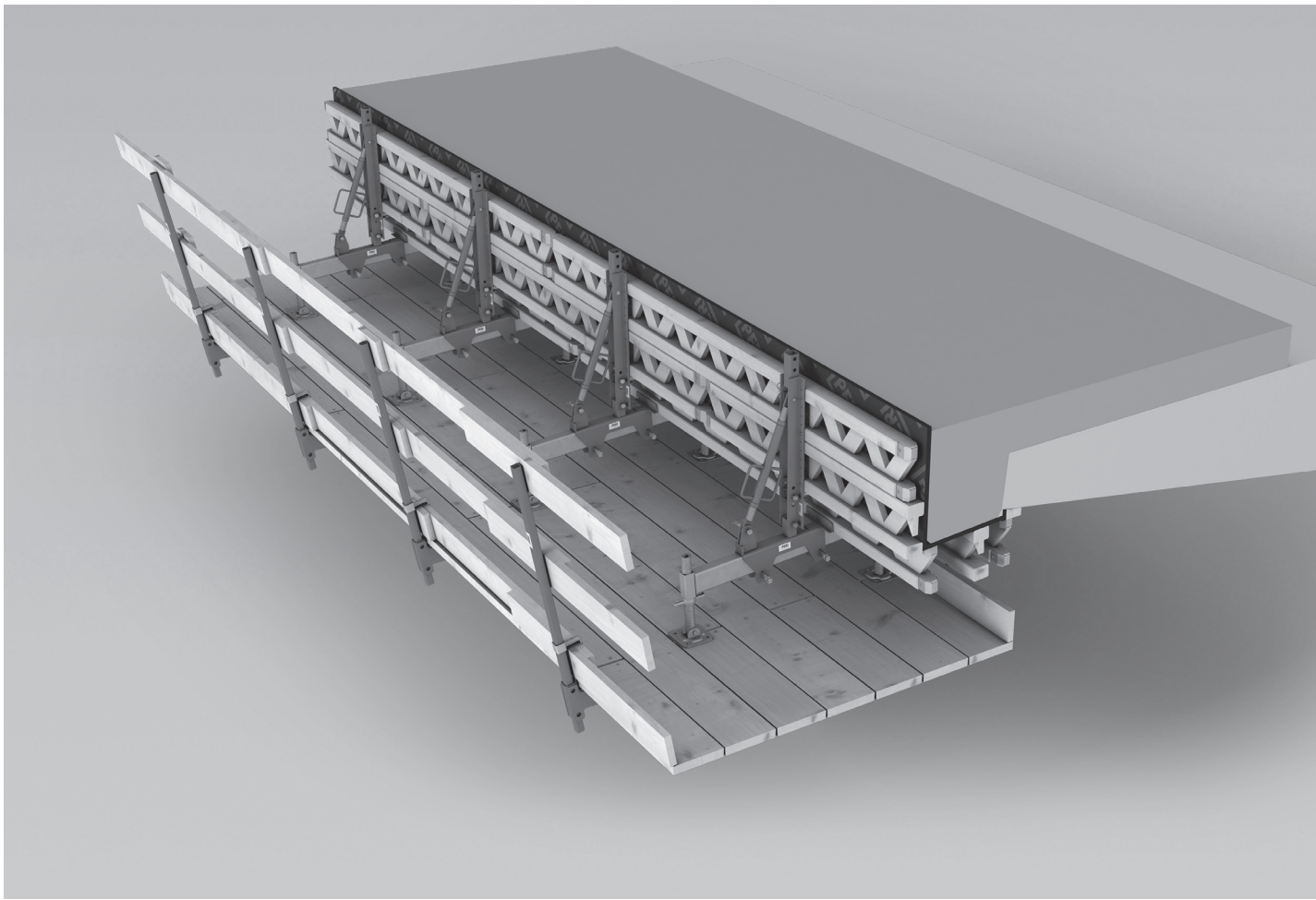
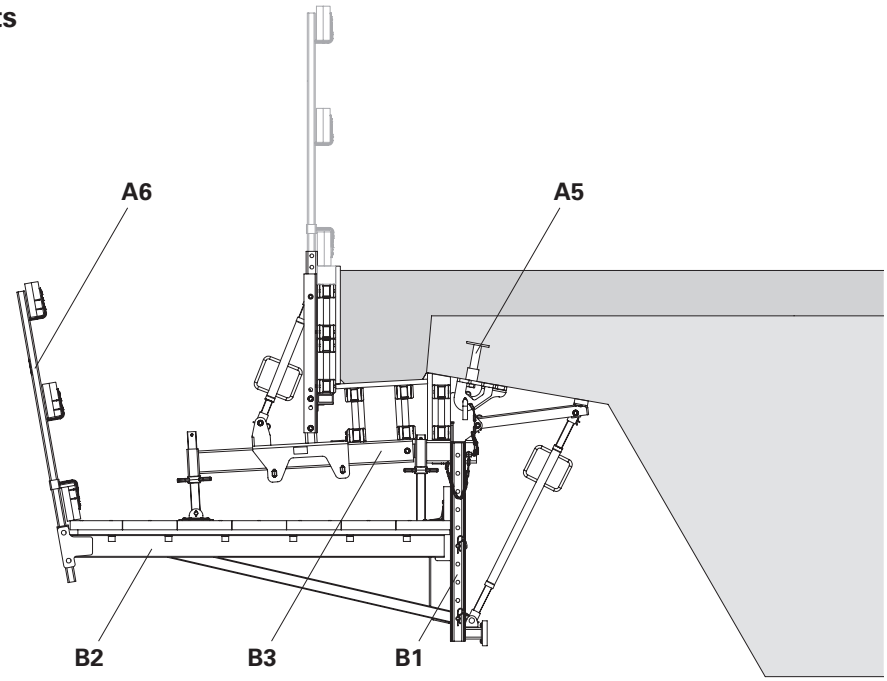
VGK
Console bracket system

Instructions for Assembly and Use – standard configuration – Version 2.0

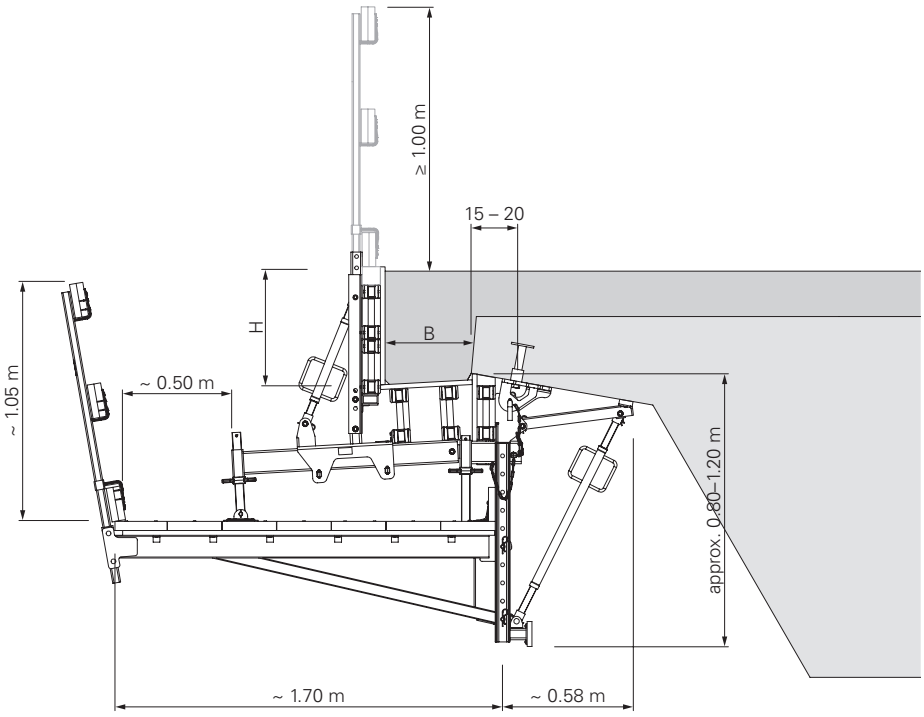


Content

Main components



Dimensions



Key

Pictogram | Definition

 Danger/Warning/Caution

 Note

 To be complied with

 Load-bearing point

 Visual inspection

 Tip

 Incorrect use

 Safety helmet

 Safety shoes

 Safety gloves

 Safety goggles

 Personal protective equipment to prevent falling from a height (PPE)

 Observe additional documentation.

Arrows

- Arrow representing an action
- Arrow representing a reaction of an action*
- Arrow representing forces

* If not identical to the action arrow.

Safety instruction categories
The safety instructions alert site personnel to the risks involved and provide information on how to avoid these risks. Safety instructions can be found at the beginning of the section or before instructions for action and are highlighted as follows:

Danger
This sign indicates an extremely hazardous situation which could result in death or serious, irreversible injury if the safety instructions are not followed.

Warning
This sign indicates a hazardous situation which could result in death or serious, irreversible injury if the safety instructions are not followed.

Caution
This sign indicates a hazardous situation which could result in minor or moderate injury if the safety instructions are not followed.

Note
This sign indicates situations in which failure to observe the information can result in material damage.

Format of the safety instructions

Signal word
Type and source of hazard!
Consequences of non-compliance.
⇒ Preventative measures.

Dimensions
Dimensions are usually given in cm. Other measurement units, e.g. m, are shown in the illustrations.

Conventions
- Instructions are numbered with: 1. ....., 2. ....., 3. .....
- The result of an instruction is shown by: →
- Position numbers are clearly provided for the individual components and are given in the drawing, e.g. **1**, in the text in brackets, for example (**1**).
- Several position numbers, i.e. alternative components, are represented with a slash: e.g. **1/2**.

Notes on illustrations
The illustration on the front cover of these instructions is understood to be a system representation only. The assembly steps presented in these Instructions for Assembly and Use are shown in the form of examples with only one component size. They are valid for all component sizes contained in the standard configuration.

To facilitate understanding, detailed illustrations are sometimes incomplete. The safety equipment that might not be shown in these detailed illustrations must still be available.

Target groups

Contractor
These Instructions for Assembly and Use are designed for contractors who either
- assemble, modify and dismantle PERI systems, or
- use them, e.g. for concreting, or
- allow them to be used for other operations, e.g. carpentry or electrical work.

Competent person
(Construction Site Coordinator)
The Safety and Health Protection Coordinator*
- is appointed by the client,
- must identify potential hazards during the planning phase,
- determines measures that provide protection against risks,
- creates a safety and health protection plan,
- coordinates the protective measures for the contractor and site personnel so that they do not endanger each other,
- monitors compliance with the protective measures.

Competent persons qualified to carry out inspections
Due to the specialist knowledge gained from professional training, professional experience and recent professional activity, the competent person qualified to carry out inspections has a reliable understanding of safety-related issues and can carry out inspections correctly. Depending on the complexity of the inspection to be undertaken, e.g. scope of testing, type of testing or the use of certain measuring devices, a range of specialist knowledge is necessary.

Qualified personnel
PERI systems may only be assembled, modified or dismantled by personnel who are suitably qualified to do so. Qualified personnel must have completed a course of training** in the work to be performed, covering the following points at least:
- Explanation of the plan for the assembly, modification or dismantling of the formwork in an understandable form and language.
- Description of the measures for assembling, modifying or dismantling the formwork.
- Designation of the preventive measures to be taken to avoid the risk of persons and objects falling.
- Designation of the safety precautions in the event of changing weather conditions that could adversely affect the safety of the system, as well as the personnel concerned.
- Details regarding permissible loads.
- Description of all other risks and dangers associated with assembly, modification or dismantling operations.

- **In other countries, ensure that the relevant national guidelines and regulations in the respective current version are complied with!**
- **If no country-specific regulations are available, it is recommended to proceed according to German guidelines and regulations.**
- **A competent person must be present on site during system operations.**

* Valid in Germany: Regulations for Occupational Health and Safety on Construction Sites 30 (RAB 30).

** Instructions are given by the contractor themselves or a competent person selected by them.

Additional technical documentation

- Approvals:
  – Approval No. Z-21.6-1764 Alternative Anchoring
  – Approval No. Z-21.6-1766 PERI Screw-On Cone for the Anchoring of Bracket Scaffold
  – Approval No. Z-21.6-1768 Peri Anchor Sleeve M24 and PERI Anchor Sleeve DW 15
  – Approval No. Z-21.8-2048 Refurbishment Anchor
- Design information:
  – Design Information for the VARIOKIT VGK
- Instructions for Assembly and Use:
  – Concrete cones and concrete adhesive tie points
  – MAXIMO System Supplement
- User information:
  – Pallets and stacking devices
- Type tests:
  – VARIOKIT VGK Cantilevered Parapet Bracket
- Technical Data Sheets
  – PERI Screw-On Sleeve M16/164
- Design Tables 2015 – Formwork and Shoring
- Product brochures:
  – DK, SK anchor technology – Reliable sealing of clamping points

Intended use

Product description
PERI products have been designed for exclusive use in the industrial and commercial sectors only by suitably trained personnel.

The VGK Console Bracket System is used for the concreting of cantilevered parapets in cantilever and abutment areas of bridges cast in-situ or constructed using prefabricated elements.

The VGK Console Bracket System system can also be used as a pure work platform, either in the standard configuration VGK 160 or in the VGK Flex configuration.

The system facilitates the forming of parapet geometries up to H/W = 100/60 cm. Work platforms and formwork units are separate. This allows the formwork unit to be readjusted to match the geometry of the parapet from the work platform.

The individual bracket consists of a standard, bracket cantilever, platform beam and spindle, and can be fixed to the bridge at variable distances to one another depending on the parapet cross-section, thus resulting in excellent load optimisation.

In the VGK Flex configuration as a work platform, a single bracket is composed of a standard, formwork girder and Kicker AV.

When used in bridge construction, the console bracket is anchored using the Anchor Sleeve M24. For refurbishment work, the console bracket can be anchored afterwards by means of composite anchoring systems.

In combination with Suspension Head Flex VGK, two bracket discs can also be suspended from the structure as pre-assembled units.
With both Suspension Head VGK and Suspension Head Flex VGK, all setup variants can be carried out. (Exception: VGK 70 with formwork construction at the abutment)

Features
- Platform and formwork units are separated.
- No openings or penetration in the platform decking.
- Operation and adjustment is carried out from the work platform.
- Continuous inclination adjustment of the slab and side formwork.
- High load-bearing capacity.

Technical data
- Parapet dimensions: max. H/W = 100/60 cm.
- Perm. influence widths up to 185 cm.

Instructions for Use

Use in a way not intended, deviating from the standard configuration or the intended use according to the Instructions for Assembly and Use, represents a misapplication with a potential safety risk, e.g. risk of falling.

Only PERI original components may be used. The use of other products and spare parts is not allowed and represents a misapplication with associated safety risks.

Changes to PERI components are not permitted.

The system described in these Instructions for Assembly and Use may contain patent–protected components.

Cleaning and maintenance instructions

In order to maintain the value and operational readiness of the formwork materials over the long term, clean the panels after each use.
Some repair work may also be inevitable due to the tough working conditions.
The following instructions should help to keep cleaning and maintenance costs as low as possible.

Spray the formwork on both sides with concrete release agent before each use; this facilitates easier and faster cleaning of the formwork. Spray the concrete release agent very thinly and evenly!

Spray the rear side of the formwork with water immediately after concreting; this avoids any time-consuming and costly cleaning operations.

When used continuously, spray the formlining elements with concrete release agent immediately after deshuttering; then clean by means of a scraper, brush or rubber lip scraper. Important: do not clean formlining made of plywood with high-pressure equipment. This could result in the formlining being damaged.

Fix recesses and built-in parts with double-headed nails; as a result, the nails can easily be removed later, and damage to the formlining is largely avoided.

Close all unused tie holes with plugs; this eliminates any subsequent cleaning or repair work.
Tie holes accidentally blocked with concrete are cleared by means of a steel pin from the formlining side.

When placing bundles of reinforcement bars or other heavy objects on horizontally stored formwork elements, suitable support, e.g. squared timbers, is to be used: this prevents impressions and damage to the formlining to a large extent.

Internal concrete vibrators should be fitted with rubber caps if possible; as a result, any damage to the formlining is reduced if the internal vibrator is accidentally inserted between the reinforcement and formlining.

Never clean powder-coated components, e.g. elements and accessories, with a steel brush or hard metal scrapers; this ensures that the powder coating remains intact.

Use spacers for reinforcement with large-sized supports or extensive areas of support; this largely avoids impressions being formed in the formlining when under load.

Mechanical components, e.g. spindles or gear mechanisms, must be cleaned of dirt or concrete residue before and after use, and then greased with a suitable lubricant.

Provide suitable support for the components during cleaning so that no unintentional change in their position is possible.

Do not clean components suspended on crane lifting gear.

Cross-system

Safety instructions apply to all service life phases of the system.

General
The contractor must guarantee that the Instructions for Assembly and Use supplied by PERI are available at all times and understood by the site personnel.

These Instructions for Assembly and Use can be used as the basis for creating a risk assessment. The risk assessment is compiled by the contractor. The Instructions for Assembly and Use are not a substitute for a risk assessment!

Observe and comply with the safety instructions and permissible loads.

For the application and inspection of PERI products, observe the current safety regulations and guidelines valid in the respective countries.

Materials and working areas are to be inspected before each use and assembly, for:
- damage,
- stability and
- function.

Damaged components must be exchanged immediately on site and may no longer be used.

Safety components are to be removed only when they are no longer required.

When on slab formwork, scaffolds and working platforms:
- do not jump,
- do not run,
- do not drop anything from or onto it.

Components provided by the contractor must comply with the characteristics stipulated in these Instructions for Assembly and Use and all applicable laws and standards. Unless otherwise indicated, the following applies in particular:
- Timber components:
  Strength class C24 for solid wood according to EN 338.
- Scaffolding tubes:
  Galvanised steel tubes with minimum dimensions Ø 48.3 x 3.2 mm according to EN 12811-1:2003 4.2.1.2.
- Scaffolding tube couplings according to EN 74-1 and EN 74-2.

Deviations from the standard configuration are only permitted after a further risk assessment has been carried out by the contractor.

Appropriate measures for working and operational safety, as well as stability, are defined on the basis of this risk assessment.

Corresponding proof of stability can be provided by PERI on request, if the risk assessment and resulting measures to be implemented are made available.

Before and after extraordinary events that may have damaging effects on the safety of the climbing system, the contractor shall immediately
- produce another risk assessment and make use of its results to take suitable steps to guarantee the stability of the climbing system,
- arrange for an extraordinary inspection to be carried out by a competent person qualified to do so. The aim of this inspection is to identify and rectify any damage in good time in order to guarantee safe use of the climbing system.

Exceptional events could be:
- accidents,
- long periods of non-use,
- natural events, e.g. heavy rainfall, icing, heavy snowfall, storms or earthquakes.

Assembly, modification and dismantling work
PERI systems may only be assembled, modified or dismantled under the supervision of a person qualified to do so and by technically suitable employees. The qualified personnel must have received appropriate training for the work to be carried out with regard to specific risks and dangers.

On the basis of the risk assessment and Instructions for Assembly and Use, the contractor must create installation instructions, in order to guarantee safe assembly, modification and dismantling of the climbing unit.

The contractor must ensure that the personal protective equipment required for the assembly, modification or dismantling of the climbing formwork, e.g.
- safety helmet,
- safety shoes,
- safety gloves,
- safety goggles,

is available and used as intended.

If personal protective equipment against falling from a height (PPE) is required or specified in local regulations, the contractor must determine appropriate attachment points on the basis of the risk assessment.
The PPE to be used to prevent falling is determined by the contractor.

The contractor must
- provide safe working areas for site personnel, which are to be reached through the provision of safe access ways, cordon off and clearly mark danger zones,
- guarantee stability during all stages of construction, in particular during assembly, modification and dismantling operations,
- ensure and demonstrate that all loads that occur are safely transferred.

Use
Every contractor who uses or allows the climbing systems to be used, is responsible for ensuring that the equipment is in good condition.

If the climbing system is used successively or at the same time by several contractors, the health and safety coordinator must point out any possible mutual hazards and all work must be then coordinated.

System-specific

Deshutter components only when the concrete has sufficiently hardened and the person in charge has given the go-ahead for deshuttering to take place.

Working areas situated below must be protected by means of appropriate measures.

Secure tools and materials to prevent them from falling to the ground. Remove concrete residues and other forms of dirt.

Every cantilevered parapet bracket must have its own anchoring. Loosening or removing the anchoring must only be possible from the load transfer side.

Constructional requirements regarding the use of the anchoring methods are to be taken into account.

Check that the anchor is correctly installed before concreting takes place. PERI recommends compiling an acceptance report.

Anchoring is to take place only if the anchorage has sufficient concrete strength.

Screw Anchor Sleeve M24 as far as possible on the fibre cement pipe on Anchor Positioning Stud M24.

The threaded areas on Screw-On Cone-2 as well as Threaded Plate DW 20 must always be completely screwed in.

The required anchoring depth h must not be achieved through a reduction in the screw-in depth.

Avoid standing under suspended loads. If work under suspended loads cannot be avoided, come up with suitable safety measures and apply them. Avoid standing between a fixed object and an object that is drawing near.

Do not use any anchoring components and mountings in advance which are damaged.

Examples of damage:
- deformed components,
- rough or scratched cone surfaces,
- blocked threads,
- weld splashes on the threads.

Check the functionality of the slide bearings before every use. Do not use Bracket Cantilever VGK 50 if the grouting is damaged.

Storage and transportation

Store and transport components in such a way that no unintentional change in their position is possible. Detach lifting accessories and lifting gear from the lowered components only if they are in a stable position and no unintentional change is possible.

Do not drop the components.

Use PERI lifting accessories and lifting gear and only those load-bearing points provided on the component.

During the relocation procedure
- Ensure that components are picked up and set down in such a way that unintentional falling over, falling apart, sliding, falling down or rolling is avoided.
- No one is allowed to remain under the suspended load.
- Use suitable load-carrying equipment to move the components and always use the designated load-bearing points on the components.
- Always use a guide rope when moving components.
- Move components onto a clean, flat and sufficiently load-bearing substrate only.

The access areas on the construction site must be free of obstacles and tripping hazards and must also be slip-resistant.

For transportation, the substrate must have sufficient load-bearing capacity.

Use original PERI storage and transport systems, e.g. crate pallets, pallets or stacking devices.

Component overview

Pos. no.	Component name	Article no.
1a	Bracket Post VGK 70	134161
1b	Bracket Post VGK 110	124404
1c	Bracket Post VGK 139	124427
2a	Kicker AV 82	123846
2b	Kicker AV 111	123847
2c	Kicker AV 140	028110
3	Bracket Cantilever VGK 50	124455
4	Platform Cantilever Beam VGK	124447
5	Formwork Fixing VGK 2	124394
6	Formwork Support VGK 100	124438
7	Formwork Post VGK 70	124371
8	Formwork Post VGK 120	138061
9	Adj. Base Plate UJB 38-80/55	100242
10	Bracing Connector VGK	124934
11	Steel Scaffolding Tube Ø 48.3 x 3.2	026417
12a	Suspension Head Flex VGK	138071
12b	Suspension Head VGK	124413
13	Anchor Sleeve M24	026230
14	FRC Tube Ø 32/52, c = 40	116233
15	Anchor Positioning Stud M24 x 65	115150
16	Bolt ISO 4014-M24 x 100-8.8	124031
17	Threaded Cone M24	123800
18	Wire nail 4.6 x 130	129157
19a	Plug FRC Ø 40	123820
19b	Plug FRC Ø 32	116234
20	Threaded Anchor Plate DW 20	030860
21	Screw-On Cone-2 M24/DW 20	114158
22	Anchor Positioning Stud M24	026420
23	Bolt ISO 4014 M24 x 70-10.9	026430
24	Nut ISO 4070 M24–8	105032
25	Guardrail Post GKB	114299
27	B15 Anchor Lock VGK	134174
28	B15 Anchor VGK	134173
29	Guardrail Post HSGP-2	116292
30	Guardrail Post RCS/SRU 184	114328
31	2-component Repoxal glue	031550
32	Swivel Coupling RS 38/48	102400
33	Guardrail boards	–
34	Toe boards	–
35	Planking	–
36	Wire pin/wood screws	–
37	Squared timber	–
38	Plank 20 x 4	–
39	Spax screw TX 30 6 x 80	–

Pos. no.	Component name	Article no.
40	Height compensation	–
41	Wire nail 3 x 80	710312
42	Screw-on Sleeve PERI M16/164	123970
43	Bolt ISO 4017 M16 x 120-8.8	–
44	Washer ISO 7094 100 HV, A 16	113349
45	Anchor Positioning Plate M24	029280
46	Positioning Screw M24	029270
47	Hex. Wood screw DIN 571 6 x 20	029440
48	Blow-out pump	130015
49	Cleaning Brush D24	130011
50	Composite Mortar CF-T 300 V	129628
51	Connection Bolt M16/M24 x 50	130012
52	ITH-Sleeve TSM BC 22 x 75 IM 16	129637
54	Internal formwork	–
55	TSS-Torx 6 x 60	024470
56	Tie Rod DW 15, special length	030340
57	Hex. Nut DW 15 AF 30/50	030070
58	Formwork panel	–
59	Eye Nut RCS DW 15	115378
60	Bolt Ø 16 x 90	118463
61	Cotter pin 4/1	018060
62	Guardrail Holder VGK	138056
63	Multi-layer plywood sheet	-
64	Angle Connector 90° reinforced	123479
65	Swivel Coupling AF 48/48	017010
66	Wall Formwork Bracket MX WK	135327
67	Guardrail Post SGP	061260
68	Bracing Shoe VGK	138455
69	Beam support	124364
70	Fork	–
71	Round sling	–
72	Four-strand hanger	–

Tool list

Tool name
Ratchet wrench
Extension for the ratchet wrench
Socket wrench AF 13
Socket wrench AF 36
Ring/open-end wrench AF 13/AF 36
Cordless screwdriver
Wood drill Ø 8.5 mm
Screw bits Torx 30
Socket wrench AF 36, chrome-plated, article no. 031480
Hex. Hexagon key wrench AF 14, long, article no. 027212
Hammer

Standard use on cantilevers ≥75 cm

(Fig. A1.01)

Take into account Section A3 – System Selection.

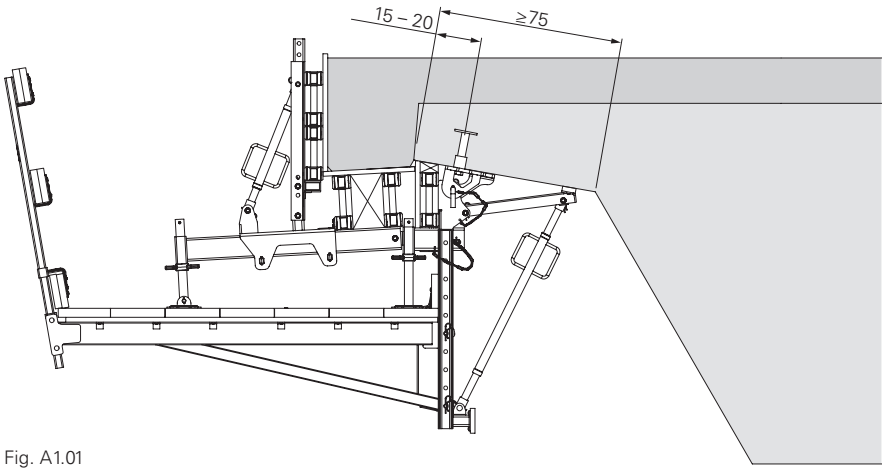


Fig. A1.01

Intermediate area on cantilevers 35 – 75 cm

- Secure Adjustable Base Plate UJB 38-80/55 (**9**) against falling out and unintentional twisting.
- The application with Adjustable Base Plate UJB 38-80/55 (**9**) must be calculated separately for each project.
- If Suspension Head Flex VGK (**12a**) is used, the influence width may be limited.

With Adj. Base Plate UJB 38-80/55 (**9**). (Fig. A1.02)

Take into account Section A3 – System Selection.

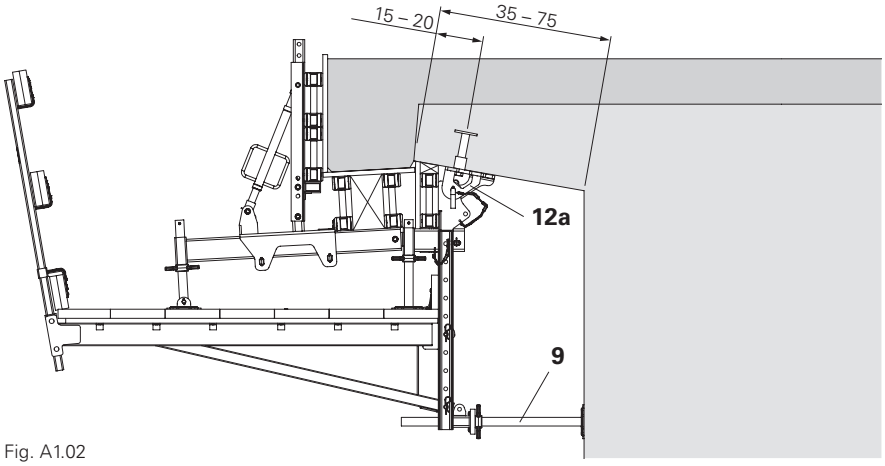


Fig. A1.02

Vertical application on abutments

Dimension x according to project-specific planning.
(Fig. A1.03)

Take into account Section A3 – System Selection.

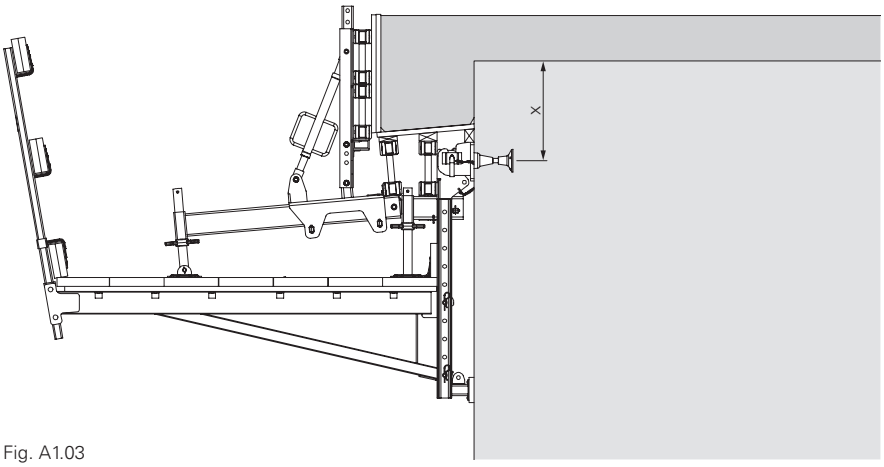


Fig. A1.03

Complete enclosure with Guardrail Post RCS/SRU 184

Assembly

1. Attach Guardrail Post RCS/SRU 184 (**30**) to Platform Cantilever Beam VGK 170 (**4**), AF 30.
2. Attach enclosure to the guardrail posts.

(Fig. A1.04)

Take into account Section A3 – System Selection.

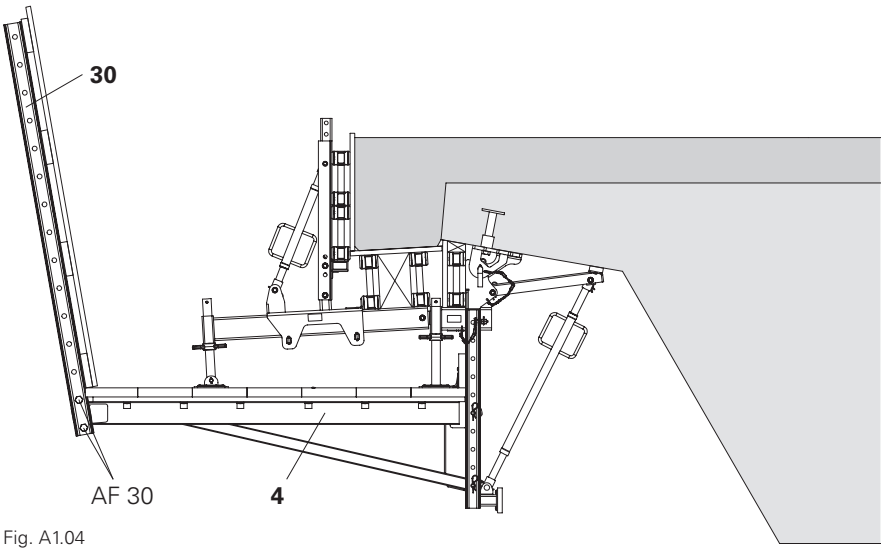


Fig. A1.04

Work Platform VGK 160

Cantilever
(Fig. A1.05)

Abutment
(Fig. A1.06)

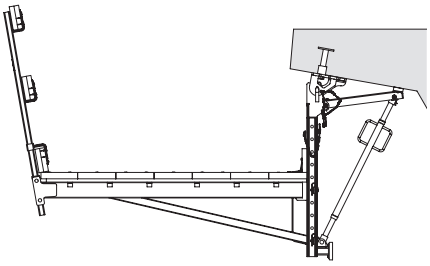


Fig. A1.05

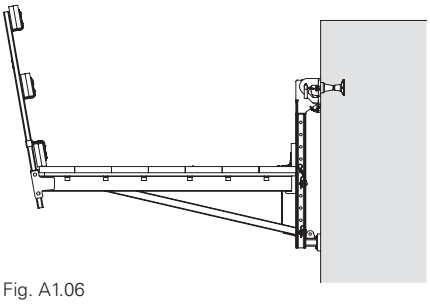


Fig. A1.06

Work Platform VGK Flex

VGK Flex 70
Formwork Post VGK 70
as platform beam
(Fig. A1.07)

Take into account Section A3 – System Selection.

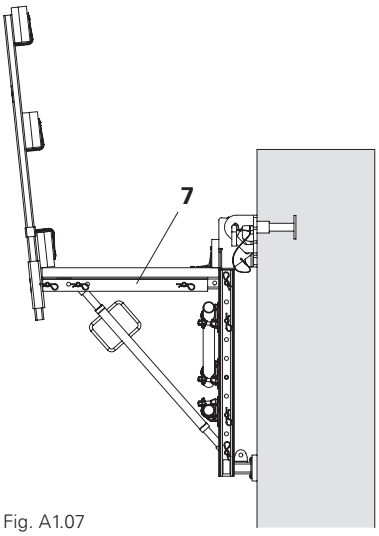


Fig. A1.07

VGK Flex 90
Formwork Post VGK 120
as platform beam
(Fig. A1.08)

Take into account Section A3 – System Selection.

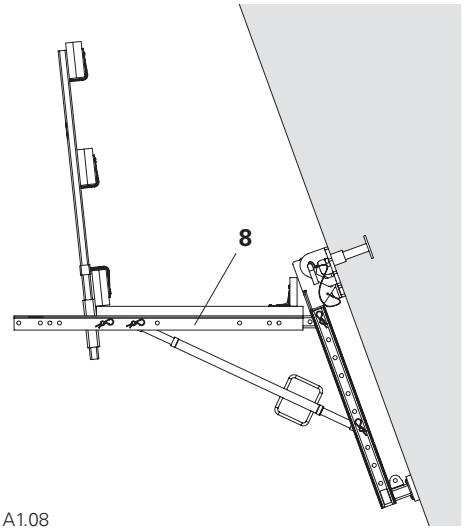


Fig. A1.08

VGK Flex 120
Formwork Post VGK 120
as platform beam
(Fig. A1.09)

Take into account Section A3 – System Selection.

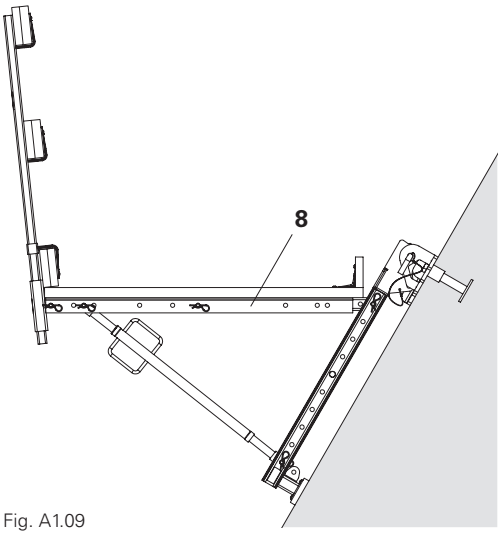


Fig. A1.09

Use as formwork scaffolding

- All given loads are characteristic loads.

Working/concreting
- Set up formwork.
- Install reinforcement in the cantilevered parapet.
- Close side formwork and concrete.
- Deshuttering.
- Inspection and maintenance.

Load case for working	
Live load on the platform	2.00 kN/m²
Max. working wind speed	0.20 kN/m² (V_w = 64 km/h)

Tab. A2.01

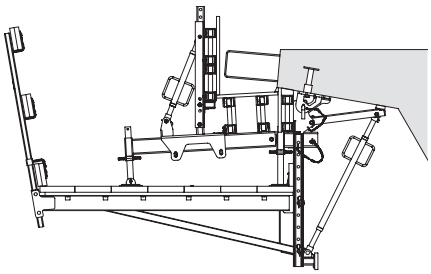


Fig. A2.01

Load Case: Concreting	
Live load on the platform	0.75 kN/m²
Max. working wind speed	0.20 kN/m² (V_w = 64 km/h)
Hydrostatic fresh concrete pressure with $\gamma_{concrete}$= 25 kN/m³	

Tab. A2.02

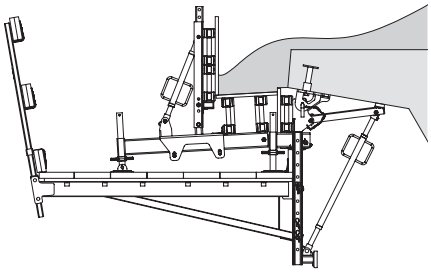


Fig. A2.02

Storm (non-operational)
During longer work breaks or storm warnings with wind speeds > 64 km/h.

- All given loads are characteristic loads.
- Implement safety measures according to Section A7.
- Remove loose materials and equipment.
- Do not access console brackets in storm conditions.
- For storm warnings with wind speeds > 111 km/h, inform an authorised person and implement separate safety measures.

Load case: Storm	
Live load on the platform	0.00 kN/m²
Peak velocity pressure $q_p(z)$*	≤0.60 kN/m² (V_W ≤ 111 km/h)

*Max. peak velocity pressure $q_p(z)$ including reduction for temporary construction.

Tab. A2.03

Use as Work Platform VGK 160

- All given loads are characteristic loads.
- All demolished concrete is immediately removed.
  No accumulation of demolished concrete.
- Secure working areas located underneath against falling objects.

Work

- Demolish existing cantilevered parapet.
- Continuously remove demolished concrete from the work platform.
- Carry out refurbishment work.
- Demolition work:
  – Demolish existing cantilevered parapet.
  – Demolished concrete.
  – Refurbishment work.
- Access for formwork work on buildings.
- Platform for reinforcement scaffolds.

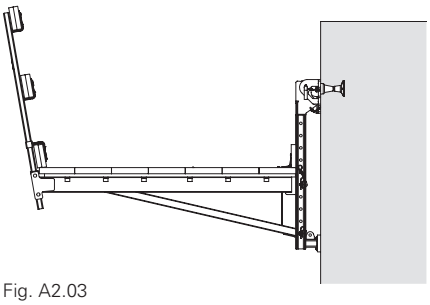


Fig. A2.03

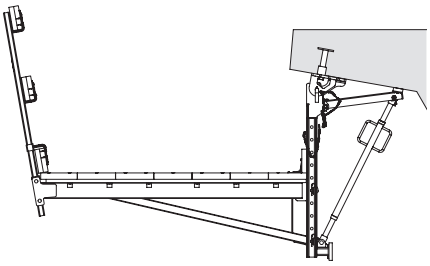


Fig. A2.04

Load case for working	
Live load on the platform	2.00 kN/m²
Max. working wind speed	0.20 kN/m² (V_w = 64 km/h)

Tab. A2.04

Storm (non-operational)
During longer work breaks or storm warnings with wind speeds > 64 km/h.

- All given loads are characteristic loads.
- Implement safety measures according to Section A7.
- Remove loose materials and equipment.
- Do not access console brackets in storm conditions.
- For storm warnings with wind speeds > 111 km/h, inform an authorised person and implement separate safety measures.

Load case: Storm	
Live load on the platform	0.00 kN/m²
Peak velocity pressure $q_p(z)$*	≤0.60 kN/m² ($V_W \leq$ 111 km/h)

*Max. peak velocity pressure $q_p(z)$ including reduction for temporary construction.

Tab. A2.05

Use as Work Platform VGK Flex on structures

- All given loads are characteristic loads.
- Do not store any material permanently on the platform.
- Secure working areas located underneath against falling objects.
- Can also be mounted on sloping walls.

Work

- Material/equipment with low loads can be parked on the work platform for a short time.

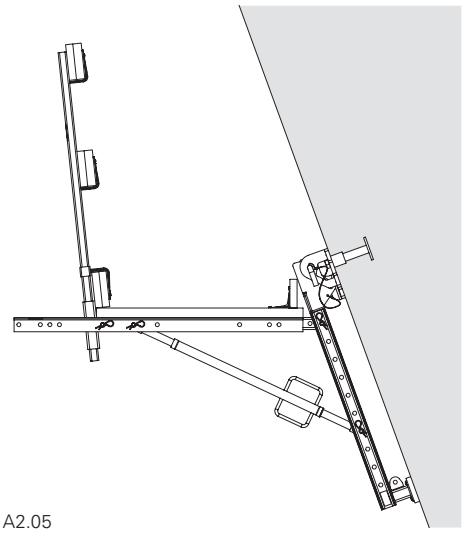


Fig. A2.05

Load case for working	
Live load on the platform	1.75 kN/m²
Max. working wind speed	0.20 kN/m² (V_w = 64 km/h)

Tab. A2.06

Storm (non-operational)
During longer work breaks or storm warnings with wind speeds > 64 km/h.

- All given loads are characteristic loads.
- Implement safety measures according to Section A7.
- Remove loose materials and equipment.
- Do not access console brackets in storm conditions.
- For storm warnings with wind speeds > 111 km/h, inform an authorised person and implement separate safety measures.

Load case: Storm	
Live load on the platform	0.00 kN/m²
Peak velocity pressure $q_p(z)$*	≤0.60 kN/m² ($V_W \leq$ 111 km/h)

*Max. peak velocity pressure $q_p(z)$ including reduction for temporary construction.

Tab. A2.07

Use with full enclosure

- When installing with full enclosure, additional measures such as ballasting are required for securing. (Fig. A2.06)
- For the design of the ballasting and any additional measures required, refer to the VARIOKIT VGK design information.
- No ballasting is required when mounting with Bracing Shoe VGK (**68**). (Fig. A2.07)
- Maximum height of the full enclosure = 1.65 m. Higher full enclosures must be verified on a project-specific basis.

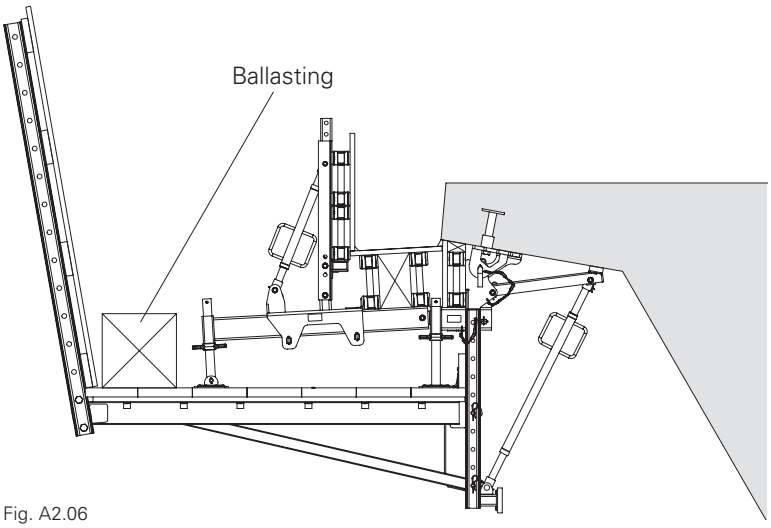


Fig. A2.06

Load case train cross/train passage	
Downwind on horizontal surfaces $\pm q_{2k} \times k_{1\wedge S}$ *)	0.50 kN/m²

*) Effect q_{2k} and coefficient $k_{1,}$, see EN 1991-2 6.6.3

Tab. A2.08

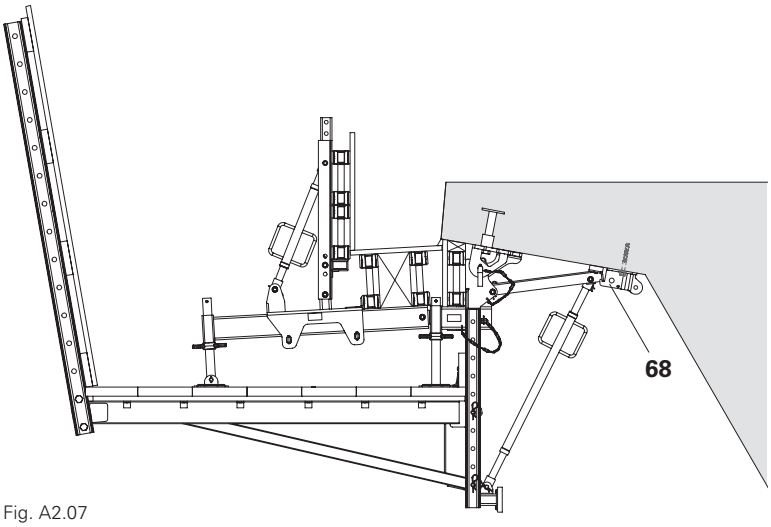


Fig. A2.07

- The distance from the upper edge of the parapet to the lower edge of the bridge cantilever is max. 55 cm in accordance with the type calculations for both assembly types. (Fig. A3.01)
- Greater heights must be verified separately.

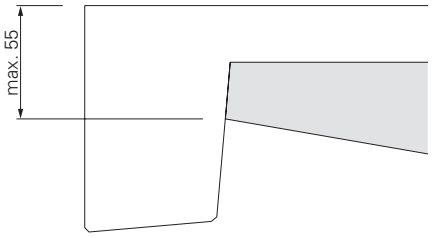


Fig. A3.01

Cantilevered Parapet with Bracket Post VGK 70

Dimensions

External height	H_{max} = 60 cm
Cap width	B_{max} = 60 cm

(Fig. A3.02)

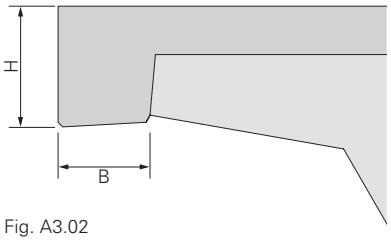


Fig. A3.02

Required formwork components:

1a Bracket Post VGK 70
2a Kicker AV 82
7 Formwork Post VGK 70

(Fig. A3.03)

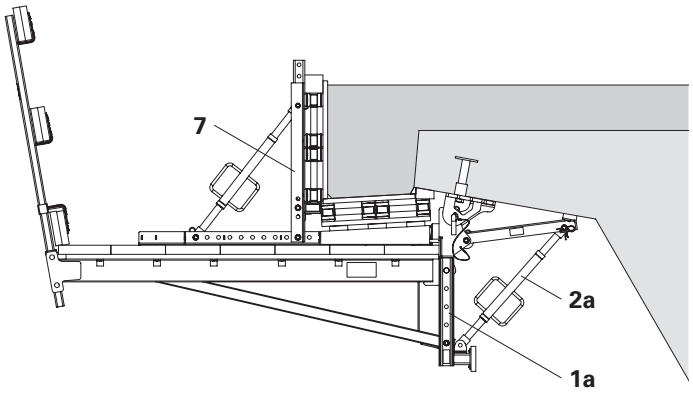


Fig. A3.03

Cantilevered Parapet with Bracket Post VGK 110

Dimensions

External height	H_{max} = 60 cm
Cap width	B_{max} = 60 cm

(Fig. A3.04)

Required formwork components:

1b Bracket Post VGK 110
2b Kicker AV 111
7 Formwork Post VGK 70
29 Guardrail Post HSGP-2 (optional)

(Fig. A3.05)

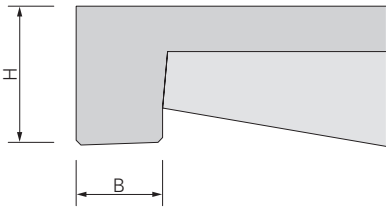


Fig. A3.04

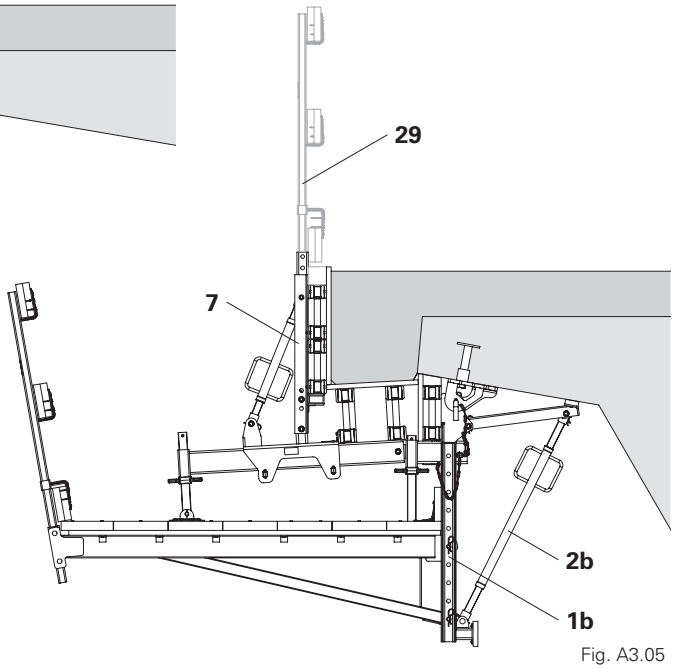


Fig. A3.05

Cantilevered Parapet with Bracket Post VGK 139

Dimensions

External height	H_{max} = 100 cm
Cap width	B_{max} = 60 cm

(Fig. A3.06)

Required formwork components:

1c Bracket Post VGK 139
2c Kicker AV 140
8 Formwork Post VGK 120
29 Guardrail Post HSGP-2
69 Beam support

(Fig. A3.07)

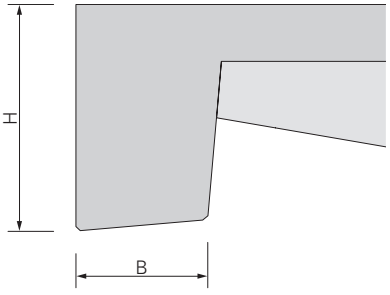


Fig. A3.06

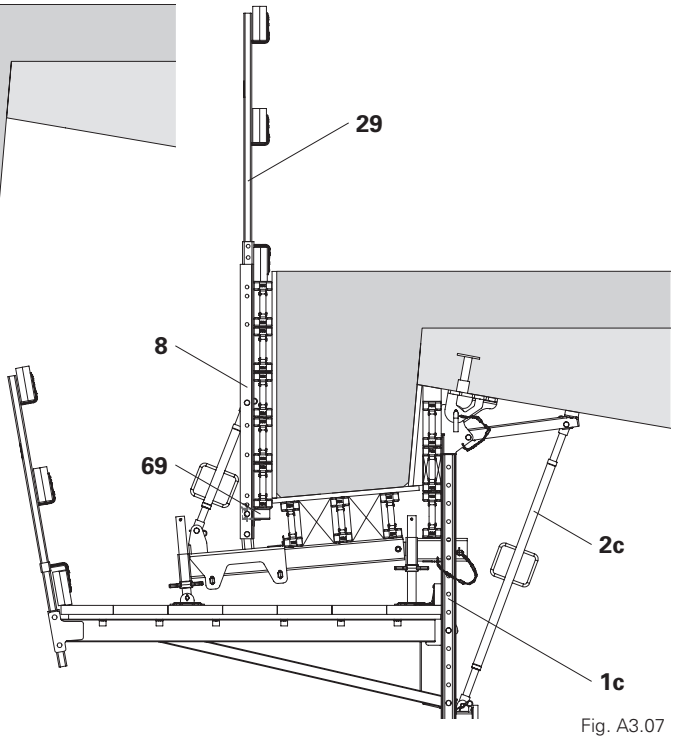


Fig. A3.07

Work Platform VGK Flex

VGK Flex 70

Platform with formwork post 70 and platform width 70 cm (Fig. A3.08)

Bracket Post VGK	Kicker Brace AV	α_{min}[°]	α_{max}[°]
110	82	60	90
	111	80	110
	140	110	110
139	82	60	70
	111	60	110
	140	80	110

Tab. A3.01

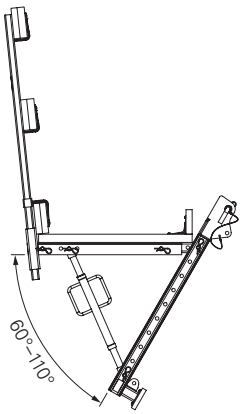


Fig. A3.08

VGK Flex 90

Platform with formwork post 120 and platform width 90 cm (Fig. A3.09)

Bracket Post VGK	Kicker Brace AV	α_{min}[°]	α_{max}[°]
110	82	60	70
	111	70	110
	140	100	110
139	82	60	60
	111	60	90
	140	80	110

Tab. A3.02

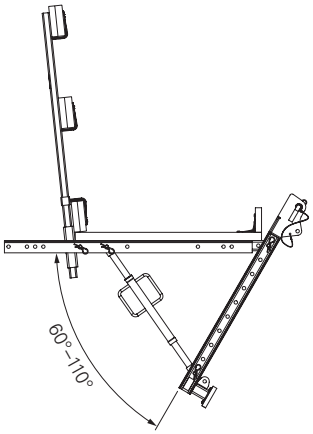


Fig. A3.09

VGK Flex 120

Platform with formwork post 120 and platform width 120 cm (Fig. A3.10)

Bracket Post VGK	Kicker Brace AV	α_{min}[°]	α_{max}[°]
110	82	–	–
	111	60	70
	140	70	100
139	82	–	–
	111	60	60
	140	60	90

Tab. A3.03

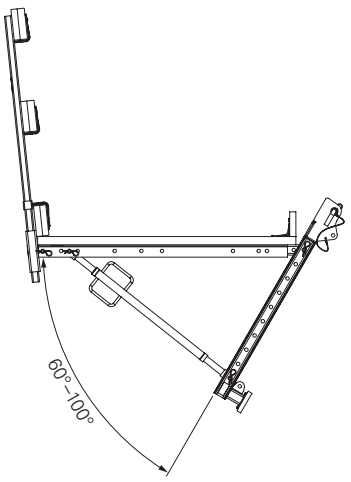


Fig. A3.10

- The different combinations can be configured according to the project-specific requirements using the dimensioning tool.
- A scaffolding tube bracing is not statically necessary, but facilitates assembly and application.

Cantilevered Parapet with Bracket Post VGK 70

Assembly with Bracket Post VGK 70 and Kicker AV 82

- Kicker AV 82 (**2a**) is always connected to the base of Bracket Post VGK 70 (**1a**) by means of bolts and cotter pins. (Fig. A4.01)
- Adapt Tie Rod DW 15 (**56**) with squared timbers (**37**). (Fig. A4.01a)
- Mount Platform Cantilever Beam VGK 170 (**4**) in the top and bottom holes of Bracket Post VGK 70 (**1a**). (Fig. A4.01)

- Never attach Kicker AV 82 (**2a**) between the fixing points of Platform Cantilever Beam VGK 170 (**4**). (Fig. A4.01b)
- Before demolition work begins or in the case of strong vibrations, secure Kicker Brace AV against unintentional turning, see Section "A10 Horizontal bracing for demolition work and strong vibrations" on page 45.

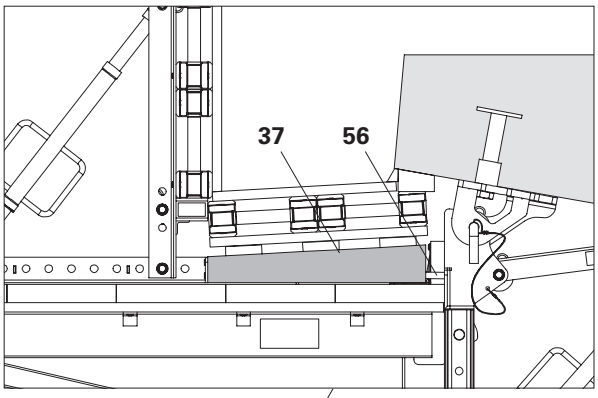


Fig. A4.01a

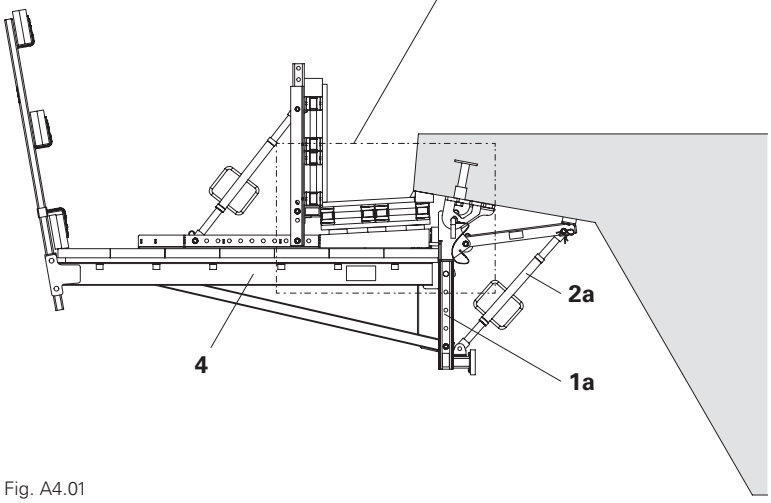


Fig. A4.01

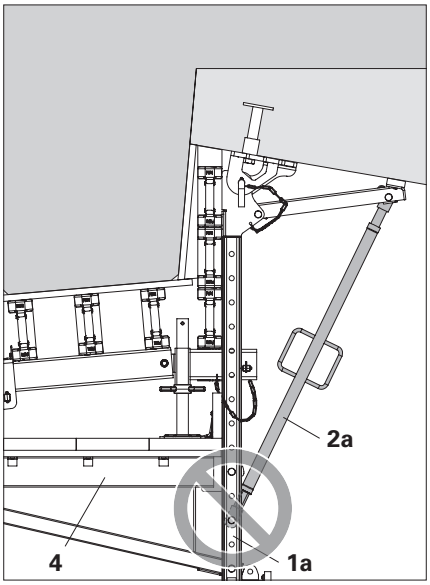


Fig. A4.01b

Cantilevered Parapet with Bracket Post VGK 110

Assembly with Bracket Post VGK 110 and Kicker AV 111

- Kicker AV 111 (**2b**) is always connected to the base of Bracket Post VGK 110 (**1b**) by means of bolts and cotter pins.
- Platform Cantilever Beam VGK 170 (**4**) is connected to the holes on Bracket Post VGK 110 (**1b**) according to the dimensions of the cantilevered parapet.

(Fig. A4.02)

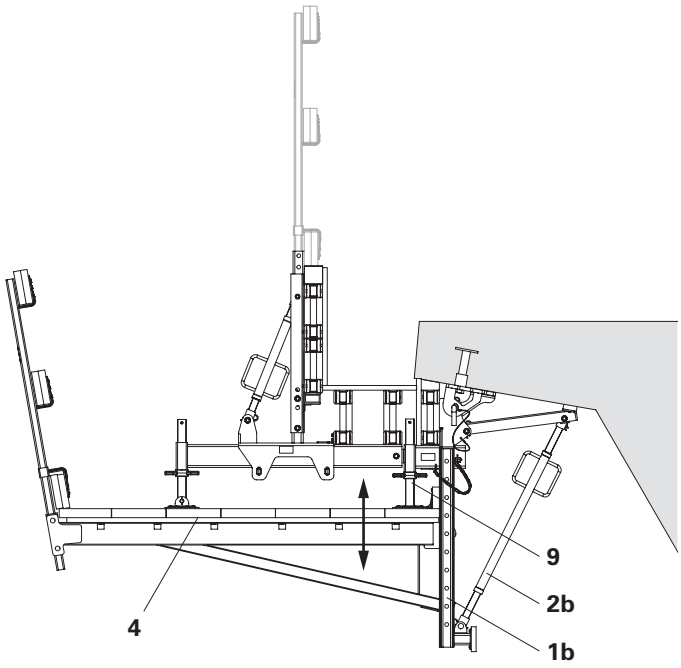


Fig. A4.02

- Never attach Kicker AV 111 (**2b**) between the fixing points of Platform Cantilever Beam VGK 170 (**4**). (Fig. A4.02a)
- Before demolition work begins or in the case of strong vibrations, secure Kicker Brace AV against unintentional turning, see Section "A10 Horizontal bracing for demolition work and strong vibrations" on page 45.

Keep the extension of foot spindle UJB 38-80/55 (**9**) as small as possible, allow spindle travel for deshuttering.

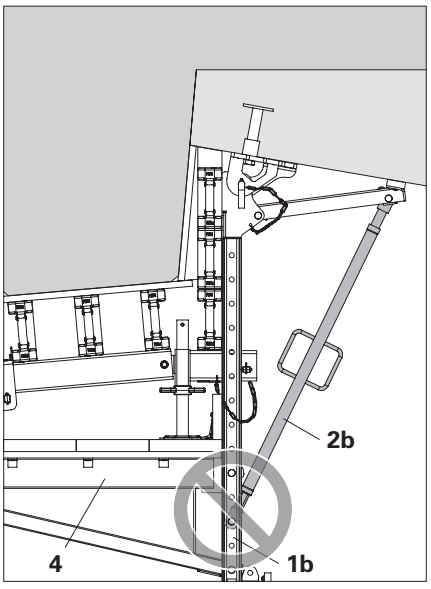


Fig. A4.02a

Cantilevered Parapet with Bracket Post VGK 139

Assembly with Bracket Post VGK 139 and Kicker AV 140

- Kicker AV 140 (**2c**) is always connected to the base of Bracket Post VGK 139 (**1c**) by means of bolts and cotter pins. (Fig. A4.03a)
- Platform Cantilever Beam VGK 170 (**4**) is connected to the holes on Bracket Post VGK 139 (**1c**) according to the dimensions of the cantilevered parapet.

(Fig. A4.03)

- Never attach Kicker AV 140 (**2c**) between the fixing points of Platform Cantilever Beam VGK 170 (**4**). (Fig. A4.03a)
- Before demolition work begins or in the case of strong vibrations, secure Kicker Brace AV against unintentional turning, see Section "A10 Horizontal bracing for demolition work and strong vibrations" on page 45.

Keep the extension of foot spindle UJB 38-80/55 (**9**) as small as possible, allow spindle travel for deshuttering.

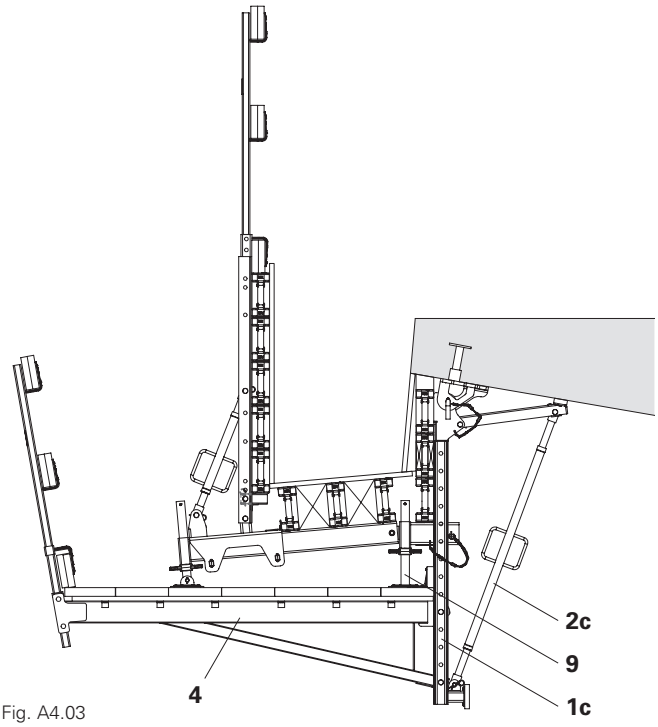


Fig. A4.03

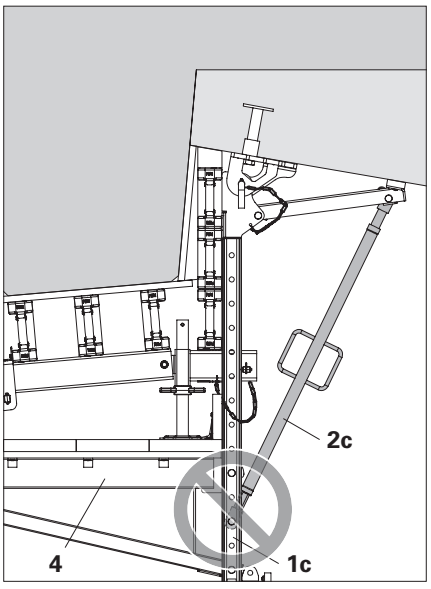


Fig. A4.03a

Work Platform VGK Flex

Assembly with Formwork Post VGK 70 and platform width 70 cm

- Guardrail Holder VGK (**62**) is always used on the 1st and 3rd hole of Formwork Post VGK 70 (**7**).
- Kicker Brace AV (**2a/2b/2c**) is always fastened in the 3rd hole.

(Fig. A4.04 + Fig. A4.04a)

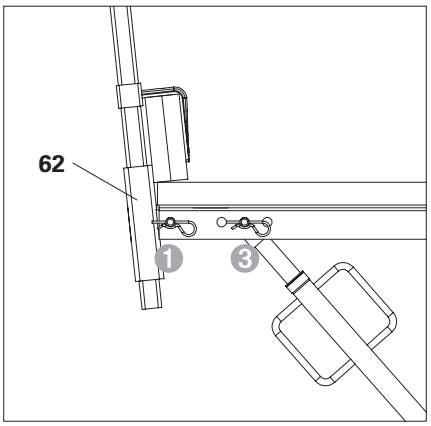


Fig. A4.04a

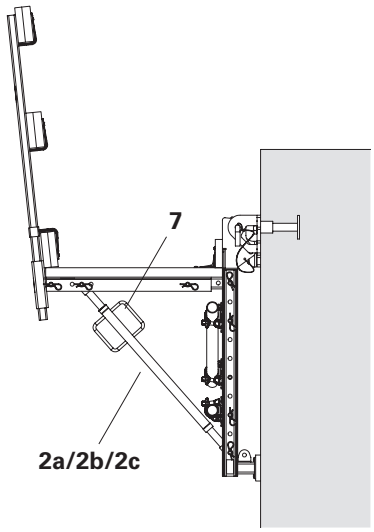


Fig. A4.04

Assembly with Formwork Post VGK 120 and platform width 90 cm

- Guardrail Holder VGK (**62**) is always used on the 5th and 6th hole of Formwork Post VGK 120 (**8**).
- Kicker Brace AV (**2a/2b/2c**) is always fastened in the 6th hole.

(Fig. A4.05 + Fig. A4.05a)

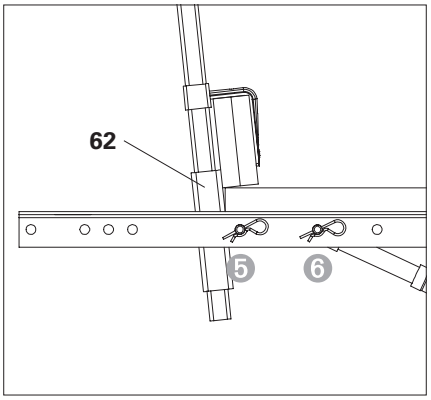


Fig. A4.05a

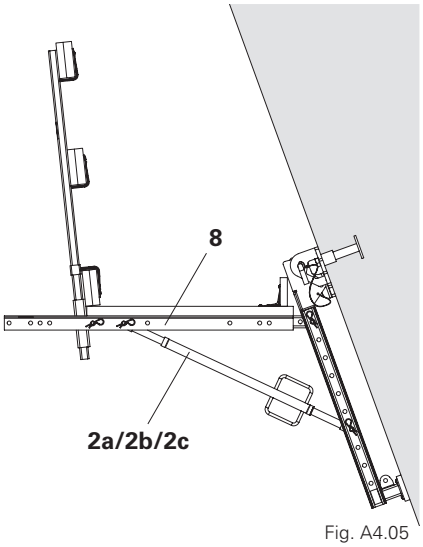


Fig. A4.05

Assembly with Formwork Post VGK 120 and platform width 120 cm

- Guardrail Holder VGK (**62**) is always used on the 1st and 3rd hole of Formwork Post VGK 120 (**8**).
- Kicker Brace AV (**2a/2b/2c**) is always fastened in the 3rd hole.

(Fig. A4.06 + Fig. A4.06a)

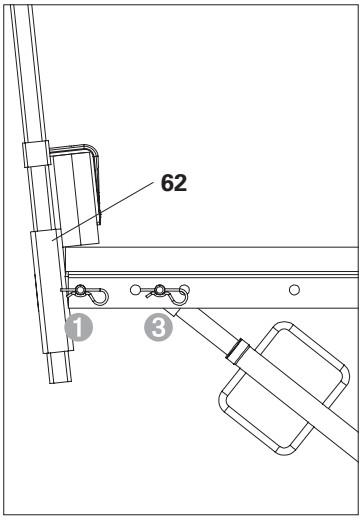


Fig. A4.06a

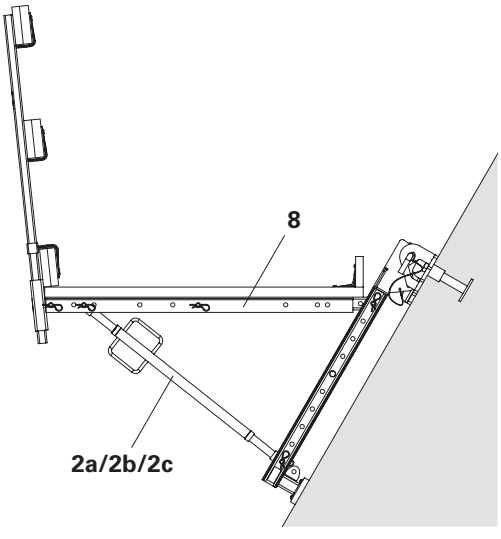


Fig. A4.06

Assembly with Bracket Post VGK 110

Kicker Brace AV (**2a/2b/2c**) may only be bolted into the lower **four** holes of Bracket Post VGK 110 (**1b**). (Fig. A4.07 + Fig. A4.07a)

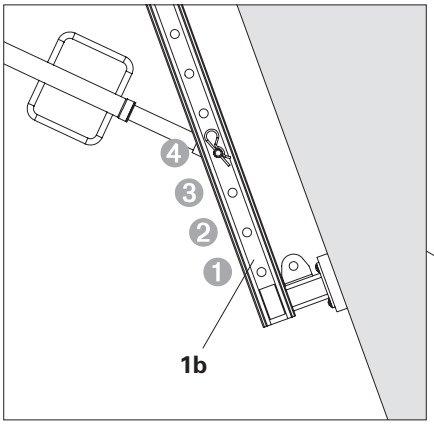


Fig. A4.07a

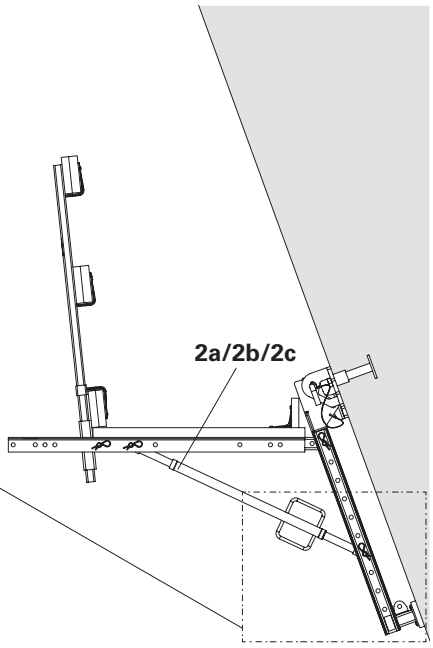


Fig. A4.07

Assembly with Bracket Post VGK 139

Kicker Brace AV (**2a/2b/2c**) may only be bolted into the lower **four** holes of Bracket Post VGK 139 (**1c**). (Fig. A4.08 + Fig. A4.08a)

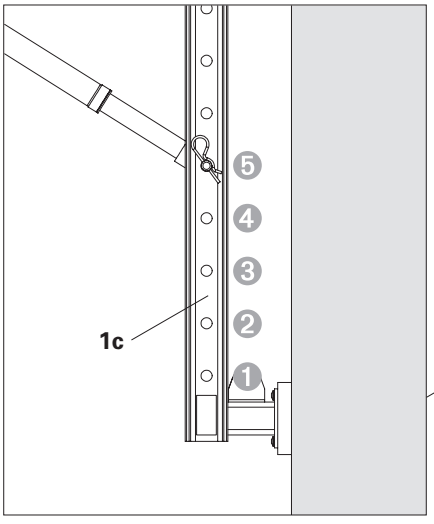


Fig. A4.08a

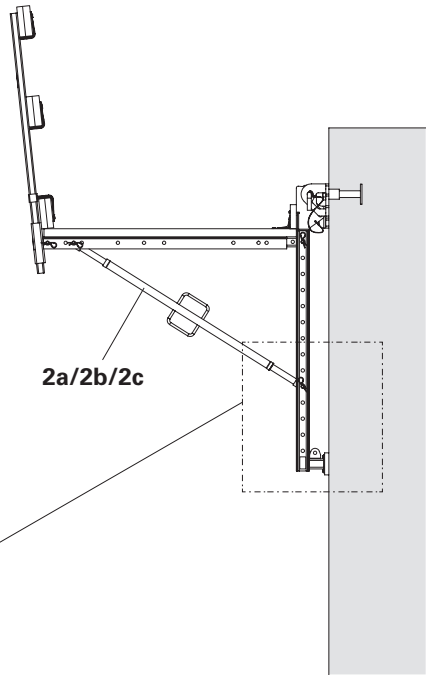
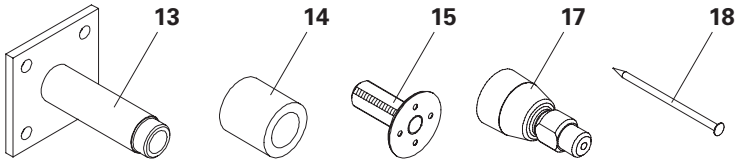


Fig. A4.08

On the cantilever (new structures)



Anchor Sleeve M24
Anchor Sleeve M24 is also embedded when concreting the cantilevered parapet.

Required components per tie point:

13	Anchor Sleeve M24	1x
14	FRC Tube 32/52, c = 40	1x
15	Anchor Positioning Stud M24 x 65	1x
41	Wire nail 3 x 80	4x
Alternatively:		
17	Threaded Cone M24	1x
18	Wire nail 4.6 x 130	1x

- Constructional requirements for use of Anchor Sleeve M24 with cantilevered parapet systems, see design information for the VARIOKIT VGK.
- Permissible widths of influence on cantilevers: see design information for the VARIOKIT VGK.
- Keep thread of Anchor Sleeve M24 free of rust and dirt.

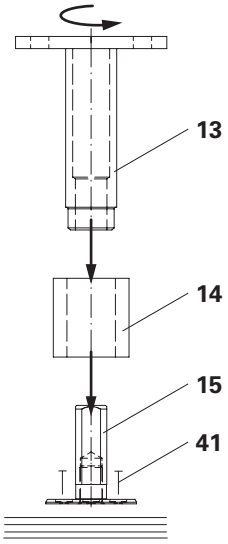


Fig. A5.01

Installation with anchor positioning stud

1. Fix Anchor Positioning Stud M24 x 65 (**15**) to the formwork panel by means of four wire nails 3 x 80 (**41**). Take into consideration edge spacing "a". (Fig. A5.01 + Fig. A5.01a)
2. Push FRC Tube 32/52, c = 40 (**14**) over the thread of Anchor Positioning Stud M24 x 65 (**15**).
3. Screw Anchor Sleeve M24 (**13**) onto the Anchor Positioning Stud M24 x 65 (**15**) as far as it will go. (Fig. A5.01)
4. Secure Anchor Sleeve M24 (**13**) in the reinforcement using tie wire.

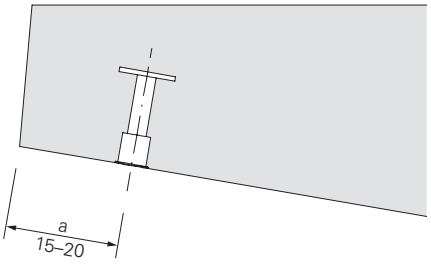


Fig. A5.01a

Installation with threaded cone

1. Check anchor installation components for signs of damage and replace if necessary.
2. Insert wire nail 4.6 x 130 (**18**) into Threaded Cone M24 (**17**).
3. Position Threaded Cone M24 (**17**) on the formlining and completely hammer in wire pin 4.6 x 130 (**18**). (Fig. A5.02)
4. Screw in Anchor Sleeve M24 (**13**) as far as possible, at 90° to the formwork panel. (Fig. A5.03)
5. Secure Anchor Sleeve M24 (**13**) in the reinforcement with tie wire to ensure that it does not change its position during concreting.

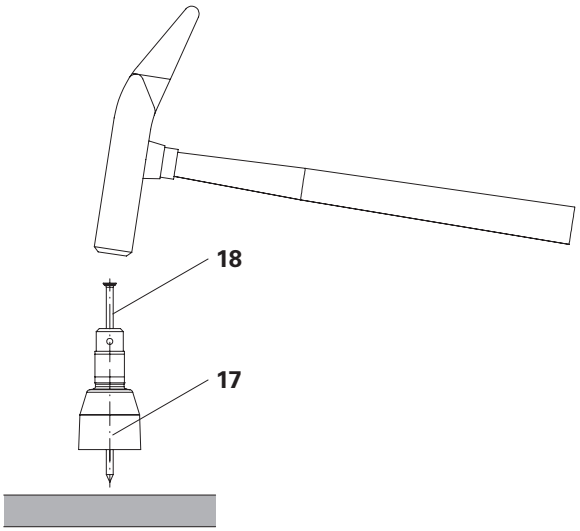


Fig. A5.02

Check installation

- Edge distance
- Tie spacings
- Ensure the anchor sleeve is completely screwed in
- Planned position

Tie and reinforcement checks can be done at the same time.

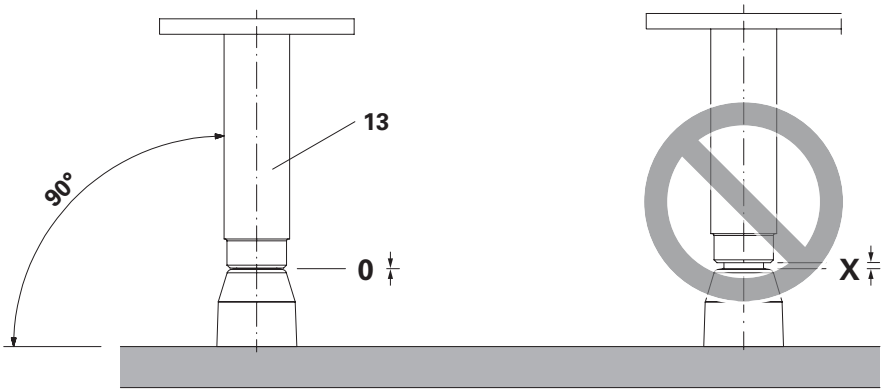


Fig. A5.03

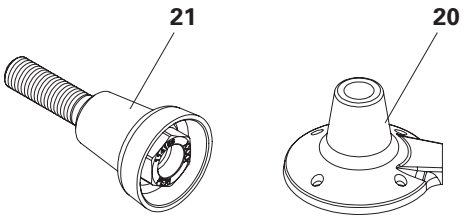
On the abutment

Screw-On Cone-2 M24/DW 20
The screw-on cone is also embedded when concreting the abutment.

Anchor Sleeve M24
The anchor sleeve is also embedded when concreting the abutment.

Required components per tie point

20	Threaded Anchor Plate DW 20	1x
21	Screw-On Cone-2 M24/DW 20	1x
or		
13	Anchor Sleeve M24	1x
14	FRC Tube Ø 32/52, c = 40	1x



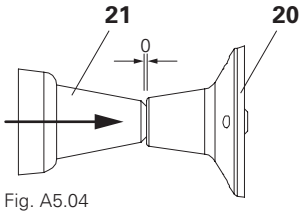


Fig. A5.04

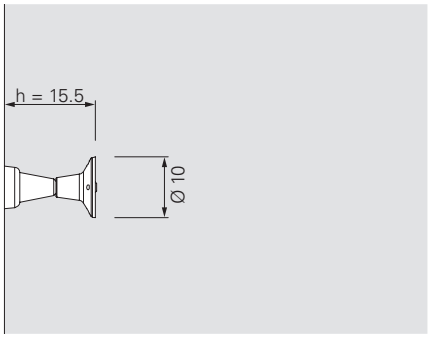


Fig. A5.04a

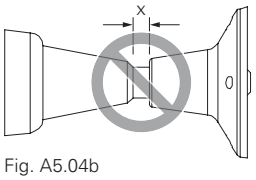


Fig. A5.04b

- Design requirements, see design information for VARIOKIT VGK.
- Permissible widths of influence on abutment, design information for VARIOKIT VGK.

Screw-on cone assembly
1. Fully insert Screw-On Cone-2 M24/DW 20 (**21**) into Threaded Anchor Plate DW 20 (**20**). (Fig. A5.04a) Anchoring depth h = 15.5 cm. (Fig. A5.04a)

Check installation
- Tie spacings
- Anchor sleeve fully screwed in (Fig. A5.04 + Fig. A5.04b)
- Planned position

Tie and reinforcement checks can be done at the same time.

Fixing with
Anchor Positioning Stud M24

Required components per tie point:

20	Threaded Anchor Plate DW 20	1x
21	Screw-On Cone-2 M24/DW 20	1x
22	Anchor Positioning Stud M24	1x
or		
13	Anchor Sleeve M24	1x
14	FRC Tube Ø 32/52, c = 40	1x
22	Anchor Positioning Stud M24	1x

Assembly

1. Fix Anchor Positioning Stud M24 (**22**) to the marked position with four wire nails 3 x 80 (**41**). Take into consideration the minimum distance to the edge. (Fig. A5.05)
2. Tightly screw pre-assembled ties (**20 +21**) onto Anchor Positioning Stud M24 (**22**) and tighten. (Fig. A5.06)
3. Firmly connect Threaded Anchor Plate DW 20 (**20**) to the reinforcement to ensure a secure position.

or

2. Fit FRC Tube Ø 32/52, c = 40 (**14**) onto Anchor Positioning Stud M24 (**22**).
3. Screw Anchor Sleeve M24 onto Anchor Positioning Stud M24 (**22**) and tie it to the reinforcement to secure the position. (Fig. A5.07)

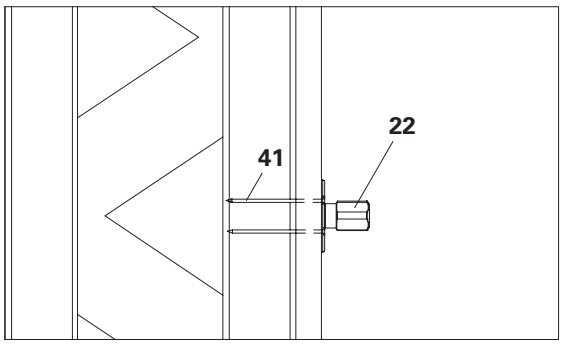


Fig. A5.05

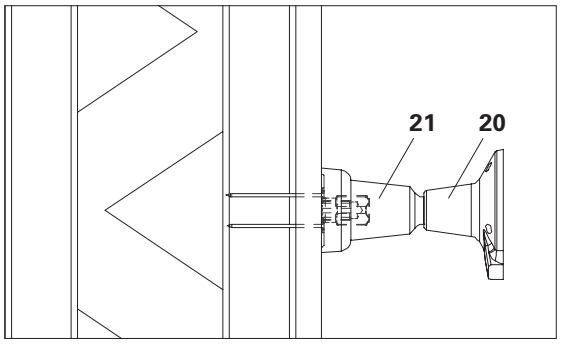


Fig. A5.06

Checking assembly

- Height
- Tie spacings
- Anchoring depth h
- Alignment according to specifications

Tie and reinforcement checks can be done at the same time.

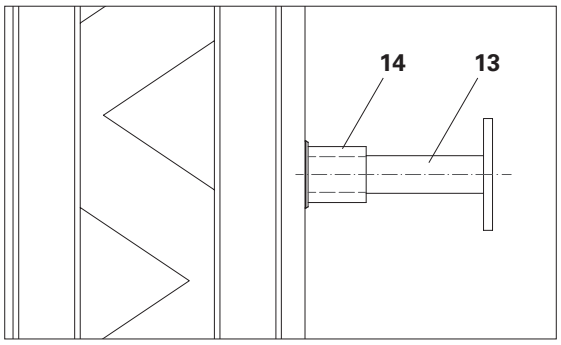


Fig. A5.07

- A more stable fixing is achieved through installation of the Anchor Positioning Plate, see A5 "Assembly of Positioning Screw M24".
- In this case, the distances from the holes to be drilled to the steel struts or beams of the formwork must be large enough.

Fixing with Positioning Screw M24

Preparation

1. Check the required space for the Anchor Positioning Plate M24 (**45**). Lateral spacings of 3 cm or 4 cm are required.
2. Measure and drill a hole Ø 25 mm from the front of the formwork. (Fig. A5.08)
3. Attach Anchor Positioning Plate M24 (**45**) to the rear side with four hex. Mount wood screw DIN 571 6 x 20 (**47**) on the formlining. (Fig. A5.09)

Assembly

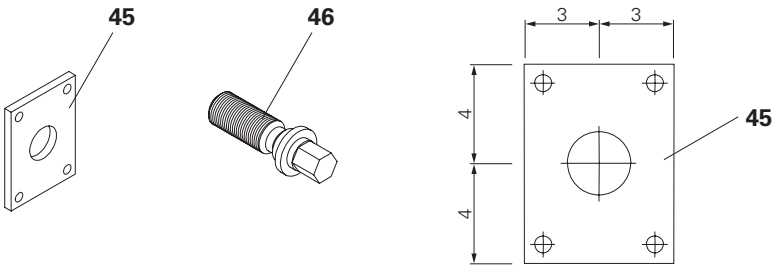
1. Insert Positioning Screw M24 (**46**) from the rear side of the formlining through the hole.
2. From the front side of the formlining, tightly screw on the tie (**20 + 21**). (Fig. A5.10)
3. Firmly connect threaded anchor plate (**20**) to the reinforcement to ensure a secure position.

Checking assembly

- Height
- Tie spacings
- Anchoring depth h
- Alignment according to specifications

Tie and reinforcement checks can be done at the same time.

If there is a formwork girder positioned at the rear of the tie point, "Assembly with Anchor Positioning Stud M24" can be used.



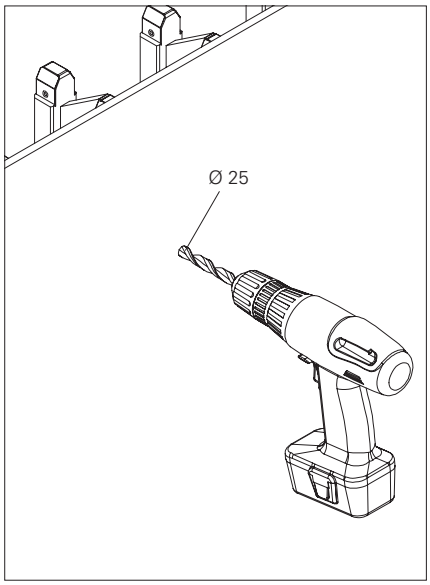


Fig. A5.08

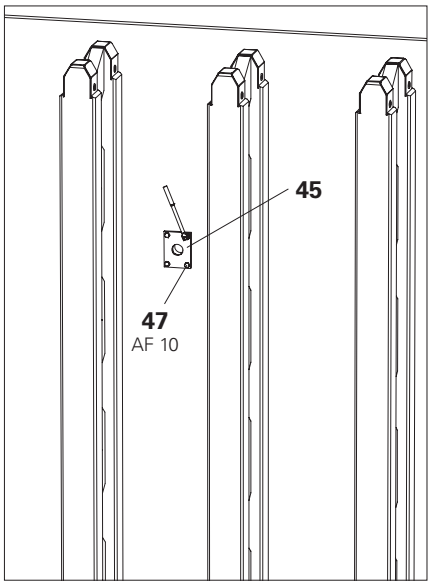


Fig. A5.09

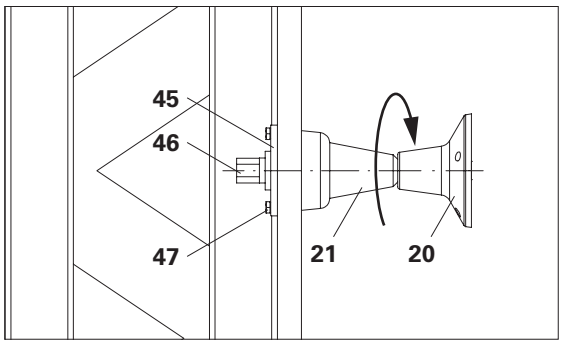


Fig. A5.10

Alternative anchoring
For anchorage on alternative anchoring (according to General Building Inspectorate Approval no. Z-21.6-1764)

Required components per tie point:

12a	Suspension Head Flex VGK	1x
28	B15 Anchor VGK	1x
Alternatively:		
12b	Suspension Head VGK	1x
27	B15 Anchor Lock VGK	1x
28	B15 Anchor VGK	1x

Assembly of Suspension Head Flex VGK
1. Insert B15 Anchor VGK (**28**) on the side of the slot through Suspension Head Flex VGK (**12a**) and screw on lightly. (Fig. A5.11b)
2. Push Suspension Head Flex VGK (**12a**) into position and tighten B15 Anchor VGK (**28**). (Fig. A5.11c)

(Fig. A5.11 + Fig. A5.11a)

Assembling Suspension Head VGK
1. Tighten Suspension Head VGK (**12**) with B15 Anchor VGK (**28**).
2. Secure B15 Anchor VGK (**28**) against twisting with B15 Anchor Lock VGK (**27**).

(Fig. A5.12 + Fig. A5.12a)

Checking assembly
- Alignment according to specifications

Tie and reinforcement checks can be done at the same time.

Close the hole after use using filler mortar.

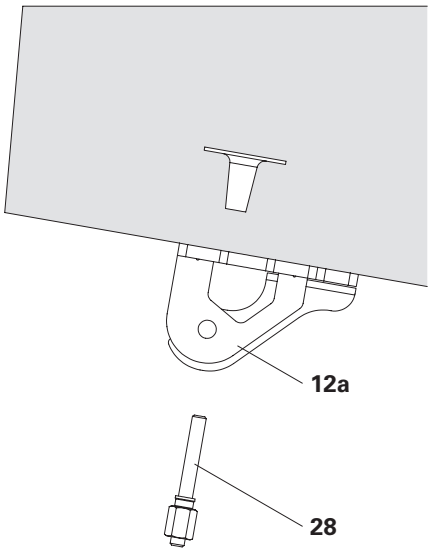


Fig. A5.11

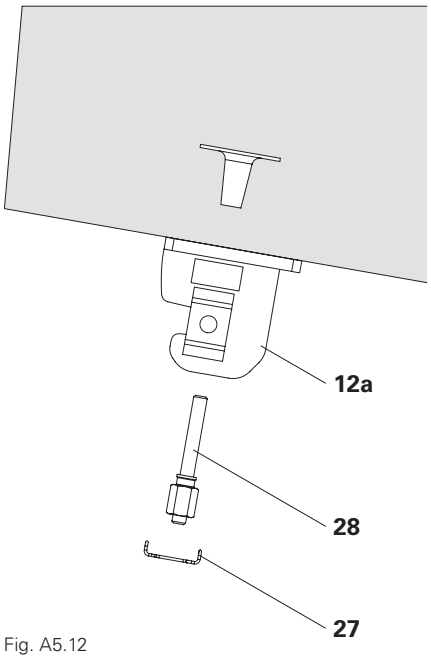


Fig. A5.12

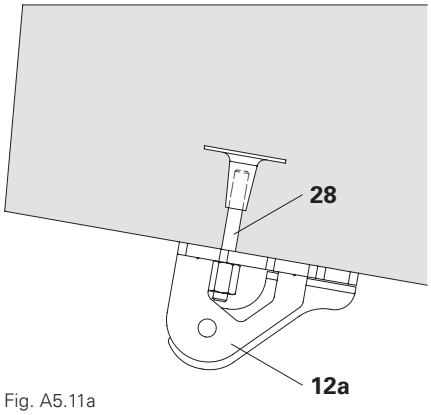


Fig. A5.11a

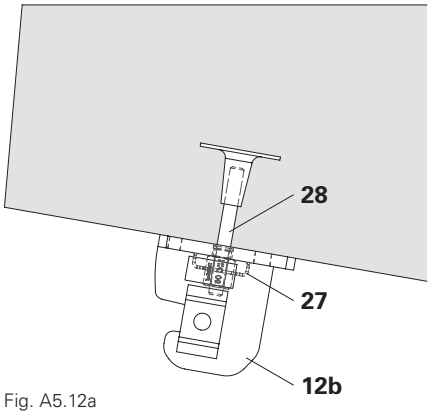


Fig. A5.12a

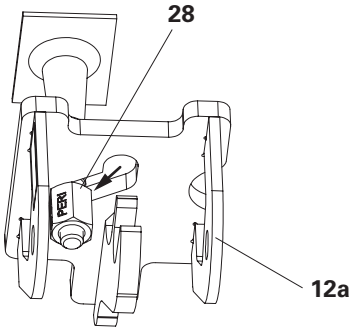


Fig. A5.11b

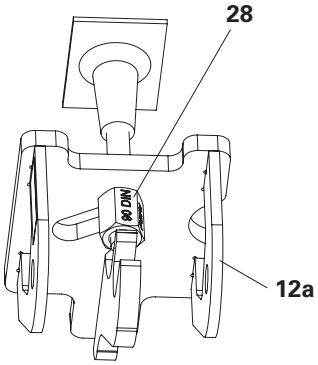


Fig. A5.11c

Removal and closure

Danger

Leading edges are present during assembly!
There is a risk of falling off the cantilevered parapet.

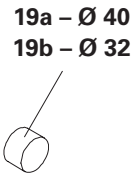
⇒ The removal and closure of the tie holes takes place from a safe and secure working area, e.g.:
- Telescopic work platform.
- Temporary working scaffold.
- Personal protective equipment to prevent falling from a height (PPE).

Dismantling on the cantilever

1. Remove bolt ISO 4014-M24 x 100-8.8 (**16**) from Suspension Head VGK (**12**).
2. Remove Suspension Head VGK (**12**).

Closure

1. Clean tie hole.
2. Mix 2-component Repoxal glue (**31**) according to the manufacturer's instructions.
3. Submerge Plug FRC Ø 32 (**19b**) for Anchor Positioning Stud M24 or Ø 40 (**19a**) for Threaded Cone M24 on one side into the 2-component Repoxal glue (**31**).
4. Tap Plug FRC (**19**) into the tie hole using a rubber-headed hammer until flush with hole.
5. Remove adhesive residue with a spatula. (Fig. A5.13 + Fig. A5.13a)



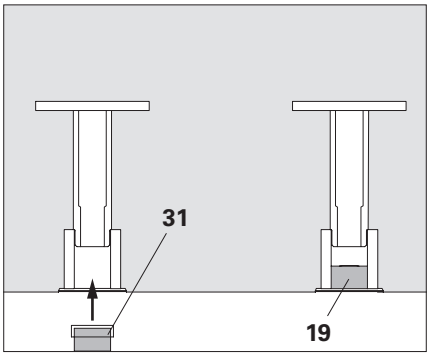


Fig. A5.13

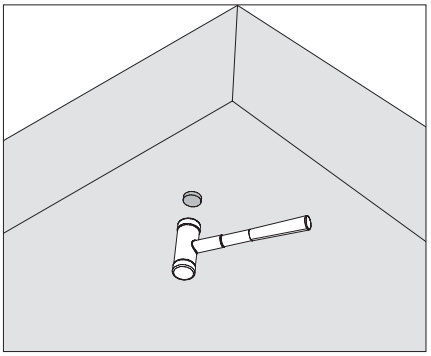


Fig. A5.13a

Dismantling on the abutment

1. Remove Bolt ISO 4014 M24 x 70-10.9 (**23**) from Suspension Head VGK (**12**).
2. Remove Suspension Head VGK (**12**).
3. Release Screw-On Cone-2 M24/DW 20 (**21**) using socket wrench AF 36.
4. Screw out Screw-On Cone-2 M24/DW 20 (**21**) by hand. (Fig. A5.14 + Fig. A5.15)

Closure

1. Clean tie hole.
2. Close the tie hole with a suitable cone, e.g. PERI Concrete Cones. (Fig. A5.16)

Observe user information for concrete cones with Sealing Compound-3.

For architectural concrete, the tie holes can be closed with PERI Sealing Cones KK.

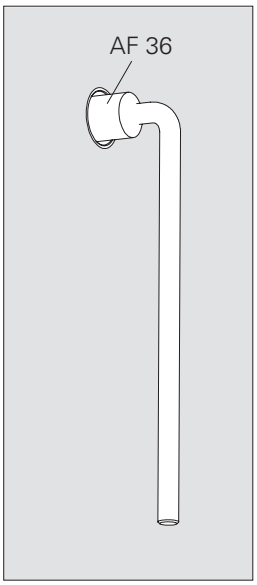


Fig. A5.14

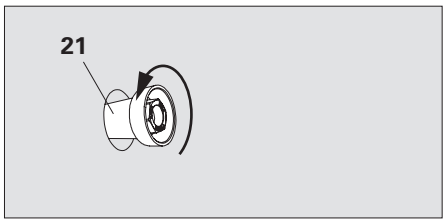


Fig. A5.15

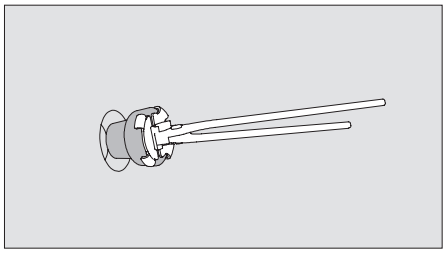


Fig. A5.16

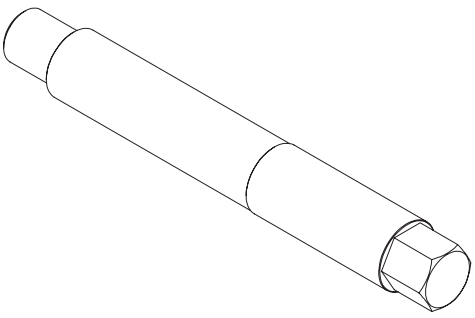
Refurbishment on the cantilever

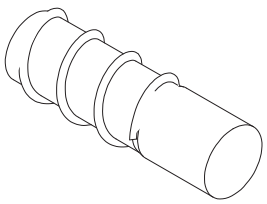
Danger

The full load-bearing capacity is reached after the composite mortar has hardened!
The cantilevered parapet bracket can fall.

⇒ Access the cantilevered parapet bracket only after the concrete has hardened.

Observe safety data sheet.





Preparing drilled hole

1. Ensure that the drilled hole is at right angles to the concrete surface. Drill hole depth 160 mm, Ø 22.
2. Check the depth of the drilled hole.
3. Blow out the drilled hole with the blow-out pump (**48**) from below.
4. Brush out the drilled hole with Cleaning Brush D24 (**49**) at least 4 times.
5. Blow out the drilled hole with the blow-out pump (**48**) from below.

Mounting refurbishment anchor

1. Inject Composite Mortar CF-T 300 V (**50**).
2. Screw Connection Bolt M16/ M24 x 50 (**51**) and ITH-Sleeve TSM BC 22 x 75 IM 16 (**52**) together tightly.
3. Screw the unit into the drilled hole with an impact wrench (nominal torque 600 Nm). (Fig. A5.17)
   → After reaching the designated screw-in depth, the composite mortar must appear on the concrete surface.
   → The embedment mark is the start of the thread on the M24.
   → VGK assembly loads can be immediately accommodated.
7. Fix Suspension Head VGK using nut ISO 7040 M24-8 (**24**).

Dismantling

1. Screw out Connection Bolt M16/ M24 x 50 (**51**) after use. (Fig. A5.18)
2. Close the drilled hole.

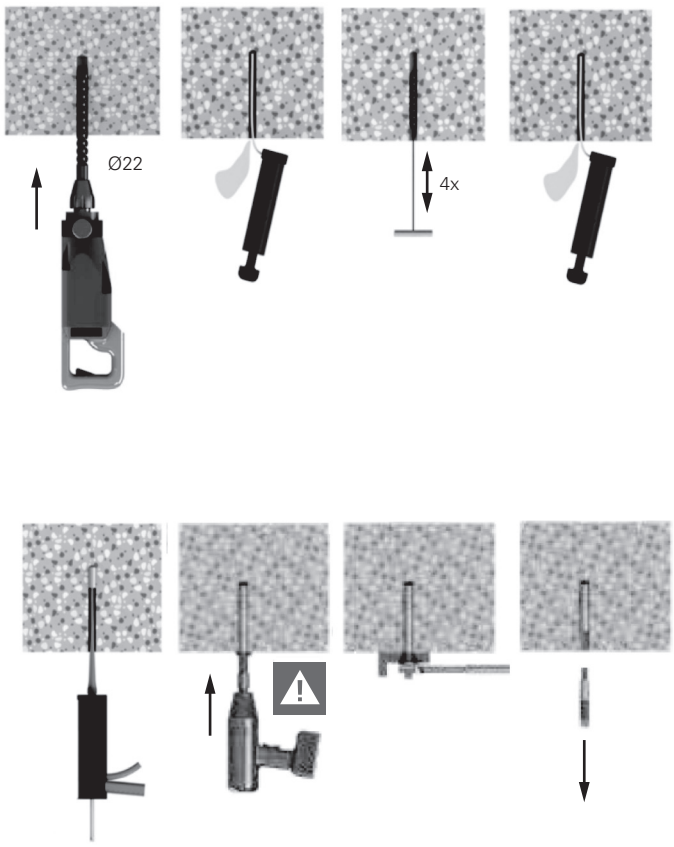


Fig. A5.17

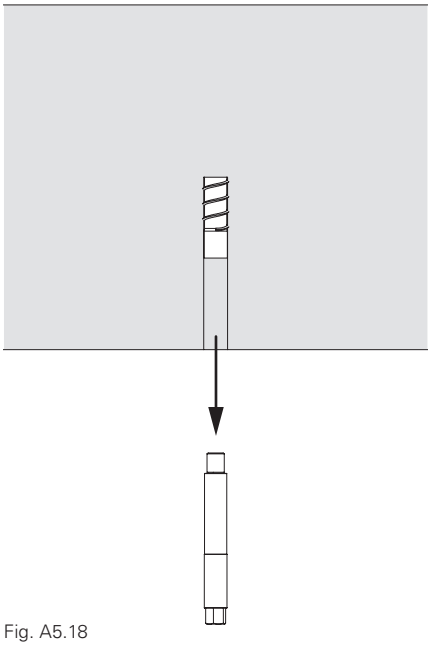


Fig. A5.18

Take into consideration country-specific standards and regulations.

Platform decking

Planking according to EN 12811 and DIN 4420-1 respectively.

- Planking (**35**) spans a minimum of two bays, with offset joints.
- Fix the planking on each platform beam with Spax screws TX 30 6 x 80 (**39**). (Fig. A6.01 + Fig. A6.02)
- When mounting the platform on the floor, only a multi-layer plywood sheet can be used as deck (cantilever = c/2, max. 75 cm). (Fig. A6.03)
- Secure cantilevered planking against lifting.
- With installation according to DIN 4420-1 Table 3, planking can be used as a cover which is suitable to catch falling objects. Ensure tightness.

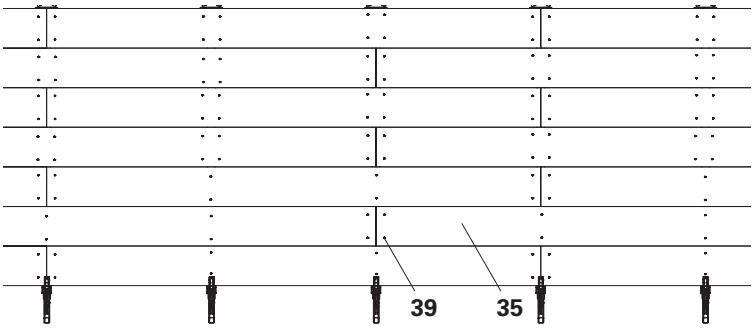


Fig. A6.01

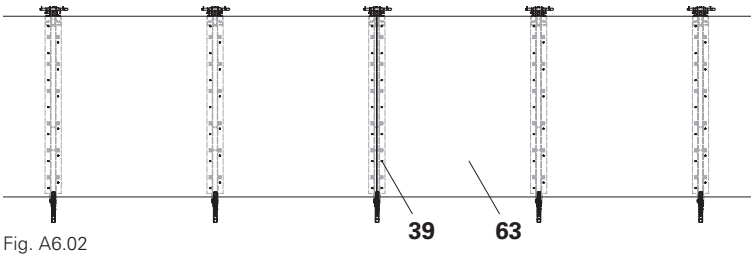


Fig. A6.02

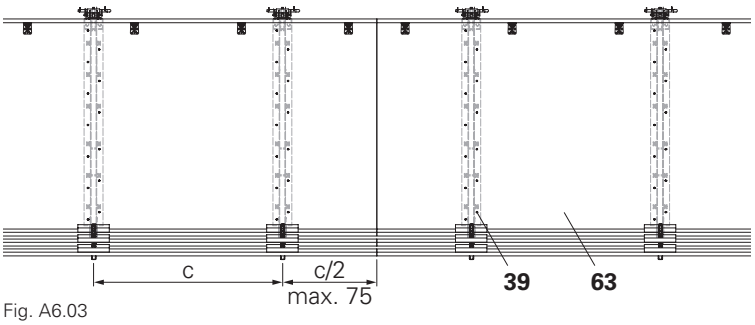


Fig. A6.03

Safety scaffold

In the absence of safety measures against falling and fall heights h > 1.00 m at the edge of the bridge, the planking is to be installed as safety decking according to DIN 4420-1.

- Installation of planking depending on the fall height h and span in accordance with DIN 4420-1, Table 2. (Fig. A6.04)
- Depending on the span, double thickness may be necessary.

For planking widths >24 cm and fall heights h ≤1.50 m:

Planking thickness	max. span
4.0 cm	1.00 m
5.0 cm	1.30 m
Double thickness	
2 x 4.0 cm	1.60 m
2 x 5.0 cm	2.20 m

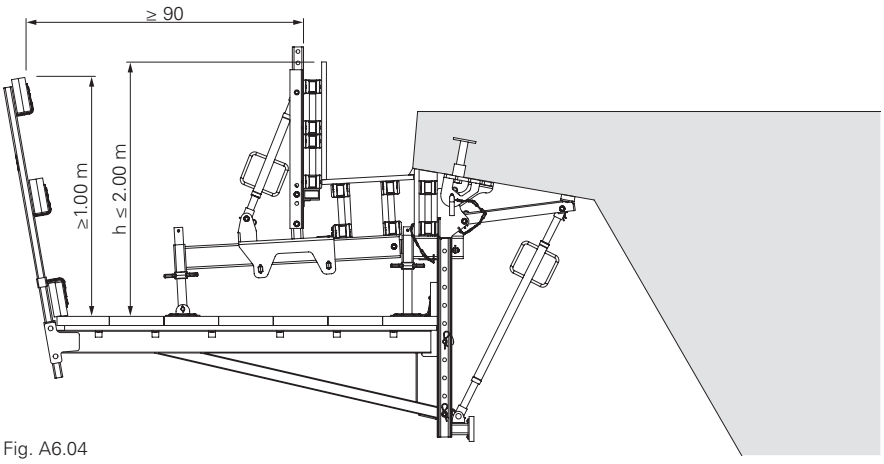


Fig. A6.04

Lateral protection

Guardrails are to be mounted on the working scaffold according to EN 12811.

- Fix guardrail boards (**33**) and toe boards (**34**) to Guardrail Posts HSGP-2 (**29**) with wire pins or wood screws (**36**). (Fig. A6.05)
- Alternatively, Guardrail Post SGP (**67**) can be fitted instead of Guardrail Post HSGP-2 (**29**).
- Lateral protection or full enclosure is only possible with the use of VGK Flex with Guardrail Post HSGP-2 (**29**).
- In case of partial or complete enclosure of the lateral protection or use with Guardrail Post SGP (**67**), the permissible influence width of the guardrail post may limit the bracket spacing.

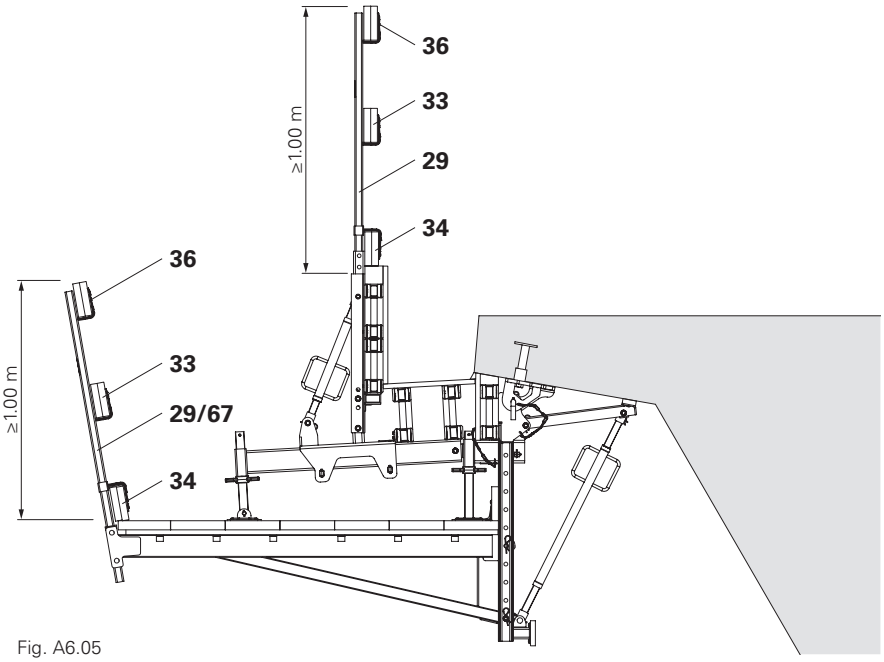


Fig. A6.05

Observe the design information.

Use as formwork scaffolding

In case of a storm, Console Bracket VGK must be free of materials and tools as well as be secured against tipping.
Example using squared timbers (**37**).

Refer to the relevant BI sheet for storm protection measures for full enclosures.

Cantilever
(Fig. A7.01)

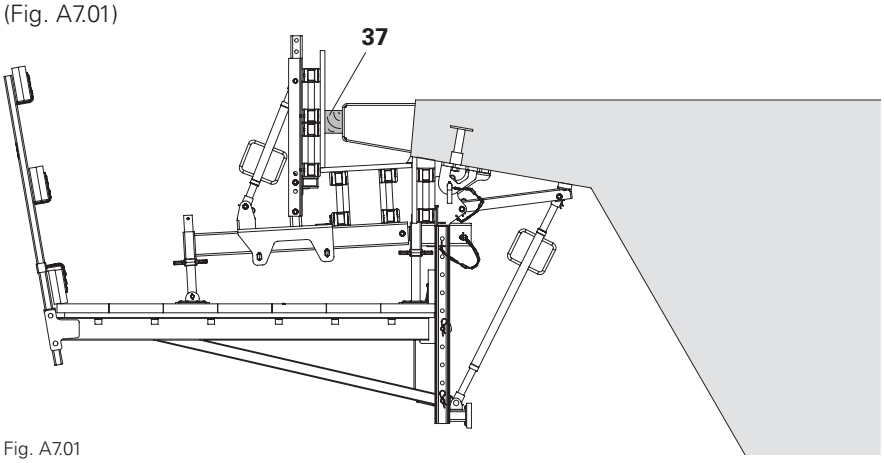


Fig. A7.01

Vertical application on abutments
(Fig. A7.02)

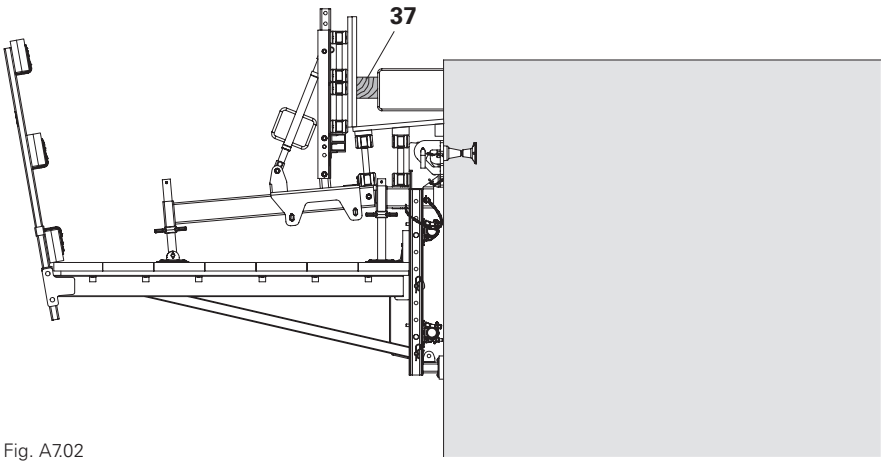


Fig. A7.02

Use as work platform

In case of a storm, Console Bracket VGK must be free of materials and tools as well as be secured against tipping.
Example using squared timbers (**37**).

Refer to the relevant BI sheet for storm protection measures for full enclosures.

Cantilever
(Fig. A7.03)

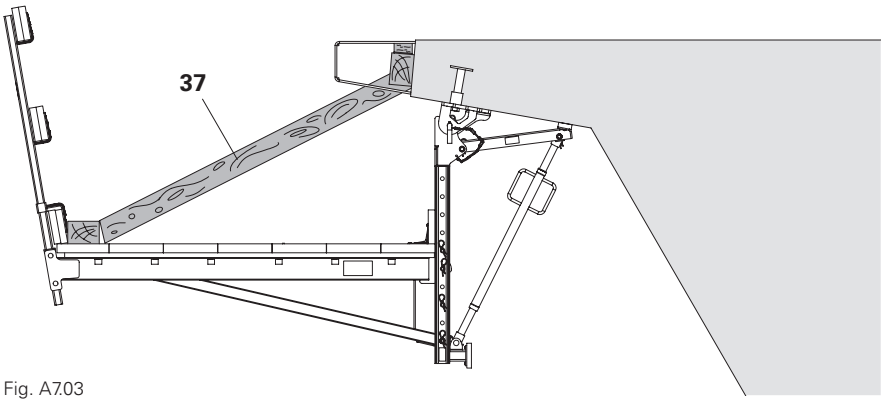


Fig. A7.03

Vertical application on abutments
(Fig. A7.04)

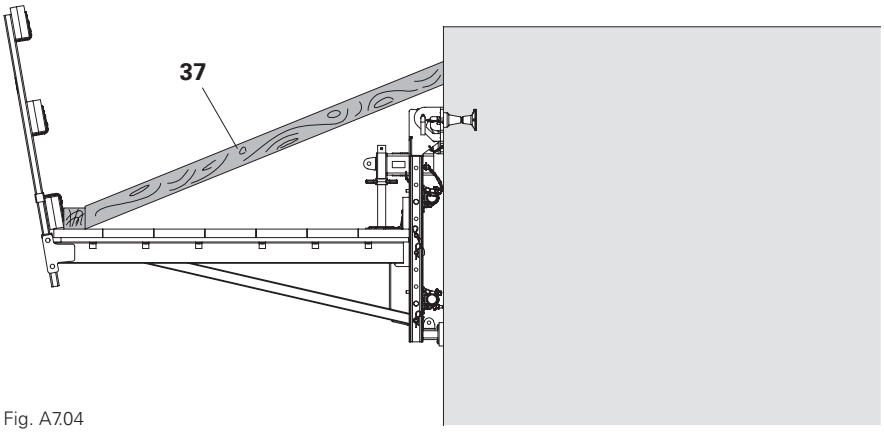


Fig. A7.04

A8 Horizontal bracing at s >3%

- For horizontal bracing, the console brackets are always connected in pairs to the scaffolding tubes and diagonal planking.
- The diagonally-positioned plank (**38**) is force-locked against Bracket Post VGK in the direction of the longitudinal inclination s.
- Take into consideration the longitudinal inclination s.
- When using a multi-layer plywood sheet (**63**) as the deck, bracing is not necessary.

Diagonal planking

Required components:

38 Planking 20 x 4	1x
39 Spax screw TX 30 6 x 80	8x
40 Height compensation	1x

Assembly

1. Prepare planking 20 x 4 (**38**) for a force-locked connection.
2. Place planking 20 x 4 (**38**) diagonally between two console brackets on the deck and fix with Spax screws TX 30 6 x 80 (**39**).
3. Mount the height compensation (**40**).
4. Fix Formwork Fixing VGK 2 (**5**) and Formwork Support VGK (**6**), see B3.
5. Fix the base spindles with two Spax Screws TX 30 6 x 80 (**39**) each.

(Fig. A8.01 + Fig. A8.01a)

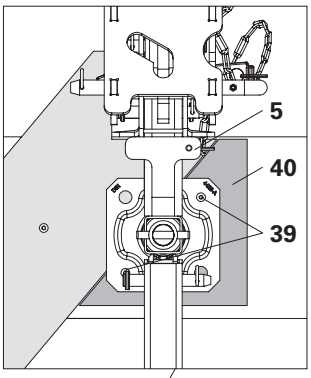


Fig. A8.01a

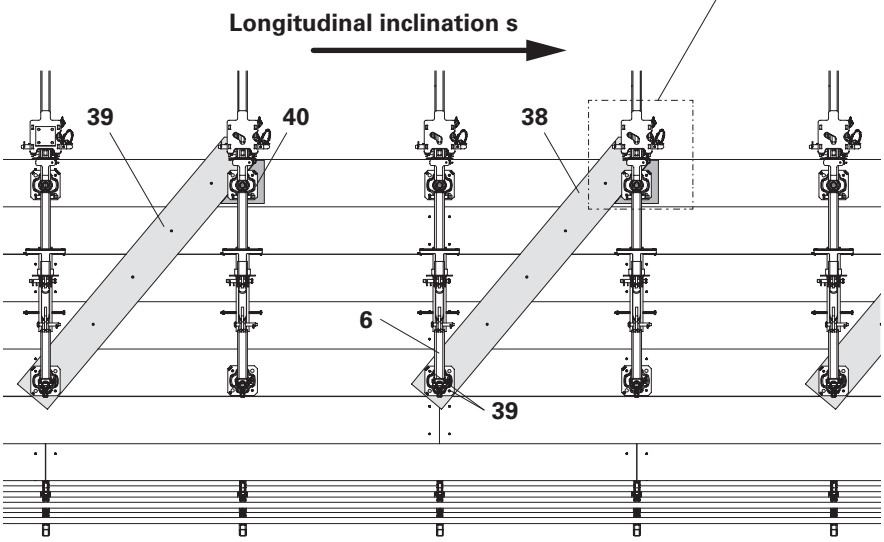


Fig. A8.01

A8 Horizontal bracing at s >3%

Scaffolding tube

Required components:

10	Bracing Connector VGK	2x
11	Steel Scaffolding Tube Ø 48.3 x 3.2	1x

Assembly

1. Mount Bracing Connector VGK (**10**) at the level of the deck with Bolt ISO 4014 M16 x 80-8.8 (**10.1**) and nut ISO 4032 M16-8 (**10.2**) on Bracket Post VGK (**1a/1b/1c**).
2. Mount the scaffolding tube (**11**) on two bracing connectors VGK (**10**).
3. Align console brackets and tighten Bracing Connectors VGK (**10**), AF 19.

(Fig. A8.02 + Fig. A8.02a)

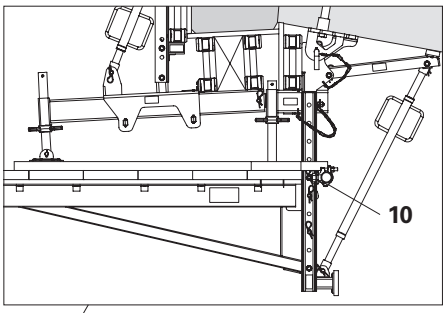


Fig. A8.02a

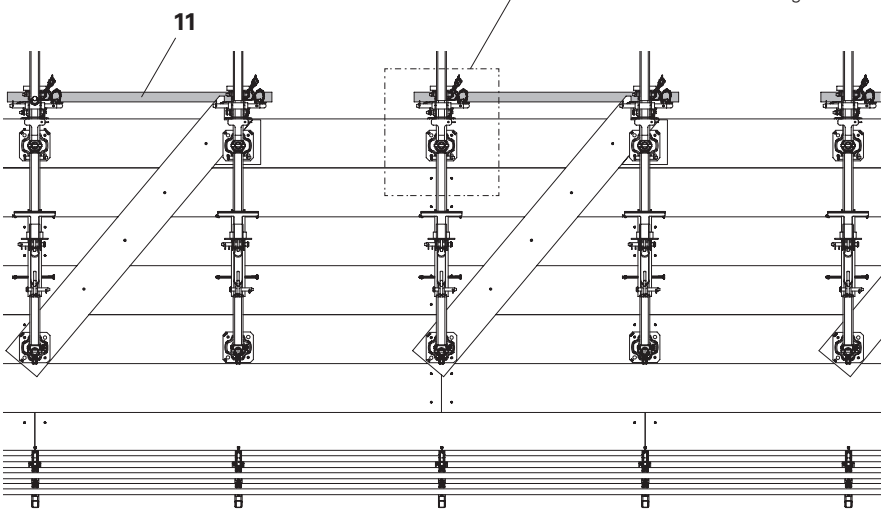


Fig. A8.02

- For platform units in longitudinal inclination s >3% at the abutment, the bracing with scaffolding tubes must be verified specifically for each project.
- For longitudinal inclination s <3%, diagonal bracing and horizontal bracing must be installed.

(Fig. A8.03)

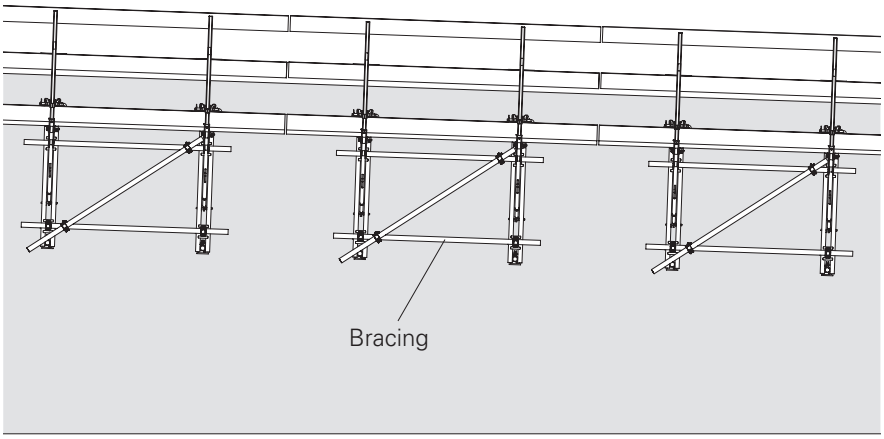


Fig. A8.03

A9 Horizontal bracing for crane misalignment

- The horizontal bracing applies to VGK Concreting Platform, VGK 160 and VGK Flex.
- In general, at least one horizontal Steel Scaffolding Tube Ø 48.3 x 3.2 (**11**) must be mounted for crane offsets.
- The assembly position is on the wall side.
- For longitudinal slopes or planned horizontal loads, a diagonal must also be installed, see Section "A8 Horizontal bracing at s >3%" on page 42.

Components

10 Bracing Connector VGK
11 Steel Scaffolding Tube Ø 48.3 x 3.2
64 Swivel Coupling AF 48/48

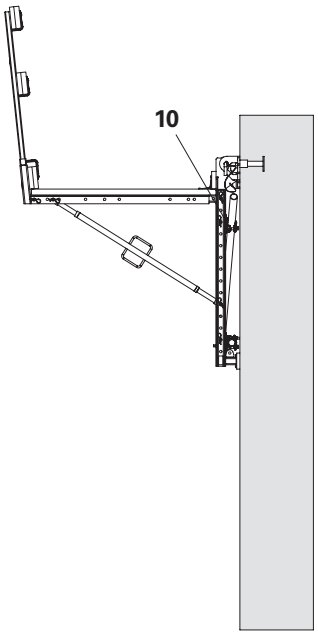


Fig. A9.01a

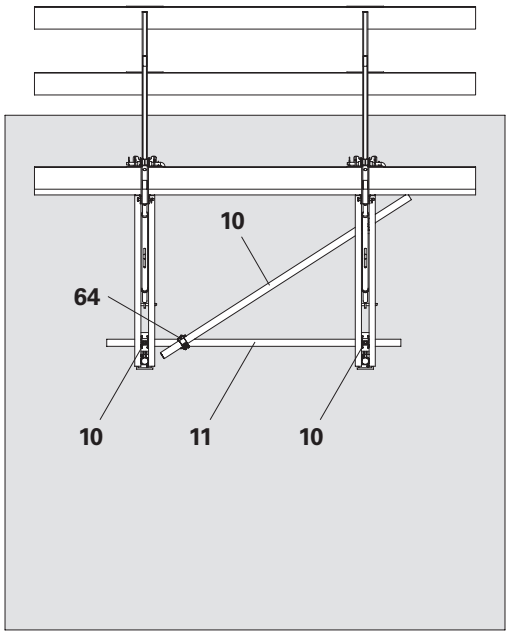


Fig. A9.01b

Assembly

1. Mount Bracing Connector VGK (**10**) with bolt ISO 4014 M16 x 80-8.8 (**10.1**) and nut ISO 4032 M16-8 (**10.2**) at the specified points on Bracket Post VGK (**1a/1b/1c**).
2. Attach Scaffolding Tube Ø 48.3 x 3.2 (**11**) and tighten bracing connectors.

For diagonals:

3. Mount Swivel Coupling AF 48/48 (**64**) on Steel Scaffolding Tube Ø 48.3 x 3.2 (**11**).
4. Attach Steel Scaffolding Tube Ø 48.3 x 3.2 (**11**) to Swivel Coupling AF 48/48 (**64**) and Bracing Connector VGK (**10**) and tighten.

(Fig. A9.01 – Fig. A9.01b)

When using the VGK 160 in conjunction with Bracket Post VGK 70, a horizontal scaffolding tube is not needed.

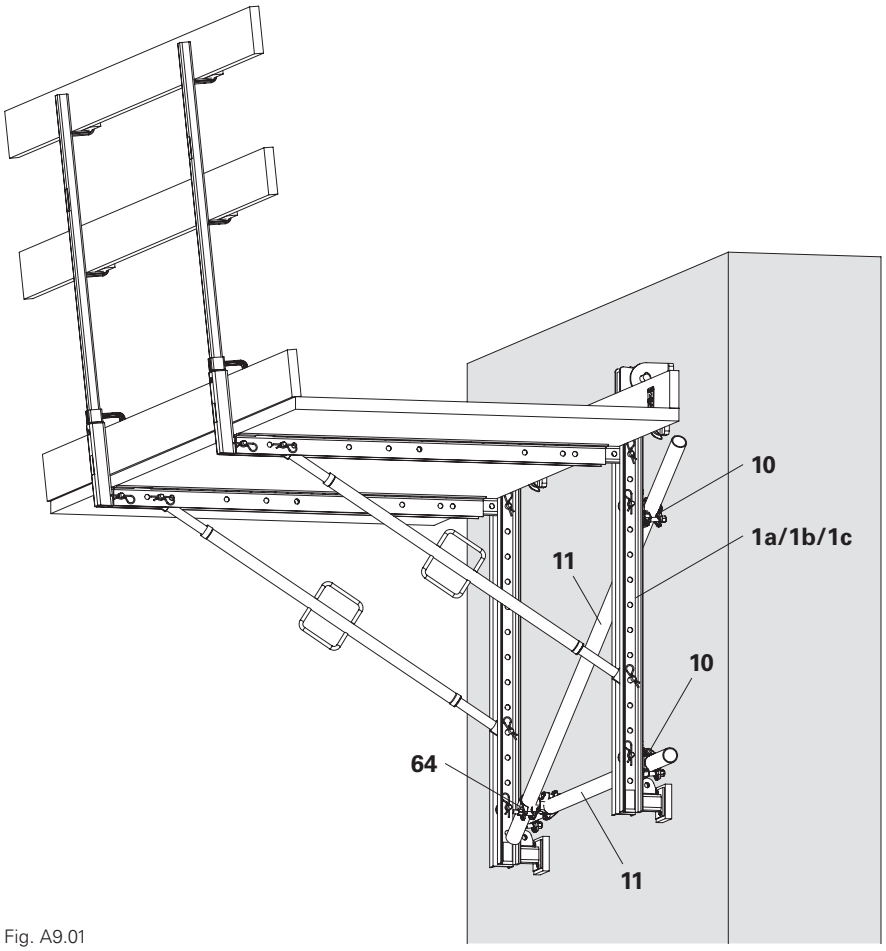


Fig. A9.01

A10 Horizontal bracing for demolition work and strong vibrations

- If the cantilevered parapet bracket is used during demolition work or is subjected to strong vibrations, the Kicker Brace AV must also be secured against twisting at the pressure point.
- Do not use the light platform version for demolition work.

Assembly

1. Fit a Swivel Coupling RS 38/48 (**32**) to the spindle sleeve on each Kicker Brace AV (**2**).
2. Connect two console brackets respectively with a Steel Scaffolding Tube Ø 48.3 x 3.2 (**11**).

(Fig. A10.01)

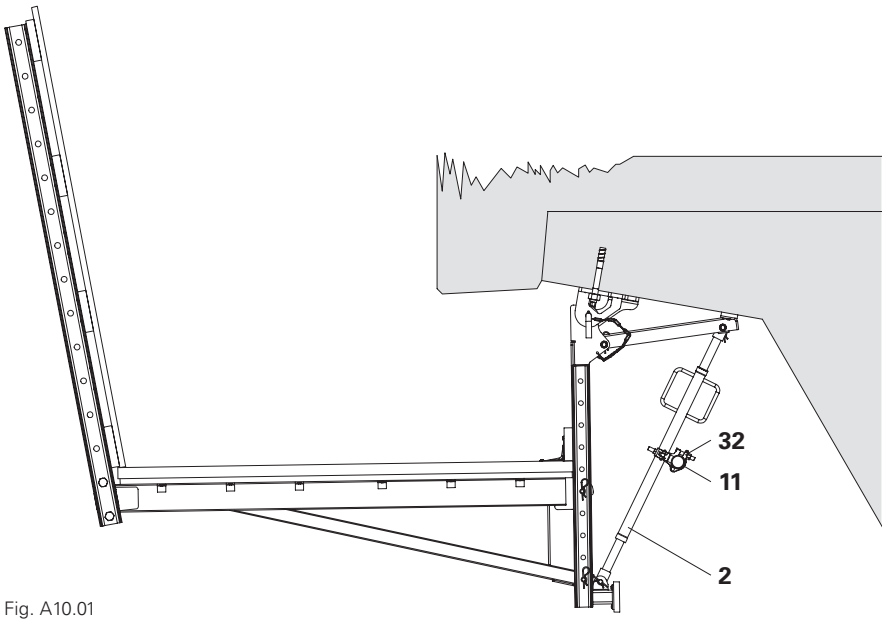


Fig. A10.01

A11 Inspection of Bracket Cantilever VGK 50

The sliding capacity of the compression bearing on Bracket Cantilever VGK 50 (**3**) must be checked before each use.

Bracket cantilevers are not to be used if the grouting is damaged.

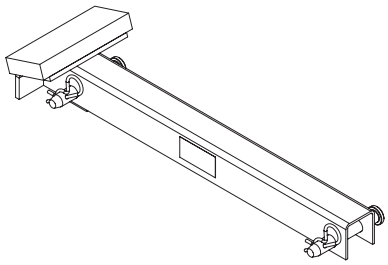
The inspection includes a visual and functionality check

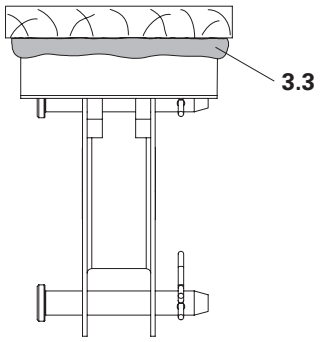
Purpose
Operational and functional reliability can be guaranteed due to the inspection carried out before the initial commissioning, as well as regularly occurring inspections.

Visual inspection
- Wear and tear
- Cracks, grooves or similar in the grouting (**3.3**).

Functional inspection
- Formwork panel moveable – approx. 2 mm forwards, back and twistable. (Fig. A11.01 – Fig. A11.03)
- Formwork panel automatically goes back to the starting position.

Measures
If any defects are determined during the safety inspection, they must be eliminated according to the instructions provided by the qualified person. A new inspection must then be performed.





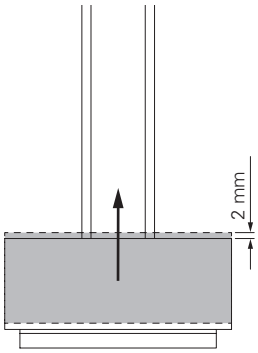


Fig. A11.01

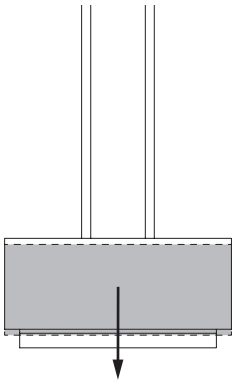


Fig. A11.02

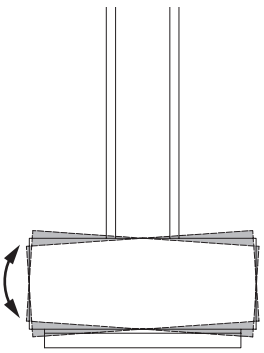


Fig. A11.03

Assembly on the cantilever

Danger

Leading edges are present during assembly!
There is a risk of falling off the cantilevered parapet.
⇒ Assemble platform unit and platform unit from a safe and secure working area, e.g.:
– Telescopic work platform.
– Temporary working scaffold.
– Personal protective equipment to prevent falling from a height (PPE).

The formwork unit is assembled and adjusted from the platform unit. Depending on the stage of construction, temporary safety measures to prevent falling may be required.

Removing the anchor positioning stud

1. Straighten wire nails.
2. Retract formwork. Pull the wire nails through the formwork panel.
3. Unscrew Anchor Positioning Stud M24 (**22**) from the anchor sleeve by means of an Allen key AF 14.

(Fig. B1.01)

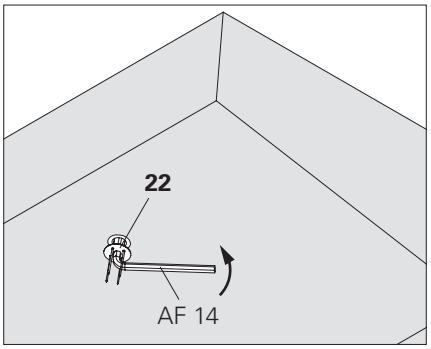


Fig. B1.01

Removing threaded cone

1. Retract formwork.
2. Push back wire nail with a hammer.
3. Unscrew Threaded Cone M24 (**17**) from the anchor sleeve using a ratchet wrench and socket AF 22.

(Fig. B1.02)

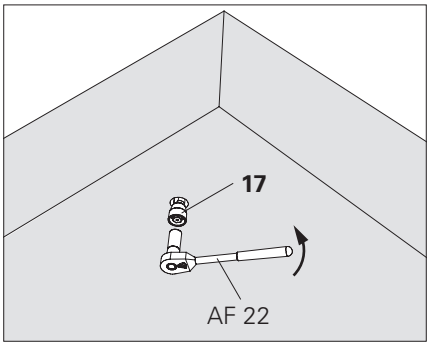


Fig. B1.02

Assembly

1. Insert bolt ISO 4014-M24 x 100-8.8 (**16**) on the side of the slot through Suspension Head Flex VGK (**12a**) and screw it lightly onto Anchor Sleeve M24 (**13**). (Fig. B1.03a)
2. Push Suspension Head Flex VGK (**12a**) into position and tighten ISO Bolt 4014-M24 x 100-8.8 (**16**). (Fig. B1.03b)

(Fig. B1.03)

3. Fix Bracket Cantilever VGK 50 (**3**) to Bracket Post VGK (**3.1**) using bolts and cotter pins (**1**). (Fig. B1.04)
4. Attach pre-adjusted Kicker Brace AV (**2**) to Bracket Cantilever VGK 50 (**3**) using bolts and cotter pins (**3.2**).
5. Attach pre-adjusted Kicker Brace AV (**2**) to the Bracket Post VGK (**1**) using bolts and cotter pins (**2.2**). (Fig. B1.05)
6. Attach Bracket Unit VGK (**1**) to Suspension Head VGK (**12**) and secure by means of locking pins Ø 20 x 260 (**1.1**) and cotter pins 4/1.
7. Vertically align Bracket Unit VGK (**1**) with Kicker Brace AV (**2**). (Fig. B1.06 + Fig. B1.07)

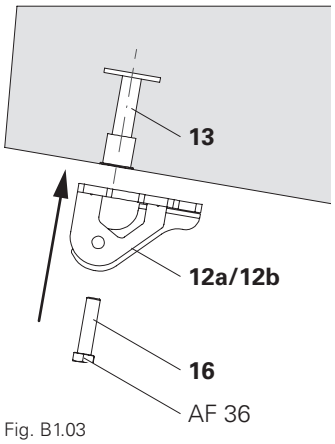


Fig. B1.03

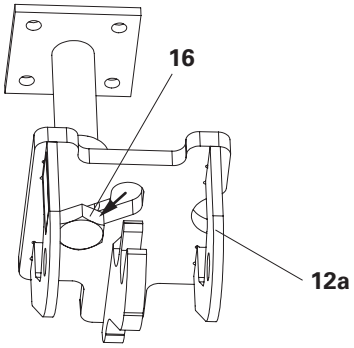


Fig. B1.03a

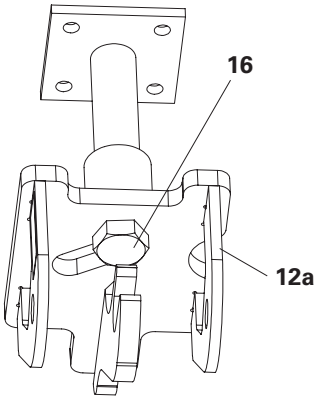


Fig. B1.03b

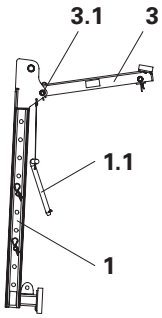


Fig. B1.04

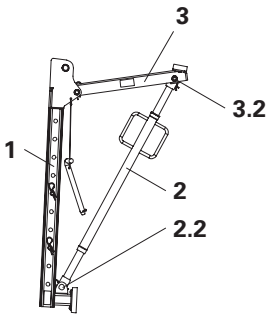


Fig. B1.05

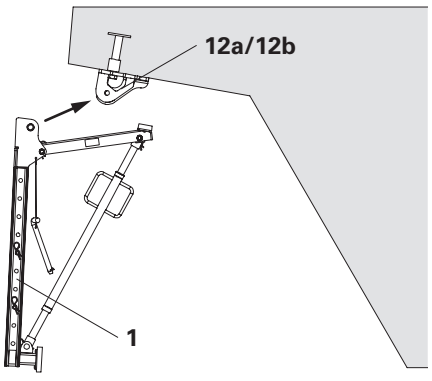


Fig. B1.06

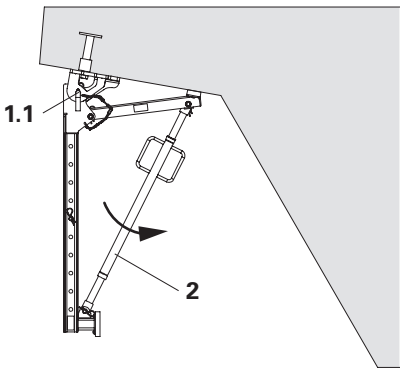


Fig. B1.07

Assembly on the cantilever 35–75 cm – additional steps

1. Insert Adj. Base Plate UJB 38-80/55 (**9**) into Bracket Unit VGK (**1**) and vertically align.
2. Secure the Adj. Base Plate UJB 38-80/55 (**9**) against falling out and unintentional twisting. (Fig. B1.08)

Assembly with Bracket Post VGK 70 – additional steps

Cantilever 35–75 or abutment:

1. Bolt Eye Nut RCS DW15 (**59**) in Bracket Post VGK (**1**) using bolts Ø 16 x 90 (**60**) and secure with cotter pins 4/1 (**61**). (Fig. B1.09 + Fig. B1.09a)

Cantilever ≥ 75 cm:

1. Attach Eye Nut RCS DW15 (**59**) to Bracket Cantilever VGK 50 (**3**) and Bracket Post VGK (**1**) using bolts and cotter pins (**3.1**). (Fig. B1.09 + Fig. B1.09a)

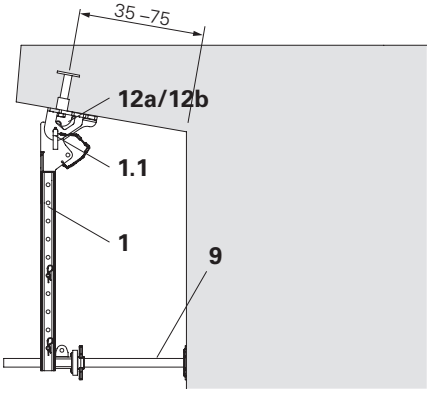


Fig. B1.08

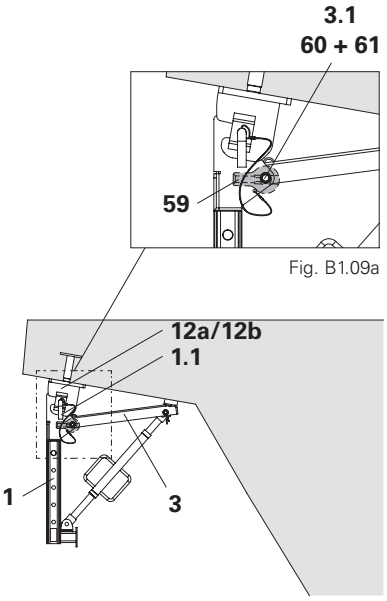


Fig. B1.09

Fig. B1.09a

Assembly on the abutment

When used on the abutment with Suspension Head Flex VGK, a scaffolding tube bracing must always be mounted.

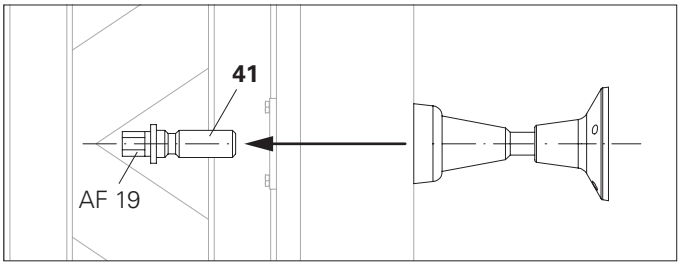


Fig. B1.10

Removing the positioning screw

1. Loosen and remove Positioning Screw M24 (**41**) from the rear side of the formlining, AF 19.
2. Remove formwork. (Fig. B1.10)

Assembly

1. Fix the Suspension Head VGK (**12**) to Screw-On Cone-2 M24/DW 20 (**21**) using bolts ISO 4014 M24 x 70-10.9 (**23**). (Fig. B1.11)
2. Attach Bracket Post VGK (**1**) to Suspension Head VGK (**12**) and secure by means of locking pins Ø 20 x 260 (**1.1**) and cotter pins 4/1.
3. Assemble the scaffolding tube bracing. (Fig. B1.12 + Fig. B1.13)

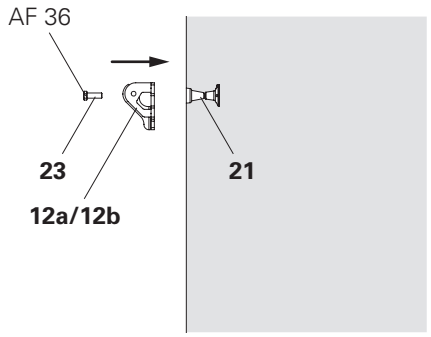


Fig. B1.11

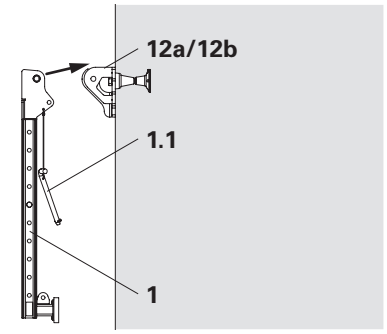


Fig. B1.12

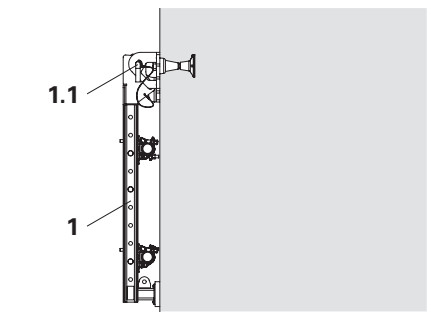


Fig. B1.13

Assembly of Platform Cantilever Beam VGK

1. Position the upper bolt Ø 16 x 90 (**1.3a**) in Bracket Post VGK at platform height.
2. Secure with lower bolt Ø 16 x 90 (**1.3b**).
3. Attach the platform beam (**4**) to the bolt Ø 16 x 90 (**1.3a**).
4. Secure with lower bolt Ø 16 x 90 (**1.3b**). (Fig. B2.01)
5. Attach more platform beams.
6. Install planking, see Section A6.

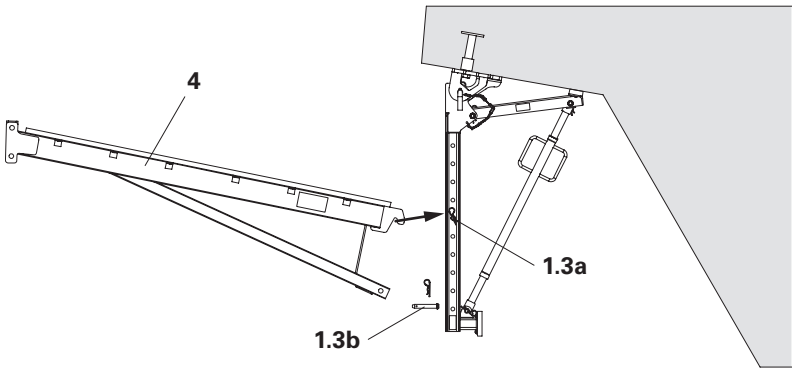


Fig. B2.01

Assembly of lateral protections

1. Insert Guardrail Post HSGP-2 (**29**) into all Platform Cantilever Beams VGK 170 (**4**). (Fig. B2.02)
2. Insert and secure side mesh barrier, see Section "A6 Decks and lateral protection" on page 38.

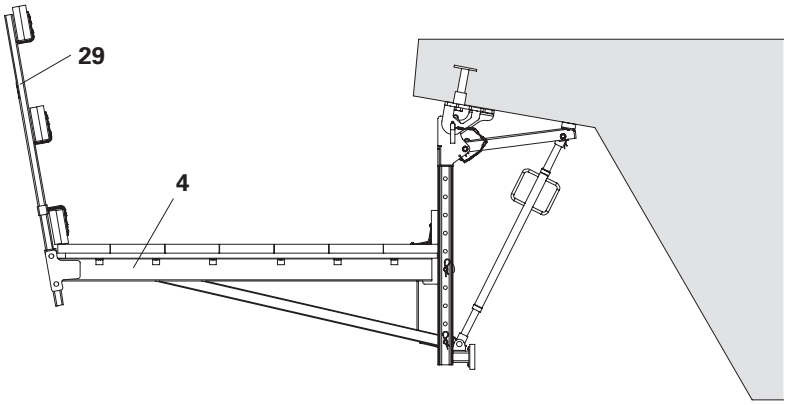


Fig. B2.02

Preparing for assembly

- A flat assembly surface is required for installation.
- If required, secure intermediate posts with temporary supports to prevent tipping over.
- Aligned and calibrated stops simplify the process of pre-assembling the work platform in a quick and precise manner (Fig. B3.01).

Fitting the assembly surface

1. Mount Suspension Head Flex VGK (**12a**) at distance "c" on the assembly surface.
2. Mount sufficiently long squared timbers in the project-specific dimensions on the assembly surface.

(Fig. B3.01 + Fig. B3.01a)

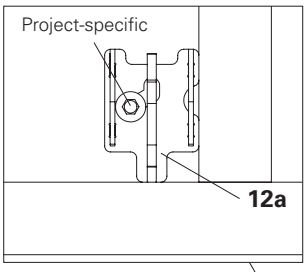


Fig. B3.01a

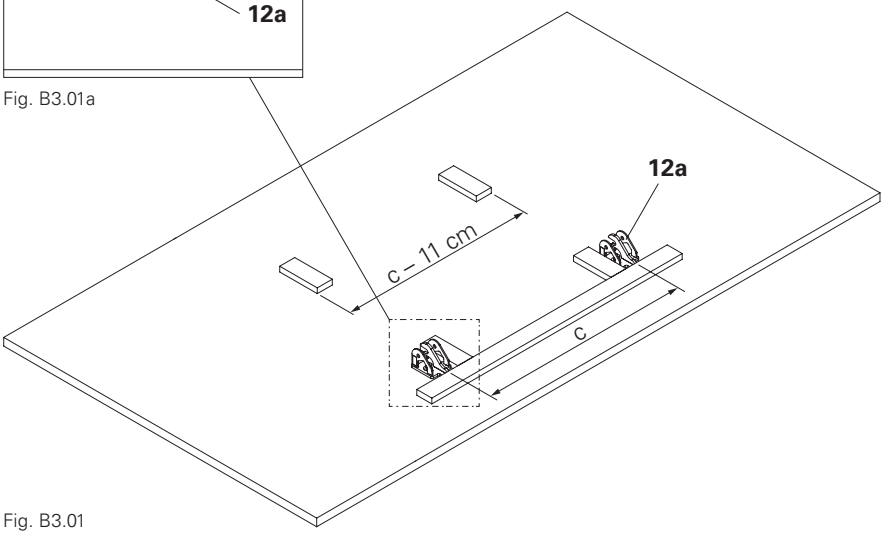


Fig. B3.01

Assembling the platform

Assembly

1. Mount Bracket Post VGK (**1a/1b/1c**) with locking pin Ø 20 x 260 (**1.1**) to Suspension Head Flex VGK (**12a**), align and secure with cotter pin 4/1 (**1.2**).

(Fig. B3.02 + Fig. B3.02a)

PERI recommends mounting a Steel Scaffolding Tube Ø 43.8 x 3.2 (**11**) with Bracing Connectors VGK (**10**) on Bracket Posts VGK (**1a/1b/1c**) to brace the platforms.

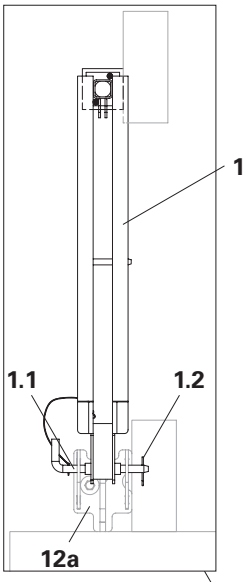


Fig. B3.02a

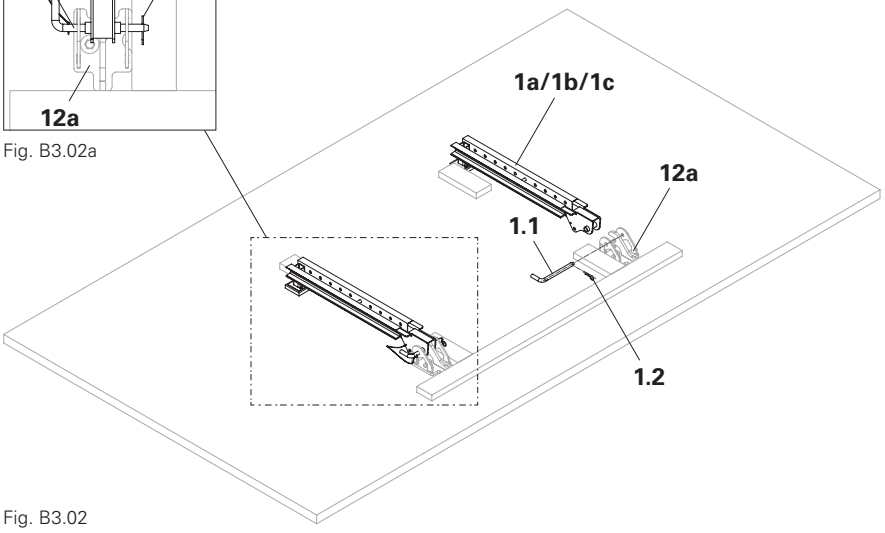


Fig. B3.02

2. Mount Platform Cantilever Beam VGK (**4**) with 2x bolts Ø 16 x 80 (**1.3**) to Bracket Post VGK (**1a/1b/1c**) and secure with cotter pin 471 (**1.2**).
(Fig. B3.03)

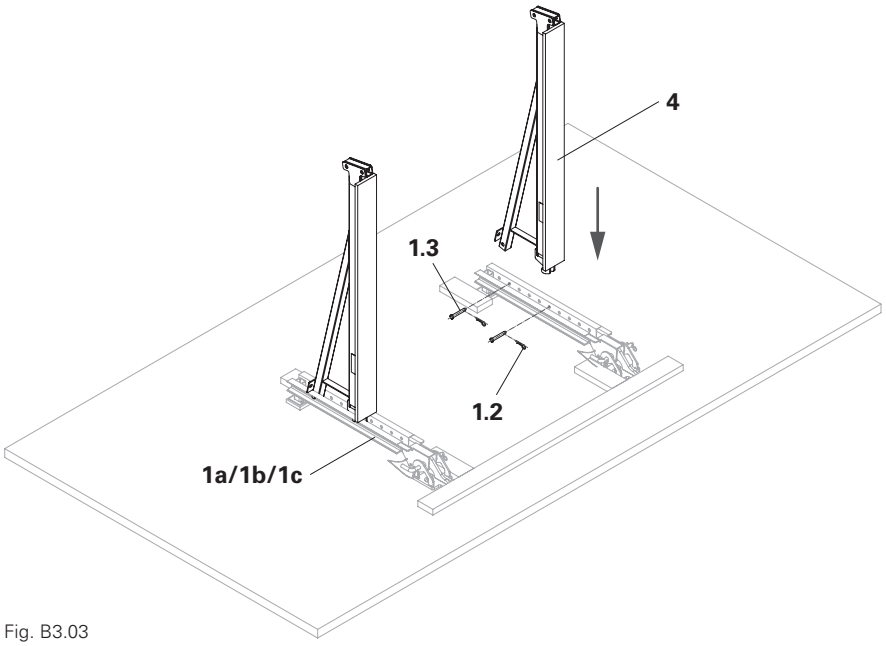


Fig. B3.03

3. Saw the multi-layer plywood sheet (**63**) to the specified dimensions.
4. Mount the multi-layer plywood sheet (**63**) with Spax screws TX 30 6 x 80 (**39**) to Platform Cantilever Beam VGK (**4**).
(Fig. B3.04)

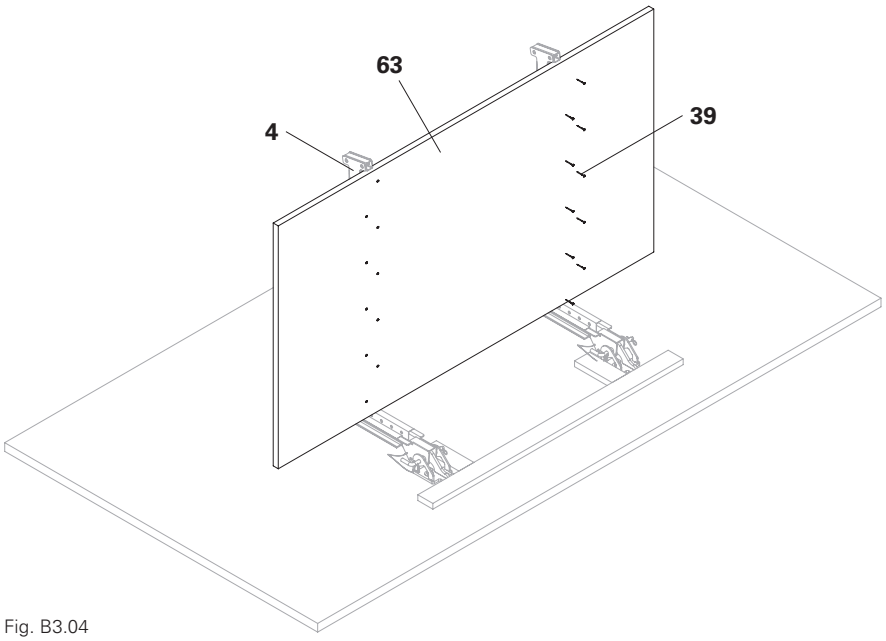


Fig. B3.04

5. Insert Guardrail Post HSGP-2 (**29**) into Platform Cantilever Beams VGK (**4**).
(Fig. B3.05)

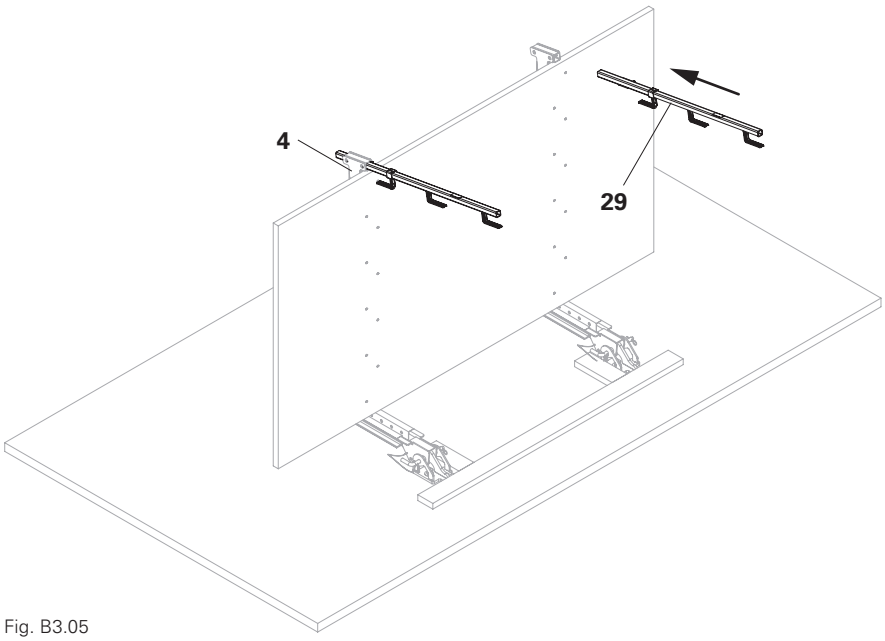


Fig. B3.05

6. Hang guardrail boards (**33**) into Guardrail Posts HSGP-2 (**29**) and fix them with wire pins or wood screws (**36**).
7 Fasten the toe board (**34**) with angle connector 90° reinforced (**64**) and wire pins or wood screws (**36**) to the multi-layer plywood sheet (**63**).
(Fig. B3.06)
8. Dismantle the platform unit from Suspension Head Flex VGK (**12a**).

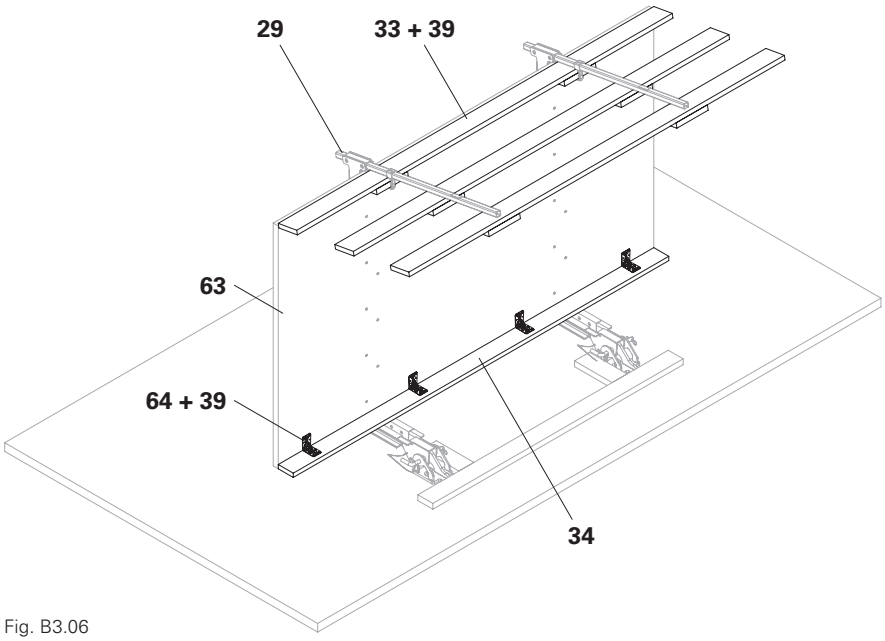


Fig. B3.06

With transportation fork

- Guide the work platform with ropes when attaching it.
- Do not stand under the suspended load.
- Mount the locking pin Ø 20 x 260 (**1.1**) from a safe workplace.

Attaching

1. Pick up platform unit with suitable fork (**70**).
2. Hang the platform unit into Suspension Shoes Flex VGK (**12a**).
3. Fix the platform unit to Suspension Shoes Flex VGK (**12a**) with locking pin Ø 20 x 260 (**1.1**) and secure with cotter pin 4/1 (**1.2**).

(Fig. B4.01 – Fig. B4.01b)

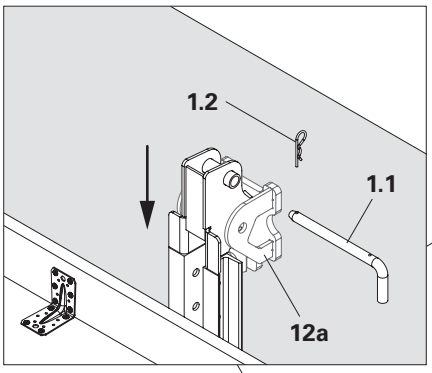


Fig. B4.01a

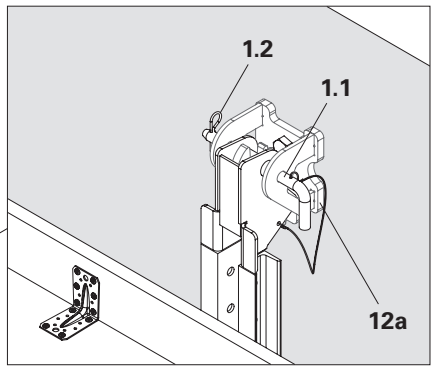


Fig. B4.01b

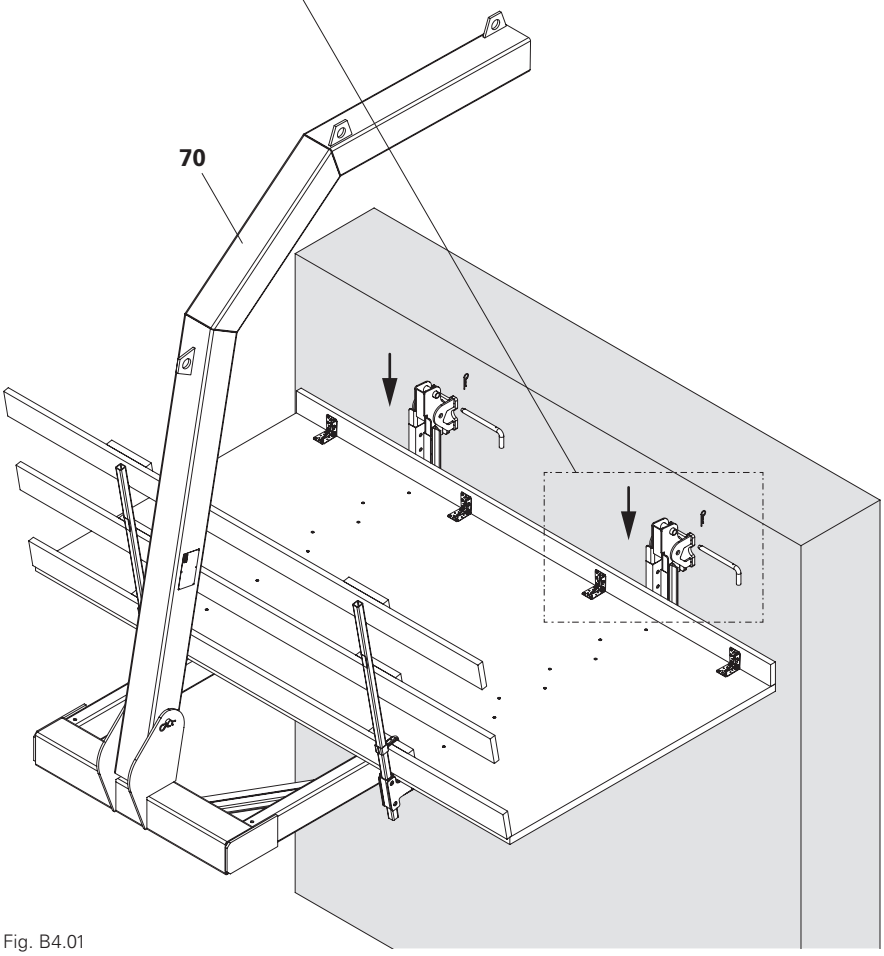


Fig. B4.01

With round slings

- Use round slings with sufficient load-bearing capacity.
- Guide the work platform with ropes when attaching it.
- Do not stand under the suspended load.
- Mount toe boards (**34**) only after the suspension process.
- Mount the locking pin Ø 20 x 260 (**1.1**) from a safe workplace.

Attaching VGK 160

1. Attach round slings (**71**) to the front and rear at the specified points on Platform Cantilever Beam VGK (**4**).
2. Attach round slings (**71**) to the crane with four-strand hanger (**72**) and lift platform unit.
3. Hang the platform unit into Suspension Shoes Flex VGK (**12a**).
4. Fix the platform unit to Suspension Shoes Flex VGK (**12a**) with locking pin Ø 20 x 260 (**1.1**) and secure with cotter pin 4/1 (**1.2**).

(Fig. B4.02 + Fig. B4.02a + Fig. B4.01b)

Attaching VGK Flex

1. Attach round slings (**71**) to the front and rear at the specified points on Formwork Post VGK (**7/ 8**).
2. Attach round slings (**71**) to the crane with four-strand hanger (**72**) and lift platform unit.
3. Hang the platform unit into Suspension Shoes Flex VGK (**12a**).
4. Fix the platform unit to Suspension Shoes Flex VGK (**12a**) with locking pin Ø 20 x 260 (**1.1**) and secure with cotter pin 4/1 (**1.2**).

(Fig. B4.03 + Fig. B4.03a + Fig. B4.01b)

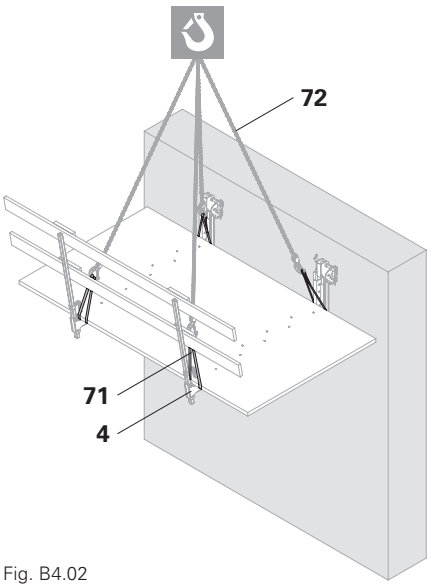


Fig. B4.02

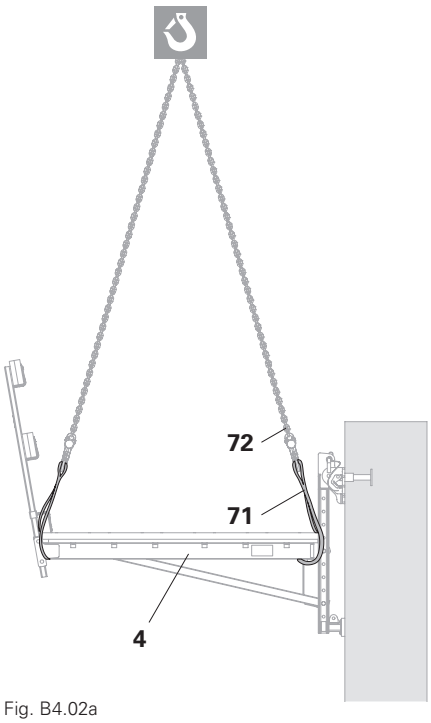


Fig. B4.02a

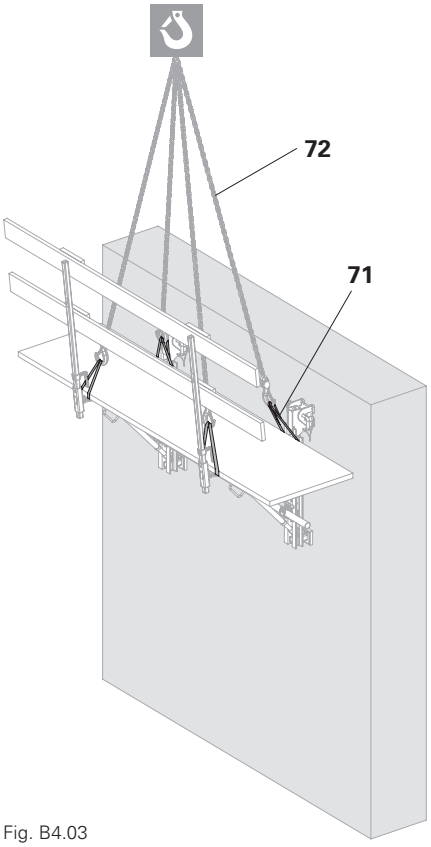


Fig. B4.03

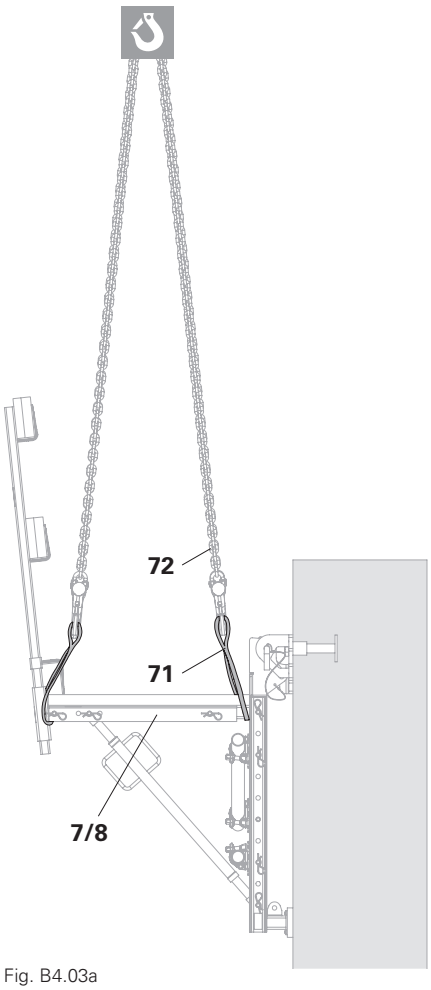


Fig. B4.03a

Assembly with the Formwork Support VGK 60

Note

Higher concrete pressure on Formwork Post VGK 120 if the cantilevered parapet is higher than 50 cm!
This can lead to deformation of Formwork Support VGK 60.

⇒ Centre Kickers AV 82 and, if necessary, secure them against shifting, e.g. using shims or squared timbers. (Fig. B5.02a)

- Fix side formwork to Formwork Post VGK 70 with wood screws.
- This version is only possible at the abutment with Suspension Head VGK (**12b**).

Assembly of Platform Cantilever Beam VGK

1. Screw Tie Rod DW 15 (**56**) into Eye Nut RCS DW 15 (**59**).
2. Screw Hex Nut DW 15 30/50 (**57**) into Tie Rod DW 15 (**56**) and adjust to match the required dimension beforehand.
3. Insert Hex Nut DW 15 30/50 (**57**) into Formwork Post VGK 120 (**8**) and screw in until contact is made with the front plate (**8.2**).
4. Fasten Formwork Post VGK 120 (**8**) to planking (**35**) with wood screws. (Fig. B5.01 + Fig. B5.01a)

Assembly of Formwork Post VGK for side formwork

1. Fasten Formwork Post VGK 70 (**7**) to Formwork Post VGK 120 (**8**) with bolts
2. Fix Kicker AV 82 (**2a**) in the rearmost hole in Formwork Support VGK 120 (**8**) and in the top hole in Formwork Post VGK 70 (**7**) with bolts in each case.
3. Insert beam support (**7.1**) in the corresponding position. (Fig. B5.02)

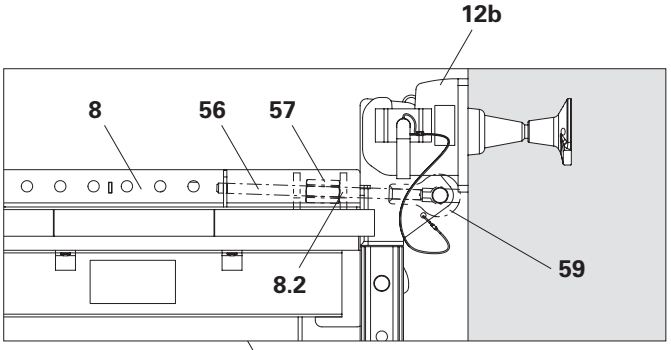


Fig. B5.01a

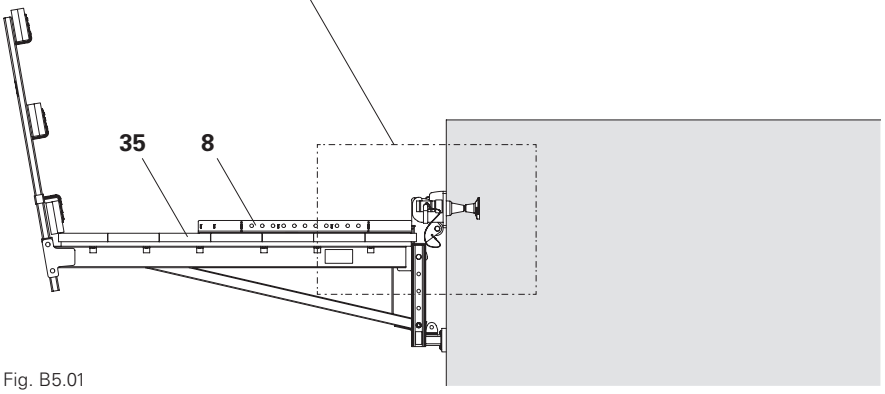


Fig. B5.01

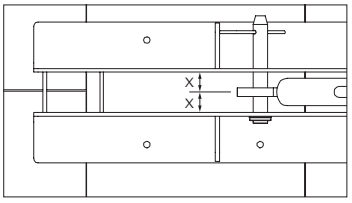


Fig. B5.02a

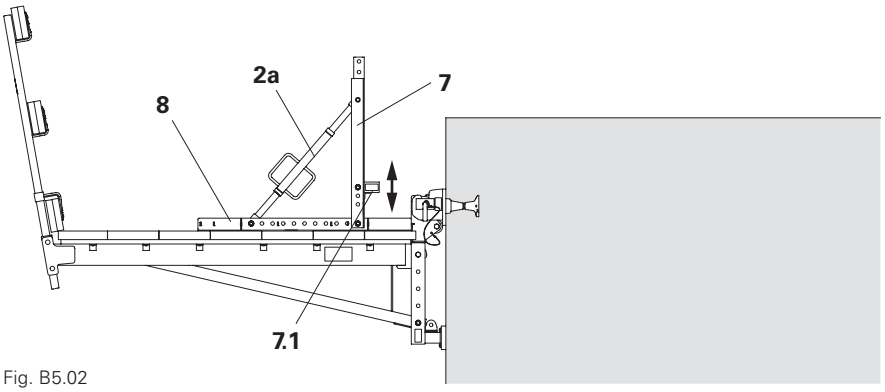


Fig. B5.02

Formwork assembly

1. Position the slab formwork at the required height by means of squared timbers and wedges.
   → The formwork panel (**58**) must rest on the beam support (**7.1**) with x <30 cm.
2. Place the side formwork on the beam support (**7.1**) and slab formwork, and fix to Formwork Post VGK 70 (**7**) with wood screws (**36**). (Fig. B5.03)

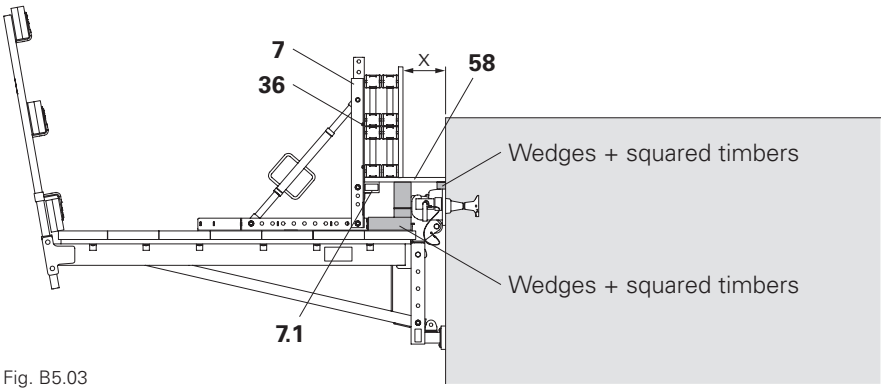


Fig. B5.03

Assembly with the Formwork Support VGK 100

Assembly of Formwork Fixing VGK

1. Release wedge (**5.1**).
2. Insert Formwork Fixing VGK 2 (**5**) into Bracket Post VGK (**1**).
3. Adjust Formwork Fixing VGK 2 (**5**) to required height with the spindle.
4. Secure Formwork Fixing VGK 2 (**5**) with a wedge (**5.1**).
5. Position internal formwork (**54**) on Formwork Fixing VGK 2 (**5**) and align. (Fig. B5.04)

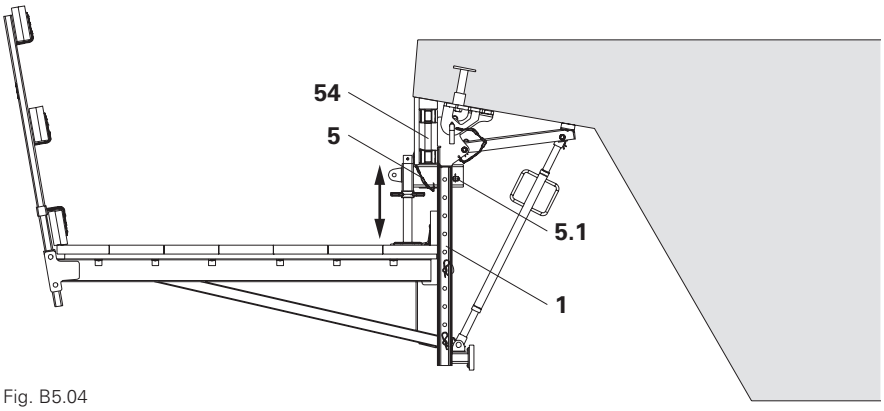


Fig. B5.04

Assembly of Platform Cantilever Beam VGK

1. Fix Formwork Support VGK (**6**) to Formwork Fixing VGK 2 (**5**) with bolts (**6.4**).
2. Bring the guide carriage (**6.1**) into position.
3. Fix slab formwork to the guide carriage (**6.1**) by means of 2 Torx 6 x 60 (**55**) respectively.
4. Align slab formwork with pivoting base spindle (**6.3**) and guide carriage (**6.1**).
5. Fix both wedges (**6.2**) on the guide carriage (**6.1**) using a sledge hammer (**5 kg**). (Fig. B5.05 + Fig. B5.05a)

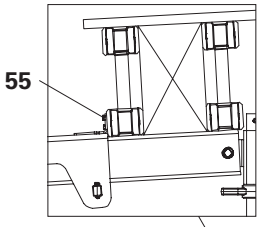


Fig. B5.05a

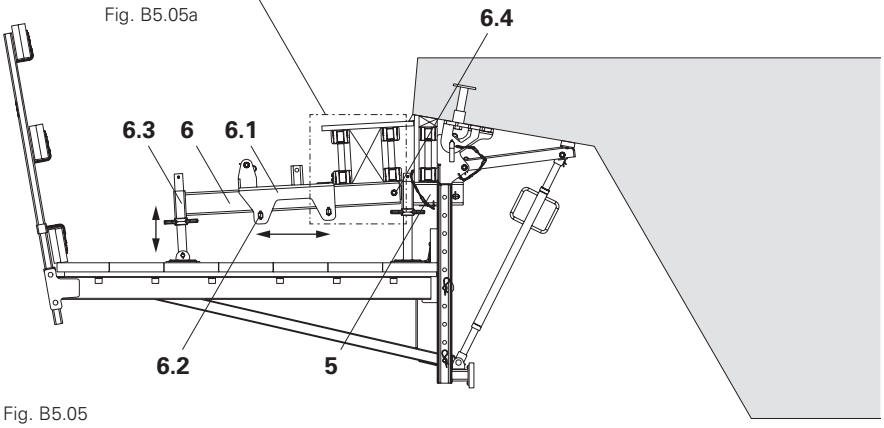


Fig. B5.05

Assembly of Formwork Post VGK for side formwork

1. Attach Formwork Post VGK 70 (**7**) to the guide carriage (**6.1**) by means of bolts.
2. Fix Kicker AV 82 (**2a**) to the guide carriage (**6.1**) and Formwork Post VGK 70 (**7**) with bolts.
3. Insert beam support (**7.1**) in the corresponding position. (Fig. B5.06 + Fig. B5.06a)

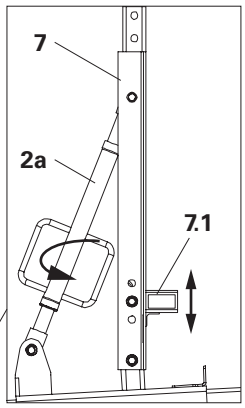


Fig. B5.06a

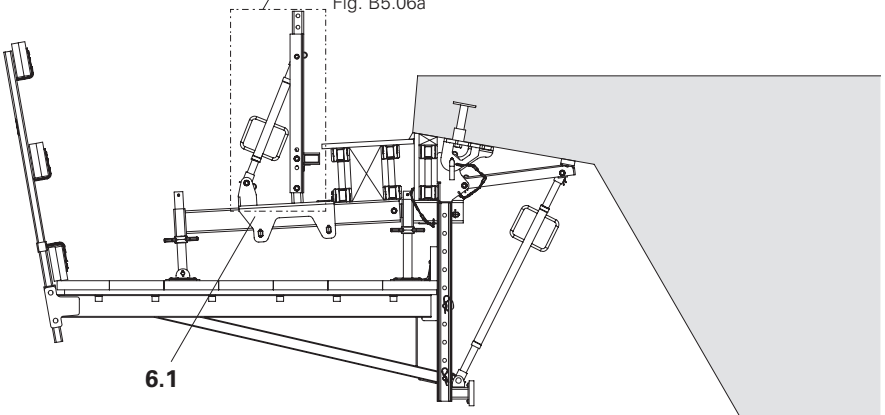


Fig. B5.06

Assembly of side formwork

1. Place the side formwork on the beam support (**7.1**) and slab formwork, and fix to Formwork Post VGK 70 (**7**) with wood screws.
2. Align Formwork Post VGK 70 (**7**) with Kicker AV 82 (**2a**). (Fig. B5.07)

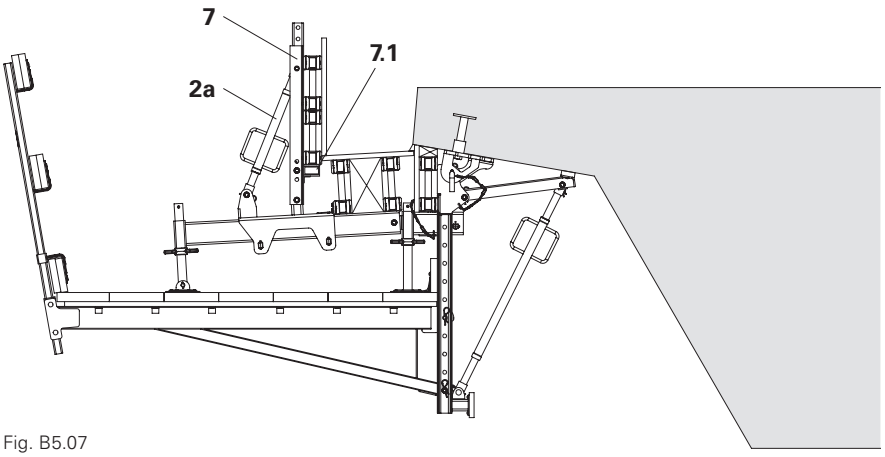


Fig. B5.07

Arrangement of formwork girders

For optimal concreting results, offset the joints of formwork girders for the slab and side formwork. (Fig. B6.01)

Top view

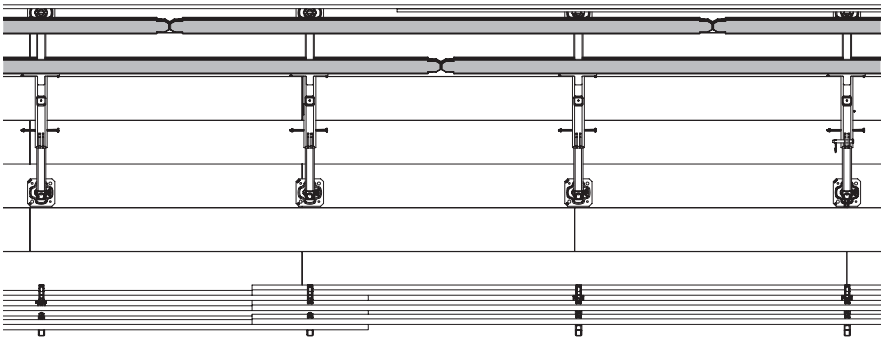


Fig. B6.01

Forward Inclination of the side formwork

The forward inclination "v" is dependent on the height of cantilevered parapet "H" and refers to the upper edge of the cantilevered parapet. (Fig. B6.02)

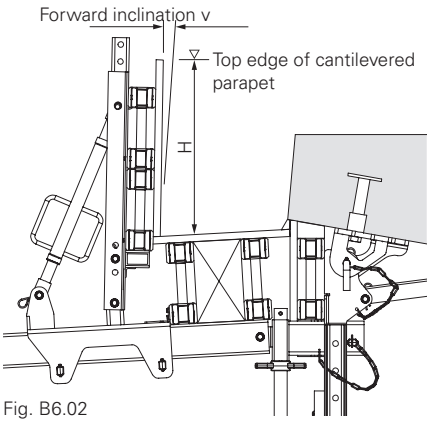


Fig. B6.02

Cantilevered parapet height H [cm]	Forward inclination v* [mm]
100	23
80	9
60	3
40	0

*Values at 1 m influence width.
Intermediate values can be interpolated linearly.
Tab. B6.01

Danger

Danger associated with overloading!
Cantilevered parapet brackets can fall to the ground.

⇒ Do not pour concrete directly from the mixer truck or concrete bucket into the formwork construction.

⇒ Avoid any accumulation of concrete in the area of the cantilevered parapet track.
(Fig. C1.01)

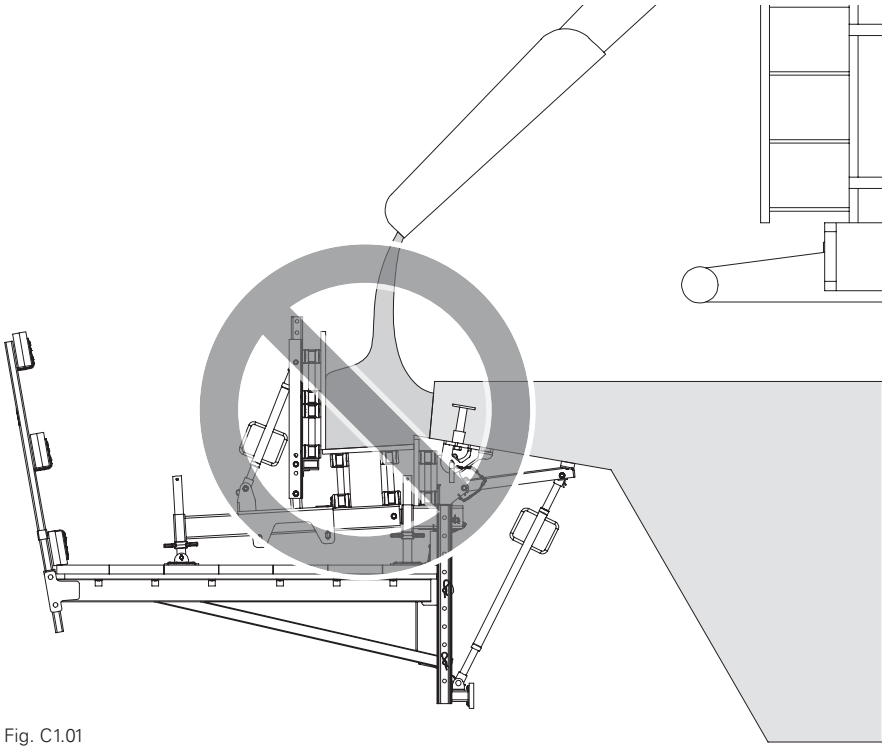


Fig. C1.01

Concreting

1. Pour concrete on the bridge cantilever.
2. Bring concrete into the formwork construction using a rake or something similar.
3. Compact the concrete.
(Fig. C1.02)

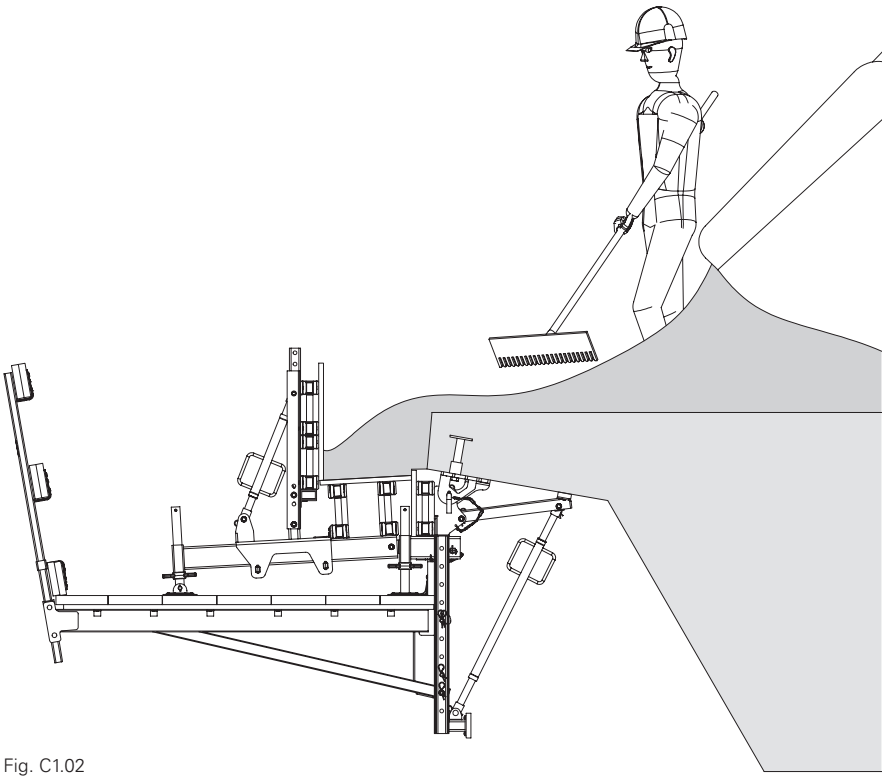


Fig. C1.02

Formwork unit

- Striking and dismantling of the formwork unit is carried out from the platform unit.
- Deshuttering and dismantling is the same for all construction sizes using the reverse order of shuttering and assembly.

Side plate

1. Turn back Formwork Post 70 (**7**) with Kicker AV 82 (**2a**) until side plate comes off the cantilevered parapet.
2. Remove the side formwork. (Fig. C2.01)

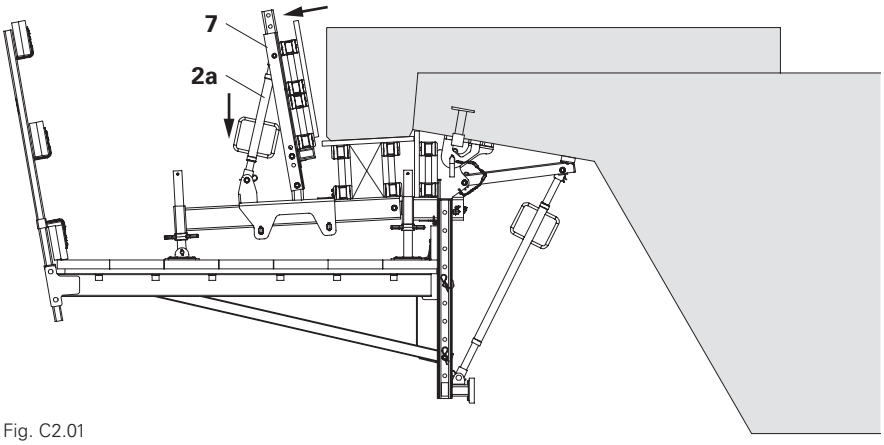


Fig. C2.01

Slab formwork

1. Release wedge (**5.1**) on Formwork Fixing VGK 2 (**5**) and wedges (**6.2**) on Formwork Support VGK (**6**).
2. Turn spindle downwards until the slab formwork has been released from the cantilevered parapet. (Fig. C2.02)

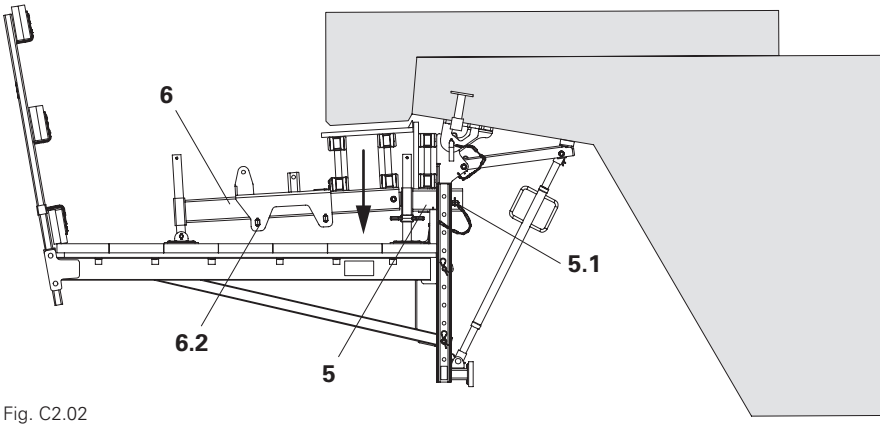


Fig. C2.02

Formwork unit

1. Remove Formwork Post VGK 70 (**7**) and Kicker AV 82 (**2a**).
2. Remove floor formwork.
3. Remove Formwork Girders VGK 100 (**6**).
4. Remove Formwork Fixing VGK 2 (**5**) and internal formwork. (Fig. C2.03)

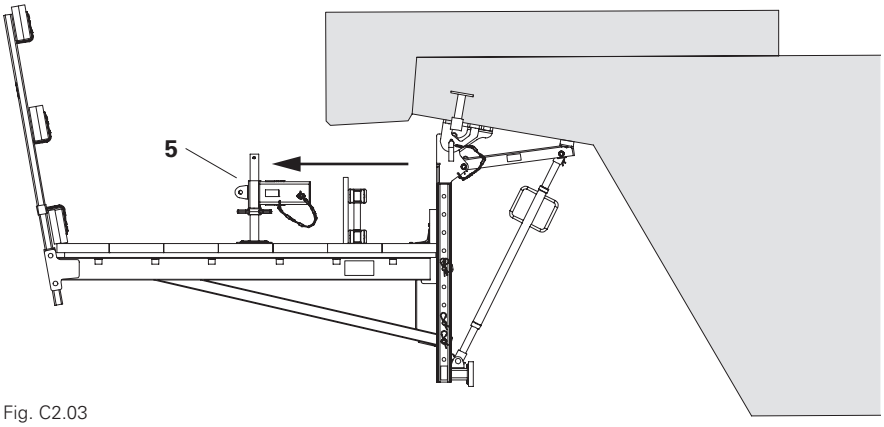


Fig. C2.03

On the cantilever

Danger

Leading edges are present during assembly!
There is a risk of falling off the cantilevered parapet.

⇒ Dismantle platform unit and platform unit from a safe and secure working area, e.g.:
- Telescopic work platform.
- Temporary working scaffold.
- Personal protective equipment to prevent falling from a height (PPE).

Depending on the stage of construction, temporary safety measures to prevent falling may be required.

Platform unit

1. Remove guardrail boards (**33**) and Guardrail Posts HSGP-2 (**29**).
2. Remove the planking (**35**) continuously. (Fig. C3.01)
3. Remove Platform Cantilever Beam VGK 170 (**4**).
4. Re-install bolts and cotter pins (**1.3**) in Bracket Post VGK (**1**). (Fig. C3.02)

Bracket Unit

1. Remove locking pins Ø 20 x 260 (**1.1**) from Suspension Head VGK (**12**) and remove bracket unit. (Fig. C3.03)
2. Place bracket console unit on the ground and dismantle.
3. Remove bolt ISO M24 x 100-8.8 (**16**) and remove Suspension Head VGK (**12**).
4. Close tie holes, e.g. with Plug FRC, see Section "A5 Anchoring" on page 36. (Fig. C3.04)

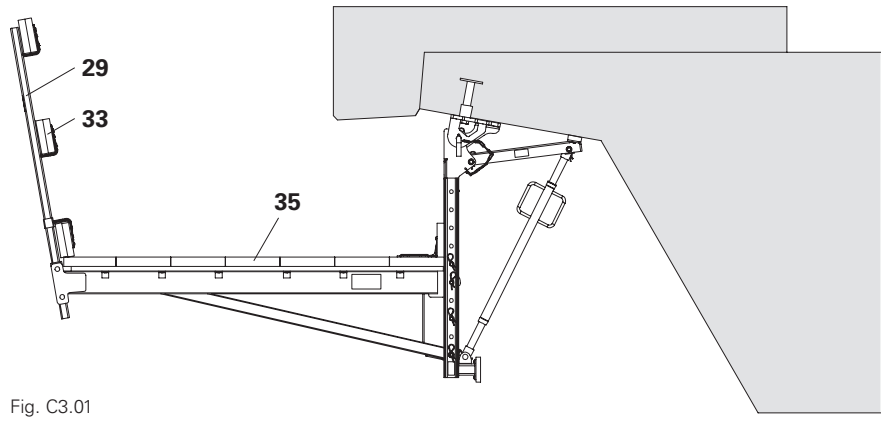


Fig. C3.01

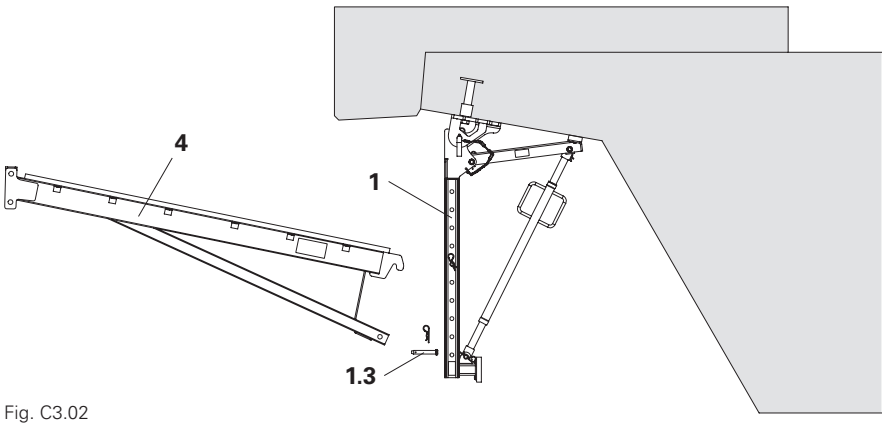


Fig. C3.02

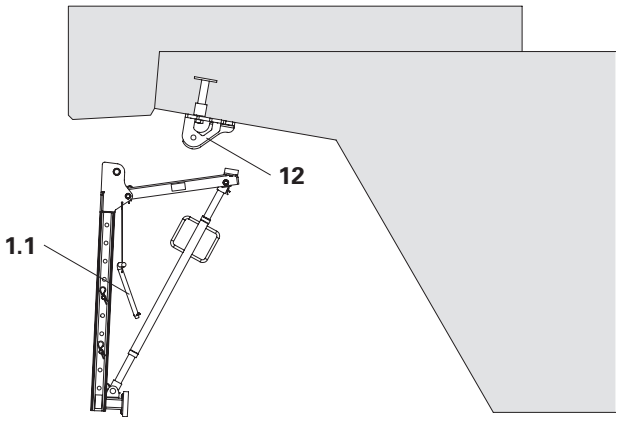


Fig. C3.03

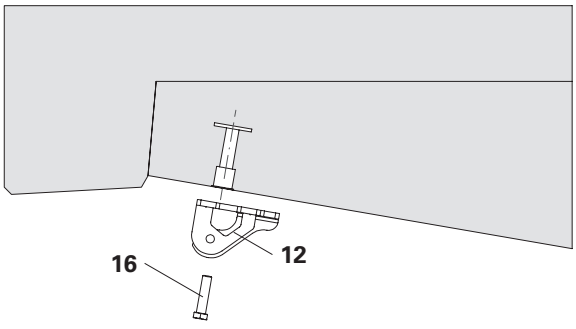


Fig. C3.04

On the abutment

Danger

Leading edges are present during assembly!
There is a risk of falling off the cantilevered parapet.

⇒ Dismantle platform unit and platform unit from a safe and secure working area, e.g.:
- Telescopic work platform.
- Temporary working scaffold.
- Personal protective equipment to prevent falling from a height (PPE).

Dismantling the cantilevered parapet bracket takes place in the same way as on the cantilever.

- Dismantle and remove the formwork unit. (Fig. C3.05)
- Dismantle and remove the platform unit. (Fig. C3.06)
- Dismantle and remove the bracket unit. (Fig. C3.07)
- Release bolt ISO 4014 M24 x 70-10.9 (**23**) and remove Suspension Head VGK (**12**).
- Remove the anchors and seal the tie holes, e.g. with PERI Concrete Cones, see Section "A5 Anchoring" on page 35. (Fig. C3.08)

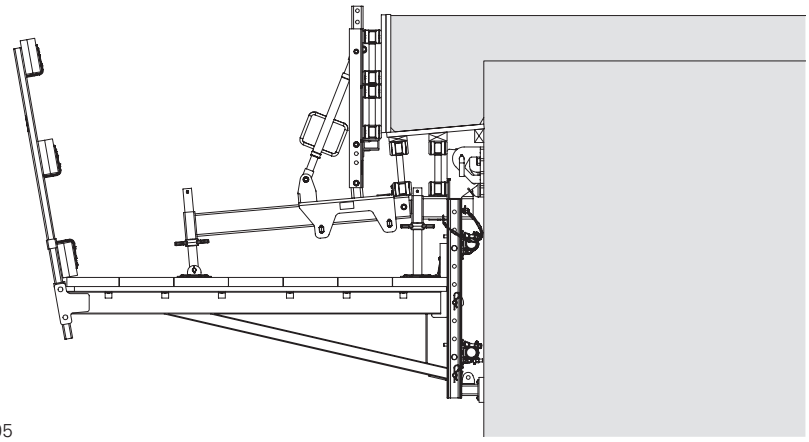


Fig. C3.05

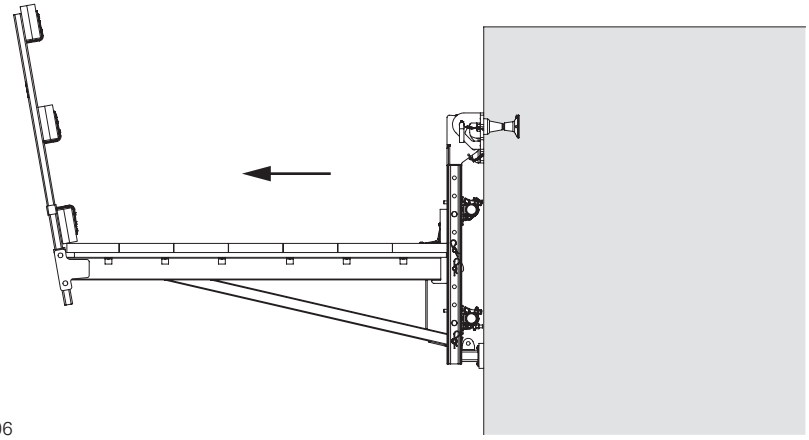


Fig. C3.06

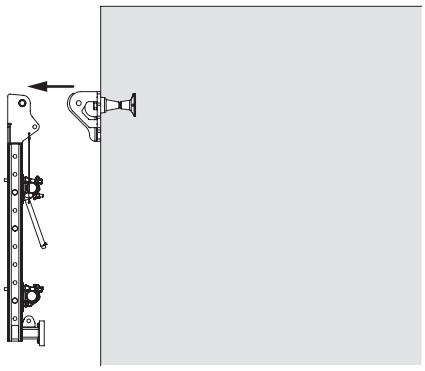


Fig. C3.07

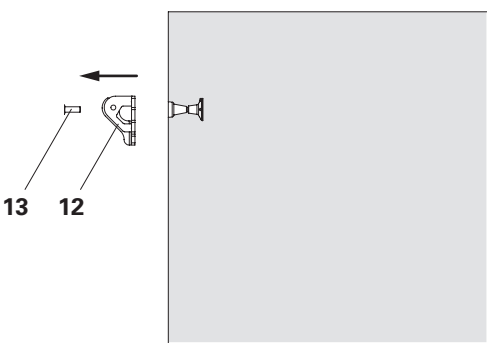


Fig. C3.08

Guardrail Post GKB

Danger
Unsecured concrete edge!
A fall can result in serious injuries or even death
Risk of falling.
⇒ Assembly and dismantling should take place from a safe and secure working area, e.g. lifting platform, or
⇒ Use PPE.

- All loads that arise must be safely transferred.
- Reinforcement stirrups must have sufficient load-bearing capacity.

The Guardrail Post GKB is to be used in accordance with EN 13374 for temporary fall protection on bridge edges.
Create side protection railings according to Tab. C4.01 or Tab. C4.02.

Two fastening variants are available:

Variant 1
The Guardrail Post GKB is clamped in the reinforcement stirrup. (Fig. C4.01)

Required components

25 Guardrail Post GKB	1x
33 Guardrail boards	3x

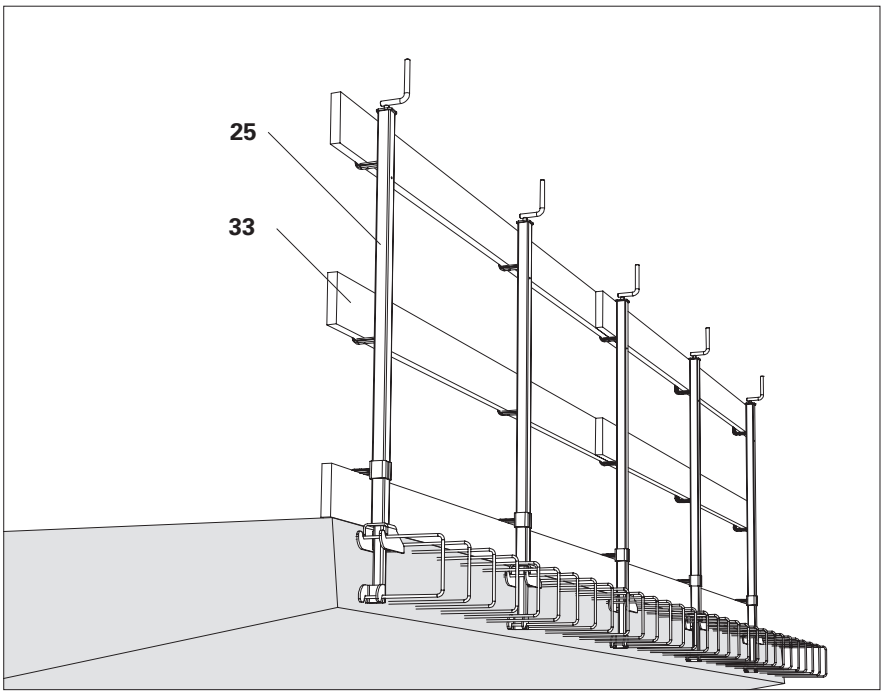


Fig. C4.01

Permissible width of influence for the guardrail posts

Handrail board h/b [cm]	Perm. width of influence* [m]
12/4	1.60
15/3	1.55

* Values are valid only in compliance with the boundary conditions in Tab. C4.02 and Fig. C4.03

Tab. C4.01

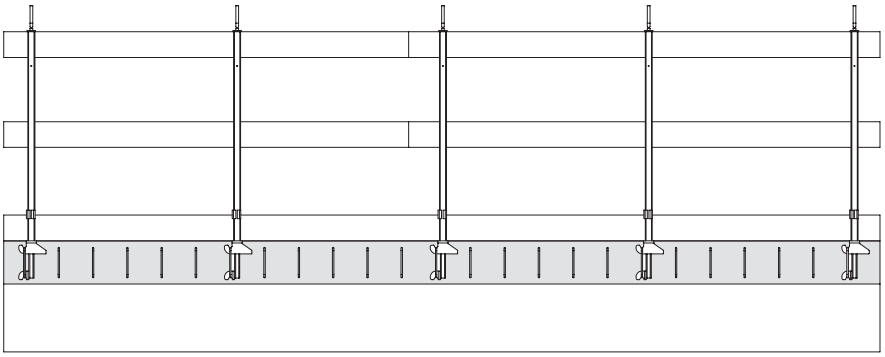


Fig. C4.01a

C4 Guardrail at the edge of the bridge

Assembly

1. Pre-adjust Guardrail Post GKB (**25**) with the crank.
2. Place the Guardrail Post GKB (**25**) in the reinforcement stirrup and tension with the crank.
3. Position guardrail boards (**33**) and secure, e.g. by means of wire pins or wood screws.
   (Fig. C4.02 + Fig. C4.03)

Dismantling

1. Turn crank until the lower holder is free and the guardrail post can be removed from the top reinforcement.

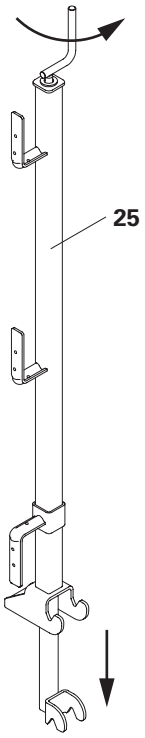


Fig. C4.02

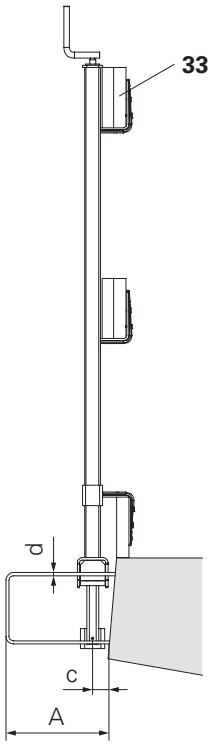


Fig. C4.03

Boundary conditions	
Tightening torque with the crank	≥60 Nm
Reinforcement stirrup spacing A	≥15 cm
Reinforcement stirrup diameter d	≥12 mm
Distance between axis/guardrail post and front concrete side c	≤6 cm

Tab. C4.02

C4 Guardrail at the edge of the bridge

Variant 2
The Guardrail Post GKB is fixed to the parapet/bridge.
(Fig. C4.04b)

Required components

25	Guardrail Post GKB	1x
42	Screw-On Sleeve PERI M16/164	1x
43	Bolt ISO 4017 M16 x 120-8.8	1x
44	Washer ISO 7094 100 HV, A16	1x

- For installation of the Screw-On Sleeve PERI M16/164 (**42**), see data sheet. (Fig. C4.06)
- Tighten and slightly tension bolt M16 x 120 (**43**) together with washer ISO 7094 100 HV, A16 (**44**). (Fig. C4.04 – Fig. C4.05)

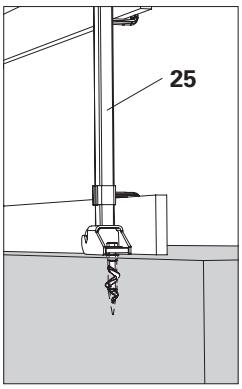


Fig. C4.04a

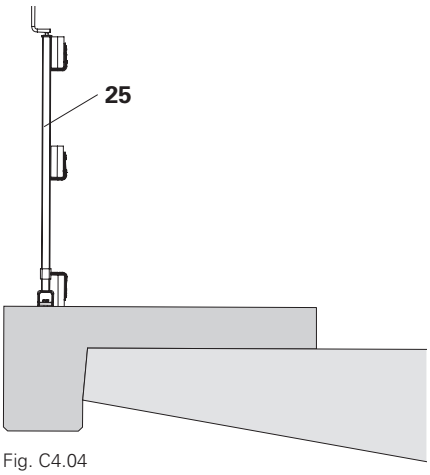


Fig. C4.04

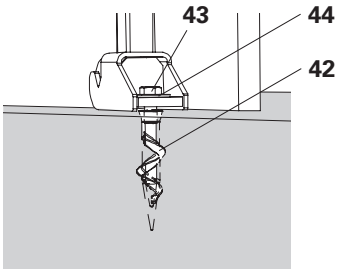


Fig. C4.04b

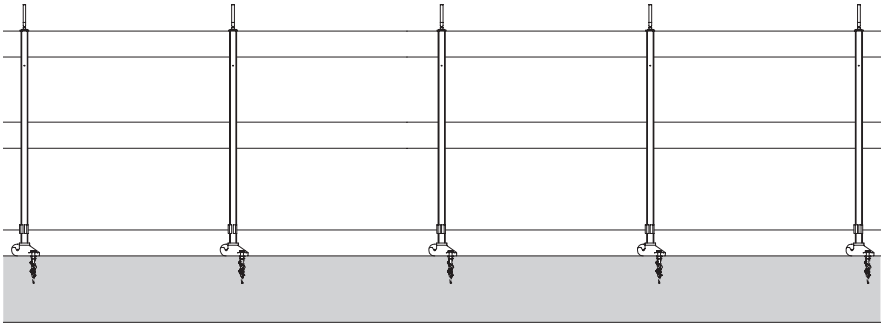


Fig. C4.05

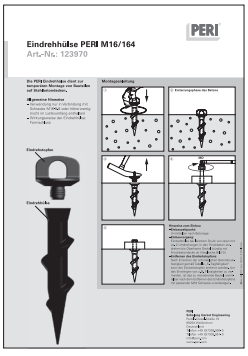
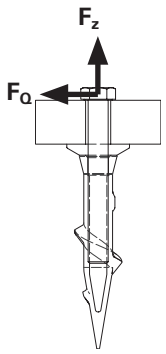


Fig. C4.06

C4 Guardrail at the edge of the bridge

Permissible width of influence for the guardrail posts when using the Screw-On Sleeve PERI.

- The forces shown in the table can be linearly reduced or increased when using other anchoring methods with smaller or larger influence widths.
- The permissible influence width in variant 2 is limited:
  - Handrail board h/b = 12 cm/4 cm: perm. influence width = 1.50 m
  - Handrail board h/b = 15 cm/3 cm: perm. influence width = 1.20 m
- For guardrail boards that extend across only two bays, the permissible influence width of the guardrail post is to be divided by 1.25.
- Safe transfer of existing forces into the building must be guaranteed.
- Take into account the manufacturer's information on the selected anchoring.



Guardrail boards h/b [cm]	Perm. width of influence* [m]	Tensile force F_Z on anchoring [kN]	Shear force F_Q on anchoring [kN]
12/4	1.20	9.89	0.53
15/3	0.95	9.74	0.53

* Values are valid only in compliance with the boundary conditions in Tab. C4.04

Tab. C4.03

Boundary conditions	
Tightening torque with the crank	≥60 Nm
Reinforcement stirrup spacing A	≥15 cm
Reinforcement stirrup diameter d	≥12 mm
Distance between axis/guardrail post and front concrete side c	≤6 cm

Tab. C4.04

Danger

The platform cannot take any concreting loads!
The platform could fall down and this could result in serious injuries or even death.

⇒ Do not use the platform as a formwork suspension.
⇒ Mount the formwork on the wall, e.g. with wall formwork bracket MX WK (**66**).
⇒ Only place the standing scaffold on Work Platform VGK 160.
⇒ Always place the standing scaffold with the base spindles centred on the bracket axes.
If this is not possible, use load-distributing supports.

(Fig. D1.01 + Fig. D1.01a)

Conditions for the standing scaffold:

- The standing scaffold must comply with EN 12811.
- The maximum width of the standing scaffold is 1.50 m.
- The maximum decking width of the standing scaffold is 0.75 m.
- Permissible load of the standing scaffold according to load class 3 (EN 12811).
  Load assumptions: 200 kg/m² on the top scaffolding level, 100 kg/m² on the next scaffolding level.
- Verify the standing scaffold as a day stand with wind force 6 Beaufort. (Wind speed 45 km/h)
- If the stability of the standing scaffold cannot be proven during working operation, the scaffold must be fixed to the formwork in a tension- and pressure-resistant manner.
- If the wind force is higher (> 6 Beaufort) or before the end of work, dismantle the scaffold or fix it to the formwork so that it is tension- and pressure-resistant.
- Secure scaffold areas projecting over the formwork separately.
- Covering with tarpaulins or nets is not permitted.
- The weight of the standing scaffold used must not deviate significantly from the adopted PERI UP scaffolding system.

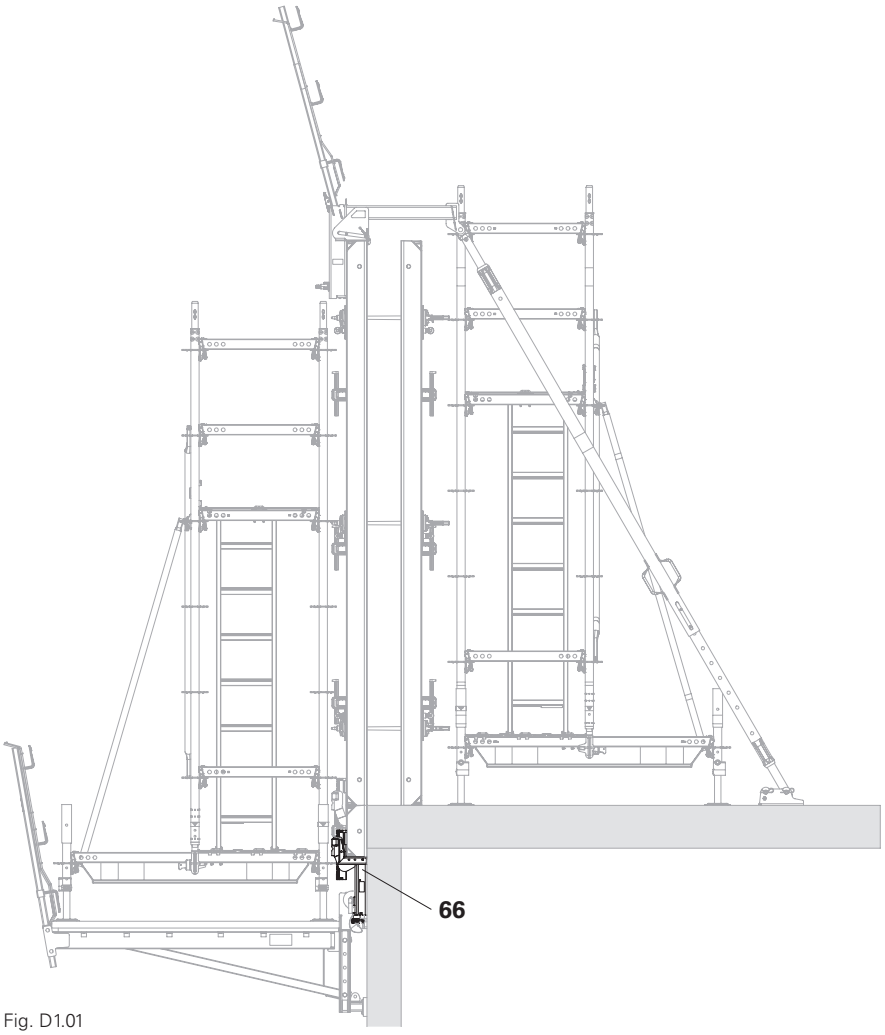


Fig. D1.01

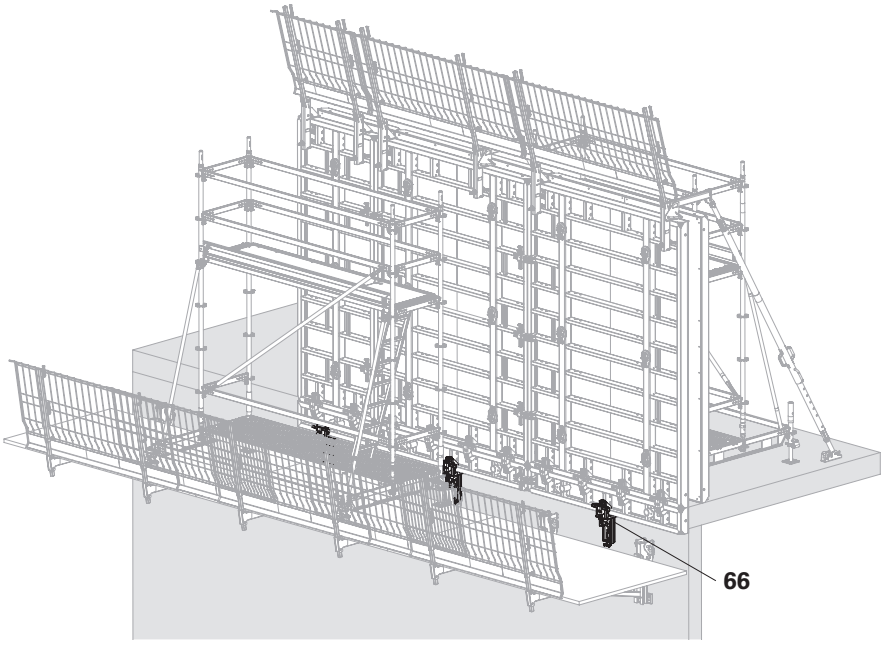
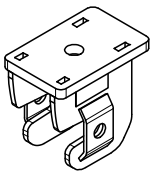
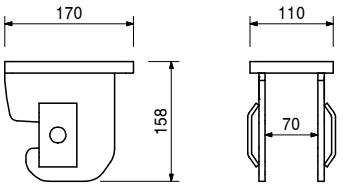


Fig. D1.01a

Art no.	Weight [kg]	
124413	4.400	**SUSPENSION HEAD VGK**

To attach the Bracket Post VGK 170/110/139 to the structure.



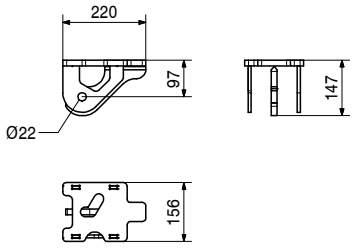


Art no.	Weight [kg]	
138071	5.290	**Suspension Head Flex VGK**

To attach the Bracket Post VGK 70/110/139 also in form of pre-assembled platforms to the structure.

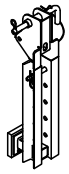
Notes

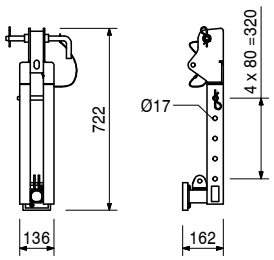
Not suitable for the Bracket Post VGK 70 in conjunction with Formwork Girder VGK 60 at the abutment.



Art no.	Weight [kg]	
134161	11.900	**BRACKET POST VGK 70**

For connection of Platform Cantilever Beam VGK 170 and formwork with parapet height up to 60 cm and low clearance profile.



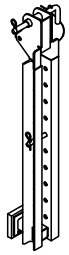


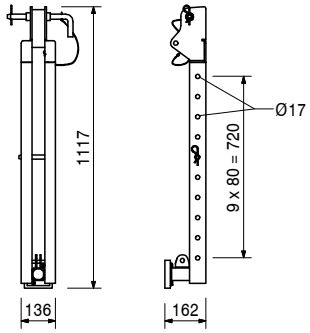
Consists of

2 pc 018060 Cotter Pin 4/1, galv.
1 pc 113012 Pin Ø 20 x 260, galv.
1 pc 118463 Bolt Ø 16 x 90, galv.

Art no.	Weight [kg]	
124404	17.300	**BRACKET POST VGK 110**

For connection of the Platform Cantilever Beam VGK 170 and formwork with parapet height up to 60 cm.



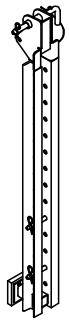


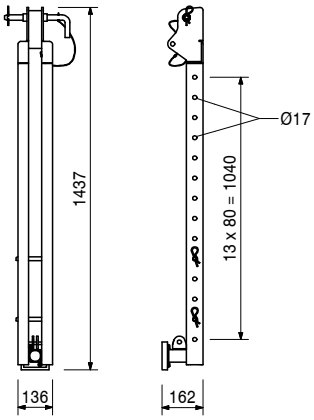
Consists of

2 pc 018060 Cotter Pin 4/1, galv.
1 pc 113012 Pin Ø 20 x 260, galv.
1 pc 118463 Bolt Ø 16 x 90, galv.

Art no.	Weight [kg]	
124427	22.000	**BRACKET POST VGK 139**

For connection of the Platform Cantilever Beam VGK 170 and formwork with parapet heights from 60 to 100 cm.





Consists of

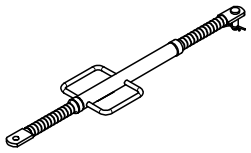
3 pc 018060 Cotter Pin 4/1, galv.
1 pc 113012 Pin Ø 20 x 260, galv.
2 pc 118463 Bolt Ø 16 x 90, galv.

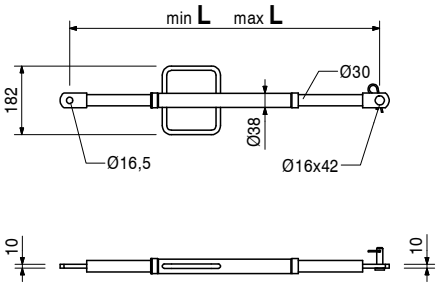
Art no.	Weight [kg]		min. L [mm]	max. L [mm]
		Kicker Brace AV		
057087	3.510	**KICKER AV 82**	500	820
057088	4.200	**KICKER AV 111**	790	1110

For aligning PERI Formwork Systems.

Notes

Permissible load see PERI Design Tables.





Consists of

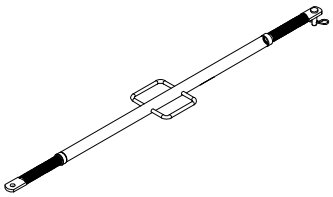
1 pc 018060 Cotter Pin 4/1, galv.
1 pc 027170 Pin Ø 16 x 42, galv.

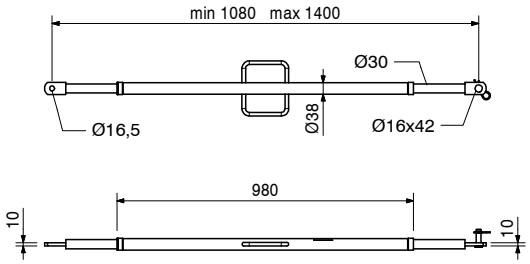
Art no.	Weight [kg]		D [mm]	L [mm]	min. L [mm]	max. L [mm]
028110	4.850	**KICKER AV 140**	2000	250	1080	1400

For aligning PERI Formwork Systems.

Notes

Permissible load see PERI Design Tables.



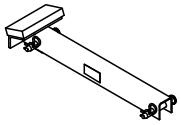


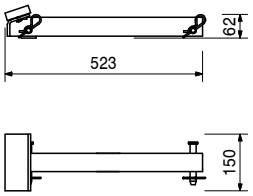
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 027170 Pin Ø 16 x 42, galv.

Art no.	Weight [kg]	
124455	3.050	**BRACKET CANTILEVER VGK 50**

For assembly of the bracket unit with Bracket Post VGK 70/110/139 and Kicker AV 82/111/140.



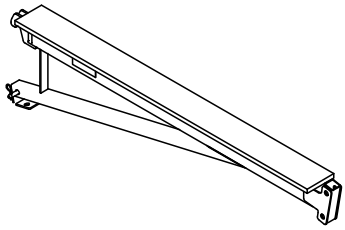


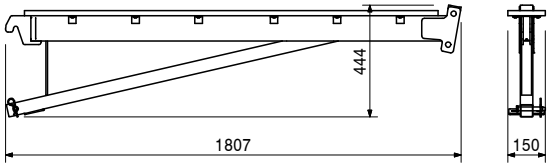
Consists of

2 pc 018060 Cotter Pin 4/1, galv.
2 pc 118463 Bolt Ø 16 x 90, galv.

Art no.	Weight [kg]	
124447	21.100	**PLATFORM CANTIL. BEAM VGK 170**

For connection to the Bracket Post VGK 70/110/139 and installation of a fully closed platform planking.



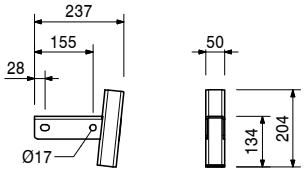


Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 118463 Bolt Ø 16 x 90, galv.

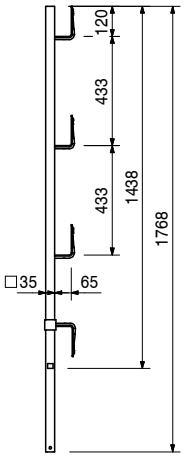
Art no.	Weight [kg]	
138056	1.900	**Handrail Holder VGK**

For assembling a guardrail to the formwork posts VGK 70 and 120



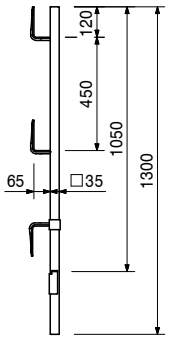
Art no.	Weight [kg]	
061260	6.150	**HANDRAIL POST SGP**

As guardrail for different systems.



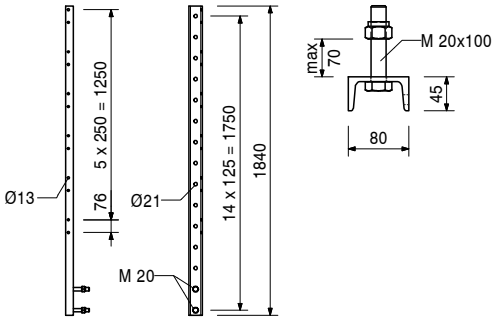
Art no.	Weight [kg]	
116292	4.720	**GUARDRAIL POST HSGP-2**

As guardrail for different systems.



Art no.	Weight [kg]	
114328	16.600	**HANDRAIL POST RCS/SRU 184**

For assembly of the guardrail on the Platform Beam RCS/SRU or Guardrail Post Holder Multi.



Accessory (not included)

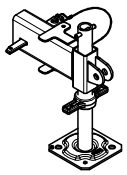
057345	0.010	**WASHER 9MM DIN 434 GALV.**
110296	0.220	**CLAMP A64 DIN 3570 M12, GALV.**
710330	0.017	**HEX NUT ISO4032-M12-8-VZ**
710709	0.036	**F.H.BOLT M08X065MUDIN603-4.8VZ**
780354	0.002	**WASHER ISO7089-08-200HV-VZ**

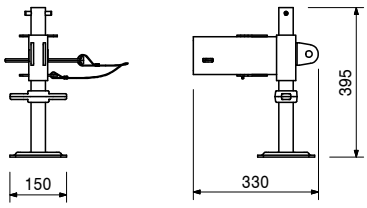
Consists of

2 pc 114727 Bolt ISO 4017 M20 x 100-8.8, galv.
2 pc 781053 Nut ISO 7040 M20-8, galv.

Art no.	Weight [kg]	
124394	6.640	**FORMWORK FIXING VGK 2**

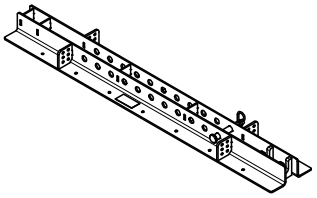
For connection of the Formwork Support VGK 100 to the Bracket Post VGK 110/139.

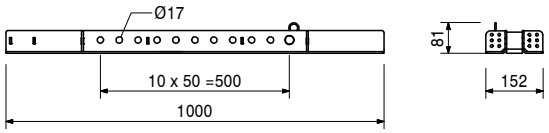




Art no.	Weight [kg]	
134169	7.650	**FORMWORK SUPPORT VGK 60**

For connection of bottom and lateral formwork in combination with Bracket Post VGK 70.



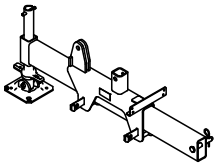


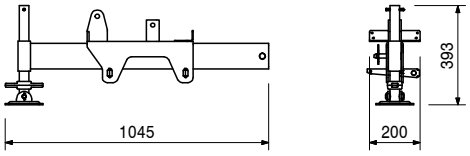
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 118463 Bolt Ø 16 x 90, galv.

Art no.	Weight [kg]	
124438	20.100	**FORMWORK SUPPORT VGK 100**

For connection of the bottom and lateral formwork.



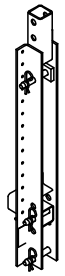


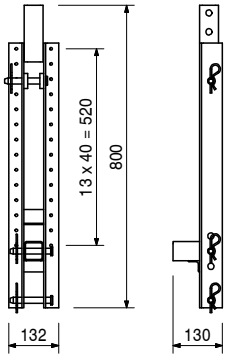
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 118463 Bolt Ø 16 x 90, galv.

Art no.	Weight [kg]	
124371	7.300	**FORMWORK POST VGK 70**

For mounting of the lateral formwork.



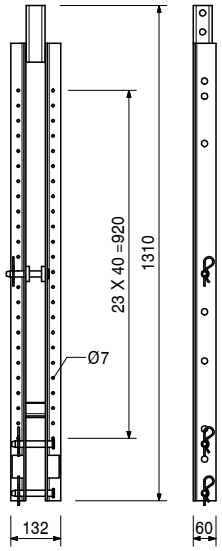


Consists of

3 pc 018060 Cotter Pin 4/1, galv.
3 pc 118463 Bolt Ø 16 x 90, galv.
1 pc 124364 WALER SUPPORT COAT

Art no.	Weight [kg]	
138061	10.200	**Formwork Post VGK 120**

For mounting of the lateral formwork for parapets from 60 to 100 cm and a platform beam in application of the light working platform

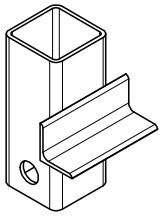


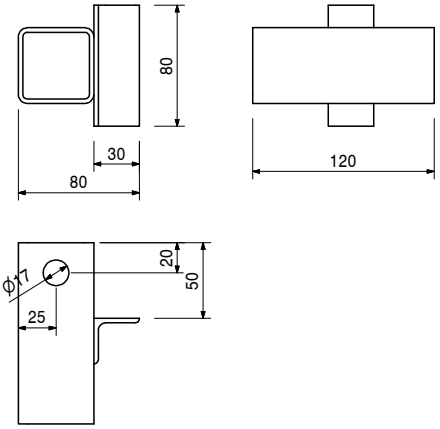
Accessory (not included)

124364	0.608	**WALER SUPPORT COAT**

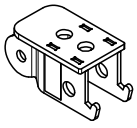
Art no.	Weight [kg]	
124364	0.608	**WALER SUPPORT COAT**

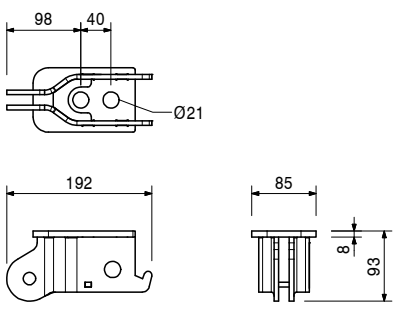
Can be assembled on VGK 120 Formwork Support. Serves as support for formwork beams.





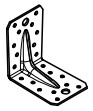
Art no.	Weight [kg]		B [mm]	L [mm]
138455	1.840	**Bracing Shoe VGK**	85	192

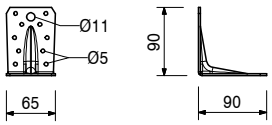




Art no.	Weight [kg]	
123478	0.255	**ANGLE BRACKET 90 REINFORCED**

For diverse timber connections.

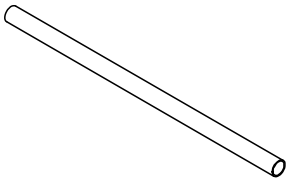


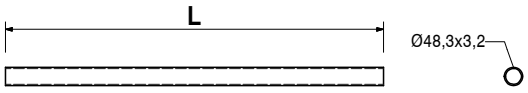


Accessory (not included)

24550	0.005	**SPAX 8X20 TX30**
129711	0.010	**SPAX 6X20 TX30**

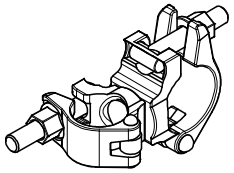
Art no.	Weight [kg]		L [mm]
		Steel Scaffold tubes Ø 48.3 x 3.2	
026417	0.000	**CUTTING COST SCAFFOLD TUBE**	1
026411	3.550	**SCAFFOLD TUBE 48,3x3,2 L=1,0M**	1000
026412	7.100	**SCAFFOLD TUBE 48,3x3,2 L=2,0M**	2000
026413	10.650	**SCAFFOLD TUBE 48,3x3,2 L=3,0M**	3000
026414	14.200	**SCAFFOLD TUBE 48,3x3,2 L=4,0M**	4000
026419	17.750	**SCAFFOLD TUBE 48,3X3,2 L=5,0M**	5000
026418	21.600	**SCAFFOLD TUBE 48,3x3,2 L=6,0M**	6000
026415	3.550	**SCAFFOLD TUBE 48,3x3,2 LFM**	1000

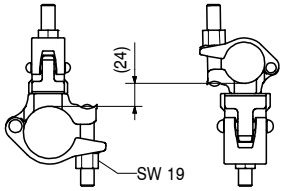




Art no.	Weight [kg]	
102400	1.100	**SWIVEL COUPL.EN74 RS 38/48 VZ**

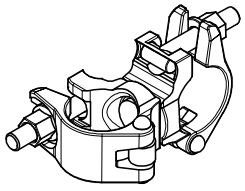
For scaffold tubes Ø 48 mm and Ø 38 mm.

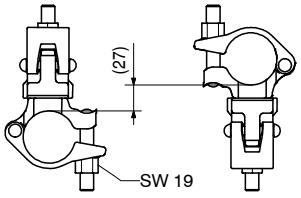




Art no.	Weight [kg]	
017010	1.400	**SWIVEL COUPLER SW 48/48 GALV.**

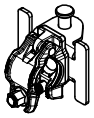
For scaffold tubes Ø 48 mm.

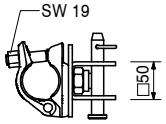




Art no.	Weight [kg]	
124934	1.750	**BRACING CONNECTOR VGK**

For bracing due to longitudinal inclination.

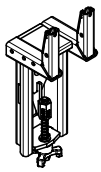


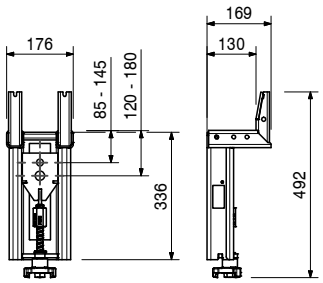


Consists of

1 pc 710222 Bolt ISO 4014 M16 x 80-8.8, galv.
1 pc 710229 Nut ISO 4032 M16-8, galv.

Art no.	Weight [kg]	
135327	9.570	**WALL FORMWORK BRACKET MX WK**

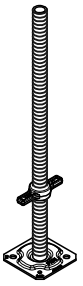


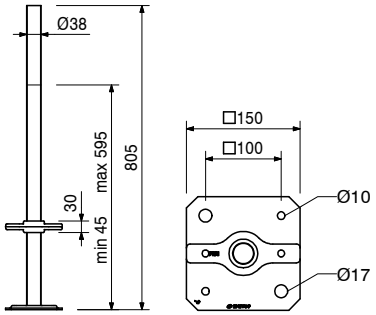


Art no.	Weight [kg]	
100242	4.570	**ADJ. BASE PLATE UJB 38-80/55**

Notes

With captive yellow quick jack nut.

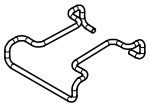


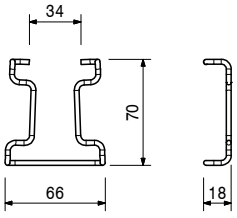


Accessory (not included)

100863	1.020	**HANDLE LOCK UJS**

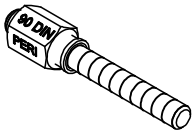
Art no.	Weight [kg]	
134174	0.019	**B15 ANCHOR LOCK VGK**

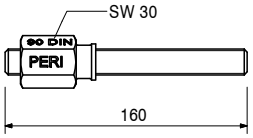




Art no.	Weight [kg]	
134173	0.478	**B15 ANCHOR VGK**

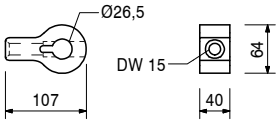
To attach VGK Cantilevered Parapet Bracket to the Anchor System in accordance with General Building Approoal No. Z-21.6-1764 with installation length hnom = 125 mm.





Art no.	Weight [kg]	
115378	1.080	**EYE NUT RCS DW15**

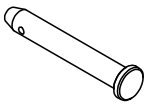
As an articulated connection to the Climbing Rail RCS, Steel Waler SRU for bracing with DW 15.

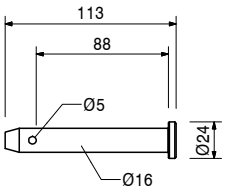


Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**
022230	0.033	**COTTER PIN 5/1, GALV.**
104031	0.462	**FILLER PIN D=21X120**
111567	0.729	**PIN D=26X120**

Art no.	Weight [kg]	
118463	0.181	**PIN D=16X90 SHERA.**





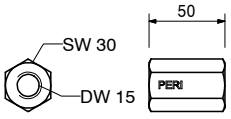
Art no.	Weight [kg]	
018060	0.014	**COTTER PIN 4/1, GALV.**

Art no.	Weight [kg]	
030070	0.222	**HEX NUT DW15 SW 30/50, GALV.**

For anchoring with Tie Rod DW 15 and B 15.

Notes

Permissible load 90 kN.

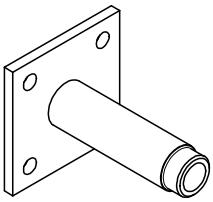


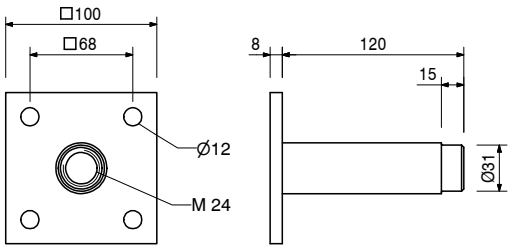
Art no.	Weight [kg]	
026230	1.010	**BOLT ANCHOR SLEEVE M 24**

For anchoring of platform systems.

Notes

Separate design information on request.



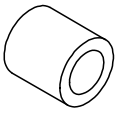


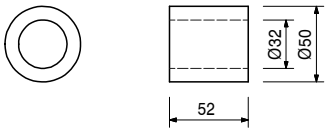
Accessory (not included)

026240	0.026	**CONE PP D=31/26, C=25**
026250	0.005	**PLUG PP D=26**
026420	0.123	**ANCHOR POSIT. STUD M 24, GALV.**
115150	0.200	**ANCHOR POSITION. M24X65, GALV.**
116233	0.116	**CONE FRC D=32/52, C=40**
116234	0.033	**PLUG FRC D=32**
123800	0.045	**THREADED CONE M24/40**

Art no.	Weight [kg]	
116233	0.116	**CONE FRC D=32/52, C=40**

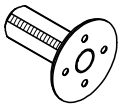
Results in concrete cover of 40 mm in combination with Tie Sleeve M24. Made of fibre-reinforced concrete.

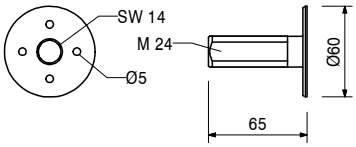




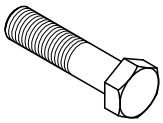
Art no.	Weight [kg]	
115150	0.200	**ANCHOR POSITION. M24X65, GALV.**

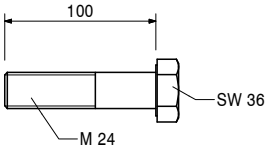
For fixing the Anchor Sleeve M24 if fixation through formlining is not possible.





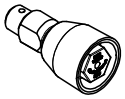
Art no.	Weight [kg]	
124031	0.452	**HEX BOLT ISO4014 M24X100-8.8-G**

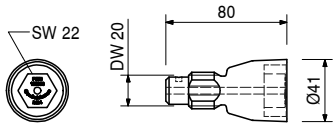




Art no.	Weight [kg]	
123800	0.045	**THREADED CONE M24/40**

For pre-fixing of Anchor Sleeve M24 with a concrete cover of 40 mm in bridge cantilevers

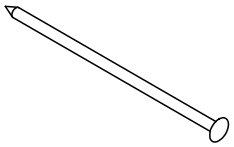


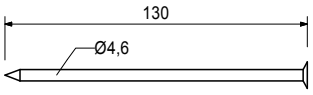


Accessory (not included)

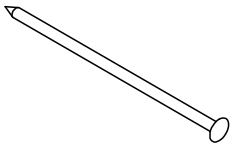
026230	1.010	**BOLT ANCHOR SLEEVE M 24**
123820	0.063	**PLUG FRC D=40**
129157	0.017	**NAIL 4,6X130**

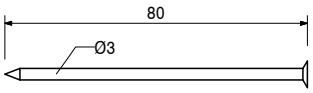
Art no.	Weight [kg]	
129157	0.017	**NAIL 4,6X130**





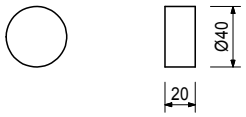
Art no.	Weight [kg]	
710312	0.005	**NAIL 3,0X80**





Art no.	Weight [kg]	
123820	0.063	**PLUG FRC D=40**

For closing the tie hole when using Threaded Cone M24.



Art no.	Weight [kg]	
116234	0.033	**PLUG FRC D=32**

For closing the FRC Tube Ø 32. Made of fibre-reinforced concrete.

Art no.	Weight [kg]	
031550	1.000	**REPOXAL GLUE**

Two-component adhesive for bonding fibre reinforced concrete plugs.
Requirements: 1 kg adhesive for approx. 200 Plugs FZR 32 or 330 Plugs FZR 22.

Notes

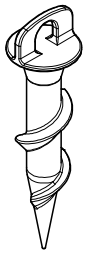
See Safety Data sheet!
Delivery unit 1.0 kg

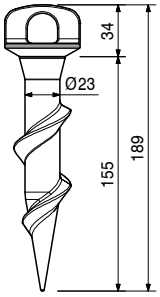
Art no.	Weight [kg]	
123970	0.047	**SCREW-ON SLEEVE PERI M16/164**

For temporary mounting of components on reinforced concrete slabs.

Notes

Inserted into the fresh concrete immediately after concreting.



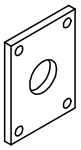


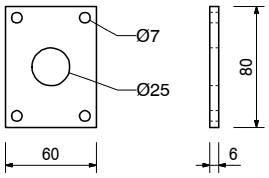
Accessory (not included)

123973	0.240	**HEX BOLT ISO4017-M16X130-8.8-V**

Art no.	Weight [kg]	
029280	0.196	**ANCHOR POSIT. PLATE M24, GALV.**

For fixing the Anchor System M24 if the plywood formlining has been drilled through.



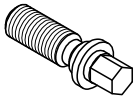


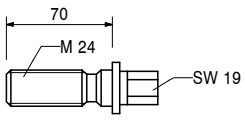
Accessory (not included)

029440	0.005	**LAG SCREW 6X20 DIN571, GALV.**

Art no.	Weight [kg]	
029270	0.331	**ADVANCING SCREW M 24, GALV.**

For fixing the Anchor System M24 if the plywood formlining has been drilled through.

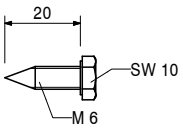




Accessory (not included)

029280	0.196	**ANCHOR POSIT. PLATE M24, GALV.**

Art no.	Weight [kg]		L [mm]
029440	0.005	**LAG SCREW 6X20 DIN571, GALV.**	20

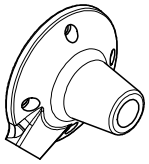


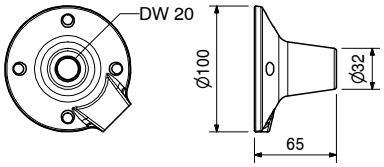
Art no.	Weight [kg]	
030860	0.792	**THREADED ANCHOR PLATE DW20**

For use with Tie Rod DW 20, B 20 or Screw-On Cone-2 M24/DW 20. For anchoring in concrete.

Notes

Lost anchor component.



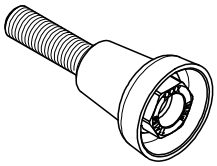


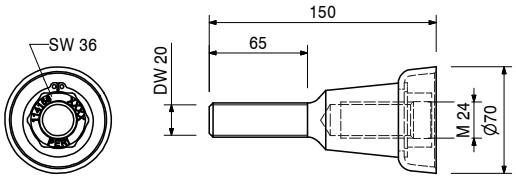
Art no.	Weight [kg]	
114158	1.030	**SCREW-ON CONE-2 M24/DW20**

Anchor System M24.
For anchoring climbing systems.

Notes

Separate design information on request.





Accessory (not included)

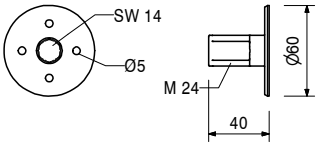
030860	0.792	**THREADED ANCHOR PLATE DW20**

Art no.	Weight [kg]	
026420	0.123	**ANCHOR POSIT. STUD M 24, GALV.**

For fixing Anchor System M24 if the plywood formlining is not to be drilled through.

Notes

Allen Key SW 14.

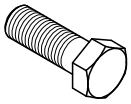


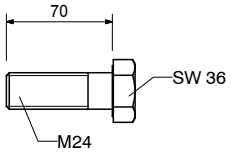
Accessory (not included)

027212	0.445	**HEXAGONAL RECESS WRENCH SW14 L**
710312	0.005	**NAIL 3,0X80**

Art no.	Weight [kg]		L [mm]
026430	0.334	**HEX BOLT ISO4014-M24X070-10.9**	70

High-strength bolt for anchoring climbing systems.



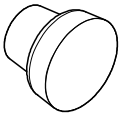


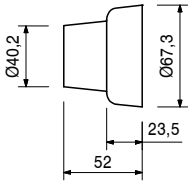
Art no.	Weight [kg]	
031652	0.247	**KK CONCRETE CONE M24-67/52**

For closing anchor points with Climbing Cone-2,
M24/DW 15 and Screw-On Cone-2 M24/DW 20.

Notes

Delivery unit 50 pieces.



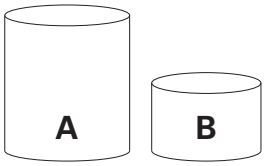


Art no.	Weight [kg]	
131709	9.980	**SEALING ADHESIVE-3, 6 CANS-SET**

For bonding PERI Concrete Cones.

Notes

See Safety Data sheet!
Consisting of:
6 x Component A, 6 x Component B

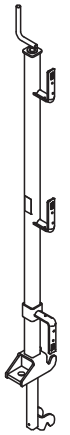


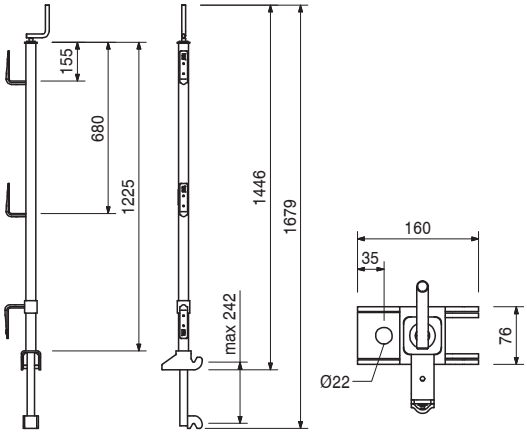
Consists of

6 pc 131710 Sealing Adhesive-3 can CO-A
6 pc 131711 Sealing Adhesive-3 can CO-B

Art no.	Weight [kg]	
114299	9.520	**GKB GUARDRAIL POST**

For fixing to the reinforcement or to the embedded anchors.





Art no.	Weight [kg]	
130012	0.337	**CONNECTION BOLT M16/M24X50**

Refurbishment anchor for subsequent attachment of Suspension Head VGK to existing bridge structures.

Notes

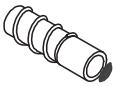
Separate design information on request.

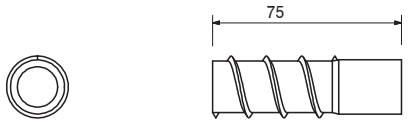
Art no.	Weight [kg]	
129637	0.195	**ITH-SLEEVE TSM BC 22X75 IM 16**

Internal threaded sleeve for connection Bolt M16/M24 x 50.

Notes

Separate design information on request.





Art no.	Weight [kg]	
129628	0.555	**COMPOSITE MORTAR CF-T 300 V**

Consumption: approx. 15 anchors / 410 ml.

Accessory (not included)

130013	0.010	**MIXER CF-T 300 V**

Art no.	Weight [kg]	
130013	0.010	**MIXER CF-T 300 V**

Art no.	Weight [kg]	
130014	1.160	**DISPENSER CF-T 300 V**

Art no.	Weight [kg]	
130015	0.277	**BLOW OUT PUMP**

Art no.	Weight [kg]	
130011	0.084	**CLEANING BRUSH D24**

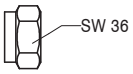
Accessory (not included)

130623	0.016	**T-HANDLE M6**

Art no.	Weight [kg]	
130623	0.016	**T-HANDLE M6**

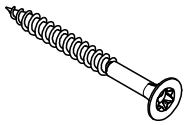
Art no.	Weight [kg]	
105032	0.070	**HEX NUT ISO7040-M24-8-GALV.**

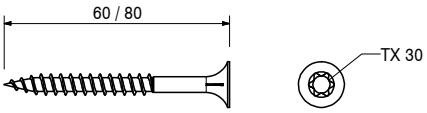
Self-locking.



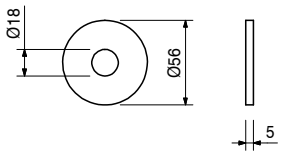
Art no.	Weight [kg]		L [mm]
		TSS-Torx 6	
024470	0.008	**TSS-TORX 6X60, GALV.**	60
024690	0.008	**TSS-TORX 6X80, GALV.**	80

For Torx Blade TX 30. Self-drilling.





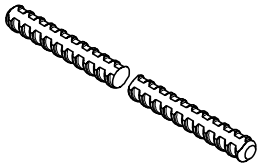
Art no.	Weight [kg]	
113349	0.087	**WASHER ISO7094-16 100HV, GALV.**



Art no.	Weight [kg]	
		Tie Rods DW 15
030050	0.000	**TIE ROD DW15 CUTTING COST**
030030	1.440	**TIE ROD DW15 SPEC LENGTH**
030340	4.480	**TIE ROD DW26 SPEC LENGTH**

Notes

Non-weldable! Observe the permissions!
Permissible tension force 90 kN.

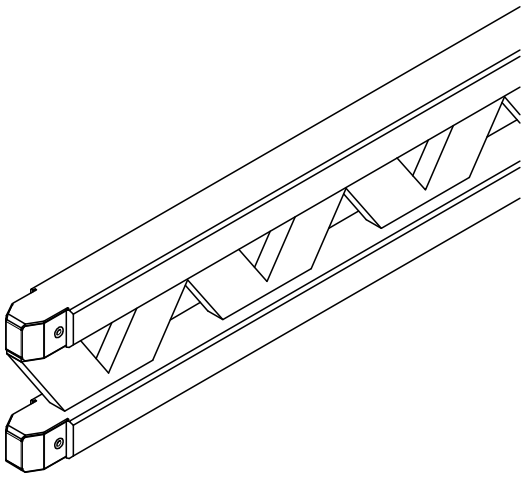


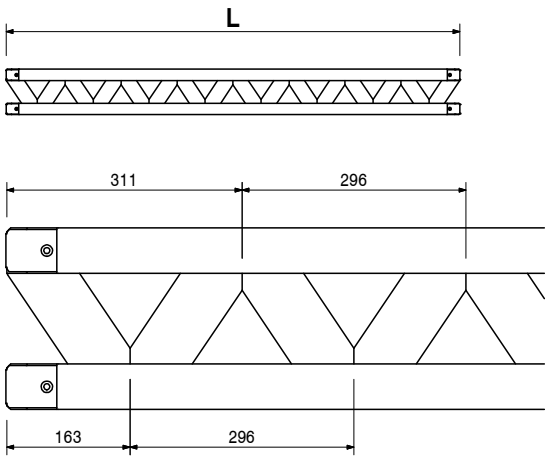
Art no.	Weight [kg]		L [mm]
		Formwork Girders GT 24	
075100	5.300	**GIRDER GT 24, 90**	918
075120	7.100	**GIRDER GT 24, 120**	1214
075150	8.900	**GIRDER GT 24, 150**	1510
075180	10.600	**GIRDER GT 24, 180**	1806
075210	12.400	**GIRDER GT 24, 210**	2102
075240	14.200	**GIRDER GT 24, 240**	2398
075270	15.900	**GIRDER GT 24, 270**	2694
075300	17.700	**GIRDER GT 24, 300**	2990
075330	19.500	**GIRDER GT 24, 330**	3286
075360	21.200	**GIRDER GT 24, 360**	3582
075390	23.000	**GIRDER GT 24, 390**	3878
075420	24.800	**GIRDER GT 24, 420**	4174
075450	26.600	**GIRDER GT 24, 450**	4470
075480	28.300	**GIRDER GT 24, 480**	4766
075510	30.100	**GIRDER GT 24, 510**	5062
075540	31.900	**GIRDER GT 24, 540**	5358
075570	33.600	**GIRDER GT 24, 570**	5654
075600	35.400	**GIRDER GT 24, 600**	5950

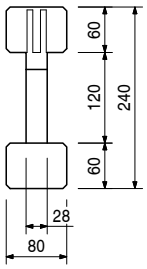
Universal formwork girder made of wood.

Notes

Special lengths possible via 078xxx numbers.





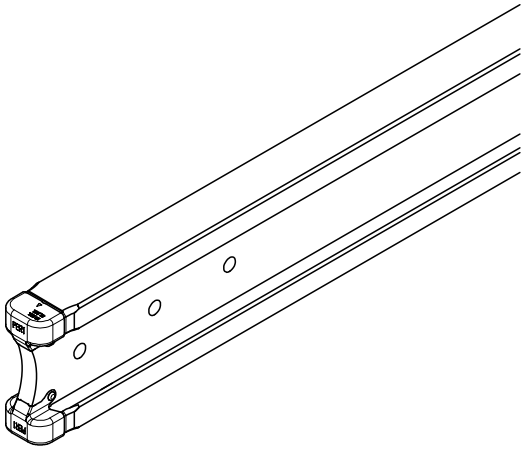


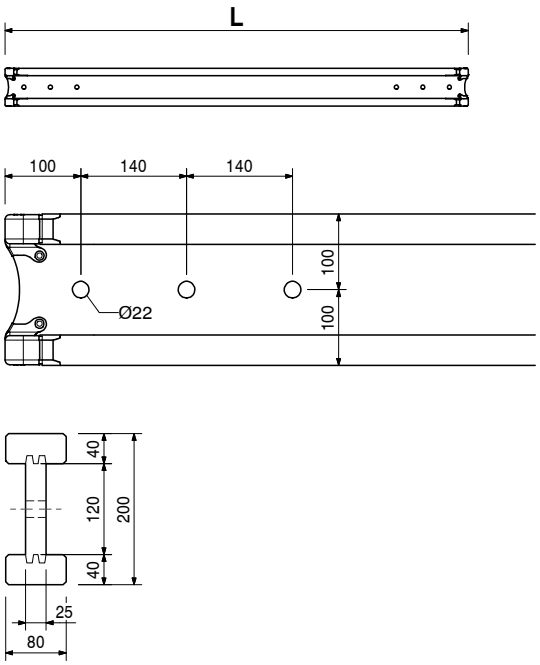
Art no.	Weight [kg]		L [mm]
		Girders VT 20K with Steel Cap	
074905	12.010	**PERI GIRDER VT 20K 215 CM**	2152
074990	8.230	**PERI GIRDER VT-20K 145 CM**	1447
074910	13.630	**PERI GIRDER VT-20K 245 CM**	2452
074890	14.710	**PERI GIRDER VT-20K 265 CM**	2652
074920	16.060	**PERI GIRDER VT-20K 290 CM**	2902
074930	18.220	**PERI GIRDER VT-20K 330 CM**	3292
074940	19.840	**PERI GIRDER VT-20K 360 CM**	3592
074950	21.460	**PERI GIRDER VT-20K 390 CM**	3892
074960	24.700	**PERI GIRDER VT-20K 450 CM**	4492
074970	26.860	**PERI GIRDER VT-20K 490 CM**	4902
074980	32.260	**PERI GIRDER VT-20K 590 CM**	5902

Universal formwork girder made of wood.

Notes

The girder fulfils all requirements of DIN EN 13377 class P20 (Declaration of Conformity).





Art no.	Weight [kg]	
074900	0.000	**CUTTING COST FOR VT GIRDER**

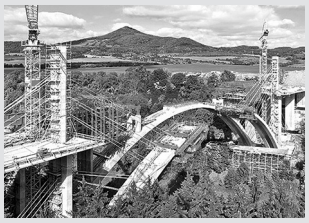
The optimal system for all projects and every requirement

Wall formwork

Column formwork

Slab formwork

Climbing systems



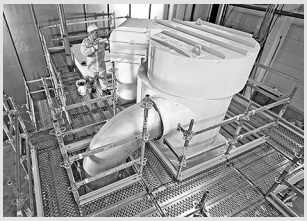
Bridge formwork

Tunnel formwork

Shoring

Working scaffolds for construction

Working scaffolds for façades



Working scaffolds for industry

Access

Safety scaffolds

Safety systems

System-independent accessories

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