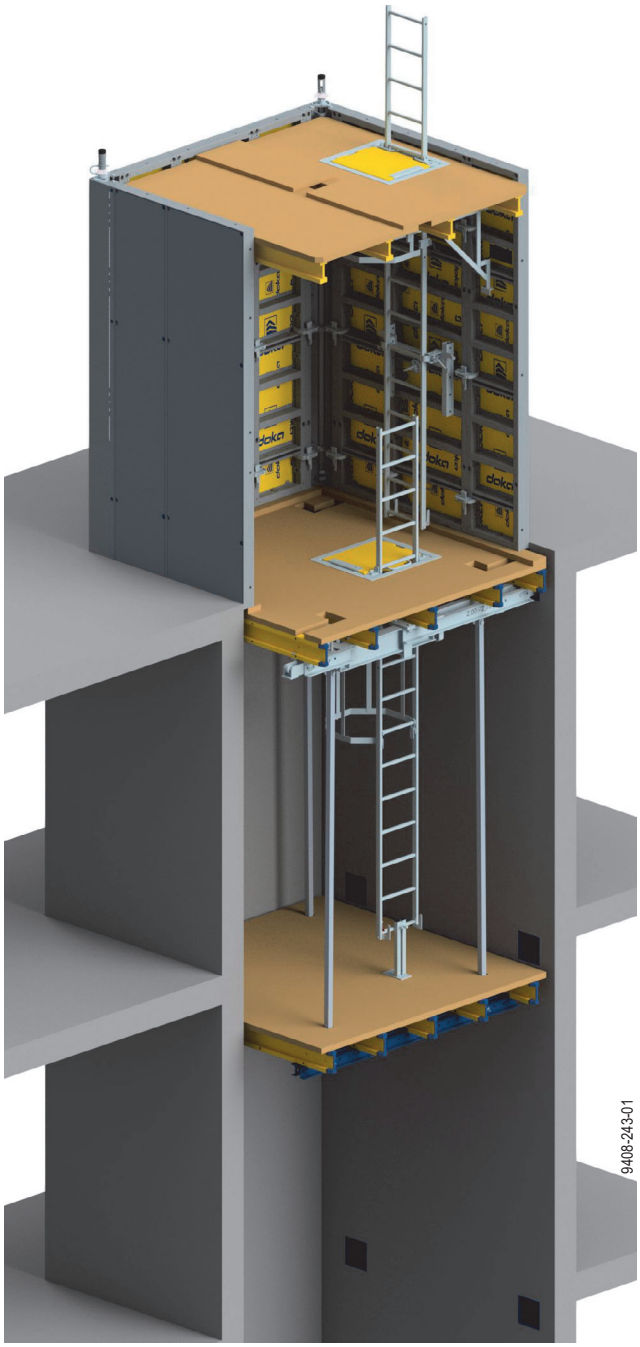
999408002 - 06/2025
en-GB

Formwork & Scaffolding.
We make it work.

Shaft platform

User Information

Instructions for assembly and use (Method statement)



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 by the user.
- The equipment/system must be assembled and erected in accordance with the applicable laws, standards and rules by trained customer personnel whilst maintaining any applicable safety inspections that may be required.
- It is not permitted to modify Doka products; such modifications constitute a safety risk.

Closing the formwork

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

Pouring

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

Stripping the formwork

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

Transporting, stacking and storing

- Observe all country-specific regulations applying to the handling of formwork and scaffolding. For system formwork the Doka slinging means stated in this booklet must be used – this is a mandatory requirement.
  If the type of sling is not specified in this document, the customer must use slinging means that are suitable for the application envisaged and that comply with the regulations.
- When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.
- Remove loose parts or secure them so that they cannot slip out of position and drop.
- When lifting formwork or formwork accessories with a crane, no persons must be carried along, e.g. on working platforms or in multi-trip packaging.
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this document!

Maintenance

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

Miscellaneous

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

Eurocodes at Doka

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

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

Allowance has been made for the following partial factors:

- γ_F = 1.5
- $\gamma_{M,\ timber}$ = 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.

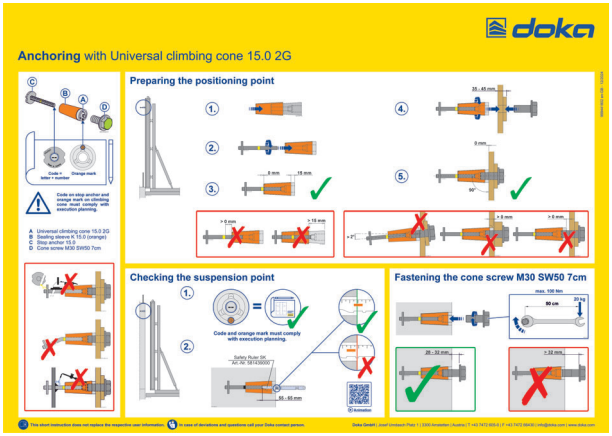
Short instructions increase knowledge of safe anchorage to the structure

Doka puts the quality and safety of all of its formwork products first.

The most important aspect of a climbing scaffold is its absolutely secure anchorage to the structure.

The Short Instructions tell the site crew how to prepare the positioning points and suspension points correctly.

The Short Instructions are available from Doka and must be posted by the customer at readily visible points, for example in the area of the main traffic routes of the working platforms.



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For more information, please contact your Doka technician.

System description

Intended use

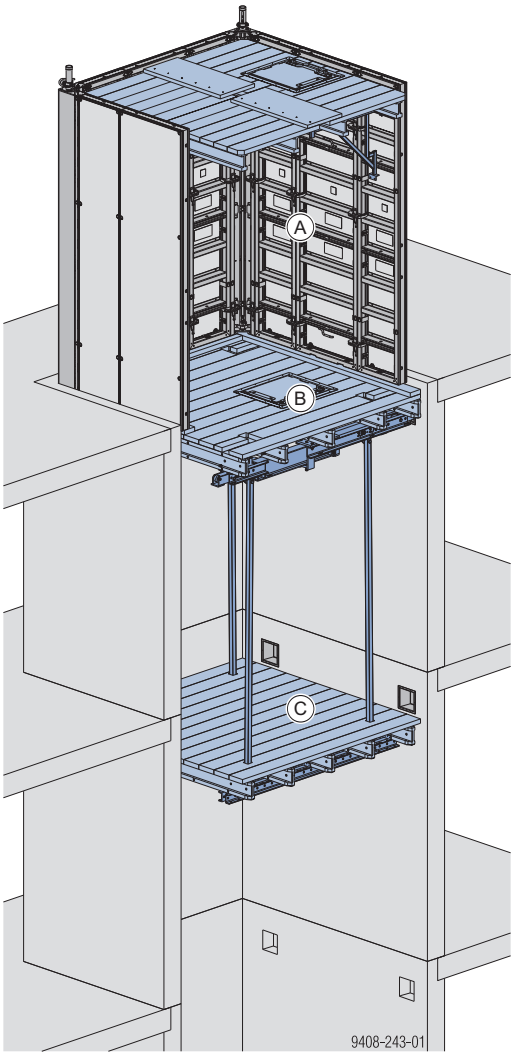
The shaft platform is a climbing system that can be used to support the inside formwork of a building shaft or as a working platform. Depending on the solution, formwork and shaft platform are moved by crane together or separately to the next casting section.

Technical data:

- Max. shaft width: 6.14 m
- Max. angle of inclination: 0°

In special cases, boundary conditions can vary. The relevant information in the Doka technical documents must be observed. Any other use or use going beyond that stated above is contrary to the intended use and requires a risk assessment, revised static calculations as well as supplementary assembly instructions!

System overview



A	Shaft formwork
B	Shaft platform
C	Suspended platform

Shaft formwork

- Framed formwork and timber-beam formwork can be used (see the section headed 'Mounting the formwork').
- The Framax stripping corner I enables the formwork to be set up and removed without the use of a crane.

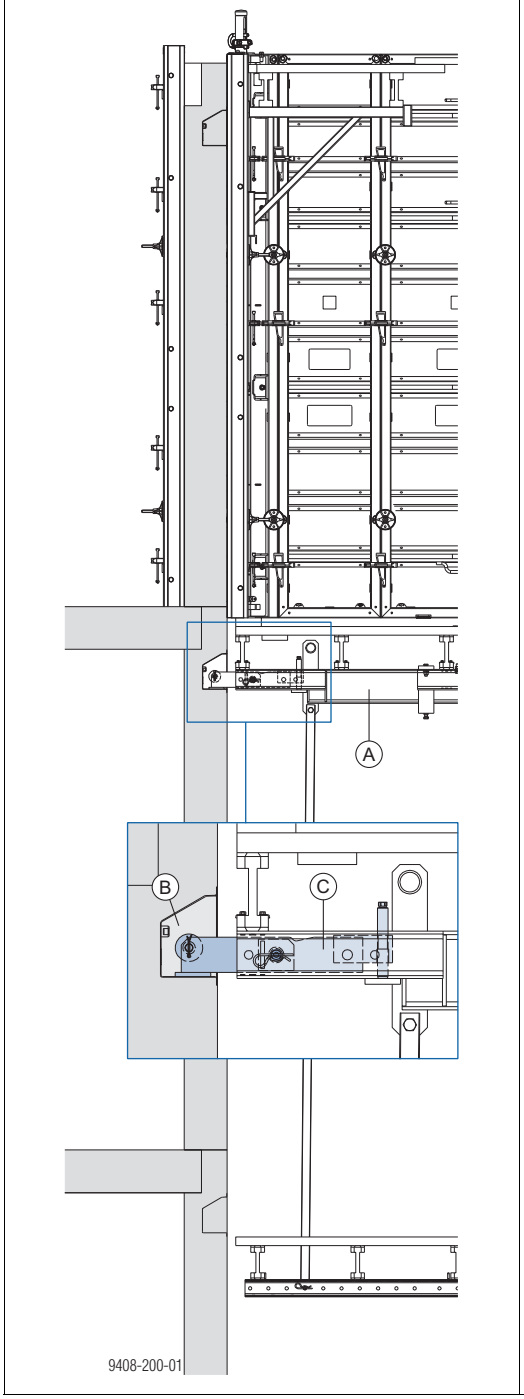
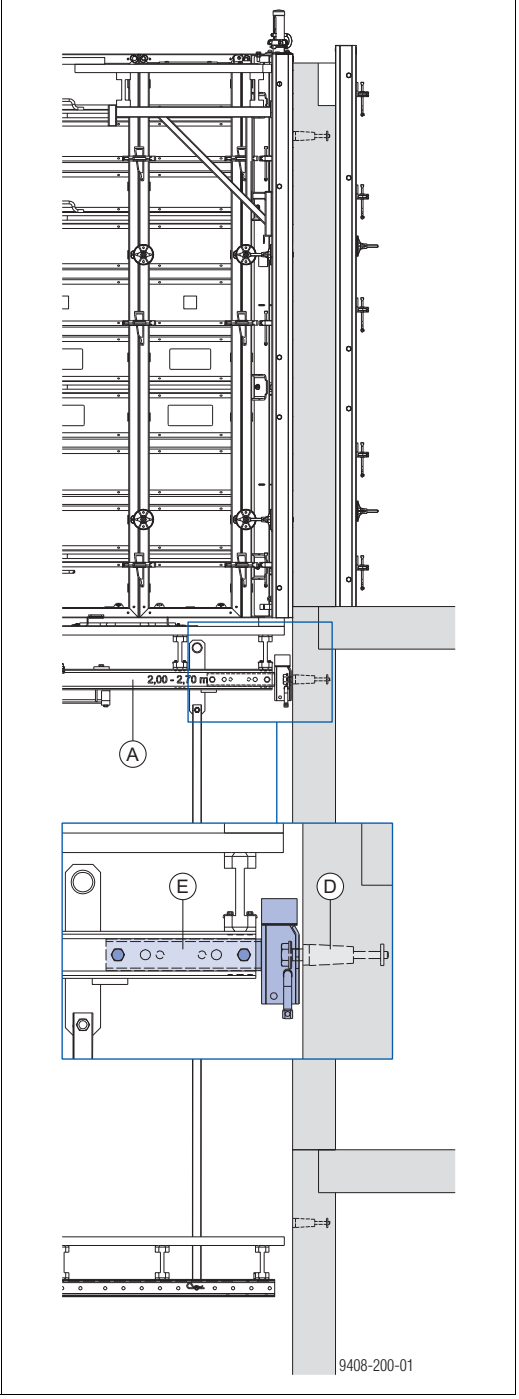
Shaft platform

- Simple adaptation to the shaft width using telescopic shaft beams (see the section headed 'Assembling the main beams').
- Simple suspension with the main beam head or latch (see the section headed 'Anchoring on the structure').

Suspended platform

Possibility of installing different variants of suspended platform (see the section headed 'Suspended platform').

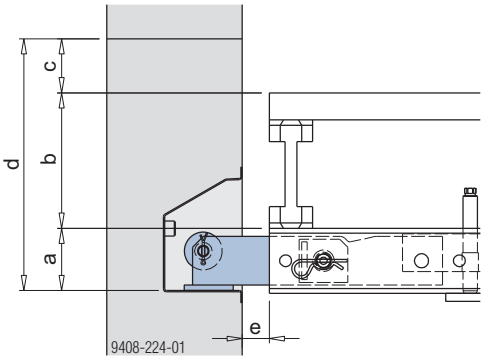
Design variants

Shaft platform with pawl-type mounting	Shaft platform with Main beam head (for cone-type suspension)
	

A Telescopic shaft beam
B Box for latch
C Latch for shaft platform
D Cone-type suspension
E Main beam head

Shaft platform with pawl-type mounting

System dimensions



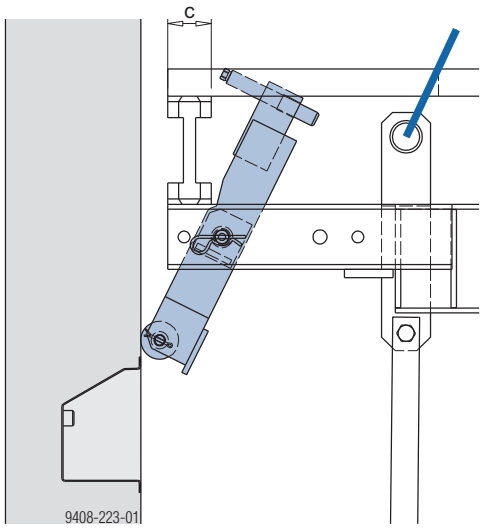
a ... 115 mm
b ... 250 mm
c ... Formwork overlap
d ... 465 mm (given a formwork overlap of 100 mm)
e ... 50 mm

Function of the pawl

The version of the shaft platform with self-actuating gravity pawls makes for a highly streamlined lifting/repositioning cycle.

The lifting operation requires recesses in the concrete, for the pawls to latch into.

The adjusting spindles on the pawls enable the entire shaft platform be lined-and-levelled in the horizontal.



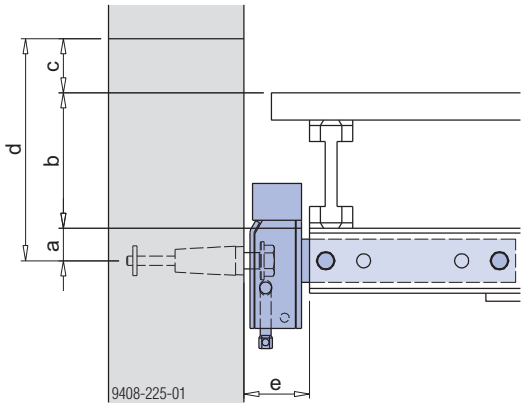
c ... max. 80 mm

Note:

If very wide squared timbers are used in the edge zone, this limits the swivelling range of the gravity pawls.

Shaft platform with Main beam head (for cone-type suspension)

System dimensions



a ... 60 mm
b ... 250 mm
c ... Formwork overlap
d ... 410 mm (given a formwork overlap of 100 mm)
e ... 120 mm

As an alternative to the pawl-type mounting version, there is also a version which uses "Platform climbing cones".

The entire shaft platform is anchored to the structure here by universal climbing cones.

Note:

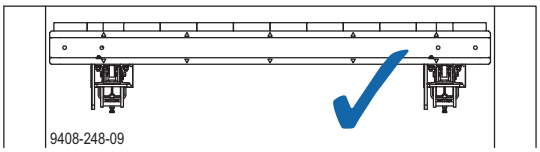
When the Framax stripping corner I is used, the shaft platform must be repositioned separately from the shaft formwork.

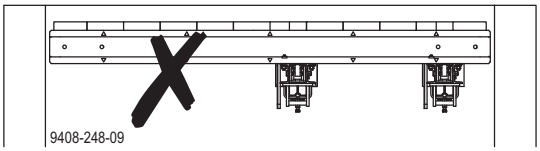
Additional measures in the event of off-centre load application

NOTICE

When making project-specific platforms, observe the following points:

- Position shaft beams as symmetrically as possible and keep their cantilever short.
- Ensure that all loads are applied centrally.
- The stability of the platforms must be ensured during all phases of the construction work!





WARNING

Risk of platforms tipping over when **loads are applied eccentrically**.

If it is unavoidable to extend a cantilever to one side, observe the following points:

➤ Choose the widest possible shaft-beam spacing in relation to the cantilever!

➤ Allow for the greater influence of the shaft beam in the cantilevering region!

➤ Secure the platform so that it cannot tip. (e.g. with a bracing)

The anti-liftout guards are not suitable for bearing planned forces! The anti-liftout guard is only designed to prevent the platform from being accidentally lifted out of its suspension point while work is in progress.

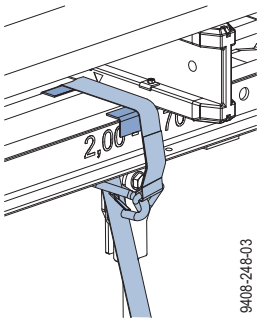
Tension-rod bracing

Attachment to the platform beam.

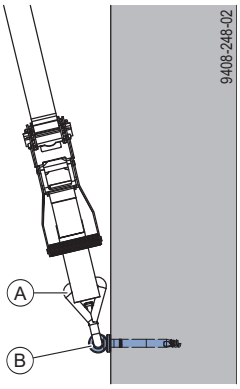
➤ Loop the lashing strap around the platform beam.

NOTICE

Protect the lashing strap of the bracing from damage!
Use edge protectors when looping the lashing strap around the platform beam!



Bracing on shaft platform with pawl-type mounting:
Set up the bracing on the structure using express anchors in the previous casting section.



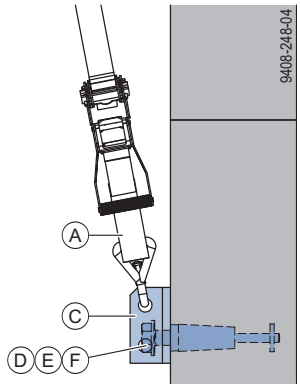
A	Lashing strap 5.00m 2G
B	Doka express anchor 16x125mm

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

Permitted load where $f_{ck,cube,current} \geq 10$ N/mm²:
$F_{permissible}$ = 10.0 kN (R_d = 15.0 kN)

Follow the directions in the 'Doka express anchor 16x125mm' and 'Lashing strap 5.00m' User Information booklets.

Bracing on shaft platform with main beam head:
Set up the bracing on the structure at the cone-type suspension of the previous casting section (see the section headed 'Anchoring on the structure').



A	Lashing strap 5.00m 2G
C	Bracing shoe
D	Cone screw M30 SW50 7cm
E	Universal climbing cone 15.0 2G
F	Stop anchor 15.0

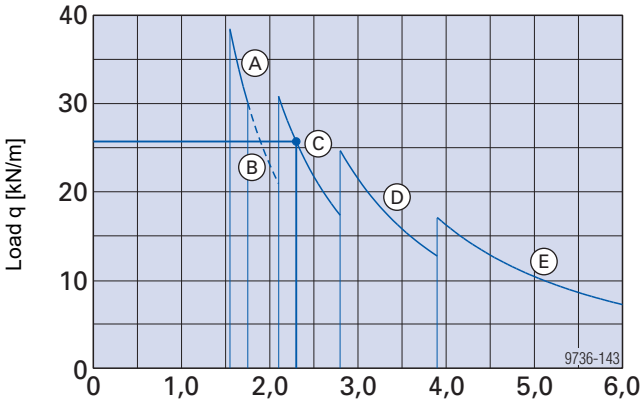
Structural design

Imposed loads

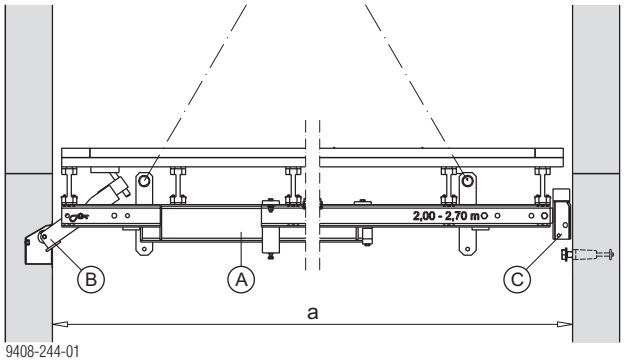
Permissible imposed load per pawl or main beam head:
4000 kg (40 kN)

Permitted loading of the telescopic shaft beams

Design diagram for telescopic shaft beams with gravity pawls or main beam heads



A	Telescopic shaft beam 1.45-1.65m (2 x U100)
B	Telescopic shaft beam 1.65-2.00m (2 x U100)
C	Telescopic shaft beam 2.00-2.70m (2 x U120)
D	Telescopic shaft beam 2.70-3.80m (2 x U140)
E	Telescopic shaft beam 3.80-5.90m (2 x U160)



a ... Shaft width (tolerance ±20 mm)

A	Telescopic shaft beam
B	Pawl-type mounting
C	With main beam head (cone-type suspension)

Explanation of terms

q	=	(live load + permanent load) / Platform area in m²	x	Influence width "b" of the telescopic shaft beam
Live load	Formwork load + live load distributed across entire platform area (at least 2.0 kN/m²). If it is also intended to store rebar on the platform, an exact loading calculation will be necessary.			
Permanent load	comprises the decking (0.3 kN/m² for 50 mm thick decking), the transverse squared timbers (6.0 kN/m³) and an estimate for the main-beam sections:][100 = 0.22 kN/lin. m][120 = 0.27 kN/lin. m][140 = 0.33 kN/lin. m][160 = 0.38 kN/lin. m If a suspended platform is being used, its dead weight must also be allowed for in the permanent load.			

Example

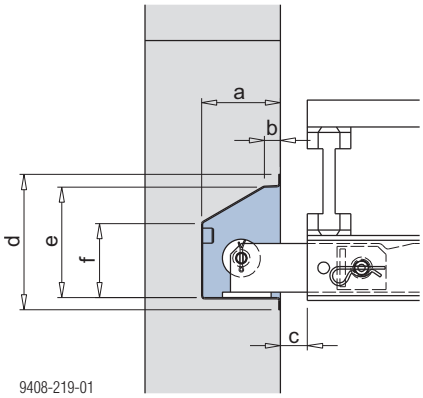
- Basic data:
  - Width of shaft: 2.30 m = Curve **(C)**
- Result:
  - Permitted load: 26 kN/m

Anchoring on the structure

Shaft platform with pawl-type mounting

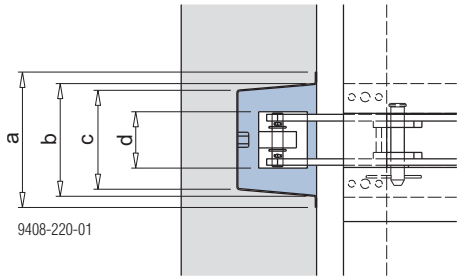
Support situation with pawl-type mounting

Pawl recess with Box for latch 20x20x15cm



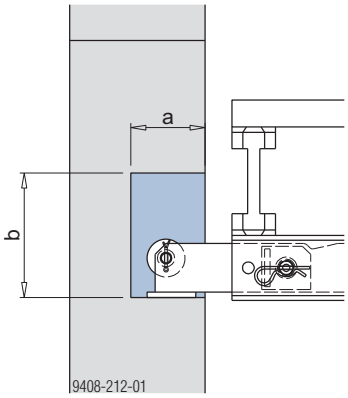
a ... 145 mm
b ... 30 mm
c ... 50 mm
d ... 250 mm
e ... 205 mm
f ... 137 mm

Plan view



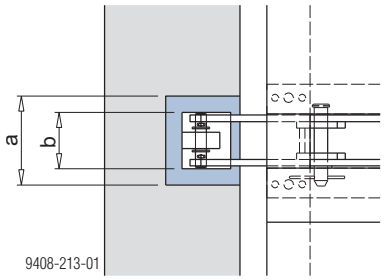
a ... 250 mm
b ... 204 mm
c ... 180 mm
d ... 104 mm

Smallest possible pawl recess using site-provided latch-box



a ... 137mm
b ... 230 mm

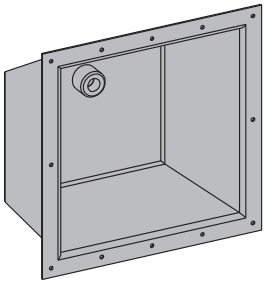
Plan view



a ... 164mm
b ... 104mm

"Box for latch" for pawl-type mounting in the concrete

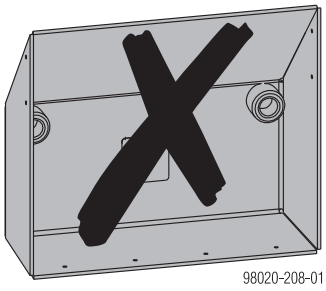
The Box for latch 20x20x15cm is used for forming recesses in the concrete on which to rest the pawls of shaft platforms.



A "Plug 15.0" (expendable part) is captively integrated in the "Box for latch".

NOTICE

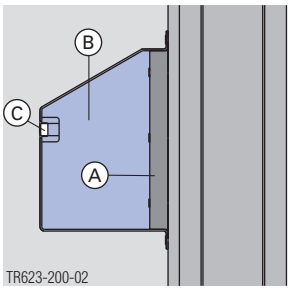
The "Box for latch" 24x21x10cm is not suitable for use with the telescopic shaft beam.



Fixing by nailing to the formwork sheet

Fixing to the formwork

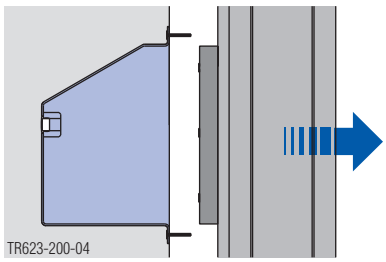
- ➤ Use screws or pin-nails to fix a 20 x 20 cm formwork sheet **(A)** to the desired location on the formwork as a positioning aid.
- ➤ Place the "Box for latch" **(B)** over the positioning aid and fix it with pin-nails.
- ➤ Before every time of using: Make sure that a Plug 15.0 **(C)** has been inserted.



A	Formwork sheet 20 x 20 cm
B	Box for latch 20x20x15cm
C	Plug 15.0

Opening the formwork

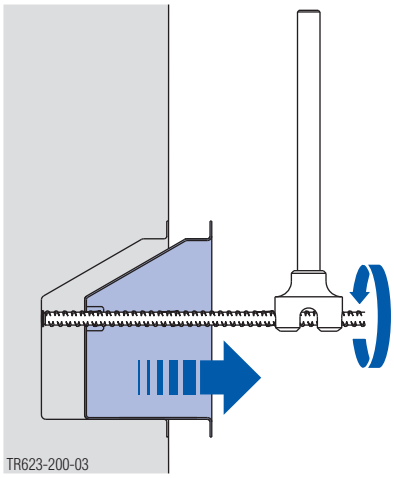
- ➤ Strike the shaft formwork.
  The "Box for latch" remains in the concrete and acts as a support surface for the pawl of the shaft platform.



Dismantling

This work is carried out from the finishing-work platform.

- ➤ Screw a Tie-rod 15.0 into the sleeve of the "Box for latch"; using a Tie-rod wrench 15.0/20.0, turn the tie-rod to detach the "Box for latch" from the concrete.



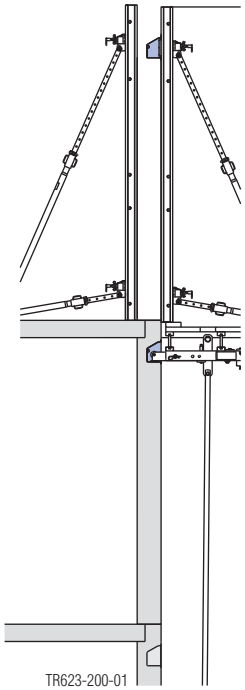
Check for any signs of damage. It may be necessary to straighten the box again.

Typical cross-section

Note:

At least two Boxes for latch 20x20x15cm are needed for each pawl plane!

The pawl rests in one "Box for latch" while the one below it is dismounted, working from the finishing-work platform, and then fastened to the formwork again to prepare the next support point.

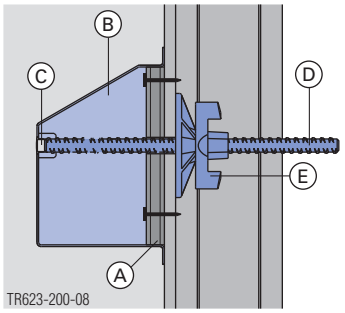


Fixing using a tie-rod and a Super-plate

This fixing method ensures that the "Boxes for latch" remain firmly and stably mounted even when they are used many times over in the same position.

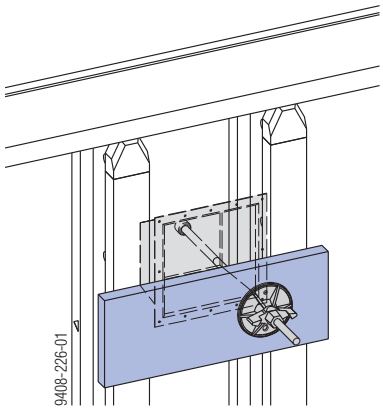
Fixing to the formwork

- ➤ Use screws or pin-nails to fix a 20 x 20 cm formwork sheet **(A)** to the desired location on the formwork as a positioning aid.
- ➤ Drill a diam. 18 mm hole in the form-ply (position as shown in shop drawing / assembly plan).
- ➤ Screw a Tie-rod 15.0 **(D)** into the "Box for latch".
- ➤ Before every time of using: Make sure that a Plug 15.0 **(C)** has been inserted.
- ➤ Place the "Box for latch" **(B)** over the positioning aid and fix it with a Super-plate 15.0 **(E)** .



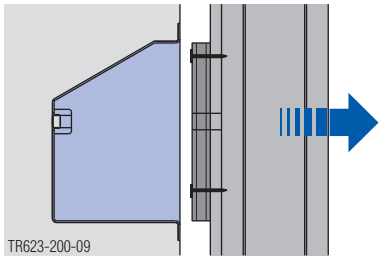
A	Formwork sheet 20 x 20 cm
B	Box for latch 20x20x15cm
C	Plug 15.0
D	Tie rod 15.0
E	Super plate 15.0

If the Tie-rod 15.0 is located too close to a Doka beam, a plank can be nailed to this and the adjoining beam to provide a support surface for the Super-plate.



Opening the formwork

- ➤ Unscrew the Super-plate.
- ➤ Before striking the formwork, remove the Tie-rod 15.0 using the Tie-rod wrench 15.0/20.0.
- ➤ Strike the shaft formwork.
  The "Box for latch" remains in the concrete and acts as a support surface for the pawl of the shaft platform.



Fixing through an opening cut out of the formwork sheet

This solution makes it possible to remove the "Boxes for latch" before striking the formwork.

Ensure that the following conditions are met:

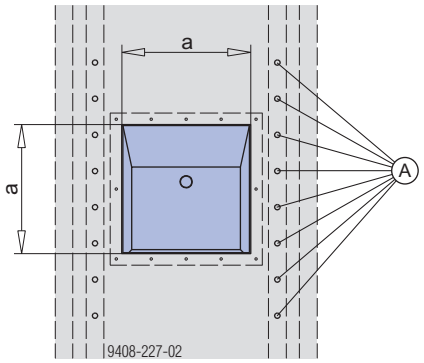
- boxes always used in same position
- formwork used is Large-area formwork Top 50

Advantages:

- only 1 "Box for latch" needed in each pawl plane
- no suspended platform needed for dismounting the boxes

Fixing to the formwork

➤ Cut out the opening for the "Box for latch" in the formwork sheet.



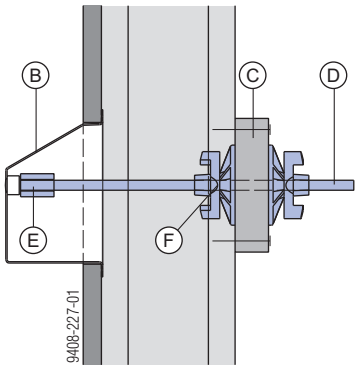
a ... 212 mm

A	Universal countersunk screw

Use universal countersunk screws to provide additional fixing between the formwork sheet and the Doka beams H20 on either side of the box.

➤ Drill a hole for the tie-rod into a plank and fix this plank to the Doka beams H20 with universal countersunk screws.

➤ Fix the "Box for latch" with a Tie-rod 15.0, Hexagon nut 15.0 and Super-plates 15.0.

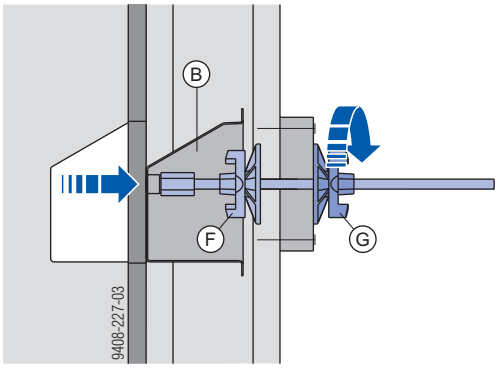


B	Box for latch 20x20x15cm
C	Plank, 5x20 cm
D	Tie-rod 15.0
E	Hexagon nut 15.0
F	Super-plate 15.0

Opening the formwork

➤ Unscrew the inside super-plate.

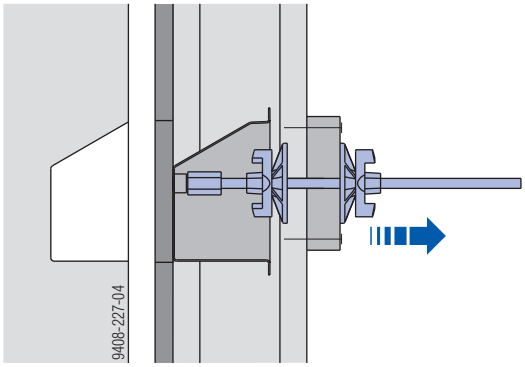
➤ Screw the outside super-plate onto the tie-rod.



B	Box for latch 20x20x15cm
F	Inside Super-plate 15.0
G	Outside Super-plate 15.0

The "Box for latch" is now pulled from the concrete.

➤ Strike the shaft formwork.



Shaft platform with Main beam head (for cone-type suspension)

Positioning point and suspension point

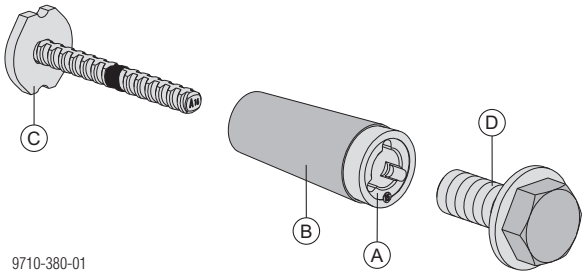
NOTICE

The system is usually anchored to the structure by the **Tie rod system 15.0**.

Risk of confusion!

➤ When the system is combined with Doka automatic climbing systems, the **Tie rod system 20.0** must be used throughout the entire project to avoid confusion.

This also applies to combinations with guided climbing systems (e.g. Guided climbing formwork Xclimb 60).



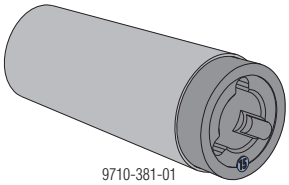
A Universal climbing cone 15.0 2G
B Sealing sleeve K 15.0 (lost anchoring component)
C Stop anchor (lost anchoring component)
D Cone screw M30 SW50 7cm

- **Universal climbing cone 15.0 2G**
  - The positioning points and the suspension points are prepared using the Universal climbing cone 15.0 2G.
- **Stop anchor**
  - Lost anchoring component for anchoring the universal climbing cone (and thus the climbing unit) in the concrete from one side.
- **Cone screw M30 SW50 7cm**
  - Positioning point – for fastening the universal climbing cone.
  - Suspension point – safe means of suspending the climbing unit.

NOTICE

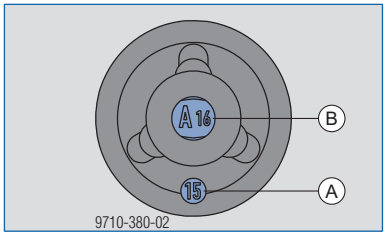
- Use the Cone screw M30 SW50 7cm (head of screw is green) for the positioning point and the suspension point!

Universal climbing cones 15.0



Advantages of the Universal climbing cone 15.0 **2G**:

- Orange mark on the end face for easy identification
- Clear view of the code on the end face with stop anchor installed

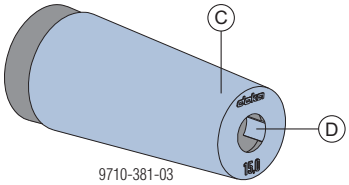


A Orange mark on end face
B Code on the stop anchor

Sealing sleeve K 15.0

NOTICE

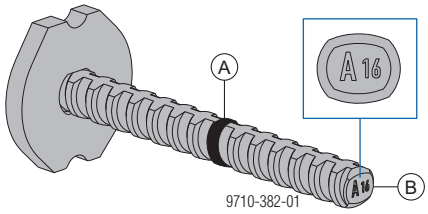
Universal climbing cones are supplied with sealing sleeves K. Fit **new sealing sleeves every time** the cones are **re-used**.



C Sealing sleeve K 15.0 (orange)
D Tab on the sealing sleeve

The tab on the sealing sleeve sits against the thread of the universal climbing cone and prevents the stop anchor from working loose.

Types of stop anchor

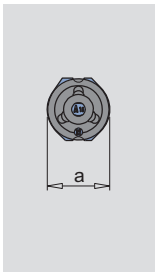


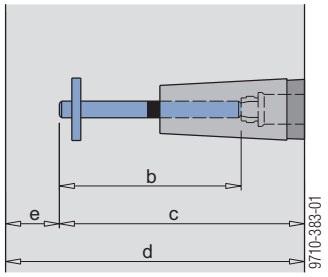
A Mark for screw-in depth
B Code for stop-anchor type

The stop anchor has an identification code on the end face.

- The code is a combination of a letter and a number and it unequivocally describes the features of the stop anchor:
  - Letter: Tie-rod size and size of the stop-anchor plate.
  - Number: Length of the stop anchor in cm
- Easy identification of the stop-anchor type before and after the concrete has been poured

Stop anchor 15.0 A16 and A21





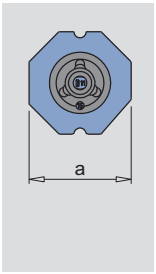
A	Stop anchor 15.0
	a ... size of stop-anchor plate: 55 mm
16	b ... tie-rod length: 16.0 cm

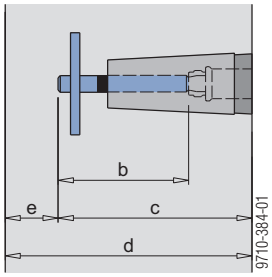
c ... installation depth: 21.5 cm
d ... minimum wall thickness: 23.5 cm (where the concrete cover is 2 cm)
d ... minimum wall thickness: 24.5 cm (where the concrete cover is 3 cm)
e ... concrete cover

A	Stop anchor 15.0
	a ... size of stop-anchor plate: 55 mm
21	b ... tie-rod length: 21.0 cm

c ... installation depth: 26.5 cm
d ... minimum wall thickness: 28.5 cm (where the concrete cover is 2 cm)
d ... minimum wall thickness: 29.5 cm (where the concrete cover is 3 cm)
e ... concrete cover

Stop anchor 15.0 B11





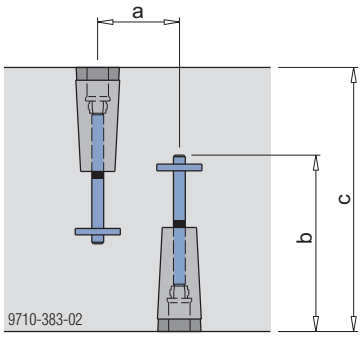
B	Stop anchor 15.0
	a ... size of stop-anchor plate: 90 mm
11	b ... tie-rod length: 11.5 cm

c ... installation depth: 17 cm
d ... minimum wall thickness: 19 cm (where the concrete cover is 2 cm)
d ... minimum wall thickness: 20 cm (where the concrete cover is 3 cm)
e ... concrete cover

Opposite anchoring points

Note:
If the wall thickness is less than twice the installation depth of the stop anchor, opposing anchor points must be offset to one another.

Plan view

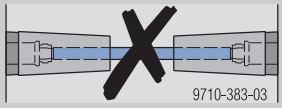


a ... min. 100 mm, if c < 2 x b
b ... installation depth
c ... wall thickness

If two cones are fitted opposite one another and joined with a tie rod there is a risk of formwork falling off.

Unscrewing the anchor on one side may cause the anchor on the opposite side to shear off.

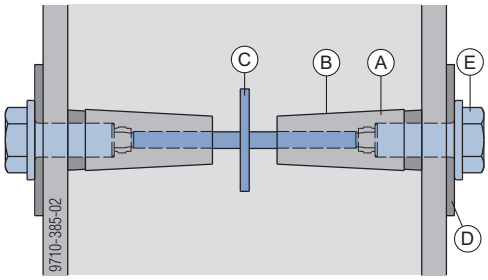
➤ Do not, under any circumstances, connect climbing cones with a tie rod.



Anchor points with no offset

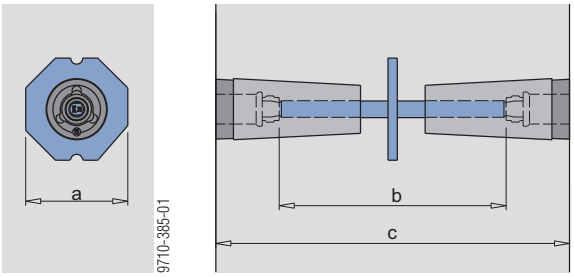
Anchor points with no offset are prepared using the **Stop anchor double-ended 15.0 K**.

Positioning point



A	Universal climbing cone 15.0 2G
B	Sealing sleeve K 15.0 (lost anchoring component)
C	Stop anchor double-ended 15.0 K.. (lost anchoring component)
D	Packing plate (e.g. Dokaplex 15 mm)
E	Cone screw M30 SW50 7cm

Stop anchor double-ended 15.0 K..



K	Stop anchor double-ended 15.0
	a ... size of stop-anchor plate: 90 mm
19 - 60	b ... tie-rod length: 19 - 60 cm

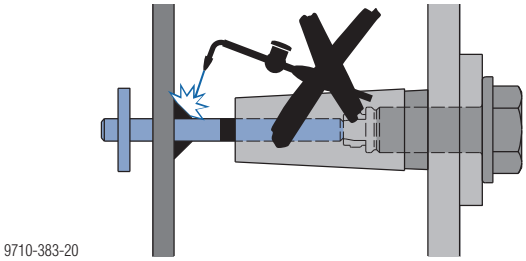
b ... order length = wall thickness 'c' - 11 cm
c ... wall thickness: 30 - 71 cm

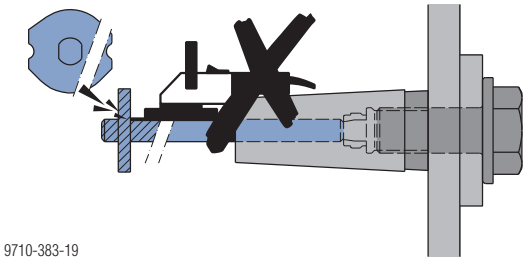
Preparing the positioning point

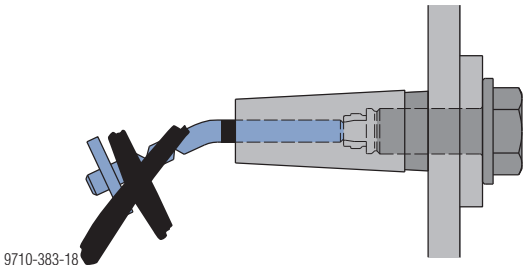
WARNING

Sensitive anchoring, suspension and connector components!

- ➤ Never weld or heat these components.
- ➤ Any components that are damaged or weakened by corrosion or wear must be withdrawn from use and destroyed.



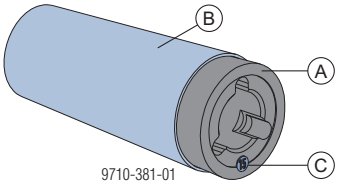




Preparing the positioning point

➤ Push the sealing sleeve all the way onto the universal climbing cone.

The coloured mark on the universal climbing cone and the colour of the sealing sleeve must be the same.



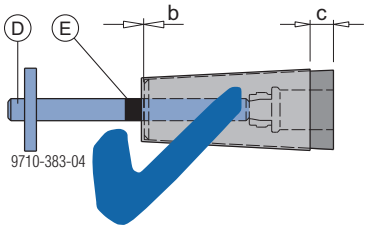
A	Universal climbing cone 15.0 2G
B	Sealing sleeve K 15.0 (orange)
C	Orange mark on end face

Note:

Do not screw the stop anchor in until the sealing sleeve is pushed fully on to the universal climbing cone.

WARNING

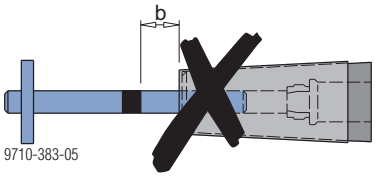
- ➤ Always screw the stop anchor into the universal climbing cone until it fully engages (up to the depth mark).
  Not screwing the stop anchor fully into the cone may lead to reduced load-bearing capacity and failure of the suspension point – resulting in possible injury and/or damage.



b ... 0 mm
c ... 15 mm

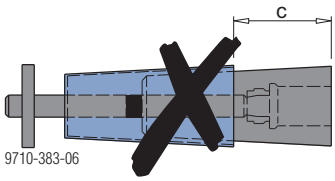
D	Stop anchor 15.0 (lost anchoring component)
E	Depth mark

- The depth mark on the stop anchor must be right up against the universal climbing cone = must be screwed in to the full depth.



b ... > 0 mm not permitted

- The sealing sleeve must be completely pushed onto the universal climbing cone.



c ... > 15 mm not permitted

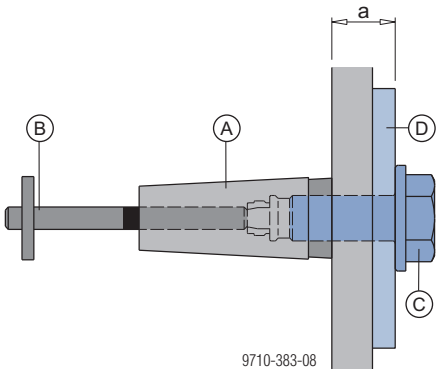
Positioning point with Cone screw M30 SW50 7cm (with hole drilled through form-ply)

Installation:

➤ Fasten a packing plate (e.g. Dokaplex 15 mm) to the form-ply (position as shown in shop drawing / assembly drawing).

➤ Drill a diam. 30 mm hole in the form-ply (position as shown in shop drawing / assembly drawing).

➤ Secure the prepared positioning point to the form-ply with Cone screw M30 SW50 7cm.

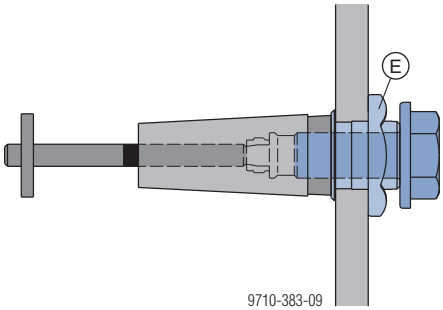


a ... 35 - 45 mm

A	Universal climbing cone 15.0 2G
B	Stop anchor 15.0
C	Cone screw M30 SW50 7cm
D	Packing plate

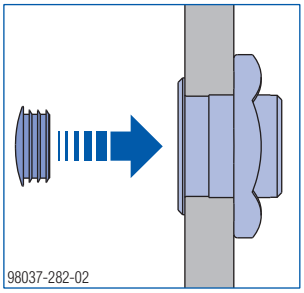
The Form-ply protector 32mm protects the form-ply from damage around the positioning point. This is a particular advantage for formwork with high numbers of repeat uses.

Possible thicknesses of form-ply: 18 - 27 mm
In order to fit the form-ply protector, a 46 mm diam. hole must be drilled in the form-ply first.



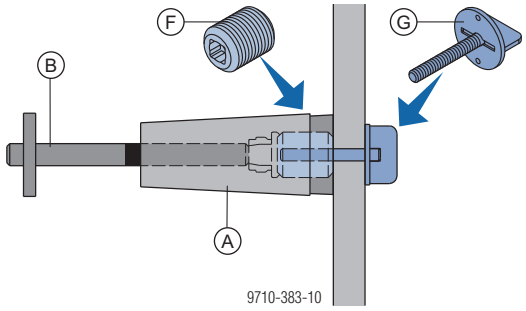
E	Form-ply protector 32mm (width across flats 70 mm)

Where necessary, the Form-ply protector 32mm can be closed off with a Cover cap D35x3 (included with product).



Positioning point with Positioning clamp M30 (with hole drilled through form-ply)

Because the hole is drilled with a diameter of only 9 - 10 mm, the positioning point can be relocated at smaller intervals than would be possible with the Cone screw M30 SW50 7cm.



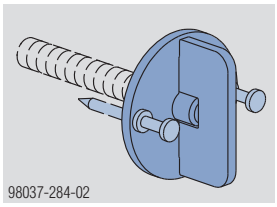
A Universal climbing cone 15.0 2G
B Stop anchor 15.0
F Socket connector M30 of the Positioning clamp M30
G M8 wing bolt of the Positioning clamp M30

Installation:

➤ Drill a diam. 9 - 10 mm hole in the form-ply (position as shown in shop drawing / assembly drawing).

Nail the M8 wing bolt onto the form-ply to make it easier to mount the cone.

Shortened double-headed nails make it easier to remove the wing bolt.

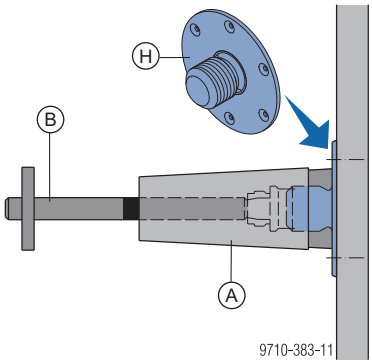


➤ Screw a Socket connector M30 all the way into the universal climbing cone and tighten it.

➤ Screw the prepared positioning point onto the M8 wing bolt (make sure that it seals against the formwork).

Positioning point with Positioning disk M30 (with no hole drilled through form-ply)

For special applications only, when it is not possible to drill through the form-ply (e.g. where there are Doka beams or formwork panel frame profiles directly behind the positioning point).



A Universal climbing cone 15.0 2G
B Stop anchor 15.0
H Positioning disc M30

NOTICE

It is not permitted to use the Positioning disc M30 more than once in the same position, as it cannot be fixed firmly and securely in the old nail-holes.

Tightness of the contact surface between the positioning disc and the climbing cone can be further increased by applying a thin film of water-resistant grease.

Installation:

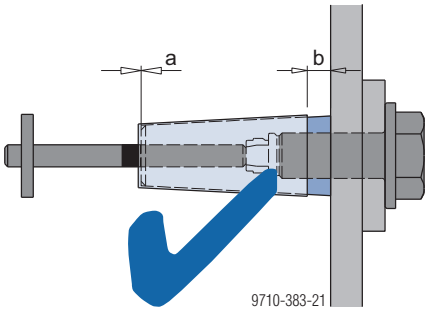
➤ Fix the Positioning disc M30 to the form-ply using 2.8x60 nails (position as shown in shop drawing / assembly drawing).

➤ Screw the prepared positioning point onto the Positioning disc M30 and tighten it.

Check of the positioning point

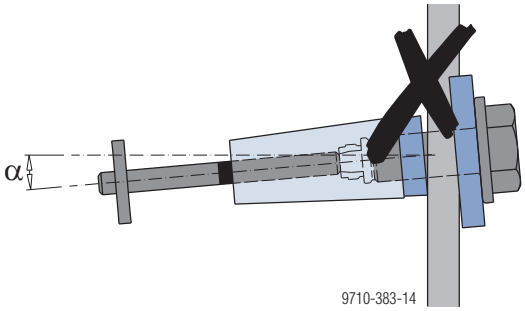
➤ Before pouring, check all positioning points and suspension points again.

- The sealing sleeve must be completely pushed onto the Universal climbing cone.
- The depth mark on the stop anchor must be right up against the universal climbing cone = must be screwed in to the full depth.
- Tolerance for locating the positioning points and suspension points: ±10 mm in the horizontal and the vertical.



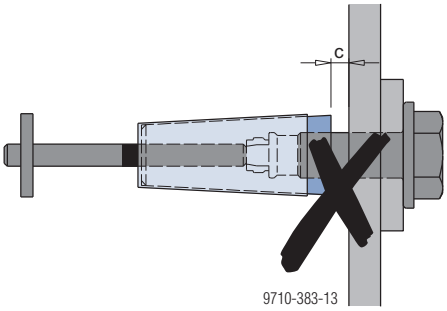
a ... 0 mm
b ... 15 mm

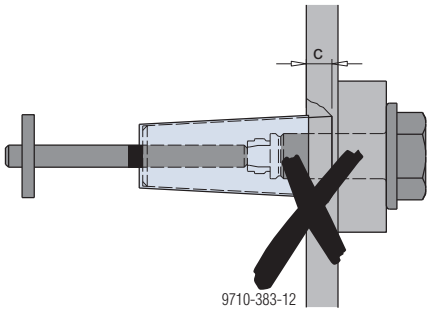
- The axis of the universal climbing cone must be at right-angles to the surface of the concrete – maximum angle of deviation: 2°.



α ... max. 2°

- The universal climbing cone must be embedded so that it is flush with the concrete surface.





c ... > 0 mm not permitted

Pouring

Mark the positions of the anchoring points at the top edge of the formwork to make them easier to locate when the concrete is being poured.

➤ Prevent the vibrator from touching the stop anchors.
➤ Do not place concrete from directly above the stop anchors.

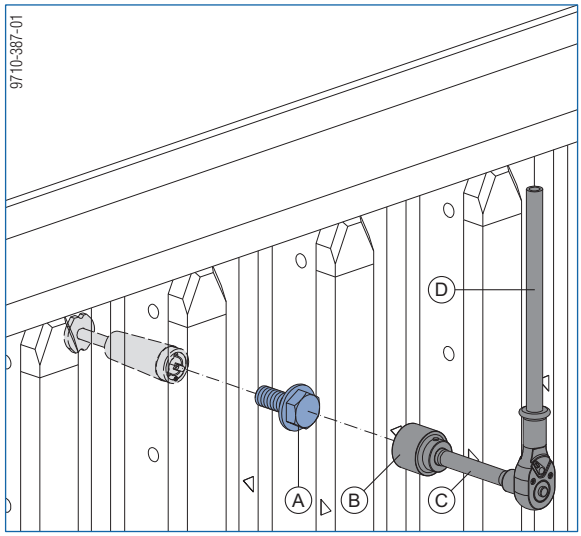
These measures prevent the anchors from working loose during pouring and vibration.

Stripping the formwork

Remove the connecting parts holding the positioning point to the formwork either before or after stripping, depending on which connecting parts are used.

Positioning point with Cone screw M30 SW50 7cm:

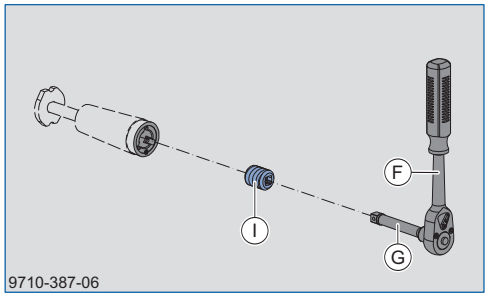
➤ Remove the Cone screw M30 SW50 7cm before stripping.



A Cone screw M30 SW50 7cm
B Box nut 50 3/4"
C Extension 20cm 3/4"
D Reversible ratchet 3/4"

Positioning point with Positioning clamp M30:

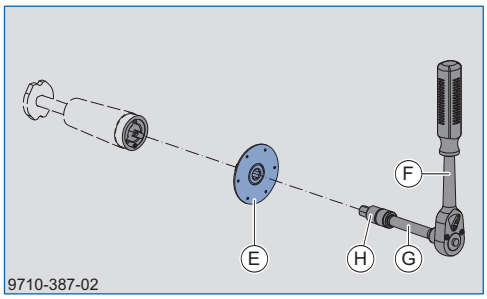
➤ Remove the M8 wing bolt before stripping.
➤ Remove the Socket connector M30 after stripping.



F Reversible ratchet 1/2"
G Extension 11cm 1/2"
I Socket connector M30 of the Positioning clamp M30

Positioning point with Positioning disc M30:

➤ Remove the Positioning disc M30 after stripping.



E Positioning disc M30
F Reversible ratchet 1/2"
G Extension 11cm 1/2"
H Hexagon bit socket 14mm 1/2"

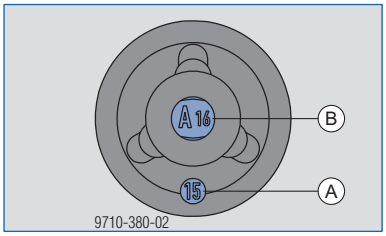
Preparing the suspension point

Check of the suspension point

NOTICE

➤ Stop anchor type and climbing cone must be as specified in the assembly drawing or shop drawing, as applicable.

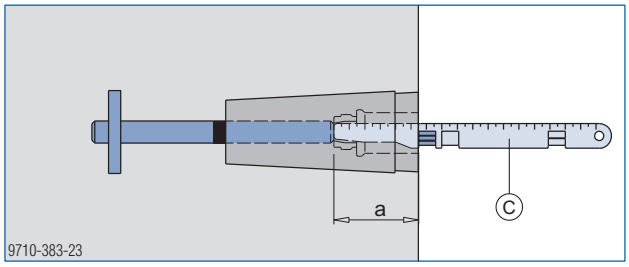
➤ Check the coloured mark on the universal climbing cone and the code on the stop anchor.



A Orange mark
B Code on the stop anchor

➤ Check the placement depth of the stop anchor.

The Safety Ruer SK permits a quick check to ensure that placement depth is within the permissible range.



a ... perm. placement depth: 55 - 65 mm

C Safety Ruler SK

Dimensioning the suspension point

The required **cube compressive strength** of the concrete at the time of loading must be **specified** separately for each project **by the structural designer**. It will depend on the following factors:

- load actually occurring
- length of the stop anchor
- reinforcement / extra reinforcement steel
- distance from edge

The introduction of the forces, the transfer of these forces into the structure, and the stability of the overall construction, must all be verified by the structural designer.

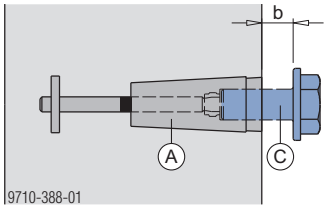
The required cube compressive strength $f_{ck,cube,current}$ must be at least 10 N/mm², however.

Follow the directions in the Calculation Guide entitled 'Load-bearing capacity of anchorages in concrete' or ask your Doka technician!

Hanging the shaft platform into place

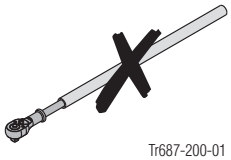
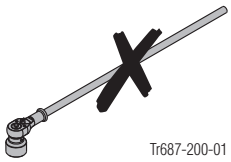
➤ Screw the Cone screw M30 SW50 7cm into the universal climbing cone until it engages, and tighten it firmly.
A tightening torque of 100 Nm (20 kg, assuming a ratchet-length of approx. 50 cm) is sufficient.

Ensure that control dimension b = 30 mm (± 2 mm)!

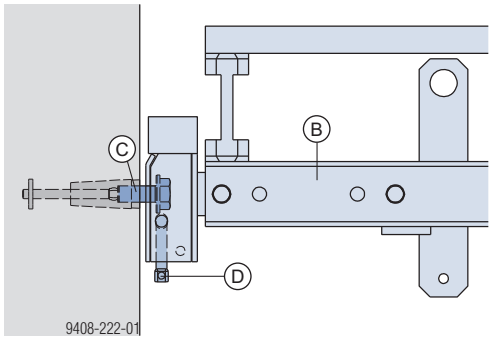


A Universal climbing cone
C Cone screw M30 SW50 7cm

Only the Reversible ratchet 3/4" may be used for screwing in and fixing the Cone screw M30 SW50 7cm into the universal climbing cone.

Reversible ratchet 3/4"	Reversible ratchet 3/4" with extension	Ratchet MF 3/4" SW50
 Tr687-200-01	 Tr687-200-01	 Tr687-200-01

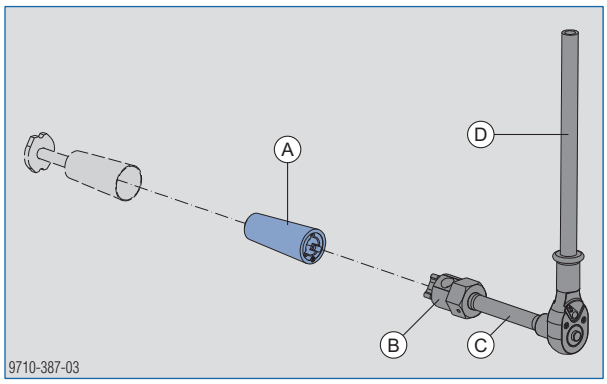
➤ Hook the shaft platform onto the Cone screw M30 SW50 7cm and secure it against accidental lift-out with fastening pins.



B Shaft platform with Main beam head
C Cone screw M30 SW50 7cm
D Fastening pin

Dismounting the suspension point

➤ Remove the Cone screw M30 SW50 7cm.
➤ Remove the universal climbing cone.



A	Universal climbing cone 15.0 2G
B	Universal cone spanner 15.0/20.0
C	Extension 20cm 3/4"
D	Reversible ratchet 3/4"

Sealing the suspension point

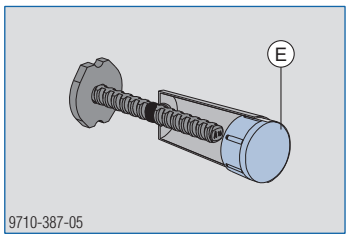
Grout level with the rest of the surface

Sealing of the suspension points can be a requirement, for reasons of rust prevention.

➤ Fill the cavity of the suspension point with mortar and grout it smoothly.

Fair-faced concrete plug 52mm plastic

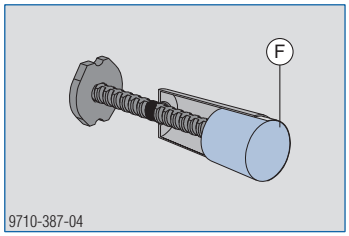
➤ Push the fair-faced concrete plug into the hole of the suspension point.



E	Fair-faced concrete plug 52mm plastic

Concrete cone 52mm

➤ Remove the sealing sleeve.
➤ Glue the concrete cone into the hole of the suspension point.



F	Concrete cone 52mm

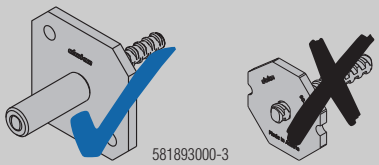
The concrete plug is glued into place with standard concrete adhesive.

Other possible anchorages

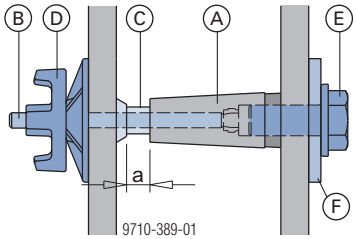
Thin walls

Wall thicknesses of 15 to 16 cm are prepared using the **Wall anchor 15.0 15cm**.

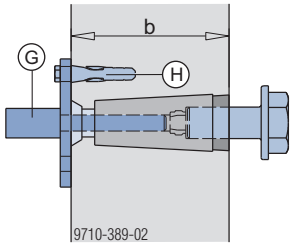
Risk of confusion!
➤ NEVER use Stop anchors 15.0 for this application.



Positioning point



Suspension point



a ... length of plastic tube 12 - 22 mm
b ... 15 - 16 cm

A	Universal climbing cone 15.0 2G
B	Tie rod 15.0mm
C	Universal cone 22mm + Plastic tube 22mm
D	Super plate 15.0
E	Cone screw M30 SW50 7cm
F	Packing plate (e.g. Dokaplex 15 mm)
G	Wall anchor 15.0 15cm
H	Hexagon timber screw 10x50 + dowel Ø12

Retrofitting a safe suspension point

Dimensioning the suspension point

The required **cube compressive strength** of the concrete and ready-mix mortar at the time of loading must be **specified** separately for each project **by the structural designer**. It will depend on the following factors:

- load actually occurring
- wall thickness
- reinforcement / extra reinforcement steel
- distance from edge

The introduction of the forces, the transfer of these forces into the structure, and the stability of the overall construction, must all be verified by the structural designer.

The required cube compressive strength $f_{ck,cube,current}$ must be at least 10 N/mm², however.

Drilling a hole for the suspension point through the wall

Comply with the manufacturer's specifications for the ready-mix mortar!

e.g.: if the crew forgot to prepare a positioning point.

➤ Drill a hole of diam. 55 mm and 130 mm depth.

➤ Drill a hole of diam. 25 mm.

➤ Push the sealing sleeve all the way onto the universal climbing cone.

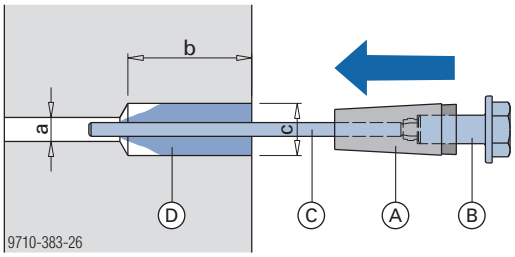
➤ Screw the tie rod into the universal climbing cone until it fully engages.

➤ Screw a Cone screw M30 SW50 7cm into the universal climbing cone.

The cone screw M30 SW50 7cm is used for aligning the suspension point.

➤ Put the unit part-way into the borehole.

➤ Paste the ready-mix mortar (supplied by site) into the drilled hole with a spatula.



a ... 25 mm
b ... 130 mm
c ... 55 mm

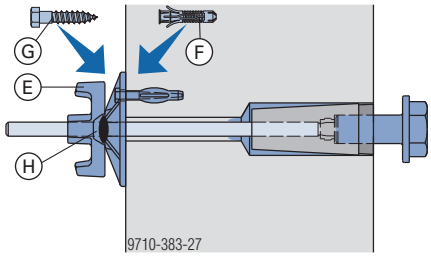
A	Universal climbing cone 15.0 2G
B	Cone screw M30 SW50 7cm
C	Tie rod 15.0mm
D	Ready-mix mortar

➤ Insert the unit so that it is flush with the concrete surface.
Scrap away the excess ready-mix mortar with a spatula.

NOTICE

➤ Weld a bead to the super plate to join the nut and the plate. Do this BEFORE screwing the super plate onto the tie rod.

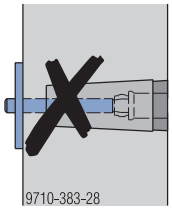
➤ On the other side of the concrete wall, screw on the super plate (now welded together) and secure it with a screw and dowel so that it cannot be unscrewed.



E	Welded-together Super plate 15.0
F	Dowel Ø12
G	Hexagon timber screw 10x50
H	Weld-seam

WARNING

➤ Do NOT fit stop anchors with the anchor plate exposed! The anchor plate must always be embedded in the concrete.

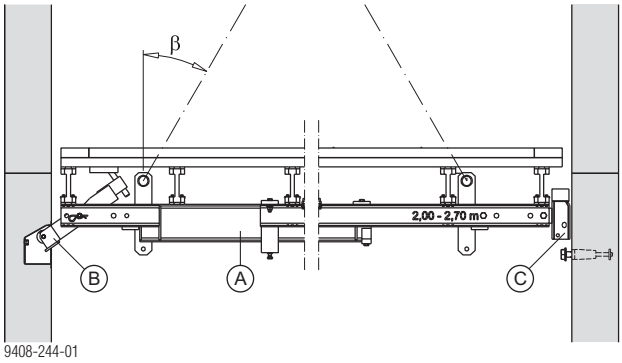


Repositioning

Instructions for safe repositioning of the complete unit

NOTICE

- **Before repositioning:** Remove any loose items from the formwork and platforms, or secure them firmly.
- 'Passenger transportation' is forbidden!
- Sling angle β: max. 30°
- When a climbing unit is repositioned, this opens up exposed fall-hazard locations on the remaining units. These exposed locations must be made safe by putting up an access prohibition barrier.

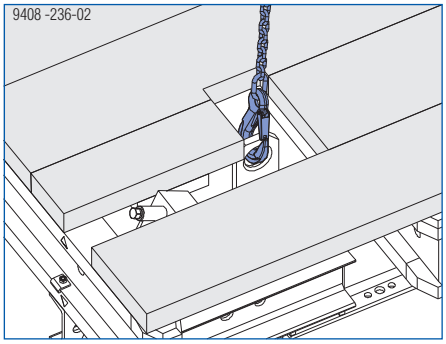


A Telescopic shaft beam
B Pawl-type mounting
C With main beam head (cone-type suspension)

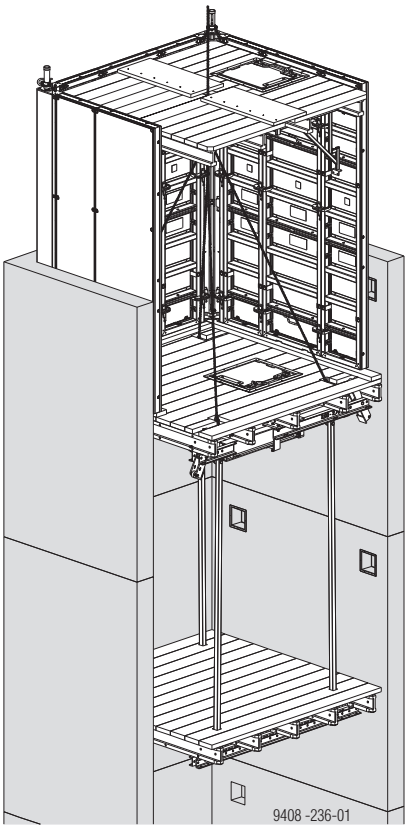
Max. load per hitching point
Permitted vertical force: 2000 kg (20 kN)

Shaft platform with pawl-type mounting

➤ Strip the formwork.
➤ Attach a 4-part chain to the telescopic shaft beams.

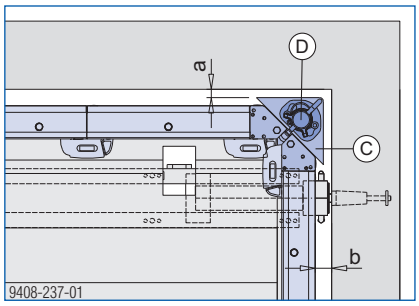


➤ Reposition the shaft platform and shaft formwork using the crane.



Shaft platform with Main beam head (for cone-type suspension)

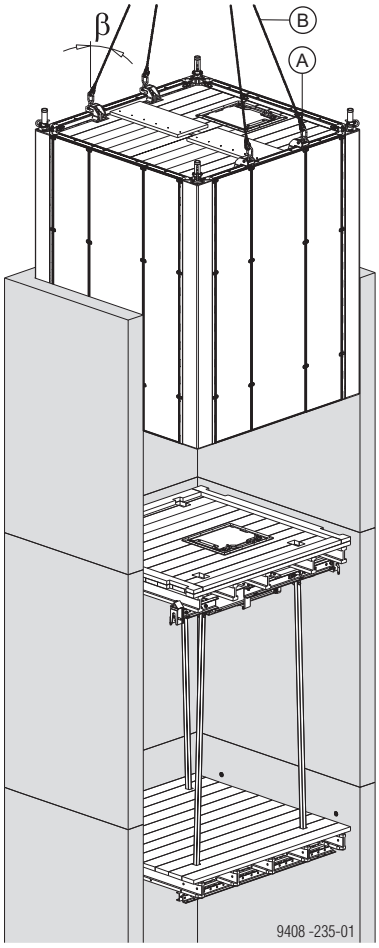
➤ Detach the formwork from the wall (twist the stripping spindle anti-clockwise).



a ... 3.0 cm
b ... 6.0 cm

C Stripping corner I
D Stripping spindle

➤ Lift the entire shaft formwork off the shaft platform and temporarily store it.



β ... max. 15°

A Framax lifting hook
B 4-part lifting chain

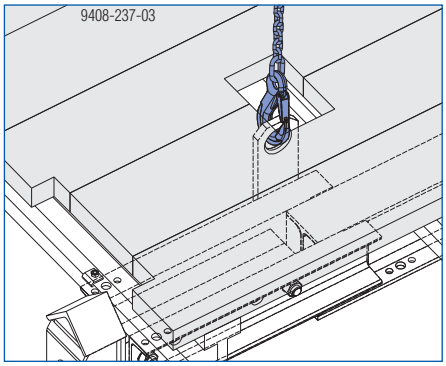
➤ Install the cone screws in the new casting section.

WARNING
Falling hazard!
Do not use the crane hook of the stripping corner I for repositioning the shaft formwork.

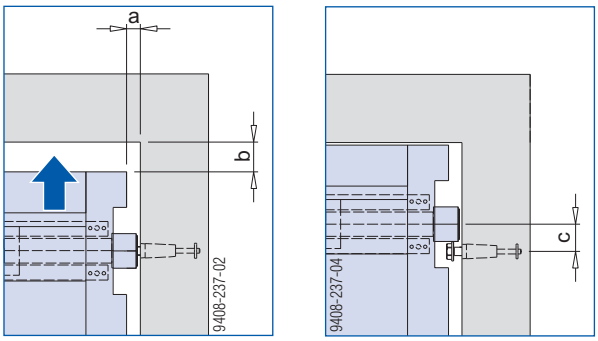
➤ Shaft formwork using Framed formwork Framax Xlife is **only** allowed to be lifted **with lifting hooks**.

➤ Shaft formwork using Large-area formwork Top 50 is **only** allowed to be lifted **with lifting brackets**.

➤ Attach a 4-part chain to the telescopic shaft beams.



➤ Manoeuvre the shaft platform to one side for lifting it past the suspension points.



a ... 50 mm
b ... 110 mm (clearance needed for manoeuvring to one side)
c ... 105 mm (95 mm + min. 10 mm play)

➤ Hook the shaft platform into the suspension points of the next pouring section.

➤ Set the shaft formwork down on the shaft platform. Close the formwork.

Operation of the shaft formwork

The modular design of the shaft formwork allows a wide range of combinations.

Depending on the project, the actual design may differ significantly from that described here.

➤ In these cases, discuss the assembly sequence with your Doka technician.

➤ Follow the directions in the shop drawing / assembly drawing.

NOTICE

- There must be a flat, firm base capable of supporting the load.
- Prepare a sufficiently large assembly area.

Note:

In order to explain the entire climbing workflow as simply as possible, the following repetitive actions are described in detail in separate sections.

- Installing latch boxes or positioning points (see the section headed 'Anchoring on the structure').
- Repositioning operation (see the section headed 'Repositioning').

For instructions on tying and joining the formwork elements/panels, and on cleaning them and using concrete release agents, see the User Information booklets 'Large-area formwork Top 50' and 'Framed formwork Framax Xlife'.

WARNING

Falling hazard!

➤ Do not step onto the pouring platforms until the formwork is securely closed up.

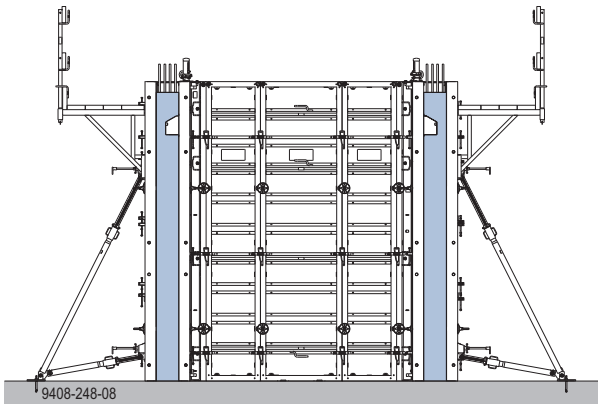
NOTICE

- During repositioning, the only persons allowed inside the access prohibition barriers are the trained personnel in charge of the repositioning operation.
- All persons working inside the access prohibition barriers must use a personal fall-arrest system (e.g. safety harness).

- When a climbing unit is repositioned, this opens up exposed fall-hazard locations on the remaining units. These open ends must be closed off by **attaching sideguards or an access prohibition barrier**.

1st casting section

- ➤ Apply concrete release agent and set up the shaft formwork.
- ➤ Install the latch boxes or positioning points.
- ➤ Place the reinforcement.
- ➤ Set up the opposing formwork and place the ties.
- ➤ Pour the 1st section.

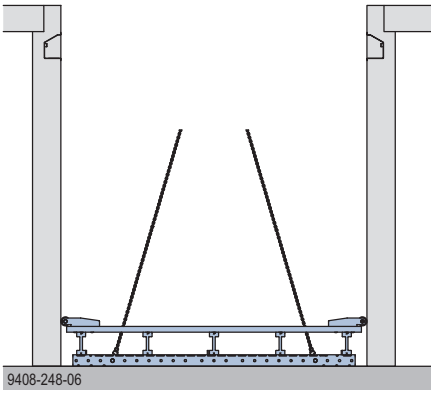


- ➤ Stripping
- ➤ Clean the formwork.

2nd casting section

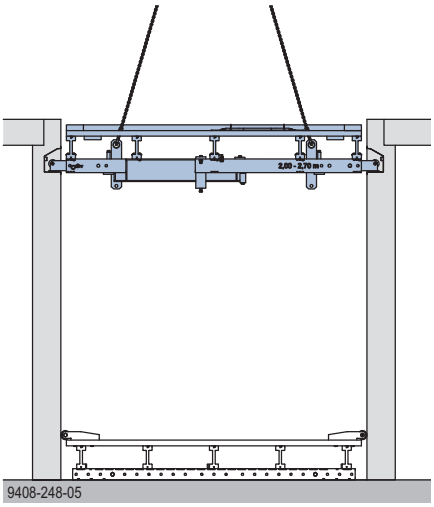
Lifting in the suspended platform

➤ Lift the suspended platform into the shaft.

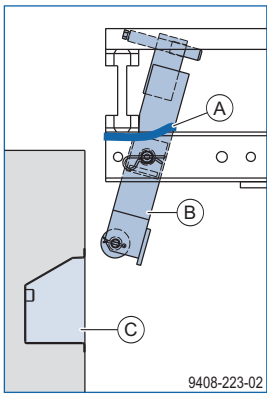
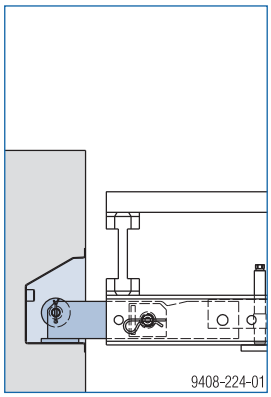


Lifting in the shaft platform

➤ Lift in the shaft platform.



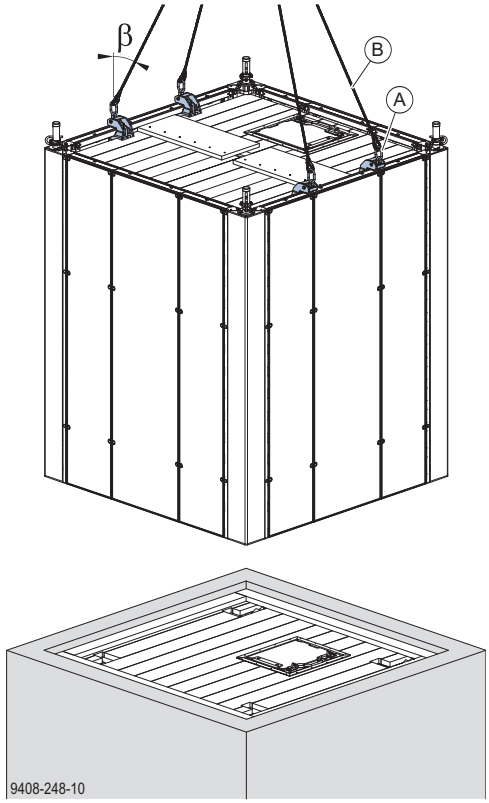
➤ Remove the Quick-locking strap 55cm.
➤ Set down the shaft platform in the latch boxes.

Latch secured with quick-locking strap	Latch is in latch box
	

A Quick-locking strap 55cm
B Latch
C Box for latch

Mounting the formwork

➤ Lift in the pre-assembled shaft formwork (see the section headed 'Mounting the formwork') and set down on the shaft platform.



β ... max. 15°

A Framax lifting hook
B 4-part chain

WARNING
Falling hazard!
Do not use the crane hook of the stripping corner I for repositioning the shaft formwork.

➤ Shaft formwork using Framed formwork Framax Xlife is **only** allowed to be lifted **with lifting hooks**.
➤ Shaft formwork using Large-area formwork Top 50 is **only** allowed to be lifted **with lifting brackets**.

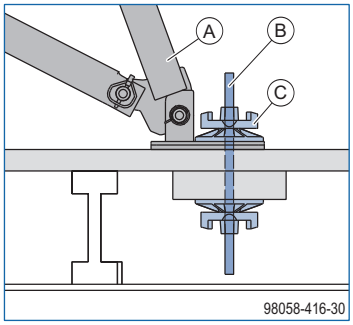
Permitted weight of the shaft formwork:
4000 kg with 4 lifting brackets or lifting hooks
Reason: 15° oblique pull in both directions

Use a lifting beam for repositioning large gangforms.

Note:
For information on erecting ladders, see the section headed 'Ladder system'.

Formwork with panel struts

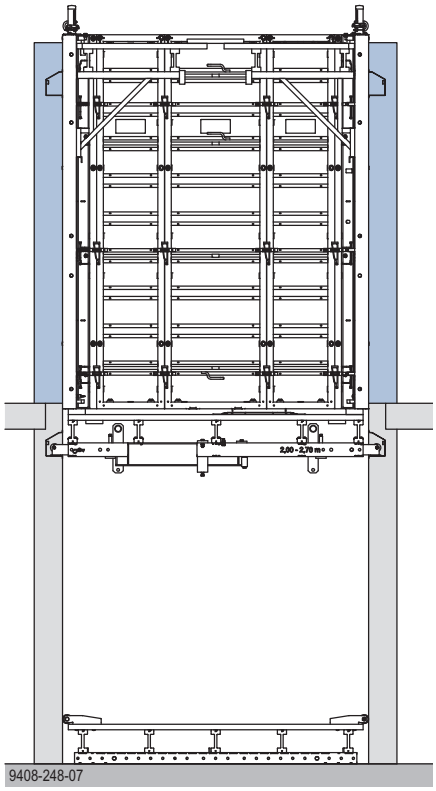
➤ Secure the formwork to the working platform with panel struts.
➤ Fix each panel strut to the working platform with a tie rod and super plates.



A	Panel strut
B	Tie rod 15.0mm
C	Super plate 15.0

Pouring

➤ Plumb and align the formwork.
➤ Mount the latch boxes.
➤ Apply concrete release agent.
➤ Place the reinforcement.
➤ Close the formwork and tie it.
➤ Pour the 2nd section.

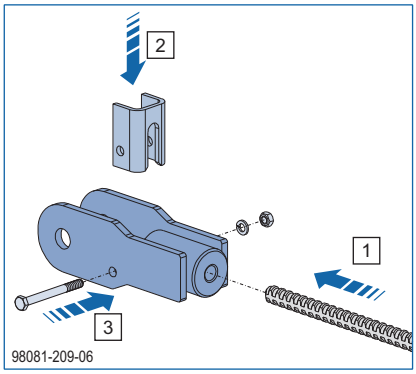


➤ Strip the formwork.
➤ Clean the formwork.

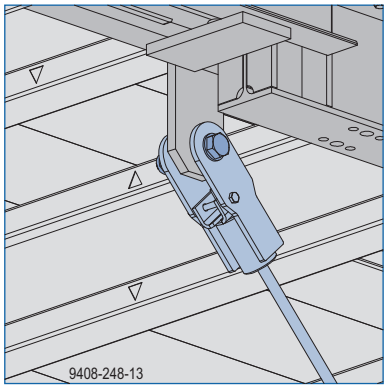
Preparations for repositioning

Pre-mounting the bracing device

1) Screw the tie rod into the bracing device.
2) Push an anti-twist guard over the flat (unthreaded) sides of the tie rod.
3) Fix the anti-twist guard with a hexagon bolt and hexagon nut.



➤ Bolt the bracing device to the platform beam using a tie rod.

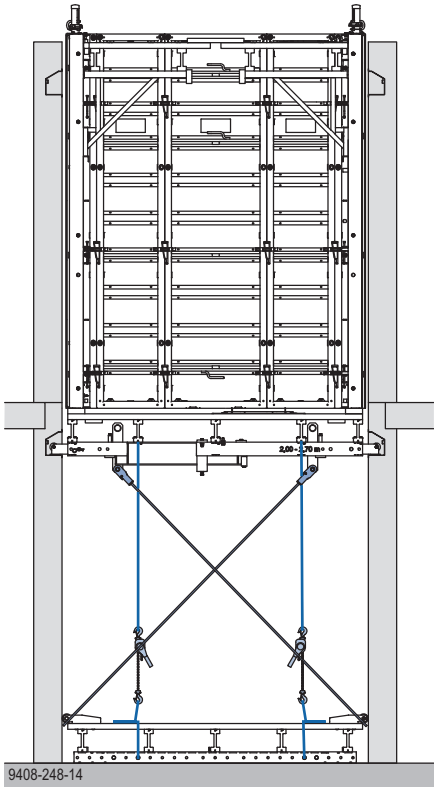


Bolting items required for each unit:

- 1 hexagon bolt ISO 4014 M20x100 8.8 galv.
- 2 washers ISO 7089 20 St-200 HV
- 1 hexagon nut ISO 7040 M20 8, self-locking

➤ Attach suitable lifting appliance (e.g.: chain hoists) to platform beam and suspended platform.

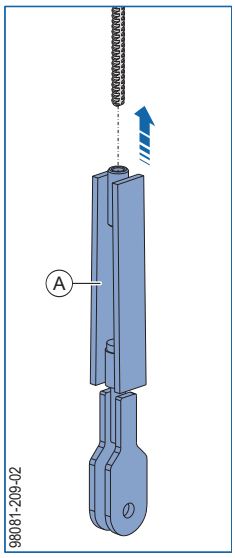
➤ Adjust the length of the lifting appliance (pouring-section height + 70 cm).



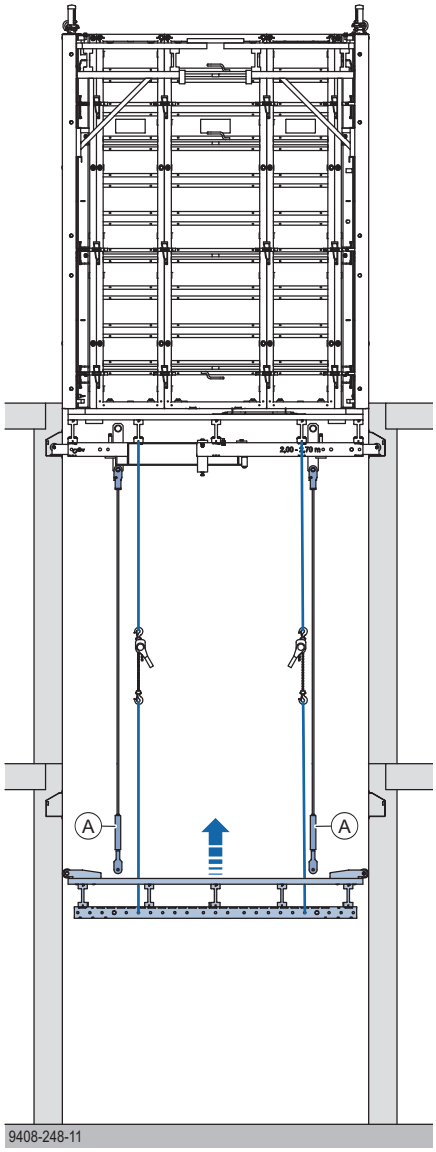
3rd casting section

Assembling the suspended platform

➤ Reposition the shaft platform and suspended platform to the new pouring section.
➤ Turn the spindle component onto the Tie rod 15.0.



A Spindle component

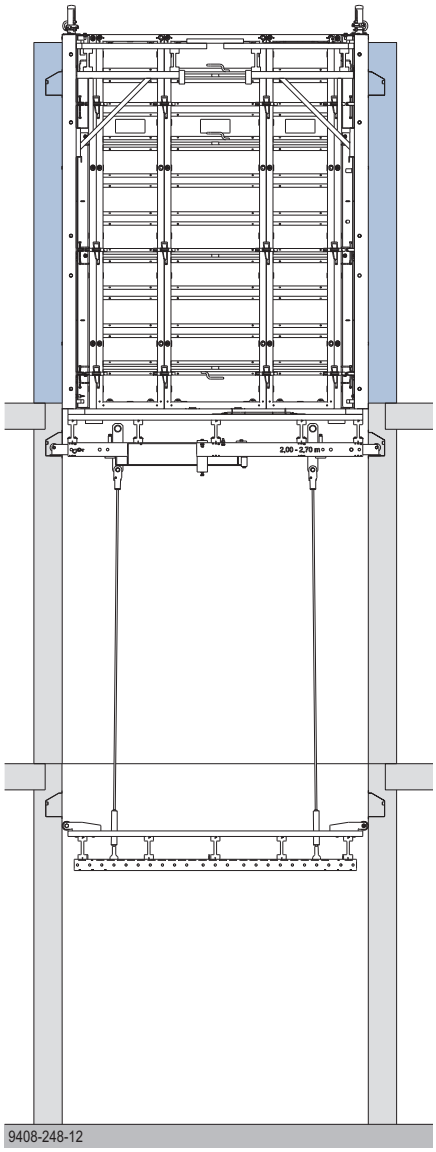


A Spindle component

➤ Lift the suspended platform further using the lifting appliance and fix with a pin to the spindle components.
➤ Align the suspended platform horizontally using the spindle components.

Pouring

➤ Plumb and align the formwork.
➤ Mount the latch boxes.
➤ Apply concrete release agent.
➤ Place the reinforcement.
➤ Close the formwork and tie it.
➤ Pour the section.



➤ Strip the formwork.
➤ Clean the formwork.

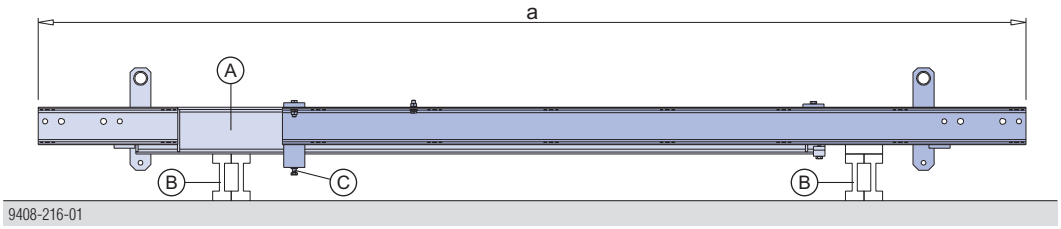
Pre-assembly

Assembling the working platform

Assembling the main beams

Areas of use

Type	Adjusting range of telescopic shaft beams (dimension 'a')	Inside dimension of shaft	
		For pawl-type mounting	For Main beam head
Telescopic shaft beam 1.45-1.65m	145.0 to 165.0 cm	155.0 to 175.0 cm	169.0 to 189.0 cm
Telescopic shaft beam 1.65-2.00m	165.0 to 200.0 cm	175.0 to 210.0 cm	189.0 to 224.0 cm
Telescopic shaft beam 2.00-2.70m	200.0 to 270.0 cm	210.0 to 280.0 cm	224.0 to 294.0 cm
Telescopic shaft beam 2.70-3.80m	270.0 to 380.0 cm	280.0 to 390.0 cm	294.0 to 404.0 cm
Telescopic shaft beam 3.80-5.90m	380.0 to 590.0 cm	390.0 to 600.0 cm	404.0 to 614.0 cm



a ... length of telescopic shaft beam is project-specific, as per table or assembly drawing

A Telescopic shaft beam

B Base with levelling mechanism

C Clamping bolt M 16x80 with check nut (width across flats 24 mm)

The telescopic shaft beams are supplied telescoped together.

Determining dimension 'a'

For pawl-type mounting	For Main beam head
Inside dimensions of shaft minus 10.0 cm	Inside dimensions of shaft minus 24.0 cm

Tools needed:

- Box nut 24 1/2"
- Reversible ratchet 1/2"
- Fork wrench 22/24

NOTICE

- There must be a flat, firm base capable of supporting the load.
- Prepare a sufficiently large assembly area.

NOTICE

➤ Make sure that the telescopic shaft beams are resting exactly in the horizontal and in the same plane!

➤ Place the telescopic shaft beam on the base supports.

➤ Loosen the clamping bolts and adjust the length (dimension 'a').

NOTICE

➤ Set the length to an accuracy of within ±2 mm!

➤ Tighten the clamping bolts and secure them with check nuts so that they cannot work loose.

Installing the mounting-fittings

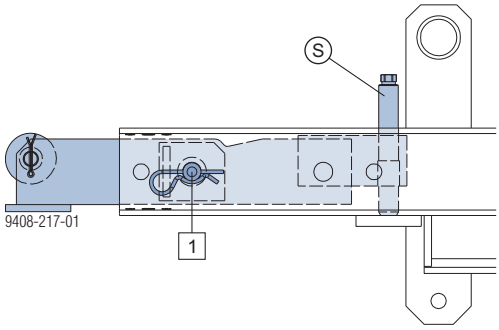
Pawl-type mounting

Tools needed:

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

➤ Fix the Latch for shaft platform in Pos. 1 with a bolt d25, and secure this with a Spring cotter 5mm.

➤ Set the horizontal position of the pawl with the height-adjusting spindle.



S Height-adjusting spindle

Included in the Latch for shaft platform:

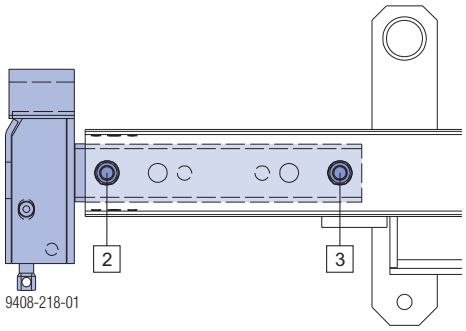
- 1 bolt d25/151
- 1 washer 21
- 1 Spring cotter 5mm

Main beam head for cone-type suspension

Tools needed:

- Fork spanner 30/32
- Reversible ratchet 1/2"
- Box nut 30 1/2"

➤ Bolt the Main beam head onto the Telescopic shaft beam in Pos. 2 and Pos. 3.



Included in the Main beam head:

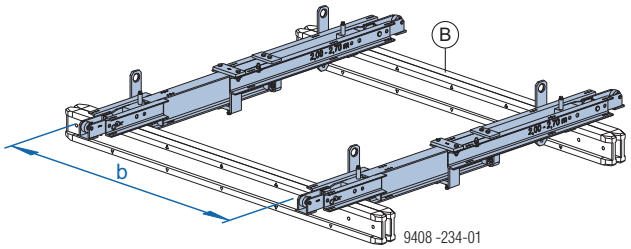
- 2 hexagon screws M20x140
- 2 hexagon nuts M20
- 2 spring washers A20

Mounting the cross-beams

NOTICE

➤ Make sure that all axes line up!

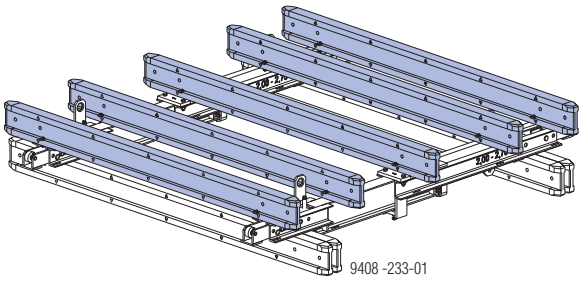
➤ Place telescopic shaft beams (length already set) on the base supports, spaced the required centre-to-centre distance apart (using an assembly stop-bar if necessary).



b ... Spacing of support areas

B Base support

➤ Place cross-beams (e.g. squared timbers, Doka beams or steel girders) on the telescopic shaft beams at the appropriate intervals, as shown in the plans.



For larger numbers of cross-beams, it is recommended to use a stop-bar.

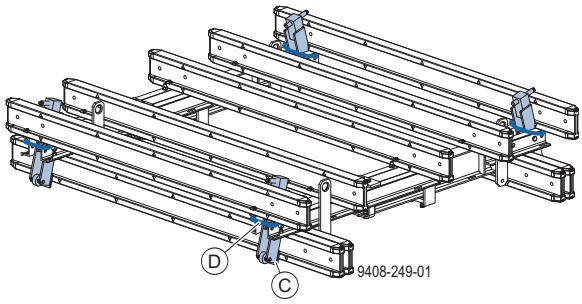
➤ Where not specified in the plans: Drill fixing holes in the cross-beams and fix these onto the telescopic shaft beams with the specified fixing-screws (site-provided). Ensure the necessary high angle accuracy during basic assembly!

Preparations for lifting-in

Note:

When the unit is being lifted into the shaft, the latches must each be held back with a Quick-locking strap 55cm.

The quick-locking straps are removed again in the shaft.

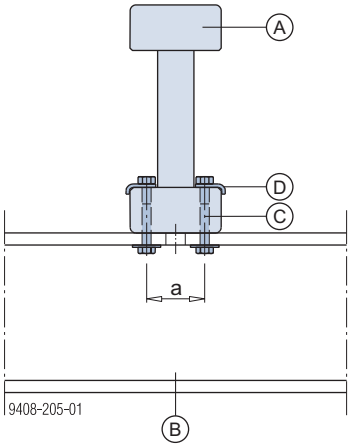


C Latch

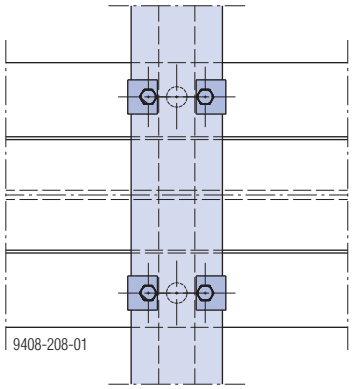
D Quick-locking strap 55cm

Examples of mounting cross-beams

Example: Doka beam



Plan view



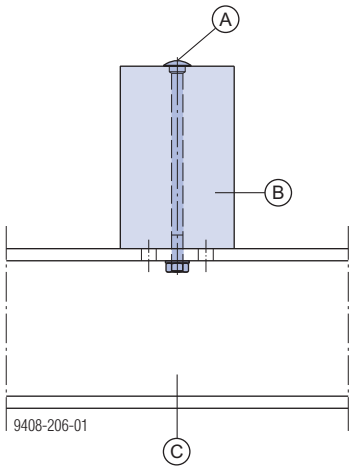
a ... 51 mm

A Doka beam H20
B Telescopic shaft beam
C Diam. 10 mm hole in the Doka beam H20
D Beam screw S 8/70

Note:

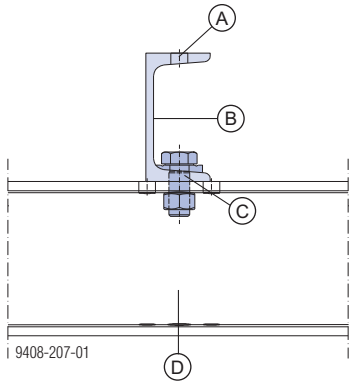
Bolt each cross-beam to the telescopic shaft beam on both flanges, to prevent the telescopic shaft beams being twisted by the oblique pull of the lifting chain.

Example: Squared timber 8x16 cm

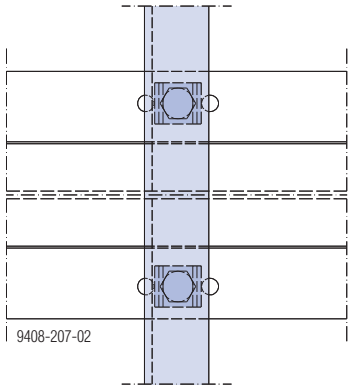


A Square bolt M10 + hexagon nut M10 (length as required)
B Squared timber 8x16 cm
C Telescopic shaft beam

Example: Steel section



Plan view



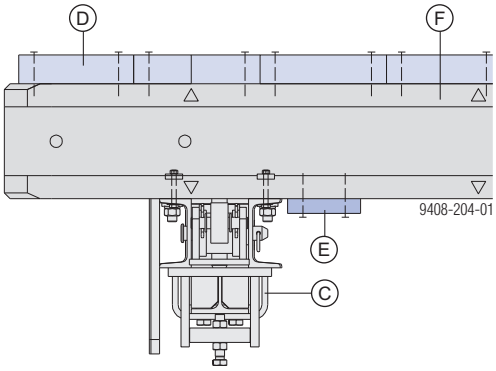
A Fixing holes for decking
B Steel section U 100
All fixing holes must be planned in advance.
C Hexagon screw M16x50 +
U-Washer 17.5 +
Hexagon nut M16
D Telescopic shaft beam

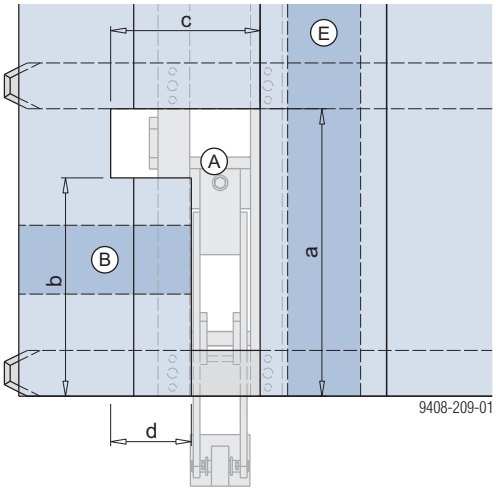
Mounting the platform decking

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.

Shaft platform with pawl-type mounting

- ➤ Lay deck-boards across the cross-beams and screw or nail them to the cross-beams.
- ➤ Nail an extra backing support onto the underside of the deck-boards in the area of the recess.
- ➤ Fasten a bracing plank to the underside of the cross-beams alongside (and parallel to) the Telescopic shaft beam.



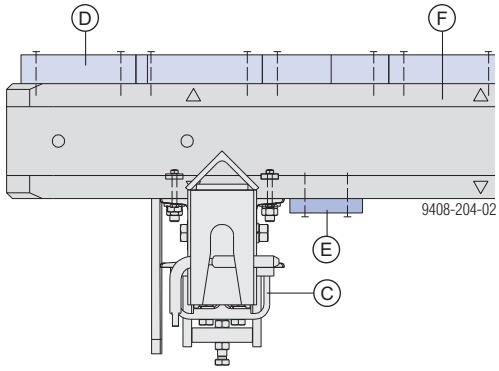


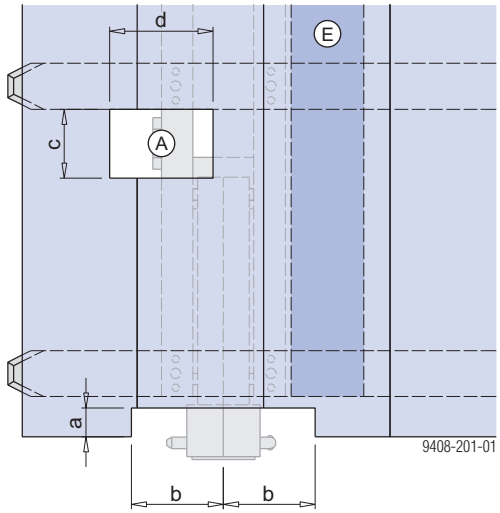
a ... 500 mm
b ... 380 mm
c ... 250 mm
d ... 150 mm

A	Recess for latch or lifting bracket
B	Extra backing support (board, min. 15x3 cm)
C	Telescopic shaft beam
D	5x20 cm board
E	Bracing plank (min. 15x3 cm)
F	Cross-beam

Shaft platform with Main beam head (for cone-type suspension)

- ➤ Lay deck-boards across the cross-beams and screw or nail them to the cross-beams.
- ➤ Fasten a bracing plank to the underside of the cross-beams alongside (and parallel to) the Telescopic shaft beam.

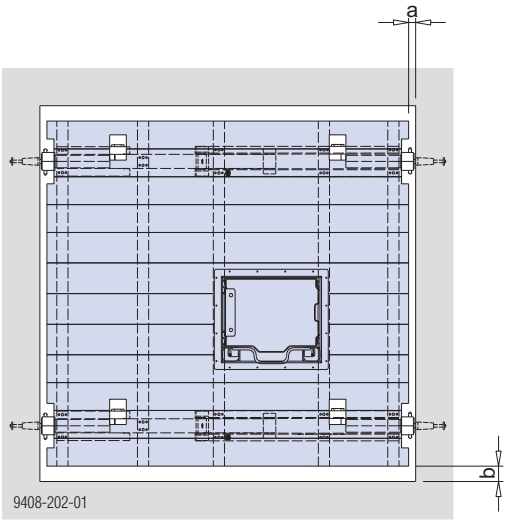




a ... 50 mm
b ... min. 160 mm (clearance needed for manoeuvring to one side when lifting past the suspension point)
c ... 120 mm
d ... 180 mm

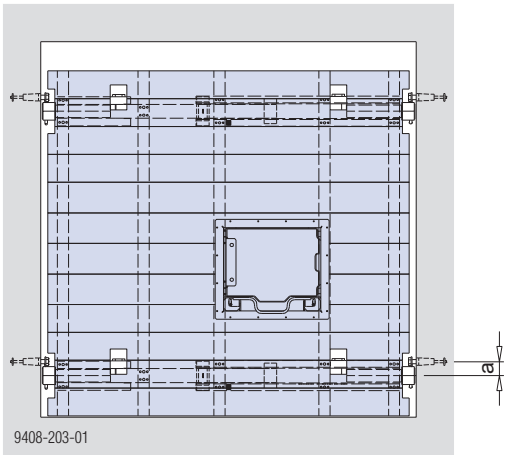
A	Recess for lifting bracket
C	Telescopic shaft beam
D	Plank, 5x20 cm
E	Bracing plank (min. 15x3 cm)
F	Cross-beam

Plan view – shaft platform hung into place



a ... 50 mm
b ... 110 mm (clearance needed for manoeuvring to one side when lifting past the suspension point)

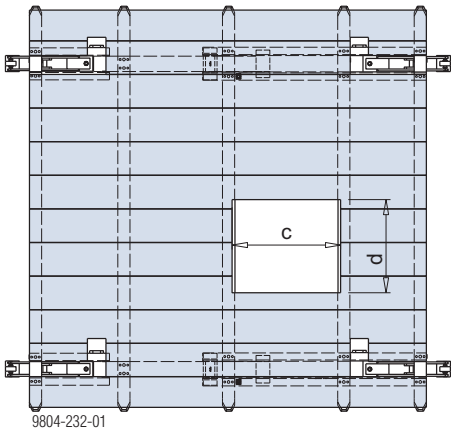
Plan view – situation when lifting past the suspension point



a ... 105 mm (95 mm + min. 10 mm play)

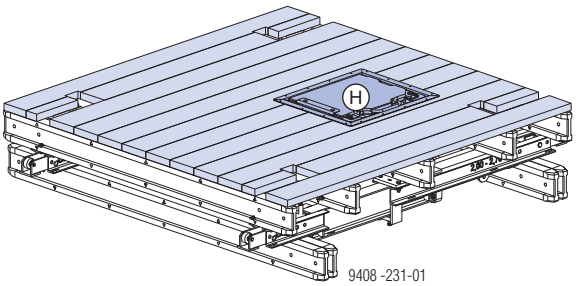
Working platform with manhole

➤ Determine the position of the manhole in the decking.
➤ Cut out the opening for the manhole.

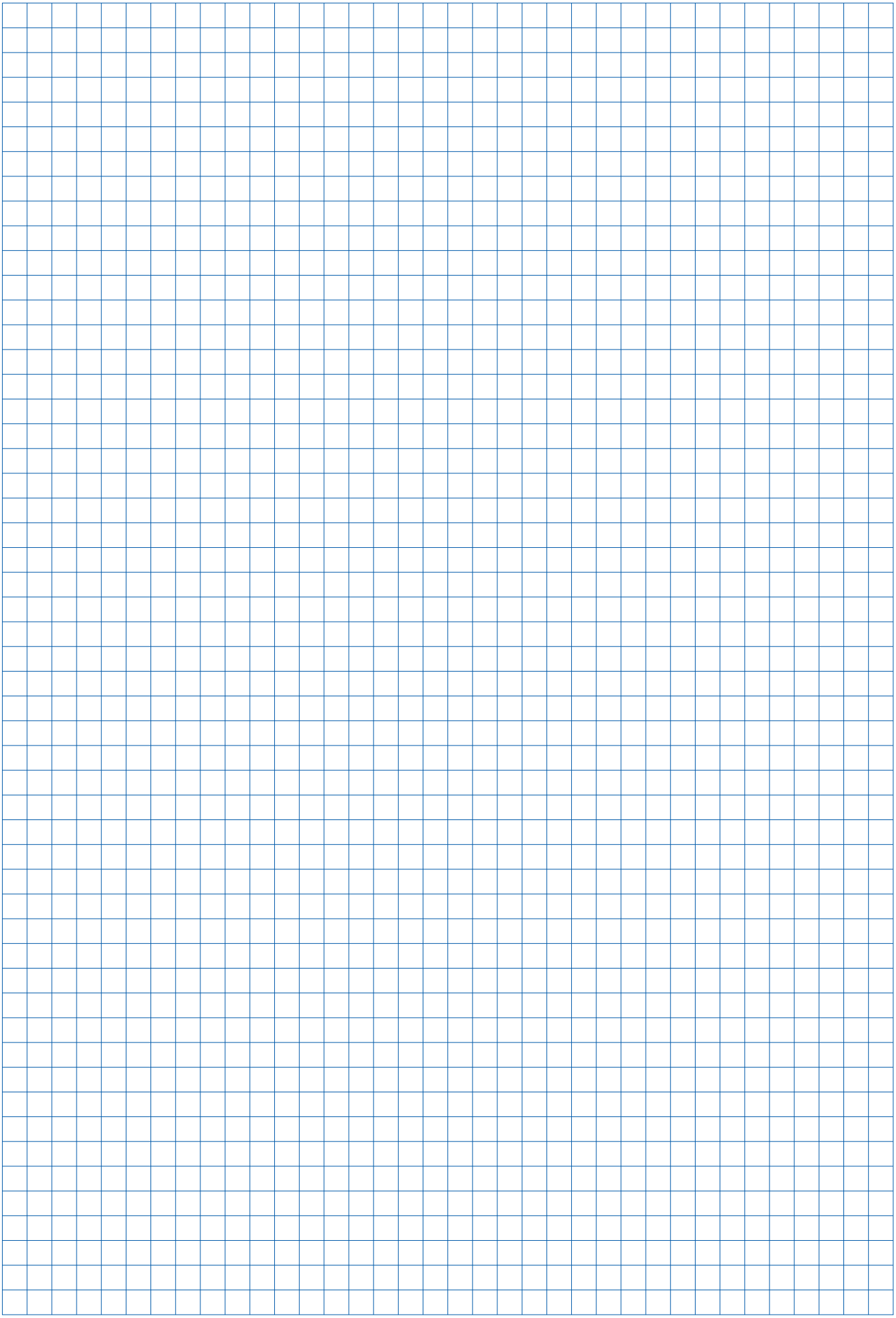


c ... 710 mm
d ... 610 mm

➤ Screw the Manhole B 70/60cm onto the deck-boards with universal countersunk screws 5x50.



H Manhole B 70/60cm

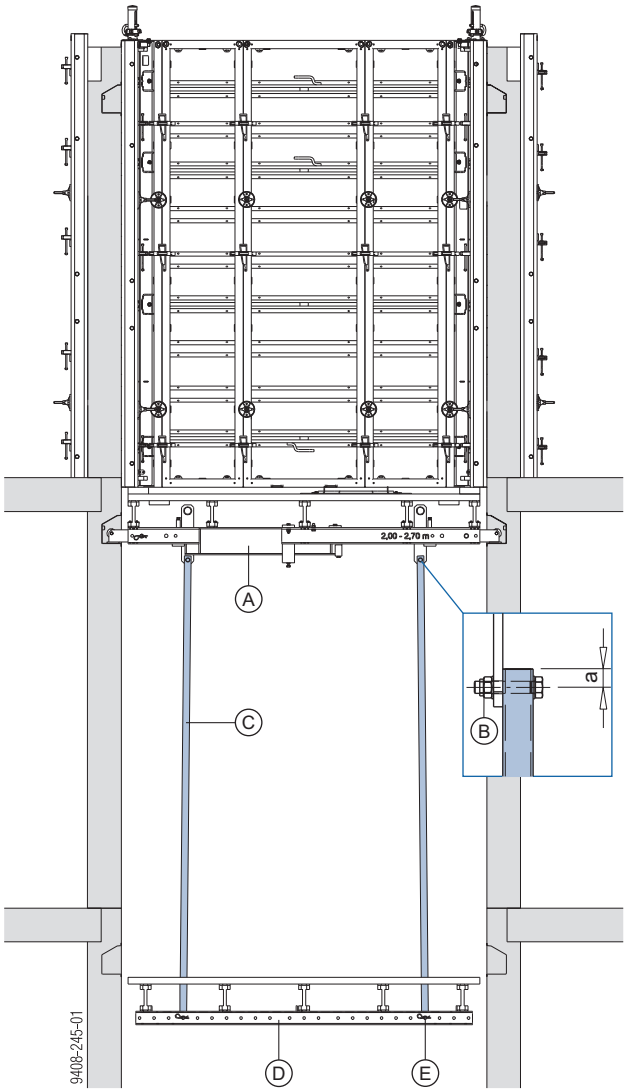


Suspended platform

Various types of suspended platform can be made with components from the Doka standard range.

Max. load per suspension tube: 1000 kg

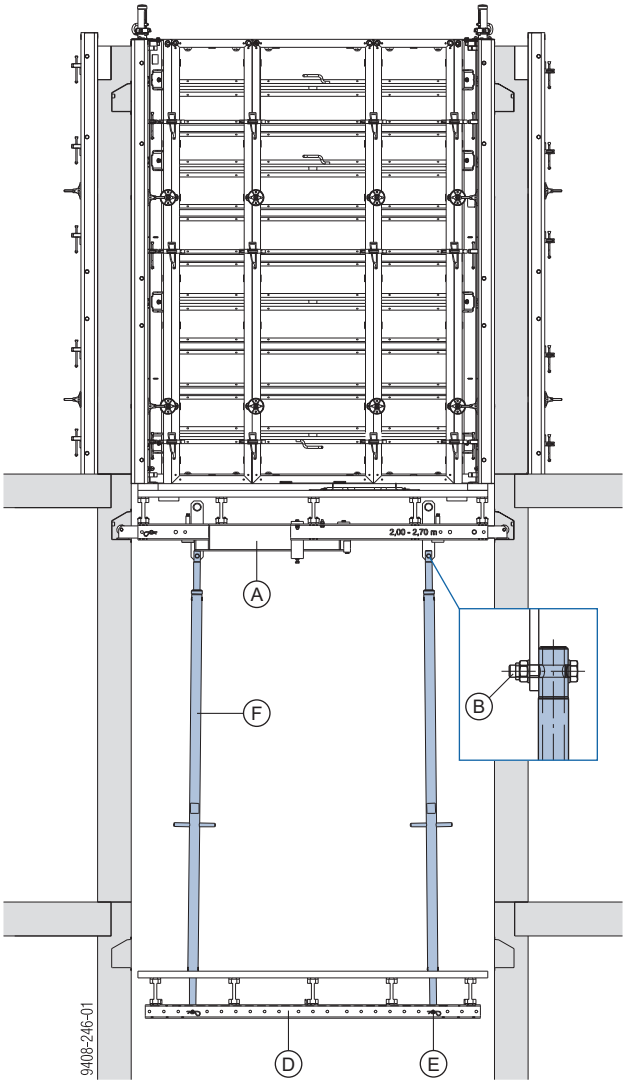
Version using scaffolding tubes or other shaped tubes



a ... min. 3.0 cm

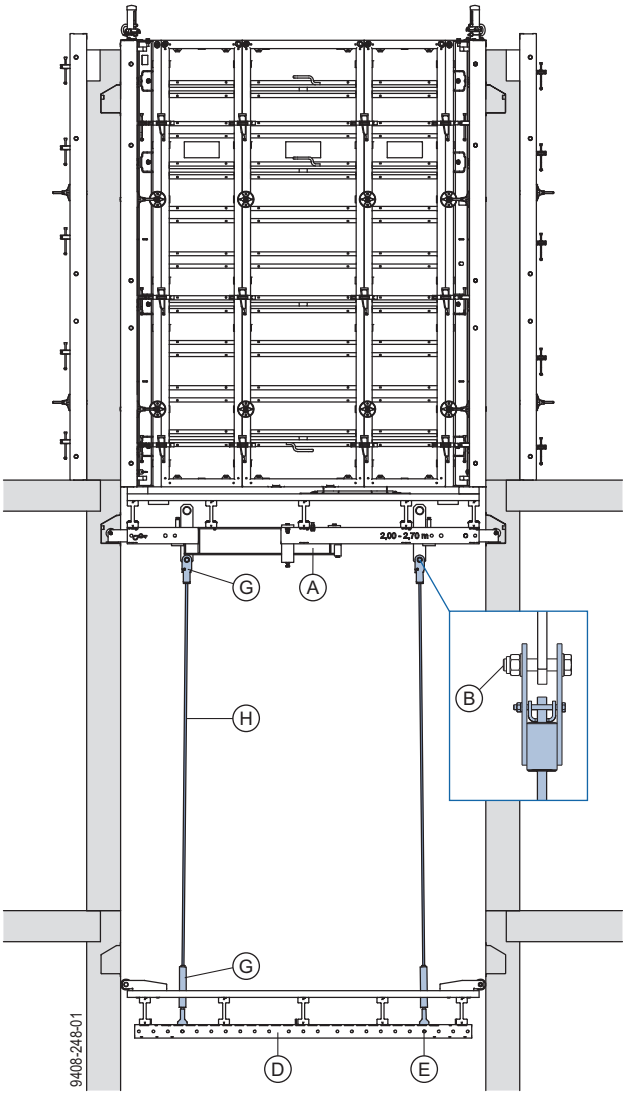
A	Telescopic shaft beam
B	Hexagon bolt ISO 4014 M20x90 8.8 galv. + Hexagon nut ISO 7040 M20 8 self-locking
C	Square tube 50/50/3 or Scaffold tube 48.3mm (length: project-specific)
D	Multi-purpose waling WS10 Top50 (length: project-specific)
E	Connecting pin 10cm + Spring cotter 5mm

Version with spindle struts, e.g. T7 305x355cm



A	Telescopic shaft beam
B	Hexagon bolt ISO 4014 M20x90 8.8 galv. + Hexagon nut ISO 7040 M20 8 self-locking
D	Multi-purpose waling WS10 Top50 (length: project-specific)
E	Connecting pin 10cm + Spring cotter 5mm
F	Spindle strut T7 305/355cm

Version with tie rods

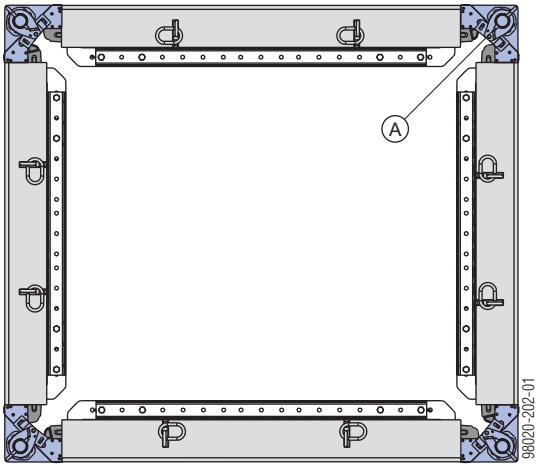


A	Telescopic shaft beam
B	Hexagon bolt ISO 4014 M20x100 8.8 galv. + 2x Washer ISO 7089 20 St-200 HV + Hexagon nut ISO 7040 M20 8 self-locking
D	Multi-purpose waling WS10 Top50 (length: project-specific)
E	Connecting pin 10cm + Spring cotter 5mm
G	Bracing device Xclimb 60 15.0
H	Tie rod 15.0 (length: project-specific)

Mounting the formwork

Shaft formwork using Large-area formwork Top 50

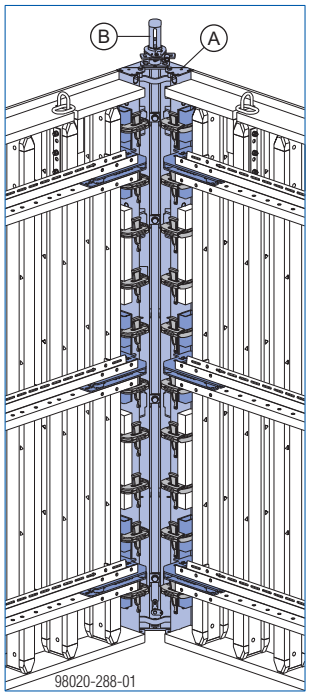
➤ Mount the formwork for the inside of the shaft.

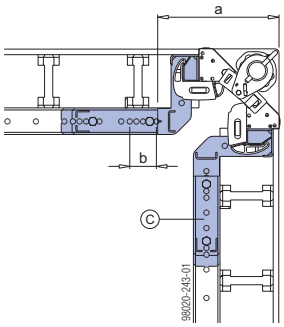


A Framax stripping corner I

With a special transition plate, the Framax stripping corner I can also be used on Large-area formwork Top 50.

The Stripping corner I allows the entire shaft formwork unit to be detached from the wall in one piece.





a ... 42.5 - 55.0 cm
b ... adjusting range 12.5 cm, in 2.5 cm increments

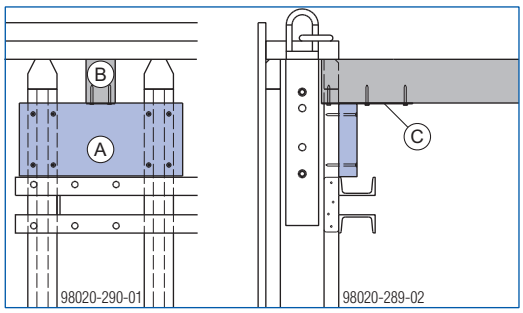
A Framax stripping corner I
B Framax stripping spindle I or
Framax stripping spindle I with ratchet
C Transition plate 18mm or 21mm

Platform configurations

➤ Fasten planks to the Doka beams with Torx TG 6x90 A2 universal countersunk screws.

Every plank must be fixed with 8 screws!

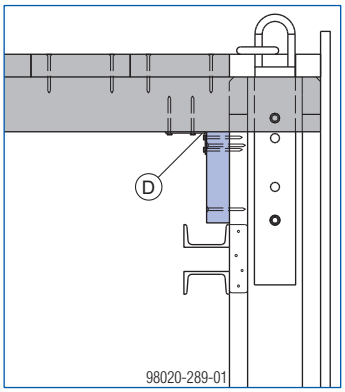
➤ Screw sliding plates onto one side of the squared timbers and place these onto the planks.



A Plank, 5x20 cm
B Squared timber 8/12 cm
C Sliding plate (site-provided)

Permitted load per screwed-on plank: 2 kN

➤ Fix the opposite side of the squared timbers to the planks with angle connectors.
➤ Fasten deck-boards to the squared timbers with Torx TG 6x90 A2 universal countersunk screws.



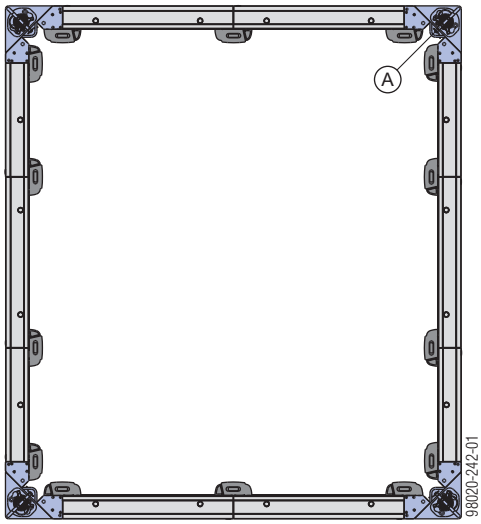
D Angle connector 9x5cm

Every deck-board must be fixed with 4 screws!

Do a sight-check to make sure that the deck-boards have been fixed properly!

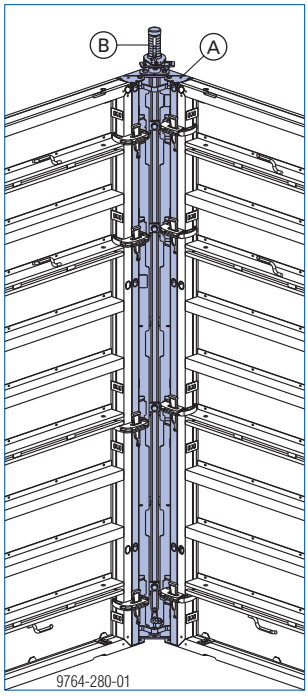
Shaft formwork using framed formwork Framax Xlife

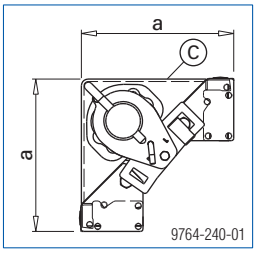
➤ Mount the formwork for the inside of the shaft.



A Framax stripping corner I

The Stripping corner I allows the entire shaft formwork unit to be detached from the wall in one piece.

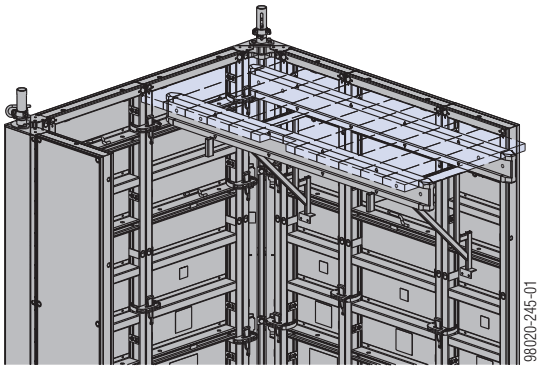




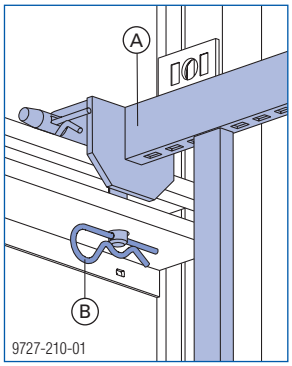
a ... 30.0 cm

A Framax stripping corner I
B Framax stripping spindle I or
Framax stripping spindle I with ratchet
C Steel form-facing

Platform configurations

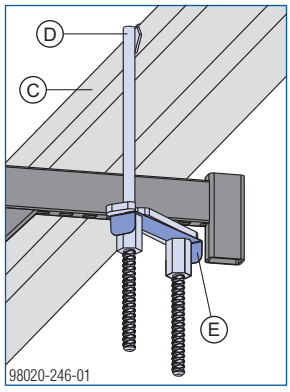


➤ Hook Framax brackets 90 onto the framed panels and secure them against accidental lift-out.



A Framax bracket 90
B Spring cotter

➤ Clamp the Doka H20 beams to the brackets with brace stirrups.
➤ Use an anti-twisting plate to prevent the hexagon nuts 15.0 from working loose.



C Doka beam H20
D Brace stirrup 8
E Anti-twisting plate for Brace stirrup 8

➤ Fasten deck-boards to the squared timbers with Torx TG 6x90 A2 universal countersunk screws.

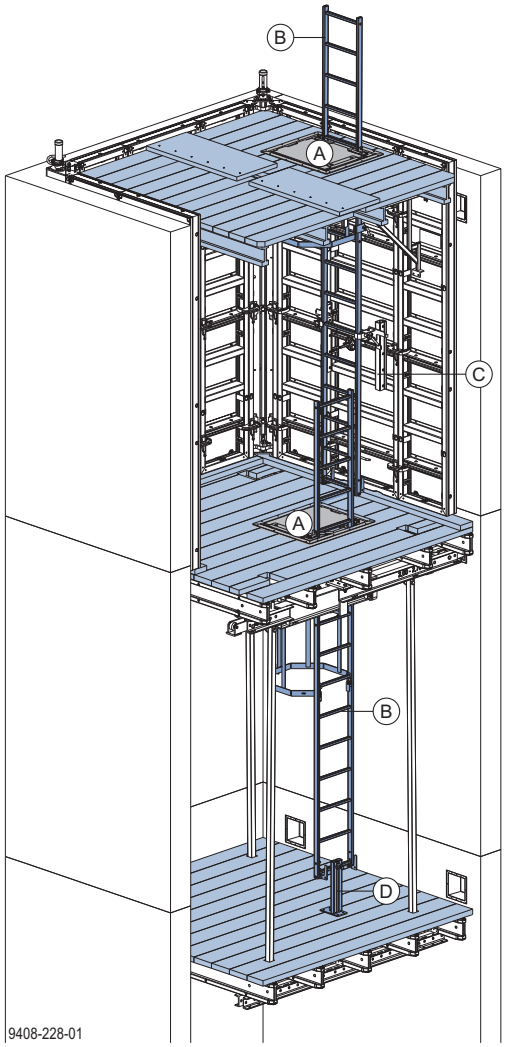
Every deck-board must be fixed with 4 screws!

Do a sight-check to make sure that the deck-boards have been fixed properly!

General

Ladder system

For safe up-and-down access between platforms.



A	Manhole B 70/60cm
B	System ladder XS 4.40m
C	Connector XS Wall formwork
D	Ladder adapter XS

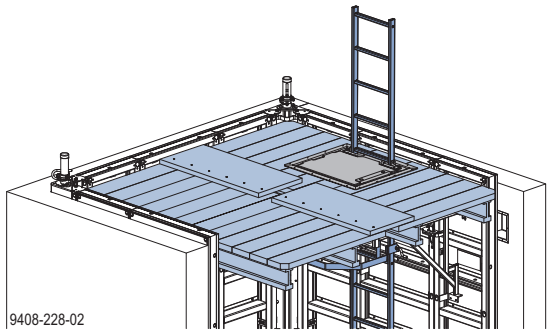
Note:
The ladder system must be implemented in such a way that all national regulations are complied with.

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

Mounting the ladders to the pouring platforms

For details of how to attach the ladders to the formwork, see the User Information booklets 'Large-area formwork Top 50' or 'Framed formwork Framax Xlife'.

On pouring platforms with decking supports, the Manhole B70/60cm can be used.



A	Manhole B 70/60cm
B	System ladder XS 4.40m
C	Decking support

NOTICE
Leave sufficient clearance between the bottom of the ladder and the decking of the working platform (so that the formwork can still be travelled forward and back freely during formwork set-up and removal).

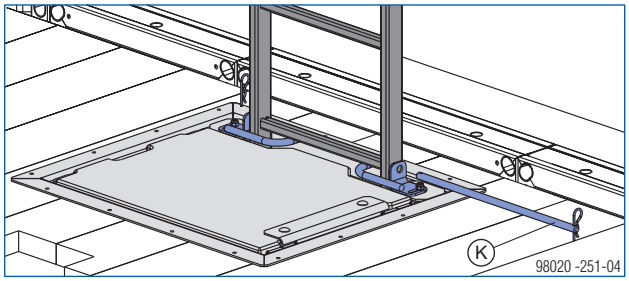
Mounting the ladders to the working platform and to the suspended platforms

Manhole B 70/60cm

For details of how to install the manhole, see the section headed 'Assembling the working platform'.

➤ Fix the System ladder XS 4.40m to the manhole with a ladder bow.

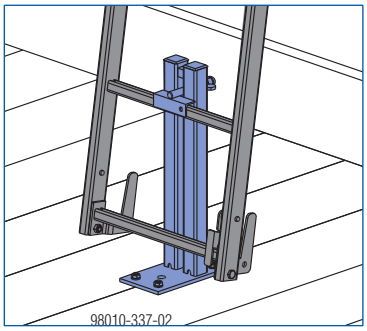
➤ Insert a Ladder bolt XS through the rung of the ladder and secure it on both sides with a d4 spring cotter.



K Ladder bolt XS

➤ Screw the Ladder adapter XS to the platform decking.

➤ Fix the bottom of the ladder to the Ladder adapter XS.



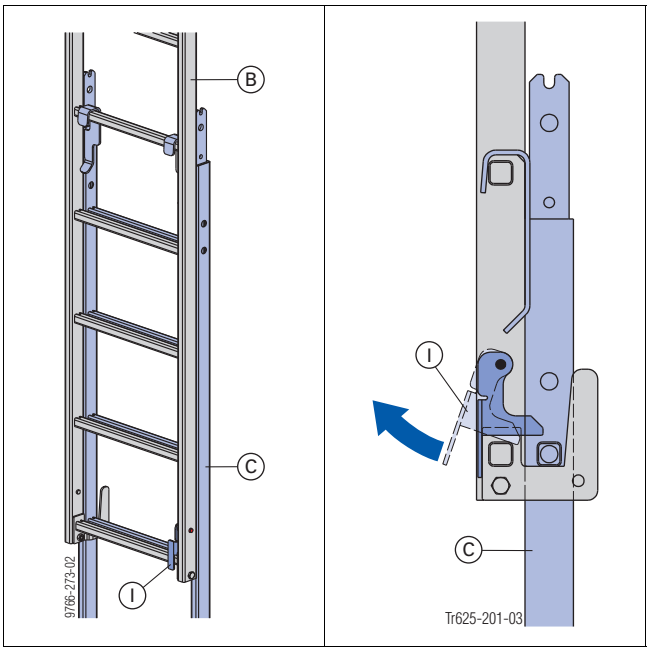
Bolting items required

- 4 cup square bolts M10x70
- 4 washers A10.5
- 4 hexagon nuts M10 (self-locking)

Lengthening the ladder

Telescoping ladder extension (for adjusting to ground level)

➤ To telescope the ladders past one another, lift the safety latch **(I)** on the ladder **(B)** and fix the Ladder extension XS 2.30m **(C)** onto the desired rung of the other ladder.

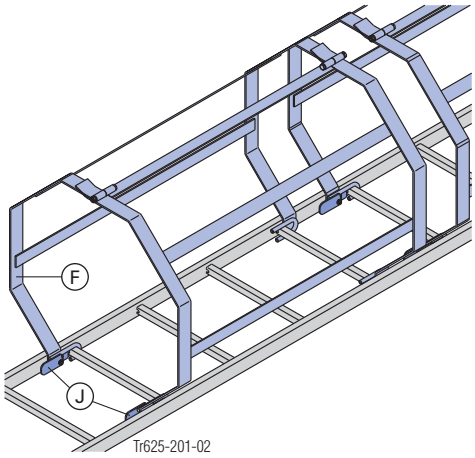


Ladder cage

NOTICE

➤ Always observe all relevant safety regulations applying to the use of the Ladder cage XS in the country in which you are operating (e.g. in Germany: BGV D 36).

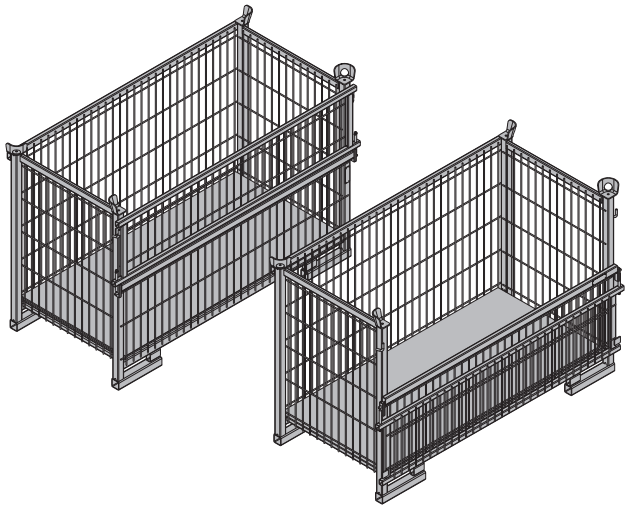
➤ Fix the Ladder cage XS 1.00m **(F)** onto the next available rung. The safety latches **(J)** prevent the cage being accidentally lifted out. Add further Ladder cages XS 1.00m, in each case fixing them onto the next available rung.



Transporting, stacking and storing

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

Doka skeleton transport box 1.70x0.80m



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

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

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

Max. n° of units on top of one another

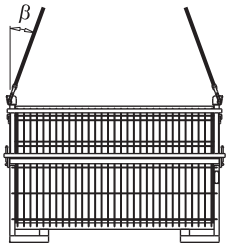
Outdoors (on the site) Floor gradients up to 3%	Indoors Floor gradients up to 1%
2	5
It is not allowed to stack empty pallets on top of one another!	

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

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

Lifting by crane

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



9234-203-01

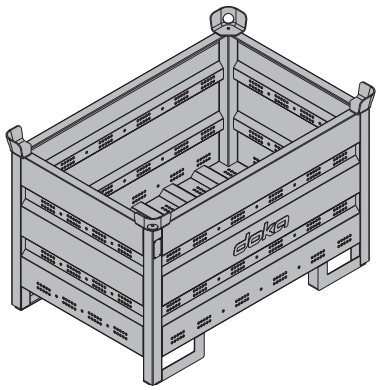
Repositioning by forklift truck or pallet stacking truck

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

Doka multi-trip transport box

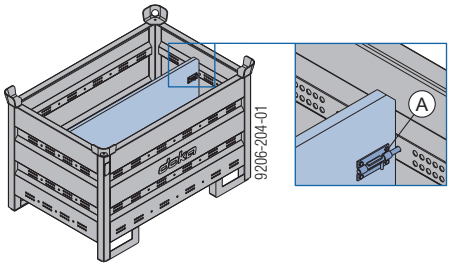
Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m



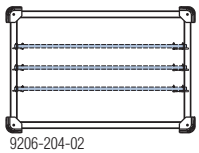
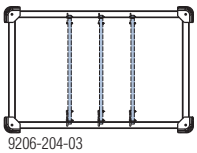
Permitted load-bearing capacity: 1500 kg (3300 lbs)
Permitted imposed stacking load: 7850 kg (17300 lbs)

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

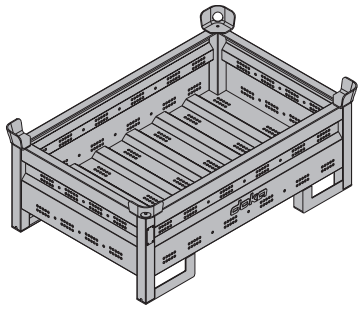


A Slide-bolt for fixing the partition

Possible ways of dividing the box

Multi-trip transport box partition	in the longitudinal direction	in the transverse direction
1.20m	max. 3	-
0.80m	-	max. 3
	 9206-204-02	 9206-204-03

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



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

Using Doka multi-trip transport boxes as storage units

Max. n° of units on top of one another

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

NOTICE

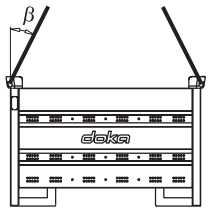
Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.

Using Doka multi-trip transport boxes as transport devices

Lifting by crane

NOTICE

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



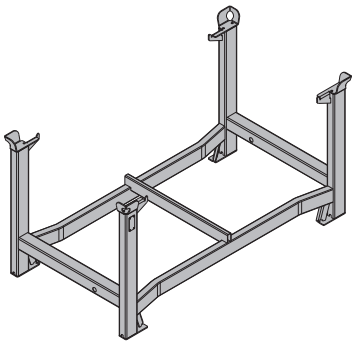
9206-202-01

Repositioning by forklift truck or pallet stacking truck

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

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

Storage and transport device for long items.



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

Using Doka stacking pallets as storage units

Max. n° of units on top of one another

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

NOTICE

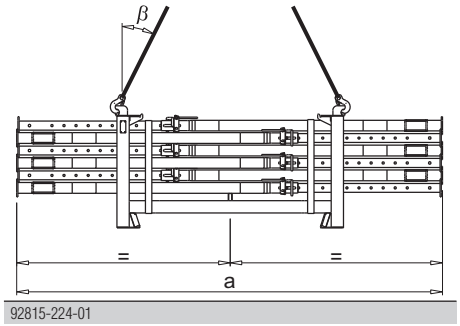
- Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.
- **How to use with Bolt-on castor set B:**
  - Always apply the fixing brake when the container is 'parked'.
  - When Doka stacking pallets are stacked, the bottom pallet must NOT be one with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

Using Doka stacking pallets as transport devices

Lifting by crane

NOTICE

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



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

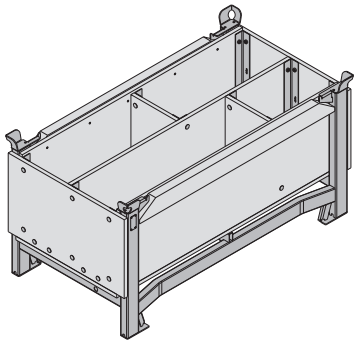
Repositioning by forklift truck or pallet stacking truck

NOTICE

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

Doka accessory box

Storage and transport device for small items.



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

Doka accessory boxes as storage units

Max. n° of units on top of one another

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

NOTICE

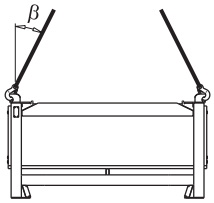
- Stacked multi-trip boxes or pallets must have the heaviest boxes at the bottom and the lightest at the top.
- **How to use with Bolt-on castor set B:**
  - Always apply the fixing brake when the container is 'parked'.
  - When Doka stacking pallets are stacked, the bottom pallet must NOT be one with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

Doka accessory box as transport devices

Lifting by crane

NOTICE

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



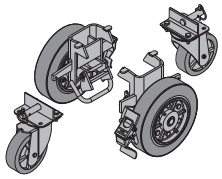
92816-206-01

Repositioning by forklift truck or pallet stacking truck

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

Bolt-on castor set B

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



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

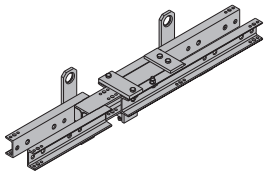
- Doka accessory box
- Doka stacking pallets
- Protective barrier Z pallets

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

	[kg]	Article N°
Telescopic shaft beam 1.45-1.65m	**65.9**	**580686000**
Telescopic shaft beam 1.65-2.00m	**74.3**	**580687000**
Telescopic shaft beam 2.00-2.70m	**107.5**	**580688000**
Telescopic shaft beam 2.70-3.80m	**156.5**	**580689000**
Telescopic shaft beam 3.80-5.90m	**261.0**	**580690000**

Teleskop-Schachtträger

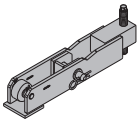
Galvanised



Latch for shaft platform **18.0** **580466000**

Klinke für Schachtbühne

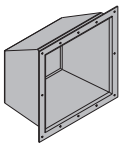
Galvanised
Length: 55 cm
Width-across: 19 mm



Box for latch 20x20x15cm **2.6** **580608000**

Aussparungskasten 20x20x15cm

Powder-coated blue



Plug 15.0 **0.001** **580609000**

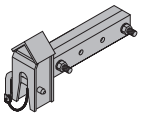
Verschlussstopfen 15,0

Colourless
Diameter: 1.9 cm

Main beam head **14.9** **580464000**

Bühnenkopf

Painted blue
Length: 49 cm

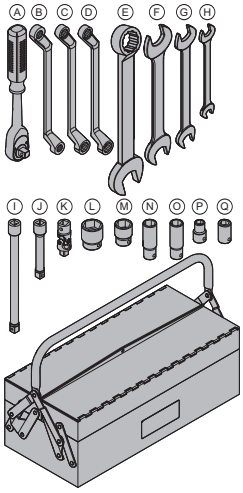


	[kg]	Article N°
Tool box GF	**7.2**	**580390000**

GF-Werkzeugbox

included in scope of supply:

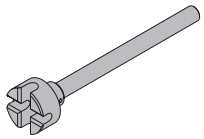
(A) **Reversible ratchet 1/2"** Galvanised	**0.73**	**580580000**
(B) **Ring spanner 13/15**	**0.25**	**580599000**
(C) **Ring spanner 16/18**	**0.23**	**580644000**
(D) **Ring spanner 17/19**	**0.27**	**580590000**
(E) **Combination wrench 36**	**0.75**	**582860000**
(F) **Fork wrench 30/32**	**0.8**	**580897000**
(G) **Fork wrench 22/24**	**0.22**	**580587000**
(H) **Fork wrench 13/17**	**0.08**	**580577000**
(I) **Extension 22cm 1/2"**	**0.31**	**580582000**
(J) **Extension 11cm 1/2"**	**0.2**	**580581000**
(K) **Universal joint coupling 1/2"**	**0.16**	**580583000**
(L) **Box nut 30 1/2"**	**0.2**	**580575000**
(M) **Box nut 24 1/2"**	**0.12**	**580584000**
(N) **Box nut 19 1/2" L**	**0.16**	**580598000**
(O) **Box nut 18 1/2" L**	**0.15**	**580642000**
(P) **Box nut 15 1/2"**	**0.09**	**580676000**
(Q) **Box nut 13 1/2"**	**0.06**	**580576000**



Tie-rod wrench 15.0/20.0 **1.8** **580594000**

Ankerstabschlüssel 15,0/20,0

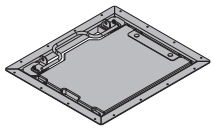
Galvanised



Manhole B 70/60cm **22.0** **581530000**

Bühnendurchstieg B 70/60cm

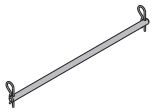
Steel parts galvanised
Timber parts varnished yellow
Length: 81 cm
Width: 71 cm



Ladder bolt XS **0.85** **581561000**

Leiternbolzen XS

Galvanised
Length: 51 cm



	[kg]	Article N°
System ladder XS 4.40m System-Leiter XS 4,40m Galvanised	**33.2**	**588640000**
Ladder adapter XS Leiternfuß XS Galvanised Height: 50 cm	**5.0**	**588673000**
Ladder cage XS 1.00m **Ladder cage XS 0.25m** Rückenschutz XS Galvanised	**16.5** **10.5**	**588643000** **588670000**
Doka express anchor 16x125mm Doka-Expressanker 16x125mm Galvanised Length: 18 cm	**0.31**	**588631000**
Doka coil 16mm Doka-Coil 16mm Galvanised Diameter: 1.6 cm	**0.009**	**588633000**
Lashing strap 5.00m 2G Zurrgurt 5,00m 2G Yellow	**2.9**	**586018500**
Bracing shoe Abspannschuh Painted blue	**1.8**	**584044000**

	[kg]	Article N°
Bracing device Xclimb 60 15.0 Abspanneinheit Xclimb 60 15,0 Painted blue	**8.1**	**581390000**
Quick-locking strap 55cm Gurtschnellverschluss 55cm Yellow	**0.07**	**580787000**

Tie rod system 15.0

Universal climbing cone 15.0 2G Universal-Kletterkonus 15,0 2G Galvanised Orange Length: 12.8 cm Diameter: 5.3 cm	**1.3**	**581977500**
Universal climbing cone 15.0 Universal-Kletterkonus 15,0 Galvanised Orange Length: 12.8 cm Diameter: 5.3 cm	**1.3**	**581977000**
Sealing sleeve K 15.0 Dichtungshülse K 15,0 Orange Length: 12 cm Diameter: 6 cm	**0.03**	**581976000**
Concrete cone D52/46 55mm Betonkonus D52/46 55mm Grey	**0.19**	**581939000**
Fair-faced concrete positioning cone MF 15.0 Sichtbetonvorlauf MF 15,0 Galvanised Length: 12.6 cm Diameter: 5.3 cm	**1.5**	**581928000**
Sealing disc 30/53 Dichtscheibe 30/53 Black	**0.003**	**581838000**
Fair-faced concrete plug 52mm plastic Sichtbetonstopfen 52mm Kunststoff PE Grey	**0.01**	**581850000**
Cone screw M30 SW50 7cm Konusschraube M30 SW50 7cm Green Length: 10 cm Diameter: 7 cm Width-across: 50 mm	**0.88**	**581444500**

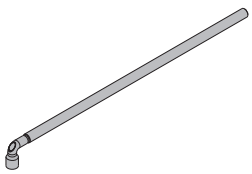
	[kg]	Article N°
Form-ply protector 32mm Schalhautschutz 32mm Galvanised Width-across: 70 mm	**0.38**	**580220000**
Positioning clamp M30 Vorlaufklemme M30 Galvanised Diameter: 4 cm	**0.19**	**581833000**
Positioning disc M30 Vorlaufscheibe M30 Galvanised Diameter: 9 cm	**0.25**	**581975000**
Stop anchor 15.0 B11 Sperranker 15,0 B11 Non-treated	**0.55**	**581868000**
Stop anchor 15.0 A16 Sperranker 15,0 A16 Non-treated	**0.38**	**581997000**
Stop anchor 15.0 A21 Sperranker 15,0 A21 Non-treated	**0.44**	**581884000**
Stop anchor double-ended 15.0 K20 Sperranker beidseitig 15,0 K20 Non-treated Custom lengths can be ordered under the special-component Art.n° 580100000, quoting the designation and the desired length in mm.	**0.76**	**581820000**
Wall anchor 15.0 15cm Wandanker 15,0 15cm Galvanised	**1.5**	**581893000**

	[kg]	Article N°
Tie rod 15.0mm galvanised 0.50m	**0.72**	**581821000**
Tie rod 15.0mm galvanised 0.75m	**1.1**	**581822000**
Tie rod 15.0mm galvanised 1.00m	**1.4**	**581823000**
Tie rod 15.0mm galvanised 1.25m	**1.8**	**581826000**
Tie rod 15.0mm galvanised 1.50m	**2.2**	**581827000**
Tie rod 15.0mm galvanised 1.75m	**2.5**	**581828000**
Tie rod 15.0mm galvanised 2.00m	**2.9**	**581829000**
Tie rod 15.0mm galvanised 2.50m	**3.6**	**581852000**
Tie rod 15.0mm galvanised .....m	**1.4**	**581824000**
Tie rod 15.0mm non-treated 0.50m	**0.73**	**581870000**
Tie rod 15.0mm non-treated 0.75m	**1.1**	**581871000**
Tie rod 15.0mm non-treated 1.00m	**1.4**	**581874000**
Tie rod 15.0mm non-treated 1.25m	**1.8**	**581886000**
Tie rod 15.0mm non-treated 1.50m	**2.1**	**581876000**
Tie rod 15.0mm non-treated 1.75m	**2.5**	**581887000**
Tie rod 15.0mm non-treated 2.00m	**2.9**	**581875000**
Tie rod 15.0mm non-treated 2.50m	**3.6**	**581877000**
Tie rod 15.0mm non-treated 3.00m	**4.3**	**581878000**
Tie rod 15.0mm non-treated 3.50m	**5.0**	**581888000**
Tie rod 15.0mm non-treated 4.00m	**5.7**	**581879000**
Tie rod 15.0mm non-treated 5.00m	**7.2**	**581880000**
Tie rod 15.0mm non-treated 6.00m	**8.6**	**581881000**
Tie rod 15.0mm non-treated .....m	**1.4**	**581873000**
Ankerstab 15,0mm		
Tie-rod wrench 15.0/20.0 Ankerstabschlüssel 15,0/20,0 Galvanised	**1.8**	**580594000**
Protective cap 15.0/20.0 Schutzkappe 15,0/20,0 Yellow Length: 6 cm Diameter: 6.7 cm	**0.03**	**581858000**
Super plate 15.0 Superplatte 15,0 Galvanised Height: 6 cm Diameter: 12 cm Width-across: 27 mm	**0.98**	**581966000**
Plastic tube 22mm 2.50m Kunststoffrohr 22mm 2,50m PVC Grey Diameter: 2.6 cm	**0.45**	**581951000**
Universal cone 22/10mm Universal-Konus 22/10mm Grey Diameter: 4 cm	**0.005**	**581995000**
Friction type ratchet SW27 Freilaufknarre SW27 Manganese-phosphated Length: 30 cm	**0.49**	**581855000**

	[kg]	Article N°

Box spanner 27 0.65m 1.9 581854000
Steckschlüssel 27 0,65m

Galvanised



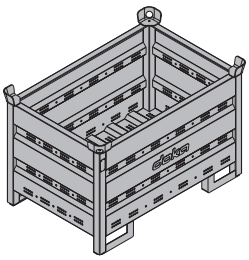
Multi-trip packaging

Doka skeleton transport box 1.70x0.80m 87.0 583012000
Doka-Gitterbox 1,70x0,80m

Galvanised
Height: 113 cm

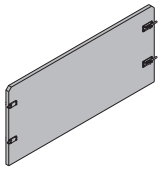
Doka multi-trip transport box 1.20x0.80m 70.0 583011000
Doka-Mehrwegcontainer 1,20x0,80m

Galvanised
Height: 78 cm



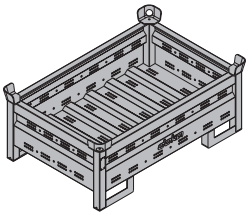
Multi-trip transport box partition 0.80m 3.7 583018000
Multi-trip transport box partition 1.20m 5.5 583017000
Mehrwegcontainer Unterteilung

Steel parts galvanised
Timber parts varnished yellow



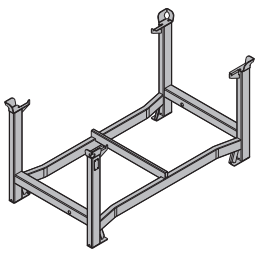
Doka multi-trip transport box 1.20x0.80x0.41m 42.5 583009000
Doka-Mehrwegcontainer 1,20x0,80x0,41m

Galvanised



Doka stacking pallet 1.55x0.85m 41.0 586151000
Doka-Stapelpalette 1,55x0,85m

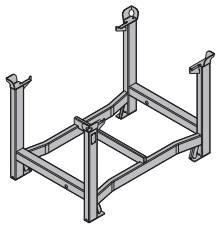
Galvanised
Height: 77 cm



	[kg]	Article N°

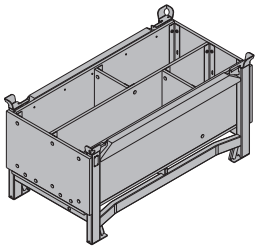
Doka stacking pallet 1.20x0.80m 38.0 583016000
Doka-Stapelpalette 1,20x0,80m

Galvanised
Height: 77 cm



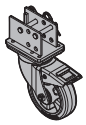
Doka accessory box 106.4 583010000
Doka-Kleinteilebox

Timber parts varnished yellow
Steel parts galvanised
Length: 154 cm
Width: 83 cm
Height: 77 cm



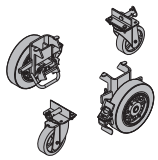
Universal castor wheel for transport pallet 6.0 584043000
Universal-Lenkrolle Transportgebinde

Galvanised
Height: 28.8 cm



Bolt-on castor set B 33.6 586168000
Anklemm-Radsatz B

Painted blue



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