	
2.90m	145 - 280 cm		
 max. spacing of secondary beams: 0.50m 			
 max. spacing of props: 0.90m 			

How to mount:

 Hook the infill beams into the support heads (cheek plate at top).



Hook the suspension clamps into the infill beams as close to the floor props as possible.

Number of suspension clamps needed:

- next to every floor prop in the longitudinal direction
- next to every other floor prop in the transverse direction



> Mount the fillers.



- A Dokadek infill beam
- B Dokadek suspension clamp H20
- **C** Doka beam H20 used as primary beam
- (e.g. Dokadek system beam H20 eco P 1.10m)
- D Doka beam H20 used as secondary beam
- E Formwork sheeting



L-shaped infill zone



- A Dokadek infill beam 2.44m
- B Dokadek infill beam 1.22m or 0.81m
- C Dokadek suspension clamp H20
- D DokaTräger H20 used as primary beam
- E Doka beam H20 used as secondary beam
- F Doka floor prop Eurex 30 top + Removable folding tripod
- G Supporting head H20 DF
- H Lowering head H20

T-shaped infill zone



Adapting to difficult layout shapes





Infilling around columns

using Dokadek infill beams and Doka beams H20

- Hook two infill beams 1.22m or 0.81m into the support heads in the transverse direction (cheek plate at top).
- Hook 4 suspension clamps into the infill beams as close to the floor props as possible.



- Fit 2 Doka beams H20 into the suspension clamps, to serve as primary beams.
- Place Dokadek system beams onto these primary beams, in the transverse direction.



- A Dokadek infill beam 1.22m or 0.81m
- **B** Dokadek suspension clamp H20
- C Doka beam H20 2.90m used as primary beam
- **D** Dokadek system beam H20 eco P 1.10m used as secondary beam

If necessary, the infill beams and Doka beams H20 can also be arranged the other way round, i.e. the Infill beams 2.44m (E) on which the suspension clamps (B) are mounted are fixed in the longitudinal direction.



Practical example: Column is exactly under the panel joint



- **B** Dokadek suspension clamp H20
- E Dokadek infill beam 2.44m
- F Doka beam H20 1.80m used as primary beam
- G Doka beam H20 2.90m used as primary beam
- H Doka beam H20 2.45m used as secondary beam
- I Additional propping with Doka floor prop Eurex 30 top (and Supporting head H20 DF)



WARNING

Risk of primary beams breaking!

Both primary beams MUST be given additional support, by a Doka floor prop Eurex 30 top placed under each beam.



using Dokadek infill beams

- > Hook two Infill beams 2.44m into the support heads in the longitudinal direction (cheek plate and locking mechanism at bottom).
- > Place Infill beams 1.22m (or 0.81m, if appropriate) on the underlying Infill beams 2.44m in the transverse direction (cheek plate at bottom, locking mechanism at top).



B Dokadek infill beam 1.22m or 0.81m

Position (C) of the locking mechanism of the transverse Infill beam 1.22m or 0.81m:

- at all 4 corners, in the recesses (D) on the Infill beams 2.44m
- between these, in the profile slots (E) on the Infill beams 2.44m





If necessary, the infill beams can also be arranged the other way round, i.e. the Infill beams 2.44m (A) are laid onto the underlying Infill beams 1.22m or 0.81m (B).



Practical example: Column is exactly under the panel joint



- A Dokadek infill beam 2.44m
- B Dokadek infill beam 1.22m or 0.81m





Floor formwork around edges

Tie-back with Lashing strap 5.00 m and Doka Express anchor 16x125mm

Important note:

- Only hook the Lashing strap 5.00m into the outside holes of the frame profiles, and tension it in the required direction of the profile.
- It is forbidden to fix tie-backs to the inside cross-profiles!
- Make an anchorage point in the floor with a Doka express anchor.
- Hook the lashing strap into place and tension it in the required direction of the profile.



A Lashing strap 5.00m

B Doka express anchor 16x125mm

The **Doka Express anchor** can be re-used many times over - the only tool needed for screwing it in is a hammer.

Permitted load in "green" (new) concrete and in cured C20/25 concrete with a characteristic cube compressive strength of $f_{ck,cube} \ge 14 \text{ N/mm}^2$: $\mathbf{F}_{perm.} = 5.0 \text{ kN} (R_d = 7.5 \text{ kN})$



Follow the Fitting Instructions!

When preparing anchoring points using dowels made by other manufacturers, carry out a statical verification.

Follow the manufacturer's applicable fitting instructions.

Practical examples

Permissible bracing force in the outside hole of the frame profile: 5 \mbox{kN}

Tie-back in transverse direction



Tie-back in longitudinal direction



A Lashing strap 5.00m

B Doka express anchor 16x125mm



Fall-arrest protection

Important note:

- Ideally, fall-arrest barriers etc. should be mounted from below (e.g. working from a Wheel-around scaffold DF or Doka mobile scaffold tower Z).
- When mounting/dismounting side protection from above, the crew must use a personal fall arrest system (PFAS).
- Suitable anchorage points must be defined by a skilled person appointed by the contractor.

Fall-arrest systems on the formwork

The Dokadek handrail-post shoes are fixed to defined positions on the previously-mounted Dokadek panel. They are used for holding Handrail posts XP 1.20m.



Possible fixing points for the handrail-post shoes



- A Dokadek handrail-post shoe narrowside
- **B** Dokadek handrail-post shoe broadside



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

Permissible influence width of the handrail-post shoes [cm]

	Type of railing			
	Guard-rail board 15 cm	Guard-rail board 20 cm	Scaffold tube 48.3mm	Protective grating XP 2.70x1.20m
Dynamic pressure q [kN/m ²]	With concrete loads and working wind			
0.2	137	137	137	137
0.6				
1.1	—			
1.3	-			
	Without concrete loads, but with working wind			
0.2	259	259	259	259
0.6	259	137	259	259
1.1	137	-	259	259
1.3	—	—	259	244



Attaching a 'Handrail-post shoe - narrowside'

Working from below, push the 'Handrail-post shoe narrowside' onto the longitudinal profile of the Dokadek panel and fix it with bolts (these are included in the scope of supply of the 'Handrail-post shoe - narrowside').



Make sure that the 'Handrail-post shoe - narrowside' (A) and the bolt (vertical!) (B) are in the correct position!



- Push on the Handrail post XP 1.20m until it locks ("Easy-Click" function).
- Mount the sideguards.



A Dokadek handrail-post shoe - narrowside

B Bolt

- C Handrail post XP 1.20m
- D Sideguard, e.g. Protective grating XP 2.70x1.20m

Attaching a 'Handrail-post shoe - broadside'

Working from below, push the 'Handrail-post shoe broadside' onto the longitudinal profile of the Dokadek panel, in the transverse direction, and fix it to the cross profile with bolts (these are included in the scope of supply of the 'Handrail-post shoe broadside').





Make sure that the bolt **(B)** is in the vertical position!





- Push on the Handrail post XP 1.20m until it locks ("Easy-Click" function).
- Mount the sideguards.



- A Dokadek handrail-post shoe broadside
- B Bolt
- C Handrail post XP 1.20m
- D Sideguard, e.g. Protective grating XP 2.70x1.20m


Fall-arrest systems on the structure

Handrail post XP 1.20m

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



a ... > 1.00 m



Handrail clamp S

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



a ... > 1.00 m



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

Handrail post 1.10m

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



a ... > 1.00 m



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

Doka floor end-shutter clamp

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





Follow the directions in the "Doka floor endshutter clamp" User Information booklet!



Slab stop-ends

Permissible influence width of the Dokadek handrailpost shoes with slab stop-ends: 137 cm

in the longitudinal direction

Practical example



- A Dokadek panel
- B Dokadek handrail-post shoe broadside
- C Handrail post XP 1.20m
- **D** Formwork sheeting
- E Doka beam H20
- F Lashing strap 5.00m

in the transverse direction





- A Dokadek panel
- B Dokadek handrail-post shoe narrowside
- C Handrail post XP 1.20m
- **D** Formwork sheeting
- E Doka beam H20
- F Lashing strap 5.00m



Combining with other Doka floor-slab systems

Dokaflex 30 tec and Dokaflex 1-2-4

Dokaflex is the fast and versatile floor-slab formwork for any layout - also for downstand beams, stepped floors and filigree slabs. Because the quantities can easily be computed using a slide-rule, no formwork planning is needed. Any type of form-facing can be used, enabling all architectural wishes regarding the concrete surface to be met.



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For more information, please refer to the "Dokaflex 30 tec" and "Dokaflex 1-2-4" User Information booklets.

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 wheeled across to their next location 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 even with varying structural-design and geometrical requirements.



Close-up of extra beam:



- A Doka beam H20
- B Nailing board (provided at site)
- C Dokamatic table
- D Dokadek panel
- E Dokadek infill beam
- F Formwork sheeting



The beam (A) must be pre-mounted!



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



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.

Dokadek panel pallets



- A Pallet
- B Cover (unlosable)
- C Lashing strap

Storage and transport device for Dokadek panels:

- Dokadek panel pallet 1.22x2.44m for Dokadek panels 1.22x2.44m
- Dokadek panel pallet 0.81x2.44m for Dokadek panels 0.81x2.44m
- durable
- stackable

CAUTION

- Max. number of Dokadek panels: 11
 Corresponds to a stack height 'h' (incl. panel pallet) of approx. 215 cm.
- It is forbidden to stack panels of different widths on the same pallet.

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- Rating plate must be in place and clearly legible
 - Load the items centrically.

Stacking the panels

- > Undo the lashing strap and remove the cover.
- Set down the 1st panel on the middle of the pallet.





- > Set down further panels, exactly over one another.
- Place the cover over the top panel and tighten the stack with the lashing strap.





For easier use of the lashing strap we recommend using a standard step ladder with platform.



Coil up the end of the lashing strap and put it in the storage tray **(D)**.





Dokadek panel pallet as a storage unit

Max. n° of units on top of one another (with Dokadek panels)

Outdoors (on the site)
Floor gradient up to 3%
1

Dokadek panel pallet as a transport device

Suitable transport appliances:

- crane
- forklift truck
- pallet stacking truck
- Attachable wheelset

Lifting by crane

- Multi-trip packaging items may only be lifted one at a time.
 - Secure the stack of panels with the cover and the lashing strap.
 - Use a suitable lifting chain (do not exceed the permitted load-bearing capacity).
 - Spread-angle β max. 30°!



 Lifting the panels without a panel pallet is only allowed using 4 separate lifting slings, with a protective sleeve (A) over every corner.





With closely stacked bundles of panels: > lever-up the bundle of panels (e.g. with a squared timber (D)), to make a space for threading in the slings.

Caution! When doing this, always make sure that the bundle of panels remains stable!



Shifting with forklift or pallet stacking truck

- Multi-trip packaging items may only be lifted one at a time.
 - Load the items centrically.
 - Secure the stack of panels with the cover and the lashing strap.

Shifting with Attachable wheelset

The 'Attachable wheelset' turns the panel pallet into a fast and manoeuvrable transport device.





Attachable wheelset

Product description



- A 2 heavy-duty wheels
- B 2 swivel casters

The 'Attachable wheelset' turns the panel pallet into a fast and manoeuvrable transport device.

Suitable for drive-through access openings > 150 cm.

- When the panel pallet is parked or is being shifted by crane or forklift, always apply the fixing brake.
 - When setting down a panel pallet with loosely stacked panels, secure these against wind liftout (e.g. by strapping them together).

Wheeling

- Max. gradient of floor: 3%
 - Max. speed 4 km/h (walking pace)
 - Either bridge any openings in the floor with sufficiently strong planking/boards secured so that they cannot slip away to either side, or close off openings with sufficiently strong side railings!
 - Keep the travel route clean and free of any obstacles.
 - It is forbidden to use any mechanical assistance during the wheeling operation!
 - It is forbidden to wheel panel pallets that have been stacked on top of one another!
 - Where necessary, secure loosely stacked panels so that they cannot slip.

Lifting by crane

The Attachable wheelset can stay fixed to the Dokadek panel pallet while it is being lifted.



• Secure the stack of panels with the cover and the lashing strap.

Before attaching the lifting chain, check that:



• the fixing brake is applied

 linch pins have been fitted to the fastening bolts of the heavy-duty wheels and the swivel casters.

Assembly

Heavy-duty wheel

- > Apply the fixing brake on the heavy-duty wheel.
- Working from below, push the heavy-duty wheel onto the longitudinal profile of the panel pallet and fix it in place with a fastening bolt and linch pin.



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Where needed, you can adjust the braking - force with the setting screw (width-across 24).

Swivel caster

Working from the outside, push the wheel-pin of the swivel caster into the hole in the cross profile, and secure it with a linch pin.





- A Heavy-duty wheel
- B Swivel caster
- C Fastening bolt
- E Linch pin
- F Wheel-pin



Variant 1: Panels stacked loosely

Place the cover on the panel pallet and tighten it with the lashing strap.





Make sure it is in the correct position!





Coil up the end of the lashing strap and put it in the storage tray (D).



> Place the 1st panel on the middle of the cover.







Max. number of loose Dokadek panels: 8

> Set down further panels, exactly over one another.



Variant 2: Panels secured and stacked with the cover and the lashing strap

See the section headed "Dokadek panel pallets"





DekDrive



Transport device for Dokadek panels

- durable
- stackable
- Suitable for drive-through access openings > 90 cm.
- state in which delivered and transported: railing folded down



Max. number of Dokadek panels: 4

- Rating plate must be in place and clearly legible
 - Load the items centrically.
 - It is allowed to stack panels of different widths.
 - Not suitable for use as a storage unit.
 - When the DekDrive is parked or is being crane-lifted, always apply the fixing brake.
 - Always secure the panels with webbing.

Loading the DekDrive

- > Apply the fixing brake on the heavy-duty wheel.
- Remove the top spring cotters and self-locking pins, at both ends of the DekDrive.



 Tilt up the railing and secure it at both ends with selflocking pins and spring cotters.





Starting from the side nearest the railing, push the Dokadek panels centrally onto the holding pins (with the formwork sheeting facing towards the railing).



Secure the panels with webbing. Fit the hook into one of the openings in the longitudinal profile of the front (i.e. outermost) panel, and tighten the webbing.



- A Heavy-duty wheel
- B Spring cotter
- C Self-locking pin
- E Railing
- F Holding pin
- G Webbing

Wheeling

- Max. gradient of floor: 3%
 - Max. speed 4 km/h (walking pace)
 - Either bridge any openings in the floor with sufficiently strong planking/boards secured so that they cannot slip away to either side, or close off openings with sufficiently strong side railings!
 - Keep the travel route clean and free of any obstacles.
 - It is forbidden to use any mechanical assistance during the wheeling operation!

Lifting by crane

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



- > Before attaching the lifting chain, check that:
 - Ithe fixing brake is applied



Dokadek infill-beam pallet



Storage and transport device for Dokadek infill beams:

- durable
- stackable
- Infill beams 2.44m and 1.22m are supplied ex-works in the Dokadek infill-beam pallet, while Infill beams 0.81m are supplied in the Doka multi-trip transport box 1.20x0.80m.

Max. number of Dokadek infill beams: 44 Max. load: 800 kg Permitted imposed load: 5900 kg

- Load Infill beams 2.44m and 1.22m onto the pallet centrically, so that they are braced against the uprights of the pallet.
 - Multi-trip packaging items that each contain very different loads must be stacked with the heaviest ones at the bottom and the lightest ones at the top!
 - Always stack in complete layers.



- It is permitted to stack infill beams of different lengths on the same pallet.
 - When the pallet is transported by lorry, Infill beams 0.81m (A) must be stacked on the inside.



- Before the infill beams are transported by lorry, they must be firmly connected to the pallet, e.g. by bundling with steel strapping.
- Rating plate must be in place and clearly legible



Max. n° of units on top of one another

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

• How to use with bolt-on castor set: Always apply the fixing brake when the container is "parked".

When Doka stacking pallets are stacked, the bottom pallet must NOT be one with a bolt-on caster set mounted to it.

Using the Dokadek infill-beam pallet as a transport device

Suitable transport appliances:

- crane
- forklift truck
- pallet stacking truck
- Bolt-on castor set B



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

Lifting by crane



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



a ... 244 cm or 122 cm

Repositioning by forklift truck or pallet stacking truck

■ Load the items centrically.

Doka skeleton transport box 1.70x0.80m



Storage and transport devices for small items:

- durable
- stackable

Suitable transport appliances:

- crane
- pallet stacking truck
- forklift truck

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

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

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

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

Max. n° of boxes on top of one another

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

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

Lifting by crane



Only lift the boxes when their sidewalls are closed!

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



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Repositioning by forklift truck or pallet stacking truck

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



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



Storage and transport devices for small items:

- durable
- stackable

Suitable transport appliances:

- crane
- pallet stacking truck
- forklift truck

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

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

Multi-trip transport box partition

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



A Slide-bolt for fixing the partition

Possible ways of dividing the box

The Formwork Exp



Using Doka multi-trip transport boxes as storage units

Max. n° of boxes on top of one another

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

Using Doka multi-trip transport boxes as transport devices

Lifting by crane

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



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

Storage and transport devices for long items:

- durable
- stackable

Suitable transport appliances:

- crane
- pallet stacking truck
- forklift truck

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



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



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

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

Using Doka stacking pallets as storage units

Max. n° of units on top of one another

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

• How to use with bolt-on castor set: Always apply the fixing brake when the container is "parked".

When Doka stacking pallets are stacked, the bottom pallet must NOT be one with a bolt-on caster set mounted to it.

Using Doka stacking pallets as transport devices

Lifting by crane



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



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

Repositioning by forklift truck or pallet stacking truck



• Load the items centrically.

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



Doka accessory box

Storage and transport devices for small items:

- durable
- stackable

Suitable transport appliances:

- crane
- pallet stacking truck
- forklift truck

The Doka accessory box is the tidy, easy-to-find way of storing and stacking all interconnection and form-tie components.

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



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



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

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

Doka accessory box as storage units

Max. n° of boxes on top of one another

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

How to use with bolt-on castor set:

Always apply the fixing brake when the container is "parked".

When Doka accessory boxes are stacked, the bottom box must NOT be one with a bolton castor set mounted to it.

Doka accessory box as transport devices

Lifting by crane

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



Repositioning by forklift truck or pallet stacking truck

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

Bolt-on castor set B

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

Suitable for drive-through access openings > 90 cm.



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

- Dokadek infill-beam pallet
- Doka accessory box
- Doka stacking pallets



Follow the directions in the Operating Instructions!



स्त्रि

Cleaning and care of your equipment

The **special coating on the Xlife sheet** greatly reduces the amount of cleaning that is needed.

Cleaning

Immediately after pouring

 Remove any blobs of concrete from the back-face of the formwork, using water (without any added sand).

Immediately after striking the formwork

 Clean the formwork with a high-pressure spray cleaner and a scraper.

Cleaning equipment

Note:

Do not use any pointed or sharp objects, wire brushes, rotating grinding disks or pan scourers.



High-pressure spray cleaner

The special coating of the Xlife sheet also makes it possible for the sheet to be cleaned with a **high-pressure spray cleaner**.

Observe the following points:

- 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.
- Make only moderate use of the jet around the silicone sealing strip:
 - If the pressure is too high, this will damage the silicone sealing strip.
 - Do not aim the jet at one place for too long.

Release agents

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 traces 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.

Care

No hammer-blows to the frame profiles



 Do not use nails on the formwork that are longer than 60 mm



A max. I=60 mm

- Never push over panels or allow them to fall
- Do not use the panels as substitute ladders.





Reshoring props, concrete technology and striking

When is the best time to strike?

In the building construction field, the load occurring during pouring (i.e. the weight of the uncovered floor) will generally be approx. 50% of the design load of the floor-slab (dead weight + flooring + service load).

This means that the formwork can be struck once the concrete has reached 50% of its 28-day strength. The loading safety of the floor-slab is then equal to that of the finished structure.

Important note:

If the load is not removed from the floor props at this stage, they will remain loaded with the dead weight of the floor-slab.

When the floor above is concreted, this may lead to a doubling of the load that is being applied to the floor props.

The floor props are not designed to cope with such an overload, and the result may be damage to the formwork, the floor props and the structure.

Why put up reshoring props after striking the formwork?

Depending on the construction sequence, reshoring props may be needed to carry **service loads** on the new floor-slab, and/or **concreting-loads** from the next floor to be poured.

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.

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. If there is any doubt, particularly where dissimilar floor systems are involved, the decision must be referred to the responsible structural designer.

Observe all local Standards and regulations!

Strength development in the new concrete

The following diagrams show the strength development where different grades of cement are used. If the temperature of the concrete is $< 5^{\circ}$ C, the chemical reactions are very greatly slowed down. This is why low temperatures require cements that have rapid heat evolution and strength development.



Water/binding-agent (cement) ratio = 0.50

- A Z 45 F, PZ 475 (CEM I 42.5 R/52.5 R/52.5 N)
- **B** Z 35 F, PZ 375 (CEM II 32.5 R/42.5 N)
- C Z 35 L (CEM III 32.5 N)



Deflection of the new concrete

The modulus of elasticity of the concrete has already reached more than 90 % of the 28-day value after only 3 days, regardless of the formulation of the concrete. 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.

However, early striking - e.g. after 3 days instead of 28 - 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 striking does not have any negative influence upon the size and distribution of cracks on the tension side of reinforced concrete constructions.

Other cracking phenomena caused by e.g. shrinkage, premature striking, impeded deformation etc. 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
 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 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.

When planning and designing floor formworks for these very thin concrete floor slabs, it is thus essential to allow for the **loads occurring during formwork removal**, as well as for the usual design loads. Please consult your Doka technician.

The basic rule is:

The load should generally be removed starting from the middle of the floor slab (mid-span) and working towards the slab-edges.

For wide spans, this procedure MUST be followed!



I ... Effective floor-slab spans of 7.50 m and over

A Load redistribution





The Formwork Exp



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