

The Formwork Experts.

Large-area formwork Top 50

User Information

Instructions for assembly and use (Method statement)



Contents

4 Introduction

- 4 Elementary safety warnings
- 7 Services
- 8 System overview

- 98 Doka multi-trip packaging
- 102 Cleaning and care of your equipment

5 Article list

9 Wall formwork

- 9 Instructions for assembly and use (Method statement)
- 12 Top 50 element in detail
- 14 Flexibility
- 15 Tie rod system
- 17 Inter-panel connections
- 18 Length adjustment using closures
- 23 Height adjustment
- 24 90 degree corners
- 28 Acute & obtuse-angled corners
- 30 Stop-end formwork
- 31 Window and door openings
- 32 Vertical stacking of panels
- 33 Shaft formwork
- 38 Circular formwork
- 39 Plumbing accessories
- 42 Pouring platforms with single brackets
- 45 Pouring platforms
- 51 Opposing guardrail
- 54 Wall formwork at the edge of the structure
- 56 Ladder system
- 60 Combining different formwork systems
- 61 Lifting by crane
- 62 Enhanced requirements for fair-faced concrete

64 Other possible areas of use

- 64 Column formwork Top 50
- 65 Top 50 as a superstructure and tunnel formwork
- 68 Platforms assembled from system components with Universal suspension head
- 69 Possible ways of connecting to the multipurpose waling
- 70 Utilising self-compacting concrete

71 Element assembly

77 Doka Pre-assembly Service

78	Structural design
78	Deflection diagrams
82	Top 50 elements
91	Struts

93 General

- 93 Top 50 combined with . . .
- 97 Fall protection on the structure

Introduction

Elementary safety warnings

User target groups

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

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

Hazard assessment

The customer is responsible for drawing up, documenting, implementing and continually updating a hazard assessment at every job-site.
 This backlet serves as the basis for the site creatifier.

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

Remarks on this booklet

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

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

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

Planning

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

Regulations; industrial safety

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

Rules applying during all phases of the assignment

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

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

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

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

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

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

Assembly

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

Closing the formwork

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

Pouring

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

Stripping the formwork

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

Transporting, stacking and storing

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

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

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

Maintenance

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

Miscellaneous

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

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

Eurocodes at Doka

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

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

Allowance has been made for the following partial factors:

γ_F = 1.5

- γ_{M, timber} = 1.3
- γ_{M, 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 r

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

WARNING

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.

Indicates that actions have to be performed



Sight-check

Instruction

by the user.

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



Tip





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.





Digital Services

for higher productivity in construction

From planning to completion of construction with our digital services we want to set the pace for boosting productivity in construction. Our digital portfolio includes solutions for planning, procuring and managing to performing on site. Learn more about our digital offer at <u>doka.com/digital</u>.

System overview

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

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

The element size-grid and tie-hole pattern provide the adaptability needed to accommodate architectural

demands. The large-area elements and exact joins make for a perfect joint pattern.

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

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

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



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

Wall formwork

Instructions for assembly and use (Method statement)

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

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

Preconditions for use:

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

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

Pre-assembly

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



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

- Mount the platforms to the face-down element (seethe section headed 'Pouring-platforms with single brackets').
- Mount the ladder system to the face-down element (see the section headed 'Ladder system').
- Mount panel struts to the face-down element (see the section headed 'Plumbing accessories').



- A Platform
- B Ladder systems
- C Panel strut

Closing the formwork

Attach the crane lifting tackle to the lifting brackets (see the section headed 'Lifting by crane').

Permitted load-bearing capacity:

1300 kg per lifting bracket

- Pick up the element by crane.
- Spray the formwork sheet with release agent (see the section headed 'Cleaning and care of your equipment').
- > Fly the element to its new location.

CAUTION

Never use a sledge hammer to plumb and align the elements!

This would damage the elements.

- Use only proper plumbing tools (e.g. a special pry-bar) that cannot cause any damage.
- Fix the panel struts firmly to the ground (see the section headed 'Plumbing accessories').
- ► Mount the top guardrail board.



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

WARNING

There is not yet a counter railing on the formwork!

- Danger to life from fatal falls!
- Use a personal fall-arrest system (e.g. safety harness)
 - or

mount a counter railing to the gang-form while this is still being pre-assembled in a flat position.

- Detach the element from the crane.
- Continue lining up elements in this way, and link them together (see the section headed 'Inter-panel connections').

Erecting the opposing formwork:

Once the reinforcement has been placed, the form-work can be closed.

- Spray the formwork sheet with release agent (see the section headed 'Cleaning and care of your equipment').
- Lift the opposing formwork by crane to its next location.



Working from the ground, insert the bottom rows of form ties (see the section headed 'Tie rod system').

WARNING

There is not yet a counter railing on the form-work!

Danger to life from fatal falls!

 Use a personal fall-arrest system (e.g. safety harness).

Before disconnecting from the crane:



- > Detach the element from the crane.
- Insert the remaining form ties. These form-tie points can be reached from the platforms.
- Continue lining up elements in this way, and link them together (see the section headed 'Inter-panel connections').

Pouring

NOTICE

- Do not exceed the maximum permissible rate of placing.
- See also 'Pressure of fresh concrete on vertical formwork, DIN 18218' in the Doka Calculation Guide.
- Perm. fresh-concrete pressure: depends on the dimensioning of the elements - see also project plan
- Comply with 'Compacting of concrete by vibrating', DIN 4235 Part 2.
- > Pour the concrete.
- Make only moderate use of vibrators, carefully coordinating the times and locations of vibrator use.



Stripping the formwork

Comply with the stipulated stripping times.

 Remove any loose items from the formwork and platforms, or secure them firmly.

Begin work on stripping the formwork on the opposing formwork:

> Undo the connectors to the adjacent elements.

WARNING

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

- Take out the form ties from the top rows of ties. These form-tie points can be reached from the platforms.
- > Attach the element (incl. platforms) to the crane.
- Working from the floor, remove the bottom rows of form ties.





WARNING

The formwork tends to adhere to the concrete. When stripping the formwork, do not try to break concrete cohesion using the crane!

- Risk of crane overload.
- Use suitable tools such as timber wedges or a special pry-bar to detach the formwork from the concrete.
- Lift the element away and to its next location, or place it face-down for intermediate storage.
- Clean residual concrete off the formwork sheet (see the section headed 'Cleaning and care of your equipment').



There is not yet a counter railing on the formwork!

- Danger to life from fatal falls!
- Use a personal fall-arrest system (e.g. safety harness).
- Where the element has panel struts attached to it, first attach this element to the crane, and only then detach the floor anchorages of the panel struts.



Top 50 element in detail



Form-facing

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



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

Steel walings (multipurpose walings)

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

Tie-holes

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

Doka beam H20 top

Innovative end-reinforcement:

- reduces damage to the ends of the beams
- greatly lengthens the service life





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

The Doka beam XT20 can be used instead of the Doka beam H20.



Follow the directions in the section headed 'Structural design'!

Fastening the beams

Flange-clamp H20







- Where more frequent alterations are needed
- Can be mounted anywhere on the waling
- For bolting the Doka beams directly onto the waling
- Can be mounted anywhere on the waling

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

Crane slinging

by mounting a lifting bracket and a top plank (pressure bracing); see the section headed 'Element assembly'.



Anchorage points for personal fall arrest systems (PFAS)



WARNING

- The anchorage point must be at or above the minimum height required for the fall arrest to work.
- The Top 50 element must consist of at least 4 H20 beams.
- Make sure that the steel walings are adequately secured with flange clamps.
- Install the hoisting point at a distance of at least two H20 beams in from the edge of the element.



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

Flexibility

Size

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



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Pressure of fresh concrete

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

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





Surface

Any type of form-ply can be used, as required:

- Doka formwork sheets 3-SO
- Dokaplex formwork sheets
- Xlife sheets
- Xface sheets
- Tongue-and-groove board formwork etc.

The tie-hole pattern and the element size-grid are easily adapted to suit architectural demands. The largearea elements and exact joins deliver perfect joint patterns.



Shape

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





Tie rod system





!

WARNING

Sensitive rod steel!

- Never weld or heat tie rods.
- Tie rods that are damaged or have been weakened by corrosion or wear must be withdrawn from use.

NOTICE

Allow for elongation of long or coupled tie rods (see the Calculation Guide 'Doka formwork engineering')!

For correct positioning of the form ties, see the section headed 'Top 50 elements' and/or the relevant project plan.

Doka also offers economical solutions for creating watertight wall-ties.



Tie-rod wrench 15.0/20.0

For turning and holding the tie rods.

Tie rod system 15.0



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

Note:

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

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



- A Top 50 element
- **B** Tie rod 15.0
- C Super plate 15.0
- D Distance piece (ready-to-use for certain wall thicknesses)

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

Tie rod 15.0mm:

Permitted load-bearing capacity, allowing a 1.6 : 1 factor of safety against failure: 120 kN

Permitted load-bearing capacity to DIN 18216: 90 kN



The Friction type ratchet SW27 or Box span-

ner 27 0.65m can be used for **low-noise releasing and tightening** of the following anchoring components:

- Super plate 15.0
- Wing nut 15.0
- Star grip nut 15.0

Form-ply protection

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

Possible thicknesses of form-ply: 18 - 27 mm In order to fit the form-ply protector, a 30 mm diameter hole must be drilled in the form-ply first.

If necessary, the form-ply protector fitted into the formply can be closed off with the Framax plug R20/25.



A Form-ply protector 22mm (width-across 46 mm)

- B Universal cone 22mm
- C Plastic tube 22mm
- D Form-ply
- E Tie-rod 15.0mm

Tie rod system 20.0



- A Top 50 element
- **B** Tie rod 20.0
- C Super plate 20.0 B
- D Plastic tube 26mm
- E Universal cone 26mm

Tie rod 20.0mm:

Permitted load-bearing capacity, allowing a 1.6 : 1 fac-
tor of safety against failure: 220 kN
Permitted load-bearing capacity to DIN 18216: 160 kN

Note:

The Plastic tubes 26mm are left in the concrete and are sealed off with **Plugs 26mm**.

Operating the form-tie from one side

The **Top50 form-tie nut 15.0** or **Top100 tec form-tie nut 20.0** makes it possible to operate the form-tie from one end of the tie (e.g. where space is tight).

Suitable for U100, U120 and U140 walings with a 50 mm waling-gap.

The form-tie nut has an integrated stopper plate for the tie-rod.



- **K** Notch for aligning the form-tie nut
- L Stopper plate for tie-rod



- b ... 10 cm
- A Form-tie nut
- B Multipurpose waling
- C Tie-rod
- D Super plate
- E Universal cone
- F Plastic tube

How to mount:

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

Inter-panel connections



The elements are linked and aligned horizontally using **Formwork element connectors FF20/50 Z** and Con-

necting pins 10cm:

- fast, dropout-proof joints between elements
- additionally, the inter-element joint can be pulled tight in 2 stages
- a hammer is the only tool needed

Section modulus: 21.6 cm³ Moment of inertia: 97.2 cm⁴

The 3 zones of the Connecting pin 10cm:



A Head: (hammer)

B Shank:	(hold)
----------	--------

C Cone: (pull tight)

!

NOTICE

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

To fit normally



To pull tight half the way



To pull tight all the way



Note:

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

Other possible types of inter-panel connection

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

For more information, please contact your Doka technician.

Length adjustment using closures



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



NOTICE

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

Adjustable waling extension FF20/50 and 1.40m Top50:

Section modulus: 21.6 cm³ Moment of inertia: 97.2 cm⁴

For closures of up to 50 cm

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

Up to 23 cm



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

23 - 50 cm



- A Adjustable waling extension FF20/50
- **B** Where statically necessary place a tie through the closure.

Determining the pin-fixing positions

Note:

Only the pin-fixing position on the 1st element needs to be determined.

After the 2nd element has been aligned, all the other pin-fixing positions will automatically be apparent.



Closure		P	in-holes	s in walir	ng	
s [mm]	А	В	С	D	E	F
0				2		8
7		3	6			
1				3	6	
1.4	1		7			
14			1		7	
21				2		8
20				3	6	
29					3	6
36				1		7
13				2		8
43		2		8		
50		3	6			
50				3	6	
57				1		7
64				2		8
71					3	6
70				1		7
19		1		7		
96				2		8
00		2		8		
93					3	6
100				1		7
107					2	5
444					3	6
114			3	6		
101				1		7
121		1		7		
128					2	5
136					3	6
143					1	4
150					2	5
150			2		8	
157					3	6
137			3	6		
164					1	4
171					2	5
178					3	6
196					1	4
100			1		7	
102					2	5
193			2		8	
200					3	6
207					1	4
214		1	1	1	0	-
					2	5
204					3	5 6

Closure		Pin-holes in waling						
s [mm]	А	В	С	D	Е	F		
228					1	4		
220			1		7			
235					2	5		
243					3	6		
250					1	4		
257				2		8		
264					3	6		
204				3	6			
271					1	4		
278					2	5		
285					3	6		
293				1		7		
300				2		8		
314					1	4		
321					2	5		
328					3	6		
335				1		7		
357					1	4		
364					2	5		
371					3	6		
400					1	4		
407					2	5		
442					1	4		

Example:

Closure needed: 264 mm

Result:

- pin-holes in waling: D and E or E and F
- pin-holes in Adjustable waling extension: 3 and 6

For closures of 50 - 64 cm

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



A Adjustable waling extension 1.40m Top50

B Where statically necessary - place a tie through the closure.

Beam clamp Top50

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



A Beam clamp Top50

- B Connecting pin 10cm
- C Adjustable waling extension

Determining the pin-fixing positions

Note:

Only the pin-fixing position on the 1st element needs to be determined.

After the 2nd element has been aligned, all the other pin-fixing positions will automatically be apparent.



	Closure	Pin-ho	oles in	waling	Closu
	s [mm]	А	В	С	s [mn
	0			5	210
	2	4			212
	3			4	213
	5		3		216
	9		2		219
	12	1			220
	13			1	223
	16		4		225
	19		3		229
	22	2			230
	23			2	233
	25		1		236
	29		4		239
	30			4	240
	32	3			243
	33			3	246
	36		2		249
	39		5		250
	40			5	253
	42	4			256
	43			4	259
	46		3		260
	49		2		263
	52	5			265
	53			5	270
	56		4		273
	59		3		276
	60			3	279
	62	2			280
	63			2	283
	66		5		285
	69		4		289
	70			4	290
	72	3			293
	73			3	296
	76		2		300
	79		5		303
	80			5	306
	82	4			310
	83			4	313
	85		3		316
	89		2		319
	90			2	320
	92	5			323
	93			5	325
1					

Closure	Pin-ho	oles in v	valing
s [mm]	А	В	С
210			2
212	1		
213			5
216		4	
219		3	
220			3
223			2
225		5	
229		4	
230			4
233			3
236		2	
239		1	
240			5
243			4
246		3	
249		2	
250			2
253			5
256		4	
259		3	
260			3
263			2
265		5	
270			4
273			3
276		2	
279		1	
280			5
283			4
285		3	
289		2	
290			2
293			5
296		4	
300			3
303			2
306		5	
310			4
313			3
316		2	
319		1	
320			5
323			4

3

Pin-holes in waling

	Closure	Pin-ho	ples in v	waling	Closure
	s [mm]	А	В	С	s [mm]
1	96		4		330
1	99		3		333
1	100		-	3	336
1	102	2			340
1	102	2		2	3/3
	105		F	2	245
	100	-	5		345
	109		4		350
	110	_		4	353
	112	3		_	356
	113			3	360
	116		2		363
	119		5		366
	120			5	370
	122	4			373
	123			4	380
	126		3		383
	129		2		386
1	130			2	390
1	132	1			393
1	133			5	396
1	136		4	-	400
	139		3		403
	140		v	3	410
	1/2	2		•	410
	142	2		2	410
	143		-	2	420
	140		5		423
	149		4		420
	150	_		4	430
	152	3		-	433
	153			3	440
	156		2		443
	159		5		450
	160			5	453
	163			4	460
	166		3		463
	169		2		470
	170			2	473
	172	1			480
1	173	1		5	490
ļ	176		4		493
1	179		3		500
ļ	180		-	3	503
l	182	2			510
	183	-		2	520
	185		5	-	520
	180		1		530
	109		4	Λ	533
	190			4	04U
	193		6	3	550
ļ	196		2		560
	199		5		570
	200			5	580
ļ	203			4	600
	206		3		610
	209		2		640

s [mm]	A	В	С
330			2
333			5
336		4	
340			3
343			2
345		1	
350			4
353			3
356		2	•
360		2	5
300			3
303	-	•	4
366		3	•
370			2
373			5
380			3
383			2
386		1	
390			4
393			3
396		2	
400			5
403			4
410			2
415			5
420			3
420			2
425		1	2
420		1	4
430			4
433			3
440			4
443			4
450			2
453			1
460			3
463			2
470			4
473			3
480			5
490			2
493			1
500			3
503			2
510			4
520			5
520			2
530			2
533			1
540			3
550			4
560			1
570			2
580			3
600			1
610			2
640			1



Example:

Closure needed: 433 mm

Result:

Pin-holes in waling: 2x 'C'
pin-holes in Adjustable waling extension: 2x '3'

For closures of 3 - 11 cm

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



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





A Joint plate

B Adjustable waling extension FF20/50

Height adjustment

using Height adjuster for formwork beams

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



Adjusting range a: max. 24.5 cm

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

Permitted load-bearing capacity: 1000 kg

Ways of operating:

- Box nut 50 3/4" and Reversible ratchet 3/4" (with lengthening-piece if needed)
- Tie rod 15.0mm or round steel bar (max. diam. 17 mm)

There are holes in the hexagon nut of the spindle for inserting a tie rod.

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



NOTICE

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

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

using Height adjuster WS10-WU16

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



Adjusting range a: max. 24.5 cm

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

Permitted load-bearing capacity: 3000 kg Not suitable for tensile loads!

Ways of operating:

- Box nut 50 3/4" and Reversible ratchet 3/4" (with lengthening-piece if needed)
- Tie rod 15.0mm or round steel bar (max. diam. 17 mm)

There are holes in the hexagon nut of the spindle for inserting a tie rod.

using Adjusting spindle M36

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



Adjusting range a: max. 22 cm

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

Permitted load-bearing capacity: 1000 kg

Ways of operating:

Box nut 24 and Reversible ratchet 1/2"

90 degree corners



Outside corners

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



A Universal angle tie bracket

- B Tie rod 15.0
- **C** Wing nut 15.0
- D Connecting pin 10cm
- E Flange reinforcement
- F Plank

Permitted anchor tensile force: 90 kN

NOTICE

Statical proof of the multipurpose waling used is required!



CAUTION

Risk of tie overload if not correctly positioned!

> Make sure that the Universal angle tie bracket is bolted into the right holes for the Multi-purpose waling WS10 Top50 or WU12 Top50, depending on which type of waling is being used!



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



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

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Inside corners

with Corner waling 20

With the Corner waling 20, it is possible to make a genuine inside-corner element. The Doka beams give the element the necessary rigidity, and also ensure dimensional accuracy.

The adjacent Top 50 elements are fastened with the normal connector components.

Note:

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



Formwork sheet	Corner dimension [A]	
21mm	54.9 cm	ĺ
27mm	55.5 cm	

A Where statically necessary - place a tie through the Corner waling 20.

NOTICE

!

When connecting the Corner waling 20 to adjacent elements, please remember:

If the Adjustable waling extension reaches a long way into the Corner waling 20, no **Formwork element connector FF20/50 Z** may be used on the 2nd leg. Because of the 'pull-tight function hole-grid', this connector cannot be installed one hole-grid further along.

In this case, use an **Anchoring plate FF20/50** instead.



- A Adjustable waling extension
- B Anchoring plate FF20/50

Tying in the Corner waling 20

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



- **B** Anchoring plate FF20/50
- C Formwork element connector FF20/50 Z
- **D** Eye-lug tie rod 15.0
- E Tie-rod 15.0

Max. load on tie-rod: 70 kN

with Internal angle plate H20 Top50

An economical way of making inside corners **with a closure function**. (For closures of up to 32 cm in 1 cm increments)

By nailing a form-ply to the end face of standard elements, these are turned into corner elements. The concrete pressure on the end face is transferred by means of reinforcements (e.g. Fastening plate) on the edge beam.



with Corner plate H20/H36 Top50

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



with Shaft corner waling WS10 Top50

The Shaft corner waling WS10 Top50 is a 90°-welded multi-purpose waling used for making sturdy corner elements. This special waling is custom-built on a project-specific basis.

The Shaft corner waling is often used for shaft formwork (see the section headed 'Shaft formwork').



T-junction

Corner connections

with Corner waling 20

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



The Offset plate FF20/50 makes it possible to arrange Multi-purpose walings WS10 Top50 in parallel, as a means of reinforcing T-junctions.



- A Offset plate FF20/50
- B Connecting pin 10cm
- C Multi-purpose waling



A Site-provided timber brace

NOTICE

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

Rounded surfaces in corner zones

using Offset plate FF20/50

The Offset plate FF20/50 makes it possible to arrange Multipurpose walings WS10 Top50 in parallel, for forming large rounded surfaces in corner zones.



- A Offset plate FF20/50
- B Connecting pin 10cm
- C Multi-purpose waling

Acute & obtuse-angled corners

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

Outside corners

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

Inside corners

with Half splice plate

Half splice plates are used for fabricating low-cost corner plates, with any angle, directly on the site.

To make a corner plate in this way, two Half splice plates are needed. After the formwork has been plumbed at the prescribed angle, these two plates must be welded firmly together.

The user is responsible for the integrity of the



- A Half splice plate
- B Connecting pin 10cm
- C Multi-purpose waling
- D Universal angle tie bracket
- E Weld-seam

with Swivel joint plate

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

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



- A Swivel joint plate
- B Connecting pin 10cm
- **C** Multi-purpose waling
- D Universal angle tie bracket

Dimensioning diagram



Angular waling WS10 Top50

The angular waling is a welded multipurpose waling for constructing strong corner elements. The legs are rigidly fixed at any desired angle other than 90°.

This special waling is custom-built on a project-specific basis.



- **B** Connecting pin 10cm
- **C** Multi-purpose waling
- **D** Universal angle tie bracket
- E Splice plate

Stop-end formwork



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

NOTICE

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

Walls up to approx. 20 cm thick

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



A Planks

B Strip of formwork sheeting

Walls thicker than approx. 20 cm

The **Anchoring plate FF20/50** ensures that the loads are safely transferred into the waling system of the Top 50 elements.

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

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



- A Anchoring plate FF20/50
- B Connecting pin 10cm
- C Super plate 15.0
- **D** Tie-rod 15.0
- E Doka beam
- F Nailed-on plank
- G Multi-purpose waling
- H Strip of formwork sheeting



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



Combining a Corner connecting plate 90/50

with an Anchoring plate makes it possible to lift the stop-end element jointly with the wall element.

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

Window and door openings

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



Close-up A:



- a ... clear width of opening
- I ... length of plank = a minus 12 cm s ... plank width = wall thickness
- A Box-out clamp
- B Top 50 element
- C Doka floor prop
- D Plank (wall thickness/2-5 cm)
- **E** Board (10/3 cm)
- F Double-headed nail

How to mount:

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

Vertical stacking of panels

The vertical-stacking methods shown here are only suitable for:

- lifting
- setting down and
- crane-handling

the formwork.

NOTICE

On account of the reduced load-bearing capacity and possible deformation, the application of load from fresh-concrete pressure or concrete weight on the vertical stacking joint is only conditionally permissible.

Consequently, one of the following measures has to be implemented:

- Whenever possible, make the cantilevers short and symmetrical at the beam joints.
- Provide additional waling planes.
- Position the vertical stacking joint at the zero point of the moments.
- Model the vertical stacking joint as an articulation in the statical calculation.

with Stacking plate H20

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



a ... min. 40 cm

Permitted moment:

- where outermost hole is 9 cm from edge of beam: 2.0 kNm
- where outermost hole is 5 cm from edge of beam: 1.5 kNm

The number of Stacking plates H20 needed will depend on the overall height of the gang-form:

• Up to an overall height of 6.0m: a Stacking plate H20 must be fastened to every 2nd beam.

• Up to an overall height of 8.0 m: a Stacking plate H20 must be fastened to every beam.

In addition, it is advisable to place extra multi-purpose walings across the horizontal joins, in order to achieve greater stability.

• Over 8.0 m, up to a max. overall height of 14.0 m: a Stacking plate H20 must be fastened to every beam.

In addition, it is **absolutely essential** to place extra multi-purpose walings across the horizontal joins, in order to achieve sufficient stability.

Included in scope of supply:

- 4 hexagon bolts M20x70 (width across flats: 30 mm)
- 4 hexagon nuts M20
- 4 spring washers A20

Note:

Make sure that the bolted connections are tightened firmly!

with board-plates

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



Permitted moment: 0.7 kNm

Items needed for each beam join:

Plank ^{*)} 115/25, I _{min} = 80.0 cm	2 pcs.
Hexagonal bolt M20x110	4 pcs.
Hexagon nut M20	4 pcs.
Washer 22	4 pcs.

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

Shaft formwork

Shaft formwork with Stripping corner I and Transition plate

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

Product features:

- No negative impression in the concrete.
- Formwork set-up and stripping function integrated in the inside corner (no need for crane – uses stripping spindles).
- Entire shaft formwork unit is lifted and reset in one piece (with lifting brackets and 4-part lifting chain).

Two different types of **stripping spindle** can be used for setting up and stripping the formwork:

- Framax stripping spindle I with ratchet
- Framax stripping spindle I

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



- A Framax stripping corner
- **D** Crane lifting point (to be used exclusively for lifting **only one** stripping corner on its own!)

Vertical stacking of Framax stripping corners I

- Connect the bottom stripping corner to the Top 50 element.
- > Pull the coupling bolt out of the top stripping corner.
- Remove the two hexagon bolts from the bottom stripping corner.
- Engage the top stripping corner flush on the bottom stripping corner.
- Push the coupling bolt back in.
- Bolt the stripping corners together with the 2 hexagon bolts and hexagon nuts removed beforehand.

 Connect the top stripping corner to the Top 50 element.



- A Bottom stripping corner I
- B Top stripping corner I
- C Coupling bolt
- D Hexagon bolt ISO 4019 M16x45 8.8 galv. + Hexagon nut ISO 4032 M16 8 galv.

Animation:

https://player.vimeo.com/video/256373947

Mounting the Framax stripping spindles I

These mounting instructions apply to both **Stripping** spindles I and Stripping spindles I with ratchet.

- 1) Pull out the U-bolt from the stripping spindle.
- Place the stripping spindle on the centring stud of the stripping corner.
- **3)** Twist the stripping spindle clockwise until fully engaged.
- Position the ratchet or spindle nut between the holes in the push-rod.
- 5) Fix the stripping spindle with the U-bolt.



- A Framax stripping spindle I or
- Framax stripping spindle I with ratchet
- B U-bolt
- C Centring stud of stripping corner
- **D** Ratchet or spindle nut
- E Push-rod

Animation: https://player.vimeo.com/video/256374622

Operating the Framax stripping spindle I with ratchet

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



- A Tie-rod 15.0mm
- **B** Weldable coupler 15.0
- C Ratchet
- **D** Change-over lever

Operating the Framax stripping spindle I

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



- A Tie rod 15.0mm
- **B** Spindle nut
- **C** Slinging point (to be used exclusively for lifting **only one** stripping corner on its own!)

Adjustment range of Transition plate



- a ... 42.5 55.0 cm
- b ... Adjusting range 12.5 cm, in 2.5 cm increments
- A Multi-purpose waling
- **B** Transition plate 18mm, 21mm or 27mm
- C Connecting pin 10cm and Spring cotter 5mm
- D Framax stripping corner I
- E Quick acting clamp RU

Possible sizes of shaft

Length of WS10 Top50 waling	Width of shaft		
[cm]	min. [cm]	max. [cm]	
75	160	185	
100	185	210	
125	210	235	
150	235	260	
175	260	285	
200	285	310	
225	310	335	
250	335	360	
275	360	385	
300	385	410	

Connections



C Connecting pin 10 cm with Spring cotter

- E Framax quick acting clamp RU
- **F** Framax screws (not included in scope of supply)

!

NOTICE

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

Supporting the plywood face

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

	Permitted formwork pres- sure [kN/m ²]				
Formwork sheet	30	40	50	60	70
3-ply sheet 21mm	15	10	10		
3-ply sheet 27mm	25	20	15	15	10
Multi-ply sheet 18mm	40	30	25	20	15
Multi-ply sheet 21mm	50	40	35	30	25

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

Spacing c [cm]	Number of quick acting clamps RU
max. 30	1
max. 60	2
max. 90	3



- **A** Transition plate
- B Framax quick acting clamp RU

C Framax moulded timber or squared timber

Shaft formwork closed ready for pour



Form-tie zones:



x ... 16.5 - 22.0 cm

1

NOTICE

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

Shaft formwork stripped ready for lifting



Stripping play:



b ... 6.0 cm


- 9785-202-01
- β ... max. 15°

Ţ

- A Lifting-bracket
- B Four-part lifting chain

The crane hook on the Stripping corner I is not allowed to be used for lifting the shaft form-work.

The shaft formwork must only be lifted using lifting-brackets, or in one piece with the shaft platform.

Permitted weight of the shaft formwork:

4000 kg with 4 lifting-brackets

Reason: 15° oblique pull in both directions

Doka shaft platform

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



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

Circular formwork

Curved structures can be formed with Half splice plates or Swivel joint plates. For more detailed information on these plates, see the section headed 'Acute and obtuse-angled corners.

Profiled timber formers are placed between the Doka beams and the form-ply to provide the desired shape.

Minimum bending radii of Doka formwork sheets:

Formwork sheet	Grain direction of face layer	Min. radius [m]
Dokapley 9mm	Transverse	2.0
	Longitudinal	3.5
Dokaplay 18mm	Transverse	4.0
Dokapiex Tomin	Longitudinal	7.0
Dokaploy 21mm	Transverse	5.0
	Longitudinal	8.0
Doka 3 SO 21mm	Transverse	3.5
Doka 5-50 2 mini	Longitudinal	8.0
Doka 3 SO 27mm	Transverse	5.0
	Longitudinal	10.0

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

with Half splice plate



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

Example - formwork for a circular tank



with Swivel joint plate



- A Swivel joint plate
- B Connecting pin 10cm
- C Profiled timber former
- D Doka beam
- E Multi-purpose waling

Plumbing accessories



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

WARNING

Risk of the formwork tipping over!

- Formwork elements must be held stable in every phase of construction work!
- Observe all applicable safety regulations!
- If high wind speeds are likely, or when work finishes for the day or before prolonged work-breaks, always take extra precautions to fix the formwork in place. Suitable precautions:
 - Suitable precautions:
 - set up the opposing formwork
 - place the formwork against a wall
 - anchor the formwork to the ground
- The safety pin is only for rough adjustment of the plumbing accessory. Do not attempt to remove or release the safety pin under load.

Permitted spacings [m] of the plumbing accessories:

Formwork boight [m]	Panel	strut	Eurox 60 550
Formwork neight [m]	340	540	Eulex 00 350
3.00	4.00		
4.00	3.00		
5.00		3.00	
6.00		2.00	
7.00	4.00		4.00
8.00	3.00		4.00

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



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

Note:

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

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

- 2 Panel struts 340
- 2 Eurex 60 550

Universal dismantling tool

 $^{/^{-}}$ | For easy operation of the spindle nuts.



Possible ways of connecting to the multipurpose waling



A Prop head EB

B Connecting pin 10cm + Spring cotter 5mm

Fixing to the ground

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

Drilled holes in footplate



a ... diam. 26 mm

b ... diam. 18 mm (suitable for Doka express anchors)

c ... diam. 28 mm

d ... diam. 18 mm (suitable for Doka express anchors)

Anchoring the footplate

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



- A Doka express anchor 16x125mm
- B Doka coil 16mm

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

i

Follow the directions in the 'Doka express anchor 16x125mm' User information booklet!

Required safe working load of alternative anchors:

F_d ≥ 20.3 kN (F_{exist} ≥ 13.5 kN)

Follow the manufacturers' applicable fitting instructions.

Panel struts

Product features:

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



α ... approx. 60°

- A Panel strut 340 IB
- B Panel strut 540 IB
- C Prop head EB

Eurex 60 550 used as a shoring & plumbing accessory

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

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



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



Type	Extension length L [m]	Plumbing strut Eurex 60 550 (A)	Extension Eurex 60 2.00m (B)	Coupler Eurex 60 (C)	Connector Eurex 60 IB (D)	Plumbing strut shoe Eurex 60 EB (E)	Adjusting strut 540 Eurex 60 IB (F)	Prop head EB (G)	Weight [kg]
1	3.79 - 5.89	1	—	—	1	1	1	2	91.1
2	5.79 - 7.89	1	1	—	1	1	1	2	112.4
3	7.79 - 9.89	1	2	—	1	1	1	2	133.7
4	7.22 - 11.42	2		1	1	1	1	2	142.5
5	9.22 - 13.42	2	1	1	1	1	1	2	163.8

Example of a possible combination of Type 4



- α ... approx. 60°
- A Plumbing strut Eurex 60 550
- B Extension Eurex 60 2.00m
- C Coupler Eurex 60
- D Connector Eurex 60 IB
- E Plumbing strut shoe Eurex 60 EB
- F Adjusting strut 540 Eurex 60 IB
- G Prop head EB

A good rule of thumb here is:

The length of the shoring & plumbing accessory (i.e. the complete Eurex 60 550 plumbing-strut assembly) = the height of the element to be shored.

Pouring platforms with single brackets

Doka brackets can be used to make pouring platforms that can easily be assembled by hand.

They can be attached to any point on the Doka beam. This also makes it possible to erect intermediate platforms.



Universal brackets



	Width b	Height h
Universal bracket 90	87	160

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

Precondition for use

Observe all applicable safety regulations.

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

Ensure that the formwork gang is sufficiently rigid.

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



NOTICE

The brackets must be secured against accidental lift-out.

Note:

The plank and board thicknesses stated comply with the EN 338 C24 timber.

Observe all national regulations applying to deck and guardrail boards.

Universal bracket 90

Board thicknesses for spans of up to 2.50 m:

- Deck-boards min. 20x5 cm
- railing planking min. 15/3 cm

Deck-boards and guard-rail boards: Per 1 metre length of platform, 0.9 m^2 of deck-boards and 0.8 m^2 of guard-rail boards are needed (site-provided).

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

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

Using scaffold tubes



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

A Screw-on coupler 48mm 95

B Scaffold tube 48.3mm



b ... 62 cm h ... 115 cm

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

Board thicknesses for centre-to-centre spans up to 2.50 m:

Deck-boards min. 20/5 cm

Top scaffold bracket L

• Guard-rail boards min. 15/3 cm

Deck-boards and guard-rail boards: Per 1 metre length of platform, 0.65 m² of deck-boards and 0.6 m² of guard-rail boards are needed (site-provided).

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

Using scaffold tubes



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

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

Possible ways of fixing



WARNING

Risk of accidental lift-out if the bracket is fixed to a multi-purpose waling!

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



 $^{*)}$... When using the Beam screw S 8/70 or H 8/70, the universal bracket can be positioned directly at the multi-purpose waling.

CAUTION

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

Sideguards on exposed platformends

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

Edge protection system XP



- A Guardrail board min. 15/3 cm (site-provided)
- B Handrail post XP 1.20m
- C Railing clamp XP 40cm
- D Toeboard holder XP 1.20m
- E Pouring platform

Installation:

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

Animation: https://player.vimeo.com/video/276197020

Handrail clamp S



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

Pouring platforms

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



Preconditions for use:

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

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

Ensure that the formwork gang has sufficient stiffness.

Observe all applicable safety regulations.

Xsafe plus platform

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

Follow the directions in the 'Xsafe platform system plus' User Information booklet.



A Xsafe plus platform

B Xsafe plus lifting adapter for beam formwork (2 adapters per platform)

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

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

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

Mounting the lifting adapter onto the platform:

 Use Connecting pins 10cm and Spring cotters 5mm to mount the lifting adapter to the platform.



C Connecting pin 10cm and Spring cotter 5mm of the Xsafe plus platform

Lifting the platform onto the formwork:

 Lift the lifting bracket by hand to easily attach the Doka 4-part chain.



Attach a 4-part lifting chain (e.g. Doka 4-part chain 3.20m) to the platform and hoist it towards the formwork.





a ... 358 mm (distance between platform decking and multi-purpose waling)

A Securing hook

Lifting the platform off the formwork:

Attach a 4-part lifting chain to the platform and raise it.

When the platform is raised by the 4-part lifting chain on the securing hook, the platform is automatically unlocked.

Do a sight-check to make sure that the securing hooks have been unlocked!

Fix the platform in the top waling.

Detach the 4-part lifting chain.

The securing hooks latch into place automatically.



Do a sight-check to make sure that the securing hooks have latched into place!

The platform is now secured against accidental lift-out.

Extending the platform to either side

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



CAUTION

Platforms with platform extensions can tip up. Falling hazard!

- Do not step onto the platform extension until the safety hooks have been fixed in place.
- Fix the safety hooks of both Lifting adapters in place with the Connecting pins 10cm and the Spring cotters 5mm.



Moving the formwork and the platform in one piece

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



NOTICE

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

Repositioning:



D Lifting bracket

Lifting / laying down:



a ... max. 6.00m



It is not permitted to lift or lay down formwork units with heights of >6.00 m!

In these cases, remove the platform before lifting / laying down the formwork.

Framax pouring platform U 1.25/2.70m

!

NOTICE

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

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



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

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

- Doka framed formwork Framax Xlife and Alu-Framax Xlife
- Wall formwork FF20 (with FF20 adapter for Framax pouring platform U)
- The guard rail can be locked in either of two positions:
 - vertical
 - tilted by 15°
- With the aid of the Top50 adapter for Framax pouring platform U, the Framax pouring platform U can be fixed in the waling of the Top 50 elements (2 adapters per pouring platform).



A Top50 adapter for Framax pouring platform U

B Framax pouring platform U

Preparing the pouring platform:

Tilt up the guard rails and lock them in position.



> Put both side stops into position.



A Side stop

> Close the decking with the tilt-back board.

Mounting the adapter:

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



A Bolt

- B Inner tube
- C Extra plank

Lifting the platform onto the formwork:

Attach a four-part lifting tackle to the hoisting points of the adapters at the front, and to the lifting brackets of the platform railings at the rear.



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



- A Safety plate
- B Supporting profile
- Secure the platform against accidental lift-out: Raise the safety catches and latch them into the front position (the claw grips behind the multi-purpose waling).



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



The safety catches on the adapters can be operated from ground level, using a board.

Detach the four-part lifting chain.

Lifting the platform off the formwork:

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

Anchorage points for personal fall arrest systems (PFAS)



WARNING

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

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



A Vertical profile of the pouring platformB Strap

Transporting, stacking and storing

Stack of 10 Framax pouring platforms U b b c c a grzr-398-01 Single collapsed platform f grzr-398-01 Single collapsed platform

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

Sideguards on exposed platformends

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

Note:

The plank and board thicknesses stated comply with the EN 338 C24 timber.

Observe all national regulations applying to deck and guardrail boards.

Side handrail clamping unit T



- A Side handrail clamping unit
- B Clamping component
- **C** Integrated telescopic railing
- **D** Guardrail board min. 15/3 cm (site-provided)
- E Pouring platform

Assembly:

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

Animation: https://player.vimeo.com/video/274887351

Opposing guardrail

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

Note:

The plank and board thicknesses stated comply with the EN 338 C24 timber..

Observe all national regulations applying to deck and guardrail boards.

Edge protection system XP



- α...15°
- A Handrail post XP
- B Timber-beam formwork adapter XP
- **C** Protective grating XP or guardrail boards

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

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





> Tilt the safety barrier outward.



D Safety bolt

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

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

Types of safety barrier:



- a ... 143 cm b ... 93 cm
- c ... min. 100 cm
- d ... 103 cm
- E Handrail post XP 1.20m
- F Handrail post XP 0.60m
- G Protective grating XP 1.20m
- H Protective grating XP 0.60m
- I Platform decking
- J Guardrail board



When Prot

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

Assembly

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

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



B Timber-beam formwork adapter XP

Make sure that it is seated correctly and making full-surface contact (10 cm from clamping part to beam end)!



- Push the Handrail post XP into the post-holding fixture on the Timber-beam formwork adapter XP until the locking mechanism engages.
- > Fit on a Protective grating XP or guardrail boards.
- Use Velcro® fasteners 30x380mm to secure the Protective gratings XP to the Handrail posts XP, or use nails (diam. 5 mm) to secure guardrail boards.



A Handrail post XP

C Protective grating or guardrail boards

G Doka 4-part chain

Lifting by crane

H Lifting bracket

When lifting gang-forms together with counter railings assembled from the Xsafe edge protection XP, remember the following points:

- The guard rails must be in the vertical position when the gang-form is raised or laid down.
- Elastic deformation of the guard rails may occur because the 4-part chain is resting against the protective grating or guardrail boards while the gangform is being lifted.
- When a gang-form is lifted, repositioned or laid down, the 4-part chain must not be led around the protective grating or the guardrail board.



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

- Placing down onto the form-ply side
- Dicking up from this position



A Form-ply side

Structural design



a ... centre-to-centre span b ... cantilever

Note:

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

Permitted span (a)

		Peak velocity pressure o [kN/m ²]			ure q
		0.2	0.6	1.1	1.3
an	Protective grating XP	2.5	i m		-
ds	Guardrail board 2.4 x 15 cm		1.9	m	
Itre	Guardrail board 3 x 15 cm	2.7	' m	2.4 m	2.0 m
Permitted centre-to-cer	Guardrail board 4 x 15 cm	3.3	m	2.4 m	2.0 m

Permitted cantilever (b)

		Peak velocity pressure q [kN/m ²]			
		0.2	0.6	1.1	1.3
	Protective grating XP	0.6	6 m	0.4 m	-
eve	Guardrail board 2.4 x 15 cm		0.5	i m	
utile Litile	Guardrail board 3 x 15 cm		0.8	m	
Pe cal	Guardrail board 4 x 15 cm		1.4	m	

Wall formwork at the edge of the structure

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



A Wall-formwork support angle

- B Bottom plank 120x80 mm (WxH) mounted on the opposing formwork
- C Opposing formwork
- **D** Holding formwork
- E Façade scaffolding (e.g. Working scaffold Modul)

Permitted load-bearing capacity: 2000 kg / Wall-formwork support angle Characteristic cube compressive strength of the concrete ($f_{ck,cube}$): min. 15 N/mm² (C12/15 grade concrete)

NOTICE

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

Note:

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



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

Installation:

Remove the nailing cone from the bridge edge beam anchor.



- a ... min. 15.5 up to max. 19.5 cm
- F Bridge edge beam anchor 15.0
- G Nailing cone 15.0
- Secure the support angle to the bridge edge beam anchor with a Screw-in cone 15.0 (but do not yet tighten).
- Use the star grip nut for adjusting to the necessary level (b).
- Tighten the Screw-in cone 15.0.



b ... 8.0 cm (offset for bottom plank) Adjustment range $c_1 \dots 6.5$ cm to $c_2 \dots 11.5$ cm **A** Wall-formwork support angle

- H Screw-in cone 15.0
- J Star grip nut

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

- Position the holding formwork.
- Lower the opposing formwork on to the support angle by crane.
- Use a wedge to tighten the bottom plank of the opposing formwork against the wall/slab.



- B Bottom plank
- I Wedge
- > Fit the anchors.

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

> Detach the gang-form from the crane.

Ladder system

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

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

Note:

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

WARNING

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



Assembly

Preparing the formwork

- Pre-assemble gang-forms face-down on a prepared flat area (see the section headed Elementverbindung).
- Install platforms and panel struts on the laid-flat panel (see the sections headed Betonierbühnen and Abstell- und Einrichthilfen).

Attaching connectors to the formwork

NOTICE

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

Fastening variant 1:



Fastening variant 2:



- A Connector XS wall formwork
- B Super plate 15.0
- **C** Tie rod 15.0 (length = 0.40 m)
- D Locking rod 15.0 330mm
- **E** Anchor plate 12/12 or 15/20

- Place the Connector XS wall formwork onto the multi-purpose waling near the top of the formwork and place a squared timber under it (pressure point). Nail the squared timber to the Doka beams.
- Secure the Connector XS Wall formwork.



- A Connector XS wall formwork
- B Super plate 15.0
- F Squared timber 10x10 cm (site-provided)
- Place the Connector XS wall formwork onto the multi-purpose waling near the bottom of the formwork (no need for a squared timber).



- A Connector XS wall formwork
- B Super plate 15.0

Note:

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

Fixing the ladder

to the top Connector XS Wall formwork

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



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

to the bottom Connector XS Wall formwork

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



- in the front position (a) for one single ladder
- in the rear position (b) in the telescoping zone (for 2 ladders)
- B Safety hooks
- C Ladder XS

Mount the Securing barrier XS to the ladder, with fixing hooks and wing-nuts.



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

Ladder system XS for heights above 3.75 m

Telescoping ladder extension (for adjusting to ground level)

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



Close-up



- A System ladder XS 4.40m
- B Ladder extension XS 2.30m
- C Safety latch

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

Permanently fixed ladder extension

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



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

- A System ladder XS 4.40m
- B Ladder extension XS 2.30m
- C Screws, width-across 17 mm

Two Ladder extensions XS 2.30m can be fixed together in the same way.



NOTICE

- Always observe all relevant safety regulations applying to the use of the Ladder cage XS in the country in which you are operating (e.g. in Germany: BGV D 36).
- > Attach the Ladder cage exit XS (the bottom of the cage must always be at the same height as the platform). The safety latches prevent the cage from being accidentally lifted out.



- D Ladder cage exit XS
- Safety latch F

Attach further ladder cages, in each case to the next available rung.



E Ladder cage XS

F Safety latches (lift-out guard)

Items needed

	Formwork height				
Connectors + ladder	2.70- 3.25 m	>3.25- 6.00 m	>6.00- 8.00 m		
Connector XS wall formwork	2	2	3		
System ladder XS 4.40m	1	1	1		
Ladder extension XS 2.30m	0	1	2		
Tie-rod 15.0 galvanised m (length: 0.40 m)	2	2	3		
Super plate 15.0	4	4	6		
Squared timber 10x10 cm	1	1	1		

	Formwork height								
Ladder cage	2.70- 3.15 m	>3.15- 4.05 m	>4.05- 5.40 m	>5.40- 6.60 m	>6.60- 7.65 m	>7.65- 8.00 m			
Ladder cage exit XS ¹⁾	1	1	1	1	1	1			
Securing bar- rier XS ¹⁾	1	1	1	1	1	1			
Ladder cage XS 1.00m ¹⁾	0	1	2	3	4	5			

1) No allowance made here for intermediate exits.

Exit onto an intermediate platform

Basic rule:

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

Mounting the Ladder cage XS 0.25m

Hook the ladder cage into an empty rung and secure it against accidental lift-out.





Combining different formwork systems

Top 50 and FF20 timber-beam formwork can be combined with the following formwork systems:

- Framed formwork Framax Xlife
- Framed formwork Alu-Framax Xlife
- Circular formwork H20

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



Example of combination with Framax Xlife framed formwork





Example of combination with Circular formwork H20





- A Transition plate 18mm, 21mm or 27mm
- B Framax quick acting clamp RU
- C Connecting pin 10cm
- D Spring cotter 5mm
- E Moulded timber support
- F Timber-beam formwork
- G Framed formwork Framax Xlife
- H Circular formwork H20



Can be combined with Wall formwork FF20:

If the spacing of the walings is suitably adjusted, Top 50 elements can be combined with FF20 ready-assembled elements. This enables users to supplement the available formwork with existing FF100 tec equipment at short notice.

Lifting by crane

with lifting-brackets and pressure bracing



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



CAUTION

It is strictly prohibited to lift the formwork without pressure bracing.



i

NOTICE

- Angle β of slinging means: max. 30°.
- Brace the formwork in a windproof manner when erecting it or when it is temporarily placed in the standing position.

Follow the directions in the Operating Instructions.

Permitted load-bearing capacity:

- 1300 kg per lifting bracket for waling centre-to-centre spacing x less than 0.75 m
- 1000 kg per lifting bracket for waling centre-to-centre spacing x 0.75 to 1.00 m



A Lifting bracket

B Doka beam

C Pressure bracing (plank, 4.5x20 cm)

For instructions on installing the lifting brackets and pressure bracing (top plank), see the section headed '**Element assembly**'.

However, for your own safety, please observe the following points:

- Only set down the elements, or stack of elements, on flat surfaces that are capable of supporting the load.
- Do not detach an element from the crane until it has been safely set down.
- Never climb onto the stack of elements.
- Never set down the units in such a way as to impose loads on platforms and brackets.



Enhanced requirements for fair-faced concrete

Examples of enhanced requirements:

- Architectural requirements
- Special requirements regarding planeness of the concrete surface

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

Formwork sheets screwed on from rear

Advantages:

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

There are **two possible ways** of fixing the formwork sheets to the Doka beams:

Open formwork

- gives the elements high rigidity
- flange-clamps can be retrofitted
- for long construction periods

H20 screw-on brackets for formwork sheets

- no swelling
 - rentable
 - for short construction periods

Open formwork



- A Open formwork
- B Beam grille
- C Formwork sheet

H20 screw-on bracket for formwork sheets

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



- A H20 screw-on bracket for formwork sheets
- B Framax screw 6.7x20.6 (article n° 508302100)
- C Universal countersunk-head screw Torx TG 5x50
- D Doka beam H20
- E Formwork sheet

Advantages:

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



NOTICE

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

Approx. five H20 screw-on brackets for formwork sheets per m^2 are needed for attaching the formwork sheeting.



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

Type of formwork sheet	Framax screw 6.7x20.6 (on formwork sheet)	Universal coun- tersunk-head screw Torx TG 5x50 (on formwork beam)
Multi-ply formwork sheet (Dokaplex or equivalent)	2 (In the middle of the sheet) 4 (At joints between sheets)	2
3-ply sheet (3-SO or equivalent)	4	2

Attachment of multi-ply formwork sheet:



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

Type of formwork sheet	Screw-in depth	Permitted pull-out force 1)
Multi-ply formwork sheet (e.g. Dokaplex 18 or 21mm)	15 mm	0.5 kN
3-ply sheet (e.g. 3-SO 21 or 27mm)	18 mm	0.2 kN

¹⁾ Values obtained when sheet was in moisture-penetrated state

Other possible areas of use

Column formwork Top 50

The proven Doka beams, multi-purpose walings and Doka formwork sheets are also used for column formwork.

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



Follow the directions in the 'Column formwork Top 50' User Information booklet.

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Top 50 as a superstructure and tunnel formwork

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

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

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



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

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



 Universal spindle foot T8 for transferring vertical compressive forces of up to 80 kN.
Not suitable for tensile loads!



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



Adjusting plate T

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





NOTICE

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

Multi-purpose waling WS10 and WU12 in detail



α ... max. 23°

A Adjusting plate T

- B Connecting pin 10cm + Spring cotter 5mm
- **C** Multi-purpose waling WS10 and WU12
- E Connection plate of multi-purpose waling
- G Spindle, width-across 24 (max. adjusting range 107 mm)

F_{permissible} = 37 kN

Tools needed for operating the spindle:

- Reversible ratchet 1/2"
- Box nut 24 1/2"

Bridge superstructure formwork



- D Bracing
- E Handrail post T 1.80m
- F Profiled timber former



- D Bracing
- E Handrail post T 1.80m
- Universal support Top50 F
- G Doka load-bearing tower Staxo

Tunnel formwork



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



- A Multi-purpose waling
- B Doka beam
- C Spindle strut
- **D** Bracing
- E e.g. Tunnel system DokaCC
- F Lowering wedge

Platforms assembled from system components with Universal suspension head

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



Possible ways of connecting to the multipurpose waling

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



- A Multi-purpose waling WS10 Top50
- B Strut

Connected to a Universal spindle foot T8



- A Multi-purpose waling WS10 Top50
- B Universal spindle foot T8
- **C** Hexagonal bolt M16x45 with hexagon nut and washer (not included with product)

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



a ... 113±2 mm

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

A Multi-purpose waling WS10 Top50

Connected to bracing tubes by screw-on couplers



- A Multi-purpose waling WS10 Top50
- B Bracing tube
- C Screw-on couplers

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Connected to a spindle or strut via an adapter and the rear-located flange holes



a ... 113±2 mm

Where the connection is made via a plate, allowance should be made for the axis tolerance of 113 ± 2 mm in the transverse direction. We recommend planning for slotted holes (18x20 mm) in the transverse direction.

- A Multi-purpose waling WS10 Top50
- B Strut
- **C** Adapter (special component project-specific)
- D Hexagonal bolt M16x45 with hexagon nut and washer

Utilising self-compacting concrete

Advantages:

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

Filler neck GF SCC

The Filler neck GF SCC enables Top 50 formworks to be filled with self-compacting concrete. The concrete is pumped in and forced upward.

- Possible thickness of form-ply: 2 6 cm
- Required centre-to-centre distance of the adjacent beam-pair: 26.6 cm
- Can be fitted between any pair of adjacent beams



Note:

For more information, please contact your Doka technician.

Panel closure tool D125 SCC



The Panel closure tool D125 SCC is mounted on the end of the pump hose.

Functions:

- To connect the pump hose to the Filler neck GF SCC
- To shut off the pump hose

Element assembly

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

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

Assembly bench with stop bars

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

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





- A Assembly bench
- B Stop-bar for multipurpose walings
- **C** End stop-bar for Doka beams
- D Detachable spacer batten
- E End stop-bar for multipurpose walings
- F Squared tube 60x60x300mm



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

Placing the walings

Use pins to fix Assembly angles Top50 into the multipurpose walings (the multipurpose walings with connection plates facing upwards).

The assembly angles are used to ensure exact alignment of the Doka beams, and as stop-bars for the formwork sheets.



- A Assembly angle Top50
- B Stop-bar for formwork sheets
- **E** End stop-bar for multipurpose walings
- F Squared tube 60x60x300mm
- Clean the assembly bench.
- Place the multipurpose walings, complete with the mounted assembly angles, onto the assembly bench.



A Multi-purpose waling



Use nails to prevent the walings sliding off.

Drilling extra holes in Doka beams

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





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

Mounting the lifting brackets

WARNING

Doka beams which have lifting brackets mounted to them must be attached to the multi-purpose walings by means of threaded joints or flange clamps.

Simply nailing them only to the connection plate is not sufficient.

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



a ... 20.0 cm b ... 22.4 cm

c ... 11.2 cm

I

- A Lifting bracket
- B Extra diam. 18 mm holes

NOTICE

Be careful to ensure that the lifting brackets are mounted in the correct position!





i

Follow the directions in the Operating Instructions.

Extra protection for the bottom ends of Doka beams H20 eco

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



a ... 1.0 cm

A Protective cap H20

Placing and attaching the Doka beams

> Fasten on the Doka beams at the desired centres.



Various ways of fastening the Doka beams

	WS10	WU12	WU14	WU16
Flange clamp H20	\checkmark	\checkmark	—	—
Flange clamp G	\checkmark	\checkmark	\checkmark	\checkmark
Flange claw	\checkmark	\checkmark	\checkmark	\checkmark
Fastening plate	\checkmark	\checkmark	\checkmark	—
Waling clamp 2G	\checkmark	\checkmark	\checkmark	—
Waling clamp H20	\checkmark	\checkmark	\checkmark	—
Beam screw S 8/70	\checkmark	\checkmark	\checkmark	\checkmark
Beam screw H 8/70	\checkmark	\checkmark	\checkmark	_

Flange-clamp H20

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

NOTICE

When using the Flange clamp H20, make sure that a **space of at least 5 cm** is left between the **form tie** and the **Doka beam**.

Tools needed:

- Reversible ratchet 1/2"
- Box nut 19 1/2" L
- Extension 22 cm
- > Push the Flange clamps H20 onto the Doka beams.
- Before tightening them to the steel waling, make sure that they are centrically positioned.
- Gently tighten on one side. Tap the stirrup with a hammer to ensure that the clamp is sitting correctly.
- Tighten the clamp on the other side and tap the stirrup with the hammer.
- Tighten the first side of the clamp completely.





a ... 13.5 - 16.5 cm

b ... 4.0 cm

c ... Bottom of the formwork



Mount the flange clamps with the hexagon nuts facing downwards (towards the bottom of the formwork). This protects the nuts against soiling during pouring.

Flange-clamp G

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

Note:

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

Tools needed:

- Reversible ratchet 1/2"
- Box nut 19 1/2" L





c ... bottom of formwork

Clamping ranges [cm]

b	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
a _{min}	15.8	15.8	15.0	14.5	13.4	13.2	13.0	13.0	12.8
a _{max}	23.8	23.3	23.2	22.7	22.3	21.9	21.3	20.7	20.0

Clamping ranges [cm]

b	4.5	5.0	5.5	6.0
a _{min}	12.3	11.5	11.8	12.0
a _{max}	19.3	18.2	16.8	14.6

Flange claw

Also for subsequent fastening of Doka beams or squared timbers to any position on walings and (IPB-section) steel girders.

Tools needed:

- Drill bit, diam. 17 mm
- Reversible ratchet 1/2"
- Box nut 19 1/2" L



Clamping ranges [cm]

b	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
a _{min}	17.3	17.1	17.0	16.7	16.3	16.0	15.5	14.8	14.2
a _{max}	29.0	28.9	28.8	28.7	28.6	28.4	28.1	27.7	27.4

Clamping ranges [cm]

oran	·P5	, . a	900	[o]					
b	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
a _{min}	13.4	12.5	11.4	10.1	10.0	10.0	10.0	10.0	10.0
a _{max}	27.1	26.7	26.0	25.5	25.1	24.4	23.7	23.0	22.2

Fastening plate

For formwork elements intended for high numbers of repeat uses, or for providing stiffening reinforcement and for transferring longitudinal forces.

Can only be screwed onto the ends of the waling (in the case of walings of 1.00 m and above), to the left or right of the connection plate, in the flanges.

Tools needed:

- Drill bit, diam. 17 mm
- Reversible ratchet 1/2"
- Box nut 24 1/2"
- Fork spanner 24





Double-headed nails 80mm

WARNING

Doka beams which have lifting-brackets mounted to them must be attached to the multipurpose walings by means of threaded joints or flange-clamps.

Simply nailing them only to the Connection plate is not sufficient.

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

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





Waling clamp 2G

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

Tools needed:

- Reversible ratchet 1/2"
- Box nut 19 1/2" L
- Extension 22 cm





Waling clamp H20

For clamping Doka beams anywhere on the waling. Subsequent installation of beam and waling possible.

Tools needed:

- Reversible ratchet 1/2"
- Box nut 13 1/2"



Beam screw S8/70

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

Tools needed:

- Drill bit, diam. 10 mm
- Fork spanner 13/17



0

Beam screws H8/70

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



Positioning rail with hole gauge Top50

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

Mounting a bottom plank

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

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



- A Bottom plank
- B Doka beam

Mounting the top plank (pressure bracing)

DANGER

- There must always be a pressure bracing between the Lifting brackets.
- The gap between the two Lifting brackets must be firmly braced, without any play, to prevent any oblique pull being applied to the Doka beams.

This means that the recesses must be profiled very precisely into the web of the beam.

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



- A Top plank (pressure bracing)
- B Lifting bracket



 If the lifting bracket is mounted on the 2nd beam from the outside, the top plank must be supported where it has been recessed.

Nail a supporting board onto the formwork beam.



a ... min. 10 mm (minimum support surface)

C e.g. 200x200 mm board

Fixing the formwork sheets

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



A Doka formwork sheet



The Strip tensioner B 6.00m presses the joints between the sheets tightly together prior to fixing.

Drilling the form-tie holes

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



Mounting profiled timber formers

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



- A Doka beam
- B Nailed joint
- **C** Profiled timber former
- D Beam block



- A Beam block screwed onto Doka beam
- B Profiled timber former nailed onto Doka beam
- C Profiled timber former nailed onto beam-block

Angle connector 9x5cm and Rafter plates right / left

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



Mounting the inside corner with the Corner waling 20

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



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

Doka Pre-assembly Service

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

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

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

By delivering 'just-in-time', straight to your site, we **save space** on your site and **reduce the amount of planning and assembly work** that you have to do. We'll be pleased to inform you about all that the Doka Pre-assembly Service can do for you. Your

local/regional Doka branch would also be happy to draw up a tender for your next project.





Structural design

Deflection diagrams

All values in the diagrams are based on a wood moisture content of 20%. If the moisture levels are higher than this, two effects will occur: The modulus of elasticity will greatly decrease (i.e. deformation will increase), and the strength values will be lower. This leads to a reduction in the load-bearing capacity.

Doka beam H20



Q ... permitted shear force

p ... actual load (service load)

Doka beam XT20



- Q ... permitted shear force
- p ... actual load (service load)

Doka formwork sheets 3-SO Doka texture sheets 3-SO

NOTICE

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



21 mm



M ... permitted bending moment

Q ... permitted shear force

27 mm



Span L [cm]

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

Dokaplex formwork sheets

Note:

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

18 mm



Span L [cm]

Flexural stiffness EI = 3.1 kNm²/m (15% timber moisture content) M ... permitted bending moment

Q ... permitted shear force

18 mm - detailed view



Span L [cm]

Flexural stiffness EI = $3.1 \text{ kNm}^2/\text{m}$ (15% timber moisture content) M ... permitted bending moment Q ... permitted shear force

21 mm



Flexural stiffness EI = $4.7 \text{ kNm}^2/\text{m}$ (15% timber moisture content) M ... permitted bending moment Q ... permitted shear force



Flexural stiffness EI = 4.7 kNm²/m (15% timber moisture content) M ... permitted bending moment

Q ... permitted shear force

9 mm

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

DokaPly Birch

Note:

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

18 mm



Span L [cm]

Flexural stiffness EI = 3.0 kNm²/m (15% timber moisture content)

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

21 mm



Span L [cm]

- Flexural stiffness EI = 4.9 kNm²/m (15% timber moisture content) M \dots permitted bending moment
- Q ... permitted shear force

Xlife sheets 21mm

NOTICE

!

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

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

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



A Support

B Sheet lettering (large Doka logos)



M ... permitted bending moment

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



A Support

B Sheet lettering (large Doka logos)



M ... permitted bending moment

Top 50 elements

Doka beam H20

Formwork height 1.90 m



Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	71	63	62	-	-	-
Max. span deflection [mm]	0.3	0.2	0.1	-	-	-
Max. cantilever deflection [mm]	0.4	0.4	0.3	-	-	-
Waling load B _k [kN/m]	12	11	11	-	-	-
Waling load A _k [kN/m]	27	33	35	-	-	-

Formwork height 2.50 m



Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	63	48	42	41	-	-
Max. span deflection [mm]	0.7	0.7	0.6	0.5	-	-
Max. cantilever deflection [mm]	0	0	0	0	-	-
Waling load B _k [kN/m]	30	31	31	31	-	-
Waling load A _k [kN/m]	34	45	54	59	-	-

Formwork height 2.70 m



Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	54	41	35	33	-	-
Max. span deflection [mm]	0.7	0.7	0.6	0.5	-	-
Max. cantilever deflection [mm]	0	0	0	0	-	-
Waling load B _k [kN/m]	30	31	31	31	-	-
Waling load A _k [kN/m]	34	45	54	59	-	-

Formwork height 3.00 m



hs

Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	47	35	29	26	26	-
Max. span deflection [mm]	1.5	1.6	1.5	1.3	1.2	-
Max. cantilever deflection [mm]	0	0	0	0	0	-
Waling load B _k [kN/m]	35	38	40	39	39	-
Waling load A _k [kN/m]	37	50	60	69	73	-

Formwork height 3.40 m



	-					
Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	54	44	36	31	28	27
Max. span deflection [mm]	0.3	0.3	0.3	0.3	0.3	0.2
Max. cantilever deflection [mm]	0.1	0.1	0.1	0.1	0.1	0.3
Waling load C _k [kN/m]	15	14.4	14	13.6	13.7	13.9
Waling load B _k [kN/m]	39	49	55	56	56	55
Waling load A _k [kN/m]	31	41	52	62	71	75

Formwork height 3.70 m



Perm. fresh-concrete pressure 6 _{hk,max} [kN/m²]	30	40	50	60	70	80
Beam centres [cm]	57	44	35	31	26	25
Max. span deflection [mm]	0.3	0.3	0.3	0.3	0.3	0.3
Max. cantilever deflection [mm]	0.2	0.1	0.1	0.2	0.2	0.2
Waling load C _k [kN/m]	25	26	25	25	25	25
Waling load B _k [kN/m]	38	50	59	56	65	64
Waling load A _k [kN/m]	31	41	52	56	73	80

Formwork height 4.00 m



Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	52	39	33	28	26	23
Max. span deflection [mm]	0.4	0.4	0.4	0.3	0.4	0.4
Max. cantilever deflection [mm]	0.3	0.1	0.1	0.1	0.1	0.2
Waling load C _k [kN/m]	30	32	32	31	31	34
Waling load B _k [kN/m]	41	55	66	74	77	74
Waling load A _k [kN/m]	31	41	52	63	74	84

Formwork height 4.60 m



Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	55	44	35	29	25	22
Max. span deflection [mm]	0.4	0.3	0.2	0.3	0.3	0.3
Max. cantilever deflection [mm]	0.1	0.1	0.1	0.1	0.1	0.1
Waling load D _k [kN/m]	15	15	14	14	14	14
Waling load C _k [kN/m]	39	47	53	54	54	53
Waling load B _k [kN/m]	37	49	62	74	84	90
Waling load A _k [kN/m]	31	41	51	62	72	83

Formwork height 5.00 m





30	40	50	60	70	80
60	44	35	29	25	22
0.3	0.3	0.2	0.3	0.3	0.3
0.8	0.5	0.4	0.4	0.4	0.4
29	30	30	29	29	29
36	48	57	62	64	64
37	49	62	77	87	96
31	41	52	62	72	83
	 30 60 0.3 0.8 29 36 37 31 	30 40 60 44 0.3 0.3 0.8 0.5 29 30 36 48 37 49 31 41	30 40 50 60 44 35 0.3 0.3 0.2 0.8 0.5 0.4 29 30 30 36 48 57 37 49 62 31 41 52	30 40 50 60 60 44 35 29 0.3 0.3 0.2 0.3 0.8 0.5 0.4 0.4 29 30 30 29 36 48 57 62 37 49 62 77 31 41 52 62	30 40 50 60 70 60 44 35 29 25 0.3 0.3 0.2 0.3 0.3 0.8 0.5 0.4 0.4 0.4 29 30 30 29 29 36 48 57 62 64 37 49 62 77 87 31 41 52 62 72

Formwork height 6.00 m



Perm. fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	44	33	27	22	19	15
Max. span deflection [mm]	0.7	0.7	0.6	0.6	0.6	0.6
Max. cantilever deflection [mm]	0	0	0	0	0	0
Waling load D _k [kN/m]	32	34	35	35	34	38
Waling load C _k [kN/m]		65	79	89	95	95
Waling load B _k [kN/m]		64	80	97	114	129
Waling load A _k [kN/m]	34	45	56	67	78	90

Doka beam XT20

Formwork height 3.00 m



Permitted fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	75
Beam centres [cm]	71	53	44	39	39	38
Max. span deflection [mm]	1.8	1.8	1.7	1.5	1.4	1.3
Max. cantilever deflection [mm]	0	0	0	0	0	0
Waling load B _k [kN/m]	35	38	40	39	39	39
Waling load A _k [kN/m]	37	50	60	69	73	74

Formwork height 3.40 m



Permitted fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80
Beam centres [cm]	62	47	38	33	32	38
Max. span deflection [mm]	1.9	2.1	2.0	1.9	1.6	1.4
Max. cantilever deflection [mm]	1.0	2.2	2.4	2.2	1.9	1.6
Waling load B _k [kN/m]	42	47	49	50	49	40
Waling load A _k [kN/m]	42	57	71	82	91	79

Formwork height 3.70 m



$\label{eq:permitted_fresh-concrete} \ensure $$\sigma_{hk,max}$ [kN/m^2]$$	30	40	50	60	70	80	90
Beam centres [cm]	84	66	54	47	41	39	38
Max. span deflection [mm]	0.4	0.3	0.3	0.4	0.3	0.3	0.2
Max. cantilever deflection [mm]	0	0	0	0	0	0	0
Waling load C _k [kN/m]	21	21	21	20	20	21	21
Waling load B _k [kN/m]	39	50	58	61	62	61	60
Waling load A _k [kN/m]	31	41	52	62	72	79	81

Formwork height 4.00 m



$\label{eq:permitted_fresh-concrete} \ensure $$ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $	30	40	50	60	70	80	90	100
Beam centres [cm]		53	45	38	35	31	30	30
Max. span deflection [mm]		0.4	0.4	0.3	0.4	0.4	0.3	0.3
Max. cantilever deflection [mm]		0	0	0.1	0.1	0.1	0.1	0.1
Waling load C _k [kN/m]		32	32	31	31	31	31	31
Waling load B _k [kN/m]		55	66	74	77	79	77	76
Waling load A _k [kN/m]	31	41	52	63	74	84	90	92

Formwork height 5.00 m



Permitted fresh-concrete pressure _{6hk,max} [kN/m ²]		40	50	60	70	80	90	100	110
Beam centres [cm]	90	66	53	44	38	33	30	29	27
Max. span deflection [mm]	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3
Max. cantilever deflection [mm]		0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3
Waling load D _k [kN/m]	29	30	30	29	29	29	29	30	29
Waling load C _k [kN/m]		48	57	62	64	64	63	63	63
Waling load B _k [kN/m]		49	62	75	87	97	103	105	104
Waling load A _k [kN/m]		41	51	62	72	83	94	104	112

Formwork height 6.00 m



Permitted fresh-concrete pressure _{6hk,max} [kN/m ²]	30	40	50	60	70	80	90	100	110
Beam centres [cm]	60	45	37	30	26	23	20	18	16
Max. span deflection [mm]	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Max. cantilever deflection [mm]		0	0	0	0	0	0	0	0
Waling load D _k [kN/m]	32	35	35	35	34	34	34	34	34
Waling load C _k [kN/m]		65	79	89	95	100	99	98	97
Waling load B _k [kN/m]		64	80	97	114	132	145	156	163
Waling load A _k [kN/m]		45	56	67	78	91	101	113	125

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Doka walings

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NOTICE

This table refers only to one single element with 2 cantilever arms.

It takes no account of:

- continuity effects with other elements
- combinations of elements
- closures
- stop-ends etc.

Practical example:

400-1200-400 tie-spacing with WS10 2.00m



			WS	510	WL	J12	WU16		
			Тор	50	Тор	o50	SL	-1	
Waling length	er of form-ties	Spacing of form-ties on standard elements	Max. perm. waling load	Characteristic anchor force	Max. perm. waling load	Characteristic anchor force	Max. perm. waling load	Characteristic anchor force	
[m]	Numb	[mm]	q _{R,k} [kN/m]	N _{R,k} [kN]	q _{R,k} [kN/m]	N _{R,k} [kN]	q _{R,k} [kN/m]	N _{R,k} [kN]	
0.50	1	250 - 250	307	154	-	-	-	-	
0.625	1	312 - 312	-	-	-	-	480	300	
0.75	2	200 - 350 - 200	376	141	-	-	800	300	
0.75	1	375 - 375	163	122	-	-	370	278	
1.00	2	250 - 500 - 250	271	136	395	198	610	305	
1.00	1	500 - 500	97	97	144	144	235	235	
1 25	2	250 - 750 - 250	214	134	306	191	427	267	
1.25	1	625 - 625	63	79	94	118	160	200	
1 50	2	300 - 900 - 300	182	137	260	195	359	269	
1.50	1	750 - 750	43	65	65	98	113	170	
1.75	2	300 - 1150 - 300	102	89	152	133	265	232	
	2	400 - 1200 - 400	123	123	177	177	265	265	
	2	450 - 1100 - 450	112	112	163	163	254	254	
2.00	2	500 - 1000 - 500	97	97	144	144	236	236	
	2	525 - 950 - 525	89	89	131	131	217	217	
	3	275 - 725 - 725 - 275	205	154	292	219	-	-	
	2	450 - 1350 - 450	97	109	-	-	226	254	
2 25	2	500 - 1250 - 500	93	105	-	-	215	242	
2.20	2	550 - 1150 - 550	81	91	-	-	198	223	
	3	330 - 795 - 795 - 330	184	145	-	-	-	-	
	2	450 - 1600 - 450	56	70	83	104	146	183	
	2	500 - 1500 - 500	79	99	117	146	195	244	
2.50	2	550 - 1400 - 550	79	99	115	144	184	230	
	2	625 - 1250 - 625	63	79	94	118	160	200	
	3	360 - 890 - 890 - 360	157	140	226	202	-	-	
	2	450 - 925 - 450	115	111	-	-	-	-	
2.75	3	500 - 875 - 875 - 500	96	100	-	-	-	-	
	3	550 - 825 - 825 - 550	81	92	-	-	-	-	
	3	450 - 1050 - 1050 - 450	113	116	165	169	257	263	
3 00	3	500 - 1000 - 1000 - 500	96	102	140	149	225	239	
0.00	3	550 - 950 - 950 - 550	81	93	119	136	196	224	
	2	625 - 1750 - 625	61	92	90	135	144	216	
	3	450 - 1300 - 1300 - 450	62	86	94	131	-	-	
3.50	3	500 - 1250 - 1250 - 500	74	93	112	141	-	-	
	3	550 - 1200 - 1200 - 550	80	95	118	140	-	-	
	4	450 - 1030 - 1040 - 1030 - 450	109	111	162	165	-	-	
4.00	4	500 - 1000 - 1000 - 1000 - 500	96	101	141	148	-	-	
	4	550 - 1000 - 900 - 1000 - 550	81	92	119	136	-	-	

			WS	\$10	WL	J12	WL	J16
			Тор	50	Тор	50	SL	-1
Waling length	ber of form-ties	Spacing of form-ties on standard elements	Max. perm. waling load	Characteristic anchor force	Max. perm. waling load	Characteristic anchor force	Max. perm. waling load	Characteristic anchor force
[m]	Numb	[mm]	q _{R,k} [kN/m]	N _{R,k} [kN]	q _{R,k} [kN/m]	N _{R,k} [kN]	q _{R,k} [kN/m]	N _{R,k} [kN]
	4	450 - 1200 - 1200 - 1200 - 450	94	115	-	-	-	-
4.50	4	500 - 1150 - 1200 - 1150 - 500	95	111	-	-	-	-
	4	550 - 1120 - 1160 - 1120 - 550	80	92	-	-	-	-
	4	450 - 1400 - 1300 - 1400 - 450	73	102	-	-	-	-
5.00	4	500 - 1340 - 1320 - 1340 - 500	78	105	<u> </u>	-	-	-
	4	550 - 1325 - 1250 - 1325 - 550	79	101	-	-	-	-
	5	450 - 1150 - 1150 - 1150 - 1150 - 450	90	105	-	-	-	-
5.50	5	500 - 1150 - 1100 - 1100 - 1150 - 500	94	104	-	-	-	-
	5	550 - 1050 - 1150 - 1150 - 1050 - 550	80	98	-	-	-	-
1	5	450 - 1250 - 1300 - 1300 - 1250 - 450	71	93	-	-	-	-
6.00	5	500 - 1 <mark>250 - 1250 - 1250 - 1250 - 500</mark>	76	96	-	-	-	-
	5	550 - 1250 - 1200 - 1200 - 1250 - 550	80	96	-	-	-	-

Struts

Fixed struts



Min. angle α between strut and waling = 30°

- A Strut
- B Bracing

Universal strut T5/5mm



- A With no bracing on the strut
- Ensure that the parallel frame sections are adequately braced!
- **B** With bracing on the strut
- $\textbf{C} \hspace{0.1in} \text{With bracing on the strut + 2\% longitudinal bridge slope}$
- **D** With bracing on the strut + 4% longitudinal bridge slope

Spindle struts



Min. angle α between strut and waling = 30°

- A Spindle strut
- B Bracing



Length of strut [m]

- A Spindle strut T6 100/150cm
- B Spindle strut T7 150/200cm
- C Spindle strut T7 200/250cm
- D Spindle strut T7 250/300cm
- E Spindle strut T7 305/355cm
- F Spindle strut T10 350/400cm

G Spindle strut T10mm (specify min. length of strut)



Length of strut [m]

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



General

Top 50 combined with . . .

Doka folding platforms

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

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

This makes work at great heights faster and more efficient.



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



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

Doka climbing formwork MF240

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





Follow the directions in the 'Climbing formwork MF240' User Information booklet!

Doka automatic climbing formwork

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



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

Doka dam formwork

Doka dam formwork is used for building mass concrete structures that have to be constructed in several casting sections, such as dams, barrages and navigation locks etc.

The pressure of the fresh concrete is transferred into the previous casting section by the climbing scaffold, meaning that no form-ties are needed.



- A Top 50 element
- B Cantilever bracket
- C Vertical waling
- D Suspended platform
- E Spindle strut
- F Screw-on access bracket MF75

Doka supporting construction frames

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



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



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

Xsafe platform system plus

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

Easy to use

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

system accessories for closure gaps and corner transitions

Safe working

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

An economical solution

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



Follow the directions in the 'Xsafe platform system plus' User Information booklet.

Fall protection on the structure

Xsafe edge protection XP

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



a ... > 1.00 m



Follow the directions in the 'Xsafe edge protection XP' User Information booklet.

Xsafe edge protection Z

- Attachment by integral screw-on shoe
- Protective barrier Z can be used as the safety barrier



a ... > 1.17 m

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Follow the directions in the 'Xsafe edge protection Z' User Information booklet.

Handrail clamp S

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



a ... > 1.00 m



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

Handrail post 1.10m

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



a ... > 1.00 m



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

Doka multi-trip packaging

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

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

Doka skeleton transport box 1.70x0.80m



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

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

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

Max. n° of units on top of one another

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

NOTICE

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

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

Lifting by crane

NOTICE

- Multi-trip packaging items must be lifted individually.
- Only lift the boxes when their sidewalls are closed!
- Use suitable lifting chains:
 - e.g. Doka 4-part chain 3.20m
 - Do not exceed the permitted working load limit of the lifting chains.
- Sling angle β max. 30°!



Repositioning by forklift truck or pallet stacking truck

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

Doka multi-trip transport box

Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m



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

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



A Slide-bolt for fixing the partition

Possible ways of dividing the box



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



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

Using Doka multi-trip transport boxes as storage units

Max. n° of units on top of one another

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

NOTICE

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

Using Doka multi-trip transport boxes as transport devices

Lifting by crane

NOTICE

- Multi-trip packaging items must be lifted individually.
- Use suitable lifting chains:
 - e.g. Doka 4-part chain 3.20m
 - Do not exceed the permitted working load limit of the lifting chains.
- Sling angle β max. 30°!



Repositioning by forklift truck or pallet stacking truck

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

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

Storage and transport device for long items.



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

Using Doka stacking pallets as storage units

Max. n° of units on top of one another

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

NOTICE

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

Using Doka stacking pallets as transport devices

Lifting by crane

NOTICE

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



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Doka stacking pallet 1.55x0.85m	max. 4.5 m
Doka stacking pallet 1.20x0.80m	max. 3.0 m

Repositioning by forklift truck or pallet stacking truck



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



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

Doka accessory boxes as storage units

Max. n° of units on top of one another

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

NOTICE

!

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

Doka accessory box as transport devices

Lifting by crane

NOTICE

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



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Repositioning by forklift truck or pallet stacking truck

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

Bolt-on castor set B

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



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

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



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

Cleaning and care of your equipment

Release agents

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



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General

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

! NOTICE

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



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

Cleaning

NOTICE

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



Cleaning high formwork:

Provide a service tower at a suitable cleaning location.

- Wheel-around scaffold DF (up to a formwork height of 3.90 m)
- Working scaffold Modul (up to a formwork height of 6,70 m)
- Load-bearing tower Staxo 40 (for formwork of over 6.70 m in height)

Cleaning equipment

High-pressure spray cleaner



!

NOTICE

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

Concrete scraper

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



Functional description:





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



NOTICE

Do not use pointed or sharp objects, wire brushes, abrasive disks or cup brushes.





[kg]	Article N°		[kg]	Article N°
Multi-purpose waling WS10 Top50 0.50m 10.2 Multi-purpose waling WS10 Top50 0.75m 14.9 Multi-purpose waling WS10 Top50 1.00m 19.6 Multi-purpose waling WS10 Top50 1.25m 24.7 Multi-purpose waling WS10 Top50 1.50m 29.7 Multi-purpose waling WS10 Top50 1.75m 35.0 Multi-purpose waling WS10 Top50 2.00m 38.9 Multi-purpose waling WS10 Top50 2.25m 44.2 Multi-purpose waling WS10 Top50 2.50m 48.7 Multi-purpose waling WS10 Top50 2.50m 48.7	580001000 580002000 580003000 580004000 580005000 580006000 580007000 580008000 580008000 580009000	Angular waling WS10 Top50 Winkelriegel WS10 Top50m	Dm 21.5 Painted blue Project-specific! Also available in profiles of thickness U120 (Order designation: WU12).	580068000
Multi-purpose waling WS10 Top50 2.75m 54.2 Multi-purpose waling WS10 Top50 3.00m 60.2 Multi-purpose waling WS10 Top50 3.50m 68.4 Multi-purpose waling WS10 Top50 4.00m 79.4 Multi-purpose waling WS10 Top50 4.00m 79.4 Multi-purpose waling WS10 Top50 4.50m 89.1 Multi-purpose waling WS10 Top50 5.00m 102.0 Multi-purpose waling WS10 Top50 5.50m 112.4 Multi-purpose waling WS10 Top50 6.00m 118.0 Mehrzweckriegel WS10 Top50 Painted blue	580010000 580012000 580013000 580014000 580015000 580016000 580017000	Flange clamp H20 Flanschklammer H20	1.0 Galvanised Width: 13 cm Width-across: 19 mm	580135000
		Flange clamp G Flanschklammer G	1.1 Galvanised Width: 13 cm Width-across: 19 mm	580120000
Multi-purpose waling WU12 Top50 1.00m 25.3 Multi-purpose waling WU12 Top50 1.25m 32.0 Multi-purpose waling WU12 Top50 1.50m 37.5 Multi-purpose waling WU12 Top50 1.75m 44.2 Multi-purpose waling WU12 Top50 2.00m 50.0 Multi-purpose waling WU12 Top50 2.50m 63.1	580018000 580019000 580020000 580021000 580022000 580023000			
Multi-purpose waling WU12 Top50 3.00m 75.7 Multi-purpose waling WU12 Top50 3.50m 90.7 Multi-purpose waling WU12 Top50 4.00m 103.4 Mehrzweckriegel WU12 Top50 Painted blue	580024000 580025000 580026000	Flange claw Flanschkralle	1.0 Galvanised Width: 17 cm Width-across: 18 mm	580137000
Multi-purpose waling SL-1 WU16 0.625m 24.0 Multi-purpose waling SL-1 WU16 0.75m 26.5 Multi-purpose waling SL-1 WU16 1.00m 35.0 Multi-purpose waling SL-1 WU16 1.25m 44.5 Multi-purpose waling SL-1 WU16 1.25m 53.0 Multi-purpose waling SL-1 WU16 1.50m 53.0 Multi-purpose waling SL-1 WU16 1.75m 67.0 Multi-purpose waling SL-1 WU16 2.00m 72.1 Multi-purpose waling SL-1 WU16 2.00m 72.1 Multi-purpose waling SL-1 WU16 2.00m 72.1	582875000 582876000 582877000 582878000 582879000 582880000 582881000 582882000	Waling clamp H20 Riegelklammer H20	0.22 Galvanised Width: 8 cm Width-across: 13 mm	580114000
Multi-purpose waling SL-1 WU16 2.50m 89.9 Multi-purpose waling SL-1 WU16 3.00m 107.0 Mehrzweckriegel SL-1 Painted blue	582883000 582888000	Riegelklammer 2G	Galvanised Width: 7.7 cm Height: 12 cm Width-across: 19 mm	
		Beam screw S 8/70 Riegelverschraubung S 8/70	0.06 Galvanised Length: 8 cm	580116500
Corner Waing 20 23.5 Eckriegel 20 Painted blue Leg length: 52 cm	580031000	Beam screw H 8/70	Width-across: 13 mm	580117000
		Riegelverschraubung H 8/70	Galvanised Length: 8 cm Width-across: 13 mm	
Shaft corner waling WS10 Top50m 20.5 Eckwandriegel WS10 Top50m Painted blue Project-specific! Also available in profiles of thickness U120 (Order designation: WU12).	580069000	Fastening plate Anschraublasche	2.7 Painted blue Width: 13 cm Height: 15 cm Width-across: 24 mm	580110000
		Protective cap H20 Stirnschuh H20	0.36 Galvanised Length: 20 cm Width: 7 cm	587248000



		[kg]	Article N°		[kg]	Article N°
Universal angle tie bracket Universal-Winkelspanner	Painted blue Length: 20 cm	4.4	580604000	T ledge 21/42 2.00m T-Leiste 21/42 2,00m	0.34 Grey	580196000
Angle tie bracket 20.0 SL-1 Winkelspanner 20,0 SL-1 WU16	WU16 Painted blue Length: 24 cm	8.1	587543000	Box-out clamp type 1cn Aussparungsklemme Typ 1cn	n 17.4 Painted blue Leg length: 10 cm	580066000
Swivel joint plate Drehgelenklasche	Galvanised Length: 155 cm	20.0	587542000	Box-out clamp type 2cn Aussparungsklemme Typ 2cn	Painted blue Leg length: 10 cm	580067000
Connecting pin 10cm Verbindungsbolzen 10cm	Galvanised Length: 14 cm	0.34	580201000	Wall-formwork support ang Auflagewinkel Wandschalung	le 6.6 Galvanised Length: 15.8 cm Width: 12 cm Height: 28 cm	588967000
Connecting pin 25cm Verbindungsbolzen 25cm	Galvanised Length: 25 cm	0.58	580202000	Panel strut 340 IB Elementstütze 340 IB consisting of: (A) Plumbing strut 340 IB Galvanised Length: 190.8 - 341.8 cm (B) Adjusting strut 120 IB	24.3 16.7 7.6	580365000 588696000 588248500
Spring cotter 5mm Federvorstecker 5mm	Galvanised Length: 13 cm	0.03	580204000	Galvanised Length: 81.5 - 130.6 cm	Galvanised Delivery condition: folded closed	
Stacking plate H20 Aufstocklasche H20	Galvanised Length: 68.8 cm Width-across: 30 mm	8.3	580310000	e e e e e e e e e e e e e e e e e e e		
Joint plate 3.00m Joint plate 4.00m Ausgleichsschiene	Powder-coated blue	36.8 47.7	580332000 580334000			

[kg]	Article N°			[kg]	Article N°
Panel strut 540 IB 41.4 Elementstütze 540 IB	580366000	Prop head EB Stützenkopf EB		3.1	588244500
consisting of: (A) Plumbing strut 540 IB 30.7 Galvanised 30.7	588697000		Galvanised Length: 40.8 cm Width: 11.8 cm		
Length: 310.5 - 549.2 cm (B) Adjusting strut 220 IB 10.9 Colveniesd 10.9	588251500	Car 10	Height: 17.6 cm		
Length: 172.5 - 221.1 cm Galvanised		Prop head Eurex 60 Top50 Stützenkopf Eurex 60 Top50	Galvanised	7.1	582665000
Delivery condition: folded closed		<u> </u>	Height: 50 cm		
		Universal dismantling tool		3.7	582768000
~			Galvanised Length: 75.5 cm		
AT.		A STAND	Longan Ford on		
-B		0			
		Doka express anchor 16x12 Doka-Expressanker 16x125mm	25mm	0.31	588631000
Eurex 60 550 Eurex 60 550			Galvanised Length: 18 cm		
depending on length, comprising:(A) Plumbing strut Eurex 60 55042.5	582658000	Ĭ			
Powder-coated blue Aluminium					
Length: 343 - 553 cm(B) Extension Eurex 60 2.00m21.3Powdor costed blue	582651000	Doka coil 16mm Doka-Coil 16mm		0.009	588633000
Aluminium Length: 250 cm		S	Galvanised Diameter: 1.6 cm		
(C) Coupler Eurex 60 8.6 Aluminium	582652000				
Length: 100 cm Diameter: 12.8 cm		Information plate for exprese Plakette Expressanker	PS	0.1	588630000
(D) Connector Eurex 60 IB 4.2 Galvanised	582657500		Width: 8 cm Height: 7.5 cm		
Length: 15 cm Width: 15 cm Heinth: 30 cm		Beachemen State I representation of the State State I representation of the State State State State I representation of the State St	-		
(E) Plumbing strut shoe Eurex 60 EB 8.0 Galvanised	582660500	Universal bracket 90		30.4	580476000
Length: 31 cm Width: 12 cm		Universal-Konsole 90	Galvanised		
Height: 33 cm (F) Adjusting strut 540 Eurex 60 IB 27.8	582659500		Length: 121 cm Height: 235 cm		
Galvanised Length: 303.5 - 542.2 cm					
		The second se			
		0 B			
		Universal corner bracket 90) right	29.5	580071000
——©		Universal-Eckkonsole 90	Galvanised	29.5	500070000
®			Length: 152 cm Height: 235 cm		
		j,			
Ē		F			
E		<u> I</u>			






		[kg]	Article N°			[kg]	Article N°
Universal suspension head Universal-Aufhängekopf		14.0	580408000	Tool box GF GF-Werkzeugbox		7.2	580390000
0	Galvanised Length: 36.5 cm Width: 16 cm			included in scope of supply: (A) Reversible ratchet 1/2 " Galvanised		0.73	580580000
	Height: 32.1 cm			(B) Ring spanner 13/15 (C) Ring spanner 16/18		0.25 0.23	580599000 580644000
Safety wedge for universal Sicherungskeil Universal-Aufhäng	suspension head _{jekopf} Galvanised Length: 30 cm	0.7	580409000	 (b) Ring spanner 17/19 (c) Combination wrench 30 (c) Fork wrench 30/32 (c) Fork wrench 22/24 (d) Fork wrench 13/17 (l) Extension 22cm 1/2" (J) Extension 11cm 1/2" (K) Universal joint coupling (L) Box nut 30 1/2" (M) Box nut 30 1/2" (N) Box nut 19 1/2" L (O) Box nut 18 1/2" L 	6 g 1/2"	0.27 0.75 0.8 0.22 0.08 0.31 0.2 0.16 0.2 0.12 0.16 0.15	582860000 580897000 580587000 580587000 580582000 580582000 580583000 580575000 580584000 580598000 580642000
Suspension head WS10		8.1	580449000	(P) Box nut 15 1/2" (Q) Box nut 13 1/2"		0.09 0.06	580676000 580576000
Refe	Galvanised Length: 21 cm Width: 18 cm Height: 23 cm						
Universal support Top50 Tragwerklasche Top50mm	mm	11.1	584312000				
0000	Painted blue Weight per linear metre						
Adjusting plate T Justierlasche T		6.5	584393000				
	Painted blue Length: 23.5 cm			And the second s			
				Filler neck GF SCC GF-Füllstutzen SCC	Galvanised Length: 66 cm	39.0	580217000
				Panel closure tool D125 SCC Sperrschieber D125 SCC		18.0	588127000
					Galvanised Length: 18 cm Width: 33 cm Height: 27 cm		
				Assembly angle Top50 Montagelasche Top50	Galvanised Length: 53.2 cm	6.7	580082000
					Width: 48.6 cm		
				Strip tensioner B 6.00m Bandzwinge B 6,00m	Galvanised	3.3	580394500
				C. Barris			



	[kg]	Article N°		[kg]	Article N°
Doka beam H20 eco P 1.80m 9. Doka beam H20 eco P 2.45m 13. Doka beam H20 eco P 2.65m 14. Doka beam H20 eco P 2.90m 15. Doka beam H20 eco P 3.30m 17. Doka beam H20 eco P 3.60m 19. Doka beam H20 eco P 3.60m 20. Doka beam H20 eco P 4.50m 23. Doka beam H20 eco P 4.50m 23. Doka beam H20 eco P 5.90m 26. Doka beam H20 eco P 5.90m 31. Doka beam H20 eco P 5.90m 31. Doka beam H20 eco P 5.90m 31. Doka beam H20 eco P 5.90m 5. Doka beam H20 eco P 5.90m 5. Doka beam H20 eco P 5. Doka beam H20 eco P 5. Doka beam H20 eco P 5. Doka-Träger H20 eco P Varnished yellow		189940000 189936000 189937000 189930000 189942000 189942000 189932000 189932000 189957000 189957000	Doka formwork sheet 3-SO 27mm 100/50cm Doka formwork sheet 3-SO 27mm 150/50cm Doka formwork sheet 3-SO 27mm 200/50cm Doka formwork sheet 3-SO 27mm 200/50cm Doka formwork sheet 3-SO 27mm 350/50cm Doka formwork sheet 3-SO 27mm 350/50cm Doka formwork sheet 3-SO 27mm 450/50cm Doka formwork sheet 3-SO 27mm 450/50cm Doka formwork sheet 3-SO 27mm 500/50cm Doka formwork sheet 3-SO 27mm 100/100cm Doka formwork sheet 3-SO 27mm 100/100cm Doka formwork sheet 3-SO 27mm 100/100cm Doka formwork sheet 3-SO 27mm 200/100cm Doka formwork sheet 3-SO 27mm 350/100cm Doka formwork sheet 3-SO 27mm 500/100cm Doka formwork sheet 3-SO 27mm 500/100cm		187007000 187008000 187012000 187012000 187012000 187012000 187029000 187013000 187029000 187013000 187027000 187015000 187015000 187015000 187019000 187020000 18702000 18702000 187022000 187024000 187106000 187107000 187108100
Doka beam H20 eco P 1.25m Doka beam H20 eco P 12.00m Doka-Träger H20 eco P Varnished yellow	6.6 63.6	5 189939000 5 189993000	Doka formwork sheet 3-SO 27mm 200/50cm BS Doka formwork sheet 3-SO 27mm 250/50cm BS Doka formwork sheet 3-SO 27mm 300/50cm BS Doka-Schalungsplatte 3-SO 27mm	12.1 15.1 18.2	187009100 187011100 187012100
			Dokaplex formwork sheet 9mm 250/150cm Dokaplex formwork sheet 9mm 300/150cm Dokaplex-Schalungsplatte 9mm	24.4 29.3	185001000 185006000
			Dokaplex formwork sheet 18mm 250/150cm Dokaplex formwork sheet 18mm 300/150cm Dokaplex-Schalungsplatte 18mm	47.3 56.7	185011000 185012000
Doka formwork sheet 3-SO 21mm 100/50cm Doka formwork sheet 3-SO 21mm 150/50cm Doka formwork sheet 3-SO 21mm 200/50cm Doka formwork sheet 3-SO 21mm 250/50cm Doka formwork sheet 3-SO 21mm 300/50cm Doka formwork sheet 3-SO 21mm 400/50cm	4.9 7.3 9.7 12.1 14.6 17.0 19.4	186007000 186008000 186009000 186011000 186012000 186028000 186013000	Dokaplex formwork sheet 21mm 250/125cm Dokaplex formwork sheet 21mm 250/150cm Dokaplex formwork sheet 21mm 300/150cm Dokaplex-Schalungsplatte 21mm	45.9 55.1 66.2	185007000 185002000 185003000
Doka formwork sheet 3-SO 21mm 450/50cm Doka formwork sheet 3-SO 21mm 500/50cm Doka formwork sheet 3-SO 21mm 550/50cm Doka formwork sheet 3-SO 21mm 600/50cm Doka formwork sheet 3-SO 21mm 100/100cm Doka formwork sheet 3-SO 21mm 200/100cm Doka formwork sheet 3-SO 21mm 200/100cm	21.8 24.3 26.7 29.1 9.7 14.6 19.4 24.3	186029000 186014000 186023000 186027000 186015000 186016000 186017000 186018000	DokaPly Birch DC 18mm 62.5/250cm DokaPly Birch DC 18mm 122/244cm DokaPly Birch DC 18mm 125/250cm DokaPly Birch DC 18mm 150/300cm DokaPly Birch DC 18mm/cm DokaPly Birch DC 18mm	20.2 36.3 38.5 58.1 12.2	185052000 185085000 185055000 185068000 185086000
Doka formwork sheet 3-SO 21mm 300/100cm Doka formwork sheet 3-SO 21mm 350/100cm Doka formwork sheet 3-SO 21mm 400/100cm Doka formwork sheet 3-SO 21mm 450/100cm Doka formwork sheet 3-SO 21mm 500/100cm Doka formwork sheet 3-SO 21mm 550/100cm Doka formwork sheet 3-SO 21mm 250/125cm	29.1 34.0 38.8 43.7 48.5 53.4 58.2 30 3	186019000 186030000 186020000 186031000 186021000 186022000 186024000 186024000	DokaPly Birch SC 18mm 122/244cm DokaPly Birch SC 18mm 125/250cm DokaPly Birch SC 18mm 150/300cm DokaPly Birch SC 18mm/cm DokaPly Birch SC 18mm	36.3 38.3 54.9 12.2	185078000 185131000 185079000 185080000
Doka formwork sheet 3-SO 21mm 300/150cm Doka formwork sheet 3-SO 21mm 300/150cm Doka formwork sheet 3-SO 21mm 150/50cm BS Doka formwork sheet 3-SO 21mm 200/50cm BS Doka formwork sheet 3-SO 21mm 250/50cm BS Doka formwork sheet 3-SO 21mm 300/50cm BS Doka formwork sheet 3-SO 21mm	43.7 87.3 7.3 9.7 12.1 14.6	186098000 186099000 186009100 186009100 186011100 186012100	DokaPly Birch DC 21mm 62.5/250cm DokaPly Birch DC 21mm 122/244cm DokaPly Birch DC 21mm 125/250cm DokaPly Birch DC 21mm 150/300cm DokaPly Birch DC 21mm/cm DokaPly Birch DC 21mm	23.0 42.6 45.9 66.2 14.3	185051000 185087000 185024000 185075000 185088000
			DokaPly Birch SC 21mm 122/244cm DokaPly Birch SC 21mm 125/250cm DokaPly Birch SC 21mm 150/300cm DokaPly Birch SC 21mm/cm DokaPly Birch SC 21mm	42.6 44.7 64.4 14.3	185081000 185082000 185083000 185084000
			Xlife sheet 21mm 265/145cm Xlife sheet 21mm 325/145cm Xlife-Platte 21mm	63.4 77.8	185071000 185070000
			Xface sheet 21mm 202/302cm Xface sheet 21mm 202/402cm Xface sheet 21mm 202/502cm Xface-Platte 21mm	91.5 121.8 152.1	185050000 185076000 185077000



		[kg]	Article N°			[kg]	Article N°
Tie rod system 15.0				Angle anchor plate 12/18 Winkelplatte 12/18		1.5	581934000
Tie rod 15.0mm galvanised Tie rod 15.0mm galvanised	0.50m 0.75m 1.00m 1.25m 1.50m 1.75m	0.72 1.1 1.4 1.8 2.2 2.5	581821000 581822000 581823000 581826000 581826000 581827000 581828000		Galvanised		DIN 18216
Tie rod 15.0mm galvanised Tie rod 15.0mm galvanised Tie rod 15.0mm galvanised Tie rod 15.0mm non-treated Tie rod 15.0mm non-treated	2.00m 2.50m 0.50m 0.75m 1.00m 1.25m 1.50m 1.75m 2.00m 2.50m	2.9 3.6 1.4 0.73 1.1 1.4 1.8 2.1 2.5 2.9 3.6	581829000 581852000 581824000 581871000 581871000 581874000 581886000 581887000 581887000 581887000 581875000 581877000	Top50 form-tie nut 15.0 Top50-Ankermutter 15,0	Galvanised Height: 25 cm	3.8	580073000
Tie rod 15.0mm non-treated Tie rod 15.0mm non-treated Tie rod 15.0mm non-treated Tie rod 15.0mm non-treated Tie rod 15.0mm non-treated Ankerstab 15,0mm	3.50m 4.00m 5.00m 6.00m m	4.3 5.0 5.7 7.2 8.6 1.4	581878000 581888000 581889000 581880000 581881000 581873000	Plastic tube 22mm 2.50m Kunststoffrohr 22mm 2,50m	PVC Grey Diameter: 2.6 cm	0.45	581951000
A DEPARTMENT DEPARTMENT			DIN 18216	Universal cone 22mm Universal-Konus 22mm	Grey Diameter: 4 cm	0.005	581995000
Eye-lug anchor 15.0 without Ösenanker 15,0 ohne Ankerstab	: tie rod Galvanised Length: 11 cm	1.2	580649000	Plug 22mm Verschlussstopfen 22mm	PE Grey	0.003	581953000
Superplate 15.0 Superplatte 15,0	Galvanised Height: 6 cm Diameter: 12 cm Width-across: 27 mm	1.1	581966000 DIN 18216	Universal plug R20/25 Kombi-Ankerstopfen R20/25	Blue Diameter: 3 cm	0.003	588180000
Wing nut 15.0		0.31	581961000	Distance piece 20cm Distance piece 25cm		0.04 0.05	581907000 581908000
	Galvanised Length: 10 cm Height: 5 cm Width-across: 27 mm		DIN 18216	Distanzhalter	PE Grey Blue	0.06	201303000
Hexagon nut 15.0 Sechskantmutter 15,0		0.23	581964000	C.O.D.			
() and	Galvanised Length: 5 cm Width-across: 30 mm		DIN 18216	Form-ply protector 22mm Schalhautschutz 22mm	Galvanised Width-across: 46 mm	0.25	580219000
Locking rod 15.0 330mm Quetschteil 15,0 330mm	Galvanised Width-across: 24 mm	0.48	582641000	<u>Om</u>			
a management				Protective cap 15.0/20.0 Schutzkappe 15,0/20,0	Yellow	0.03	581858000
Anchor plate 12/12 Ankerplatte 12/12	Galvanised	1.3	581930000		Length: 6 cm Diameter: 6.7 cm		
			DIN 18216	Tie-rod wrench 15.0/20.0 Ankerstabschlüssel 15,0/20,0	Galvanised	1.8	580594000
Anchor plate 15/20 Ankerplatte 15/20	Galvanised	1.8	581929000	RI	Jaivanistu		
			DIN 18216				







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