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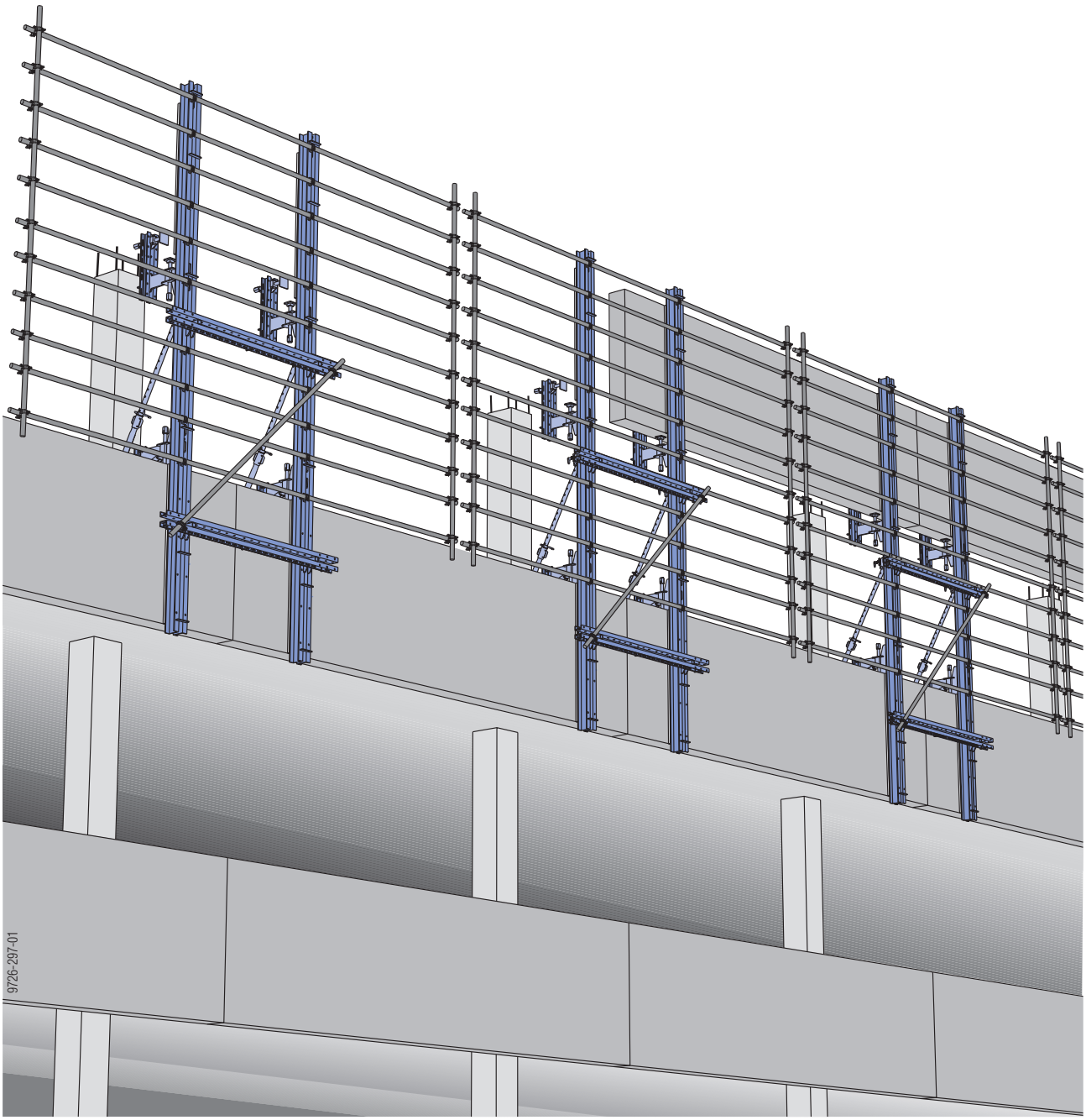
en-GB

The Formwork Experts.

Façade formwork Top 50

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 available to all users, and that they have been made aware of them and have easy access to them at the usage location.
- In the relevant technical documentation and formwork utilisation plans, Doka shows the workplace safety precautions that are necessary in order to use the Doka products safely in the usage situations shown.
  In all cases, users are obliged to ensure compliance with national laws, Standards and rules throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

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

Remarks on this booklet

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

Planning

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

Regulations; industrial safety

- All laws, Standards, industrial safety regulations and other safety rules applying to the utilisation of our products in the country and/or region in which you are operating must be observed at all times.
- If a person or object falls against, or into, the 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 of all components and units must be ensured during all phases of the construction work!
- The functional/technical instructions, safety warnings and loading data must all be strictly observed and complied with. Failure to do so can cause accidents and severe (even life-threatening) damage to health, as well as very great material damage.
- Fire-sources are not permitted anywhere near the formwork. Heating appliances are only allowed if properly and expertly used, and set up a safe distance away from the formwork.
- The work must take account of the weather conditions (e.g. risk of slippage). In extreme weather, steps must be taken in good time to safeguard the equipment, and the immediate vicinity of the equipment, and to protect employees.
- All connections must be checked regularly to ensure that they still fit properly and are functioning correctly.
  It is very important to check all screw-type connections and wedge-clamped joins whenever the construction operations require (particularly after exceptional events such as storms), and to tighten them if necessary.
- It is strictly forbidden to weld Doka products – in particular anchoring/tying components, suspension components, connector components and castings etc. – or otherwise subject them to heating.
  Welding causes serious change in the microstructure of the materials from which these components are made. This leads to a dramatic drop in the failure load, representing a very great risk to safety.
  The only articles which are allowed to be welded are those for which the Doka literature expressly points out that welding is permitted.

Assembly

- The equipment/system must be inspected by the customer before use, to ensure that it is in suitable condition. Steps must be taken to rule out the use of any components that are damaged, deformed, or weakened due to wear, corrosion or rot.
- Combining our formwork systems with those of other manufacturers could be dangerous, risking damage to both health and property. If you intend to combine different systems, please contact Doka for advice first.
- The equipment/system must be assembled and erected in accordance with the applicable laws, Standards and rules by suitably skilled personnel of the customer's, having regard to any and all required safety inspections.
- It is not permitted to modify Doka products; any such modifications constitute a safety risk.

Closing the formwork

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

Pouring

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

Stripping out the formwork

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

Transporting, stacking and storing

- Observe all regulations applying to the handling of formwork and scaffolding. In addition, the Doka slinging means must be used - this is a mandatory requirement.
- Remove any loose parts or fix them in place so that they cannot be dislodged or fall free!
- All components must be stored safely, following all the special Doka instructions given in the relevant sections of this booklet!

Maintenance

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

Others

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

Symbols used

The following symbols are used in this booklet:

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

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

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

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

Tip
Points out useful practical tips.

Reference
Refers to other documents and materials.

Eurocodes at Doka

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

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

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

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

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

$$E_d \leq R_d$$

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

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

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

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

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

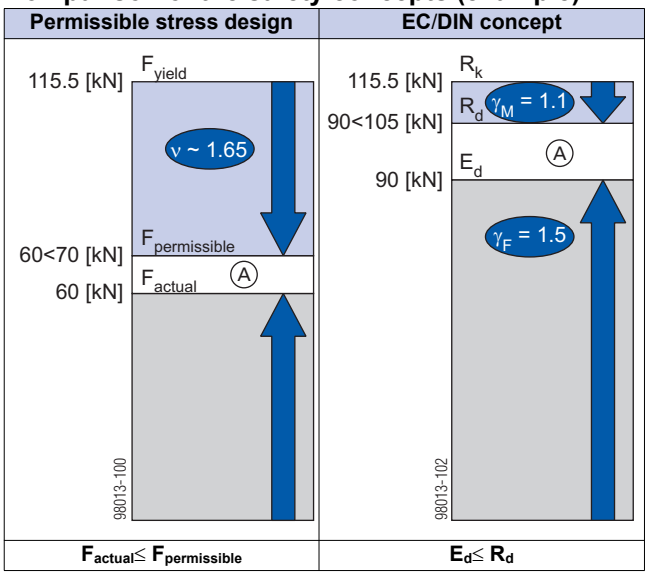
Steel: $R_d = \frac{R_k}{\gamma_M}$ Timber: $R_d = k_{mod} \cdot \frac{R_k}{\gamma_M}$

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

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

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

Comparison of the safety concepts (example)



A Utilisation factor

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

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

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

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

Doka services

Support in every stage of the project

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

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

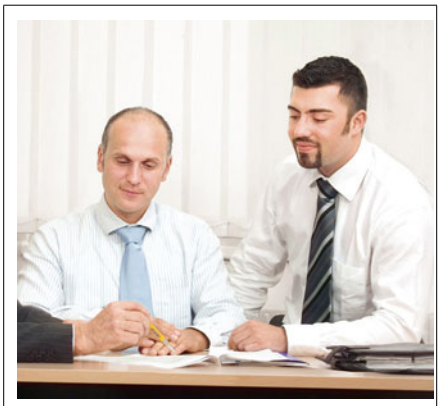
Project Development Stage

Taking well-founded decisions thanks to professional advice and consulting

Find precisely the right formwork solutions, with the aid of

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

Bidding Stage

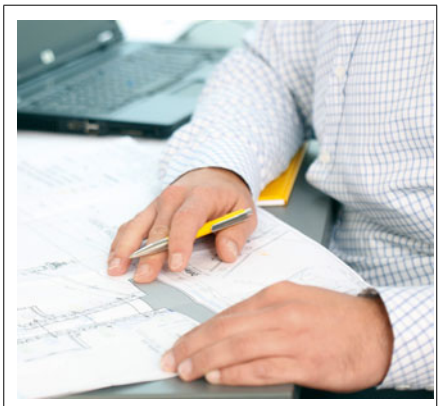


Optimising the preliminary work with Doka as an experienced partner

Draw up potentially winning bids, by

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

Operations Scheduling Stage

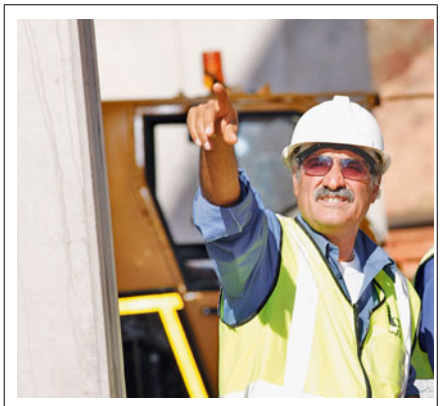


Controlled, regular forming operations, for greater efficiency resulting from realistically calculated formwork concepts

Plan cost-effectively right from the outset, thanks to

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

Concrete Construction Stage



Optimum resource utilisation
with assistance from the Doka Formwork Experts

Workflow optimisation, thanks to

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

Project Close-out Stage

Seeing things through to a positive conclusion
with professional support

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

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

The advantages for you
thanks to professional advice and consulting

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

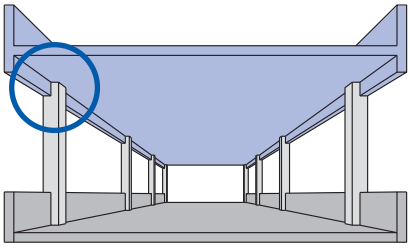
System description

Doka façade formwork Top 50 is the fast formwork system for structures built in a 'hybrid' mode of construction:

- Parapets as precast members
- CIP concrete floor-slab and columns

Constructing the complex **slab edge** completely independently and ahead of the floor-slab brings significant savings in both time and costs.

Area that is complex to form when slab and slab edge are being cast in one pour:



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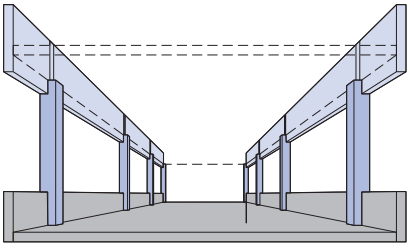
Using the Façade formwork Top 50 reduces construction time, as the complex slab edge can be built **separately** from the remaining floor-slab.

'Decoupling' the slab edge from the floor-slab:



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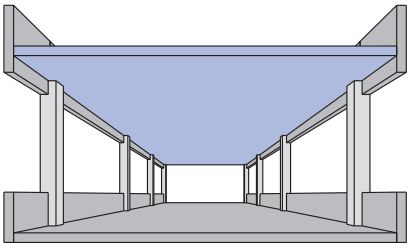
With the Façade formwork Top 50:

CIP columns and precast members are joined in one single operation.



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The remaining unobstructed and simple floor-slab can be formed efficiently and economically using Doka tableforms or Dokaflex 1-2-4.

The 'key to decoupling' is defined as early as in the planning and calculation phase for the structure.

Column and parapet joined in one step:

- CIP columns and precast parapets are joined in one single operation.

No need for working and protection platforms:

- No extra working and protection platforms are needed in areas where forming operations are being carried out.

Further product features:

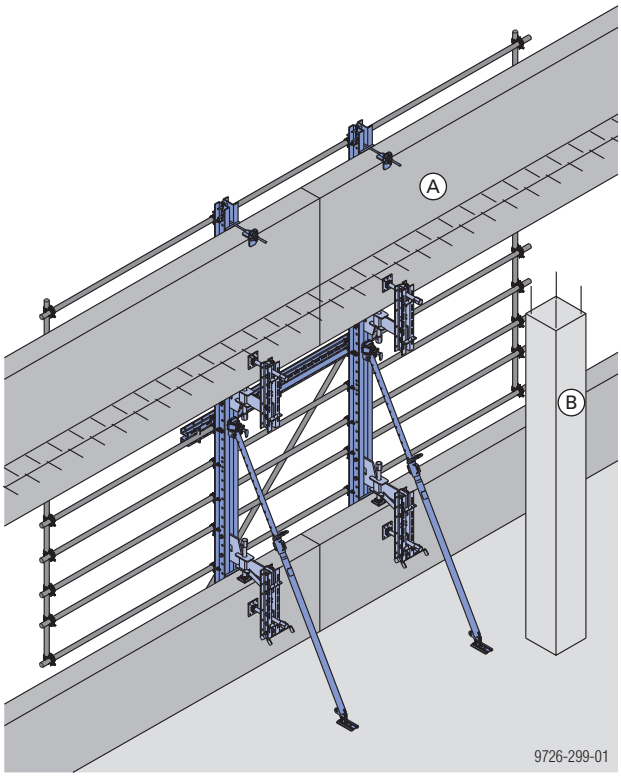
- The system mainly uses standard components of the proven Doka large-area formwork Top 50.
- Continuous hole grid in the walings for quick height adjustment.
- Pre-assembly by the Doka Pre-assembly Service saves time-consuming assembly work on the site.

Areas of use

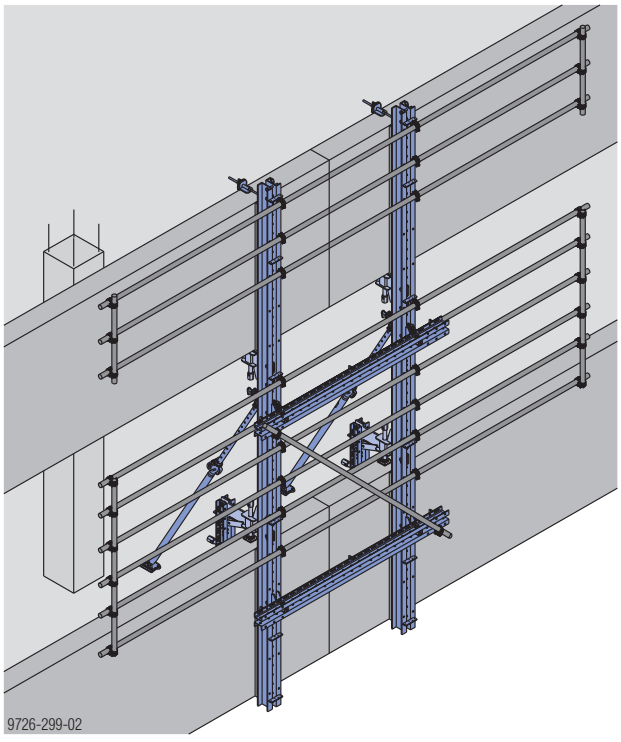
Option 1

Facade with set-back CIP column

The columns **(B)** can be cast independently of the timings for the parapets **(A)** . The precast members are exactly positioned with the aid of the Doka façade formwork, and also serve as stop-ends for the floor-slab.



View of the outside of the building

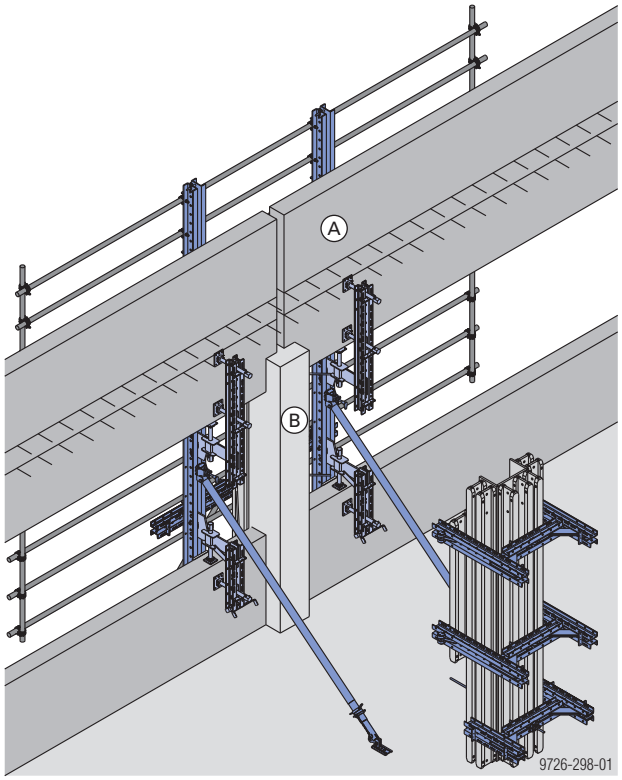


Option 2

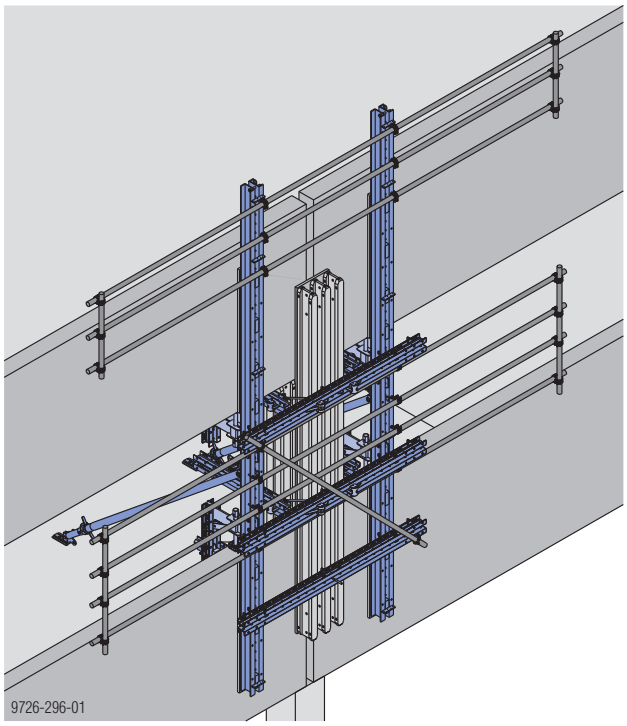
Facade with integrated CIP column

In this construction method, the Doka façade formwork is used to cast CIP columns **(B)** so as to embed the precast parapet members **(A)** .

Permissible fresh-concrete pressure for column formwork: 90 kN/m²



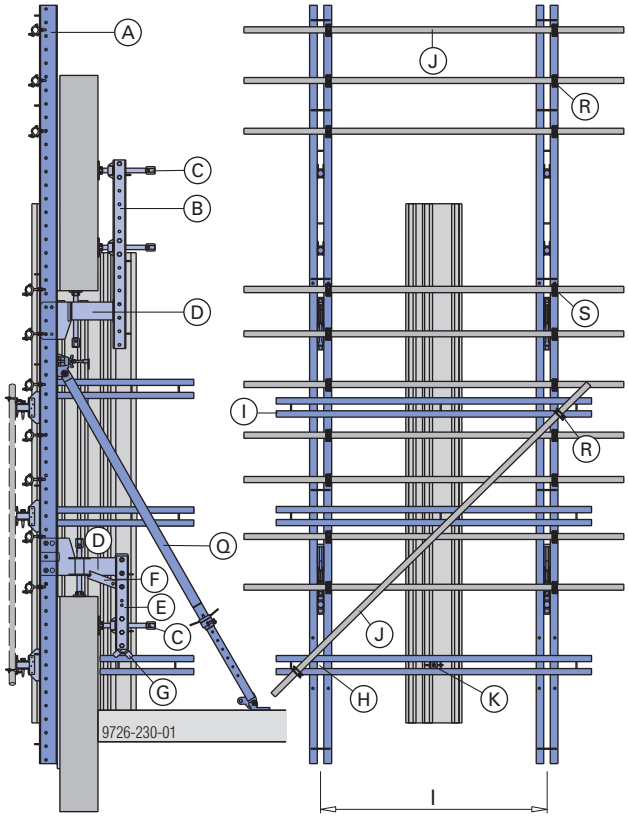
View of the outside of the building

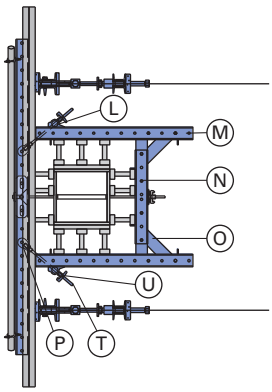


System overview

Standard set-up

Example of facade formwork with column formwork:





Side view and plan view are shown without precast members and working platforms so as to make them easier to understand.
l = standard dimension of 2.00 m

A	Facade waling WU14 6.00m
B	Multi-purpose waling WS10 Top50, e.g. 1.50m
C	Facade precast member clamp V
D	Facade precast member clamp H
E	Multi-purpose waling WS10 Top50, e.g. 0.75m
F	Facade waling holder
G	Facade strut holder
H	Facade waling connector
I	Multi-purpose waling WS10 Top50 2.50m or Facade waling WS10 2.50m
J	Scaffold tube 48.3mm
K	Facade anchor socket 15.0
L	Universal angle tie bracket
M	Multi-purpose waling WS10 Top50, e.g. 1.25m
N	Multi-purpose waling WS10 Top50, e.g. 0.75m
O	Corner connecting plate 90/50
P	Eye-lug anchor 15.0 without tie rod
Q	Plumbing strut 540 with prop head
R	Screw-on coupler 48mm 50
S	Screw-on coupler 48mm 95 with Hexagon nut with collar M14
T	Tie rod 15.0 0.50m
U	Wing nut 15.0

For more information on how to design the scaffold-tube assembly, see the section headed 'Structural design'.

For special projects, it is also possible to use multi-purpose walings of lengths other than those specified in the legend.

2 extra mobile scaffold towers must be provided for the following operations

- Operating the Façade formwork Top 50
- Lifting the precast members into position
- Pouring (in option 2 with integrated CIP column)

unless special guardrails and platforms are specified in the shop drawing.

Façade formwork Top 50 in detail

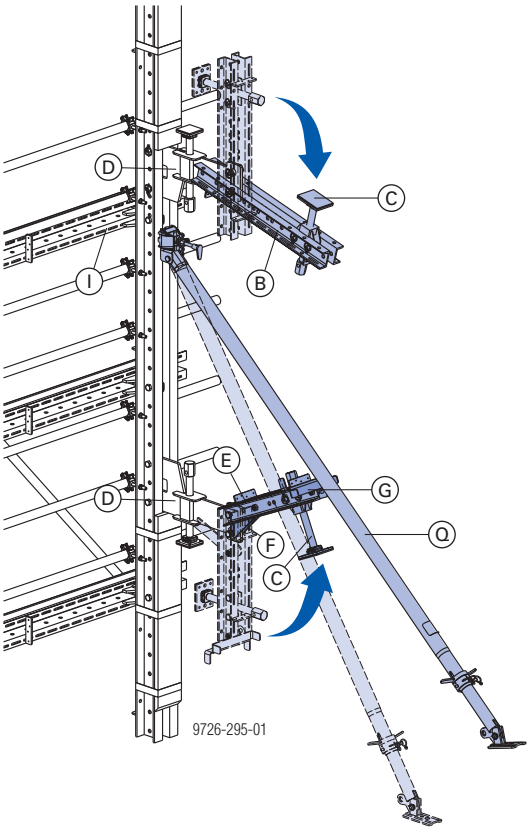
Basic functions

Exact height adjustment:

- with the spindles of the Facade precast member clamps H **(D)**
  - at the bottom clamping unit, for aligning the whole facade unit
  - at the top clamping unit, for adjusting the precast members

Easy and safe to operate:

- The top clamping unit, consisting of a multi-purpose waling **(B)** and a Facade precast member clamp V **(C)** , can be folded down. A stop secures it in its final position.
- The bottom clamping unit, consisting of a multi-purpose waling **(E)** and a Facade precast member clamp V **(C)** , can be folded up and secured in this position with the Facade waling holder **(F)** .
- The Facade strut holder **(G)** acts as a support for the plumbing strut **(Q)** . This makes it safe to move the unit out of the window opening (as the plumbing struts cannot tilt down accidentally).

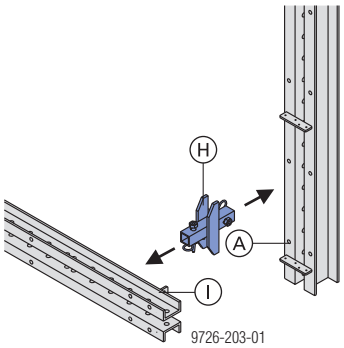


Note:

The plumbing strut can also be attached to the horizontal multi-purpose waling **(I)** (to be planned separately for each project).

Quick connection

The **Facade waling connector (H)** makes it possible to quickly and easily mount the Facade waling WU14 6.00m to the Multi-purpose waling WS10 Top50 2.50m.



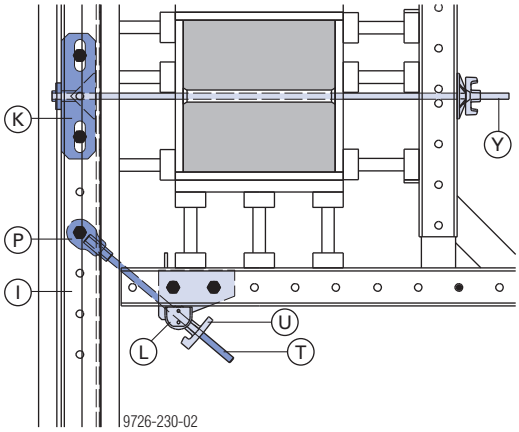
Fixing the column formwork

The **Eye-lug anchor 15.0 without tie rod (P)** can remain permanently fixed in place in the multi-purpose waling **(I)** .

- The corner anchorage can be operated and accessed easily from the inside, with a **Universal angle tie bracket (L)** , a **Tie rod 15.0 (T)** , and a **Wing nut 15.0 (U)** .

Exception:
This corner anchorage is not possible in the bottom multi-purpose waling, as this is where the precast member is located. The concrete pressure is transferred by means of a middle anchor **(Y)** there.

- The **Facade anchor socket 15.0 (K)** , which is fitted in the bottom multi-purpose waling, makes it easier to fit the middle anchor from the protected inside, thanks to its self-centring function.



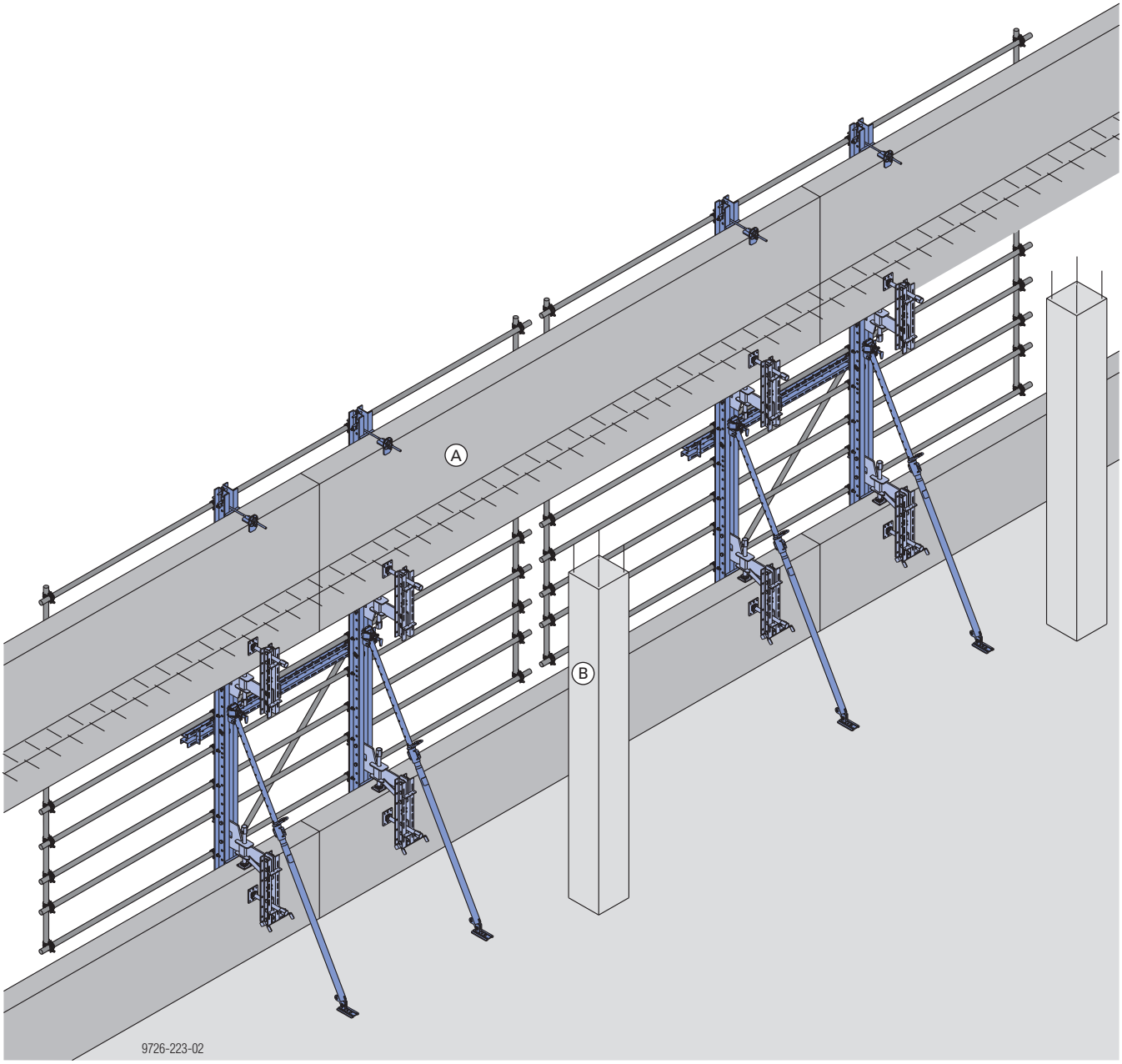
Eye-lug anchor 15.0 without tie rod:

When fixed in the multi-purpose waling with a Connecting pin 10cm: $F_{permissible}$ = 74 kN

Option 1

Facade with set-back CIP column

The columns **(B)** can be cast independently of the timings for the parapets **(A)** . The precast members are exactly positioned with the aid of the Doka façade formwork, and also serve as stop-ends for the floor-slab.

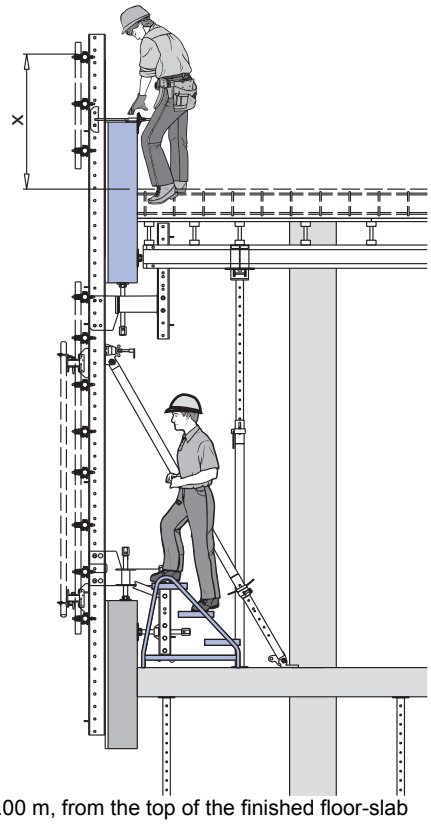


Mounting guardrails

To make sure all work is carried out safely, it is recommended to mount a scaffold-tube assembly covering the whole opening between the upper and the bottom precast member – particularly when work on the formwork cannot be carried out from the mobile scaffold tower.

The scaffold-tube assembly in the area of the upper precast member varies depending on the construction method used.

A) Precast members are lifted into position first – then the floor-slab is formed



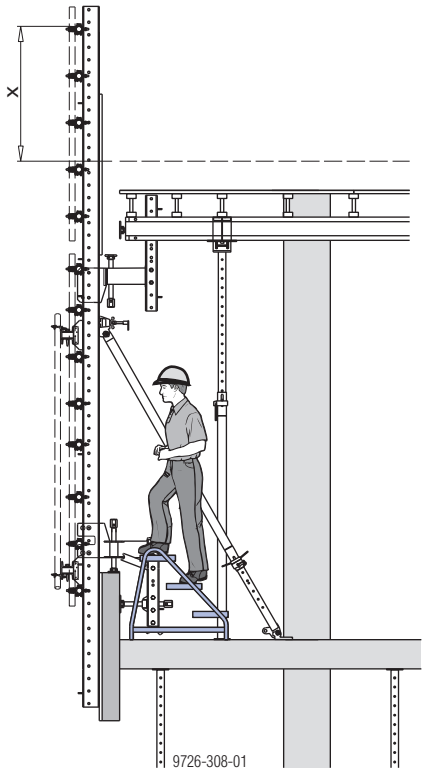
x ... min. 1.00 m, from the top of the finished floor-slab

In this construction method, the precast member itself acts as a fall protection for the following operations: forming the floor-slab, placing the reinforcement, pouring the concrete, etc.

Provided that the scaffold tubes are arranged accordingly, safety is even ensured with low precast members.

For more information on how to design the scaffold-tube assembly, see the section headed 'Structural design'.

B) Floor-slab is formed first – then the precast member is lifted into position



x ... min. 1.00 m, from the top of the finished floor-slab

In this construction method, no precast member is yet in place as a fall protection for forming the floor-slab, placing the reinforcement, etc.

Therefore, a continuous scaffold-tube assembly is required.

When the formwork is in place, any open areas between the formwork and the scaffold-tube assembly with a width of more than 30 cm, must be additionally secured.

For more information on how to design the scaffold-tube assembly, see the section headed 'Structural design'.

Setting up, repositioning and stripping the formwork

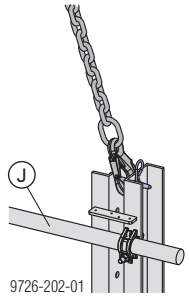
General instructions on repositioning

Ensure that:

- The top horizontal scaffold tube **(J)** must be fitted just below the crane-hoisting point in order to be able to absorb the oblique pull.
- In the top hole of the facade waling, a Connecting pin 10cm must be fitted and secured with a Spring cotter 6mm.
- The slinging means must be at least as long as the centre-to-centre distance of the vertical facade walings.
- The parapet must be at least 1.00 m high, or suitable precautions, as described in the section 'Additional safety precautions' must be taken.

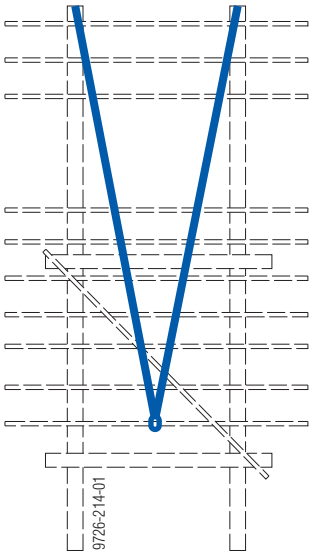
Attaching the crane

➤ Attach the lifting chain only to the Connecting pin 10cm.



Leaving the lifting chain permanently attached to the unit for repositioning:

- makes it easier to attach the crane.
- increases safety.
- speeds up work.



Workflow

Tools needed:

- Reversible ratchet 3/4"
- Box nut 50
- Tie-rod wrench 15.0/20.0

Mounting to the structure:

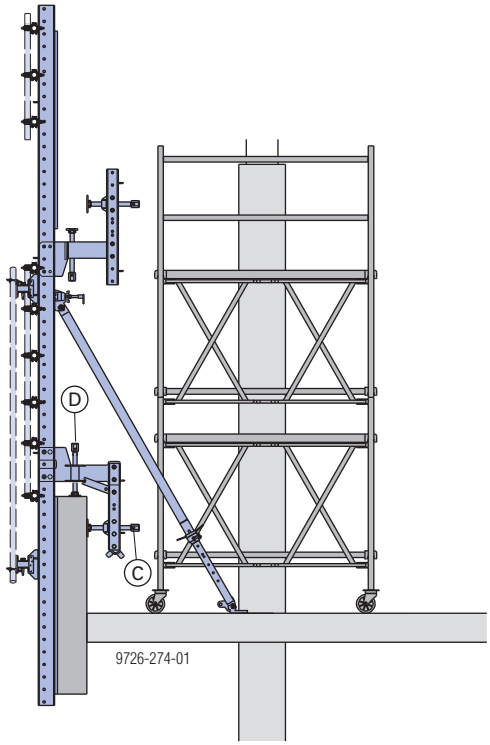
➤ Position the facade unit on the precast parapet by crane.

➤ Align it horizontally with the spindles **(D)** , and fix it to the parapet member with the spindles **(C)** .

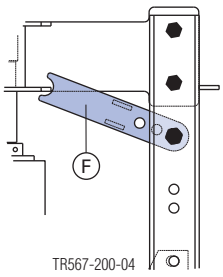
➤ Fix the plumbing struts with an Express anchor 16x125mm or anchor-bolt. (see the section headed 'Structural design')

➤ Adjust the plumbing struts.

➤ Detach the crane.



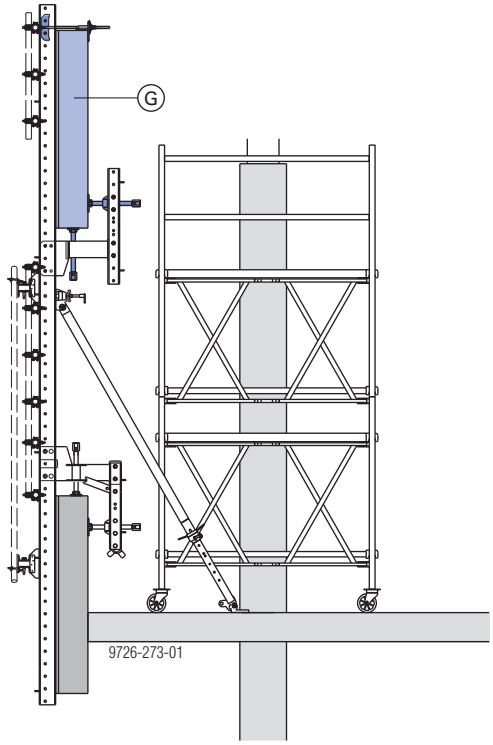
Stand-by position of the Facade waling holder **(F)** when fixing the facade unit at its new location, if the Facade waling holder cannot completely fold down into the vertical position for reasons of geometry, e.g. this is prevented by the spindle of the Facade precast member clamp H.



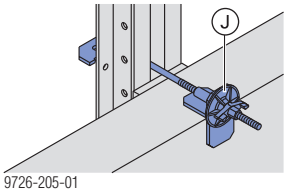
Positioning the precast member

Note:
For operating the spindles and detaching the precast member from the crane, we recommend using a standard mobile scaffold tower.

➤ Position the precast member **(G)** by crane.

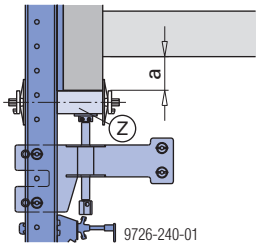


➤ Lower the precast member to the exact dimension with the pressure spindle, and fix it in place with the pressure spindles and the Precast member clamps O **(J)** .



In case of a small projection **'a'** of the precast member, the multi-purpose waling with the Facade precast member clamp V cannot be attached.

In this case, place a drilled squared timber **(Z)** under the precast member to act as a shim, and fix it in place with a Tie rod 15.0, an Anchor plate 15/20, and a Wing nut 15.0.



Forming the floor-slab

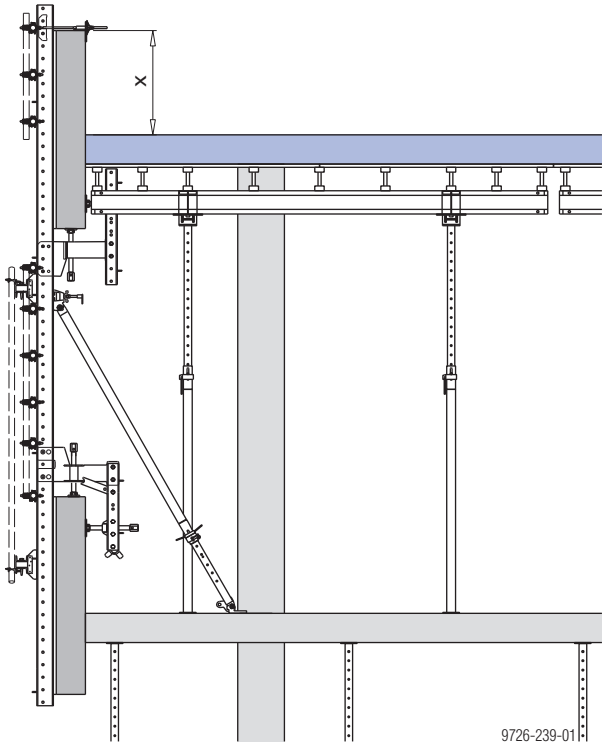
CAUTION

➤ The parapet height **'x'** must be at least 1.00 m, or the scaffold-tube assembly must be designed accordingly in the area of the fall-hazard location!

➤ Form the floor-slab with Dokaflex tableforms or Dokaflex 1-2-4.

➤ Put up temporary reshoring for the previously cast floor-slab.

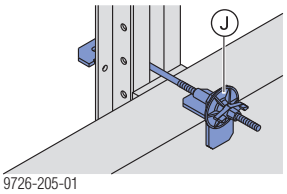
➤ Pour the floor-slab and join it with the precast member.



Preparations for repositioning

Precondition: Floor-slab that is capable of supporting the load.

➤ Release the Precast member clamps O **(J)** .



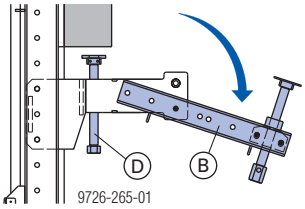
➤ Fix the Precast member clamp O in the Facade waling WU14 with a Connecting pin 10cm, and secure this with a Spring cotter 6mm.
This way, the Precast member clamp O is available for use again straight away at the new location.

Detaching the facade unit from the top precast member:

➤ Release the top pressure spindle.

➤ Remove the pin from the 4th hole of the multi-purpose waling. The pin in the 3rd hole acts as a pivot point.

➤ **Slowly** tilt down the multi-purpose waling **(B)** .



➤ Release the adjusting spindle **(D)** (precondition: floor-slab or column capable of supporting the load).

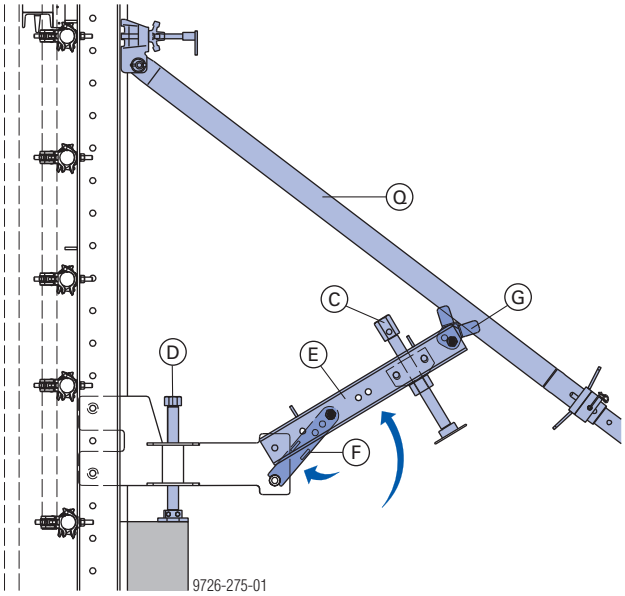
Detaching the entire facade unit:

➤ Attach the facade unit to the crane.

➤ Release the bottom pressure spindle **(C)** .

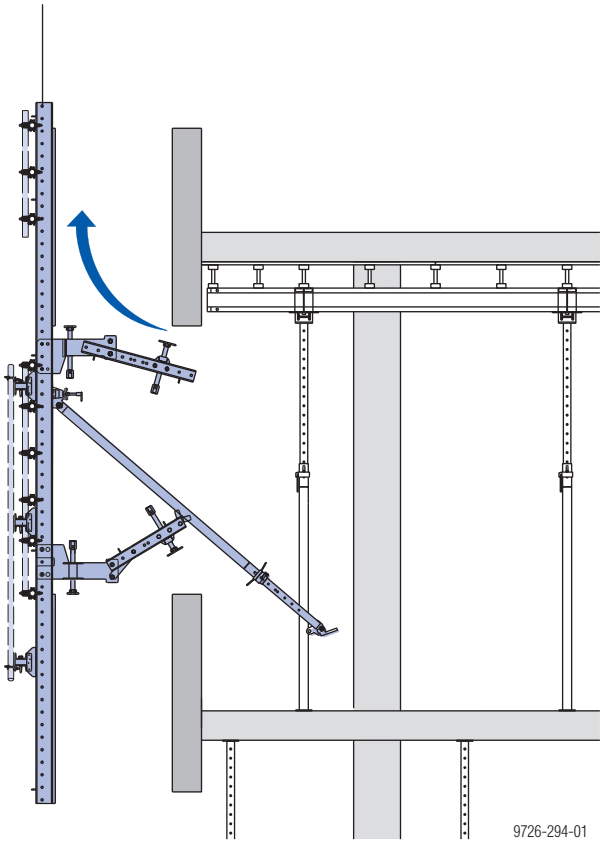
➤ Raise the panel strut **(Q)** .

➤ Raise the multi-purpose waling **(E)** together with the plumbing strut, and engage the Facade waling holder **(F)** in the tube of the Facade precast member clamp H. The plumbing strut is secured by the Facade strut holder **(G)** .



Repositioning the facade unit

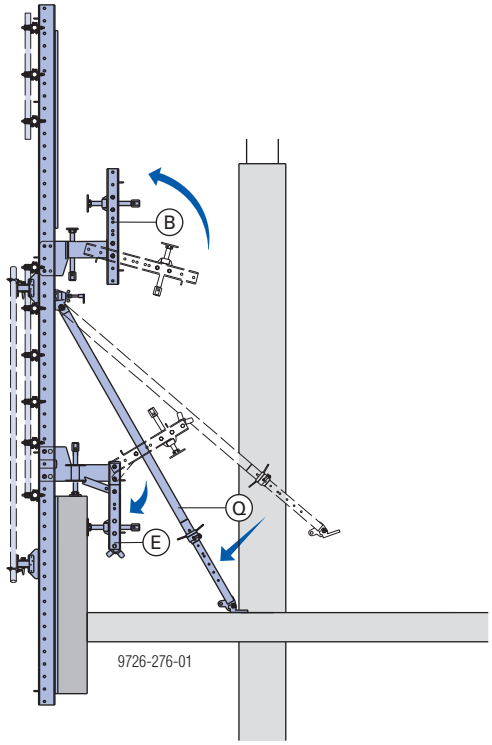
➤ Reposition the entire unit to its next location by crane.



Positioning the facade unit at its new location

➤ Position the facade unit on the precast parapet by crane.

➤ Pivot the top and bottom clamping units into position and fix them in place.

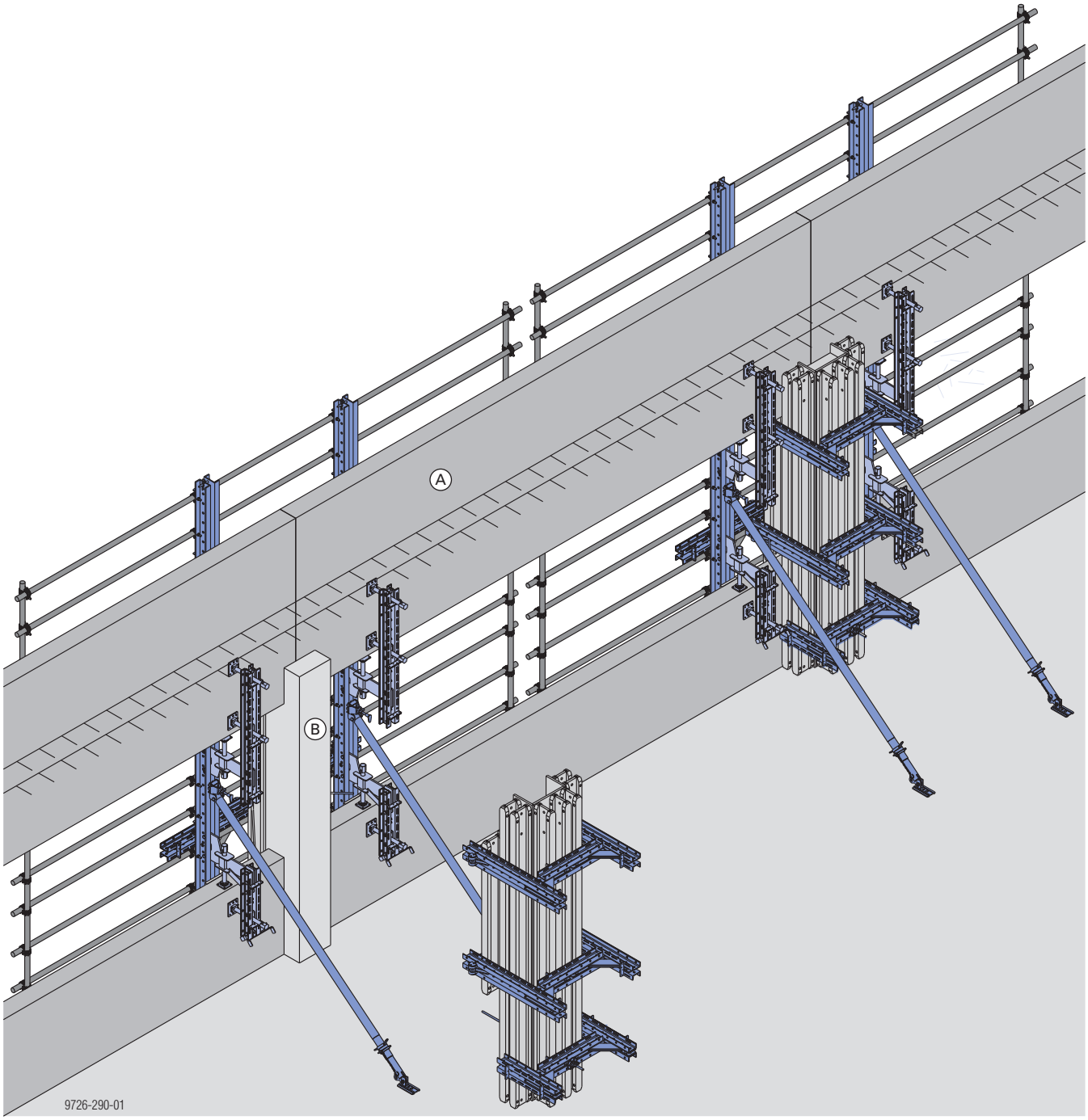


From this point on, repeat the previous steps starting with 'Mounting to the structure'.

Option 2

Facade with integrated CIP column

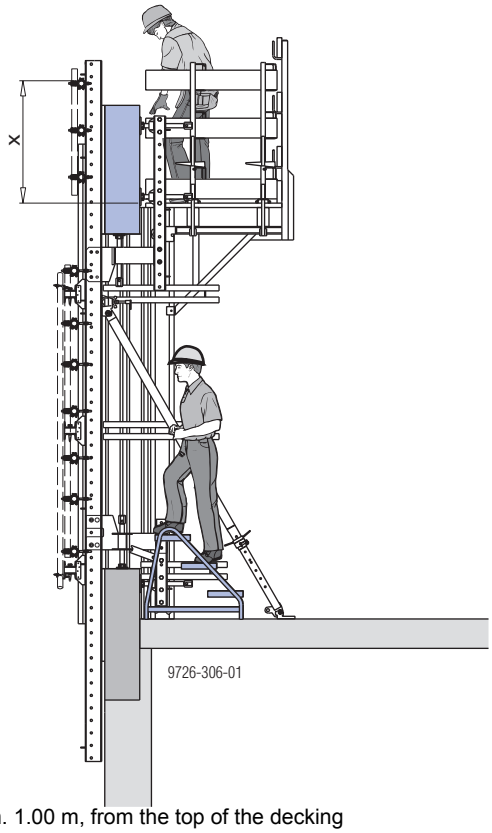
In this construction method, the Doka façade formwork is used to cast CIP columns **(B)** so as to embed the pre-cast parapet members **(A)** .



Permissible fresh-concrete pressure for column formwork: 90 kN/m²

Mounting guardrails

To make sure all work is carried out safely, it is recommended to mount a scaffold-tube assembly covering the whole opening between the upper and the bottom precast member – particularly when work on the formwork cannot be carried out from the mobile scaffold tower.



x ... min. 1.00 m, from the top of the decking

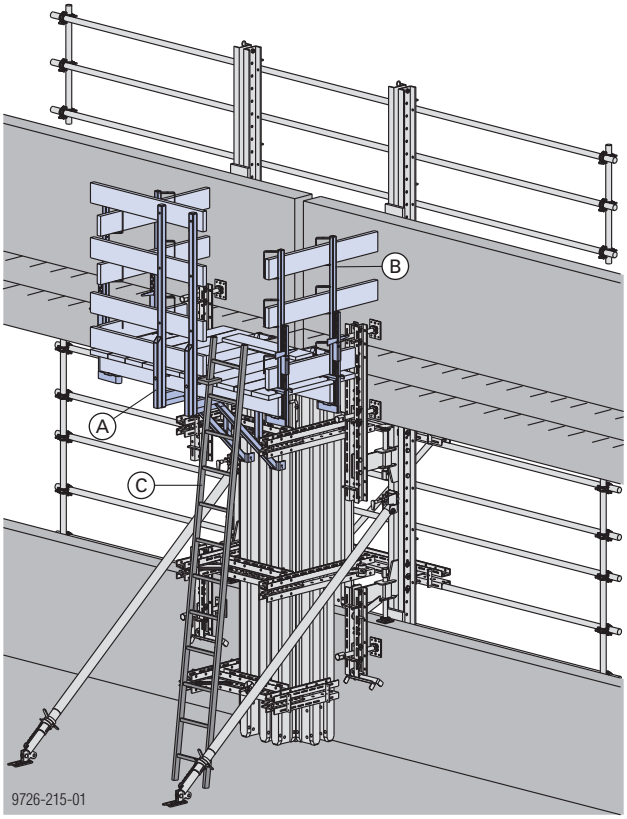
The precast member itself acts as a fall protection for the following operations: forming the floor-slab, placing the reinforcement, pouring the concrete, etc.

Provided that the scaffold tubes are arranged accordingly, safety is even ensured with low precast members.

For more information on how to design the scaffold-tube assembly, see the section headed 'Structural design'.

Pouring platforms with single brackets

Recommended only in case of suitably large column dimensions.



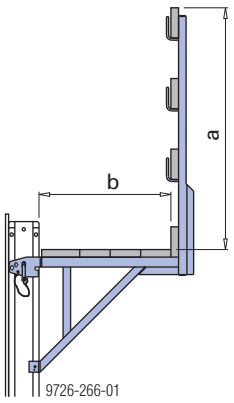
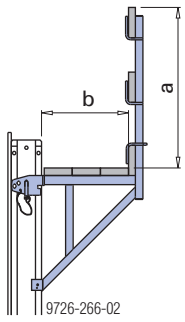
A Universal bracket or Top scaffold bracket L
B Handrail clamp S
C Ladder secured to prevent it tipping over

Universal brackets 90 and 60

"Use-anywhere" brackets for making working platforms.

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

System dimensions:

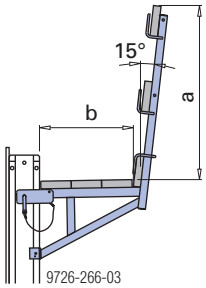
Universal bracket 90	Universal bracket 60
	
a ... Height of railing 160 cm b ... Width of decking 90 cm	a ... Height of railing 106 cm b ... Width of decking 60 cm

Top scaffold bracket L

Lightweight bracket for making working platforms.

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

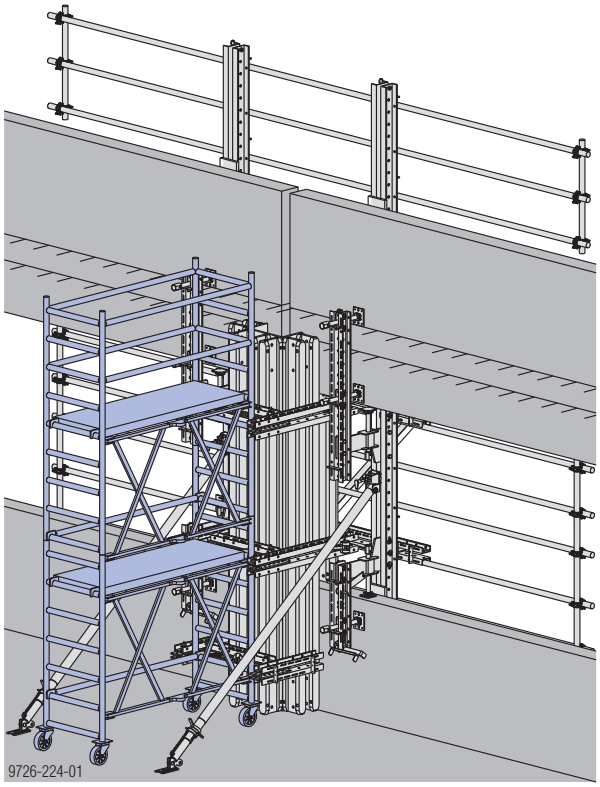
System dimensions:



a ... Height of railing 115 cm
b ... Width of decking 60 cm

Mobile scaffold tower

Working platforms can also be made using standard mobile scaffold towers.

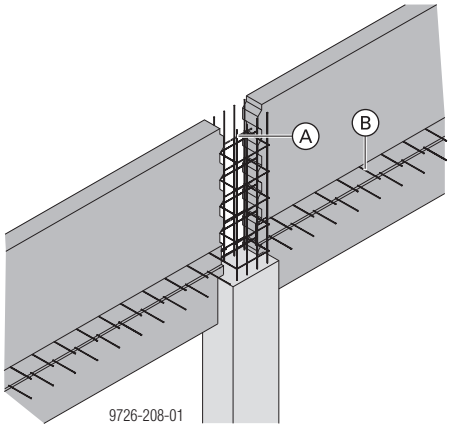


Design of the precast member and connection to the structure

The precast members come with all of the built-in components needed (e.g. sockets for connecting the plumbing struts).

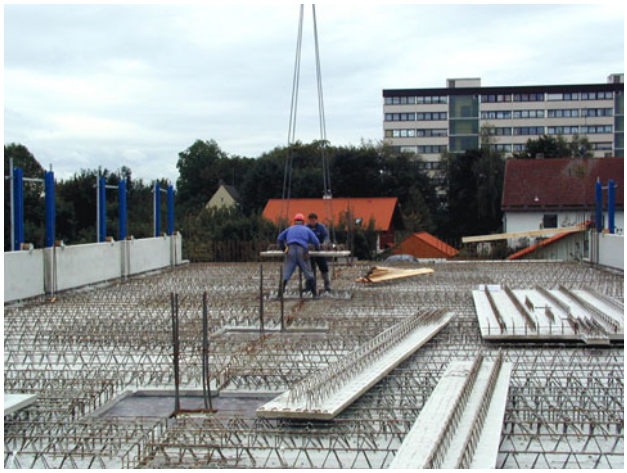
Thanks to their toothed end faces, the precast members can transfer high shear forces.

Before casting the floor-slab, stop-end formwork must be mounted between the precast members (in the column area).



A Reinforcement connection in the column area
B Connection for slab reinforcement

Example with precast concrete floor



Setting up, repositioning and stripping the formwork

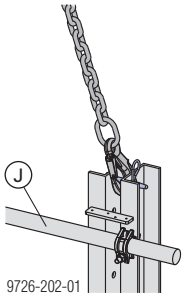
General instructions on repositioning

Ensure that:

- The top horizontal scaffold tube **(J)** must be fitted just below the crane-hoisting point in order to be able to absorb the oblique pull.
- In the top hole of the facade waling, a Connecting pin 10cm must be fitted and secured with a Spring cotter 6mm.
- The slinging means must be at least as long as the centre-to-centre distance of the vertical facade walings.
- The parapet must be at least 1.00 m high, or suitable precautions, as described in the section 'Additional safety precautions' must be taken.

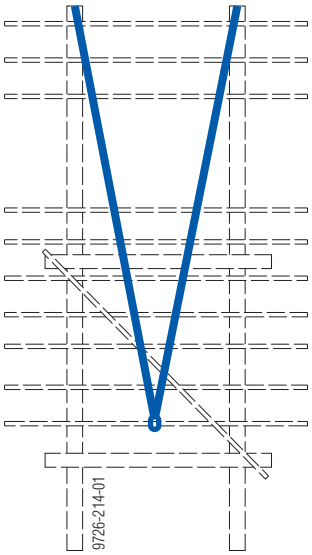
Attaching the crane

➤ Attach the lifting chain only to the Connecting pin 10cm.



Leaving the lifting chain permanently attached to the unit for repositioning:

- makes it easier to attach the crane.
- increases safety.
- speeds up work.



Workflow

Tools needed:

- Reversible ratchet 3/4"
- Box nut 50
- Tie-rod wrench 15.0/20.0

Mounting to the structure:

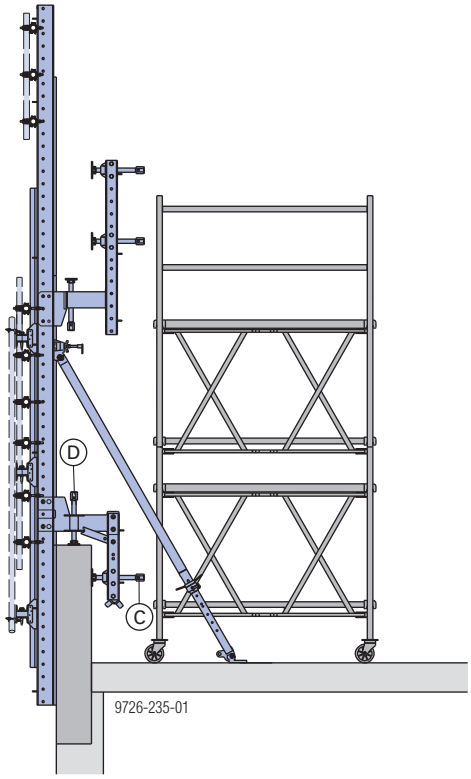
➤ Position the facade unit on the precast parapet by crane.

➤ Align it horizontally with the spindles **(D)** , and fix it to the parapet member with the spindles **(C)** .

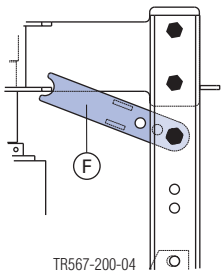
➤ Fix the plumbing struts with an Express anchor 16x125mm or anchor-bolt. (see the section headed 'Structural design')

➤ Adjust the plumbing struts.

➤ Detach the crane.

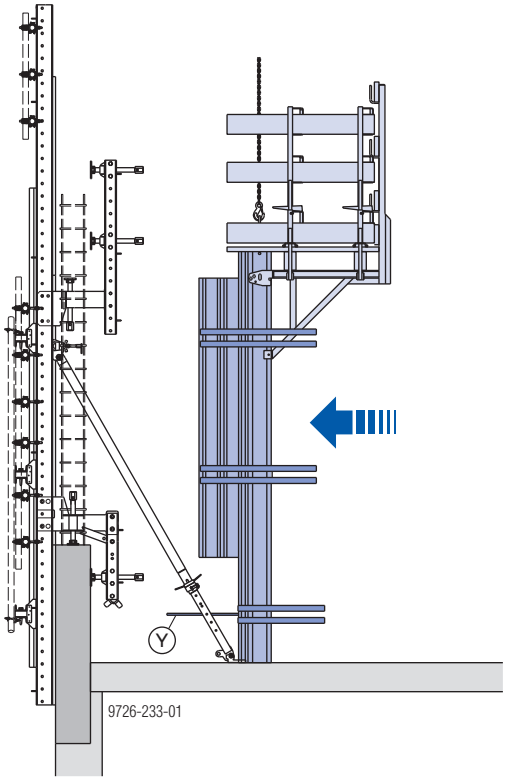


Stand-by position of the Facade waling holder **(F)** when fixing the facade unit at its new location, if the Facade waling holder cannot completely fold down into the vertical position for reasons of geometry, e.g. this is prevented by the spindle of the Facade precast member clamp H.



Setting up the column formwork (after placing the reinforcement)

➤ Attach the lifting chain to the lifting bracket and lift the pre-assembled column formwork to its usage location.



➤ Insert the Tie rod 15.0 **(Y)** through the form-tie hole as shown in the illustration, and push on the plastic tube together with the Universal cone 22mm.

➤ Screw the Tie rod 15.0 into the Facade anchor socket 15.0, and firmly clamp the column formwork to the parapet member with the Super plate 15.0.

➤ Detach the crane.

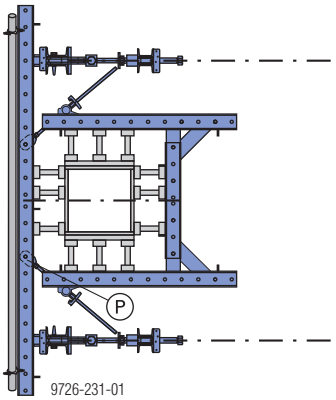
Closing the column formwork

➤ Fix the Eye-lug anchor 15.0 without tie rod **(P)** in the facade waling with a Connecting pin 10cm.

➤ Insert the Tie rod 15.0 through the Universal angle tie bracket and screw it into the Eye-lug anchor 15.0 without tie rod.

➤ Screw the Wing nut 15.0 onto the Tie rod 15.0 and tighten it firmly.

This anchorage is required in every waling level except the bottom one, as this has already been fixed with the middle anchor.



Positioning the precast member

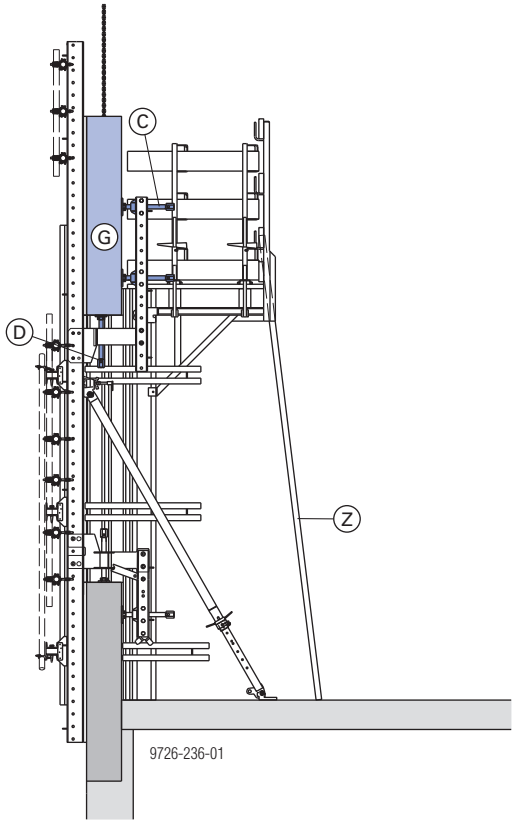
Note:
For operating the spindles and detaching the precast member from the crane, we recommend using a standard mobile scaffold tower.

➤ Position the precast member **(G)** by crane.

In order to protect the formwork sheeting, adjust the pressure spindles **(D)** in such a way that there is a minimum distance of 5 mm between the precast member and the top edge of the formwork.

➤ Fix the ladder **(Z)** to the formwork.

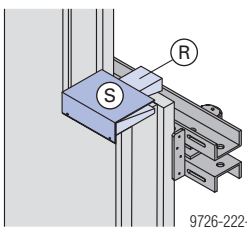
➤ Lower the precast member to the exact dimension with the adjusting spindle **(D)** and fix it with the pressure spindles **(C)** .



Stripping angle **(S)** (project-specific):

- Perfectly seals the space between the top edge of the column formwork and the precast member.
- Avoids constraints during stripping.

Exact height adjustment to the precast member using hardwood wedges **(R)** .



The formwork is now ready for pouring the column.

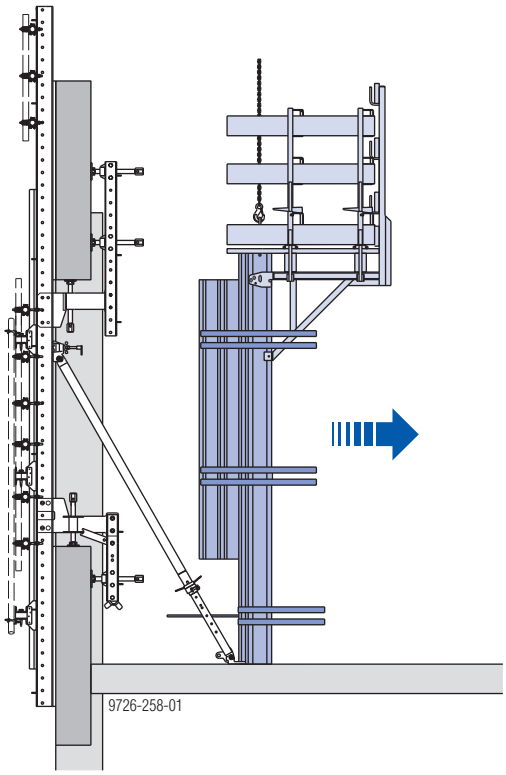
Stripping the column formwork

➤ Attach the lifting chain to the lifting brackets of the column formwork.

➤ Unscrew the Super plate 15.0 of the middle anchor and take out the middle anchor.

➤ Remove all Eye-lug tie rod anchors 15.0 from the facade walings.

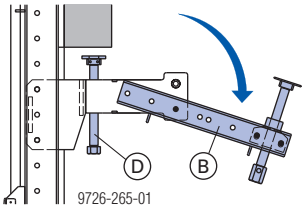
➤ Lift the formwork-half that is attached to the crane, and set it down on the ground for cleaning.



Preparations for repositioning

Detaching the facade unit from the top precast member:

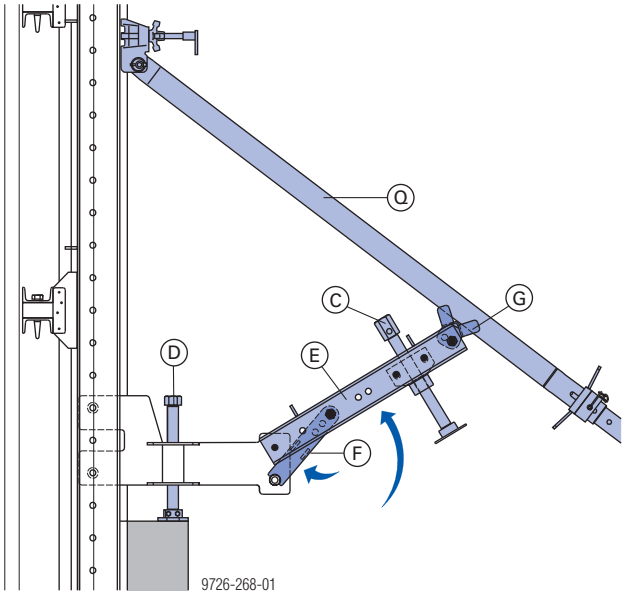
- ➤ Release the top pressure spindle.
- ➤ Remove the pin from the 4th hole of the multi-purpose waling. The pin in the 3rd hole acts as a pivot point.
- ➤ **Slowly** tilt down the multi-purpose waling **(B)** .



- ➤ Release the adjusting spindle **(D)** (precondition: floor-slab or column capable of supporting the load).

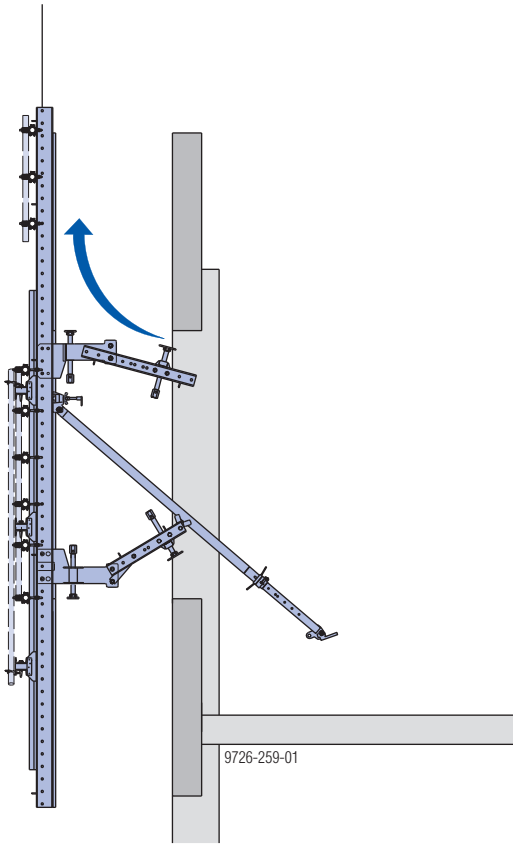
Detaching the entire facade unit:

- ➤ Attach the facade unit to the crane.
- ➤ Release the bottom pressure spindle **(C)** .
- ➤ Raise the panel strut **(Q)** .
- ➤ Raise the multi-purpose waling **(E)** together with the plumbing strut, and engage the Facade waling holder **(F)** in the tube of the Facade precast member clamp H. The plumbing strut is secured by the Facade strut holder **(G)** .



Repositioning the facade unit

- ➤ Reposition the entire unit to its next location by crane.



Forming the floor-slab

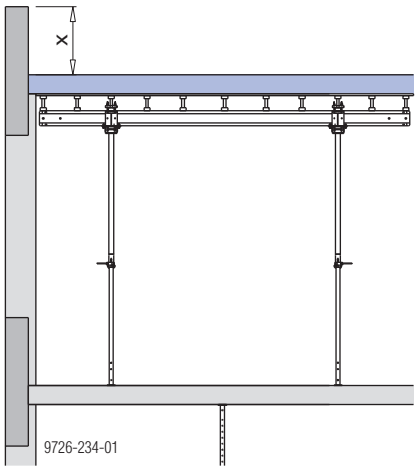
CAUTION

➤ The parapet height **'x'** must be at least 1.00 m, or suitable additional safety precautions must be taken!

➤ Form the floor-slab with Dokaflex tableforms or Dokaflex 1-2-4.

➤ Put up temporary reshoring for the previously cast floor-slab.

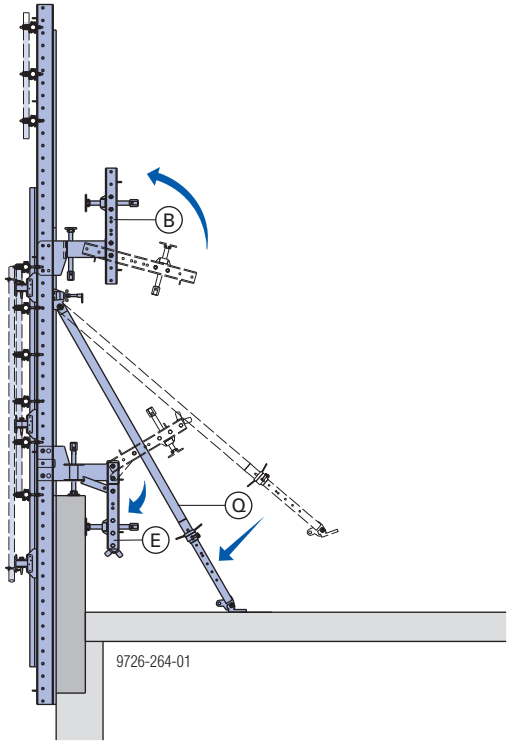
➤ Pour the floor-slab and join it with the precast member.



Positioning the facade unit at its new location

➤ Position the facade unit on the precast parapet by crane.

➤ Pivot the top and bottom clamping units into position and fix them in place.



From this point on, repeat the previous steps starting with 'Mounting to the structure'.

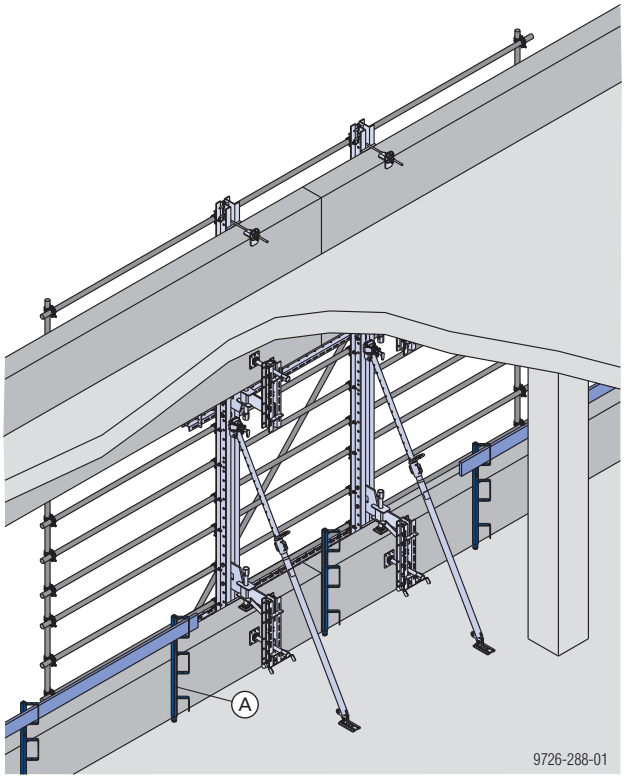
General remarks

Additional safety precautions

For parapet heights of less than 1.00 m

When the formwork is in place, the scaffold-tube assembly of the facade unit offers the required fall protection.

Before lifting the facade unit away



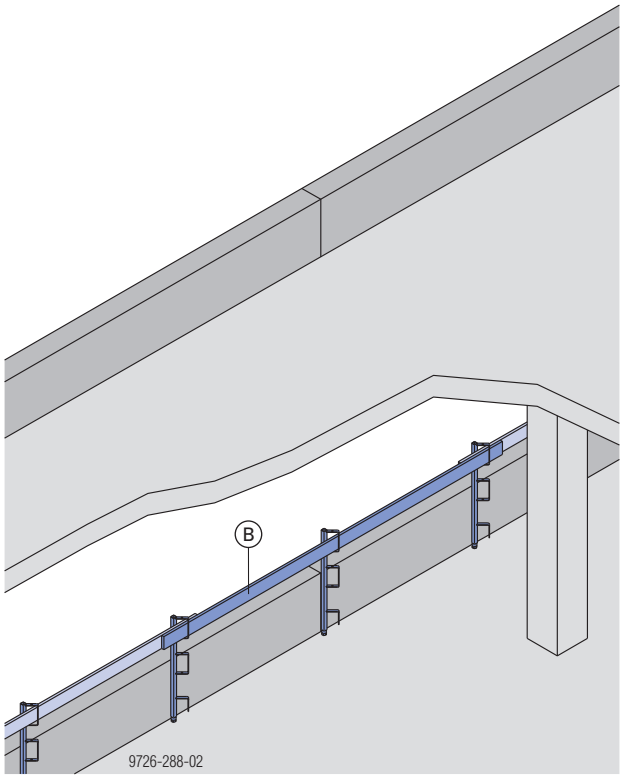
Before lifting the facade unit away, mount, for example, Doka Handrail posts 1.10m **(A)** as a fall protection for subsequent work.

- It can be fixed in any of 3 different ways:
  - in an Attachable sleeve 24mm
  - in a Screw sleeve 20.0
  - in a hole subsequently drilled in the concrete

Guard-rail boards can already be inserted between the facade units.

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

After lifting the facade unit away



After lifting the facade unit away, only the missing guard-rail board **(B)** still needs to be inserted.

Assembling the facade unit

Facade formwork can cover a wide area of practical applications. Depending on the project, the actual design may thus differ from the standard type shown here.

Always refer to the **assembly plan / shop drawing** for details on the number and exact positions of the individual components.

Tools needed:

- Fork wrench 22/24
- Reversible ratchet 3/4"
- Box nut 50

The connecting pins 105 and linch pins needed for assembly are included in the scope of supply of the following parts:

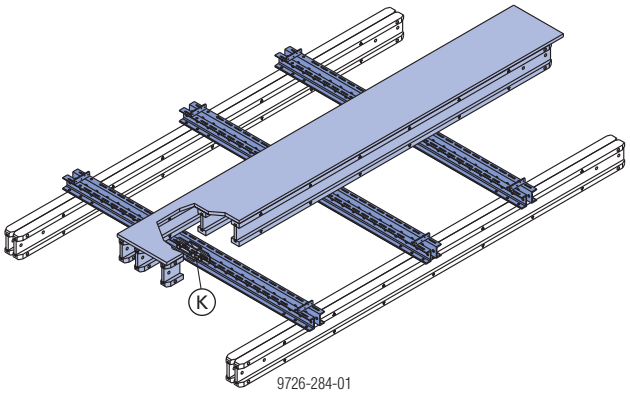
- Facade precast member clamp H
- Facade precast member clamp V
- Facade waling connector
- Facade anchor socket 15.0

Note:

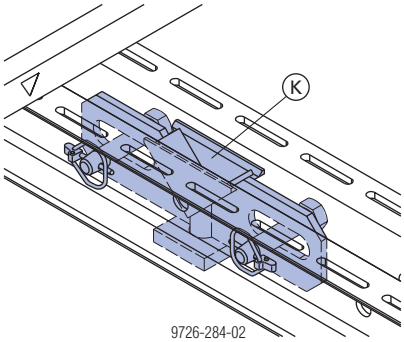
The closing formwork for the column can be pre-assembled by the Doka Pre-assembly Service.

➤ Place the pre-assembled closing formwork on (double) Doka beams.

➤ Fit and secure the Facade anchor socket 15.0 **(K)** in the bottom multi-purpose waling.

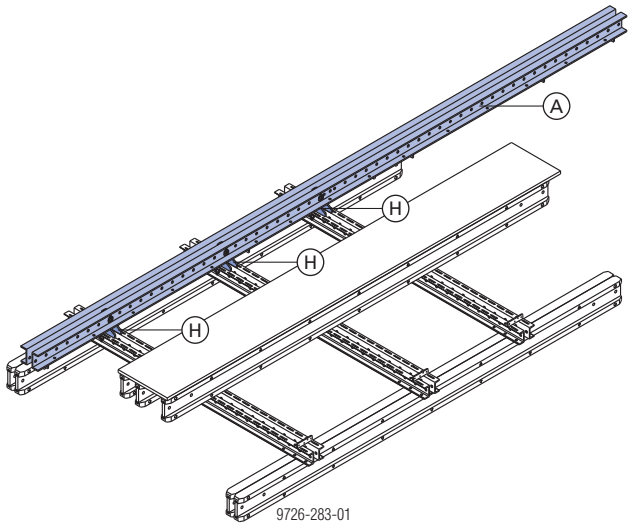


Close-up of Facade anchor socket 15.0:

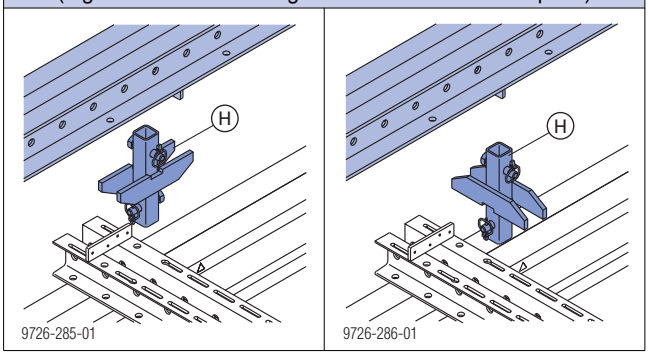


Mounting the first facade waling

➤ Fasten the Facade waling WU14 6.00m **(A)** in the walings of the pre-assembled unit with Facade waling connectors **(H)** .

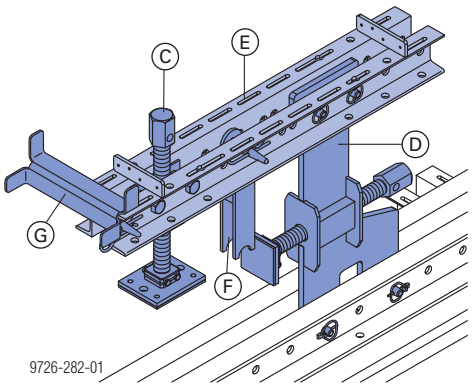


The Facade waling connector **(H)** can be fitted in 2 different ways (e.g. when it is located right next to the connection plate)



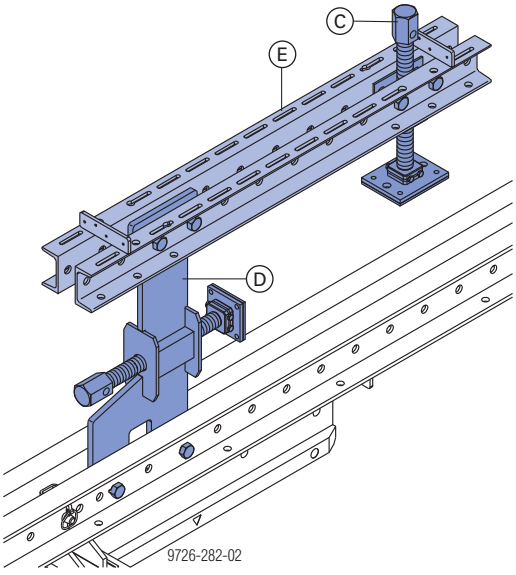
Assembling the bottom clamping unit

- ➤ Pin the Facade precast member clamp H **(D)** to the facade waling and secure it.
- ➤ Pin the multi-purpose waling **(E)** to the Facade precast member clamp H and secure it.
- ➤ Pin the Facade precast member clamp V **(C)** to the multi-purpose waling and secure it.
- ➤ Fix the Facade waling holder **(F)** and the Facade strut holder **(G)** with Connecting pins 10cm and secure these.



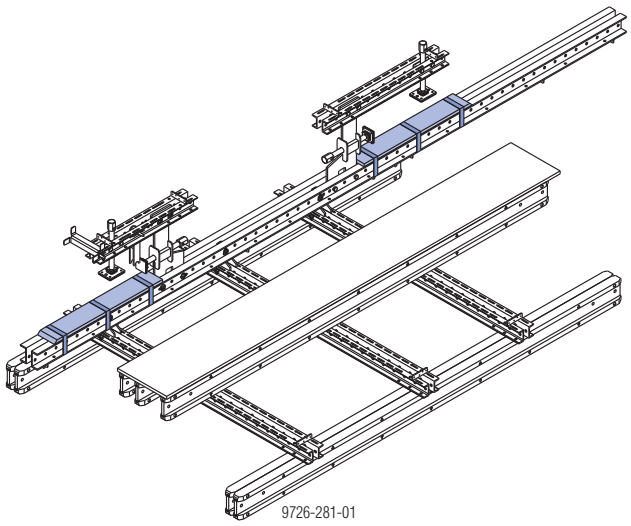
Assembling the top clamping unit

- ➤ Pin the Facade precast member clamp H **(D)** to the facade waling and secure it.
- ➤ Pin the multi-purpose waling **(E)** to the Facade precast member clamp H and secure it.
- ➤ Pin the Facade precast member clamp V **(C)** to the multi-purpose waling and secure it.



Attaching formwork sheeting as a protection for the precast member

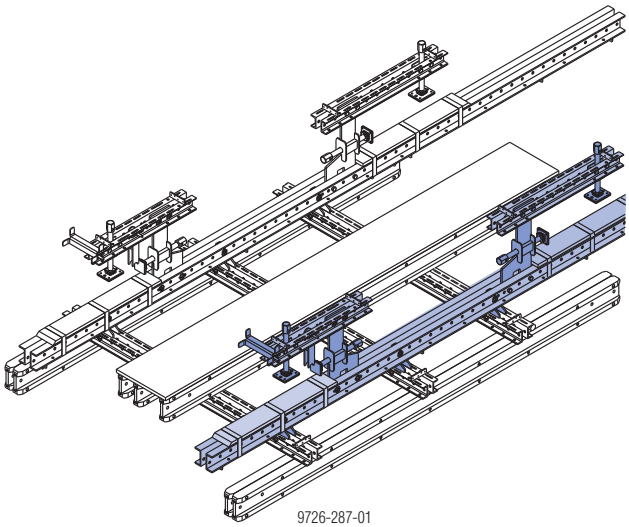
- ➤ Attach a strip of formwork sheeting to protect the precast member against damage. The strip can be fixed with adhesive tape.



You can also attach timber supports to the spindles.

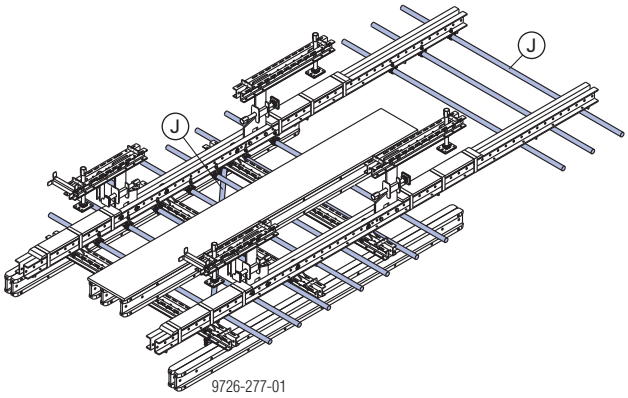
Finishing the other side of the facade formwork unit

- ➤ Assemble the other side in the same order as described above.



Mounting the bracing tubes and guardrails

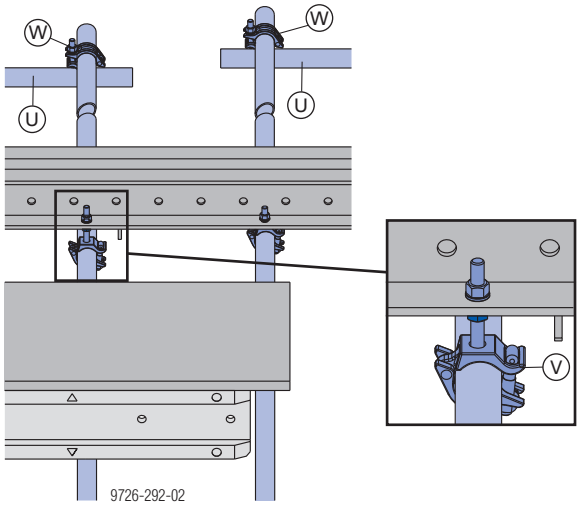
➤ Mount the couplers and scaffold tubes **(J)** as shown in the project plan.



Note:
In general, the scaffold tubes are attached to the facade waling with Screw-on couplers 48mm 50.

Coupler connections in the area of the closing formwork

➤ Insert an additional hexagon nut with collar M14 (ID n° 019300) as a check-nut in order to fix the distance.

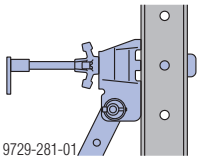


U	Vertical scaffold tube 48mm
V	Screw-on coupler 48mm 95
W	Normal coupler 48mm

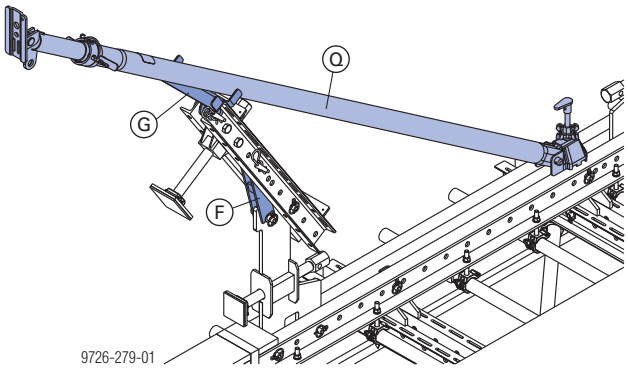
Note:
The scaffold tubes in the area of the closing formwork are not located at the same level as in the upper area.
Therefore, it is not possible to use one continuous vertical scaffold tube for facade units with column formwork (two scaffold tubes are required).

Fixing the plumbing struts

➤ Fix a Plumbing strut 540 with prop head in the Facade waling WU14 with a Connecting pin 10cm, and secure this with a Spring cotter 6mm.



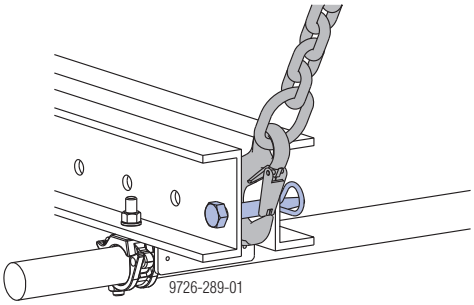
➤ Fold up the bottom clamping unit and secure it with the Facade waling holder **(F)** .
➤ Insert the Plumbing strut 540 into the Facade strut holder **(G)** .



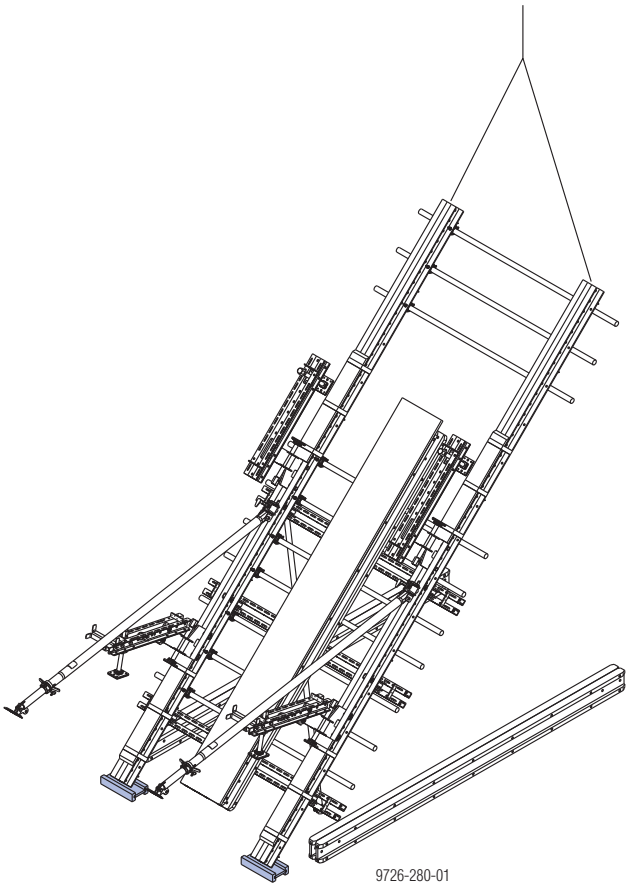
Repositioning

➤ Fit a Connecting pin 10cm in the top hole of the facade waling, and secure this with a Spring cotter 6mm.

➤ Attach the lifting chain.



➤ Raise the facade unit and reposition it to its next location.



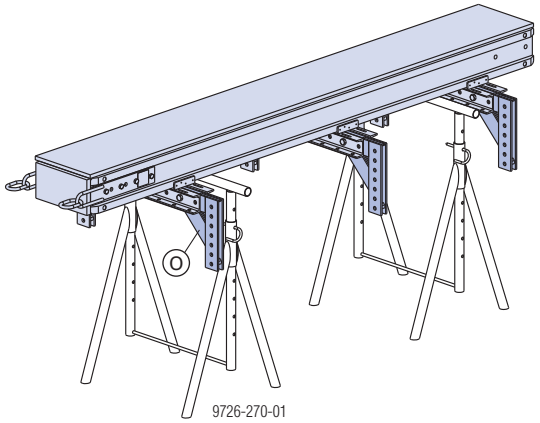
Assembling the column formwork

The column formwork elements can be pre-assembled by the Doka Pre-assembly Service exactly to the specifications provided.

Mounting the stop-end formwork

➤ Place the stop-end formwork onto stable trestles, for example.

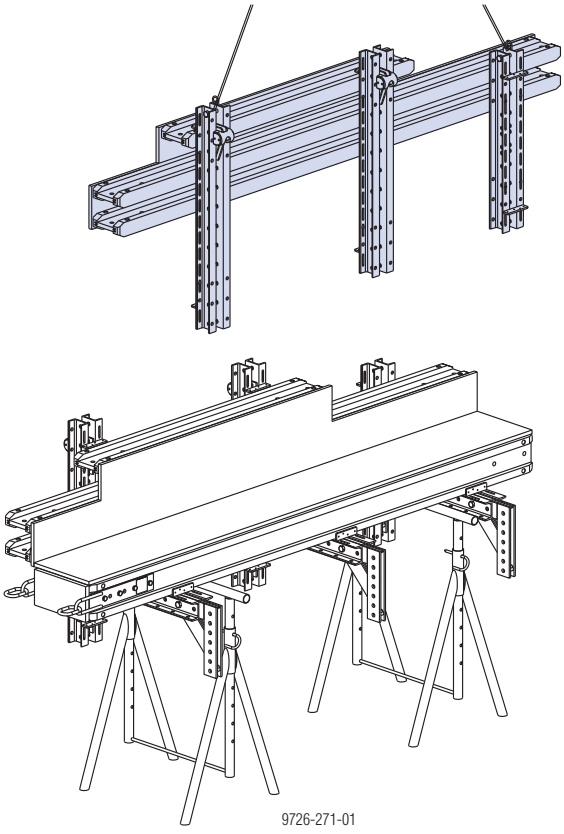
➤ Pin the Corner connecting plates 90/50 **(O)** to the multi-purpose walings with Connecting pins 10cm, and secure these with Spring cotters 6mm.



9726-270-01

Mounting the side formwork

➤ Fix the side formwork in the Corner connecting plates 90/50 with Connecting pins 10cm. Secure the pins with Spring cotters 6mm.



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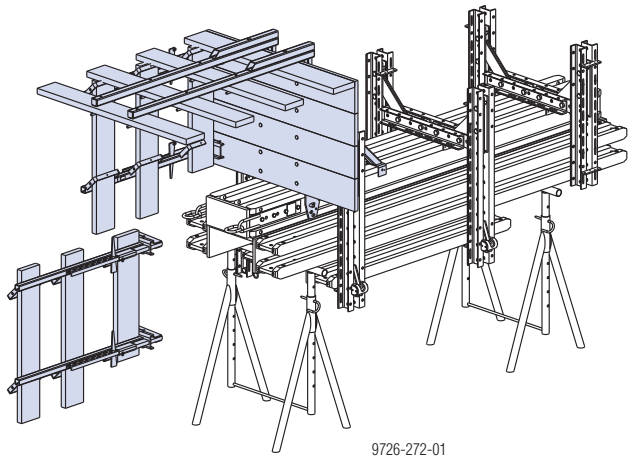
Pouring platforms with single brackets



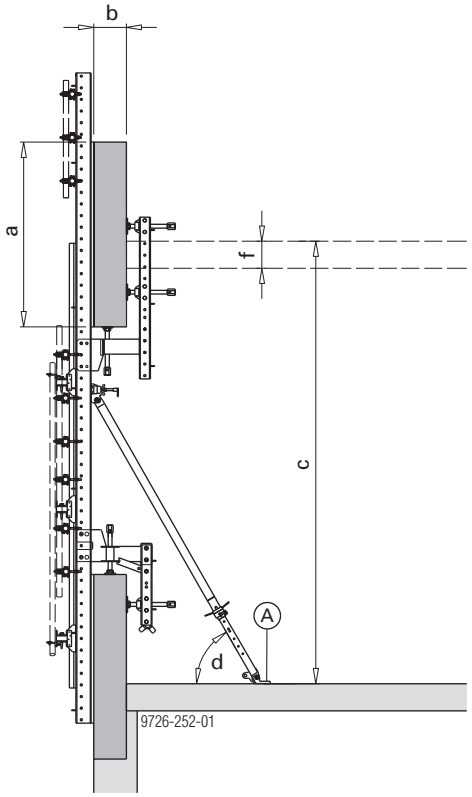
9726-272-01

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

For detailed instructions on how to assemble pouring platforms correctly, see the 'Doka large-area formwork Top 50' User Information booklet.

Structural design

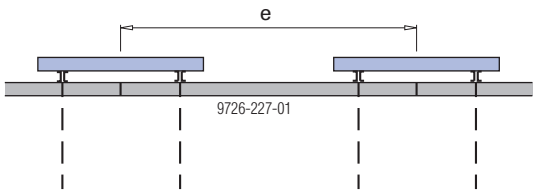
The illustration below is the basis of structural design. The data apply up to a structure height of 100 m.



a ... Max. height of precast member 1.50 m
b ... Max. thickness of precast member 0.30 m
c ... Max. storey height 4.50 m
d ... max. 60°
e ... Max. centre-to-centre distance between the units 7.50 m
f ... Slab thickness in metres (with set-back column)

A Fixed with Express anchor 16x125mm or anchor-bolt

Schematic plan view:



Dimensioning diagram

Option 1: Facade with set-back CIP column

1. Determine value **'e'** (centre-to-centre distance) on the basis of scale **'a'** (height of precast member)
2. Determine value **'e'** (centre-to-centre distance) on the basis of scale **'f'** (slab thickness)

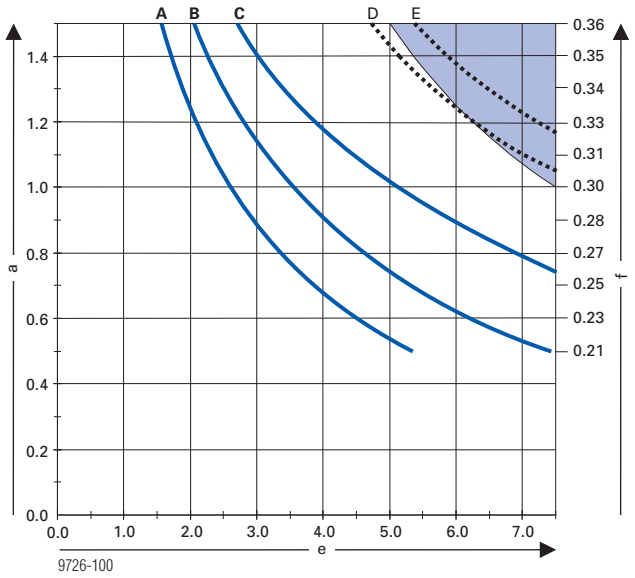
For the dimensioning calculation, it is the smaller of the two values **'e'** that is relevant.

In case of greater slab thicknesses, the centre-to-centre distance **'e'** between the units must be reduced accordingly.

Option 2: Facade with integrated CIP column

Scale **'f'** (slab thickness) has no influence.

The following applies to the area marked in blue: max. thickness of precast member **'b'** is 20 cm.



f = max. slab thickness at which lateral forces may be introduced into the precast member without taking any additional precautions.

Storey height **'c'**	Curve	Panel strut	Max. resultant anchor-bolt load
4.0 m	**A** [1]	340	D_d = 13.5 kN (D_k = 9 kN)
3.5 m	**B** [1]	340	D_d = 21 kN (D_k = 14 kN)
3.0 m	**C**	340	D_d = 33 kN (D_k = 22 kN)
4.5 m	D	540	D_d = 36 kN (D_k = 24 kN)
4.0 m	E	540	D_d = 45 kN (D_k = 30 kN)

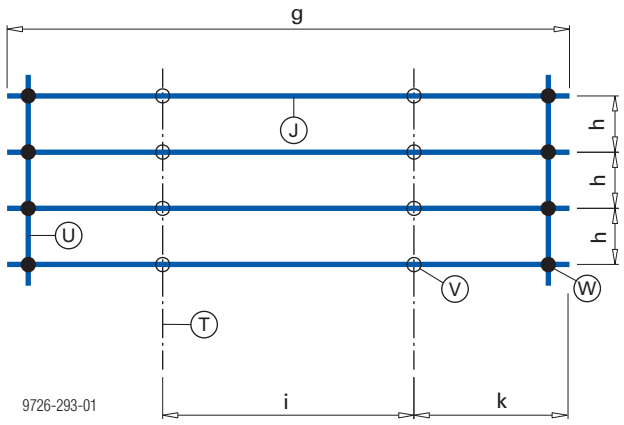
[1] For curves A and B, it is possible to use Express anchors 16x125mm.

Note:

The load-bearing capacity of the Corner connecting plate 90/50 must be allowed for in the design calculation for the column formwork (option 1).

Scaffold-tube assembly

All applicable standards and regulations, in particular DIN 4421, must be observed when erecting guardrails using scaffold tubes 48mm and couplers.



J	Horizontal scaffold tube 48mm
T	Axis of Facade waling WU14 6.00m
U	Vertical scaffold tube 48mm
V	Screw-on coupler 48mm 50 or 48mm 95
W	Normal coupler 48mm

Where 'g' = max. 5.0 m:
- no vertical scaffold tube **(U)** required
- h ... max. 0.5 m
- i ... 2.00 m
- k ... max. 1.50 m

Where 'g' = max. 6.50 m:
- vertical scaffold tube **(U)** required
- at least 3 horizontal scaffold tubes
- h ... max. 0.50 m
- i ... 2.00 m
- k ... max. 2.25 m

Where 'g' = max. 7.50 m:
- vertical scaffold tube **(U)** required
- at least 4 horizontal scaffold tubes
- h ... max. 0.33 m
- i ... min. 2.30 m
- k ... max. 2.60 m

The top horizontal scaffold tube must be fitted just below the crane-hoisting point in order to be able to absorb the oblique pull.

This scaffold tube must therefore also be fitted in cases where no scaffold-tube assembly is needed.

Note:

The scaffold tubes in the area of the closing formwork are not located at the same level as in the upper area.

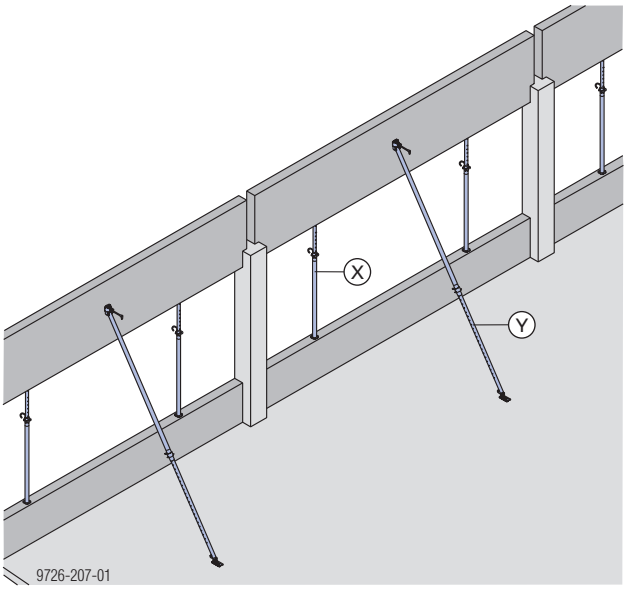
Therefore, it is not possible to use one continuous vertical scaffold tube for facade units with column formwork (two scaffold tubes are required).

For more information, see the section headed 'Coupler connections in the area of the closing formwork'.

Additional precautions

If the values stated in the section 'Structural design' are exceeded, additional precautions must be taken, as shown.

A separate statical proof is required in these situations.



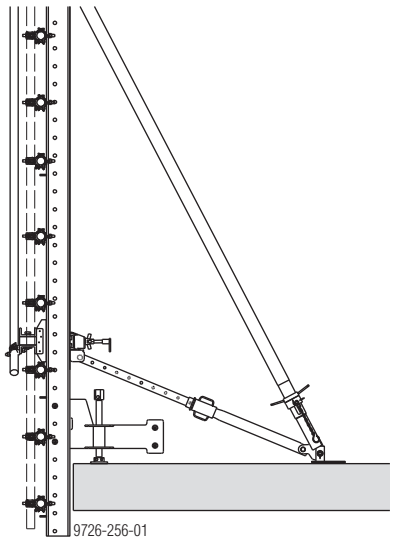
X	Doka floor prop
Y	Plumbing strut 540 or 340 for precast members

Flexible adaptation to the requirements of the structure

The usage situations shown here as well as any other special applications must be described in additional assembly instructions specific to the particular application.

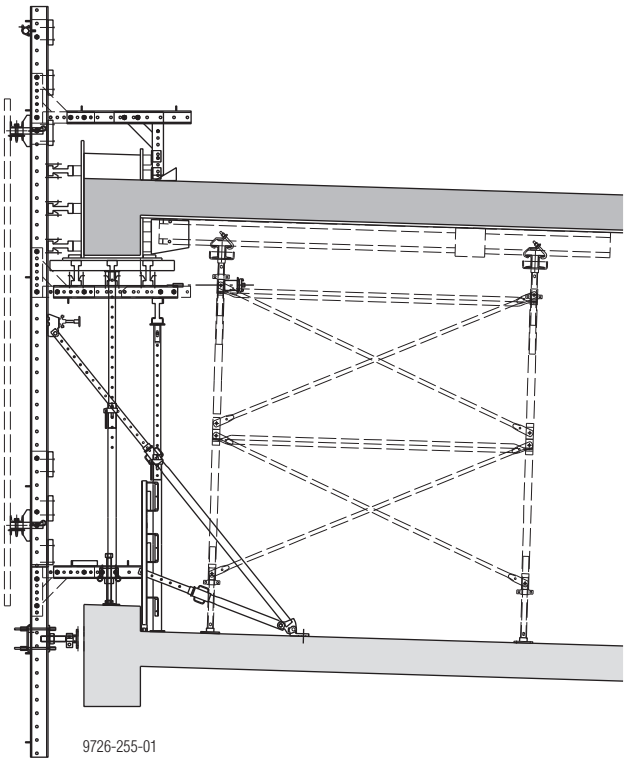
Used without parapet

e.g. entrance area, floor, door openings.



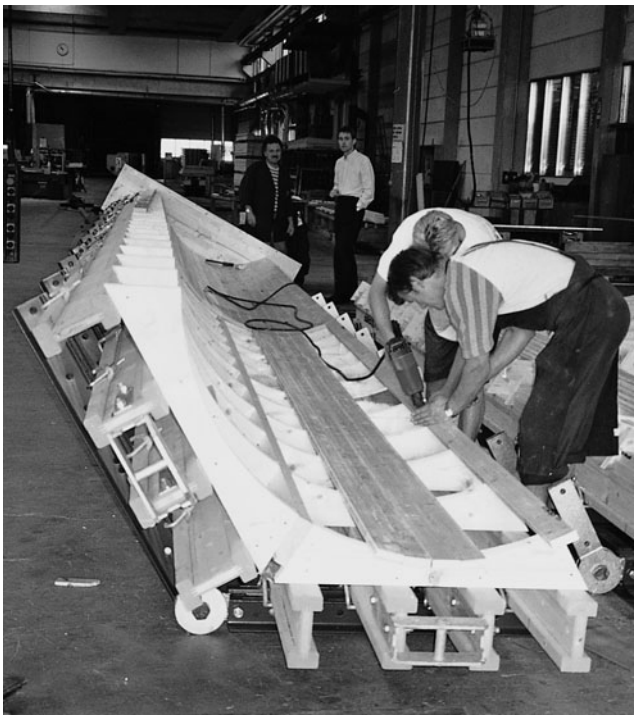
Special application with CIP concrete beams

The Doka façade formwork Top 50 also allows edge drop beams to be constructed in CIP concrete – with no special parts, simply by using the standard components of the Doka large-area formwork Top 50.



Doka "Ready-to-Use" Service

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



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

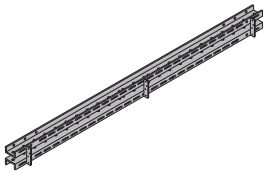
No matter whether you are looking for a special concrete finish or a custom solution for a tunnel or bridge.

The professionals from the Doka Ready-to-Use Service plan and make **ready-to-use standard and custom formworks** exactly to your specifications.

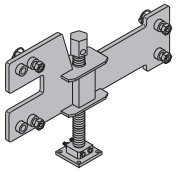
By delivering "just-in-time", straight to your site, we **save space** on your site and **reduce the amount of planning and assembly work** that you have to do.

We'll be pleased to inform you about all that the Doka "Ready-to-Use" Service can do for you. Your local/regional Doka branch would also be happy to draw up a tender for your next project.

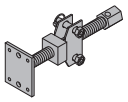
	[kg]	Article n°
Facade waling WS10 2.50m	**50.0**	**580692000**
Facade waling WU14 6.00m	**189.2**	**580691000**
Fassadenriegel		
Painted blue		



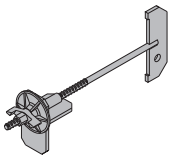
Facade precast member clamp H	**26.2**	**580693000**
Fassaden-Fertigteilklemme H		
Galvanised		
Length: 70 cm		
Height: 41 cm		
Width-across: 50 mm		



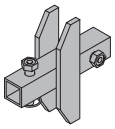
Facade precast member clamp V	**8.1**	**580694000**
Fassaden-Fertigteilklemme V		
Galvanised		
Length: 70 cm		
Height: 41 cm		
Width-across: 50 mm		



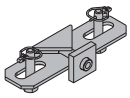
Facade precast member clamp O	**4.9**	**580698000**
Fassaden-Fertigteilklemme O		
Galvanised		
Length: 59 cm		
Height: 22 cm		



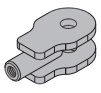
Facade waling connector	**4.7**	**580695000**
Fassaden-Riegelverbinder		
Galvanised		
Length: 26 cm		
Height: 25 cm		



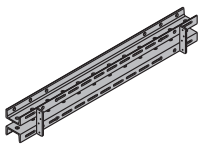
Facade anchor socket 15.0	**3.5**	**580696000**
Fassaden-Ankermuffe 15,0		
Galvanised		
Length: 33 cm		
Width: 12 cm		



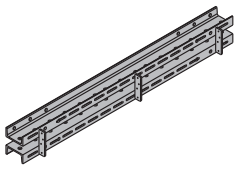
Eye-lug anchor 15.0 without tie rod	**1.2**	**580649000**
Ösenanker 15,0 ohne Ankerstab		
Galvanised		
Length: 11 cm		



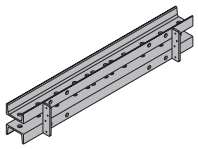
Multi-purpose waling WS10 Top50 0.50m	**10.2**	**580001000**
Multi-purpose waling WS10 Top50 0.75m	**14.9**	**580002000**
Multi-purpose waling WS10 Top50 1.00m	**19.6**	**580003000**
Multi-purpose waling WS10 Top50 1.25m	**24.7**	**580004000**
Multi-purpose waling WS10 Top50 2.50m	**48.7**	**580009000**
Mehrzweckriegel WS10 Top50		
Painted blue		



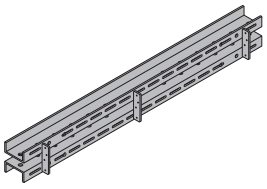
	[kg]	Article n°
Multi-purpose waling WU12 Top50 1.50m	**37.5**	**580020000**
Mehrzweckriegel WU12 Top50 1,50m		
Painted blue		



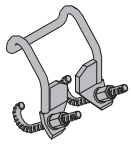
Steel waling WS10 Top50 0.50m	**10.4**	**580038000**
Steel waling WS10 Top50 0.75m	**15.4**	**580039000**
Steel waling WS10 Top50 1.00m	**20.2**	**580040000**
Steel waling WS10 Top50 1.25m	**25.0**	**580041000**
Stahlwandriegel WS10 Top50		
Painted blue		



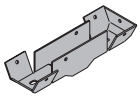
Steel waling WU12 Top50 1.50m	**37.9**	**580087000**
Stahlwandriegel WU12 Top50 1,50m		
Painted blue		



Flange clamp H20	**1.0**	**580135000**
Flanschklammer H20		
Galvanised		
Width: 13 cm		
Width-across: 19 mm		

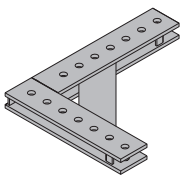


Protective cap H20	**0.36**	**587248000**
Stirnschuh H20		
Galvanised		
Length: 20 cm		
Width: 7 cm		



Lifting bracket	**6.2**	**580460000**
Kranöse		
Galvanised		
Height: 59 cm		

Corner connecting plate 90/50	**13.8**	**580603000**
Winkellasche 90/50		
Painted blue		
Length: 51 cm		
Width: 40 cm		



	[kg]	Article n°
Universal angle tie bracket Universal-Winkelspanner Painted blue Length: 20 cm	**4.4**	**580604000**
Connecting pin 10cm Verbindungsbolzen 10cm Galvanised Length: 14 cm	**0.34**	**580201000**
Spring cotter 5mm Federvorstecker 5mm Galvanised Length: 13 cm	**0.05**	**580204000**
Facade waling holder Fassaden-Riegelhalter Galvanised Length: 31 cm	**2.3**	**580674000**
Facade strut holder Fassaden-Stützenhalter Galvanised Length: 30 cm	**2.0**	**580675000**
Plumbing strut 340 IB Justierstütze 340 IB Galvanised Length: 190.8 - 341.8 cm	**16.7**	**588696000**
Plumbing strut 540 IB Justierstütze 540 IB Galvanised Length: 310.5 - 549.2 cm	**30.7**	**588697000**

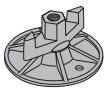
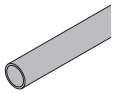
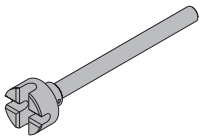
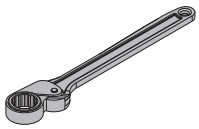
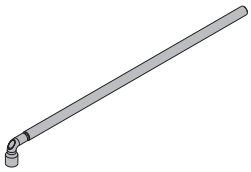
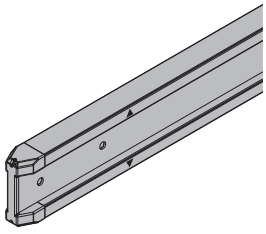
	[kg]	Article n°
Strut shoe EB Strebenschuh EB Galvanised Width: 8 cm Height: 13 cm	**0.93**	**588946000**
Panel strut 340 IB Elementstütze 340 IB consisting of:	**24.3**	**580365000**
(A) **Plumbing strut 340 IB** Galvanised Length: 190.8 - 341.8 cm	**16.7**	**588696000**
(B) **Adjusting strut 120 IB** Galvanised Length: 81.5 - 130.6 cm	**7.6**	**588248500**
Galvanised Delivery condition: folded closed		
Panel strut 540 IB Elementstütze 540 IB consisting of:	**41.4**	**580366000**
(A) **Plumbing strut 540 IB** Galvanised Length: 310.5 - 549.2 cm	**30.7**	**588697000**
(B) **Adjusting strut 220 IB** Galvanised Length: 172.5 - 221.1 cm	**10.9**	**588251500**
Galvanised Delivery condition: folded closed		
Prop head EB Stützenkopf EB Galvanised Length: 40.8 cm Width: 11.8 cm Height: 17.6 cm	**3.1**	**588244500**
Docking head Andockkopf Galvanised Length: 29.5 cm	**3.3**	**588690000**

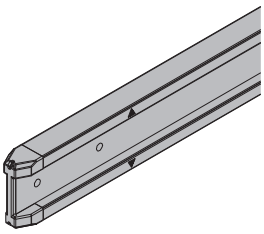
	[kg]	Article n°
Docking set Andockset Galvanised Length: 16 cm	**0.66**	**588694000**
Docking screw Andockschraube Galvanised Length: 30.5 cm	**0.60**	**588698000**
Universal dismantling tool Universal-Lösewerkzeug Galvanised Length: 75.5 cm	**3.7**	**582768000**
Doka express anchor 16x125mm Doka-Expressanker 16x125mm Galvanised Length: 18 cm Follow fitting instructions!	**0.31**	**588631000**
Doka coil 16mm Doka-Coil 16mm Galvanised Diameter: 1.6 cm	**0.009**	**588633000**
Top scaffold bracket L Betonierkonsole L Galvanised Length: 101 cm Height: 159 cm	**12.6**	**587153500**
Top scaffold bracket L painted Betonierkonsole L lackiert Painted blue Length: 101 cm Height: 159 cm	**12.0**	**587153000**

	[kg]	Article n°
Universal bracket 60 Universal-Konsole 60 Galvanised Length: 86 cm Height: 181 cm	**14.0**	**580477000**
Universal bracket 90 Universal-Konsole 90 Galvanised Length: 121 cm Height: 235 cm	**30.4**	**580476000**
Universal railing shackle Universal-Geländerbügel Galvanised Height: 20 cm	**3.0**	**580478000**
Scaffold tube 48.3mm 0.50m	**1.7**	**682026000**
Scaffold tube 48.3mm 1.00m	**3.6**	**682014000**
Scaffold tube 48.3mm 1.50m	**5.4**	**682015000**
Scaffold tube 48.3mm 2.00m	**7.2**	**682016000**
Scaffold tube 48.3mm 2.50m	**9.0**	**682017000**
Scaffold tube 48.3mm 3.00m	**10.8**	**682018000**
Scaffold tube 48.3mm 3.50m	**12.6**	**682019000**
Scaffold tube 48.3mm 4.00m	**14.4**	**682021000**
Scaffold tube 48.3mm 4.50m	**16.2**	**682022000**
Scaffold tube 48.3mm 5.00m	**18.0**	**682023000**
Scaffold tube 48.3mm 5.50m	**19.8**	**682024000**
Scaffold tube 48.3mm 6.00m	**21.6**	**682025000**
Scaffold tube 48.3mm .....m Gerüstrohr 48,3mm Galvanised	**3.6**	**682001000**
Scaffold tube connection Gerüstrohranschluss Galvanised Height: 7 cm	**0.27**	**584375000**
Handrail clamp S Schutzgeländerzwinge S Galvanised Height: 123 - 171 cm	**11.5**	**580470000**

	[kg]	Article n°
Handrail post 1.10m Schutzgeländer 1,10m Galvanised Height: 134 cm	**5.5**	**584384000**
Attachable sleeve 24mm Steckhülse 24mm Grey Length: 16.5 cm Diameter: 2.7 cm	**0.03**	**584385000**
Screw sleeve 20.0 Schraubhülse 20,0 Yellow Length: 20 cm Diameter: 3.1 cm	**0.03**	**584386000**
Screw-on coupler 48mm 50 **Screw-on coupler 48mm 95** Anschraubkupplung Galvanised Width-across: 22 mm Follow fitting instructions!	**0.84** **0.88**	**682002000** **586013000**
Swivel coupler 48mm Drehkupplung 48mm Galvanised Width-across: 22 mm Follow fitting instructions!	**1.5**	**582560000**
Normal coupler 48mm Normalkupplung 48mm Galvanised Width-across: 22 mm Follow fitting instructions!	**1.2**	**682004000**
Doka 4-part chain 3.20m Doka-Vierstrangkette 3,20m Follow the directions in the "Operating Instructions"!	**15.0**	**588620000**

	[kg]	Article n°
Tool box GF GF-Werkzeugbox included in scope of supply:	**6.5**	**580390000**
(A) **Reversible ratchet 1/2"** Galvanised Length: 30 cm	**0.73**	**580580000**
(B) **Fork wrench 13/17**	**0.08**	**580577000**
(C) **Fork wrench 22/24**	**0.22**	**580587000**
(D) **Fork wrench 30/32**	**0.80**	**580897000**
(E) **Ring spanner 17/19**	**0.27**	**580590000**
(F) **Extension 11cm 1/2"**	**0.20**	**580581000**
(G) **Extension 22cm 1/2"**	**0.31**	**580582000**
(H) **Universal joint coupling 1/2"**	**0.16**	**580583000**
(I) **Box nut 19 1/2" L**	**0.16**	**580598000**
(J) **Box nut 13 1/2"**	**0.06**	**580576000**
(K) **Box nut 24 1/2"**	**0.12**	**580584000**
(L) **Box nut 30 1/2"**	**0.20**	**580575000**
Reversible ratchet 3/4" Umschaltknarre 3/4" Galvanised Length: 50 cm	**1.5**	**580894000**
Box nut 50 3/4" Stecknuss 50 3/4"	**0.81**	**581449000**
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 7.50m	**10.7**	**581882000**
Tie rod 15.0mm non-treated .....m Ankerstab 15,0mm	**1.4**	**581873000**
Wing nut 15.0 Flügelmutter 15,0 Galvanised Length: 10 cm Height: 5 cm Width-across: 27 mm	**0.31**	**581961000**

	[kg]	Article n°
Super plate 15.0 Superplatte 15,0 Galvanised Height: 6 cm Diameter: 12 cm Width-across: 27 mm 	**1.1**	**581966000**
Plastic tube 22mm 2.50m Kunststoffrohr 22mm 2,50m 	**0.45**	**581951000**
Universal cone 22mm Universal-Konus 22mm Grey Diameter: 4 cm 	**0.005**	**581995000**
Plug 22mm Verschlussstopfen 22mm Grey 	**0.003**	**581953000**
Tie-rod wrench 15.0/20.0 Ankerstabschlüssel 15,0/20,0 Galvanised Length: 37 cm Diameter: 8 cm 	**1.9**	**580594000**
Friction type ratchet SW27 Freilaufknarre SW27 manganese-phosphated Length: 30 cm 	**0.49**	**581855000**
Box spanner 27 0.65m Steckschlüssel 27 0,65m Galvanised 	**1.9**	**581854000**
Doka beam H20 top N 1.80m	**9.5**	**189011000**
Doka beam H20 top N 2.45m	**12.8**	**189012000**
Doka beam H20 top N 2.65m	**13.8**	**189013000**
Doka beam H20 top N 2.90m	**15.0**	**189014000**
Doka beam H20 top N 3.30m	**17.0**	**189015000**
Doka beam H20 top N 3.60m	**18.5**	**189016000**
Doka beam H20 top N 3.90m	**20.0**	**189017000**
Doka beam H20 top N 4.50m	**23.0**	**189018000**
Doka beam H20 top N 4.90m	**25.0**	**189019000**
Doka beam H20 top N 5.90m	**30.0**	**189020000**
Doka beam H20 top N .....m	**5.2**	**189010000**
Doka beam H20 top N .....m BS	**5.2**	**189021000**
Doka-Träger H20 top N Varnished yellow 		

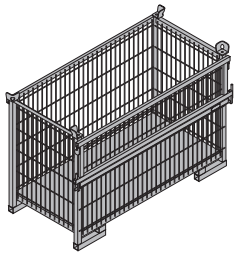
	[kg]	Article n°
Doka beam H20 top P 1.80m	**9.9**	**189701000**
Doka beam H20 top P 2.45m	**13.2**	**189702000**
Doka beam H20 top P 2.65m	**14.3**	**189703000**
Doka beam H20 top P 2.90m	**15.6**	**189704000**
Doka beam H20 top P 3.30m	**17.7**	**189705000**
Doka beam H20 top P 3.60m	**19.2**	**189706000**
Doka beam H20 top P 3.90m	**20.8**	**189707000**
Doka beam H20 top P 4.50m	**23.9**	**189708000**
Doka beam H20 top P 4.90m	**26.0**	**189709000**
Doka beam H20 top P 5.90m	**31.2**	**189710000**
Doka beam H20 top P .....m	**5.4**	**189700000**
Doka beam H20 top P .....m BS	**5.4**	**189711000**
Doka-Träger H20 top P Varnished yellow 		
Doka formwork sheet 3-SO 21mm 100/50cm	**5.2**	**186007000**
Doka formwork sheet 3-SO 21mm 150/50cm	**7.3**	**186008000**
Doka formwork sheet 3-SO 21mm 200/50cm	**9.7**	**186009000**
Doka formwork sheet 3-SO 21mm 250/50cm	**12.1**	**186011000**
Doka formwork sheet 3-SO 21mm 300/50cm	**14.6**	**186012000**
Doka formwork sheet 3-SO 21mm 350/50cm	**18.0**	**186028000**
Doka formwork sheet 3-SO 21mm 400/50cm	**20.6**	**186013000**
Doka formwork sheet 3-SO 21mm 450/50cm	**23.2**	**186029000**
Doka formwork sheet 3-SO 21mm 500/50cm	**25.8**	**186014000**
Doka formwork sheet 3-SO 21mm 550/50cm	**28.3**	**186023000**
Doka formwork sheet 3-SO 21mm 600/50cm	**30.9**	**186027000**
Doka formwork sheet 3-SO 21mm 100/100cm	**10.3**	**186015000**
Doka formwork sheet 3-SO 21mm 150/100cm	**15.5**	**186016000**
Doka formwork sheet 3-SO 21mm 200/100cm	**19.4**	**186017000**
Doka formwork sheet 3-SO 21mm 250/100cm	**24.3**	**186018000**
Doka formwork sheet 3-SO 21mm 300/100cm	**30.9**	**186019000**
Doka formwork sheet 3-SO 21mm 350/100cm	**36.1**	**186030000**
Doka formwork sheet 3-SO 21mm 400/100cm	**41.2**	**186020000**
Doka formwork sheet 3-SO 21mm 450/100cm	**46.4**	**186031000**
Doka formwork sheet 3-SO 21mm 500/100cm	**51.5**	**186021000**
Doka formwork sheet 3-SO 21mm 550/100cm	**56.7**	**186022000**
Doka formwork sheet 3-SO 21mm 600/100cm	**61.8**	**186024000**
Doka formwork sheet 3-SO 21mm 250/125cm	**32.2**	**186097000**
Doka formwork sheet 3-SO 21mm 300/150cm	**46.4**	**186098000**
Doka formwork sheet 3-SO 21mm 600/150cm	**92.7**	**186099000**
Doka formwork sheet 3-SO 21mm 150/50cm BS	**7.7**	**186008100**
Doka formwork sheet 3-SO 21mm 200/50cm BS	**10.3**	**186009100**
Doka formwork sheet 3-SO 21mm 250/50cm BS	**12.9**	**186011100**
Doka formwork sheet 3-SO 21mm 300/50cm BS	**15.5**	**186012100**
Doka-Schalungsplatte 3-SO 21mm		
Doka formwork sheet 3-SO 27mm 100/50cm	**6.5**	**187007000**
Doka formwork sheet 3-SO 27mm 150/50cm	**9.8**	**187008000**
Doka formwork sheet 3-SO 27mm 200/50cm	**13.0**	**187009000**
Doka formwork sheet 3-SO 27mm 250/50cm	**16.3**	**187011000**
Doka formwork sheet 3-SO 27mm 300/50cm	**19.5**	**187012000**
Doka formwork sheet 3-SO 27mm 350/50cm	**22.8**	**187028000**
Doka formwork sheet 3-SO 27mm 400/50cm	**26.0**	**187013000**
Doka formwork sheet 3-SO 27mm 450/50cm	**29.3**	**187029000**
Doka formwork sheet 3-SO 27mm 500/50cm	**32.5**	**187014000**
Doka formwork sheet 3-SO 27mm 550/50cm	**35.8**	**187023000**
Doka formwork sheet 3-SO 27mm 600/50cm	**39.0**	**187027000**
Doka formwork sheet 3-SO 27mm 100/100cm	**13.0**	**187015000**
Doka formwork sheet 3-SO 27mm 150/100cm	**19.5**	**187016000**
Doka formwork sheet 3-SO 27mm 200/100cm	**26.0**	**187017000**
Doka formwork sheet 3-SO 27mm 250/100cm	**32.5**	**187018000**
Doka formwork sheet 3-SO 27mm 300/100cm	**39.0**	**187019000**
Doka formwork sheet 3-SO 27mm 350/100cm	**45.5**	**187030000**
Doka formwork sheet 3-SO 27mm 400/100cm	**52.0**	**187020000**
Doka formwork sheet 3-SO 27mm 450/100cm	**58.5**	**187031000**
Doka formwork sheet 3-SO 27mm 500/100cm	**65.0**	**187021000**
Doka formwork sheet 3-SO 27mm 550/100cm	**71.5**	**187022000**
Doka formwork sheet 3-SO 27mm 600/100cm	**78.0**	**187024000**
Doka formwork sheet 3-SO 27mm 250/125cm	**40.6**	**187106000**
Doka formwork sheet 3-SO 27mm 300/150cm	**58.5**	**187107000**
Doka formwork sheet 3-SO 27mm 600/150cm	**117.0**	**187108000**
Doka formwork sheet 3-SO 27mm 150/50cm BS	**9.8**	**187008100**
Doka formwork sheet 3-SO 27mm 200/50cm BS	**13.0**	**187009100**
Doka formwork sheet 3-SO 27mm 250/50cm BS	**16.3**	**187011100**
Doka formwork sheet 3-SO 27mm 300/50cm BS	**19.5**	**187012100**
Doka-Schalungsplatte 3-SO 27mm		

	[kg]	Article n°
Dokaplex formwork sheet 21mm 250/125cm	**45.9**	**185007000**
Dokaplex formwork sheet 21mm 250/150cm	**55.1**	**185002000**
Dokaplex formwork sheet 21mm 300/150cm	**66.2**	**185003000**
Dokaplex-Schalungsplatte 21mm		

Multi-trip packaging

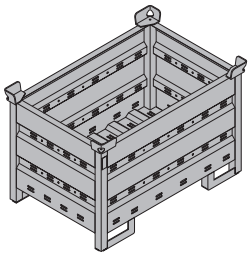
Doka skeleton transport box 1.70x0.80m **87.0** **583012000**
Doka-Gitterbox 1,70x0,80m

Galvanised
Height: 113 cm



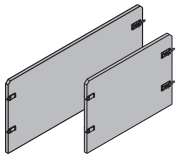
Doka multi-trip transport box 1.20x0.80m **75.0** **583011000**
Doka-Mehrwegcontainer 1,20x0,80m

Galvanised
Height: 78 cm



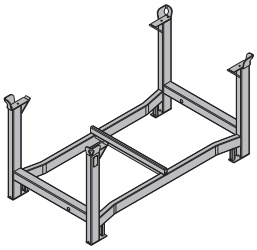
Multi-trip transport box partition 0.80m **3.7** **583018000**
Multi-trip transport box partition 1.20m **5.5** **583017000**
Mehrwegcontainer Unterteilung

Timber parts varnished yellow
Steel parts galvanised



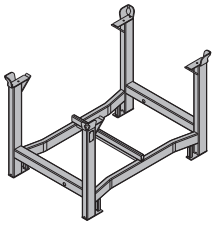
Doka stacking pallet 1.55x0.85m **42.0** **586151000**
Doka-Stapelpalette 1,55x0,85m

Galvanised
Height: 77 cm



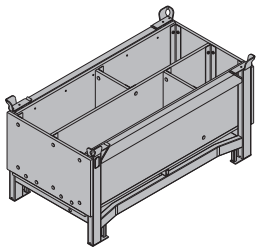
Doka stacking pallet 1.20x0.80m **39.5** **583016000**
Doka-Stapelpalette 1,20x0,80m

Galvanised
Height: 77 cm



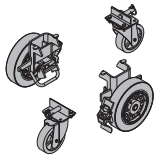
	[kg]	Article n°
Doka accessory box	**106.4**	**583010000**
Doka-Kleinteilebox		

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



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

Painted blue



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

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

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