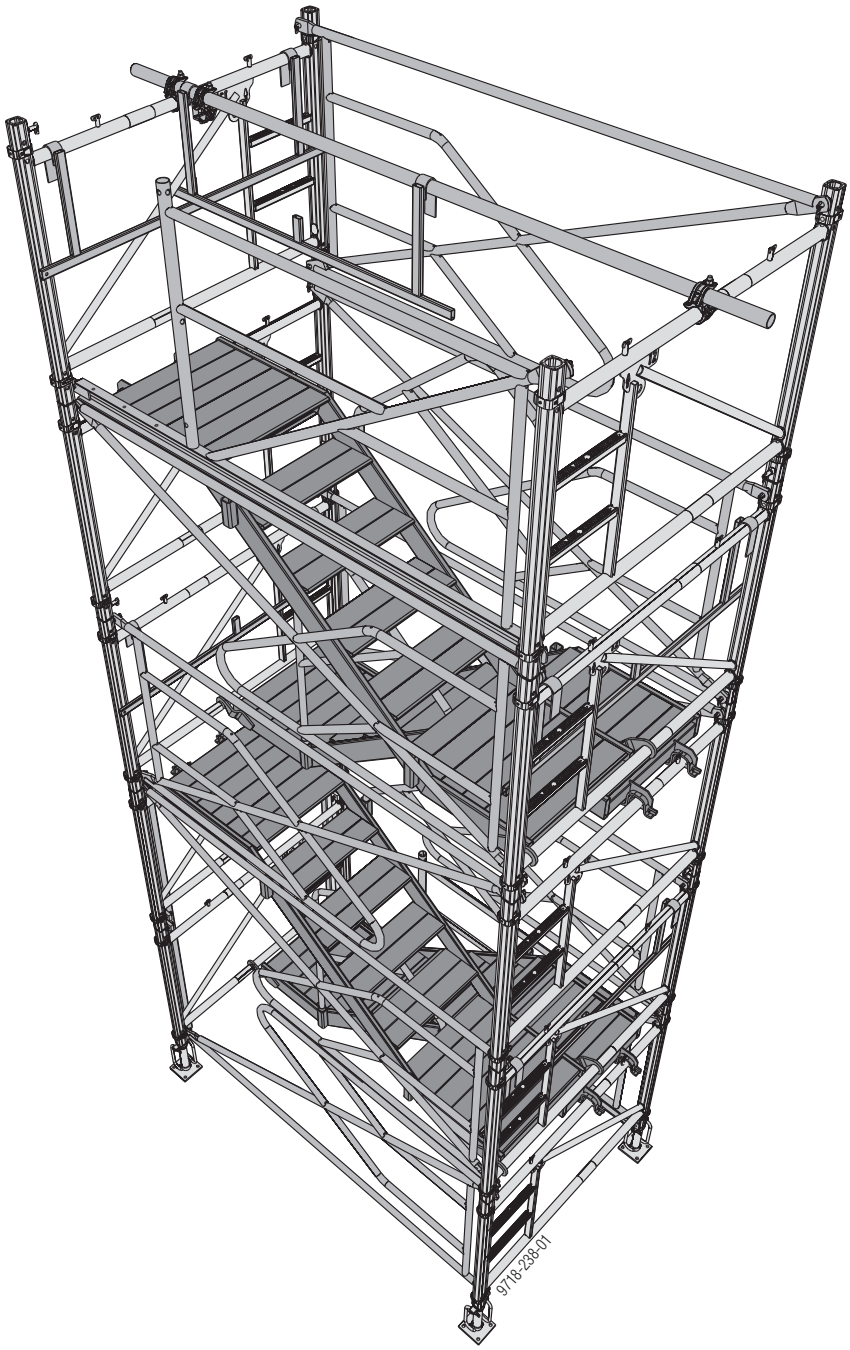
999718002 - 10/2014
en-GB

The Formwork Experts.

Stair tower 250

User Information

Instructions for assembly and use (Method statement)



Contents

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 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 rules throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

- The customer is responsible for drawing up, documenting, implementing and continually updating a hazard assessment at every job-site.
  This 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 booklet can also be used as a generic method statement or incorporated with a site-specific method statement.
- **Many of the illustrations in this booklet show the situation during formwork assembly and are therefore not always complete from the safety point of view.**
  Any safety accessories not shown in these illustrations must still be used by the customer, in accordance with the applicable rules and regulations.
- **Further safety instructions, especially warnings, will be found in the individual sections of this booklet!**

Planning

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

Regulations; industrial safety

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

Rules applying during all phases of the assignment

- The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose in accordance with the applicable laws, Standards and rules, under the direction and supervision of suitably skilled persons. These persons' mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.
- Doka products are technical working appliances which are intended for industrial/commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.
- The stability of all components and units must be ensured during all phases of the construction work!
- The functional/technical instructions, safety warnings and loading data must all be strictly observed and complied with. Failure to do so can cause accidents and severe (even life-threatening) damage to health, as well as very great material damage.
- Fire-sources are not permitted anywhere near the formwork. Heating appliances are only allowed if properly and expertly used, and set up a safe distance away from the formwork.
- The work must take account of the weather conditions (e.g. risk of slippage). In extreme weather, steps must be taken in good time to safeguard the equipment, and the immediate vicinity of the equipment, and to protect employees.
- All connections must be checked regularly to ensure that they still fit properly and are functioning correctly.
  It is very important to check all screw-type connections and wedge-clamped joins whenever the construction operations require (particularly after exceptional events such as storms), and to tighten them if necessary.
- 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.
  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 suitable condition. Steps must be taken to rule out the use of any components that are damaged, deformed, or weakened due to wear, corrosion or rot.
- Combining our formwork systems with those of other manufacturers could be dangerous, risking damage to both health and property. If you intend to combine different systems, please contact Doka for advice first.
- The equipment/system must be assembled and erected in accordance with the applicable laws, Standards and rules by suitably skilled personnel of the customer's, having regard to any and all required safety inspections.
- It is not permitted to modify Doka products; any 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 out 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 regulations applying to the handling of formwork and scaffolding. In addition, the Doka slinging means must be used - this is a mandatory requirement.
- Remove any loose parts or fix them in place so that they cannot be dislodged or fall free!
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this booklet!

Maintenance

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

Miscellaneous

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

Symbols used

The following symbols are used in this booklet:

Important note
Failure to observe this may lead to malfunction or damage.

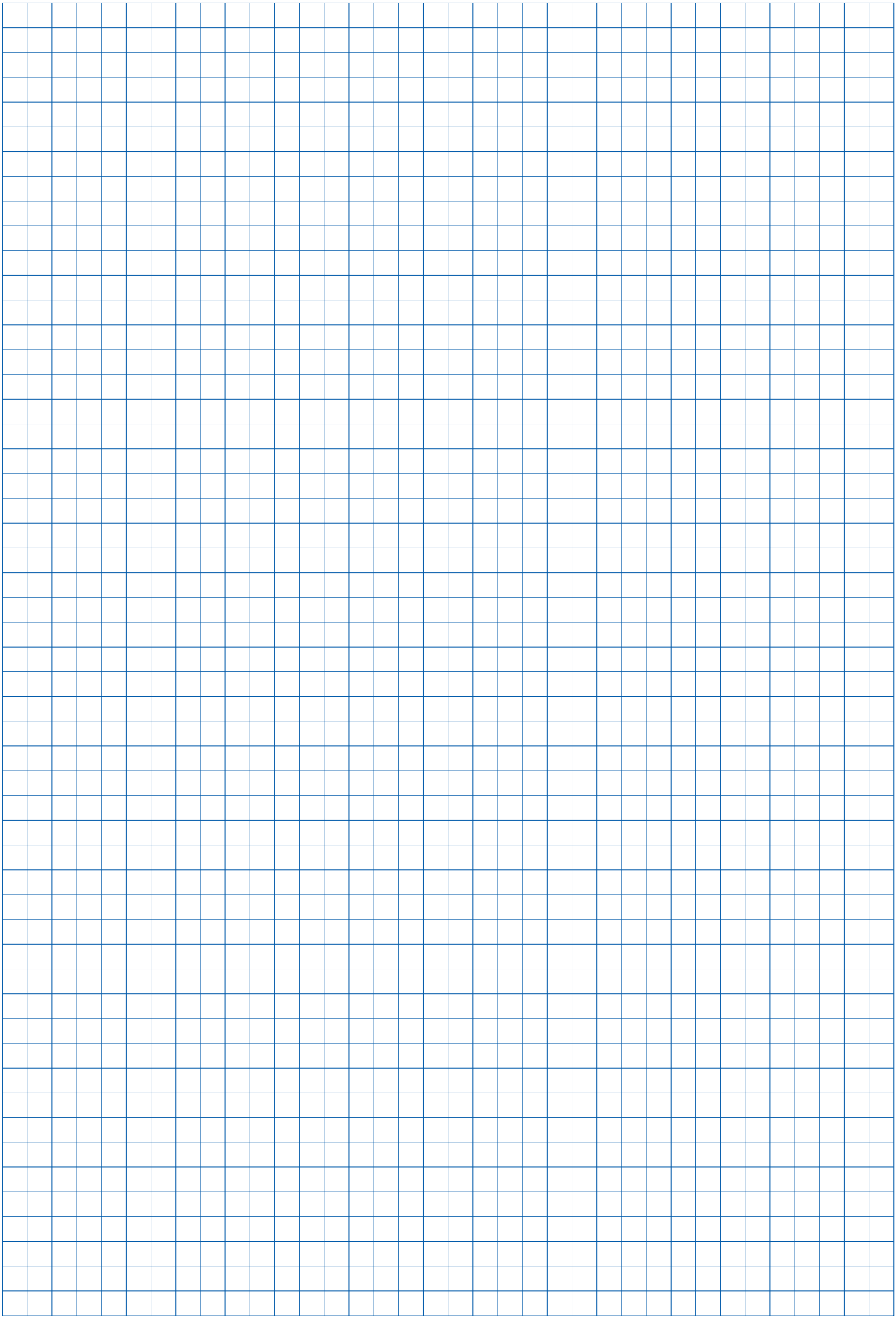
CAUTION / WARNING / DANGER
Failure to observe this may lead to material damage, and to injury to health which may range up to the severe or even life-threatening.

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

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

Tip
Points out useful practical tips.

Reference
Refers to other documents and materials.



Doka services

Support in every stage of the project

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

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

Project Development Stage

Taking well-founded decisions thanks to professional advice and consulting

Find precisely the right formwork solutions, with the aid of

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

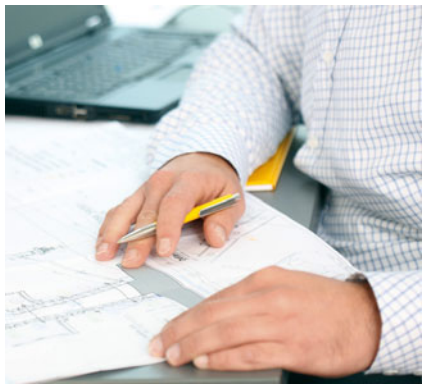
Bidding Stage

Optimising the preliminary work with Doka as an experienced partner

Draw up potentially winning bids, by

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

Project Management Planning Stage

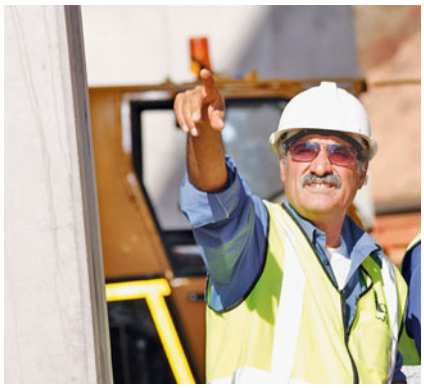


Controlled, regular forming operations, for greater efficiency resulting from realistically calculated formwork concepts

Plan cost-effectively right from the outset, thanks to

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

Concrete Construction Stage



Optimum resource utilisation
with assistance from the Doka Formwork Experts

Workflow optimisation, thanks to

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

Project Close-out Stage

Seeing things through to a positive conclusion
with professional support

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

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

The advantages for you
thanks to professional advice and consulting

- **Cost savings and time gains**
  When we advise and support you right from the word "go", we can make sure that the right formwork systems are chosen and then used as planned. This lets you achieve optimum utilisation of the formwork equipment, and effective forming operations because your workflows will be correct.
- **Maximised workplace safety**
  The advice and support we can give you in how to use the equipment correctly, and as planned, leads to greater safety on the job.
- **Transparency**
  Because our services and costs are completely transparent, there is no need for improvisation during the project – and no unpleasant surprises at the end of it.
- **Reduced close-out costs**
  Our professional advice on the selection, quality and correct use of the equipment helps you avoid damage, and minimise wear-and-tear.

Eurocodes at Doka

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

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

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

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

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

$$E_d \leq R_d$$

E_d **Design value of effect of actions**
(E ... effect; d ... design)
Internal forces from action F_d
(V_{Ed}, N_{Ed}, M_{Ed})

F_d **Design value of an action**
$F_d = \gamma_F \cdot F_k$
(F ... force)

F_k **Characteristic value of an action**
"actual load", service load
(k ... characteristic)
e.g. dead weight, live load, concrete pressure, wind

γ_F **Partial factor for actions**
(in terms of load; F ... force)
e.g. for dead weight, live load, concrete pressure, wind
Values from EN 12812

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

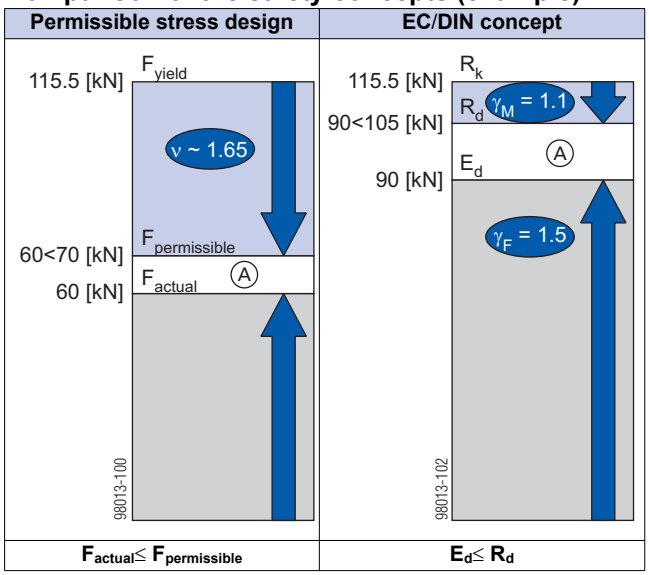
Steel: $R_d = \frac{R_k}{\gamma_M}$ Timber: $R_d = k_{mod} \cdot \frac{R_k}{\gamma_M}$

R_k **Characteristic value of the resistance**
e.g. moment resistance to yield stress

γ_M **Partial factor for a material property**
(in terms of material; M...material)
e.g. for steel or timber
Values from EN 12812

k_{mod} **Modification factor** (only for timber – to take account of the moisture and the duration of load action)
e.g. for Doka beam H20
Values as given in EN 1995-1-1 and EN 13377

Comparison of the safety concepts (example)



A Utilisation factor

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

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

Allowance has been made for the following partial factors:
γ_F = 1.5
$\gamma_{M,\ timber}$ = 1.3
$\gamma_{M,\ steel}$ = 1.1
k_{mod} = 0.9

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

Examples of the system in action

Labelling of the stair tower (loading data)

National regulations may require stair towers to be labelled with their loading data. The form below can be used as a template for this. Any modifications that may be required to ensure compliance with national laws, standards and regulations must be taken into account.

Before the loading-data labelling is affixed, technically qualified personnel from the company responsible for erecting the system must verify that it has been properly assembled and erected in accordance with the applicable laws, standards and regulations.

Note:
Doka does not itself carry out site-erection work, nor can it perform final inspection and acceptance.

Construction firm / site	
NOTICE ON MAX. LOADING **Stair tower 250** **Nominal load per unit area:** 2.0 kN/m² (distributed on all treads and landings within a height of 10 m) **Max. total live load:** 25 kN (approx. 25 persons) **Max. stair-tower height:** 100 m Please refer to the User Information booklet or planning documents for detailed usage instructions	
Date	Name

System description

For fast, safe access to high-up workplaces

The stair tower can be put together very quickly from size 1.20m load-bearing tower frames, and pre-assembled stairway elements. Intermediate exits permit safe access to all work-deck levels. The stair tower is anchored to the structure as required by the usage situation, and complies with the relevant safety rules (Class B to EN 12811-1).

Multi-functional

Can be used with the following system components:
- Load-bearing tower Staxo 100
- Load-bearing tower Staxo 100 eco
- Load-bearing tower Staxo
- Load-bearing tower d2
- Load-bearing tower Aluxo

Can be used in very confined spaces:
- System dimension: 1.52 x 2.50 m
- Smallest clear dimensions: 1.67 x 2.65 m

Highly cost-efficient

Makes work easier for your crew:
- Ergonomically designed
- Getting up and down requires much less physical effort than on ladders
- Gives the crew plenty of room to move, even in “2-way traffic” situations

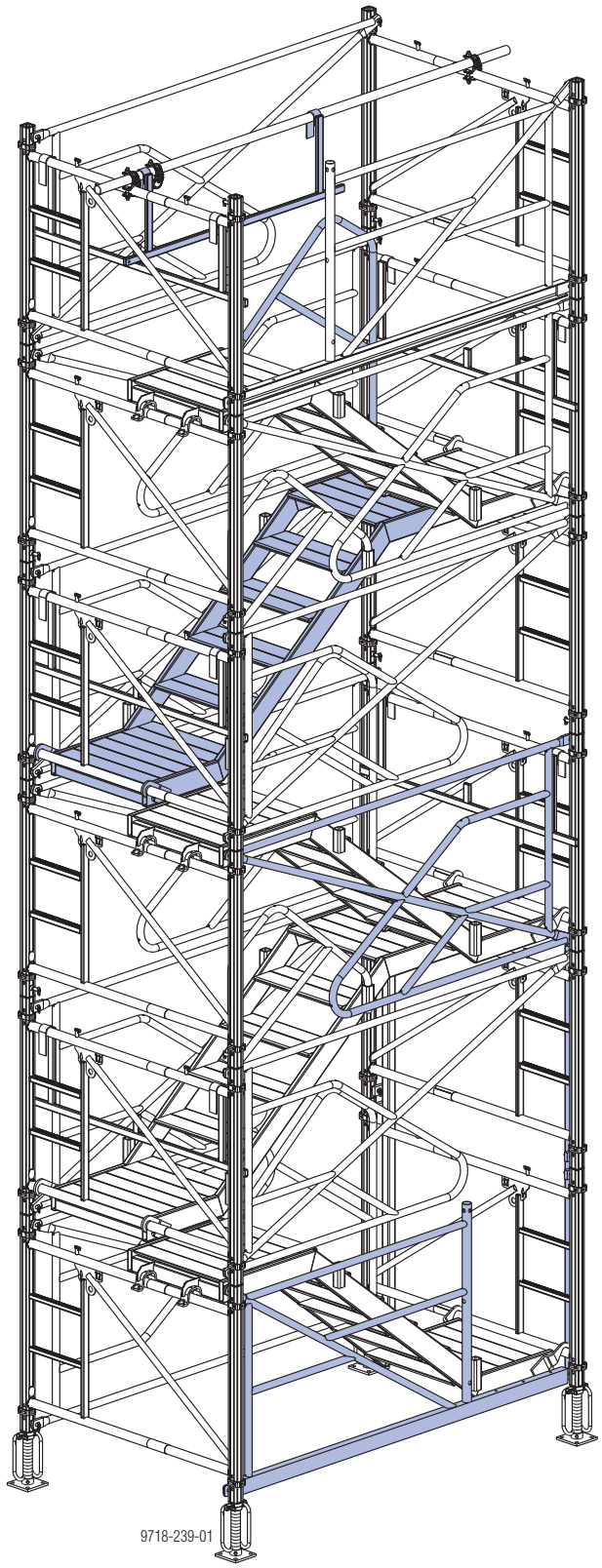
Gets the most use out of your equipment:
- both tableforms and load-bearing towers can be built from the same equipment

Convenient and easy to erect

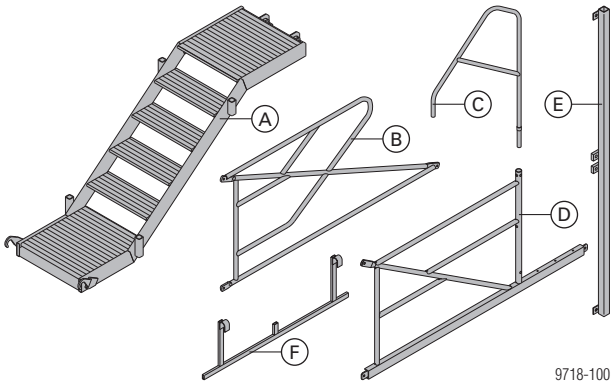
- only a small number of different parts
- hardly any tools needed – only a hammer

- Max. stair-tower height: 100 m
- The stair tower is capable of supporting a uniformly distributed load of 2.0 kN/m² on all treads and landings within a height of 10 m.
- Max. total live load: 25 kN (approx. 25 persons)
- Permitted vertical load per leg: 35 kN

Standard set-up



The Stair tower 250 in detail

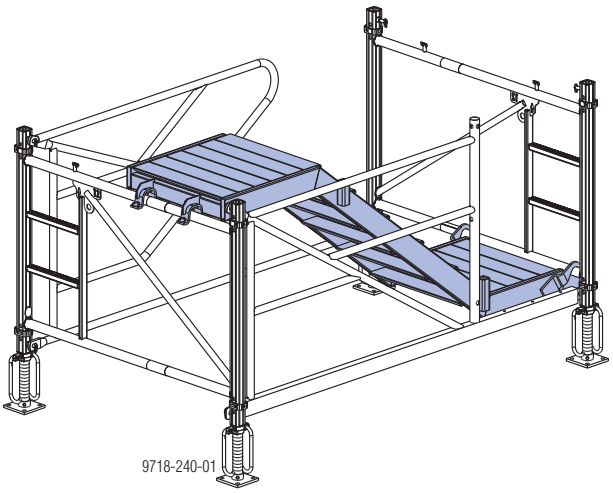


A	Alu stairway 250
B	Outer railing 250
C	Inner railing 250
D	Access railing 250
E	Access support 250
F	Landing railing 250

Alu stairway 250

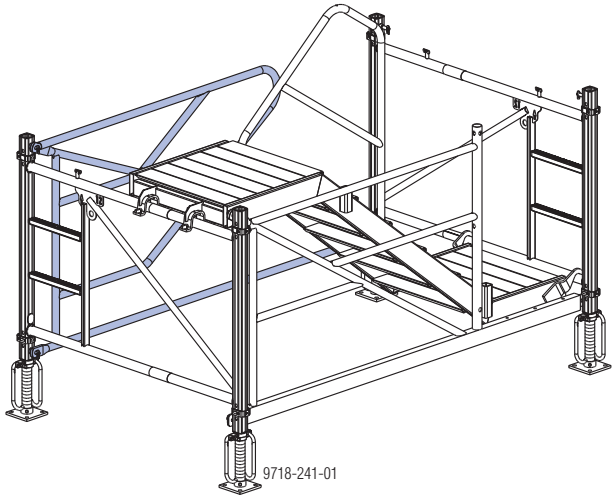
Is hung into place on the 1.20m frames of the Staxo 100, Staxo 100 eco, Staxo, Aluxo and d2 load-bearing towers.

Wedge-locks secure the stair bracket against being accidentally lifted out or displaced. The only tool needed is a hammer.



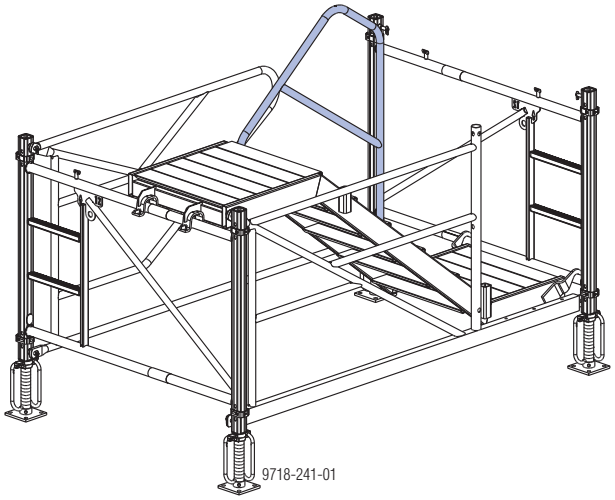
Outer railing 250

The Outer railing 250 is fastened to the safety-catch bolts on the 1.20m load-bearing tower frames.



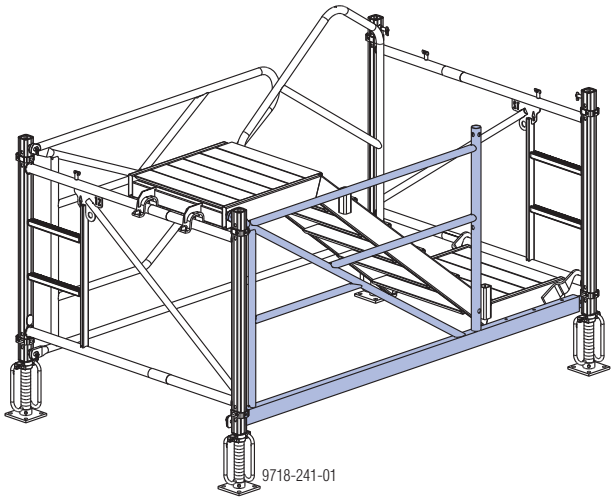
Inner railing 250

The Inner railing 250 is fixed onto the Alu stairways 250.



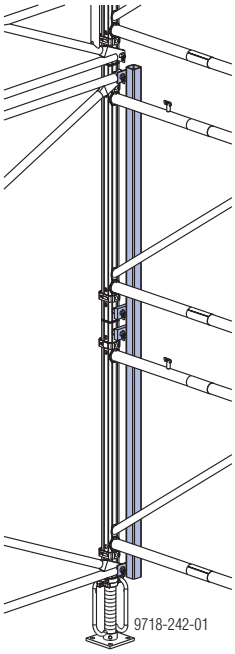
Access railing 250

The Access railing 250 is fastened to the safety-catch bolts on the 1.20m load-bearing tower frames. It enables users to enter or leave the Doka stair tower 250, conveniently and safely, at the entry-point, the intermediate access point and the top access point.



Access support

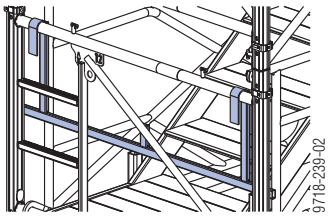
This braces the two bottom load-bearing tower frames on the entry-point side and at the intermediate access points. It is fixed to both leg-tubes by being pushed onto the safety-catch bolts of the load-bearing tower frames.



Landing railing 250

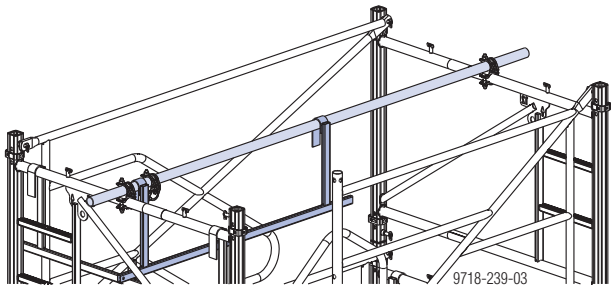
as an end-guard

Is hung onto the load-bearing tower frame at the same height as the change-of-direction platforms.



as an exit guard

Is hung from the scaffold tube and fixed in place.

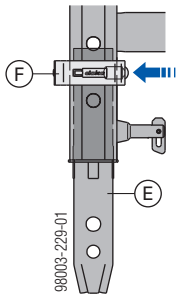
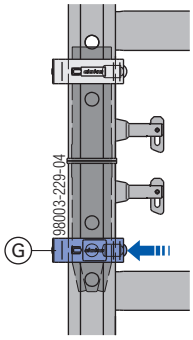


Product features of the Doka load-bearing towers

Integral interconnection system on the Staxo 100, Staxo and Aluxo load-bearing towers

- The crane-handling-safe link between the frames uses a **captive locking spring** plus built-in safety bolt. It can be locked or released in an instant - **with no need for any tools**.

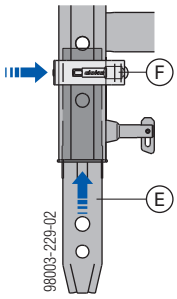
Mode of functioning for upward stacking

Yellow locking spring pushed toward the outside = connection sleeve fixed	Blue locking spring pushed toward the outside = frames linked in crane-handling-safe manner
	

E Connection sleeve
F Yellow locking spring
G Blue locking spring

Mode of functioning for fitting the base units

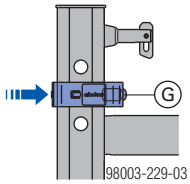
Yellow locking spring pushed toward the inside = connection sleeve unfixed.



E Connection sleeve
F Yellow locking spring

Mode of functioning for fitting the head units

Blue locking spring is pushed toward the inside.

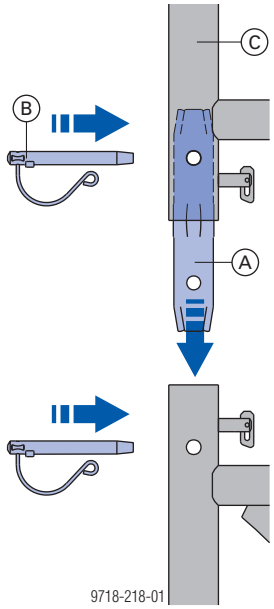


G Blue locking spring

Interconnection system on the d2 and Staxo 100 eco load-bearing towers

- Easy, safe interconnection using the couplers and Spring locked connecting pins 16mm.

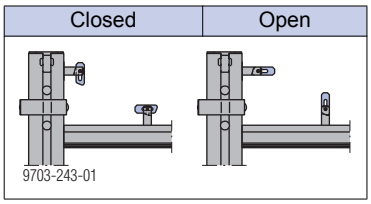
1) Fix a coupler in the top frame, using a Spring locked connecting pin 16mm.
2) Place this frame on top of the one below it.
3) Secure it with a Spring locked connecting pin 16mm.



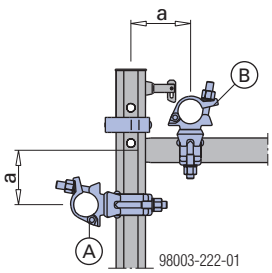
A Coupler
B Spring locked connecting pin 16mm
C Top frame

Safety catch

- tried-and-tested interconnection system (captive)
- secures the Outer railing, Access railing and Access support 250
- two defined positions (closed – open)



Connecting the couplers



a ... max. 16 cm (exception: where tubes are being connected for constructional design purposes, e.g. middle scaffold tube on top access point)

Item	Staxo 100, Staxo	Aluxo, Staxo 100 eco	d2
A	Transition swivel coupler 48/76mm [1)]	Transition swivel coupler 48/76mm [1)]	Transition swivel coupler 48/60mm or Transition angle coupler 48/60mm
B	Swivel coupler 48mm or Normal coupler 48mm	Swivel coupler 48mm or Normal coupler 48mm [1)]	Swivel coupler 48mm or Normal coupler 48mm

[1)] This type of link is not in conformity with EN 12812 (DIN EN 74). **No loads may be introduced parallel** to the Staxo or Aluxo tubes.

Follow the directions in the following User Information booklets:
- Load-bearing tower Staxo 100
- Load-bearing tower Staxo 100 eco
- Load-bearing tower Staxo
- Load-bearing tower Aluxo
- Load-bearing tower d2

Assembly instructions

By way of example, the assembly sequence is shown here for Staxo 100.

General remarks

- When erecting the stair tower at the usage location, anchor it to the structure at regular intervals. Otherwise, assemble max. 10 m high sections of stair-tower, bring them to the erection location by crane, stack them and anchor them to the structure.
- Mark any load-bearing towers or stair towers that are not ready for use (especially incomplete towers while these are being erected, modified or dismantled) with "No entry" warning signs fixed to suitable points on the towers.

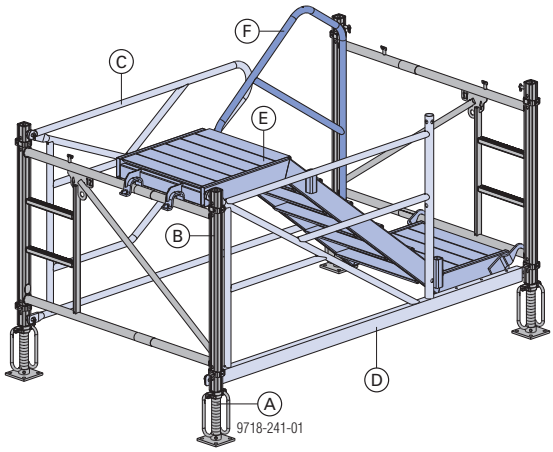
- Always use the Staxo 100, Staxo and Aluxo frames with the yellow locking spring at the bottom, or the Basic frames d2 and Staxo 100 eco frames with the safety-catch bolts at the top.
- Push the base units into the legs of the bottom frames. On Staxo 100, Staxo and Aluxo frames, open the yellow locking springs first.
- Fix the Outer railing 250 and the Access railing 250 onto the safety-catch bolts.
- Secure the Outer railing 250 and the Access railing 250 by closing the safety catches.
- On the frames for stacking, lock the connection sleeve in place = press the yellow locking spring outwards.

Erecting the first storey

- Insert the screw jack feet.
- Connect the load-bearing tower frame to an Outer railing 250 and an Access railing 250.

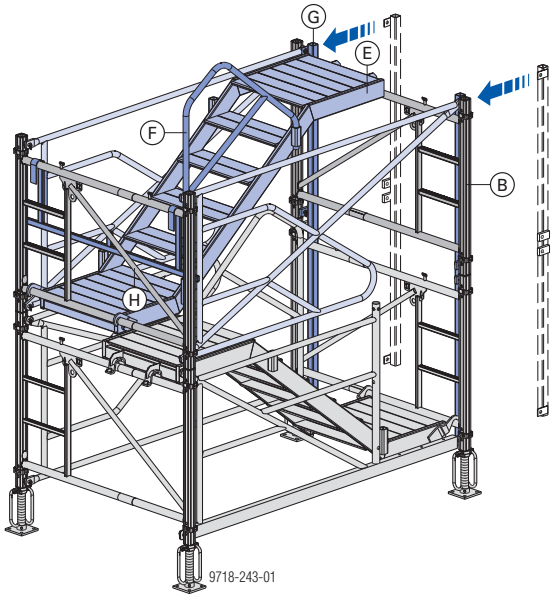
- Do not oil or grease wedge-clamped joins.

- Place an Alu stairway 250 on the cross-tubes of the load-bearing tower frames, and fix using wedges.
- Fix an Inner railing 250 onto the Alu stairway 250.



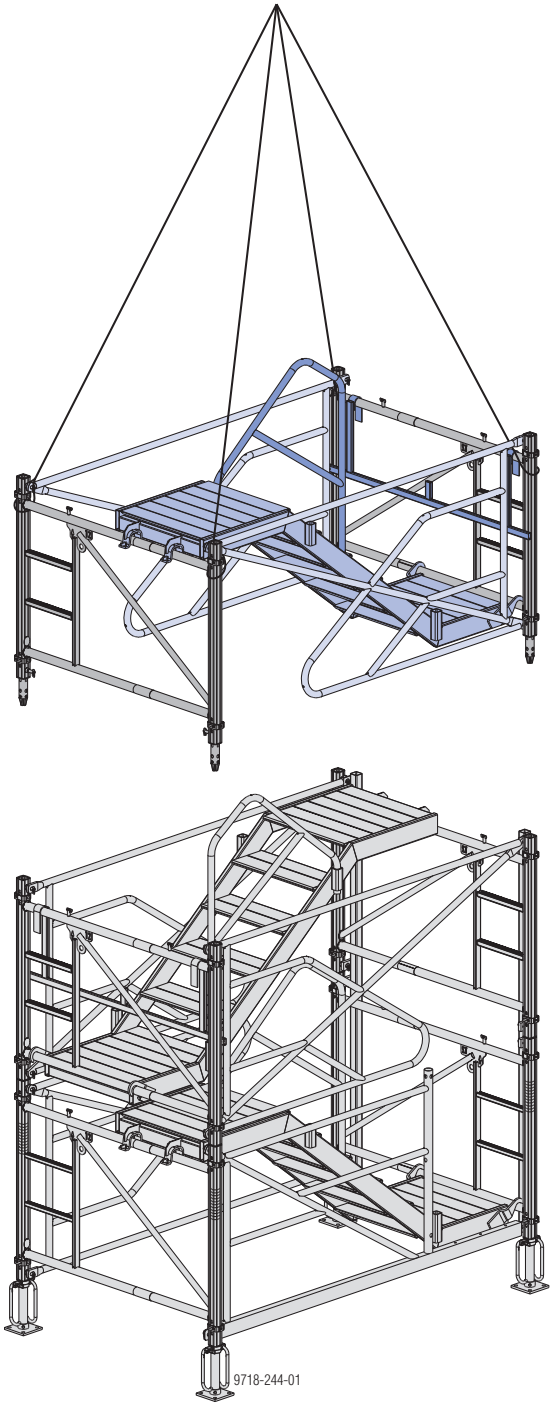
Erecting the first middle section

- Add a frame at each end and link them together with Outer railings 250 (with the long linking strut at the top).
- Fix 2 Access supports 250 **(G)** on the entry-point side, in the safety-catch bolts of the frames.
- Hook in and wedge an Alu stairway 250 in the same way as in the first (i.e. base) "storey".
- Mount a Landing railing 250 on the same side as the change-of-direction platforms.
- Fix an Inner railing 250 onto the Alu stairway 250.



Erecting further middle sections

➤ From the third section (storey) upward, each storey must be assembled at ground level first (safer and more efficient). Assemble as described in "Erecting the first middle section". The finished sections are placed on the storeys below (alternate ways round, i.e. at 180° to one another) by crane.



Middle section incorporating an intermediate access point: Mount an Access railing 250 on the exit-opening side instead of an Outer railing 250.

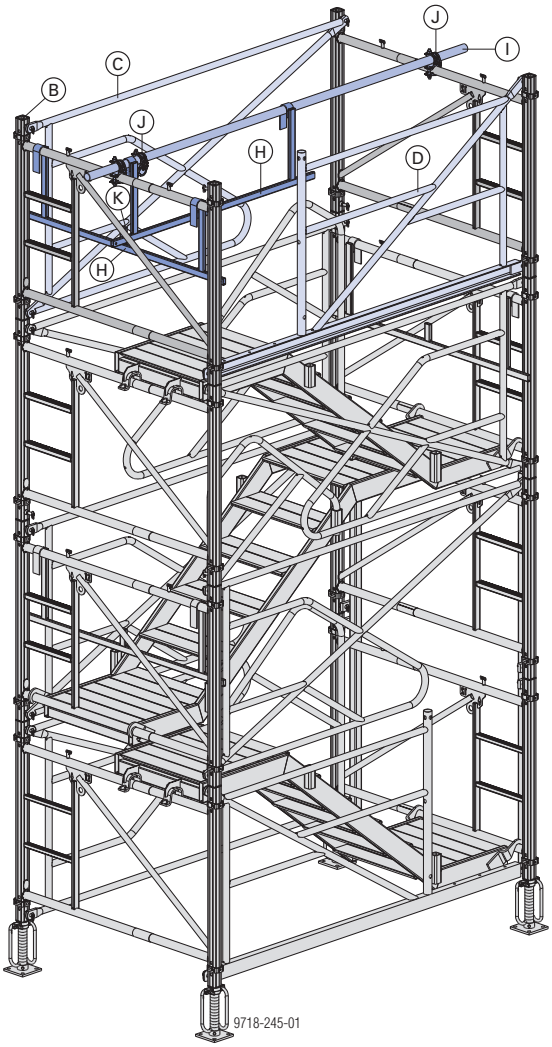
Erecting the top section

➤ Connect the load-bearing tower frame to an Outer railing 250 and an Access railing 250.

➤ Mount a Landing railing 250 on the exit-opening side.

➤ Using Normal couplers 48mm, fasten a Scaffold tube 48.3mm 3.00m to the middle of the cross-tubes of the frames.

➤ Hang an extra Landing railing 250 from the scaffold tube and fix it to the supporting tube of the landing railing on the exit-opening side, using a Normal coupler 48mm to prevent it slipping.



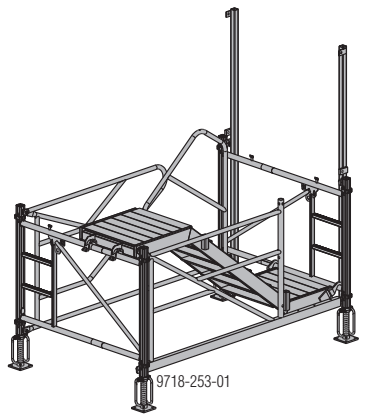
A	Screw jack foot
B	Basic frame
C	Outer railing 250
D	Access railing 250
E	Alu stairway 250
F	Inner railing 250
G	Access support
H	Landing railing 250
I	Scaffold tube 48.3mm 3.00m
J	Normal coupler 48mm
K	Supporting tube

Items needed

Height of tower in m (exit height)	Alu stairway 250	Inner railing 250	Outer railing 250	Access railing 250	Landing railing 250	Access support	Scaffold tube 3.00m	Normal coupler 48mm	Screw jack foot	Alternative load-bearing towers			
										▪ Staxo 100 ▪ Staxo ▪ Aluxo	▪ Staxo 100 eco ▪ d2		
										1.20m frame	1.20m frame	Coupler	Spring locked connecting pin 16mm
3.6	3	3	6	2	4	2	1	3	4	8	8	12	24
4.8	4	4	8	2	5	2	1	3	4	10	10	16	32
6.0	5	5	10	2	6	2	1	3	4	12	12	20	40
7.2	6	6	12	2	7	2	1	3	4	14	14	24	48
8.4	7	7	14	2	8	2	1	3	4	16	16	28	56
9.6	8	8	16	2	9	2	1	3	4	18	18	32	64
10.8	9	9	18	2	10	2	1	3	4	20	20	36	72
12.0	10	10	20	2	11	2	1	3	4	22	22	40	80
13.2	11	11	22	2	12	2	1	3	4	24	24	44	88
14.4	12	12	24	2	13	2	1	3	4	26	26	48	96
15.6	13	13	26	2	14	2	1	3	4	28	28	52	104
16.8	14	14	28	2	15	2	1	3	4	30	30	56	112
18.0	15	15	30	2	16	2	1	3	4	32	32	60	120
19.2	16	16	32	2	17	2	1	3	4	34	34	64	128
20.4	17	17	34	2	18	2	1	3	4	36	36	68	136
21.6	18	18	36	2	19	2	1	3	4	38	38	72	144
22.8	19	19	38	2	20	2	1	3	4	40	40	76	152
24.0	20	20	40	2	21	2	1	3	4	42	42	80	160
25.2	21	21	42	2	22	2	1	3	4	44	44	84	168
26.4	22	22	44	2	23	2	1	3	4	46	46	88	176
27.6	23	23	46	2	24	2	1	3	4	48	48	92	184
28.8	24	24	48	2	25	2	1	3	4	50	50	96	192
30.0	25	25	50	2	26	2	1	3	4	52	52	100	200

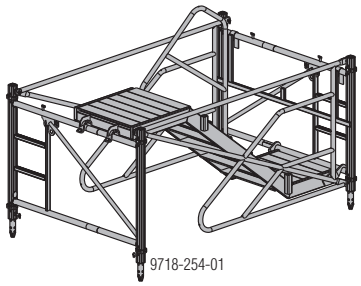
The table above shows all the items needed for the height of stair tower in question – for the first section ("storey"), the appropriate number of middle sections and the top section.

First section



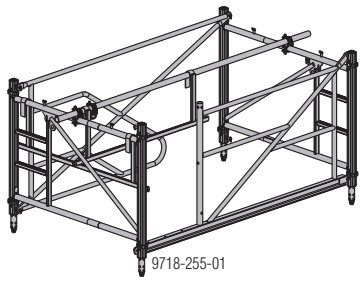
Designation	N° of units
Alu stairway 250	1
Inner railing 250	1
Outer railing 250	1
Access railing 250	1
Access supports 250	2
Screw jack feet or Heavy duty screw jacks	4
1.20m frames	2

Middle section



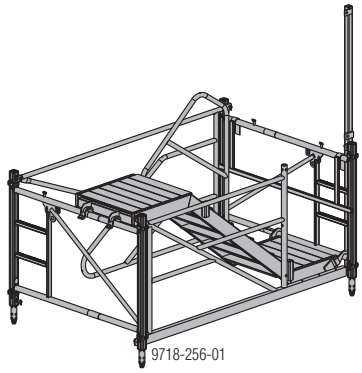
Designation	N° of units
Alu stairway 250	1
Inner railing 250	1
Outer railings 250	2
Landing railing 250	1
1.20m frames	2

Top section



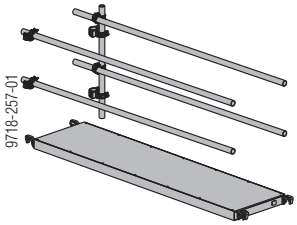
Designation	N° of units
Outer railing 250	1
Access railing 250	1
Landing railings 250	2
Scaffold tube 48.3mm 3.00m	1
Normal couplers 48mm	3
1.20m frames	2

Middle section incorporating an intermediate access point



Designation	N° of units
Alu stairway 250	1
Inner railing 250	1
Outer railing 250	1
Access railing 250	1
Access support 250	1
Landing railing 250	1
1.20m frames	2

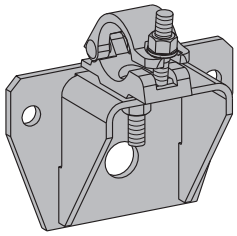
Access point for middle or top section



Designation	N° of units
Scaffold tubes (variable length)	4
Scaffold tube 48.3mm 1.00m	1
Transition swivel couplers 48/76mm	2
Swivel couplers 48mm	4
Scaffold planking 60 (variable length)	1

Anchoring on the structure

With Anchoring shoe for stair tower



Permissible force transmission for each Anchoring shoe for stair tower: 12 kN in all directions

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 ($F_{perm.} \geq$ 14.0 kN)
- Shear force: $R_d \geq$ 6.6 kN ($F_{perm.} \geq$ 4.0 kN)

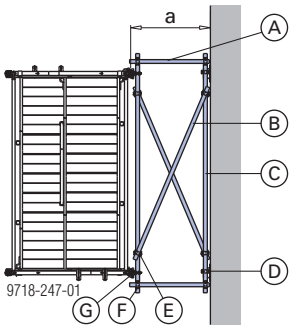
e.g. Hilti HST M16 - in uncracked B30 concrete, or equivalent products from other manufacturers. Follow the manufacturer's applicable fitting instructions!

Design of the anchoring planes

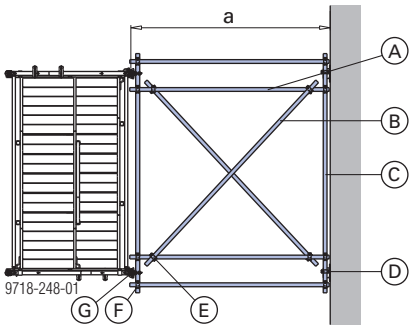
The load-bearing tower is connected to the Anchoring shoe for stair tower by scaffold tubes and couplers.

When designing units assembled from tubes and couplers, all applicable standards and regulations must be observed, in particular EN 12812 "Falsework", EN 39 "Loose steel tubes for tube and coupler scaffolds" and EN 74 "Couplers, spigot pins and baseplates for use in falsework and scaffolds".

Distance 'a' < 1.00 m



Distance 'a' 1.00 m - 2.50 m



Items needed

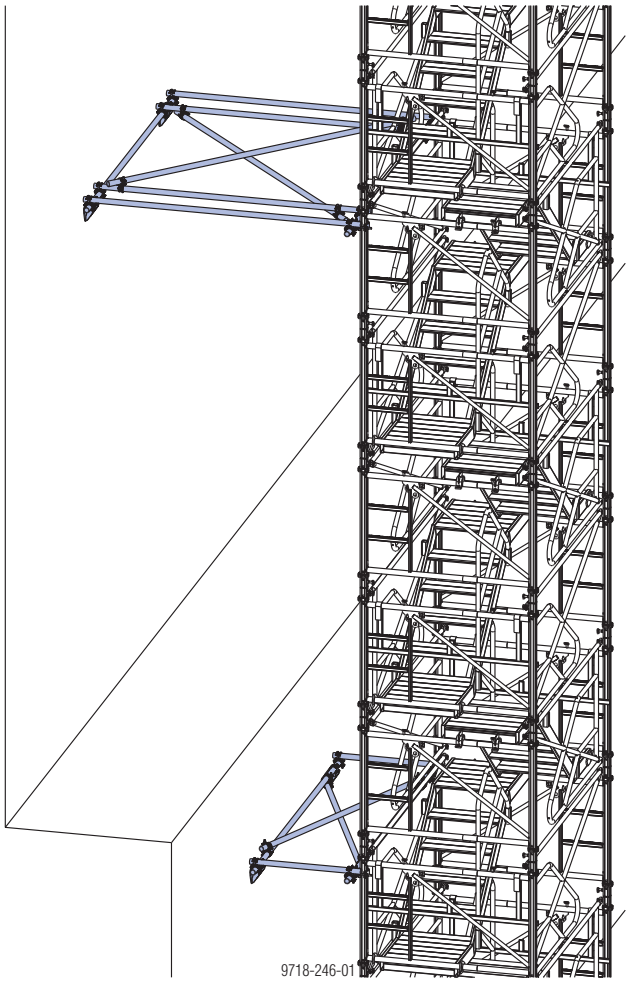
Item	Designation	Distance 'a'	
		< 1.00 m	1.00 - 2.50 m
A	Scaffold tube 48.3mm (minimum length = distance 'a')	2	4
B	Scaffold tube 48.3mm (variable length)	2	2
C	Scaffold tube 48.3mm 3.00m	2	2
D	Anchoring shoe for stair tower	2	2
	Dowels per anchoring shoe	1	2
E	Swivel coupler 48mm	4	4
F	Normal coupler 48mm	4	8
G	Transition swivel coupler 48/76mm on Staxo 100 / Staxo 100 eco / Staxo / Aluxo, or Transition swivel coupler 48/60mm on d2	2	2

Vertical distance between the anchoring levels

The number of anchor points depends on the type of enclosure (netting or tarpaulins) and on the height of the stair tower.

Height of stair tower	N° of anchor points	
	with/without netting	with tarpaulins
Up to 40 m	Every 5 sections	Every 4 sections
40 to 100 m	Every 4 sections	Every 3 sections

Example:
Height of stair-tower 72 m; enclosed with/without netting.
Anchored in the 5th, 10th, 15th, 20th, 25th and 30th sections, and in the 34th, 38th, 42nd, 46th, 50th, 54th and 58th sections.

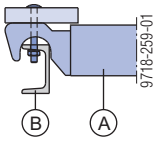


Access point

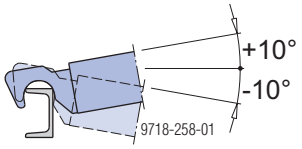
On the Stair tower 250, an access point is possible every 1.20 m if the stair-tower components are combined in the correct way. The gangway to the structure is assembled from standard Doka components.

When designing units assembled from tubes and couplers, all applicable standards and regulations must be observed, in particular EN 12812 "Falsework", EN 39 "Loose steel tubes for tube and coupler scaffolds" and EN 74 "Couplers, spigot pins and baseplates for use in falsework and scaffolds".

Using site-provided fixing materials, fix a Scaffold planking 60 **(A)** onto the Access railing 250 **(B)** so that there is no risk of accidental lift-out.

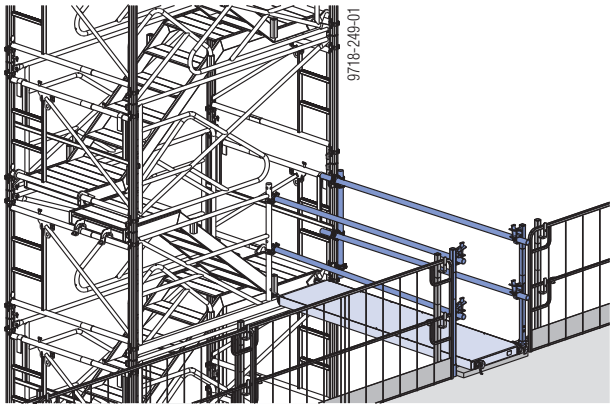


Inclination range of the Scaffold planking 60



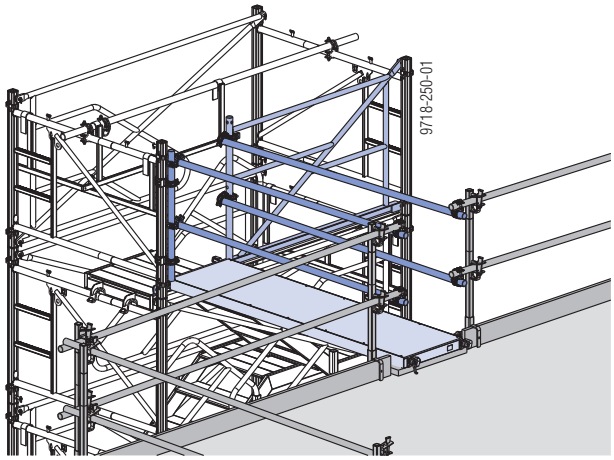
Intermediate access point

For details of the items needed here, see the section headed "Items needed".

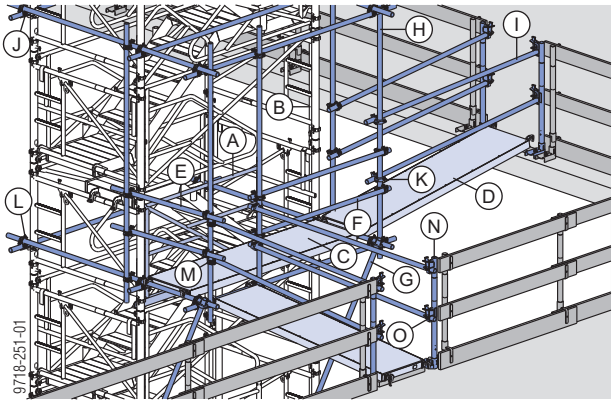


Top access point

For details of the items needed here, see the section headed "Items needed".



Other possible uses

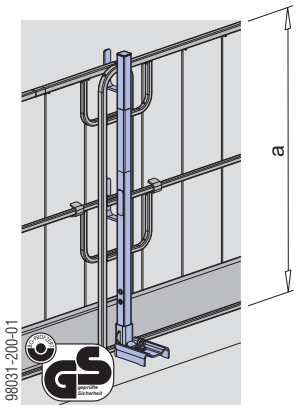


A	1 x Access railing 250
B	1 x Access support 250
C	1 x Scaffold planking 60/250cm
D	2 x Scaffold planking 60 (variable length)
E	2 x Scaffold tube 48.3mm 1.50m
F	2 x Scaffold tube 48.3mm 2.00m
H	15 x Scaffold tube 48.3mm 3.00m
I	8 x Scaffold tube 48.3mm (variable length)
J	10 x Transition swivel coupler 48/76mm on Staxo 100 / Staxo 100 eco / Staxo / Aluxo, or 10 x Transition swivel coupler 48/60mm on d2
K	10 x Swivel coupler 48mm
L	30 x Normal coupler 48mm
M	4 x Screw-on coupler 48mm 50
N	4 x Handrail post XP 1.20m (several different floor-mounting methods)
O	4 x Scaffold tube holder D48mm

Fall-arrest systems on the structure

Handrail post XP 1.20m

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

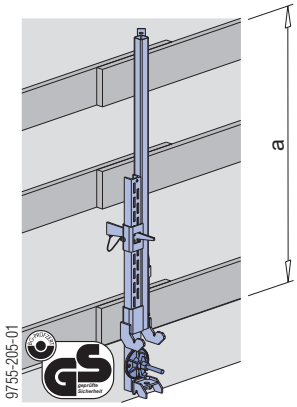


a ... > 1.00 m

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

Handrail clamp T

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

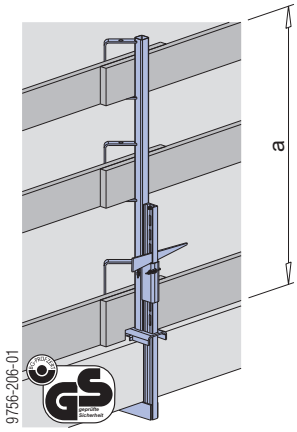


a ... > 1.00 m

Follow the directions in the "Handrail clamp T" User Information!

Handrail clamp S

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

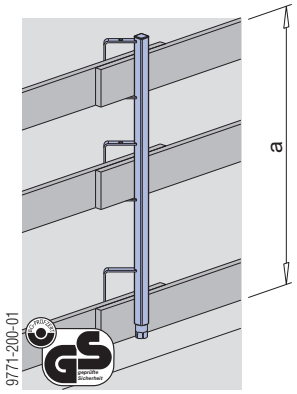


a ... > 1.00 m

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

Handrail post 1.10m

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



a ... > 1.00 m

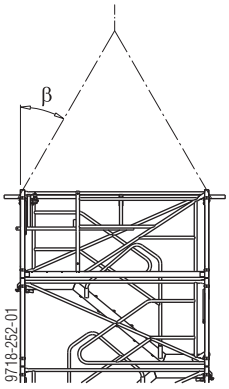
Follow the directions in the "Handrail post 1.10m" User Information!

Lifting by crane

The towers can be stacked (or reduced in height) very quickly, and can be lifted by crane either as a complete unit or in separate "storeys".

Important note:

Maximum height of stair-tower unit that can be lifted: 10.8 m.

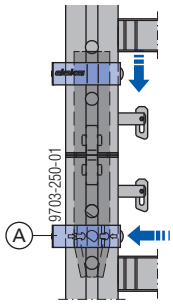


β ... max. 30°

Staxo, **Staxo 100** and **Staxo 100 eco frames** can be linked in a crane-handling-safe manner using **hexagon screws M16x80 + hexagon nuts M16 (self-locking)**. This makes it possible to lift **20 m** high stair-tower units.

Link the frames in a crane-handling-safe manner

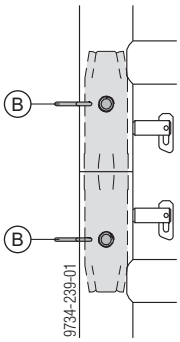
➤ **On Staxo 100, Staxo and Aluxo:** Close the blue locking spring by pressing it toward the outside.



Remember that stair towers will often also be used by persons who are unfamiliar with site procedures. For this reason, always check that all the locking springs are closed before the tower is lifted.

To increase safety when the stair tower is lifted, we recommend fitting Spring locked connecting pins 16mm or hexagon screws M16x80 + hexagon nuts M16 (self-locking) as an extra precaution.

➤ **On Staxo 100 eco and d2:** Check whether all Spring locked connecting pins 16mm have been fixed into place.



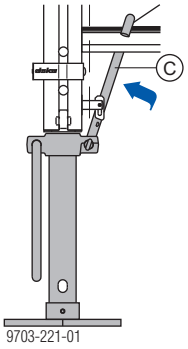
A Blue locking spring

B Spring locked connecting pin 16mm

Secure the base units to prevent them dropping out

Screw jack feet

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



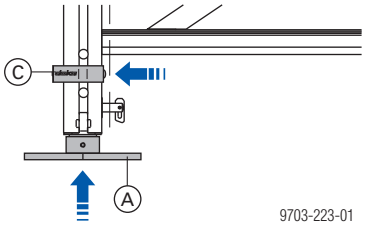
C Fixing handle

Heavy duty screw jacks 70

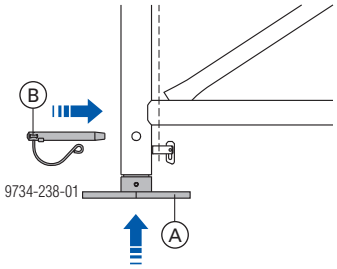
➤ First take the weight off the Heavy duty screw jack 70, then open the split nut.
Because this is a "split" nut, it does not need to be turned through the full length of the threaded spindle. While the stair-tower is being lifted, the split nut can be clamped over one of the braces of the outside railing.

➤ Push the Heavy duty screw jack 70 into the frame.

➤ **On Staxo 100, Staxo and Aluxo:** Secure it with the yellow locking spring.



➤ **On Staxo 100 eco and d2:** Secure it with a Spring locked connecting pin 16mm.



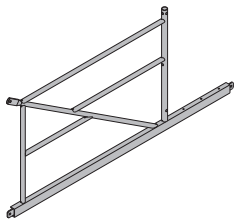
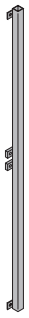
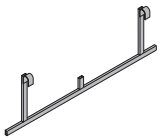
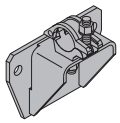
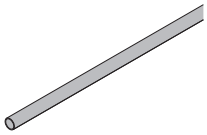
A Heavy duty screw jack 70
B Spring locked connecting pin 16mm
C Yellow locking spring

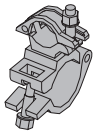
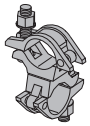
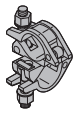
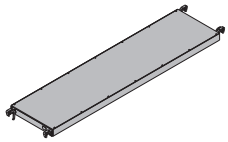
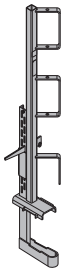
Repositioning operation

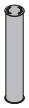
➤ Lift the entire unit with a four-part lifting tackle such as the Doka 4-part chain 3.20m.

	[kg]	Article n°
Staxo 100 frame 1.20m Staxo 100-Rahmen 1,20m Galvanised	**28.0**	**582301000**
Staxo 100 eco frame 1.20m galvanised Staxo 100 eco-Rahmen 1,20m verzinkt Galvanised	**23.6**	**582374000**
Staxo 100 eco frame 1.20m painted Staxo 100 eco-Rahmen 1,20m lackiert Painted yellow	**20.5**	**582371000**
Staxo frame 1.20m Staxo-Rahmen 1,20m Galvanised	**23.0**	**582770000**
Aluxo frame 1.20m Aluxo-Rahmen 1,20m Aluminium	**14.6**	**582601000**
Basic frame d2 1.20m Grundrahmen d2 1,20m Galvanised	**24.1**	**582701000**
Coupler Kupplungsstück Galvanised Height: 27 cm	**0.57**	**582527000**

	[kg]	Article n°
Spring locked connecting pin 16mm Federbolzen 16mm Galvanised Length: 15 cm	**0.25**	**582528000**
Screw jack foot Fußspindel Galvanised Height: 69 cm	**9.0**	**582637000**
Heavy duty screw jack 70 Lastspindel 70 Galvanised Height: 101 cm	**8.8**	**582639000**
Split nut B Spannmutter B Galvanised	**2.0**	**582634000**
Universal dismantling tool Universal-Lösewerkzeug Galvanised Length: 75.5 cm	**3.7**	**582768000**
Alu stairway 250 Alu-Treppenlauf 250 Aluminium Length: 263 cm Width: 80 cm Height: 112 cm	**33.2**	**582670000**
Outer railing 250 Außengeländer 250 Galvanised Length: 255 cm Height: 111 cm	**19.5**	**582672000**
Inner railing 250 Innengeländer 250 Galvanised Height: 155 cm	**7.0**	**582671000**

	[kg]	Article n°
Access railing 250 Einstiegsgeländer 250 Galvanised Length: 255 cm Height: 117 cm 	**36.5**	**582675000**
Access support 250 Einstiegsadapter 250 Galvanised Height: 238 cm 	**12.6**	**582674000**
Landing railing 250 Podestgeländer 250 Galvanised Length: 160 cm Height: 48 cm 	**6.3**	**582673000**
Anchoring shoe for stair tower Ankerschuh für Treppenturm Galvanised Length: 22 cm Width: 12 cm Height: 22 cm 	**3.4**	**582680000**
Cone screw B 7cm Konusschraube B 7cm red Length: 10 cm Diameter: 7 cm Width-across: 50 mm 	**0.86**	**581444000**
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 Gerüstrohr 48,3mm Galvanised 	**3.6**	**682001000**

	[kg]	Article n°
Transition swivel coupler 48/76mm Übergangsdrehkupplung 48/76mm Galvanised Width-across: 22 mm Follow fitting instructions! 	**1.9**	**582563000**
Swivel coupler 48mm Drehkupplung 48mm Galvanised Width-across: 22 mm Follow fitting instructions! 	**1.5**	**582560000**
Normal coupler 48mm Normalkupplung 48mm Galvanised Width-across: 22 mm Follow fitting instructions! 	**1.2**	**682004000**
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 Gerüstbelag Aluminium 	**26.2**	**582310500**
Doka 4-part chain 3.20m Doka-Vierstrangkette 3,20m Follow the directions in the "Operating Instructions"! 	**15.0**	**588620000**
Handrail clamp S Schutzgeländerzwinge S Galvanised Height: 123 - 171 cm 	**11.5**	**580470000**
Handrail clamp T Schutzgeländerzwinge T Galvanised Height: 122 - 155 cm 	**12.3**	**584381000**

	[kg]	Article n°
Handrail post 1.10m Schutzgeländer 1,10m  Galvanised Height: 134 cm	**5.5**	**584384000**
Attachable sleeve 24mm Steckhülse 24mm  Grey Length: 16.5 cm Diameter: 2.7 cm	**0.03**	**584385000**
Screw sleeve 20.0 Schraubhülse 20,0  Yellow Length: 20 cm Diameter: 3.1 cm	**0.03**	**584386000**
Warning sign "No entry" 300x300mm Verbotsschild "Zutritt Verboten" 300x300mm 	**0.70**	**581575000**

[kg]	Article n°

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