



Climbing Scaffold KLK 230

Technical Instruction Manual



Product Characteristics

The climbing bracket KLK 230 is the main part of a climbing system which can be equipped with a secondary platform (suspended below). The KLK system can be used as a working platform as well as a support platform for wall formwork.

When using the climbing scaffold with a slide carriage, the formwork can be moved by 70 cm for cleaning or for work at the rebars.

The formwork can be tilted when using the formwork clamping fixture.

When used in combination with the slide carriage, wall formwork and climbing scaffold can be transported as an unit.

Abstract of the approval No. Z-21.6-1751 of the MEVA climbing cone KK15/M24 (February 7th, 2005):

The anchoring must be planned by an engineer - with calculations and drawings, e.g. formwork drawings that observe the loads that must be transferred. Refer to page KLK-44 and KLK-45 for the records for the construction site.

The KLK 230 is an efficient and economical climbing system, which allows for a high degree of adaptation to different building structures.

The KLK climbing system typically supports double-sided wall formwork which is placed in perpendicular position. The KLK climbing system is statically approved. The anchoring is proved for the indicated loads. Special cases require a separate structural analysis. When using the climbing scaffold, make sure to observe the German DIN 4421 (8/82) - Falsework and the German DIN 4420, Part 1 (12/90) Service and working platforms - as well as any state and local codes and regulations.

During transport neither personnel nor material are allowed to be on the platforms. Only during assembly when moving the first platform and during disassembly when moving the last platform, as long as personal protective equipment is used and all safety regulations are observed.

The 4-rope crane slings must always be attached to the integrated crane eyes of the climbing scaffold KLK 230. For transport purposes it is recommend to use the transport spreader KLK.

Personell is not allowed to stay or move below the climbing scaffold.

Abbreviations, dimensions, decimal numbers, figures and tables

The abbreviation KLK is used for the Climbing Scaffold KLK.

DIN means Deutsche Industrie-Norm (German Industrial Standard). E DIN (E = Entwurf / draft) means that the DIN is in draft status and not yet approved of. The DIBt (Deutsches Institut für Bautechnik) is the German institute that, among other construction-related tasks, drafts technical rules, prepares technical decisions and grants national and European technical approvals. Any further abbreviations are explained where they are used the first time.

Measurements: This manual uses the metric system and thus m (for metre), cm (for centimetre) and mm (for millimetre). Dimensions without a unit are in cm. Decimal numbers: Note that the comma is used in decimal numbers, e.g. 1,5 means 1 and a half.

The page numbers in this manual start with KLK. The figures and tables are numbered per page. Depending on its product abbreviation, a cross reference in the text refers to a page, table or figure in this or in another manual.



Please observe

This Technical Instruction Manual contains information, instructions and hints describing how to use the MEVA equipment on the construction site in a proper, quick and economic way. Most examples shown are standard applications that will occur in practice most often. For more complicated or special applications not covered in this manual, please contact the MEVA experts for advice.

When using our products the federal, state and local codes and regulations must be observed. Many of the details shown do not illustrate the climbing system in the ready-to-pour condition as to the aforementioned safety regulations. Please adhere to this manual when applying the equipment described here. Deviations require engineering calculations and analysis to guarantee safety.

Assembly instructions (created by site management) are intended to minimise site-specific risks and must contain the following details:

- The order in which all working steps including assembly and disassembly must be carried out
- The weight of the panels and other system parts
- The type and number of ties and braces as well as the distance between them
- The location, number and dimensions of working scaffolds including working area and protection against falling down
- Pick points for panel transport by crane

Important: Generally, only well maintained material may be used. Damaged parts must be replaced. Apply only original MEVA spare parts for replacement.

Attention: Never wax or oil assembly locks.

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Climbing scaffold KLK 230

The climbing scaffold KLK is a modular system, which allows for a high degree of adaptation to different building structures. The climbing bracket (Fig. 4.1) can be used in different configurations.

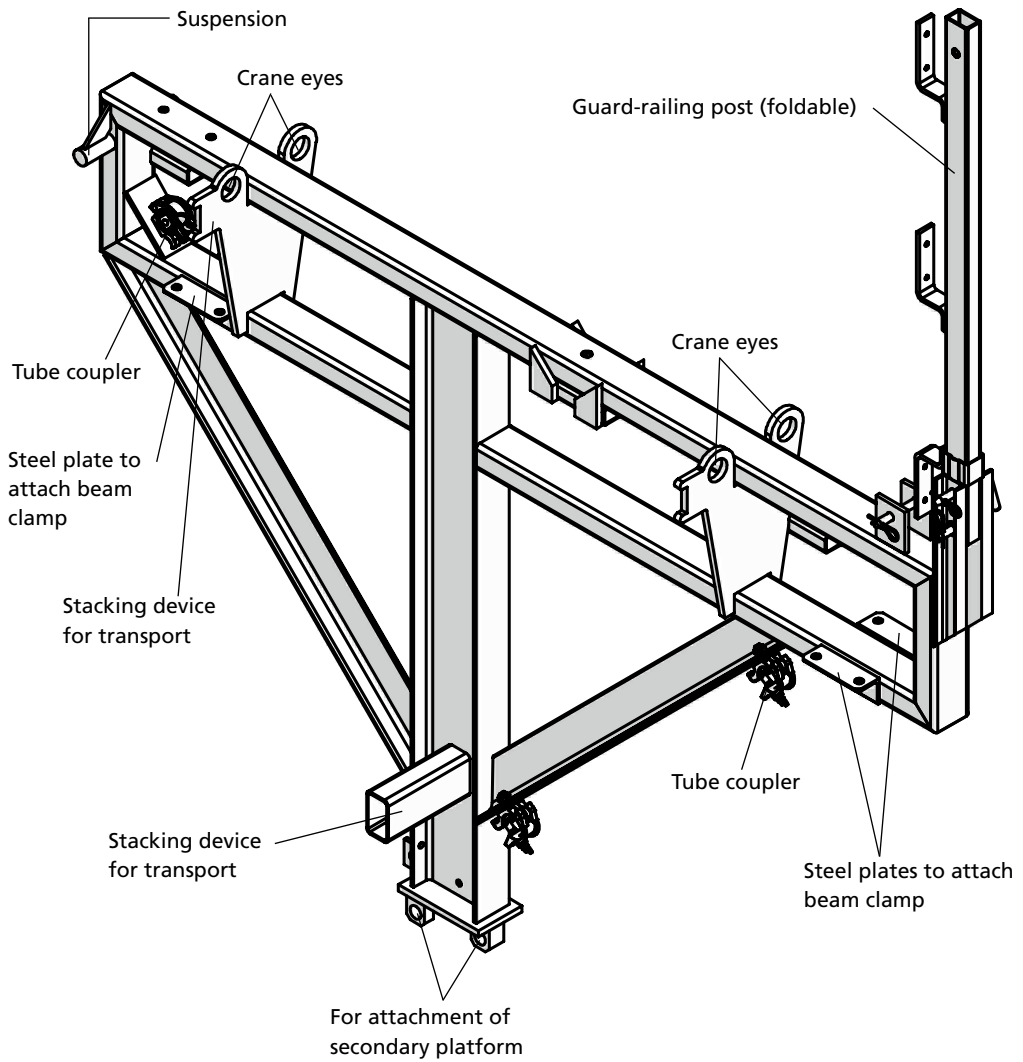


Fig. 4.1

Description	Ref.-No.
Climbing bracket KLK 230.....	29-411-00

Typical applications

All dimensions in cm.
 Dimensions refer to anchor plate 15/120
 Dimensions in parentheses refer to anchor plate 15/170

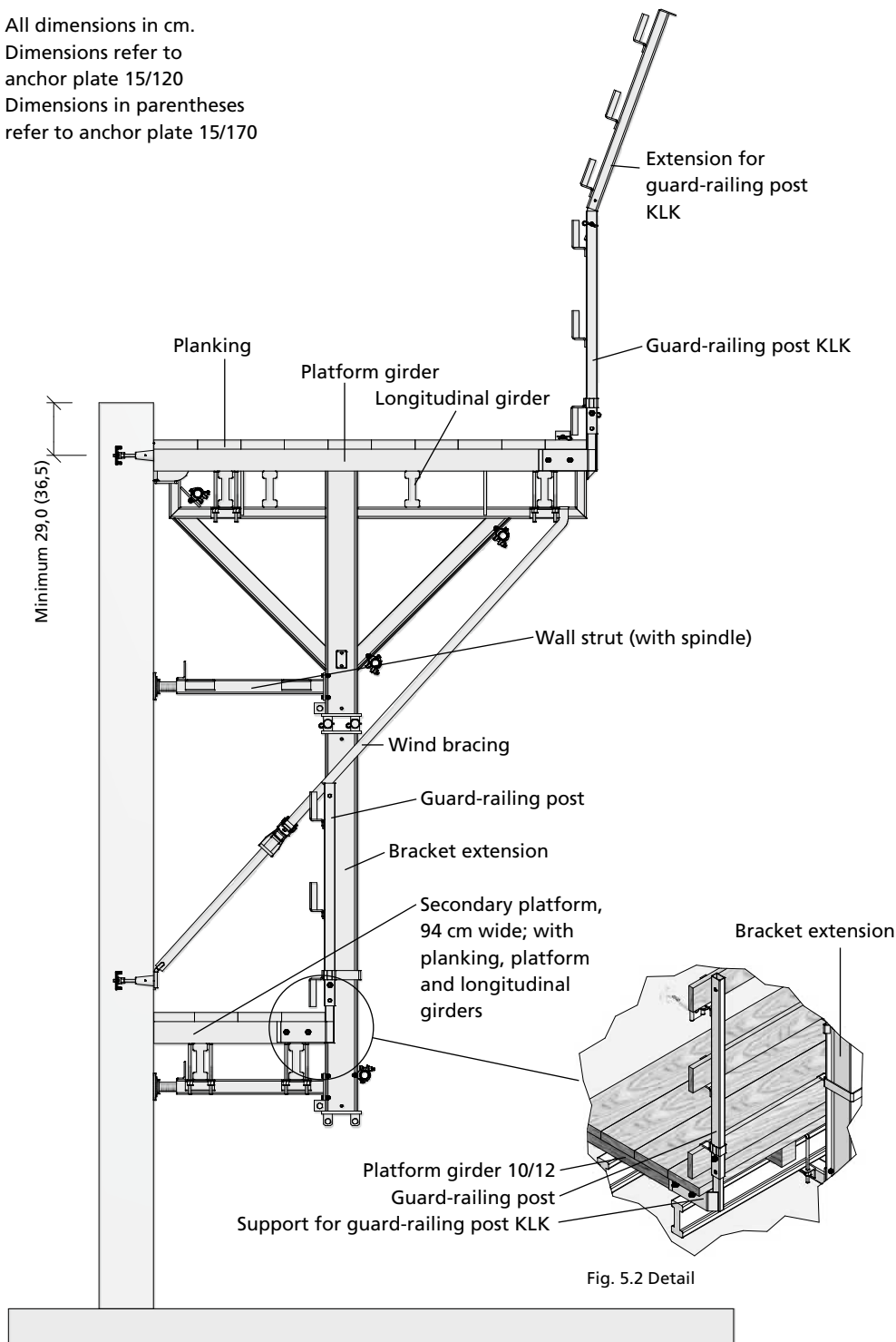


Fig. 5.1

Working scaffold

The climbing bracket KLK 230 can be used to build working platforms with a width of 2.30 m (Fig. 5.1).

In this configuration there is no formwork on the platform. Since the platform is built with single brackets the range of application is extremely flexible. It is easy to adapt the climbing system to the requirements of the building geometry.

When used as working scaffold the maximum load is 600 kg/m² (scaffold group 6).

Fig. 5.2 Detail

Description	Ref. No.
Climbing bracket KLK 230.....	29-411-00
Wall strut (with spindle).....	29-411-30

Typical applications

Climbing formwork with formwork support KLK

By adding a formwork support KLK and a holding device for push-pull props, the working scaffold KLK can be turned into a 2,30 m wide scaffold on which wall formwork panels can be placed. The panels are attached with assembly locks (Fig. 6.1).

Mammut 350 and Mammut wall formwork panels are attached with 2 M-assembly locks at each formwork support while AluStar/StarTec panels are attached with either 2 Uni-assembly locks or with formwork adapter AS/ST and 2 M-assembly locks.

Note

This type of application requires the formwork and KLK platform to be lifted and transported separately.

All dimensions in cm.
Dimensions refer to anchor plate 15/120
Dimensions in parentheses refer to anchor plate 15/170

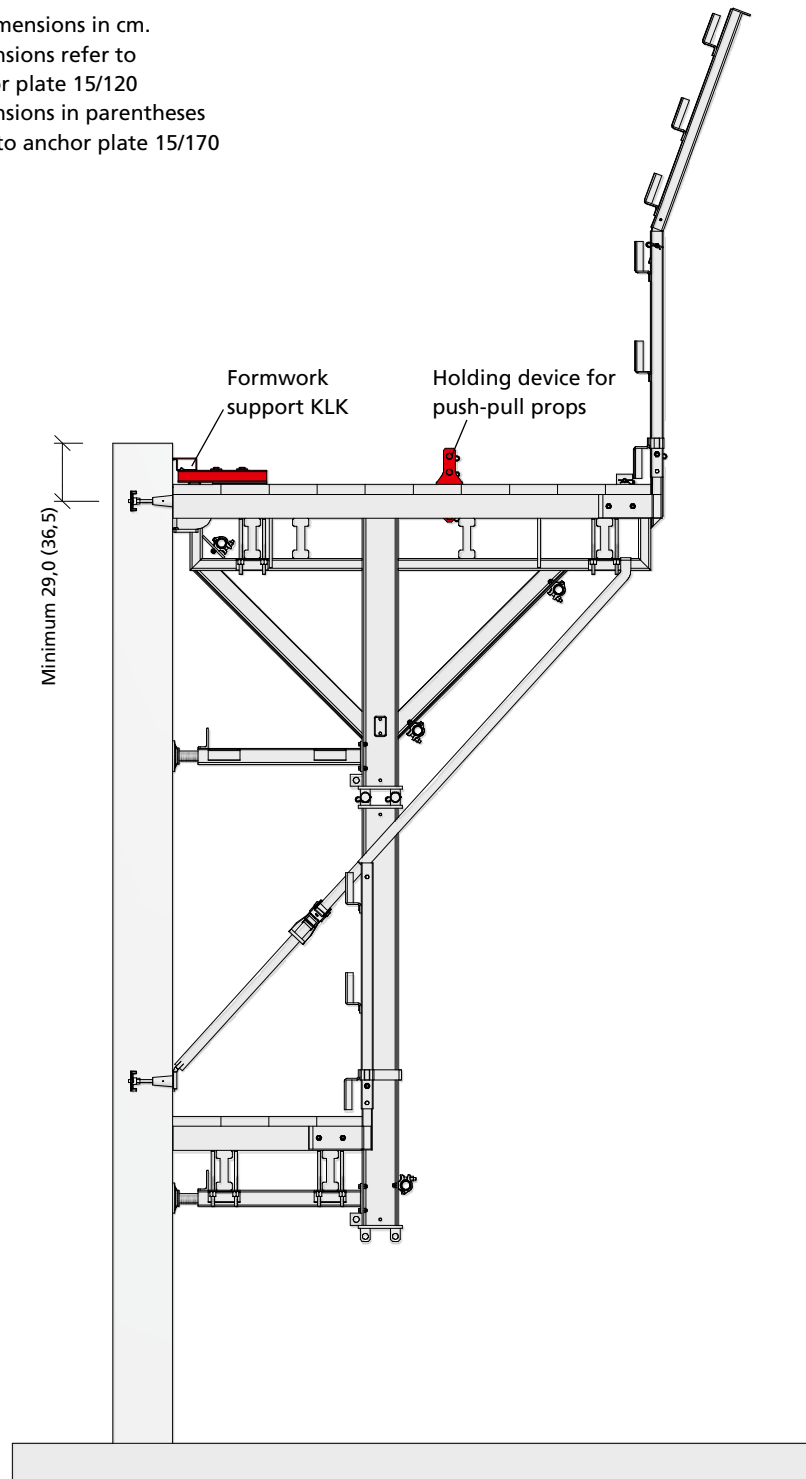


Fig. 6.1

Description	Ref. No.
Climbing bracket KLK 230.....	29-411-00
Formwork support KLK.....	29-411-90
Formwork adapter AS/ST.....	29-411-90
Holding device for push-pull props.....	29-411-25

Typical applications

All dimensions in cm.
 Dimensions refer to
 anchor plate 15/120
 Dimensions in parentheses
 refer to anchor plate 15/170

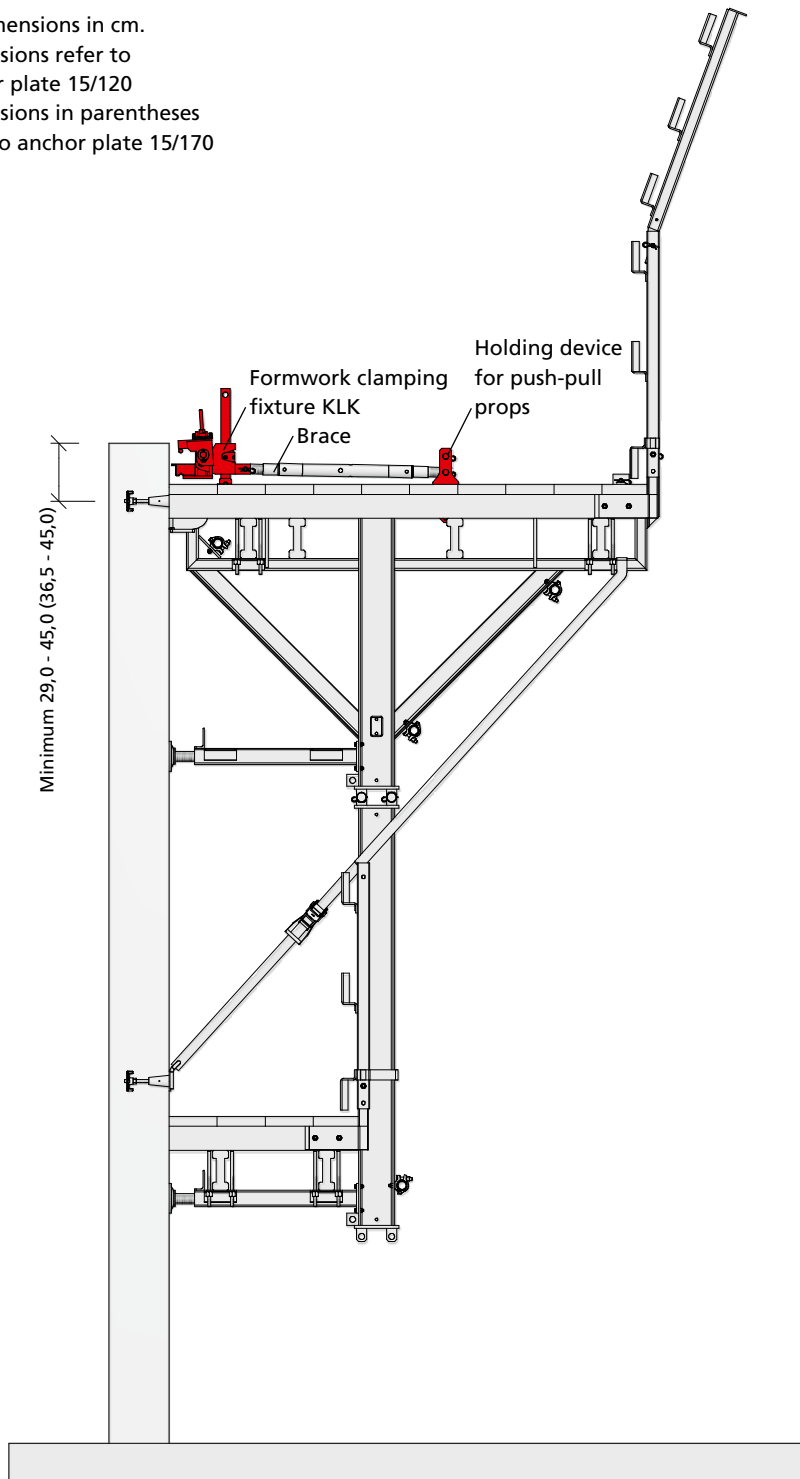


Fig. 7.1

Climbing formwork with formwork clamping fixture KLK

By adding a formwork clamping fixture KLK, a bearing for formwork clamping fixture KLK (see p. KLK-20) and a holding device for push-pull props, the working scaffold KLK can be turned into a 2,30 m wide scaffold on which wall formwork panels can be placed and attached with the formwork clamping fixture (Fig. 7.1 as well as p. KLK-25 and p. KLK-26).

The formwork clamping fixture allows to tilt back the attached formwork panels.

In addition to that it is possible to adjust the formwork panels in height. Adjustment range 23.0 cm.

Note

This type of application requires the formwork and KLK platform to be lifted and transported separately.

Description	Ref. No.
Climbing bracket KLK 230.....	29-411-00
Formwork clamping fixture KLK.....	29-411-60
Bearing for formwork clamping fixture KLK.....	29-411-70
Holding device for push-pull props.....	29-411-25

Typical applications

Climbing formwork with slide carriage

By adding a formwork clamping fixture KLK and a slide carriage, the working scaffold KLK can be turned into a 2,30 m wide scaffold on which wall formwork panels can be placed. The panels are attached with the formwork clamping fixture (Fig. 8.1). The slide carriage allows to slide back the formwork panels by 70.0 cm to provide enough room for cleaning and rebar works.

The formwork clamping fixture allows to tilt back the attached formwork panels.

In addition to that it is possible to adjust the formwork panels in height. Adjustment range 23.0 cm.

A square spanner is required to operate the slide carriage.

Note

This type of application allows the formwork and platform to be lifted and transported together as one unit.

All dimensions in cm.
Dimensions refer to anchor plate 15/120
Dimensions in parentheses refer to anchor plate 15/170

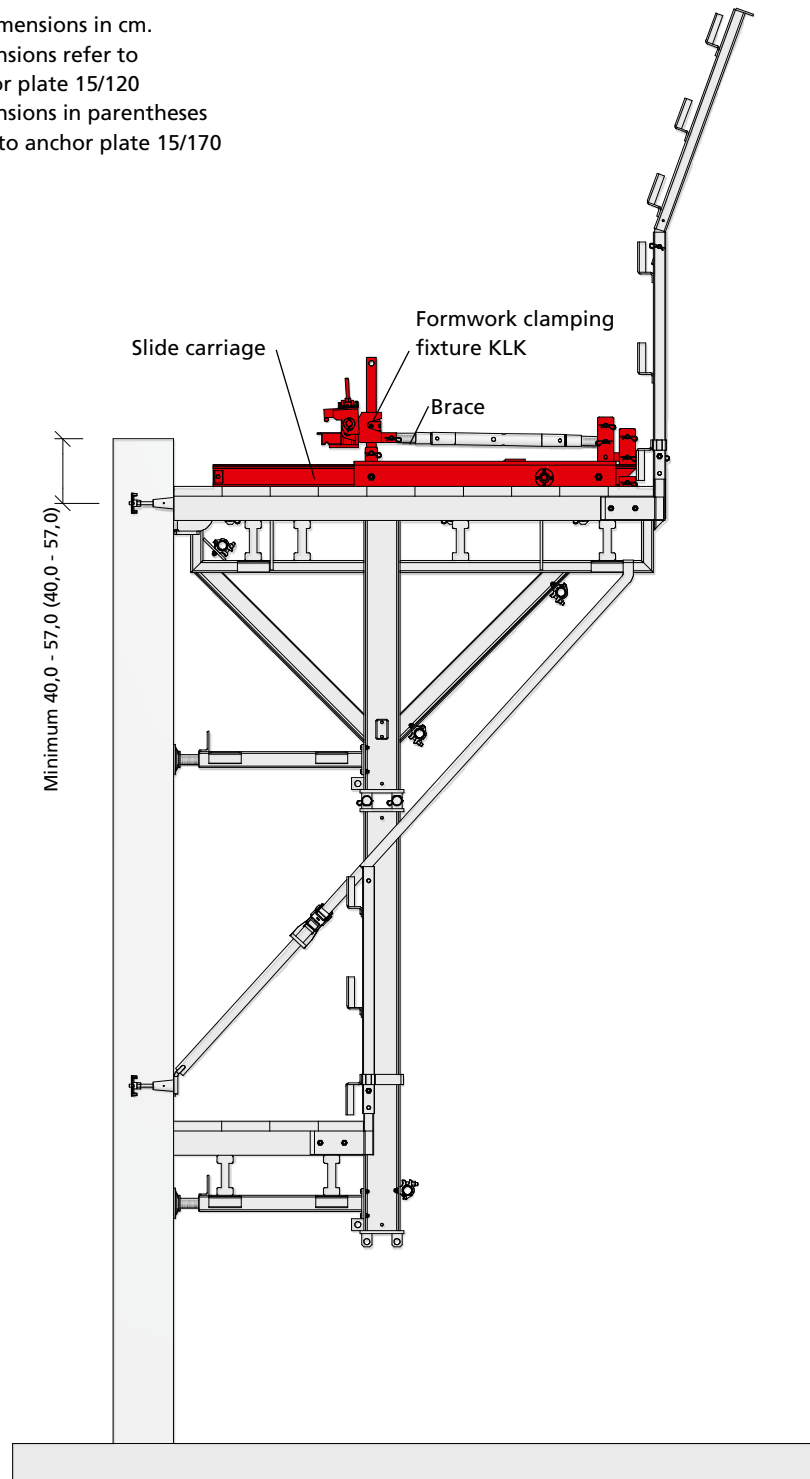


Fig. 8.1

Description	Ref. No.
Climbing bracket	
KLK 230.....	29-411-00
Slide carriage	29-411-50
Formwork clamping fixture KLK.....	29-411-60
Square spanner.....	29-411-45

Working with the KLK is only allowed if the wind speed does not exceed 20 m/s

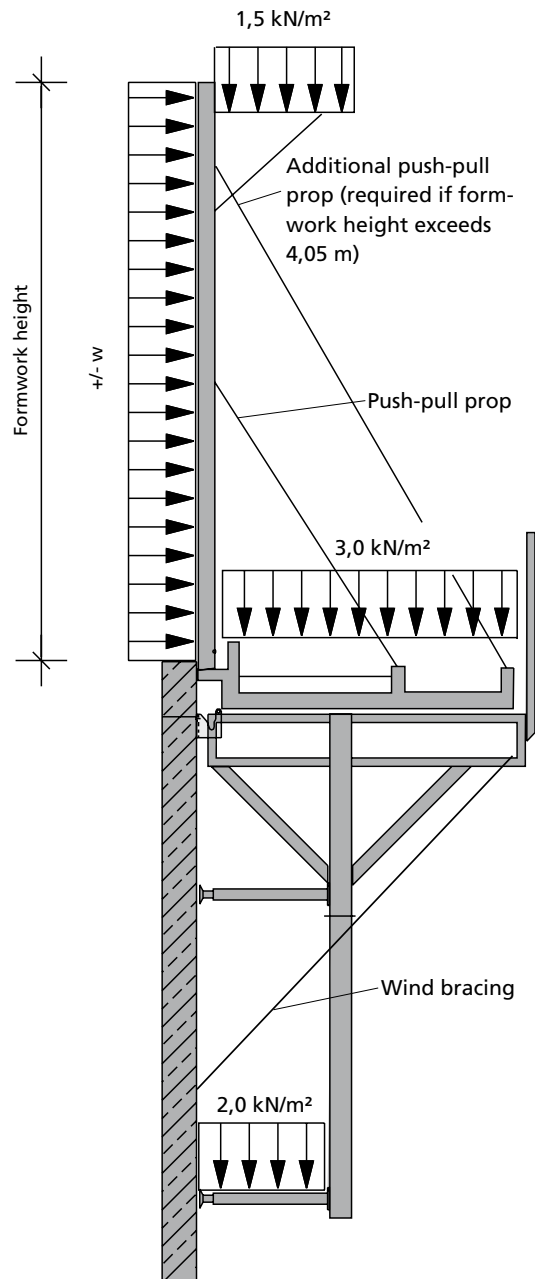


Fig. 9.1

Attention

- Do not "fly" the KLK and stop working on it if the wind speed exceeds 20 m/s (72 km/h). Move the formwork to the building, set it plumb (not tilted) and secure it.
- The climbing scaffold must be kept free from excessive snow and ice.

The structural analysis of the anchoring only includes the local transfer of forces into the concrete. The analysis of the stability of the building has to be checked as well and has to be provided by the structural engineer.

Load capacity of the KLK 230 (Fig. 9.1)

The following loads can be applied at the same time:

- 1.50 kN/m² per level on the working platform of the wall formwork (workers only, no material) (scaffold group 2).
- 2.00 kN/m² at the secondary platform (scaffold group 3).
- 3.00 kN/m² at the platform of the climbing scaffold (scaffold group 4).

Planning

Influence width

The influence widths shown in tables 10.1 through 10.3 are valid for climbing cone 15/M24, anchor plate 15/170 and suspension screw M24, installation depth 210 mm, based on the maximum edge distance and cracked concrete. See p. KLK-11 through KLK-13. The influence width depends on the minimum concrete strength, formwork height, wind speed, impact pressure as well as length of platform and formwork.

If the distance from the edge is below the minimum distance required, a separate structural analysis is required.

All concrete building parts must have sufficient reinforcement.

Formwork height in m at a concrete strength of 25 N/mm²

Max. influence width per bracket in m	2	2,5	3	3,5
q = 0,5 kN/m ²	7	6,5	5,5	3
q = 0,8 kN/m ²	6,5	6	5	3
q = 1,1 kN/m ²	5,5	5	4,5	3

Table 10.1

Formwork height in m at a concrete strength 20 N/mm²

Max. influence width per bracket in m	2	2,5	3	3,5
q = 0,5 kN/m ²	6,5	6	4	2,5
q = 0,8 kN/m ²	6	5,5	4	2
q = 1,1 kN/m ²	5	4,5	4	-

Table 10.2

Formwork height in m at a concrete strength of 15 N/mm²

Max. influence width per bracket in m	2	2,5	3	3,5
q = 0,5 kN/m ²	6	4,5	2,5	-
q = 0,8 kN/m ²	6	4	2,5	-
q = 1,1 kN/m ²	5	4	2,5	-

Table 10.3

Max. wind speed and max. impact pressure

v (m/s)	(km/h)	q (kN/m ²)	w (kN/m ²)
28,3	101,9	0,5	0,65
35,8	128,9	0,8	1,04
42,0	151,2	1,1	1,43

Tab. 10.4

v = wind speed in metres per second (m/s)

q = impact pressure (kN/m²)

w = wind load (kN/m²)

All dimensions in mm

Minimum dimensions and distances of the climbing cones when using anchor plate 15/120 under reduced load

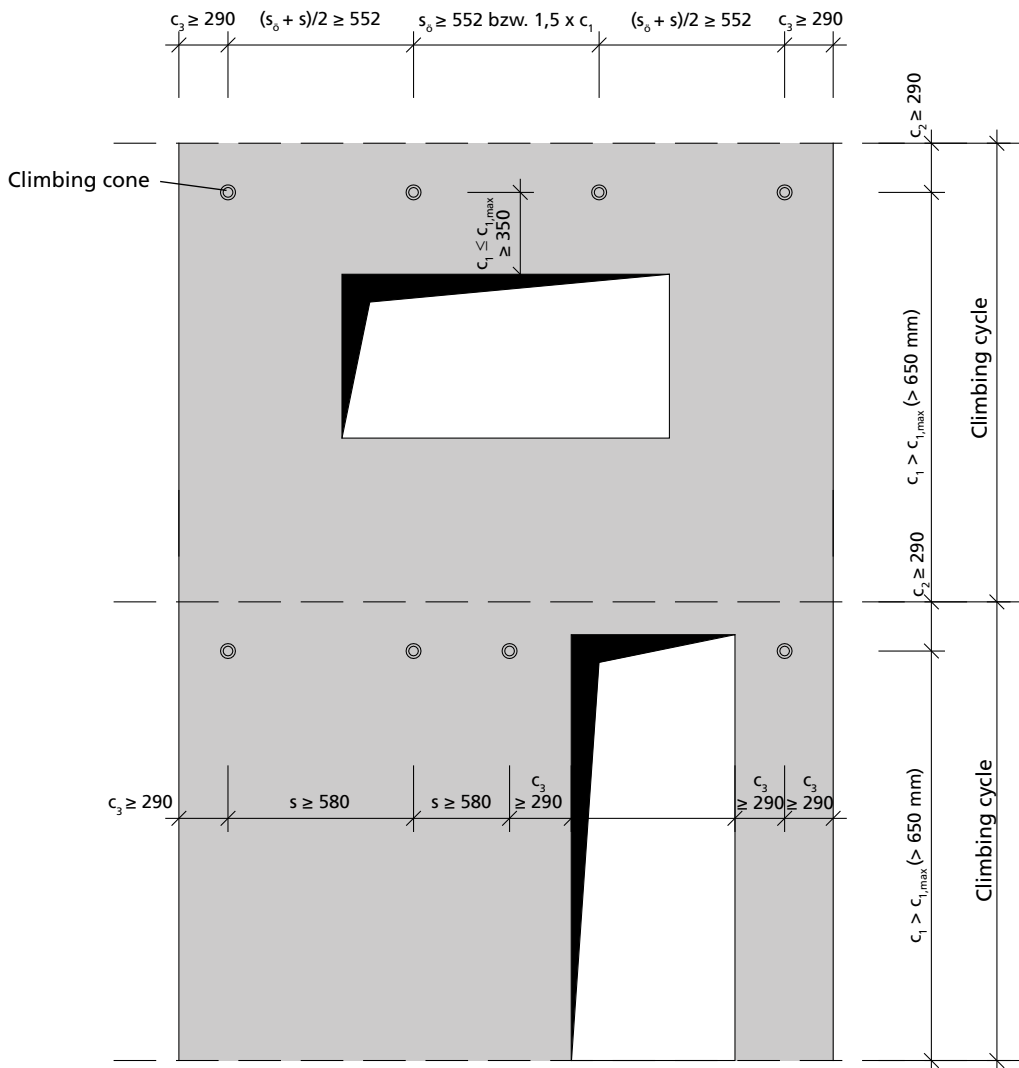


Fig. 11.1 Dimensions and distances for anchor plate 15/120 and climbing cone at an installation depth of 160 mm

(Source: General technical approval no. Z-21.6-1751 for the MEVA climbing cone KK15/M24; DIBt)

Minimum dimensions and distances of the climbing cones when using anchor plate 15/120 under reduced load

When installing climbing cones minimum dimensions and distances have to be observed. Especially above openings and close to edges the dimensions in Fig. 11.1 and the tables on p. KLK-13 have to be observed.

The shown dimension are valid for the use of the KLK 230 climbing bracket and the anchor plate 15/120 according to the approval. If the load is lower the dimensions can be reduced. In that case a separate structural analysis from the structural engineer is required.

Planning

Minimum dimensions and distances of the climbing cones when using anchor plate 15/170 under reduced load

When installing climbing cones minimum dimensions and distances have to be observed. Especially above openings and close to edges the dimensions in Fig. 12.1 and the tables on p. KLK-13 have to be observed.

The shown dimension are valid for the use of the KLK 230 climbing bracket and the anchor plate 15/170 according to the approval. If the load is lower the dimensions can be reduced. In that case a separate structural analysis from the structural engineer is required.

All dimensions in mm

Minimum dimensions and distances of the climbing cones when using anchor plate 15/170 under reduced load

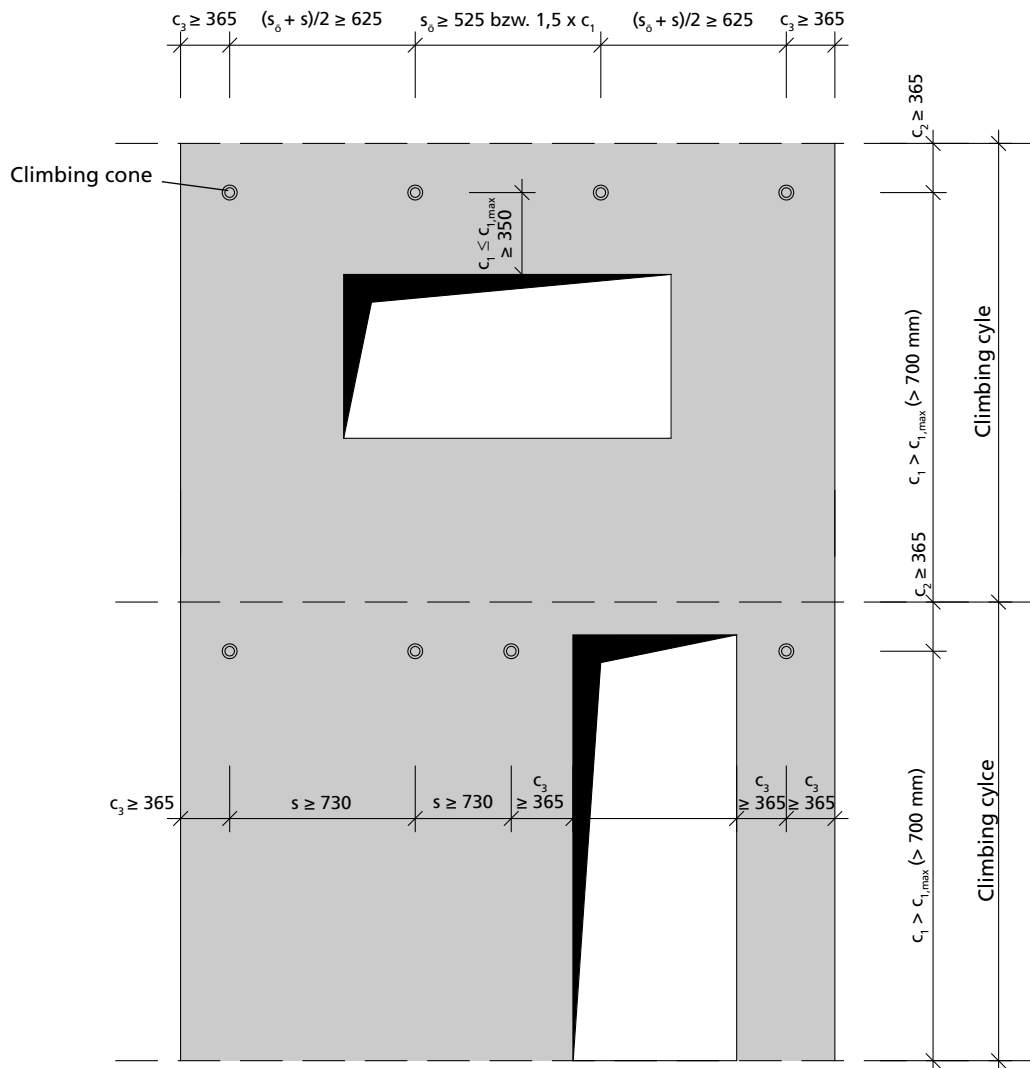


Fig. 12.2 Dimensions and distances for anchor plate 15/170 and climbing cone at an installation depth of 210 mm

(Source: General technical approval no. Z-21.6-1751 for the MEVA climbing cone KK 15/M24; DIBt)

Characteristic values for the load-bearing capacity at shear
(Breaking of concrete edge / of bond between concrete and rebar)

Characteristic shear capacity $V_{Rk,c}$ • for cracked and non-cracked concrete • minimum C20/25 • at least 24 hours old • β_w (minimum concrete strength): 10 N/mm ²		Required distance from the edge in force direction c_1 mm	Required thickness of building part $h \geq$ mm	
MEVA climbing cone, installation depth = 160 mm = anchor plate 15/120 + cone				
• for maximum value	$V_{Rk,c}$ kN	105	$c_{1,max} = 650$	200
• for minimum distance from the edge in force direction		64	$c_{1,min} = 350$	400
		52		250
		50		200
MEVA climbing cone, installation depth = 210 mm = anchor plate 15/170 + cone				
• for maximum value	$V_{Rk,c}$ kN	127	$c_{1,max} = 700$	250
• for minimum distance from the edge in force direction		64	$c_{1,min} = 350$	400
		52		250
Safety factor	γ_{Mc}	1,5		

Table 13.1

Minimum values for building part thickness, distance from the edges and between axes

MEVA climbing cone		Installation depth	
		$h_{nom} = 160$ mm	$h_{nom} = 210$ mm
Minimum building part thickness	h_{min} mm	200	250
Distance between axes			
• Minimum distance between axes for wall without openings $c_1 > c_{1,max}$	s_{min} mm	580	730
• Distance between axes above openings $c_1 \leq c_{1,max}$	$s_o \geq$ mm	1,5 x c_1	
Distance from edges			
• in direction of the load towards the stressed edge	$c_{1,min}$ mm	350	
• in direction of the load towards the non-stressed edge	$c_{2,min}$ mm	290	365
• perpendicular to the direction of the load	$c_{3,min}$ mm	290	365

Table 13.2

(Source: General technical approval no. Z-21.6-1751 for the MEVA climbing cone KK15/M24; DIBt)

Minimum dimensions and distances of the climbing cones under maximum load

The following is an excerpt from the approval of the MEVA climbing cone KK15/M24.

When installing climbing cones, minimum dimensions and distances have to be observed. Especially above openings and close to the edges of building parts please observe Fig. KLK-11.1 and KLK-12.1 as well as the corresponding tables 13.1 and 13.2.

The shown dimensions are valid for the use of the KLK 230 climbing bracket according to the approval. If the load is lower the dimensions can be reduced. In that case a separate structural analysis from the structural engineer is required.

Attention

Tables 13.1 and 13.2 are based on a minimum concrete strength of $\beta_w = 10$ N/mm².

Installation of the climbing cones

Important

The accurate installation of the anchoring material in the concrete is mandatory.

Installation of the climbing cone with positioning disc

(Fig. 14.1 and 14.2)

1. Nail the positioning disc with 4 nails to the facing, e.g. with nails $\varnothing 3,1/65$.
2. Before nailing the disc to the facing, make sure to fill the Allen key with some plastic material to prevent concrete slurry from entering.
3. Screw the climbing cone onto the positioning disc.
4. Slip over a conical sleeve to facilitate unscrewing of the climbing cone after stripping.
5. Screw the anchor plate into the climbing cone (Fig. 14.1).
6. Secure the anchor plate to the rebar using additional wire or additional rebars (Fig. 14.2).
7. After stripping, remove the positioning disc with an Allen wrench.

Installation of the climbing cone with hexagonal screw M24/60

(Fig. 14.3 and 14.4)

1. Screw the suspension screw M24/80 into the climbing cone through the pre-drilled facing (hole with $\varnothing 35$ mm).
2. Slip over a conical sleeve to facilitate unscrewing of the climbing cone after stripping.

3. Screw the anchor plate into the climbing cone.

4. Before stripping, unscrew suspension screw M24/80 and remove the formwork from the concrete.

Note

Rather than using a suspension screw M240/80, the cone can also be attached with a hexagonal screw M24/80 and a washer M24. In this case the facing must be drilled with a $\varnothing 25$ mm hole.

Attention

The suspension shoe KLK must never be attached with the hexagonal screw. Only the suspension screw M24/80 may be used to attach the suspension shoe!

Installation of the suspension shoe (Fig. 14.3)

1. After stripping and removing the positioning disc or suspension screw, screw the suspension screw into the climbing cone.
 2. Attach the suspension shoe and tighten the suspension screw.
- The safety pin of the suspension shoe secures the shoe against unhooking.

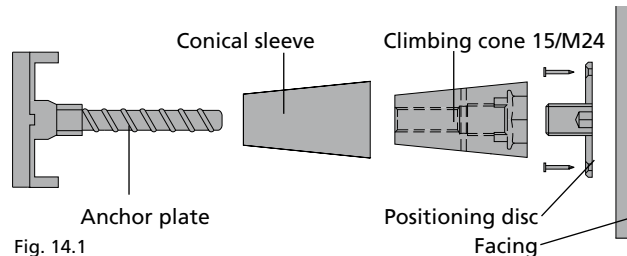


Fig. 14.1

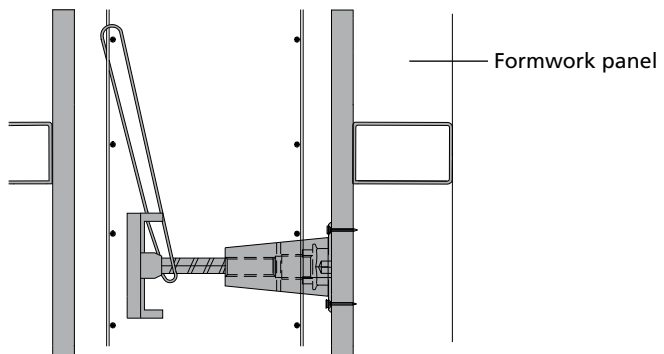


Fig. 14.2

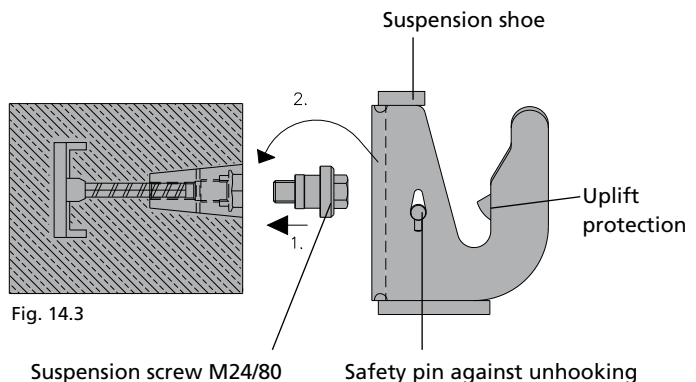


Fig. 14.3

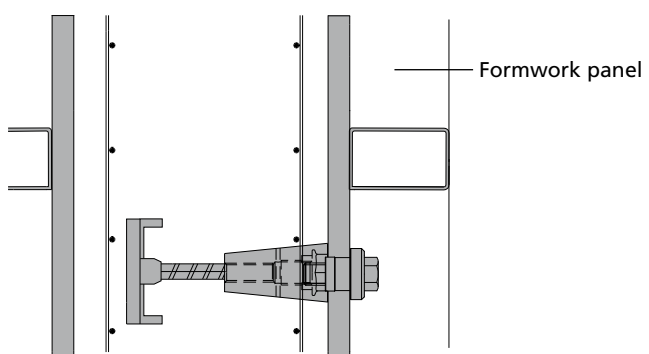


Fig. 14.4

Installation of the climbing cones

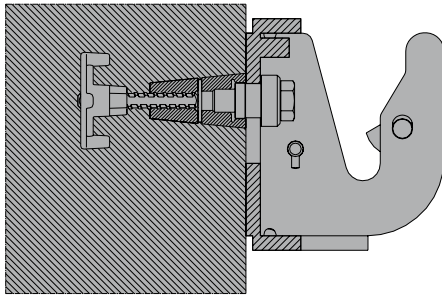


Fig. 15.1 Anchor plate 15/120

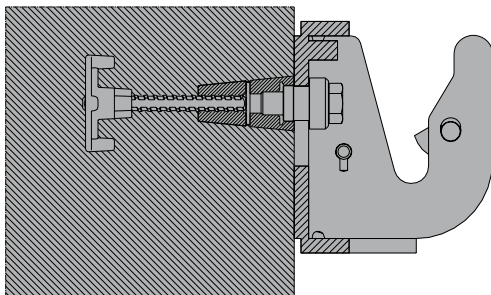


Fig. 15.2 Anchor plate 15/170

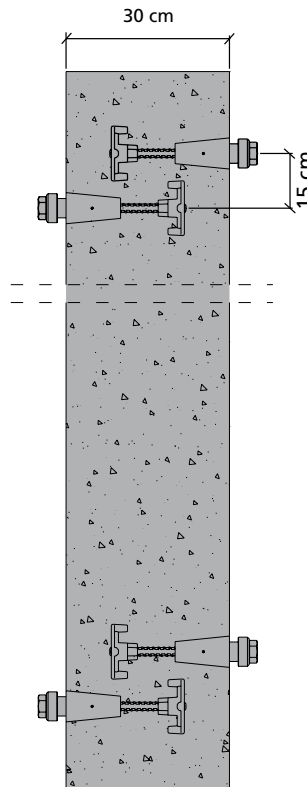


Fig. 15.3 Plan view – Position of the climbing cones for climbing scaffolds on both sides of the wall

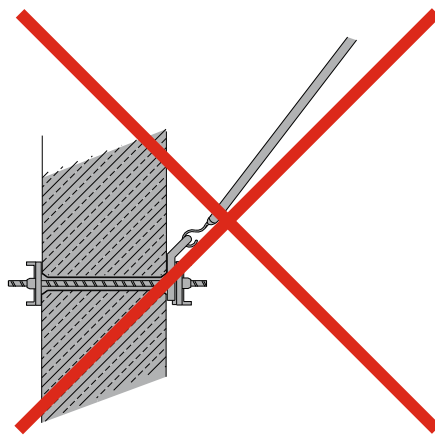


Fig. 15.4

When installing climbing cones, concrete must be set for at least 24 hours. The minimum concrete strength must be 15 N/mm². The anchor plate 15/120 is used for wall thicknesses from 25 cm to 30 cm (Fig. 15.1). For walls thicker than 30 cm the anchor plate 15/170 is used (Fig. 15.2). When the climbing cone is not needed any longer, remove cone from concrete. The anchor plate remains in concrete (not reusable). To patch the remaining hole in the concrete we recommend to use prefabricated concrete cones which are glued into the hole.

Note:

When climbing scaffolds are used on both sides of the wall the anchor plates and cones have to be placed at least 15 cm apart from each other (Fig. 15.3).

Attention

Under no circumstances attach the safety eye "through" a tie hole to avoid accidental loosening of the securing nut on the other side of the wall (Fig. 15.4).

Description	Ref. No.
Climbing cone 15/M24	29-412-70
Climbing cone 20/M24	29-412-75
Conical sleeve	29-412-95
Positioning disc M24	29-412-85
Suspension screw M24	29-412-80
Anchor plate 15/120	29-412-30
Anchor plate 15/170	29-412-35
Anchor plate 20/170	29-412-37
Combination spanner	29-411-85
Concrete cone	29-412-67
Concrete glue A+B	53-210-70

Assembly

Assembly of basic platform

We recommend to cast in climbing cones in the wall. The distance between these cast-in cones should match the desired width of the climbing platform (Fig. 16.1).

The advantage is the possibility to assemble the platform on the ground (safe and convenient). The brackets should be fixed by using scaffold tubes $\varnothing 1.9''$ (48 mm).

Horizontal tubes are attached to the couplers which are already mounted to bracket. Diagonal tubes are attached to the horizontal tubes by using swivel-joint couplers 48/48 (Fig. 16.2). Swivel-joint couplers have to be ordered separately. Before all couplers are tightened please make sure that brackets are perpendicular. (Fig. 16.3). After all scaffold tubes have been attached the wall strut has to be mounted to the KLK bracket. We also recommend to attach bracket extensions when you are still on ground (Fig. 16.4).

For a detailed assembly description please see pages KLK-17 - 23.

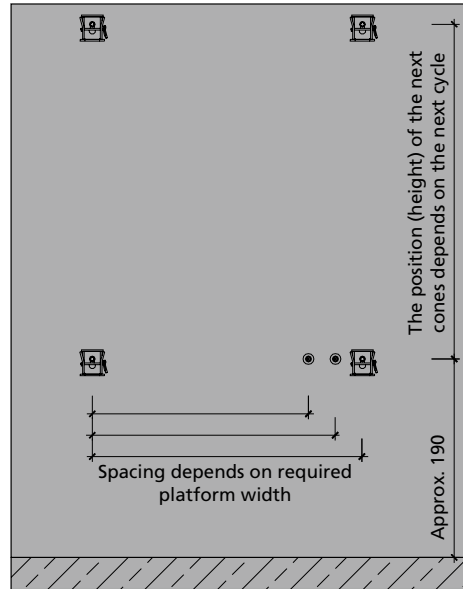


Fig. 16.1

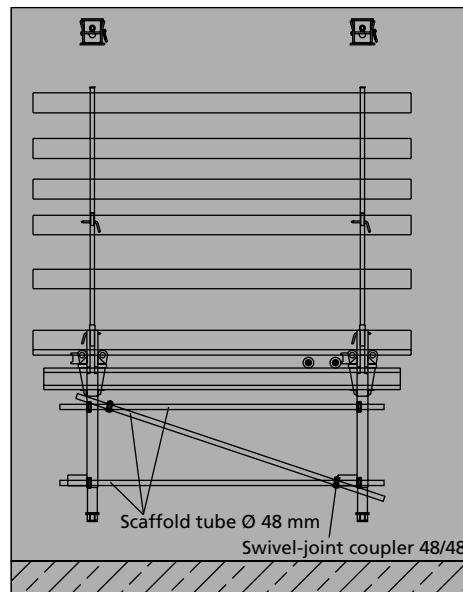


Fig. 16.3

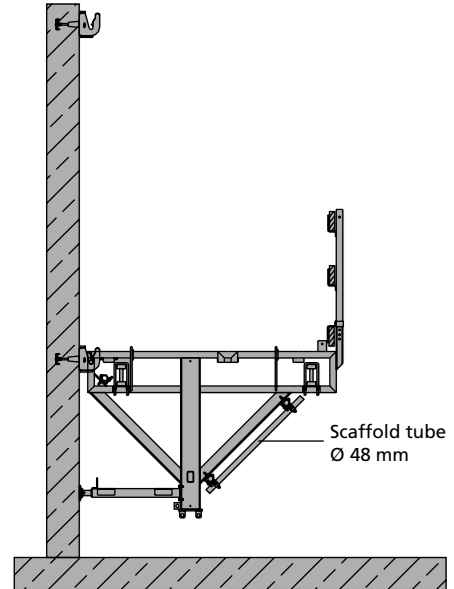


Fig. 16.2

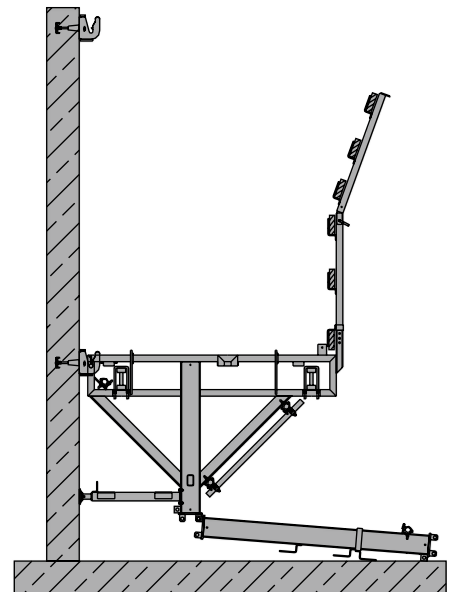


Fig. 16.4

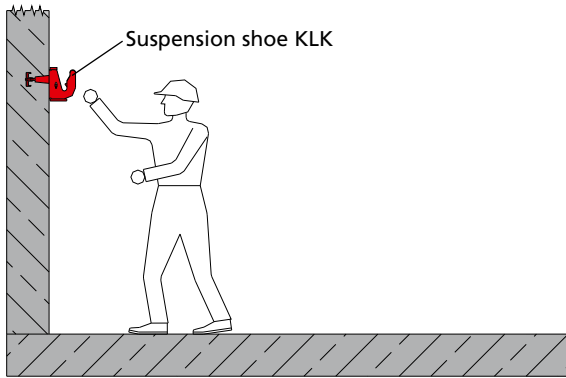


Fig. 17.1

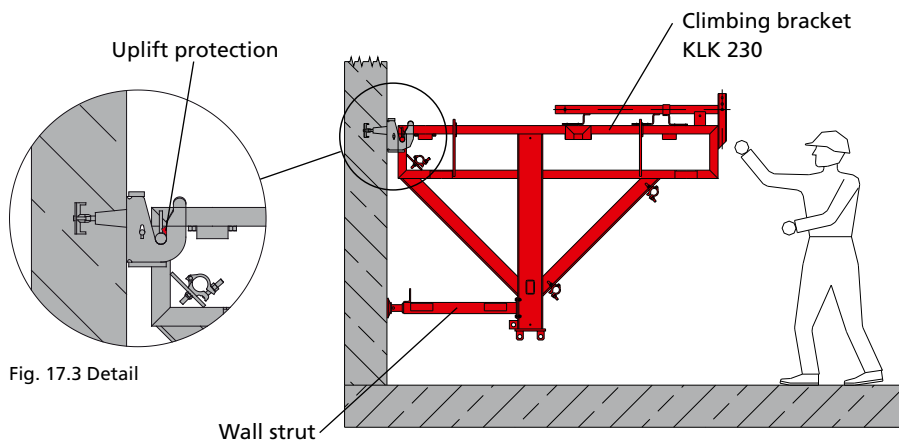


Fig. 17.2

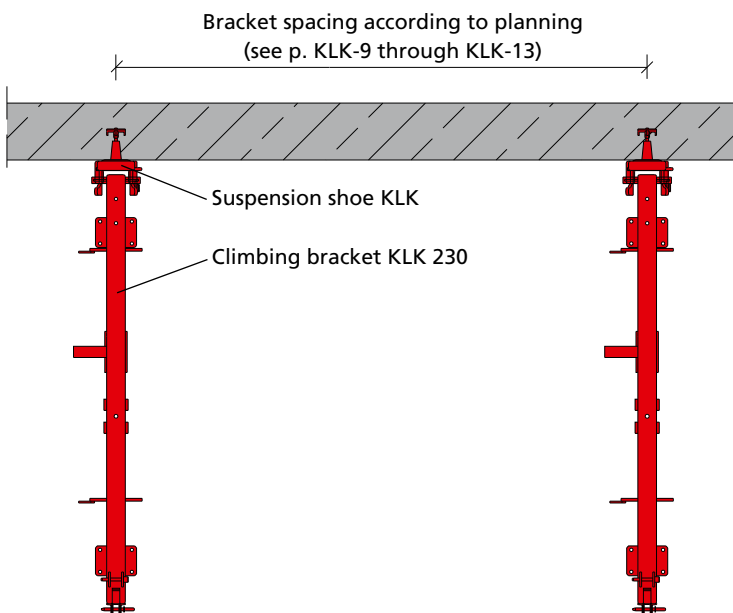


Fig. 17.4

1. Attach the suspension shoe KLK to the climbing cone by using the suspension screw M24. Secure the shoe with the integrated safety pin against unhooking (see p. KLK-16 -17 and Fig. 17.1).
2. Attach the wall strut to the climbing bracket KLK 230 with 4 screws M12x35 (in delivery included).
3. Attach the climbing bracket to the suspension shoe (Fig. 17.2 through 17.4). The uplift protection automatically secures the bracket (Fig. 17.3).
4. Make sure that the uplift protection is in a correct position.

Important

Make sure to observe the planning details as described on p. KLK-9 through KLK-13.

Description	Ref. No.
Climbing bracket KLK 230.....	29-411-00
Wall strut.....	29-411-30
Suspension shoe KLK ..	29-411-05

Assembly

1. Check the distance of brackets (Fig. 18.1).

2. Attach 3 horizontal scaffold tubes to the bolt-on tube couplers of the bracket. Attach one diagonal scaffold tube to the 2 horizontal scaffold tubes by using swivel-joint couplers 48/48 (Fig. 18.1 and 18.2).

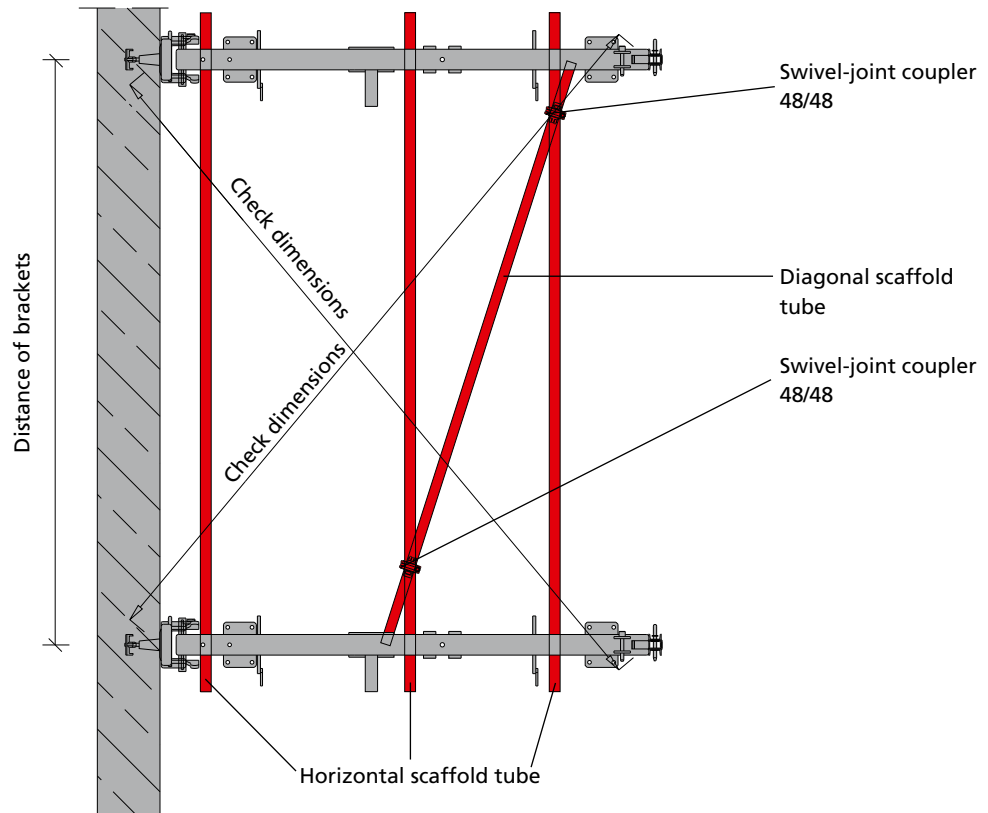


Fig. 18.1

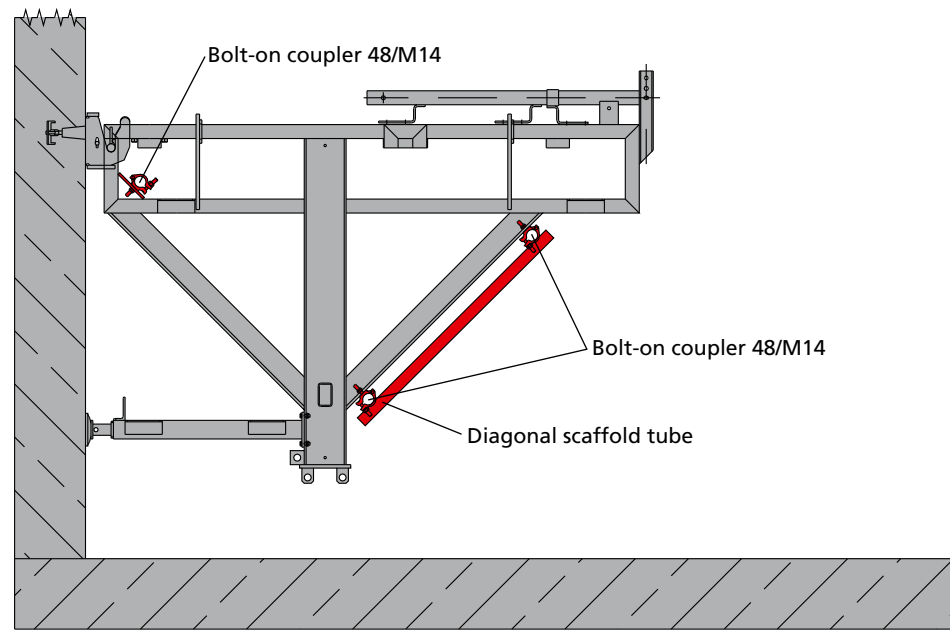


Fig. 18.2

Description	Ref. No.
Scaffold tube	
48/200.....	29-412-23
48/300.....	29-412-26
48/400.....	29-412-27
48/500.....	29-412-25
48/600.....	29-412-28
Tube per linear metre..	29-412-29
Bolt-on coupler	
48/M14	40-080-70
Swivel-joint coupler	
48/48.....	29-412-52

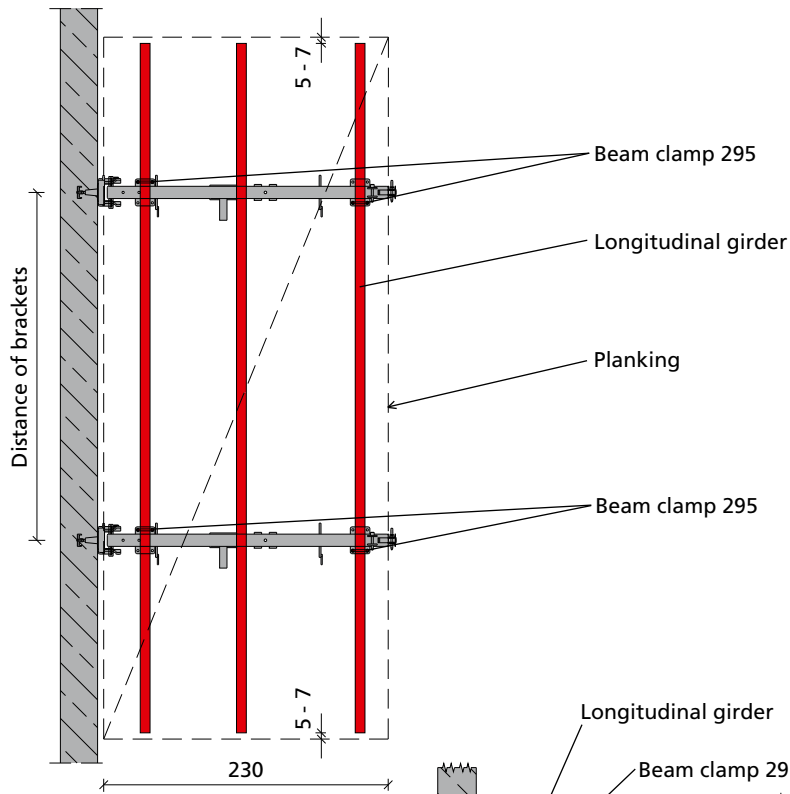


Fig. 19.1

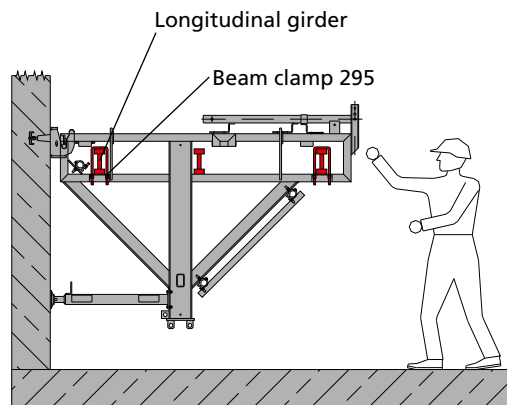


Fig. 19.2

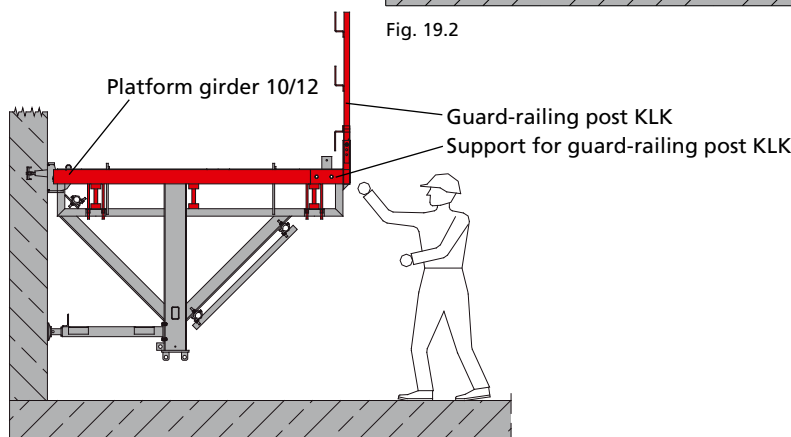


Fig. 19.3

Attach longitudinal girders to the brackets by using 2 beam clamps 295 per bracket. The longitudinal girders (H20, aluminum or steel) should be 10 - 14 cm shorter than the whole platform. So the plywood can cantilever 5 - 7 cm on each side (Fig. 19.1 and 19.2). Alternatively a beam clamp 8 can be used for attachment.

If the distance between two KLK brackets is wider than 2,00 m additional platform girders 10/12 are required to allow for the attachment of guard-railing posts (Fig. 19.3). The guard railing posts are attached to the platform girders by using the support for guard-railing post KLK which are mounted to the platform girder (Fig 19.3).

Assembly of planking

If the KLK is used as working platform the planking needs to be installed. If additional platform girders are required the planking is nailed to the platform girders 10/12 parallel to the wall by using wood screws (6x90).

If a ladder plus access hatch is required please see page KLK-31 for more details.

Description	Ref. No.
Beam clamp 295.....	29-412-60
Guard-railing post KLK 230.....	29-411-78
Support for guard-railing post KLK.....	29-411-77

Assembly

KLK with formwork support KLK

This device can be used to attach wall formwork panels with assembly locks to the KLK-. It is attached with 2 screws M16 x 220, DIN 931 to the bracket (Fig. 20.1).

KLK with formwork clamping fixture KLK

This device can be used to attach wall formwork panels to the KLK brackets. The clamping fixture allows the attached panels to be tilted. The formwork clamping fixture KLK is mounted to the bearing for the formwork clamping fixture. The bearing is attached with 2 screws M16 x 220 to the bracket (Fig. 20.2).

Holding device for push-pull prop

When using push-pull props or braces, the holding device has to be mounted to the KLK bracket using the integrated pin.

Important

When using wall formwork together with formwork support KLK or with formwork clamping fixture KLK, the formwork and platform must be transported and lifted separately.

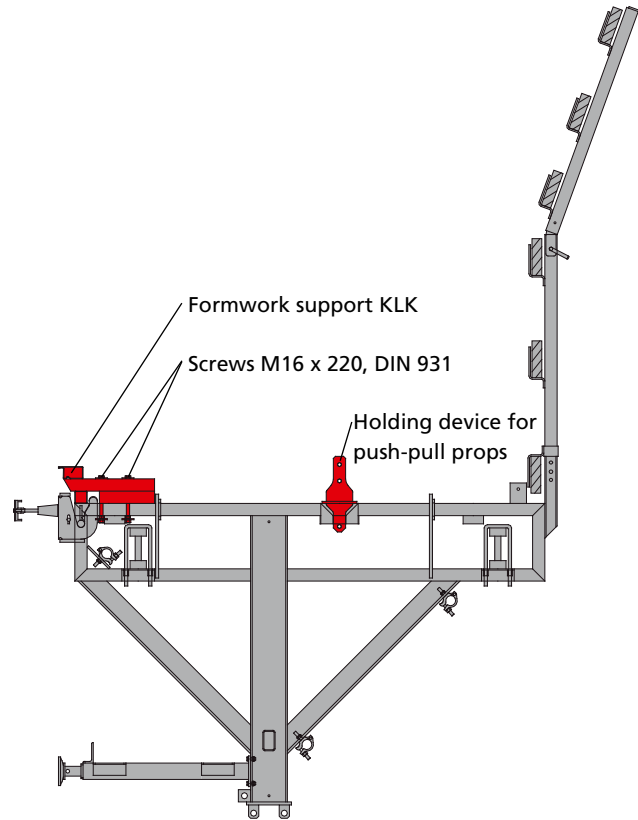


Fig. 20.1

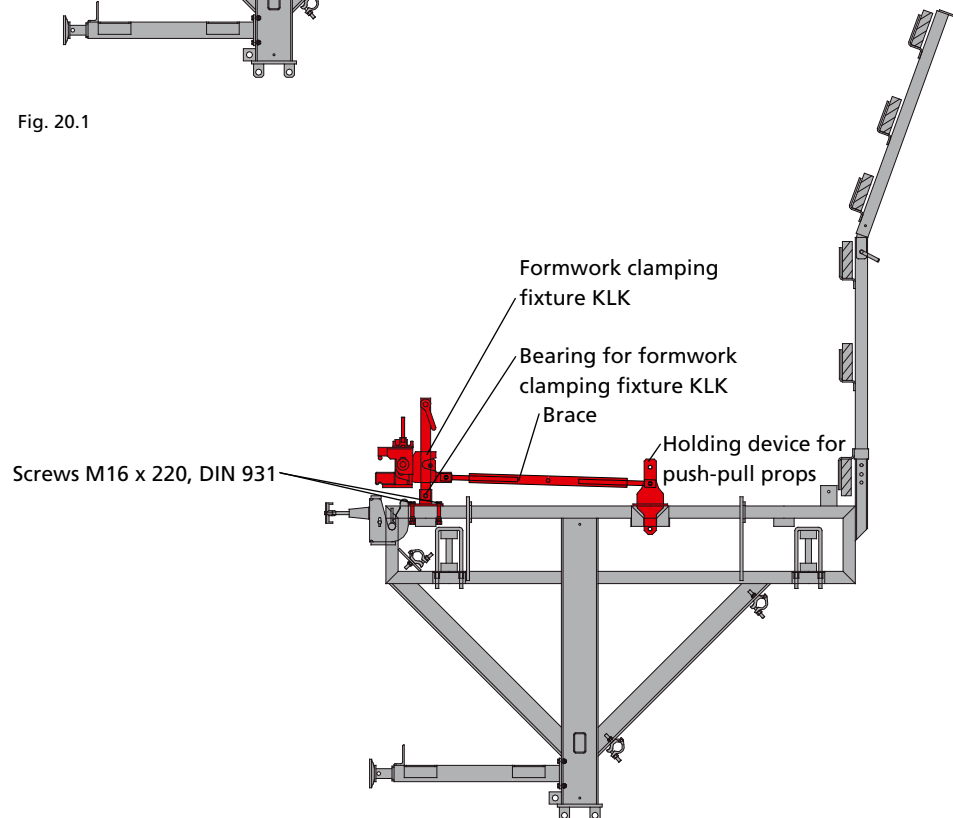


Fig. 20.2

Description	Ref. No.
Formwork support KLK.....	29-411-90
Formwork clamping fixture KLK.....	29-411-60
Bearing for formwork clamping fixture KLK...	29-411-70
Holding device for push-pull props.....	29-411-25

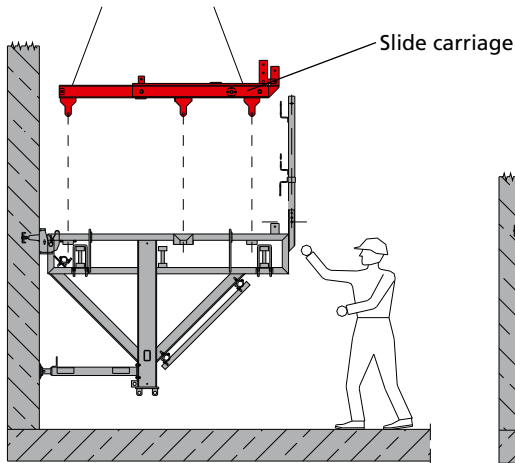


Fig. 21.1

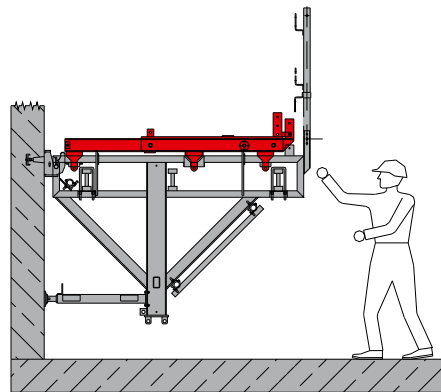


Fig. 21.2

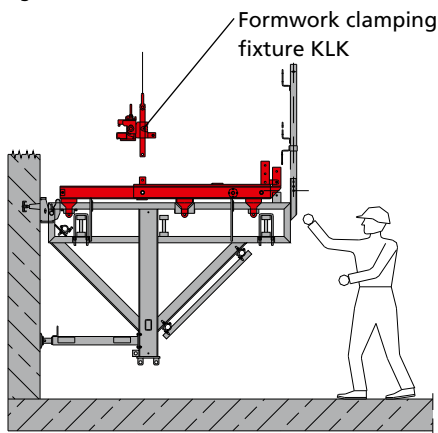


Fig. 21.3

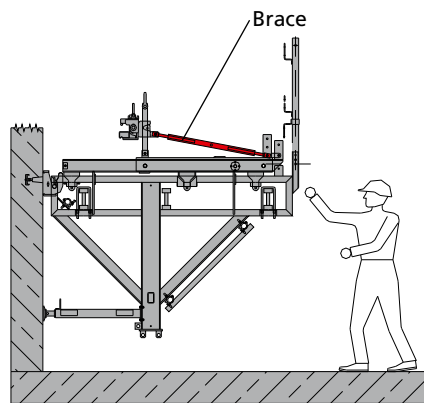


Fig. 21.4

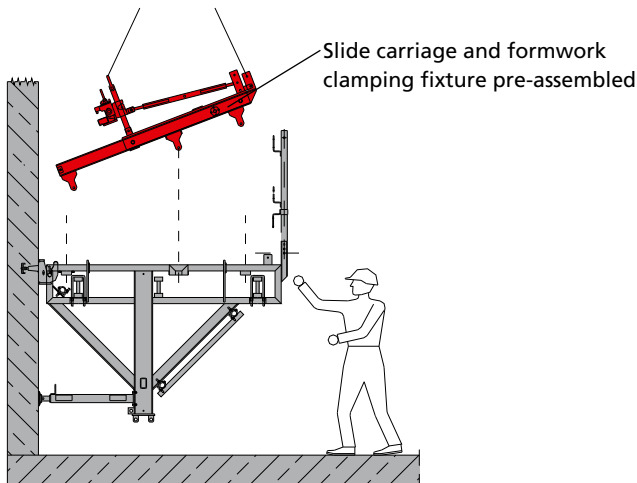


Fig. 21.5

KLK with slide carriage

The slide carriage allows to slide back the attached formwork panels by 70 cm.

To attach the slide carriage, remove the 3 integrated pins. The slide carriage can now be placed on top of the bracket (Fig. 21.1) and secured to it with the 3 previously removed bolts (Fig. 21.2). Now attach the formwork clamping fixture KLK to the slide carriage with the integrated pins (Fig. 21.3). Add a brace to adjust the inclination of the formwork clamping fixture (Fig. 21.4).

Alternatively the formwork clamping fixture can be pre-assembled to the slide carriage on the ground to be flown in as a unit. (Fig. 21.5).

To operate the slide carriage a square spanner is required.

Note:

The use of the formwork clamping fixture KLK and the slide carriage allows to move formwork and platform as one unit!

Description	Ref. No.
Slide carriage	29-411-50
Formwork clamping fixture KLK.....	29-411-60
Brace SRL 120.....	29-108-80
Brace RSK 1	79-401-56
Square spanner	29-411-45

Assembly

Assembly of planking

The planking is usually attached to the platform girders (10/12) parallel to the wall by using wood screws (6x90). The planks must be at least 4,5 cm thick.

Make sure to leave openings for crane eyes, slide carriages, suspension shoes and the like (Fig. 22.1). The size of the openings depends on the support structure.

Access hatch

If the KLK unit is equipped with a ladder, observe p. KLK-33 for more details.

Side railing

It is possible to mount the support for guard-railing post KLK (for square timber with a width of 10 cm) or SDT (for H20-girders) at the end of the longitudinal or platform girders to attach the guard-railing posts (Fig. 22.2). The guard-railing post KLK, 100 or 140 can be used to install the side railing. Side railing according to DIN 4074, 5 x 28 cm.

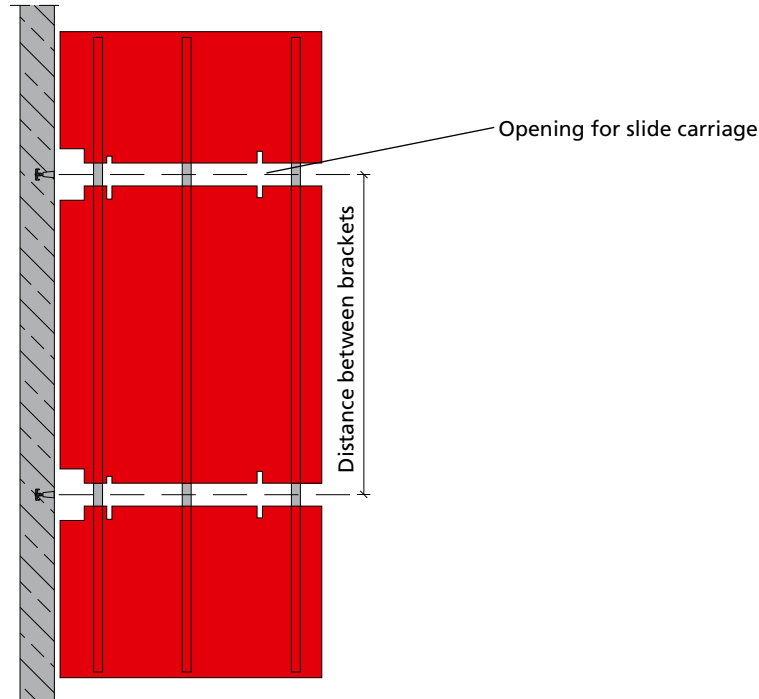


Fig. 22.1

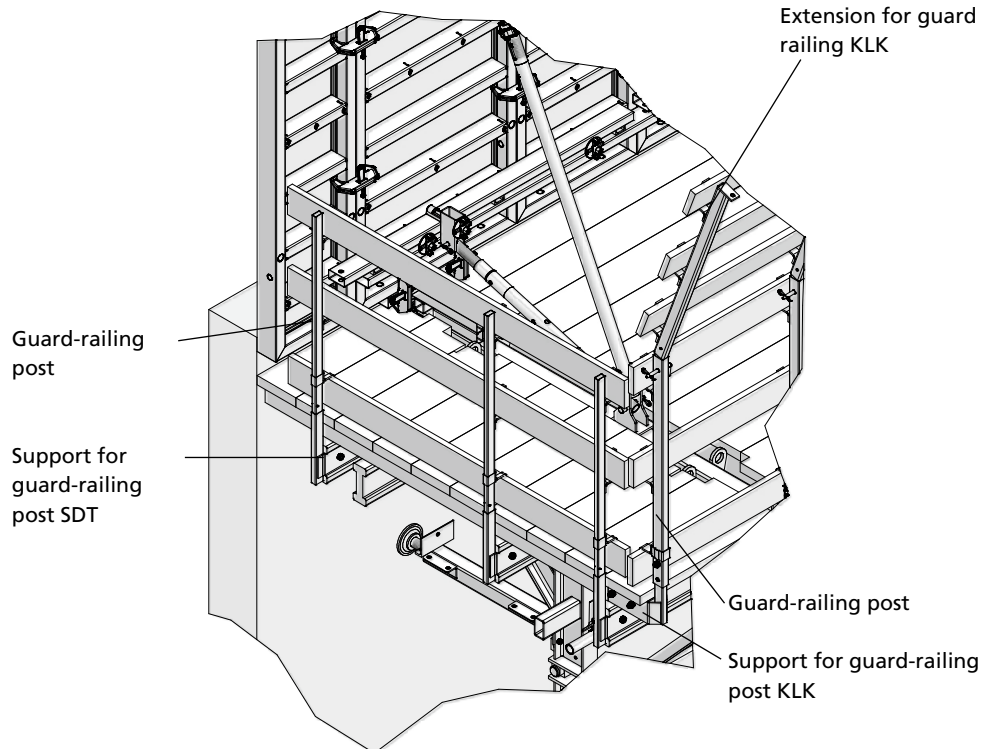


Fig. 22.2

Description	Ref. No.
Support for guard-railing post KLK	29-411-77
post SDT	29-106-90

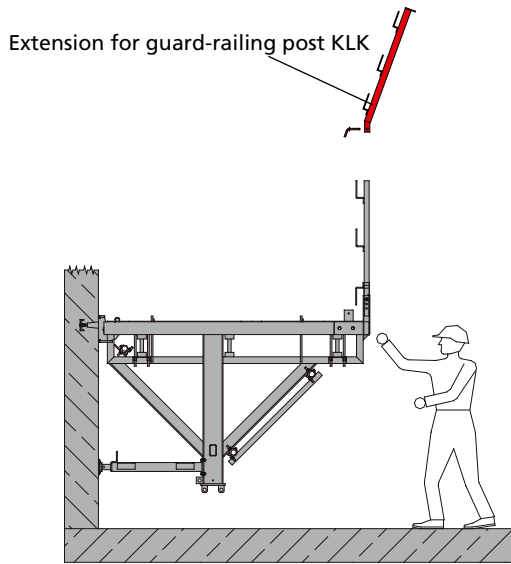


Fig. 23.1

- Extension for guard-railing post KLK
- Guard-railing post KLK (attached at the climbing bracket)
- Additional guard-railing post KLK (attached to the support for guard-railing post KLK)
- Platform girders 10/12
- Support for guard-railing post KLK

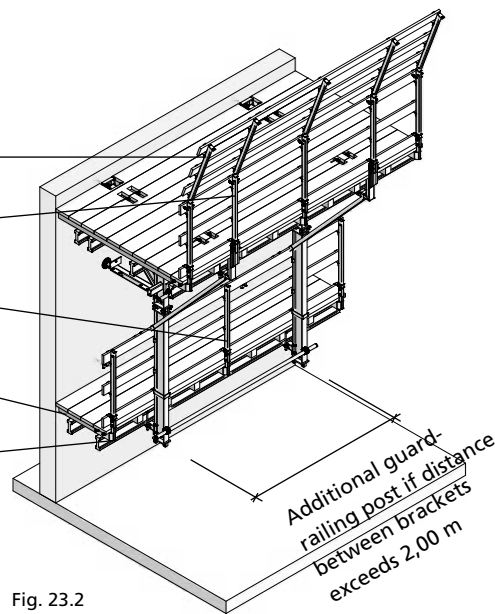


Fig. 23.2

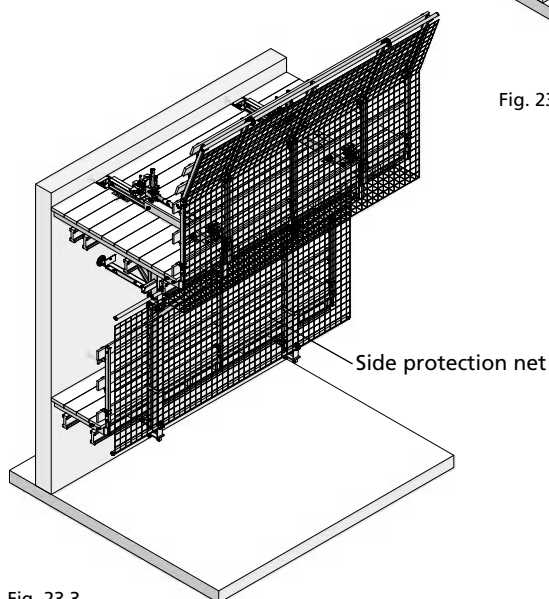


Fig. 23.3

Extension for guard-railing post KLK 230

When using the extension for guard-railing post KLK the fall protection and safety is more effective. The height of the railing is about 2,00 m (Fig. 23.1 and 23.2).

Additional guard-railing posts

If the distance between two KLK brackets is wider than 2,00 m additional guard-railing posts are required. The posts are attached to the support for guard-railing post which are mounted to the platform girders 10/12 (Fig. 23.2).

Side protection net

We recommend to use a safety net or tarpaulin with a mesh width of 20 mm to avoid falling down of tools, accessories etc. The net is attached to the scaffold tubes at the top of the guard-railing post and to the scaffold tubes at the bottom of the secondary platform. Inbetween, it is also attached to scaffold tubes and kept tight with quick-release belt fasteners (Fig. 23.3).

Description	Ref. No.
Guard-railing post KLK 230.....	29-411-78
Extension for guard-railing post KLK 230.....	29-411-75
Support for guard-railing post KLK.....	29-411-77
Side protection net	29-108-60
Quick-release belt fastener	29-108-65

Attachment of wall formwork – with formwork support KLK

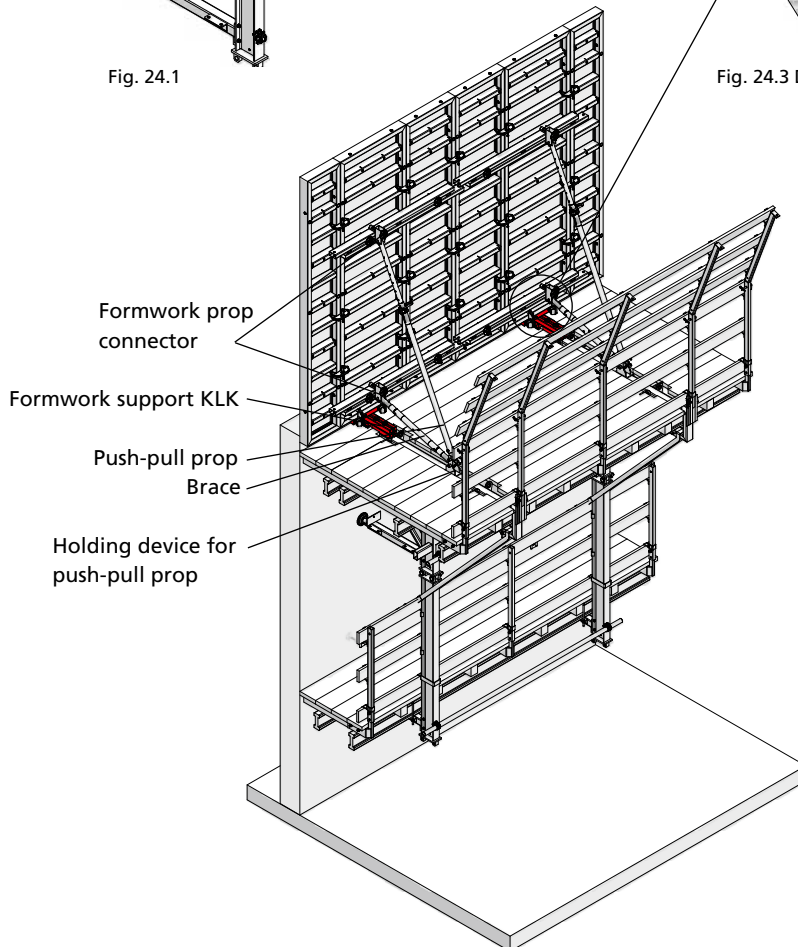
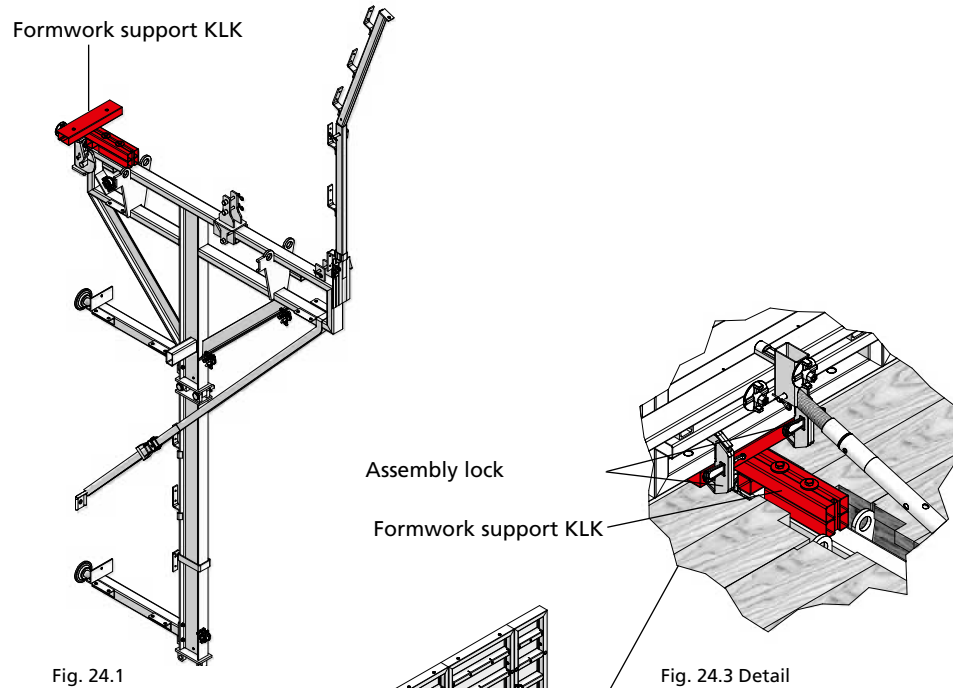
Mammut/Mammut 350-panels are attached with two (2) M-assembly locks, AluFix/EcoAs panels are attached by using two Uni-assembly locks or two (2) M-assembly locks and an adapter AF/ML. StarTec panels are either attached with two (2) Uni-assembly locks or by using an AS/ST adapter and two (2) M-assembly locks (Fig. 24.2 and 24.3)

Attachment of push-pull props

The push-pull props are attached to the formwork with the formwork prop connector and flange screws. To attach the push-pull props at the bracket, the holding device for push-pull props is needed. It can be attached in the middle of the bracket (Fig. 24.2). It is also possible to attach push-pull props at the end of the bracket.

Important

This type of assembly requires the wall formwork and KLK platform to be transported and lifted separately! (see p. KLK-36 and KLK-37).



Description	Ref. No.
Formwork support KLK.....	29-411-90
Adapter AS/ST	29-411-65
Adapter AF/ML	29-411-92
M-assembly lock	29-400-71
Uni-assembly lock 22 ..	29-400-85
Formwork prop connector	29-804-85
Flange screw 18	29-401-10
Flange screw 28	29-401-12
Holding device for push-pull props.....	29-411-25

Attachment of wall formwork – with formwork clamping fixture KLK

Formwork clamping fixture KLK

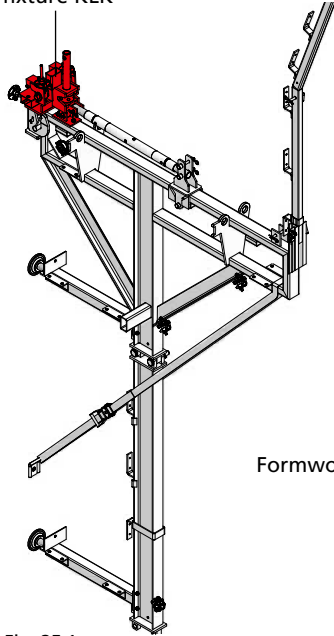


Fig. 25.1

Formwork panel
AluFix, EcoAs,
StarTec or AluStar
Adapter AF/ML
or AS/ST
Formwork clamping
fixture KLK with 23 cm
height adjustment

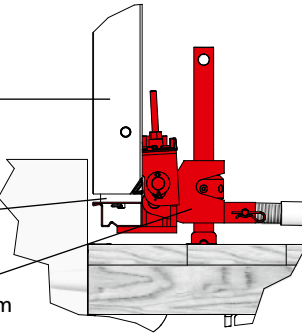


Fig. 25.3

Formwork clamping fixture KLK

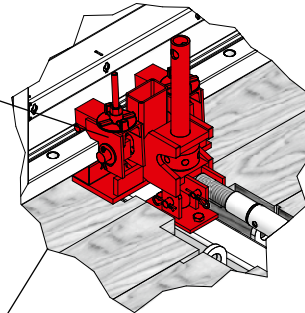


Fig. 25.4 Detail

Formwork prop connector

Formwork clamping fixture KLK

Push-pull prop
Brace

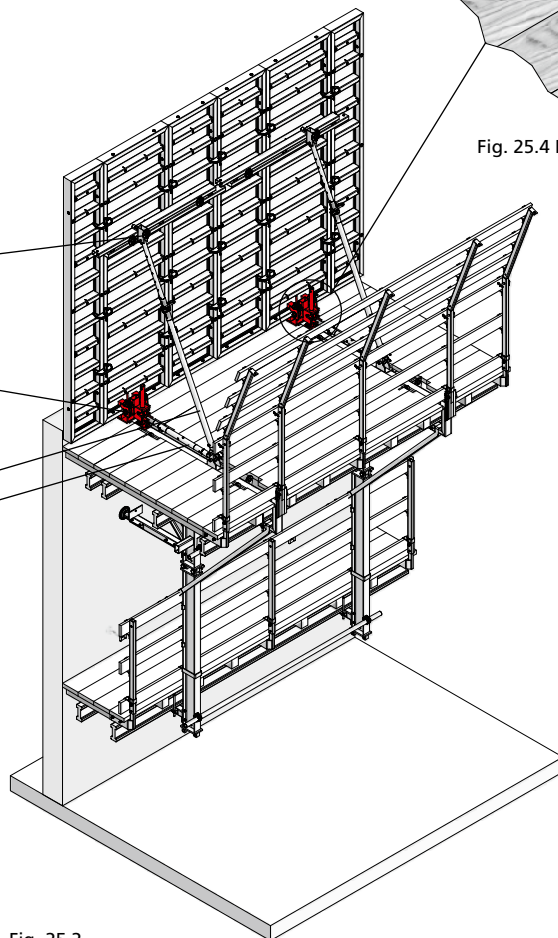


Fig. 25.2

Without slide carriage

Mammut350/Mammut wall formwork panels are directly attached to the formwork clamping fixture KLK (Fig. 25.4). AluFix, EcoAs and StarTec/AluStar require an adapter (Fig. 25.3)

The formwork clamping fixture allows to tilt back the attached formwork panels. In addition to that it is possible to adjust the formwork panels in height. Adjustment range 23.0 cm

Attachment of push-pull props

The push-pull props are attached to the formwork with the formwork prop connector and flange screws. To attach the push-pull props at the bracket, the holding device for push-pull props is needed. It can be attached in the middle of the bracket (Fig. 25.2). It is also possible to attach push-pull props at the end of the bracket.

Important

The use of the formwork clamping fixture KLK requires the formwork and the KLK platform to be lifted and transported separately! (see p. KLK-36 and KLK-37).

Description	Ref. No.
Formwork clamping fixture KLK	29-411-60
Bearing for formwork clamping fixture KLK...	29-411-70
Adapter AS/ST	29-411-65
Adapter AF/ML	29-411-92
Formwork prop connector	29-804-85
Flange screw 18	29-401-10
Flange screw 28	29-401-12
Holding device for push-pull props	29-411-25

Attachment of wall formwork – with slide carriage

Mammut350/Mammut wall formwork panels are directly attached to the formwork clamping fixture KLK (Fig. 26.3). AluFix, EcoAs and StarTec/AluStar require an adapter.

The formwork clamping fixture allows to tilt back the attached formwork panels.

In addition to that it is possible to adjust the formwork panels in height. Adjustment range 23.0 cm

Attachment of push-pull props

The push-pull props are attached to the formwork with the formwork prop connector and flange screws. To attach the push-pull props at the bracket, the holding device for push-pull props is needed. It can be attached in the middle of the bracket (Fig. 26.2). It is also possible to attach push-pull props at the end of the bracket.

The wall formwork is moved with the slide carriage to the edge of the concrete and secured with the wedge of the slide carriage. Make sure to set the formwork plumb by using braces and push-pull props.

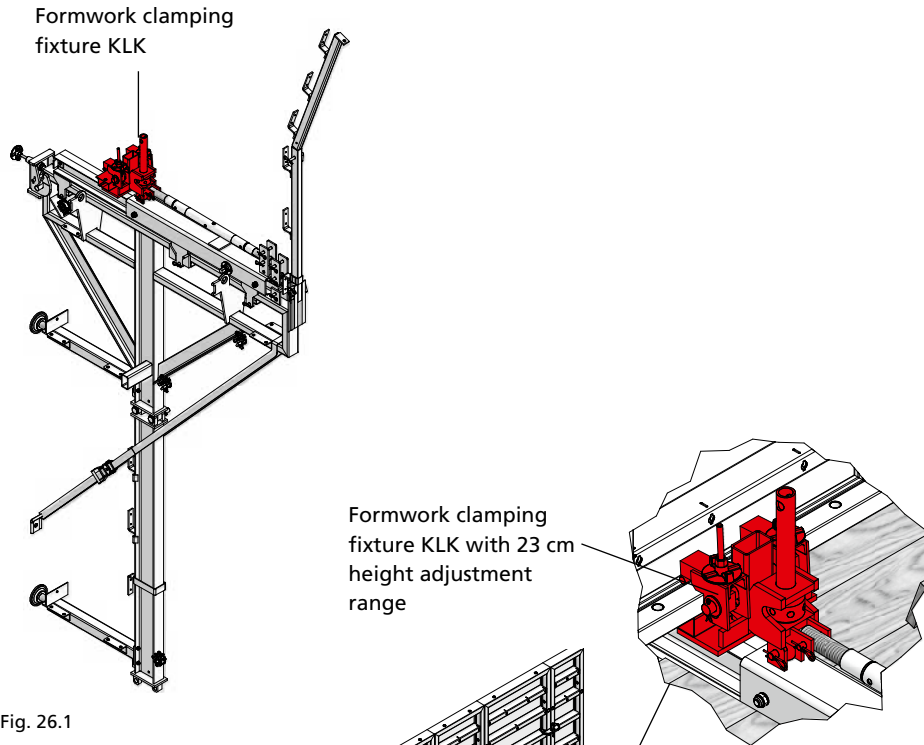


Fig. 26.1

Formwork clamping fixture KLK with 23 cm height adjustment range

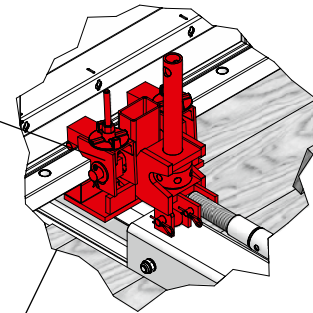


Fig. 26.3 Detail

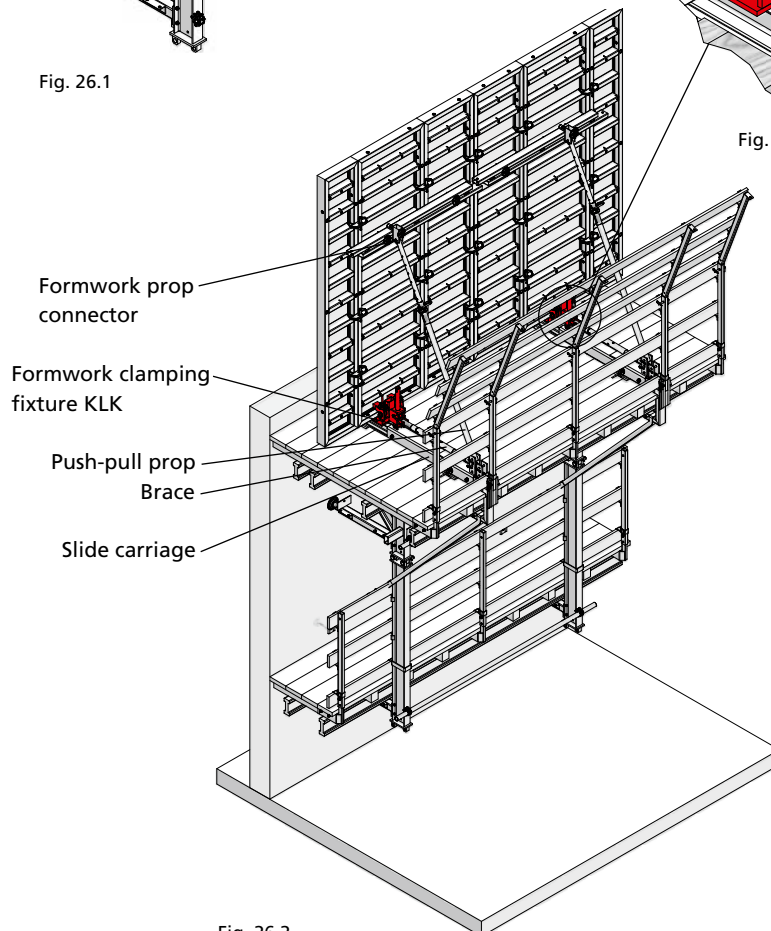


Fig. 26.2

Description	Ref. No.
Slide carriage	29-411-50
Formwork clamping fixture KLK	29-411-60
Adapter AS/ST	29-411-65
Adapter AF/ML	29-411-92
Formwork prop connector	29-804-85
Flange screw 18	29-401-10
Flange screw 28	29-401-12

Braces and push-pull props

Description	Ref. No.	Adjustment range [m]	Adm. pressure [kN]	Adm. tensile force [kN]	Weight [kg]	Recommended area of application
Braces SRL						
SRL 120	29-108-80	0,90–1,50	20,0	30,0	8,3	Horizontal and vertical alignment; can be used in combination with push-pull props
SRL 170	29-108-90	1,20–2,20	25,0	40,0	10,5	Horizontal and vertical alignment; can be used in combination with push-pull props
Braces RSK						
RSK 1	79-401-56	0,90–1,50	40,0	40,0	11,0	Horizontal and vertical alignment; can be used in combination with push-pull props
RSK 170	79-401-95	1,20-2,20	40,0 - 20,0	40,0	12,0	Horizontal and vertical alignment; can be used in combination with push-pull props
Push-pull props R						
R 160	29-109-40	1,35–2,00	25,0	25,0	11,0	Horizontal and vertical alignment; for wall heights up to 2,50 m
R 250	29-109-60	1,90–3,20	25,0	30,0	18,5	Horizontal and vertical alignment; for wall heights up to 4,05 m
R 460	29-109-80	3,40–5,20	20,0	30,0	35,8	Horizontal and vertical alignment; for wall heights up to 6,00 m
R 630	29-109-85	5,10–7,60	9,5	25,0	68,0	Horizontal and vertical alignment; for wall heights up to 9,00 m

The attachment of the push-pull props depends on the type of KLK application. See p. KLK-24 through KLK-26.

Braces must be attached to each KLK bracket.

Formwork height and length of the push-pull props should be identical. The angle between short and long brace should be less than 60°.

Table 27.1

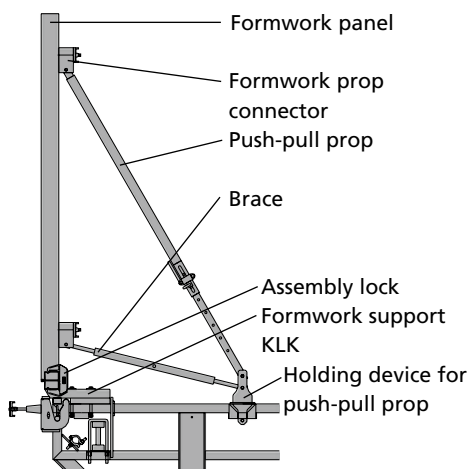


Fig. 27.2 With formwork support KLK

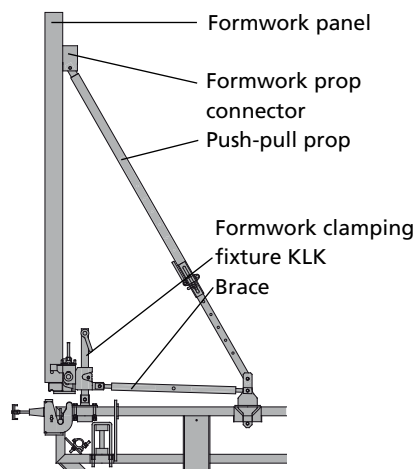


Fig. 27.3 With formwork clamping fixture KLK

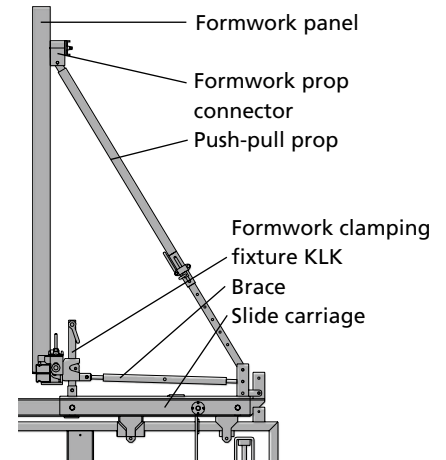


Fig. 27.4 With slide carriage

Assembly of secondary platform

The secondary platform is needed in order to

- do concrete cosmetics
- remove the suspension shoes and climbing cones of the previous pour
- install and remove the wind bracing

The bracket extensions (Fig. 28.1) should be attached to the KLK bracket on the ground by using the 30 mm diameter safety pin. The safety pin must be secured with a cotter pin (Fig. 28.2).

Different pour heights can be achieved by using the bracket extension in different combinations.

For the required length and number of bracket extensions refer to table 34.1 on p. KLK-34.

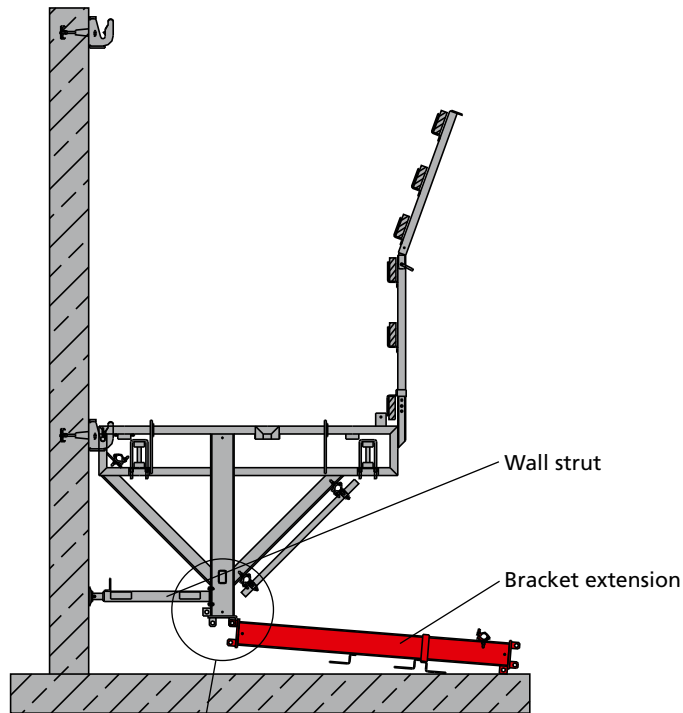


Fig. 28.1

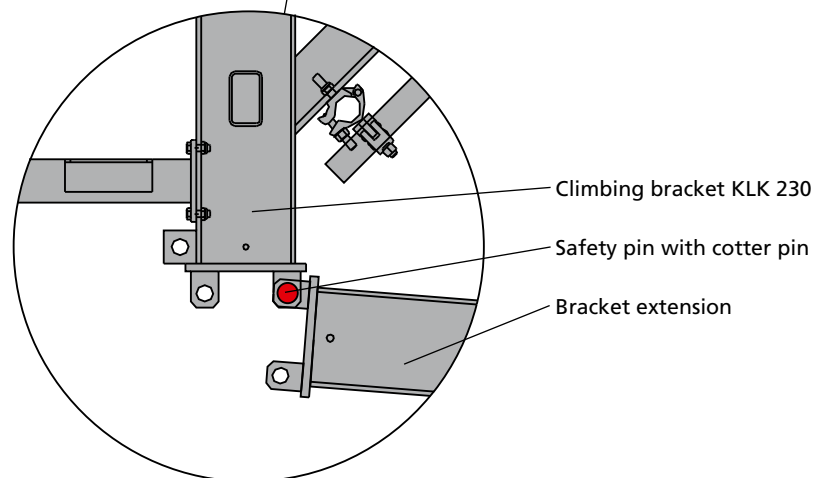


Fig. 28.2 Detail

Description	Ref. No.
Bracket extension	
220.....	29-411-20
120.....	29-411-22
40.....	29-416-40

Assembly of secondary platform

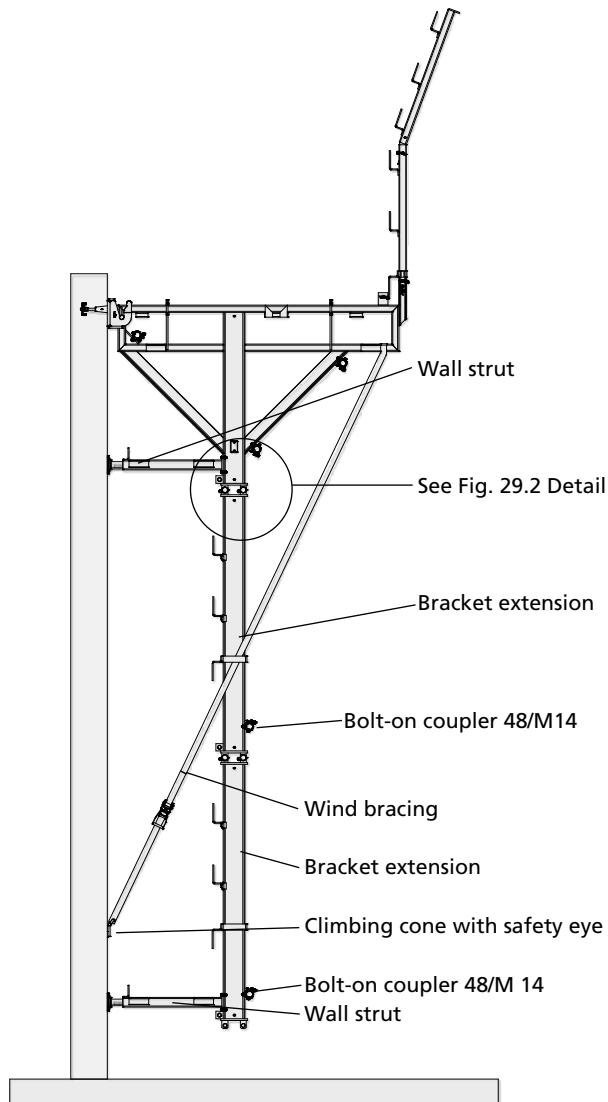


Fig. 29.1

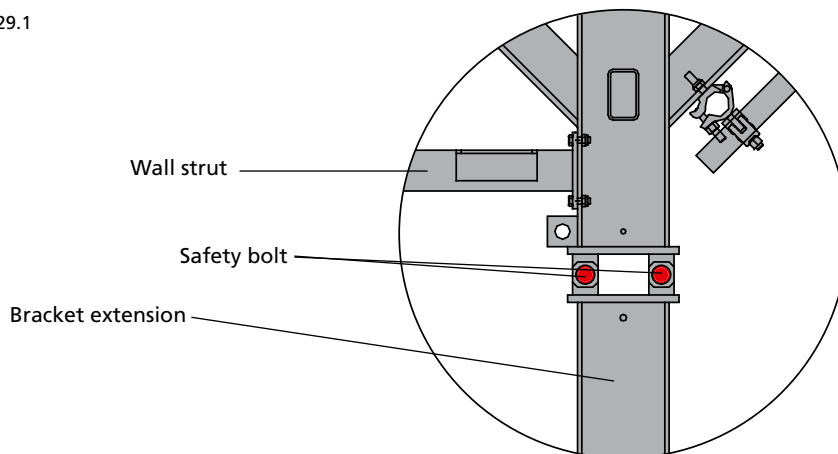


Fig. 29.2 Detail

When suspended, the secondary platform must be secured with two 30 mm safety bolts plus cotter pins (Fig. 29.2).

The wall strut can be attached at all bracket extensions (220, 120 and 40). The 4 required bolts M 12 are delivered with locking nuts.

The planking of the secondary platform is attached with wood screws 6x90 to longitudinal girders or platform girders 10/12 which are mounted to the wall strut by using the beam clamp 295.

If the distance between two KLK brackets exceeds 2,00 m, additional guard-railing posts are required. The posts are attached to the supports for guard-railing post which are mounted to the platform girders (see p. KLK-23). Scaffold tubes with 48,3 mm diameter are attached to the bolt-on couplers 48/M14 to align and brace the secondary platform.

The wind bracing is attached to the climbing scaffold and to the safety eye which is mounted to the cone of the previous pour (Fig. 29.1).

Different pour heights can be achieved by using the bracket extensions in different combinations. For the required length and number of bracket extensions, refer to table 34.1 on p. KLK-34.

Assembly of wind bracing

The safety eye is attached to the climbing cone by using a bolt M24 x 80 and 2 washers M24 (Fig. 30.1).

Warning

Under no circumstances attach the safety eye "through" an existing tie hole to avoid the accidental loosening of the securing nut on the other side of the wall (Fig. 30.2).

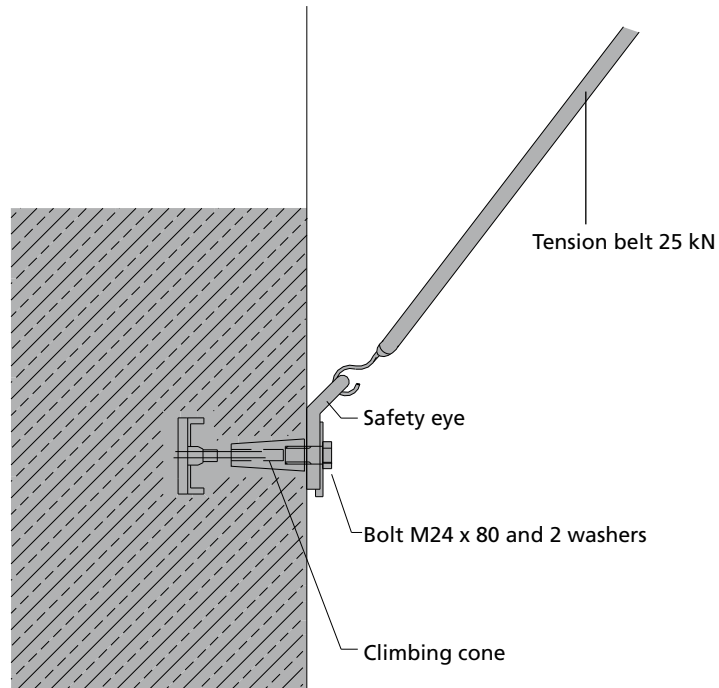


Fig. 30.1

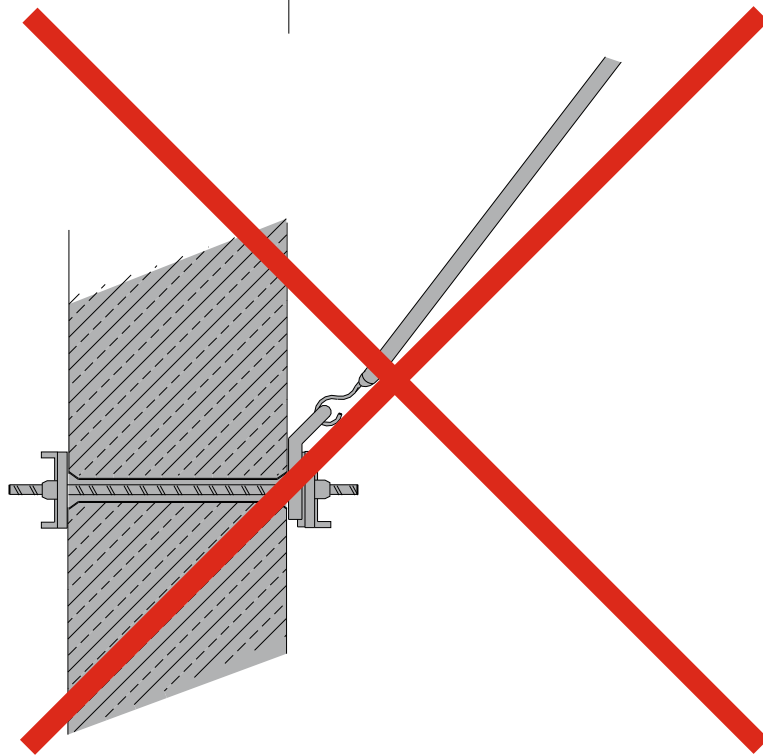


Fig. 30.2

Description	Ref. No.
Safety eye	29-412-40
Hexagonal bolt	
M24 x 80	63-119-53
Washer M24	62-030-50
Tension belt	29-930-10

Assembly of ladder access

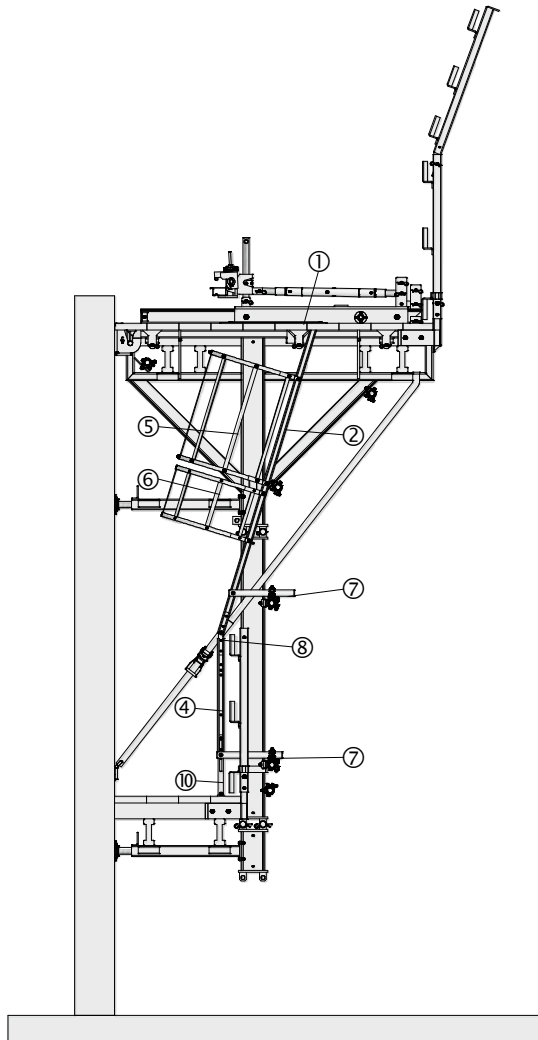


Fig. 31.1

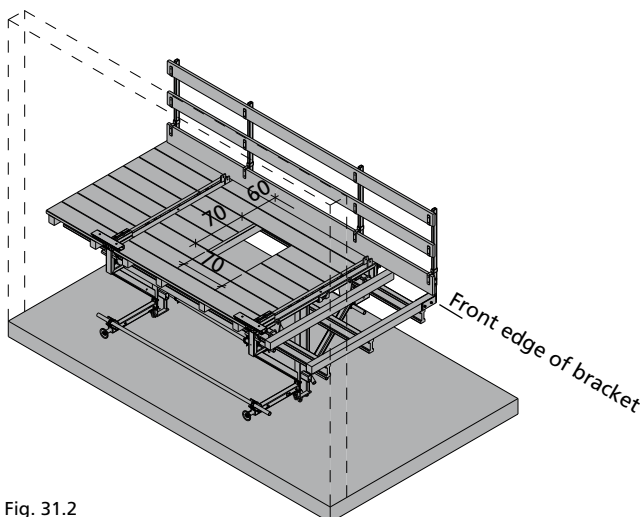


Fig. 31.2

Ladder access KLK, Pour height 2,90 m

- ① Access hatch KLK 29-416-05
- ② Ladder 243 29-416-50
- ④ Extension ladder 90 29-416-60
- ⑤ Safety cage 85 29-414-90
- ⑥ Safety cage 40 29-416-90
- ⑦ Ladder fixture KLK 29-416-65
- ⑧ Ladder link set KLK 29-416-72
- ⑩ Ladder base KLK 29-416-70

The ladder access provides a safe access to and from the secondary platform. We recommend to provide at least 2 ladder access' per site, e.g. one at the first and one at the last platform.

The access hatch is nailed to the planking 60 cm away from the front edge (Fig. 31.2). Make sure the planking is tight and there is no gap between planks and the frame of the access hatch. Also consider that the position of the access hatch does not interfere with the slide carriage.

The ladder is suspended into the hatch frame from below and secured with pins and cotter pins.

If necessary, the ladder system is extended with the ladder link set and extension ladders. The ladder's inclination and the distance to the extension ladder are adjusted with the ladder fixture.

The safety cages are mounted to the ladders (and extension ladders if necessary). Their number is determined by the height of the ladder system.

The extension ladder must be attached to the scaffold tubes with the ladder fixture.

To hold the ladder in place the ladder base is screwed to the planking of the secondary platform if the ladder fixture cannot be mounted in that area. The distance between the ladder end and platform planking must not exceed 40 cm.

Being on the secondary platform it is easy to remove the suspension shoe and install the wind bracing at this (now available) climbing cone.

For safety reasons we recommend attaching a protection net around the ladder access. The net is secured with quick-release belt fasteners to the scaffold tubes.

The access hatch can also be used when the slide carriage and formwork are slid back.

Table 34.1 on p. KLK-34 shows all parts required for the ladder access.

Ladder access – Example

Ladder access KLK, Pour height 4,70 m

- ① Access hatch KLK 29-416-05
- ② Ladder 243 29-416-50
- ③ Extension ladder 210 29-414-60
- ④ Extension ladder 90 29-416-60
- ⑤ Safety cage 85 29-414-90
- ⑥ Safety cage 40 29-416-90
- ⑦ Ladder fixture KLK 29-416-65
- ⑧ Ladder link set KLK 29-416-72
- ⑩ Ladder base KLK 29-416-70

The ladder system can easily be adapted to different pour heights because the extension ladders can be hooked in the ladders above at any step (Fig. 32.2).

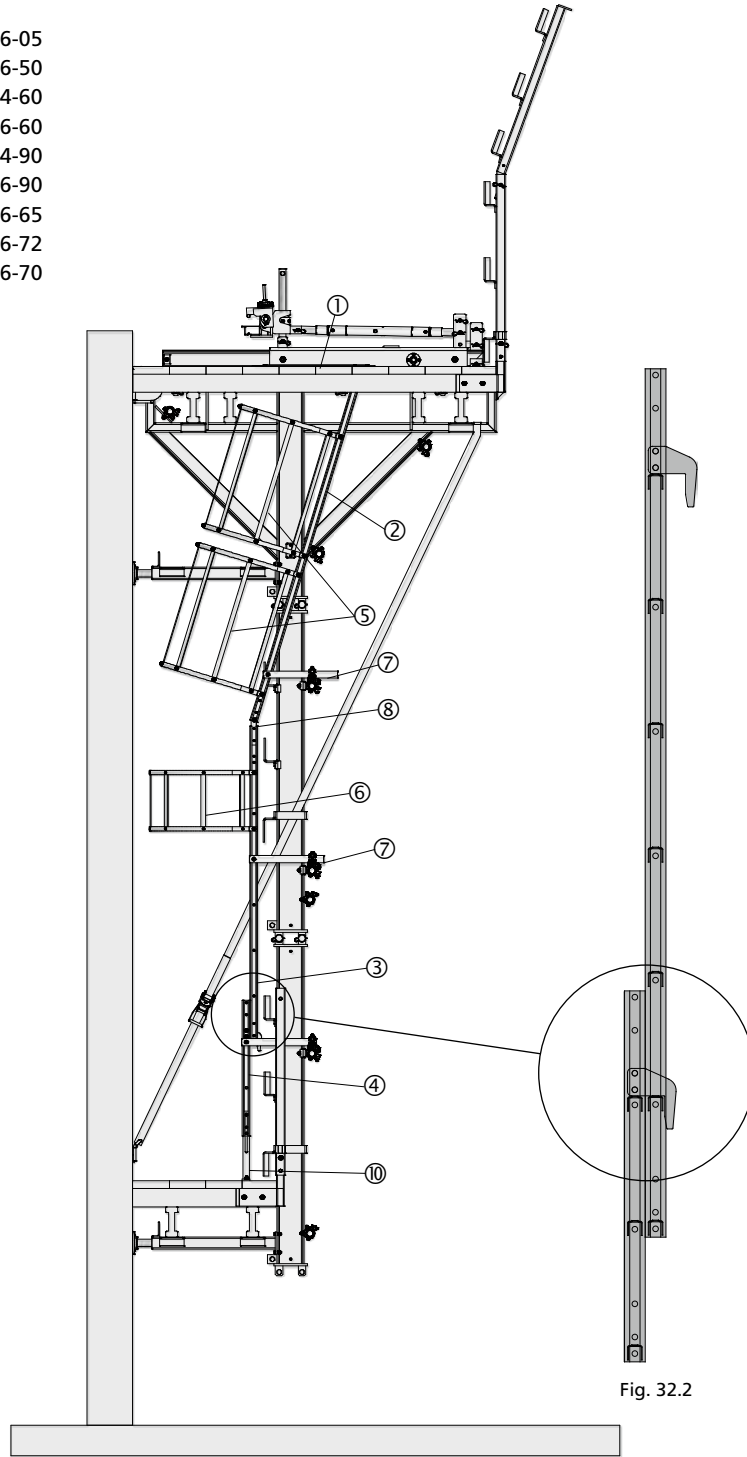


Fig. 32.1

Fig. 32.2

Ladder access – Example

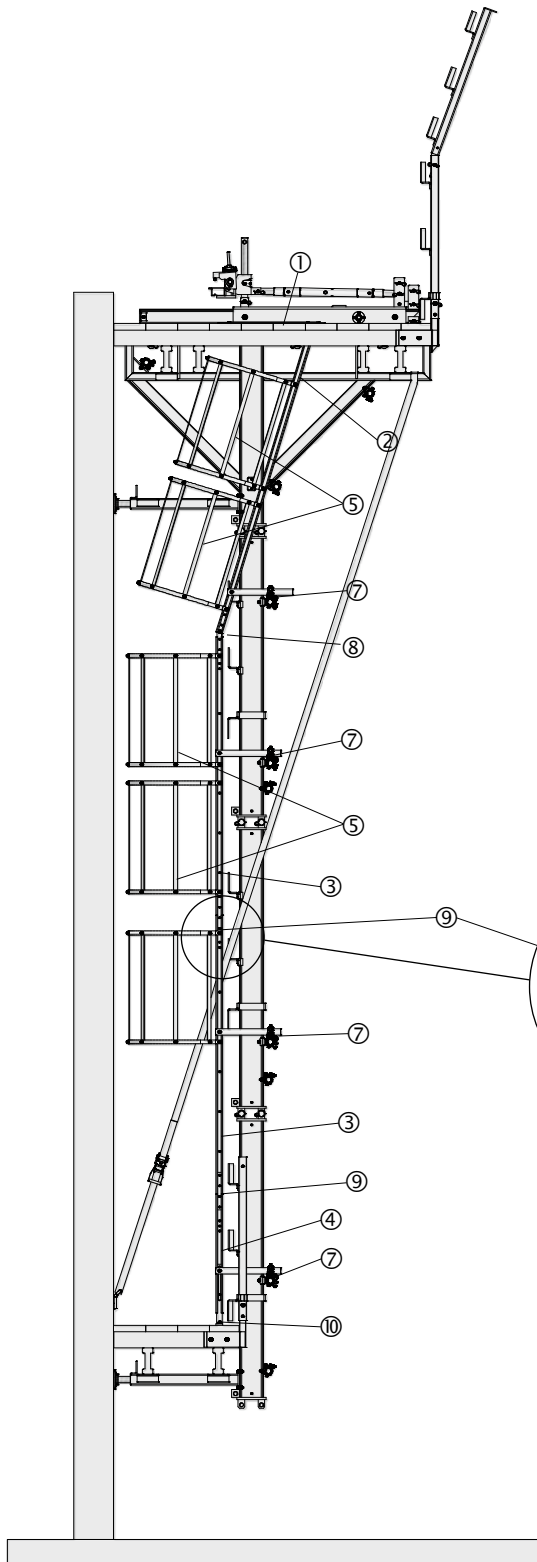


Fig. 33.1

Ladder access, Pour height 6,90 m

- ① Acces hatch KLK..... 29-416-05
- ② Ladder 243 29-416-50
- ③ Extension ladder 210..... 29-414-60
- ④ Extension ladder 90..... 29-416-60
- ⑤ Safety cage 85..... 29-414-90
- ⑦ Ladder fixture KLK 29-416-65
- ⑧ Ladder link set KLK..... 29-416-72
- ⑨ Ladder connector 29-414-70
- ⑩ Ladder base KLK 29-416-70

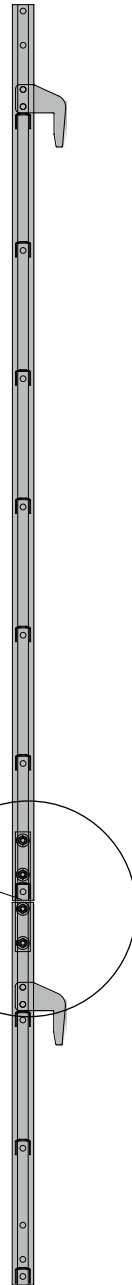


Fig. 33.2

Instead of hooking an extension ladder at a step of a ladder above, it can also be connected with the ladder connector (Fig. 33.2).

Material list

Table 34.1 shows all required parts to assemble a scaffolding unit which includes a secondary platform and a ladder access. The table considers different pour heights from 2,50 m to 6,90 m.

Material list for a unit consisting of 2 brackets, a secondary platform and a ladder access KLK

Ref. No.	Description	Pour height (m)							
		2,50	up to 2,90	up to 3,70	up to 4,10	up to 4,70	up to 5,10	up to 5,90	up to 6,90
Climbing unit (consisting of 2 brackets)									
29-411-00	Climbing bracket KLK 230	2	2	2	2	2	2	2	2
29-411-30	Wall strut	4	4	4	4	4	4	4	4
29-412-23	Scaffold tube 48/200 ¹⁾	4	4	4	4	4	4	4	4
29-412-26	Scaffold tube 48/300 ¹⁾								
29-412-27	Scaffold tube 48/400 ¹⁾								
29-412-52	Swivel-joint coupler 48/48	2	2	2	2	2	2	2	2
29-411-20	Bracket extension 220	2	2	2	2	4	4	4	6
29-411-22	Bracket extension 120	0	0	2	2	0	0	2	0
29-416-40	Bracket extension 40	0	2	0	2	0	2	0	0
Ladder access (at least 2 are recommended per project)									
29-416-05	Access hatch KLK	1	1	1	1	1	1	1	1
29-416-50	Ladder 243	1	1	1	1	1	1	1	1
29-416-62	Extension ladder 60	1	0	0	0	0	0	0	0
29-416-60	Extension ladder 90	0	1	2	0	1	0	1	0
29-414-60	Extension ladder 210	0	0	0	1	1	2	2	3
29-416-72	Ladder link set KLK	1	1	1	1	1	1	1	1
29-414-70	Ladder connector	0	0	2	0	0	0	0	0
29-416-70	Ladder base KLK	0	1	1	0	0	1	0	0
29-416-65	Ladder fixture KLK	2	2	2	3	3	3	4	4
29-412-48	Swivel-tube coupler 48	4	4	4	6	8	8	8	8
29-412-23	Scaffold tube 48/200 ¹⁾	2	2	2	3	4	4	4	4
29-412-26	Scaffold tube 48/300 ¹⁾								
29-412-27	Scaffold tube 48/400 ¹⁾								
29-414-90	Safety cage 85	1	1	2	2	2	3	4	5
29-416-90	Safety cage 40	1	1	0	0	1	1	0	0

Table 34.1

¹⁾ Length of scaffold tube depends on the distance between the brackets.

In the material list is **not** included:

- Configuration depending on the type of application (slide carriage, formwork clamping fixture KLK, formwork support KLK), see p. KLK-6 through KLK-8
- Longitudinal girder, platform girder (if required) and planking, see p. KLK-19 through KLK-22
- Extension for guard-railing post (if necessary), formwork and formwork accessories, see p. KLK-23 through KLK-26
- Additional guard-railing posts required if the distance between 2 brackets exceeds 2,00 m, see p. KLK-23)
- Anchoring (anchor plate, climbing cone, conical sleeve, positioning disc, suspension screw, washer, suspension shoe), see p. KLK-14 and KLK-15

Transport spreader KLK

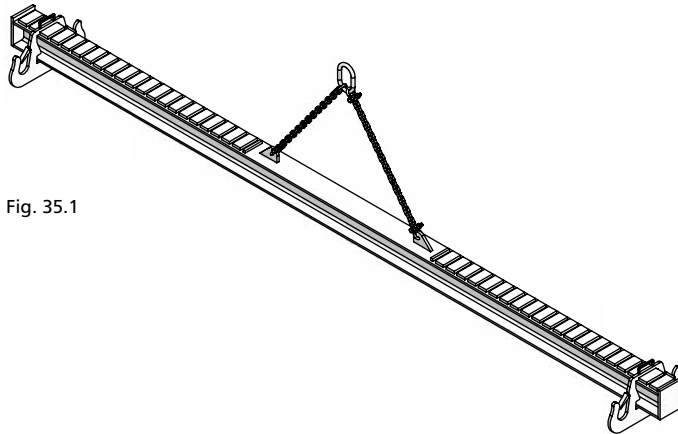


Fig. 35.1

The transport spreader (Fig. 35.1) is recommended when KLK units with slide carriage are used. To avoid interfering of crane slings with the formwork panel tilt back formwork by using the formwork clamping fixture. Make sure that the working platform of the wall formwork has an opening to be able to pass through the crane rope (see p. KLK-38 and KLK-39).

Attention:

Position suspension points of transport spreader KLK perpendicular above pick points of the KLK brackets. The adjustment range of the spreader: 235 cm to 600 cm (Fig. 35.2).

Please observe the operating manual of the transport spreader KLK.

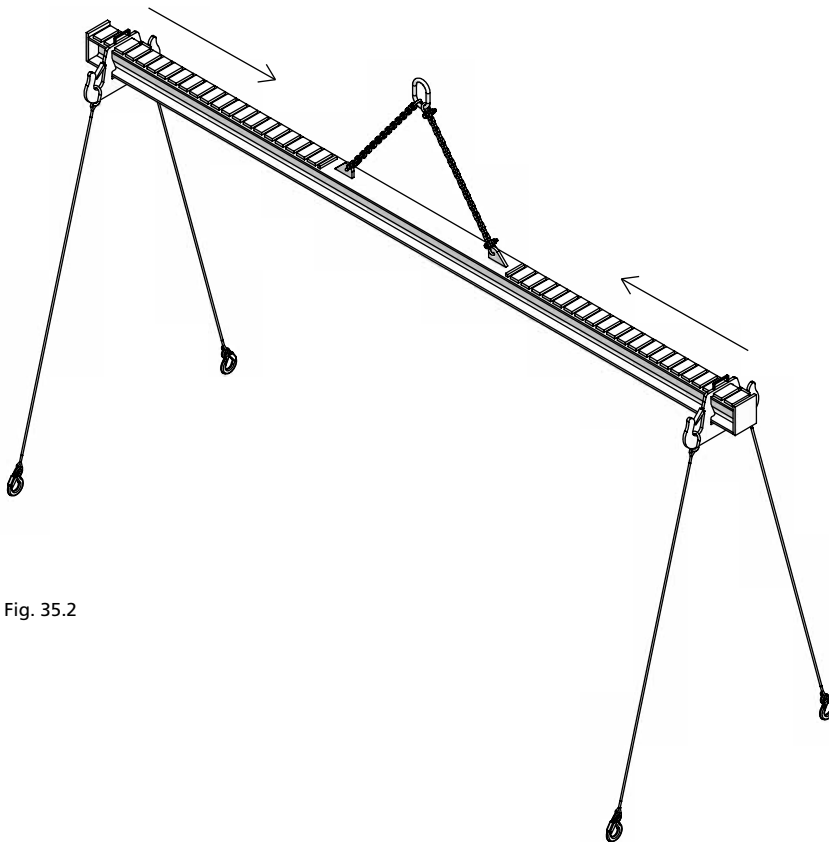


Fig. 35.2

Description	Ref. No.
Transport spreader KLK.....	29-412-45
Chain for transport spreader KLK.....	29-412-42

Moving of KLK units – without slide carriage

Pages KLK-36 and KLK-37 describe how to lift and transport formwork that is attached to the climbing system with formwork support or formwork clamping fixture.

Important

When using the KLK without slide carriage, the formwork and KLK platform must be transported separately.

Safety instructions

- When using our products, the federal, state and local codes and regulations must be observed.
- The person that attaches the crane slings must be secured to the building with a lifeline, lanyard or the like.
- The fall-down protection that is required according to the local legislation must be identified and listed in the assembly instructions.
- All personnel must be off the platform when moving units by crane.
- All loose parts and tools must be removed from the platforms prior to lifting and transporting them.

Moving of formwork

1. Attach the crane hooks to the formwork panels (always use 2 crane hooks per gang). Make sure not to exceed the crane hook's admissible load capacity. Also observe the operating instructions of the M-crane hook or AS-crane hook.
2. After securing the formwork with the crane hooks and slings, loose the assembly locks when using the formwork support or open the claws of the formwork clamping fixture, then detach the push-pull props.
3. Crane-gang the formwork (Fig. 36.1)

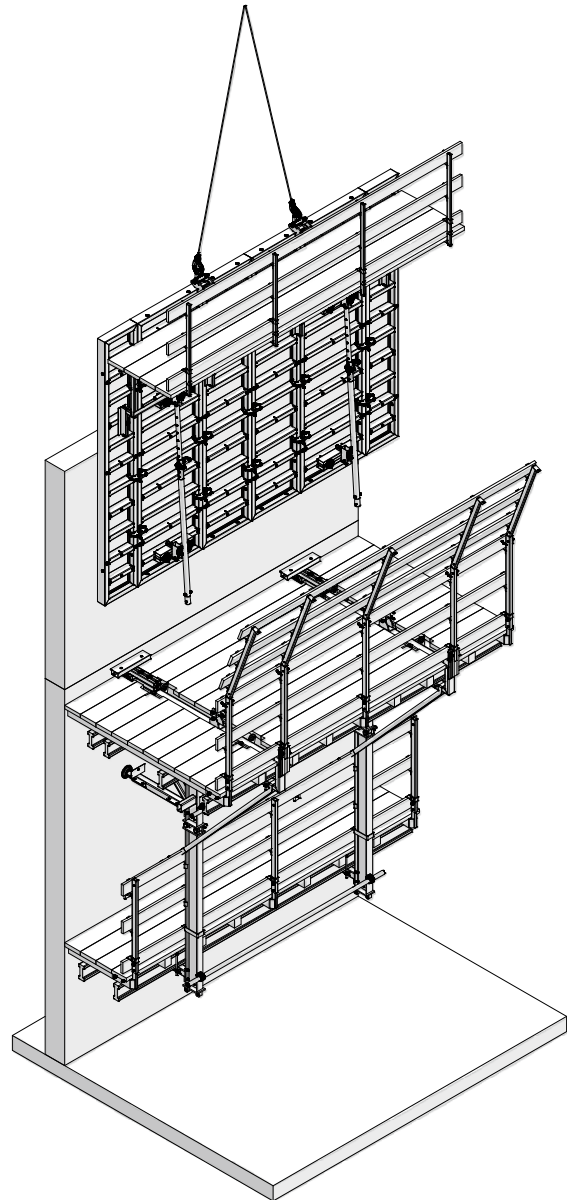


Fig. 36.1 With formwork support KLK

Moving KLK units – without slide carriage

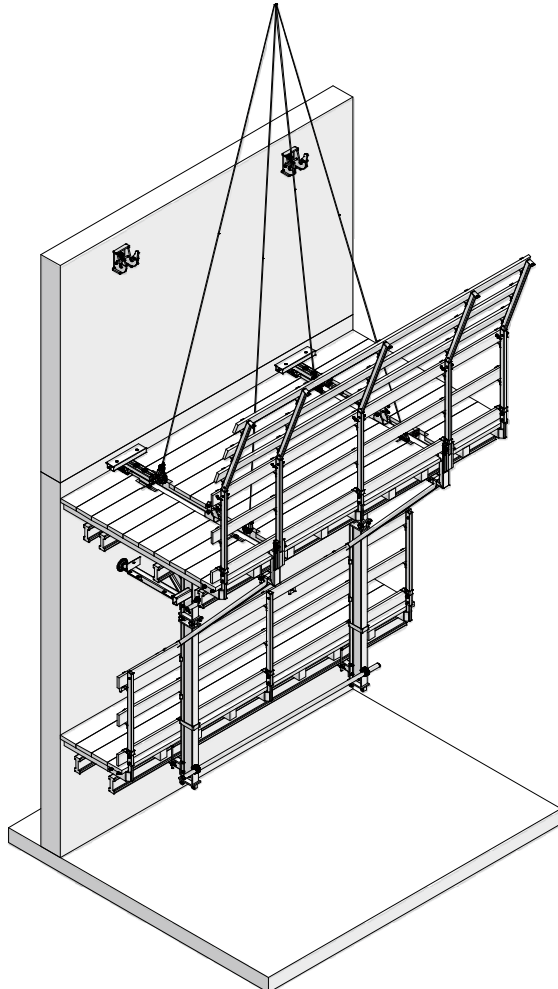


Fig. 37.1 With formwork support KLK

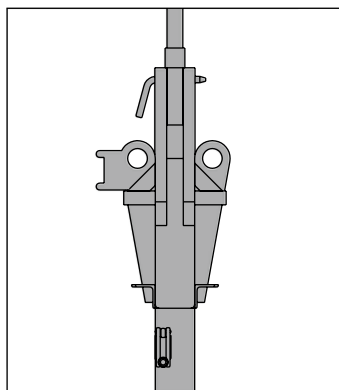


Fig. 37.2 KLK crane eyes

Moving of KLK units when using the formwork support KLK or the formwork clamping fixture

1. Attach the crane slings to the crane eyes of the KLK bracket (Fig. 37.1 and 37.2). The maximum load capacity of each KLK crane eye is 2,5 tons.
2. Detach the wind bracing.
3. Detach the safety pins of the suspension shoes.
4. Move the platform unit to the next cycle.
5. Secure the platform unit with safety pins at the suspension shoes of the next cycle.
6. Attach the safety eye to the climbing cone of the previous pour. Tighten the wind bracing.
7. Unhook the crane slings.
8. Transport the other KLK units.
9. Attach the formwork and push-pull props at the KLK brackets.

Important

Free-standing climbing scaffolds have to be equipped with a side railing at their sides.

Moving of KLK units – with slide carriage

When using the formwork clamping fixture KLK and the slide carriage, the formwork and platform can be moved as one unit.

Safety instructions

- When using our products, the federal, state and local codes and regulations must be observed.
- The person that attaches the crane slings must be secured to the building with a lifeline, lanyard or the like.
- The fall-down protection that is required according to the local legislation must be identified and listed in the assembly instructions.
- Persons may only be transported when wearing personal protective equipment (PPE).
- All loose parts and tools must be removed from the platforms prior to lifting and transporting them.

Make sure that the working platform of the wall formwork has an opening to be able to pass through the crane rope (Fig. 38.2).

The suspension shoes for the next pour have to be installed before the unit is moved.

When moving the unit, the slide carriage has to be slid back and secured by the wedge which is located at the side of the carriage. We recommend tilting back the formwork to prevent the crane rope from interfering with the formwork facing.

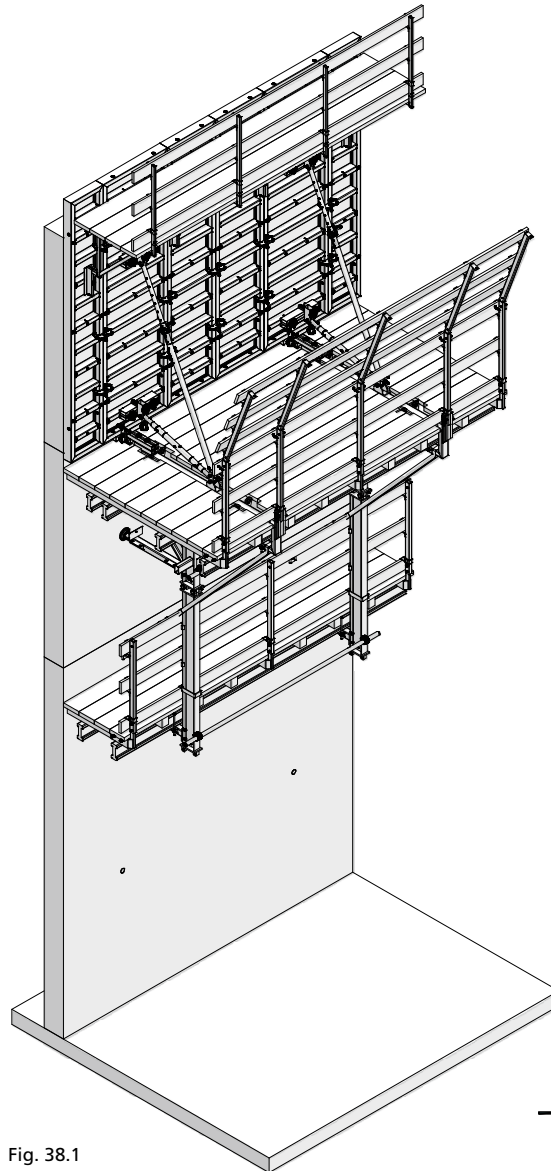


Fig. 38.1

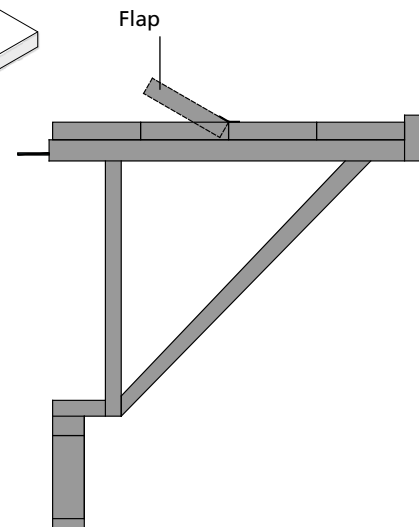


Fig. 38.2

Moving of KLK units – with slide carriage

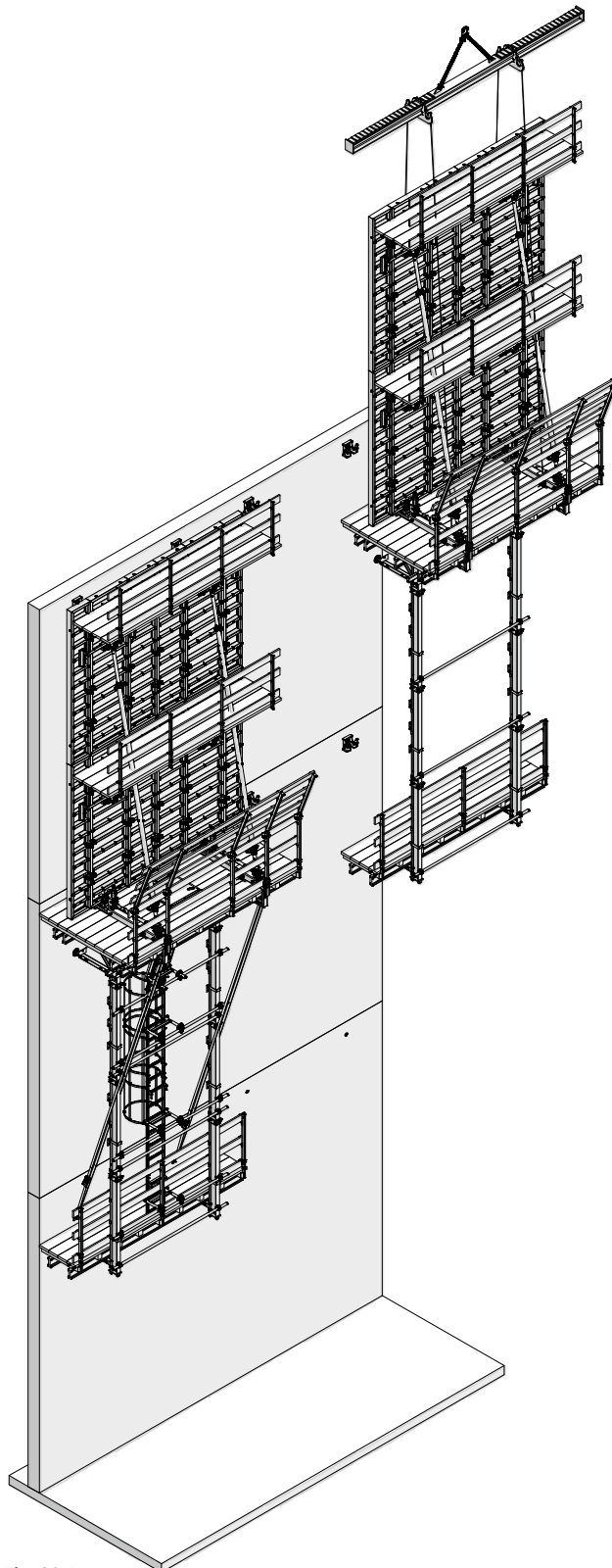


Fig. 39.1

Moving the KLK units

1. Attach the crane slings at the crane eyes of the KLK bracket (Fig. 39.1). We recommend using the transport spreader KLK (see p. KLK-35). The crane ropes have to be as long as required to have the transport spreader located in the center of gravity of the KLK unit and to have 2 strings in front of the formwork and 2 behind it.
2. Detach the wind bracing.
3. Detach the safety pins of the suspension shoes.
4. Move the platform unit to the next cycle.
5. Secure the platform with safety pins at the suspension shoes of the next cycle.
6. Attach safety eye to the climbing cone of the previous pour. Tighten wind bracing (tension belt).
7. Unhook the crane slings.
8. Transport the other KLK units.

Important

Free-standing climbing scaffolds have to be equipped with a side railing at their sides.

Single-sided climbing

The KLK can also be used for single-sided applications (Fig. 40.1).

For a detailed solution please contact our experts of the technical department.

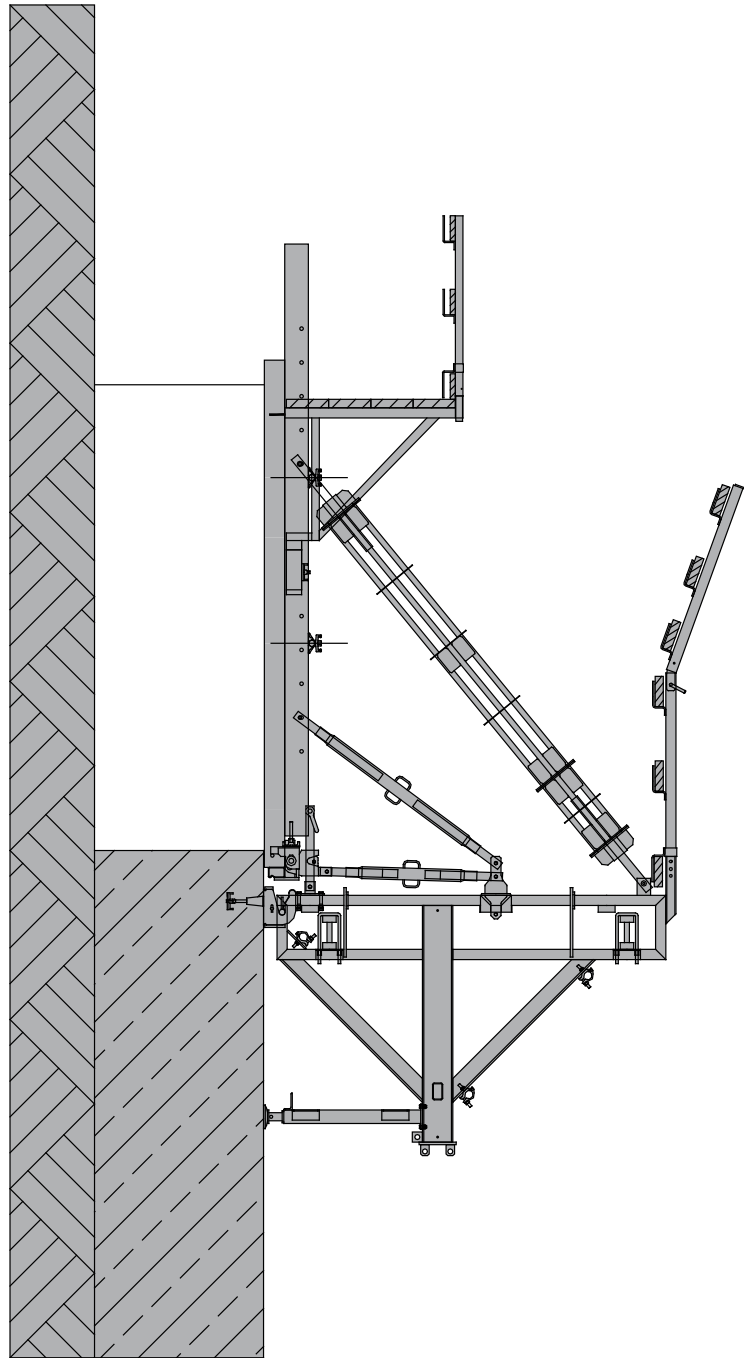


Fig. 40.1

Shaft platform

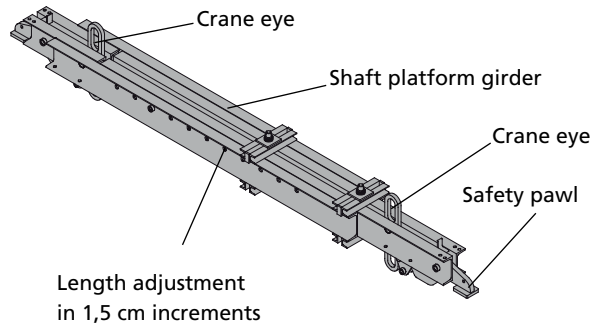


Fig. 41.1

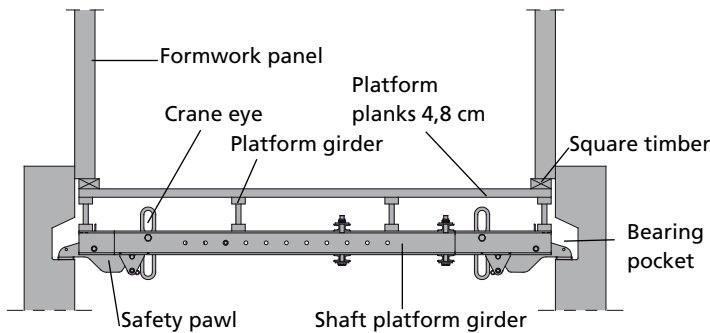


Fig. 41.2

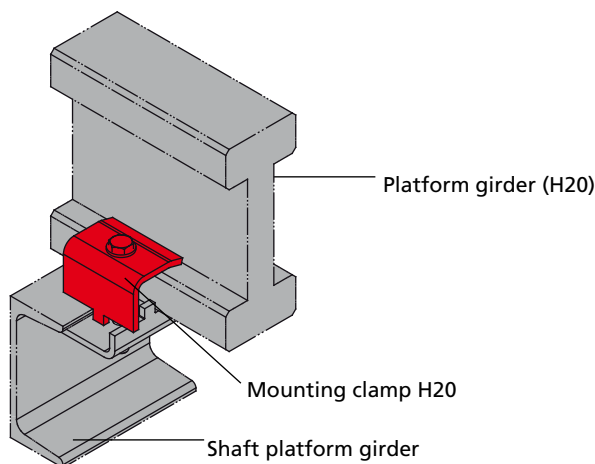


Fig. 41.3

Shaft platforms are used in elevator shafts, stairways and other shaft structures where no or too less room is available for conventional shoring.

6 shaft platform girders are available in different lengths for shaft openings ranging from 1,41 m to 5,78 m. The girders can be adjusted in 1,5 cm increments.

A shaft platform needs at least 2 shaft platform girders, platform girders (wood, aluminium or steel) and a platform with planks that are at least 4,8 cm thick.

The platform girders (H20) are attached to the shaft platform girder with mounting clamps H20 (Fig. 41.3).

The wall formwork is placed on top of the platform (Fig. 41.2).

The shaft platform girder is placed in the bearing pockets (Fig. 41.2) which were cast in before.

Description	Ref. No.
Shaft platform girder	
4840 - 5830.....	29-150-70
3850 - 4840.....	29-150-60
2850 - 3840.....	29-150-50
2390 - 2860.....	29-150-40
1930 - 2400.....	29-150-30
1460 - 1930.....	29-150-20
Bearing pocket.....	29-151-80
Mounting clamp H20.....	29-411-62

Shaft platform

The installation dimensions of the bearing pocket (Fig. 42.2) depend on the height of the chosen platform girder (here a wooden H20 girder), on the thickness of the planks and on the thickness of the square timber (Fig. 42.1).

If other platform girders (aluminium or steel) are used, the installation dimensions may change.

The concrete must have a minimum strength of 15 N/mm² when using the shaft platform.

The platform girders must not be placed in the swing range of the safety pawl (see Fig. KLK-43.3).

Make sure the safety pawl has a minimum bearing of 7,5 cm.

When lifting the platform, the safety pawl swings up and automatically resets itself at the next bearing pocket.

Dimensions in cm

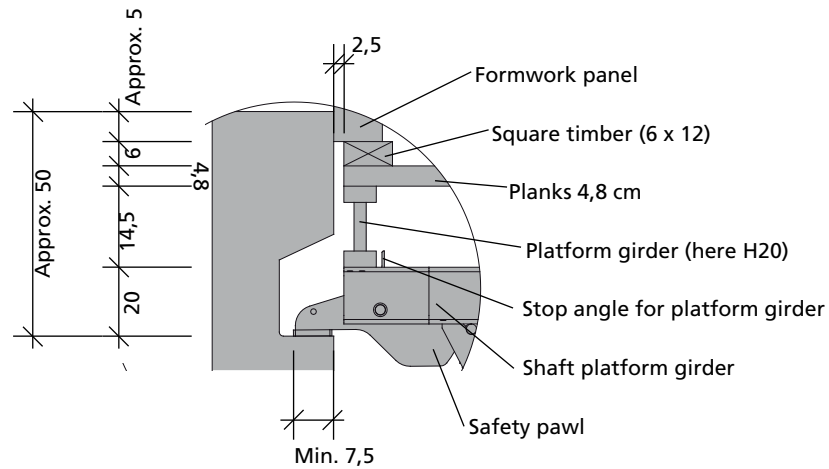


Fig. 42.1

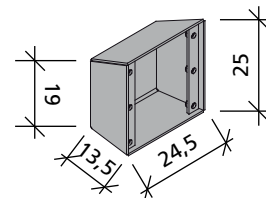


Fig. 42.2 Bearing pocket

Shaft platform

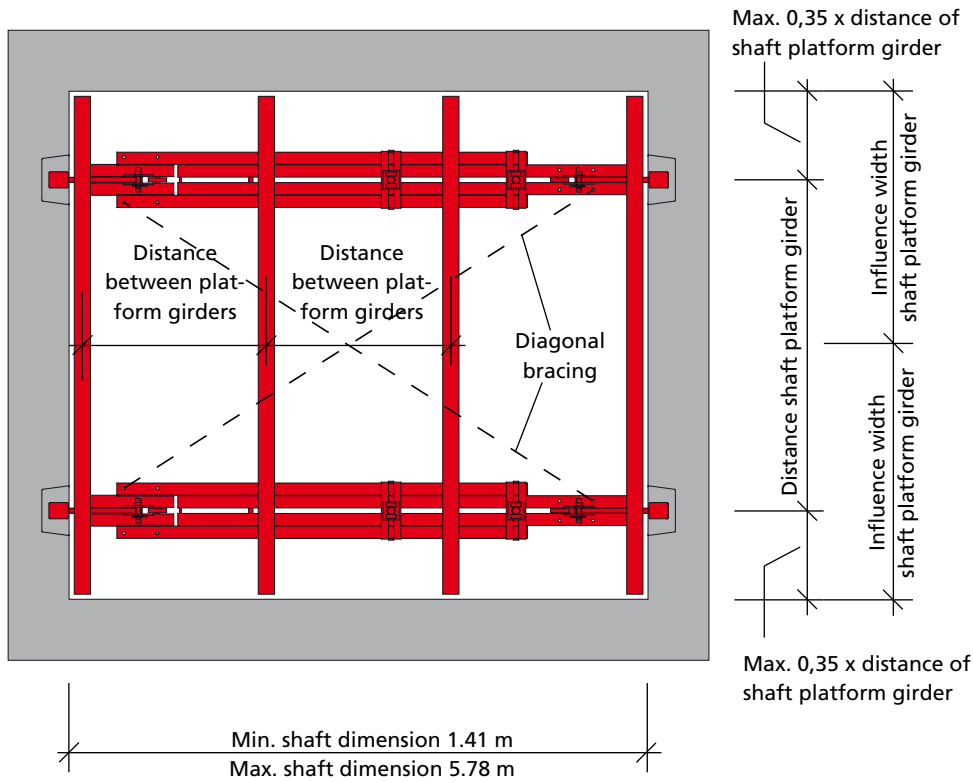


Fig. 43.1

6 different shaft platform girders are available to handle shafts with a min. dimension of 1,41 m and a max. dimension of 5,78 m (Fig. 43.1)

Table 43.2 shows the maximum influence width of the shaft platform girders for a maximum pouring height of 4,25 m. The influence widths are based on a symmetrical platform layout and a maximum working load of 2,00 kN/m².

The distance between the platform girders depends on the kind of girder (wood, steel or aluminium) and the planking. An additional structural analysis may be required.

Ref. No.	Shaft platform girders for 4,25 m pouring height	Influence width (m)
29-150-20	Spg 1460 - 1930 mm	3,00
29-150-30	Spg 1930 - 2400 mm	3,00
29-150-40	Spg 2390 - 2860 mm	3,00
29-150-50	Spg 2850 - 3840 mm	3,00
29-150-60	Spg 3850 - 4840 mm	1,75
29-150-70	Spg 4840 - 5830 mm	1,50

Table 43.2

For pouring heights other than 4,25 m please contact our technical department.

The concrete must have a minimum strength of 15 N/mm² when using the shaft platform.

A crane sling must be attached at each crane eye of each shaft platform girder when moving the shaft platform (Fig. 43.1).

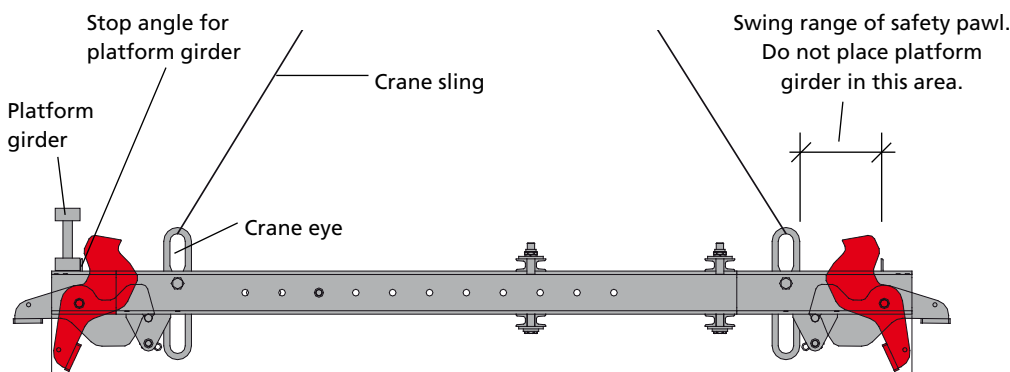


Fig. 43.3

Make sure to leave an opening in the planking to have access to the crane eyes.

When lifting the platform, the safety pawl swings up and automatically resets itself at the next bearing pocket. Do not place a platform girder in the swing range of the safety pawl (Fig. 43.3).

Record to check cones

Use this form to carry out and document the control of the (climbing) cones used for bracket scaffolds, their installation in the formwork and/or the go-ahead for pouring.		
Project:		
Builder: Address: Phone, fax, e-mail:		
Site address: Phone, fax, e-mail:		
Company that installs the climbing cones: Company: Address: Phone, fax, e-mail:		
Contractor or assigned site manager: First/Last name: Phone, fax, e-mail:		
The contractor's or site manager's expert deputy: First/Last name: Phone, fax, e-mail: was briefed by the site manager <div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> Place, date Contractor's or site manager's signature </div>		
Scope and Area of Application This form is to be filled in for each building activity that uses (climbing) cones (hereafter called cones) that are subject to a general technical approval and installed in the formwork to anchor bracket scaffolds if different installation depths of a cone size can no longer be controlled after concrete was poured. The appropriate general technical approval must be observed. Section 4 of the approval demands that the contractor who is assigned the task of installing the cones or the site manager to whom the contractor assigned this task or the site manager's expert deputy be present when the cones are installed. Such person must make sure that the complete instruction and construction documents as well as the supplier's technical documentation, also called Technical Instruction Manual or Assembly and Operating Instructions, are at hand and that the assembly, installation and all related work be carried out in due form. Such person must control and document in due form EACH anchoring point. Check and document that the concrete has the required strength before lifting and transporting the bracket scaffolds.		
MEVA Schalungs-Systeme GmbH Industriestraße 5 72221 Haiterbach Phone: +49 7456 692-01 Fax: +49-7456 692-66 e-mai: info@meva.de	MEVA climbing cone KK 15/M 24 Form: Cone control, Go-ahead for pouring	Appendix 8 of the General Technical Approval Z-21.6-1751 of 7th February 2005

Record to check cones

Construction site	Date	
Project no.	Protocol no.	
Building part/construction section/level/floor		
Form and procedure for the control of cones that are used for bracket scaffolds, their installation in the formwork and/or the go-ahead for pouring		
<p>Control of the cones</p> <ul style="list-style-type: none"> • EACH anchoring point that uses a climbing cone (hereafter called cone) to ancor a bracket scaffold must be checked for TYPE, COMPLETENESS, INSTALLATION LENGTH, SCREW-IN DEPTH, correct POSITION and adjustment. The screw-in depth can be controlled by cross-checking the tie rod steel length with the installation length. • If additional rebars are required for the cones or in order to secure threaded plates (anchor plates) in their position, the rebars must also be controlled. • Different cone installation lengths must be documented and the document be ATTACHED to the cone control and procedure form. • All cone parts must be checked for faultlessness. For example, parts with sluggish threads must be sorted out because sluggish threads are not permitted. Damaged anchoring parts of the cones must only be replaced by original parts. • Any corrections or replacement and tolerated deviation from the plan for anchoring parts must be documented and the document be ATTACHED to the cone control and procedure form. 		
<p>List the appropriate formwork and rebar plans as well as construction drawings (e.g. installation details for the cones), installation and construction documents:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>		
<p>Confirmation</p> <p>The controlled cones are in line with the completely released installation and construction documents. The cones were installed in the formwork in due form according to the supplier's technical documentation (Technical Instruction Manual or Assembly and Operating Instructions) covering the bracket scaffold and scaffold anchoring.</p> <p>See ATTACHED document(s) no.</p> <p>When the concrete has reached the required strength, the cones may be used with the load indicated in the installation and construction documents.</p> <p>$f_{ck,cube200} = B_{W200} = \dots\dots\dots N/mm^2 \geq 10 N/mm^2$ (Concrete: strength class $\geq C20/25$)</p> <p>The building parts listed above may now be poured.</p> <p>.....</p> <p>Place, date Signature of contractor or contractor's site manager or deputy</p>		
This form and all attached documents as well as all installation and construction documents must be on display for reading on site during the entire construction phase.		
<p>MEVA Schalungs-Systeme GmbH Industriestraße 5 72221 Haiterbach Phone: +49 7456 692-01 Fax: +49-7456 692-66 e-mai: info@meva.de</p>	<p>MEVA climbing cone KK 15/M 24</p> <hr/> <p>Form: Cone control, Go-ahead for pouring</p>	<p>Appendix 8 of the General Technical Approval Z-21.6-1751 of 7th February 2005</p>

Service

Cleaning

The KLK parts are cleaned professionally upon return.

Cleaning and regeneration of wall formwork

Cleaning is done using industrial equipment with assembly lines.

The regeneration is carried out as follows: The frames are checked and, if necessary, repaired, painted and provided with a new facing.

As long as the formwork equipment is up-to-date, a regeneration will always be a more economical solution than purchasing new formwork.

Please note that the cleaning and regeneration service is not available in all countries in which MEVA does business.

Rentals

With much equipment on stock, we offer our customers the option of renting supplementary material during peak times. We also give prospective customers the chance to test MEVA formwork so they can see its benefits for themselves in actual use.

RentalPlus

Since MEVA started the flat rate for cleaning and repair of rented formwork systems in early 2000, more and more contractors experience the outstanding advantages. Ask our representatives about the details!

Formwork drawings

Of course, all offices in our technical department have CAD facilities. You get expert, clearly represented plans and work cycle drawings.

MBS

MEVA Basic Support

MBS is an addition to AutoCAD, developed by MEVA Formwork Systems in 2000. MBS is based on standard programs (AutoCAD and Excel) and can be used on any PC that has these two programs installed. It includes pull down menus for AutoCAD and applications to ease forming. It also includes the possibility to create take-offs.

Special solutions

We can help with special parts, custom-designed for your project, as a supplement to our formwork systems.

Static calculations

Generally, this is only necessary for applications like single-sided formwork where the anchor parts are embedded in the foundation or the base slab. If requested, we can perform static calculations for such applications at an additional charge.

Formwork seminars

To make sure that all our products are used properly and efficiently, we offer formwork seminars. They provide our customers a good opportunity to keep themselves up-to-date and to benefit from the know-how of our engineers.

