Instructions for Assembly and Use **AluDEK**

www.ringer.at/en

RINGER
SCAFFOLDING + FORMWORK

LET'S BUILD

RINGER GmbH

A-4844 Regau, Austria
Roemerweg 9
+43 7672 72711 - 0
office@ringer.at
www.ringer.at

Contents

1 General Information

REFERENCE
Refers to other documents with more detailed information

TECHNICAL INFORMATION
Refers to important product features.

TIP
Refers to useful practical tips

CHECK
Check your performed activity

qualityaustria
SYSTEMZERTIFIZIERT
ISO 9001:2015 NR.00720/0

Safety information

FOREWORD
In order to ensure that the products are applied and used safely, the country-specific laws, standards and any other applicable regulations must be observed. They form part of the occupational safety obligations of employers and employees. They result, for example, in the employer's obligation to ensure that formwork constructions are structurally stable during all stages of construction. They also include basic assembly, dismantling and transportation of these constructions and their parts. The overall construction must be inspected during and after assembly.

INSTRUCTIONS FOR ASSEMBLY AND USE
Formwork is technical work equipment intended solely for commercial use. It may only be applied as intended by technically suitable and qualified personnel. These instructions for assembly and use are an integral part of the formwork. They contain safety information, information about the standard design and intended use as well as a system description. They also include drawings and explanatory illustrations.

AVAILABILITY OF THE INSTRUCTIONS FOR ASSEMBLY AND USE
The user must ensure that the instructions for assembly and use provided by RINGER are available at the point of use and that employees know of them and can access them

INSTRUCTIONS
The functional instructions (standard layout) in the instructions for assembly and use must be observed closely Deviations require a separate verification from the user in compliance with the relevant laws, standards and safety regulations.

ILLUSTRATIONS
Some of the illustrations in the instructions for assembly and use are states of assembly and therefore not always complete in terms of safety technology Nevertheless, the users must always utilise safety equipment, even if it is not shown in these illustrations.

STORAGE AND TRANSPORT
The special requirements of formwork structures must be observed for transport processes and storage.

MATERIAL CONTROL
The formwork material must be checked when it arrives at the construction site, as well as before each additional use, to ensure that it is fault-free and functional. Changes and alterations are not permissible. All connections must be checked for fit and function. This is particularly necessary after extraordinary events (e.g. storm/severe weather).

SPARE PARTS AND REPAIRS
Only original components may be used as spare parts. Repairs may only be performed by RINGER or authorised facilities.

USE OF OTHER PRODUCTS
Combining RINGER systems with parts from other manufacturers harbours risks that may result in injuries or material damage.

RISK ASSESSMENT
The user is responsible for compiling, documenting, implementing and reviewing a risk assessment for each construction site. Their employees are obliged to implement the resulting measures in line with relevant legislation. The instructions for assembly and use form one of the bases for preparing a risk assessment

INSTALLATION INSTRUCTIONS
The user is responsible for preparing written installation instructions. The instructions for assembly and use form one of the bases for preparing these installation instructions

CHANGES
The author reserves the right to make changes during the course of technical development.

AluDEK
Modular Slab Formwork

2 Product Description

AluDEK is a beamless, aluminium lightweight (16.0 kg/m²) handset formwork system that enables the manual forming of slabs. The system combines the advantages of panel floor formwork system with those of beam formwork. That means rapid forming in the typical area (standard panel 1.82 m²) and flexible forming in the infill areas.
The system consists of only three main components: prop, head and panel. The AluDEK head is suitable for edge, panel-to-panel and corner areas, making handling of the system both easy and efficient.

AluDEK COMBINED WITH AL2000
Part of the design brief for the AluDEK slab formwork was that the panels should combine perfectly with AL2000 wall formwork panels. Consequently, any floorplan can be formed with ease.
Infill beams and formwork sheets can be used at infill areas. The fall-protection barriers required to ensure safety on the jobsite are easily erected using the tried-and-tested RINGER guardrail clamps and the appropriate adapters.

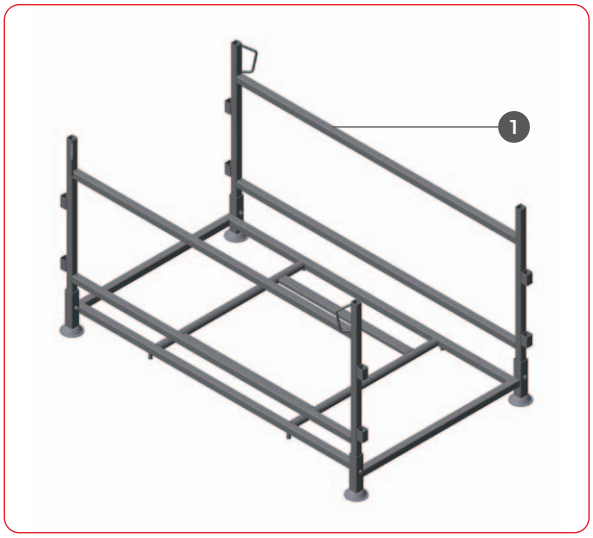
Adjustable clamps are used to secure against wind lift and for cantilevering slabs.

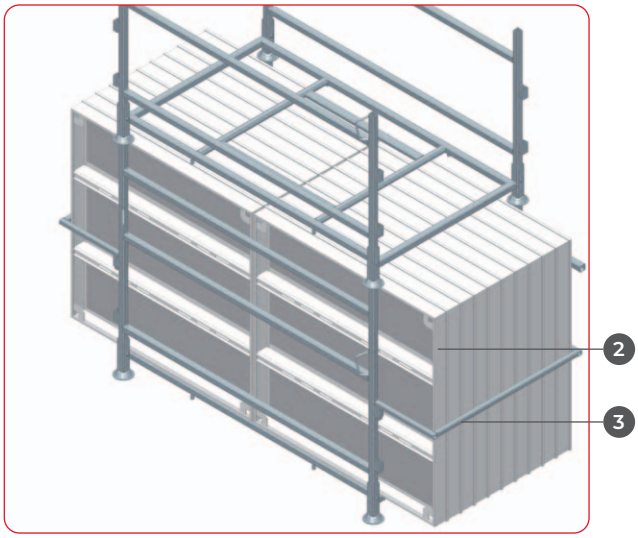
BENEFITS AT A GLANCE
- **Any floorplan easy to form**
  by combining with AL2000
- **RINGER AluDEK head**
  for edge, panel-to-panel and corner areas
- **Lightweight formwork panels**
  made of aluminium
- **Safe set-up**
  from floor level
- **Few individual parts**
  so faster forming

FORMWORK SHEETING
The sheeting is riveted to the frame. The AluDEK panels are available with the following sheeting:

- **Phenolic-resin coated sheeting**
  Birch plywood, 9 layers glue-bonded, film-coated on both sides
- **Plastic-coated sheeting**
  Birch plywood, 8 layers glue-bonded, plastic coating 1.8 mm thick on both sides
- **Alkus**
  Extremely durable all-plastic sheet

Transportation and storage





Stacking the AluDEK panels

The AluDEK panels are stored and transported in the pallet for aluminium formwork. Make sure that at least the two top stirrups for pallet are installed in each pallet.

When pallets are stacked on top of each other, two stacking frames for AluDEK always have to be inserted between the pallets to obtain clearance past the 1.35 m height of the panels turned on their side.

Maximum stack height when stacking frames for AluDEK are used:
2 pallets

Consult the data sheet for the pallet!

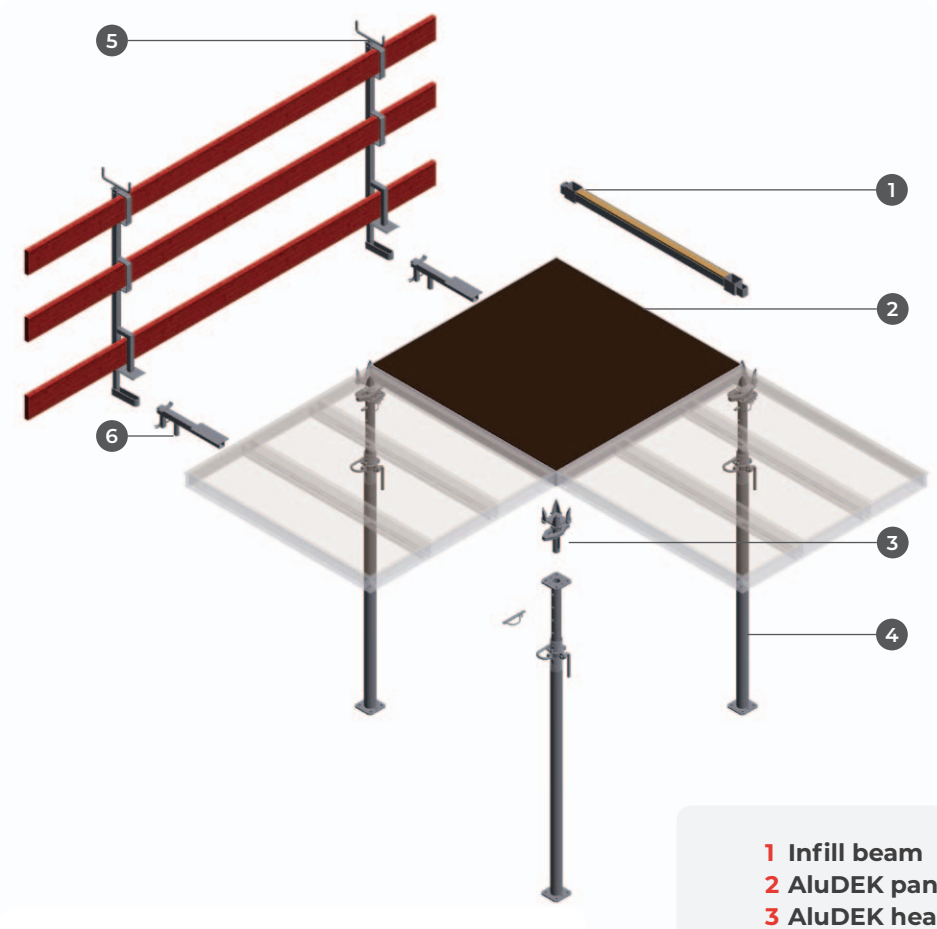
1 Pallet for Aluminium formwork
2 Stacking frame for AluDEK
3 Stirrup for pallet

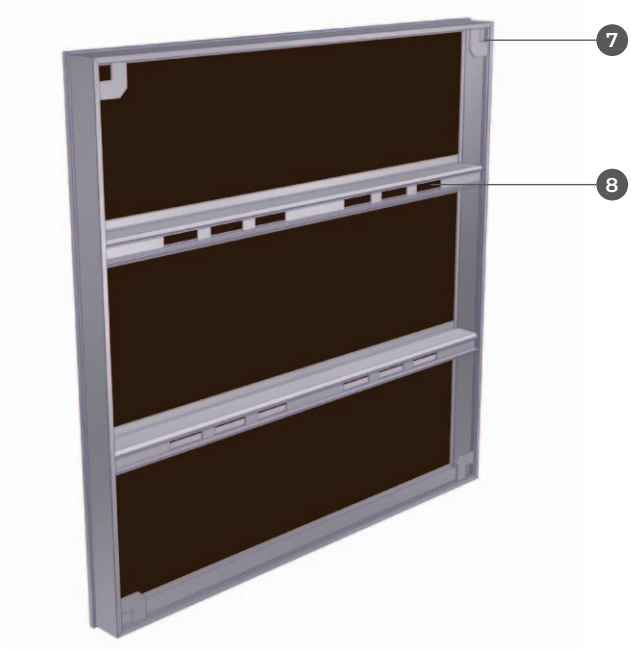
Different ways of repositioning

The pallets can be repositioned by different means:

- Forklift truck
- Crane

3 Product overview





1 **Infill beam**
2 **AluDEK panel**
3 **AluDEK head**
4 **Prop 20 kN**
5 **Guardrail clamp**
6 **AluDEK adapter for guardrail clamp**
7 **Holder for AluDEK head**
8 **Function profile**
for attachment of RS clamp with waler

Also see the assembly video on our YouTube channel.
Just scan the QR code.

Panel - details

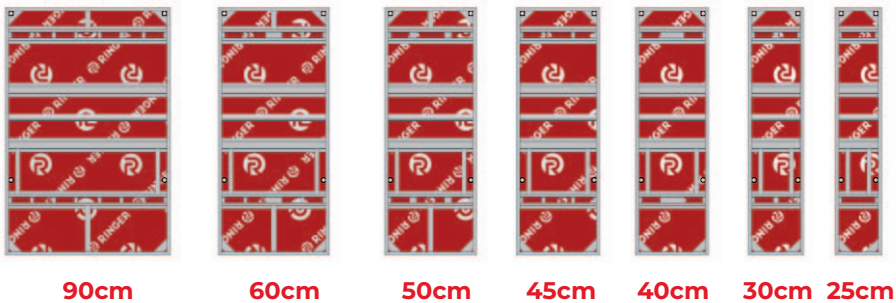
AluDEK formwork panels

135cm

AL2000 formwork panels

270cm

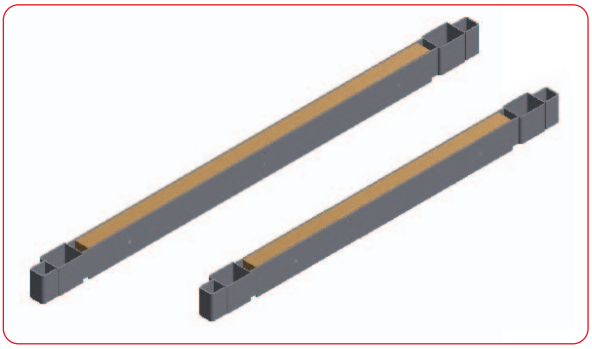
135cm



System parts

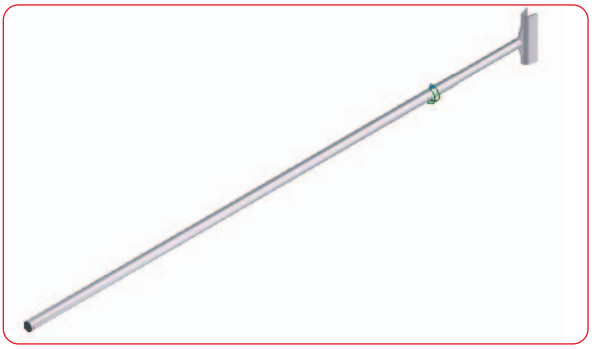
AluDEK head

The AluDEK head has a quick-lowering function that makes stripping out the formwork considerably easier. The head can be used in the main area, but also at the edges of the slab and in corners.



Infill beam 21+27mm

Infill beams are available in the lengths 135cm and 90cm. The beam can be turned over, so it is suitable for formwork sheet thicknesses 27mm and 21mm.



AluDEK assembly bar

The bar is made of aluminium and it makes the AluDEK panels easy to raise and lower.

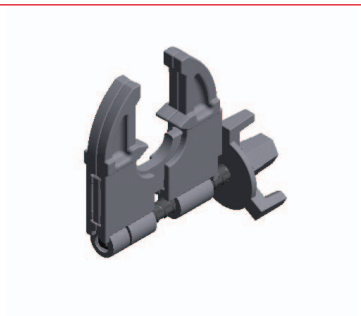
20 kN props

At the maximum centre-to-centre spacing of 1.35 m, the props with a working load limit of 20 kN can be used to prop the slab formwork for slabs up to 30cm thick.

System parts

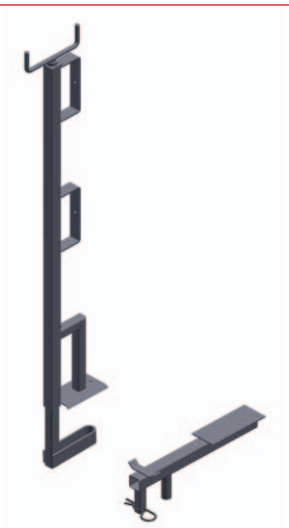
Tripod

Tripods can be used to steady the first props and prevent them from toppling.



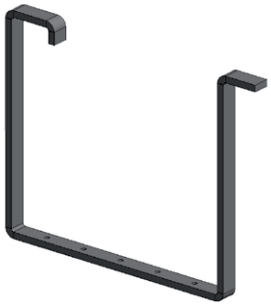
Adjustable clamp short

This short adjustable clamp can be used to interconnect slab panels. A ratchet lashing strap can then be attached to secure against wind lift or prevent cantilevering formwork from tipping over.



Guardrail clamp

The guardrail clamp is ideal for constructing fall-protection barriers and the AluDEK adapter for guardrail clamp secures the clamp to the slab panel.

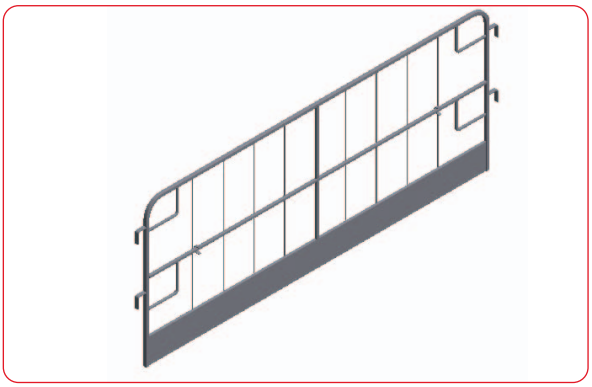


H20 suspension bracket for AluDEK

This bracket can be used for positioning H20 beams when floor slabs are >30 cm thick and additional propping is needed.

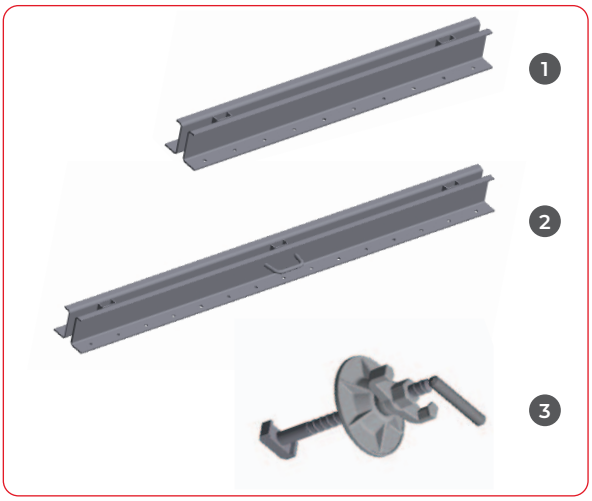
Article not available in Germany.

System parts



Side protection grids 1.45 and 2.70m

For constructing fall-protection barriers in combination with the guardrail clamp.



Waler

Walers are used to stabilise the formwork panels. They can also be used as supports for infill areas.

1 Waler 100
2 Waler 150
3 RS clamp

4 Assembly
Basics

Permissible slab thicknesses (not valid for Germany)

The AluDEK panels are suitable for slab thicknesses up to 30 cm without additional propping.

When the preconditions set out below are satisfied, a slab thickness of max. 35 cm is permissible:

- Concrete placing only by pump (no dumping from bucket, because of the danger that the fully loaded bucket might inadvertently be set down on the formwork)

- Avoidance of large quantities of concrete spot-loading the formwork while pouring is in progress; fill from pump hose only up to the finished slab top edge. Immediately spread overfill, if any.

- Only 1 person on each panel

In relation to additional propping, see the illustration on Page 20

Formwork panel	[cm]	Perm. slab thickness [cm]			
		<=30	<=35	<=40	<50
AluDEK	135x135	x	$x_{1)}$		$x_{2)}$
AluDEK	135x90			x	
AL2000	$270xB_{3)}$				x
AL2000	$135xB_{3)}$				x

1) assuming compliance with the restrictions above

2) with diagonally positioned additional propping

3) valid for all panel widths

All the variants outlined above satisfy the surface planeness requirements of DIN 18218, Table 3, Line 6.

When AL2000 panels are used, the maximum centre-to-centre spacing between props is 135 cm in all directions.

Permissible slab thicknesses for Germany, with DIBt approval

The AluDEK panels are suitable for slab thicknesses up to 30 cm without additional propping.

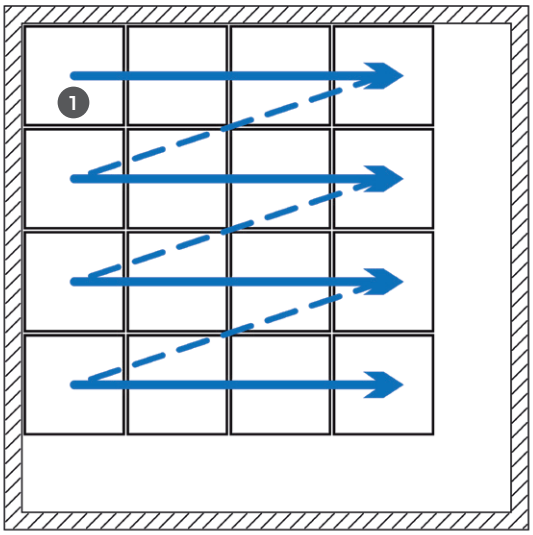
When AL2000 panels are used, the maximum centre-to-centre spacing between props is 135 cm in all directions.

Formwork panel	[cm]	Perm. slab thickness [cm]	
		<=30	<50
AluDEK	135x135	x	
AluDEK	135x90	x	
AL2000	$270xB_{1)}$		x
AL2000	$135xB_{1)}$		x

1) valid for all panel widths

All the variants outlined above satisfy the surface planeness requirements of DIN 18218, Table 3, Line 6.

Basics



Preparatory work

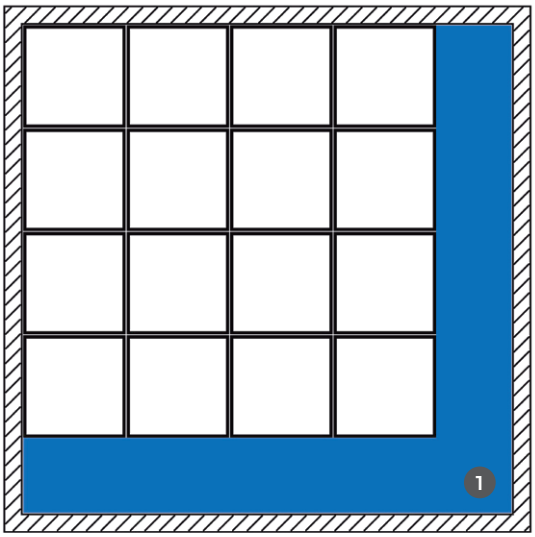
The following points have to be considered before formworking starts:

- Which formwork panels are available?
- What does the floorplan look like?
- Where are the best locations for infill areas?
- Where is the best place for the starting panel?

1 Starting panel

Direction of panel set-up

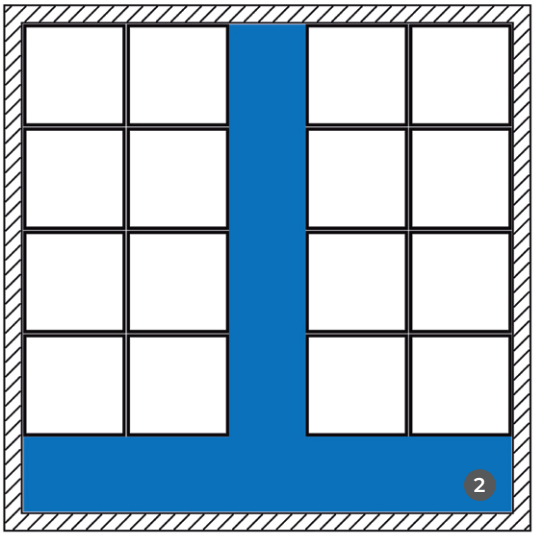
When setting up the panels, start at one corner.

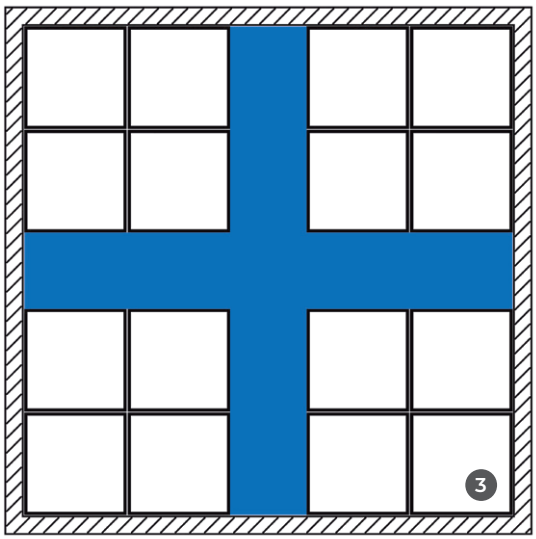


Infill areas

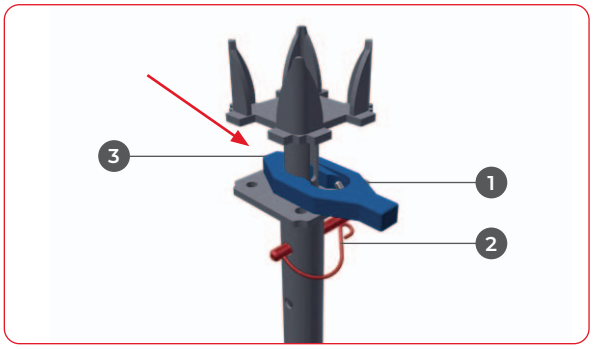
Infill areas are possible at the wall or between two adjacent rows of panels.

1 Type L
2 Type T
3 Type X





Set-up procedure



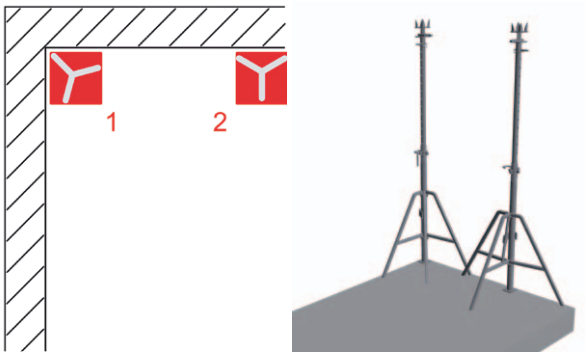
Starting phase

1.) Position the AluDEK head with activated (raised) lowering wedge on the prop and secure the head with the spring bolt.

1 Lowering wedge
2 Spring bolt
3 Hammer strikes on lowering wedge

Hammer the lowering wedge tight

Each AluDEK head must be secured in the prop by means of its spring bolt.



2.) Set up the first two props 1 + 2 complete with tripods to prevent them toppling.

Make sure that the activated lowering wedge is positioned where it can be hammered out when the formwork is being stripped.

3.) Set the floor props to approximately the correct height. Top edge of AluDEK head = 10 cm lower than bottom of slab.

Comply with the loads stated in the EN 1065 load table for standard EU 20kN props. Also see the data sheet for props!

4.) Adjust the AluDEK assembly bar to slab height so that when vertical, the bar holds the formwork panel horizontal or tilted slightly down. The assembly bar can be adjusted in steps of 6 cm.

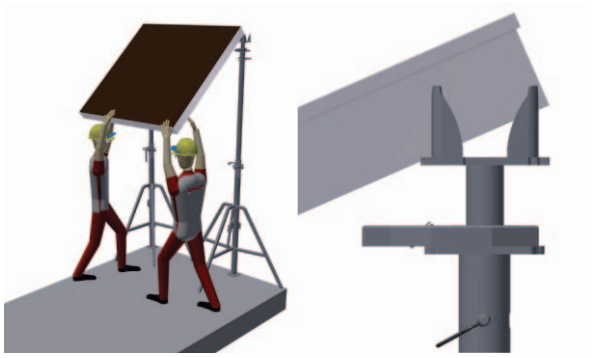
Legend

Prop with AluDEK head

Prop with AluDEK head and tripod

Assembly bar

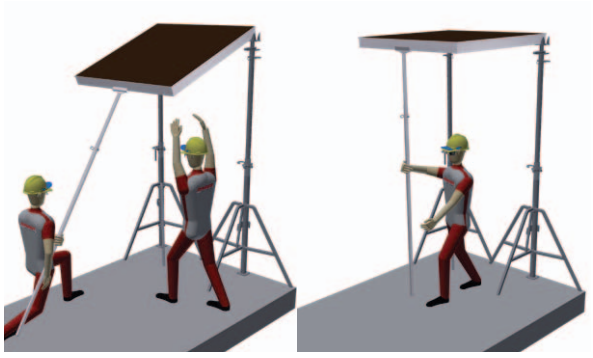
Set-up procedure



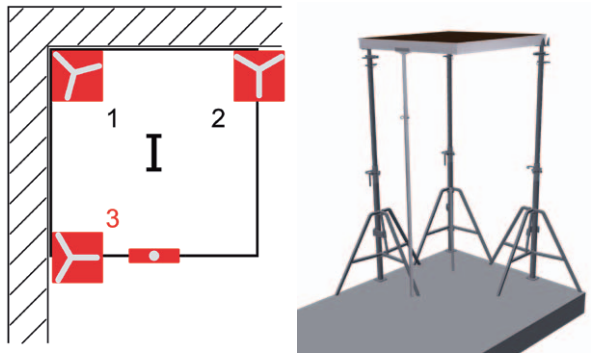
5.) Hook the first formwork panel into the heads of props 1 + 2.

Risk of tip-over - secure the prop so that it cannot topple while the slab panel is being swung up into position.

Check that the formwork panel is correctly hooked into the AluDEK heads.



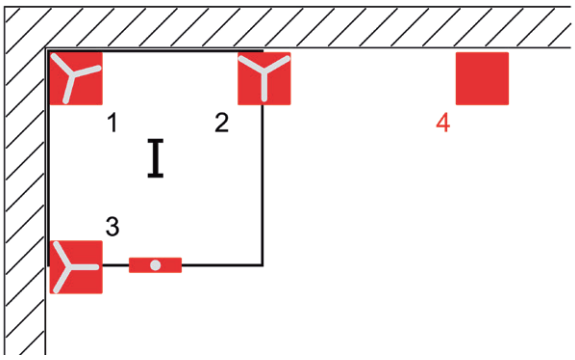
6.) Use the assembly bar to swing the formwork panel up and leave the assembly bar standing in position.



7.) Set up prop number 3.
Leave the assembly bar standing in position for safety's sake.

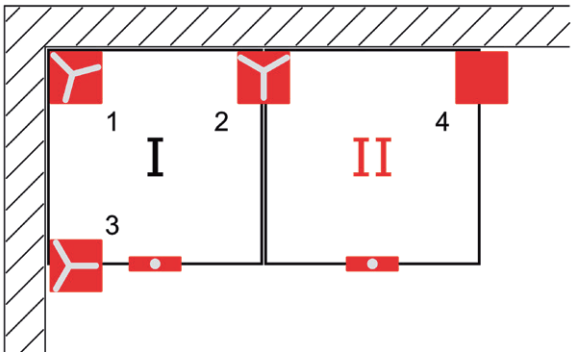
Securing the formwork panel to the wall improves stability.
See Page 25

Set-up procedure

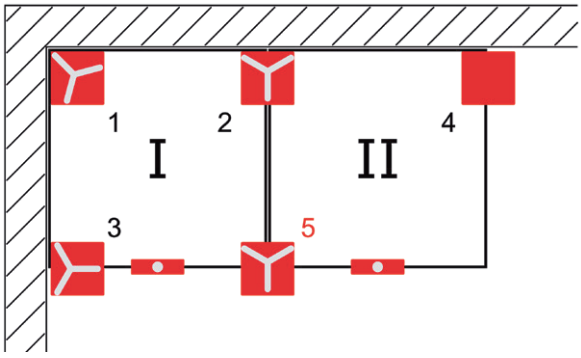


Repetition phase, row along

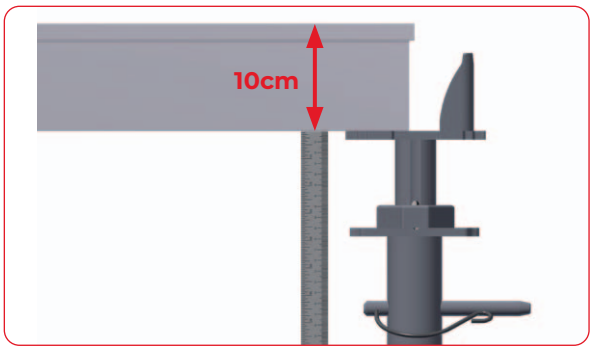
8.) In the next step, ready prop number 4 for the second formwork panel.



9.) This prop is held upright by one person. Panel II is hooked into the heads, swung up and lifted into position beside the first panel with the assembly bar.



10.) Now prop number 5 can be set in position propping the panel and secured with a tripod. Repeat these steps along the row.

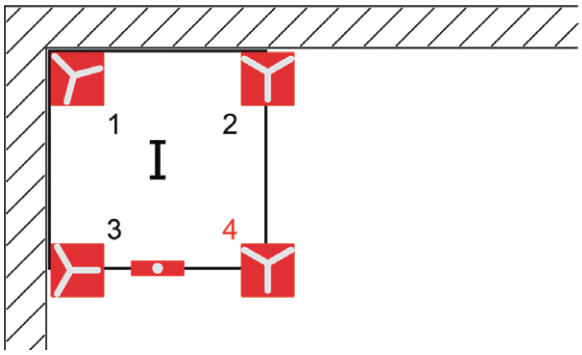


Height adjustment

Level the panels by measuring from floor level to the frame profile bottom edge (as close as possible to a prop).

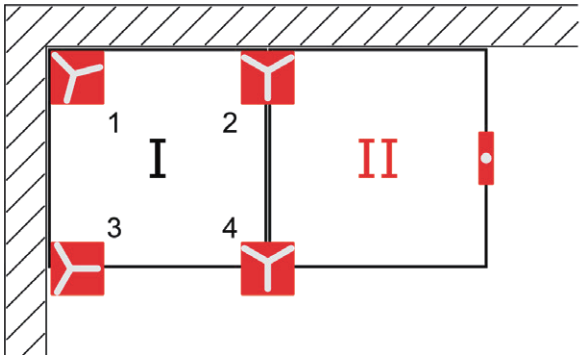
Bottom edge of AluDEK panel frame = room height - 10 cm

Set-up procedure

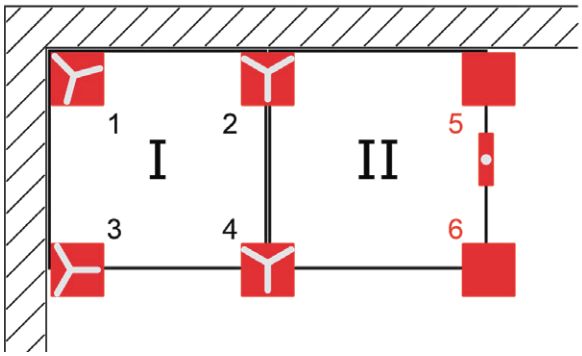


Alternatively - repetition phase, row across

7.1.) In the next step, use prop number 4 for the second formwork panel to prop underneath panel I.

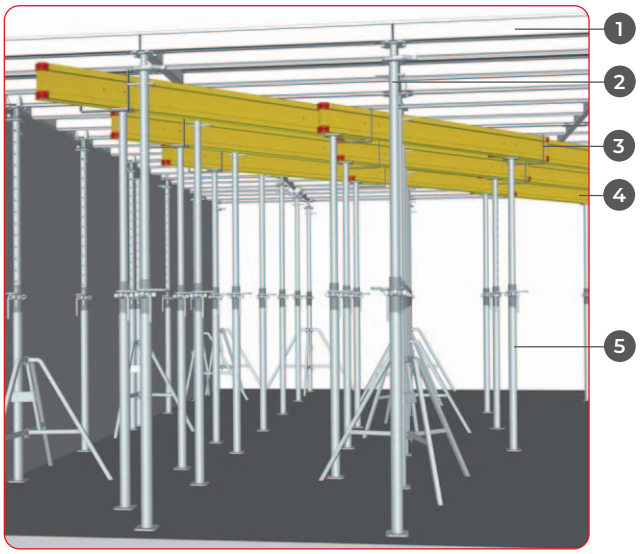


7.2.) This prop is held upright by one person. Panel II is hooked into the heads, swung up and lifted into position beside the first panel with the assembly bar.



7.3.) Now props 5 and 6 can be set in position. Repeat these steps along the row.

Slab thicknesses up to 50 cm (Not permitted in Germany)



Additional propping

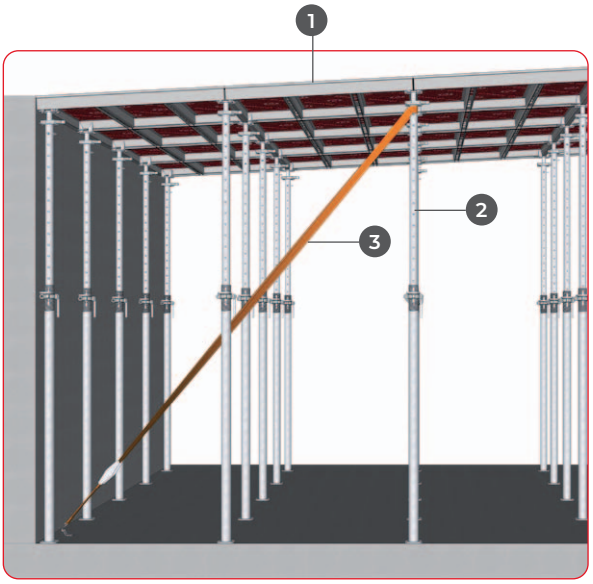
With appropriate propping, the AluDEK panels can be used to form concrete slabs up to 50 cm thick.

H20 suspension brackets for AluDEK have to be hooked into the function profiles and H20 beams slotted in at an angle of 45° to the panel grid. These beams then have to be propped with 20 kN props spaced 2.25 m apart.

By turning the adjusting nuts, extend the props underneath the H20 beams until the H20 beams are just touching the bottom of the edge profiles of the AluDEK panels. Make sure that there is no perceptible lift of the panels in this process.

1 **AluDEK panels**
2 **Props with AluDEK heads**
3 **H20 suspension bracket for AluDEK**
4 **H20 beams**
5 **Prop**

Sloping slabs



1 AluDEK panels
2 Props with AluDEK heads
3 Ratchet strap, tied back at angle of 45 °

Pouring the concrete for a sloping slab invariably produces horizontal forces that have to be transferred by suitable means.

Inclination up to 1°

This corresponds to a slope of approx. 2 cm per metre of length. The horizontal loads equate to approx. 2 % of the vertical loads.
No special measures are needed. However, it is important to ensure that the starting panel is standing securely (see Page 25).

Inclination from 1° to 3°

This corresponds to a slope of approx. 5 cm per metre of length. The horizontal loads equate to approx. 5 % of the vertical loads

Measures to prevent sideways displacement of the formwork are needed. Tying back with ratchet lashing straps set at an angle (approx. 45° to the vertical) is recommended

Example illustrating how to calculate the number of ratchet lashing straps needed:

- 3° slope
- 30 cm concrete thickness = approx. 9.2 kN/m² vertical load
- Resulting horizontal load = 9.2kN/m² x 5% = 0.46 kN/m²

Over the entire area of the slab, therefore, a horizontal load of 0.46 kN per m² of formwork area has to be transferred.

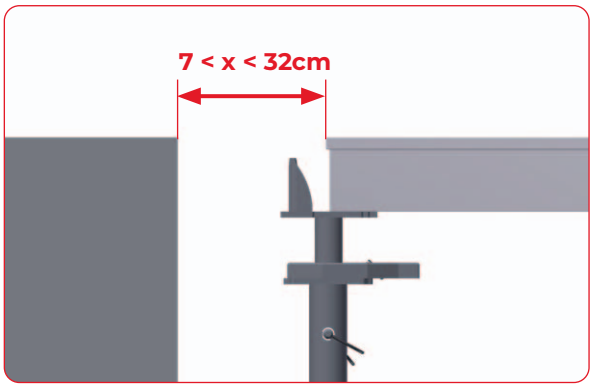
Ratchet lashing strap at 45° with a maximum ratcheted lashing force of 3.0 kN:
- max. horizontal load to be transferred per ratchet lashing strap: approx. 2.0 kN
- 2.0 kN per ratchet lashing strap / 0.46 kN/m² = 4.3 m²/ ratchet lashing strap

1 ratchet lashing strap is needed per 4.3 m² of slab area, or approx. 0.42 ratchet lashing strap per 1.82 m² of panel, which means that 2 out of 5 panels have to be tied back with ratchet lashing straps.

Inclination more than 3°

Project-specific consultation with the planning department at RINGER is required.

5 Closures and infills
Wall junctions

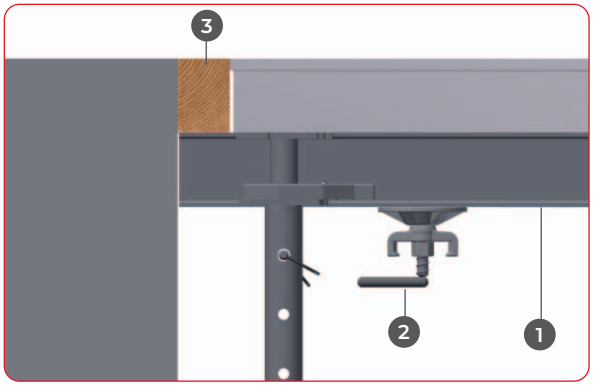


Wall junction in the wall area

Make the infill no smaller than 7 cm in width. This makes it easier to span the infill with a infill beam and a strip of formwork sheeting cut to size.

A gap wider than 32 cm can be reduced in size beforehand with an AL2000 formwork panel (width 25 cm or wider).

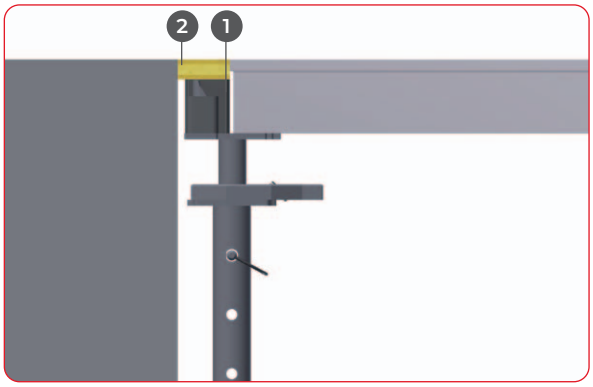
Fall hazard! Do not remove loose sheets or beams!
Before anybody steps onto the surface of the formwork, its stability must be established.



Infills < 7 cm

These gaps can be filled with boards, posts or squared timbers and secured with walers 100 and RS clamps clamped to the function profile.

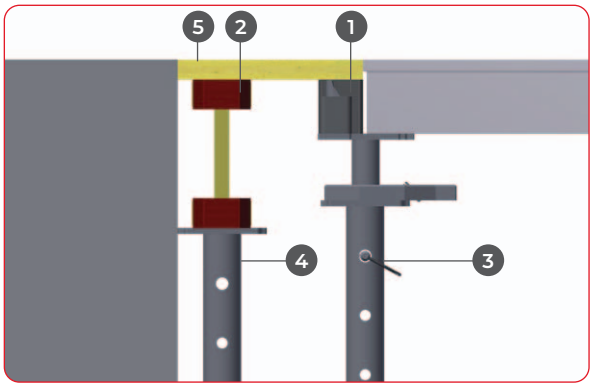
1 Waler 100
2 RS clamp
3 Fitted timber



Infills 7 to 10 cm

Hook infill beam into position and nail down a strip of formwork sheeting cut to size.

1 Infill beam 21+27mm
2 Formwork sheet (21 or 27 mm, as appropriate)

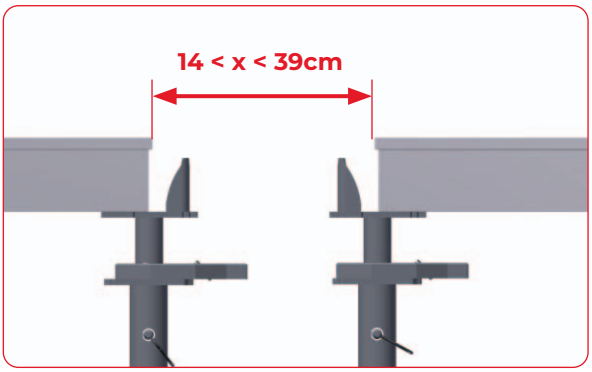


Infills 10 to 50 cm with H20 beams

Hook infill beam into position and span the gap with H20 beams.

1 Infill beam 21+27mm
2 H20 beam
3 Prop with AluDEK head
4 Prop with H20 fork head
5 Formwork sheet

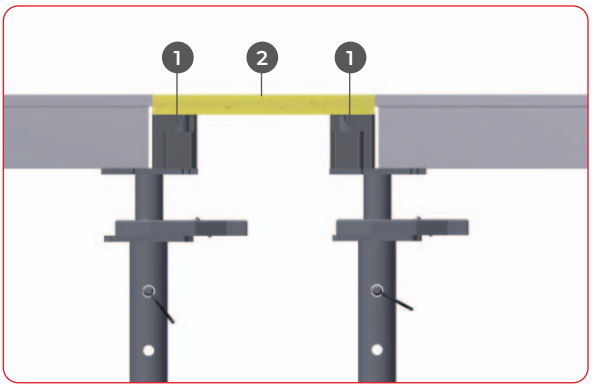
Infill between panels



Infill between AluDEK panels

The gap to be filled should be at least 14 cm wide. This makes it easier to span the infill with infill beams and a strip of formwork sheeting cut to size.

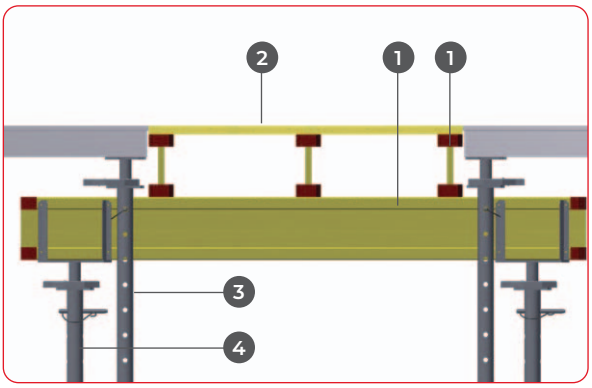
A gap wider than 39 cm can be reduced in size beforehand with an AL2000 formwork panel (width 25 cm or wider).



Infills 14 to 50 cm

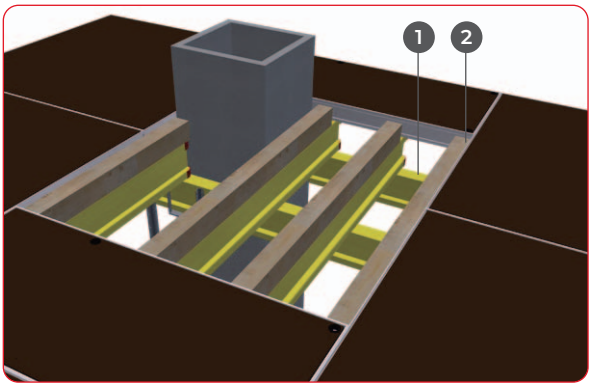
Hook infill beam into position and nail down a strip of formwork sheeting cut to size.

1 Infill beam 21+27mm
2 Formwork sheet (21 or 27 mm, as appropriate)



1 H20 beam
2 Formwork sheet (21 or 27 mm, as appropriate)
3 Props with AluDEK heads
4 Props with H20 fork heads

When using H20 beams, follow the directions in the instructions for assembly and use of the slab formwork!

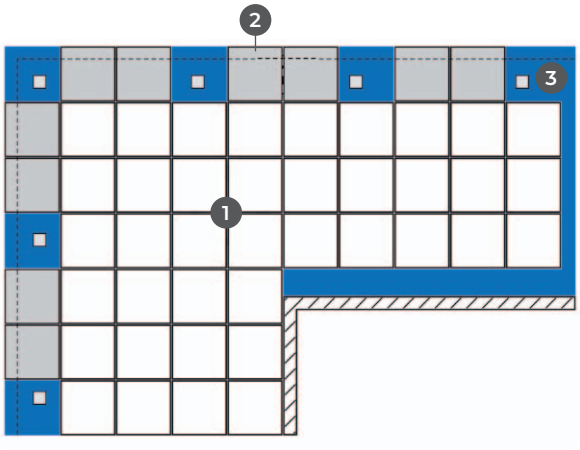


Example for infill at column or chimney

Hook infill beams into position, fill the gap with closure timbers and nail down a strip of formwork sheeting cut to size.

1 H20 beams
2 Closure timber

6 Slab formwork in edge area
Basics



Set-up sequence

1.) Set up the formwork in the normal area, level the formwork and secure it so that it cannot topple

2.) Set up cantilevering formwork panels, level them and secure them against wind lift and against tilt-up (see Page 25)

3.) Close the gaps with infills

4.) Install the fall-protection barrier

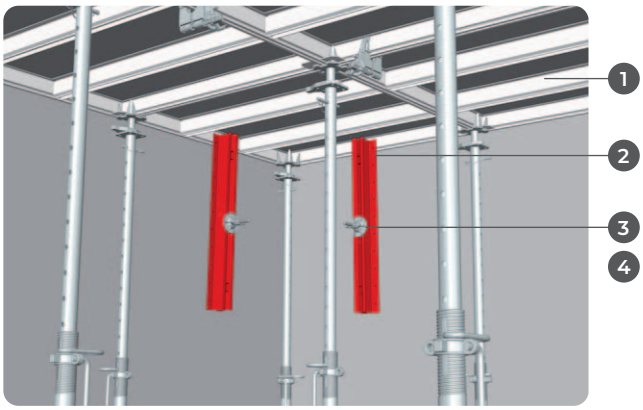
5.) Set up the stop-end formwork

1 Normal area
2 Cantilevering formwork panels
3 Infill area

Fall hazard! Use appropriate personal fall-arrest system until the fall-protection barrier is fully installed.

AL2000 formwork panels are ideal for cantilevering areas of the slab formwork. (See Section 8)

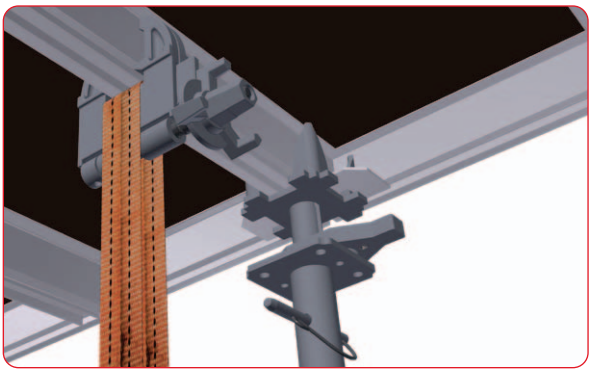
Securing the slab formwork



Establishing the stability of the starting panel

Stability can be established with walers, tie rods and combi plates. Existing tie-rod holes in the wall can be used for this purpose.

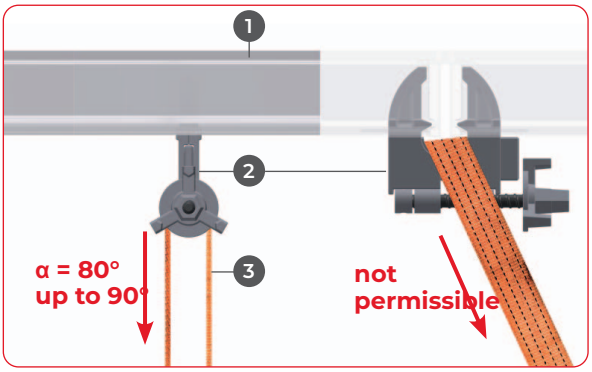
1 Slab formwork panel
2 Waler
3 Tie rod
4 Combi plate



Securing against wind lift

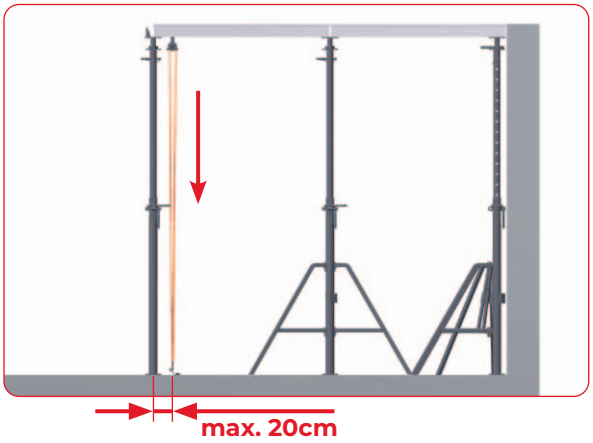
The adjustable clamp short can be used to attach a ratchet lashing strap anywhere along the panel-to-panel joint. The strap has to be looped through the quick-acting clamp.

The maximum permissible tie-back force is 3 kN.
The maximum permissible tie-back angle is 10 ° from the vertical.
The distance from the outermost prop should not be more than 20 cm.



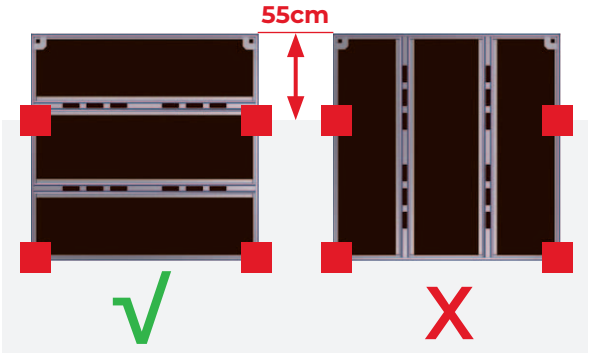
Ratchet lashing strap angle	Lashing force, vertical [kN]	Lashing force, horizontal [kN]
90°	3.00	0
80°	2.80	0.50

1 Slab formwork panel
2 Adjustable clamp short
3 Ratchet lashing strap



To prevent overloading of the panels when the concrete is being poured, the ratchet lashing straps have to be slackened or removed when pouring starts.

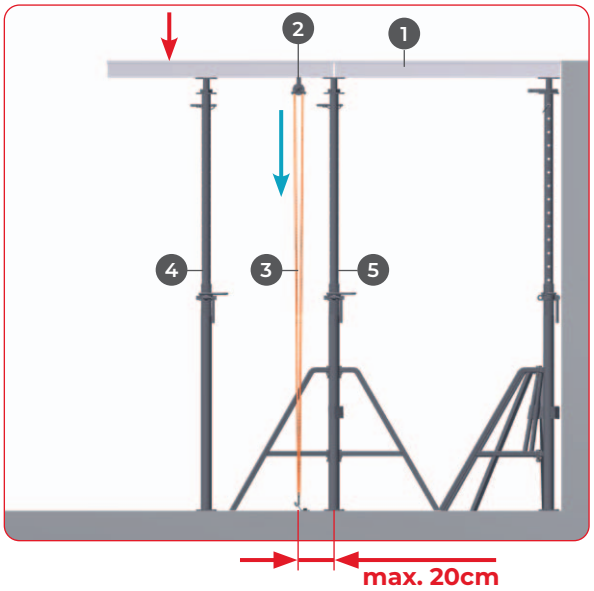
Securing the slab formwork



Cantilevering the formwork

Cantilevers up to 55 cm over the last prop can be made with AluDEK panels (slab thickness up to 30 cm).

The maximum cantilever with AluDEK panels is 55 cm. The function profiles must be parallel with the edge of the building.

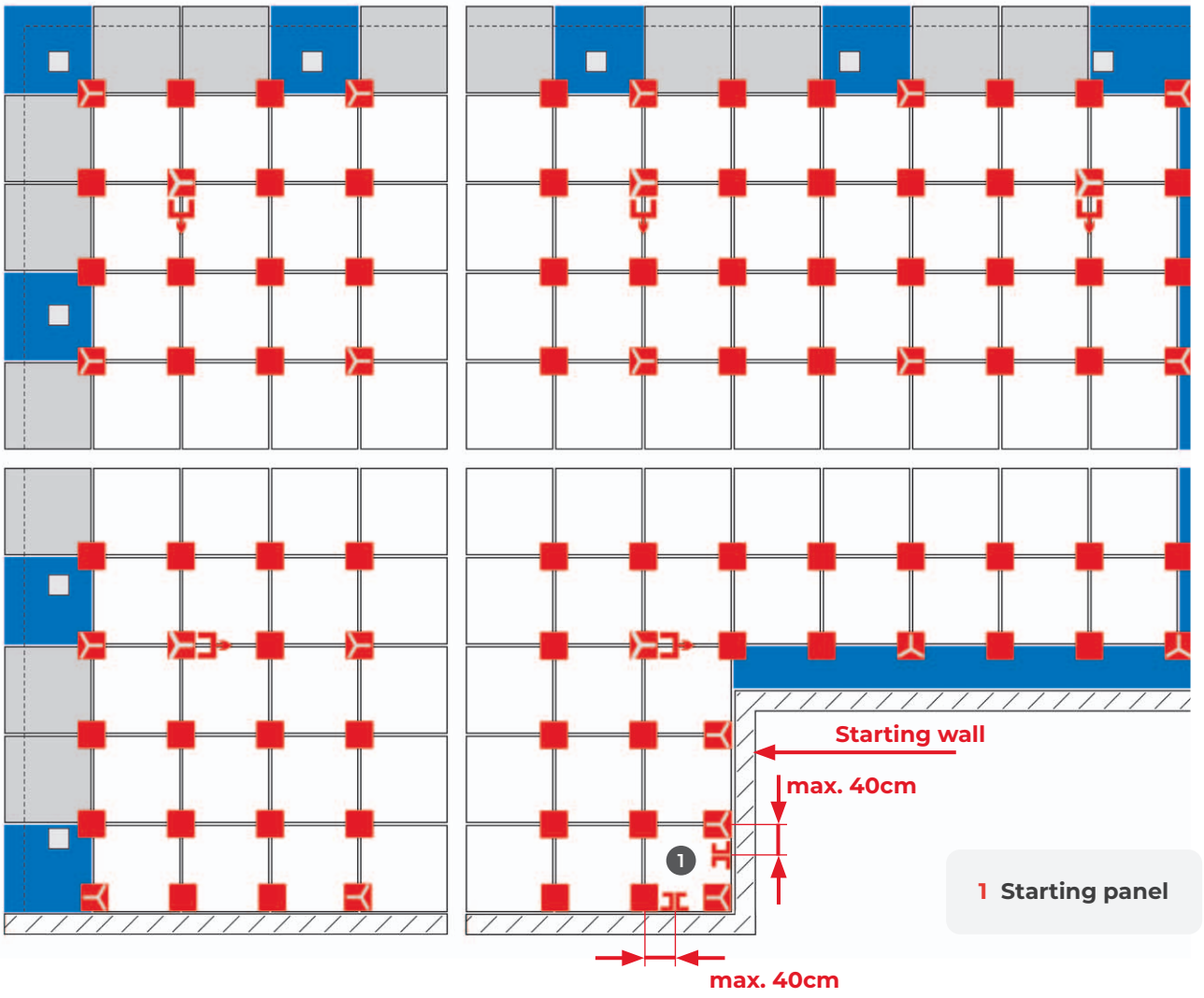


Ratchet lashing straps have to be used to secure the cantilevered panels against tilt-up.

1 AluDEK panel
2 Adjustable clamp short
3 Ratchet lashing strap
4 Prop with AluDEK head, row 1
5 Prop with AluDEK head, row 2

- Max. tie-back force: 3 kN
- Max. deviation from the vertical: 10°
- Max. distance from the second row of props (5): 20 cm

Securing in practice



1 **Starting panel**

Securing for stability

Stabilizing units after max. 5 panels

Tripod after every 3rd panel and for every prop along the starting wall.

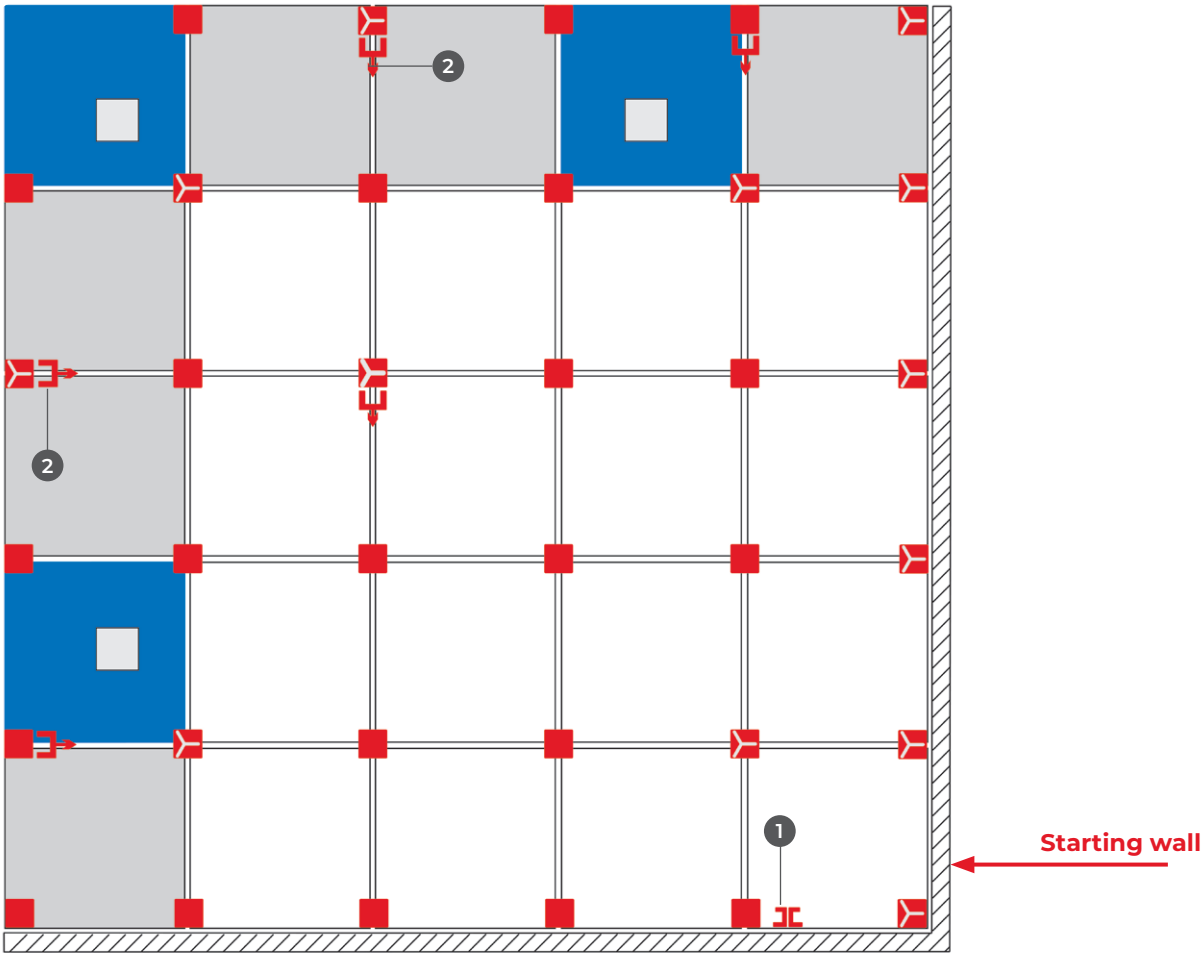
Prop with AluDEK head

Prop with AluDEK head and tripod

Adjustable clamp short, with ratchet lashing strap

Waler as stabiliser

Securing against wind lift



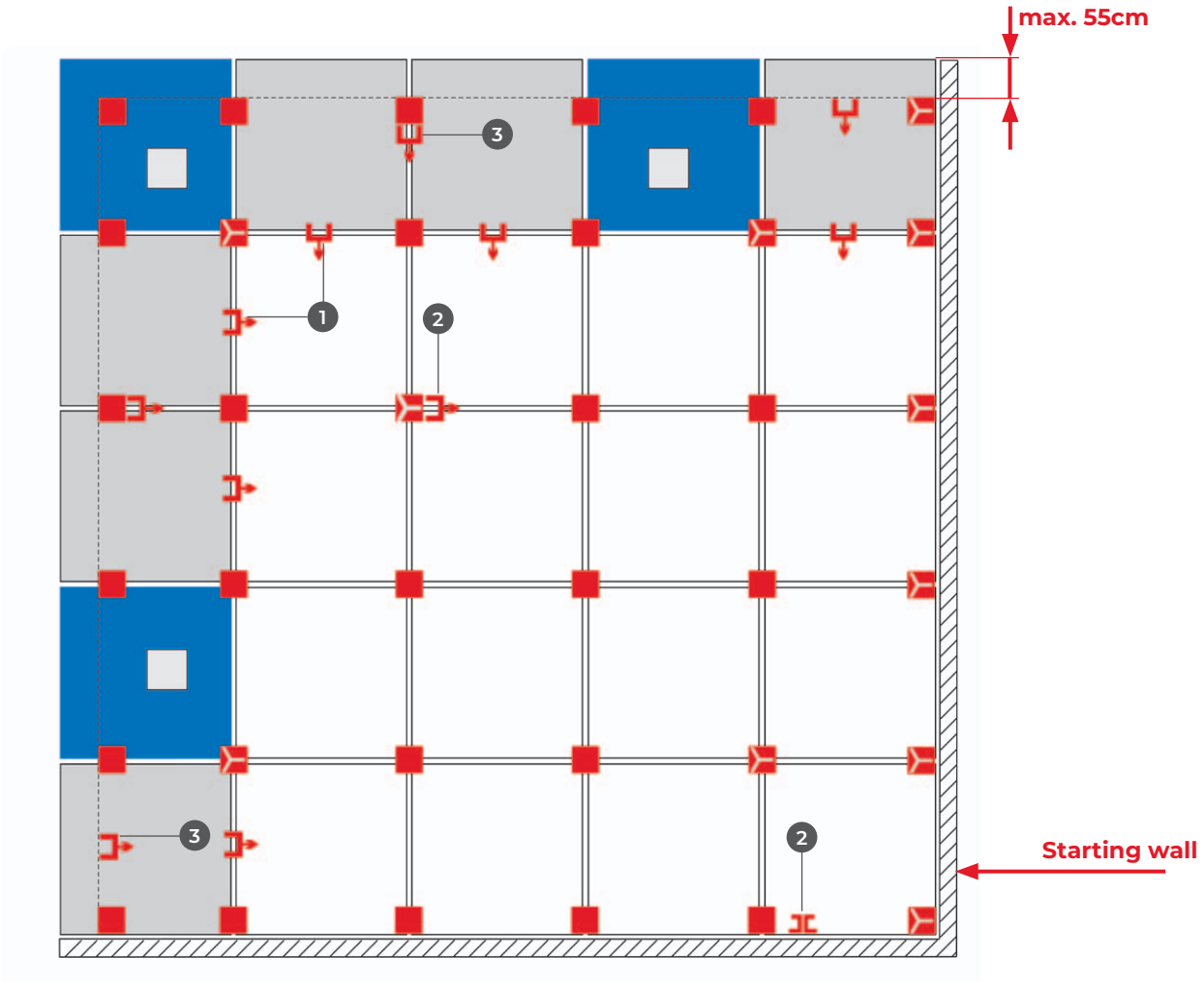
1 **Secured for stability**
2 **Secured against wind lift**

Establishing security against wind lift

Using props with adjustable clamps short and ratchet lashing straps increases transfer of tensile forces.

For details of strap positioning and maximum tie-back forces see Page 25.

Cantilevers

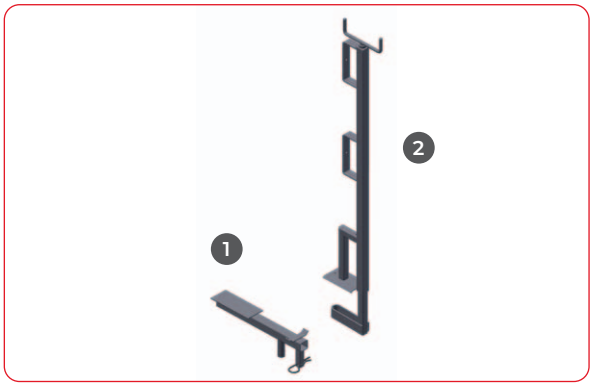


1 Secured against tip-over
2 Secured for stability
3 Secured against wind lift

Maximum cantilever = 55 cm
Function profile must be parallel with building wall

For details of strap positioning and maximum tie-back forces see Page 25.

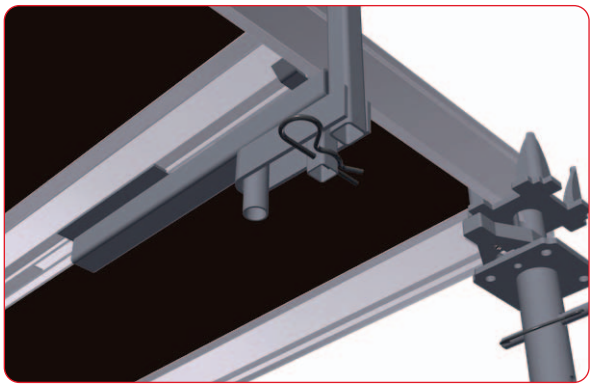
Fall-protection barrier



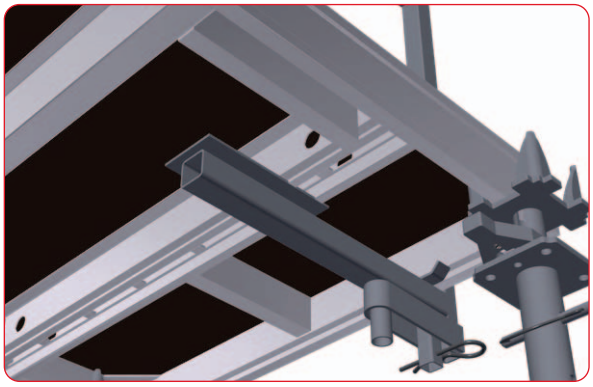
With guardrail clamp and adapter

A convenient and effective fall-protection barrier can be erected using guardrail clamps and the appropriate adapters.

1 Guardrail clamp
2 AluDEK adapter for guardrail clamp

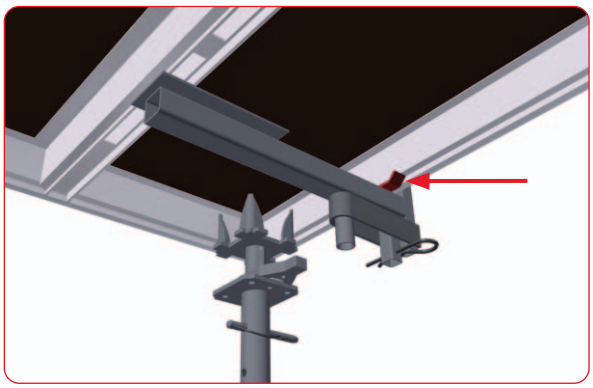


Positioning of the AluDEK adapter in longitudinal direction.



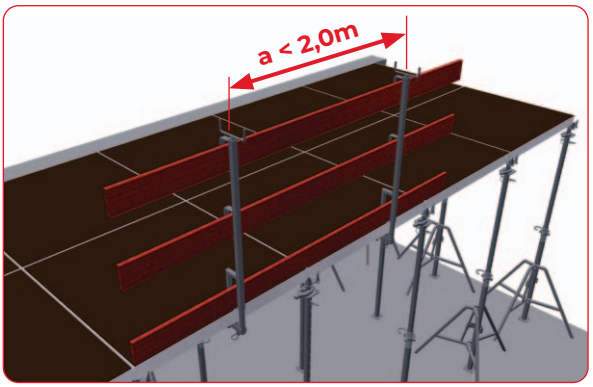
Positioning of the AluDEK adapter in transverse direction:

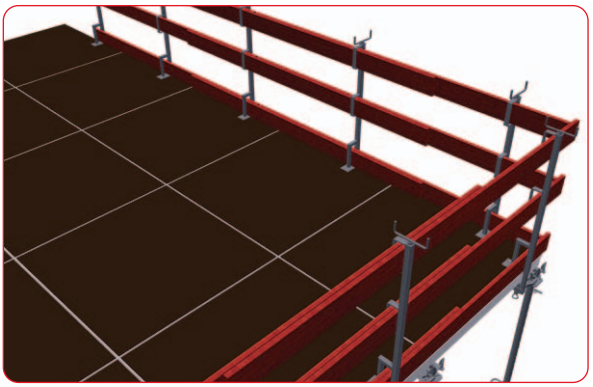
Risk of the formwork panels tipping over! Install guardrail clamps on the formwork panel only when security against tip-over is ensured.



The AluDEK adapter for guardrail clamp must be positively locked behind the edge profile.

Fall-protection barrier





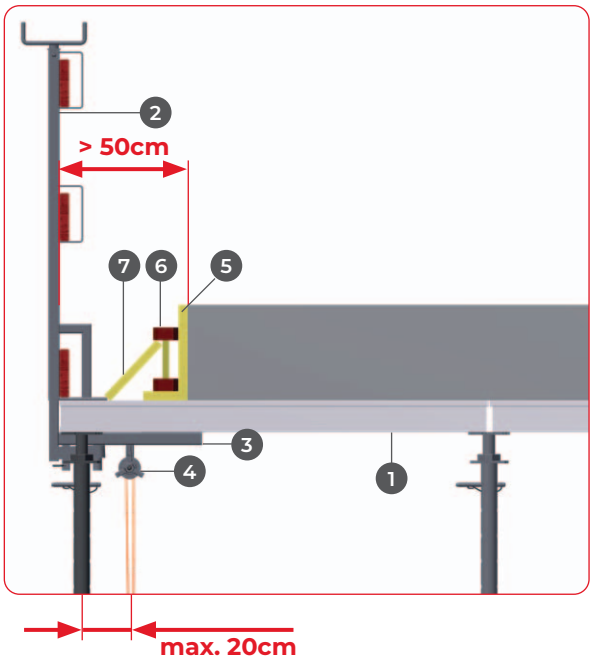
Centre-to-centre spacing of guard-rail clamps

Guardrail boards		Permissible centre-to-centre distance a up to 40 m above ground plane
Height	Width	
15 cm	3 cm	< 2 m

Practical example for erection of a protective railing

Guardrail height > 1 m

Slab stop-end



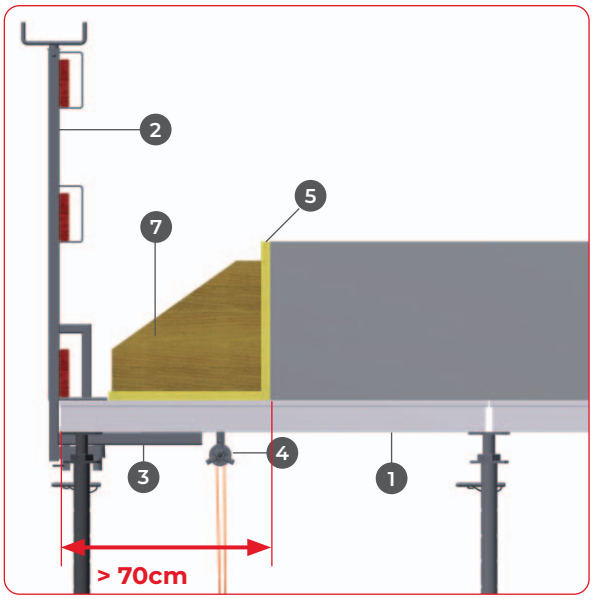
Example of stop-end in edge area

Pour height < 30 cm
Distance from stop-end to guardrail > 50 cm

1 **AluDEK panels**
2 **Guardrail clamp**
3 **AluDEK adapter for guardrail clamp**
4 **Adjustable quick-acting clamp short**
5 **Stop-end**
6 **H20 beam**
7 **Brace**

The guardrail clamp is not suitable for transferring concrete pressure.

When edge protection is installed on the edge fields, the panels have to be secured against lift-out until pouring of the concrete starts. Use ratchet lashing straps and adjustable quick-acting clamps short for tying down in this way.
The specifications are the same as for securing against wind lift (see Page 25).
The ratchet lashing straps have to be slackened or removed when pouring starts.

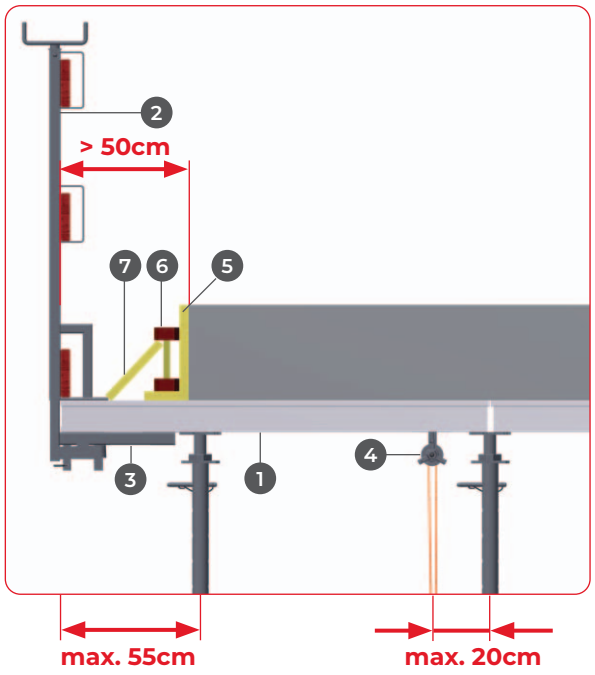


Example of stop-end in edge area

Pour height 30 - 50 cm
Distance from stop-end to guardrail > 70 cm

Pour heights 30-50 cm possible only with additional propping!
Not permitted in Germany!

Slab stop-end



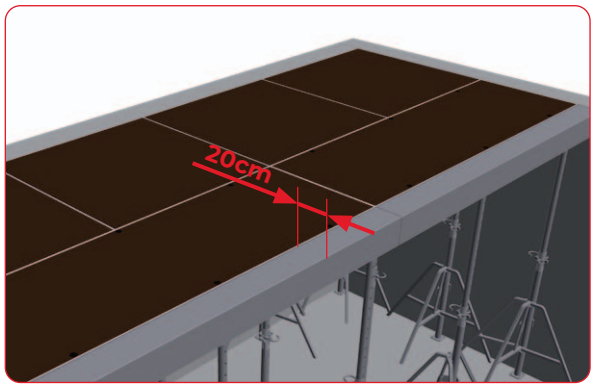
Example of stop-end in edge area with cantilever

Pour height < 30 cm
Distance from stop-end to guardrail > 50 cm
Cantilever max. 55 cm

1 **AluDEK panels**
2 **Guardrail clamp**
3 **AluDEK adapter for guardrail clamp**
4 **Adjustable clamp short**
5 **Stop-end**
6 **H20 beam**
7 **Brace**

The guardrail clamp is not suitable for transferring concrete pressure.

7 Forming drop beams
Basics

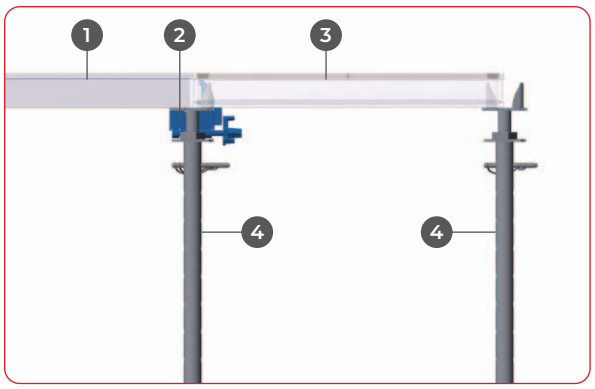


Drop beams with AL2000 panels

The inside and outside corners from the AL2000 wall formwork system can be used to form drop beams.

Set-up

The last slab formwork panel must be an AL2000 panel. This means that the corner panels can be connected by means of adjustable clamps short. Set up the formwork panels in such a way that the drop beam is at least 20 cm clear of the last formwork panel.



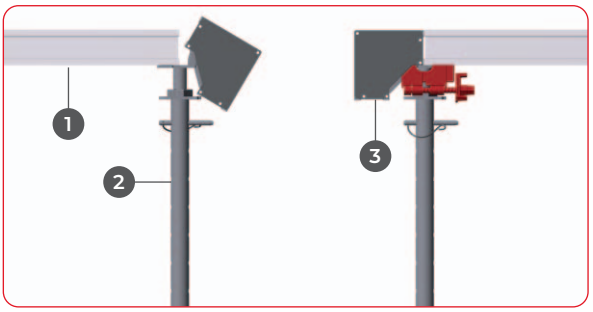
Preparatory work

Before the job of hooking the inside corners into position can start, the AL2000 panel has to be connected to the adjacent AluDEK panel. This prevents opening at the joint. Use adjustable clamps short spaced
< 1.35 m apart for this purpose.

1 **AluDEK** or **AL2000 panel**
2 **Adjustable quick-acting clamp short**
3 **AL2000 panel**
4 **Prop with AluDEK head**

Connect formwork panels in the slab formwork only with adjustable clamps short!

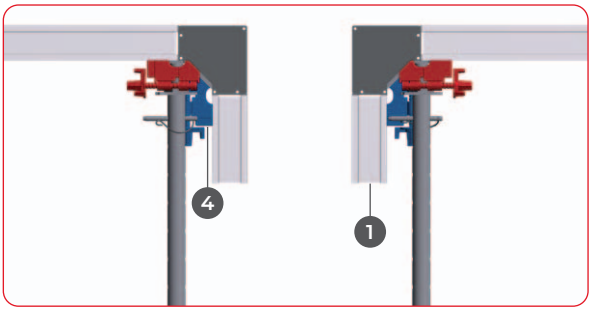
Set-up procedure



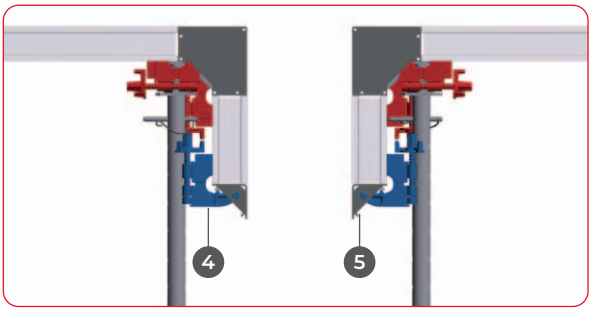
Set-up with fixed drop-beam height

1.) When the preparatory work is finished, hook the System 2000 inside corner into the AluDEK heads and swing it up. Connect the inside corner and the AL2000 panel with adjustable clamps short spaced < 1.35 m apart.

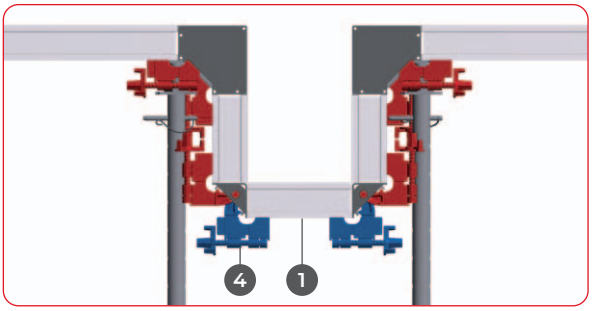
1 AL2000 panel
2 Prop with AluDEK head
3 System 2000 inside corner
4 Adjustable clamp short
5 System 2000 outside corner



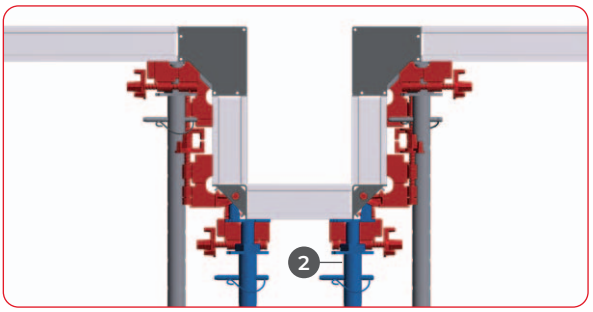
2.) Connect a formwork panel of the width appropriate to the height of the drop beam to the inside corner.



3.) Install the outside corners, using adjustable clamps short.

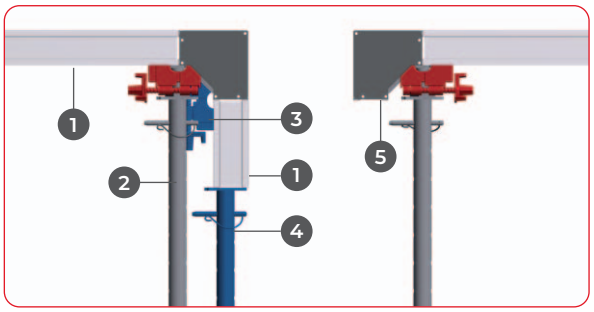


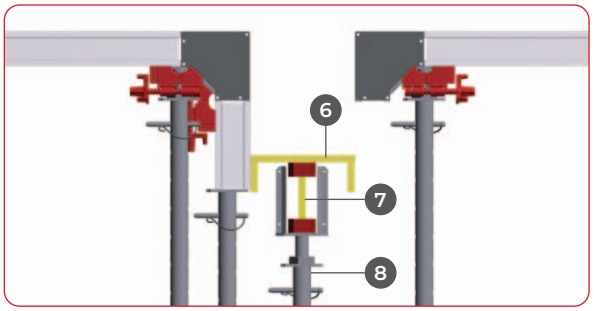
4.) Install another AL2000 formwork panel to close the underside of the drop beam

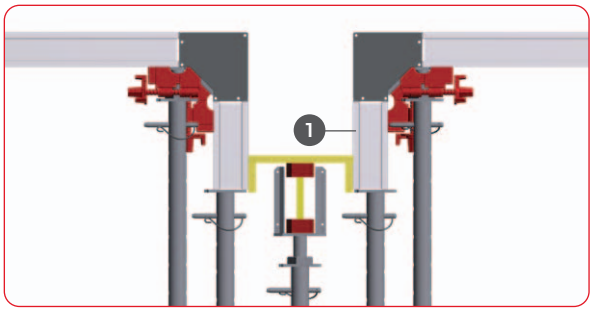


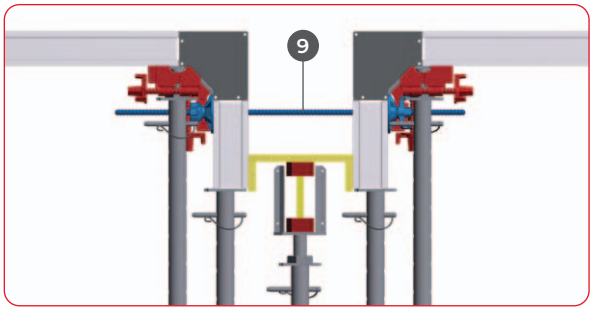
5.) Prop the finished drop-beam formwork appropriately with props and AluDEK heads.

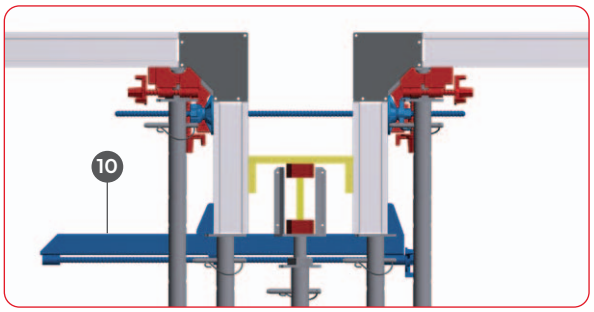
Set-up procedure











Set-up with variable drop-beam height

2.1.) Install a formwork panel on the inside corner and secure with props.

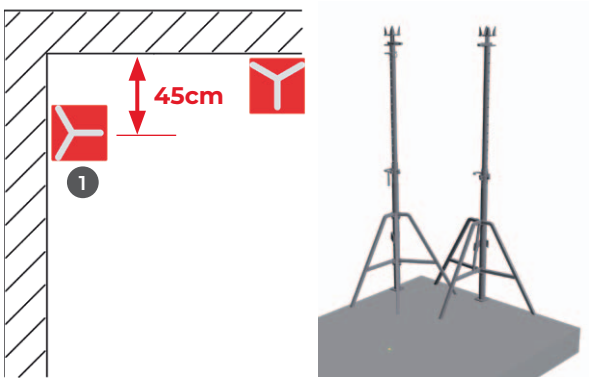
1 AL2000 panel
2 Prop with AluDEK head
3 Adjustable quick-acting clamp short
4 Prop
5 System 2000 inside corner
6 Bottom for drop beam (e.g. shuttering board)
7 H20 beam
8 Prop with H20 beam head
9 Tie rod with combi plates
10 Slab beam clamp

2.2.) Form the bottom for the drop beam and prop it using H20 beams and props.

2.3.) Close the formwork by installing another formwork corner on the opposite side.

2.4.) The formwork can be stiffened as necessary with additional tie rods and combi plates, or with slab beam clamps.

8 Combination with AL2000
Set-up

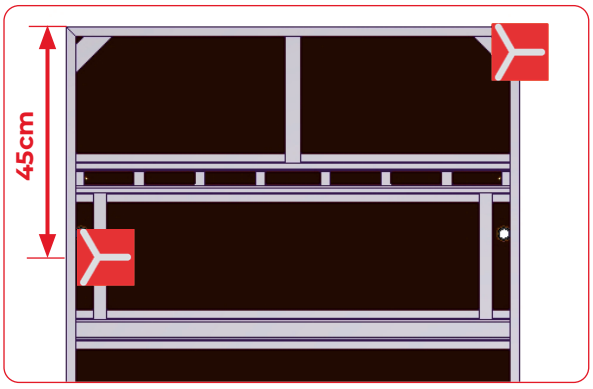


Starting phase in wall and corner area

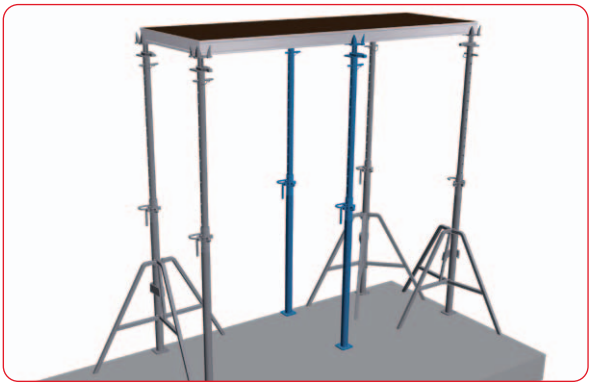
When AL2000 panels are used as slab formwork, in the corner area make sure that the first prop is set 45 cm back from the corner.

1 First prop

Symbol representing prop with AluDEK head and tripod



Incorrect positioning of the prop with AluDEK head can result in damage to the formwork sheeting. Fall hazard!

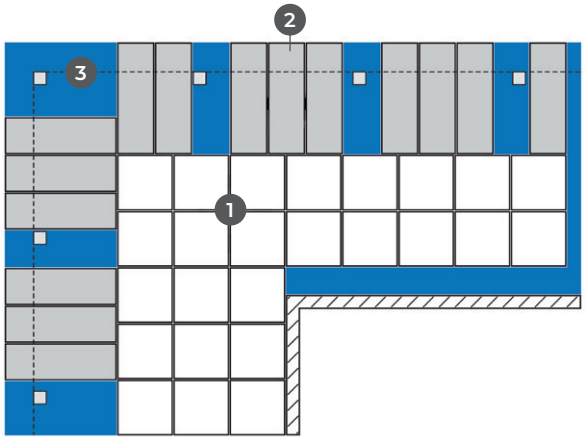


Middle propping

After setting up the formwork panels and adjusting them to the correct height, set up a third row of props in the middle.

The maximum centre-to-centre distance between props is 1.35 m in all directions. Do not exceed this spacing.

Edge area with AL2000



Set-up sequence

1.) Set up the formwork in the normal area, level the formwork and secure it so that it cannot topple

2.) Set up cantilevering formwork panels, level them and secure them against wind lift and against tilt-up

3.) Close the gaps with infills

4.) Install the fall-protection barrier

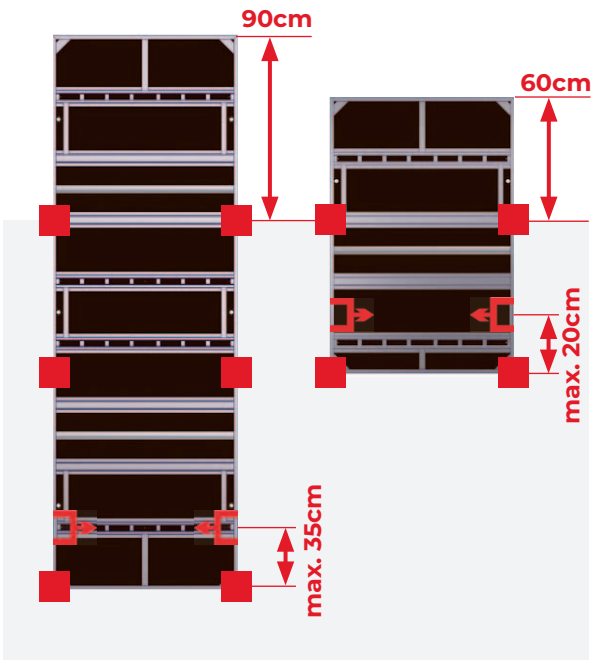
5.) Set up the stop-end formwork

1 Normal area
2 Cantilevering formwork panels
3 Infill area

Tying back with ratchet lashing straps in edge area

The ratchet lashing straps for tying down can be looped into the adjustable clamps short in the usual way. Alternatively, ratchet lashing straps can be looped directly into the function profiles of the AL2000 panels.

The maximum permissible tie-back force is 3 kN. The maximum permissible tie-back angle is 10 ° from the vertical.

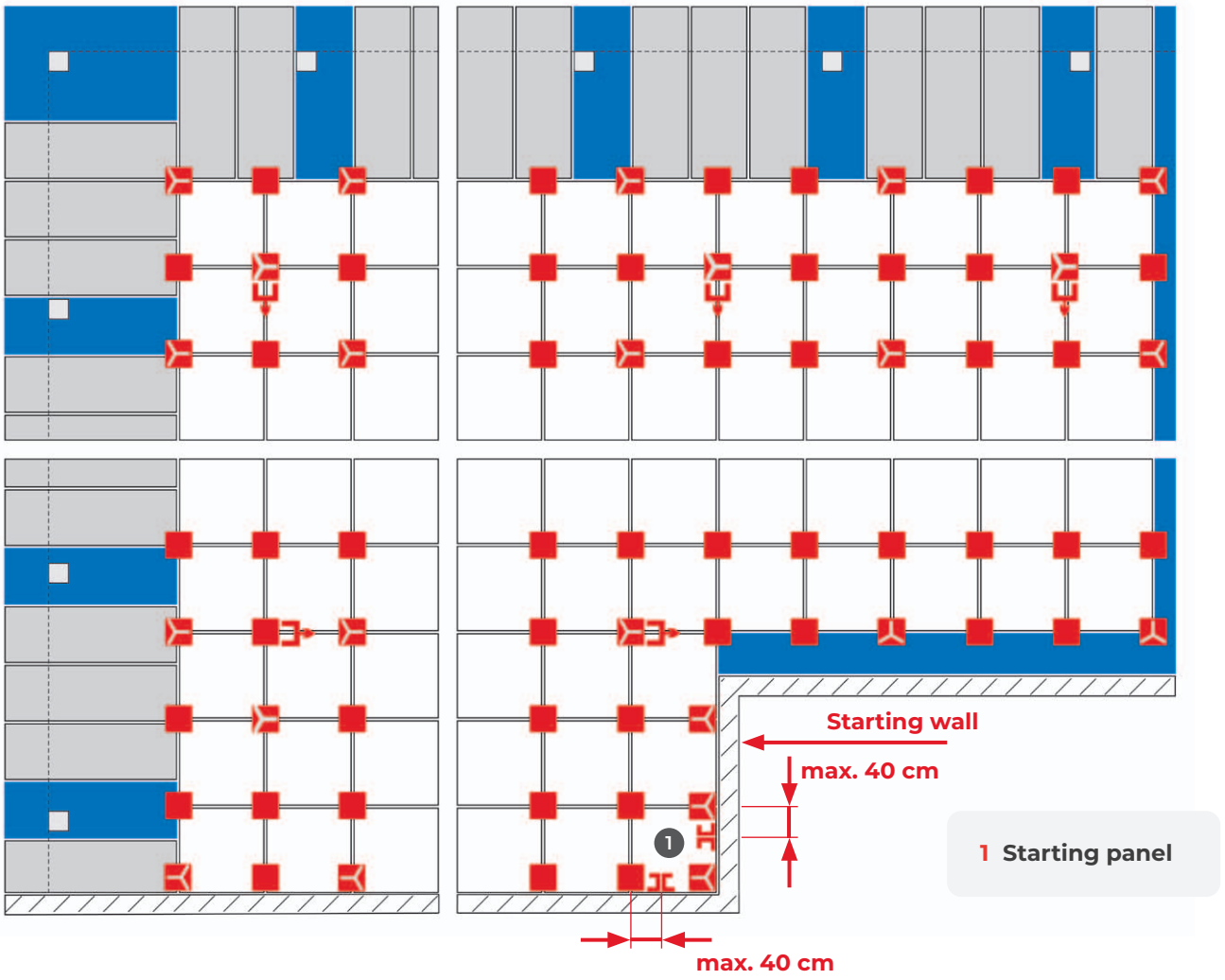


Cantilevering the formwork

Depending on the size of the AL2000 panels used, cantilevers up to 60 or 90 cm past the last row of props can be formed.

Maximum cantilever:
AL2000 panels 270 = max. 90 cm
AL2000 panels 135 = max. 60 cm

Securing in practice with AL2000



1 Starting panel

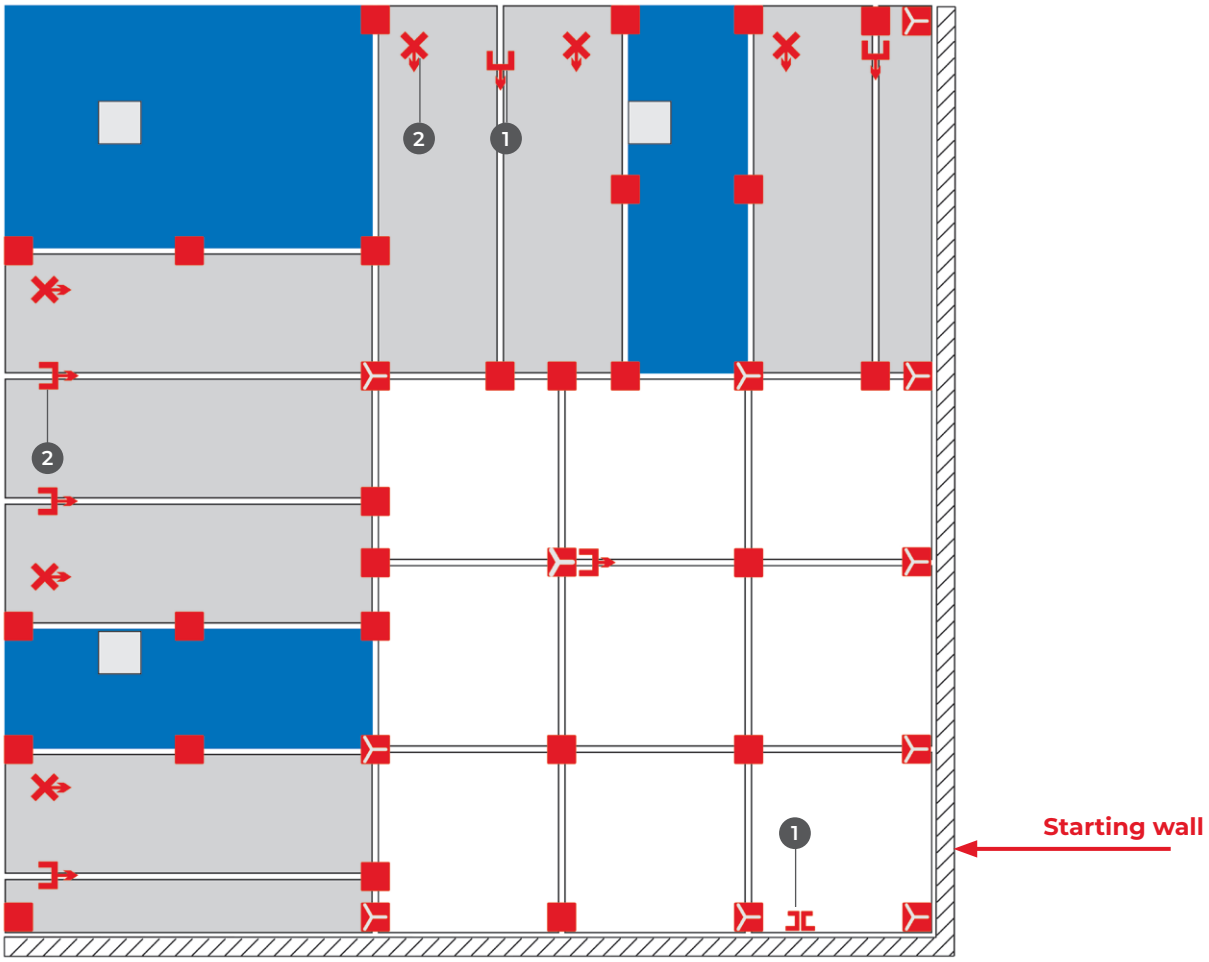
Prop with AluDEK head

Prop with AluDEK head and tripod

Ratchet lashing strap

Adjustable quick-acting clamp short with ratchet lashing strap

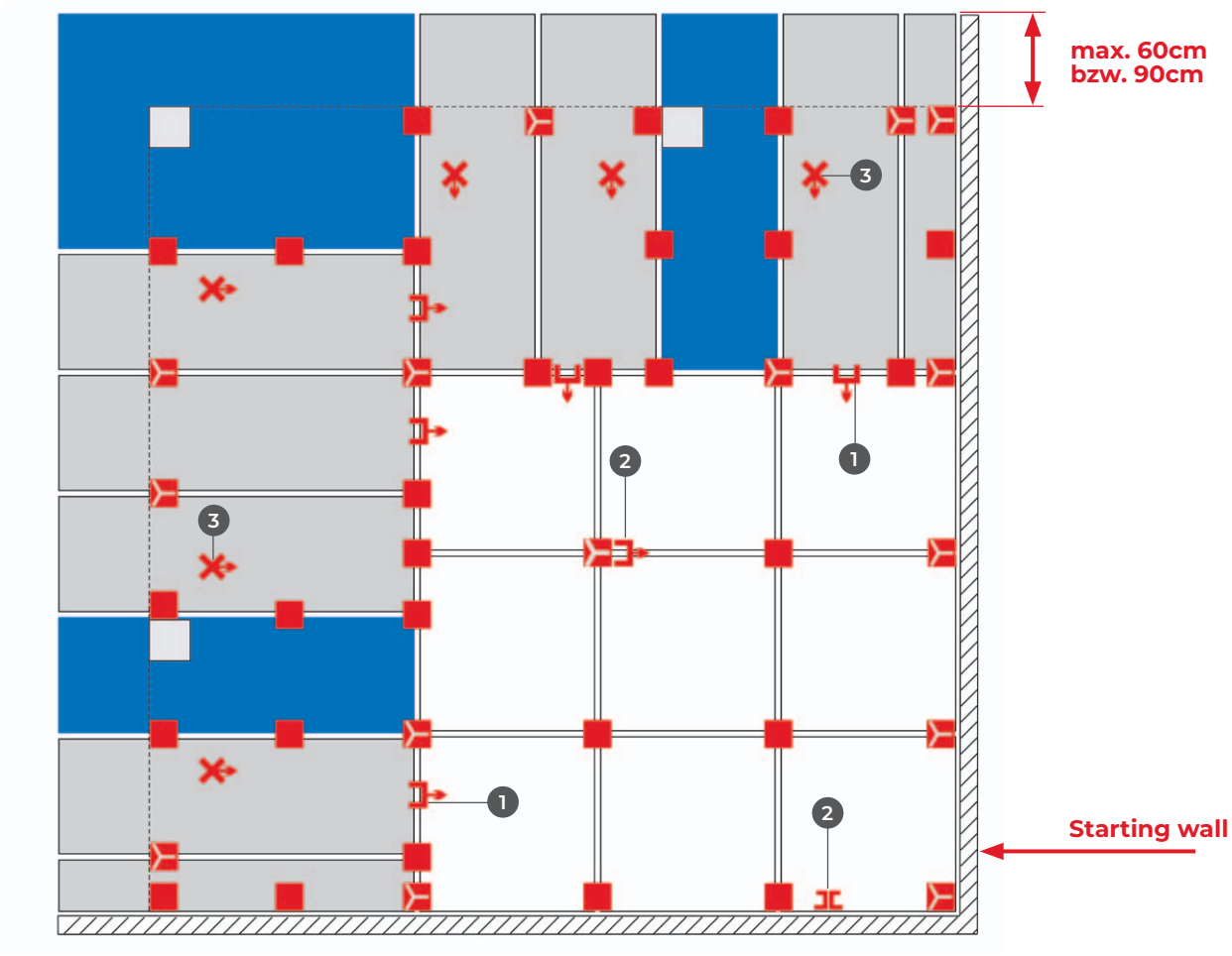
Securing against wind lift, AL2000



1 Secured for stability
2 Secured against wind lift

The basics are the same as when AluDEK panels are used, see Page 25.

Cantilevering AL2000

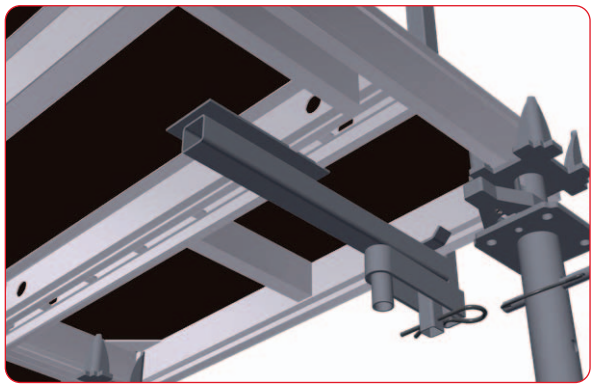


1 Secured against tip-over
2 Secured for stability
3 Secured against wind lift

Maximum cantilever:
AL2000 panels 270 = max. 90 cm
AL2000 panels 135 = max. 60 cm

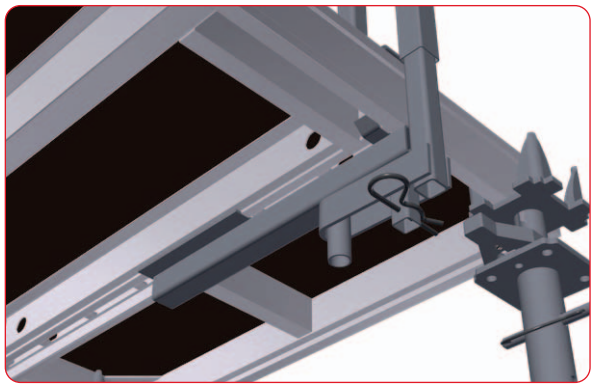
The basics are the same as when AluDEK panels are used, see Page 25.

Fall-protection barrier with AL2000



With AluDEK adapters and guardrail clamps

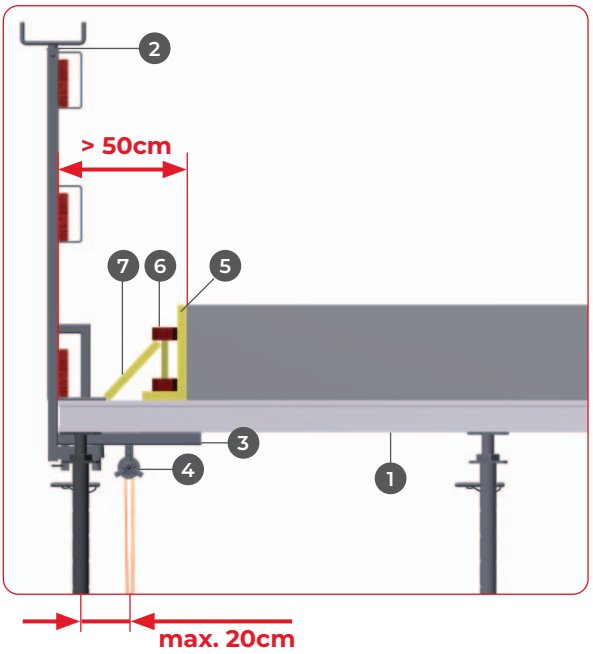
Positioning of the adapter on the long side of the AL2000 formwork panel.



Positioning of the adapter on the short side of the AL2000 formwork panel.

Risk of the formwork panels tipping over! Install guardrail clamps on the formwork panel only when security against tip-over is ensured.

Slab stop-end

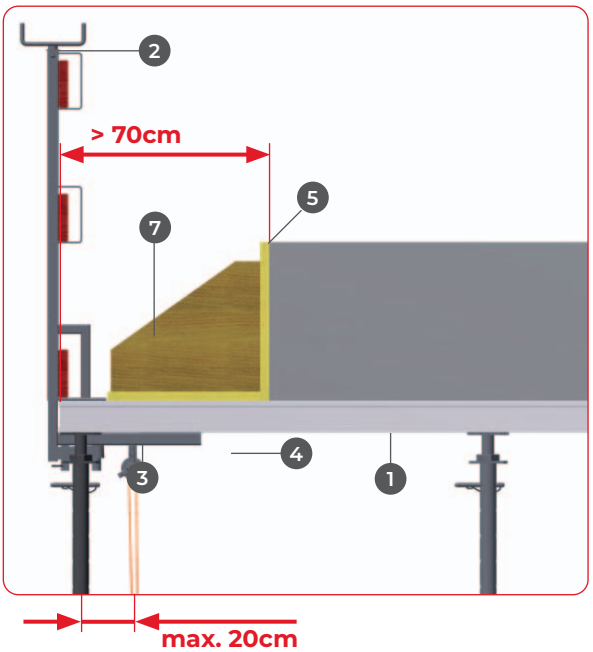


Example of stop-end in edge area

Pour height < 30 cm
Distance from stop-end to guardrail > 50 cm

1 **AL2000 panels**
2 **Guardrail clamp**
3 **AluDEK adapter for guardrail clamp**
4 **Adjustable quick-acting clamp short**
5 **Stop-end**
6 **H20 beam**
7 **Brace**

The guardrail clamp is not suitable for transferring concrete pressure.



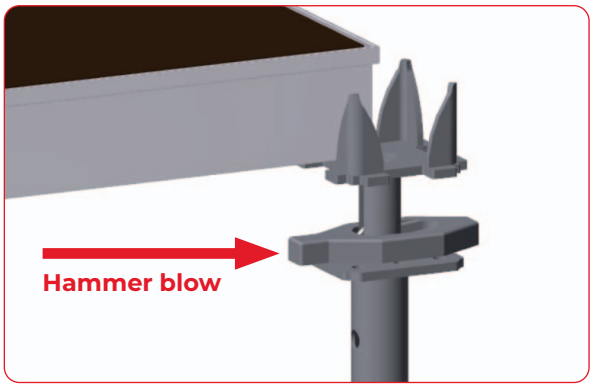
Example of stop-end in edge area

Pour height 30 - 50 cm
Distance from stop-end to guardrail > 70 cm

When edge protection is installed on the edge fields, the panels have to be secured against lift-out until pouring of the concrete starts. Use ratchet lashing straps and adjustable clamps short for tying down in this way. The specifications are the same as for securing against wind lift (see Page 25).
The ratchet lashing straps have to be slackened or removed when pouring starts.

In Germany, only AL2000 panels are permitted to be used for pour heights 30 - 50cm.

9 Stripping and cleaning the formwork



Stripping procedure

1.) Use a hammer to knock out the lowering wedge in the AluDEK head

2.) Start stripping the formwork at the infill area, because this helps avoid unnecessary damage to the formwork panels.

3.) The sequence for removing the formwork panels and props is the reverse of the set-up sequence, or starting from the middle of the room.

Before lowering the AluDEK heads, check that the props are secured by tripods.

Cleaning

Directly after stripping out, clean the formwork with high-pressure spray cleaners or concrete scrapers.

Do not use chemical cleaning agents. Do not use pointed or sharp instruments (wire brush, rotary abrasive wheels, etc.).

Immediately after the concrete has been poured, use water to wash fresh-concrete residues off the underside of the formwork.

Damage

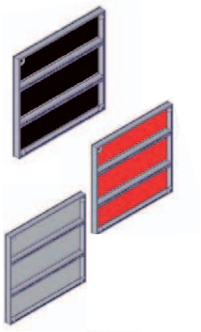
Repairs to RINGER formwork panels and accessories must be carried out by RINGER or a facility authorised by RINGER to carry out repair work.

Release agents

Before the concrete is poured, apply RINGER release agent with a sprayer for release agent. It is important to apply a thin, even coating over the entire surface.

10 Overview
System parts

Art. No.		Item	Weight [kg]	Unit
System Parts				
F322R135		AluDEK Panel 135/135 with Phenolic-ply	29.90	pc.
E322R135		AluDEK Panel 135/135 with Plastic plywood	30.00	pc.
V322R135	*	AluDEK Panel 135/135 Alkus	32.00	pc.
32001		Quick Lowering Head for AluDEK galvanized	3.00	pc.
32002		Assembly Bar for AluDEK Aluminium	6.00	pc.
32006		Infill Beam 135 for AluDEK 21 + 27mm galvanized	8.60	pc.
32007		Infill Beam 90 for AluDEK 21 + 27mm galvanized	5.50	pc.
32030		Adjustable Clamp short for AluDEK galvanized	3.30	pc.
32020		AluDEK Adaptor for Guardrail Clamp galvanized	2.50	pc.
32070		H20 Suspension Bracket for AluDEK galvanized	1.40	pc.
32060		Stacking Frame AluDEK for pallet for alu formwork galvanized	10.50	pc.
408V90		Pallet for Alu Formwork galvanized	80.00	pc.
408V91		Stirrup for Pallet galvanized	4.20	pc.



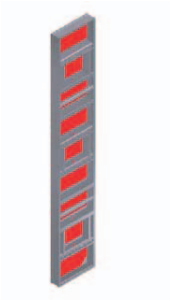






Release Agent and Spraying Device				
450 1	*	Release Agent (canister 25 litre)	22.50	CSTR
450 11	*	Release Agent (barrel 200 litre) incl. spigot set	180.00	Bbl
450 3	*	Special Release Agent for exposed concrete (25 liter canister)	22.50	CSTR
408 8	*	Spraying Device with flat jet nozzle set (5 Liter content)	5.00	pc.


Art. Nr.	Bezeichnung	Gewicht [kg]	Einheit
AL2000 270 Plastic Coated Plywood			
E431 90	AL2000 Panel 270/90 with Plastic-ply	54.00	pc.
E431 60	AL2000 Panel 270/60 with Plastic-ply	42.00	pc.
E431 50	AL2000 Panel 270/50 with Plastic-ply	37.00	pc.
E431 45	AL2000 Panel 270/45 with Plastic-ply	34.00	pc.
E431 40	AL2000 Panel 270/40 with Plastic-ply	32.00	pc.
E431 30	AL2000 Panel 270/30 with Plastic-ply	26.00	pc.
E431 25	AL2000 Panel 270/25 with Plastic-ply	24.00	pc.
AL2000 135 Plastic Coated Plywood			
E432 90	AL2000 Panel 135/90 with Plastic-ply	28.50	pc.
E432 60	AL2000 Panel 135/60 with Plastic-ply	21.00	pc.
E432 50	AL2000 Panel 135/50 with Plastic-ply	18.50	pc.
E432 45	AL2000 Panel 135/45 with Plastic-ply	16.50	pc.
E432 40	AL2000 Panel 135/40 with Plastic-ply	15.00	pc.
E432 30	AL2000 Panel 135/30 with Plastic-ply	12.00	pc.
E432 25	AL2000 Panel 135/25 with Plastic-ply	11.00	pc.
EU Props hot-dip galvanized EN 1065 20 kN			
200V260	Prop "EU" size 1 / 1,51 - 2,50m galvanized EN 1065 class BD 25	14.50	pc.
200V300	Prop "EU" size 2 / 1,71 - 3,00m galvanized EN 1065 class BD 30	15.50	pc.
200V35D	Prop "EU" size 3 / 1,98 - 3,50m galvanized EN 1065 class CD 35	20.50	pc.
200V40D	Prop "EU" size 4 / 2,25 - 4,00m galvanized EN 1065 class CD 40	22.50	pc.
200V55D	Prop "EU" Size 5 / 3,05 - 5,50m galvanized EN 1065 class CD55	35.00	pc.
290V59	Tripod EU for Props (foldable) galvanized	10.60	pc.
Connecting Parts			
703V152	Waler 150 galvanized	18.66	pc.
703V151	Waler 100 galvanized	12.80	pc.
704V5	RS-Clamp galvanized	1.60	pc.



* Purchase-only article, rental not possible!

LET'S BUILD

20221212HPO

RINGER GmbH

A-4844 Regau, Austria
Roemerweg 9
+43 7672 72711 - 0
office@ringer.at
www.ringer.at

RINGER
SCAFFOLDING + FORMWORK