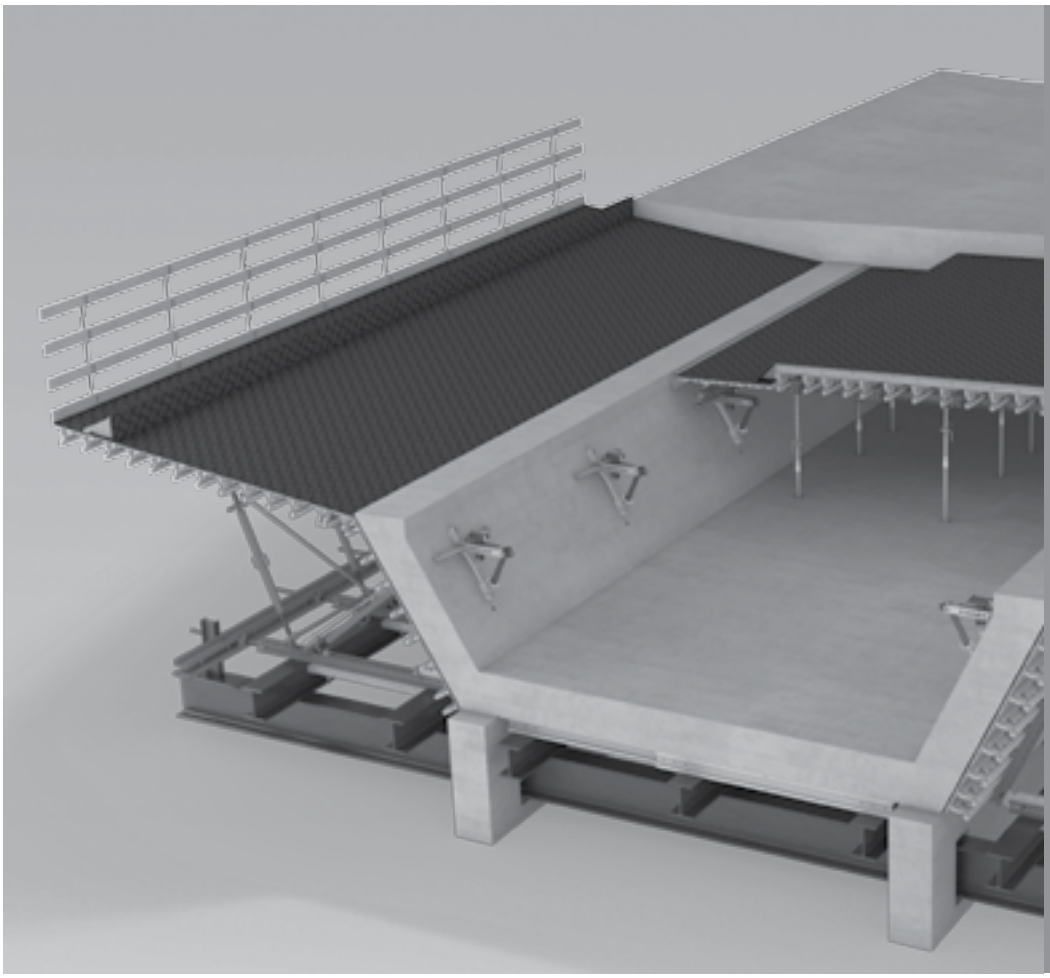
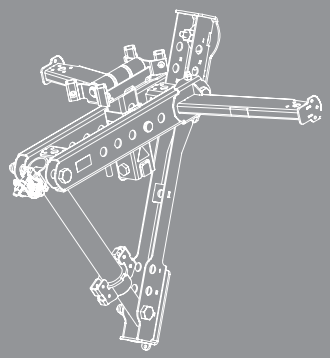
VIL Incremental Launching Facility

Internal slab formwork

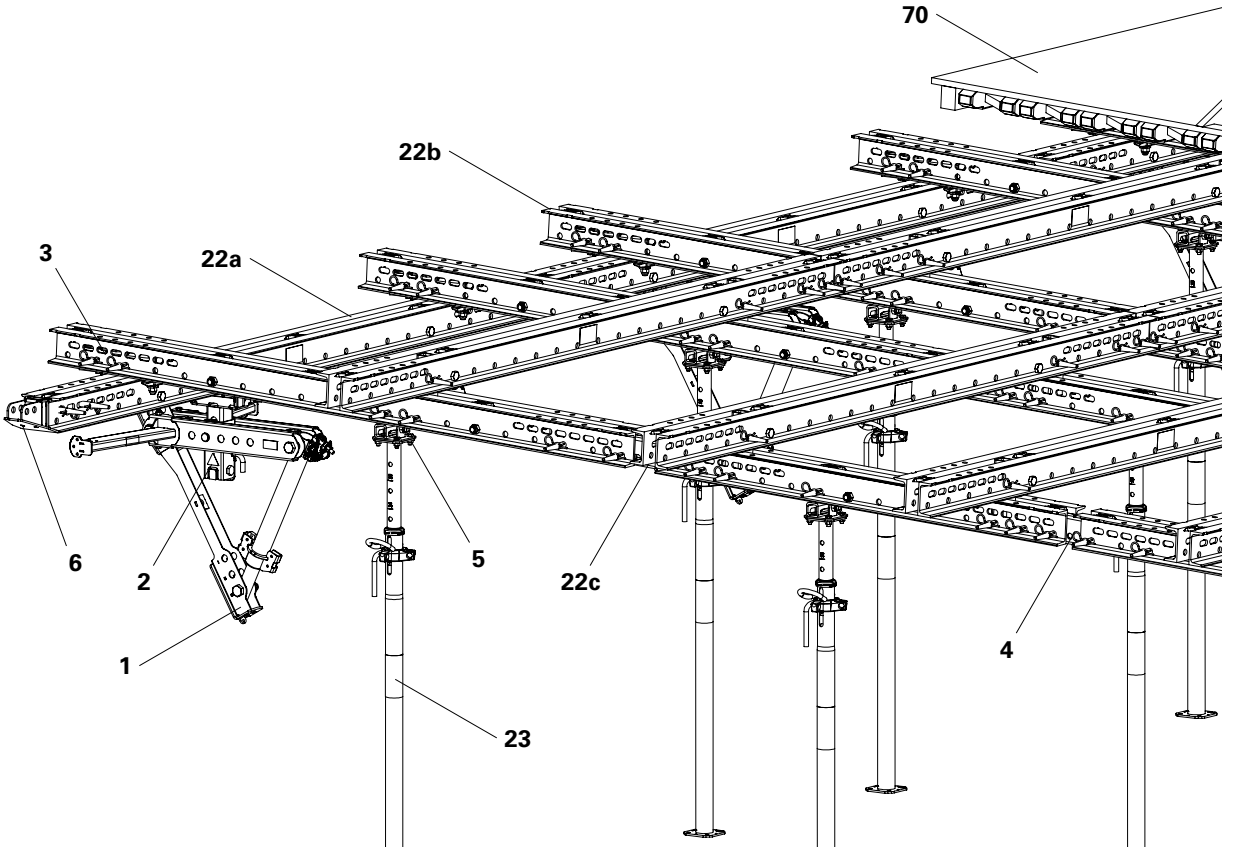
Instructions for Assembly and Use – Standard Configuration – Issue 12/2018





Overview

Main Components



1 Wall Support VIL
2 Roller Drophead VIL
3 Cross Fall Compensator SRU
4 Longitudinal Connector SRU
5 Cross Swivel Head SRU
6 Travelling Nose SRU
22a Rail
22b Cross Beam
22c Main Beam
23 Slab Prop
70 Internal Slab Formwork

Content

Overview
- Main Components 3
- Key 4

Introduction
- Target Groups 5
- Additional Technical Documentation 5
- Intended Use 6
- Instructions on Use 6
- Cleaning and Maintenance Instructions 7

Safety Instructions
- Cross-System 8
- System-Specific 10
- Load-Bearing Capacity 11
- Storage and Transportation 11

General

A1 System-Specific Components
- Wall Support VIL 12
- Roller Drophead VIL 13
- Cross Fall Compensator SRU 14
- Longitudinal Connector SRU 15
- Cross Swivel Head SRU 16
- Travelling Nose SRU 17

A2 Operating Sequence
- Preparing the Anchor Points 18
- Concreting the Side Walls 18
- Mounting the Wall Support 18
- Mounting the Internal Slab Formwork 18
- Moving the Internal Slab Formwork 18
- Load Table 19

Utilisation

B1 Preparing the Anchor Positions
- General 20
- Designated Anchor Points 20
- Independent Anchor Points 22

B2 Preparing the Wall Support
- General 23
- Assembly Position > 0° 23
- Assembly Position < 0° 24
- Mounting the Bracing Wing 25

B3 Mounting the Wall Support
- Mounting the Brackets on the Web 26
- Mounting the Roller Drophead 28
- Mixed Bracing 29
- Bracing with Scaffold Tubes 30
- Mixed Bracing for Overhangs 31

B4 Pre-Assembling the Slab Formwork
- General 32
- Mounting the Rails 33
- Mounting the Cross Beam 34
- Mounting the Main Beam 35

B5 Mounting the Slab Formwork
- General 36
- Preparations 37
- Lifting in the First Element 38
- Lifting in Additional Elements 39
- Mounting the Slab Props 40
- Closing the Filler Areas 41
- Mounting the Stopend Formwork 41

B6 Lowering the Slab Formwork
- General 42
- Lowering the Roller Drophead 42
- Lowering the Slab Formwork 43

B7 Moving the Slab Formwork
- Preparations 44
- Moving 45
- Anchoring with the Heavy-Duty Spindle 46

Components
- Components 48

Overview

Key

Pictogram | Definition

 Danger / warning / caution

 Information

 To be complied with

 Load-bearing point

 Visual check

 Tip

 Misapplication

 Safety helmet

 Safety shoes

 Safety gloves

 Safety glasses

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

Arrows

→ Arrow representing an action

⇨ Arrow representing a reaction of an action*

→ Forces

* If not identical to the action arrow.

Safety instruction categories
The safety instructions alert site personnel to the risks involved and provide information on how to avoid these risks. Safety instructions are featured at the beginning of the section or ahead of the instructions, and are highlighted as follows:

 **Danger**
This sign indicates an extremely hazardous situation which, if not avoided, will result in death or serious injury.

 **Warning**
This sign indicates a hazardous situation which, if not avoided, could result in death or serious injury.

 **Caution**
This sign indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

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

Set-up of the safety instructions

 **Signal word**
Type and source of the danger!
Consequences of non-compliance.
⇒ Avoidance measures.

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

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

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

For a better understanding, detailed illustrations are partly incomplete. Some safety installations which have possibly not been shown in these detailed descriptions must nevertheless be available.

Target Groups

Contractors
These Instructions for Assembly and Use are designed for contractors who either
- assemble, modify and dismantle the formwork system, or
- use it for, e.g. concreting, or
- allow it to be used for other operations, e.g. carpentry or electrical work.

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

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

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



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

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

** Instructions are given by the contractor himself or a competent person selected by him.

Additional Technical Documentation

- Instructions for Assembly and Use:
  – VARIO GT 24
- Instructions for Use:
  – Crane Splice 24
  – Crane Hook-2 VT 20
  – Pallets and Stacking Devices
  – DK Sealing Cones SK Anchor Cones
  – PERI Bio Clean
- PERI Design Tables - Formwork and Shoring
- Brochure:
  – VARIOKIT Engineering Construction Kit
  – GT 24 Formwork Girder
  – VT 20K / VT 20 Formwork Girder
- Technical data sheet
  – PERI Anchor Bolt 14/20x130

Intended Use

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

These Instructions for Assembly and Use describe the standard configuration of internal slab formwork for the construction of bridges using the incremental launching method.
This standard configuration uses the following parameters:
- Bridge trough with a web inclination of 26°
- Lateral inclination 3 %
- no bridge radius.

The components used are taken from the standardised VARIOKIT Engineering Construction Kit.
The powder-coated and galvanised precision components can be quickly and easily adapted to match the required bridge cross-sections during planning phases and on the construction site.

The internal slab formwork carries the dead weight of the fresh concrete and steel reinforcement during concreting and until the concrete has completely hardened.

These Instructions for Assembly and Use exclusively describe the application of the internal slab formwork.
The external and slab formwork for the bridge construction have not been included in this document.

Features
The internal slab formwork for bridges using the incremental launching method consists of formlining, profiled timber formwork, wooden girders and steel girders. The internal slab formwork is mounted on steel rails, e.g. SRU Steel Walers or HEB 140 / IPE 160-330 and Double GT 24 Girders.

During concreting, the centre part of the internal slab formwork is always supported by steel props such as PERI PEP Ergo. The sides of the internal slab formwork transfer the load via the SRU Rails and the Roller Drophead VIL to the Wall Support VIL in the side walls of the bridge.
After the required curing time, the internal slab formwork is lowered and pushed backwards from the advanced superstructure section into the next concreting section.

Accessing the internal slab formwork can be facilitated via the PERI UP Flex Stair Tower or other access systems or access components.

Technical data
Max. permissible load of the Wall Support VIL:
- $V_{E,k}$ = 55 kN (α = 0°)
- $V_{E,k}$ = 64.5 kN (α = 32°)

Max. permissible load of the Roller Drophead VIL:
- $V_{E,k}$ = 82 kN

Bridge geometry
Min.- max. inclination of the side walls:
α = -27° – 32° *
Max. longitudinal inclination of the bridge:
β = 7 %
Max. lateral inclination of the bridge:
γ = 6 %
Min. bridge radius:
r > 300 m

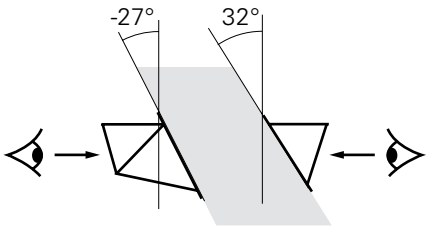
* The specified number of degrees indicates the deviation from the vertical.
Negative values tilt towards the viewer, positive values tilt away from the viewer.

Instructions on Use

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

Only PERI original parts may be used. The use of other products and spare parts is not allowed.

Changes to PERI components are not permitted.



Cleaning and Maintenance Instructions

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

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

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

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

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

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

When placing bundles of reinforcement bars or other heavy objects on horizontally-stored formwork elements, suitable support, e.g. square timbers, is to be used; as a result, impressions and damage to the formlining are largely avoided.

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

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

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

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

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

Do not clean components suspended on crane lifting gear.

Cross-System

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

These Instructions for Assembly and Use can be used as the basis for creating a risk assessment. The risk assessment is compiled by the contractor. However, these Instructions for Assembly and Use do not replace the risk assessment!

Always take into consideration and comply with the safety instructions and permissible loads.

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

Materials and working areas are to be inspected on a regular basis, especially before each use and assembly, for:
- signs of damage,
- stability and
- functionality.

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

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

Components provided by the contractor must conform to the characteristics required in these Instructions for Assembly and Use, as well as all valid construction guidelines and standards. Unless otherwise indicated, this applies in particular to:
- timber components: Strength Class C24 for Solid Wood according to EN 338.
- scaffold tubes: galvanised steel tubes with minimum dimensions of Ø 48.3 x 3.2 mm according to EN 12811-1:2003 4.2.1.2.
- scaffold tube couplings according to EN 74.

Deviations from the standard configuration are only permitted after a further risk assessment has been carried out by the contractor.
Appropriate measures for working and operational safety, as well as stability, are defined on the basis of this risk assessment.
Corresponding proof of stability can be provided by PERI on request if the risk assessment and resulting measures to be implemented are made available.

Before and after exceptional occurrences that may have an adverse effect regarding the safety of the formwork system, the contractor must immediately
- create another risk assessment, with appropriate measures for ensuring the stability of the formwork system being carried out based on the results,
- arrange for an extraordinary inspection to be carried out by competent person qualified to do so. The aim of this inspection is to identify and rectify any damage in good time, in order to guarantee the safe use of the formwork system.

Exceptional occurrences can include:
- accidents,
- longer periods of non-use,
- natural events, e.g. heavy rainfall, icing, heavy snowfall, storms or earthquakes.

Assembly, modification and dismantling work
Assembly, modification or dismantling of formwork systems may only be carried out by qualified persons under the supervision of a competent person. The qualified persons must have received appropriate training for the work to be carried out with regard to specific risks and dangers.

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

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

is available and used as intended.

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

The contractor must
- provide safe working areas for site personnel which are to be reached through the provision of safe access ways. Areas of risk must be cordoned off and clearly marked.
- ensure stability during all stages of construction, in particular during assembly, modification and dismantling operations.
- ensure and prove that all loads can be safely transferred.

Operations
The contractor must ensure that the assembly, modification, dismantling, moving, use and handling of the product is managed and supervised by qualified personnel and authorised personnel.

All persons working with the product must be familiar with the operating instructions and safety information.

The contractor has to ensure that the instructions for use, the instructions for assembly and use, other instructions required for operation or assembly, relevant planning documents, parts lists and other data are available to the users.

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

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

Access ways and working areas
- Safe access to all working areas must be guaranteed at all times.
- Working areas must remain free of any tripping hazards.
- Working platforms are to be kept clean and tidy. In particular, there is an increased risk of slipping in rain and snow conditions.
- Ensure that site personnel are always in a safe and stable position.
- Do not remain in an area of risk caused by moving parts or parts being moved.
- Avoid installing working areas and access points in areas of risk.
- Close access hatches immediately after use.

Protection against falling objects
Secure tools and materials to prevent them from falling to the ground. Concrete residue and other dirt are to be removed.

Avoid positioning working areas and access points in areas of risk. If this is not possible due to work procedures, suitable equipment (e.g. protective roofs) must be available to provide protection against falling objects. This also applies to work requiring only a short period of time.

Operational working areas at great heights are to be secured against falling objects by means of appropriate constructional measures. Safety nets (mesh size ≤ 2 cm) and planking are considered to be suitable here, and are to be installed very close (distance ≤ 5 cm) to the building.

Do not remain under any suspended loads.

Assembly



Mandatory personal protective equipment (PPE):
safety helmet
safety shoes
protective gloves

There is always the possibility of unforeseen risks arising during assembly work. Assess the degree of risk in each individual case and, if necessary, take measures to prevent or at least minimise the risk.



If guardrails cannot be used due to technical reasons or have to be removed, then site personnel are to be secured by other means, e.g. through the use of personal protective equipment or safety nets.

Site personnel are forbidden to remain in areas below where assembly work is being carried out, unless the area of risk has been provided with sufficient protection against falling, overturned, sliding or rolling objects and masses. Otherwise, the area of risk is to be cordoned off and clearly marked.

If working under suspended loads is unavoidable, appropriate measures must be determined and applied.

Avoid entering the area between suspended loads and the building.

System-Specific

Utilisation
Every contractor who uses or allows formwork systems or sections of the formwork to be used, is responsible for ensuring that the equipment is in good condition.

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

Maintenance and repairs
The VIL components of the internal slab formwork must be checked before each use in order to ensure they are in fault-free condition.

Basically, all materials used must be in perfect condition.
Mountings must be inspected for signs of damage at regular intervals by authorised personnel.
Damaged components are to be identified, removed and replaced.

Remove concrete residue. All concrete residue that affects functionality must be removed immediately.

In case of overload or damage, stop work on and under the platforms, determine and eliminate the cause, and replace all damaged components.

If the maximum permissible wind speed has been exceeded, temperatures are outside of the normal limits or after unusual events such as fire or earthquake, all safety-relevant components as well as the supporting system must be checked regarding functionality and load-bearing capacity before being used again.

Inspection of safety-relevant components
- Visual checks are to be carried out by authorised personnel at regular intervals.
- Before every movement sequence and assembly procedure, the functions must be checked by qualified personnel.
- Defective parts are to be replaced by PERI original components.
- Repairs may only be carried out by PERI-trained personnel only.

Inspecting the supporting structure
- Visual checks are to be carried out by authorised personnel at regular intervals.
- Only PERI original components may be used for repairs or as spare parts.

Inspection of other components
- Inform the site management.
- Only qualified personnel are allowed to carry out repairs.

Moving the formwork
During the moving procedure, neither persons nor construction materials or tools are allowed to be transported.

Connections
- Always mount all fitting pins and bolts.
- Always secure fitting pins with cotter pins.
- Secure bolts with self-locking nuts. Only use the self-locking nuts once.

Slab formwork
In order to avoid an overloading of the integrated temporary props, the load-bearing capacity of the slabs, plates and beams which have already been completed must be activated. For this, a free deflection possibility of these components is required. This takes place by releasing and re-installing all existing temporary props, and is also required for formwork systems where the prop head is an integral part of the slab formwork.

The load-distributing support used, such as planking, must match the respective base. If several layers are required, planks are to be arranged crosswise.

During striking, do not tear off the formwork elements with the crane.

Prop loads must be safely transferred by means of sufficiently load-bearing slab props or tower systems.

When storing heavy items on the formwork, the load-bearing capacity must be taken into consideration.

Cantilevers may only be accessed after bracing has been mounted.

Bracing
The horizontal fixed position of the slab formwork must be guaranteed. This is given with circumferential walls and pre-concreted beams. Otherwise, the transfer of the horizontal loads has to be guaranteed by means of other measures supplied by the contractor, e.g. bracing.
Load assumptions for horizontal loads in accordance with DIN EN 12812.

Winches / chain hoists
All auxiliary means used to move the slab formwork must be able to accommodate all forces that could be generated at all times. This applies in particular to ascending/descending gradients.

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

Exceptional occurrences
With wind speeds of 64 km/h upwards, weigh the formwork down immediately after shuttering, e.g. with reinforcement,
in the case of a storm warning, take additional measures, e.g.
formwork is provided with additional bracing,
weigh down formwork (reinforcement), dismantle formwork.

Danger

Heavy moving parts can fall down or overturn!
During assembly, there is a risk of hands and other body parts being crushed.
⇒ Do not stand under suspended loads.
⇒ Use a guide rope when moving components.
⇒ Maintain an appropriate safety distance.
⇒ Do not stand between moving elements.

Load-Bearing Capacity

Attach the internal slab formwork to Ø 21 fitting pins in the SRU Steel Walers or with lifting straps to the crane. (Fig. 01)

Bearing capacity of the load-bearing points:
- Fitting pins Ø 21 (38) : 3000 kg

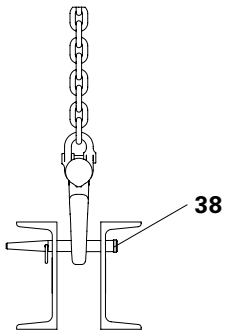


Fig. 01

- So that the internal slab formwork is in the correct position when being craned in, the attachment points are determined through a series of tests.

Storage and Transportation

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

Do not drop the components.

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

During the moving procedure
- ensure that components are picked up and set down so that unintentional falling over, falling apart, sliding, falling down or rolling is avoided.
- no persons are allowed to remain under the suspended load.
- use a rope to facilitate better control of the components suspended from a crane.

The access areas on the construction site must be free of obstacles and tripping hazards, as well as being slip-resistant.

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

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

Wall Support VIL

The Wall Support VIL accommodates vertical forces of the internal slab formwork and transfers these to the side walls of the bridge.
When moving the internal slab formwork, the Wall Support also carries the horizontal forces and transfers them likewise to the side walls of the bridge. (Fig. A1.01)

Components

1.1 Wall Shoe
1.2 Cantilever Arm
1.3 Spindle

Using the Spindle, the Cantilever Arm can be aligned to match the wall inclination accordingly.
This also aligns the formwork.
If the wall inclination is negative (tilting towards the viewer), the Overhang Adapter VIL must be mounted. (Fig. A1.01a)

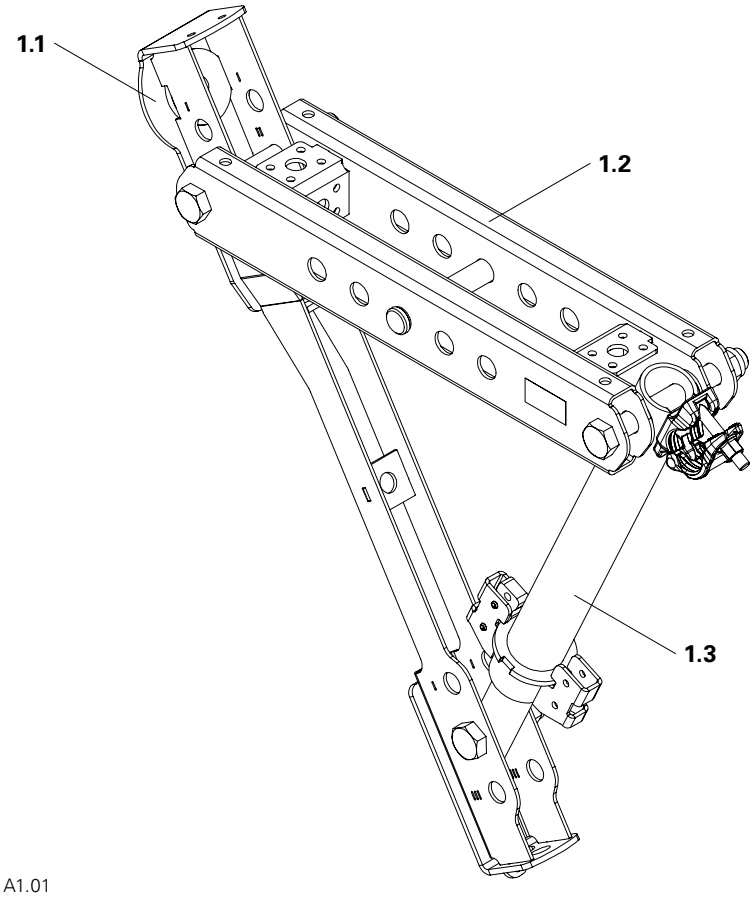


Fig. A1.01

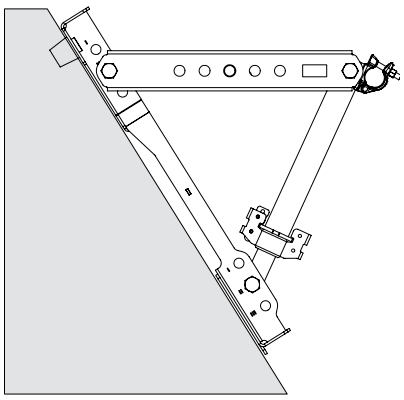


Fig. A1.01a

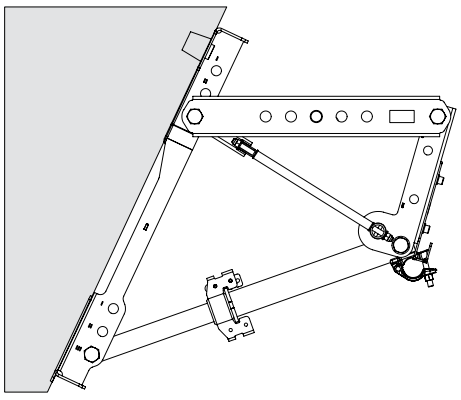


Fig. A1.01b

Roller Drophead VIL

The Roller Drophead VIL carries the vertical forces of the internal slab formwork and transfers them to the Wall Support VIL.
When moving the internal slab formwork, the rails are pushed over the Roller Drophead VIL and then laterally guided. For striking operations, the Roller Drophead can be lowered. (Fig. A1.03a)

Components

- **2.1** Roller
- **2.2** Quick-release mechanism
- **2.3** Locking pin
- **2.4** Guide nose
- **2.5** Bearing bolt
- **2.6** Fixing bolt

Lowering

1. Unscrew locking pin (2.3) and remove.
2. A hammer blow on the quick-release mechanism (2.2) causes the Roller Drophead VIL to drop 5 cm into the striking position.

(Fig. A1.02 + A1.03)

Lifting

1. Use a ring spanner to turn the bearing bolt (2.5) and lift the quick-release mechanism. Roller Drophead is now in the shuttering position.
2. Insert locking pins (2.3) which then secures the quick-release mechanism against lowering.

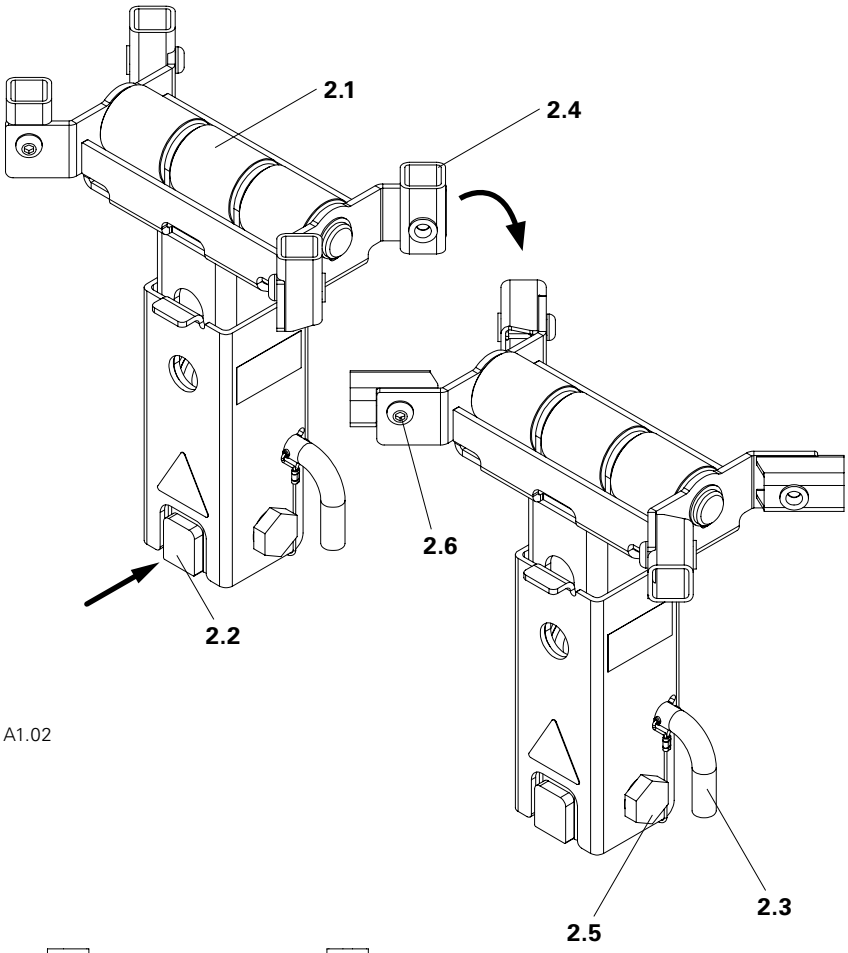


Fig. A1.02

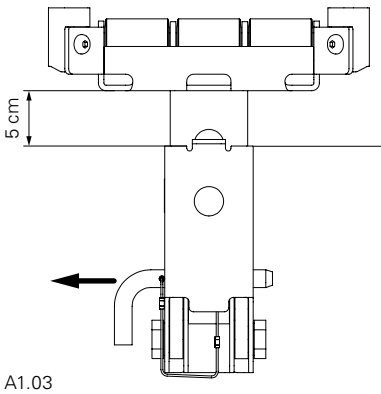


Fig. A1.03

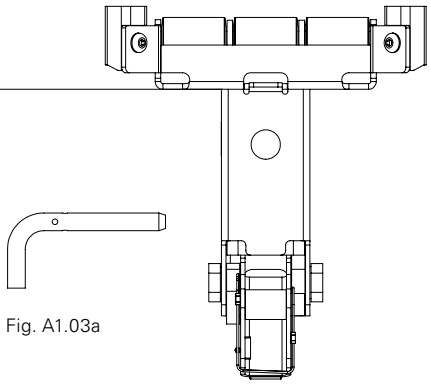


Fig. A1.03a

The guide noses (2.4) can be swung outwards. This is necessary if the rail tilts on the Roller Drophead or when negotiating tight corners.
To swing outwards, loosen the fixing bolts (2.6) and pivot the guide nose downwards. (Fig. A1.02)

Cross Fall Compensator SRU

The Cross Fall Compensator SRU connects the cross beam to the rail. (Fig. A1.04)

Components

3.1 Positioning hole
3.2 Fixing bolt
3.3 Clamping plate

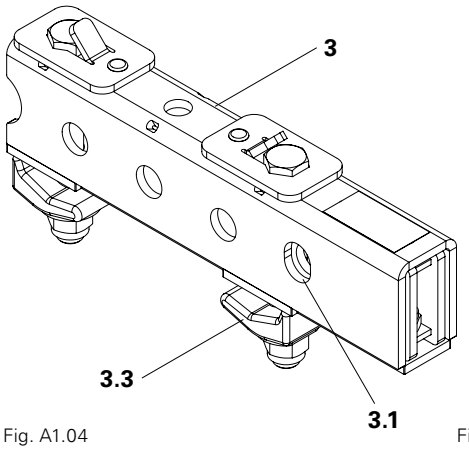


Fig. A1.04

The lateral inclination of the internal slab formwork can be adjusted in 3 steps. (Fig. A1.05)
Position 1: 0 % – 2 %
Position 2: 2 % – 4 %
Position 3: 4 % – 6 %

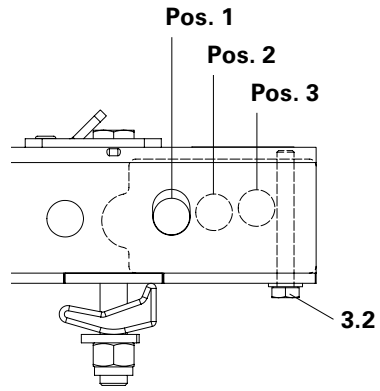


Fig. A1.05

Adjusting the lateral inclination
1. Loosen the Fixing Bolt (3.2).
2. Move the internal engagement coupling to the required position. Make sure that the two holes on the positioning hole (3.1) are congruent.
3. Tighten the fixing bolt.

(Fig. 1.05)

Components

3 Cross Fall Compensator SRU
22 Steel Waler Universal SRU U120
38 Fitting pin D=21x120
39 Cotter pin 4/1, galv.

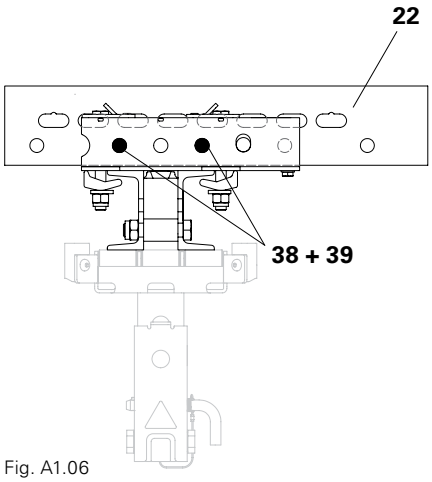


Fig. A1.06

Pinning positions for **horizontally** arranged Crossbars.

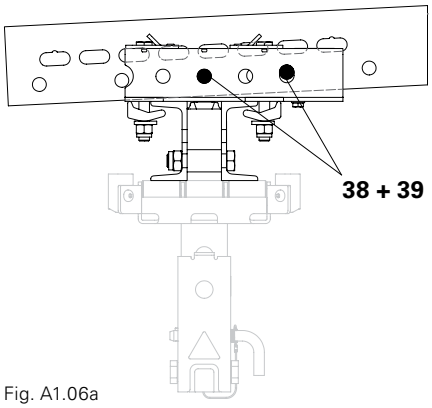


Fig. A1.06a

Pinning positions for **inclined** positioned Crossbars.

Assembly
1. Push the Cross Fall Compensator SRU (3) outwards onto the longitudinal beam and secure to the top chord using clamping plates.
2. Place cross-bar on the Cross Fall Compensator SRU and fix in position with two fitting pins (38) and secure with cotter pins (39).

When installing in the Crossbeam, take the direction of assembly into consideration. The longer side points in the direction of the incline. (Fig. A1.06)

Alternatively, a Wide Flange Beam HEB 140 or medium-width I-Beam IPE 160 – 330 can be used as rails. Project-specific planning is required for the slab formwork!

Longitudinal Connector SRU

The Longitudinal Connector SRU connects two Steel Walers SRU at the front. (Fig. A1.07)
The Longitudinal Connector SRU has two functions:

- Longitudinal compensation of the Cross Beam for the internal slab formwork.
- Length adjustment of the outer rail for bridges with radius.

Components

4.1 Positioning hole
4.2 Adjusting screw
4.3 Counterplate
4.4 Locking screw

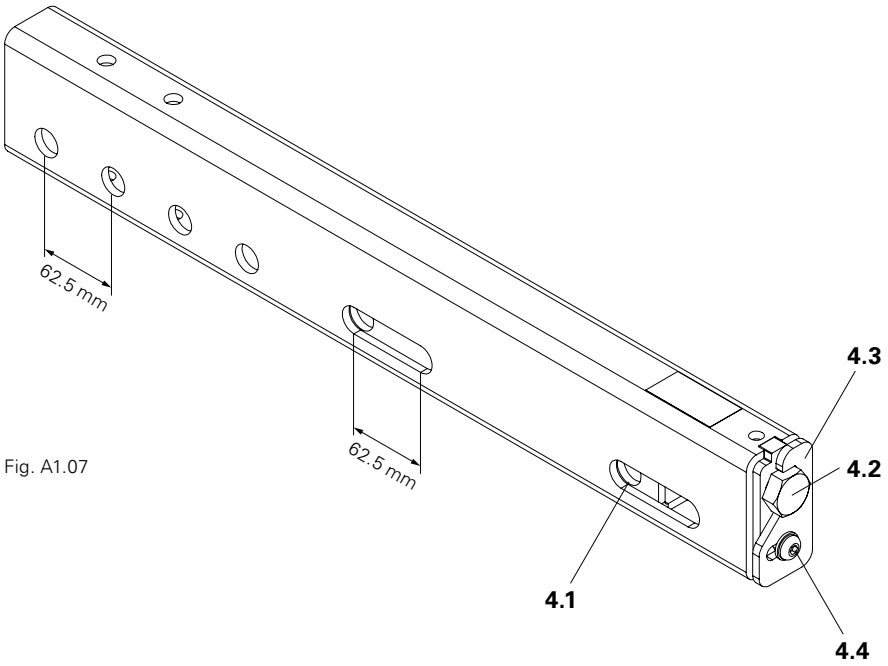


Fig. A1.07

The longitudinal connector allows adjustments of 0 – 125 mm.
Adjustments are made in 2 areas:

- 0 – 62.5 mm
- 62.5 – 125 mm

(Fig. A1.08)

Adjusting the length

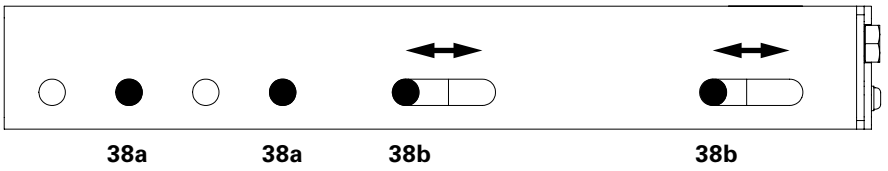
1. Swivel counterplate (4.3) to one side.
2. Adjust to the required length using the adjusting screw (4.2).
3. Pivot the counterplate back, thereby securing the adjusting screw.

Assembly

1. Insert the longitudinal connector at the front side into the Steel Waler SRU.
2. Insert fitting pins (38a) and secure with cotter pins.
3. Push in the other Steel Walers and mount using fitting pins (38.b) and cotter pins.

Positioning matrix for fitting pins 38a and 38b

0 – 62.5 mm



62.5 – 125 mm

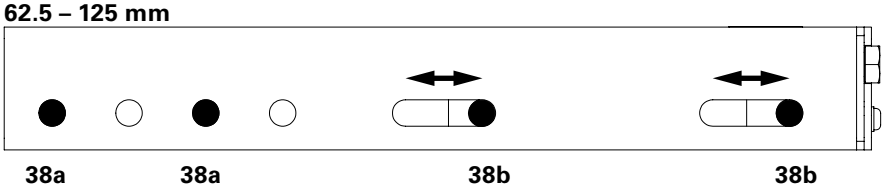


Fig. A1.08

Always carry out length adjustments before starting assembly operations!

The counterplate (4.3) must be swivelled towards the adjusting screw (4.2) during installation!

Cross Swivel Head SRU

The Cross Swivel Head SRU transfers the vertical forces of the Cross Beams to the slab props.
The Cross Swivel Head is designed to allow compensation for any slab formwork inclinations. The slab props are always in a vertical position.
(Fig. A1.09)

Components

5.1 Connector plate
5.2 Cardan joint
5.3 Check bore hole
5.6 Mounting hole

The Cross Swivel Head has two positions:
- Concreting position
- Moving position

Assembly
Secure the Cross Swivel Head on the mounting holes to the slab props using 4 bolts M12 x 40 and nuts M12.

Shuttering position
The Cross Swivel Head with the slab props is positioned vertically under the Cross Beam. The axis of the connector plate snaps into place in the vertical groove.

Moving position
The Cross Swivel Head with the slab props is pivoted to the rear. Fix the slab prop to the slab formwork by means of a lashing strap.

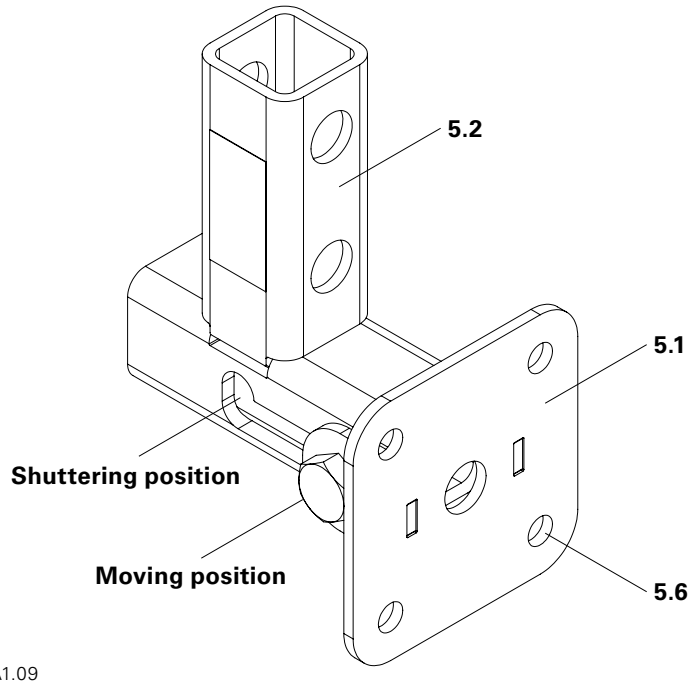


Fig. A1.09

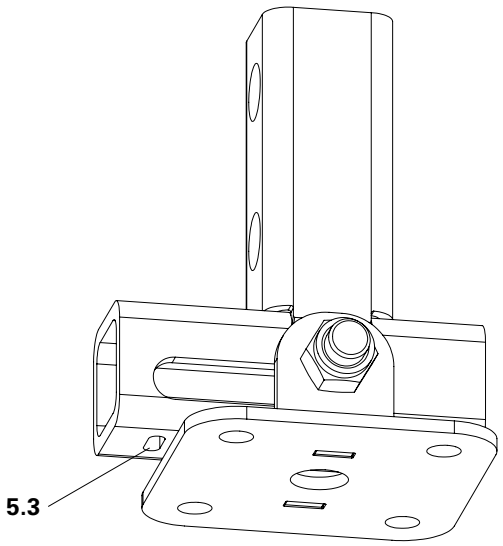


Fig. A1.10

The check bore hole (5.3) must be completely visible in the shuttering position. (Fig. A1.10)

Travelling Nose SRU

The Travelling Nose SRU is mounted on the front and rear ends of the rail. (Fig. A1.11)

Components

6.1 Positioning hole SRU
6.3 Positioning hole SLS

The Travelling Nose has two functions:
- When moving the slab formwork, the floor surface lifts and lowers the rail on the Roller Drophead.
- The Heavy-Duty Spindle SLS 80/120 is mounted on the Travelling Nose and thus fixes the internal slab formwork in place after the moving procedure has finished.

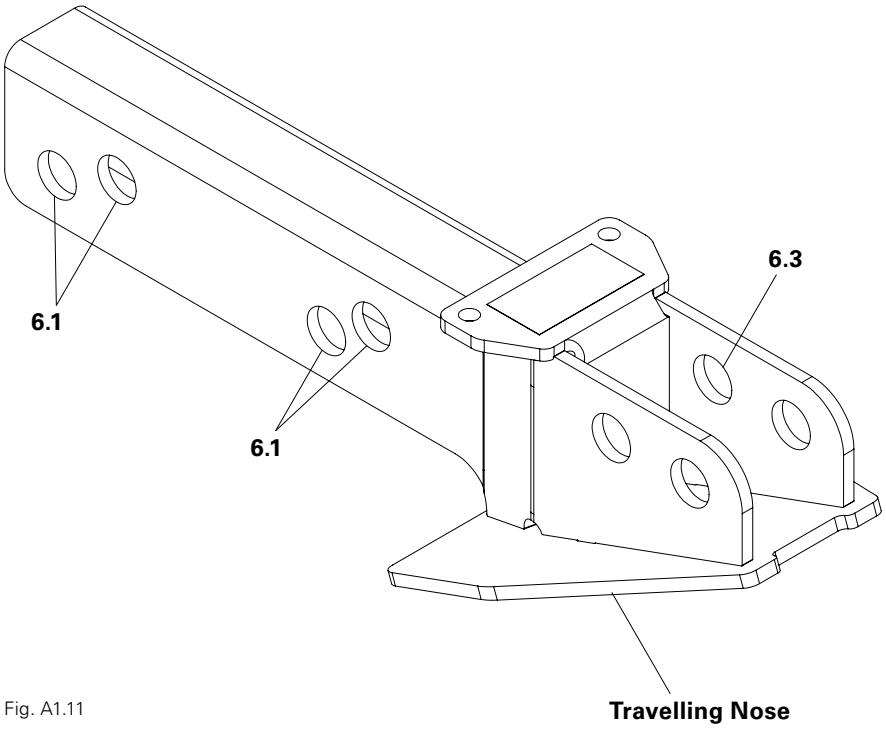


Fig. A1.11

Assembly
Mount the Travelling Nose in the slotted holes of the Steel Waler SRU using fitting pins (38) and cotter pins (39).

- With Steel Walers SRU 72 and 97, do **not** mount the Travelling Nose on the side with the truncated slotted hole (22.1).
- The Travelling Nose must have a flush and gap-free (A) connection with the Steel Waler SRU.

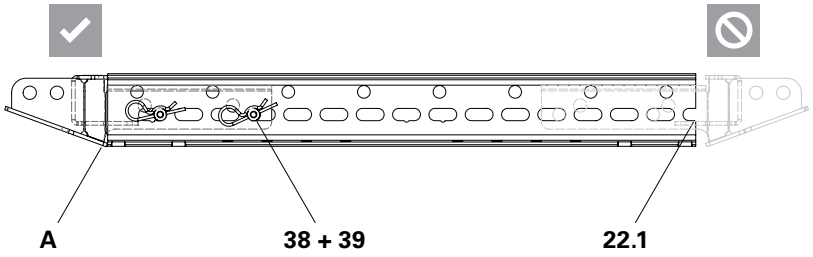


Fig. A1.11a

Preparing the Anchor Points

- Anchor positions on the internal wall formwork of the webs with DK Cone DW 15/55, Spacer Tube DR 22 and either with Water Bar Middle Piece DW15 (with the same anchor position as for the wall formwork) or with Threaded Anchor Plate DW 15.
- Close formwork, mount stopend formwork.

Concreting the Side Walls

- Concrete the webs.
- Strike wall formwork after required curing time.

Mounting the Wall Support

- Remove the Tie Rod DW 15 from the internal wall formwork.
- Remove the DK Cone DW 15/55.
- Mount tie rods with specified lengths (overhand of tie rod 85 mm).
- Insert Wall Support VIL vertically onto the tie rod and in the impression of the DK Cone.
- Manually mount the Wall Support VIL to the tie rod using the hex. nut DW 15/55 SW 30/30 DW 15.
- Mount the Roller Drophead VIL in the shuttering position.
- Horizontally brace all Wall Supports VIL.

Mounting the Internal Slab Formwork

- Position the internal slab formwork together with the rails (Steel Walers SRU) on the Roller Drophead.
- Secure the internal slab formwork against any unintentional movement.
- Mount steel slab props under the internal slab formwork in the planned positions.
- Prepare the formlining in the recessed areas for attaching crane slings.
- Close the edge areas (slab formwork to the web) with timbers, adjusting boards and formlining.
- Check and document internal slab formwork before concreting for position, completeness and suitable materials.
- The transfer of the concrete weight loads on the slab props and Wall Support VIL is carried out according to project-specific static specifications.
- Working wind: max. wind speed ≤ 63 km/h (wind pressure $q \leq 0.20$ kN/m²).
  For higher wind speeds, fix the internal slab formwork appropriately.

Moving the Internal Slab Formwork

- Prepare the new concreting section in accordance with Section B3 "Mounting the Wall Support".
- Remove filler areas in the edge area of the formwork.
- Lower each Roller Drophead by striking the quick-release mechanism with a hammer blow.
- Lower the steel slab props from the inside to the outside, fold up and fix in a horizontal position by means of lashing straps.
- The entire internal slab formwork is now positioned on the Roller Dropheads.
- Lower the first Roller Drophead of the new concreting section in order to create an access ramp for the Travelling Nose SRU.
- Position the internal slab formwork in the new concreting section using a chain hoist or deflection roller and crane.
- Lift the still-lowered Roller Drophead into the formwork position. For this, lift the Cross Beam of the internal slab formwork with additional props or with a rack and pinion winch (approved for industrial applications and approved according to DIN 7355).
- Secure the internal slab formwork against any unintentional movement. Here, mount one Heavy-Duty Spindle SLS on the Travelling Nose SRU and secure it on the previous concreting section.

Load Table

Load overview / minimum concrete strength

Internal slab formwork	Minimum required concrete strength		Minimum required level of reinforcement Min A_s
	With Water Bar Middle Piece DW 15	With Threaded Anchor Plate DW 15	
Concreting position	25 N/mm²	25 N/mm²	7.7 cm²

* Maximum permissible live load in the concreting position

Other conditions or influences must be proven on a project-specific basis.

B1 Preparing the Anchor Positions

General

Components

11	DK Sealing Cone DW 15/55
13	Spacer Tube rough DR 22
14	Tie Rod DW 15
14a	Tie Rod DW 15, with overhang 85 mm
15	Water Bar Middle Piece DW 15
16	Threaded Anchor Plate DW 15
44	Tie Rod Wrench
45	DK Cone Spanner UNI

The number and position of the anchor points for the Wall Supports depends on the shape of the structure and position of the rails, and must be established on a project-specific basis.

Designated Anchor Points

If the anchor positions match, the anchor for the Wall Support VIL may be the same as for the wall formwork of the web.

In this case, use a two-piece anchor with a Water Bar Middle Piece (15) and DK Sealing Cones (11) for shuttering the webs.

Assembly

1. Screw two sufficiently long Tie Rods DW 15 (14) as far as possible into the Water Bar Middle Piece.
2. Attach two Spacer Tube rough DR 22 (13) and two DK Sealing Cones (11).
3. Mount system-specific ties.

(Fig. B1.01)

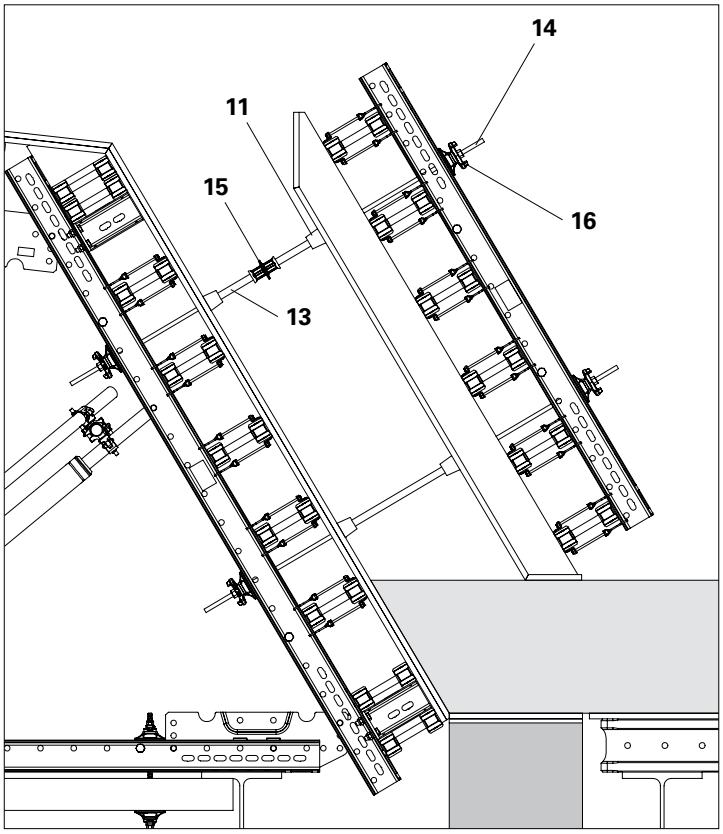


Fig. B1.01

B1 Preparing the Anchor Positions

After concreting

1. Remove the tie rods positioned towards the internal formwork together with the internal formwork.
2. Remove the Sealing Cone using the DK Cone Spanner (45). (Fig. B1.02)
3. Install shortened tie rod by means of a Tie Rod Wrench. Projection over the concrete 85 mm. (Fig. B1.02a)

When concreting the internal slab the external wall formwork must remain anchored to the Water Bar Middle Piece (15) with the Tie Rod DW 15.

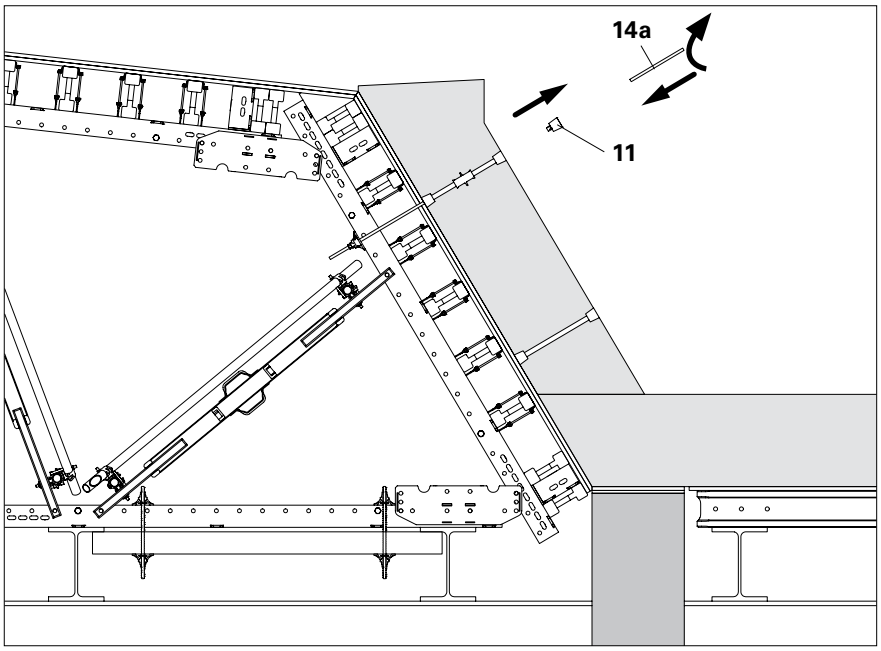


Fig. B1.02

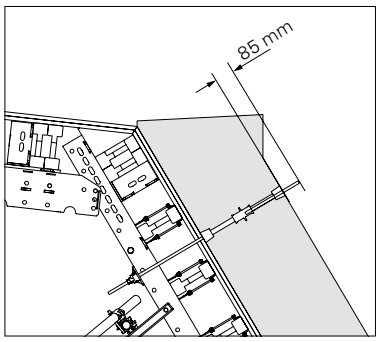


Fig. B1.02a

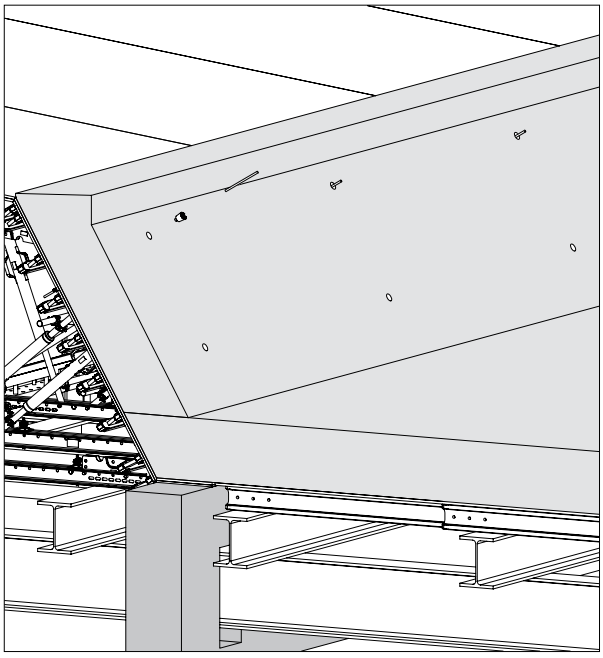


Fig. B1.03

Independent Anchor Points

If the anchor positions for the wall formwork of the web and Wall Support do not match or additional anchor points are required, independent anchor points must be set.

Components

10	Anchor Positioning Plate DW 15
11	DK Sealing Cone DW 15/55
12	Hex. Nut DW 15 SW 30/50
13	Spacer Tube rough DR 22
14a	Tie Rod DW 15
16	Threaded Anchor Plate DW 15
32	Hex. wood screw DIN 571 6x20
44	Tie Rod Wrench
45	DK Cone Spanner Uni

Assembly

1. Pre-drill formlining.
2. Align the Anchor Positioning Plate (10) and screw it to the outside of the formlining using hex. wood screws DIN 571 6 x 20 (32).
3. Screw Threaded Anchor Plate DW 15 (16) onto the Tie Rod DW 15 (14a).
4. Attach Spacer Tube rough (13) and DK Sealing Cone (11).
5. Insert the tie from the inside of the formwork through the Anchor Positioning Plate and screw on tightly with hex. nut DW 15 (12).

(Fig. B1.04 – B1.06)

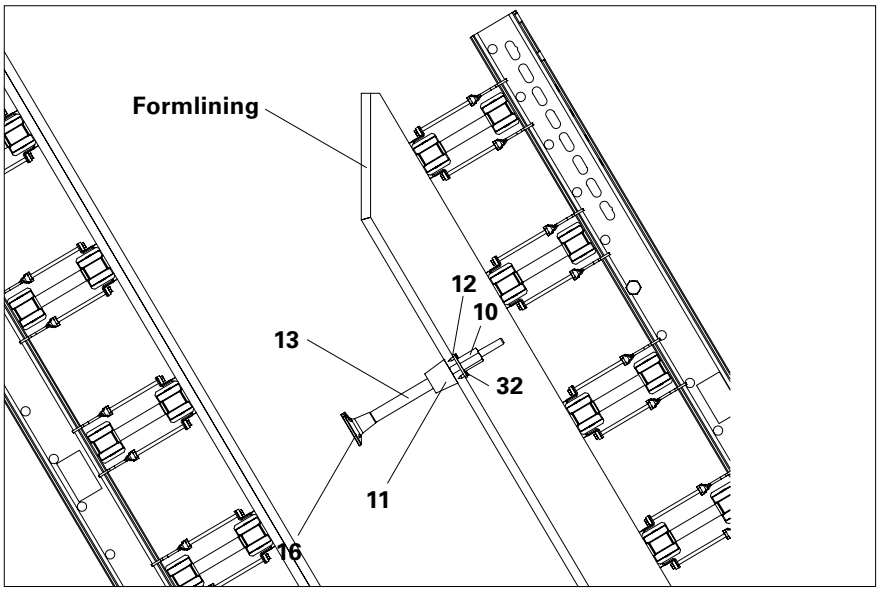


Fig. B1.04

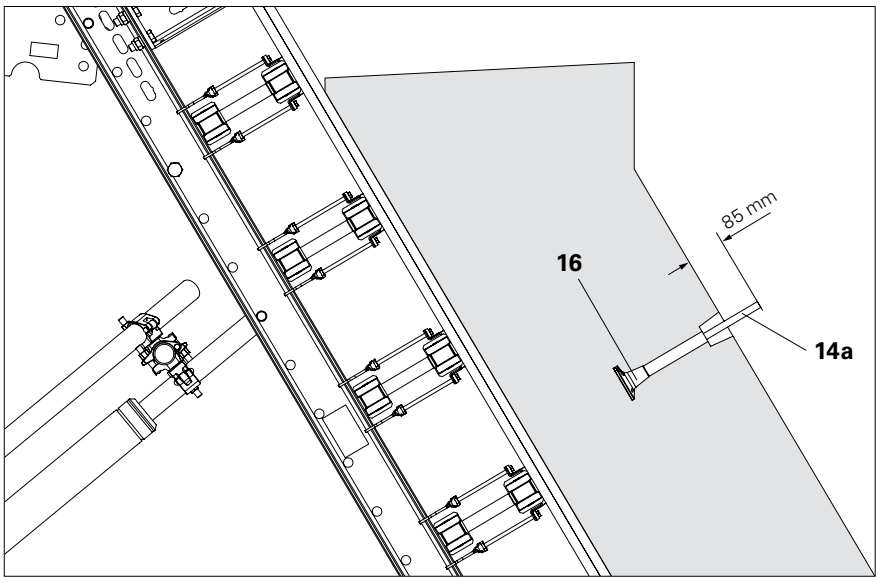


Fig. B1.05

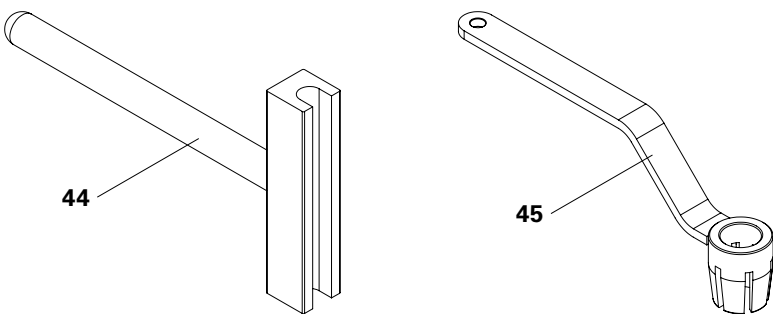


Fig. B1.06

B2 Preparing the Wall Support

General

The Wall Support VIL has three different assembly positions for the Cantilever Arm (1.2) and Spindle Strut (1.3).

The position of the Wall Shoe (1.1) depends on the position of the anchor. The distance to the rail can be adjusted through the assembly positions.

Only position combinations I – I / II – II / III – III are allowed.
Position combinations II – II / III – III are preferred.
Position combination I – I is not possible at 0°!
The distance between the mounting positions is 63 mm.

For assembly on overhanging webs, install the Overhang Adapter VIL (7) in the Wall Support, see section "Assembly Position < 0°".

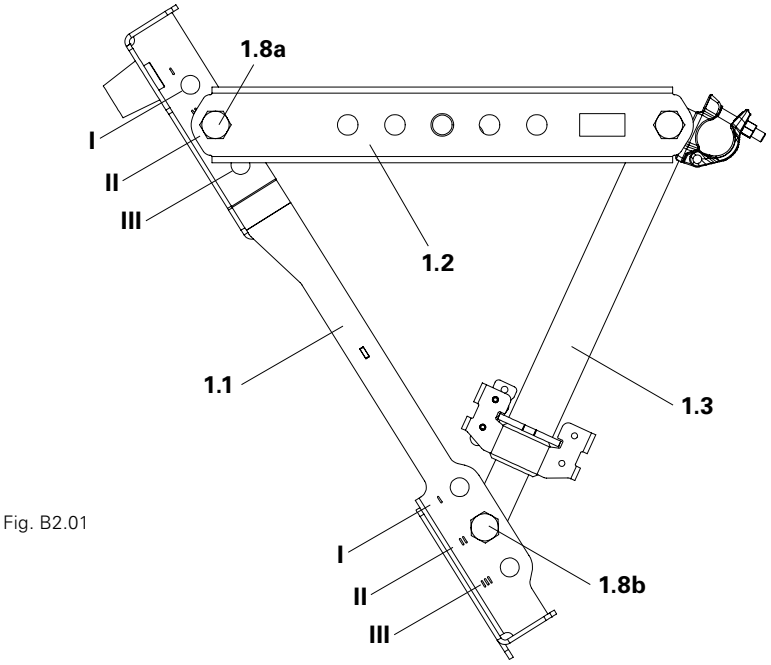


Fig. B2.01

Assembly Position > 0°

The Wall Support has an adjustment range of 0° – 32° independent of the assembly position of the Kicker. For a wall inclination definition: see section "Introduction – Technical Data".

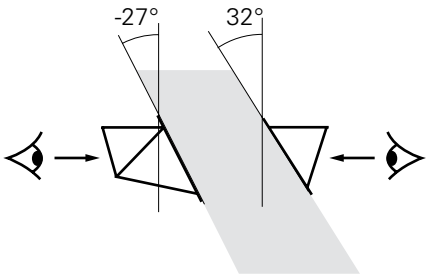


Fig. B2.01a

Components

1	Wall Support VIL
1.1	Wall Shoe
1.2	Cantilever Arm
1.3	Spindle
1.8	Bolt M24
1.9	Nut M24

Assembly

1. Open two bolts M24 on the Wall Shoe (1.8a + 1.8b) with a 36-mm wrench and remove.
2. Re-position the Cantilever Arm (1.2) and the Spindle Strut (1.3) on the Wall Shoe (1.1).
3. Install and tighten both bolts M24 (1.8).
4. After assembly on the structure: align Cantilever Arm (1.2) with Spindle Strut (1.3).

Assembly Position < 0°

The Wall Support together with the Overhang Aadapter VIL (7) has an adjustment range of 0° – -27° independent of the assembly position of the Cantilever Arm.
Position combination I – I with the use of the Overhang Adapter is not possible!

Components

1	Wall Support VIL
1.2	Cantilever Arm
1.3	Spindle
1.8	Bolt M24
1.9	Nut M24
1.13	Washer M24
7	Overhang Adapter VIL
7.1	Connecting piece
7.2	Extension piece
7.3	Bolt ISO4014-M24x130-8.8-VZ
7.4	Hex. nut ISO 7040-M24-8-VZ
7.5	Tension Anchor

Assembly

1. Remove bolt (1.8c) with wrench SW 36. (Fig. B2.02)
2. Swivel the Spindle (1.3) to one side.
3. Remove bolt (1.8a) with wrench SW 36.
4. Secure the connecting piece (7.1) of the Overhang Adapter (7) to the Cantilever Arm using the bolt (1.8c). The extension piece (7.2) of the Overhang Adapter must be pointing upwards.
5. Secure the extension piece to the top hole on the Cantilever Arm with the bolt (1.8c). Place a washer (1.13) between the Cantilever Arm and extension piece. (Fig. B2.03)
6. Secure the Spindle (1.3) in the bottom hole of the extension piece (7.2) using bolt (7.3) and nut (7.4). Place washer (1.13) under bolt (7.3) and nut (7.4). (Fig. B2.04)
7. After assembly on the structure, horizontally align the Cantilever Arm (1.2) with Spindle (1.3).

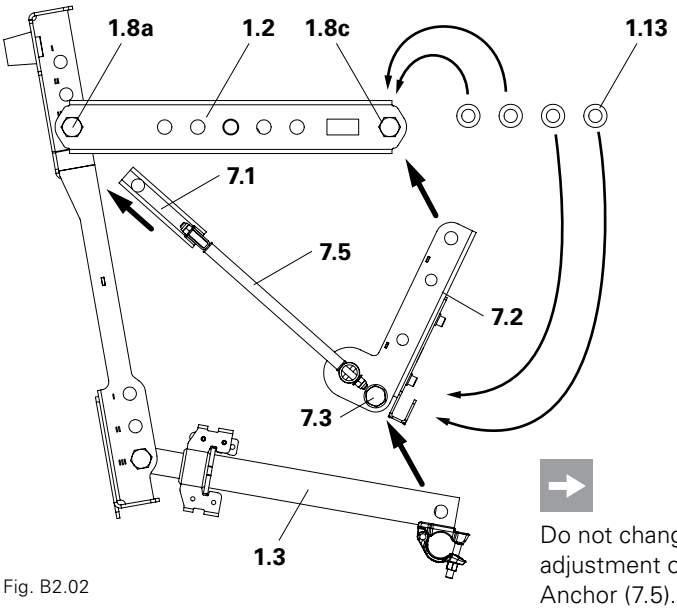


Fig. B2.02

Do not change the length adjustment of the Tension Anchor (7.5).

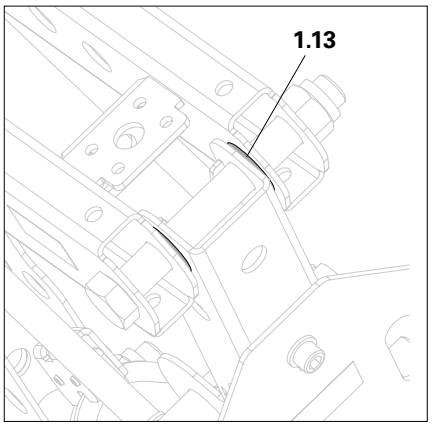


Fig. B2.03

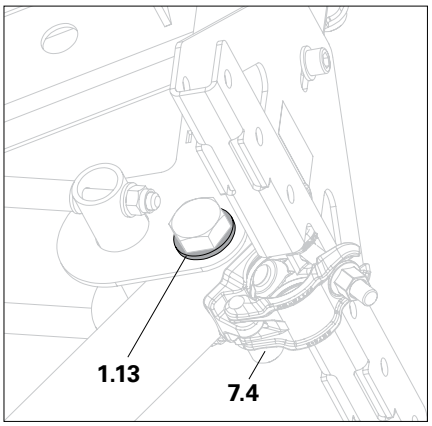


Fig. B2.04

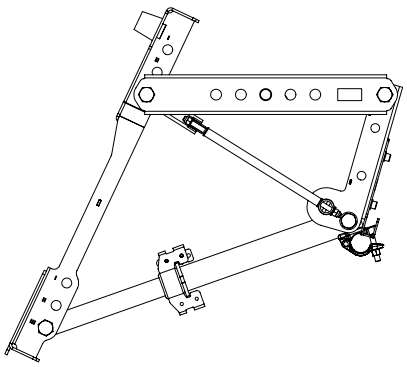


Fig. B2.05

Mounting the Bracing Wing

Mount Bracing Wing for horizontal support on the Wall Support.
Mount Bracing Wing individually or in pairs.

Components

1	Wall Support VIL
8	Bracing Wing VIL
8.1	Bolt M12x130
8.2	Nut M12
8.3	Contact plate
8.4	Recess for bolt M24

Assembly

1. Remove bolt M12x130 (8.1) and nut M12 (8.2) from the Bracing Wing.
2. Attach Bracing Wing VIL (8) with flange (8.2) to the side of the Cantilever Arm (1.2).
   – The toothing of the Contact Plate (8.3) must point towards the concrete.
   – Insert recess for bolt M24 (8.4) over the head of the bolt.
3. Secure the Cantilever Arm with previously removed bolts M12x130 through the holes in the flange (8.2) and Cantilever Arm (1.2).

(Fig. B2.06)

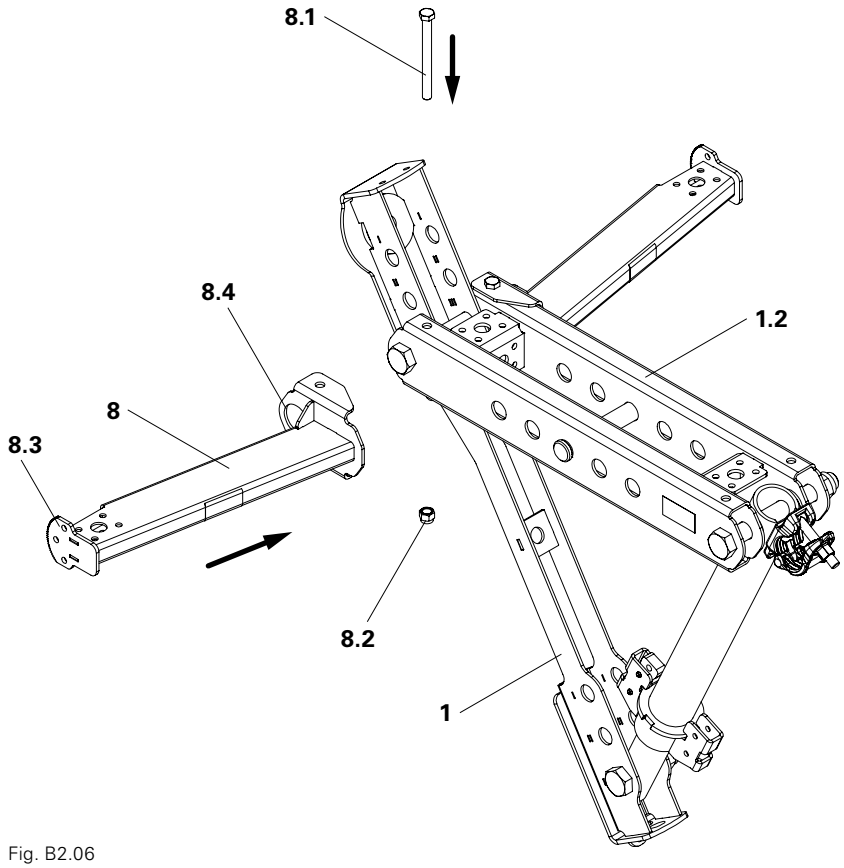


Fig. B2.06

Mounting the Wall Support on the Web

Caution

Hands can get caught between the web and Wall Shoe and become trapped. This can cause serious injuries to the hands.

⇒ Only lift Wall Support on the Spindle and Cantilever Arm.

Requirements

- Shortened Tie Rods are installed in all anchor points.
- All DK Sealing Cones have been removed.

Components

1	Wall Support VIL
1.3	Spindle
8	Bracing Wing VIL
12	Hex. nut DW 15 SW 30/50

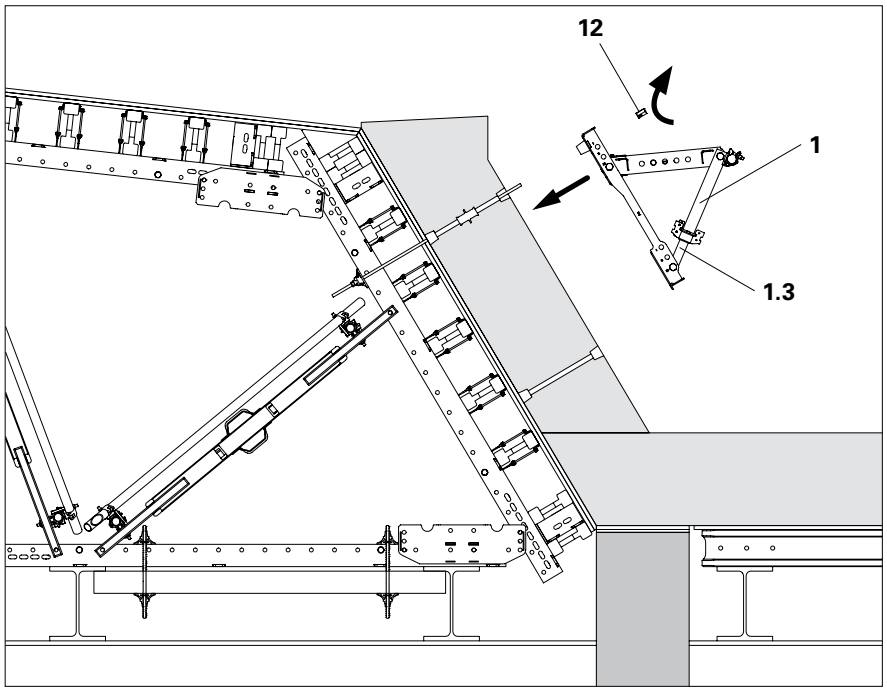


Fig. B3.01

Assembly

1. Attach the Wall Support to the Tie Rod until the cones sit inside one another.
2. Screw hex. nut (12) onto the Tie Rod.
3. Vertically align the Wall Support.
4. Secure Wall Support with the hex. nut. (Fig. B3.01)
5. After assembling the Roller Drophead: carry out height fine adjustments with the Spindle (1.3).

Adjustment range ± 32 mm.

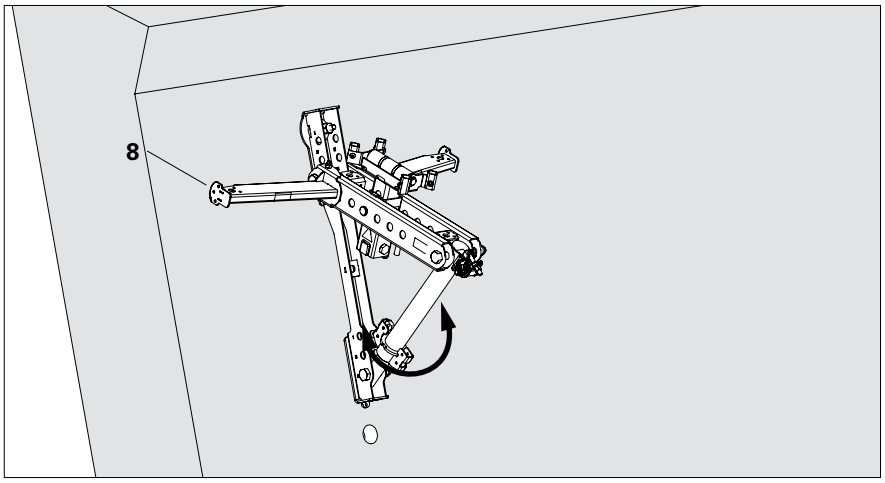


Fig. B3.02

Due to the Bracing Wing mounted on both sides, horizontal bracing of the Wall Support is not required. (Fig. B3.02)

B3 Mounting the Wall Support

All of the contact surface of the Wall Shoe must rest against the concrete. (Fig. B3.03b)

→ On flat components, the Bracing Wings must touch the concrete as well as being prestressed.

– Otherwise, hammer in additional wooden wedges in the recesses of the Bracing Wings. (B3.04)

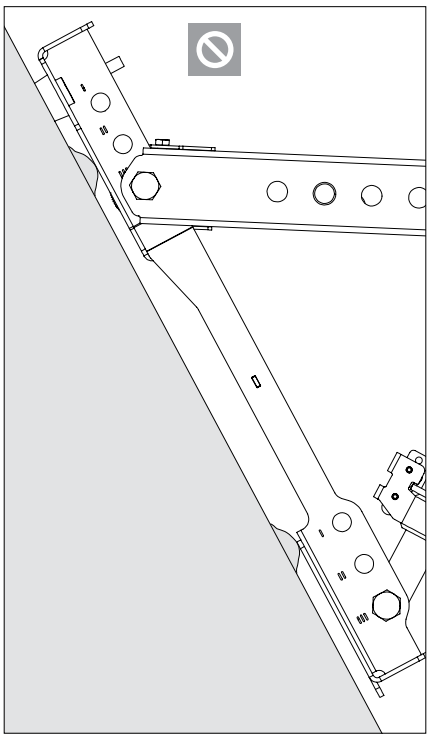


Fig. B3.03a

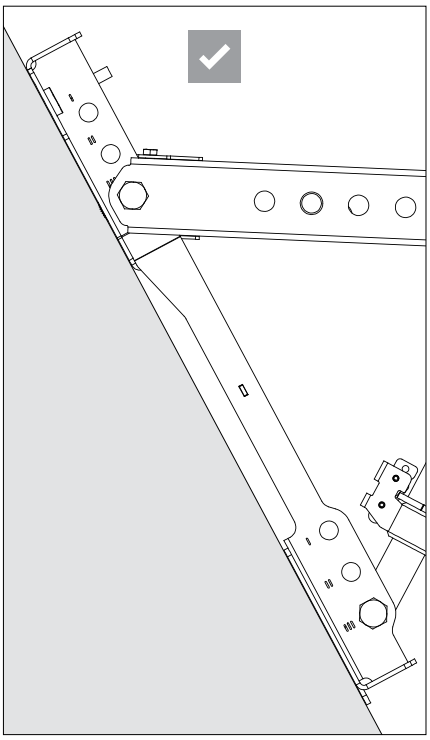


Fig. B3.03b

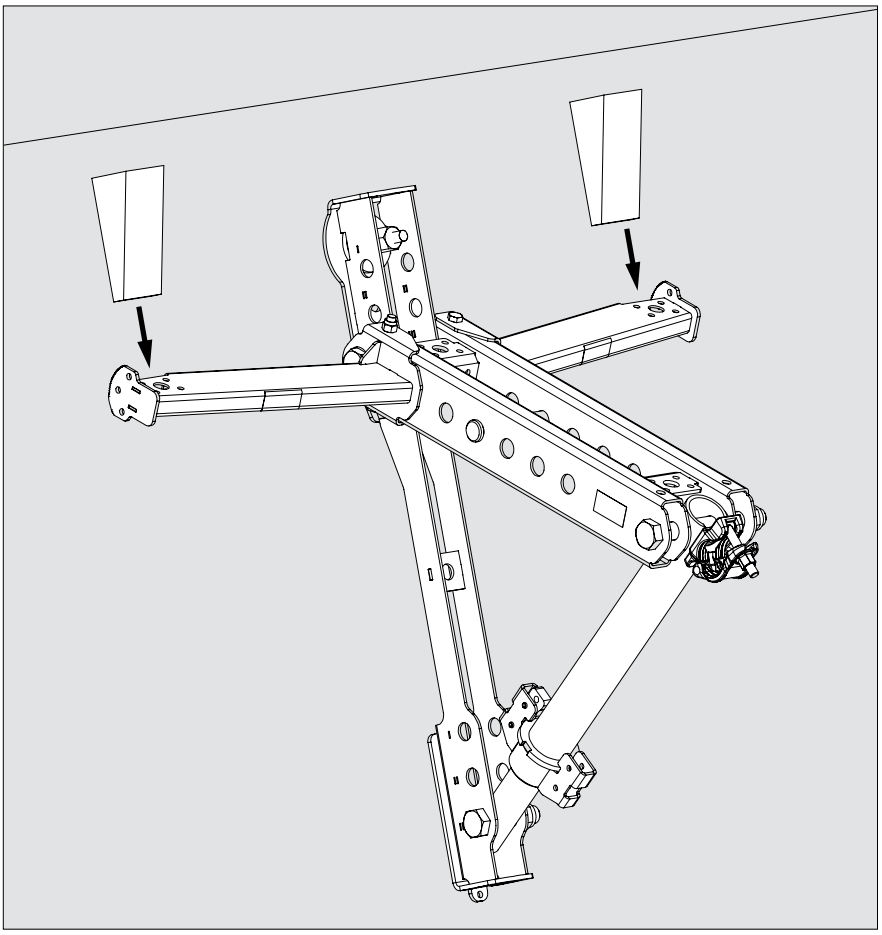


Fig. B3.04

Mounting the Roller Drophead

Caution

Hands can get caught between the Roller Drophead and the Cantilever Arm of the Wall Support and become trapped. This can cause serious injuries to the hands.

⇒ Only hold the Roller Drophead on the roller part.

Components

1	Wall Support VIL
1.2	Cantilever Arm
2	Roller Drophead VIL
36	Bolt D=26x164
37	Cotter Pin 5/1

Assembly

1. Insert the Roller Drophead into the Cantilever Arm of the Wall Support.
2. Mount the Roller Drophead to the Cantilever Arm (1.2) using Bolt D=26x164 (36) and Cotter Pin 5/1 (37).

(Fig. B3.05 + B3.06)

- The assembly position of the Roller Drophead must be project-specifically determined.
- The Locking Pin must be accessible for striking operations.

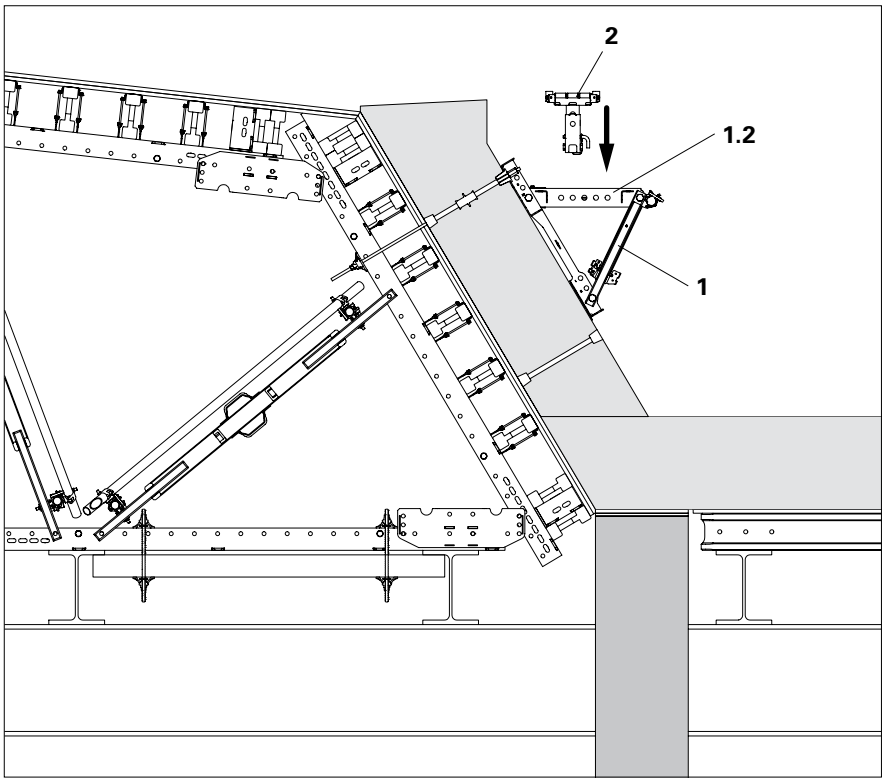


Fig. B3.05

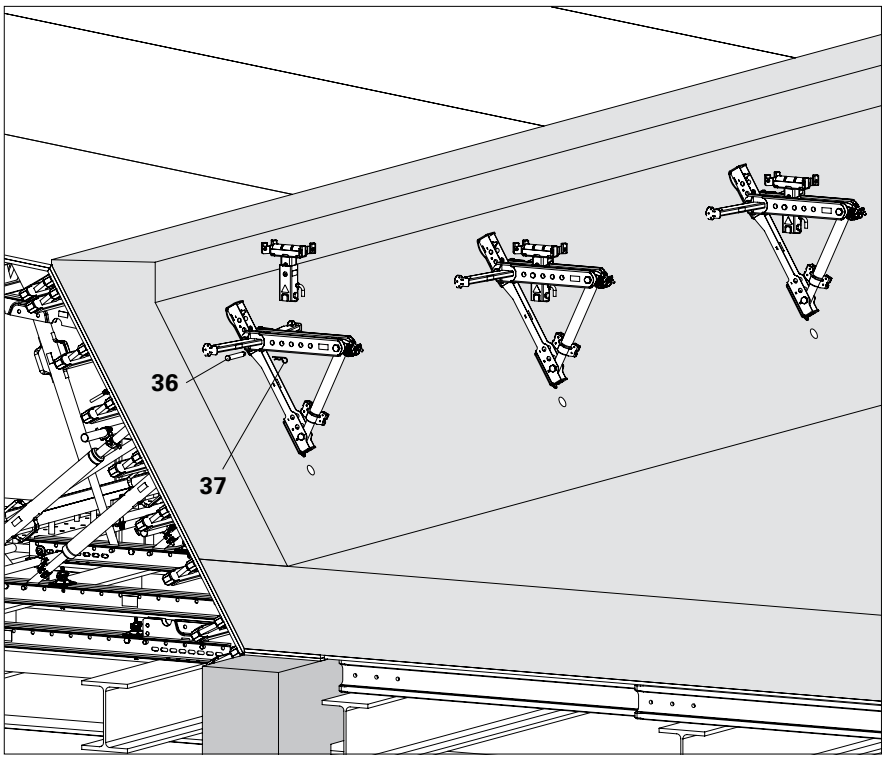


Fig. B3.06

Mixed Bracing

Components

1	Wall Support VIL
1.4	Half-Coupler
8	Bracing Wing VIL
60	Scaffold Tube Ø 48 mm

Assembly

1. Connect 2 Wall Supports in each case to the Half-Couplers (1.4) with a Scaffold Tube.
2. Mount 2 Bracing Wings (8) on each Wall Support facing each other. (Fig. B3.07)

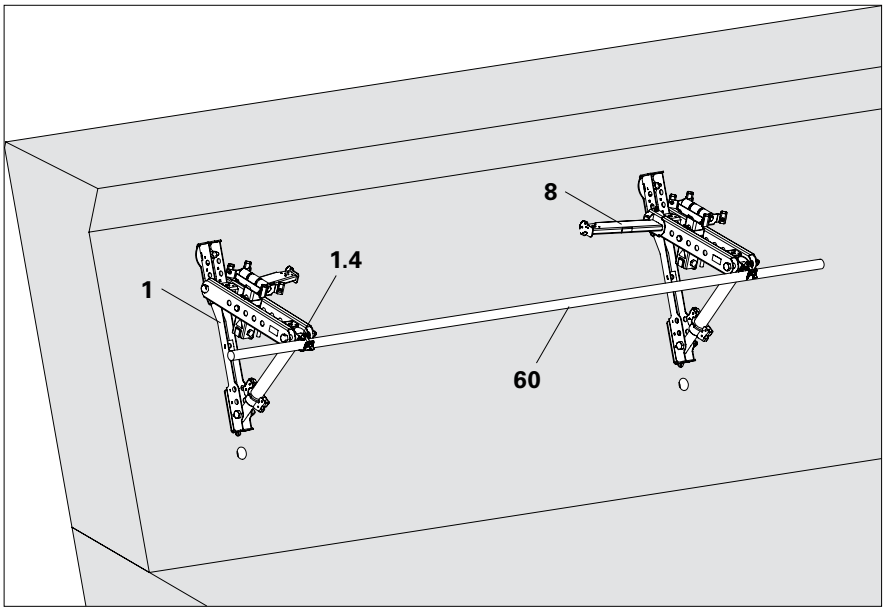


Fig. B3.07

Bracing with Scaffold Tubes

If Bracing Wings cannot be mounted, the Wall Supports can be braced with Scaffold Tubes.

Components

1	Wall Support VIL
1.4	Half-Coupler
60	Scaffold Tube Ø 48 mm
61	Screw-On Coupling-2 HT B D48-M20
62	Swivel Coupler SW 48/48
63	Tension Coupler 1 1/2"

Assembly

1. Connect all Wall Supports (1) to the Half-Couplers (1.4) with Scaffold Tubes (60).
2. Connect Scaffold Tubes with Tension Couplers (63).
3. Loosely attach Screw-On Couplings (61) to the first and last pair of Wall Supports, do not tighten yet. (Fig. B3.08)
4. On the first and last pair, horizontally mount an additional Scaffold Tube in the Screw-On Couplings (61).
5. Diagonally brace the first and last pair with another Scaffold Tube (60A). The diagonal Scaffold Tube is positioned in the direction the slab table is moved – from bottom to top. Connect Scaffold Tubes with Swivel Couplings (62).
6. Secure Screw-On Couplings (61). (Fig. B3.06)

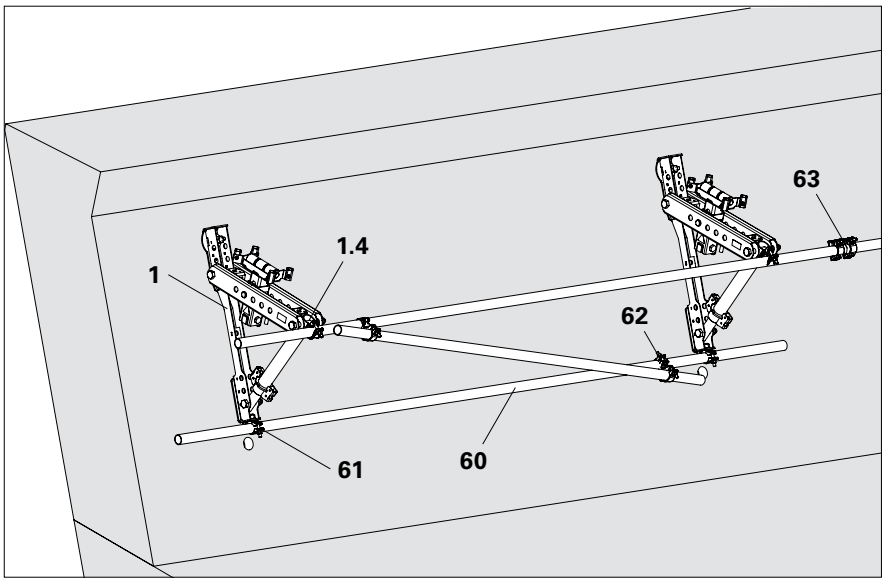


Fig. B3.08

Mixed Bracing for Overhangs

For side walls with overhangs, mixed bracing is mandatory.

Assembly

1. Mount Wall Support (1) with pre-assembled Overhang Adapter.
2. Mount one Bracing Wing (8) on each Wall Support. The Bracing Wings face each other.
3. Connect 2 Wall Supports in each case to the Half-Couplers (1.4) with a Scaffold Tube (60).
4. Slide the Adjusting Plate (7.9) towards the Scaffold Tube as far as it will go.
5. Tighten the two cylinder screws (7.10).

The Adjusting Plate and Scaffold Tube form a positive-locking connection and provide additional bracing.
(Fig. B3.09)

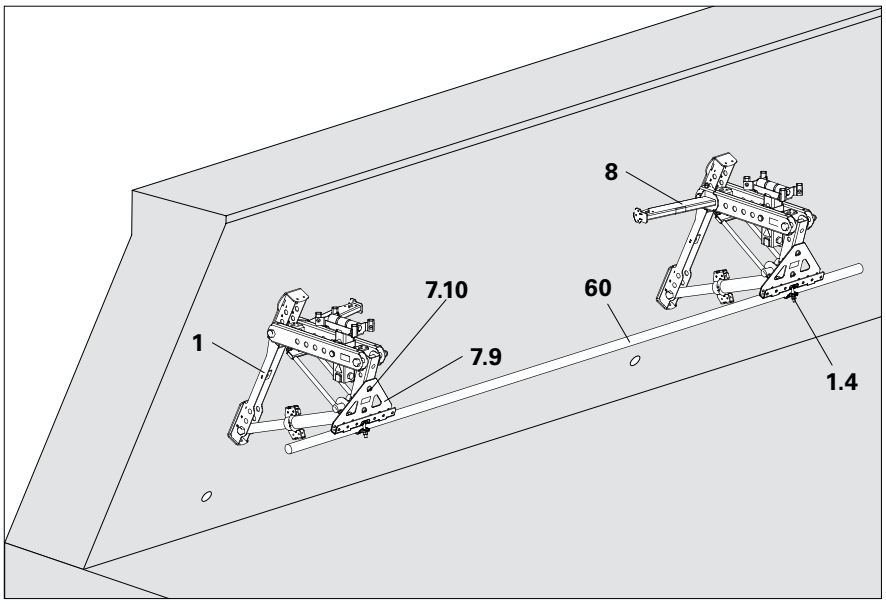


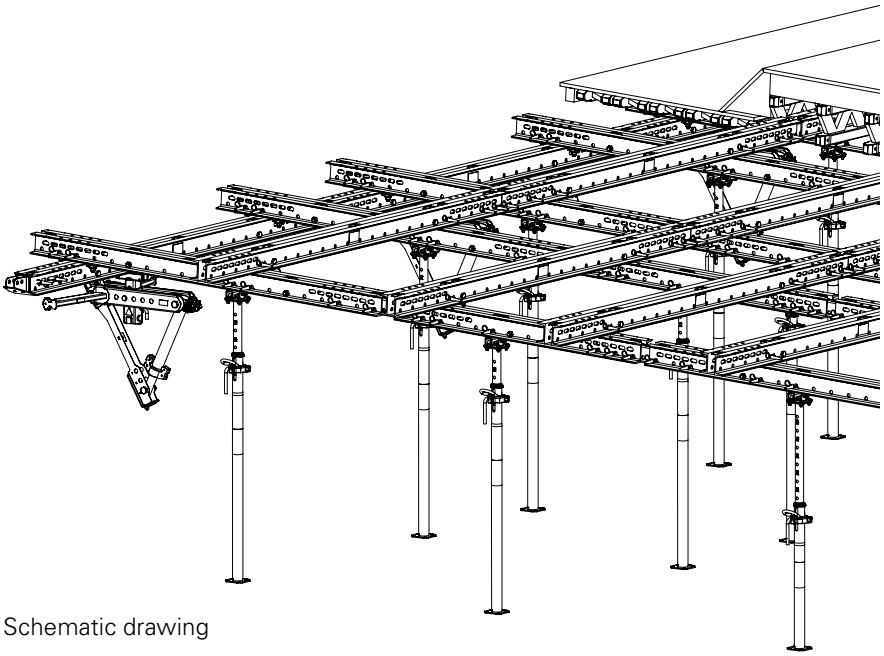
Fig. B3.09

General

Warning

Heavy converging components.
Body parts could be trapped.
This can cause serious injuries.
⇒ Do not take hold of anything between moving components.
⇒ Use a guide rope when moving components.

- For pre-assembly, there must be a sufficiently large, level and load-bearing assembly area available.
- A sufficiently large area for temporary storage purposes must be available.
- A crane or other lifting equipment is required.
- Secure intermediate states correctly by means of temporary supports to prevent any tipping over.
- Assembly is carried out on aligned timbers.



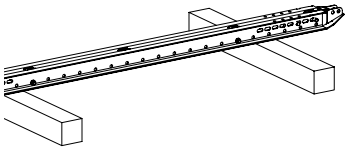
Schematic drawing

- Assemble slab formwork in crane-usable sections.
- The length of the coupled rails must correspond to at least twice the Wall Support spacing.
- The number and position of the components depends on the shape of the structure and must be project-specifically determined.
- Pre-assembly must be carried out with the formwork element which is subsequently positioned at the lowest point.

Mounting the Rails

Components

4	Longitudinal Connector SRU, adjustable
6	Travelling Nose SRU
22	Steel Waler Universal SRU U120
38	Fitting pin D=21x120
39	Cotter pin 4/1



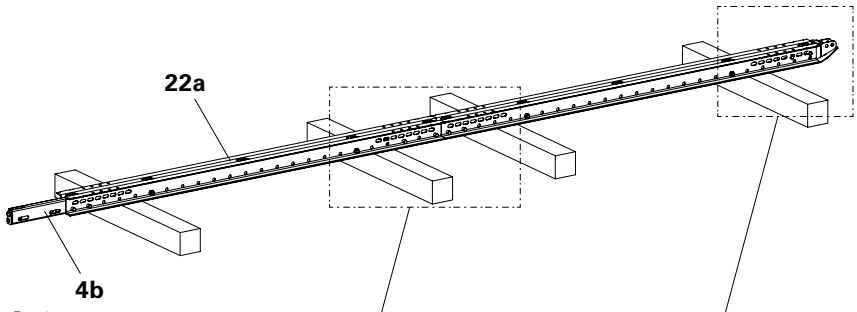


Fig. B4.01

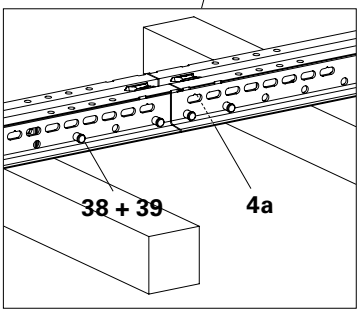


Fig. B4.01a

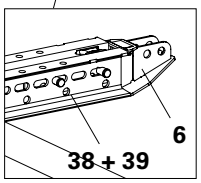


Fig. B4.01b

Assembly

1. Place Rails (22a), here Steel Waler Universal SRU (22), with Spacers down on timbers.
2. Align the Rails to suit the project-specific spacing.
3. Position additional Steel Walers SRU as rails and connect using the Longitudinal Connector SRU (4a), see section "A1 System-Specific Components – Longitudinal Connector SRU".
4. To connect the formwork sections after lifting: mount an additional Longitudinal Connector SRU (4b) on the connection side.
5. Mount one Travelling Nose SRU (6) respectively at the front and rear ends of the rail. For this, lift the Travelling Nose from below into the rail and secure with 2 fitting pins (38) and 2 cotter pins (39), see section "A1 System-Specific Components – Travelling Nose SRU".

(Fig. B4.01 – B4.01b)

Alternatively, a Wide Flange Beam HEB 140 or medium-width I-Beam IPE 160 – 330 can be used as rails. Project-specific planning is required for the slab formwork!

Mounting the Cross Beam

Components

3	Cross Fall Compensator SRU
3.3	Clamping Plate
3.4	Nut
4	Longitudinal Connector SRU, adjustable
22	Steel Waler Universal SRU U120
38	Fitting pin D=21x120
39	Cotter pin 4/1

Assembly

1. Slide on Cross Fall Compensator SRU (3) on both sides of the rail (22a). Number and position in accordance with project-specific planning.
2. Turn the Clamping Plates (3.3) of the Cross Fall Compensator under the chord profile of the main beam and secure against twisting with the nut (3.4). (Fig. B4.02 + B4.02a)
3. Assemble the Steel Waler Universal SRU (22) with Longitudinal Connector SRU (4) as Cross Beam (22b) according to project-specific dimensions.
4. Position pre-assembled Cross Beam on the Cross Fall Compensator and mount using fitting pins (38) and cotter pins (39), see section "A1 System-Specific Components – Cross Fall Compensator SRU".
5. Accurately align the Cross Beam and tighten nuts (3.4). (Tightening torque 120 Nm) (Fig. B4.03 + B4.03a)

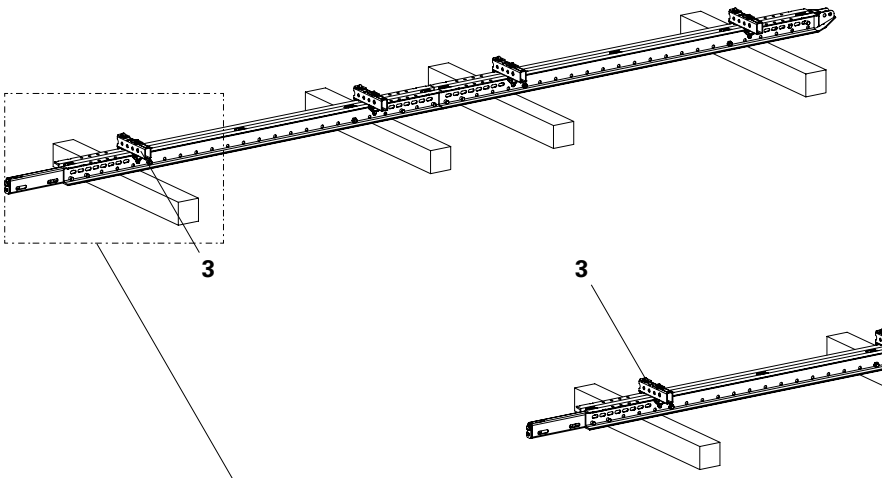


Fig. B4.02

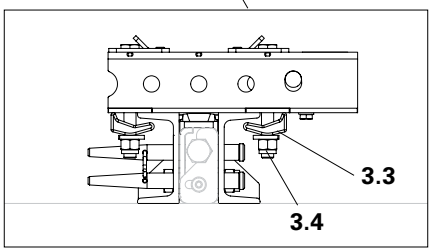


Fig. B4.02a

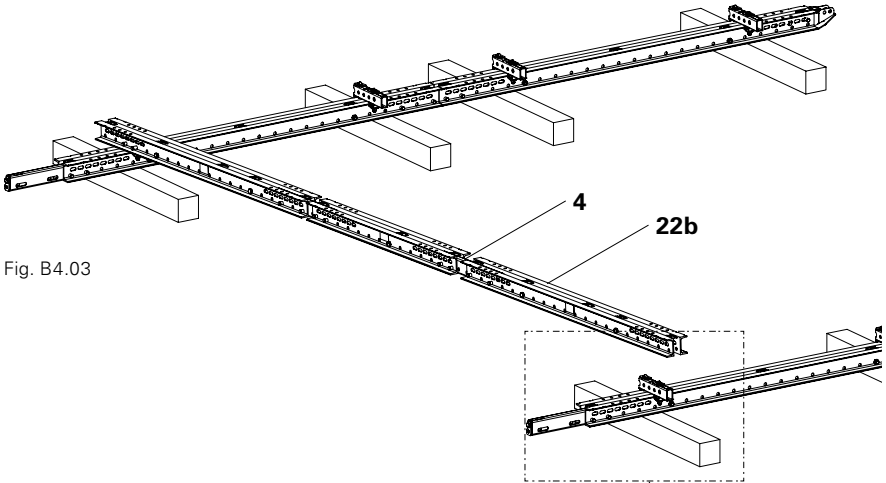


Fig. B4.03

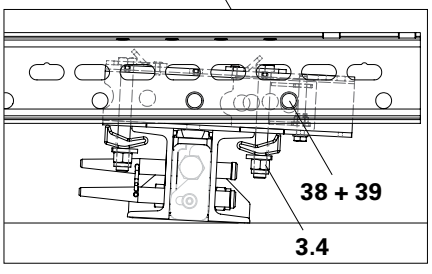


Fig. B4.03a

Mounting the Main Beam

Main beams are required
- for bracing the internal formwork,
- as attachment points for the crane, cable winch, tensioning chains and heavy-duty spindles,
- as tension-proof connection when moving the slab formwork.

Components

4	Longitudinal Connector SRU, adjustable
20	Cross Connector VARIOKIT
22	Steel Waler Universal SRU U120
38	Fitting pin D=21x120
39	Cotter pin 4/1

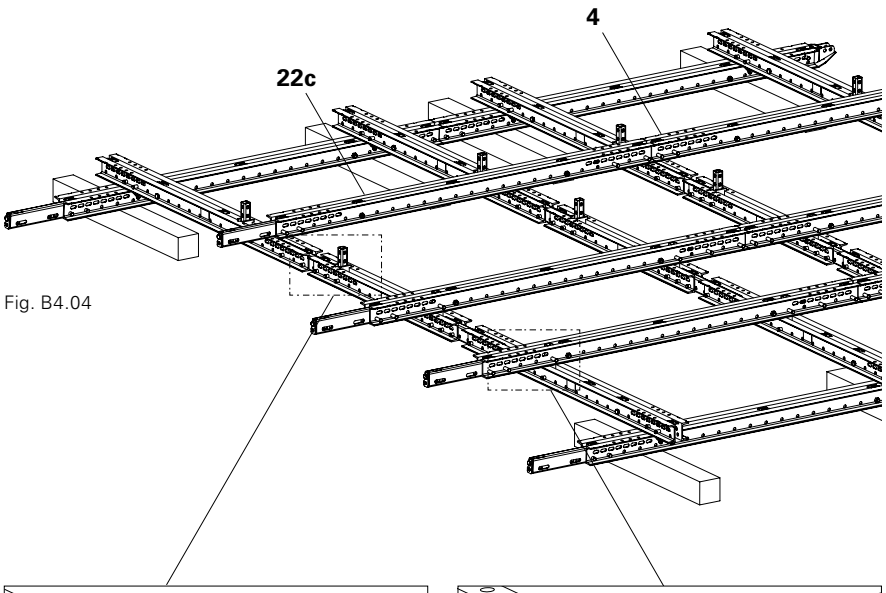


Fig. B4.04

Assembly

1. As a main beam (22c), assemble Steel Waler Universal SRU (22) with Longitudinal Connector SRU (4) according to project-specific dimensions.
2. Suspend Cross Connector VARIOKIT (20) above in the Cross Beam (22b) and secure with fitting pins (38) and cotter pins (39). (Fig. B4.04a)
3. Position pre-assembled main beam (22c) on the Cross Connector VARIOKIT (20) and mount with fitting pins and cotter pins. (Fig. B4.04b)
4. Install slab formwork and attachment points for crane transport according to the project-specific planning.

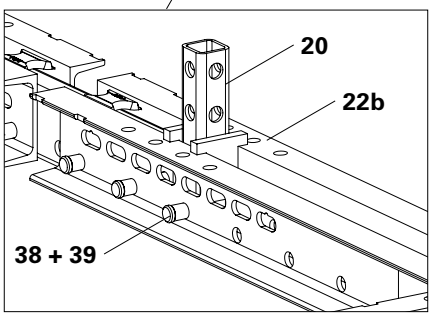


Fig. B4.04a

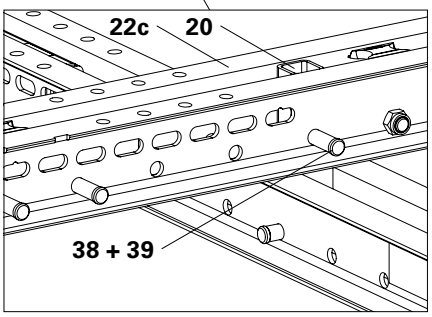


Fig. B4.04b

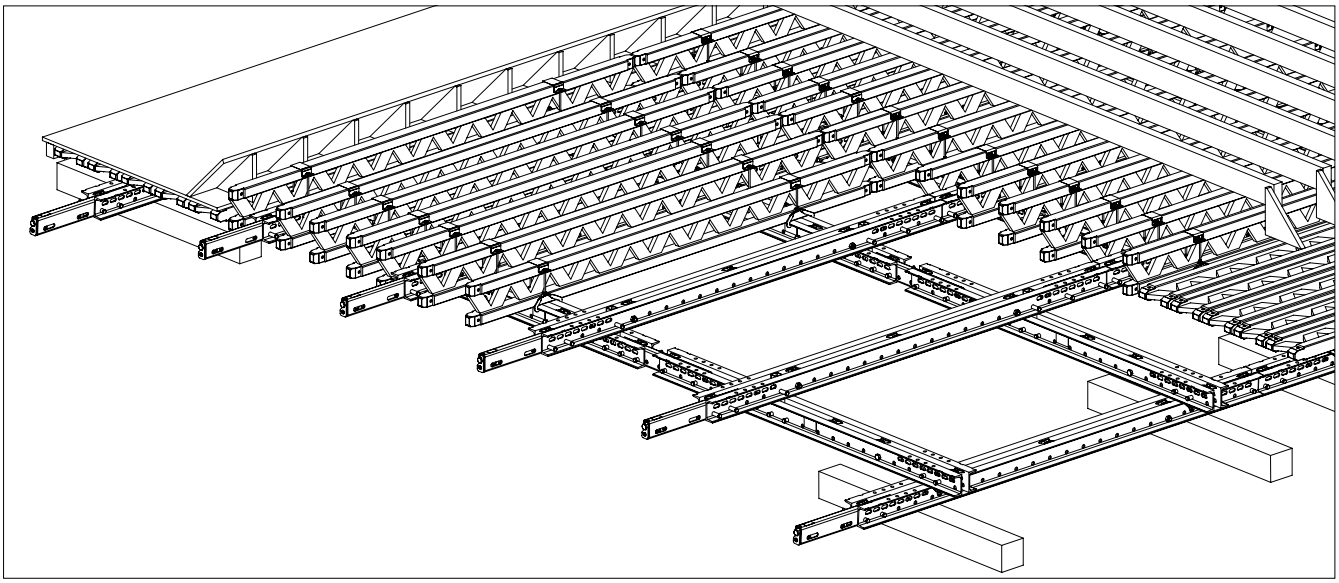


Fig. B4.04c

General

Warning

- Danger due to suspended loads. Components could fall to the ground and hit persons below. This could lead to serious injuries or even death.
  ⇒ Remove or secure all loose components.
  ⇒ Do not stand under suspended loads.
  ⇒ Use a guide rope when moving components.

- Heavy converging components. Body parts could become trapped. This can cause serious injuries.
  ⇒ Do not take hold of anything between moving components.
  ⇒ Use a guide rope when moving components.

- Unsecured formwork edges. Risk of falling from remaining on the slab formwork. This can cause serious injuries.
  ⇒ Clearly mark unsecured building edges.
  ⇒ Mount guardrails.
  ⇒ Use PPE to prevent falling.

Take suitable precautions to prevent any unintentional rolling away of formwork sections.

Preparations

Components

2	Roller Drophead VIL
5	Cross Swivel Head SRU
23	Slab props
25	Tensioning Chain
30	Base Plate-3 for RS
35	Anchor Bolt PERI 14/20 x 130

Assembly

1. Position all Roller Dropheads (2) in the concreting position and secure with locking pins, see section "A1 System-Specific Components – Roller Drophead VIL".
2. Mount Base Plate-3 (30) to the pre-cast bottom slab using Anchor Bolts PERI 14/20 x 130 (35).
3. Prepare tensioning chains (25).
4. Prepare slab props (23) with pre-assembled Cross Swivel Head (5). (Fig. B5.01)

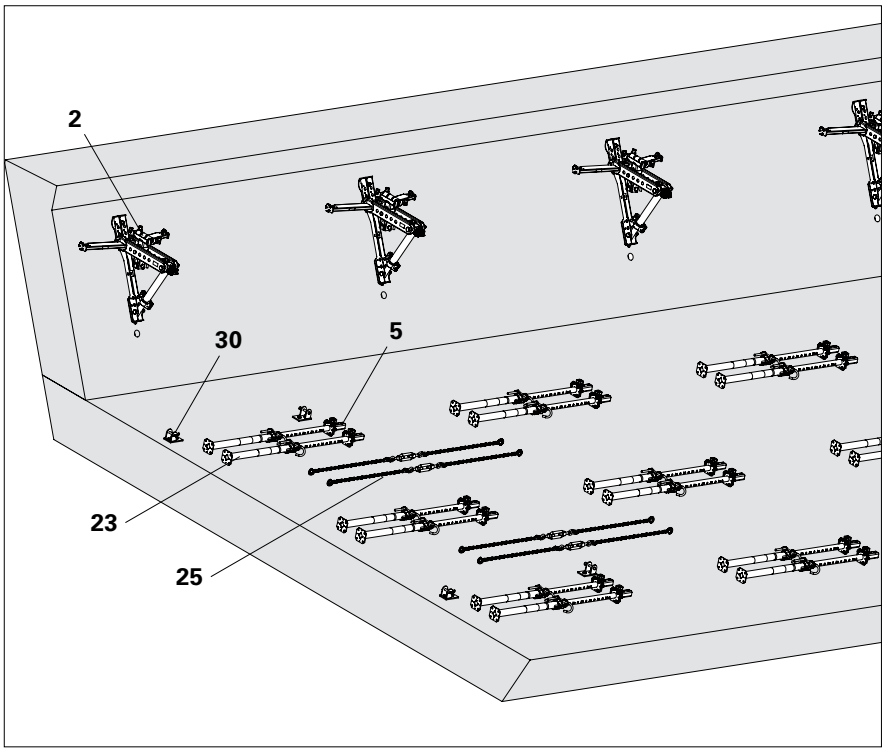


Fig. B5.01

Alternatively, bracing with Heavy-Duty Spindle SLS 80/140 and Bracing Shoe RCS DW 15, see section "B/ Moving Slab Formwork – Anchoring with Heavy-Duty Spindle".

Lifting in the First Element

Components

2	Roller Drophead VIL
22	Steel Waler Universal SRU U120
38	Fitting pin D=21x120
39	Cotter pin 4/1

Assembly

1. Position the slab element with rails (22a) on the Roller Dropheads (2).
2. If necessary, bring the slab element to its final position with chain hoist or cable winch.
3. Mount tensioning chains (25) on fitting pins and cotter pins in the main beam, and tension. Ensure the slab element is in a stable position.
4. Release slab element from crane slings.

(Fig. B5.02 + B5.03)

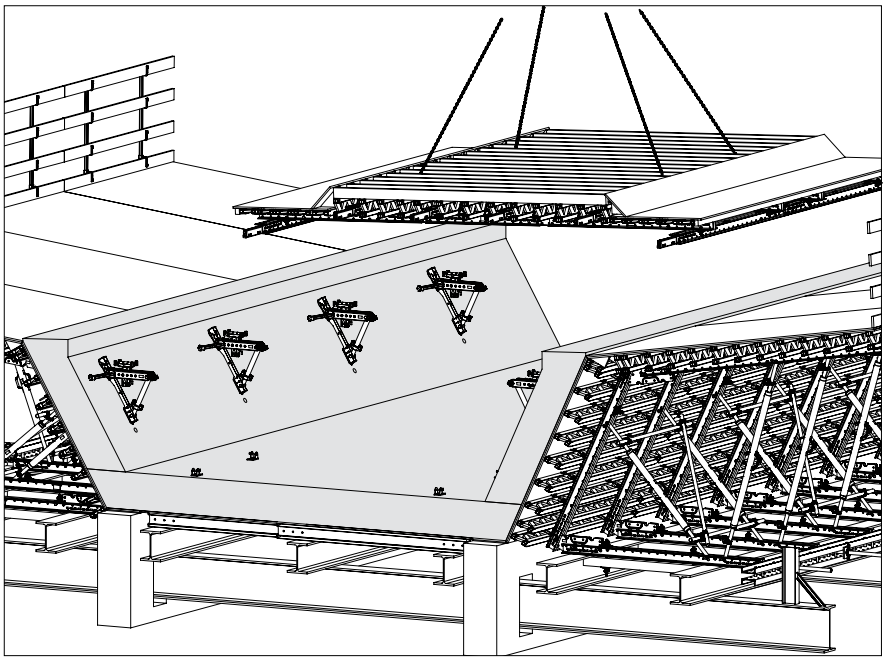


Fig. B5.02

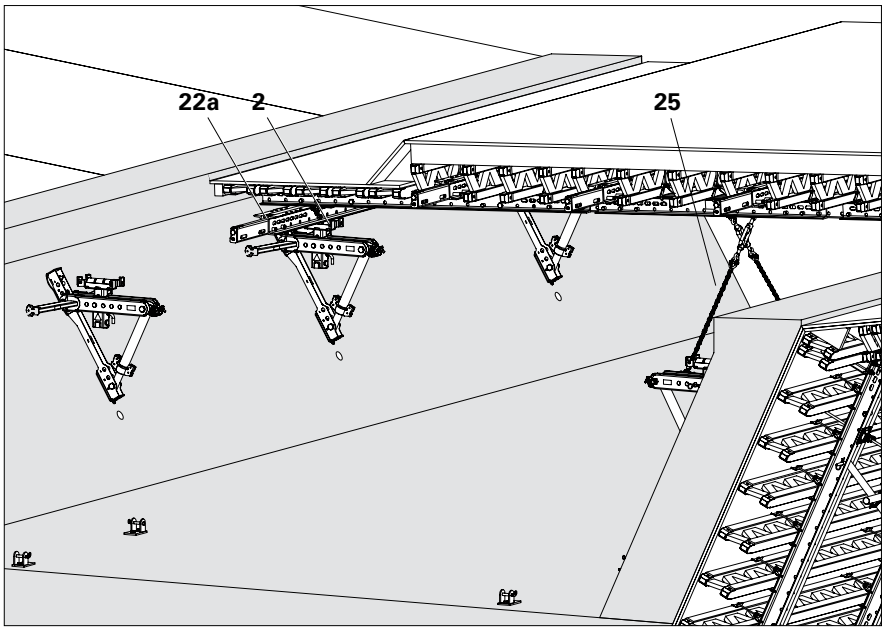


Fig. B5.03

Lifting in Additional Elements

Components

2	Roller Drophead VIL
4	Longitudinal Connector SRU, adjustable
6	Travelling Nose SRU
22	Steel Waler Universal SRU U120
38	Fitting pin D=21x120
39	Cotter pin 4/1

Assembly

1. Insert slab element with rails (22a) on Longitudinal Connector (4) and place on Roller Dropheads (2).
2. If necessary, bring the slab element to its final position with chain hoist or cable winch.
3. Connect Longitudinal Connector (4) to the rails using 2 fitting pins and cotter pins.
4. Additional assembly as in "Lifting in the First Element" from step 3 onwards.
5. Lift in additional slab elements in the same way.
6. Lift in the last slab element complete with mounted Travelling Nose SRU.

(Fig. B5.04 – B5.04a)

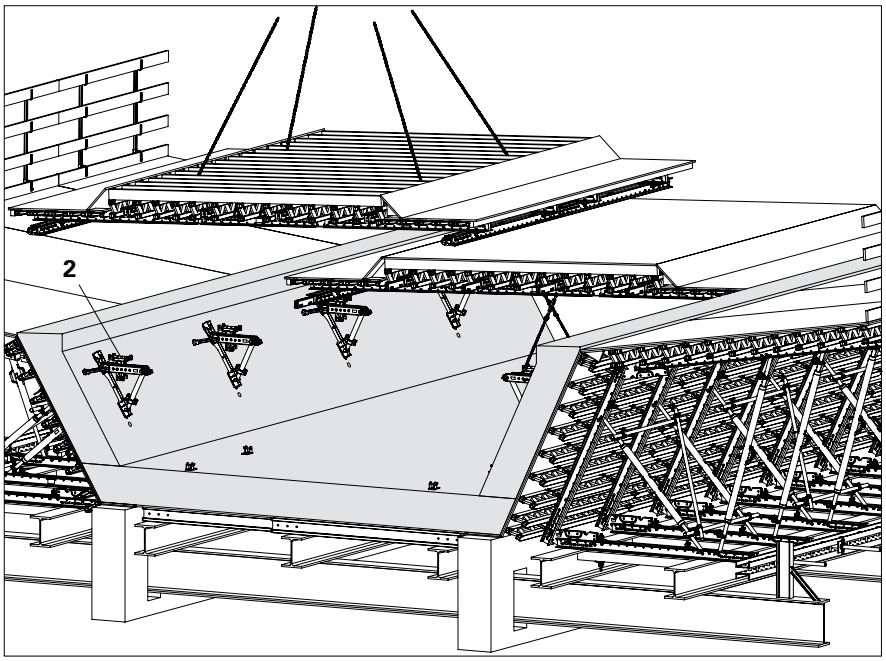


Fig. B5.04

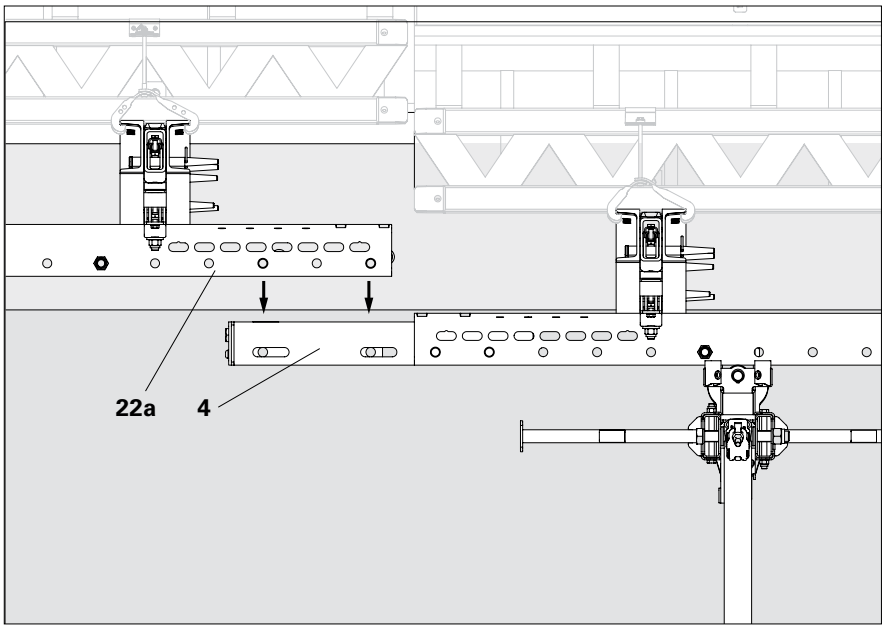


Fig. B5.04a

Mounting the Slab Props

Components

5	Cross Swivel Head SRU

Assembly

1. Mount slab props complete with pre-assembled Cross Swivel head (5) to Cross Beam (22b) using fitting pins (38) and cotter pins (39). (Fig. B5.06a + B5.06b)
2. Align slab elements with slab props and spindles of the Wall Support VIL.
3. Tension the tensioning chains. (Fig. B5.08)

Depending on the direction of the Cross Beam (holes at the top or bottom), lower in the Cross Swivel Head into the top or bottom hole. (Fig. B5.07a – B5.07c)

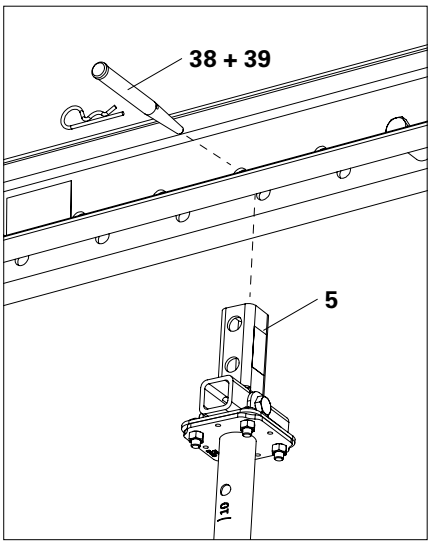


Fig. B5.06a

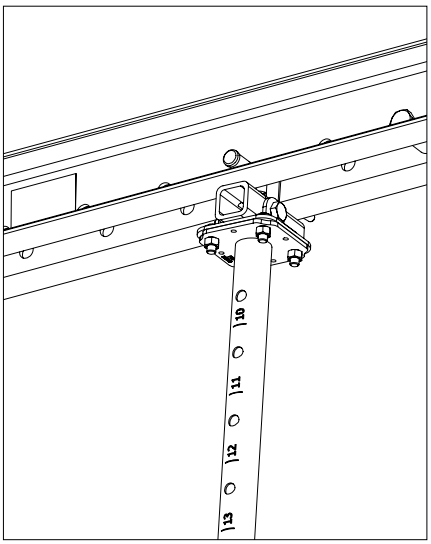


Fig. B5.06b

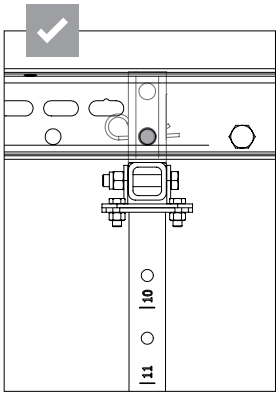


Fig. B5.07a

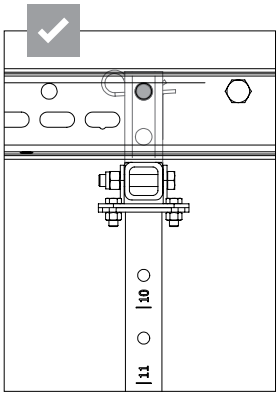


Fig. B5.07b

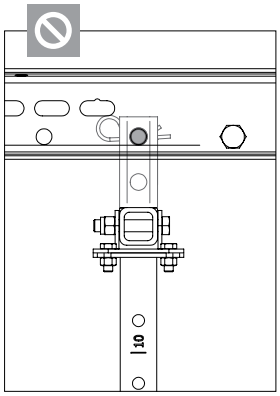


Fig. B5.07c

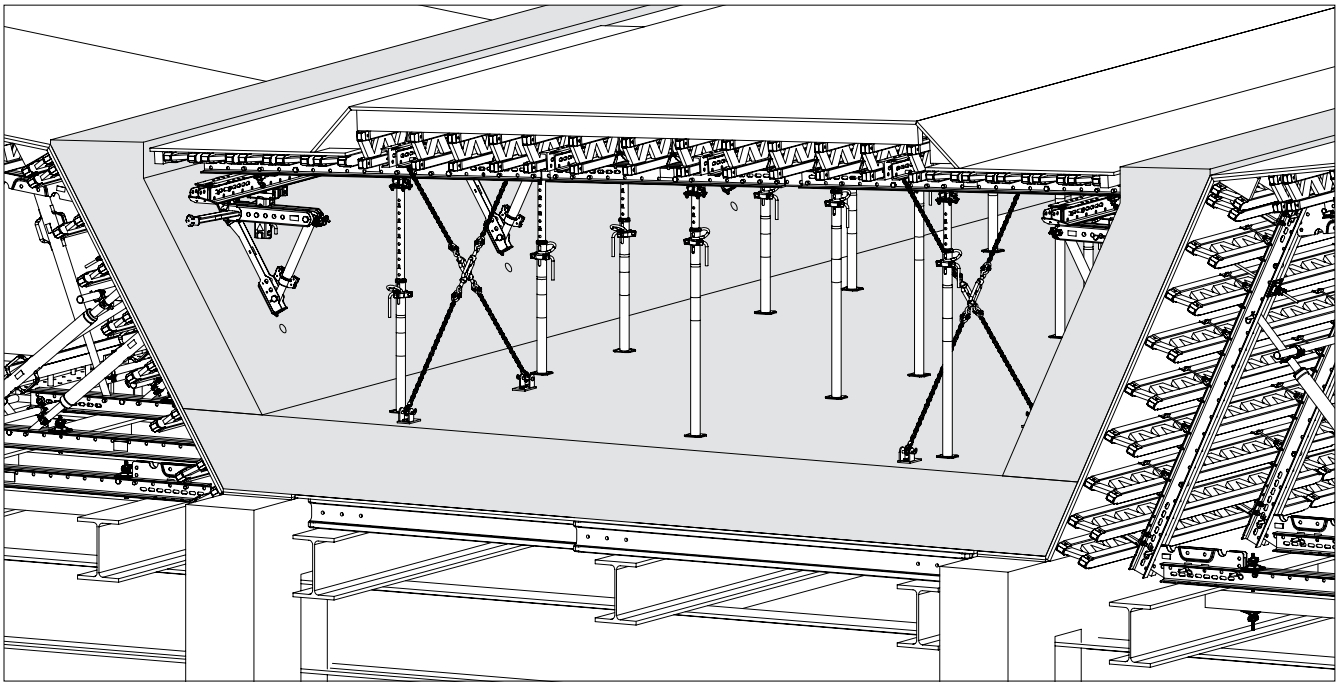


Fig. B5.08

Closing the Filler Areas

Components

1	Wall Support VIL
1.1	Wall Shoe
50	Formlining strips
51	Supporting board
52	Timber

Assembly

1. Place timbers (52) on the Wall Shoe of the Wall Support and, if necessary, nail firmly in position.
2. Place supporting board (51) on timbers and nail down.
3. Close filler area with formlining strips (50). Nail the formlining strips to the supporting board and girder of the slab formwork. (Fig. B5.09 + B5.09a)

- In the case of small filler areas or overhanging webs, it is usually sufficient to nail narrow formlining strips to the slab formwork.
- In order to be able to nail timber to the Wall Shoe (1.1), screw on a piece of formlining through the holes provided in the Wall Shoe during pre-assembly.

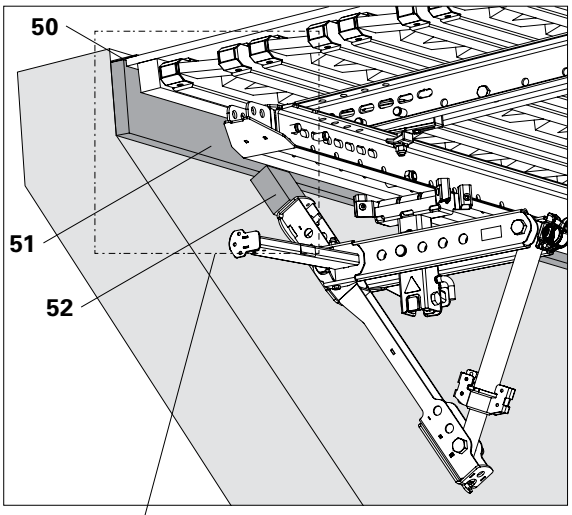


Fig. B5.09

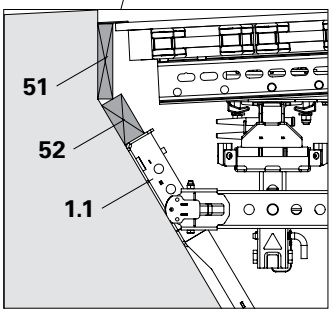


Fig. B5.09a

Mounting the Stopend Formwork

Assembly of the stopend formwork must be determined on a project-specific basis.

General

- Lower the slab formwork only when the person in charge has given the go-ahead for striking to take place.
- Take suitable precautions to prevent any unintentional rolling away of formwork sections.
- Do not loosen the tensioning chains or Heavy-Duty Spindles.
- Avoid overloading the Roller Dropheads and Wall Support. For the time being, leave the slab props in the concreting position.

Lower the Roller Dropheads

Warning

- There is a risk of crushing between the Roller Drophead and Cantilever Arm when lowering the Roller Drophead. This can cause serious injuries to the hands.
  ⇒ Do not reach into the area of risk during the lowering procedure.

Components

1	Wall Support VIL
2	Roller Drophead VIL
23	Slab props

Dismantling

1. Strike filler areas.
2. Secure slab formwork against unintentional rolling away, e.g. by means of a cable winch with brakes. Slab props (23) still remain in a load-bearing position while in the concreting position.
3. Lower Roller Drophead (2), see section "A1 System-Specific Components – Roller Drophead VIL".

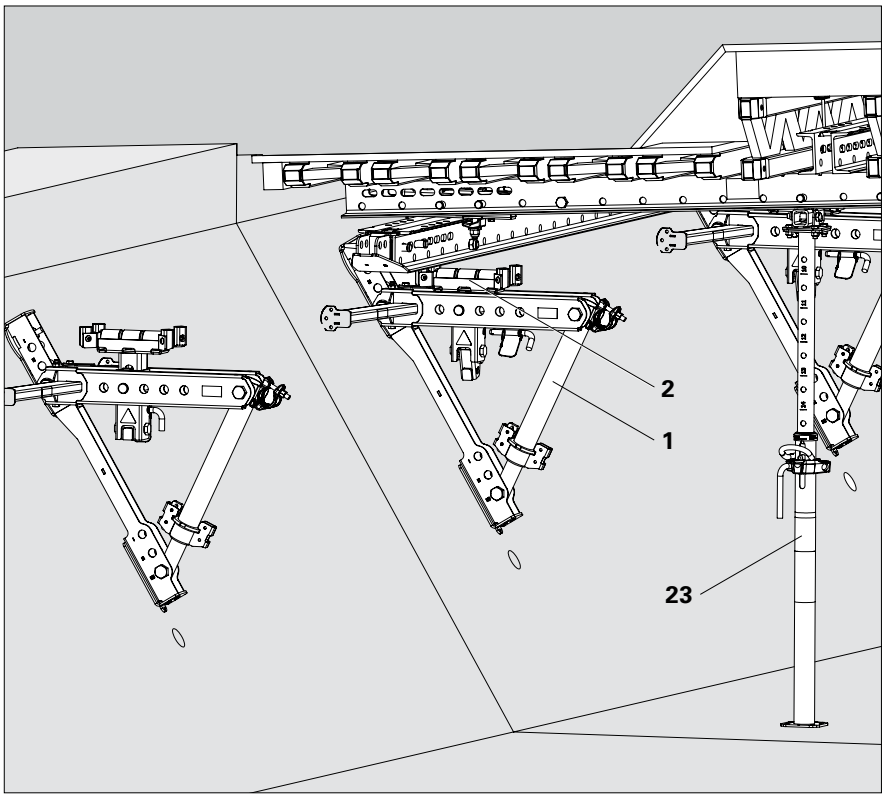


Fig. B6.01

Lowering the Slab Formwork

Components

2	Roller Drophead VIL
22a	Rail
23	Slab props

Dismantling

1. Evenly lower the slab props (23) in several steps from the centre until the rail (22a) rests again on the Roller Dropheads (2) in a load-bearing position.
   → Slab formwork has now been lowered.
2. Continue to spindle in the slab props and swivel upwards to the rear.
3. Secure slab props to the main beam by means of lashing straps.

❶ Concreting position

❷ Moving position

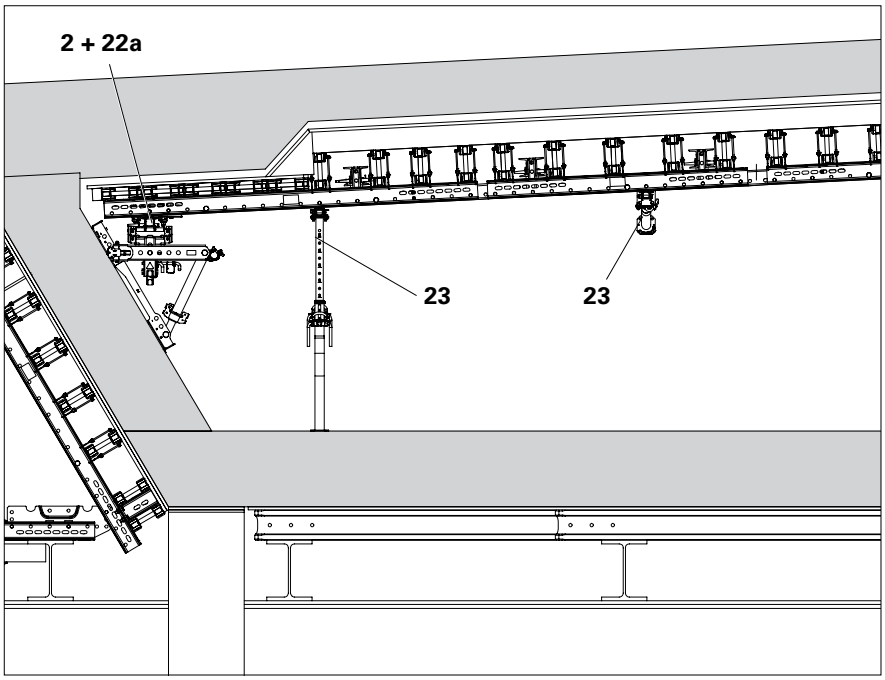


Fig. B6.02

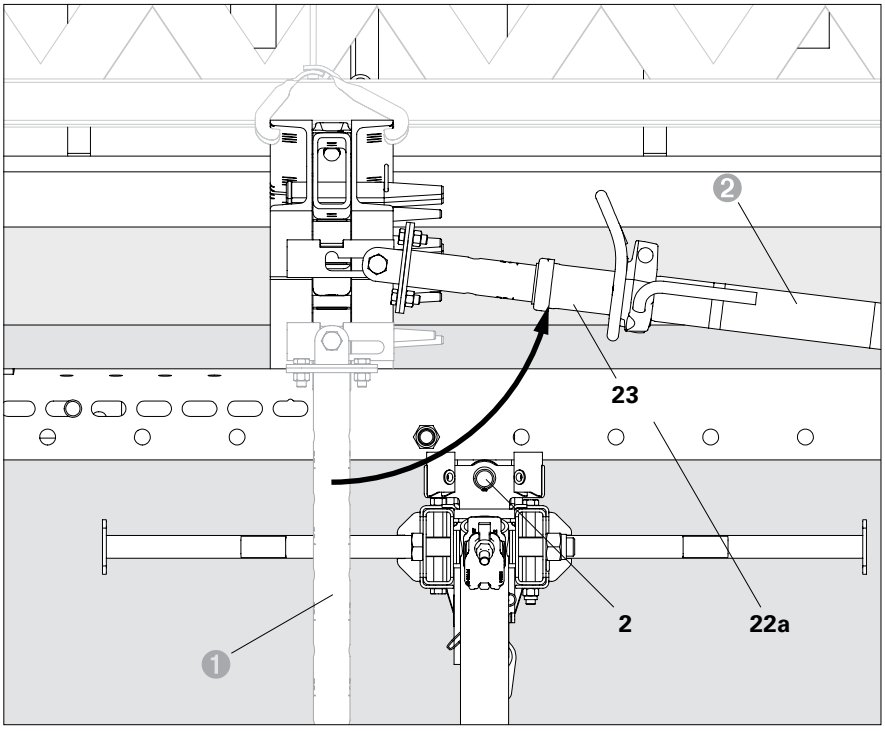


Fig. B6.03

Warning

Heavy converging components. Body parts could become trapped. This can cause serious injuries.

⇒ Guide slab formwork using a cable winch with brakes.

⇒ Take suitable precautions to prevent any unintentional rolling away of the slab formwork.

Preparations

Components

2	Roller Drophead VIL
25	Tensioning chain
30	Base Plate-3 for RS
35	Anchor Bolt PERI 14/20 x 130

Assembly

1. Mount and anchor the cable winches / chain hoists for the moving procedure, as well as the brakes for the slab formwork.
2. Remove tensioning chains (25) and prepare for new concreting section.
3. Mount Base Plates-3 (30) for the tensioning chains in the new concreting section.
4. Remove or secure all moving components or tools.
5. Raise all Roller Dropheads (2) in the new concreting section. (Fig. B7.01)

Alternative drive units for moving the slab formwork can be determined on a project-specific basis. This is to be taken into consideration in a risk assessment by the contractor.

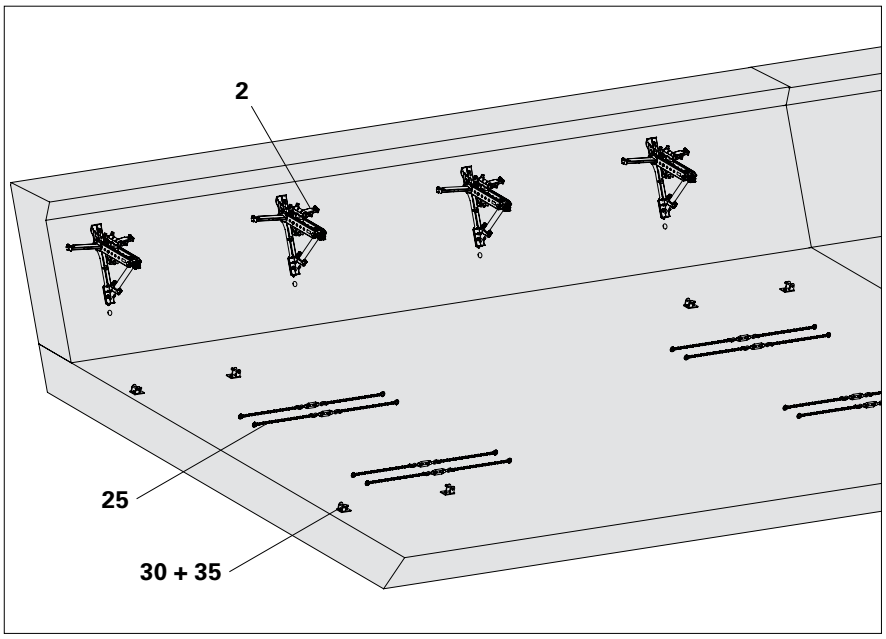


Fig. B7.01

Moving

Components

2	Roller Drophead VIL
6	Travelling Nose SRU
23	Slab props
25	Tensioning chain

Assembly

1. Pull the slab formwork into the new concreting section with the cable winches / chain hoists. Controlled slowing down on the side used for braking.
   → Travelling Nose (6) rolls onto the first raised Roller Drophead (2) and is lifted together with the slab formwork. (Fig. B7.02)
2. Continue pulling the slab formwork until the next concreting position has been reached.
3. Attach tensioning chains (25), and pre-tension. Ensure the slab formwork is in a stable position.
4. Swivel down the slab props and align the slab formwork.
5. Tension the tensioning chains.
6. Dismantle cable winches / chain hoists.

(Fig. B7.03)

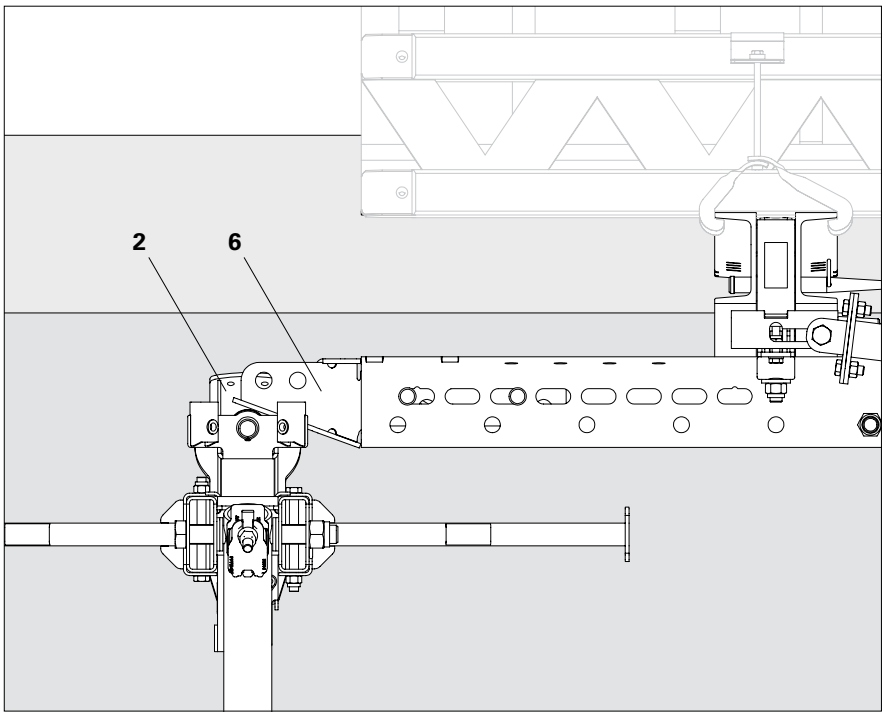


Fig. B7.02

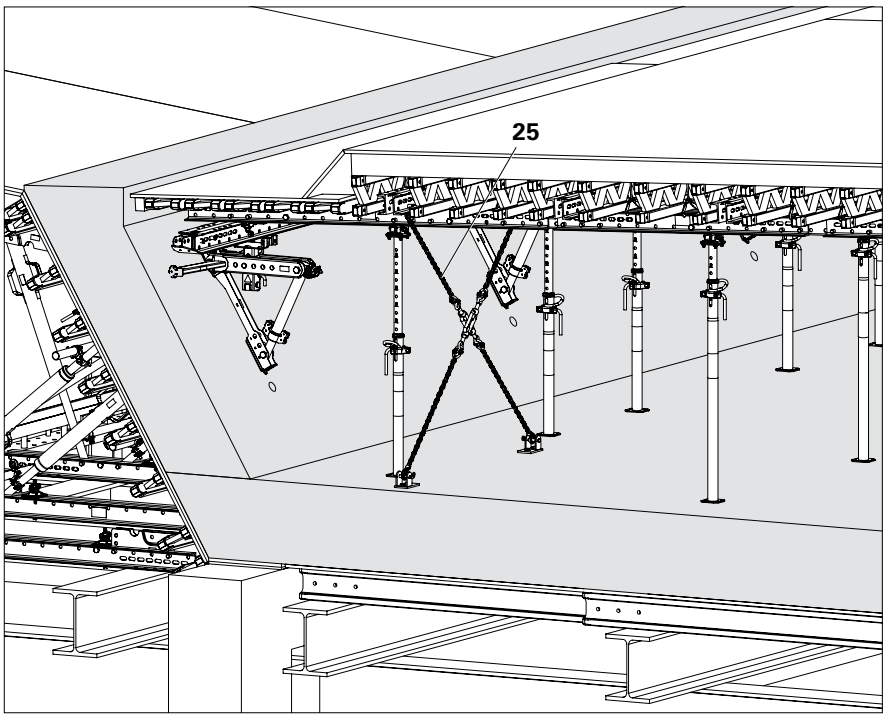


Fig. B7.03

Alternatively, bracing with Heavy-Duty Spindle SLS 80/140 and Bracing Shoe RCS DW 15, see section "B7 Moving the Slab Formwork – Anchoring with Heavy-Duty Spindle".

It may be necessary to carry out the lifting procedure on the second Wall Support first.
After lifting, push up the last formwork section in order to be able to raise the Roller Drophead.
Use suitable lifting spindles in accordance with DIN 7355 or a sufficient number of slab props.

Anchoring with the Heavy-Duty Spindle

Components

6	Travelling Nose SRU
18	Heavy-Duty Spindle SLS 80/140
19	Bracing Shoe RCS DW 15
26	Heavy-Duty Dowel Ø 22
27	Heavy-Duty Dowel Ø 30
38	Fitting pin D=21x120
39	Cotter pin 4/1

Instead of tensioning chains, the slab formwork can be secured by using at least 2 Heavy-Duty Spindles.

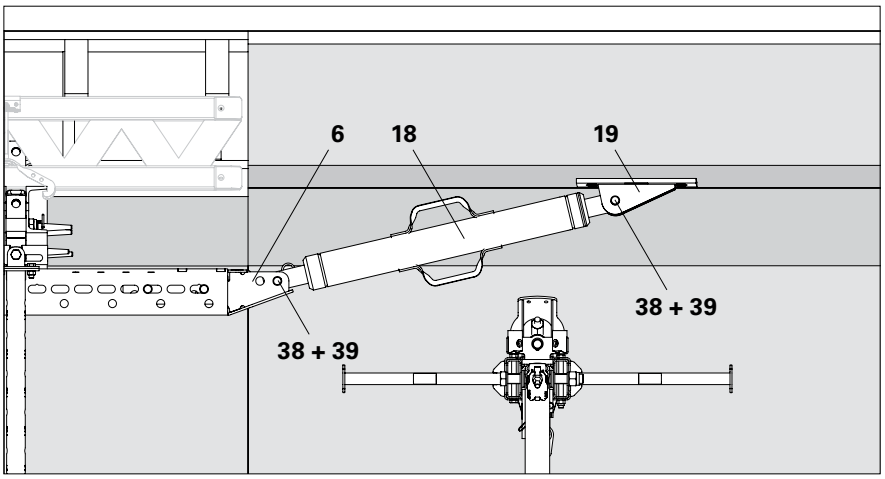


Fig. B7.04

Assembly

First concreting section

1. Fix Bracing Shoe RCS (19) to the bottom slab using Heavy-Duty Dowels (26/27).
2. Mount Heavy-Duty Spindle in the Bracing Shoe by means of fitting pins (38) and cotter pins (39). (Fig. B7.04a – B7.04d)
3. Mount the other side of the Heavy-Duty Spindle on the main beam using fitting pins and cotter pins. The length of the Heavy-Duty Spindle is determined by the specifics of the project.

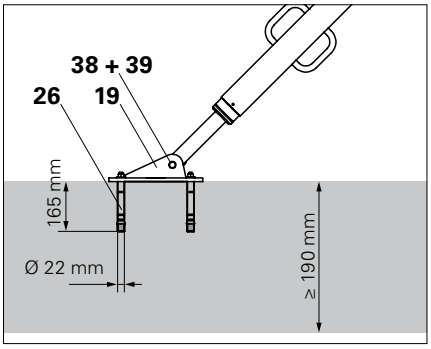


Fig. B7.04a

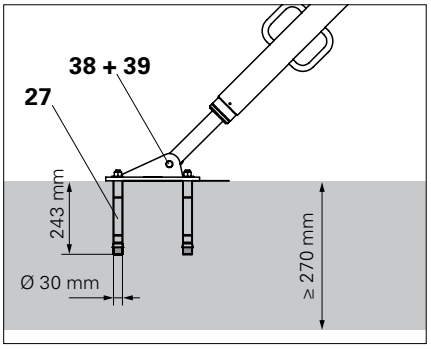


Fig. B7.04b

The following concreting section

1. Secure the Bracing Shoe RCS (19) to the previous slab section using Heavy-Duty Dowels.
2. Mount the Heavy-Duty Spindle SLS 80/140 (18) in the Bracing Shoe with fitting pins (38) and cotter pins (39).
3. Mount the other side of the Heavy-Duty Spindle on the Travelling Nose (6) using fitting pins (38) and cotter pins (39).

(Fig. B7.04)

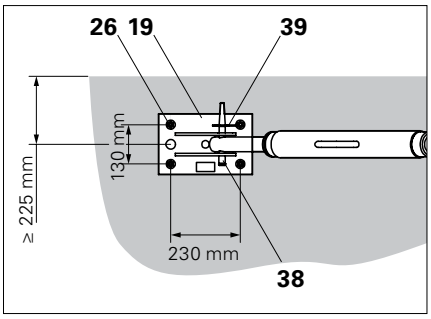


Fig. B7.04c

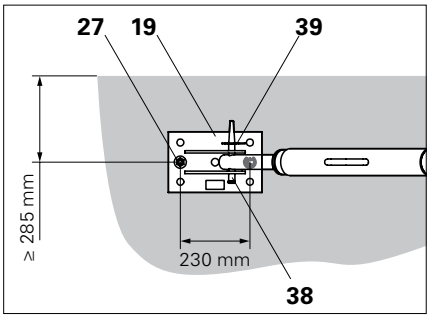
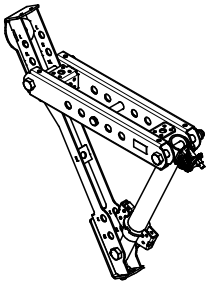
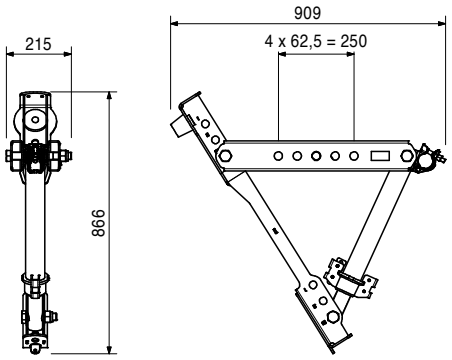


Fig. B7.04d

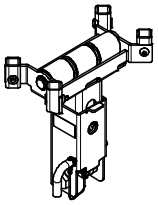
Mounting of the Bracing Shoe on slabs or side walls takes place in the same way.

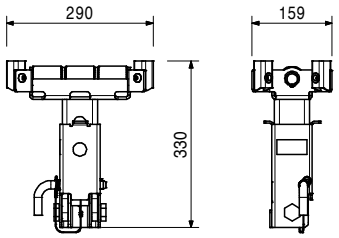
Item no.	Weight kg		
132439	30.500	**Wall-Support VIL** For supporting Roller Drophead VIL and Rail Profile SRU.	**Note** Complete with: 1 Half-Coupling



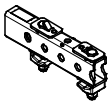


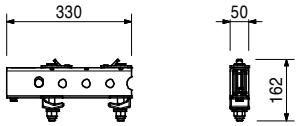
132436	10.200	**Roller Drophead VIL** Supporthead for Rail Profile SRU.



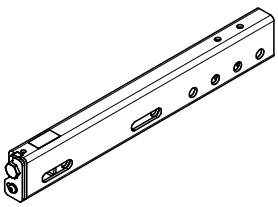


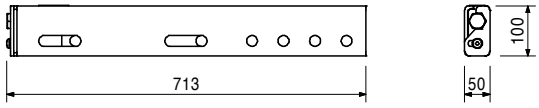
132517	5.400	**Cross Fall Compensator SRU** Adjustable coupling for corsswise connection of Steel Walers SRU.



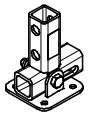


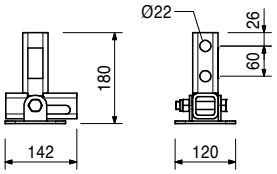
132709	12.300	**Longitudinal Connector SRU, adjustable** Length-adjustable coupling for rigid connection of Steel Walers SRU.



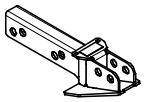


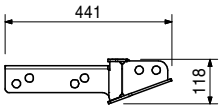
Item no.	Weight kg	
132633	2.600	**Cross Swivel Head SRU** Articoulated prophead for the attachment to Steel Waler SRU with folding function across the waler.

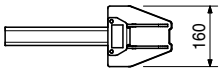




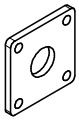
132597	4.870	**Travelling Nose SRU** Ramp for Steel Walers SRU to compenbate cantilevers when moving VARIO Slab Formwork during the incremental launching process.

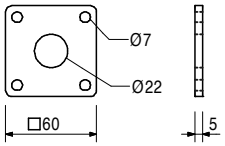




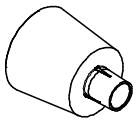


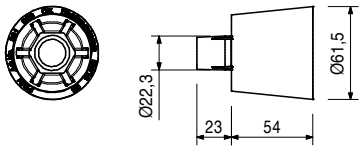
132386	0.120	**Anchor Positioning Plate DW 15** For fixing the DW 15 Anchor System if the plywood is drilled through.	**Note** Delivery unit: 50 pieces.





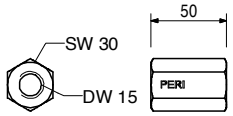
031636	0.063	**DK Cone DW 15/55** For waterproof, fire-resistant and soundproof anchor points with Tie Rod DW 15. Used with Spacer Tube rough 22.	**Note** Delivery unit 50 pieces.



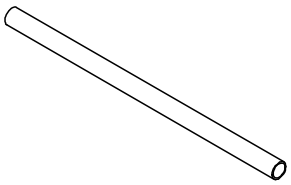


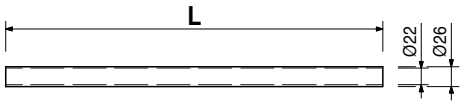
030070	0.222	**Hex. Nut DW 15 SW 30/50, galv.** For anchoring with Tie Rod DW 15 and B 15.	**Technical Data** Permissible load 90 kN.





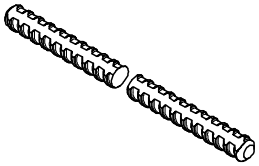
Item no.	Weight kg	
065027	0.359	**Spacer Tube rough DR 22, l = 2.00 m** Plastic spacer tube for DW 15, B 15.





		Tie Rods DW 15
030030	1.440	**Tie Rod DW 15, spec. length**
030050	0.000	**Cutting Cost Tie Rod DW 15, B 15**

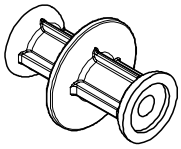
Note
Non-weldable! Take official Approval into consideration!
Technical Data
Permissible tension force 90 kN.

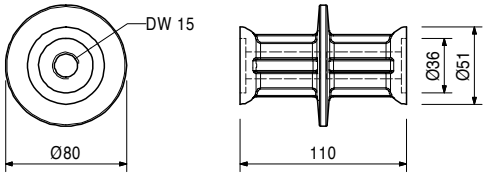




031150	0.831	**Waterstop Centrepiece DW 15, rough** For anchoring with Tie Rod DW 15 and B 15.

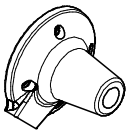
Technical Data
Permissible tension force 90 kN.

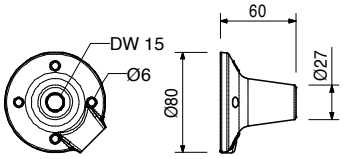




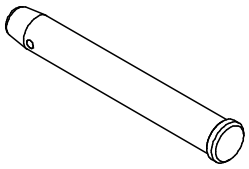
030840	0.515	**Threaded Anchor Plate DW 15** For use with Tie Rod DW 15 or B 15. For anchoring in concrete.

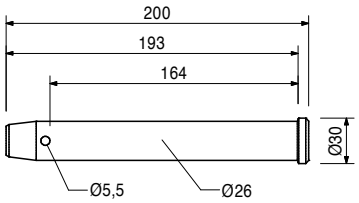
Note
Lost anchor part.



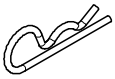


Item no.	Weight kg	
132387	0.000	**Fitting Pin Ø 26 x 160, galv.**



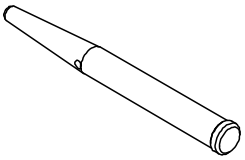


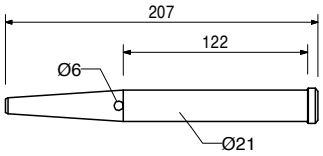
022230	0.033	**Cotter Pin 5/1, galv.**





104031	0.462	**Fitting Pin Ø 21 x 120** For different connections.





Accessories

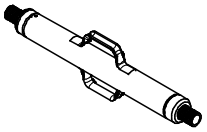
018060	0.014	**Cotter Pin 4/1, galv.**

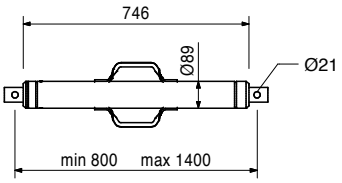
018060	0.014	**Cotter Pin 4/1, galv.**



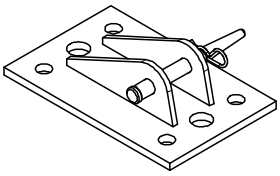


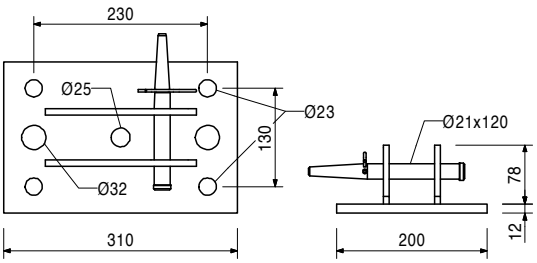
Item no.	Weight kg		
101773	15.300	**Heavy Duty Spindle SLS 80/140** Used as adjustable spindle for truss beams made of Steel Walers SRU and Climbing Rails RCS.	**Note** Permissible load see PER Design Tables.



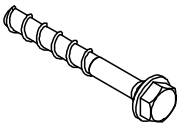


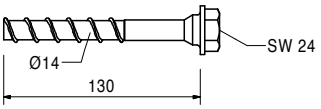
114997	7.160	**Bracing Shoe RCS DW 15** For anchoring the bracing with DW 15 to the building slab. Fixation with Anchor System M24 or corresponding dowels.	**Complete with** 1 pc. 104031 Fitting Pin Ø 21 x 120 1 pc. 018060 Cotter Pin 4/1, galv.



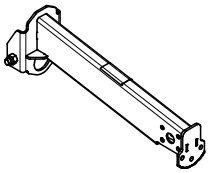


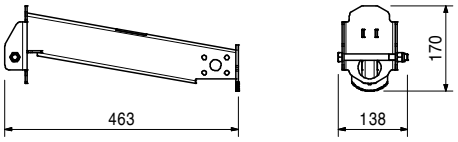
124777	0.210	**Anchor Bolt PERI 14/20 x 130** For temporary fixation to reinforced concrete structures.	**Note** See PERI Data Sheet! Drilling Ø 14 mm.



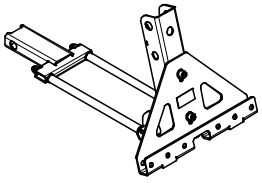


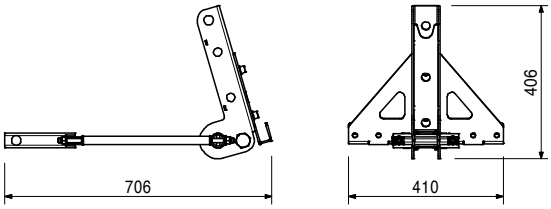
133941	2.810	**Bracing Wing VIL**



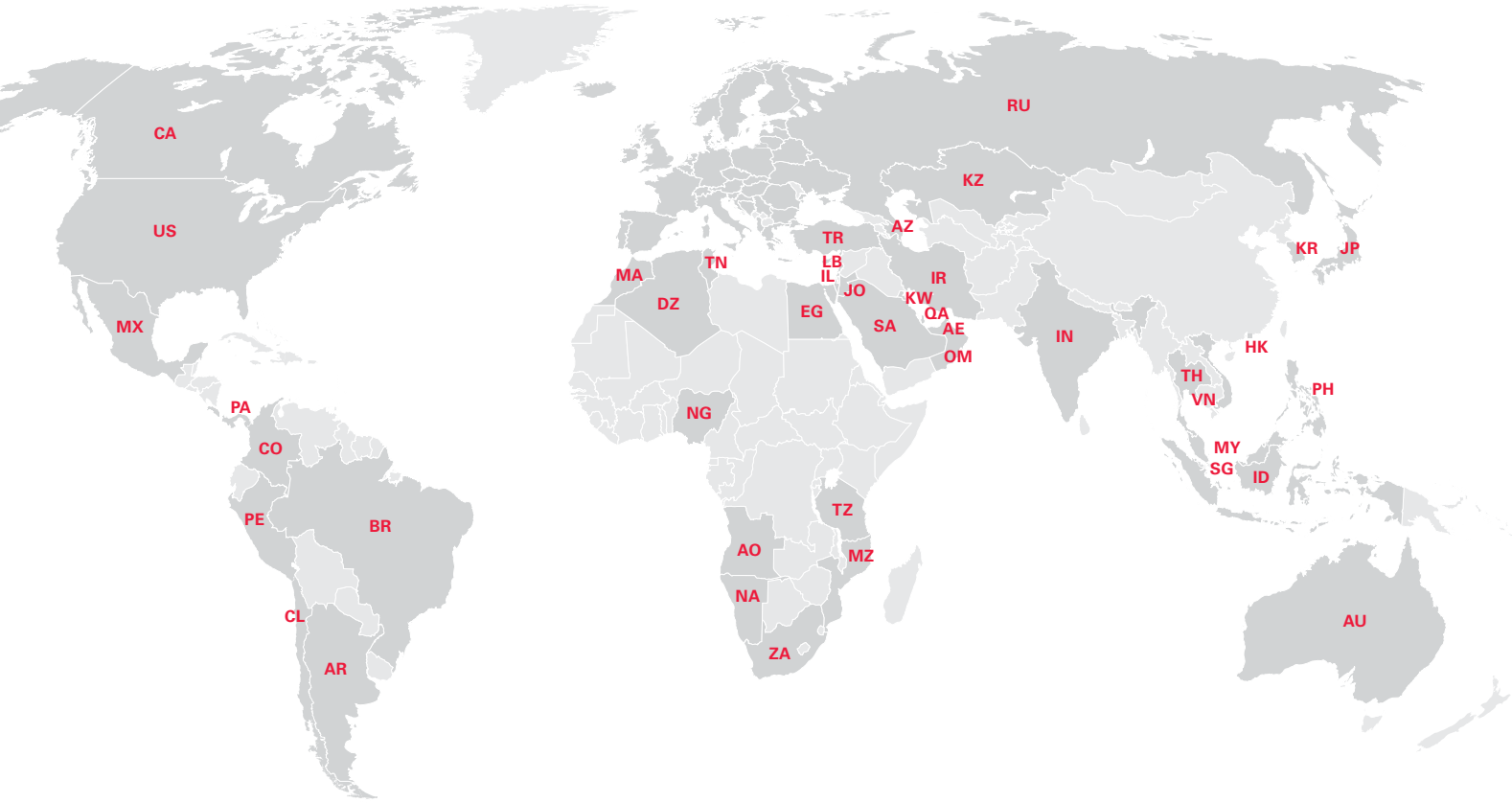


133933	9.930	**Overhang Adaptor VIL**





PERI International



North America

CA Canada
PERI Formwork Systems, Inc.
www.peri.ca

MX Mexico
PERI Cimbras y Andamios, S.A. de C.V.
www.peri.com.mx

PA Panama
PERI Panama Inc.
www.peri.com.pa

US USA
PERI Formwork Systems, Inc.
www.peri-usa.com

South America

AR Argentina
PERI S.A.
www.peri.com.ar

BR Brazil
PERI Formas e Escoramentos Ltda.
www.peribrasil.com.br

CL Chile
PERI Chile Ltda.
www.peri.cl

CO Colombia
PERI S.A.S.
www.peri.com.co

PE Peru
PERI Peruana S.A.C.
www.peri.com.pe

Africa

AO Angola
Pericofragens, Lda.
www.peri.pt

DZ Algeria
S.A.R.L. PERI
www.peri.dz

EG Egypt
Egypt Branch Office
www.peri.com.eg

MA Morocco
PERI S.A.
www.peri.ma

MZ Mozambique
PERI (Pty.) Ltd.
www.peri.co.mz

NA Namibia
PERI (Pty.) Ltd.
www.peri.na

NG Nigeria
PERI Nigeria Ltd.
www.peri.ng

TN Tunisia
PERI S.A.U.
www.peri.es

TZ Tanzania
PERI Formwork and Scaffolding Ltd
www.peri.co.tz

ZA South Africa
PERI Formwork Scaffolding (Pty) Ltd
www.peri.co.za

Asia

AE United Arab Emirates
PERI (L.L.C.)
www.peri.ae

AZ Azerbaijan
PERI Repesentative Office
www.peri.com.tr

HK Hong Kong
PERI (Hong Kong) Limited
www.perihk.com

ID Indonesia
PT Beton Perkasa Wijaksana
www.betonperkasa.com

IL Israel
PERI F.E. Ltd.
www.peri.co.il

IN India
PERI (India) Pvt Ltd
www.peri.in

IR Iran
PERI Pars. Ltd.
www.peri.ir

JO Jordan
PERI GmbH – Jordan
www.peri.com

JP Japan
PERI Japan K.K.
www.peri.co.jp

KR Korea
PERI (Korea) Ltd.
www.perikorea.com

KW Kuwait
PERI Kuwait W.L.L.
www.peri.com.kw

KZ Kazakhstan
TOO PERI Kazakhstan
www.peri.kz

LB Lebanon
PERI Lebanon Sarl
lebanon@peri.de

MY Malaysia
PERI Formwork Malaysia Sdn. Bhd.
www.perimalaysia.com

OM Oman
PERI (L.L.C.)
www.peri.ae

PH Philippines
PERI-Asia Philippines, INC.
www.peri.com.ph

QA Qatar
PERI Qatar LLC
www.peri.qa

SA Saudi Arabia
PERI Saudi Arabia Ltd.
www.peri.com.sa

SG Singapore
PERI Asia Pte Ltd
www.periasia.com

TH Thailand
Peri (Thailand) Co., Ltd.
www.peri.co.th

TR Turkey
PERI Kalıp ve İskeleleri
www.peri.com.tr

VN Vietnam
PERI ASIA PTE LTD
www.peri.com.vn



PERI GmbH
Formwork Scaffolding Engineering
Rudolf-Diesel-Strasse 19
89264 Weissenhorn
Germany
Tel. +49 (0)7309.950-0
Fax +49 (0)7309.951-0
info@peri.com
www.peri.com

Oceania

AU Australia
PERI Australia Pty. Ltd.
www.periaus.com.au

Europe

AL Albania
PERI Kalıp ve İskeleleri
www.peri.com.tr

AT Austria
PERI Ges.mbH
www.peri.at

BA Bosnia and Herzegovina
PERI oplate i skele d.o.o
www.peri.com.hr

BE Belgium
PERI N.V.
www.peri.be

BG Bulgaria
PERI Bulgaria EOOD
www.peri.bg

BY Belorussia
IOOO PERI
www.peri.by

CH Switzerland
PERI AG
www.peri.ch

CZ Czech Republic
PERI spol. s r.o.
www.peri.cz

DE Germany
PERI GmbH
www.peri.de

DK Denmark
PERI Danmark A/S
www.peri.dk

EE Estonia
PERI AS
www.peri.ee

ES Spain
PERI S.A.U.
www.peri.es

FI Finland
PERI Suomi Ltd. Oy
www.perisuomi.fi

FR France
PERI S.A.S.
www.peri.fr

GB United Kingdom
PERI Ltd.
www.peri.ltd.uk

GR Greece
PERI Hellas Ltd.
www.perihellas.gr

HR Croatia
PERI oplate i skele d.o.o.
www.peri.com.hr

HU Hungary
PERI Kft.
www.peri.hu

IR Ireland
Siteserv Access & Formwork
www.siteservaccess.ie

IS Iceland
Armar ehf.
www.armar.is

IT Italy
PERI S.r.l.
www.peri.it

LT Lithuania
PERI UAB
www.peri.lt

LU Luxembourg
N.V. PERI S.A.
www.peri.lu

LV Latvia
PERI SIA
www.peri-latvija.lv

NL Netherlands
PERI b.v.
www.peri.nl

NO Norway
PERI Norge AS
www.peri.no

PL Poland
PERI Polska Sp. z o.o.
www.peri.com.pl

PT Portugal
Pericofragens Lda.
www.peri.pt

RO Romania
PERI România SRL
www.peri.ro

RS Serbia
PERI oplate d.o.o.
www.peri.rs

RU Russia
OOO PERI
www.peri.ru

SE Sweden
PERI Sverige AB
www.peri.se

SI Slovania
PERI oplate i skele d.o.o
www.peri.com.hr

SK Slovakia
PERI spol. s. r.o.
www.peri.sk

UA Ukraine
TOW PERI
www.peri.ua

The optimal System for every Project and every Requirement



Wall Formwork



Column Formwork



Slab Formwork



Climbing Systems



Bridge Formwork



Tunnel Formwork



Shoring Systems



Construction Scaffold



Facade Scaffold



Industrial Scaffold



Access



Protection Scaffold



Safety Systems



System-Independent Accessories



Services

PERI GmbH
Formwork Scaffolding Engineering
Rudolf-Diesel-Strasse 19
89264 Weissenhorn
Germany
Tel. +49 (0)7309.950-0
Fax +49 (0)7309.951-0
info@peri.com
www.peri.com

DE en 03|2019 0.5sm 794464 © PERI GmbH