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User target groups

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

Hazard assessment

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

Remarks on this booklet

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

Planning

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

Regulations; industrial safety

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

- The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose in accordance with the applicable laws, standards and rules, under the direction and supervision of suitably skilled persons.
- These persons’ mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.
- Doka products are technical working appliances which are intended for industrial / commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.
- The stability and load-bearing capacity of all components and units must be ensured during all phases of the construction work!
- Do not step on or apply strain to cantilevers, closures, etc. until suitable measures to ensure their stability have been correctly implemented (e.g. by tie-backs).
- Strict attention to and compliance with the functional instructions, safety instructions and load specifications are required. Non-compliance can cause accidents and severe injury (risk of fatality) and considerable damage to property.
- Sources of fire in the vicinity of the formwork are prohibited. Heaters are permissible only when used correctly and situated a correspondingly safe distance from the formwork.
- Customer must give due consideration to any and all effects of the weather on the equipment and regards both its use and storage (e.g. slippery surfaces, risk of slipping, effects of the wind, etc.) and implement appropriate precautionary measures to secure the equipment and surrounding areas and to protect workers.
- All connections must be checked at regular intervals to ensure that they are secure and in full working order.
  In particular threaded connections and wedged connections have to be checked and retightened as necessary in accordance with activity on the jobsite and especially after out-of-the-ordinary occurrences (e.g. after a storm).
- It is strictly forbidden to weld Doka products – in particular anchoring/tying components, suspension components, connector components and castings etc. – or otherwise subject them to heating.
  Welding causes serious change in the microstructure of the materials from which these components are made. This leads to a dramatic drop in the failure load, representing a very great risk to safety.
  It is permissible to cut individual tie rods to length with metal cutting discs (introduction of heat at the end of the rod only), but it is important to ensure that flying sparks do not heat and thus damage other tie rods.
  The only articles which are allowed to be welded are those for which the Doka literature expressly points out that welding is permitted.

Assembly

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

Closing the formwork

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

Pouring

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

Stripping the formwork

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

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

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

▪ When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.

▪ Remove loose parts or secure them so that they cannot slip out of position and drop.

▪ All components must be stored safely, following all the special Doka instructions given in the relevant sections of this document!

Maintenance

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

Miscellaneous

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

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

Eurocodes at Doka

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

▪ It is essential to avoid confusing permissible values with design values!

▪ Doka documents will continue to state the permissible values.

Allowance has been made for the following partial factors:

▪ \( \gamma_c = 1.5 \)

▪ \( \gamma_M, \text{ timber} = 1.3 \)

▪ \( \gamma_M, \text{ steel} = 1.1 \)

▪ \( k_{\text{mod}} = 0.9 \)

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.
Support in every stage of the project

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

Project assistance from start to finish

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

Efficient planning for a safe project sequence

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

Optimise construction workflows with Doka

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

Custom formwork and on-site assembly

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

Just-in-time availability

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

Rental and reconditioning service

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

High performance, in all stages of the project

- Tender
- Operations scheduling
- Construction work
- Project close-out

Engineering

- Execution planning
- Cycle planning
- Structure modelling/3D-planning
- Assembly drawings
- Statics calculation
- Concremote

Consulting and training

- Project processing on-site
- Formwork instructor
- Training & consulting

Process optimisation

- Concremote
- myDoka
- Planning software
- Yard management

Pre-assembly and assembly

- Pre-assembly service
- Pre-assembly on site service

Logistics

- Organisation of transport & freight

Rental and reconditioning service

- Rental service
- Formwork returns
- Reconditioning & service fixed rates

upbeat construction digital services for higher productivity

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

Circular formwork H20 – the practical circular formwork for curved walls
Doka circular formwork H20 uses special spindles to curve the form-ply into a "genuine" arced shape. This adjusting system permits continuous setting of the radii. Circular formwork H20 is designed for radii of 3.50 m to 40 m (in special cases, a radius of 2.50 m is possible).
The circular formwork elements are supplied to the site ready-assembled.
The use of proven basic components from the Doka Large-area formwork Top 50 makes this formwork system both robust and adaptable.
Special connecting profiles allow its components to be combined with Framax Xlife, Alu-Framax Xlife, Frameco and Column formwork RS.

| Permitted fresh-concrete pressure: 60 kN/m² |

Further product features:
- Continuous adaptation to different radii by means of spindles.
- Only 2 widths of element:
  - 2.40 m inside element
  - 2.50 m outside element
- Ideal height grid provided by the element heights of:
  - 0.70 m
  - 1.20 m
  - 2.40 m
  - 3.00 m
  - 3.60 m
  - 4.80 m
- Only one type of connector needed:
  - Adjustable clamp 10cm
- Heavy-duty, flexible form-ply:
  - Dokaplex 21mm
- Smooth, constant curvature ensured by uniform form-ply support.
- Extra-rigid connection between connecting profile and form-ply ensures perfect curvature in the edge zone of the elements as well.
- Low form-tie ratio:
  - only 1 form-tie per 1.5 m² area to be formed

System overview

A Special spindle:
For setting the element-bending radius.

B Connecting profile:
Connection piece to further circular formwork elements or to Framax Xlife or Alu-Framax Xlife framed formwork panels.

C Steel waling RD:
For distributing the form-tie forces.

D Lifting-bracket:
For lifting and resetting the element.

E Bending instructions:
Information on how to adjust the Circular formwork element H20 correctly.
**System grid**

### Panel widths

The 2.40m wide elements are used for the inside formwork, and the 2.50m wide ones for the outside formwork. This speeds up work by making it easy to see which element belongs where.

#### Circular formwork element H20 2.40m (for inside use)

![Diagram of H20 2.40m formwork element]

- **A** Dokaplex 21mm
- **B** Doka beam H20
- **C** Turnbuckle C
- **D** Turnbuckle D
- **E** Timber-beam seat 24cm
- **F** Steel waling RD 0.75m
- **G** Connecting profile (left)
- **H** Connecting profile (right)
- **I** Lifting-bracket

#### Circular formwork element H20 2.50m (for outside use)

![Diagram of H20 2.50m formwork element]

- **A** Dokaplex 21mm
- **B** Doka beam H20
- **C** Turnbuckle A
- **D** Turnbuckle C
- **E** Timber-beam seat 24cm
- **F** Steel waling RD 0.75m
- **G** Connecting profile (left)
- **H** Connecting profile (right)
- **I** Lifting-bracket

### Panel heights

<table>
<thead>
<tr>
<th></th>
<th>0.70 m</th>
<th>1.20 m</th>
<th>2.40 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>70.0</td>
<td>120.0</td>
<td>240.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>3.00 m</th>
<th>3.60 m</th>
<th>4.80 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>300.0</td>
<td>360.0</td>
<td>480.0</td>
</tr>
</tbody>
</table>
## Vertical stacking

### Possible height gradations

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>1.20 m</th>
<th>1.90 m</th>
<th>2.40 m</th>
<th>3.00 m</th>
<th>3.60 m</th>
<th>4.20 m</th>
<th>4.80 m</th>
<th>5.40 m</th>
<th>6.00 m</th>
<th>6.60 m</th>
<th>7.20 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.20 m + 0.70 m</td>
<td>1.90 m</td>
<td>2.40 m</td>
<td>3.00 m</td>
<td>3.60 m</td>
<td>4.20 m</td>
<td>4.80 m</td>
<td>5.40 m</td>
<td>6.00 m</td>
<td>6.60 m</td>
<td>7.20 m</td>
<td></td>
</tr>
</tbody>
</table>
Vertical stacking using Stacking plate for circular formwork H20

The ideal height-grid of the elements, and the systematic spacing of the form-ties, make it possible to arrange many different height-combinations opposite one another.

Note:
A 3.00 m high element may only be placed opposite another 3.00 m high element.

Dismount the Lifting-bracket for Circular formwork H20 from the element joint before vertically stacking the elements.

Rules for vertical stacking of panels
- Always position 0.70m high elements at the top.
- In stacking configurations, 3.00m high elements are only allowed to have other elements placed beneath them, never on top of them! In other words, these elements must always be on top.
- To prolong their service lives, the 3.60m and 4.80m high Circular formwork elements H20 are equipped with protective caps. For this reason, they can only be used at the bottom of a stack.

Perm. moment: 2.0 kNm

Rules for vertical stacking of panels
- Always position 0.70m high elements at the top.
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- To prolong their service lives, the 3.60m and 4.80m high Circular formwork elements H20 are equipped with protective caps. For this reason, they can only be used at the bottom of a stack.

Plan view

The necessary nuts & bolts etc. are included with the stacking plate.
A Stacking plate
B Hexagon screw M16x70 (width-across 24 mm)
C Spring washer A16

Practical example

Mounting the stacking plate

NOTICE
- Before vertically stacking elements, always turn their spindles to make them straight again.
- Attach one stacking plate for every beam-join.
Inter-panel connections

- As a rule, 2.50 m wide elements are used for the outside formwork.
- For the inside formwork, 2.40 m wide elements are used.
- The inter-element connections are made using Adjustable clamps 10 cm. Attach at least 1 clamp for every metre that the element is high!
  - Do not oil or grease wedge-clamped joints.
- Place the inside and outside formworks opposite one another.
  Bridge any closure gaps between the elements using fitting-timbers \(a = 122 \text{ mm}\), e.g. Framax fitting-timbers 2.70 m or 3.30 m (see the section headed ‘Determining the required widths of fitting-timber’).
- Tie using a Tie-rod 15.0 and a Super-plate 15.0. Minimum length of the tie-rods:
  Wall thickness + 1.00 m

Practical example

Inside radius of the structure: 10.00 m
Wall thickness: 0.30 m

Combining with Framed formwork Framax Xlife and Alu-Framax Xlife

The connecting profiles of the Circular formwork elements H20 permit Framax Xlife and Alu-Framax Xlife panels to be connected directly to the elements.
Stop-end formwork

There are 3 ways of making up stop ends (for wall thicknesses up to 60 cm):
- Adjustable clamp 10cm
- Framax stop-end tie
- Framax multi function clamp

### Adjustable clamp 10cm:
Perm. tensile force: 10.0 kN

### Framax stop-end tie:
Perm. tensile force: 15.0 kN

### Framax multi function clamp:
Perm. tensile force: 15.0 kN

#### Number of connectors required

<table>
<thead>
<tr>
<th>Wall thickness</th>
<th>Adjustable clamp 10cm</th>
<th>Framax stop-end tie / Framax multi function clamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 cm</td>
<td>0.75 pcs./m</td>
<td>0.5 pcs./m</td>
</tr>
<tr>
<td>34 cm</td>
<td>1 pcs./m</td>
<td>0.68 pcs./m</td>
</tr>
<tr>
<td>40 cm</td>
<td>1.2 pcs./m</td>
<td>0.8 pcs./m</td>
</tr>
<tr>
<td>50 cm</td>
<td>1.5 pcs./m</td>
<td>1 pcs./m</td>
</tr>
<tr>
<td>60 cm</td>
<td>1.8 pcs./m</td>
<td>1.2 pcs./m</td>
</tr>
</tbody>
</table>

Example:
- Wall thickness: 40 cm
- Panel height: 2.40 m
- Adjustable clamp 10cm

Number of connectors: 6 pcs./stop end

**NOTICE**

- Permissible load of stop end: max. 18.0 kN/m at the profiles of the circular formwork elements.
- If wall thickness is greater than 60 cm provide additional support for the stop end (e.g. with supporting construction frames).
Bending instructions

As-delivered condition: Element = straight

Note:
Smallest bending radius: 3.50 m

➤ Put up the circular formwork element and secure it so that it cannot topple over.
➤ Place tall elements on their sides, as shown in the illustration, so that the spindle-levels are in the vertical. In this way, all the spindles are within easy reach.

➤ Uniformly pre-tension all the spindles by hand.

Adjusting

![NOTICE]
➤ Only adjust the element by means of the template.
➤ Make sure that you turn each spindle exactly as much as the ones above and below it.
➤ Check the radius with the template before every pour.

➤ Adjust the spindles using the Wrench for Circular formwork H20 (E).

➤ Prepare the template.

There is an indicator on the spindles to show you which way to turn them (Z) for pulling together, (D) for pushing apart.

➤ The formwork is easier to set up if there is an in-line connection to an existing wall.

N° of turns of the spindle

<table>
<thead>
<tr>
<th>No.</th>
<th>(C)</th>
<th>(B)</th>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>—</td>
<td>—</td>
<td>1½</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2</td>
<td>—</td>
<td>1½</td>
<td>—</td>
<td>1½</td>
<td>—</td>
</tr>
<tr>
<td>3</td>
<td>1½</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1½</td>
</tr>
</tbody>
</table>

➤ Repeat this procedure until the form-ply sits closely and evenly against the template. To return the elements to the "straight" position, simply repeat the spindling procedure in reverse.

If spindling has gone badly wrong:
➤ Straighten out the element and start all over again!

➤ Once you have adjusted the circular formwork elements to the desired radius, set them up next to one another in the same way as straight elements, link them with Adjustable clamps 10cm, and then place the form-ties.

Storage
➤ Straighten out the elements again before storing them for any length of time.
Plumbing accessories brace the formwork against wind loads and make it easier to plumb and align.

**NOTICE**
The formwork panels must be held stable in **every** phase of the construction work!
Please observe all applicable safety regulations!

For more information (wind loads etc.) see the section headed 'Vertical and horizontal loads' in the Calculation Guide 'Doka formwork engineering'.

**Permitted spacings [m] of the plumbing accessories:**

<table>
<thead>
<tr>
<th>Formwork height [m]</th>
<th>Panel strut 340 540</th>
<th>Eurex 60 550</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>3.60</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>4.20</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>4.80</td>
<td>2.50</td>
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</tr>
<tr>
<td>5.40</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>6.00</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>6.60</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>7.20</td>
<td>2.50 2.50</td>
<td></td>
</tr>
<tr>
<td>7.80</td>
<td>2.50 2.50</td>
<td></td>
</tr>
</tbody>
</table>

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

**Fixing the struts to the formwork**

![Fixing the struts to the formwork](image)

**Fixing to the ground**

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

**Drilled holes in footplate**

<table>
<thead>
<tr>
<th>Panel struts</th>
<th>Eurex 60 550</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>d</td>
<td>c</td>
</tr>
</tbody>
</table>

- a ... diam. 26 mm
- b ... diam. 18 mm (suitable for Doka express anchors)
- c ... diam. 28 mm
- d ... diam. 16 mm (suitable for Doka express anchors)

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

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

Example: For a formwork height of 7.20 m, the following items are required for each element:
- 1 Panel strut 540
- 1 Eurex 60 550
Anchoring the footplate

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

Panel struts

**Product features:**
- Can be telescoped in 8 cm increments
- Fine adjustment by screw-thread
- All parts are captively integrated - including the telescopic tube (has safety stop to prevent dropout)

**Panel strut 340**
- A Panel strut 340 IB or 540 IB
- B Prop head RD EB

**Panel strut 540**
- A Panel strut 340 IB or 540 IB
- B Prop head RD EB

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

Follow the Fitting Instructions!

Required safe working load of alternative anchors for foot-plates:
- $R_d \geq 20.3$ kN ($F_{permissible} \geq 13.5$ kN)
- Follow the manufacturers’ applicable fitting instructions.

<table>
<thead>
<tr>
<th>A</th>
<th>Doka express anchor 16x125mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Doka coil 16mm</td>
</tr>
</tbody>
</table>

α ... approx. 60°
Eurex 60 550 used as a shoring & plumbing accessory

Product features:
- For shoring high wall formwork
- The "Adjusting strut 540 Eurex 60 IB" makes handling much easier, especially when the formwork is being transferred.
- Can be telescoped in 10 cm increments
- Continuous fine adjustment by screw-thread

Follow the directions in the "Eurex 60 550" User Information!

Universal dismantling tool
The easy way to turn the spindle nuts.

A good rule of thumb here is:
The length of the shoring & plumbing accessory (i.e. the complete Eurex 60 550 plumbing-strut assembly) = the height of the element to be shored.
Pouring platforms with single brackets

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

**Preconditions for use:**

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

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

Ensure that the formwork gang has sufficient stiffness.

Observe all applicable safety regulations.

**NOTICE**

The brackets must be secured against accidental lift-out

**Universal bracket 90**

"Use-anywhere" brackets for making working platforms.

- a ... 28.4 cm (50.5 cm in the case of 3.00m high elements)
- b ... 87 cm
- h ... 160 cm

**Deck and guardrail boards**

Board thicknesses for support centres of up to 2.50 m:
- Deck-boards min. 20x5 cm
- Guard-rail boards min. 15x3 cm

**Deck and guardrail boards**: Per 1 metre length of platform, 0.9 m² of floor decking and 0.8 m² of guard-rail boards are needed (in-situ).

**Fastening the floor decking**: with 5 square bolts M10x70 and 1 square bolt M10x160 per bracket (included with product).

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

**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.

**Using scaffolding tubes**

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

Load Class 2 to EN 12811-1:2003

Max. influence width: 2.00 m

**CAUTION**

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

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

- A Screw-on couplers 48mm 95
- B Scaffolding tube 48.3mm
Top scaffold bracket L

Lightweight bracket for making working platforms.

![Diagram of Top scaffold bracket L]

\(a\) ... 76 cm (22.5 cm in the case of 3.00m high elements)
\(b\) ... 62 cm
\(h\) ... 115 cm

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

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

**Deck and guardrail boards**

Board thicknesses for support centres of up to 2.50 m:
- Deck-boards min. 20x5 cm
- Guard-rail boards min. 15x3 cm

**Deck and guardrail boards:** Per 1 metre length of platform, 0.65 m\(^2\) of floor decking and 0.6 m\(^2\) of guard-rail boards are needed (in-situ).

**Fastening the floor decking:** with 3 square bolts M10x120 per bracket (not included with product).

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

**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.

Using scaffolding tubes

![Diagram of Using scaffolding tubes]

Tools: Fork spanner 22 for mounting the couplers and scaffolding tubes.
- **A** Scaffold tube connector
- **B** Scaffolding tube 48.3mm
- **C** Screw-on couplers 48mm 50
- **D** Hexagon screw M14x40 + hexagon nut M14 (not included with product)

Intermediate platforms

Because there are holes drilled in the beams beneath every spindle level, it is possible to erect several platform levels on the Circular formwork element H20, from an element height of 1.20 m upwards.
Ladder system

The Ladder system XS permits safe vertical access to and from the intermediate platforms and pouring platforms:
▪ when attaching/detaching the formwork to/from the crane tackle
▪ when opening/closing the formwork
▪ when placing the reinforcement
▪ during pouring

Note:
The Ladder system XS must be implemented in such a way that all national regulations are complied with. On formworks of up to 3.00 m in height, no Ladder system XS is possible.

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

Assembly

Preparation of the formwork
➤ Pre-assemble gang-forms face-down on an assembly bench.
➤ With the gang-form still flat, mount platforms and panel struts to it.

Attaching connectors to the formwork
➤ Place the Connector XS Wall formwork against the frame profile near the top of the formwork.

NOTICE
➤ Do not oil or grease wedge-clamped joins.
➤ Fasten the Connector XS Wall formwork to the frame profile using two Quick acting clamps RU.

➤ Place a "Connector XS wall formwork" against the frame profile, near the bottom of the formwork.
➤ Fasten the Connector XS Wall formwork to the frame profile using two Quick acting clamps RU.

➤ For formwork heights above 5.85 m, an extra Connector XS Wall formwork must be attached in the same way near the middle of the formwork (i.e. approx. half-way up). This extra connector prevents the ladder swaying when site crew climb up or down it.
Fixing the ladder

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

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

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

Ladder system XS for heights above 3.75 m

Telescoping ladder extension (for adjusting to ground level)
➤ To telescope the ladders past one another, lift the safety latch on the ladder and fix the Ladder extension XS 2.30m onto the desired rung of the other ladder.

Close-up

A telescoping join between two Ladder extensions XS 2.30m can be made in the same way.
Permanently fixed ladder extension
➤ Insert the Ladder extension XS 2.30m into the uprights of the System ladder XS 4.40m, with its hooking brackets facing downwards, and fasten it. Tighten the screws only very slightly!

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

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

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

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

➤ Attach the Ladder cage exit XS (the bottom of the cage must always be at the same height as the platform). The safety latches prevent the cage from being accidentally lifted out.

Items needed

<table>
<thead>
<tr>
<th>Connectors + ladder</th>
<th>Formwork height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.00-3.60 m</td>
</tr>
<tr>
<td>Connector XS wall formwork</td>
<td>2</td>
</tr>
<tr>
<td>System ladder XS 4.40m</td>
<td>1</td>
</tr>
<tr>
<td>Ladder extension XS 2.30m</td>
<td>0</td>
</tr>
<tr>
<td>Framax quick-acting clamp RU</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ladder cage</th>
<th>Formwork height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.00-3.15 m</td>
</tr>
<tr>
<td>Ladder cage exit XS 1)</td>
<td>1</td>
</tr>
<tr>
<td>Securing barrier XS 1)</td>
<td>1</td>
</tr>
<tr>
<td>Ladder cage XS 1.00m 1)</td>
<td>0</td>
</tr>
</tbody>
</table>

1) No allowance made here for intermediate exits.
Exit onto an intermediate platform

Mounting the Ladder cage XS 0.25m

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

Opposing guard-rail

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

Basic rule:

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

A Opposing guard-rail (provided at site)
Repositioning

The slinging chains are hooked into the ready-mounted lifting-brackets of the Circular formwork element H20.

β ... max. 15°

Lifting-bracket for Circular formwork H20

Close-up of lifting-bracket:

Max. load per lifting-bracket: 1000 kg
Determining the required widths of fitting-timber

Closure diagram

A Closure on inside [cm]
B Closure on outside [cm]
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

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

Lifting by crane

NOTICE
- Multi-trip packaging items may only be lifted one at a time.
- Only lift the boxes when their sidewalls are closed!
- Use a suitable crane suspension tackle (e.g. Doka 4-part chain 3.20m). Do not exceed the permitted load-bearing capacity.
- Spread angle $\beta$ max. 30°!

Repositioning by forklift truck or pallet stacking truck

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

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

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

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

Max. n° of units on top of one another

<table>
<thead>
<tr>
<th>Outdoors (on the site)</th>
<th>Indoors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor gradients up to 3%</td>
<td>Floor gradients up to 1%</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

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.
Doka multi-trip transport box
Storage and transport device for small items

Doka multi-trip transport box 1.20x0.80m

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

<table>
<thead>
<tr>
<th>Multi-trip transport box partition</th>
<th>in the longitudinal direction</th>
<th>in the transverse direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.20m</td>
<td>max. 3 partitions</td>
<td>-</td>
</tr>
<tr>
<td>0.80m</td>
<td>-</td>
<td>max. 3 partitions</td>
</tr>
</tbody>
</table>

Max. carrying capacity: 1500 kg (3300 lbs)
Permitted imposed load: 7850 kg (17300 lbs)

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

Using Doka multi-trip transport boxes as storage units

Max. n° of units on top of one another

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<td>Floor gradients up to 1%</td>
</tr>
<tr>
<td>Doka multi-trip transport box 1.20x0.80m</td>
<td>Doka multi-trip transport box 1.20x0.80x0.41m</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

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 a suitable crane lifting tackle (e.g. Doka 4-part chain 3.20m).
  Do not exceed the permitted load-bearing capacity.
- Spread angle $\beta$ max. 30°!

Repositioning by forklift truck or pallet stacking truck
The forks can be inserted under either the broadside or the narrowside of the containers.
**Doka stacking pallet 1.55x0.85m and 1.20x0.80m**

Storage and transport devices for long items.

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

Using Doka stacking pallets as transport devices

**Lifting by crane**

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

**Repositioning by forklift truck or pallet stacking truck**

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

### Using Doka stacking pallets as storage units

<table>
<thead>
<tr>
<th>Max. n° of units on top of one another</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outdoors (on the site)</strong></td>
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<tr>
<td>Floor gradients up to 3%</td>
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<td>2</td>
</tr>
</tbody>
</table>

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 caster 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.

---

999705002 - 03/2020 29
Doka accessory box

Storage and transport device for small items

Doka accessory boxes as storage units

Max. carrying capacity: 1000 kg (2200 lbs)
Permitted imposed load: 5530 kg (12191 lbs)

Doka accessory box as transport devices

Lifting by crane

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

<table>
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<tbody>
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</tr>
<tr>
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</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

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.

Rep Positioning by forklift truck or pallet stacking truck

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

Bolt-on castor set B

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

Suitable for drive-through access openings > 90 cm.

The Bolt-on caster set B can be mounted to the following multi-trip packaging items:
- Doka accessory box
- Doka stacking pallets

Follow the directions in the 'Bolt-on castor set B' Operating Instructions!
# Circular formwork H20

<table>
<thead>
<tr>
<th>Article N°</th>
<th>kg</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31999705002 - 03/2020</td>
<td></td>
<td>User Information Circular formwork H20</td>
</tr>
</tbody>
</table>

## Component overview

### Circular formwork element H20 2.40x0.70m
- Article N°: 587820000
- Weight: 195.0 kg

### Circular formwork element H20 2.40x1.20m
- Article N°: 587821000
- Weight: 244.0 kg

### Circular formwork element H20 2.40x2.40m
- Article N°: 587822000
- Weight: 472.0 kg

### Circular formwork element H20 2.40x3.00m
- Article N°: 587813000
- Weight: 699.0 kg

### Circular formwork element H20 2.40x3.60m
- Article N°: 587823000
- Weight: 934.0 kg

### Circular formwork element H20 2.40x4.80m
- Article N°: 587824000
- Weight: 1160.0 kg

### Circular formwork element H20 2.50x0.70m
- Article N°: 587825000
- Weight: 197.0 kg

### Circular formwork element H20 2.50x1.20m
- Article N°: 587826000
- Weight: 249.0 kg

### Circular formwork element H20 2.50x2.40m
- Article N°: 587827000
- Weight: 480.0 kg

### Circular formwork element H20 2.50x3.00m
- Article N°: 587814000
- Weight: 534.0 kg

### Circular formwork element H20 2.50x3.60m
- Article N°: 587828000
- Weight: 716.0 kg

### Circular formwork element H20 2.50x4.80m
- Article N°: 587829000
- Weight: 942.0 kg

### Stacking plate for circular formwork H20
- Article N°: 587830000
- Weight: 7.0 kg
- Height: 62 cm

### Adjustable clamp 10cm
- Article N°: 587808000
- Weight: 3.7 kg
- Length: 30 cm

### Framax multi function clamp
- Article N°: 588169000
- Weight: 5.8 kg
- Framax-Uni-Spanner
- Galvanised
- Length: 40 cm

### Wrench for circular formwork H20
- Article N°: 587807000
- Weight: 0.70 kg
- Schlüssel für Rundschalung H20
- Galvanised
- Length: 27 cm

### Template f. circular formwork H20...
- Article N°: 177020000
- Weight: 6.5 kg
- Schalldose für Rundschalung H20...
- Galvanised
- Delivery condition: folded closed

### Panel strut 340 IB
- Article N°: 580365000
- Weight: 24.3 kg
- Elementstütze 340 IB
- Galvanised
- Length: 190.8 - 341.8 cm

### Panel strut 540 IB
- Article N°: 580366000
- Weight: 41.4 kg
- Elementstütze 540 IB
- Galvanised
- Length: 310.5 - 549.2 cm

### Framax stop-end tie
- Article N°: 588143000
- Weight: 1.5 kg
- Framax-Stirnanker
- Galvanised
- Length: 29 cm

---

Project-specific!

Height: 62 cm

Galvanised

Delivery condition: folded closed

---

Panel strut 540 IB
- Article N°: 177020000
- Weight: 6.5 kg
- Schalldose für Rundschalung H20...
- Galvanised
- Delivery condition: folded closed

---

Panel strut 540 IB
- Article N°: 580365000
- Weight: 24.3 kg
- Elementstütze 340 IB
- Galvanised
- Length: 190.8 - 341.8 cm

### Panel strut 540 IB
- Article N°: 580366000
- Weight: 41.4 kg
- Elementstütze 540 IB
- Galvanised
- Length: 310.5 - 549.2 cm

### Panel strut 540 IB
- Article N°: 580367000
- Weight: 49.4 kg
- Elementstütze 540 IB
- Galvanised
- Length: 310.5 - 549.2 cm

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- Galvanised
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# Component overview

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<thead>
<tr>
<th>Article N°</th>
<th>[kg]</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eurex 60 550</td>
<td>42.5</td>
<td>(A) Plumbing strut Eurex 60 550 depending on length, comprising:</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>21.3</td>
<td>(B) Extension Eurex 60 2.00m Powder-coated blue</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>4.2</td>
<td>(C) Connector Eurex 60 IB Galvanised Length: 15 cm Width: 15 cm Height: 30 cm</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>8.0</td>
<td>(D) Plumbing strut shoe Eurex 60 EB Galvanised Length: 31 cm Width: 12 cm Height: 33 cm</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>27.8</td>
<td>(E) Adjusting strut 540 Eurex 60 IB Galvanised Length: 303.5 - 542.2 cm Delivery condition: separate parts</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>1.9</td>
<td>Prop head RD EB Galvanised Length: 19 cm Width: 8 cm</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>3.7</td>
<td>Universal dismantling tool Galvanised Length: 75.5 cm</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>0.31</td>
<td>Doka express anchor 16x125mm Galvanised Length: 18 cm Follow the directions in the &quot;Fitting instructions!&quot;</td>
</tr>
<tr>
<td>Eurex 60 550</td>
<td>0.009</td>
<td>Doka coil 16mm Galvanised Diameter: 1.6 cm</td>
</tr>
<tr>
<td>Universal bracket 90</td>
<td>30.4</td>
<td>Universal-Konsole 90 Galvanised Length: 121 cm Height: 235 cm</td>
</tr>
<tr>
<td>Top scaffold bracket L</td>
<td>12.6</td>
<td>Betonierkonsole L Galvanised Length: 101 cm Height: 159 cm</td>
</tr>
<tr>
<td>Top scaffold bracket L painted</td>
<td>12.0</td>
<td>Betonierkonsole L lackiert Painted blue Length: 101 cm Height: 159 cm</td>
</tr>
<tr>
<td>Scaffold tube 48.3mm 0.50m</td>
<td>1.7</td>
<td>Galvanised</td>
</tr>
<tr>
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<td>3.6</td>
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Follow the directions in the "Fitting instructions"!
### User Information

**Circular formwork H20**

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**Circular formwork H20**

Follow the directions in the "Operating Instructions"!

#### Framax fitting timber

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#### Framax fitting timber 2x12cm 2.70m

Follow the directions in the "Operating Instructions"!

#### Framax fitting timber 3x12cm 2.70m

Follow the directions in the "Operating Instructions"!

#### Framax fitting timber 5x12cm 2.70m

Follow the directions in the "Operating Instructions"!

#### Framax fitting timber 10x12cm 2.70m

Follow the directions in the "Operating Instructions"!

#### Framax-Passholz 2,70m

Follow the directions in the "Operating Instructions"!

#### Reversible ratchet 1/2"

Follow the directions in the "Operating Instructions"!

#### Box nut 24 1/2"

Follow the directions in the "Operating Instructions"!

#### Ladder system XS

**Connector XS Wall formwork**

- Galvanised
- Width: 89 cm
- Height: 63 cm

**System ladder XS 4.40m**

- Galvanised

**Ladder extension XS 2.30m**

- Galvanised

**Ladder cage XS 1.00m**

- Galvanised

**Securing barrier XS**

- Galvanised
- Length: 80 cm

**Ladder cage exit XS**

- Galvanised
- Height: 132 cm

### Dimensions

- Varnished yellow
- Galvanised
- Length: 30 cm
- Length: 89 cm
- Length: 80 cm
- Height: 63 cm
- Height: 132 cm

---

**Note:** Follow the directions in the "Operating Instructions"!
### Component overview

#### Tie rod system 15.0

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#### User Information

**Circular formwork H20**

- **Box spanner 27 0.65m**
  - Description: Galvanised
  - Length: 27 cm
  - Diameter: 6 cm
  - Quantity: 1
  - Article No: 581854000

- **Super plate 15.0**
  - Description: Galvanised, Height: 6 cm, Diameter: 12 cm, Width: 27 mm
  - Article No: 581966000

- **Plastic tube 22mm 2.50m**
  - Description: PVC, Grey, Diameter: 2.6 cm
  - Article No: 581951000

- **Universal cone 22mm**
  - Description: Grey, Diameter: 4 cm
  - Article No: 581995000

- **Protective cap 15.0/20.0**
  - Description: Yellow, Length: 6 cm, Diameter: 6.7 cm
  - Article No: 581858000

- **Tie-rod wrench 15.0/20.0**
  - Description: Galvanised, Length: 37 cm, Diameter: 8 cm
  - Article No: 580594000

- **Friction type ratchet SW27**
  - Description: Manganese-phosphated, Length: 30 cm
  - Article No: 581855000

**Doka skeleton transport box 1.70x0.80m**

- **Doka multi-trip transport box 1.20x0.80m**
  - Description: Galvanised, Height: 78 cm
  - Article No: 583011000

- **Super plate 15.0**
  - Description: Galvanised, Height: 6 cm, Diameter: 12 cm, Width: 27 mm
  - Article No: 581966000

- **Plastic tube 22mm 2.50m**
  - Description: PVC, Grey, Diameter: 2.6 cm
  - Article No: 581951000

- **Universal cone 22mm**
  - Description: Grey, Diameter: 4 cm
  - Article No: 581995000

- **Protective cap 15.0/20.0**
  - Description: Yellow, Length: 6 cm, Diameter: 6.7 cm
  - Article No: 581858000

- **Tie-rod wrench 15.0/20.0**
  - Description: Galvanised, Length: 37 cm, Diameter: 8 cm
  - Article No: 580594000

- **Friction type ratchet SW27**
  - Description: Manganese-phosphated, Length: 30 cm
  - Article No: 581855000
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Near to you, worldwide

Doka is one of the world leaders in developing, manufacturing and distributing formwork technology for use in all fields of the construction sector. With more than 160 sales and logistics facilities in over 70 countries, the Doka Group has a highly efficient distribution network which ensures that equipment and technical support are provided swiftly and professionally. An enterprise forming part of the Umdasch Group, the Doka Group employs a worldwide workforce of more than 6000.