999811602 - 09/2020
en-GB

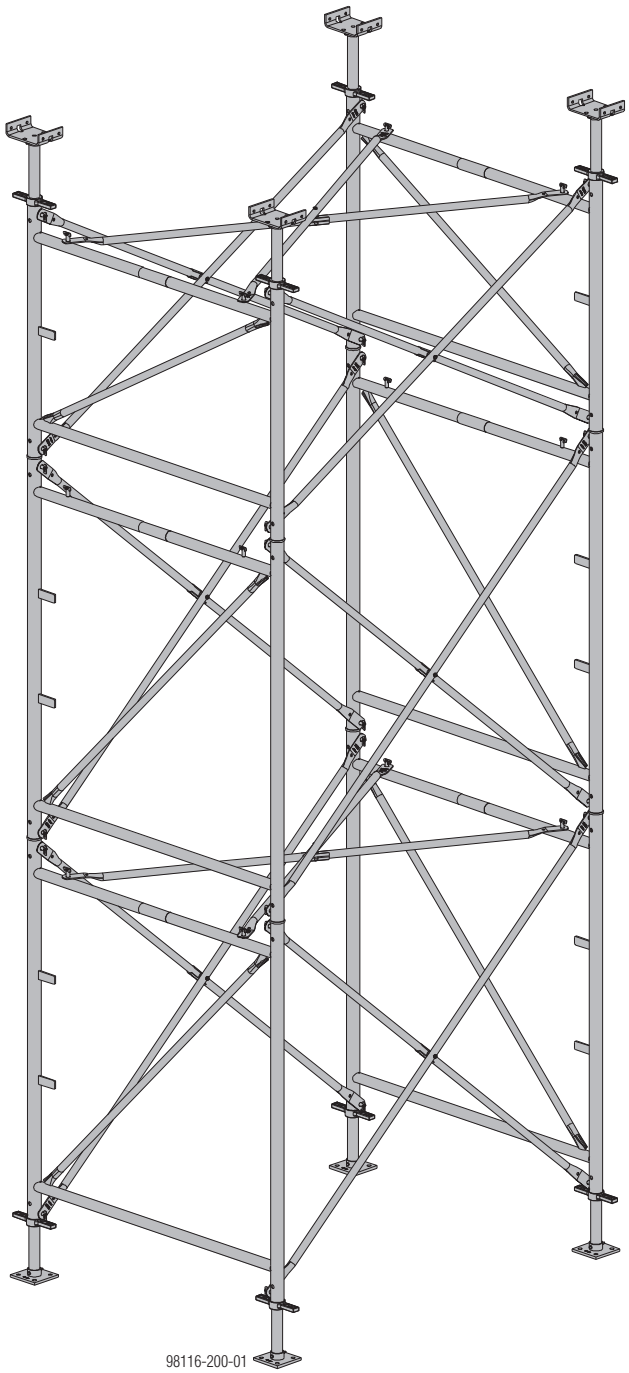
The Formwork Experts.

# Load-bearing tower d3

stating design loads as per trials

## User Information

Instructions for assembly and use (Method statement)



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# Contents

# Introduction

## Elementary safety warnings

### User target groups

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

### Hazard assessment

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

### Remarks on this booklet

- This document can be used as general Instructions for Assembly and Use (Method Statement) or be incorporated into site-specific Instructions for Assembly and Use (Method Statement).
- **The graphics, animations and videos in this document or app sometimes depict partially assembled assemblies and may require additional safety equipment and/or measures to comply with safety regulations.**
  The customer must ensure all applicable regulations are complied with, even if they are not shown or implied in the graphics, animations and videos provided.
- **Individual sections contain further safety instructions and/or special warnings as applicable.**

### Planning

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

### Regulations; industrial safety

- All laws, Standards, industrial safety regulations and other safety rules applying to the utilisation of our products in the country and/or region in which you are operating must be observed at all times.
- If a person or object falls against, or into, the 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.
- The equipment/system must be assembled and erected in accordance with the applicable laws, standards and rules by trained customer personnel whilst maintaining any applicable safety inspections that may be required.
- It is not permitted to modify Doka products; such modifications constitute a safety risk.

## Closing the formwork

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

## Pouring

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

## Stripping the formwork

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

## Transporting, stacking and storing

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

## Maintenance

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

## Miscellaneous

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

## Eurocodes at Doka

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

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

Allowance has been made for the following partial factors:

- $\gamma_F$ = 1.5
- $\gamma_{M,\ timber}$ = 1.3
- $\gamma_{M,\ steel}$ = 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 notifier drawing attention to an extremely dangerous situation in which non-compliance with this notifier will lead to death or severe, irreversible injury.

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

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

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

**Instruction**
Indicates that actions have to be performed by the user.

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

**Tip**
Points out useful practical tips.

**Reference**
Cross-references other documents.

# Services

## Support in every stage of the project

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

### Project assistance from start to finish

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

### Efficient planning for a safe project sequence

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

### Optimise construction workflows with Doka

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

### Custom formwork and on-site assembly

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

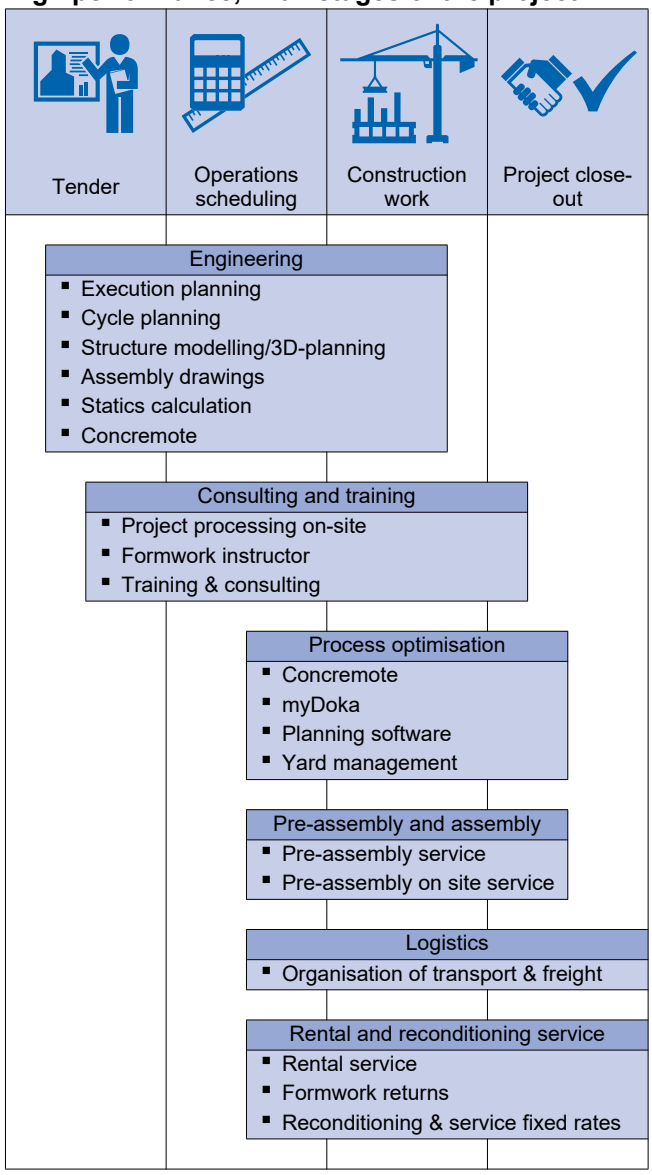
### Just-in-time availability

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

### Rental and reconditioning service

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

**High performance, in all stages of the project**

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**digital services for higher productivity**

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

# System description

## Load-bearing tower d3 - high-performing, fast and economical

Sturdy galvanised steel frames, in three different heights, are the basis of this high-speed, high-performance load-bearing tower system.

High load-bearing capacity, quick and easy assembly and great versatility – these are the outstanding characteristics of d3.

Wherever high loads occur, in either the building-construction or civil-engineering fields, this load-bearing tower is the ideal solution.

### The high-performance load-bearing tower

- high load capacity up to 94 kN per leg, due to the increased material strength of the d3 frame
- with light-weight individual components
- ergonomical: easy-to-handle parts

### ... speeds up work

- the small number of system components makes for easier handling and means that no time is wasted searching for parts
- no tools are needed for assembling the towers

### ... provides optimum safety

- high stability, due to its 1.52 m wide frames
- attachment points for fall-arrest set
- d3 safety hook (painted yellow)
- optional ladder

### ... is flexible

- the inter-frame spacing can be varied (from 0.60 m to 3.00 m), for optimum utilisation of the frames' load-bearing capacity. (From 1.00m, in 50 cm increments).
- different frame heights - 0.90 m, 1.20 m and 1.80 m - for rough height adjustment in 30 cm increments: 0.90, 1.20 and 1.80 m
- fine adjustment by means of screw-jack U-heads and feet
- can be used in conjunction with floor props and Dokaflex

### ... is economical

- The tower units are quick and easy to assemble:
  - either on their sides or in the upright
  - for tall towers, tower units can be pre-assembled on their sides, and then simply stacked by crane
  - scaffold planking units make it easy to erect and dismantle the tower and superstructure
- with special wheel units, complete tableforms can quickly be wheeled to their next location
- the Forklift shifting device TG makes the job of erecting, dismantling and transporting Doka load-bearing towers very much easier.

## Areas of use

The Load-bearing tower d3 is ideal:

- as falsework for bridge-building and tunnelling, where high loads occur and high structural integrity is essential
- in the building construction field, e.g. for multistorey car-park decks, schools, hospitals and shopping centres and where large-area tableform units reduce forming times

  in the building construction field, e.g. for administration buildings and multistorey car-park decks, where large-area tableform units reduce forming times
- in the industrial and power-station construction field, as a load-bearing tower for all manner of applications

### Doka stair tower 250

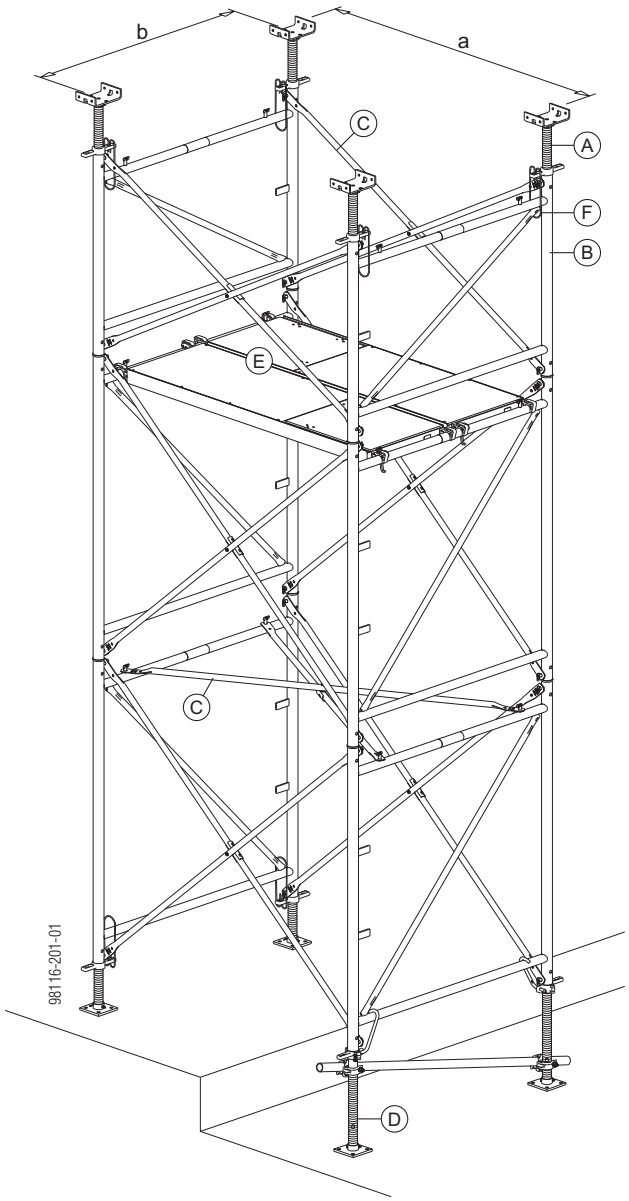
The Doka stair tower 250 consists of 1.20m frames and a small number of lightweight aluminium stairway elements.

Quick to erect, the stair tower provides 'high-level' safety and lets the site crew get quickly to their workplaces.

Follow the directions in the 'Doka stair tower 250' User Information booklet!

# System overview

## Basic design concept

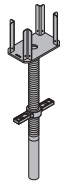



a ... Inter-frame spacing = 60* / 100 / 150 / 175 / 200 / 250 / 300 cm
b ... Frame width = 152 cm
* only for 1.20 and 0.90m frames

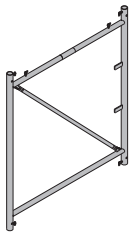
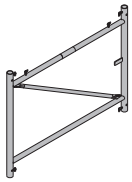
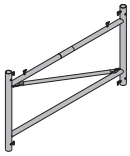
| | |
|---|---|
| **A** | Head unit |
| **B** | d3 frame |
| **C** | Diagonal cross |
| **D** | Base unit |
| **E** | Scaffold planking |
| **F** | d3 safety hook |

## The d3 system components

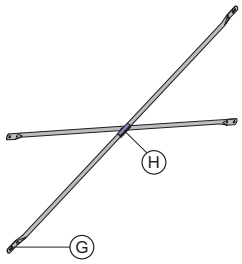
### Head units (A)

| d3 4-way screw-jack head | d3 screw jack U-head | Heavy duty screw jack 70 top + Split nut B |
|---|---|---|
|  |  |  |
| Top height-adjustment screwjacks for load-bearing towers. For holding the superstructure and adjusting its height. | | |
| May be used with either one or two Doka H20 beams.<br>The primary beams are fixed so that they cannot tip over. | For holding the primary beams (e.g. multi-purpose walings, steel girders). | |

### d3 frames (B)

| d3 frame 1.80m | d3 frame 1.20m | d3 frame 0.90m |
|---|---|---|
|  |  |  |

## Diagonal crosses (C)




Slot-in bracing crosses made of tubular steel, for mounting between the frames.

Identified by:

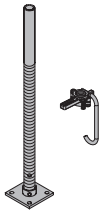
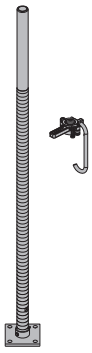
- Embossed marking **(G)** e.g. 18.250
  - 18 = frame height 1.80 m
  - 250 = inter-frame spacing 250 cm
- Notched, colour-coded clips **(H)** (see table)

| Designation | Colour-coded clip | Notches |
|---|---|---|
| Diagonal cross 9.060 | Black | — |
| Diagonal cross 9.100 | Green | — |
| Diagonal cross 9.150 | Red | — |
| Diagonal cross 9.175 | Light green | — |
| Diagonal cross 9.200 | Blue | — |
| Diagonal cross 9.250 | Yellow | — |
| Diagonal cross 9.300 | Orange | — |
| Diagonal cross 12.060 | Black | 1 |
| Diagonal cross 12.100 | Green | 1 |
| Diagonal cross 12.150 | Red | 1 |
| Diagonal cross 12.175 | Light green | 1 |
| Diagonal cross 12.200 | Blue | 1 |
| Diagonal cross 12.250 | Yellow | 1 |
| Diagonal cross 12.300 | Orange | 1 |
| Diagonal cross 18.100 | Green | 3 |
| Diagonal cross 18.150 | Red | 3 |
| Diagonal cross 18.175 | Light green | 3 |
| Diagonal cross 18.200 | Blue | 3 |
| Diagonal cross 18.250 | Yellow | 3 |
| Diagonal cross 18.300 | Orange | 3 |

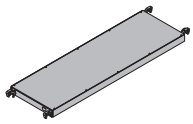
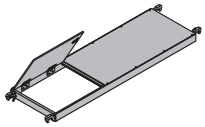
**Note:**

For **horizontal** bracing of the frames, always use **Diagonal crosses 12.xxx**.

## Base units (D)

| d3 screw jack foot | d3 screw jack foot 80 | Heavy-duty screw jack 70 + Split nut B | Heavy-duty screw jack 130 + Split nut B |
|---|---|---|---|
|  |  |  |  |
| Bottom height-adjustment spindle for load-bearing towers. | | | |
| | | The Split nut B can be swung apart, meaning that it does not need to be turned through the full length of the threaded spindle. | |
| | | | Specially for height mismatches such as on steps. Otherwise identical to Heavy-duty screw jack 70. For details, see the section headed "Structural design". |

## Scaffold planking units (E)

| Scaffold planking 60/...cm | Scaffold planking 60/...cm with manhole |
|---|---|
|  |  |

Aluminium/timber scaffold planking units with or without self-closing cover, for making safe assembly decks.

Integral anti-liftout guard

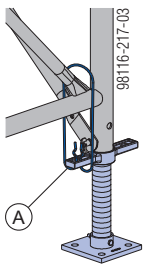
Width: 60 cm

Lengths: 60 / 100 / 150 / 175 / 200 / 250 / 300 cm

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

Load Class 2 to EN 12811-1:2003

## d3 safety hook (F)

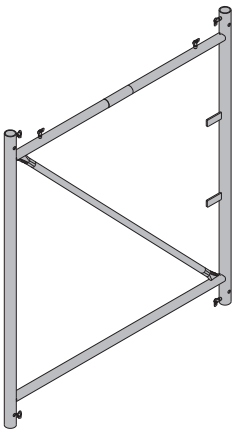



Secures the d3 screw jack U-head or screw jack foot to the d3 frame

- when the towerframes are assembled in the horizontal
- when the towerframes are lifted by crane

# d3 in detail

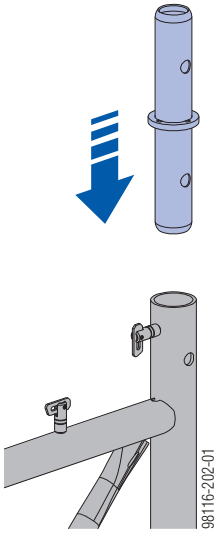
## d3 frame



### Linking the frames

#### d3 coupler

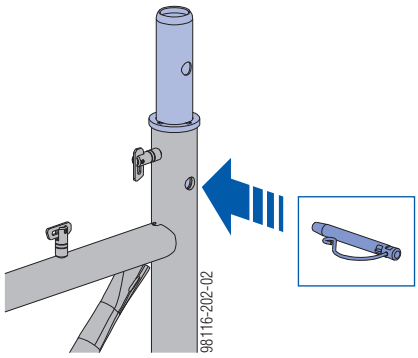
The vertically stacked frames are attached to one another by the **d3 coupler** with its integrated stop-ring. Because this coupler extends such a long way (15 cm) into each frame, no extra pin-type safety locks are needed when towerframes are erected and dismantled in the upright.




#### Spring locked connecting pin 16mm

A tension-proof link with Spring locked connecting pin 16mm is necessary

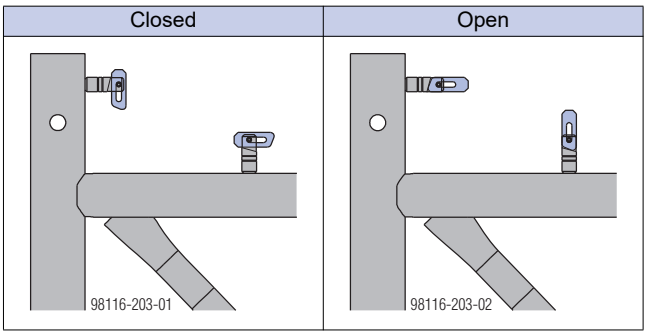
- when the towerframes are assembled in the horizontal
- when the towerframes are lifted by crane
- if there are forces acting upon the tower which cause tensile stress



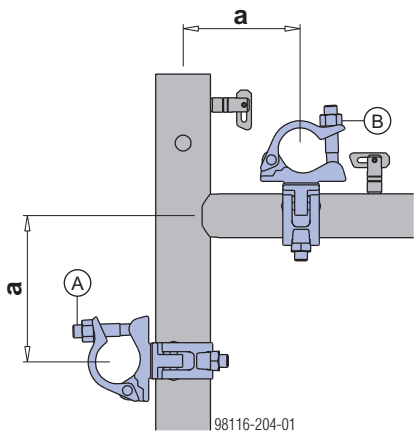

Permitted tensile force: 22 kN

### Safety catch

- tried-and-tested interconnection system (captive)
- secures the diagonal crosses
- two defined positions (closed – open)



## Connecting the couplers



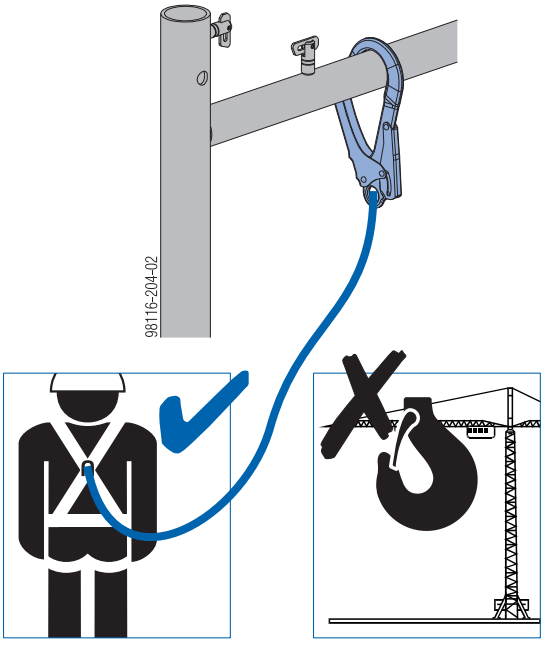

a ... max. 16 cm (exception: where tubes are being connected for constructional design purposes)

**A** Transition swivel coupler 48/60mm or Transition angle coupler 48/60mm

**B** Swivel coupler 48mm or Normal coupler 48mm

EN 74 compliant couplers
- Class A, permissible V ≤ 6 kN

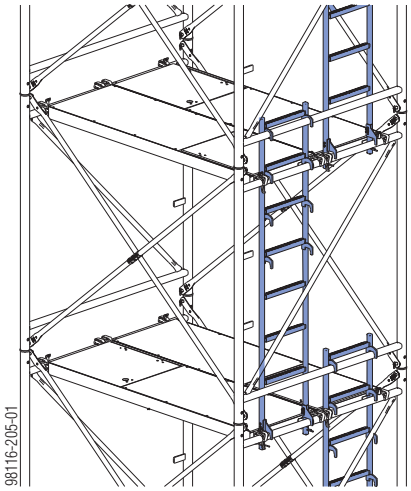
## Attachment point for personal fall-arrest set




## Climbing rungs and access openings

- integral climbing rungs
- good gripping possibility for transport by hand
- convenient climb-through access opening

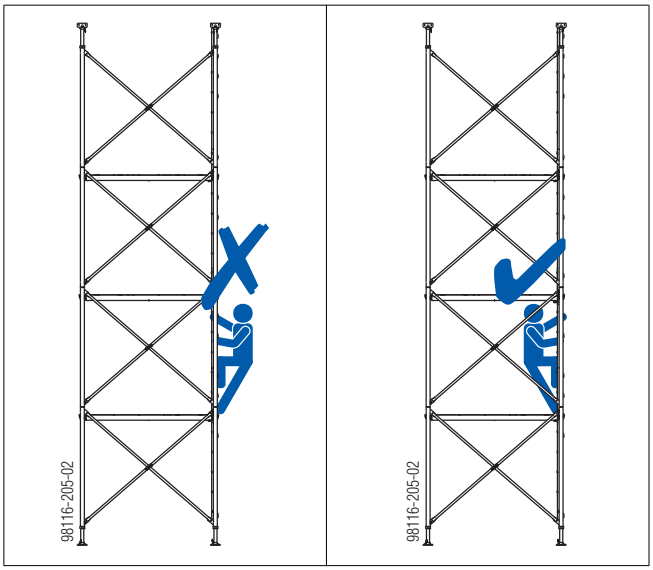
Stricter safety requirements can be met with the Staxo 40/d3 ladder 2.30m to integrate safe access into the Load-bearing tower d3.




**WARNING**

Never climb up or down the outside of the tower! You risk falling and/or causing the tower to tip over!

➤ Only ever climb up the inside of the tower. When doing this, make sure that the scaffold planking units are in the correct positions (as intermediate landings)!

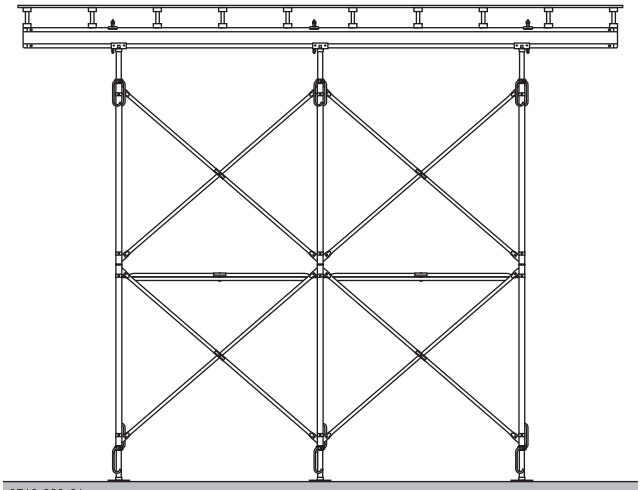


# Practical examples

Tableforms and tower frames are both assembled from the same system components.

## Tableform units

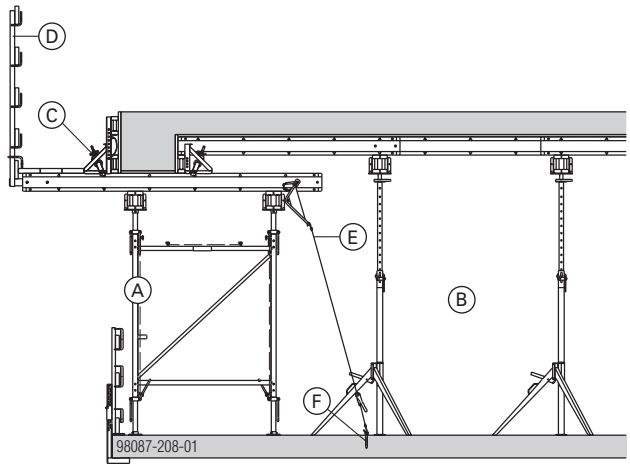
- For repetitive use, the load-bearing tower can be assembled into complete table-forms.




## Combined with Dokaflex

For downstand beams, the **load-bearing towers and beam-forming supports** can be combined very effectively with Dokaflex.

### Edge floor-beam



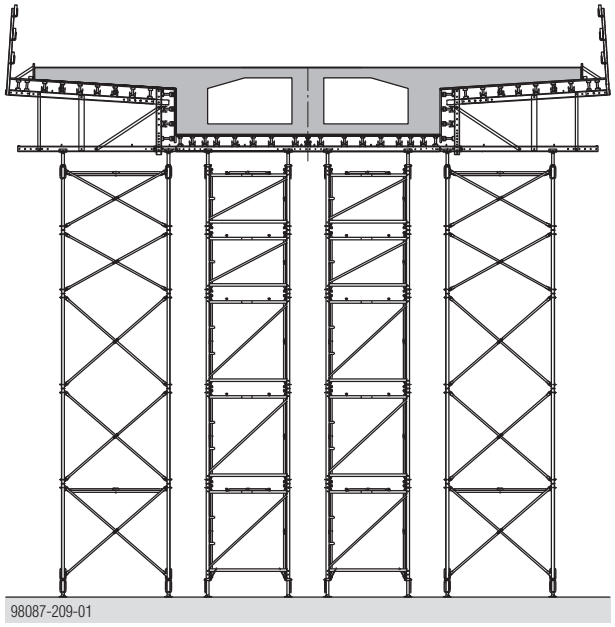

| | |
|---|---|
| **A** | Load-bearing tower |
| **B** | Dokaflex |
| **C** | Beam forming support 20 |
| **D** | Handrail post T 1.80m (optionally with Toeboard holder T 1.80m), Edge protection system XP, Handrail clamp S |
| **E** | Lashing strap 5.00m |
| **F** | Doka express anchor 16x125mm and Doka coil 16mm |

## Tower frames

With a load-bearing capacity of up to 94 kN per leg, d3 is an extremely strong load-bearing tower system.

It safely withstands horizontal forces such as wind loads.

The wide frames make for high stability right from the word "go".

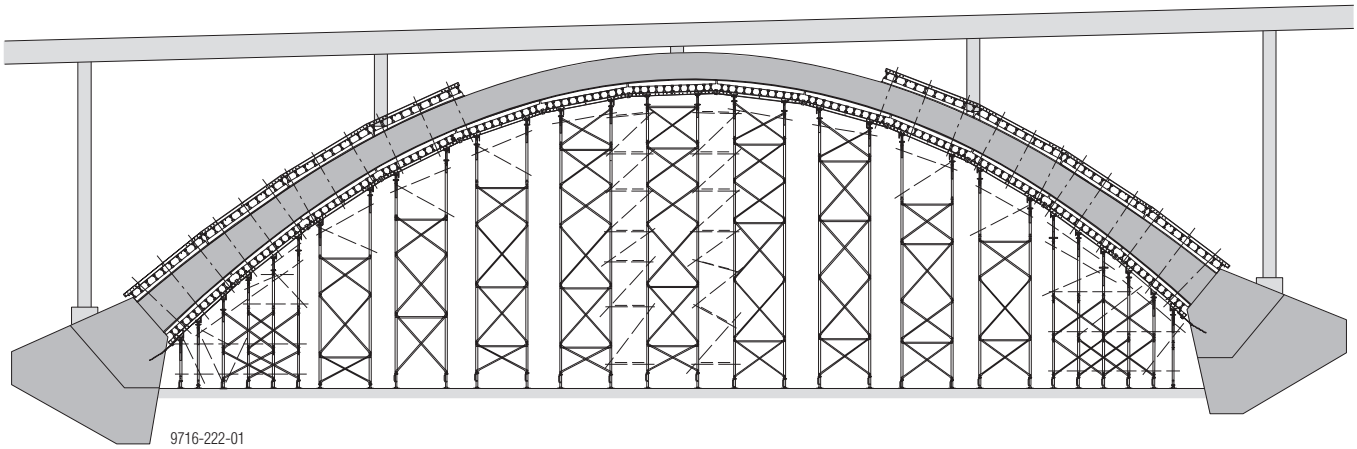


## Shoring load-bearing structures

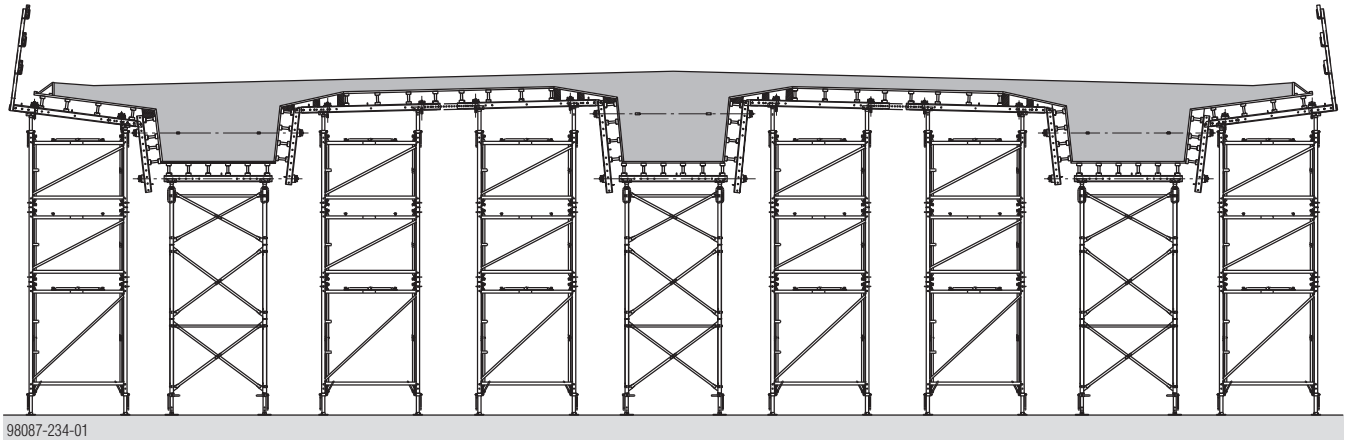
For bridges, underpasses and industrial structures, the load-bearing towers also combine perfectly with Doka large-area formwork Top 50.

Even complicated structures can be formed cost-effectively in this way, with standard parts used extensively.

**Propping an arched bridge**



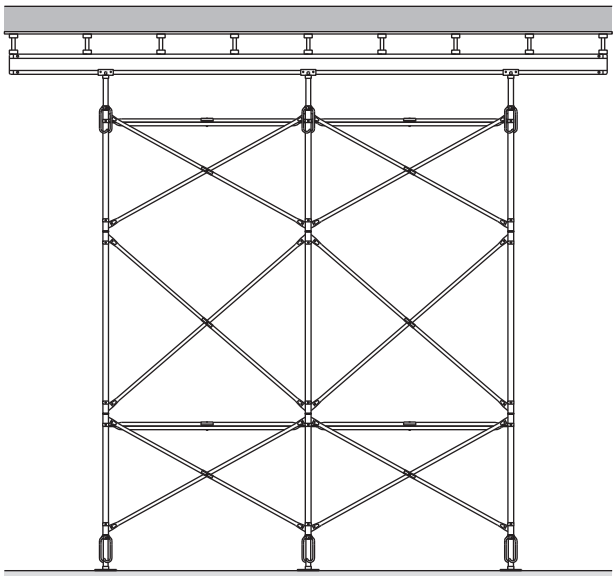
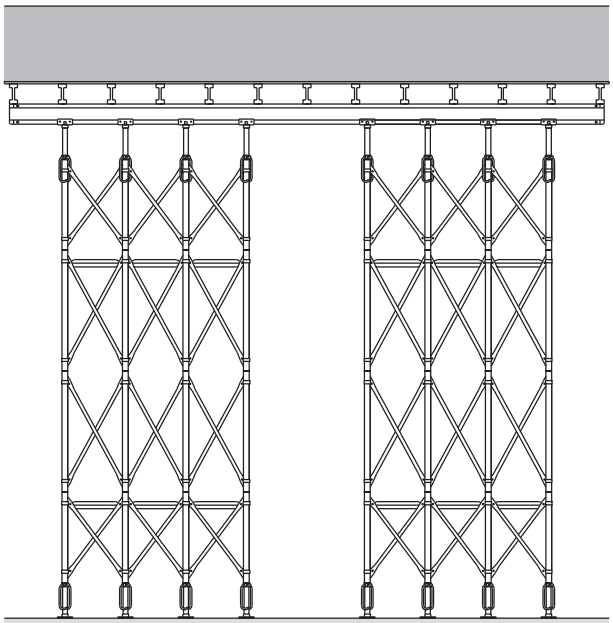
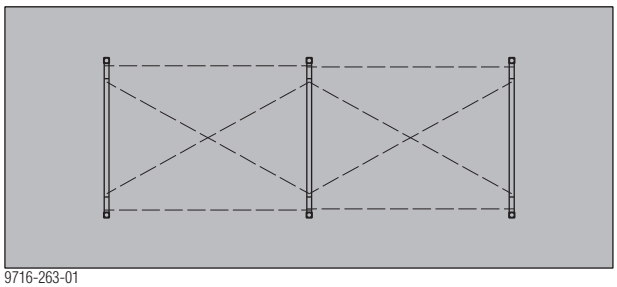
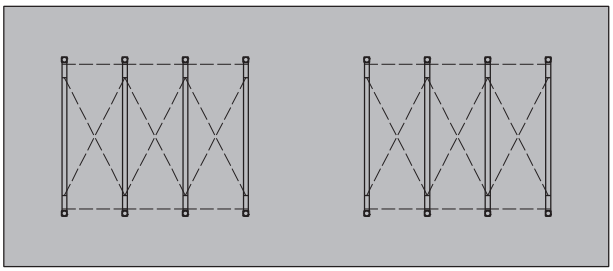

**Typical section - propping a superstructure formwork**



# Adapts to different ground plans, heights, floor shapes and loads

The different sizes of diagonal brace for each height of frame enable the frames to be spaced close together or further apart, depending on the load.

In this way, only as much material is used as is really needed.

| e.g. light loads – frames spaced further apart | e.g. heavy loads – frames spaced close together |
|---|---|
|  9716-262-01 |  98003-281-01 |
| Plan view | Plan view |
|  9716-263-01 |  98003-283-02 |

# Height adjustment

- The 3 different heights of frame 0.90 m, 1.20 m and 1.80 m enable coarse adjustment to within 30 cm.
- Fine adjustment, down to the last millimetre, is done using the various head and base units.

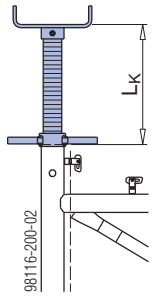
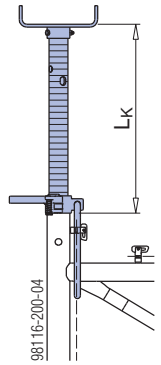
**NOTICE**

Depending on the structural details of the load-bearing tower, use shorter extended lengths in planning or cross-brace the screw jacks. See the section headed 'Structural design' for dimensioning details.

## System dimensions

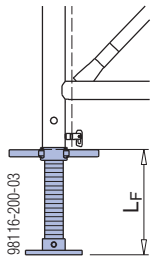
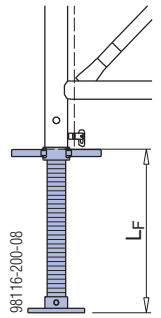
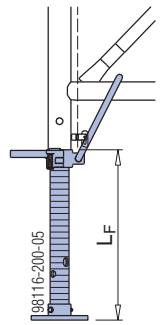
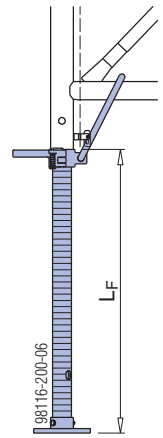
### on multi-storey towers

**Table B: Head zone**

| | d3 screw jack U-head and d3 4-way screw-jack head | Heavy-duty screw jack 70 top | | |
|---|---|---|---|---|
| |  |  | | |
| | Frames in the top 'storey' | | | |
| | 1.80 / 1.20 / 0.90m | 1.80m | 1.20m | 0.90m |
| $L_K$ max. | 50.8 | 70.9 | 70.9 | 70.9 |
| $L_K$ min. | 6.7 | 8.4 | 8.4 | 26.7 |

Values in cm
Min. values with no formwork-striking play

**Table C: Base zone**

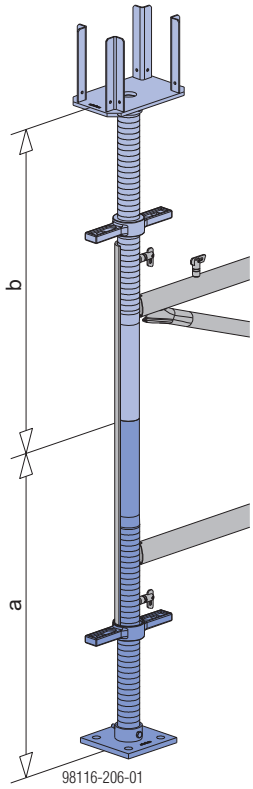
| | d3 screw jack foot | | | d3 screw jack foot 80 | | | Heavy-duty screw jack 70 + Split nut B | | | Heavy-duty screw jack 130 + Split nut B | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| |  | | |  | | |  | | |  | | |
| | Frames in the base 'storey' | | | | | | | | | | | |
| | 1.80m | 1.20m | 0.90m | 1.80m | 1.20m | 0.90m | 1.80m | 1.20m | 0.90m | 1.80m | 1.20m | 0.90m |
| $L_F$ max. | 51.2 | 51.2 | 51.2 | 81.2 | 81.2 | 81.2 | 71.2 | 71.2 | 71.2 | 131.2 | 131.2 | 131.2 |
| $L_F$ min. | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 32.0 | 8.8 | 8.8 | 27.0 | 8.9 | 68.9 | 98.9 |

Values in cm
Min. values with no formwork-striking play

## on single-storey towers

**Note:**
For towers consisting of one 'storey' only, the min. values $L_K$ and $L_F$ stated for the screwjack head and base units in the previous Tables will often not be reached.
**Reason:** The lengths of the screwjack head and base units in the frame add up to a larger dimension than the height of the frame.

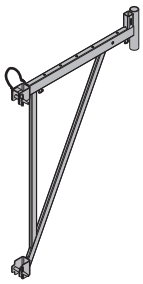
### Close-up: Sectional view of frame tube (to show screw-jack collision in single-storey tower)

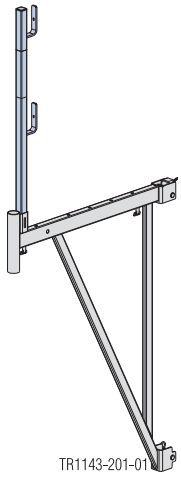
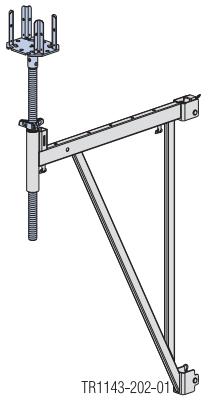



| | a | b |
|---|---|---|
| d3 screw jack foot | 76.2 | -- |
| d3 screw jack foot 80 | 106.2 | -- |
| Heavy-duty screw jack 70 | 101.2 | -- |
| Heavy-duty screw jack 130 | 173.0 | -- |
| d3 screw jack U-head | -- | 75.8 |
| d3 4-way screw-jack head | -- | 75.8 |
| Heavy-duty screw jack 70 top | -- | 100.9 |

# Extending the range of use with brackets

## d3 bracket 90cm



| Extension with Handrail post XP 1.20m | Extension with 4-way screw-jack heads |
|---|---|
|   |   |

### Conditions applying to use

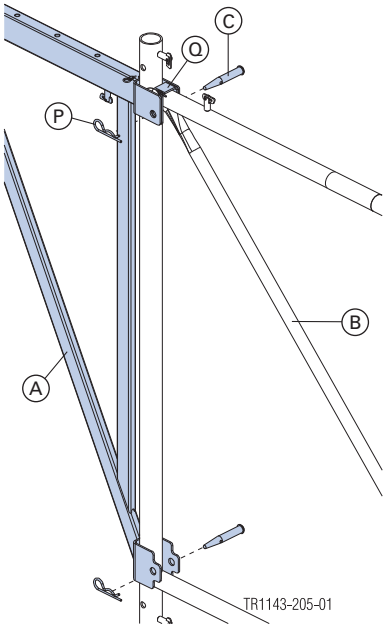
**WARNING**
Risk of tipping over!
➤ Before setting up and using the bracket, secure the tower with plumbing struts or tie-backs so that it cannot tip over.

**NOTICE**
When inter-frame spacing is ≤ 1 m, there is a risk of collision between the suspension of the d3 bracket 90cm and the diagonal crosses.

Permitted service load: 1.5 kN/m² (150 kg/m²) with influence width of max. 3.0 m.
Load Class 2 to EN 12811-1:2003

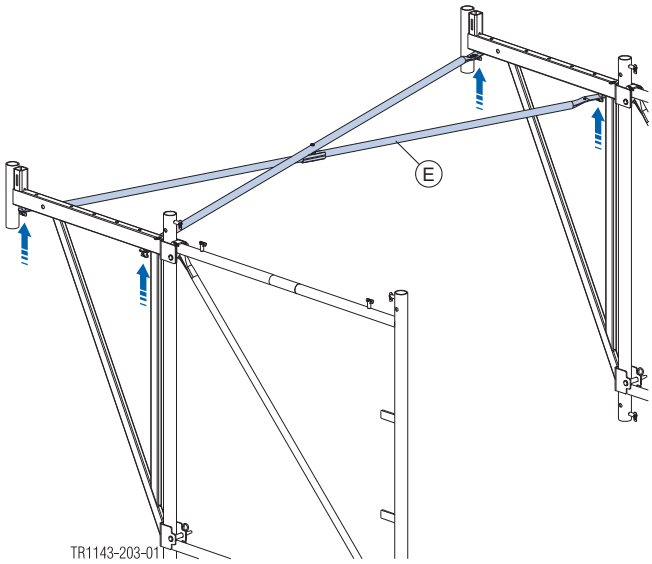
### Assembly

➤ Secure the tower so that it cannot tip over.
➤ Pin the d3 bracket 90cm to the top of the diagonal cross of the d3 frame with a safety hook and secure the safety hook with a spring locked connecting pin. Insert and secure the bottom bolt, to prevent accidental lift-out.



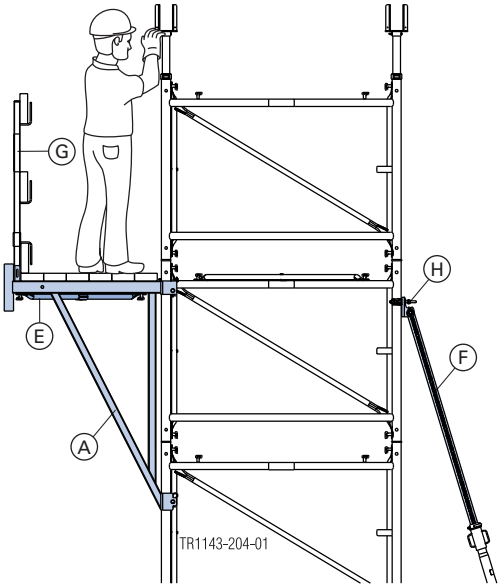

**A** d3 bracket 90cm
**B** d3 frame
**C** D16/22 pin
**P** Spring cotter 5mm
**Q** Safety bow

➤ Fit Diagonal crosses 9.xxx between the brackets and secure them with safety catches.




**E** Diagonal cross 9.xxx

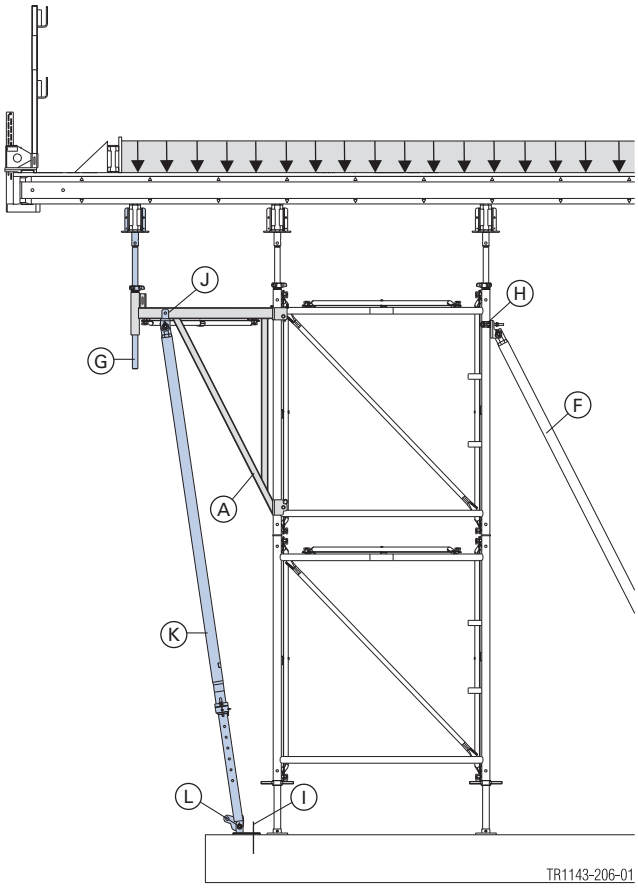
## Use with the d3 frame as working platform




| | |
|---|---|
| **A** | d3 bracket 90cm |
| **E** | Diagonal cross 9.xxx |
| **F** | Plumbing strut IB and Strut shoe EB |
| **G** | Handrail post XP 1.20m or 4-way screw-jack head |
| **H** | Screw-on coupler 48mm 95 |

## Using bracket under concreting load

The d3 bracket 90cm can also be used for transferring concreting loads. The extra plumbing strut attached to every bracket ensures that no compressive forces are transferred into the load-bearing tower.




| | |
|---|---|
| **A** | d3 bracket 90cm |
| **F** | Plumbing strut IB and Strut shoe EB |
| **G** | Handrail post XP 1.20m or 4-way screw-jack head |
| **H** | Screw-on coupler 48mm 95 |
| **I** | Doka express anchor 16x125mm and Doka coil 16m |
| **J** | Staxo 40 plumbing strut adapter |
| **K** | Plumbing strut 340 IB or 540 IB for precast members |
| **L** | Prop shoe |

**NOTICE**

- Nail down the formwork sheets in the edge zone!
- Do not exceed the specified maximum extension length of the spindle in the bracket!

Supporting force of the outermost screwjack on the bracket:
Permissible F during erection and once erected (i.e. prior to pouring) < 3.0 kN
Permissible F during pouring: 0 kN

Permitted leg load has to be reduced by $F_{VK}$ = 14 kN.

Supporting force of the outermost screwjack on the bracket:
Permissible $F_{max}$: 10.5 kN

Reduction of 7.7 kN in the permitted vertical load $F_V$ per leg

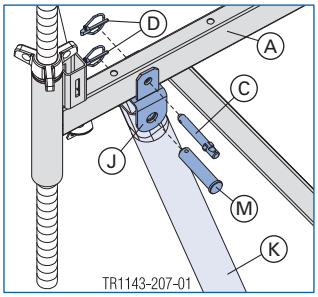
## Close-up showing how to attach the Plumbing strut IB

**NOTICE**

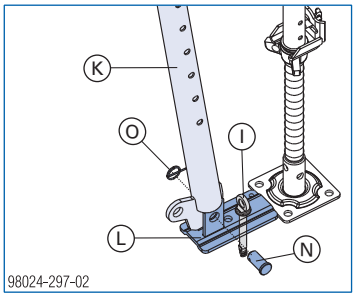
- Every frame with a bracket must be braced by a Plumbing strut IB.
- All the elements in the entire tower unit must be linked together using d3 safety hooks and Spring locked connecting pins 16mm.

To prevent tower tip-up, a Plumbing strut IB with Strut shoe EB must be mounted to every frame that has a bracket attached to it, and this plumbing strut must be fixed to the ground with a Doka express anchor 16x125mm.

### Fixing the plumbing strut to the bracket




### Fixing the plumbing strut to the ground




| | |
|---|---|
| **A** | d3 bracket 90cm |
| **C** | D16/22 pin |
| **D** | Linch pin 6x42 |
| **I** | Doka express anchor 16x125mm and Doka coil 16mm |
| **J** | Staxo 40 plumbing strut adapter |
| **K** | Plumbing strut 340 IB or 540 IB for precast members |
| **L** | Prop shoe |
| **M** | B25/90.5 pin |
| **N** | d25/58 pin |
| **O** | Spring pin |

**Required safe working load of alternative anchors:**
$R_d \geq 20.3$ kN ($F_{permissible} \geq 13.5$ kN)

Follow the manufacturers' applicable fitting instructions.

### Deck and guardrail boards

Board thicknesses for support centres of up to 2.50 m:

- Deck-boards min. 20x5 cm
- Guard-rail boards min. 15x3 cm

**Note:**

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

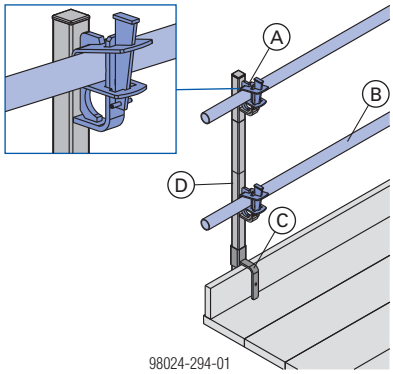
Observe all national regulations applying to deck-boards and guard-rail boards.

**Deck and guardrail boards:** Per 1 metre length of platform, 0.6 m² of floor decking and 0.6 m² of guard-rail boards are needed (in-situ).

**Fastening the deck planking:** with 4 square bolts M 10x120 per bracket (not included in scope of supply).

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

### Using scaffolding tubes



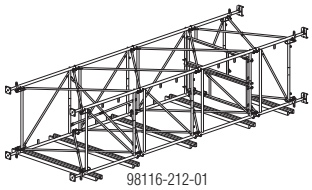

| | |
|---|---|
| **A** | Scaffold tube holder D48mm |
| **B** | Scaffold tube 48.3mm |
| **C** | Toeboard holder XP 1.20m |
| **D** | Handrail post XP 1.20m |

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

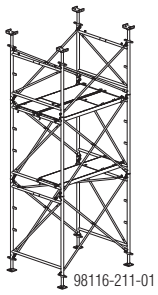
# Assembly

**Different ways of assembling the Load-bearing tower d3**

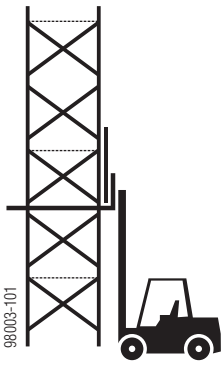
**On-ground (horizontal) assembly**
Standard set-up



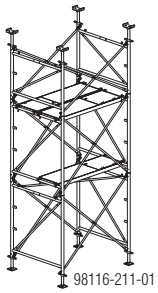

Assembling in the upright




with Fork lift shifting device TG




by hand




## Fall protection when erecting, modifying or dismantling the load-bearing tower

Local regulations, or the result of a risk assessment carried out by the erector, may make it necessary to use personal fall arrest systems (PFAS) when erecting, modifying or dismantling the load-bearing tower.

**NOTICE**

Use only the attachment points as shown in the section headed 'd3 in detail'!

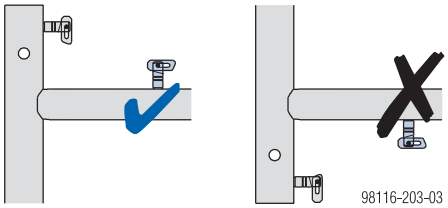
# Horizontal assembly

**Preliminary remark:**

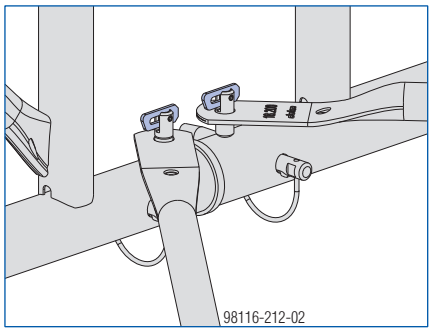
- The terms 'vertical' and 'horizontal' (e.g. referring to the diagonal crosses) are always used here with reference to their installation situation in the finished, upright tower.
- The job of erecting the load-bearing tower begins with the bottom (i.e. first) 'storey'.

**General:**

- The gravity latches of the frame must always point upwards.




- Slide the diagonal cross onto the safety-catch bolt and immediately secure it with the safety catch.

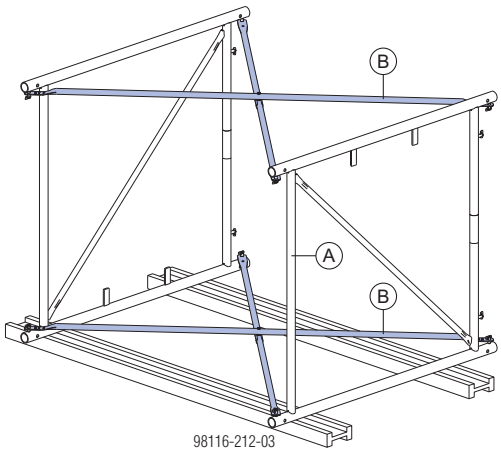



## Erecting the first storey

➤ Having regard to the instructions given above, place the tower frames on their sides on timber supports (min. 4cm high).

### Bracing the frames in the vertical

➤ Link the frames with diagonal crosses.




**A** d3 frame
**B** Diagonal cross

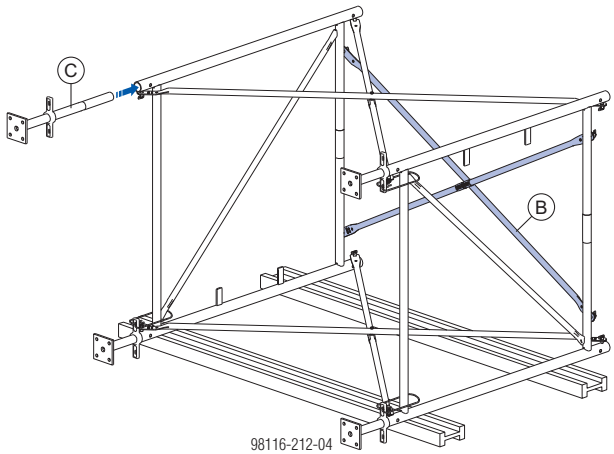
### Plan-bracing the frames (in the horizontal)

**Basic rule:**

- Securing the geometry by means of horizontal diagonal cross in the 1st and second-last or last storey, or every 10 m.
  Additionally as necessary, e.g.
  - if there is a horizontal restraint for the tower (even a temporary one)
  - if local loads need to be transferred (e.g. from attaching the tower to the crane after it has been ground-assembled in the horizontal)

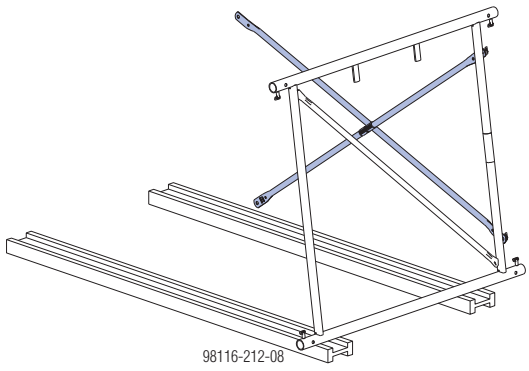
➤ Slot diagonal crosses onto the safety-catch bolts of the horizontal frame tubes, and fix them in place.

➤ Insert base units and secure (see section entitled 'Head zone and base zone').




**B** Diagonal cross 12.xxx
**C** Base unit

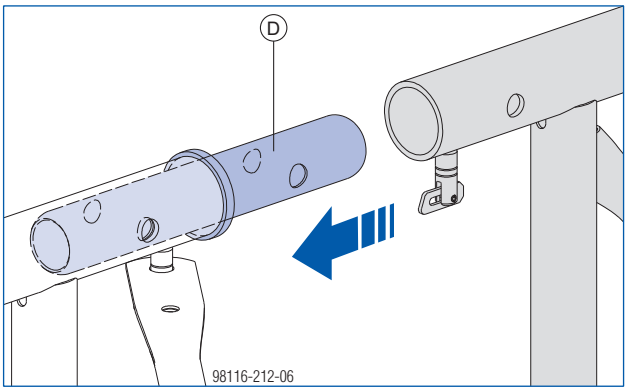
Install horizontal diagonal cross right at the start if there is only one person assembling the tower.



# Erecting further storeys

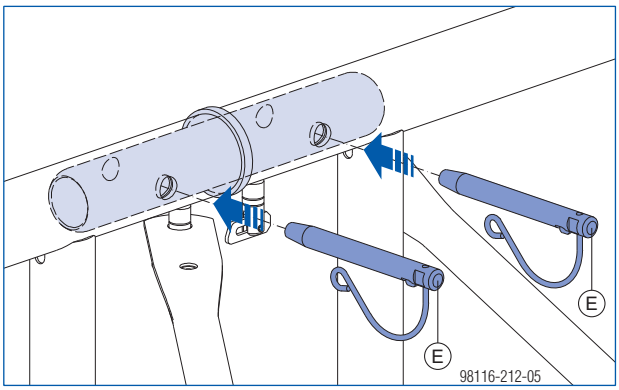
**Note:**
Do not pre-assemble units any higher than 10 m.

➤ Insert the couplers into the frames that you are about to add.




**D** d3 coupler

➤ Add the next frame and connect it to the frame below with Spring locked connecting pins 16mm.

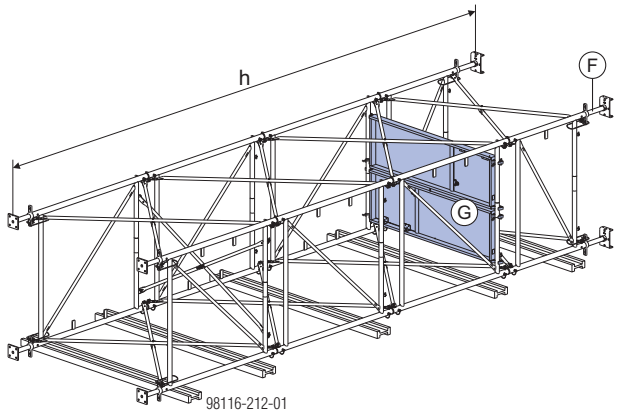



**E** Spring locked connecting pin 16mm

➤ Fit and secure diagonal crosses in the same way as in the first 'storey'.

➤ Insert head units and secure (see section entitled 'Head zone and base zone').

➤ Install scaffold planking units where required.

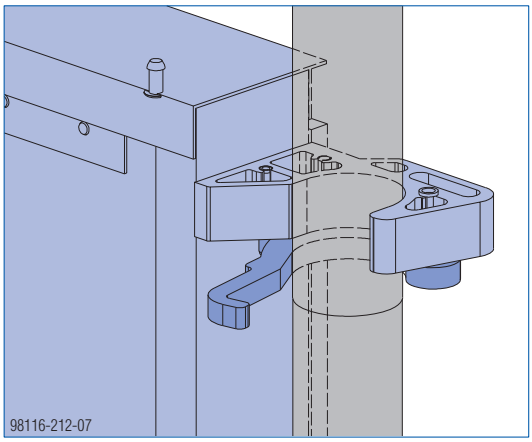



h ... max. 10 m

**F** Head unit

**G** Scaffold planking 60/...cm

➤ Close the anti-liftout guard.




Having scaffold planking units in the top ‘storey’ makes it easier to carry out assembly work on the towerframe superstructure.

## Lifting into the upright by crane

➤ Check before attaching the crane suspension tackle:

- All the spring locked connecting pins must have been fitted (to link the frames).
- All safety catches must be closed.
- All screw-jack head and base units must be secured against drop-out.

**NOTICE**

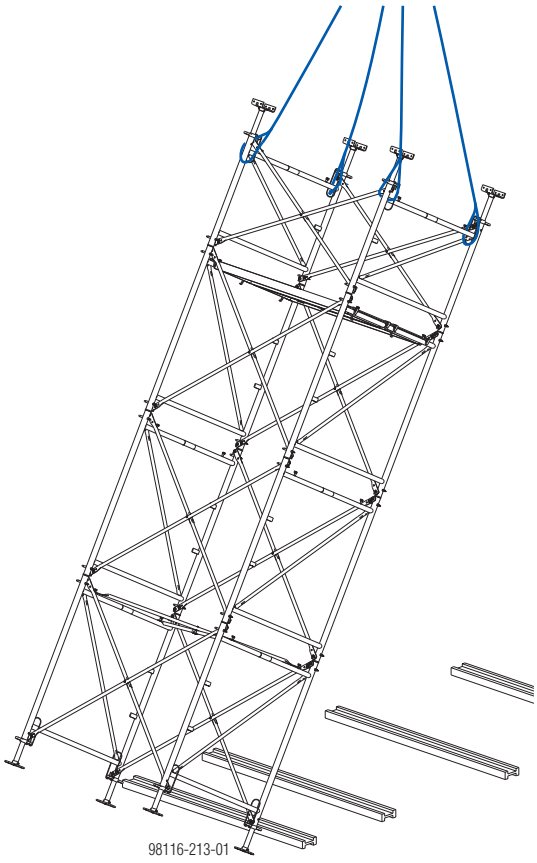
Max. extension length of the base units when the tower is being lifted into the upright: 35 cm!

### Lifting into the upright

**NOTICE**

- Erect the load-bearing tower in the vertical on ground that is statically capable of supporting the load.
- If the load-bearing tower is over 6 m high, back-stay it or combine it with other towers.

➤ Attach the lifting chain to the frames of the top "storey" and lift the entire tower into the upright.




When the tower is standing in the upright, check once again to make sure that all the safety catches are closed.

**Detaching the lifting chain near ground level:**

This method must **not be used for placing the tower back on its side**!

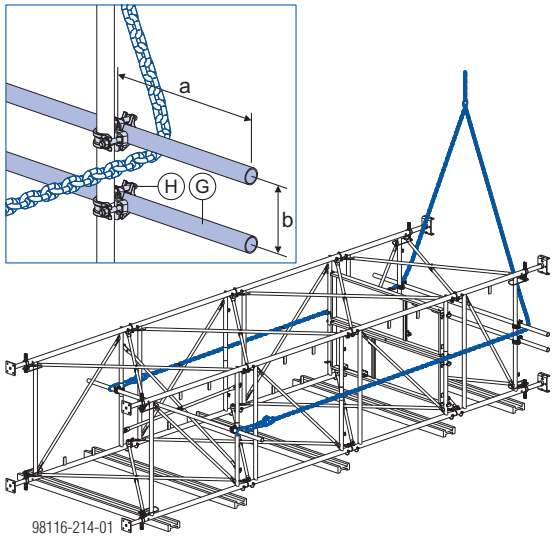
Items needed:

- 3 x Scaffold tube 48.3mm **(G)**
  - Minimum length:
    Inter-frame space + 1.00 m
- 6 x normal or swivel couplers, 48mm **(H)**

➤ Attach the scaffold tubes:
- one between the bottom frames
- two between the top frames

➤ Attach two cables, chains or lifting straps to the bottom scaffold tube.

➤ Lead the cables, chains or lifting straps along the outside of the tower and between the top scaffold tubes.




a ... min. 0.5 m
b ... max. 0.2 m

After the tower has been lifted into the upright, the cables, chains or lifting straps are detached by a crewman working from ground level.

## Dismantling

After the tower has been placed back on its side, it can be dismantled in reverse order.

**NOTICE**

As early as in the planning phase, consideration should also be given to the dismantling operations (e.g. travelling/towing the load-bearing tower/unit into the reach of the crane for safe repositioning or for horizontal on-ground dismantling)!

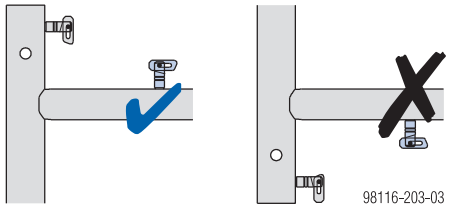
# Assembling towers in the upright by hand

**NOTICE**

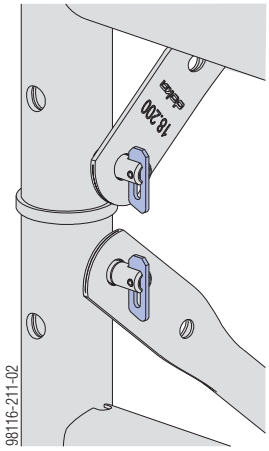
- Erect the load-bearing tower in the vertical on ground that is statically capable of supporting the load.
- If the load-bearing tower is over 6 m high, brace it or combine it with other towers.

**As a rule:**

- The gravity latches of the frame must always point upwards.

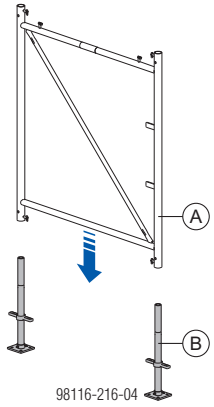



- Slide the diagonal cross onto the safety-catch bolt and immediately secure it with the safety catch.



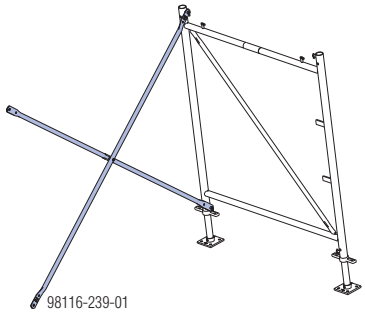

## Erecting the first storey

➤ Insert base units and secure (see section entitled 'Head zone and base zone').

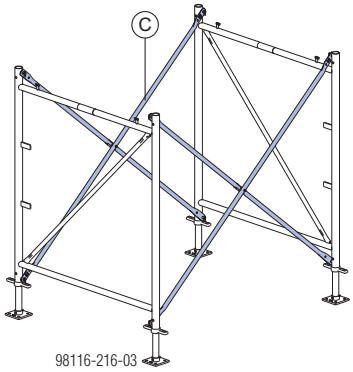



**A** d3 frame
**B** Base unit

➤ Mount and fix the diagonal crosses.




➤ Connect the frames together with diagonal crosses.

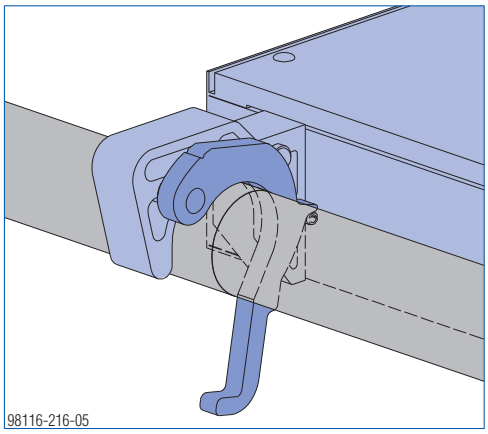



**C** Diagonal cross

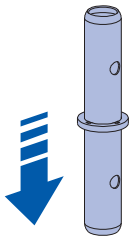
# Erecting the second storey

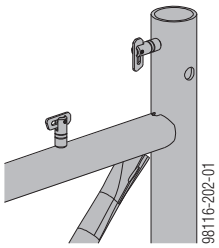
## Stacking the frames

➤ Place scaffold planking on the finished 'storey'.
➤ Close the anti-liftout guard.

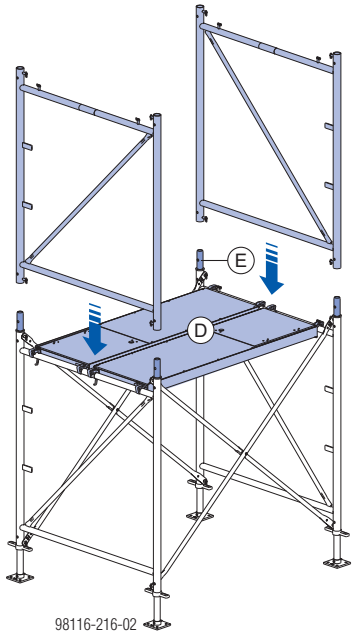



➤ Insert d3 couplers.






➤ Add the next frames.

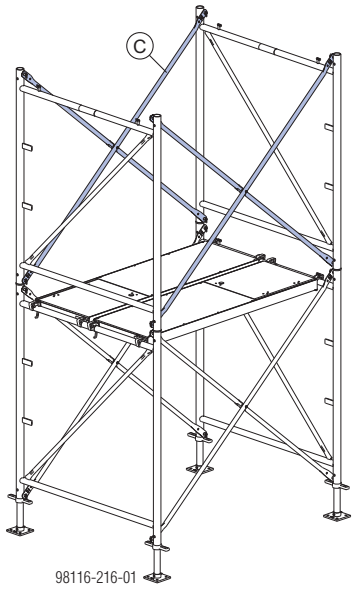



**D** Scaffold planking
**E** d3 coupler

**Note:**
If the tower is going to be crane-lifted, the frames have to be secured to each other with Spring locked connecting pins 16mm so that they cannot pull apart. See also the section headed 'Lifting by crane'.

## Bracing the frames in the vertical

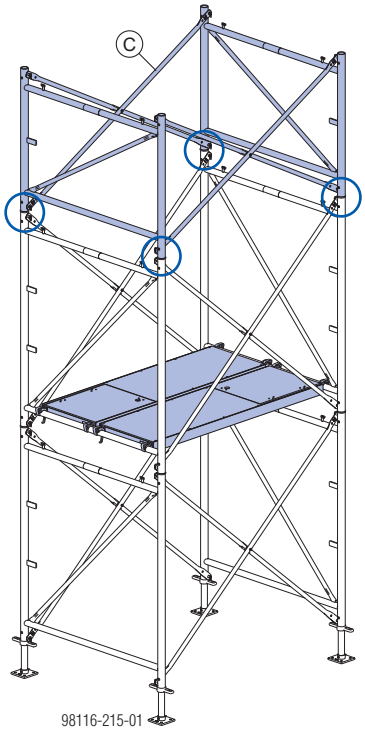
➤ Fit and secure diagonal crosses in the same way as in the first 'storey'.




**C** Diagonal cross

## Erecting the third 'storey'

➤ Raise the scaffold planking units to the next level.
➤ Add 1.20 m frames in the same way as for the 2nd storey.
➤ Push diagonal crosses onto the bottom safety-catch bolts and secure them with the safety catches.




**C** Diagonal cross

➤ Place the scaffold planking units 1 storey higher up.
➤ Push diagonal crosses onto the top safety-catch bolts and secure them with the safety catches.

## Plan-bracing the frames (in the horizontal)

**Basic rule:**

- Securing the geometry by means of horizontal diagonal cross in the 1st and second-last or last storey, or every 10 m.
  Additionally as necessary, e.g.
  - if there is a horizontal restraint for the tower (even a temporary one)
  - if local loads need to be transferred (e.g. from attaching the tower to the crane after it has been ground-assembled in the horizontal)

## Erecting further storeys

➤ Add further frames in the same way as for the 3rd storey, and brace them in the vertical with diagonal crosses.

**NOTICE**

- If the load-bearing tower is over 6 m high, back-stay it or combine it with other towers.

## Dismantling

To dismantle, perform the above steps in reverse order.

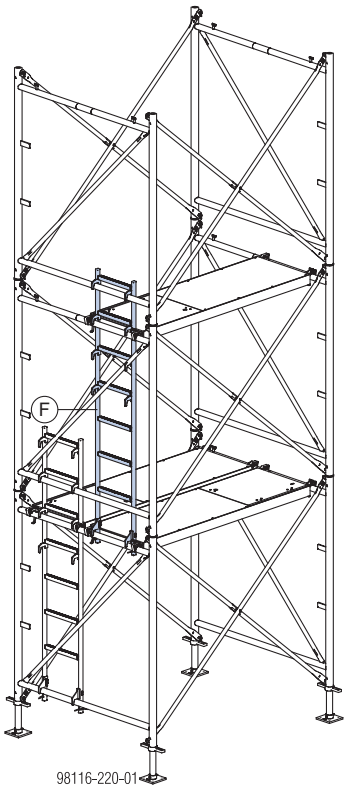
**NOTICE**

As early as in the planning phase, consideration should also be given to the dismantling operations (e.g. travelling/towing the load-bearing tower/unit into the reach of the crane for safe repositioning or for horizontal on-ground dismantling)!

# Installing ladders

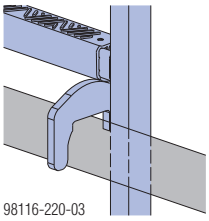
The Staxo 40/d3 ladder 2.30m can be installed to integrate safe access into the Load-bearing tower d3.

➤ Hang a Staxo 40/d3 ladder 2.30m into place and secure it with d6 spring cotters.

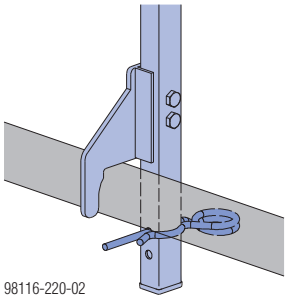



**F** Staxo 40/d3 ladder 2.30m

- The hooks of the ladder must correctly engage the tubes of the d3 frame.




- The Spring cotters d6 must be seated in the top holes.

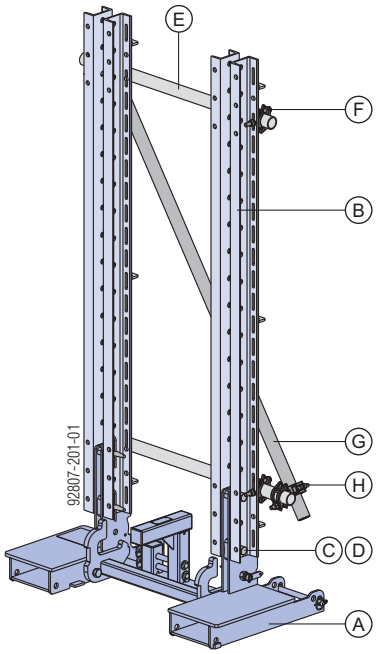


# Assembling towers in the upright by forklift truck

## Fork lift shifting device TG

The Fork lift shifting device TG may only be used for erecting, dismantling and transporting Doka load-bearing towers Staxo, Staxo 40, Staxo 100, Staxo 100 eco, d3 and d2.

Follow the directions in the 'Fork lift shifting device TG' Operating Instructions.




### Items needed:

| Item | Designation | Q'ty |
|---|---|---|
| **(A)** | Fork lift shifting device TG | 1 |
| **(B)** | Multi-purpose waling WS10 Top50 2.00m | 2 |
| **(C)** | Connecting pin 10cm | 4 |
| **(D)** | Spring cotter 5mm | 4 |
| **(E)** | Scaffold tube 48.3mm 1.00m | 2 |
| **(F)** | Screw-on coupler 48mm 50 | 4 |
| **(G)** | Scaffold tube 48.3mm 2.00m | 1 |
| **(H)** | Swivel coupler 48mm | 2 |
| | Operating cord, site-provided (optional) | 1 |

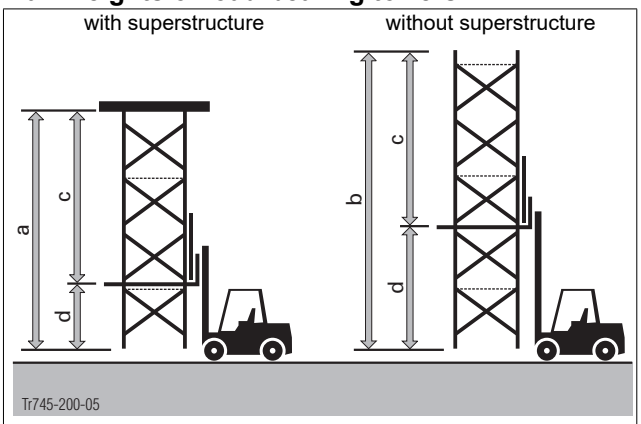
**WARNING**

➤ While load-bearing towers are being erected or dismantled, lifted or lowered: It is forbidden to walk or stand beneath suspended loads.

### Max. loads

| Max. load on forklift | **Max. load on Fork lift shifting device** | |
|---|---|---|
| | with box-style fork extensions | with telescopic forks |
| **4000 kg** | 1000 kg | 600 kg |
| **2000 kg** | 600 kg | 600 kg |

### Max. heights of load-bearing towers



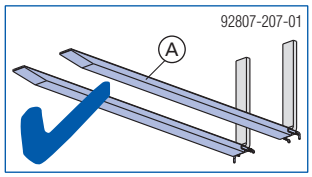

| | Max. load on forklift **4000 kg** | | Max. load on forklift **2000 kg** | |
|---|---|---|---|---|
| | when travelling | when lifting | when travelling | when lifting |
| a | 7.20 m | 9.00 m | 5.00 m | 7.00 m |
| b | 9.00 m | 12.60 m | 7.00 m | 10.00 m |
| c | 5.40 m | 9.00 m | 4.00 m | 7.00 m |
| d | 3.60 m | 3.60 m | 3.00 m | 3.00 m |

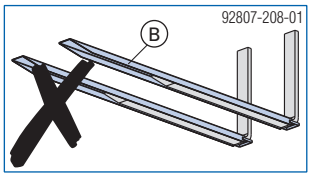
## Requirements for fork-lift trucks or telescoping stacker trucks

- Overhead guard for forklift operator
- Centre-to-centre distance of the fork prongs: 850 mm

**WARNING**

➤ It is not permitted to use non-enclosed (open) fork extensions.




**A** Box-style fork extension

**B** Open fork extension

- Permitted types of fork extension:
  - box-style fork extensions 1)
  - Telescopic fork prongs
- Min. fork length:
  Distance between the frames of the load-bearing tower + 400 mm
- Max. fork width: 195 mm
- Max. fork height: 71 mm

**1)** Observe the following manufacturer's data:
- Load-bearing capacity of the fork extension
- Required length of the fork prongs

## Travelling the towerframe units

**NOTICE**

**Very important points for the moving procedure:**

- As well as the fork-lift driver, a specially trained watchman must also be on hand during all lifting, assembly and travelling operations.
- max. inclination of trackway: 2%.
- There must be a flat, firm (e.g. concrete) base that is capable of supporting the load.

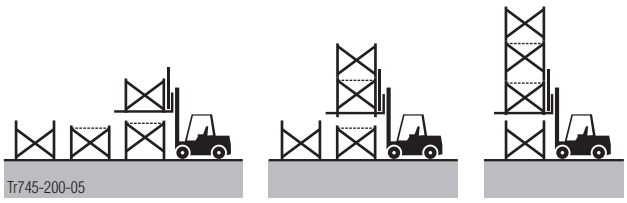
## Assembling the towerframe units

**NOTICE**

➤ For details of how to assemble and join together the individual sections ('towerframe storeys'), see 'Assembling towers in the upright by hand'!

➤ Build each section at ground level.

➤ Use a forklift truck to stack the towerframe storeys into a single towerframe unit.




## Dismantling

To dismantle, perform the above steps in reverse order.

**NOTICE**

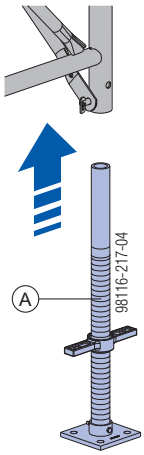
Always only disasemble the bottom "storey" of the towerframe unit.

# Head zone and base zone

## with d3 screw jack U-head and d3 screw jack foot

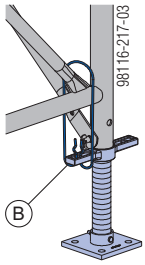
### Base zone

➤ Turn the nut to adjust the d3 screw-jack foot to the desired extended length.
➤ Insert d3 screw jack feet.




**A** d3 screw jack foot

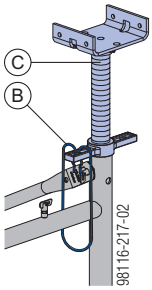
➤ Secure each d3 screw jack foot to the d3 frame with a d3 safety hook.




**B** d3 safety hook

### Head zone

➤ Insert the d3 screw jack U-heads into the d3 frames in the same way.
➤ Secure each d3 screw jack U-head to the d3 frame with a d3 safety hook.




**B** d3 safety hook
**C** d3 screw jack U-head

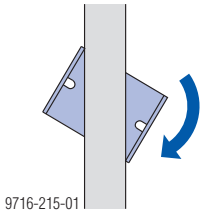
### Positioning superstructure on load-bearing towers

**WARNING**
➤ Where formwork beams cantilever out a long way, secure them against accidental lift-out.

**NOTICE**
➤ When lifting and repositioning the entire tower unit (or pre-assembled sub-units) by crane: Follow the instructions in the section headed 'Lifting by crane'!

Always place the primary beams (single or double formwork beams) centrally.

The d3 screw jack U-heads can also be turned to an angle to keep single formwork beams centred.

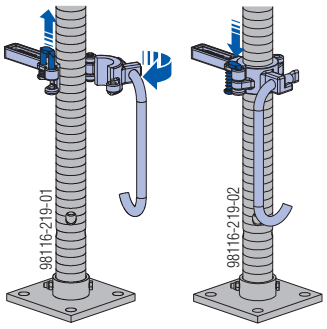


# with Heavy-duty screw jack 70

## Base zone

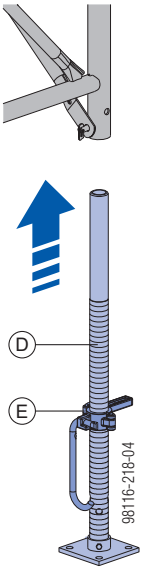
➤ Place a Split nut B on the Heavy-duty screw jack 70, push the two halves together and secure it with the spring locking pin.

Make sure that the spring locking pin points downwards when it is secured.




➤ Turn Split nut B to adjust Heavy-duty screw jack 70 to the desired extended length.

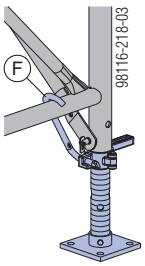
➤ Insert Heavy-duty screw jack 70.




**D** Heavy-duty screw jack 70

**E** Split nut B

➤ Slot the fixing handle into the cross-tube of the frame.

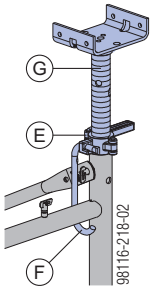



**F** Fixing handle

## Head zone

➤ Insert the Heavy-duty screw jacks 70 top into the d3 frames in the same way.

➤ Slot the fixing handle into the cross-tube of the frame.




**E** Split nut B

**F** Fixing handle

**G** Heavy-duty screw jack 70 top

### Positioning superstructure on load-bearing towers

**WARNING**

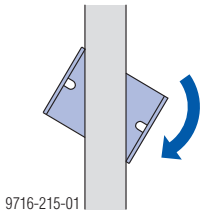
➤ Where formwork beams cantilever out a long way, secure them against accidental lift-out.

**NOTICE**

➤ When lifting and repositioning the entire tower unit (or pre-assembled sub-units) by crane: Follow the instructions in the section headed 'Lifting by crane'!

Always place the primary beams (single or double formwork beams) centrally.

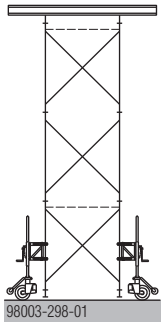
The Heavy-duty screw jacks 70 top can also be turned to an angle to keep single formwork beams centred.

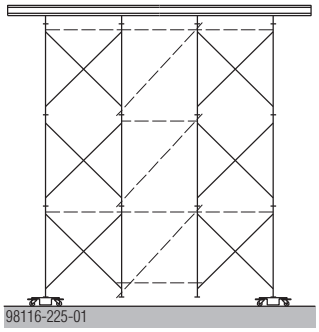


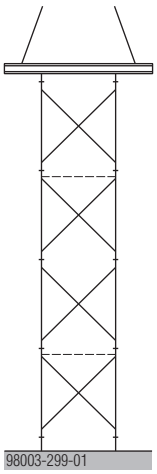
# Repositioning

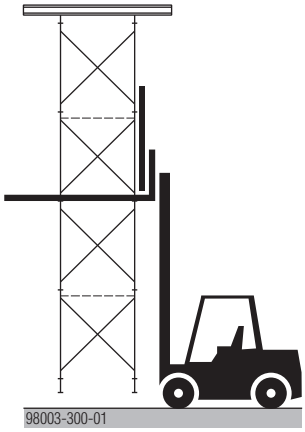
**Different ways of repositioning**

- Using traveller units
  - With transport winches
  - With Trolley TT
- By crane
- By forklift truck or telescoping stacker truck




**NOTICE**

The most suitable approach to repositioning and dismantling should already be discussed and agreed with the site in the project phase, especially for very tall towers.

**Note:**

There are also other ways of repositioning the towers that are not shown in this User Information booklet. The customer (contractor) bears sole responsibility for use of all such methods and must prepare a separate risk assessment for any such intended method.

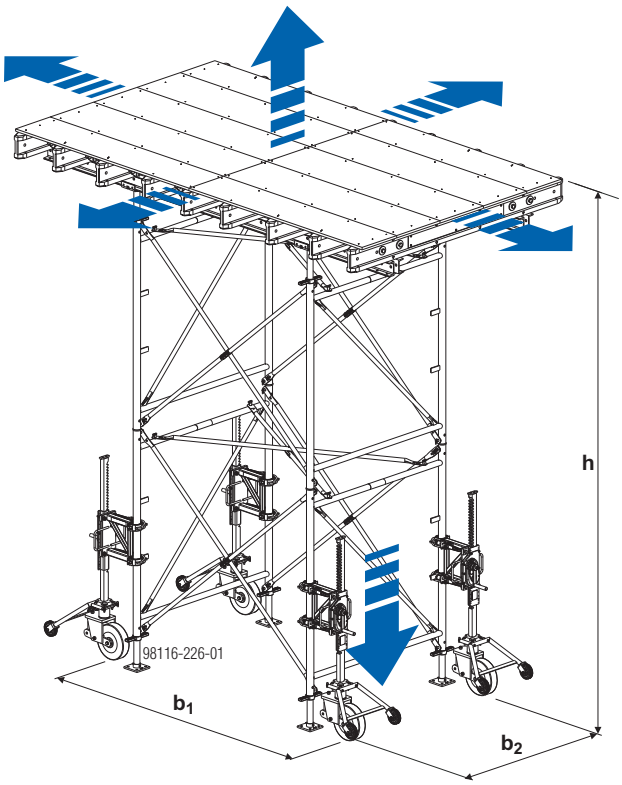
# Repositioning using traveller units

Finished tableforms can be moved on to their next usage location quickly and easily using traveller units.

Traveller unit variants:

- Modular system (with winches)
- Trolley TT

## Modular system (with winches)




**NOTICE**

When repositioning load-bearing towers that include standard superstructures, remember:

Ratio b:h = max. 1:3, with 'b' being the narrowest side.

Check special structures to ensure that they cannot topple.

Optimum adaptability to on-site requirements.

There is a choice of 2 types of winch and 2 types of wheel.

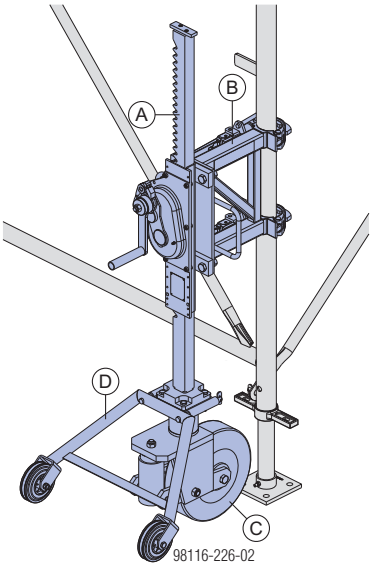
Max. load-bearing capacity:
1000 kg / Winch 70
(lifting height 70 cm) with Solid tire wheel
1500 kg / Winch 125
(lifting height 125 cm) with Heavy-duty wheel 15kN

**NOTICE**

- There must be a flat, firm base capable of supporting the load (e.g. concrete).

Follow the directions in the 'Staxo/d2 winch' Operating Instructions!

➤ Clamp the winch to the frame of the load-bearing tower, using the adapter frame.
➤ Secure the foot-pieces to prevent them dropping out. See the section headed 'Lifting by crane'.




**Items needed for one shifting unit**

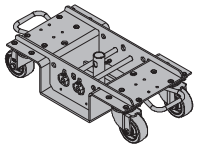
| Item | Designation | Quan-tity |
|---|---|---|
| **A** | Winch 70 or 125 | 4 |
| **B** | Staxo/d2 adapter frame | 4 |
| **C** | Solid tire wheel or Heavy duty wheel 15kN | 4 |
| **D** | Double wheeled transporter | 4 |

## Accessory for transporting the winches when empty:

The **Double wheeled transporter** is bolted into the connecting sockets on the wheel flange and makes it easier to wheel the (empty) wheel-units.


**A** Double wheeled transporter

## Trolley TT



Max. load-bearing capacity per trolley: 1430 kg

# Lifting by crane

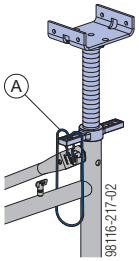
## Lifting chain attached to the d3 frame

**NOTICE**

- Max. tower weight for repositioning: 1200 kg
- Max. tower height for lifting the tower into the upright and placing it on its side: 10 m (see the section entitled "Horizontal assembly")

### Secure the head units so that they cannot be lifted out

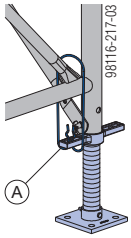
➤ Secure each d3 screw jack U-head to the d3 frame with a d3 safety hook.




**A** d3 safety hook

### Secure the base units to prevent them dropping out

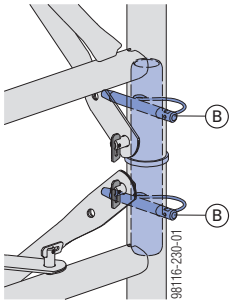
➤ Secure each d3 screw jack foot to the d3 frame with a d3 safety hook.




**A** d3 safety hook

### Link the frames in a crane-handling-safe manner

➤ Secure the frames with Spring locked connecting pins 16mm at each leg join so that they cannot pull apart.



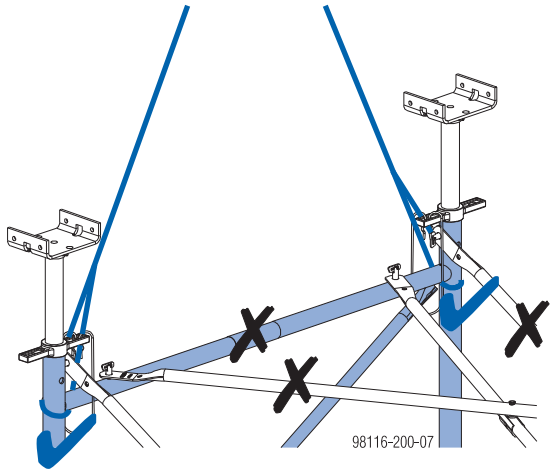

**B** Spring locked connecting pin 16mm

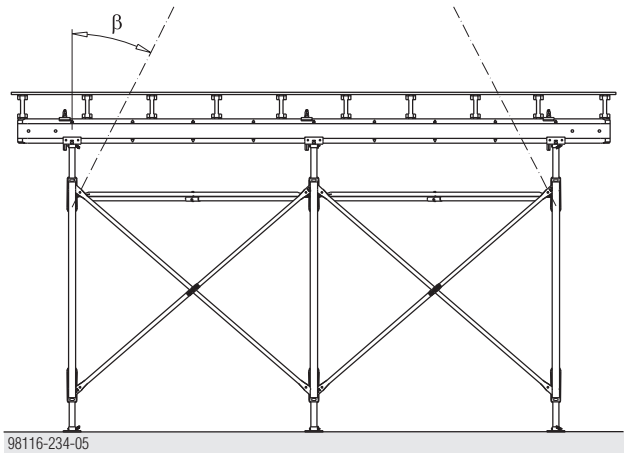
### Repositioning operation

➤ Remove the formwork sheeting of the superstructure so that the lifting chain can be attached.

**CAUTION**

➤ Attach the lifting chain to the frame nodes only; do not attempt to attach the lifting chain to the diagonal crosses!
Spread angle β max. 30°.




While the tableform is being lifted, there must NOT be any loose parts, tools or other items on the tableform!

# Lifting chain attached to the superstructure

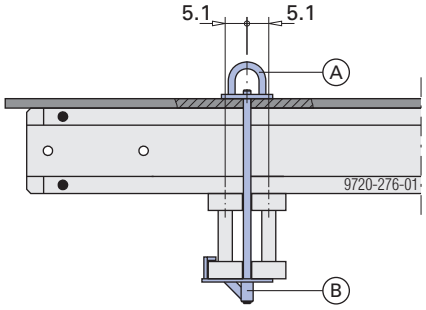
Where the tableforms are to be repositioned in the vertical, i.e. crane-lifted, they must be fitted with a **Lifting rod 15.0** and **Retaining plate 15.0**, which make it easy to attach the transfer cables.

| Max. load-bearing capacity: |
| --- |
| 1000 kg per Lifting rod 15.0 - where the load is applied centrally |

In addition to the action steps set out in 'Lifting chain attached to the d3 frame', the following steps must also be taken:

## Mount the Lifting rod 15.0

➤ Mount the Lifting rod 15.0 and Retaining plate 15.0.




**A** Lifting rod 15.0
**B** Retaining plate 15.0

Use a Ø 20 mm bit to drill the hole through the form-ply. It can later be filled with a Universal plug R20/25.

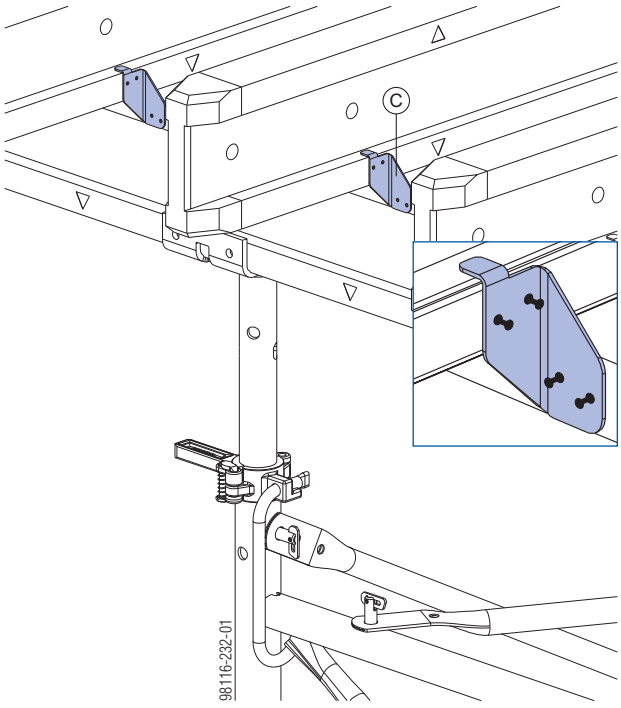
Follow the directions in the 'Lifting rod 15.0' Operating Instructions!

## Preparation

**WARNING**
Danger from loose and unsecured parts.
➤ Observe the following points before lifting!

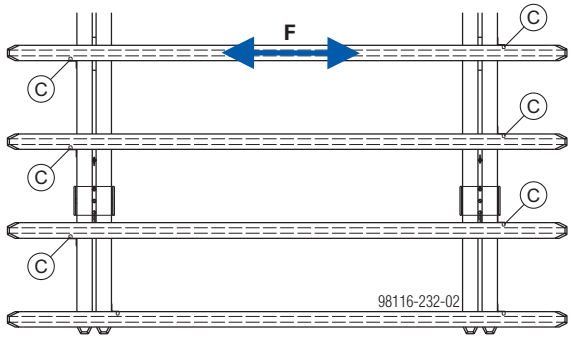
### Connect superstructure components together

➤ e.g. connect the primary and secondary beams with Beam connection plates H20 or Rafter plates, and nail on the form-ply.




The Beam connection plates H20 are easier to dismount if double-headed nails 3.1x75mm are used.

### Plan view



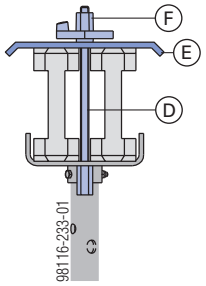
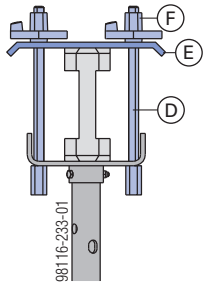

Arrange the Beam connection plates H20 on opposing sides where possible.

**C** Beam connection plate H20

| Permitted F: 0.8 kN |
| --- |

## Connect the superstructure to the head units

➤ e.g. with Locking rod 15.0, Clamping plate and Wing nut 15.0.

| Double primary beams | Single primary beams |
|---|---|
|  |  |

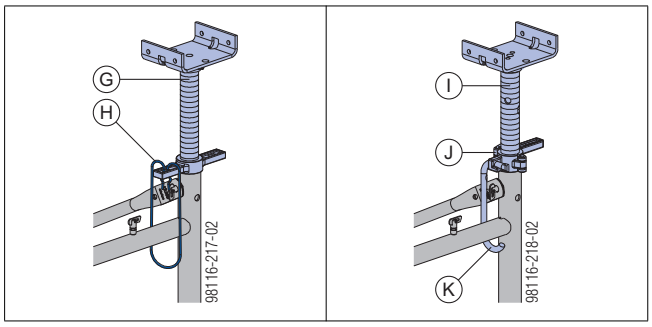


**D** Locking rod 15.0
**E** Clamping plate
**F** Wing nut 15.0

## Secure the head units so that they cannot be lifted out

➤ Secure each d3 screw jack U-head to the d3 frame with a d3 safety hook.
➤ When using Heavy-duty screw jacks 70, slot the fixing handle into the cross-tube of the frame.

Max. load-bearing capacity:
1,5 kN / fixing

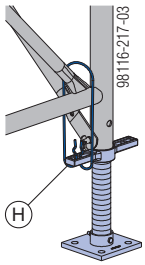




**G** d3 screw jack U-head
**H** d3 safety hook
**I** Heavy-duty screw jack 70 top
**J** Split nut B
**K** Fixing handle

## Secure the base units to prevent them dropping out

➤ Secure each d3 screw jack foot to the d3 frame with a d3 safety hook.

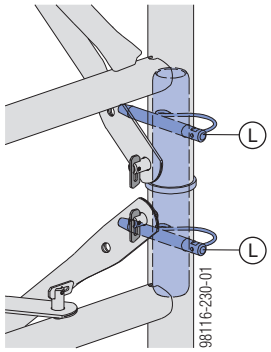




**H** d3 safety hook

## Link the frames in a crane-handling-safe manner

➤ Secure the frames with Spring locked connecting pins 16mm at each leg join so that they cannot pull apart.

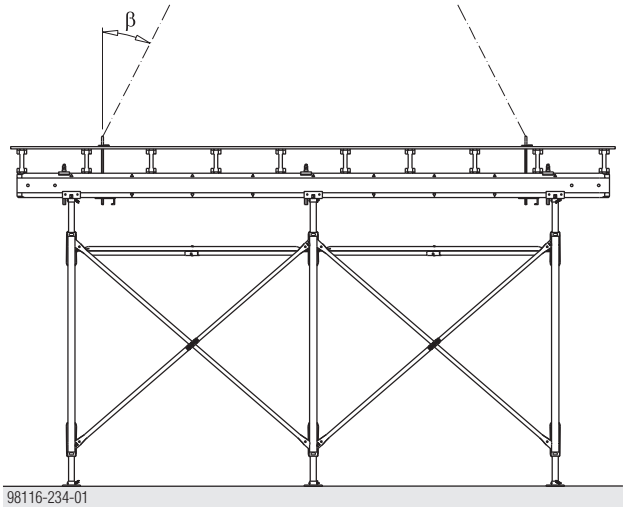




**L** Spring locked connecting pin 16mm

## Repositioning operation

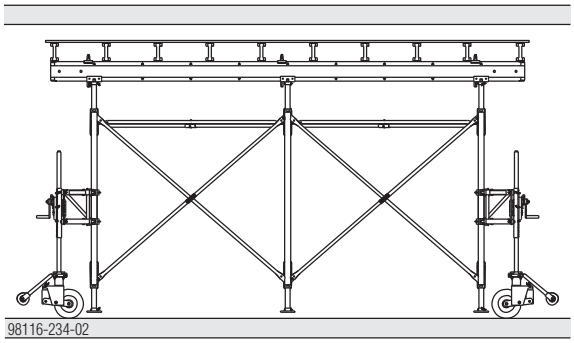
➤ Attach the crane sling to the Lifting rods 15.0 and lift the tableform to its next location. Spread-angle β max. 30°.



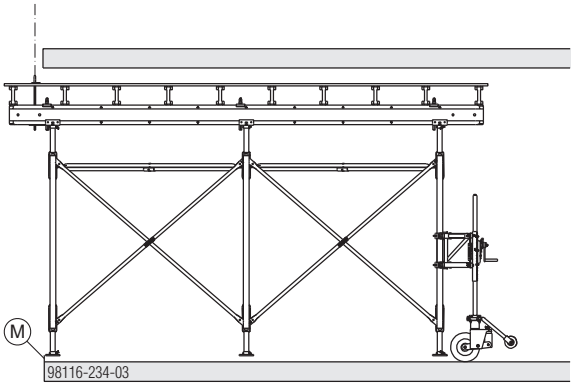

While the tableform is being lifted, there must NOT be any loose parts, tools or other items on the tableform!

### Shifting the table in skeleton construction

➤ Take the load off the table by turning the threaded spindles.
➤ Clamp on the wheel-units.
➤ Push in and secure the base units.

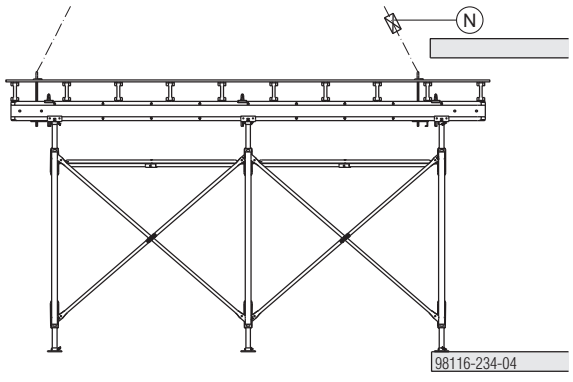



➤ Using the wheel-units, lower the table, and wheel it out as far as the stop.
➤ Remove the front wheel-units.
➤ Screw the Lifting rod 15.0 into the previously mounted Retaining plate 15.0.
➤ Attach the crane sling to the Lifting rod 15.0, then raise the crane until the front legs are just off the floor.




**M** Wheel-out stop

➤ Push the table outwards until only the innermost legs are still over the floor.
➤ Mount more lifting rods and attach crane slings.
➤ Use a chain hoist to shorten the rear cables until the table is suspended in the horizontal.
➤ Manoeuvre the table all the way out with the crane, then lift it to the next storey.




**N** Chain hoist

# Repositioning a pre-assembled superstructure

## Lifting by crane

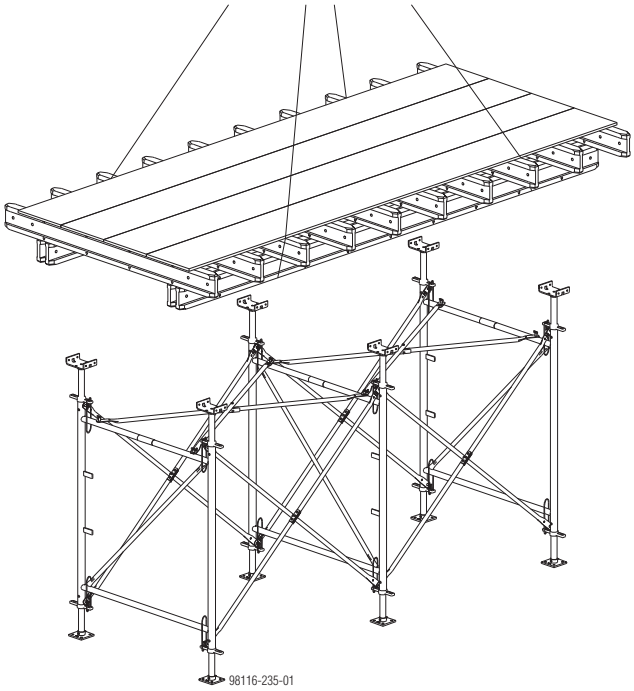
The Dokamatic lifting strap 13.00m is a lifting accessory that is only suitable for lifting Doka tableforms and stacked Doka panels.

2 Dokamatic lifting straps are needed for each unit to be lifted.

Max. load-bearing capacity:
2000 kg / Dokamatic lifting strap 13.00m

- Strap shoes for safe lifting of stacked tableform superstructures.
- Anti-dropout safeguard for strap shoes
- Moveable, 8 m long protective sleeve makes it possible to lift in a horizontal position, and protects the strap fabric.

Follow the directions in the 'Dokamatic lifting strap 13.00m' Operating Instructions!



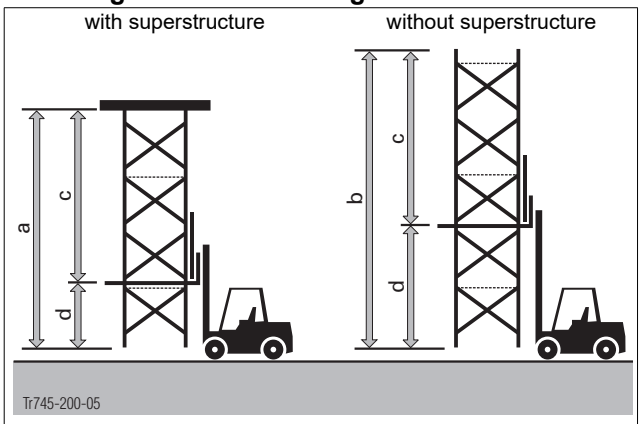
# Lifting by forklift truck

## Fork lift shifting device TG

For product information on the Fork lift shifting device TG and the requirements in respect of the forklift truck, see the section entitled 'Assembling towers in the upright by forklift truck'.

Follow the directions in the 'Fork lift shifting device TG' Operating Instructions.

**Max. heights of load-bearing towers**




| | Max. load on forklift **4000 kg** | | Max. load on forklift **2000 kg** | |
|---|---|---|---|---|
| | when travelling | when lifting | when travelling | when lifting |
| a | 7.20 m | 9.00 m | 5.00 m | 7.00 m |
| b | 9.00 m | 12.60 m | 7.00 m | 10.00 m |
| c | 5.40 m | 9.00 m | 4.00 m | 7.00 m |
| d | 3.60 m | 3.60 m | 3.00 m | 3.00 m |

### Travelling the towerframe units

**NOTICE**

**Very important points for the moving procedure:**

- As well as the fork-lift driver, a specially trained watchman must also be on hand during all lifting, assembly and travelling operations.
- max. inclination of trackway: 2%.
- There must be a flat, firm (e.g. concrete) base that is capable of supporting the load.

# Additional areas of use

## Inclination adjustment

If the superstructure or the ground are **inclined at an angle of 1% or more**, slope compensation must be provided.

### using Wedges for screw-jack ..... %

These prefabricated birch plywood wedges make it possible to stand load-bearing towers in the perpendicular on surfaces with various inclinations, even when utilising the full leg load.

**CAUTION**

Excessively steep wedges may slip away!

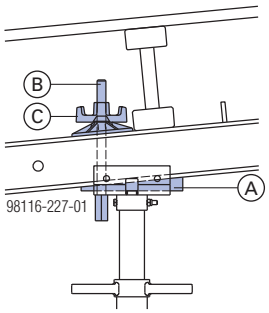
➤ Maximum inclination: 20%!

For this reason, wedges must NOT be placed on top of one another in an attempt to compensate for inclinations that are greater than 20%.

#### Inclined superstructures

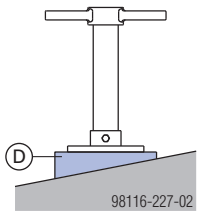
**Securing the superstructure at angles of over 12%:**

➤ Connect the head-plate to the longitudinal beam (e.g. with Locking rod 15.0/33cm and Super-plate 15.0 or Angle anchor plate 12/18)




| | |
|---|---|
| **A** | Wedge for screw-jack ..... % |
| **B** | Locking rod 15.0/33cm |
| **C** | Super-plate 15.0 |

#### Inclined ground surface




| | |
|---|---|
| **D** | Wedge for screw-jack ..... % |

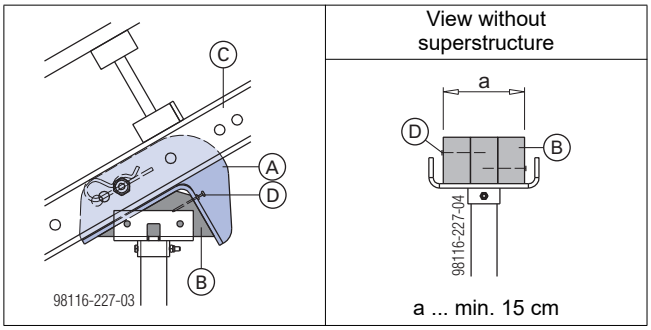
### using Staxo wedge support WS10

Used with timber wedges, this component provides angle adjustment to floor-slab constructions with a max. inclination of 45°.

Bolted into the multi-purpose waling or steel waling, this wedge support prevents the timber wedges from slipping and ensures that the loads are safely transferred.

**NOTICE**

This type of connection is no substitute for extra structural design measures such as back-stays.




| | |
|---|---|
| **A** | Staxo wedge support WS10 |
| **B** | Timber wedge, project-specific |
| **C** | Multi-purpose waling WS10 Top50 |
| **D** | Nailed connection |

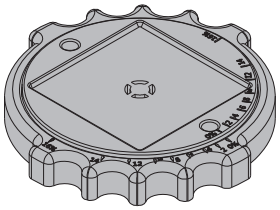
**NOTICE**

The grain of the timber wedges must always be in the vertical!

**Note:**

If the legs of the load-bearing tower have to be located outside the pattern of drilled holes in the multi-purpose waling, then a suitable 20 mm diam. hole must be drilled in the web of the waling.

## with Compensating plate

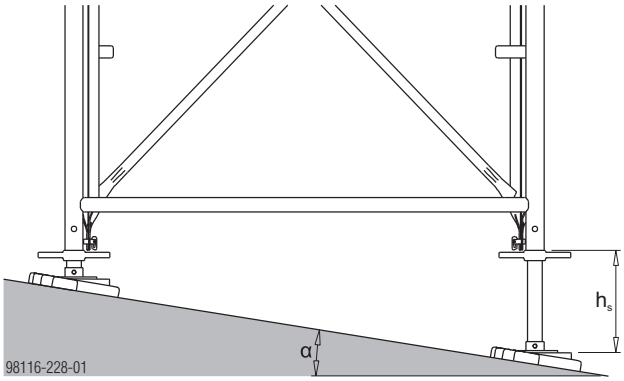


The 'Compensating plate' is made of tough plastic and is used to compensate for sloping support surfaces beneath load-bearing towers, without limiting their load-bearing capacity.

- Angle adjustment from 0 - 16 % in all directions.
- The baseplate is always supported across its entire area.
- The punch-marked number scale is a practical aid for setting and checking the required angle.
- No timber wedges or other chocks are needed.
- Max. size of baseplate: 15 x 15 cm
  (meaning that Eurex 60 550 cannot be stood on it)

**NOTICE**

- The 'Compensating plate' must be placed on concrete only.
- For the proof against slippage between the Compensating plate and the concrete, a friction coefficient of 0.33 must be assumed.




α ... max. angle 16 %
$h_s$ ... screw-jack extension length (determines design-load of load-bearing tower)

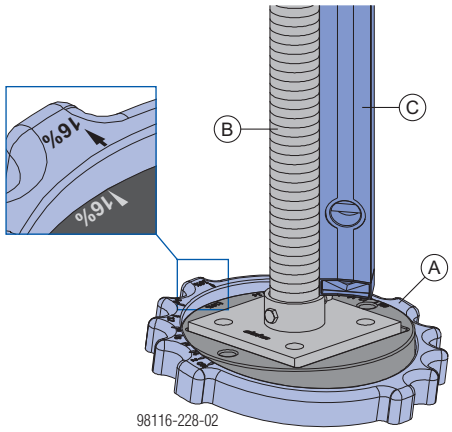
**Set-up instructions:**

➤ Place the 'Compensating plates' on concrete.

➤ Set the required angle with the black rotary plate. The numbers must correspond – see close-up.

➤ Position the Doka load-bearing tower.

➤ Make sure that the 'Compensating plate' is sitting firmly, and check that the leg is in the vertical.

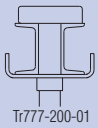
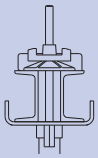



| | |
|---|---|
| **A** | Compensating plate |
| **B** | Screw-jack foot |
| **C** | Spirit level |

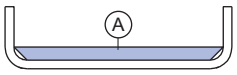
# Steel primary beams

The following tables will help you design superstructures on load-bearing towers.

## Conditions of use for securing through centres

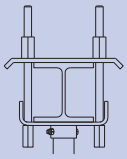
| Doka series walings | Width x height [mm] |  Tr777-200-01 Unsecured max. width = 165 mm |  Tr777-201-01 Secured centrally (necessary from 12%) max. width 165 mm |
|---|---|---|---|
| Multi-purpose waling WS10 Top50 | 153 x 100 | Yes | Yes |
| Multi-purpose waling WU12 Top50 | 163 x 120 | Yes | Yes |
| Facade waling WU14 | 172 x 140 | Yes [1)] | Yes [1)] |
| Multi-purpose waling SL-1 WU16 | 183 x 160 | Yes [1)] | Yes [1)] |
| System beam SL-1 | 226 x 240 | No | No |
| Hollow section 125x75 double | 2x75 x 125 | Yes | Yes |
| Hollow section 100x50 double | 2x50 x 100 | Yes | Yes |
| Alu box beam | 2x80 x 175 | Yes | Yes |

[1)] Hardwood support **(A)** needed.
Bevelled edges prevent it resting in the curved radius zone, resulting in a max. width of 188 mm.



Tr770-201-03

## Conditions of use for securing at each side

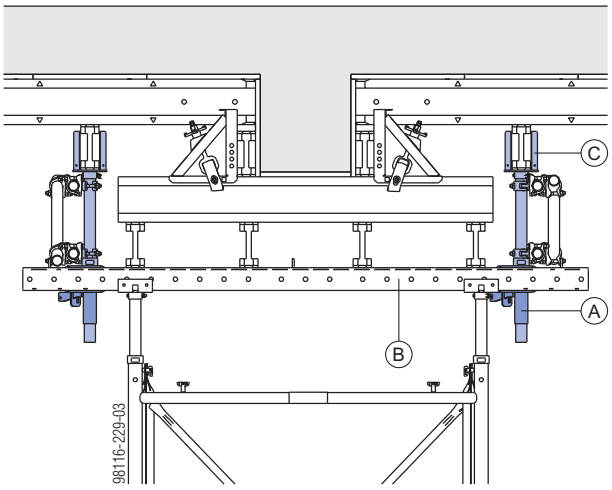
| Selection of I-girders | Width x height [mm] |  Tr777-202-01 Unsecured max. width = 165 mm |  Tr777-203-01 Secured centrally (necessary from 12%) max. width 150 mm |
|---|---|---|---|
| I 380 | 149 x 380 | Yes | Yes |
| I 425 | 163 x 425 | Yes | No |
| IPE 300 | 150 x 300 | Yes | Yes |
| IPE 330 | 160 x 330 | Yes | No |
| IPBl 140 | 140 x 133 | Yes | Yes |
| IPBl 160 | 160 x 152 | Yes | No |
| IPB 140 | 140 x 140 | Yes | Yes |
| IPB 160 | 160 x 160 | Yes | No |
| IPB 150 | 150 x 150 | Yes | Yes |
| Alu box beam | 100 x 225 | Yes | Yes |

# Drop beams

The Staxo 100 spindle adapter is used for drop beams incorporated into the slab. This enables precision positioning of the slab formwork to each side of the drop beams.

**NOTICE**

- The multi-purpose waling, the screw-jack and the load-bearing tower must be statically dimensioned as stipulated in the relevant User Information booklets.
- The extension length must be measured from the top of the multi-purpose waling.

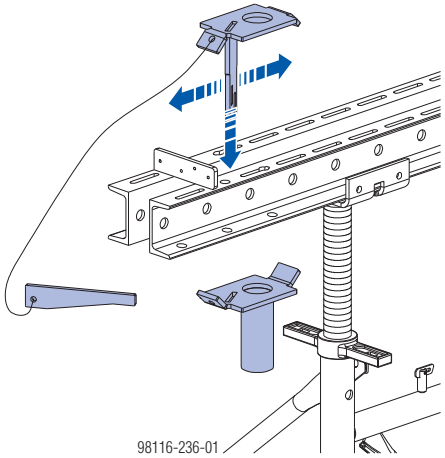



| | |
|---|---|
| **A** | Staxo 100 spindle adapter |
| **B** | Multi-purpose waling WS10 or WU12 |
| **C** | d3 4-way screw-jack head |

## Assembly

➤ Position the Staxo 100 spindle adapters at the multi-purpose walings.
When the adapters are positioned in this way the lugs project into the waling gap and keep the adapters from turning.

➤ Insert the wedge to secure the Staxo 100 spindle adapter to the multi-purpose waling.



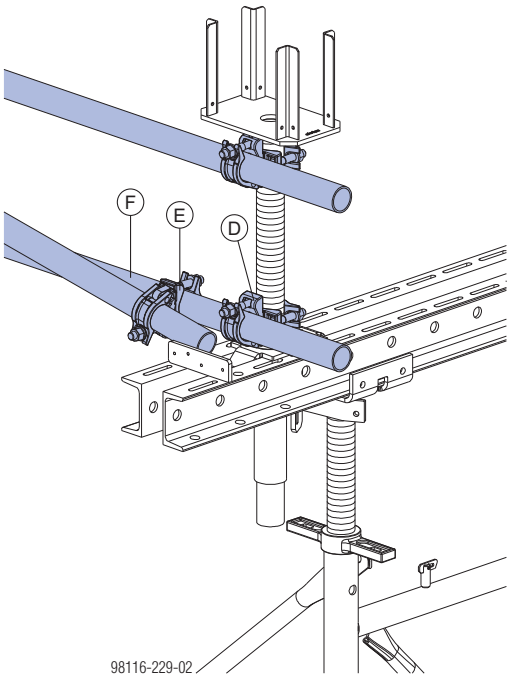

➤ Set the d3 4-way screw-jack head into the Staxo 100 spindle adapter.

**NOTICE**

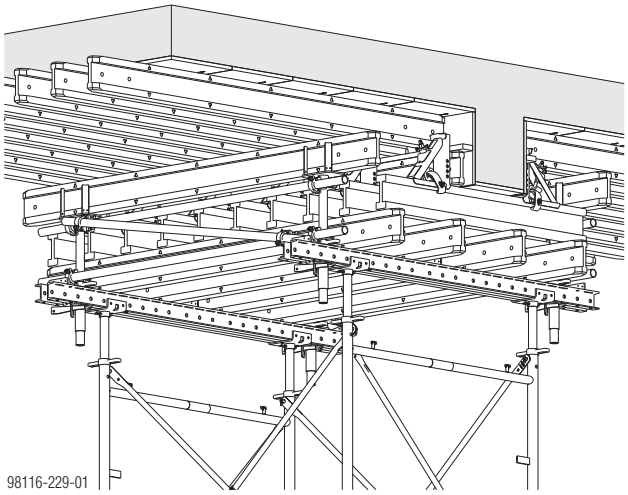
Screw jack U-heads have to be held in both directions at the head.

➤ Brace the screw-jack U-heads at right angles to the multi-purpose walings.

➤ On free-standing load-bearing towers, the screw-jack U-heads must be braced in both directions.



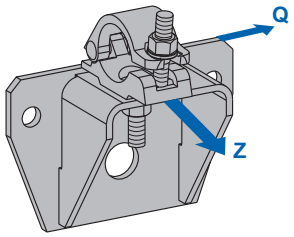

| | |
|---|---|
| **D** | Normal coupler 48mm |
| **E** | Swivel coupler 48mm |
| **F** | Scaffold tube 48.3mm |



# General

## Anchoring on the structure

### With Anchoring shoe for stair tower




Q ... shear force
Z ... tensile force

Permissible force transmission for each Anchoring shoe for stair tower:

- Z = 12 kN perpendicular to the wall
- Q = 6 kN parallel to the wall

Applies when fastened with Cone screw B 7cm and Universal climbing cone 15.0 or two dowels.

Methods for fixing in concrete:

- By using a Cone screw B 7cm to fix the anchoring shoe to an existing suspension point prepared with Universal climbing cones 15.0 (diameter of hole in anchoring shoe = 32 mm). Hardwood shim (essential for ensuring a firm fit) prevents damage to the concrete (scratch marks).
  This fixing method is only possible with anchoring shoes manufactured from 05/2009 onwards.
- With one or two dowels (diameter of hole in anchoring shoe = 18 mm).

**Required load-bearing capacity of the dowels used:**

- tensile force: $R_d \geq 23.1$ kN ($F_{permissible} \geq 14.0$ kN)
- Shear force: $R_d \geq 6.6$ kN ($F_{permissible} \geq 4.0$ kN)

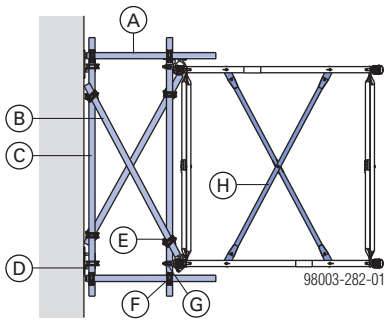
e.g. Hilti HST M16 - in uncracked B30 concrete, or equivalent products from other manufacturers. Follow the manufacturers' applicable fitting instructions.

### Design of the anchoring planes

The load-bearing tower is connected to the Anchoring shoe for stair tower by scaffold tubes and couplers.

**NOTICE**

When designing units assembled from tubes and couplers, all applicable standards and regulations must be observed.



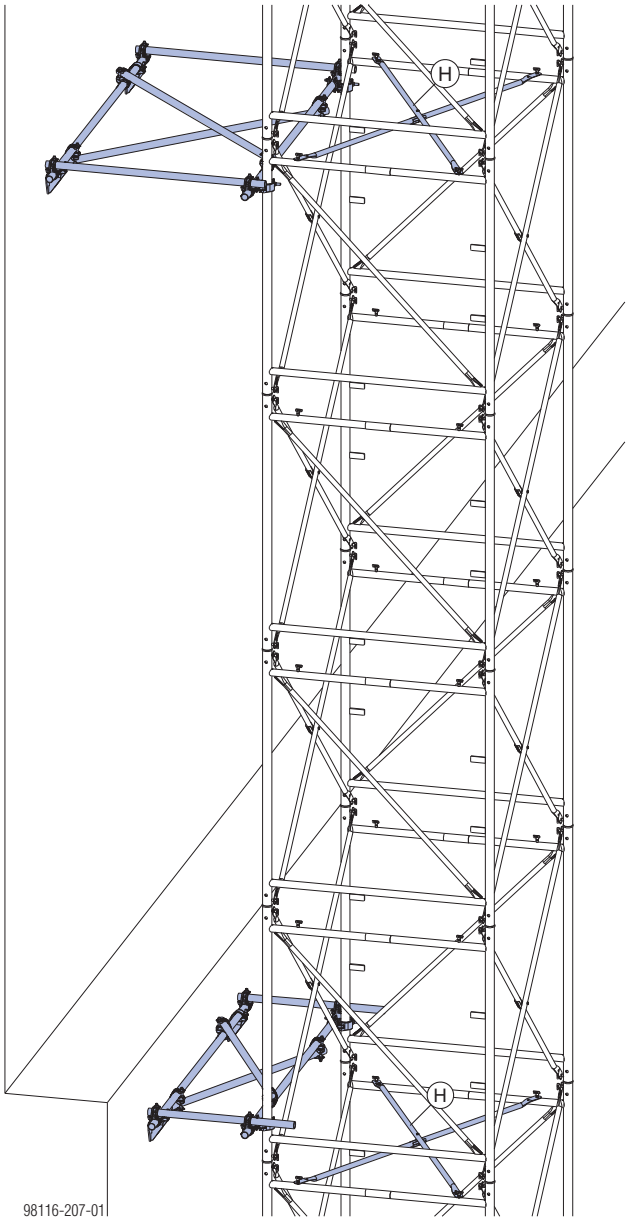

| | |
|---|---|
| **A** | Scaffold tube 48.3mm (L min = distance from structure) |
| **B** | Scaffold tube 48.3mm (L = variable) |
| **C** | Scaffold tube 48.3mm (L = variable) |
| **D** | Anchoring shoe for stair tower |
| **E** | Swivel coupler 48mm |
| **F** | Normal coupler 48mm |
| **G** | Transition swivel coupler 48/60mm |
| **H** | Horizontal diagonal cross |

## Vertical distance between the anchoring levels

- will depend on the assembly method, the wind loads and the design assumptions
- near junctions (frame-joins)

**NOTICE**

The load-bearing tower must be stiffened with a diagonal cross in the anchoring plane.




**H** Diagonal cross

**NOTICE**

- The actual design of the anchoring planes, and the maximum permitted distances from the structure, must be reviewed separately for each project.
- Adjacent load-bearing towers must be braced to one another as statically required, in a similar way to when towers are anchored to the structure.

# Back-stays/shoring supports for the load-bearing towers

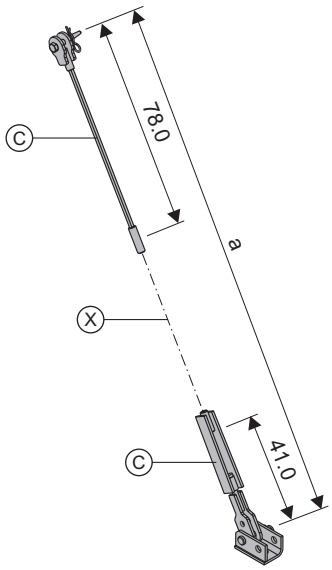
## Back-stay on the superstructure

### Back-stay for load-bearing towers

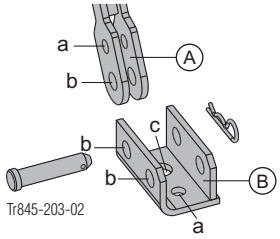
For transferring **planned horizontal loads** e.g. wind loads, concrete loads or in custom applications (e.g. on inclined load-bearing towers or for high load-bearing capacities).

**NOTICE**

Lashing straps are **not** suitable for transferring planned horizontal loads.

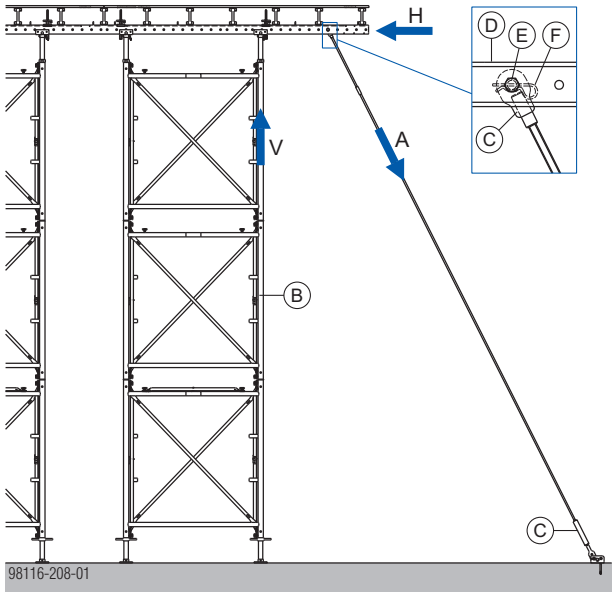



**Bores in screw-jack unit and 'Shoe (complete)'**




a ... diam. 21 mm
b ... diam. 27 mm
c ... diam. 35 mm

| | |
|---|---|
| **A** | Spindle unit |
| **B** | Shoe (complete) |

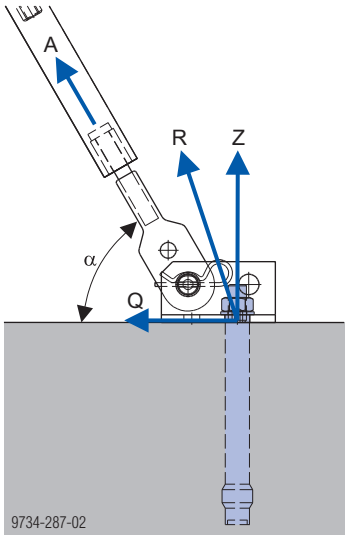



H ... Horizontal force
V ... Resulting vertical force from H
A ... Back-stay/shoring force

| | |
|---|---|
| **B** | Load-bearing tower |
| **C** | Bracing for load-bearing towers |
| **D** | Multi-purpose waling |
| **E** | Connecting pin 10cm |
| **F** | Spring cotter 5mm |
| **X** | Tie-rod 15.0 (not included in scope of supply)<br>Length = 'a' minus 119 cm<br>This leaves a 17 cm adjustment range available |

**NOTICE**

- Screw the tie-rods all the way in to the rod connectors of the back-stay (i.e. until they are fully engaged)!
- When calculating the leg loads, allow for the additional forces imposed by the back-stay!
- With high loads and long back-stays, watch out for any elongation of the back-stay!




A ... Back-stay force
Q ... Shear force (corresponds to horizontal force H)
R ... Resulting anchor force
Z ... Anchor tensile force

### Back-stay force $A_k$ = 30 kN ($A_d$ = 45 kN)

| Anchor force [kN] | $Z_k$ | $Q_k = H_k$ | $R_k$ | $Z_d$ | $Q_d = H_d$ | $R_d$ |
|---|---|---|---|---|---|---|
| α = 30° a) | 18.2 | 26.0 | 31.7 | 27.3 | 39.0 | 47.6 |
| α = 45° a) | 27.6 | 21.2 | 34.8 | 41.4 | 31.8 | 52.2 |
| α = 60° a) | 44.8 | 15.0 | 47.2 | 67.2 | 22.5 | 70.8 |

### Back-stay force $A_k$ = 40 kN ($A_d$ = 60 kN)

| Anchor force [kN] | $Z_k$ | $Q_k = H_k$ | $R_k$ | $Z_d$ | $Q_d = H_d$ | $R_d$ |
|---|---|---|---|---|---|---|
| α = 30° a) | 24.3 | 34.6 | 42.3 | 36.5 | 51.9 | 63.5 |
| α = 45° a) | 36.8 | 28.3 | 46.4 | 55.2 | 42.5 | 69.6 |
| α = 60° c) | 59.7 | 20.0 | 62.9 | 89.6 | 30.0 | 94.4 |

### Back-stay force $A_k$ = 50 kN ($A_d$ = 75 kN)

| Anchor force [kN] | $Z_k$ | $Q_k = H_k$ | $R_k$ | $Z_d$ | $Q_d = H_d$ | $R_d$ |
|---|---|---|---|---|---|---|
| α = 30° b) | 30.4 | 43.3 | 52.9 | 45.6 | 65.0 | 79.4 |
| α = 45° b) | 46.0 | 35.4 | 58.0 | 69.0 | 53.1 | 87.0 |
| α = 60° c) | 74.6 | 25.0 | 78.7 | 111.9 | 37.5 | 118.1 |

Examples of anchor points in uncracked C 25/30 concrete:
a) HILTI heavy duty anchor HSL M20
b) HILTI self-undercutting anchor HDA-T-M16
c) HILTI self-undercutting anchor HDA-P-M20, with an extra 50x10 washer with a diam. 22 mm hole
or equivalent products from other manufacturers.
Follow the manufacturer's applicable fitting instructions.

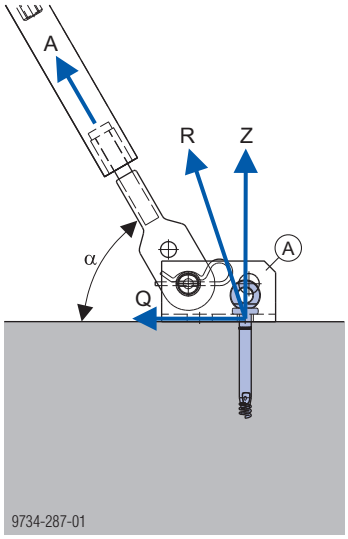
**CAUTION**

➤ The "Back-stay for load-bearing towers" must not be dismounted until it is certain that there is sufficient stability for the load-bearing tower.

## Anchored with Doka Express anchor 16x125mm

**Note:**

The 'Shoe (complete)' must be turned by 180° in the horizontal.




**A** Shoe (complete)

### Back-stay force [kN]

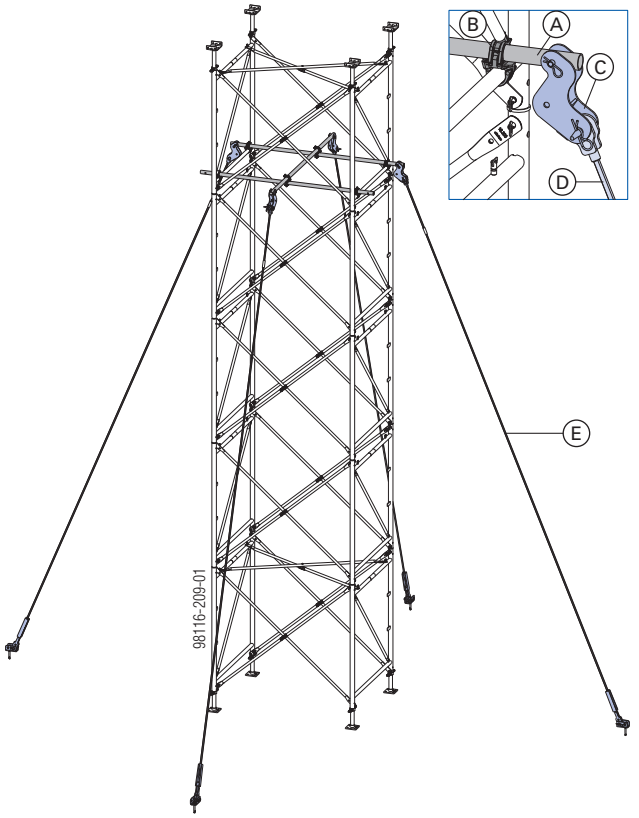
| | $f_{ck,cube,current}$ > 15 N/mm² | | $f_{ck,cube,current}$ > 25 N/mm² | |
|---|---|---|---|---|
| | $A_k$ | $A_d$ | $A_k$ | $A_d$ |
| α = 30° | 15.2 | 22.8 | 19.7 | 29.6 |
| α = 45° | 12.5 | 18.8 | 16.3 | 24.5 |
| α = 60° | 9.1 | 13.7 | 11.8 | 17.7 |

Follow the directions in the 'Doka express anchor 16x125mm' Fitting Instructions!

# Temporary back-stays directly on the load-bearing tower, for site-erection

**NOTICE**

Only suitable for use during erection of the load-bearing tower, but **not** for transferring planned horizontal loads.



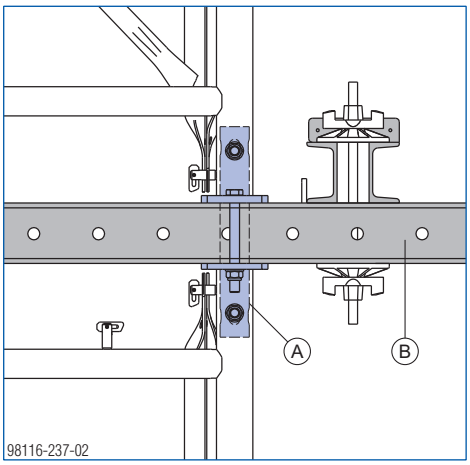

| | |
|---|---|
| **A** | Scaffold tube 48.3mm (with drilled hole ⌀17mm) |
| **B** | Normal coupler 48mm |
| **C** | Spindle connecting plate T |
| **D** | Back-stay for load-bearing towers |
| **E** | Tie-rod 15.0mm |

Straps, chains or cables can be used for temporary back-staying for erection purposes.

# Intermediate level made up with multi-purpose walings

Intermediate levels made up from multi-purpose walings permit the transfer of horizontal loads. The possibilities for using multi-purpose walings for this purpose are as follows:

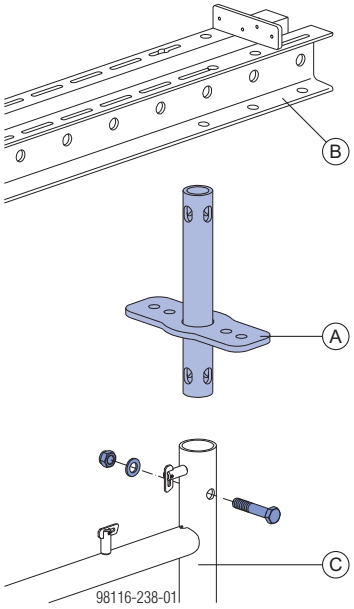
- Connection of a back-stay
- Support against / anchoring to the structure
- Formation of a truss of cross-braced horizontal multi-purpose walings




**A** Coupler WS10 250
**B** Multi-purpose waling WS10

## Assembly

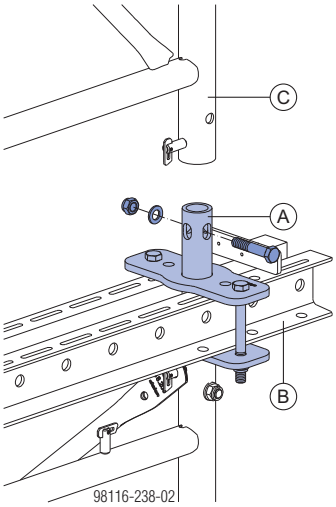
➤ Insert Coupler WS10 250 into the d3 frame and bolt it into position.
➤ Set the multi-purpose waling on the coupler.




**A** Coupler WS10 250
**B** Multi-purpose waling WS10
**C** d3 frame

➤ Clamp the Multi-purpose waling WS10 to the coupler.

➤ Set the next d3 frame on the coupler and bolt it into position.




**A** Coupler WS10 250
**B** Multi-purpose waling WS10
**C** d3 frame

The scope of supply of the Coupler WS10 250 includes:

- 2 hexagon bolts ISO 4014 M16x80
- 2 hexagon bolts ISO 4014 M16x160
- 4 washers ISO 7089 16
- 4 hexagon nuts ISO 7042 M16 (self-locking)

**Note:**
As an alternative to the bolts, it is also possible to establish the connection between coupler and d3 frame using Spring locked connecting pins 16mm.

# Transporting, stacking and storing

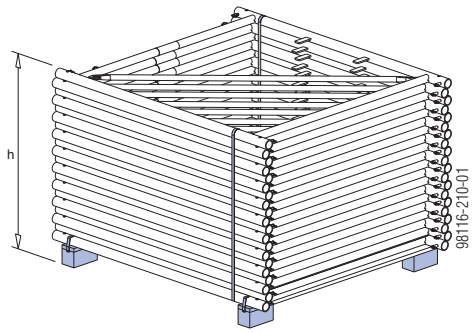
**Utilise the benefits of Doka multi-trip packaging on your site.**
Multi-trip packaging such as containers, stacking pallets and skeleton transport boxes keep everything in place on the site, minimise time wasted searching for parts, and streamline the storage and transport of system components, small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

## Stacking baseblocks

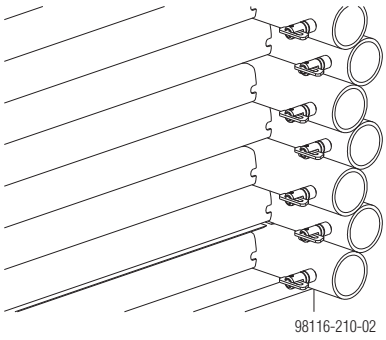
Stacking the d3 frames:
- Max. 20 d3 frames per stack!

**CAUTION**
Risk of tipping over!
➤ Do not mix different sizes of frame in the same stack.

➤ Place strapping belts around the d3 frames and the stacking baseblocks at each corner, to strap them firmly together.




h ... 122 cm



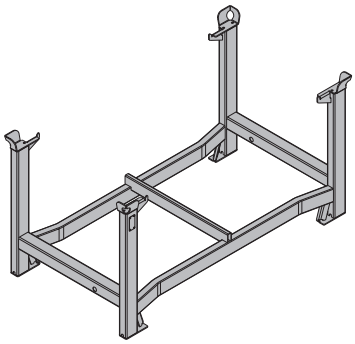

Stack the frames at an offset to one another.

## Doka multi-trip transport box

Storage and transport device for small items

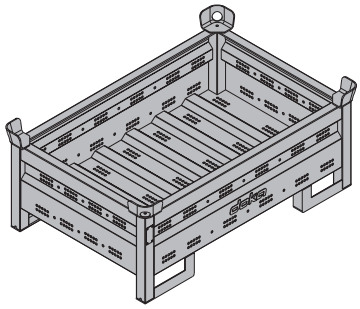
### Doka stacking pallet 1.55x0.85m and 1.20x0.80m

Storage and transport devices for long items.



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

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



Max. carrying capacity: 750 kg (1650 lbs)
Permitted imposed load: 7200 kg (15870 lbs)

### Using Doka stacking pallets as storage units

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

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

**NOTICE**

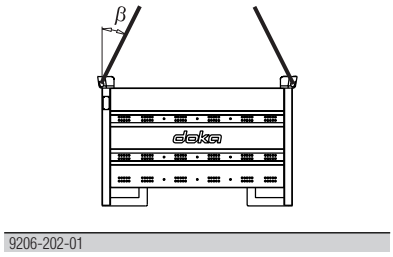
- Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.
- **How to use with Bolt-on castor set B:**
  - Always apply the fixing brake when the container is 'parked'.
  - When Doka stacking pallets are stacked, the bottom pallet must NOT be one with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

## Using Doka multi-trip transport boxes as transport devices

### Lifting by crane

**NOTICE**

- Multi-trip packaging items must be lifted individually.
- Use a suitable crane lifting tackle (e.g. Doka 4-part chain 3.20m).
  Do not exceed the permitted load-bearing capacity.
- Spread angle β max. 30°!



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### Repositioning by forklift truck or pallet stacking truck

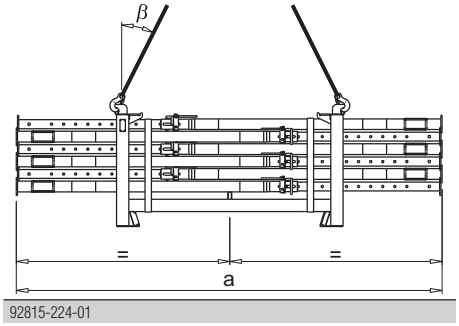
The forks can be inserted under either the broadside or the narrowside of the containers.

## Using Doka stacking pallets as transport devices

### Lifting by crane

**NOTICE**

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



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

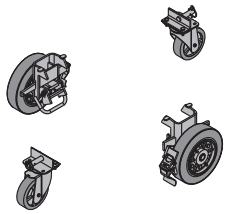
### Repositioning by forklift truck or pallet stacking truck

**NOTICE**

- Load the items centrically.
- Fasten the load to the stacking pallet so that it cannot slide or tip out.

# Bolt-on castor set B

The Bolt-on caster set B turns the stacking pallet into a fast and manoeuvrable transport device.
Suitable for drive-through access openings > 90 cm.



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

- Doka accessory box
- Doka stacking pallets

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

# Structural design

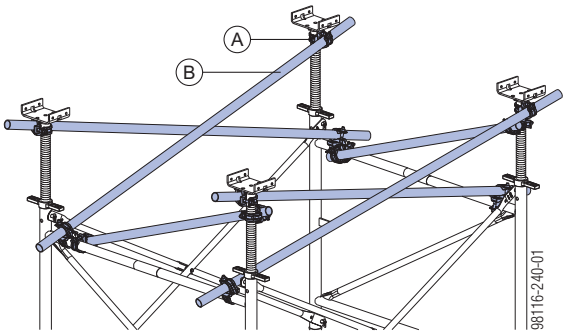
## Preconditions for use

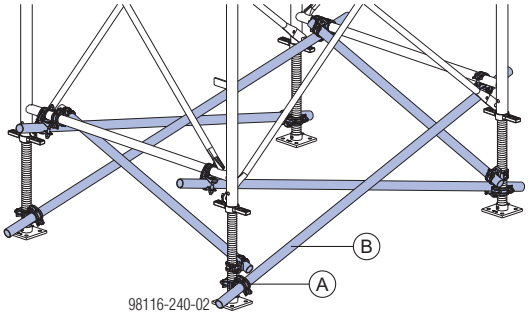
- On multi-plane towers with different inter-frame spaces, it is always the smallest inter-frame space that determines the design load.
- For heights not shown within the chart limits, load values can be interpolated.
- Primary beams have to be secured to prevent overturning (in much the same way as in conventional applications with primary beams and secondary beams).
- Separate proof must be provided, by a suitably skilled person, regarding the foundation. Particular attention must be paid here to the ground-bearing pressure!
- Intermediate anchoring planes may be necessary while the towers are being erected.
- The allowable leg loads stated here reflect a 2.5 : 1 safety factor.
- For technical information not shown or indicated, consult Doka technician.

**NOTICE**

Secure the load-bearing tower against slippage and tipover, in all situations!

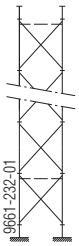
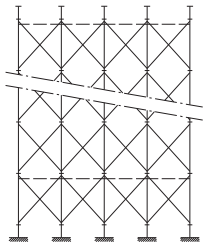
## Bracing in the head and base zone



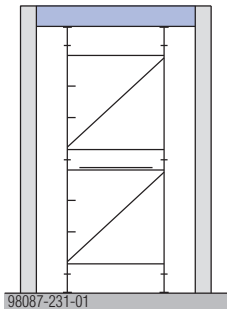
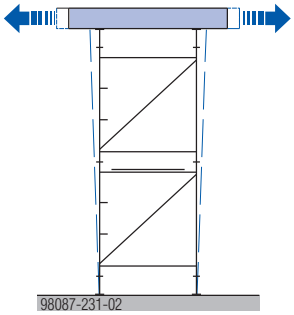

**A** Swivel coupler 48mm
**B** Scaffold tube 48.3mm

## Set-up configurations

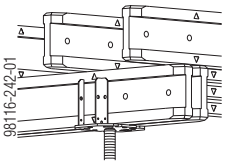
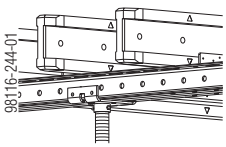
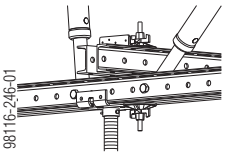
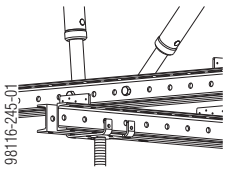
| As tower<br>Number of frame planes = 2 | With multiple towerframe-planes<br>Number of frame planes ≥ 3 |
|---|---|
|  |  |



## Scope of applicability

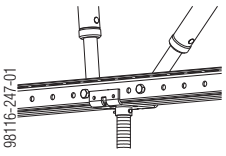
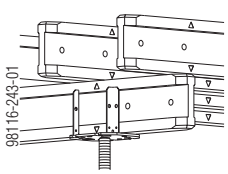
| Top-held systems | Free-standing systems |
|---|---|
|  |  |



| Head units restrained | |
|---|---|
| Double primary beam H20 or<br>Single primary beam I tec 20 | Multi-purpose waling |
|  |  |
| Friction-locked, unloaded secondary beam | Transverse, unloaded WS10 between longitudinal WS10 and screw jack U-heads |
|  |  |

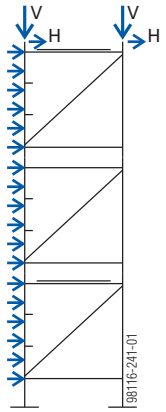


Max. influence width of the secondary beams for the superstructure: 50 cm

| Head units **not restrained**<br>(consult Doka technician to determine load-bearing capacities) | |
|---|---|
| Superstructure<br>with spindle struts | Single primary beam H20 |
|  |  |

# Permitted leg loads

### Free-standing systems (without bracing, without holding device)

| Frame size [m] | Screw-jack extension lengths [cm] at top and bottom respectively | | Inter-frame space [m] | Number of frame planes connected to one another by diagonal crosses (multi-plane tower) | Max. height [m] of load-bearing tower without intermediate anchoring (Intermediate anchoring planes may be necessary while the towers are being erected) | Permitted leg load V [kN] (head units restrained) | |
|---|---|---|---|---|---|---|---|
| | Unbraced | Braced | | | | | |
| up to 1.80 | 30 | 70 | ≥ 1.5 | ≥ 2 | 7.8 | 60 |  |
| | | | | | 11.4 | 54 | |
| | | | | | 13.2 | 50 | |
| | | | 1.0 | ≥ 2 | 7.8 | 54 | |
| | | | | ≥ 3 | | 58 | |
| | | | | ≥ 5 | 11.4 | 56 | |
| | | | | | 13.2 | 54 | |
| up to 1.20 | 30 | 45 | 1.0 | ≥ 2 | 7.8 | 66 | |
| | | | | ≥ 3 | | 73 | |
| | | | | ≥ 5 | 12.6 | 70 | |
| | | | | | 15.0 | 65 | |
| | | | 0.6 | ≥ 5 | 7.8 | 68 | |
| | | | | ≥ 8 | | 70 | |
| | | | | | 10.2 | 67 | |
| | | | | | 12.6 | 63 | |
| | | | | | 15.0 | 59 | |



- The following loads are taken into consideration as horizontal loads H:
  - Working wind 0.2 kN/m² (64.4 km/h) at the load-bearing tower, but not at the superstructure and
  - 2.5% of vertical load V or
    1% of vertical load V + 1kN per leg additionally

### Top-held systems (e.g. enclosed space, or with bracing)

| Configuration | Maximum screw-jack extension at top and bottom respectively [cm] | | Permitted leg load [kN] (head units restrained) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unbraced | Braced | Clear shoring height including screw-jack extension [m] | | | | | | | | | | | | | | | | |
| | | | 1.8 | 2.4 | 3.0 | 3.2 | 3.8 | 4.2 | 6.0 | 7.4 | 7.6 | 9.1 | 10.7 | 12.2 | 13.7 | 15.2 | 16.8 | 18.3 | 19.8 | 21.3 |
| Tower with 0.90m, 1.20m or 1.80m frames | 30 | 70 | - | 73 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 72 | 71 | 71 | 71 | 71 | 71 | 71 | 70 | 70 |
| | 45 | | - | - | 66 | 66 | 66 | 65 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 |
| | 70 | | - | - | - | 51 | 53 | 54 | 58 | 57 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 48 |
| | 70 at top 130 at bottom | - | - | - | - | - | 34 | 35 | 38 | 41 | 41 | 40 | 40 | 39 | 39 | 38 | 37 | 37 | 36 | 36 |
| Tower with 0.90m or 1.20m frames | 30 | 70 | 93 | 93 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 91 | 91 |
| | 45 | | 83 | 83 | 83 | 83 | 83 | 84 | 83 | 82 | 82 | 82 | 81 | 81 | 80 | 79 | 79 | 78 | 78 | 77 |
| | 70 | | 65 | 65 | 65 | 65 | 66 | 66 | 65 | 64 | 64 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 |
| Tower with 0.90m, 1.20m or 1.80m frames and 0.90m end frames | 30 | 45 | - | - | 94 | 94 | 94 | 94 | 94 | 79 | 79 | 76 | 74 | 73 | 73 | 72 | 72 | 71 | 71 | 70 |

- To carry horizontal loads safely, support the superstructure or slab formwork on existing parts of the structure if possible, or else use external bracing.
- The table above is for load-bearing towers with a footprint of at least 1.5 x 1.5 m. Form multi-plane towers if the diagonal crosses used are smaller than 1.5 m.
  Examples:
  - Diagonal cross XX.100 - min. 3 planes
  - Diagonal cross XX.060 - min. 4 planes

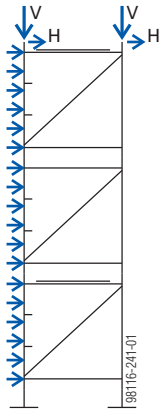
## Load-bearing capacities of specific structures

In addition to the 'systematic' load-bearing capacities stated in the tables above, the table below sets out load-bearing capacities for specific structures particularly suitable for supporting slabs. These can be used or modified by application of appropriate engineering knowledge.

**Note:**

- Higher load-bearing capacities can also be achieved by using frames 1.20m in the topmost storey above frames 1.80m.
- Consult your Doka technician for information about load-bearing capacities of additional structures.

**Free-standing systems (without back-stay, without holding device)**

| Number of frames and frame sizes [m] | Screw-jack extension [cm] (unbraced) | | Inter-frame space [m] | N° of frame planes connected to one another by diagonal crosses (multi-plane tower) | Max. height [m] of load-bearing tower without intermediate anchoring (Intermediate anchoring planes may be necessary while the towers are being erected) | Permitted leg load V [kN] (head units restrained) | |
|---|---|---|---|---|---|---|---|
| | in the head zone | in the base zone | | | | | |
| 1 x 1.80 | 30 | 40 | ≥ 1.5 | ≥ 2 | 2.5 | 47 |   |
| 1 x 1.80 | 30 | 50 | | | 2.6 | 40 | |
| 1 x 1.80 | 30 | 60 | | | 2.7 | 33 | |
| 2 x 0.90 | 30 | 70 | | | 2.8 | 45 | |
| 2 x 1.20 | 30 | 40 | | | 2.8 | 55 | |
| 2 x 1.80 | 30 | 40 | | | 4.3 | 52 | |
| 2 x 1.80 | 30 | 50 | | | 4.4 | 42 | |
| 2 x 1.80 | 30 | 60 | | | 4.5 | 33 | |
| 2 x 1.80 | 30 | 70 | | | 4.6 | 28 | |
| 2 x 1.80 | 50 | 50 | | | 4.6 | 40 | |
| 2 x 1.80 | 50 | 80 | | | 4.9 | 19 | |
| 3 x 1.80 | 30 | 60 | | | 6.3 | 28 | |

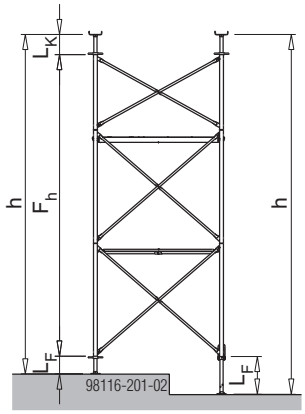
- The following loads are taken into consideration as horizontal loads H:
  - Working wind 0.2 kN/m² (64.4 km/h) at the load-bearing tower, but not at the superstructure and
  - 2.5% of vertical load V or
    1% of vertical load V + 1kN per leg additionally

# Height ranges and materials schedule

## Frame-sizes up to 1.80 m

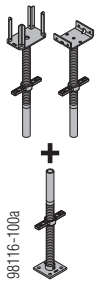
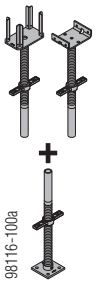
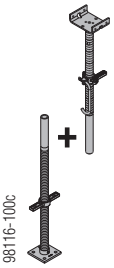
**NOTICE**

- The minimum values $h_{min.}$ given in Table A are only applicable if the biggest possible frame is always used in the base section.
- The **lowering distance of 6 cm** is already allowed for in Table A!
- $L_K$ and $L_F$ are in accordance with the structural design. In some cases, the structural design will permit greater extension lengths - see Tables B and C in the section headed 'Height adjustment'.




1.80m, 1.20m and 0.90m frames are possible here.

**Table A**

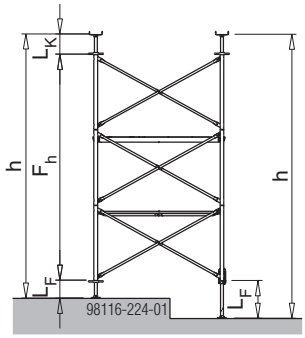
| Fixed height of frame $F_h$ [m] | Variant 1 $L_K$ = max. 30 cm $L_F$ = max. 30 cm | | | Variant 2 $L_K$ = max. 45 cm $L_F$ = max. 45 cm | | | Variant 3 $L_K$ = max. 70 cm $L_F$ = max. 70 cm | | | Basic items | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| |   h [m] min. - max. | d3 4-way screw-jack head or d3 screw jack U-head | d3 screw jack foot |   h [m] min. - max. | d3 4-way screw-jack head or d3 screw jack U-head | d3 screw jack foot |   h [m] min. - max. | Heavy-duty screw jack 70 top | d3 screw jack foot 80 | d3 frame 0.90m | d3 frame 1.20m | d3 frame 1.80m | Diagonal cross 9.xxx | Diagonal cross 12.xxx | Diagonal cross 18.xxx | d3 coupler | Spring locked connecting pin 16mm |
| 1.20 | 1.58 - 1.79 | 4 | 4 | 1.58 - 2.09 | 4 | 4 | 2.13 - 2.59 | 4 | 4 | — | 2 | — | — | 3 | — | — | — |
| 1.80 | 1.99 - 2.39 | 4 | 4 | 1.99 - 2.69 | 4 | 4 | 2.13 - 3.19 | 4 | 4 | — | — | 2 | — | 1 | 2 | — | — |
| 1.80 | 1.99 - 2.39 | 4 | 4 | 1.99 - 2.69 | 4 | 4 | 2.44 - 3.19 | 4 | 4 | 4 | — | — | 4 | 2 | — | 4 | 8 |
| 2.10 | 2.29 - 2.69 | 4 | 4 | 2.29 - 2.99 | 4 | 4 | 2.55 - 3.49 | 4 | 4 | 2 | 2 | — | 2 | 4 | — | 4 | 8 |
| 2.40 | 2.59 - 2.99 | 4 | 4 | 2.59 - 3.29 | 4 | 4 | 2.61 - 3.79 | 4 | 4 | — | 4 | — | — | 6 | — | 4 | 8 |
| 2.70 | 2.89 - 3.29 | 4 | 4 | 2.89 - 3.59 | 4 | 4 | 3.09 - 4.09 | 4 | 4 | 2 | — | 2 | 2 | 2 | 2 | 4 | 8 |
| 3.00 | 3.19 - 3.59 | 4 | 4 | 3.19 - 3.89 | 4 | 4 | 3.21 - 4.39 | 4 | 4 | — | 2 | 2 | — | 4 | 2 | 4 | 8 |
| 3.30 | 3.49 - 3.89 | 4 | 4 | 3.49 - 4.19 | 4 | 4 | 3.69 - 4.69 | 4 | 4 | 2 | 4 | — | 2 | 6 | — | 8 | 16 |
| 3.60 | 3.79 - 4.19 | 4 | 4 | 3.79 - 4.49 | 4 | 4 | 3.81 - 4.99 | 4 | 4 | — | — | 4 | — | 2 | 4 | 4 | 8 |
| 3.90 | 4.09 - 4.49 | 4 | 4 | 4.09 - 4.79 | 4 | 4 | 4.29 - 5.29 | 4 | 4 | 2 | 2 | 2 | 2 | 4 | 2 | 8 | 16 |
| 4.20 | 4.39 - 4.79 | 4 | 4 | 4.39 - 5.09 | 4 | 4 | 4.41 - 5.59 | 4 | 4 | — | 4 | 2 | — | 6 | 2 | 8 | 16 |
| 4.50 | 4.69 - 5.09 | 4 | 4 | 4.69 - 5.39 | 4 | 4 | 4.89 - 5.89 | 4 | 4 | 2 | — | 4 | 2 | 2 | 4 | 8 | 16 |
| 4.80 | 4.99 - 5.39 | 4 | 4 | 4.99 - 5.69 | 4 | 4 | 5.01 - 6.19 | 4 | 4 | — | 2 | 4 | — | 4 | 4 | 8 | 16 |
| 5.10 | 5.29 - 5.69 | 4 | 4 | 5.29 - 5.99 | 4 | 4 | 5.49 - 6.49 | 4 | 4 | 2 | 4 | 2 | 2 | 6 | 2 | 12 | 24 |
| 5.40 | 5.59 - 5.99 | 4 | 4 | 5.59 - 6.29 | 4 | 4 | 5.61 - 6.79 | 4 | 4 | — | — | 6 | — | 2 | 6 | 8 | 16 |
| 5.70 | 5.89 - 6.29 | 4 | 4 | 5.89 - 6.59 | 4 | 4 | 6.09 - 7.09 | 4 | 4 | 2 | 2 | 4 | 2 | 4 | 4 | 12 | 24 |
| 6.00 | 6.19 - 6.59 | 4 | 4 | 6.19 - 6.89 | 4 | 4 | 6.21 - 7.39 | 4 | 4 | — | 4 | 4 | — | 6 | 4 | 12 | 24 |
| 6.30 | 6.49 - 6.89 | 4 | 4 | 6.49 - 7.19 | 4 | 4 | 6.69 - 7.69 | 4 | 4 | 2 | — | 6 | 2 | 2 | 6 | 12 | 24 |
| 6.60 | 6.79 - 7.19 | 4 | 4 | 6.79 - 7.49 | 4 | 4 | 6.81 - 7.99 | 4 | 4 | — | 2 | 6 | — | 4 | 6 | 12 | 24 |
| 6.90 | 7.09 - 7.49 | 4 | 4 | 7.09 - 7.79 | 4 | 4 | 7.29 - 8.29 | 4 | 4 | 2 | 4 | 4 | 2 | 6 | 4 | 16 | 32 |
| 7.20 | 7.39 - 7.79 | 4 | 4 | 7.39 - 8.09 | 4 | 4 | 7.41 - 8.59 | 4 | 4 | — | — | 8 | — | 2 | 8 | 12 | 24 |
| 7.50 | 7.69 - 8.09 | 4 | 4 | 7.69 - 8.39 | 4 | 4 | 7.89 - 8.89 | 4 | 4 | 2 | 2 | 6 | 2 | 4 | 6 | 16 | 32 |
| 7.80 | 7.99 - 8.39 | 4 | 4 | 7.99 - 8.69 | 4 | 4 | 8.01 - 9.19 | 4 | 4 | — | 4 | 6 | — | 6 | 6 | 16 | 32 |
| 8.10 | 8.29 - 8.69 | 4 | 4 | 8.29 - 8.99 | 4 | 4 | 8.49 - 9.49 | 4 | 4 | 2 | — | 8 | 2 | 2 | 8 | 16 | 32 |
| 8.40 | 8.59 - 8.99 | 4 | 4 | 8.59 - 9.29 | 4 | 4 | 8.61 - 9.79 | 4 | 4 | — | 2 | 8 | — | 4 | 8 | 16 | 32 |
| 8.70 | 8.89 - 9.29 | 4 | 4 | 8.89 - 9.59 | 4 | 4 | 9.09 - 10.09 | 4 | 4 | 2 | 4 | 6 | 2 | 6 | 6 | 20 | 40 |
| 9.00 | 9.19 - 9.59 | 4 | 4 | 9.19 - 9.89 | 4 | 4 | 9.21 - 10.39 | 4 | 4 | — | — | 10 | — | 2 | 10 | 16 | 32 |
| 9.30 | 9.49 - 9.89 | 4 | 4 | 9.49 - 10.29 | 4 | 4 | 9.69 - 10.69 | 4 | 4 | 2 | 2 | 8 | 2 | 4 | 8 | 20 | 40 |

Choose the right diagonal crosses for the distance between the frames.

The schedule of materials does not include scaffold planking units.

The scaffold planking units have to be planned separately for each set-up configuration. Provided they are located in the same level, they replace the Diagonal crosses 12.xxx needed for horizontal bracing. This reduction in the number of diagonal crosses needed must be allowed for in the schedule of materials.

## Frame-sizes up to 1.20 m

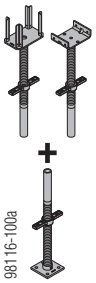
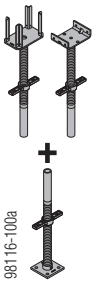
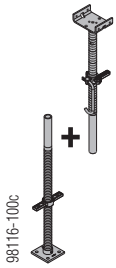



1.20m and 0.90m frames are possible here.

**NOTICE**

- The minimum values $h_{min.}$ given in Table A are only applicable if the biggest possible frame is always used in the base section.
- The **lowering distance of 6 cm** is already allowed for in Table A!
- $L_K$ and $L_F$ are in accordance with the structural design. In some cases, the structural design will permit greater extension lengths - see Tables B and C in the section headed 'Height adjustment'.

**Table A**

| Fixed height of frame $F_h$ [m] | Variant 1 $L_K$ = max. 30 cm $L_F$ = max. 30 cm | | | Variant 2 $L_K$ = max. 45 cm $L_F$ = max. 45 cm | | | Variant 3 $L_K$ = max. 70 cm $L_F$ = max. 70 cm | | | Basic items | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| |  h [m] min. - max. | d3 4-way screw-jack head or d3 screw jack U-head | d3 screw jack foot |  h [m] min. - max. | d3 4-way screw-jack head or d3 screw jack U-head | d3 screw jack foot |  h [m] min. - max. | Heavy-duty screw jack 70 top | d3 screw jack foot 80 | d3 frame 0.90m | d3 frame 1.20m | Diagonal cross 9.xxx | Diagonal cross 12.xxx | d3 coupler | Spring locked connecting pin 16mm |
| 1.20 | 1.58 - 1.79 | 4 | 4 | 1.58 - 2.09 | 4 | 4 | 2.13 - 2.59 | 4 | 4 | — | 2 | — | 3 | — | — |
| 1.80 | 1.99 - 2.39 | 4 | 4 | 1.99 - 2.69 | 4 | 4 | 2.44 - 3.19 | 4 | 4 | 4 | - | 4 | 1 | 4 | 8 |
| 2.10 | 2.29 - 2.69 | 4 | 4 | 2.29 - 2.99 | 4 | 4 | 2.55 - 3.49 | 4 | 4 | 2 | 2 | 2 | 3 | 4 | 8 |
| 2.40 | 2.59 - 2.99 | 4 | 4 | 2.59 - 3.29 | 4 | 4 | 2.61 - 3.79 | 4 | 4 | — | 4 | — | 5 | 4 | 8 |
| 2.70 | 2.89 - 3.29 | 4 | 4 | 2.89 - 3.59 | 4 | 4 | 3.34 - 4.09 | 4 | 4 | 6 | - | 6 | 2 | 8 | 16 |
| 3.00 | 3.19 - 3.59 | 4 | 4 | 3.19 - 3.89 | 4 | 4 | 3.39 - 4.39 | 4 | 4 | 4 | 2 | 4 | 4 | 8 | 16 |
| 3.30 | 3.49 - 3.89 | 4 | 4 | 3.49 - 4.19 | 4 | 4 | 3.69 - 4.69 | 4 | 4 | 2 | 4 | 2 | 6 | 8 | 16 |
| 3.60 | 3.79 - 4.19 | 4 | 4 | 3.79 - 4.49 | 4 | 4 | 3.81 - 4.99 | 4 | 4 | — | 6 | — | 8 | 8 | 16 |
| 3.90 | 4.09 - 4.49 | 4 | 4 | 4.09 - 4.79 | 4 | 4 | 4.29 - 5.29 | 4 | 4 | 6 | 2 | 6 | 4 | 12 | 24 |
| 4.20 | 4.39 - 4.79 | 4 | 4 | 4.39 - 5.09 | 4 | 4 | 4.41 - 5.59 | 4 | 4 | 4 | 4 | 4 | 6 | 12 | 24 |
| 4.50 | 4.69 - 5.09 | 4 | 4 | 4.69 - 5.39 | 4 | 4 | 4.89 - 5.89 | 4 | 4 | 2 | 6 | 2 | 8 | 12 | 24 |
| 4.80 | 4.99 - 5.39 | 4 | 4 | 4.99 - 5.69 | 4 | 4 | 5.01 - 6.19 | 4 | 4 | — | 8 | — | 10 | 12 | 24 |
| 5.10 | 5.29 - 5.69 | 4 | 4 | 5.29 - 5.99 | 4 | 4 | 5.49 - 6.49 | 4 | 4 | 6 | 4 | 6 | 6 | 16 | 32 |
| 5.40 | 5.59 - 5.99 | 4 | 4 | 5.59 - 6.29 | 4 | 4 | 5.61 - 6.79 | 4 | 4 | 4 | 6 | 4 | 8 | 16 | 32 |
| 5.70 | 5.89 - 6.29 | 4 | 4 | 5.89 - 6.59 | 4 | 4 | 6.09 - 7.09 | 4 | 4 | 2 | 8 | 2 | 10 | 16 | 32 |
| 6.00 | 6.19 - 6.59 | 4 | 4 | 6.19 - 6.89 | 4 | 4 | 6.21 - 7.39 | 4 | 4 | — | 10 | — | 12 | 16 | 32 |
| 6.30 | 6.49 - 6.89 | 4 | 4 | 6.49 - 7.19 | 4 | 4 | 6.69 - 7.69 | 4 | 4 | 6 | 6 | 6 | 8 | 20 | 40 |
| 6.60 | 6.79 - 7.19 | 4 | 4 | 6.79 - 7.49 | 4 | 4 | 6.81 - 7.99 | 4 | 4 | 4 | 8 | 4 | 10 | 20 | 40 |
| 6.90 | 7.09 - 7.49 | 4 | 4 | 7.09 - 7.79 | 4 | 4 | 7.29 - 8.29 | 4 | 4 | 2 | 10 | 2 | 12 | 20 | 40 |
| 7.20 | 7.39 - 7.79 | 4 | 4 | 7.39 - 8.09 | 4 | 4 | 7.41 - 8.59 | 4 | 4 | — | 12 | — | 14 | 20 | 40 |
| 7.50 | 7.69 - 8.09 | 4 | 4 | 7.69 - 8.39 | 4 | 4 | 7.89 - 8.89 | 4 | 4 | 6 | 8 | 6 | 10 | 24 | 48 |
| 7.80 | 7.99 - 8.39 | 4 | 4 | 7.99 - 8.69 | 4 | 4 | 8.01 - 9.19 | 4 | 4 | 4 | 10 | 4 | 12 | 24 | 48 |
| 8.10 | 8.29 - 8.69 | 4 | 4 | 8.29 - 8.99 | 4 | 4 | 8.49 - 9.49 | 4 | 4 | 2 | 12 | 2 | 14 | 24 | 48 |
| 8.40 | 8.59 - 8.99 | 4 | 4 | 8.59 - 9.29 | 4 | 4 | 8.61 - 9.79 | 4 | 4 | — | 14 | — | 16 | 24 | 48 |
| 8.70 | 8.89 - 9.29 | 4 | 4 | 8.89 - 9.59 | 4 | 4 | 9.09 - 10.09 | 4 | 4 | 6 | 10 | 6 | 12 | 28 | 56 |
| 9.00 | 9.19 - 9.59 | 4 | 4 | 9.19 - 9.89 | 4 | 4 | 9.21 - 10.39 | 4 | 4 | 4 | 12 | 4 | 14 | 28 | 56 |
| 9.30 | 9.49 - 9.89 | 4 | 4 | 9.49 - 10.29 | 4 | 4 | 9.69 - 10.69 | 4 | 4 | 2 | 14 | 2 | 16 | 28 | 56 |

Choose the right diagonal crosses for the distance between the frames.

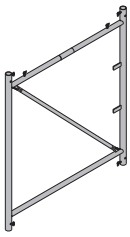
The schedule of materials does not include scaffold planking units.

The scaffold planking units have to be planned separately for each set-up configuration. Provided they are located in the same level, they replace the Diagonal crosses 12.xxx needed for horizontal bracing. This reduction in the number of diagonal crosses needed must be allowed for in the schedule of materials.

| | [kg] | Article N° |
|---|---|---|
| **d3 frame 0.90m** | **20.5** | **582940000** |
| **d3 frame 1.20m** | **25.2** | **582941000** |
| **d3 frame 1.80m** | **33.1** | **582942000** |

d3-Rahmen

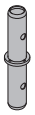
Galvanised



| | | |
|---|---|---|
| **d3 coupler** | **0.80** | **582943000** |

d3-Kupplungsstück

Galvanised



| | | |
|---|---|---|
| **Spring locked connecting pin 16mm** | **0.25** | **582528000** |

Federbolzen 16mm

Galvanised
Length: 15 cm

| | | |
|---|---|---|
| **Diagonal cross 9.060** | **3.1** | **582322000** |
| **Diagonal cross 9.100** | **4.1** | **582772000** |
| **Diagonal cross 9.150** | **5.2** | **582773000** |
| **Diagonal cross 9.175** | **6.1** | **582334000** |
| **Diagonal cross 9.200** | **6.6** | **582774000** |
| **Diagonal cross 9.250** | **7.7** | **582775000** |
| **Diagonal cross 9.300** | **9.0** | **582323000** |
| **Diagonal cross 12.060** | **4.0** | **582324000** |
| **Diagonal cross 12.100** | **4.6** | **582610000** |
| **Diagonal cross 12.150** | **5.7** | **582612000** |
| **Diagonal cross 12.175** | **6.3** | **582335000** |
| **Diagonal cross 12.200** | **6.9** | **582614000** |
| **Diagonal cross 12.250** | **8.3** | **582616000** |
| **Diagonal cross 12.300** | **9.3** | **582325000** |
| **Diagonal cross 18.100** | **6.1** | **582620000** |
| **Diagonal cross 18.150** | **6.9** | **582622000** |
| **Diagonal cross 18.175** | **7.8** | **582336000** |
| **Diagonal cross 18.200** | **7.8** | **582624000** |
| **Diagonal cross 18.250** | **9.1** | **582626000** |
| **Diagonal cross 18.300** | **10.3** | **582326000** |

Diagonalkreuz

Galvanised
Delivery condition: folded closed

| | | |
|---|---|---|
| **d3 4-way screw-jack head** | **9.2** | **582944000** |

d3-Vierwegkopfspindel

Galvanised

| | | |
|---|---|---|
| **d3 screw jack U-head** | **8.6** | **582945000** |

d3-Kopfspindel

Galvanised

| | | |
|---|---|---|
| **d3 safety hook** | **0.12** | **582947000** |

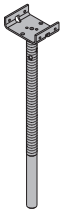
d3-Sicherheitsbügel

Yellow

| | | |
|---|---|---|
| **Heavy-duty screw jack 70 top** | **9.2** | **582327000** |

Lastspindel 70 oben

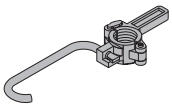
Galvanised
Height: 106 cm



| | | |
|---|---|---|
| **Split nut B** | **2.0** | **582634000** |

Spannmutter B

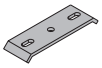
Galvanised



| | | |
|---|---|---|
| **Clamping plate D** | **2.0** | **502709030** |

Klemmplatte D

Galvanised
Length: 24 cm
Width: 9 cm



| | | |
|---|---|---|
| **Wing nut 15.0** | **0.31** | **581961000** |

Flügelmutter 15,0

Galvanised
Length: 10 cm
Height: 5 cm
Width-across: 27 mm

| | | |
|---|---|---|
| **Locking rod 15.0 330mm** | **0.48** | **582641000** |

Quetschteil 15,0 330mm

Galvanised
Width-across: 24 mm

| | | |
|---|---|---|
| **Wedge for screw jack ..... %** | **0.46** | **176071000** |

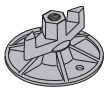
Spindelkeil ..... %

Length: 20 cm
Width: 16 cm

| | | |
|---|---|---|
| **Super plate 15.0** | **1.1** | **581966000** |

Superplatte 15,0

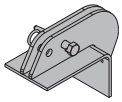
Galvanised
Height: 6 cm
Diameter: 12 cm
Width-across: 27 mm



| | | |
|---|---|---|
| **Staxo wedge support WS10** | **8.7** | **582796000** |

Staxo-Keilauflager WS10

Galvanised
Length: 31 cm
Width: 15 cm
Height: 23 cm



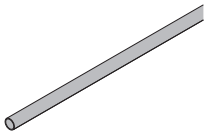
| | [kg] | Article N° |
|---|---|---|
| **Staxo 100 spindle adapter**<br>Staxo 100-Spindeladapter<br>Galvanised<br>Height: 26 cm | **3.4** | **582351000** |
| **d3 screw jack foot**<br>d3-Fußspindel<br>Galvanised | **7.9** | **582946000** |
| **d3 screw jack foot 80**<br>d3-Fußspindel 80<br>Galvanised | **9.9** | **582948000** |
| **Heavy-duty screw jack 70**<br>Lastspindel 70<br>Galvanised<br>Height: 101 cm | **8.8** | **582639000** |
| **Heavy-duty screw jack 130**<br>Lastspindel 130<br>Galvanised<br>Height: 173 cm | **13.0** | **582711000** |
| **Compensating plate**<br>Ausgleichsplatte<br>Orange<br>Black<br>Diameter: 30 cm | **1.2** | **582239000** |
| **Doka express anchor 16x125mm**<br>Doka-Expressanker 16x125mm<br>Galvanised<br>Length: 18 cm<br>Follow the directions in the "Fitting instructions"! | **0.31** | **588631000** |

| | [kg] | Article N° |
|---|---|---|
| **Doka coil 16mm**<br>Doka-Coil 16mm<br>Galvanised<br>Diameter: 1.6 cm | **0.009** | **588633000** |
| **Scaffold planking 60/100cm with manhole** | **9.5** | **582311500** |
| **Scaffold planking 60/150cm with manhole** | **13.8** | **582312500** |
| **Scaffold planking 60/175cm with manhole** | **15.5** | **582333500** |
| **Scaffold planking 60/200cm with manhole** | **17.7** | **582313500** |
| **Scaffold planking 60/250cm with manhole** | **20.8** | **582314500** |
| **Scaffold planking 60/300cm with manhole**<br>Gerüstbelag mit Durchstieg<br>Aluminium | **26.3** | **582315500** |
| **Scaffold planking 60/60cm** | **6.1** | **582330500** |
| **Scaffold planking 60/100cm** | **9.5** | **582306500** |
| **Scaffold planking 60/150cm** | **13.6** | **582307500** |
| **Scaffold planking 60/175cm** | **15.5** | **582332500** |
| **Scaffold planking 60/200cm** | **17.8** | **582308500** |
| **Scaffold planking 60/250cm** | **22.2** | **582309500** |
| **Scaffold planking 60/300cm**<br>Gerüstbelag<br>Aluminium | **26.2** | **582310500** |
| **d3 bracket 90cm**<br>d3-Konsole 90cm<br>Galvanised<br>Width: 114 cm<br>Height: 151.5 cm | **16.3** | **582949000** |
| **Staxo 40/d3 ladder 2.30m**<br>Staxo 40/d3-Leiter 2,30m<br>Galvanised | **15.5** | **582219500** |

| | [kg] | Article N° |
|---|---|---|
| **Scaffold tube 48.3mm 0.50m** | **1.7** | **682026000** |
| **Scaffold tube 48.3mm 1.00m** | **3.6** | **682014000** |
| **Scaffold tube 48.3mm 1.50m** | **5.4** | **682015000** |
| **Scaffold tube 48.3mm 2.00m** | **7.2** | **682016000** |
| **Scaffold tube 48.3mm 2.50m** | **9.0** | **682017000** |
| **Scaffold tube 48.3mm 3.00m** | **10.8** | **682018000** |
| **Scaffold tube 48.3mm 3.50m** | **12.6** | **682019000** |
| **Scaffold tube 48.3mm 4.00m** | **14.4** | **682021000** |
| **Scaffold tube 48.3mm 4.50m** | **16.2** | **682022000** |
| **Scaffold tube 48.3mm 5.00m** | **18.0** | **682023000** |
| **Scaffold tube 48.3mm 5.50m** | **19.8** | **682024000** |
| **Scaffold tube 48.3mm 6.00m** | **21.6** | **682025000** |
| **Scaffold tube 48.3mm .....m** | **3.6** | **682001000** |

Gerüstrohr 48,3mm

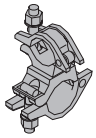
Galvanised



**Transition swivel coupler 48/60mm** **1.5** **582561000**

Übergangsdrehkupplung 48/60mm

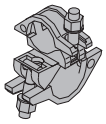
Galvanised
Width-across: 22 mm
Follow the directions in the "Fitting instructions"!



**Transition angle coupler 48/60mm** **1.6** **582562000**

Übergangsnormalkupplung 48/60mm

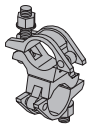
Galvanised
Width-across: 22 mm
Follow the directions in the "Fitting instructions"!



**Swivel coupler 48mm** **1.5** **582560000**

Drehkupplung 48mm

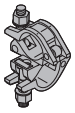
Galvanised
Width-across: 22 mm
Follow the directions in the "Fitting instructions"!



**Normal coupler 48mm** **1.2** **682004000**

Normalkupplung 48mm

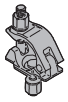
Galvanised
Width-across: 22 mm
Follow the directions in the "Fitting instructions"!



**Screw-on coupler 48mm 50** **0.84** **682002000**

Anschraubkupplung 48mm 50

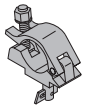
Galvanised
Width-across: 22 mm
Follow the directions in the "Fitting instructions"!



**Pin coupling 60mm** **1.0** **582546000**

Zapfenkupplung 60mm

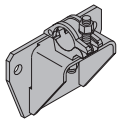
Galvanised
Width-across: 22 mm



**Anchoring shoe for stair tower** **3.4** **582680000**

Ankerschuh für Treppenturm

Galvanised
Length: 22 cm
Width: 12 cm
Height: 22 cm



| | [kg] | Article N° |
|---|---|---|
| **Cone screw B 7cm** | **0.86** | **581444000** |

Konusschraube B 7cm

Red
Length: 10 cm
Diameter: 7 cm
Width-across: 50 mm

**Beam connecting plate H20** **0.07** **586263000**

Gurtverbinder H20

Galvanised
Height: 8 cm

**Rafter plate right** **0.09** **582521000**
**Rafter plate left** **0.09** **582522000**

Sparrenpfettenanker

Galvanised
Length: 17 cm

**Handrail clamp S** **11.5** **580470000**

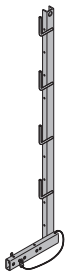
Schutzgeländerzwinge S

Galvanised
Height: 123 - 171 cm

**Handrail post T 1.80m** **17.7** **584373000**

Einschubgeländer T 1,80m

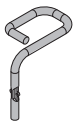
Galvanised



**Toeboard holder T 1.80m** **0.53** **584392000**

Fußwehrhalter T 1,80m

Galvanised
Height: 13.5 cm



**Scaffold tube connection** **0.27** **584375000**

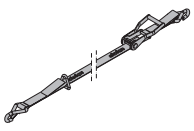
Gerüstrohranschluss

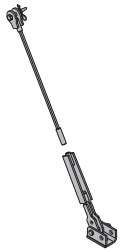
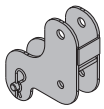
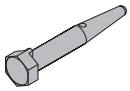
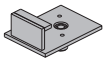
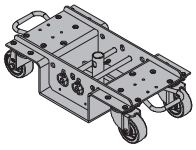
Galvanised
Height: 7 cm

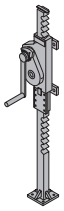
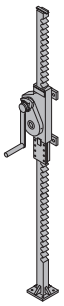
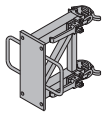
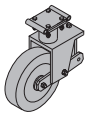
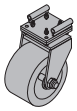
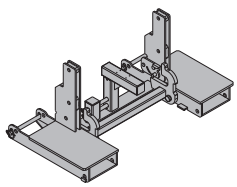
**Lashing strap 5.00m** **2.8** **586018000**

Zurrgurt 5,00m

Yellow

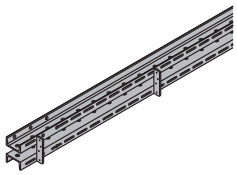


| | [kg] | Article N° |
|---|---|---|
| **Bracing for load-bearing towers**<br>Abspannung für Traggerüste<br>  <br>Galvanised<br>Painted blue | **10.2** | **582795000** |
| **Spindle connecting plate T**<br>Spindellasche T<br>  <br>Galvanised<br>Width: 20 cm<br>Height: 25 cm | **3.1** | **584371000** |
| **Connecting pin 10cm**<br>Verbindungsbolzen 10cm<br>  <br>Galvanised<br>Length: 14 cm | **0.34** | **580201000** |
| **Spring cotter 5mm**<br>Federvorstecker 5mm<br>  <br>Galvanised<br>Length: 13 cm | **0.03** | **580204000** |
| **Lifting strap 13.00m**<br>Umsetzgurt 13,00m<br>  <br>Green<br>Follow the directions in the "Operating Instructions"! | **4.0** | **583013000** CE |
| **Lifting rod 15.0**<br>Umsetzstab 15,0<br>  <br>Painted blue<br>Height: 57 cm<br>Follow the directions in the "Operating Instructions"! | **1.9** | **586074000** CE |
| **Retaining plate 15.0**<br>Jochplatte 15,0<br>  <br>Galvanised<br>Length: 17 cm<br>Width: 12 cm<br>Height: 11 cm | **1.8** | **586073000** |
| **Universal plug R20/25**<br>Kombi-Ankerstopfen R20/25<br>  <br>Blue<br>Diameter: 3 cm | **0.003** | **588180000** |
| **Trolley TT**<br>Rollwagen TT<br>  <br>Galvanised<br>Length: 70 cm<br>Width: 32 cm | **29.2** | **586681000** |

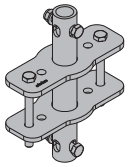
| | [kg] | Article N° |
|---|---|---|
| **Winch 70**<br>Zahnstangenwinde 70<br>  <br>Painted blue<br>Height: 126 cm<br>Follow the directions in the "Operating Instructions"! | **31.0** | **582779000** CE |
| **Winch 125**<br>Zahnstangenwinde 125<br>  <br>Painted blue<br>Height: 189 cm<br>Follow the directions in the "Operating Instructions"! | **63.8** | **582780000** CE |
| **Staxo/d2 adapter frame**<br>Staxo/d2-Adapter<br>  <br>Painted blue<br>Length: 37 cm<br>Width: 36 cm<br>Height: 36 cm | **14.1** | **582781000** |
| **Solid tire wheel**<br>Vollelastikrad<br>  <br>Painted blue<br>Height: 45 cm | **34.5** | **582573000** |
| **Heavy-duty wheel 15kN**<br>Schwerlastrad 15kN<br>  <br>Painted blue<br>Height: 41 cm | **33.0** | **582575000** |
| **Double wheeled transporter**<br>Zweirad-Transportroller<br>  <br>Painted blue<br>Width: 57 cm | **5.0** | **582558000** |
| **Fork lift shifting device TG**<br>Umsetzgerät TG für Stapler<br>  <br>Galvanised<br>Length: 60 cm<br>Width: 113 cm<br>Height: 52 cm<br>Follow the directions in the "Operating Instructions"! | **83.0** | **582797000** CE |

[kg] Article N°

**Multi-purpose waling WS10 Top50 2.00m** 38.9 580007000
Mehrzweckriegel WS10 Top50 2,00m
Painted blue



**Coupler WS10 250** 6.9 582688000
Kupplungsstück WS10 250
Galvanised
Length: 35 cm
Width: 27 cm
Width-across: 24 mm



**Doka 4-part chain 3.20m** 15.0 588620000
Doka-Vierstrangkette 3,20m
Follow the directions in the "Operating Instructions"!

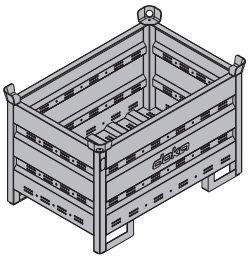
CE

**Doka personal fall-arrest set** 3.6 583022000
Doka-Auffanggurt
Follow the directions in the "Operating Instructions"!

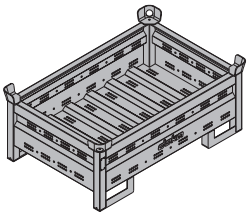
CE

## Multi-trip packaging

**Doka multi-trip transport box 1.20x0.80m** 70.0 583011000
Doka-Mehrwegcontainer 1,20x0,80m
Galvanised
Height: 78 cm

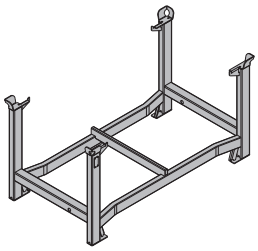


**Doka multi-trip transport box 1.20x0.80x0.41m** 42.5 583009000
Doka-Mehrwegcontainer 1,20x0,80x0,41m
Galvanised

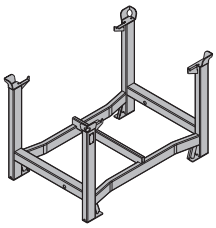


[kg] Article N°

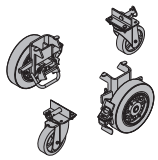
**Doka stacking pallet 1.55x0.85m** 41.0 586151000
Doka-Stapelpalette 1,55x0,85m
Galvanised
Height: 77 cm



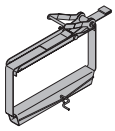
**Doka stacking pallet 1.20x0.80m** 38.0 583016000
Doka-Stapelpalette 1,20x0,80m
Galvanised
Height: 77 cm



**Bolt-on castor set B** 33.6 586168000
Anklemm-Radsatz B
Painted blue



**Stacking strap 50** 3.1 586156000
Stapelgurt 50
Powder-coated blue
Packaging unit: 2 pcs.



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Doka is one of the world leaders in developing, manufacturing and distributing formwork technology for use in all fields of the construction sector.

With more than 160 sales and logistics facilities in over 70 countries, the Doka Group has a highly efficient distribution network which ensures that equipment and technical support are provided swiftly and professionally.

An enterprise forming part of the Umdasch Group, the Doka Group employs a worldwide workforce of more than 6000.