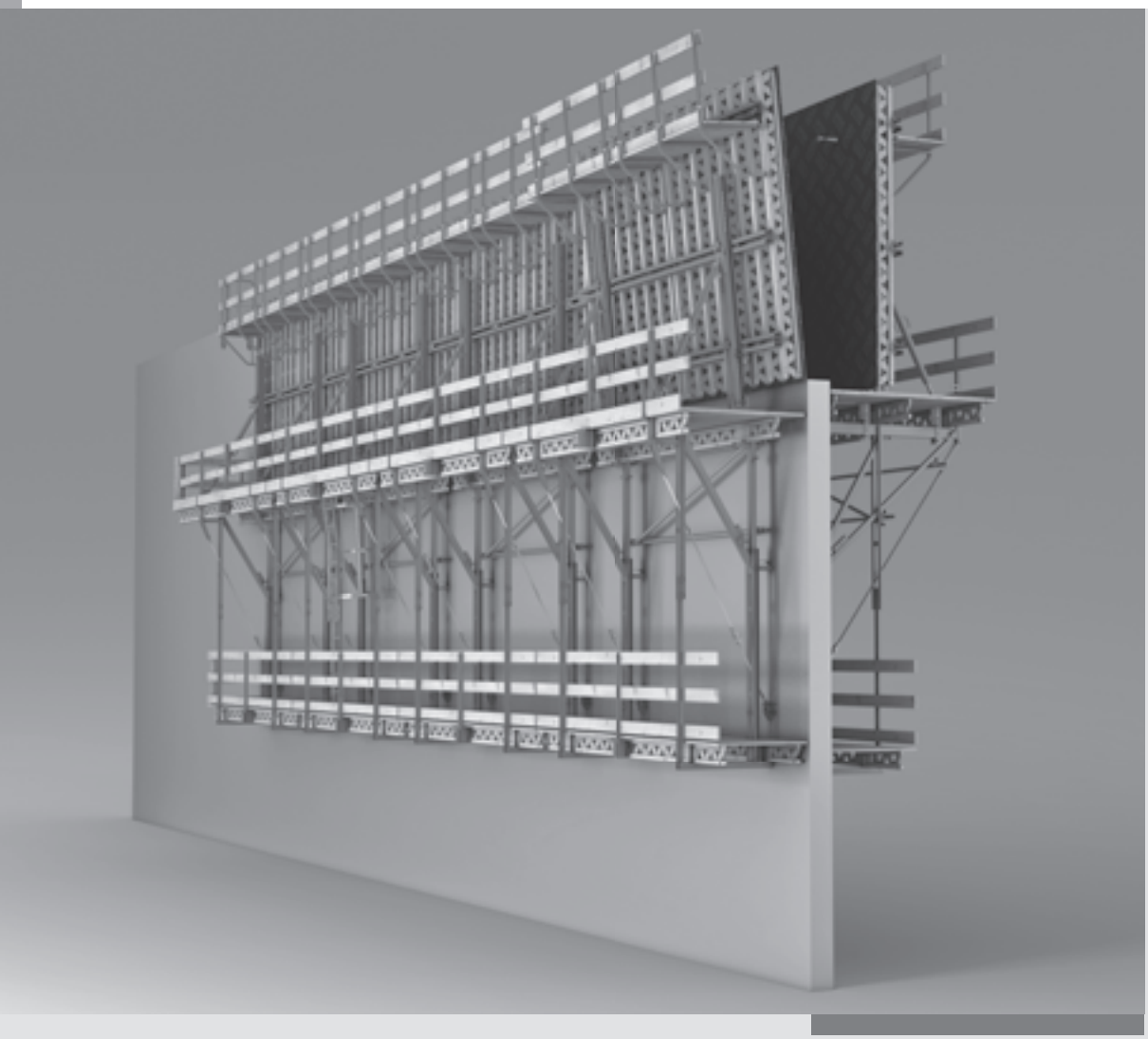
CB 160
Climbing Formwork

Instructions for Assembly and Use – Standard Configuration



Edition 04 I 2014

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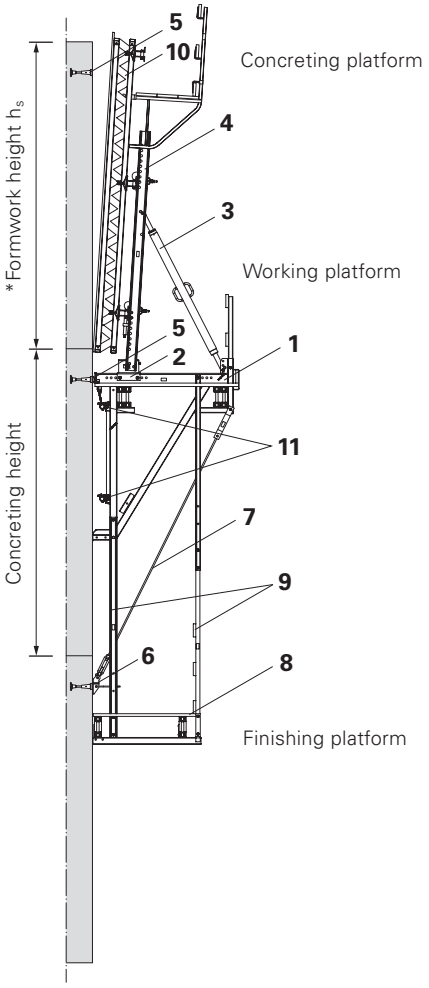
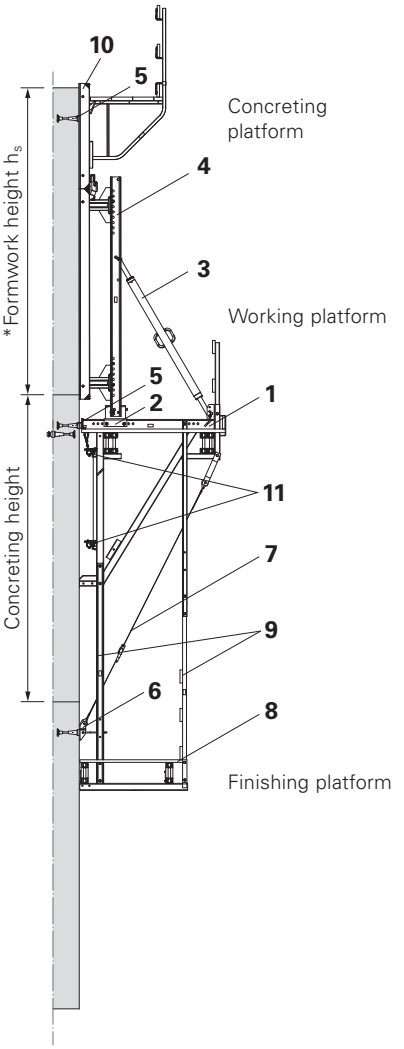
Overview, Main Components

Climbing Formwork CB 160 with VARIO GT 24 girder wall formwork
- concreting height 3.60 m
- extended suspension of finishing platform
- Tension Anchor with Tie Rod DW 15 as wind bracing



Climbing Formwork CB 160 with TRIO panel formwork
- concreting height 3.60 m
- extended suspension of finishing platform
- Tension Belt as wind bracing



1 Working platform with Climbing Bracket CB 160
2 Adjusting Unit CB 160
3 Adjustable Brace CB 164-224
4 Strongback CB 270 or CB 380
5 Anchoring and Leading Anchor
6 Bracing Shoe Wall CB M 24
7 Wind bracing with tension belt or tie rod
8 Finishing Platform with Platform Beam CB
9 Suspension of finishing platform
10 VARIO GT 24 or TRIO formwork with concreting scaffold
11 Bracing with scaffold tubes

*Formwork height = concreting height + formwork projection (max. 5.40 m)

Introduction

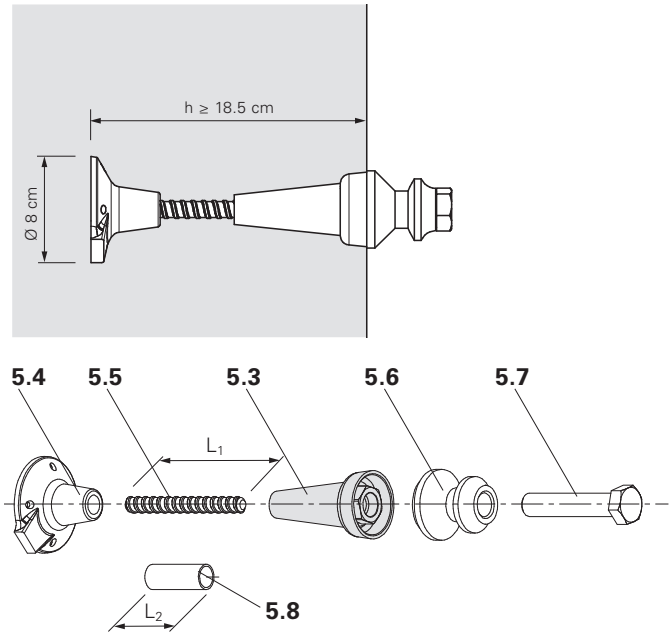
Overview, Main Components

Anchoring to the building structure

Variant 1
5.4 Threaded Anchor Plate DW 15*
5.5 Tie Rod DW 15*, Z-12.4-70
L_1 = h – 8 cm
or Tie Rod B15*, Z-12.5-82
5.3 Climbing Cone 2 M24/DW 15
5.6 Scaffold Mounting Ring M24, galv.
5.7 Hex. Bolt
M24 x 120 ISO 4014-10.9
5.8 Spacer Tube DR 22* (optional)
L_2 = h – 18.5 cm (tolerance 0 to +5 mm)

Anchoring depth h = variable, min. 18.5 cm

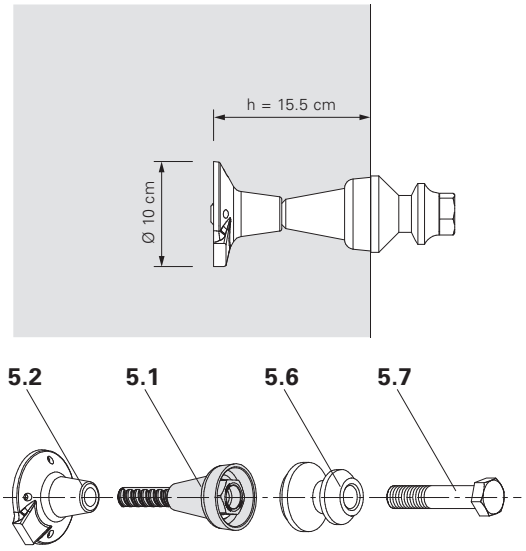
* Not re-usable
With PVC spacer tube, the tie rod (5.5) is reusable.



Variant 2
5.2 Threaded Anchor Plate DW 20*
5.1 Screw-On Cone 2 M24/DW 20
5.6 Scaffold Mounting Ring M24, galv.
5.7 Hex. Bolt M24 x 120
ISO 4014-10.9

Anchoring depth h = 15.5 cm.

* Not re-usable



Introduction

Standard Configuration

General
The CB 160 climbing formwork is normally used as shoring in order to support anchored wall formwork in accordance with EN 12812. The formwork is firmly connected with the scaffolding and is moved as a single unit suspended on a crane.
The system can also be used as working scaffold only.
The working platform for operating the formwork consists of planking, platform beams and two fixed climbing brackets. These transfer the loads deriving from the dead weight, live loads and prevailing wind loads via the anchorage and bottom pressure point into the structure.

The working platform can be supplemented with:
– clamping unit, strongback and adjustable braces for accommodating the VARIO and TRIO formwork systems.
– a height-adjustable finishing platform complete with access ladder which is attached to posts.
– end-to-end guardrails on the working and finishing platforms in accordance with EN 12811.
– a tension anchor which prevents tipping inwards.

Technical Data:
– width of bracket: 1.60 m
– static height: 1.80 m
– max. formwork height: 5.40 m

Intended Use

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

2. These instructions for assembly and use serve as basis for the project-related risk assessment and the instructions for the provision and use of the system by the contractor (user). However, they don't replace them.

3. Only PERI original components may be used. The use of other products and spare parts represents a misapplication with associated safety risks.

4. The components are to be inspected before each use to ensure that they are in perfect condition and that they funtion correctly.

5. Changes to PERI components are not permitted and represent a misapplication with associated safety risks.

6. Safety instructions and permissible loads must be observed at all times.

7. Components provided by the contractor must conform with the characteristics required in these instructions for assembly and use as well as with all valid construction guidelines and standards.

In particular, the following applies if nothing else is specified:
– Timber components: Strength Class C24 for Solid Wood EN 338.
– Scaffold tubes: galvanised steel tubing with minimum dimensions Ø 48.3 x 3.2 mm according to EN 12811-1:2003 4.2.1.2.
– Scaffold tube couplings according to EN 74.

8. Deviations from the standard configuration may only be carried out after a separate risk assessment has been completed by the contractor (user). On this basis, appropriate measures for the working safety and stability are to be implemented.

Introduction

Safety Instructions

General
1. Deviations from the standard configuration and/or intended use present a potential safety risk.

2. All country-specific laws, standards and other safety regulations are to be taken into account whenever our products are used.

3. During unfavourable weather conditions, suitable precautions and measures are to be taken in order to ensure both working safety and stability.

4. The contractor (user) must ensure the stability throughout all phases of construction. He must ensure and verify that all loads occuring are safely transferred.

5. The contractor (user) has to provide safe working areas for site personnel which can be safely accessed. Areas of risk must be cordoned off and clearly marked. Hatches and openings on accessible working areas must be kept closed during working operations.

6. For better comprehensibility, detailed drawings are partly incomplete. The safety installations which have possibly not been featured in these detailed drawings must nevertheless be available.

Storage and Transportation
1. Do not drop the components.

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

3. When moving the components, make sure they are lifted and set down in a way that any unintentional tilting over, falling apart, sliding or rolling away is prevented.

4. Use only suitable load-carrying equipment to move the components as well as the designated load-bearing points.

5. During the lifting and moving procedure, ensure that all loose parts are removed or secured.

6. During the moving procedure always use a guide rope.

7. Move components on clean, flat and sufficiently load-bearing surfaces only.

System-specific
1. Retract components only when the concrete has sufficiently hardened and the person in charge has given the approval for striking to take place.

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

3. It is the responsibility of the contractor (user) to inspect all anchors and associated components.

4. Enclosure of the platform or mounting of additional surfaces which are exposed to the influences of the wind changes the stability and must therefore be checked. If necessary, additional measures must be implemented.

5. The platforms are to be inspected for signs of damage by authorised personnel at regular intervals. Dirt which affects the functionality is to be removed immediately.

6. As a result of the moving procedure, falling edges are formed between the platforms. Corresponding areas are to be secured.

7. Site personnel, construction materials or tools may not be transported while the scaffold unit is being moved with the crane. Exceptions to this can be determined through the operational working and instructions for assembly and use.

General

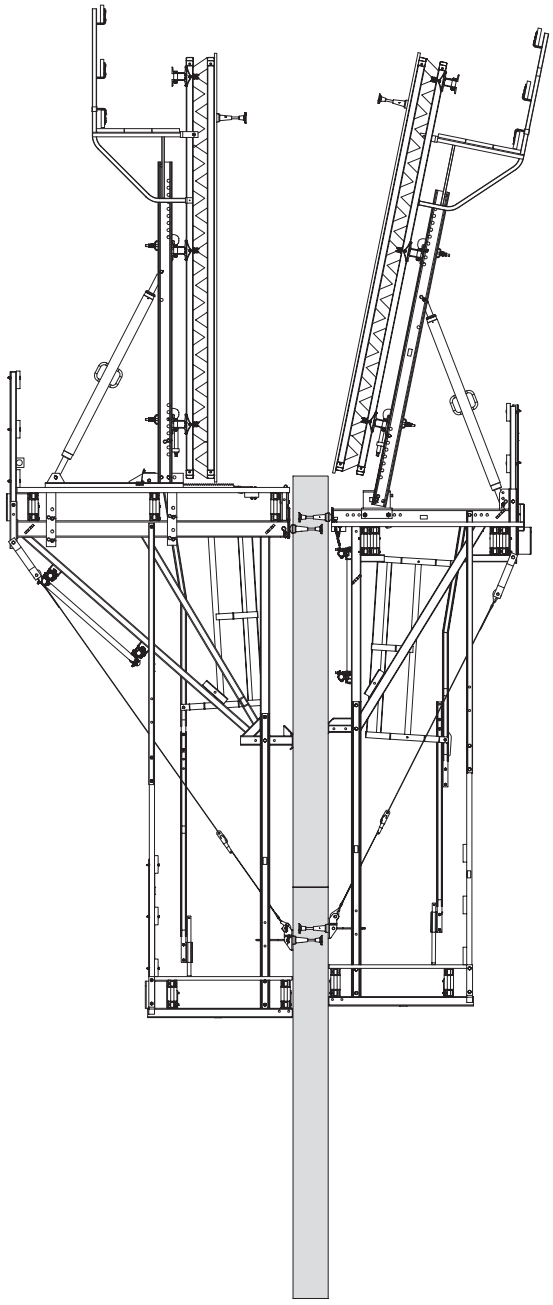
Additional PERI product information
- Type Test CB 160
- Brochure "Climbing System CB 240 and CB 160"
- Instructions of Use for the Crane Splice 24
- Instructions for Use: Lifting Hook MAXIMO 1.5 t
- PERI Design Tables for Formwork Technology

The assemblies shown in these PERI Instructions for Assembly and Use are only examples which feature only one component size. They are valid for all component sizes contained in the standard configuration.

Introduction

Load Models

Working position
The area-related live loads correspond to EN 12811.

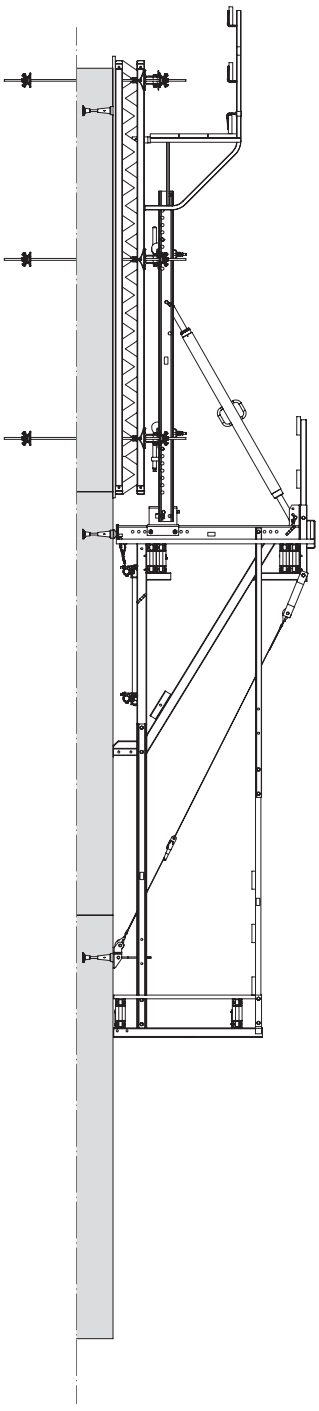


Concreting platform
150 kg/m²
Load Class 2

Working platform
200 kg/m²
Load Class 3

Finishing platform
75 kg/m²
Load Class 1

Concreting position
The area-related live loads correspond to EN 12811.



Concreting platform
150 kg/m²
Load Class 2

Working platform
200 kg/m²
Load Class 3

Finishing platform
75 kg/m²
Load Class 1

Introduction

Standard work flow

Preparation

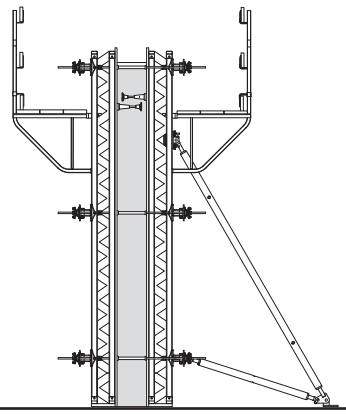
1. Assemble wall formwork.
2. Assemble platforms.
3. Assemble finishing platform.

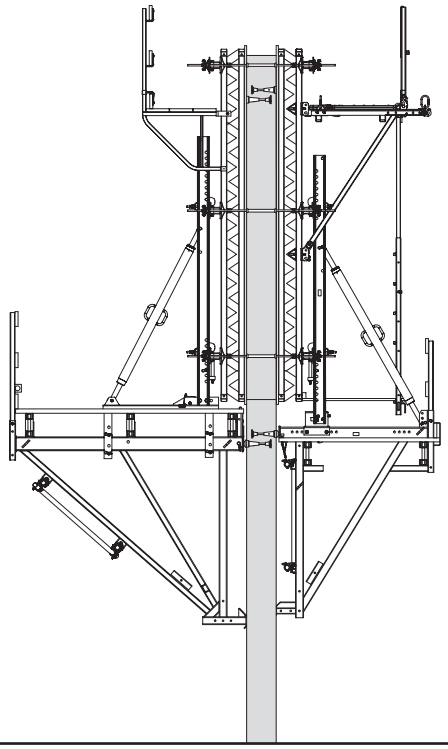
To moving procedure:

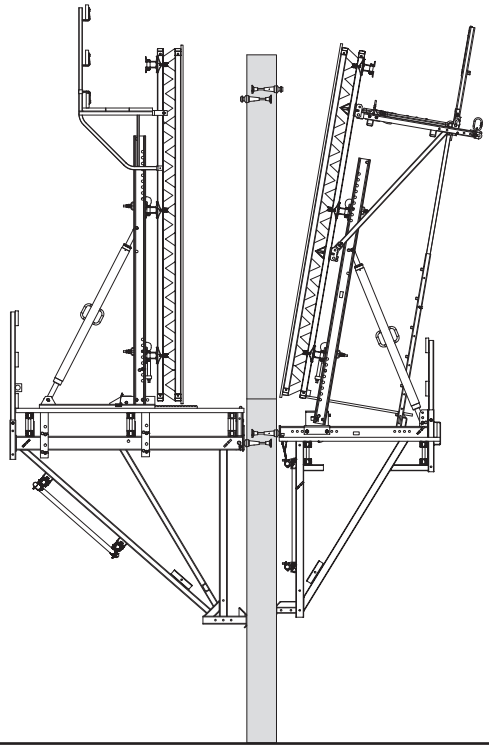
- **Do not transport persons!**
- **Do not transport any loose parts or other loads!**

Initial use

1. Position wall formwork for first wall section.
2. Add reinforcement to first wall section.
3. Mount leading anchor and close formwork.
4. Place formwork anchor.
5. Pour first wall section.
6. Remove advancing bolts and strike.
7. Mount scaffold mounting rings.
8. Attach climbing platforms.
9. Assemble tension anchor if necessary.
10. Place formwork on climbing platform and secure.
11. Clean formwork and adjust if necessary.
12. Reinforce second wall section.
13. Mount leading anchor and close formwork.
14. Place formwork anchor.
15. Pour second wall section.
16. Remove advancing bolts and retract formwork.
17. Mount scaffold mounting rings.







Introduction

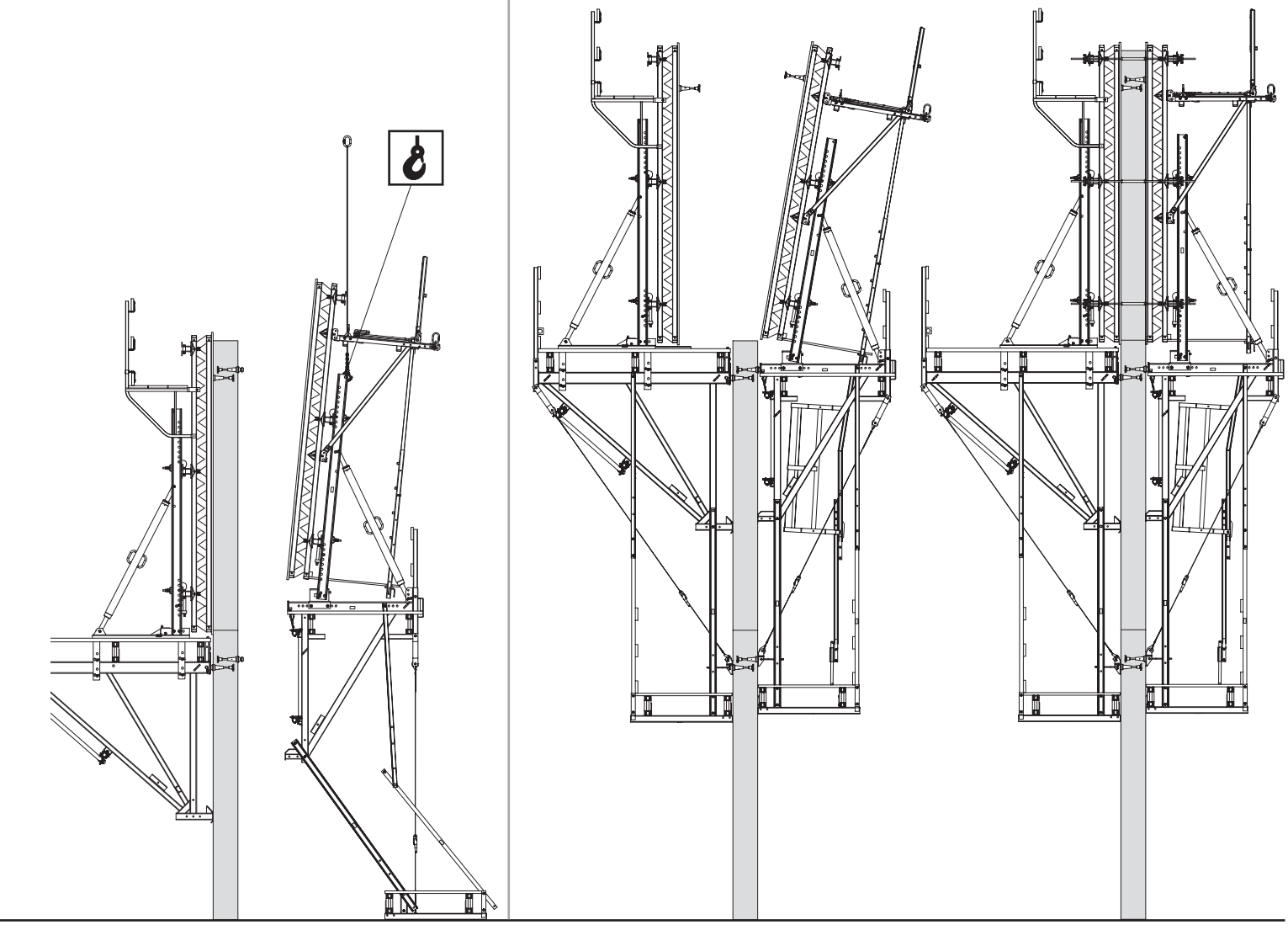
18. Attach finishing platform.
19. Move Climbing Formwork to second wall section.
20. Bolt on finishing platform and attach guardrails.
21. If necessary, mount ladder.

Standard cycle

22. Mount wind bracing if required.
23. Clean formwork and adjust.
24. Install reinforcement to wall.
25. Mount leading anchor and close formwork.
26. Place formwork anchor.
27 Pour wall section.
28. Remove advancing bolts and retract formwork.
29. Mount scaffold mounting rings.
30. Remove climbing cones from previous wall section.
31. Move Climbing Formwork to next wall section.

Continue with standard cycle.

32. Dismantle Climbing Formwork.



A1 Assembly of the CB 160 platforms

Required resources

Equipment and tools
Hammer, wire pins, plumb line,
4 screw clamps with 300 mm clamping length, circular saw, electric drill, HSS drill Ø 6 mm, Ø 8 mm,
min. L = 180 mm.
072180 Ratchet Wrench 1/2"
102784 Socket SW 24 - 1/2"
Wrench SW 24
029620 Socket SW 19 - 1/2"
Wrench SW 19.
072170 Socket SW 13 - 1/2"
072150 Electric Power Wrench (recommended)
072080 Electric Screw Driver
072090 Bit Holder
072120 Magnetic Holder
072140 Bit Points TX 30
031480 Socket Wrench SW 36
027212 Allen Kew SW 14
031080 Drill Bit Ø 25 mm

Flat assembly surface
Width: approx. 3.50 m
Length: maximum platform width + 2.0 m
Attach stop bars and support.
(Fig. A1.01)

Aids
– Locating block (0.1)
12 plywood blocks 21 x 80 x 80 mm
– Support h = approx. 24 cm,
e.g. GT 24 (0.2)
L = max. bracket spacing + 1.0 m
– Stop bars
1 plank 40 x 120 mm (0.3)
1 plank 80 x 80 mm
L = max. bracket spacing + 1.0 m
– Gauge for bracket spacing C
1 plank 40 x 120 mm (0.4)
L = bracket spacing + max. 1.0 m
plywood blocks (0.1) (Fig. A1.02)
– Diagonal bracing for securing bracket
1 plank 40 x 120 mm, L = 2.0 m (0.5)
(Fig. A1.03)

Are the stop bars and support mounted in parallel?

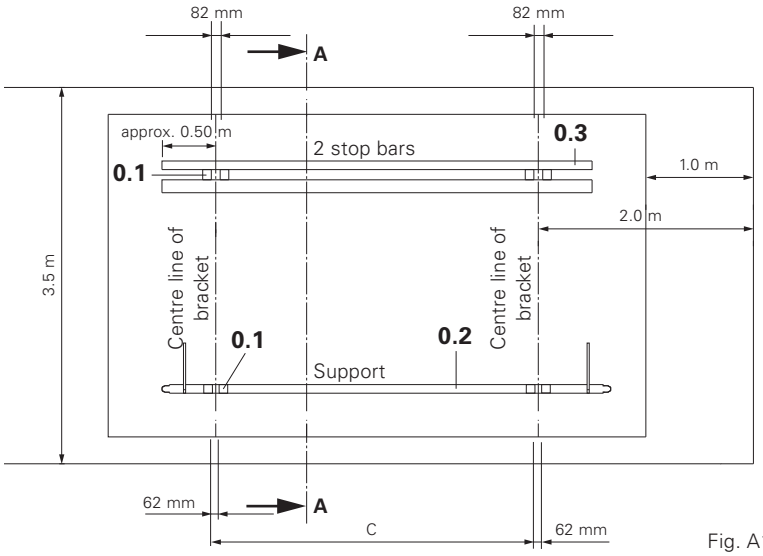


Fig. A1.01

Section A-A

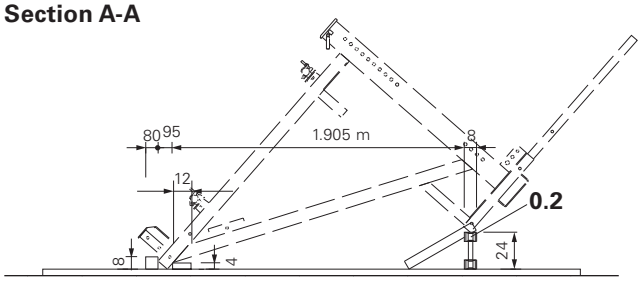


Fig. A1.01a

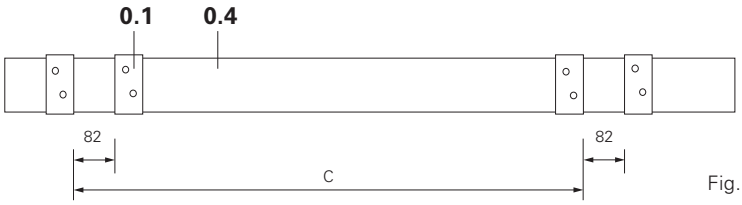


Fig. A1.02

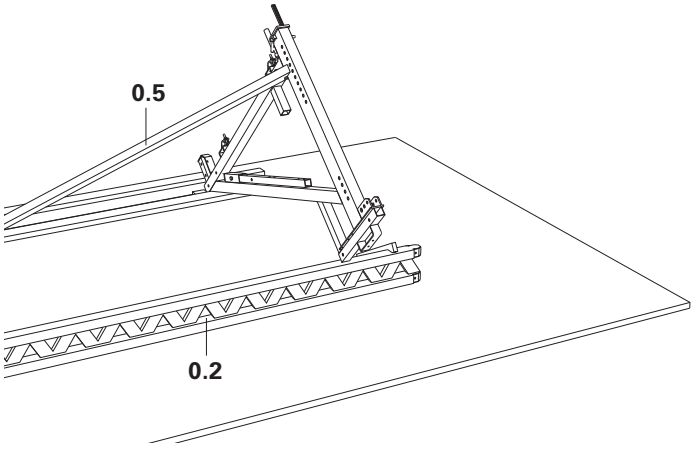


Fig. A1.03

A1 Assembly of the CB 160 platforms

Assembly of Console Bracket CB 160

Assembly

1. Check centre-to-centre spacing if regarding the planned measurement, or measure spacing of climbing cones already cast in concrete.
2. Adjust centre-to-centre spacing of brackets to the support (0.2).
(Fig. A1.04)
3. Fix locating blocks (0.1).
(Fig. A1.05)
For spacings see (Fig. A1.02)
4. Lift first bracket (1.1) vertically into the stops and then align.
5. Fix together with the diagonal bracing (0.5).
(Fig. A1.06)
6. Lift in second bracket and align using bracket spacing gauge (0.4).
Fix gauge using screw clamps. Check bracket spacing.
(Fig. A1.06)
7. Fix two scaffold tubes (11.1) to screw couplings (1.3) in a parallel position to provide support.
8. Brace with diagonal scaffold tube (11.2) and two swivel couplings (11.3).
(Fig. A1.07)

The bracket axes form a right-angle to the stops and support.

The scaffold tubes should project at least 100 mm from the couplings.

The brackets are now aligned.

Fig. A1.04

Fig. A1.05

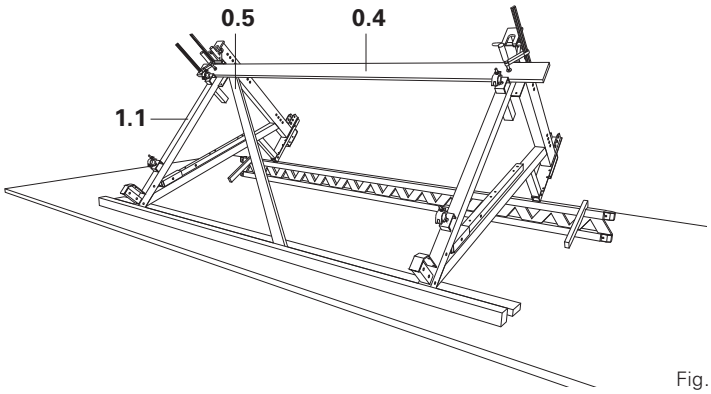


Fig. A1.06

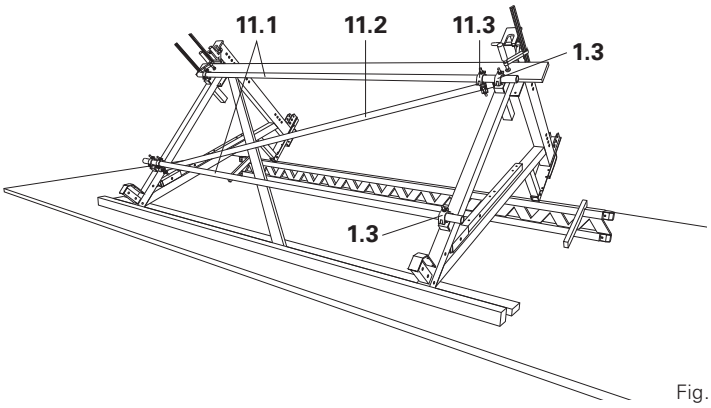


Fig. A1.07

A1 Assembly of the CB 160 platforms

Assembly of girders

When using PERI GT 24 girders, strengthen them on both sides in the area of the brackets with plywood strips (13.2). (Fig. A1.08)
In order to avoid the risk of lifting in the case of large cantilevers, timber blocks must be placed on the opposite side in-between the bracket cross-beams and girders. Fix to the girders by means of wood screws.
Dimensions: thickness/width/height
27 x 120 x 300 mm
Fixing: Torx TSS 6 x 60

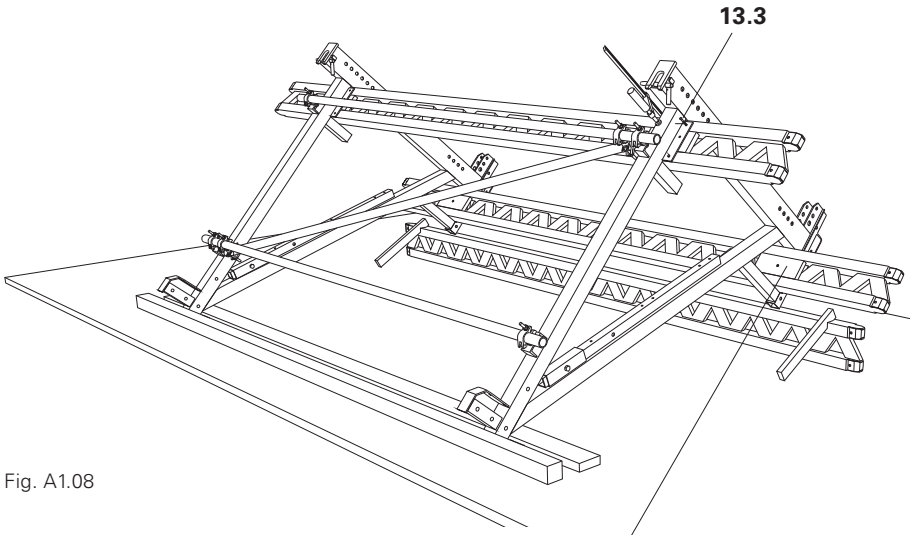


Fig. A1.08

Assembly
1. Fix girder (13.1) by means of screw clamps.
2. Fix diagonals to the fixing plates using two hex. wood screws 6 x 80 (13.3) in each case.

(Fig. A1.08)

Alternatively:
F. H. Bolts M6 x 100, washer or for double girders M6 x 180 (13.4).
(Fig. A1.08a)

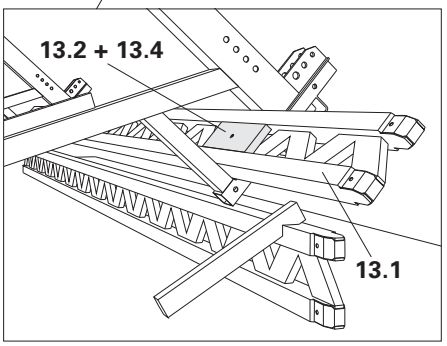


Fig. A1.08a

– If no girders have been included in the planning, these can be determined from C1 Platform deckings.
– Pre-drill girders when using F. H. Bolts.
– Use F. H. Bolts for longer girder cantilevers.
– Timbers must be fixed accordingly.

A1 Assembly of the CB 160 platforms

Single girder position
- plywood or 3-ply board (13.2)
- hex. wood screw 6 x 80 (13.3)
- timber 8/16 (13.6)
- GT 24 lattice girder (13.7)
  (Fig. A1.09 + A1.10)

GT 24 Girder

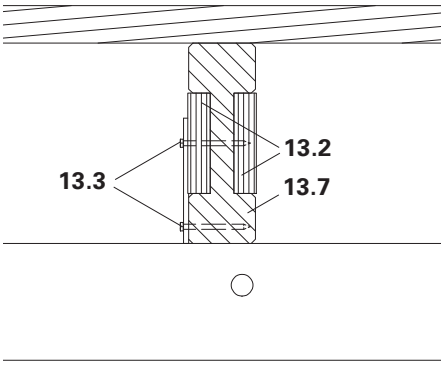


Fig. A1.09

Timber

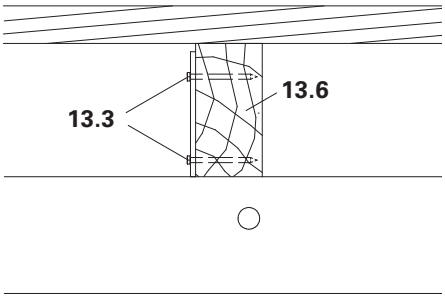


Fig. A1.10

Double girder position
- plywood or 3-ply board (13.2)
- hex. wood screw 6 x 80 (13.3)
- timber 8 x 16 (2x) or 16 x 16 (1x)
  (13.6)
- F. H.Bolt M6 x 180 (13.4)
- GT 24 lattice girder (13.7)
  (Fig. A1.11 + A1.12)

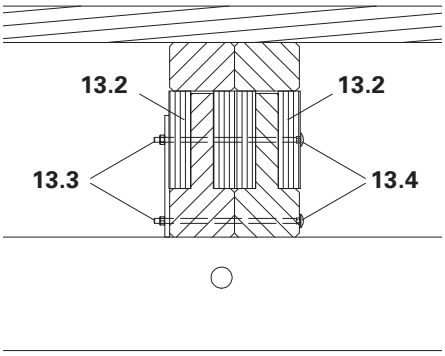


Fig. A1.11

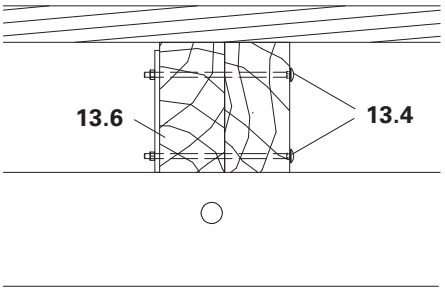


Fig. A1.12

These drawings conform to Appendix K15 of the type test issued by the State Structural Inspectorate, Düsseldorf, test certificate no. P31 - 95/91 and may only be used in accordance with the aforementioned type test.

Assembly as working scaffold

For operating the securing bolts from above, a spacing of x ≥ 23 cm is required.
1. Bolt on two Platform Connections CB 160 (1.4) per bracket.
(Fig. A1.13)
2. For supporting the decking, fix timbers h = 16 cm (13.6) with hex. wood screws 6 x 80 (13.3).

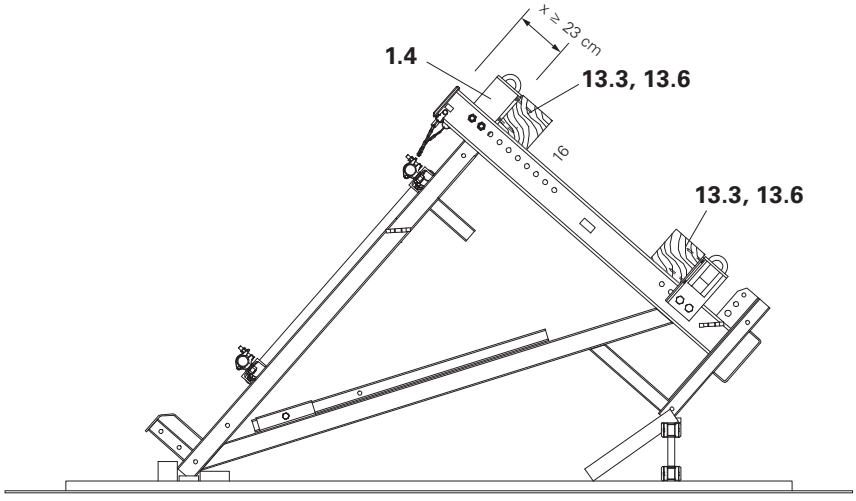


Fig. A1.13

A1 Assembly of the CB 160 platforms

Assembly of Adjusting Unit CB 160

Assembly
When using TRIO or VARIO GT 24, the Adjusting Unit CB 160 (2) has to be assembled with Hex. Bolts M20 x 150 (2.3), SW 30. Bolts M20 x 150 (2.3), SW 30.
The Adjusting Bolt (2.2) points to the guardrail side.
(Fig. A1.14)

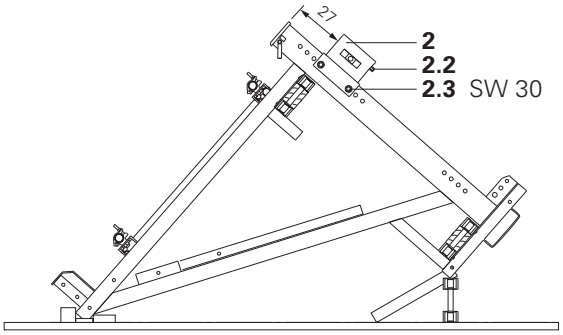


Fig. A1.14

Another position may be predefined in the plan.

Assembly of Guardrail Post CB

Assembly
1. Loosen bolt (1.6) and take out SW 24, and guardrail post (1.2).
2. Insert guardrail post in the holder.
3. Fix with Bolt (1.6) and self-securing nut.
4. Proceed in the same way with the second guardrail post.

(Fig. A1.15 or A1.16).

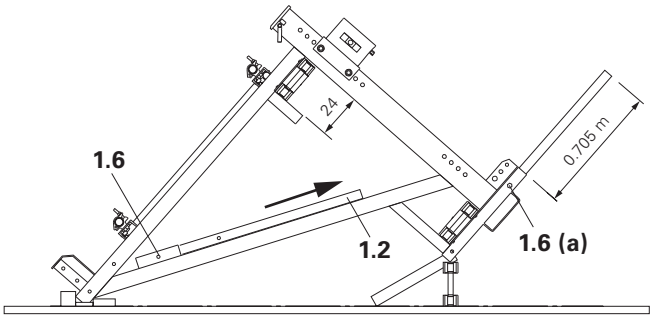


Fig. A1.15

Arrangement of the girder below: top hole (a) in the guardrail post.
(Fig. A1.15)
Arrangement of the girder above: bottom hole (b) in the guardrail post
(Fig. A1.16)

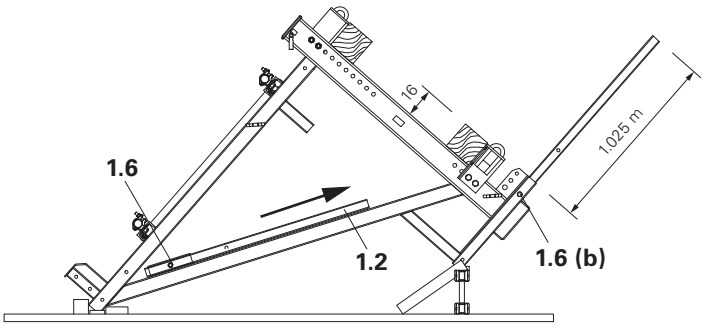


Fig. A1.16

Assembly of decking

Climbing Platform, Working Platform

Assembly

1. Cut planking at right angles. Length according to decking requirements.
(Fig. A1.17 + A1.18)
2. At platform ends, fix each plank flush to the girders (13.1 / 13.6). Planking is flush with bracket front edge on the wall side.
   Mounting: Torx TSS 6 x 80 (13.5)
   2 x per girder support.
   Alternatively: nails 38 x 100.
3. For accurate positioning, use plumb line.
4. Fix remaining planking.
5. Cut out for securing bolt (1.5).
(Fig. A1.17a)

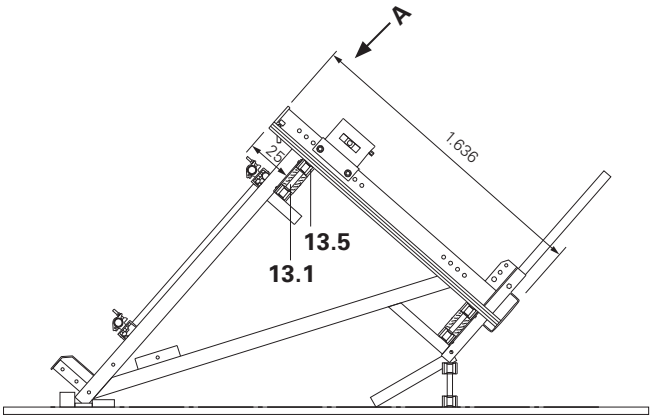


Fig. A1.17

View A

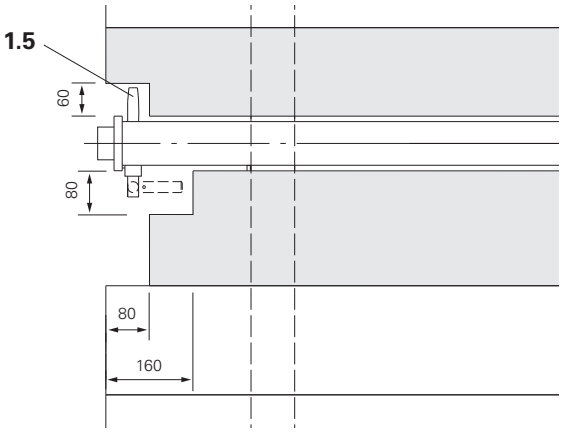


Fig. A1.17a

– If no girders have been included in the planning, they can be determined from C1 platform deckings.
– For girders positioned above, dimension x of the planning is to be used. The decking can be pre-assembled with girders placed in position and then fixed.
– For operating the securing bolts (1.5) from above, a spacing of x ≥ 23 cm is required.
– Decking made of other materials must be sized to the same dimensions and then fixed.
– The installation of the hinged hatches is described in A2 assembly of hinged hatch cover.
– Gaps in the decking ≤ 2 cm.

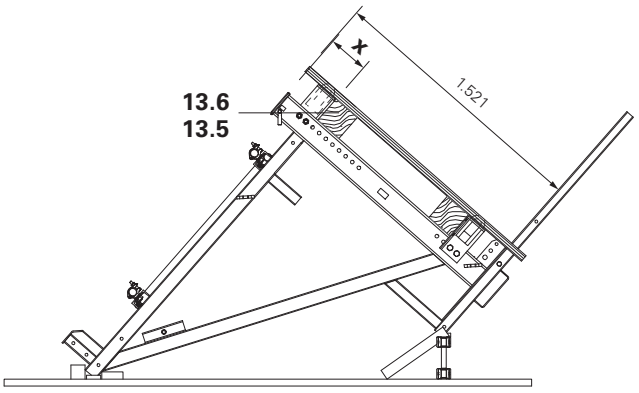


Fig. A1.18

A1 Assembly of the CB 160 Platforms

Assembly of guardrails

Guardrail Post CB

1. Cut handrail boards (12.1) to match platform width.
2. Attach handrail boards to guardrail post with screw clamps. Height: depends on decking design. (Fig. A1.19a + A1.19b)
3. Fix handrail boards (12.1) with two round head bolts M8 x 100 (12.5). Pre-drill boards!
4. Depending on the design of the decking, fix Toe Board (12.2) to the guardrail posts by means of F. H. Bolts M8 x 100 (12.5) (Fig. A1.19b) or fix to the support bracket with Torx 6 x 40 (12.10). (Fig. A1.19a)

– If no guardrail has been included in the planning, this can be determined from C1 Handrails and Guardrails.
– With larger cantilevers of the guardrail boards, the ends are to be connected with a vertically-positioned plank.

Handrail boards flush with the planking.

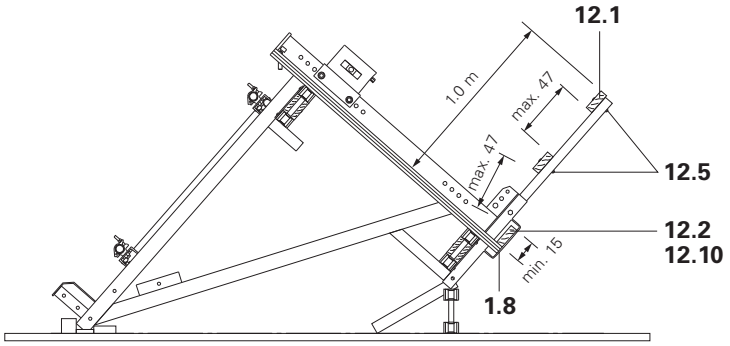


Fig. A1.19a

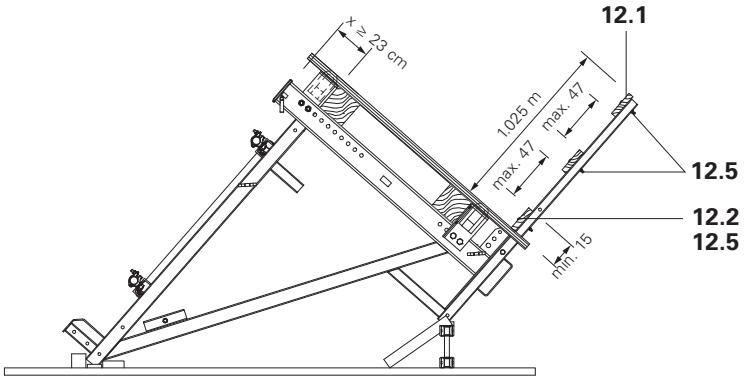


Fig. A1.19b

A1 Assembly of the CB 160 Platforms

Assembly of guardrails

End Guardrail Post
For longer cantilevers, it is necessary to additionally support the handrail boards with one or more end guardrail posts.

1. Mark the outside edge of the end guardrail post (12.3) on the handrail boards (12.1 + 12.2).
2. Align end guardrail post and fix to girder (13.1) with screw clamp.
3. Use wood screws (6x) 6 x 80 (12.8) for fixing to girder.
4. Mount the pre-drilled handrail boards using F. H. Bolts M 8x 125 (12.5) on fillers.

(Fig. A1.20a + A1.20b)

If no span is specified in the planning, this can be determined from Part C1 Handrails and Guardrails.

Fig. A1.20a

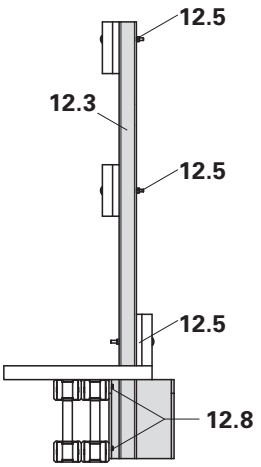


Fig. A1.20b

A2 Other assembly work

Assembly of end guardrail posts

Required materials:
– 2 end guardrail posts
– 2 handrail boards 4 x 12 cm
– 1 toe board 4 x 12 cm

Assembly
1. Fix end guardrail post (12.4) to girders with wood screws 6 x 80 (5x) (12.8).
2. Fix handrail boards and toe board with F. H. Bolts M 8 x 100 (12.5).

(Fig. A2.01 + A2.01a)

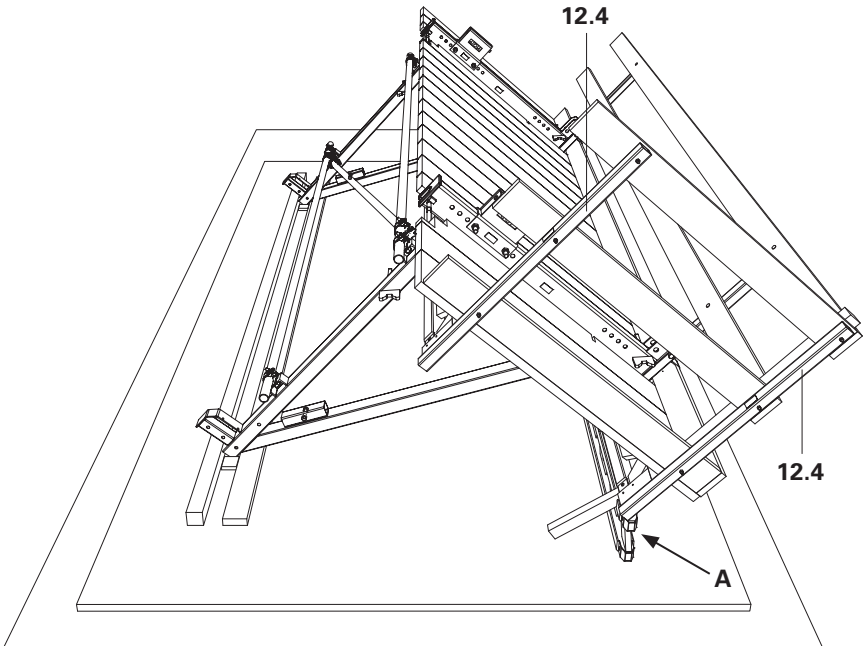


Fig. A2.01

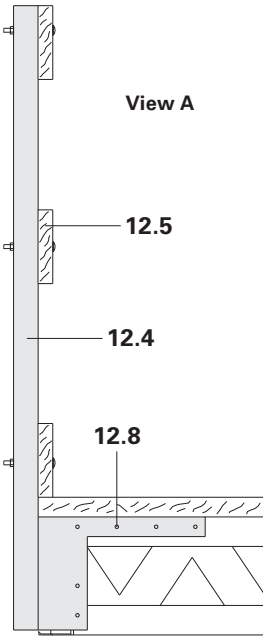


Fig. A2.01a

A2 Other assembly work

Assembly of hinged hatch cover

Pre-assembly

– For installation, a 72 x 57 cm cut-out is made in the planking between the brackets.
– Remaining planking width > 10 cm.
– The recess is arranged according to the configuration:
formwork scaffold: a = 43.5 cm
working scaffold: a = 35 cm
– Support the cut planks with timbers (14.8), L = 120 cm, min. 120 x 40 mm, and secure with TORX 6 x 80.
– Screw timbers (14.8) 2 x with the laterally-positioned end-to-end planking. F.H. Bolt DIN 603 M8 x 100 MU (14.9) with washer ISO 7094 100 HV A8. (Fig. A2.02 + Fig. A2.03)

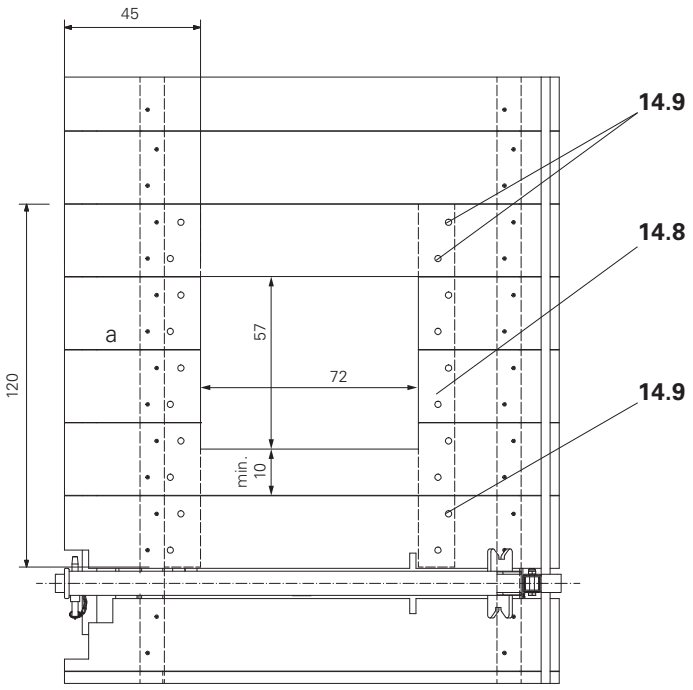


Fig. A2.02

We recommend the hatch, as featured, to be installed close to the bracket in order that personnel can hold the spindle when climbing.
(Fig. A2.04)

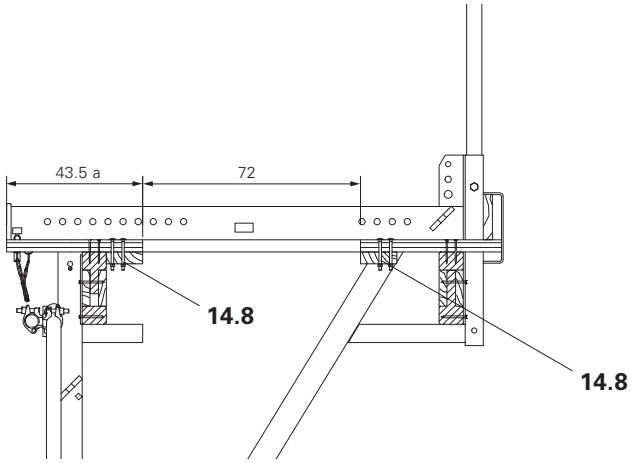


Fig. A2.03

Assembly

– Place hinged hatch 55 x 60 (14.1) in the cut-out. The cover (14.2) opens towards the wall side. (Fig. A2.04a)
– Attach hatch frame to the planking (approx. 20 x TORX 6 x 40). (Fig. A2.04)

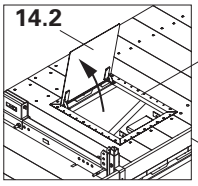


Fig. A2.04a

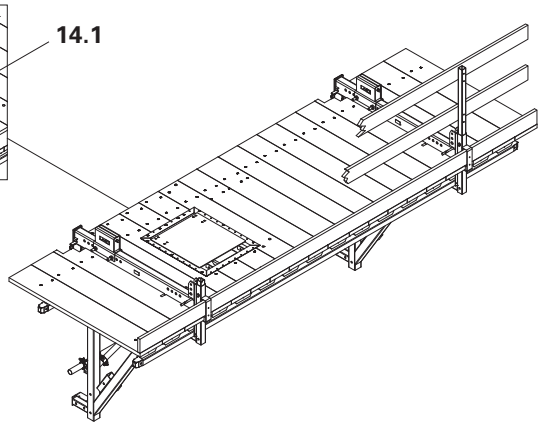


Fig. A2.04

A2 Other assembly work

Assembly of finishing platform

Platform girders

1. Lay CB platform beam (8.1) parallel in the bracket spacing on the assembly floor.
2. Place girder (13.1) and secure in position, see A1.

(Fig. A2.05)

– If no girders have been included in the planning, they can be selected in Part C1 platform deckings.
– When using PERI GT 24 girders, they are to be strengthened on both sides at the level of the platform beams with 3S sheets, see A1.

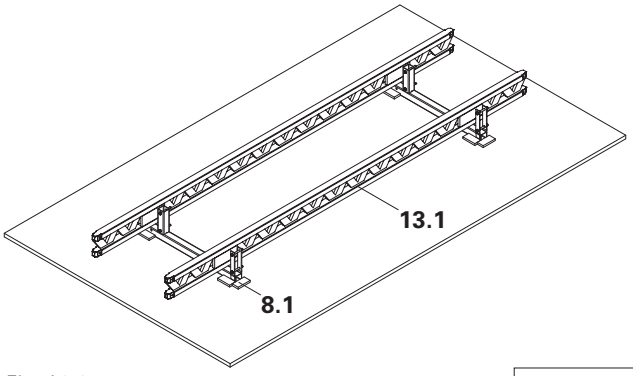


Fig. A2.05

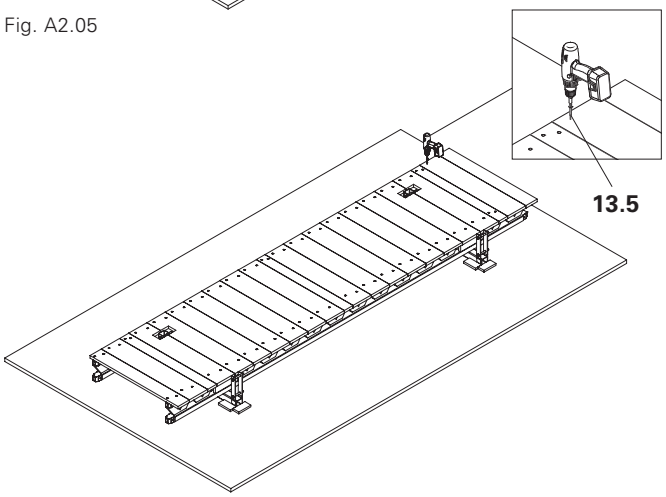


Fig. A2.06

Assembly of decking

1. Cut planking to length. L = 1.170 m.
2. Fix planking at both platform ends flush to girders, see A1.
   Projecting length: 14 mm over girder on the wall side.
   (Fig. A2.06a)
   Mounting: Torx TSS 6 x 80 (13.5)
   2 x per girder.
   Alternatively: nails 38 x 100
3. For accurate positioning, use plumb line.
4. Fix remaining planking.
   (Fig. A2.06)

If no platform decking has been included in the planning, the planking can be selected in Part C1 platform deckings.

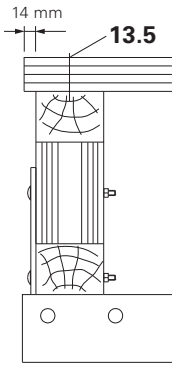


Fig. A2.06a

A2 Other assembly work

Assembly of finishing platform

Assembly in the area of the platform girder

– The planking is divided along the middle of the platform girder (8.1).
– The planking (8.3) to the side of the platform post (9.1) is complete!
– The planking is only tacked on! It must be removed when the finishing platform is mounted.
– A cut-out is made in the area around the platform post. Provide for a circumferential 10 mm slit.
– The planking width in the compensation area is ≥ 100 mm! (Fig. A2.07)

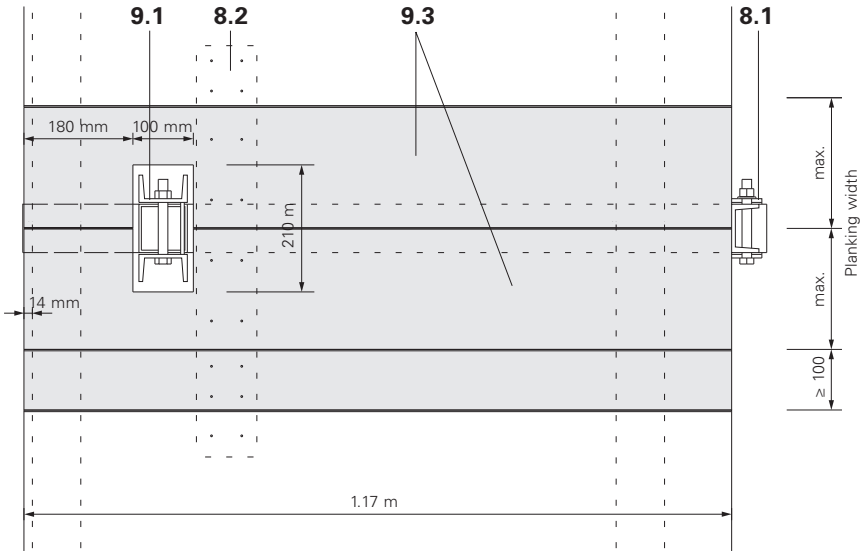


Fig. A2.07

Additional support (8.2) is screwed on under the planking.

Finishing tasks

– Mark the platform according to planning instructions e.g. with colour spray.

We recommend attaching a platform description, see C1 Drawings and Plans.

B1 Work on the construction site

Anchoring

Safety instructions

- **Each CB bracket must be individually anchored, and the loosening or dismantling of the anchoring may only take place on the side of the load transfer. The positioning of two cones against each other is not allowed. (Fig. B1.01)**
- **If $h_1 + h_2 < d$, the anchor positions must be horizontally or vertically offset. (Fig. B1.02 + B1.03)**
- **The correct installation of the climbing anchor is to be checked before being concreted in position. We recommend the compiling of an acceptance report.**
- **The climbing anchors must not be used until the load-bearing capacity of the anchorage is sufficient.**
- **The threaded areas on the Screw-On Cone-2 and Climbing Cone-2 as well as the Threaded Plate DW 15 and DW 20 must always be completely screwed in.**
- **The required anchoring depth h must not be achieved through a reduction of the screw-in depth.**
- **The tie rods must be chamfered at both ends.**
- **Damaged anchoring components must not be used.**

Damages are e.g.:
- welding splashes on the tie rods
- bent tie rods
- blocked threads
- deformed cone cups
- rough or scratched cone surfaces
- missing dowel pin in the climbing cone

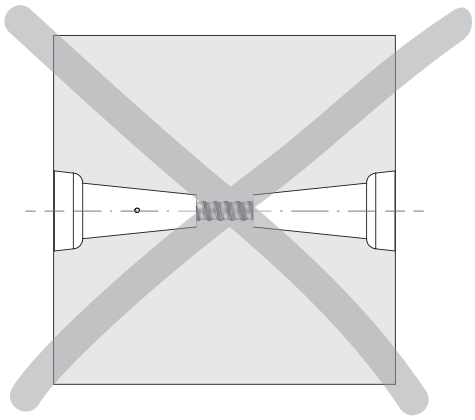


Fig. B1.01

Top view
horizontal offset

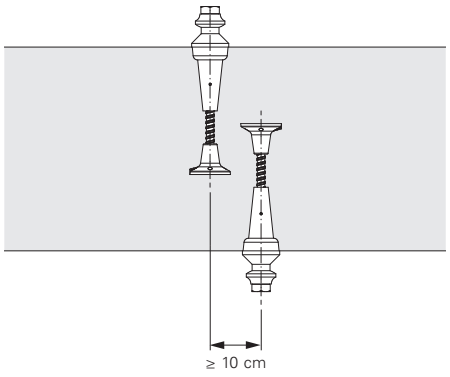


Fig. B1.02

Section
vertical offset

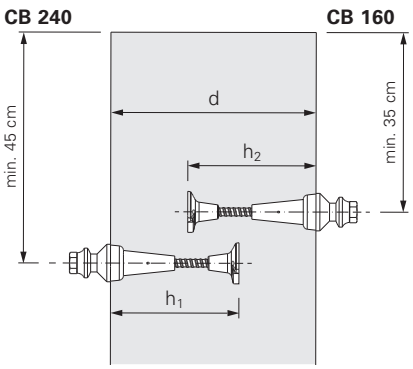


Fig. B1.03

B1 Work on the construction site

Anchoring

Preparations for use

- With different concreting heights, anchor spacings with < 5 cm deviations can be compensated by means of the height adjusting unit. With larger deviations, more drilled holes are provided.
- During the first installation, compare the anchor spacing with the bracket spacing of the pre-assembled platform.
- Dimension and install the leading anchor according to planning requirements.

Version 1
Climbing Cone-2 M24/DW 15
Anchoring depth h according to static requirements.

1. Check tie rod length.
2. Screw in DW 15 tie rod into the climbing cone (5.3).
3. If necessary, pull DR 22 spacer tube (5.8) over the DW 15 tie rod (5.5).
4. Completely screw in and tighten Threaded Anchor Plate DW15 (5.4) on the tie rod (5.5). (Fig. B1.04)

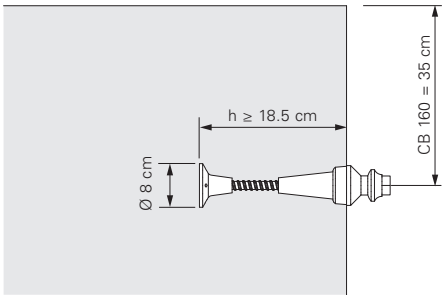


Fig. B1.04

Version 2
Screw-On Cone-2 M24/DW 20
Anchoring depth h = 15.5 cm.

1. Completely insert screw-on cone (5.1) into the Threaded Anchor Plate DW 20 (5.2). (Fig. B1.05)

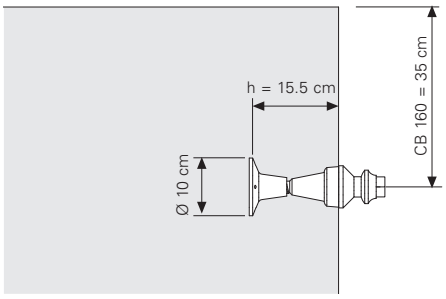
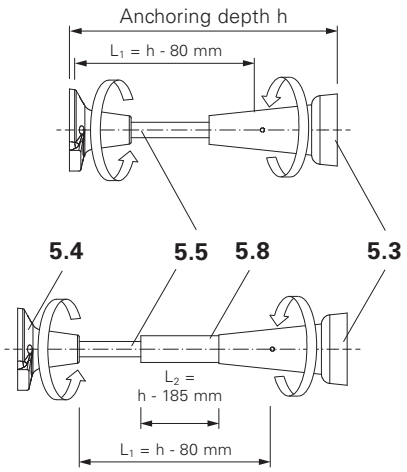
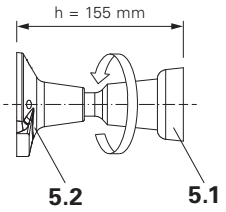


Fig. B1.05





B1 Work on the construction site

Anchoring

Assembly of the leading anchor with Anchor Positioning Stud M24, e.g. for TRIO panel formwork.

Initial use and standard use

1. Fix Anchor Positioning Stud M24 (5.11) to the marked position with nails 31 x 80 (4x) (5.12). (Fig. B1.06)
2. Tightly screw on pre-assembled leading anchor (5) on Anchor Positioning Stud M24. (Fig. B1.07 + B1.08)

– A more stable mounting is achieved through the installation of the anchor positioning plate, see "Assembly of Advancing Bolt M24".
– In this case, the distances from the holes to be drilled to the steel struts of the formwork must be large enough.
– For safe positioning, firmly connect the threaded anchor plate (5.2) to the reinforcement.

Check assembly

– height
– anchor spacings
– anchoring depth h
– alignment according to specifications

Checking of leading anchor and reinforcement measures can be done at the same time.

Fig. B1.06

Fig. B1.07

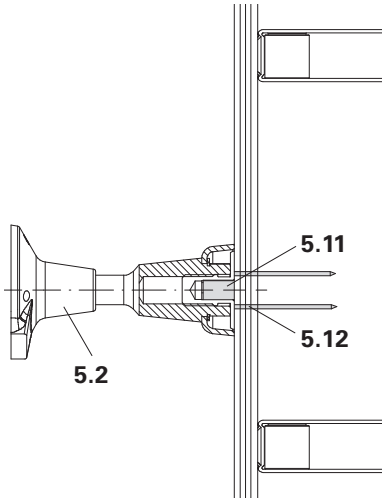


Fig. B1.08

Anchoring

Assembly of the leading anchor with Advancing Bolt M24, e.g. for VARIO GT 24 girder wall formwork.

Initial use

1. Check the required space for the Anchor Positioning Plate M24 (5.10). A lateral clearance of 3 cm or 4 cm is required. (Fig. B1.10)
2. Determine the set position and drill Ø 25 mm hole from the front of the formwork. (Fig. B1.09)
3. Mount Anchor Positioning Plate M24 (5.10) to the rear side of the plywood. Wood screws 6 x 20 DIN 571, SW 10 (4x) (5.13). (Fig. B1.10)

Standard use

1. Insert the Advancing Bolt M24 (5.9) from the rear side of the plywood through the drilled hole.
2. From the front side of the plywood, tightly screw on the leading anchor (5). (Fig. B1.11 + B1.12)

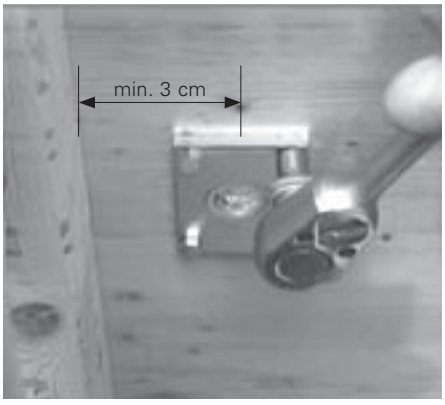
– If there is a formwork girder positioned at the rear of the anchoring, "Assembly with Anchor Positioning Stud M 24" can be applied.
– For safety reasons, firmly connect the threaded anchor plate (5.4) to the reinforcement.

Check assembly

– height
– anchor spacings
– anchoring depth h
– alignment according to specifications

Checking of leading anchor and reinforcement measures can be done at the same time.

Fig. B1.09



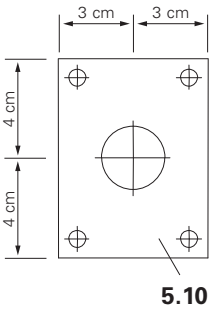


Fig. B1.10

Fig. B1.11

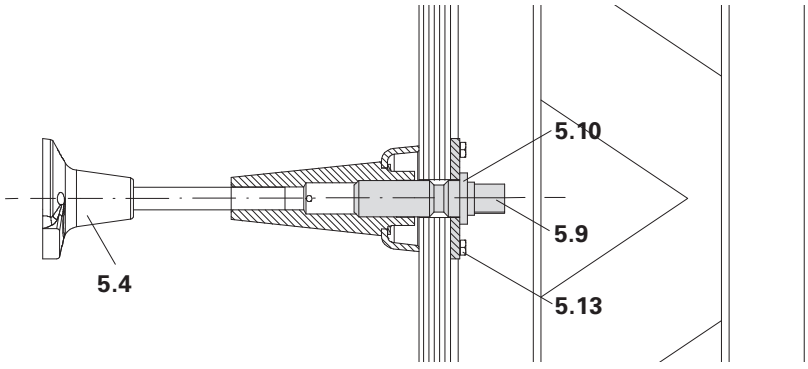


Fig. B1.12

B1 Work on the construction site

Anchoring

Important aspects when striking with Anchor Positioning Stud M24
– Re-straighten any bent nails.
– When retracting the formwork, nails (5.12) must be pulled through the plywood.
(Fig. B1.13)

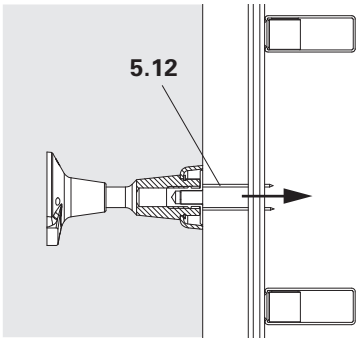


Fig. B1.13

Important aspects when striking with Advancing Screw M24
Loosen and remove all Advancing Bolts M24 (5.9) from the rear side of the plywood. (Fig. B1.14)

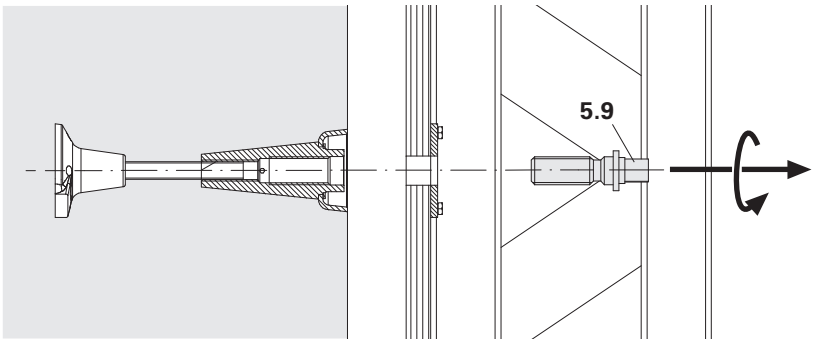


Fig. B1.14

Striking
1. Loosen connections to the adjoining elements (VKZ couplings, BFD alignment coupler).
2. Loosen Height Adjusting Unit CB 160 (2).
3. Tilt formwork using Adjustable Brace CB 164-225 (3.1). (Fig. B1.15)
   With this, the nails from the Anchor Positioning Stud M24 (5.12) and box outs are pulled out of the plywood or at least loosened.

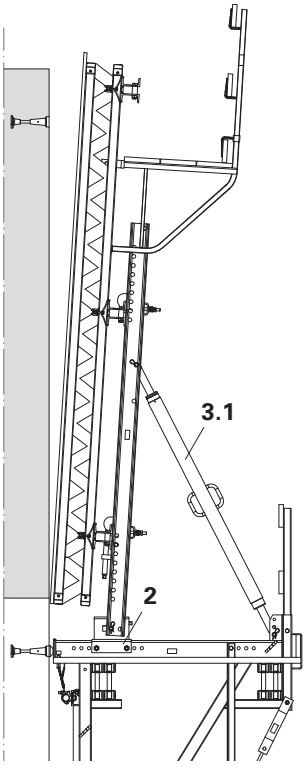


Fig. B1.15

B1 Work on the construction site

Anchoring

Check if the cone fits correctly and is clean.

Assembly of Scaffold Mounting Ring M24

1. Remove the Anchor Positioning Stud M24 (5.11) from the cone with an Allen Key SW 14. (Fig. B1.16)
2. Place the Scaffold Mounting Ring M24 (5.6) on the cone cup of the screw-on or climbing cone (5.1/5.3) and secure using bolt M24 x 120 ISO 4014-10.9 (5.7). (Fig. B1.17)
3. Firmly tighten bolt by hand using socket wrench SW 36. (Fig. B1.18)

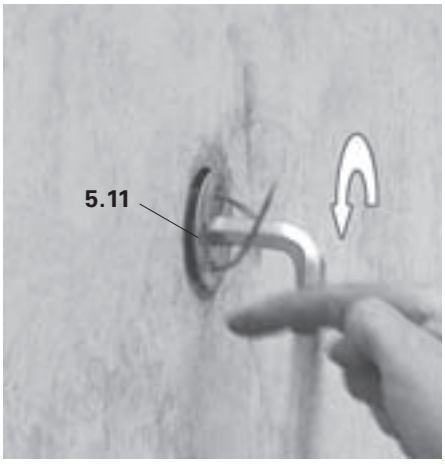


Fig. B1.16

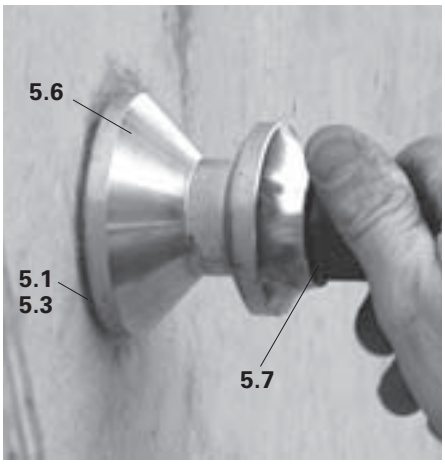


Fig. B1.17

Fig. B1.18

B1 Work on the construction site

Mounting the climbing platform CB 160 to the first wall section

– Use 4-sling lifting gear with sufficiently long chains and securing devices!
– Crane sling angle max. 30°!
– Observe permissible load capacity!

Assembly

1. Bolt two platform connections (1.4) to each CB 160 bracket.
2. Attach lifting gear hook to the bails of the platform connections. (Fig. B1.19)
3. Remove safety bolts (1.5). (Fig. B1.20)

Before moving

– Is the locking device on the lifting hook closed?
– Is the lifting angle correct?
– Have loose parts been removed?
– Have the safety pins (1.5) been completely removed? (Fig. B1.21)

The platform is now ready to be moved.

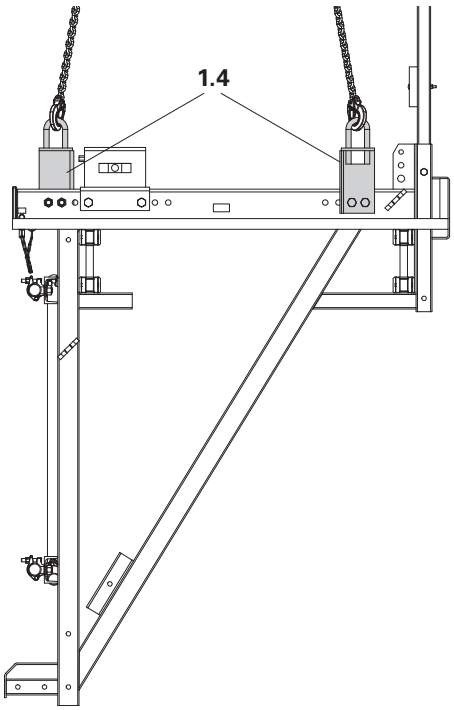


Fig. B1.19

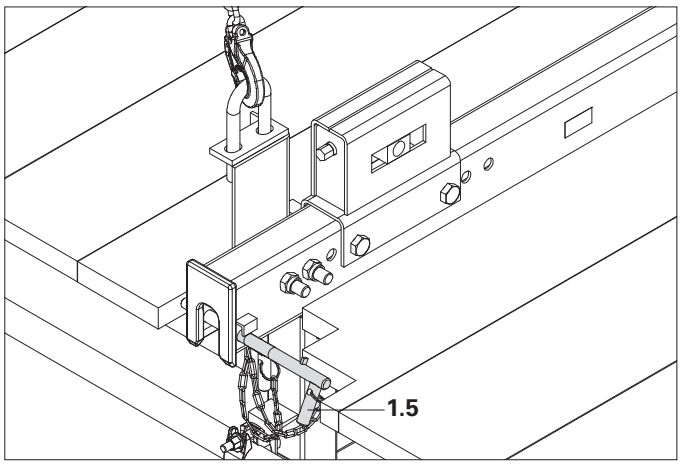


Fig. B1.20

Mounting the CB 160 climbing platform to the first wall section

Assembly

4. Lift platform and pivot over the scaffold mounting rings.
   (Fig. B1.21)
5. Bring platform into position and simultaneously lower without tilting.

Troubleshooting

– If no connection is made with the scaffold mounting rings (5.6) or the brackets (1.1) jam, lift the platform and lower again.
– If the bracket spacing does not match that of the scaffold mounting rings, check the distance of the leading anchor to the formwork.
– If the mounting procedure is not possible, the bracket spacing must be corrected through the re-assembly of the platform.

Do the brackets (1.1) hang in both scaffold mounting rings M24 (5.6)?

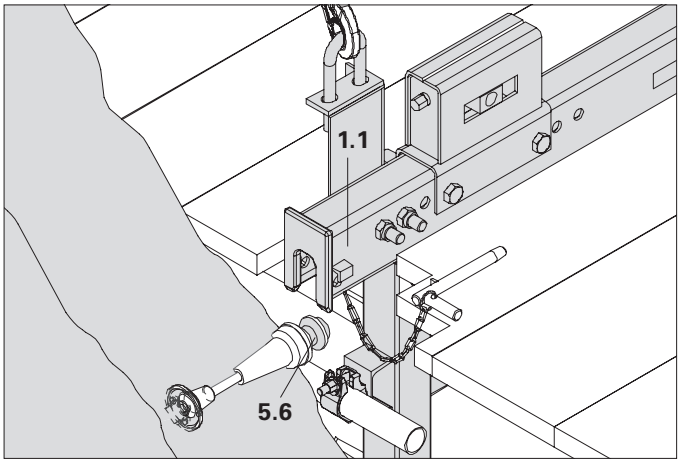


Fig. B1.21

Securing the platform

If the securing bolts cannot be inserted, repeat the procedure!

Assembly

1. Enter platform.
2. Insert safety pins (1.5) into the opening under the Scaffold Mounting Ring (5.6) and secure by turning to a vertical position.
   (Fig. B1.22)
3. Remove crane hook.
   Mounting of formwork, see B2 / B3.

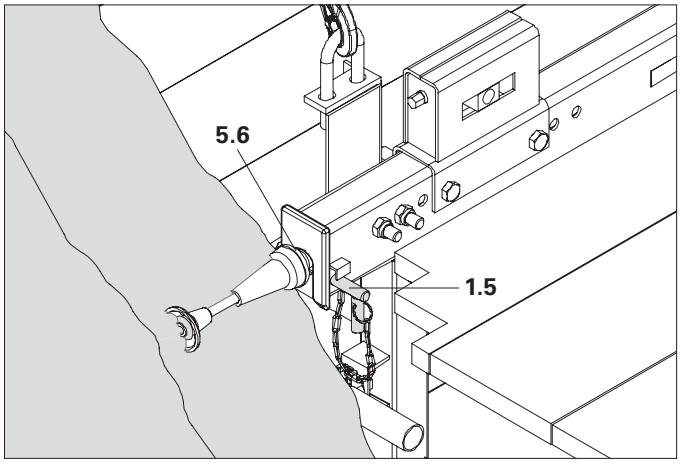


Fig. B1.22

B1 Work on the construction site

Mounting of the finishing platform CB 160

Preparation

1. Remove tacked on planking parts from both sides of the platform beam.
2. Attach 4-sling lifting gear to the four bolts and move finishing platform to the assembly area. (Fig. B1.23)

Connecting to the brackets

Connections are done using Bolts M16 x 130 ISO 4014-8.8 and self-securing nuts (9.6) (supplied with components). Initially, only loosely tighten bolts for the articulated connections.

Fig. B1.23

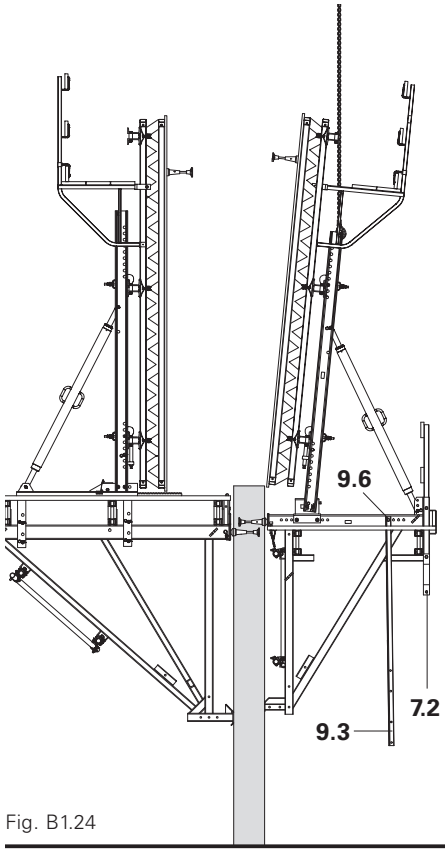


Fig. B1.24

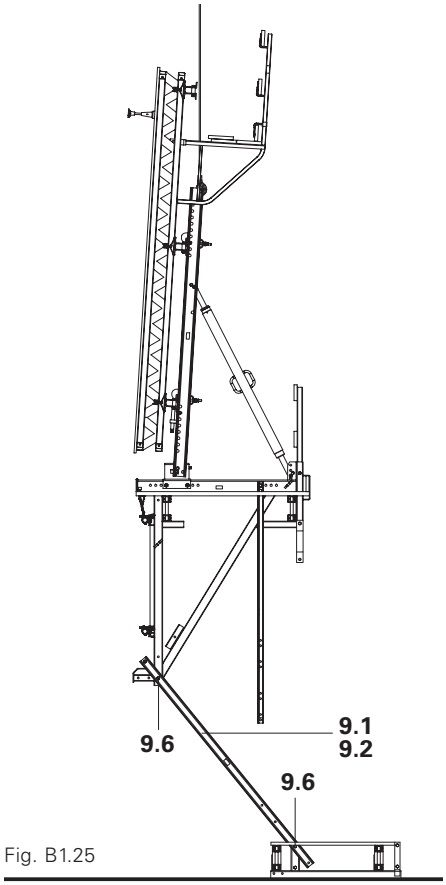


Fig. B1.25

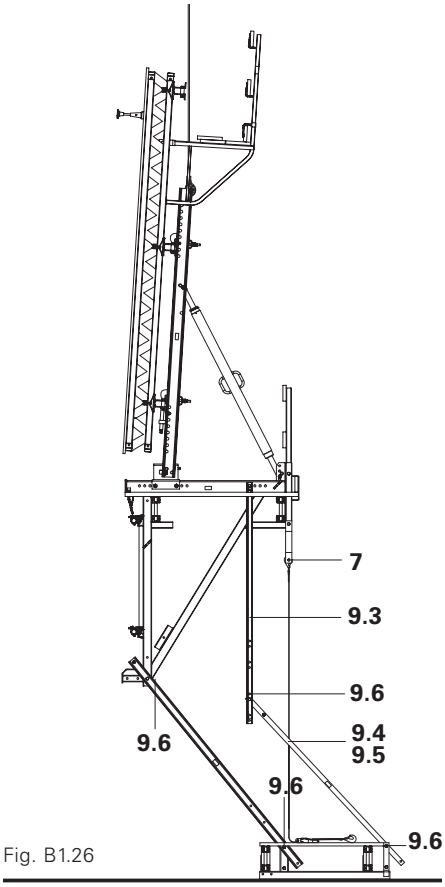


Fig. B1.26

1. Connect Guardrail Post 200 (9.3) to the bracket and tighten bolts (9.6). Bolt on top part of the wind bracing (7.2), see B1 Assembly of wind bracing.
2. Attach platform unit to strongback and lift out of the anchoring. Do not exceed crane capacity, see B4. (Fig. B1.24)
3. Pivot platform unit over the finishing platform.
4. Bolt Platform Post 225 (9.1) to post extension 180 (9.2) and fix to the bracket and finishing platform at an angle with bolt (9.6). (Fig. B1.25) Depending on the concreting height, use top or bottom hole. (Fig. B1.26)
5. Fix the Guardrail Post 190 (9.4) or Guardrail Post 370 (9.5) to Guardrail Post 200 (9.3) at an angle using bolt (9.6). Depending on the concreting height, use top or bottom hole. (Fig. B1.26a – d) Attach wind bracing (7), see B1.
6. Fix the toe board at the lower end. (Fig. B1.26)

B1 Work on the construction site

Mounting the finishing platform CB 160

Fixing points for the Platform Posts CB 225 and Guardrail Posts CB 190 and 370.
Firstly, only loosely tighten the bolt (9.6) for an articulated connection.

Concreting height 1.50 – 3.10 m
Distance of the working platform to the finishing platform 3.65 m.
Required free space: ≥ 0.42 m
Mark out Platform Post CB 225 (9.1) and Guardrail Post 190 (9.4) at the top.
(Fig. B1.26a)

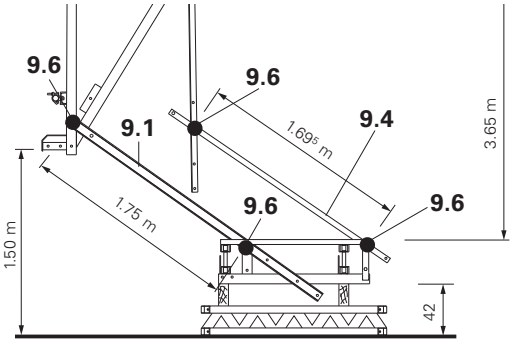


Fig. B1.26a

Concreting height 2.00 – 3.60 m
Distance of working platform to the finishing platform 4.15 m.
Mark out Platform Post CB 225 (9.1) and Guardrail Post 190 (9.4) at the bottom.
(Fig. B1.26b)

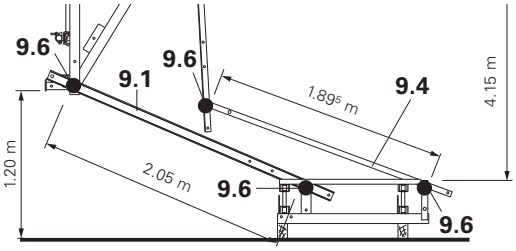


Fig. B1.26b

Concreting height 3.30 – 4.90 m
Distance of the working platform to the finishing platform 5.45 m.
Firmly bolt the Platform Post CB 225 (9.1) to the Post Extension CB 180 (9.2).
Mark out the Handrail Post CB 370 (9.5) at the top.
(Fig. B1-26c)

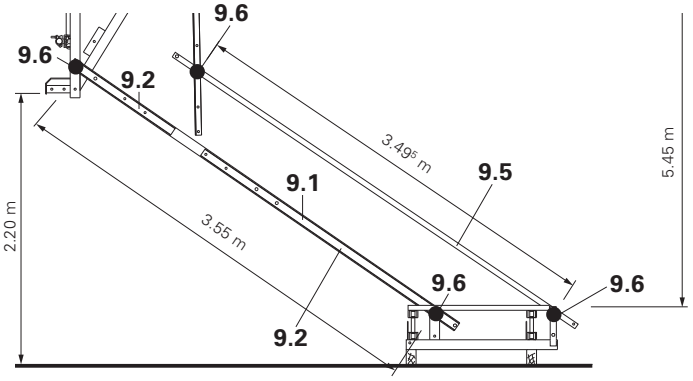


Fig. B1.26c

Concreting height 3.80 – 5.40 m
Distance of the working platform to the finishing platform 5.95 m.
Firmly bolt the Platform Post CB 225 (9.1) to the Post Extension CB 180 (9.2).
Mark out the Handrail Post CB 370 (9.5) at the bottom.
(Fig. B1.26d)

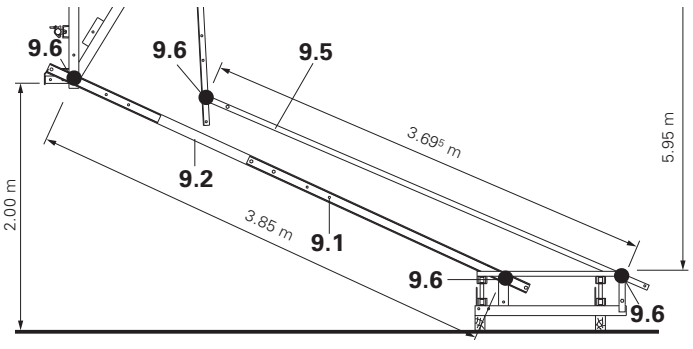


Fig. B1.26d

B1 Work on the construction site

Fitting of the finishing Platform CB 160

Finishing tasks

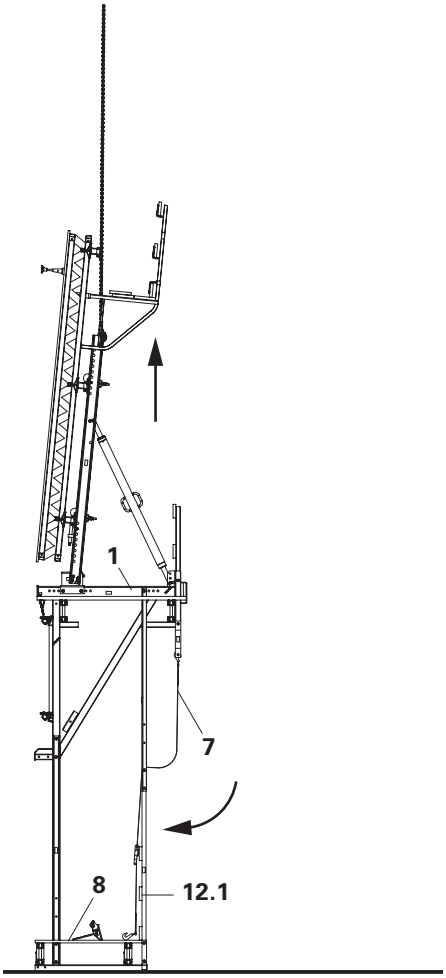


Fig. B1.27

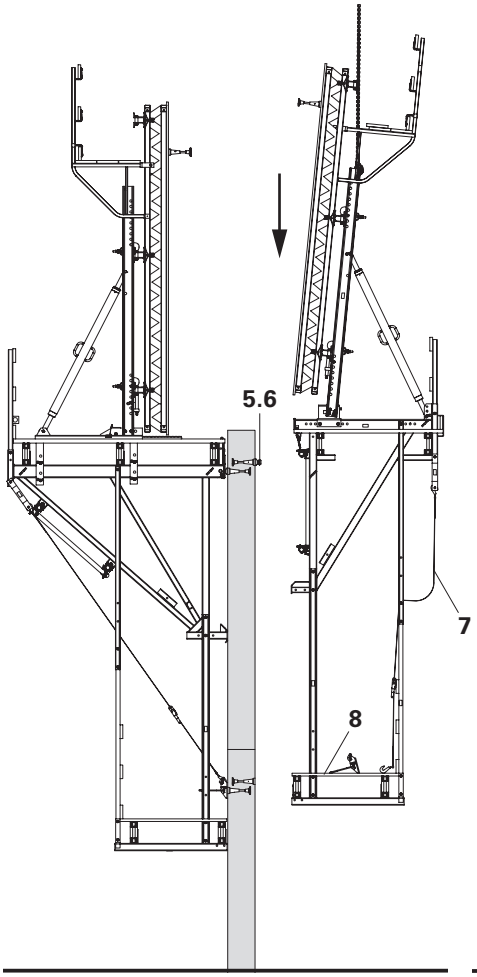


Fig. B1.28

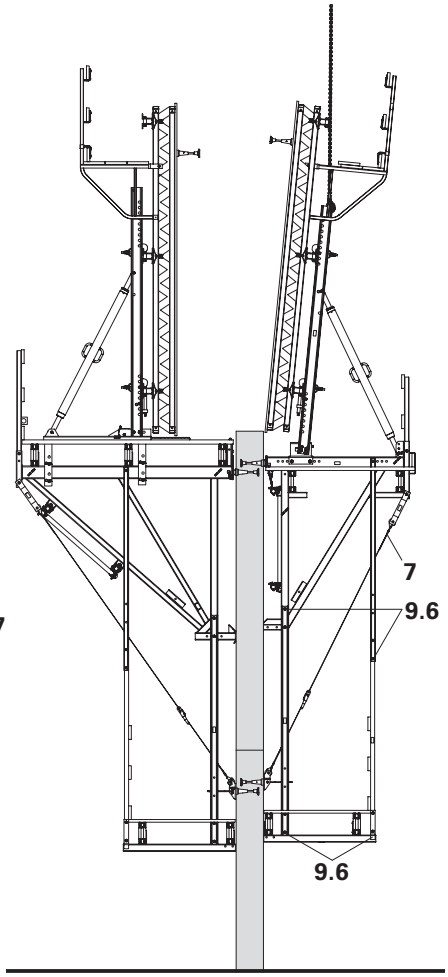


Fig. B1.29

7. Slowly lift the platform unit.
   The finishing platform (8) pivots under the working platform (1).
8. Safety rails: attach guardrails (12.1) to the edge platforms by means of coach screws M8 x 70, see C1 Guardrails. (Fig. B1.27)
   Alternative: safety rails can also be mounted after installing the platform unit if suitable measures are in place.
9. Lower the platform unit from the structure and attach it to the Scaffold Mounting Ring (5.6) in the next climbing cycle, see B4.
10. Close the planking on the finishing platform (8).
    (Fig. B1.28)
11. Mount the missing Bolts M16 x 130 ISO 4014-8.8 with Nuts (9.6) ISO 7042. Tighten bolts.
12. Mount wind bracing (7), see B1 Assembly of wind bracing.
    (Fig. B1.29)

For controlled moving guide ropes are to be used.

Assembly of wind bracing

With tension belt 25 kN
Permissible tension anchor force
Z_Z = 25 kN.

1. Attach Belt Connector CB (7.2) with Bolt M16 x 100, SW 24, to the vertical tube of the bracket (1.2).
2. Mount tension belt (7.1) to the bolts using the end of the belt without turnbuckle. (Fig. B1.30)
3. Loosen scaffold mounting ring and Bolt M24 x 120 (5.6) on the previous concreting segment with Socket Wrench SW 36 and remove. (Fig. B1.31)
4. Fix Bracing Shoe Wall CB M24 (6.1) to the cone using Bolt M24 x 70 (5.14) SW 36, after the bolts have been removed from the tension plate (6.2). Re-insert tension plate through the platform post and re-bolt in the bracing shoe. (Fig. B1.32)
5. Unroll tension belt (7.1) from ratchet.
6. Attach tension belt (7.1) below in the Bracing Shoe Wall CB M24 (6.1) and tighten. (Fig. B1.33)

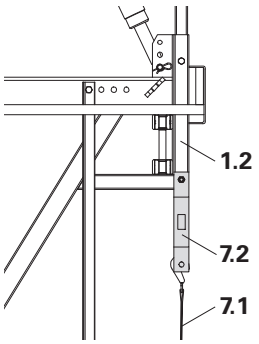


Fig. B1.30

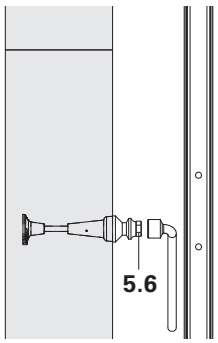


Fig. B1.31

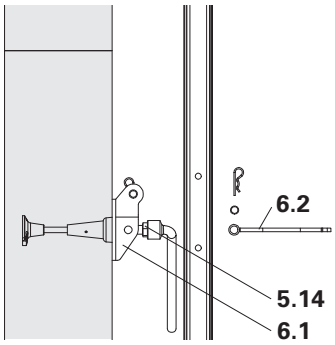


Fig. B1.32

– If lateral stabilisation of the finishing platform is not required, then the Belt Connector Wall (6.3) can also be used instead of the bracing shoe. (Fig. B1.33a)
– For the use and care of tension belts, see EN 12195-2, Appendix B.

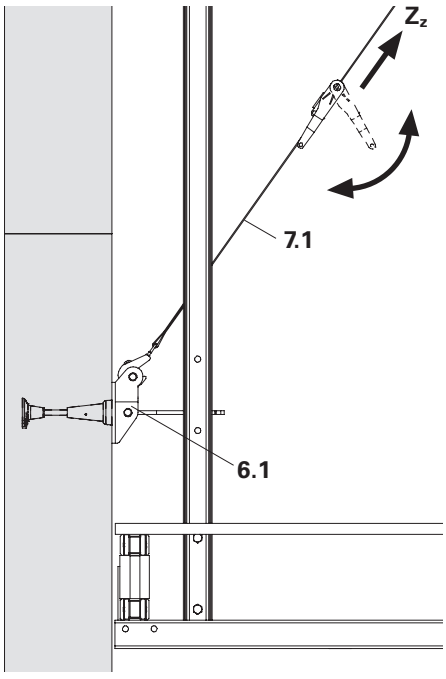


Fig. B1.33

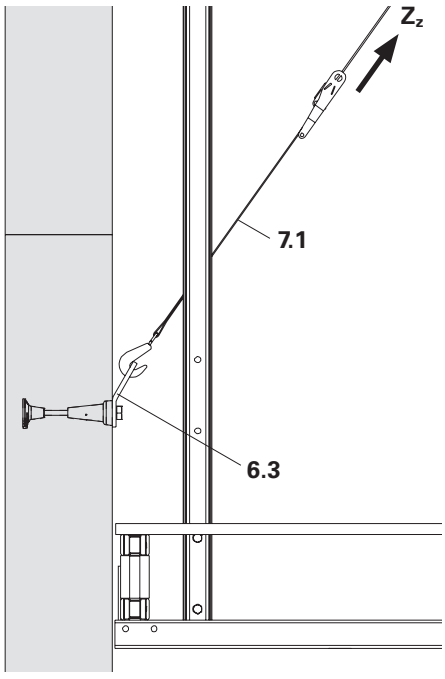


Fig. B1.33a

B1 Work on the construction site

Assembly of wind bracing

With Tie Rod DW 15
Permissible tension anchor force
Z_Z = 41 kN.

1. Fix Tension Anchor Connector CB (7.3) with designated Bolt M16 x 100, SW 24, to vertical tube of the bracket (1.2). (Fig. B1.34a)
2. Screw in the DW 15 Tie Rod (7.4) into the nut of the Tension Anchor Connector (6.2). (Fig. B1.34b)
3. Loosen scaffold mounting ring and Bolt M24 x 120 on the previous concreting segment with Socket Wrench SW 36 and remove. (Fig. B1.31)
4. Fix Bracing Shoe Wall CB M24 (6.1) to the cone using Bolt M24 x 70 (5.14) SW 36, after the bolts have been removed from the tension plate (6.2). Re-insert tension plate through the platform post and re-bolt in the bracing shoe. (Fig. B1.32)
5. Turn Turnbuckle CB Ø 25-M20L/DW 15 (7.6) on the tie rod (7.4) (Fig. B1.34c). Roughly adjust length by turning the tie rod. Fine adjustment by turning the turnbuckle.
6. Insert eyelet bolt Ø 25-M20L (7.5) into the bracing shoe (6.1) and secure with designated bolts and cotter pins. (Fig. B1.34d)
7. Turn turnbuckle, e.g. with shortened tie rod, thus tensioning the wind bracing. (Fig. B1.34f)

If lateral stabilisation of the finishing platform is not required, then the Wall Tension Anchor (6.4) can also be used. Loosen turnbuckle, turn on tie rod and insert into the tension anchor connector. (Fig. B1.34e)

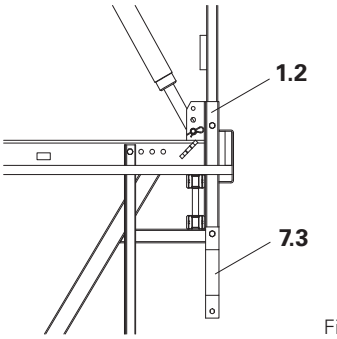


Fig. B1.34a

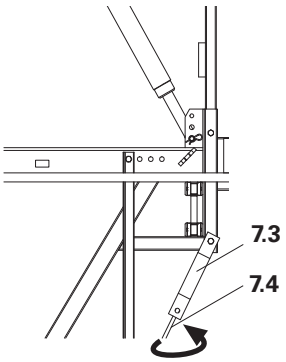


Fig. B1.34b

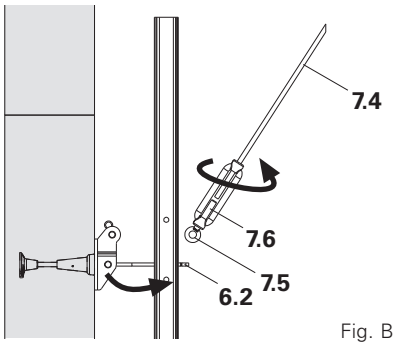


Fig. B1.34c

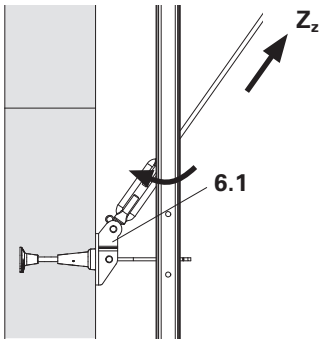


Fig. B1.34d

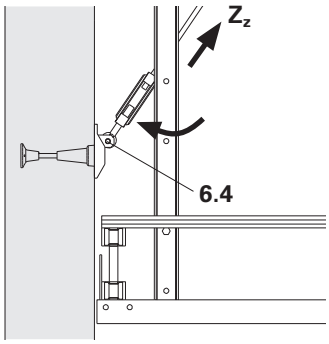


Fig. B1.34e

Fig. B1.34f

Formula for calculating the length of the DW 15 Tie Rod.

With Bracing Shoe Wall CB M24

$$L = \sqrt{(H - 22.5)^2 + 232.6^2} - 51$$

With Wall Tension Anchor

$$L = \sqrt{(H - 16.4)^2 + 233.6^2} - 51$$

H = Concreting height in cm = vertical spacing of the climbing anchor
L = Tie rod length in cm

B1 Work on the construction site

Removal of the climbing cones

Assembly

1. Remove Scaffold Mounting Ring M24 or wind bracing.
2. Loosen cone using Socket Wrench SW 36. (Fig. B1.35a)
3. Unscrew cone by hand. (Fig. B1.35b)

For architectural concrete or gas/water impermeability of the wall, the cone hole can be closed with PERI Sealing Cones KK.
See PERI Tie Technology or contact your PERI sales engineer.
(Fig. B1.35c)

Fig. B1.35a

Fig. B1.35b

Fig. B1.35c

Dismantling

Disassembly

1. Dismantle formwork.
2. Attach 4-sling lifting gear to the platform mountings (1.4).
3. Remove safety bolts (1.5).
4. Lift working platform out of anchoring and disassemble finishing platform. (Fig. B1.36)
5. Set down working platform on assembly area and dismantle.
6. Remove anchors from building ensuring that personnel are always in a safe working position.

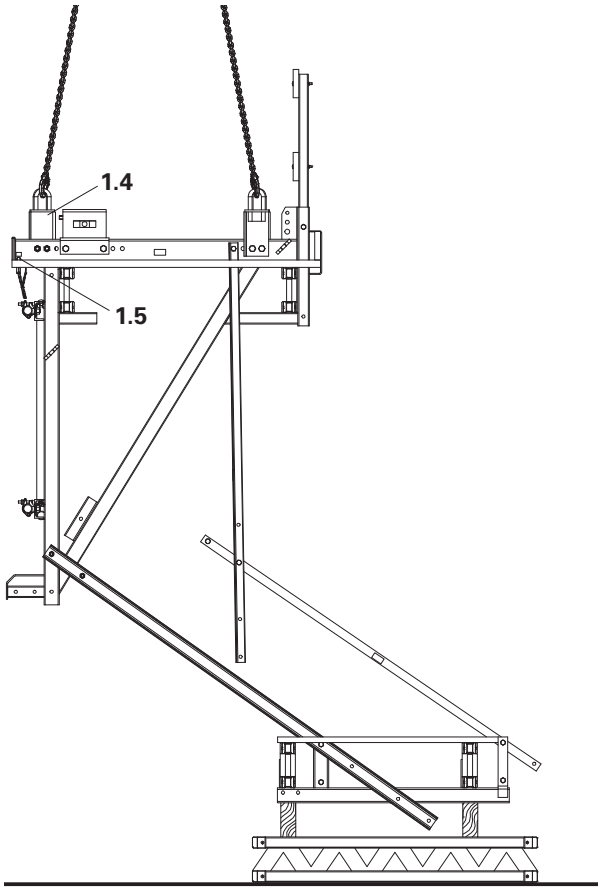


Fig. B1.36

B1 Work on the construction site

Ladder assembly

Overview
Mounting of ladder is dependent on the position of the finishing platform.
There are four concreting heights.
(Fig. B1.37a – B1.37d)
For assembly of (hinged) hatch cover see A2.

If the safety cage is not used on the ladder, then the guardrails on the finishing platform are to be mounted up to the top or a safety net is to be installed!

Concreting height 1.50 – 3.10 m

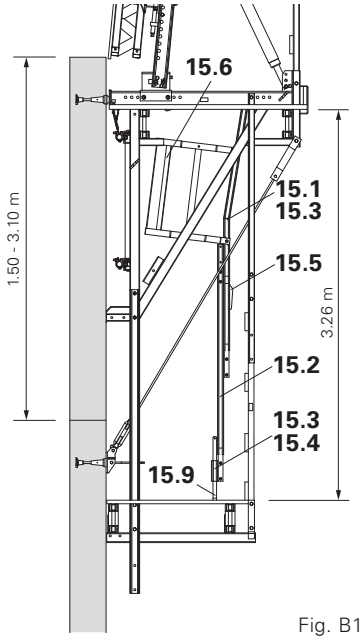


Fig. B1.37a

Concreting height 2.00 – 3.60 m

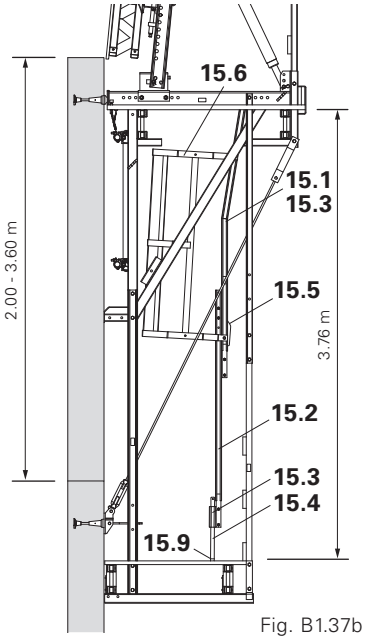


Fig. B1.37b

Concreting height 3.30 – 4.90 m

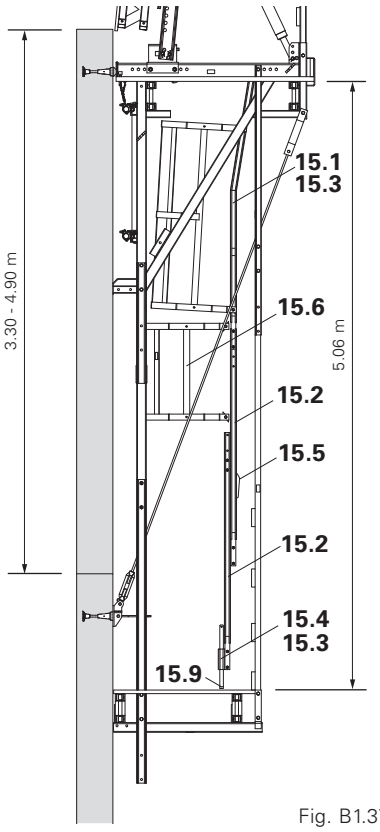


Fig. B1.37c

Concreting height 3.80 – 5.40 m

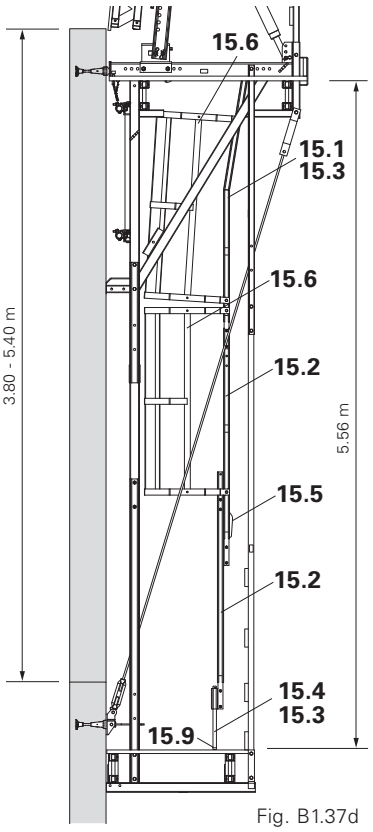


Fig. B1.37d

B1 Work on the construction site

Ladder assembly

Pre-assembly of ladder

1. Use ladders:
   Top: Ladder 220/6 (15.1)
   Bottom: Ladder 180/6 (15.2)
2. Connect ladders with bolts SW 19 (15.3). (Fig. B1.50)
3. Mount Ladder Base (30) (15.4) using bolts SW 19 (15.3). (Fig. B1.38)

If the ladder is of a hang-in type, fix ladder hook (15.5) with bolts SW 19 (15.7). (Fig. B1.39)

When mounting the ladder, the rungs of both ladders must be at the same level. (Fig. B1.40)

Attaching the ladder to the hatch

1. Lift ladder using crane. Lower ladder through hatch opening.
2. Fix ladder to hatch from the top, bolts SW 19 (14.3) (2x). (Fig. B1.41)

Mounting the ladder base

1. For horizontal mounting of the ladder, tightly screw the drawn-out bracket of the Ladder Base 30 to the planking with 3 Torx TSS 6 x 40 (15.9).

Mounting the ladder safety cage

1. Bring and hold ladder safety cage (15.6) in position using a rope.
2. Slightly loosen bolts SW 19 (15.7) (4x) on clamping plate (15.8), position clamping plate on the ladder longitudinal members, and tighten screws. (Fig. B1.42)

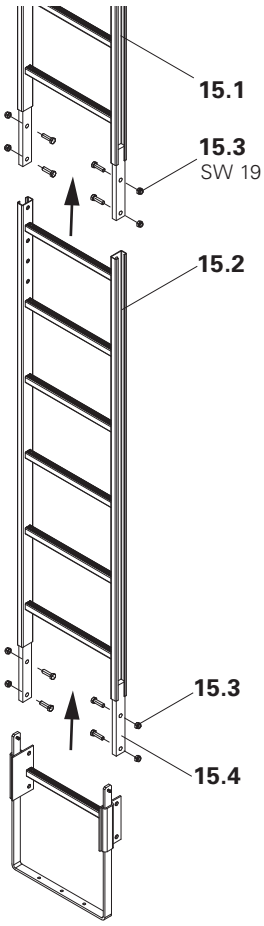


Fig. B1.38

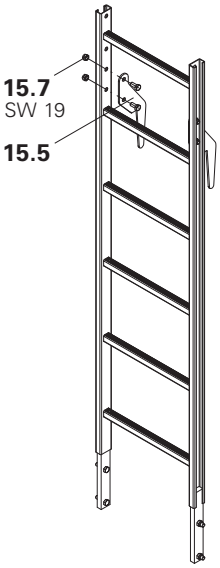


Fig. B1.39

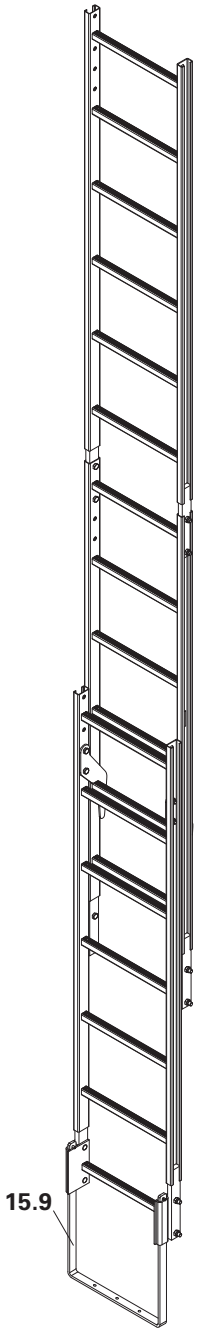


Fig. B1.40

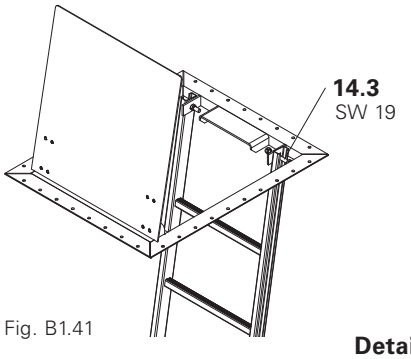


Fig. B1.41

Detail

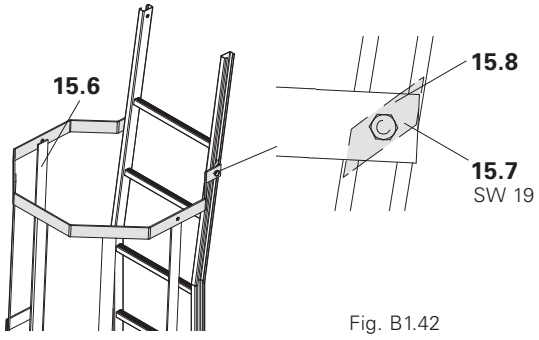


Fig. B1.42

B2 Assembly of formwork elements

VARIO GT 24 element

Assembly of Strongback CB on the VARIO GT 24 element

1. Lay Strongback CB 270 or CB 380 (4) on the steel waler of the VARIO GT 24 formwork according to the bracket spacing. Bottom projecting length: see Planning or C1. (Fig B2.01)
2. Mount Waler Fixation U 100 – U120 (4.4) and secure in position by tightening the quick jack nut. (Fig. B2.02)
3. Fix Height Adjusting Unit (4.3) with bolts Ø 25 x 180 (4.6) and cotter pin to the Strongback CB. (Fig. B2.03)
4. Turn height adjusting unit spindle (4.8) against the formwork waler.

The Waler Fixation U100 - U120 can be attached to the SRZ steel walers U100 and U120.

Fig. B2.01

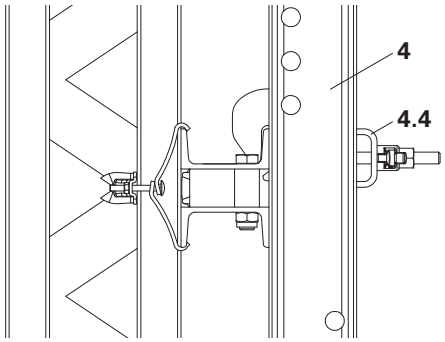


Fig. B2.02

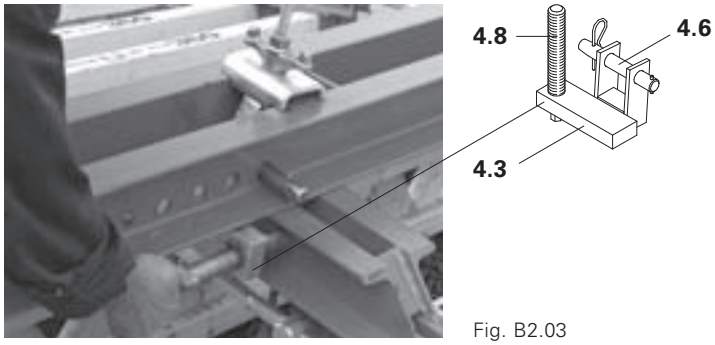


Fig. B2.03

In order to prevent the strongbacks from being pulled out of position at any time, a piece of timber (4.10) has to be clamped between the top ends of the strongbacks, see C1 Moving (Fig. B2.04)

Alternatively, use Lifting Beam RCS 10 t (Item no. 112986) for moving.

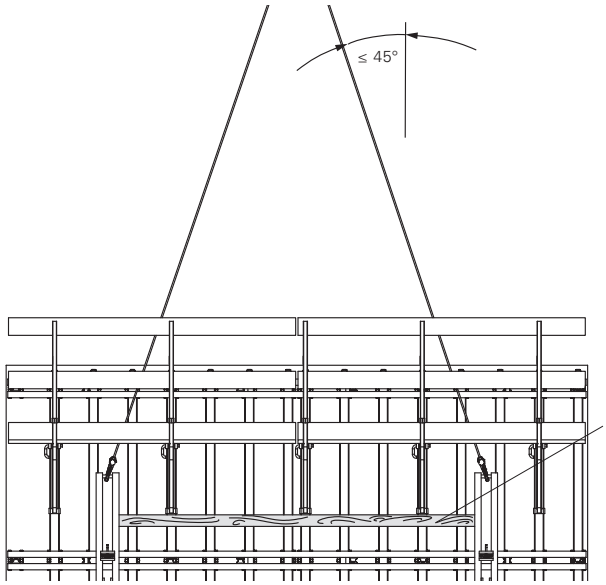


Fig. B2.04

B2 Assembly of formwork elements

VARIO GT 24 element

Assembly of VARIO GT 24 formwork element on CB 160 Bracket

1. Completely move back the sliding block (2.1) of the Adjusting Unit CB 160 (2), SW 19, see B3. (Fig. B2.05a)
2. Open or cut out decking (10.3) of the concreting platform (10.2) in the area of the strongback. Secure loose decking components.
3. Attach formwork with concreting platform (10) to the strongback (4) and position on the platform. (Fig. B2.05b)
4. Fix strongback to the adjusting unit by means of bolts Ø 25 x 180 and cotter pins (4.6). Standard case: use those holes in the strongback facing the wall. (Fig. B2.05c)
5. Fix Adjustable Brace 164-224 (3.1) to the bracket using bolts and cotter pins (3.2). Spindle to approx. length and attach to strongback. (Fig. B2.05c)
6. Detach lifting gear. Close decking (10.3) on concreting platform.
7. Move sliding block (2.1) in the adjusting unit with formwork to the wall, SW 19. (Fig. B2.05d)
8. Align formwork, see B3.

For controlled moving a guide ropes are to be used.

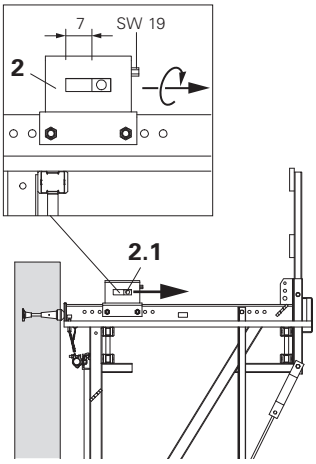


Fig. B2.05a

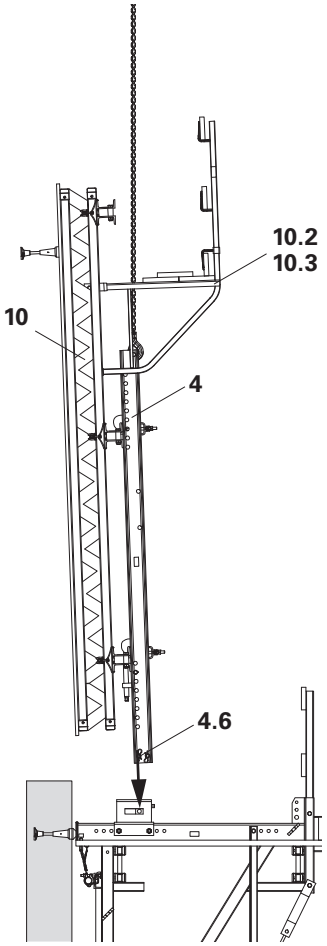


Fig. B2.05b

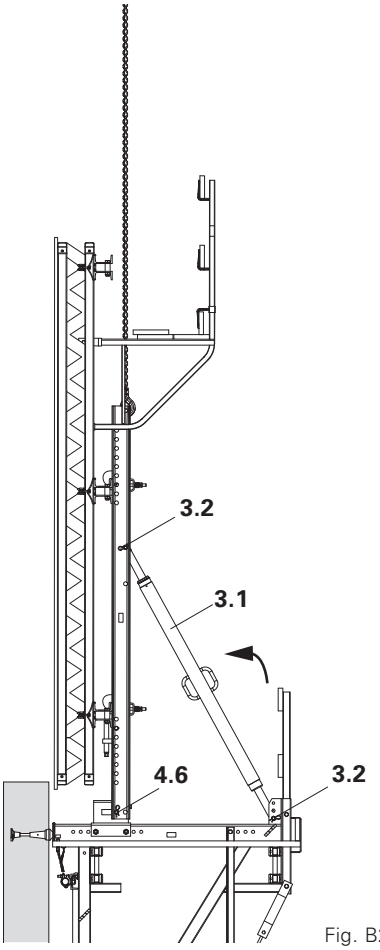


Fig. B2.05c

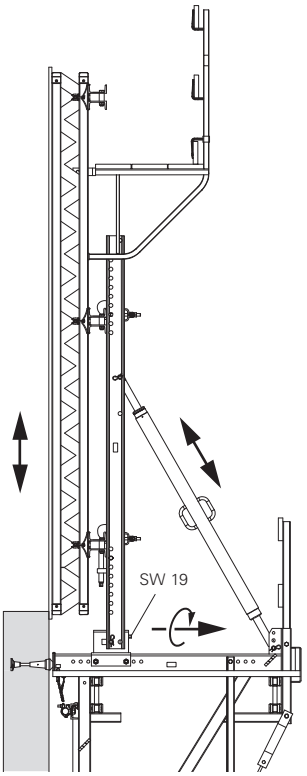


Fig. B2.05d

B2 Assembly of formwork elements

VARIO GT 24 element

Moving of VARIO GT 24 elements

Follow the instructions of use for the Crane Splice 24!

Dismantling

1. Move back the sliding block (2.1) in the adjusting unit, SW 19, and laterally brace the strongbacks.
2. Attach formwork (10) to Crane Splice 24 (10.6) and tension lifting gear.
3. Remove all Waler Fixations U100 – U120 (4.4).
4. Lift formwork and remove (e.g. storage area). (Fig. B2.06)

When laying the formwork down, the guardrail (10.5) on the concreting platform (10.2) must be removed in order to avoid any damage caused by the lifting gear.

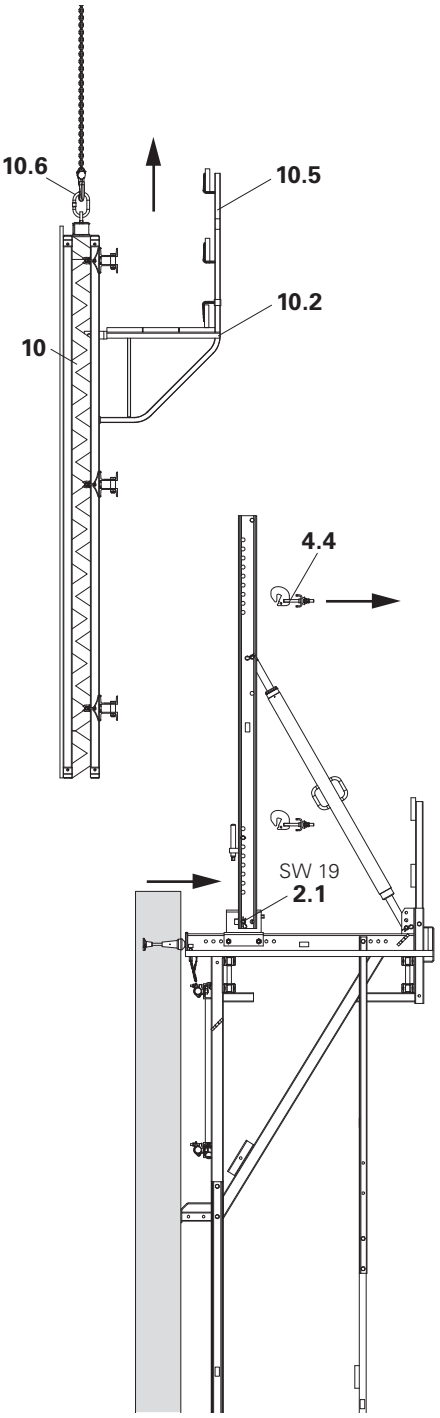
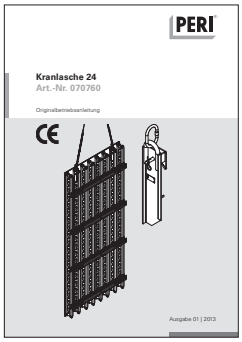


Fig. B2.06



B2 Assembly of formwork elements

VARIO GT 24 element

Moving of VARIO GT 24 elements

Preparation for initial assembly

1. Move back the sliding unit (2.1) in the adjusting unit, SW 19, see B3.
2. Fix Strongback CB (4) to the adjusting unit by means of bolts Ø 25 x 180 and cotter pins (4.6).
3. Attach Adjustable Brace (3.1) to strongback using bolts Ø 25 x 180 and cotter pins (3.2) and laterally brace strongbacks.

Assembly

4. Check that the Height Adjusting Unit (4.3) is in the correct position and adjust if necessary.
5. Lower formwork (10) with the bottom waler (10.4) onto the height adjusting unit. Lifting gear remains tensioned.
6. Fix strongback connector (4.4) to the walers. (Fig. B2.07)
   Detach lifting gear.
7. Move sliding block (2.1) in the adjusting unit to the wall, SW 19.
8. Align formwork, see B3.
   (Fig. B2.08)

Attention must be paid to ensure that the strongback does not collide with the Scaffold Bracket GB 80 (10.2) or decking (10.3). If necessary, remove scaffold bracket and decking.

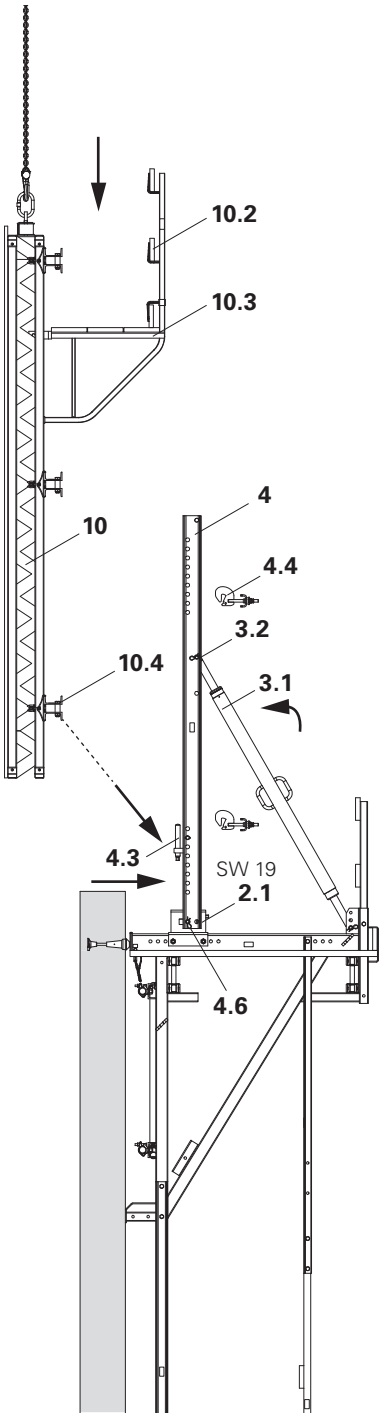


Fig. B2.07

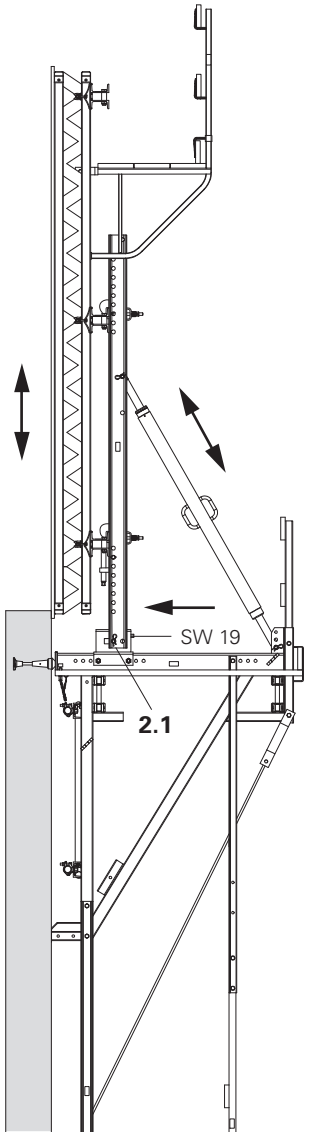


Fig. B2.08

B2 Assembly of formwork elements

TRIO eElement

Mounting of Strongback CB on TRIO elements

1. Assemble TRIO elements on the assembly area to form formwork units.
2. Fix Connector TRIO-CB (4.5) to panel struts with bail pin Ø 25 (4.7), see plans for arrangement.
   Centre distance = bracket spacing.
   By changing the mounting position of the adjusting spindle (4.8), the Connector TRIO-CB can be used cantilevering on the left or right.
   (Fig. B2.09 + B2.10)
   Connections are possible on horizontal and vertical panel struts through repositioning of the bail pins.
   (Fig. B2.11 - B2.14)
3. Place Strongback CB (4) on the connectors. Bottom projecting length: see project drawings or C1.
4. Attach Strongback CB to bottom connector using bolts and cotter pins (4.6).
5. Adjust height on bottom connector using adjusting spindle (4.8).
6. Adjust height of top connector.
7. Fix Strongback CB at top connector TRIO-CB.
   (Fig. B2.15)

Connector TRIO-CB

left cantilevering

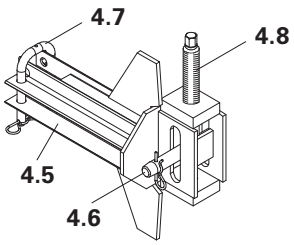


Fig. B2.09

right cantilevering

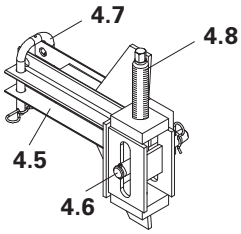


Fig. B2.10

On horizontal struts

left cantilevering

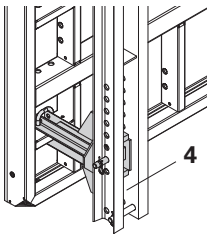


Fig. B2.11

right cantilevering

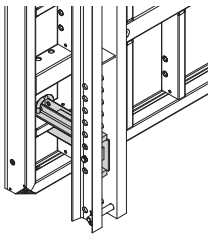


Fig. B2.12

On vertical struts

left cantilevering

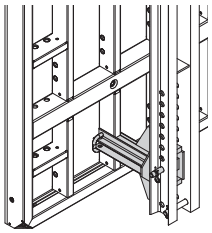


Fig. B2.13

right cantilevering

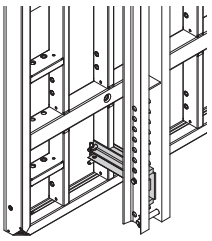


Fig. B2.14

Fig. B2.15

In order to prevent the strongbacks from being pulled out of position at any time, a piece of timber (4.10) is clamped between the top ends of the strongbacks, see also C1 Moving. (Fig. B2.16)

Alternatively, use Lifting Beam RCS 10 t (Item no. 112986) for moving.

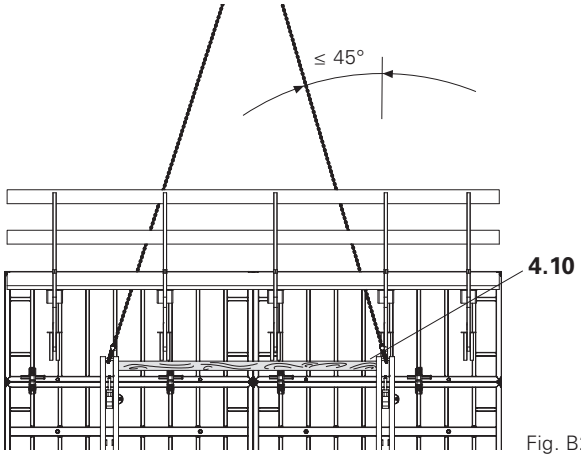


Fig. B2.16

B2 Assembly of formwork elements

TRIO element

Mounting of formwork element on CB 160 Bracket

1. Move back the sliding block (2.1) in the adjusting unit (2), SW 19, (Fig. B2.17).
2. Open concreting platform decking (10.3) above the strongback. Secure loose decking components.
3. Attach formwork unit (10) with concreting platform to the strongback (4) and position on the platform. (Fig. B2.18)
4. Fix strongback to the adjusting unit by means of bolts Ø 25 x 180 and cotter pins (4.6). Standard case: use those holes in the strongback facing the wall. (Fig. B2.18)
5. Fix Adjustable Brace 164-224 (3.1) to bracket using bolts and cotter pins (3.2). Spindle to approx. length and attach to strongback. (Fig. B2.19)
6. Detach lifting gear. Close decking (10.3) on concreting platform.
7. Move sliding block (2.1) in the adjusting unit with formwork to the wall, SW 19.
8. Align formwork, see B3. (Fig. B2.20)

For controlled moving a guide ropes are to be used.

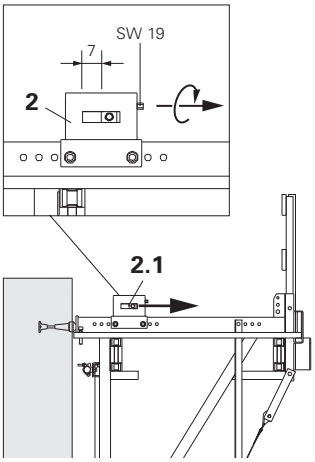


Fig. B2.17

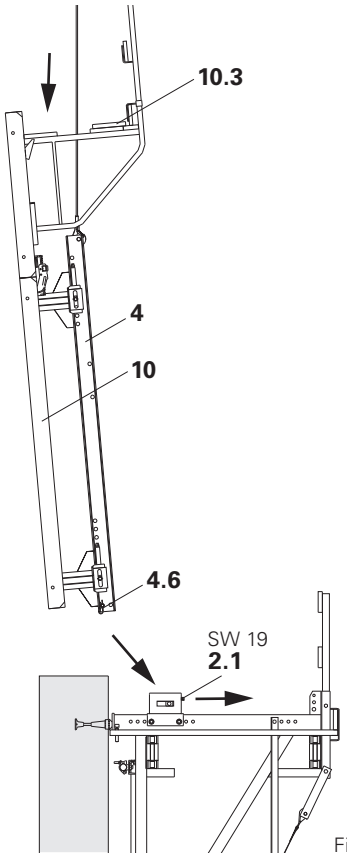


Fig. B2.18

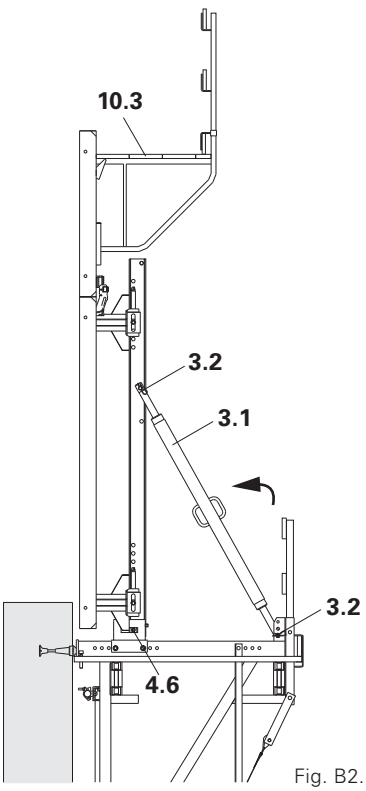


Fig. B2.19

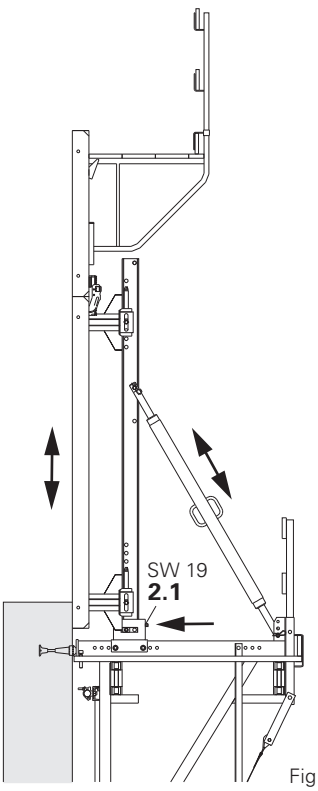


Fig. B2.20

B2 Assembly of formwork elements

TRIO element

Exchange of formwork

Follow Instructions for Use: Lifting Hook MAXIMO 1.5 t!

Dismantling

1. Move back the sliding block (2.1) in the adjusting unit, SW 19, and laterally brace the strongbacks.
2. Fix TRIO Lifting Hook (10.6) to the formwork unit (10) and then attach lifting gear.
3. Tension lifting gear.
4. Release bail pin of the Connectors CB (4.5).
5. Lift formwork and remove (e.g. storage area).
   (Fig. B2.21)

When laying the formwork down, the guardrail (10.5) on the concreting platform (10.2) must be removed (by customer) in order to avoid any damage through the lifting gear.

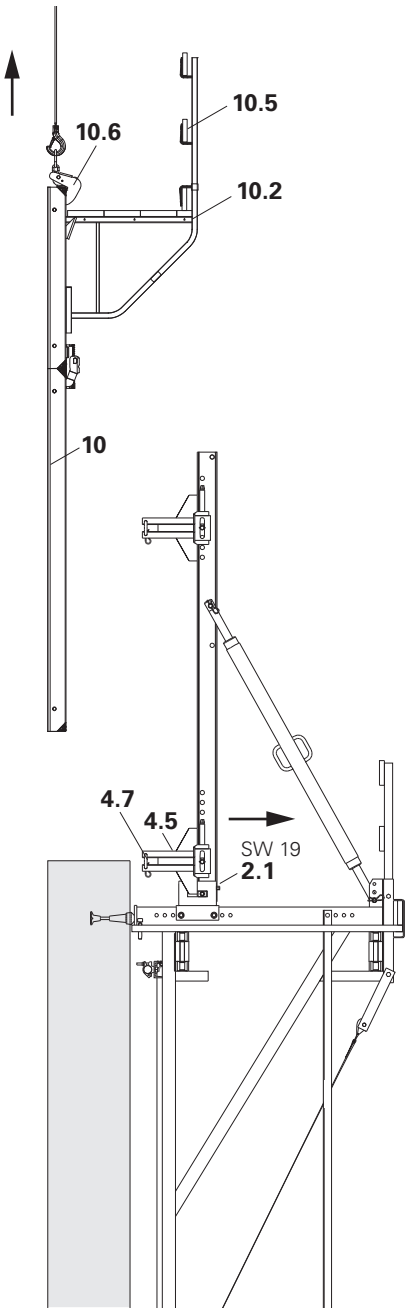
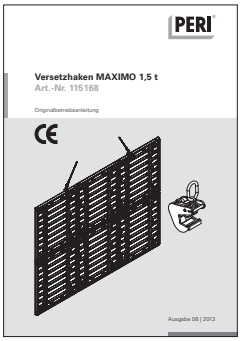


Fig. B2.21



B2 Assembly of formwork elements

TRIO element

Exchange of formwork elements

Preparation for initial assembly

1. Move back the sliding unit (2.1) in the adjusting unit, SW 19, see B3.
2. Fix Connectors CB (4.5) to the Strongback CB (4) using bolts Ø 25 x 180 and cotter pins (4.6).
3. Fix strongback to the adjusting unit by means of bolts ø 25 x 180 and cotter pins (4.6).
4. Attach Adjustable Brace (3.1) to bracket and strongback using bolts ø 25 x 180, cotter pins (3.2) and laterally brace strongbacks.

(Fig. B2.22)

Assembly

5. Insert formwork unit (10) with MAXIMO Lifting Hook (10.6) into the Connectors CB (4.5) and secure using bail pin (4.7).
6. Remove lifting gear and lifting hook.
7. Move sliding block (2.1) in the adjusting unit to the wall, SW 19.
8. Align formwork, see B3.
   (Fig. B2.23)

Attention must be paid to ensure that the strongback does not collide with the TRIO Scaffold Bracket TRG 80 (10.2) or decking (10.3). If necessary, remove scaffold bracket and decking.

Check the clearance of the top height adjustment, ≥ 5 mm.

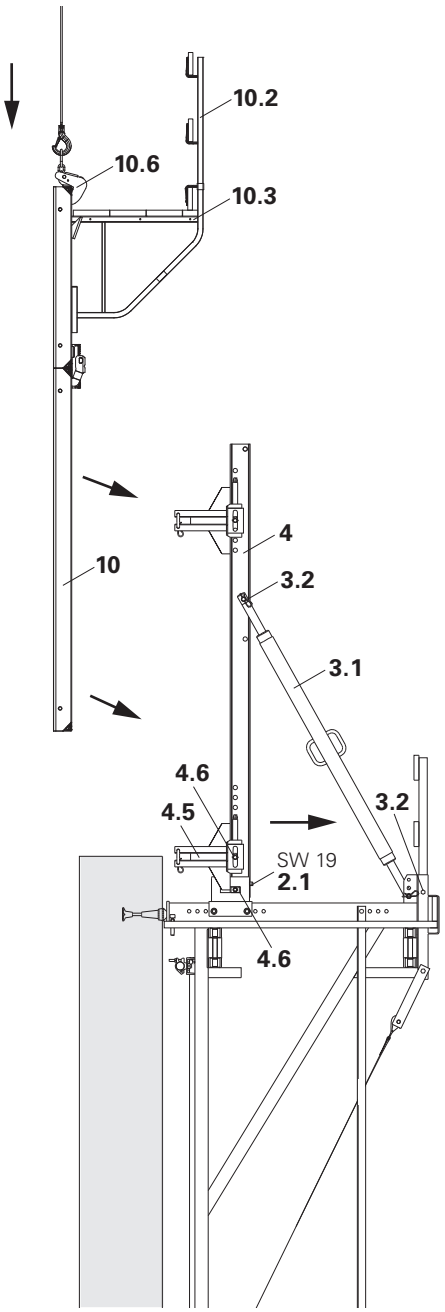


Fig. B2.22

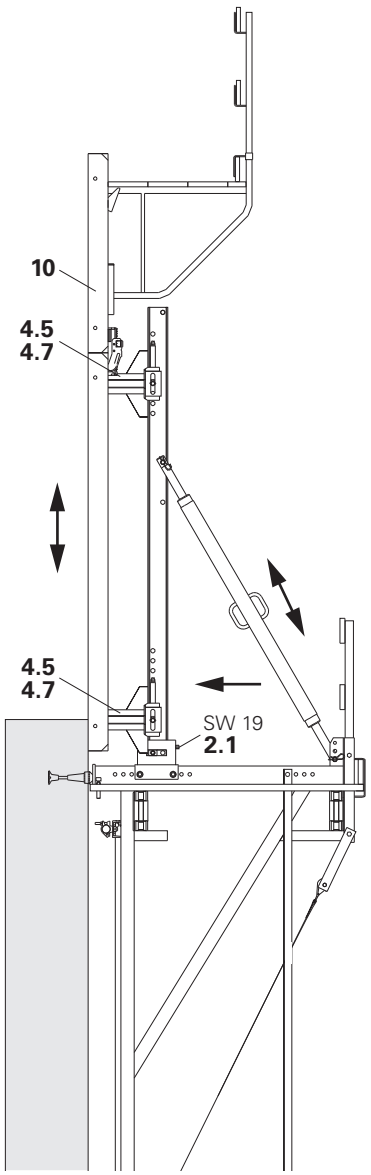


Fig. B2.23

B3 Formwork Utilisation

Utilisation of adjusting unit CB 160

Adjusting Unit
Adjusting Unit CB 160 (2)
Sliding block with hole Ø 26 (2.1)
Adjusting bolt SW 19 (2.2)
Hex. bolt ISO 4014 (2.3)
M20 x 150-8.8 and nut
ISO 7042 (2x)
Ratchet Lever SW 19 (2.5)
(Fig. B3.01)

After using the adjusting unit, the inclination of the formwork must be checked and adjusted.

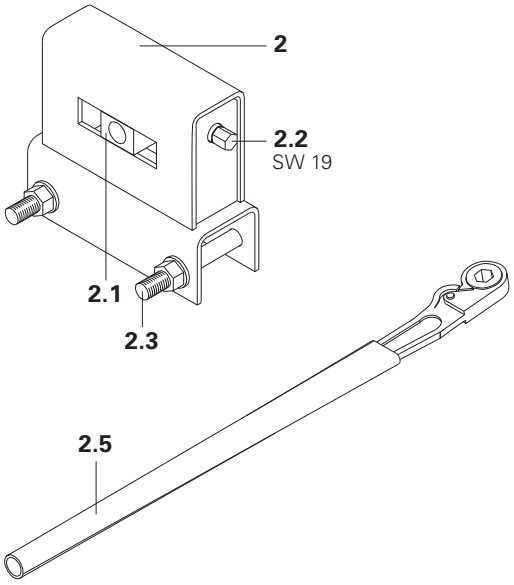


Fig. B3.01

Moving the formwork to the wall

Turn the adjusting bolt SW 19 (2.2) in an anti-clockwise direction. The sliding block (2.1) then moves to the wall.
(Fig. B3.02)
Adjusting range: max. 7 cm

Moving the formwork away from the wall

Turn the adjusting bolt SW 19 (2.2) in a clockwise direction. The sliding block (2.1) then moves away from the wall.
(Fig. B3.03)

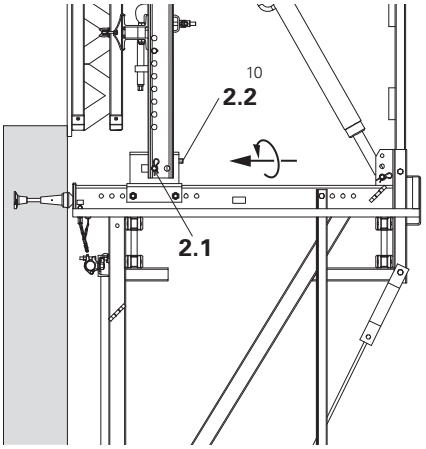


Fig. B3.02

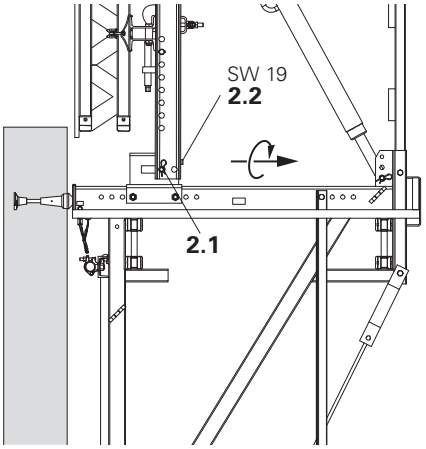


Fig. B3.03

B3 Formwork Utilisation

Formwork alignment

Height adjustment with the Connector TRIO-CB

1. On the top Connector, alter the adjusting spindle (4.8) for necessary clearance.
2. On the lower Connector, lower adjusting spindle (4.8) onto the locking pin (4.6).
   (Fig. B3.05)
3. Turn adjusting spindle using the ratchet lever SW 19 and bring formwork into position.
   Depending on the rotational direction, the formwork moves upwards or downwards.
   (Fig. B3.04)

Fig. B3.04

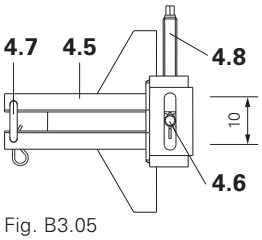


Fig. B3.05

Is there enough clearance for adjustment on the top connector?

Height adjustment with the Height Adjusting Unit CB

Apply ratchet lever SW 19 to adjusting spindle (4.8) of the Height Adjusting Unit CB (4.3) on the strongback. Depending on the rotational direction, the formwork moves upwards or downwards.
(Fig. B3.06 + B3.07)
Permissible load see C1.

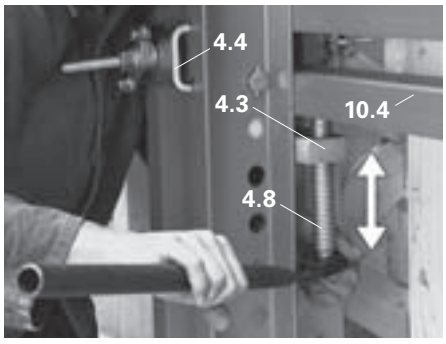


Fig. B3.06

– If the formwork does not move, loosening of the Waler Fixation (4.4) will make the adjustment easier.
– By placing a spirit level on the formwork waler line (10.4), exact adjustment is possible.

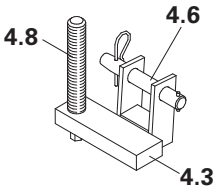


Fig. B3.07

B3 Formwork Utilisation

Formwork alignment

Inclination adjustment with the Adjustable Brace CB 164-224
The required inclination of the formwork is achieved by altering the Adjustable Brace CB 164-225 (3.1).
Depending on the rotational direction, the formwork moves forward or retracts.
(Fig. B3.08)

Fig. B3.08

By placing a spirit level on the TRIO formwork struts or on a VARIO formwork girder, exact adjustment is possible.
(Fig. B3.08)

Horizontal movement of a VARIO element with waler fixation
1. Loosen the Waler Fixation (4.4) until the element can be moved.
2. Move the element into the correct position by hand or by using a piece of timber as a lever.
3. Tighten waler fixation.
   (Fig. B3.09)

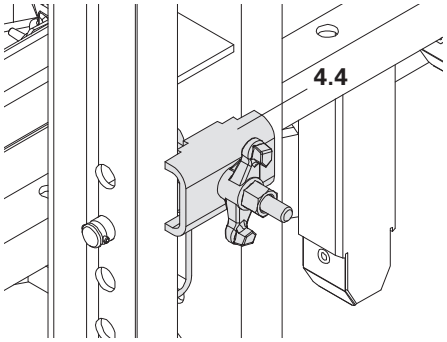


Fig. B3.09

Strongbacks must remain in the same position.

B4 Moving the units

Preparation

Do not exceed the crane capacity!

1. Loosen tie point and remove tie rod.
2. Move formwork away from the wall by means of the Adjusting Unit (2), see B3. Tilt formwork in the direction of the guardrails using the Adjustable Brace (3.1).
   Mount Scaffold Mounting Ring (5.6) with bolt M24 x 120 (5.7) on next concreting section, see B1 Anchoring.
4. Detach wind bracing from the wall using DW 15 Tie Rod or Tension Belt CB (7) and lay on the finishing platform (8).
5. Remove mounting parts of the wind bracing (6).
6. Remove cones (5.1/5.3) which are no longer required, see B1.
7. Brace strongback e.g. with piece of timber (4.10), see C1 Moving.
8. Open concreting platform decking (10.3) above the strongback.
   Secure loose parts. Attach lifting gear to the strongback (4).
   (Fig. B4.01)
9. Tighten safety pins (1.5).
   (Fig. B4.01a)
10. All personnel leave the moving unit.

The unit is now ready to be moved.

If the crane capacity is insufficient, the formwork and platform can be moved separately. For this, refer to B2 for VARIO or TRIO, and B1.

- Have the safety pins been completely removed?
- Is the locking device on the lifting hook closed?
- Is the lifting angle correct?
- Are the guardrail posts secured with bolts?
- Have loose parts been removed?

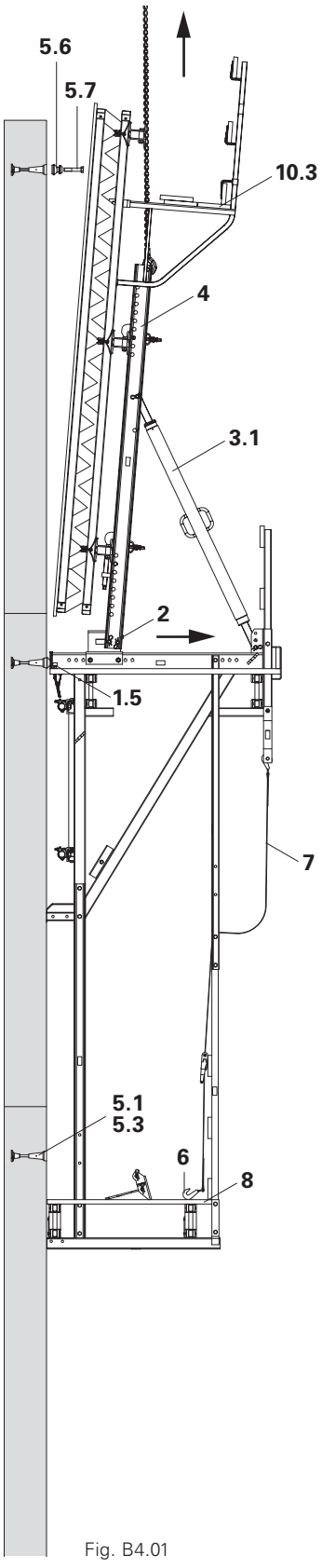


Fig. B4.01

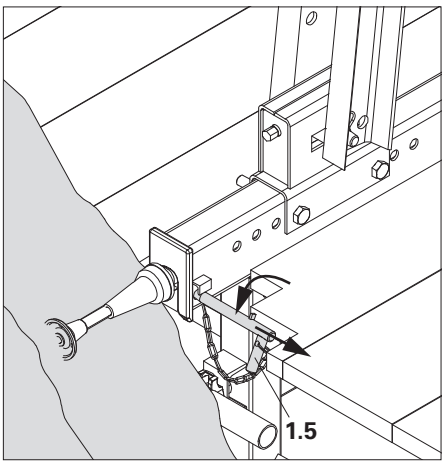


Fig. B4.01a

B4 Moving the units

Moving procedure

Use a guide rope to ensure controlled movements of the platform when being moved.
Any open edges created during the climbing procedure are to be made safe or cordoned off.
Loose components are to be secured or removed before moving takes place.

1. Crane lifts the climbing unit out of the Scaffold Mounting Ring (5.6a).
2. Crane lifts the climbing unit up to the next Scaffold Mounting Ring (5.6b).
3. Bring platform into position.
4. Lower climbing unit onto Scaffold Mounting Ring (5.6b) evenly and horizontally till the lower point of pressure (1.7) of the bracket rests against the wall. Lifting gear remains tensioned. (Fig. B4.02a – B4.02d)

Do the brackets (1.1) hang in both scaffold mounting rings M24 (5.6)?

Troubleshooting
- If no connection is made with the scaffold mounting rings (5.6) or if the brackets (1.1) jam, lift the platform and lower it again.
- If the bracket spacing does not match that of the scaffold mounting rings, check the distance of the leading anchor to the formwork.
- If the mounting procedure is not possible, the bracket spacing must be corrected through the re-assembly of the platform.

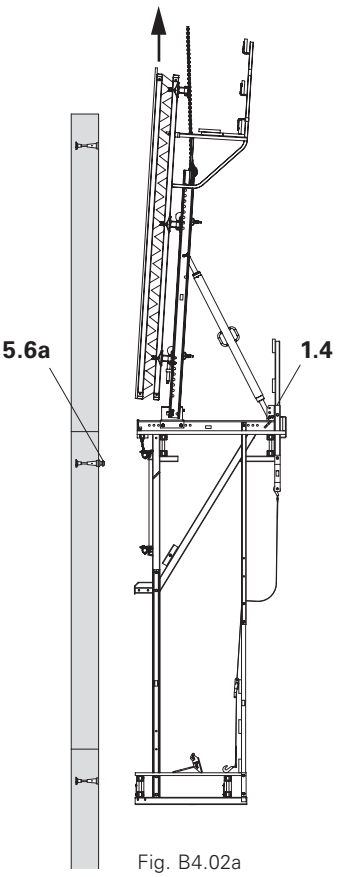


Fig. B4.02a

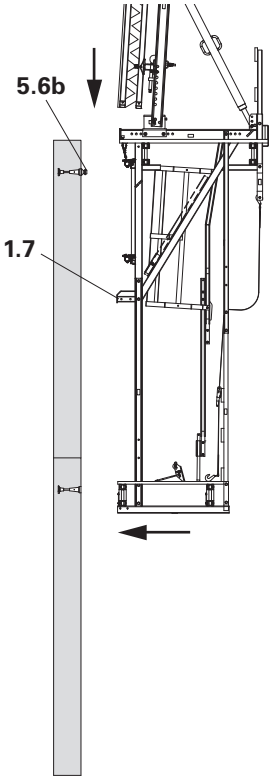


Fig. B4.02b

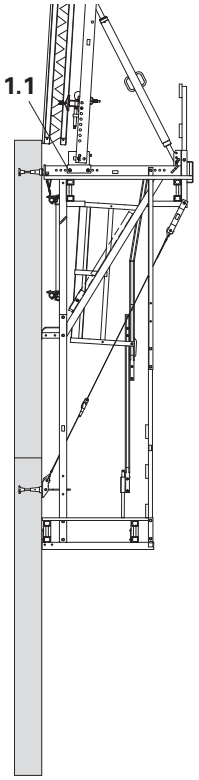


Fig. B4.02c

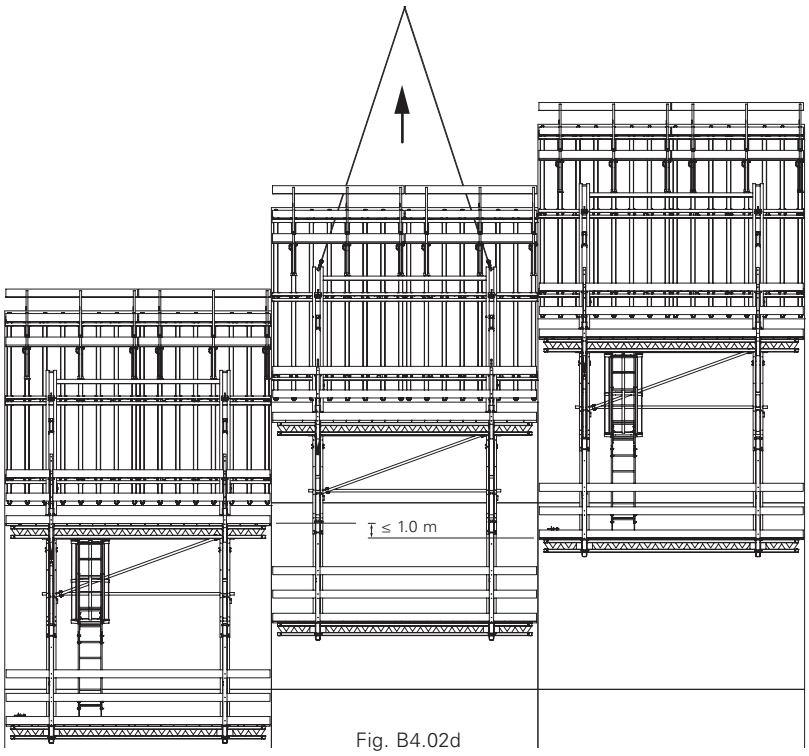


Fig. B4.02d

B4 Moving the units

Securing the unit

If the securing bolts cannot be inserted, repeat the procedure!

1. Enter platform.
2. Insert safety pins (1.5) under the Scaffold Mounting Ring (5.6). (Fig. B4.03 + B4.03a)
   Use cut-out in the planking.
3. Remove crane hook.
4. Close decking (10.3) on concreting platform.

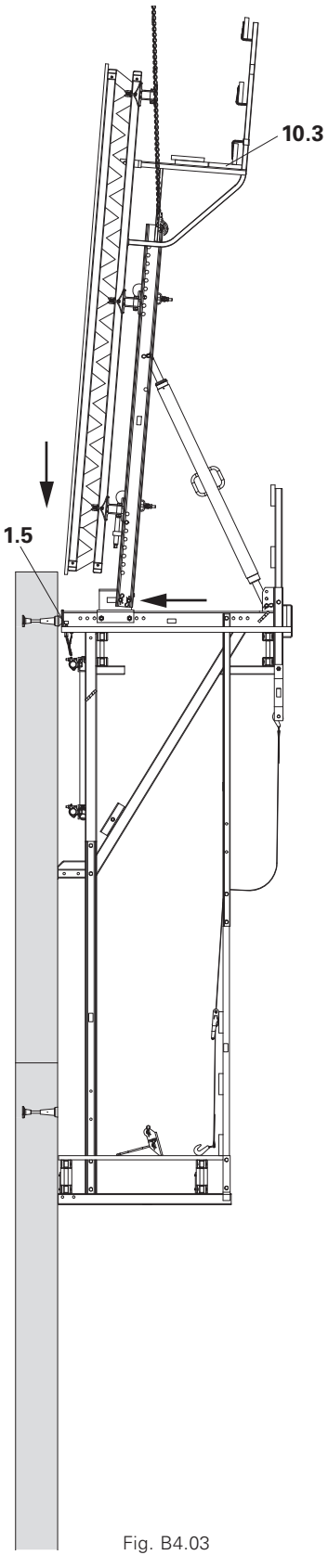


Fig. B4.03

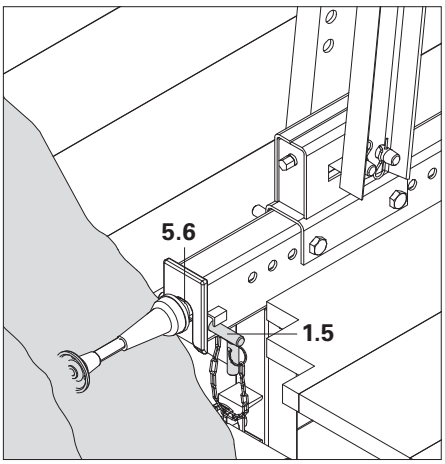


Fig. B4.03a

C1 Planning and work preparation for the platforms

Static system and load combinations

The charts serve the detailed determination of the bearing forces with regard to the load combinations. For all load combinations (A – working and B – storm), the safe transfer of the bearing forces into the building structure has to be checked.

With higher wind loads, the permissible widths of influence must be reduced accordingly and the bearing forces determined through a static calculation.

Width of influence b
Application height h_G
Formwork height h_S
Formwork weight max. 60 kg/m²
Dynamic wind pressure q
Wind velocity v

Load Combination A – Working
Wind load:
q = 0.25 kN/m², v = 72 km/h
– Working on all platforms permitted.
– Material storage on working platform permitted.

Load Combination B – Storm
Wind load:
q = 0.8 kN/m², v = 129 km/h
q = 1.1 kN/m², v = 151 km/h
q = 1.3 kN/m², v = 164 km/h
– Working not permitted
– Material can be left on the working platform.

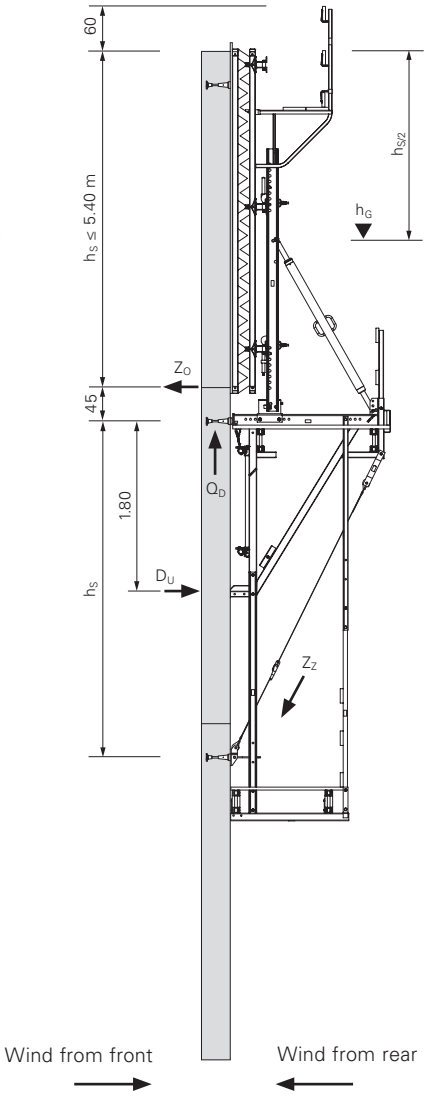


Table 1
Load Assumptions

		Dead load [kg/m²]	Perm. working load* [kg/m²]	Decisive load combinations [kg/m²] for calculating the bearing forces			
				Working	Storm		
				A	B1	B2	B3
Concreting platform		30	150	75	-	-	-
Intermediate platform (if required)		30	150	-	-	-	-
Working platform	**Wall side**	50	300	300	-	-	-
	Guardrail side	50	200	200	133	133	-
Finishing platform		50	75	37,5	-	-	-
Wind direction				from front	from front	from rear	from rear

*Maximum permissible live load for operating condition Working.

- Evenly distribute loads. One-sided loading of cantilevered platform areas is not permitted.
- Working: If more platforms are loaded, only one can be fully loaded, the other platform levels only 50 %.
- Storm: Reduced load on the working platform for material left behind.

Platform dimensioning

Standard applications
When planning the platforms, existing widths of influence of the brackets are to be determined.
Depending on the position on the building, different permissible widths of influence apply to the corner as well as standard areas. The bearing forces for the existing widths of influence are determined using the associated bearing forces while taking into consideration the dead load of the bracket unit.

Special applications
Differing loads, larger formwork heights or inclinations of the building require a separate statical proof for the platforms.

Anchoring verification

The following are to be verified or determined by the structural engineer responsible for the building:
- The safe transfer of the bearing forces into the concrete
- The safe transfer of all reaction forces as well as the stability of the building under construction
- The concrete strength required before the platforms can be loaded
- The arrangement and load-bearing capacity of possible additional reinforcement.

Load application
- The bearing forces of the maximum shear force Q_O are diverted into the concrete via the pressure on the periphery of the climbing cone's cup V_T through the bedding on the cone V_K and into the concrete.
- The maximum tensile force Z_O is diverted into the concrete via the pressure on the threaded anchor plate Z_A. (Fig. C1.01)

On request, design tables along with diagrams and formulae are available in a separate product information on the basis of German building authority approval. For use outside of Germany, a separate product information on the basis of an expert´s report is available. Both are based on a comprehensive series of tests for determining the load-bearing capacity.

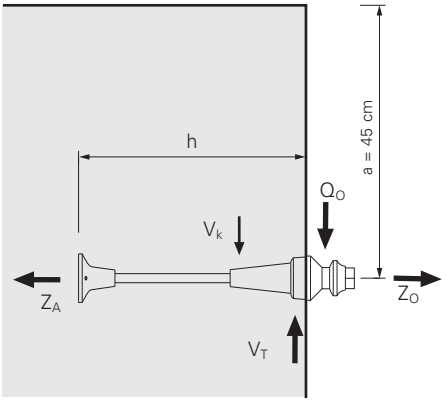


Fig. C1.01

Platform decking

- The execution of the platform decking must be carried out according to DIN EN 12811.
- All materials used must be of sufficient quality, see Table 6.
- Tripping hazards, unnecessary box outs and openings in the decking are to be avoided or covered.
- The distance between the decking and the structure should be max. 5 cm.
- Gaps inbetween the planking must not exceed 2 cm.
- The spacing between the decking of adjacent platforms must not exceed 2 cm. Larger gaps are to be covered with non-movable suitable materials or safety nets (8.4) with a max. mesh size of 2 cm are to be used.
- Any openings in the decking, which are required for normal working procedures, must be covered with non-movable suitable materials.
- Safe working conditions for ties are to be provided by intermediate platforms.
  (Fig. C1.02)

Minimum dimensions of plankings see Table 2.

Permissible span of girders see Table 3.

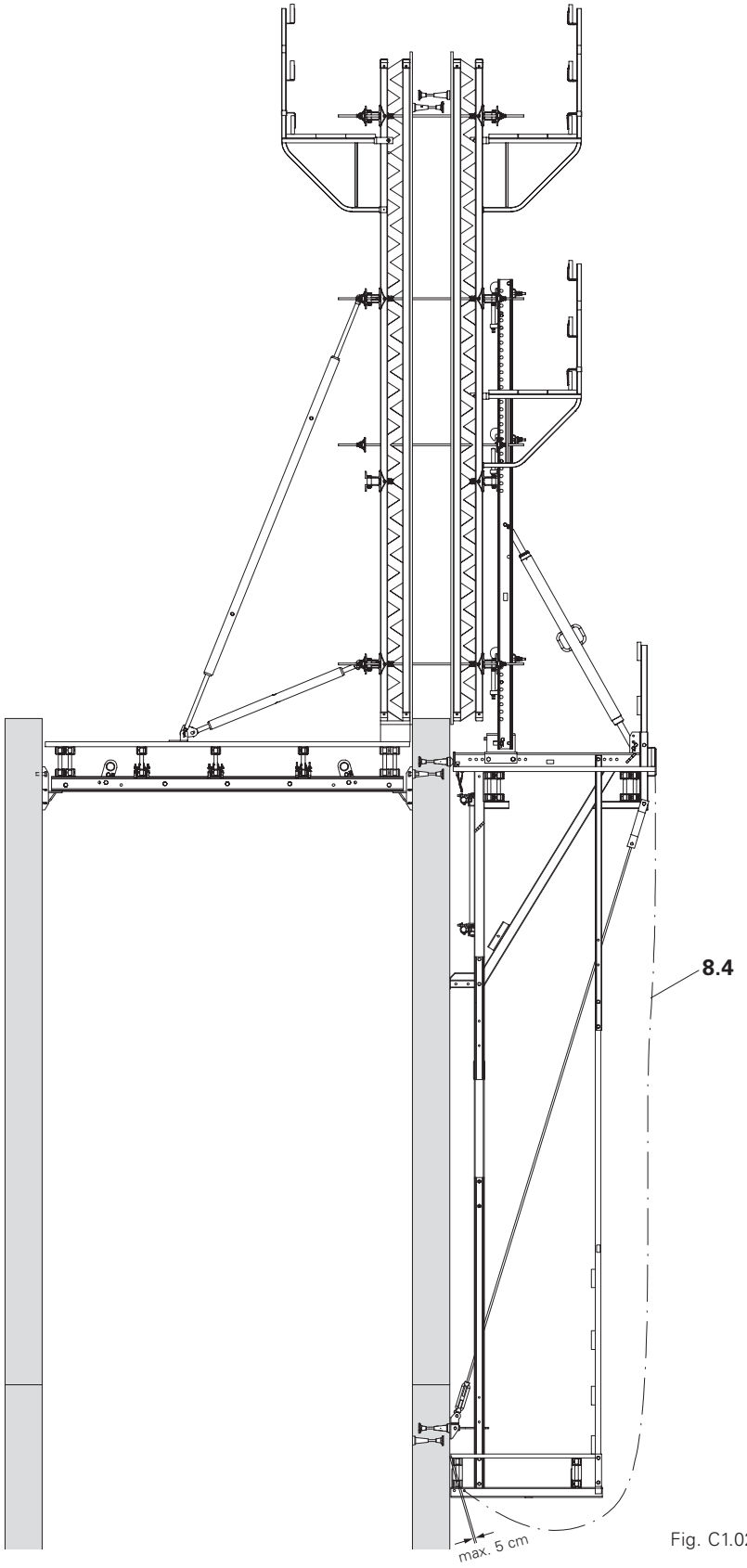


Fig. C1.02

C1 Planning and work preparation

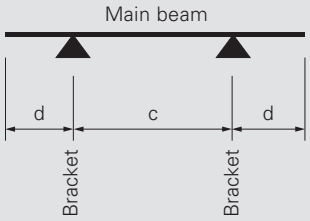
Platform decking

Table 2
Minimum dimensions of the planking

		min. thickness [mm]	min. width [mm]	max. span [m]
Working platform		40	240	
Finishing platform		40	240	
Concreting platform [3]	GB 80	40	240	2.25 [1]
	TRG 80	40	240	2.25 [2]

1) max. width of influence ≤ 1.25 m
2) max. width of influence ≤ 1.35 m
3) Planking is to be secured against lifting.

Table 3
Permissible girder spans

Static system:	Main beam type	max. cantilever d ≤ c/2 [m]	max. span c [m]
	Girder GT 24	2.06	4.12
	Timber 8 x 16	1.95	3.91
	2 x Girder GT 24	2.40	7.20
	2 x Timber 8 x 16 or Timber 16 x 16	2.40	5.53

The illustration and table conform to Appendices K12 and K13 of Type Test CB 160 carried out by the State Structural Inspectorate in Düsseldorf (Inspection Certificate No. IIB 4-540-136/91) and may only be used in accordance with the provisions of this type test.

C1 Planning and work preparation

Platform decking

Layout of main platform – when used as formwork scaffold

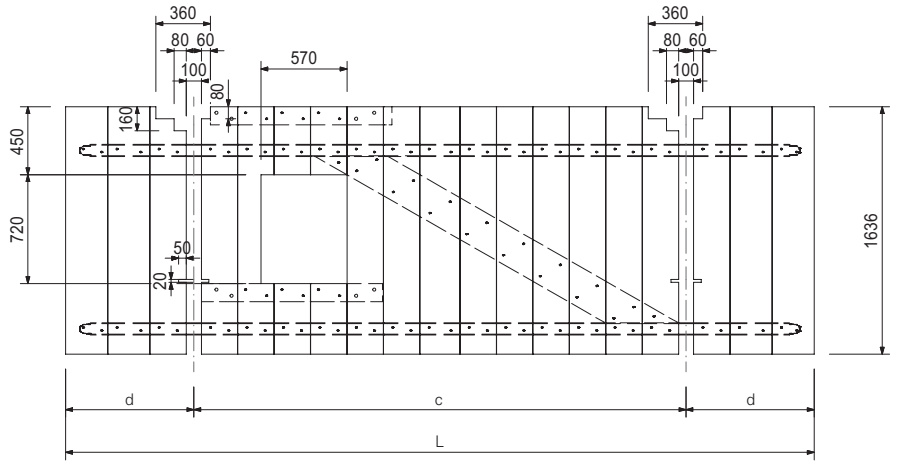


Fig. C1.03a

Layout of main platform – when used as working scaffold
(Platform above the bracket)

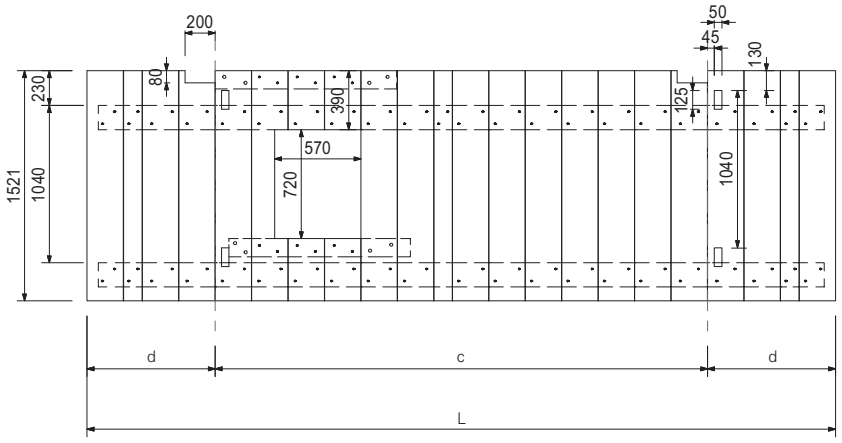


Fig. C1.03b

Layout of finishing platform

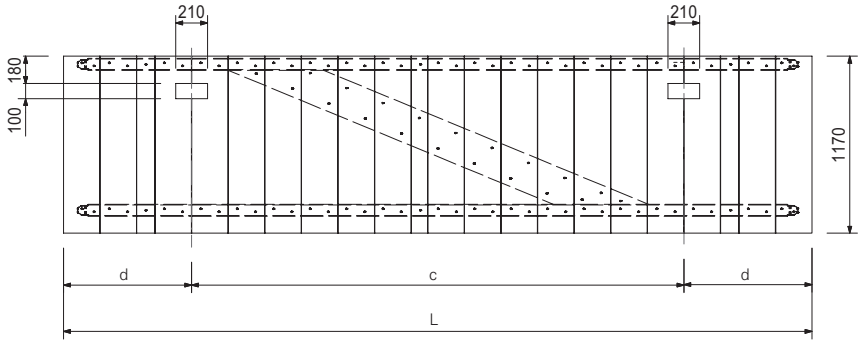


Fig. C1.03c

Dimensions in mm

L = Platform length
c = Bracket spacing
d = Cantilevers

C1 Planning and work preparation

Handrails and guardrails

On all platform levels, edges are to be protected with guardrails. In order to maintain permissible spans and cantilevers, additional guardrail posts can also be mounted, see Table 4.

In accordance with BGI 778, working areas positioned at great heights are to be secured through safety nets.
Standard assembly
(Fig. C1.04a)
Working scaffold
(Fig. C1.04b)

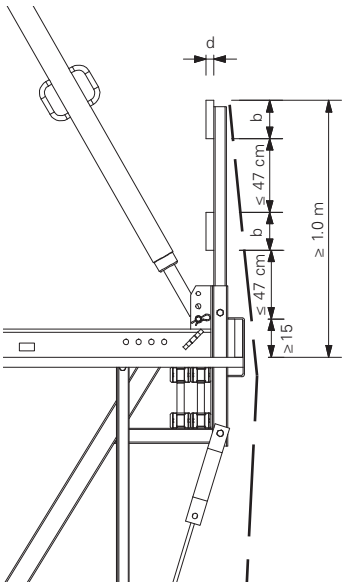


Fig. C1.04a

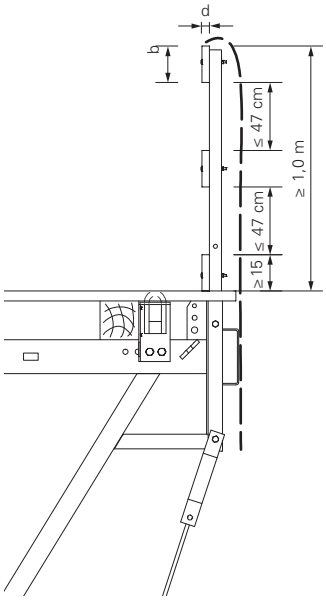
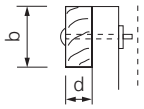
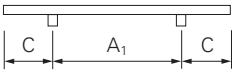
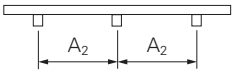


Fig. C1.04b

Table 4
Permissible spans of handrail boards

Dimensions of handrail boards		**Case 2:** 2 x guardrail posts + projection		**Case 2:** 3 or more guardrail posts
				
d/b [mm]	**Net***	**perm. A_1 [m]**	**perm. C [m]**	**perm. A_2 [m]**
40/120	without	≤ 3.07	0.91	≤ 3.56
	with	≤ 2.21	0.85	≤ 2.21
30/150	without	≤ 2.16	0.73	≤ 2.66
	with	≤ 1.81	0.73	≤ 1.81

* net with 50 % wind permeability

C1 Planning and work preparation

Connecting VARIO GT 24 formwork

Mounting the leading anchor
During formwork design, attention must be paid that there is sufficient spacing between the bracket axis and the GT 24 formwork girder.
Otherwise, mounting the Leading Anchor (5) with the Anchor Positioning Stud M24 (5.9) is not possible.
(Fig. C1.05)

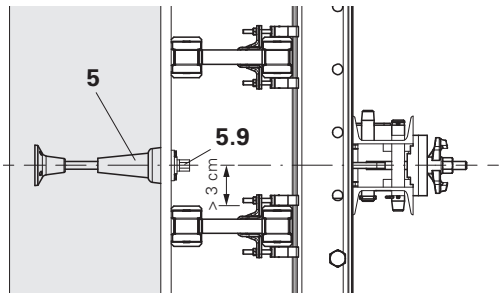


Fig. C1.05

Height adjusting units
Depending on the weight of the formwork, the number of Height Adjusting Units (4.3) is to be determined for each strongback.
(Fig. C1.06)

perm. V_1 = 12.8 kN

Fix all walers (10.4) in the area of the strongback (4) with waler fixations (4.4).

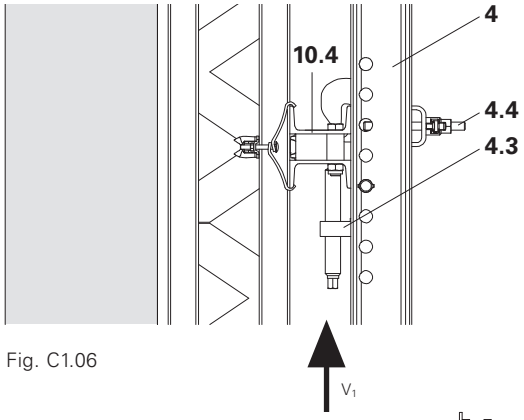


Fig. C1.06

Strongback CB 270 (4.1)
The top height adjusting unit is only mountable with standard waler spacings of 1.78 m or 2.07 m.
(Fig. C1.07a)

Strongback CB 380 (4.2)
The top height adjusting units are only mountable on walers in standard spacings from 1.78 m to 3.26 m from the lowest-positioned waler.
(Fig. C1.07b)

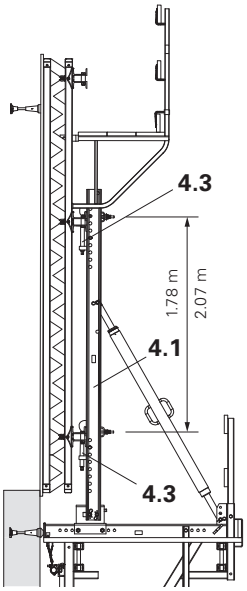


Fig. C1.07a

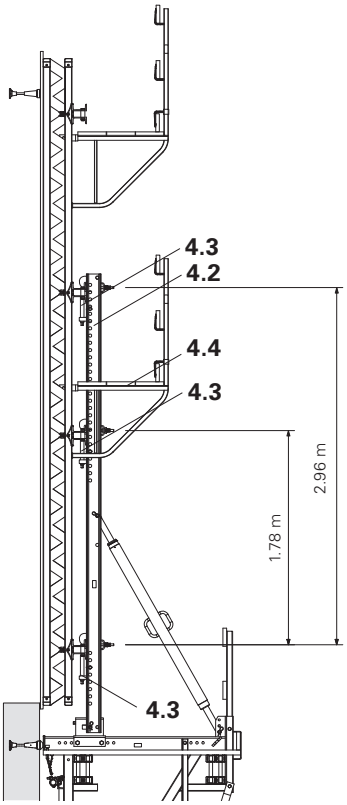


Fig. C1.07b

C1 Planning and work preparation

Connecting VARIO GT 24 formwork

Adjustable Brace 164-224
According to the formwork waler spacing, fix the adjustable brace (3.1) with bolt Ø 25 x 180 (3.2) in the bottom hole (Fig. C1.08a)
or in the top hole
(Fig. C1.08b)
of the strongback.

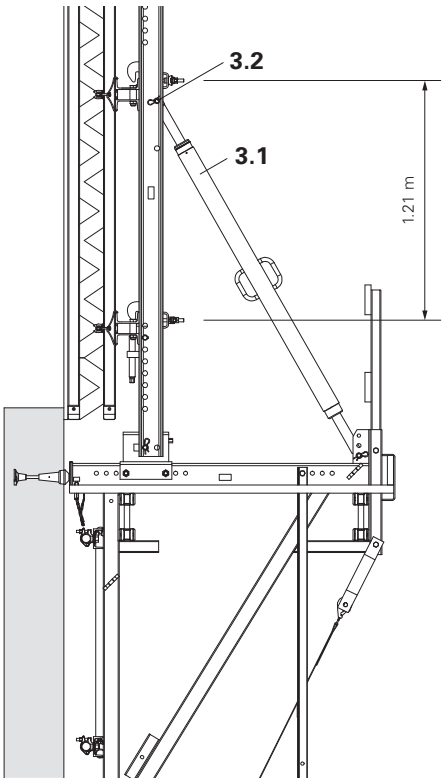


Fig. C1.08a

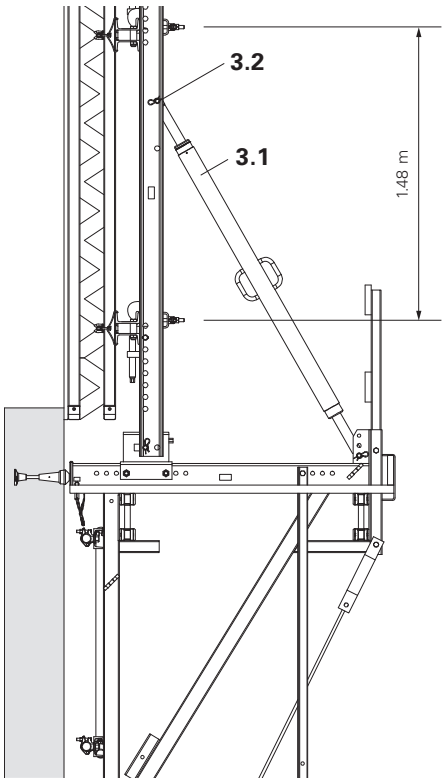


Fig. C1.08b

Anchoring
As a rule, the edge distance of the anchoring (5) can be executed with a = 35 cm. If necessary, this can deviate from the plan. (Fig. C1.09)

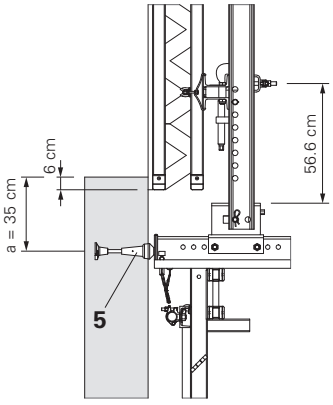


Fig. C1.09

C1 Planning and work preparation

Connecting TRIO formwork

Connection to horizontal struts
Height of girder: 24 cm

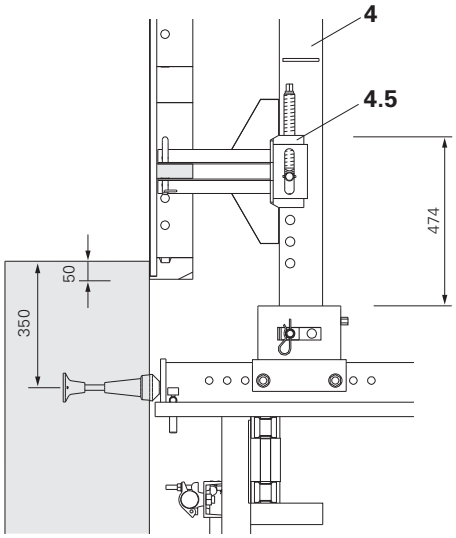


Fig. C1.10.1

Connection to vertical struts
Height of girder: 24 cm
With a plywood projecting end of 5 cm and an adjusting length of approx. 5 cm, the anchoring dimension must be increased to 50 cm.

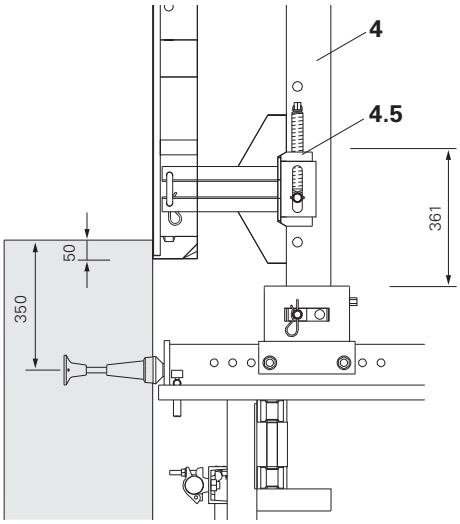


Fig. C1.10.2

Layout of C1.10.1

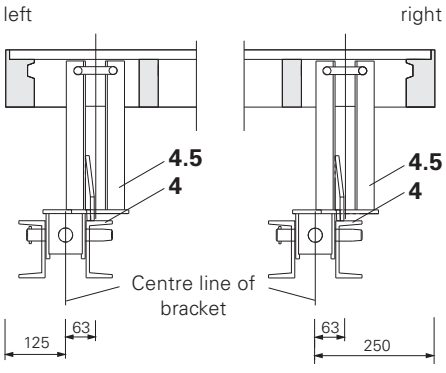


Fig. C1.11.1

Layout of C1.10.2

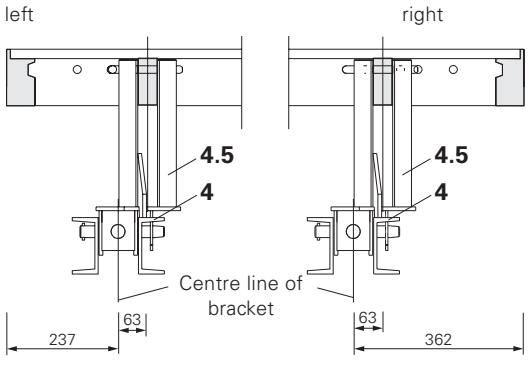


Fig. C1.11.2

C1 Planning and work preparation

Connecting TRIO formwork

TR 270 x 240 element in an upright position

The Connector TRIO-CB is to be bolted to the vertical struts.
(Fig. C1.12.1 – C1.12.3)
The illustrations show girders with a height of 24 cm.

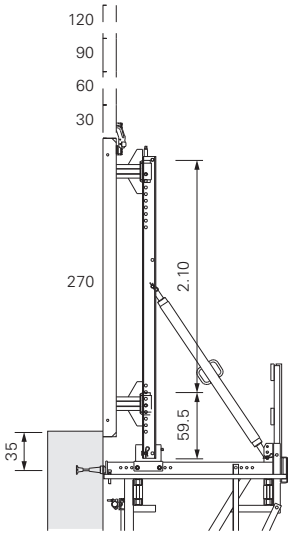


Fig. C1.12.1

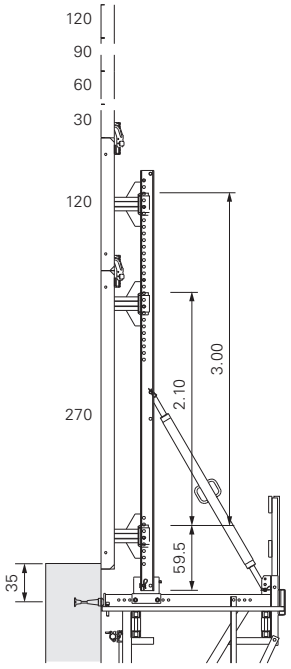


Fig. C1.12.2

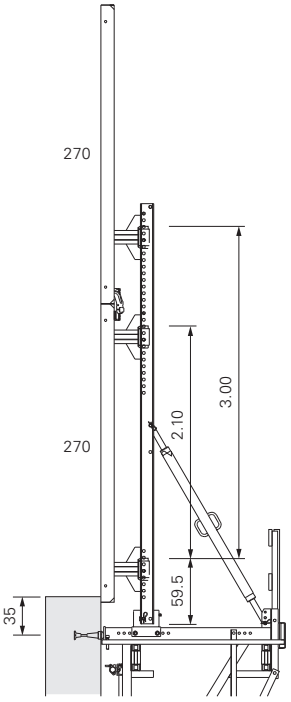


Fig. C1.12.3

The Connector TRIO-CB is to be bolted to the vertical struts.
(Fig. C1.13.1 – C1. 13.3)

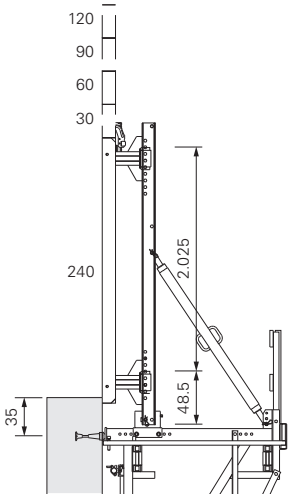


Fig. C1.13.1

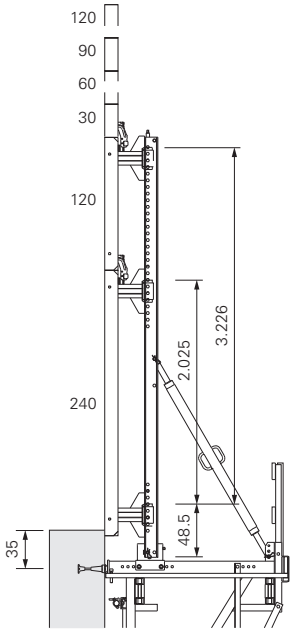


Fig. C1.13.2

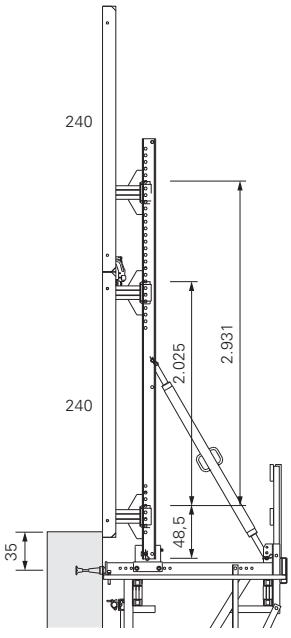


Fig. C1.13.3

Moving the units

Installation of compression brace
In order to prevent the strongbacks from being pulled out of line during the lifting process due to the redirection of forces, clamp a suitable piece of timber (4.10) as a compression brace between the top ends of the strongbacks (4). (Fig. C1.14)

Dimensions of the compression brace see Table 5.

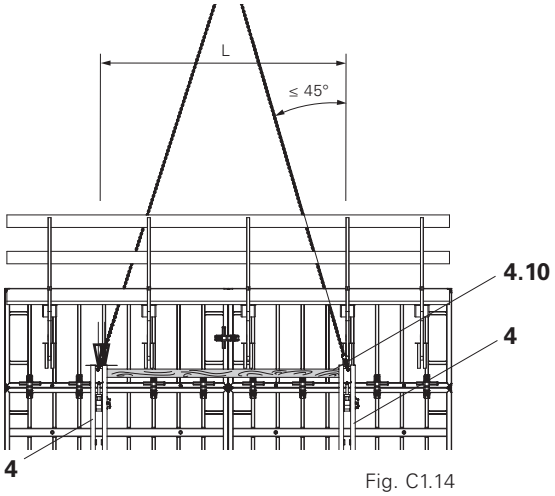


Fig. C1.14

Table 5
Permissible spacing for the Strongback CB

Dimensions of the compression brace b x d [cm]	**Permissible spacing for the Strongback CB L [m]** Crane sling angle $\alpha \leq 30°$	Crane sling angle $\alpha = 45°$
10 x 10	4.30	3.80
12 x 12	5.20	5.20
14 x 14	6.00	6.00

The timber ends (4.10) are to be adapted to the U120 profile of the strongback (4) through chamfering and notching. For fixing with wood screws 8 x 160 and washers (4.11), use the drilled holes in the strongback web. (Fig. C1.15)

Top view

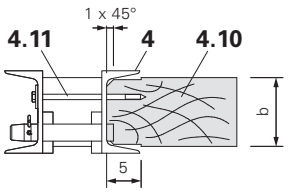


Fig. C1.15

If no compression braces are used between the strongbacks or strongly unbalanced platforms are to be moved, we recommend the use of the Lifting Beam RCS 10 t, Item no. 112986. Instructions for Assembly and Use: see Fig. C1.16.

Fig. C1.16

Ladder Access

Table 6
Parts list for ladder access

Concreting height [m]		1.5 – 3.0	2.0 – 3.0	3.3 – 4.9	3.8 – 5.4
Working platform - finishing platform spacing [m]		3.65	4.15	5.45	5.95
Item no.	**Description**	**Parts List**			
051430	Sliding Hatch	1	1	1	1
051420	Ladder 220/6	1	1	1	1
051410	Ladder 180/6, galv.	1	1	2	2
051450	Ladder Safety Cage 150, galv.	1	1	1	2
104132	Ladder Safety Cage 75, galv.	–	–	1	–
109105	Ladder Base 30, galv.	1	1	1	1
103718	Ladder Hook, galv.	2	–	2	–
070711	Timber 10 x 10, L = 60 cm for assembly of Ladder Base 30	1*	–**	1*	–**

* The ladders are attached to the top end of the sliding hatch cover.
The bottom ladder is attached using the ladder hook, and with the ladder base on timber at the lower end.

** Screw ladder base tightly on decking of the finishing platform.

Drawings and plans

Assembly Drawings
At least the following points should be featured in the assembly drawings:
- bracket spacing and bracing
- dimensions of the working and finishing platform
- dimensions, arrangement and number of concreting and intermediate platforms
- erection of girders and guardrails
- layout of end guardrail posts
- layout of lateral guardrails
- position of access ladders
- material requirements (parts list)

General Arrangement Drawings
At least the following points should be featured in the general arrangement drawings:
- position of the climbing anchor in the plan view and sectional view
- which scaffolding platform is used on which part of the building
- associated formwork and finishing platform
- installation of wind bracing
- distance of finishing platform to the working platform
- formwork and strongback connection points
- timber brace position between the strongbacks
- reference values for retraction distance during moving (see Table 1)
- possible special measures in case of irregular concreting heights
- details of modifications
- material requirements (parts list)

Appropriate, easy-to-read as well as sufficient drawings in both number and format are to be made available to the site management. The drawings are to be created clearly and professionally in the language of the country where construction is taking place.

We recommend including a plan view and sectional view of the scaffold as well as an overview plan for positioning purposes.

We recommend including a plan view and a top view of the platform.

Use on circular structures

Parallel arrangement of brackets
Depending on bracket spacing c, brackets can be positioned parallel to each other as of a certain radius of the building.
Advantage:
The adjusting unit can be used for tilting the formwork.
The maximum twist in the scaffold mounting ring is 5°. The pressure point of the bracket is wedged to compensate for the angle. (Fig. C1.17)

Requirements for the radius of the building:
available R ≥ 5.72 x actual c

System statics are proved with the application diagrams according to the type test.

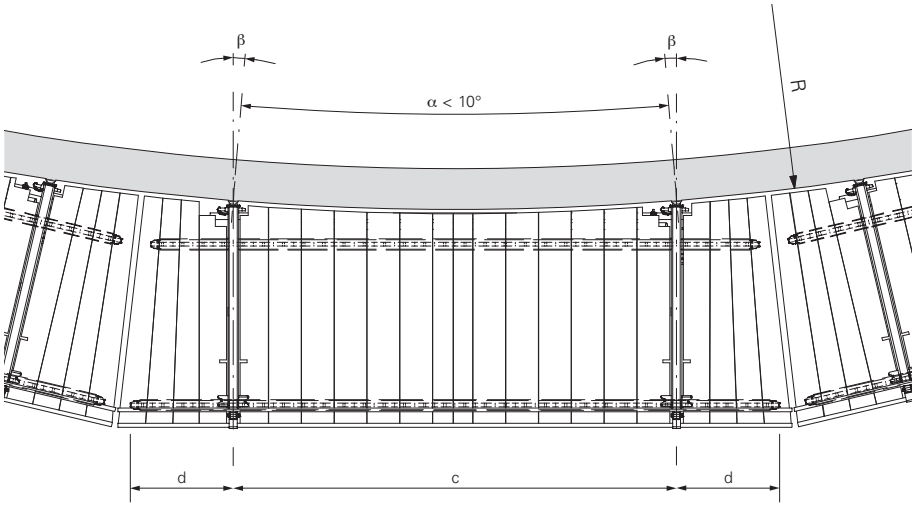


Fig. C1.17

c available bracket spacing = anchor spacing
d middle girder cantilever
α = 2 x angle of torsion β
R radius of the building

Radial arrangement of brackets
Disadvantage:
The tilting possibilities for the formwork are limited.
Wedges for compensating the angle have to be fitted between the girder and mounting plate.
If the arc rise s of the building edge is too big, the innermost girder must be additionally moved outwards by means of packing in order to provide sufficient space between the girder and the building. (Fig. C1.18)
The same applies to the finishing platforms.
Special measures have to be undertaken if scaffold tube units are installed.

Static proof is to be carried out separately.

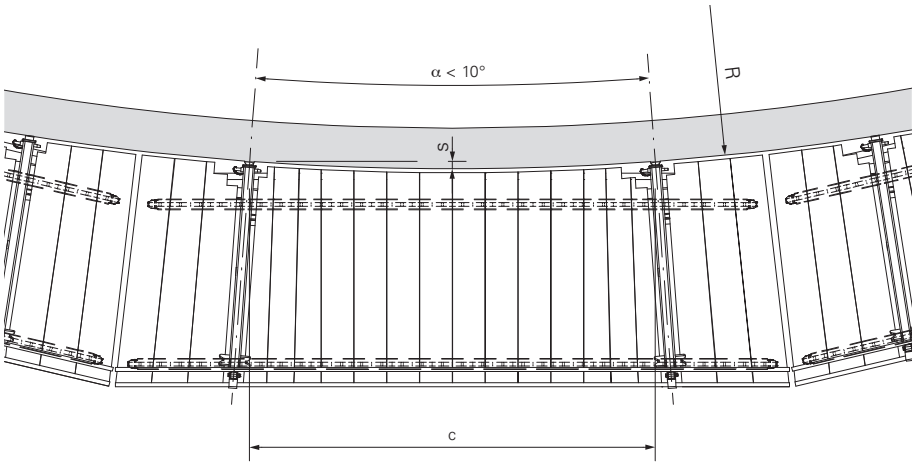


Fig. C1.18

s arc rise of the building curvature
c anchor spacing

C1 Planning and work preparation

Corner platforms

Corner platforms are to be erected in such a way that free access is possible around the corners of the building when the formwork has either been shuttered or retracted.

Procedure:
An extended cantilever at a working platform.
Open edges at the platform ends are to be secured with end guardrails.
(Fig. C1.19)

In the verification process with the help of the application diagrams, the girder cantilever is to be taken into consideration.

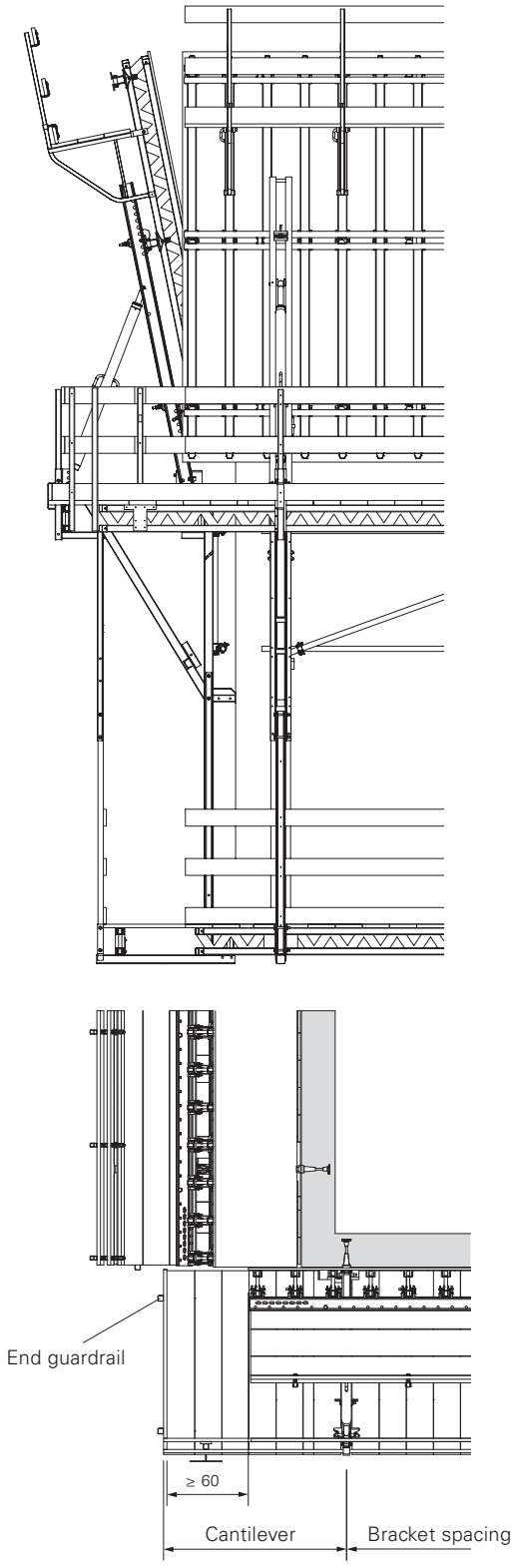


Fig. C1.19

C1 Planning and work preparation

Use as working and safety scaffold

Working scaffold according to DIN EN 12811

Other loads require separate static calculations!

With a load that corresponds to DIN EN 12811 Load Class 3 (200 kg/m²), the brackets and platforms can be assembled without any additional proof, see C1 Platform Decking applies. (Fig. C1.20)

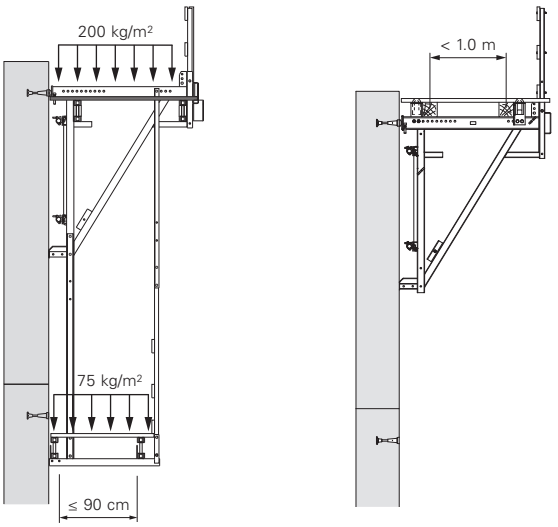


Fig. C1.20

Working scaffold with finishing platform

If a finishing platform is attached to a working platform with decking on top, ensure that the rear platform connection does not collide with the Handrail Post 200. If necessary, the position of the timber 16/16 and the Platform Connection CB 160 is to be changed. (Fig. C1.21)

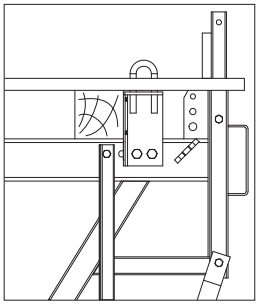


Fig. C1.21

Protective access scaffold according to DIN 4420

Open slab edges are to be secured at the scaffold ends with guardrails!

For decking consisting of planks, the permissible falling height h is dependent on the dimensions of the planks which have been used Table 7).
For the bracket spacing and girders, C1 Platform Decking applies.
(Fig. C1.22)

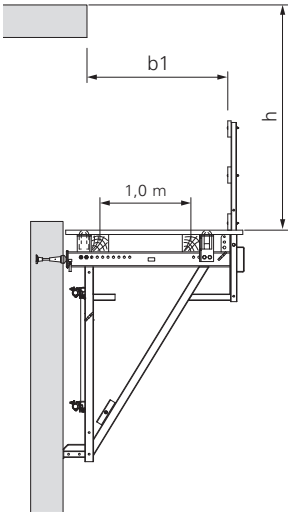


Fig. C1.22

Table 7
Minimum thickness of the planking [mm] and free width depending on the falling height [m]

Falling height H [m]				
Planking width [mm]	≤ 1.50	≤ 2.00	≤ 2.50	≤ 3.00
≥ 200	≥ 40	≥ 45	≥ 45	≥ 50
≥ 240	≥ 40	≥ 40	≥ 40	≥ 4.5
≥ 280	≥ 35	≥ 35	≥ 40	≥ 40
Free width b1 [m]	≥ 0.90		≥ 1.30	

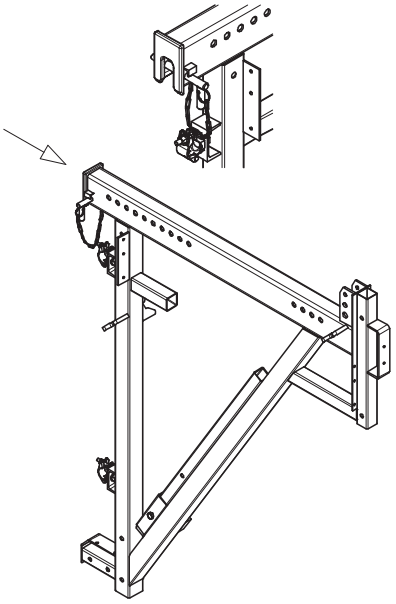
Required thickness according in mm to DIN 4420 with a max. span of 1.00 m

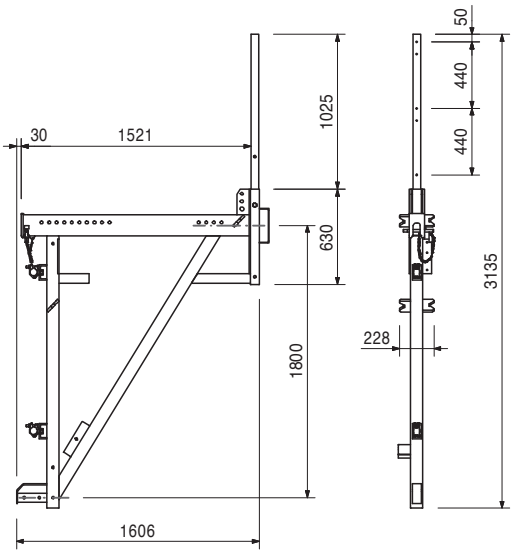
Item no.	Weight kg
051100	79,200

Climbing Bracket CB 160
Complete Climbing Scaffold Bracket CB 160.

Complete with
2 pc. 017040 Screw-On Coupler AK 48, galv.
1 pc. 701209 Guardrail Post CB 160
1 pc. 710222 Bolt ISO 4014 M16 x 80-8.8, galv.
1 pc. 070890 Nut ISO 7042 M16-8, galv.

Note
Delivery condition: handrail post in transport securing device.

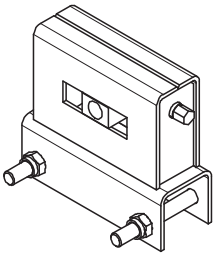


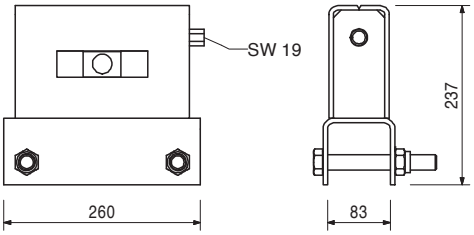


Item no.	Weight kg
051130	12,900

Adjusting Unit CB 160
For Climbing Bracket CB 160.

Complete with
2 pc. 711084 Bolt ISO 4014 M20 x 150-8,8, galv.
2 pc. 781053 Nut ISO 7042 M20-8, galv.

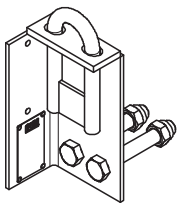


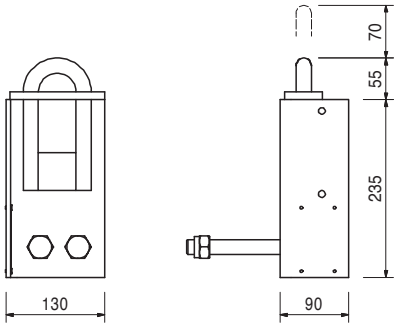


Item no.	Weight kg
051120	4,570

Platform Connection CB 160
For mounting platform decking on the Climbing Bracket CB 160 when used as working scaffold.

Complete with
2 pc. 711078 Bolt ISO 4014 M20 x 130-8.8, galv.
2 pc. 781053 Nut ISO 7042 M20-8, galv.
Note
Follow Instructions for Use!
Technical Data
Permissible load-bearing capacity 500 kg.

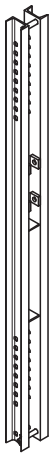


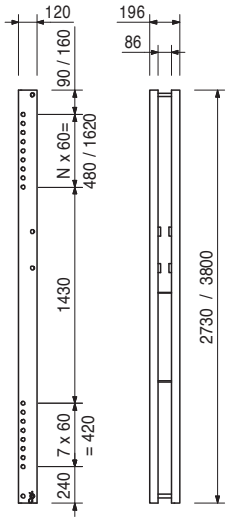


051060	73,400
051150	103,000

Strongbacks CB
Strongback CB 270
Strongback CB 380
For assembling system formwork on Climbing Brackets CB 240 and 160. For formwork heights up to 5.40 m.

Complete with
1 pc. 715936 Pin Ø 25 x 180, incl. dowel pin Ø 6
1 pc. 018060 Cotter Pin 4/1, galv.
Technical Data
Permissible load-bearing point capacity 1.9 t.

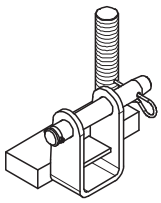


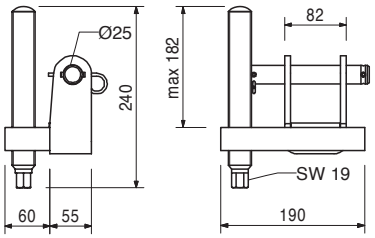


051030	5,320

Height Adjusting Unit CB, SCS
For height adjustment of VARIO GT 24 panels on the Strongbacks CB and SCS.

Complete with
1 pc. 715936 Pin Ø 25 x 180, incl. dowel pin Ø 6
1 pc. 018060 Cotter Pin 4/1, galv.

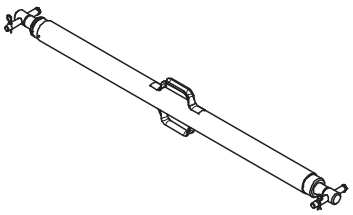


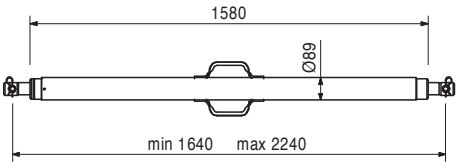


Item no.	Weight kg
051110	24,900

Adjustable Brace CB 164-224
For aligning the Strongback CB.

Complete with
2 pc. 715936 Pin Ø 25 x 180, incl. dowel pin Ø 6
2 pc. 018060 Cotter Pin 4/1, galv.

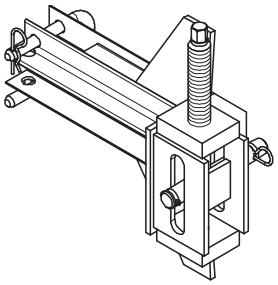


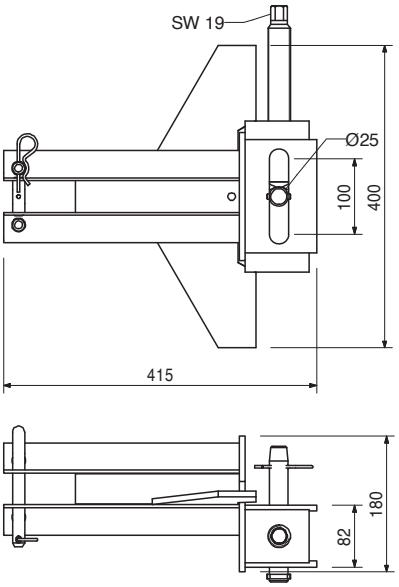


051090	13,500

Connector TRIO-CB
For fixing TRIO panels to the Strongback CB. Used on horizontal or vertical struts. With integrated height adjustment.

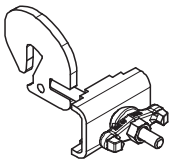
Complete with
1 pc. 715936 Pin Ø 25 x 180, incl. dowel pin Ø 6
1 pc. 018060 Cotter Pin 4/1, galv.

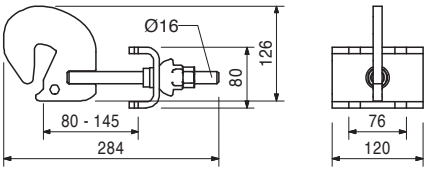




110059	2,840

Waler Fixation U100 – U120
For fixing VARIO GT 24 panels to Strongbacks CB and SCS, Steel Waler SRU and V-Strongback SKS.

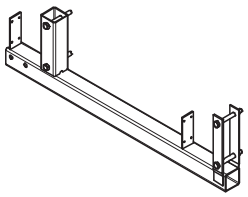


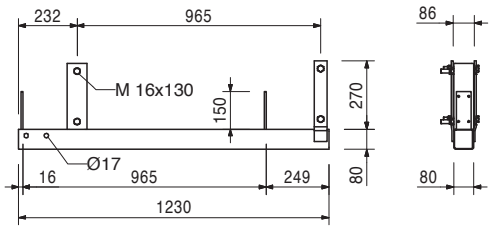


Item no.	Weight kg
051230	17,000

Finishing Platform Beam CB
For assembling finishing platforms.

Complete with
4 pc. 710232 Bolt ISO 4014 M16 x 130-8.8, galv.
4 pc. 070890 Nut ISO 7042 M16-8, galv.

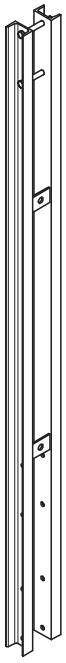


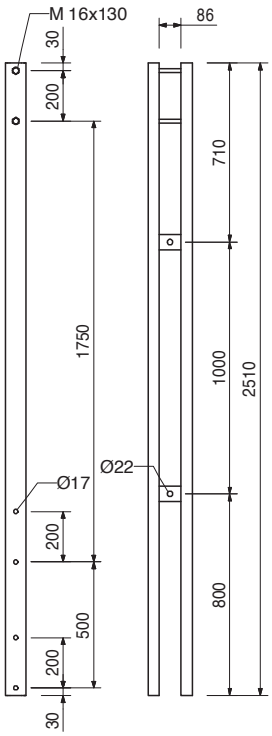


051200	44,400

Platform Post CB 225
For assembling finishing platforms. For concreting heights up to 3.60 m. In combination with Post Extension CB 180 for concreting heights from 3.60 to 5.40 m.

Complete with
2 pc. 710232 Bolt ISO 4014 M16 x 130-8.8, galv.
2 pc. 070890 Nut ISO 7042 M16-8, galv.

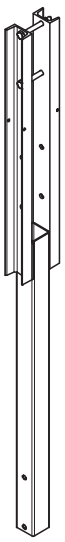


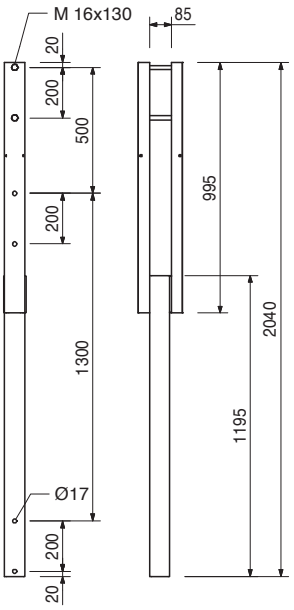


Item no.	Weight kg
051050	26,400

Post Extension CB 180
For assembling finishing platforms. In combination with Platform Post CB 225 for concreting heights from 3.60 to 5.40 m.

Complete with
2 pc. 710232 Bolt ISO 4014 M16 x 130-8.8, galv.
2 pc. 070890 Nut ISO 7042 M16-8, galv.

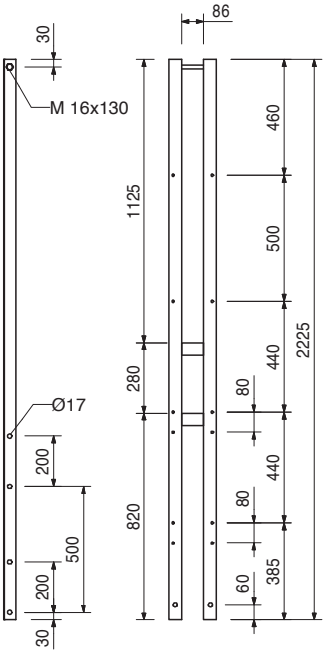




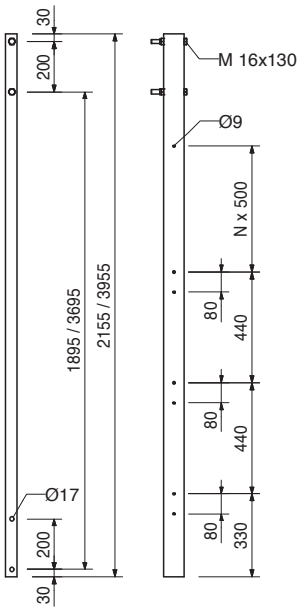
051190	17,400

Handrail Post CB 200
For assembling guardrails on finishing platforms. Basic extension for Handrail Post CB 190 and 370.

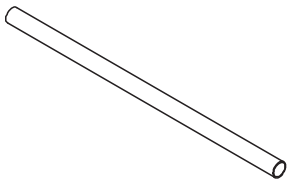
Complete with
2 pc. 710232 Bolt ISO 4014 M16 x 130-8.8, galv.
2 pc. 070890 Nut ISO 7042 M16-8, galv.

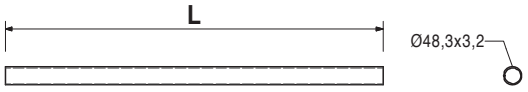


Item no.	Weight kg		
		Handrail Posts CB	**Complete with**
051210	19,000	**Handrail Post CB 190**	2 pc. 710232 Bolt ISO 4014 M16 x 130-8.8, galv.
051220	34,600	**Handrail Post CB 370**	2 pc. 070890 Nut ISO 7042 M16-8, galv.
		For assembling guardrails on finishing platforms. Handrail Post CB 190 for concreting heights up to 3.60 m. Handrail Post CB 370 for concreting heights from 3.60 to 5.40 m.	

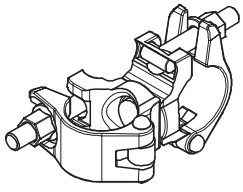


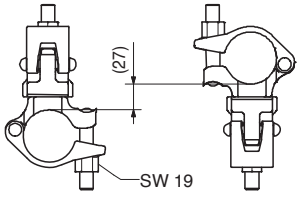
			L
		Scaffold Tubes Steel Ø 48.3 x 3.2	
026415	3,550	**Scaff. Tube Steel Ø 48.3 x 3.2, special length**	
026417	0,000	**Cutting Cost Scaffold Tube**	
026411	3,550	**Scaff. Tube Steel Ø 48.3 x 3.2, l = 1.0 m**	1000
026412	7,100	**Scaff. Tube Steel Ø 48.3 x 3.2, l = 2.0 m**	2000
026413	10,650	**Scaff. Tube Steel Ø 48.3 x 3.2, l = 3.0 m**	3000
026414	14,200	**Scaff. Tube Steel Ø 48.3 x 3.2, l = 4.0 m**	4000
026419	17,750	**Scaff. Tube Steel Ø 48.3 x 3.2, l = 5.0 m**	5000
026418	21,600	**Scaff. Tube Steel Ø 48.3 x 3.2, l = 6.0 m**	6000



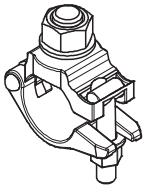


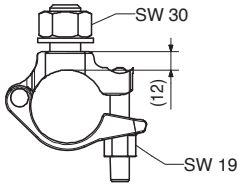
017010	1,400	**Swivel Coupling DK 48/48, galv.** For Scaffold Tubes Ø 48 mm.



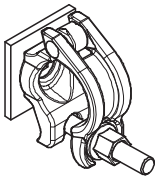


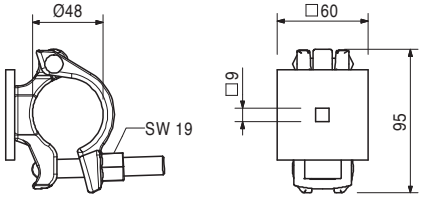
Item no.	Weight kg	
017040	0,850	**Screw-On Coupler AK 48, galv.** For Scaffold Tubes Ø 48 mm.





051160	0,894	**Guardrail Connector CB** For assembling scaffold tubes on handrail posts.

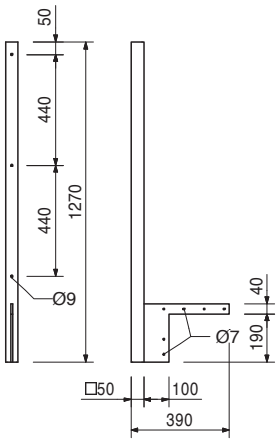




Accessories

126228	0,030	**F.H. Bolt DIN 603 M8 x 70 MU, galv.**

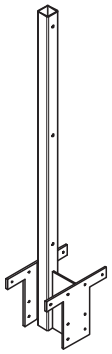
051610	6,940	**Side Guardrail Post CB** For assembly of an end guardrail. Bolted to the platform main beam.

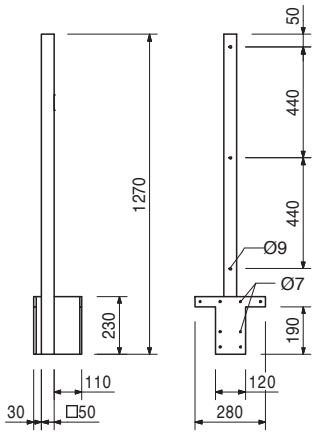


Accessories

051640	0,014	**Lag Screw DIN 571 6 x 80, galv.**

Item no.	Weight kg	
051630	11,000	**Intermediate Handrail Post CB** For assembling a guardrail with large cantilevers. Bolted on the platform main beam.

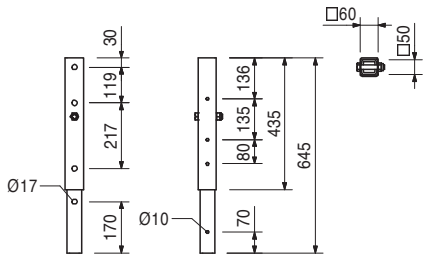




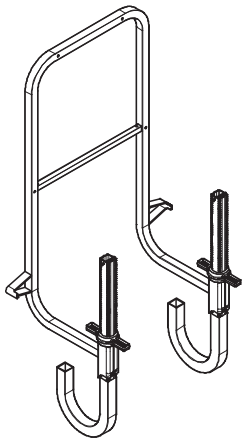
Accessories

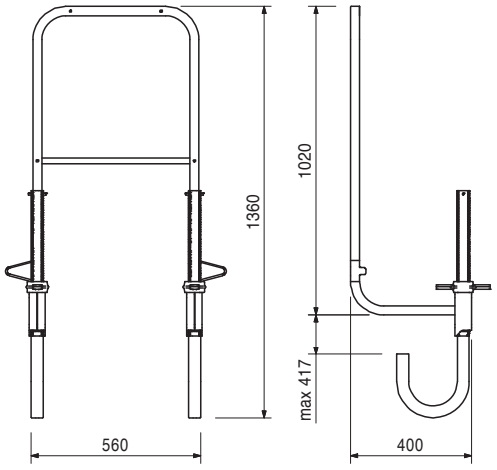
051640	0,014	**Lag Screw DIN 571 6 x 80, galv.**
051610	6,940	**Side Guardrail Post CB**

126399	4,710	**Handrail Post Extension CB** For the extention of guardrail post CB by 50 cm.	**Complete with** 1 pc. 710222 Bolt ISO 4014 M16 x 80-8.8, galv. 1 pc. 070890 Nut ISO 7042 M16-8, galv.

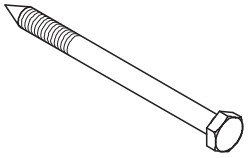


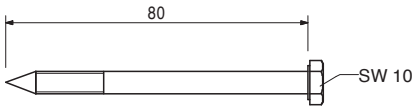
065066	15,100	**End Guardrail Frame 55** Clampable end guardrail for all PERI scaffold platforms and climbing systems.



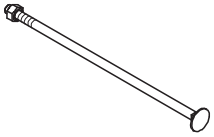


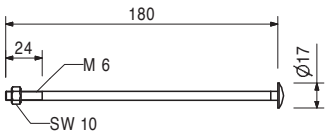
Item no.	Weight kg	
051640	0,014	**Lag Screw DIN 571 6 x 80, galv.**





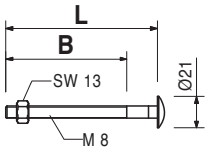
051650	0,060	**F.H. Bolt DIN 603 M6 x 180 MU, galv.** With nut.



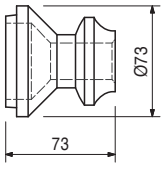


		F. H. Bolts DIN 603 M8	**L**	**B**
710240	0,050	**F.H. Bolt DIN 603 M8 x 100 MU, galv.**	100	80
024360	0,058	**F.H. Bolt DIN 603 M8 x 125 MU, galv.**	125	113
108834	0,085	**F.H. Bolt DIN 603 M8 x 180 MU, galv.**	180	28

With nut.



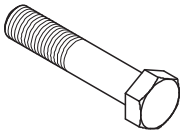
029470	0,723	**Scaffold Mounting Ring M24, galv.** Anchor System M24. For anchoring climbing systems.

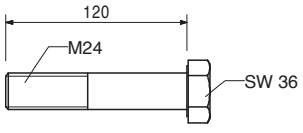


Accessories

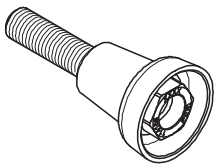
029560	0,535	**Bolt ISO 4014 M24 x 120-10.9**

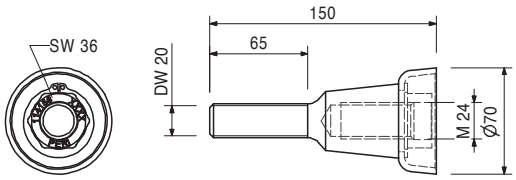
029560	0,535	**Bolt ISO 4014 M24 x 120-10.9** High-strength bolts for anchoring climbing systems.





Item no.	Weight kg		
114158	1,030	**Screw-On Cone-2 M24/DW 20, galv.** Anchor system M24. For anchoring climbing systems.	**Note** Separate design information on request.

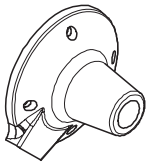


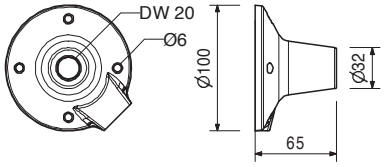


Accessories

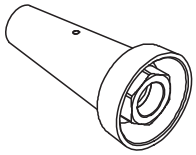
030860	0,801	**Threaded Anchor Plate DW 20**

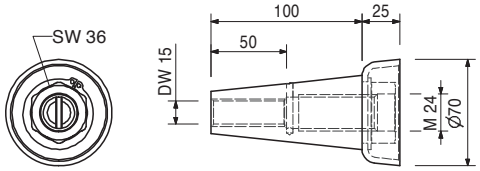
030860	0,801	**Threaded Anchor Plate DW 20** For use with Tie Rod DW 20, B 20 or Screw-On Cone-2 M24/DW 20. For anchoring in concrete.	**Note** Lost anchor part.





031220	1,010	**Climbing Cone-2 M24/DW 15, galv.** Anchor system M24. For anchoring climbing systems.	**Note** Seperate design information on request.

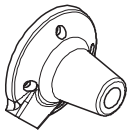


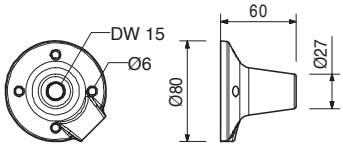


Accessories

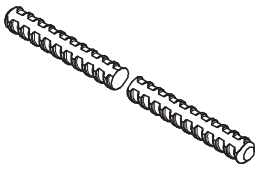
030840	0,516	**Threaded Anchor Plate DW 15**
030030	1,440	**Tie Rod DW 15, Spec. Length**
030740	1,550	**Tie Rod B 15, Spec. Length**

030840	0,516	**Threaded Anchor Plate DW 15** For use with Tie Rod DW 15 or B 15. For anchoring in concrete.	**Note** Lost anchor part.

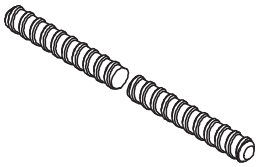




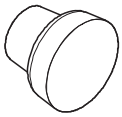
Item no.	Weight kg		
		Tie Rods DW 15	**Note**
030030	1,440	**Tie Rod DW 15, Spec. Length**	Non-weldable! Take official approval into consideration!
030050	0,000	**Cutting Cost Tie Rod DW 15, B 15**	**Technical Data**
			Permissible tension force 90 kN.

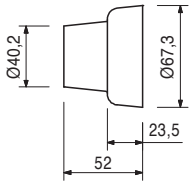


		Tie Rods B 15	**Note**
030740	1,550	**Tie Rod B 15, Spec. Length**	Weldable! Take official approval into consideration!
030050	0,000	**Cutting Cost Tie Rod DW 15, B 15**	**Technical Data**
			Permissible tension force 82 kN.



031652	0,247	**KK Concrete Cone M24-67/52**	**Note**
		For closing anchor points with Climbing Cone-2, M24/DW 15 and Screw-On Cone-2 M24/DW 20.	Delivery unit 50 pieces.

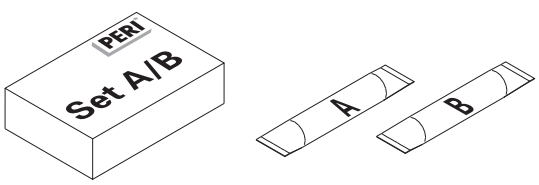




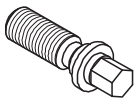
Accessories

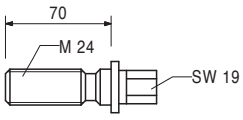
108136	5,000	**Glue for Concrete Cones-2, 5-kg-Set**

108136	5,000	**Glue for Concrete Cones-2, 5-kg-Set**	**Note**
		For bonding PERI concrete cones.	See Safety Data sheet! Consisting of: 6 x Component A, 6 x Component B 2 x Stirring Container, 3 x Stirring Staff



Item no.	Weight kg	
029270	0,331	**Advancing Bolt M24, galv.** For fixing the M24 anchor system if the plywood formlining is drilled through.

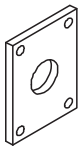


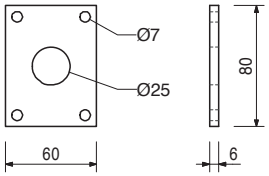


Accessories

029280	0,196	**Anchor Positioning Plate M24, galv.**

029280	0,196	**Anchor Positioning Plate M24, galv.** For fixing the M24 anchor system if the plywood formlining is drilled through.

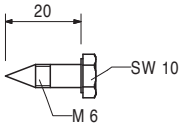




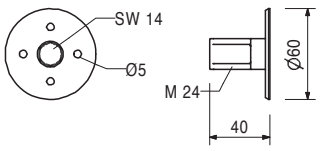
Accessories

029440	0,005	**Lag Screw DIN 571 6 x 20, galv.**

029440	0,005	**Lag Screw DIN 571 6 x 20, galv.**



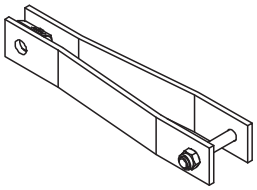
026420	0,123	**Anchor Positioning Stud M24, galv.** For fixing the M24 anchor system if the plywood formlining is not drilled through.	**Note** Allen Key SW 14.

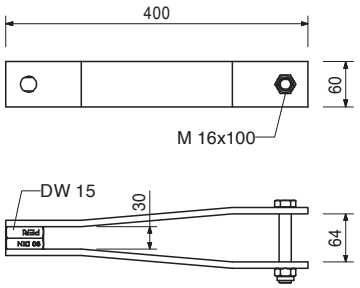


Accessories

027212	0,445	**Allen Key SW 14, long**
710312	0,005	**Nail 3 x 80**

Item no.	Weight kg		
107007	3,410	**Tension Anchor Connector CB** To prevent tipping over due to wind loads with Tie Rod DW 15.	**Complete with** 1 pc. 710219 Bolt ISO 4014 M16 x 100-8.8, galv. 1 pc. 070890 Nut ISO 7042 M16-8, galv.

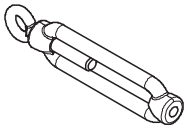


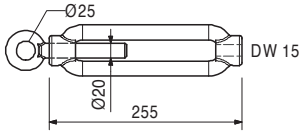


Accessories

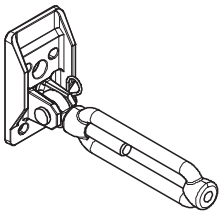
116807	1,820	**Turnbuckle CB M20/DW 15**
030030	1,440	**Tie Rod DW 15, Spec. Length**
107008	4,100	**Wall Tension Anchor**
116752	5,050	**Wall Bracing Shoe CB M24**

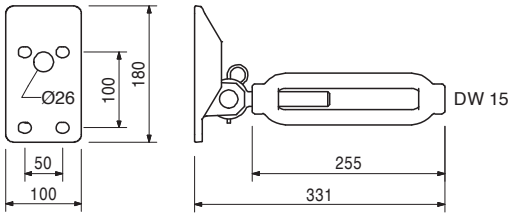
116807	1,820	**Turnbuckle CB M20/DW 15** For tensioning of Tie Rod DW 15 to prevent tipping over due to wind loads. Connects Tie Rod DW 15 with Wall Bracing Shoe CB M24.	**Complete with** 1 pc. 711059 Turnbuckle for tension anchor CB 1 pc. 711060 Eye Bolt M20, left, galv.





107008	4,100	**Wall Tension Anchor** Alternative wall connector to prevent tipping over due to wind loads with Tie Rod DW 15. Including Turnbuckle CB M20/DW 15.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.

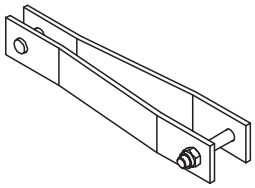




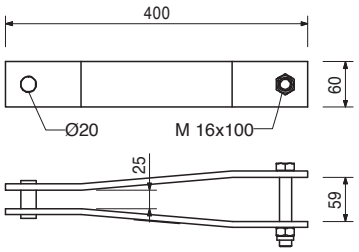
Accessories

026430	0,334	**Bolt ISO 4014 M24 x 70-10.9**

Item no.	Weight kg	
051260	3,300	**Tension Belt Connector CB** To prevent tipping over due to wind loads with tension belt.



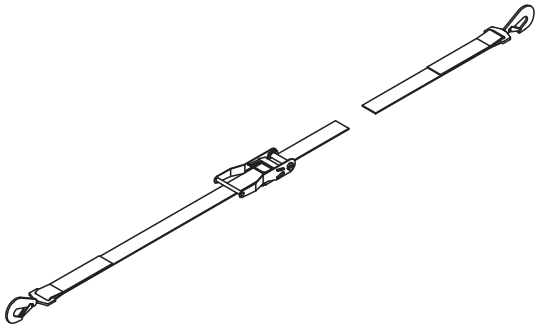
Complete with
1 pc. 710219 Bolt ISO 4014 M16 x 100-8.8, galv.
1 pc. 070890 Nut ISO 7042 M16-8, galv.



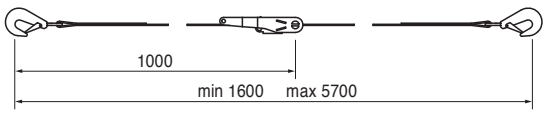
Accessories

051250	2,790	**Tension Belt, l = 5.70 m, 2.5 t**
051270	1,620	**Tension Belt Connector Wall M24**
116752	5,050	**Wall Bracing Shoe CB M24**

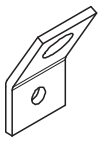
051250	2,790	**Tension Belt, l = 5.70 m, 2.5 t** To prevent climbing systems from tipping over due to wind loads.

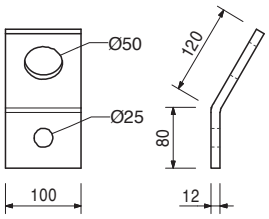


Note
Follow Instructions for Assembly and Use!
Technical Data
Permissible tension force 2.5 t.



051270	1,620	**Tension Belt Connector Wall M24** Wall connector to prevent tipping over due to wind loads with Tension Belt. To be used for climbing systems CB and FB.

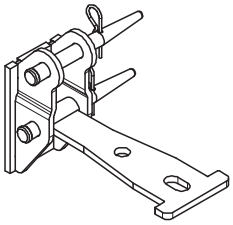


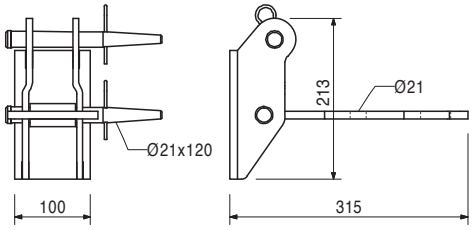


Accessories

026430	0,334	**Bolt ISO 4014 M24 x 70-10.9**

Item no.	Weight kg	
116752	5,050	**Wall Bracing Shoe CB M24** To prevent tipping over due to wind loads with Tension Belt or Tie Rod DW 15 and to stabilise the finishing platform. To be mounted on the Climbing Anchor M24 embedded in the concrete. **Complete with** 2 pc. 104031 Fitting Pin Ø 21 x 120 2 pc. 018060 Cotter Pin 4/1, galv.

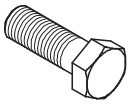


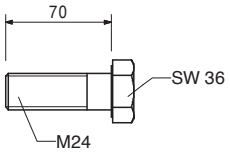


Accessories

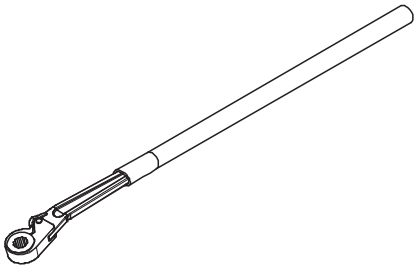
026430	0,334	**Bolt ISO 4014 M24 x 70-10.9**

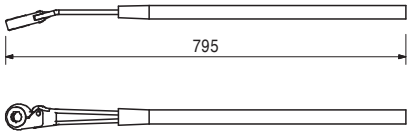
026430	0,334	**Bolt ISO 4014 M24 x 70-10.9** High-strength bolt for anchoring climbing systems.





027180	1,760	**Ratchet Lever SW 19** For operation of the adjusting unit and of the carriage with drive shaft SW 19.

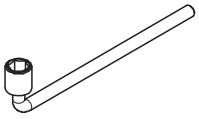


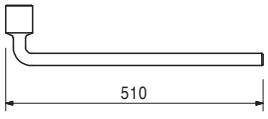


Accessories

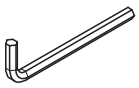
027200	0,100	**Insert Socket SW 19**

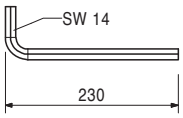
031480	2,460	**Socket Wrench SW 36, chrome-plated** For various purposes.



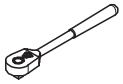


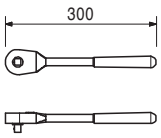
Item no.	Weight kg	
027212	0,445	**Allen Key SW 14, long** Fits to PERI Anchor Positioning Studs and Allen Key Bolts M16.





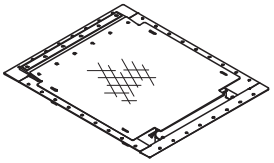
072180	0,560	**Ratchet Wrench 1/2"**

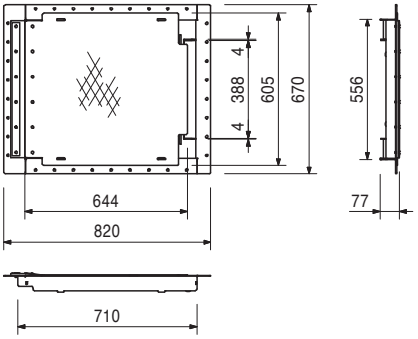




029620	0,075	**Socket SW 19-1/2"** Fits to Hex. Bolts M12 or Height Adjusting Unit SW 19.

Item no.	Weight kg		
126431	12,300	**Hatch 55 x 60-2, foldable** Self-closing hatch for ladder access. Clear opening approx. 55 x 60 cm. Ladder fixation with bolts or by hanging up.	**Complete with** 1 pc. 126785 Hatch Hinge RCS 12 pc. 108647 Rivet DIN 7337- A5 x 20 2 pc. 022230 Cotter Pin 5/1, galv.

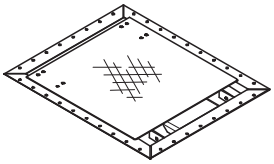


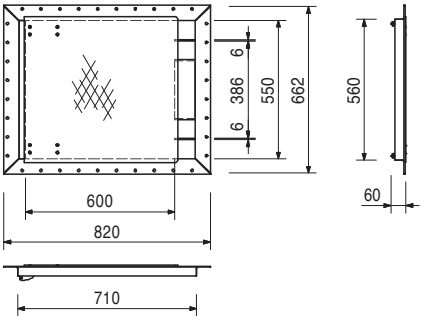


Accessories

710224	0,047	**Bolt ISO 4017 M12 x 40-8.8, galv.**
710381	0,017	**Nut ISO 7042 M12-8, galv.**

110608	15,600	**Hatch 55 x 60, foldable** Self-closing hatch for ladder access. Clear opening approx. 55 x 60 cm. Ladder fixation with bolts.	**Complete with** 1 pc. 110529 Hinging Plate left, galv. 1 pc. 110535 Hinging Plate right, galv. 8 pc. 721412 Rivet DIN 7337 - A4,8 x 12

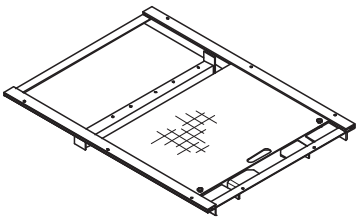


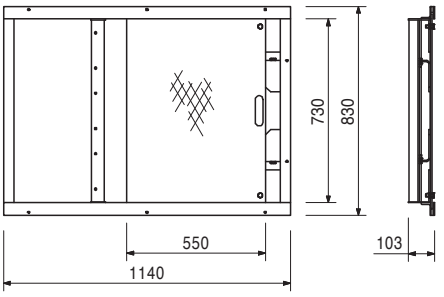


Accessories

710224	0,047	**Bolt ISO 4017 M12 x 40-8.8, galv.**
710381	0,017	**Nut ISO 7042 M12-8, galv.**

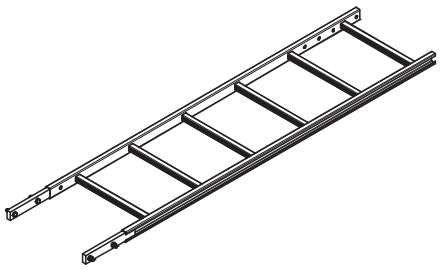
051430	37,900	**Sliding Hatch Cover** Non self-closing hatch for ladder access. Clear opening approx. 73 x 55 cm. Ladder fixation with bolts.	**Complete with** 4 pc. 710266 Bolt ISO 4017 M12 x 25-8.8, galv. 4 pc. 710381 Nut ISO 7042 M12-8, galv.

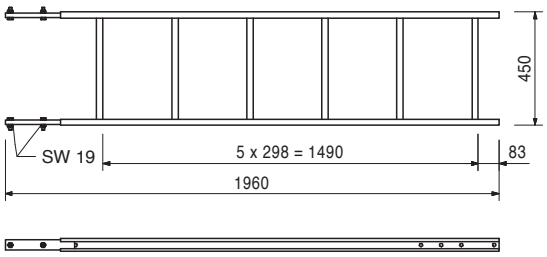




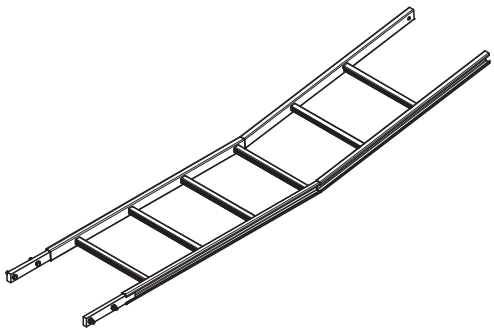
Ladder Access for Climbing Systems

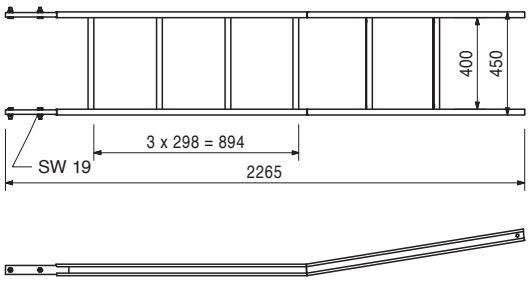
Item no.	Weight kg		
051410	11,700	**Ladder 180/6, galv.** As access for PERI formwork systems.	**Complete with** 4 pc. 710224 Bolt ISO 4017 M12 x 40-8.8, galv. 4 pc. 710381 Nut ISO 7042 M12-8, galv.



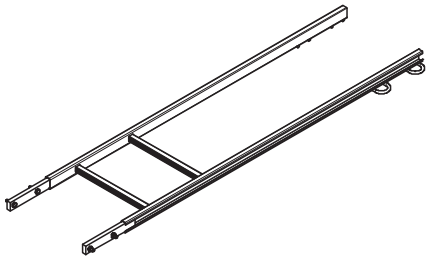


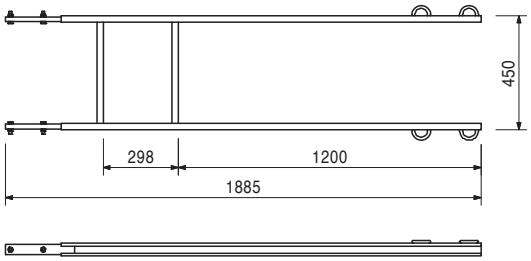
051420	12,800	**Ladder 220/6** As access for PERI formwork systems.	**Complete with** 4 pc. 710224 Bolt ISO 4017 M12 x 40-8.8, galv. 4 pc. 710381 Nut ISO 7042 M12-8, galv.



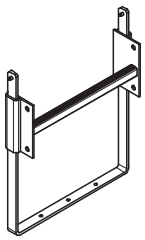


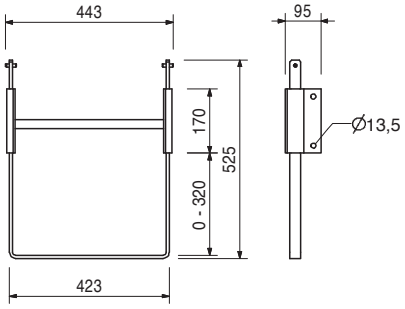
103724	10,400	**End Ladder 180/2, galv.** As access for PERI formwork systems.	**Complete with** 4 pc. 710224 Bolt ISO 4017 M12 x 40-8.8, galv. 4 pc. 710381 Nut ISO 7042 M12-8, galv.



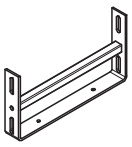


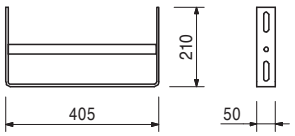
109105	5,070	**Ladder Base 30 adjustable, galv.** For horizontal fixing of ladders on the platform decking.





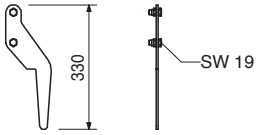
Item no.	Weight kg	
051460	2,180	**Ladder Base, galv.** As bottom ladder connection and for securing ladders against sliding on the scaffold decks.





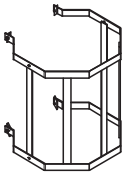
103718	0,684	**Ladder Hook, galv.** For adjusting the bottom ladder. Always use in pairs.

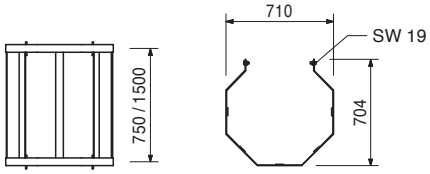
Complete with
2 pc. 710266 Bolt ISO 4017 M12 x 25-8.8, galv.
2 pc. 710381 Nut ISO 7042 M12-8, galv.



		Ladder Safety Cages, galv.
104132	15,600	**Ladder Safety Cage 75, galv.**
051450	25,200	**Ladder Safety Cage 150, galv.**
		Ladder safety cage for PERI access ladders.

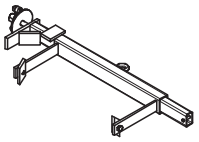
Complete with
4 pc. 710266 Bolt ISO 4017 M12 x 25-8.8, galv.
4 pc. 701763 Clamping Plate Fl 25 x 10 x 90

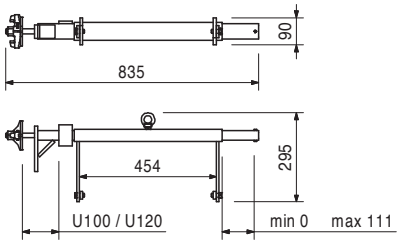




111165	6,080	**Ladder Connector VARIO, adjustable** For connecting ladders to Steel Walers SRZ and SRU, Profile U100 - U120.

Complete with
2 pc. 710266 Bolt ISO 4017 M12 x 25-8.8, galv.
2 pc. 701763 Clamping Plate Fl 25 x 10 x 90





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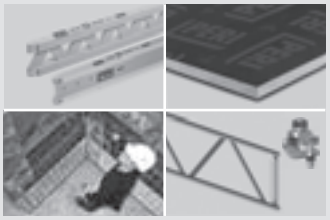

System-Independent Accessories

Services

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