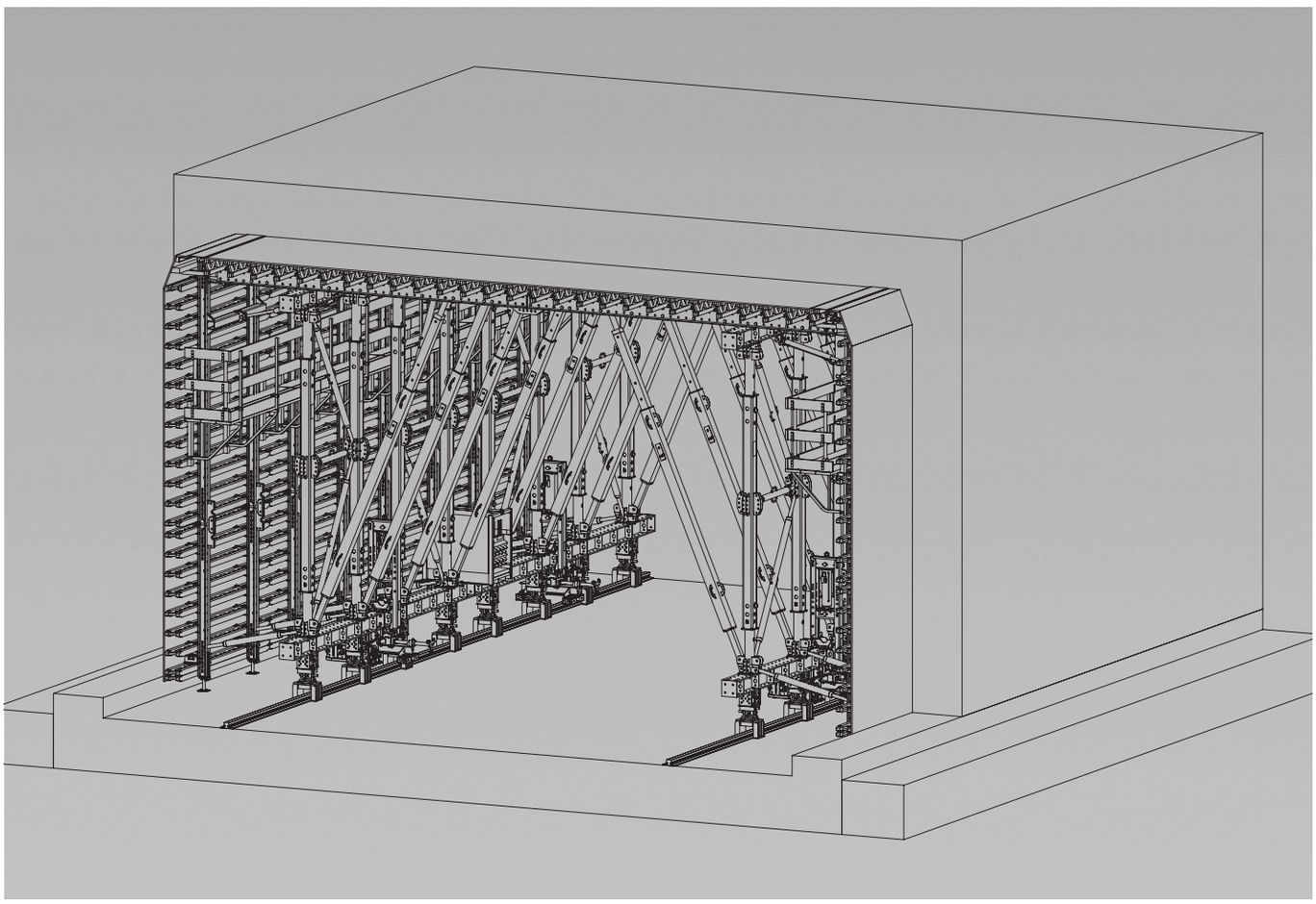
VTC

System Components for the Tunnel Formwork Carriage

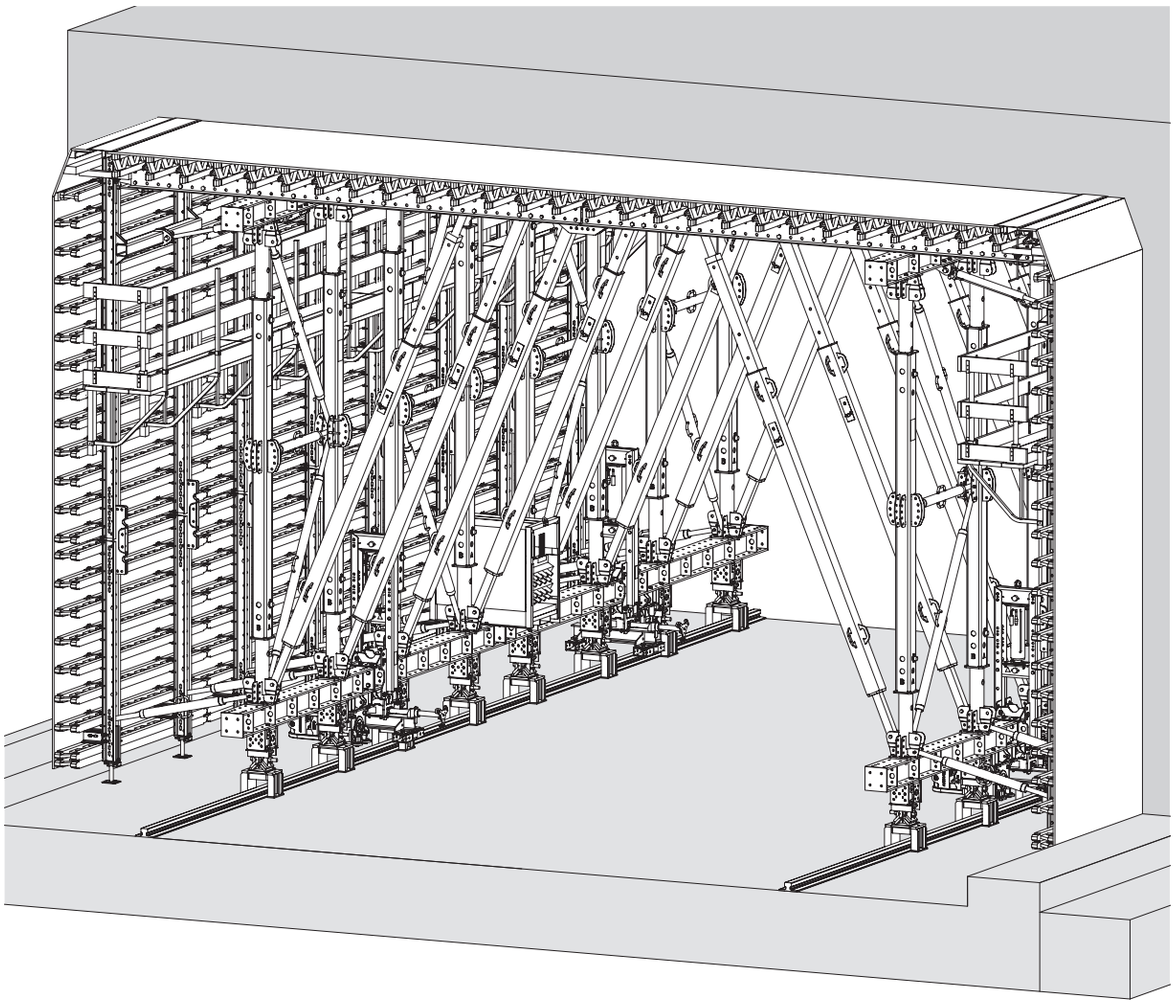
Assembly Instructions – Version 2.0



Content

Overview

Main components



A1 Hydr.Pump VARIOKIT 8-fold
A2 Hydraulic components
A3 Lifting and Lowering Unit LALD
A4 Hydraulic traversing drive

B1 General assembly procedure
B2 Base Beam VARIOKIT
B3 Base Beam RCS
B4 Base Beam HDT
B5 Installing hydraulic components
B6 Connecting and converting hydraulic units

Overview

Key

Pictogram | Definition

 Danger/Warning/Caution

 Note

 To be complied with

 Load-bearing point

 Visual inspection

 Tip

 Incorrect use

 Safety helmet

 Safety shoes

 Safety gloves

 Safety goggles

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

 Observe additional documentation

Arrows

→ Arrow representing an action

⇨ Arrow representing a reaction of an action*

→ Arrow representing forces

* If not identical to the action arrow.

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

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

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

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

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

Format of the safety instructions

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

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

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

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

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

Terminology
Components are not always named in full so that they are easier to read.
All components deemed valid according to the program overview may be used.
Exceptions are specified.
Example:
– Horizontal ledger
corresponds to:
– Horizontal Ledger UH Plus
– Horizontal Ledger UH-2

Target groups

Contractors
These Assembly Instructions are intended for contractors who
- assemble, modify and dismantle PERI Systems, or
- use them, e.g. for concreting, or
- allow them to be used for other operations, e.g. carpentry or electrical work.

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

Competent person
- is appointed by the contractor,
- must be on site for all system operations,
- prepares and updates the plan for assembly, modification and dismantling,
- prepares and updates the plan for use of the system by the user,
- supervises the assembly, modification and dismantling work (supervisor).

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

Qualified personnel
PERI systems may only be assembled, modified or dismantled by personnel who are suitably qualified to do so. Qualified personnel must have completed a course of training** in the work to be performed, covering the following points at least:
- Explanation of the plan for the assembly, modification or dismantling of the system in an understandable form and language.
- Description of the measures for safely assembling, modifying or dismantling the system.
- 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 that could adversely affect the safety of the system, as well as the personnel concerned.
- Details regarding permissible loads.
- Description of all other risks and dangers associated with assembly, modification or dismantling operations.
- PERI is responsible for training the operating personnel. With their signature on the handover certificate, the operator confirms that they are able to correctly operate the hydraulic system and traversing drive. See "Participation Protocol and Handover Certificate" on page 133.

- **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.**

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

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

Product description

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

The hydraulic lifting and lowering unit as well as the Wall Hydr.-Cylinder serve only to position the VTC Tunnel Formwork Carriage and the internal wall formwork vertically and horizontally. The hydraulic cylinders are relieved of any load before concreting begins. Forces occurring during concreting operations must be transferred via the formwork system and supporting structure. Any other use is considered to be improper.

These Assembly Instructions serve as a basis for the project-related risk assessment, as well as instructions for the provision and use of the system by the contractor (user). However, they do not replace them.

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

Deviations from the standard configurations listed here are generally impermissible. Special applications must be described in the form of detailed planning and instructions for use based on a separate risk assessment. These special applications must be approved by PERI.

For all damage arising from non-intended use

- the operator bears sole responsibility.
- the manufacturer assumes no liability.

The VTC Tunnel Formwork Carriage may only be used

- within the permissible load-bearing capacity.
- within the permissible temperature limits of -20 °C to +60 °C (with special measures up to -30 °C).
- in good working condition and when correctly mounted.

Features
Depending on the tunnel construction method, the VTC Tunnel Formwork Carriage only requires one load-bearing system for the walls and slab, which means the overall workload is greatly reduced. The outer wall formwork is also the stop end for the slab edge.
The system is self-propelled by means of the hydraulic traversing drive.

The same hydraulic components are always used. The construction of the VTC Tunnel Formwork Carriage and formwork elements is always adapted to accommodate the structure and is thus planned on a project-related basis.

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 contractor must ensure that the personal protective equipment required for cleaning, maintenance and repair work such as
- Safety helmet,
- Safety shoes,
- Safety gloves,
- Safety goggles,

is available and used as intended.

The following instructions should help to keep cleaning and maintenance costs as low as possible.

Cleaning tools must be adapted to the respective surfaces of the components so that they are not damaged.

Spray the formwork on both sides with concrete release agent before each use; this makes the formwork easier and faster to clean. Spray the concrete release agent very thinly and evenly!

Do not spray work platforms and access routes with concrete release agent.
Slip hazard.

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

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

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

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

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

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

Never clean powder-coated components, e.g. elements and accessories, with steel brushes or hard metal scrapers; this preserves the powder coating. Use spacers for reinforcements with large or flat supports; this largely avoids indentations in the formlining 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.

Additional technical documentation

- Instructions for Use:
  - Hydraulic units
  - Hydraulic traversing drive
  - Hydr. Jack
  - Filter Pump CE
- Assembly Instructions:
  - RCS Climbing Device and Hydraulics
- Instructions for Assembly and Use:
  - Concrete Pump Connector BPA-2
- Design information for verification of the climbing ties
- Project-specific Instructions for Assembly and Use and related general arrangement drawings
- Safety data sheet:
  - Hydraulic oil
- PI sheets:
  - separate product information, e.g. for permissible tie loads

Instructions for Use

Use in a way that is not intended according to the assembly instructions or deviations from the standard configuration or intended use constitute incorrect use with a safety risk, e.g. risk of falling.

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

Changes to PERI components are not permitted.

Only ever use approved and calculated components.

Operation with damaged or incomplete load-carrying equipment is not permissible.

The system described in these Assembly Instructions may contain patent-protected components.

- The description of the assembly and operation of the assemblies and components in these Assembly Instructions is intended as an example.
- For use on the construction site, a project-specific assembly plan is required.
- The project-related assembly plan from PERI is binding for assembly operations.

RFID transponder

Individual components are equipped with an RFID transponder. RFID transponders combine hardware with additional software to create a smart product.
Depending on the component and digital solution, you can:

- Call up technical documents.
- View maintenance plans.
- Track information on transport and logistics.

For more information, see "RFID LA Tag Mounting Kit User Information".

Disposal

Carry out disposal in accordance with the relevant national regulations.

Observe the safety data sheets of the auxiliary and operating materials.

Cross-system

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

General information
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 Assembly Instructions can be used as a basis for preparing the risk assessment. The risk assessment is compiled by the contractor.
The Assembly Instructions are not a substitute for the risk assessment!

Observe and comply with the safety instructions and permissible loads.

For the application and inspection of PERI products, observe the current laws and regulations in force in the respective countries.

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

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

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

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

Components provided by the contractor must comply with the characteristics stipulated in these Instructions for Assembly and Use and all applicable laws and standards. Unless otherwise indicated, the following applies in particular:
- Timber components:
  Strength class C24 for solid wood according to DIN EN 338:2016-07.
- Scaffolding tubes:
  Galvanised steel tubes with minimum dimension Ø 48.3 x 3.2 mm according to DIN EN 12811-1:2004-03 4.2.1.2.
- Scaffolding tube couplings:
  according to DIN EN 74-1:2022-09 and DIN EN 74-2:2022-09.

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.

Nails and wood screws must not protrude. Only allow other connecting components to protrude to the extent that is necessary.
If necessary, mark protruding components or fit them with protective material.
Secure all bolts with cotter pins and all screws with nuts.

Before and after extraordinary events that may have damaging effects on the safety of the system, the contractor must immediately
- produce another risk assessment, the results of which must be used to implement suitable measures to ensure the stability of the system,
- arrange for an extraordinary inspection to be carried out by a competent person qualified to do so. The aim of this inspection is to detect and repair damage in good time in order to ensure safe use of the system.

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

Suitable measures could be:
- removing nets/tarpaulin,
- clearing snow and ice,
- reducing live loads,
- securing loose materials.

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

On the basis of the risk assessment and the Assembly Instructions, the contractor must create assembly instructions to guarantee safe assembly, modification and dismantling of the system.

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

is available and used as intended.

For work at a higher level, use an approved ladder or platform system, or an assembly scaffold.

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

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

Only use tested and approved lifting gear.

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

If the 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 then be coordinated.

When systems are used in publicly accessible areas,
- measures to prevent unauthorised use, e.g. enclosure of access areas, must be taken.
- Measures are taken against injuries caused by bumping against protruding components, e.g. assembly of protective components.

Always keep the contact surfaces of the system free of dirt, objects, snow and ice.
Close off the system in extreme weather conditions.

System-specific

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

Make sure that the guardrails and/or edge covers at building openings and projections are fully installed before accessing the system.

Before entering the system, check for completeness of the platform deck and for danger spots and use PPE if necessary.

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

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

Inspection of the anchoring and associated components must be carried out by the party responsible.

Building materials or tools must not be transported as part of the relocation operation. Exceptions to this can be determined through the operational working and assembly instructions.

The transport of persons during the relocation process is strictly prohibited. This does not apply to the operating personnel required for relocation operations.

Working areas at great heights are to be secured by means of appropriate measures to prevent objects from falling down.

Use a guide rope to ensure that assembly units suspended from the crane are fully under control when being moved.

Welding or abrasive cutting work is prohibited on the platforms due to the associated fire hazard.

Reliable lightning conduction must be ensured by the contractor.

Assembly work
Only those persons who are required to carry out the individual work steps may remain on the tunnel formwork carriage.

The contractor must ensure that the user has an appropriate and sufficient number of tools, lifting equipment and slings, suitable and sufficient space for assembly and storage as well as adequate crane capacity at his disposal.

During the transportation procedure, only use the specified attachment points for components.

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

Secure interim assembly states by means of temporary supports in order to prevent any items from toppling over.

The contractor must make a level assembly area with sufficient load-bearing capacity available.

Unexpected hazards can always arise when assembly work is carried out. Assess the degree of risk in each individual case and, if necessary, take measures to prevent or minimise the risk.

If guardrails cannot be used or has to be removed due to operational reasons, safety equipment must be installed in its place in order to prevent falls from any height.
If the use of anti-fall equipment is deemed to be inappropriate, personal protection equipment (PPE) can be used if suitable fixing points are available.

Site personnel are forbidden to remain in areas below where assembly work is being carried out, unless the danger zone has been provided with sufficient protection against falling, overturned, sliding or rolling objects and masses. Cordon off and clearly mark any danger zones and check that these are in place and complete every time work is commenced.

Do not walk on components and assembly units.
Find a secure standing position next to the components or assembly units.
Use assembly scaffolds.

Always keep components and assembly units free of dirt, ice and snow.

Safety instructions

Access
Safe access to all working areas must be guaranteed at all times.

Hatches and openings to accessible working areas must be kept closed during working operations.

Use walkways, stairs, stair towers or site lifts as access routes. Ladders are suitable for use as passageways in exceptional cases only.

Ladders must not be connected to each other for more than two levels and should be offset against one another.

Ladders must be secured on the outer side by means of appropriate anti-fall equipment such as ladder cages or safety nets.

Building edges at passages and openings in accessible areas must be secured.

In case of danger, it must be ensured that working areas can be vacated via emergency escape routes or rescue equipment.
It must also be ensured that at least one emergency escape route or piece of rescue equipment can still be used if the power supply fails.
Determine and apply all appropriate measures.

Throughout the entire relocation procedure, ensure that site personnel can still use the emergency escape route.

In case the access hatches are blocked when retracting the formwork, ensure that site personnel can still use the emergency escape route.

Protection against falling components
Work activities may not be carried out simultaneously on areas positioned on top of each other if the lower working areas are not protected against falling objects.

Avoid installing working areas and access routes in danger zones.
If this is not possible due to work procedures, suitable protective measures must be available to provide protection against falling objects. This also applies to work that only takes a short period of time.
Safety nets (mesh size ≤ 2 cm) and platform planking are considered to be suitable means and are to be installed very close to the structure (distance ≤ 5 cm).

Secure tools and material to prevent them from falling down. Remove concrete residue and other forms of dirt as quickly as possible. The platforms are to be kept clean at all times.

Operational working areas at great heights are to be secured by means of appropriate structural measures to prevent objects from falling down.

Access routes and working areas
- Working areas must remain free of any tripping hazards.
- Always keep work platforms clean. Especially after hydraulic oil leakage and wet weather conditions, there is an increased risk of slipping.
- Do not remain in the danger zone created by moving parts.
- Avoid installing working areas and access routes in danger zones.

Components that are likely to become unstable components
Secure components that are likely to become unstable with suitable means, e.g. using push-pull props, or leave them attached to the crane until the tipping hazard has been eliminated.

Loitering in the tipping range is prohibited. Draw attention to and clearly mark any danger zones.

If necessary, cordon off the danger zones with suitable means. Check that safety signs and barriers are in place before commencing work.

Safety instructions

Moving procedure
Personnel, building materials or tools must not be transported as part of the relocation operation. Exceptions to this can be determined through the operational working and assembly instructions on the basis of a corresponding risk analysis.

The relocation procedure must be monitored by a competent and qualified person.

During the relocation procedure, clamping and crushing hazards are brought about by moving components.

The individuals carrying out the relocation procedure must be fully informed about all possible hazards.

All persons who are not required to carry out the relocation procedure must leave the danger zones.

Maintenance and repairs
The components of the system are to be inspected before every use to ensure that they are in flawless condition. Only flawless materials may be used. Have the system checked monthly for signs of damage by competent persons who are authorised to give instructions.

Remove any loose concrete residue.

Immediately remove any dirt that impairs functionality.
Remove and replace damaged components.

In the event of overload or damage, work should be stopped, the cause determined, rectified and the damaged parts replaced.

If the maximum permissible wind speed has been exceeded, temperatures are outside the area of application or after any extraordinary event has taken place such as a fire or earthquake, the functionality and load-bearing capacity of all safety components as well as the supporting structure must be checked.

Safety components:
- A visual inspection is to be carried out by authorised personnel before each relocation procedure.
- A functional check is to be carried out by qualified personnel before each relocation procedure.
- If parts need to be replaced, only PERI original components may be used.
- Repairs are to be carried out by qualified PERI personnel only.
- In the event of overloading or recurring damage, stop work, determine the cause and rectify it.

Supporting structure:
- A visual inspection is to be carried out by authorised personnel before initial use.
- Only PERI original components are to be used for repairs or replacement.
- In the event of overloading or recurring damage, stop work, determine the cause and rectify it.

Other components:
- Have repairs carried out by authorised personnel and inform a person who is authorised to give instructions.
- In the event of frequently recurring damage, determine the cause and remedy it.
- Route hydraulic lines and power cables in such a way that they cannot be disconnected or sheared off, and that they do not pose a tripping hazard.

Hydraulic components
Visual inspections are to be carried out by authorised personnel at regular intervals.
Qualified personnel are to carry out a functionality check before every working cycle or before assembly takes place.
If any defects are discovered, repairs are only allowed to be carried out by qualified personnel.

Hydraulic hoses have an expiry date. Observe the manufacturer-specific information.

Do not suspend any objects from the hydraulic hoses.

Observe the manufacturer-specific information regarding inspection and maintenance of the hydraulic unit.

For correct use and disposal of the hydraulic oil, observe the manufacturer-specific instructions.

Thicken spilled hydraulic oil immediately with oil binder and mop it up.

Wear safety goggles and suitable protective gloves when working on the hydraulic system.

PERI recommends the use of an oil pan to collect hydraulic oil from the hydraulic unit.

Note
Always switch off the power to the hydraulic unit and prevent it from being switched on again as soon as the relocation procedure involving the tunnel formwork carriage has been completed.
This safety measure also applies to the following:
- Assembly.
- Maintenance.
- Repairs.
- Inspections.
- Dismantling.

Approval for use is the responsibility of the operating personnel.

Electrical components

Danger
High electric voltage at the hydraulic unit!
Death or serious injury can result from an electric shock.
⇒ Connection only by qualified personnel.
⇒ Only qualified personnel may carry out work and repairs on the electrical components of the systems.
⇒ Only approved, undamaged and tested connecting cables should be used.

Only operate the hydraulic unit using the current and voltage specified on the type plate.

Do not suspend any objects from the electrical lines.

Storage and transportation

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

Do not drop the components.

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

During the relocation procedure
- ensure that components are picked up and set down in such a way that unintentional falling over, falling apart, sliding, falling down or rolling is avoided.
- no one is allowed to remain under the suspended load.

Pre-assembled assemblies should always be guided with ropes when moving them by 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 substrate must have sufficient load-bearing capacity.

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

A1 Hydr.Pump VARIOKIT 8-fold

Overview of the hydraulic unit

Identification marking
For clear identification of the hydraulic unit and electric motor, pay attention to the type plates.
When consulting the manufacturer, have the information on the type plates to hand.
(Fig. A1.01)

1 Hydraulic unit
1.1 Hand lever
1.2 CEE motor protection plug
1.3 Adaptor Cable RCS
1.4 Hydraulic connection feed
1.5 Hydraulic connection return
1.6 Pressure gauge
1.7 Oil tank
1.8 Oil level indicator with temperature display
1.9 Filling opening for hydraulic oil
1.10 Oil drain bolt
1.11 Return filter
1.12 Bypass connection
1.13 Hydraulic pump motor
1.14 Attachment point
1.15 Hydraulic unit type plate
1.16 Electric motor type plate
1.17 Leakage oil connection
1.18 RFID LA tag
1.19 Splint
1.20 Oil pan
1.21 Funnel

Fig. A1.01

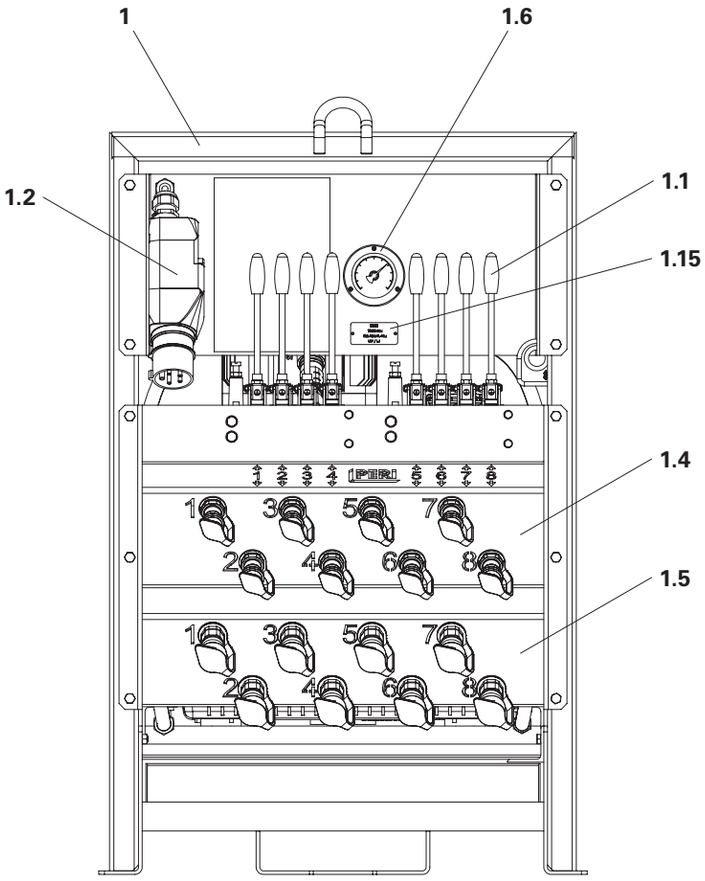


Fig. A1.02

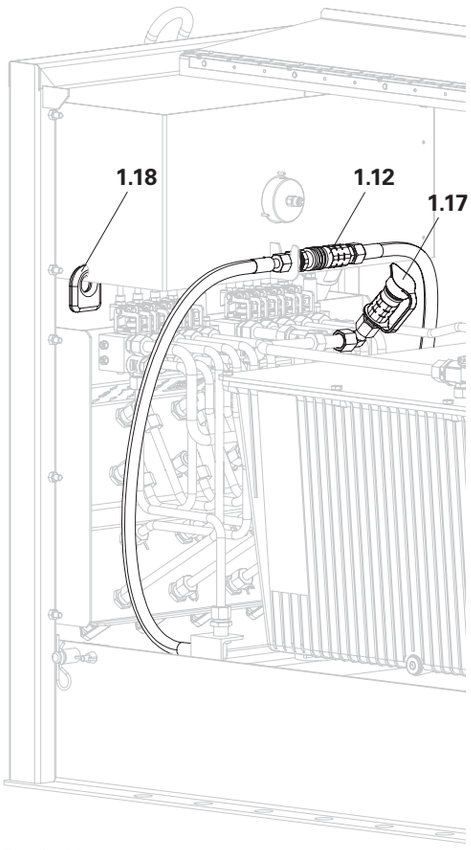


Fig. A1.03

A1 Hydr.Pump VARIOKIT 8-fold

Technical data	Europe	USA
Operating pressure	180 bar	180 bar
Supply voltage	400 V	460 V
Safety device	16 A slow	16 A slow
Frequency	50 Hz	60 Hz
Oil volume	87 l	87 l
Weight	241 kg	241 kg

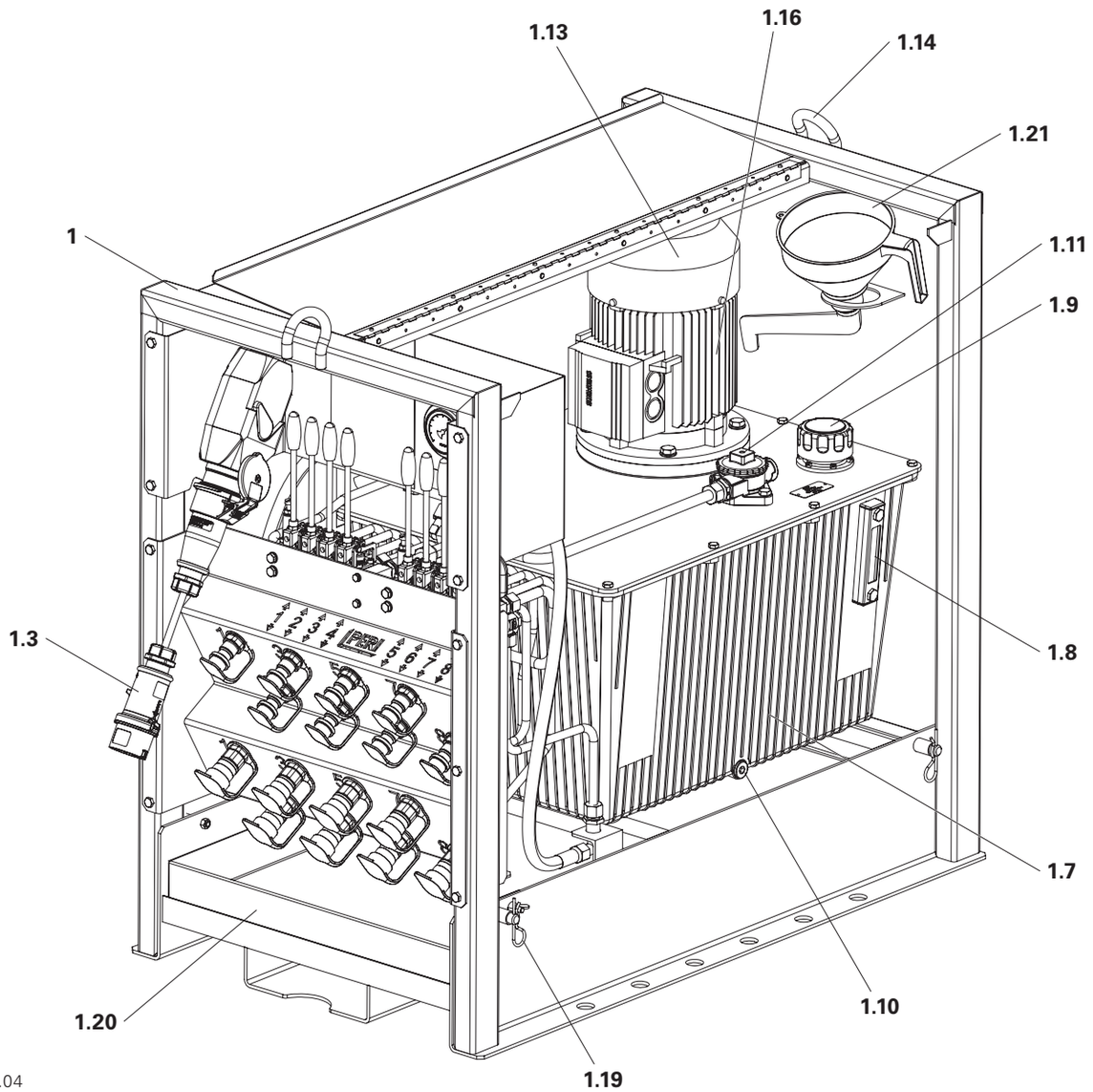


Fig. A1.04

Operating the hydraulic unit

Danger

Uncontrolled movement of the hydraulic cylinders!
Risk of crushing body, arms and legs.
⇒ Check that all hand levers are in the centre position.
⇒ Leave danger zones.

Switching on
Turn the switch (**1.24**) on the CEE motor protection plug to I.
→ The hydraulic unit is switched on.
→ The hydraulic unit is ready for operation and circulates freely.
(Fig. A1.05)

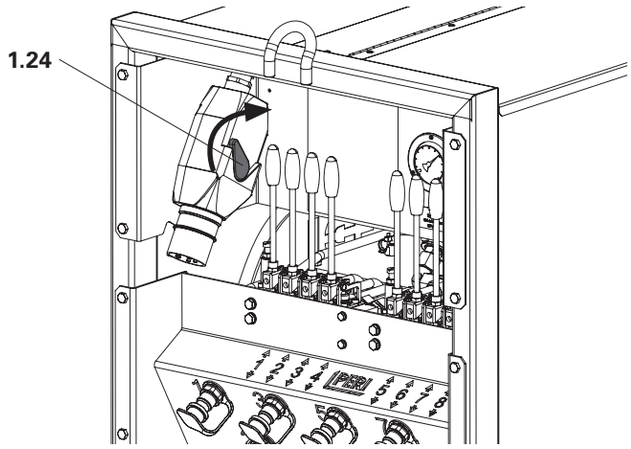


Fig. A1.05

Extending the hydraulic cylinder
Press the hand lever (**1.1**).
→ the hydraulic cylinder extends.
(Fig. A1.06)

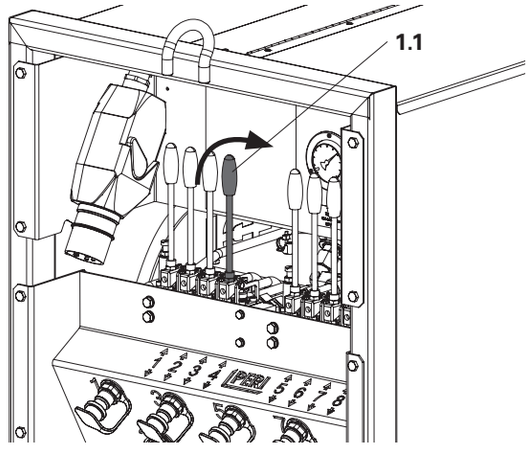


Fig. A1.06

Retracting the hydraulic cylinder
Pull the hand lever (**1.1**).
→ the hydraulic cylinder retracts.
(Fig. A1.07)

Switching off
Turn the switch (**1.24**) on the CEE motor protection plug to 0.
→ The hydraulic unit is switched off.

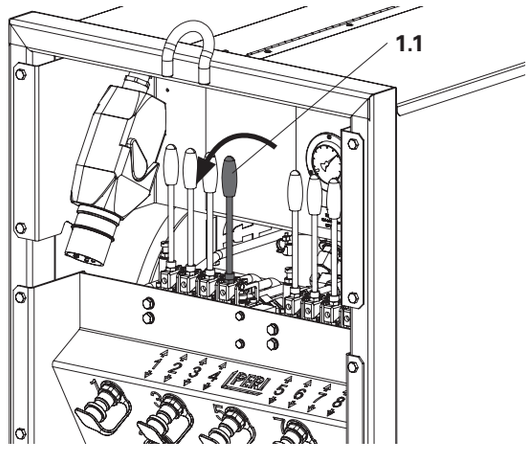


Fig. A1.07

Taking a reading of the hydraulic pressure
The manometer shows the operating pressure of the hydraulic system. Pressure is applied only when operating the hand lever. If none of the hand levers are actuated, the pressure in the system is 0 bar, the hydraulic unit circulates freely.
(Fig. A1.08)

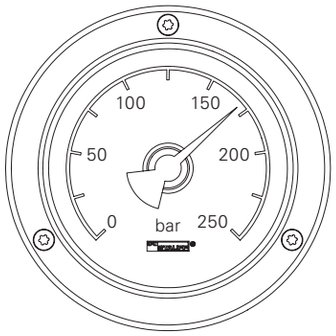


Fig. A1.08

Opening the hydraulic unit
1. Fold up cover (**1.22**).
2. Remove split pin (**1.19**).
3. Push side wall (**1.23**) upwards and remove.

(Fig. A1.09)

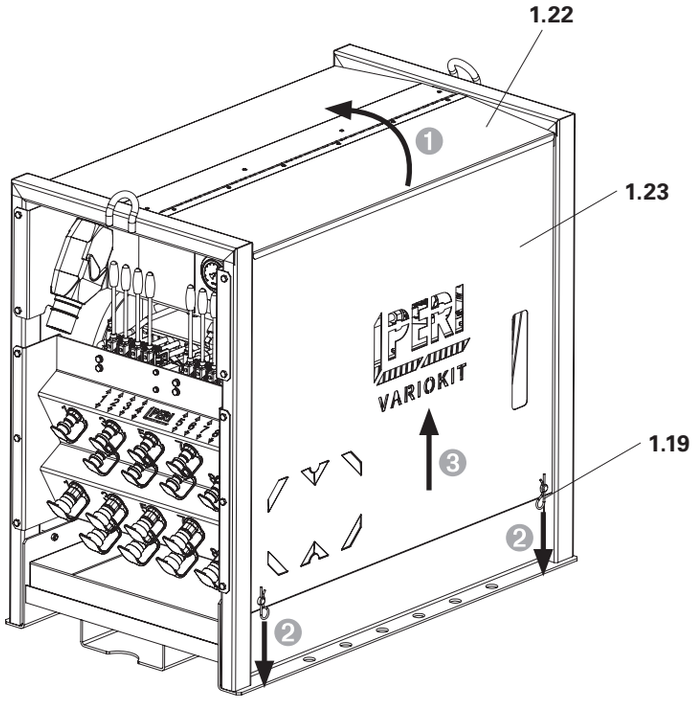


Fig. A1.09

Taking a reading of the oil temperature and oil level
The oil level indicator with temperature gauge (**1.8**) is an instrument cluster and shows the oil level and oil temperature.
(Fig. A1.10)

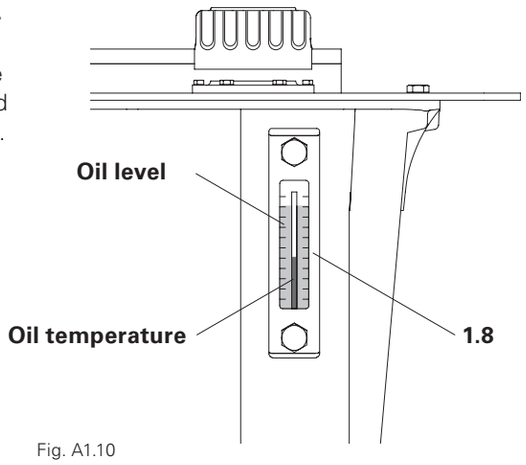


Fig. A1.10

Lifting and lowering cylinder

The VTC Tunnel Formwork Carriage is raised and lowered by means of the lifting and lowering cylinders.

- In the concreting position, the tunnel formwork carriage is raised.
- In the moving position, the tunnel formwork carriage is lowered.

The tunnel slab is shuttered and struck in one working operation. When concreting the tunnel slab, the load is transferred via support frames and lowering wedges into a sufficiently load-bearing substrate.

Technical data	D120/70 Stroke 300
Lifting force $F_{compression}$	200 kN
Lifting force $F_{tension}$	135 kN
Piston stroke	300 mm
External length (retracted)	832 mm
External length (extended)	1132 mm
Ø Eye	51 mm
Operating pressure	180 bar
Weight	55 kg

2 Lifting and lowering cylinder
2.1 Quick coupler feed
2.2 Quick coupler return
2.3 Rod side
2.4 Piston side
2.5 RFID LA tag
(Fig. A2.01)

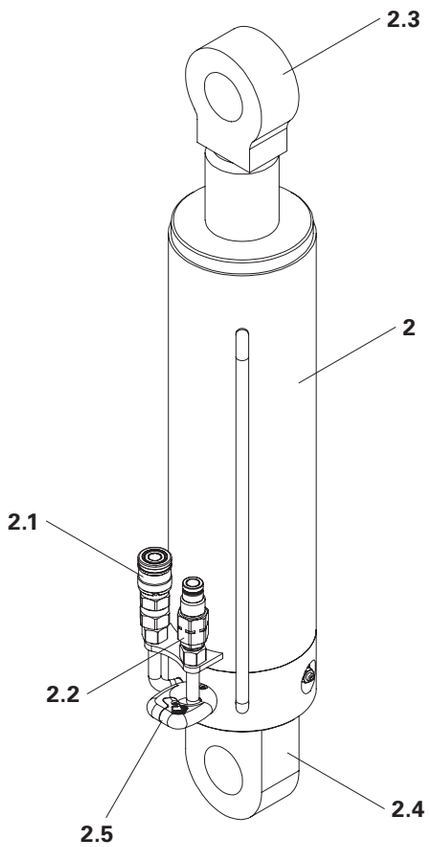


Fig. A2.01

Hydr.-Cylinder

The wall formwork is retracted and extended with the Hydr.-Cylinders:
- In the concreting position, the wall formwork is extended.
- In the moving position, the wall formwork is retracted.

The hydraulic cylinders are mounted underneath the slab formwork and facilitate fast shuttering and deshuttering operations. Adjustable limit stops ensure repeatable exact positioning of the wall formwork without requiring any re-adjustment.

Technical data	D60/40 Stroke 650
Lifting force $F_{compression}$	50 kN
Lifting force $F_{tension}$	30 kN
Piston stroke	650 mm
External length (retracted)	1040 mm
External length (extended)	1690 mm
Ø Eye	41 mm
Operating pressure	180 bar
Weight	22 kg

3 Hydr.-Cylinder
3.1 Quick coupler feed
3.2 Quick coupler return
3.3 Rod side
3.4 Piston side
3.5 RFID LA tag
(Fig. A2.02)

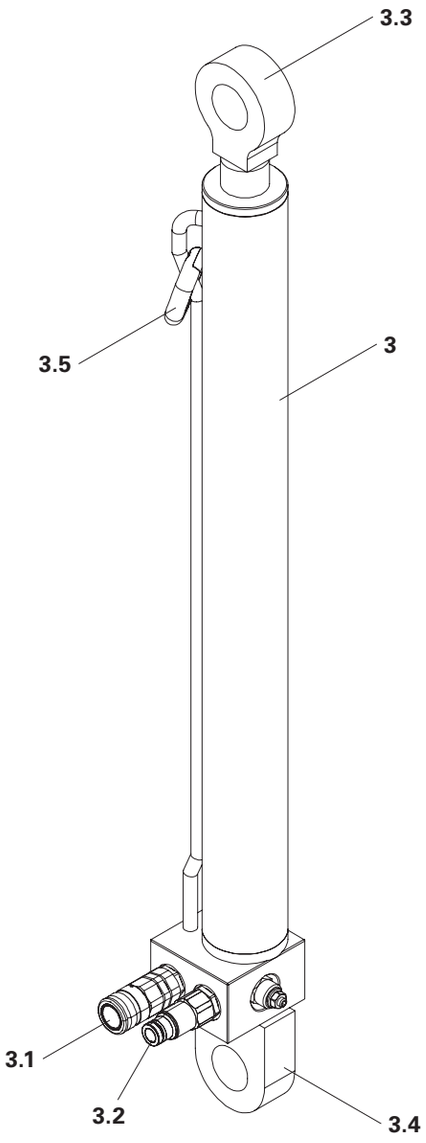


Fig. A2.02

Hydraulic quick coupler

60.1 Quick coupler connector
60.2 Quick coupler bushing
60.3 Retaining ring
60.4 Notch
60.5 Sphere

The hydraulic quick coupler allows the hydraulic components to be connected without any tools. The hydraulic system must be free of pressure.
After uncoupling, the hydraulic quick coupler seals the hydraulic connection, meaning the hydraulic oil cannot escape.
(Fig. A2.03)

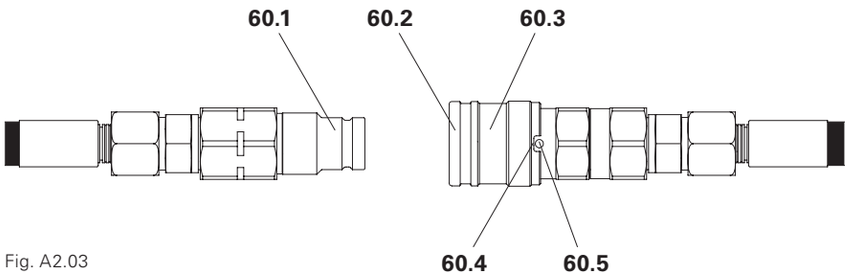


Fig. A2.03

Connecting the quick coupler

! Depressurise the hydraulic system.

1. Protective caps may have to be removed.
2. Clean the bushing and connector, and check for any signs of damage.
3. Align notch (**60.4**) in the retaining ring of the bushing with the sphere (**60.5**).
4. Push the connector (**60.1**) as far as possible into the bushing (**60.2**) until the retaining ring engages.
   → The quick coupler is now connected.
5. Turn the retaining ring (**60.3**) by 90°.
   → The quick coupler is secured against any unintentional release.

(Fig. A2.04 + A2.05)

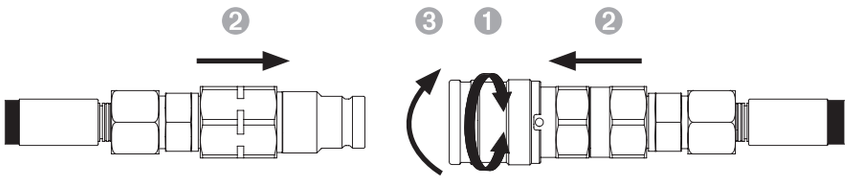


Fig. A2.04

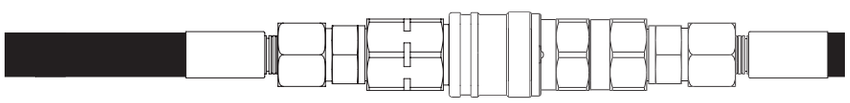


Fig. A2.05

Disconnecting the quick coupler

! Depressurise the hydraulic system.

1. Align notch (**60.4**) in the retaining ring of the bushing with the sphere (**60.5**).
2. Press the quick coupler together, push back the retaining ring (**60.3**) and hold it there.
3. Pull the quick coupler apart.

(Fig. A2.06)

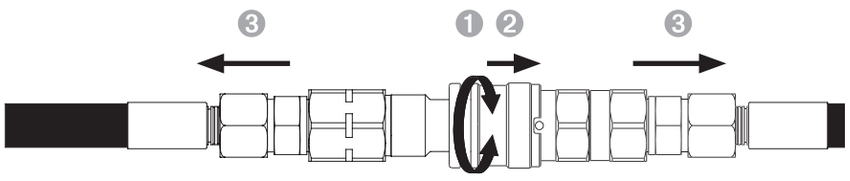


Fig. A2.06

Hydraulic hose
Hydraulic twin hose

50 Hydraulic Hose DN08
51 Hydraulic Hose DN12
52 Hydraulic Twin Hose RCS
60.1 Quick coupler connector
60.2 Quick coupler bushing

Hydraulic hose
The hydraulic hose connects the hydraulic unit to the consumer. A quick coupler bushing is mounted at one end of the hydraulic hose while a quick coupler connector is fitted at the other end.
(Fig. A2.07)

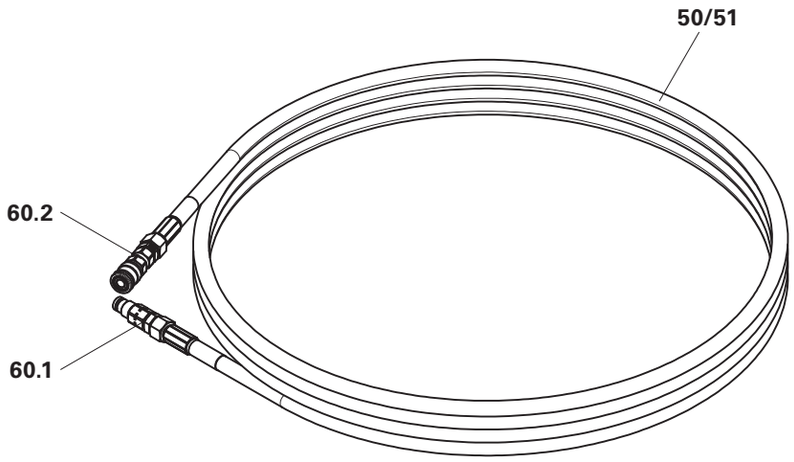


Fig. A2.07

Hydraulic twin hose
The hydraulic twin hose is comprised of two individual hoses. At each end of the hydraulic twin hose, there is a quick coupler bushing and a quick coupler connector.
(Fig. A2.08)

The arrangement of the connector and bushing on the hydraulic unit and consumers means that the feed and return flow lines cannot be mixed up.

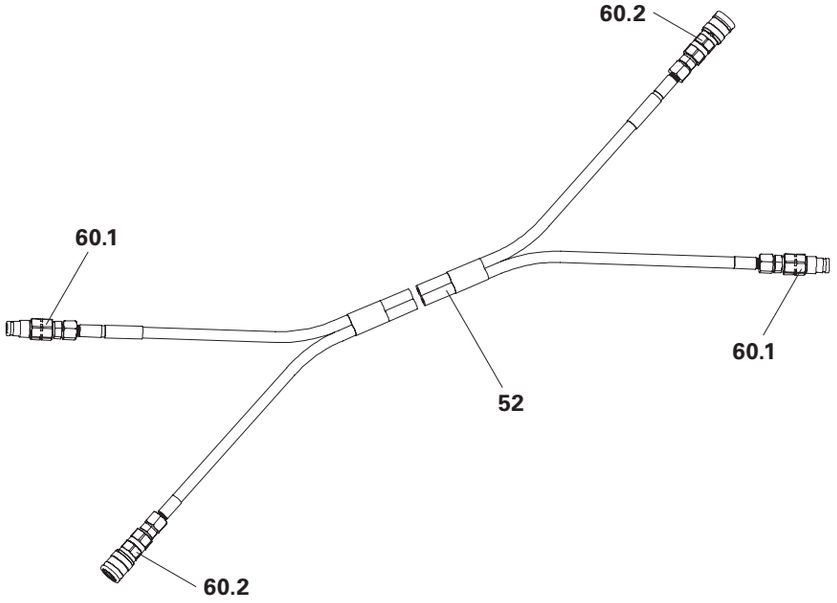


Fig. A2.08

General information about hydraulic hoses
Hydraulic hoses
- are to be positioned to allow oil to flow smoothly.
- must have no kinks or twists.
- should not be placed over sharp edges.
- are to be secured at regular intervals with cable ties.
- should not be fixed to any moving parts.
- are to be arranged in such a way they do not create any tripping hazards.

Do not place any objects on the hydraulic hoses.

The length of the hydraulic hoses is
- as short as possible.
- as long as required.

If the hydraulic hoses are too long, this creates unnecessary pressure losses.

A3 Lifting and Lowering Unit LALD

Overview

The Liftframe LALD VARIOKIT and the Hinge Slide LALD VARIOKIT form the lifting and lowering unit for the tunnel formwork carriage. With the lifting and lowering unit, the tunnel formwork carriage

- is lifted and moved into the concreting position.
- is lowered and brought into the moving position.

(Fig. A3.04)

Technical data	
Load-bearing capacity	91 – 200 kN[1) 2)]
Maximum stroke	300 mm
Lateral adjustment	±220 mm
Maximum compensation in a longitudinal direction	±5°
Maximum compensation in a transverse direction	±5°
Operated with	■ Lifting and lowering cylinder or ■ Hydr. Jack

[1)] Longitudinal inclination ≤1°

[2)] Bearing shell ±10 cm from the centre of the bearing block (Fig. 3.03)

Liftframe LALD VARIOKIT

The liftframe is mounted on the base beam of the falsework. With the liftframe, the entire construction of the tunnel formwork carriage is guided during the lifting and lowering operations. The lifting and lowering cylinder is mounted in the liftframe. As an alternative to the lifting and lowering cylinder, a Hydr. Jack can be used. The liftframe must be modified for this.
(Fig. A3.01)

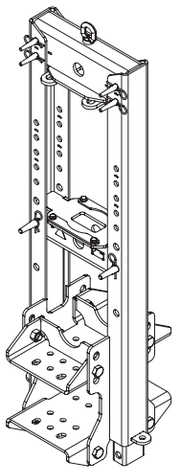


Fig. A3.01

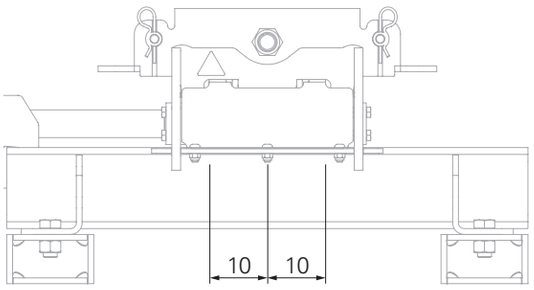


Fig. A3.03

Hinge Slide LALD VARIOKIT

The Hinge Slide LALD VARIOKIT is mounted on the
Liftframe LALD VARIOKIT. The hinge slide is an articulated bearing position and compensates the unevenness of the ground.
The hinge slide facilitates exact positioning of the tunnel formwork carriage in a transverse direction.
(Fig. A3.02)

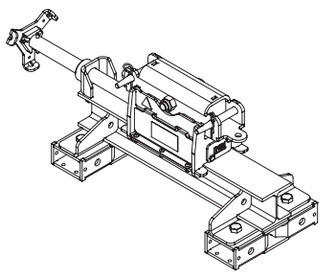


Fig. A3.02

Aligning the hinge slide in a transverse direction

1. Turn on the spindle head (**24.2**) and thereby move the bearing shell (**24.3**) into the required direction.

(Fig. A3.04)

A3 Lifting and Lowering Unit LALD

25 Liftframe LALD VARIOKIT
25.1 Main beam
25.2 Cross girder
25.3 Marking for main beam
25.4 Marking for gallows
25.5 Girder connection at the bottom
25.6 Girder connection at the top
25.7 Slider plate
25.8 Threaded bolt
25.9 Sliding part
25.10 Attachment point
25.11 Eyelet for liftframe
25.15 Parking position
25.16 Transport position
25.17 Moving position

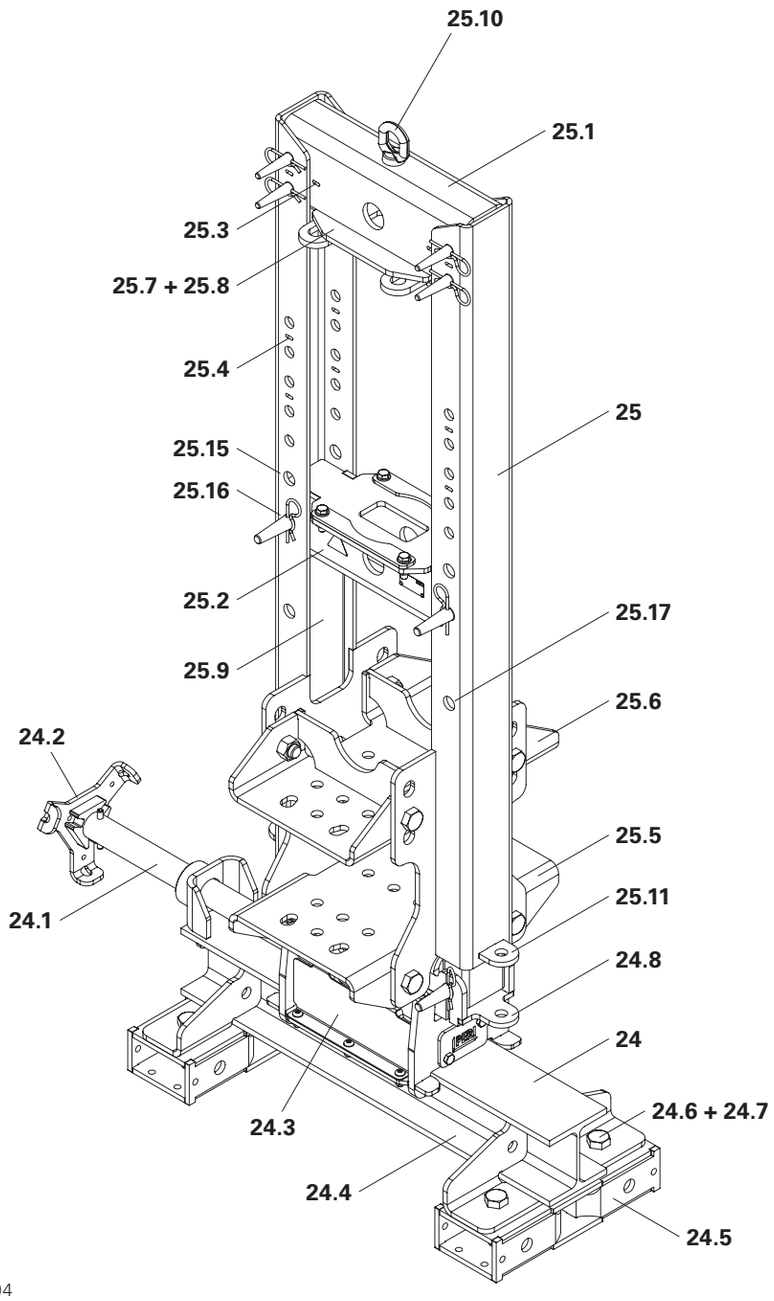


Fig. A3.04

24 Hinge Slide LALD VARIOKIT
24.1 Spindle
24.2 Spindle head
24.3 Bearing shell
24.4 Bearing block
24.5 Bottom profile
24.6 Bolt M24x50
24.7 Nut M24
24.8 Eyelet for hinge slide

Lifting Tool LALD VARIOKIT

If the lifting and lowering equipment is operated with a Hydr. Jack, the hinge slide must be lifted manually with the lifting tool. (Fig. A3.05)
If the lifting tool is not required, hook the lifting tool into the top of the liftframe. (Fig. A3.06)

28.1 Tube
28.2 Retaining head
28.3 Adjusting unit
28.4 Hook
28.5 Closure
28.6 Linch pin 5x32

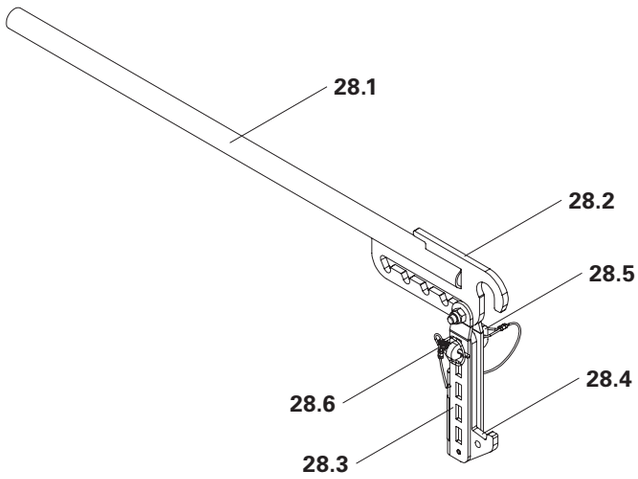


Fig. A3.05

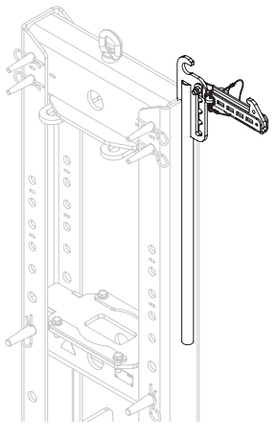


Fig. A3.06

Application

1. Hook the lifting tool with the retaining head (**28.2**) into the liftframe eyelet (**25.11**).
2. Pull the lever (**28.1**) upwards. Ensure that the hook (**28.4**) engages in the eyelet of the hinge slide (**24.8**).
3. Pull the lever further upwards until the hinge slide (**24**) is fully raised.

(Fig. A3.07)

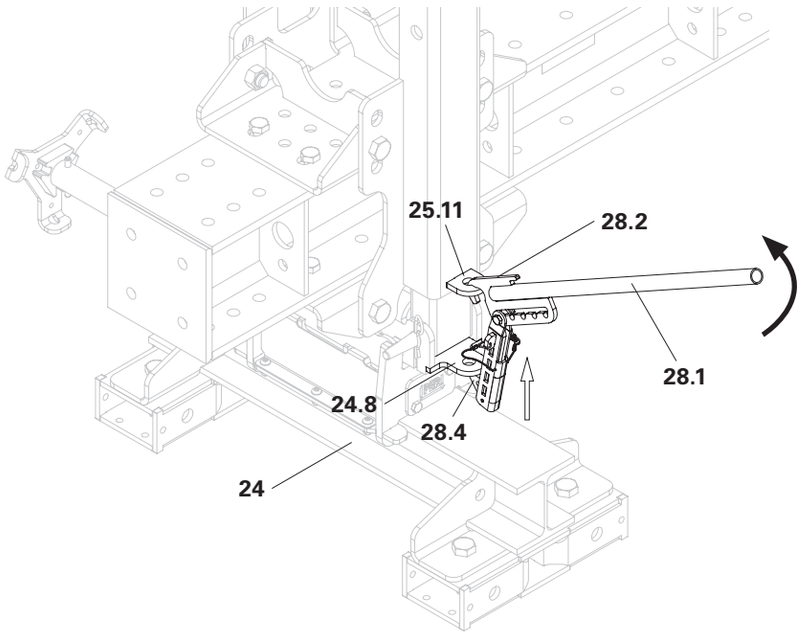


Fig. A3.07

Valve Block Hydr.-Drive

The valve block is the control system for the hydraulic traversing drive.
The two hydraulic motors are controlled individually with the valve block.
The valve block is used in combination with the Hydr.Pump VARIOKIT 8-fold.
Alternatively, the Hydraulic Unit RCS can be used. The Hydraulic Unit RCS must be modified for this particular use.
The direction of movement is indicated by means of symbols on the housing.

- Large triangle:
  DIRECTION OF MOVEMENT FORWARDS
- Small triangle:
  DIRECTION OF MOVEMENT BACKWARDS

Moving forward
Push the hand lever (**33.1 + 33.2**) forwards (large triangle).
→ the tunnel formwork carriage moves forwards.

Reversing
Pull the hand lever (**33.1 + 33.2**) backwards (small triangle).
→ the tunnel formwork carriage moves backwards.

33.1 Hand lever 1 (left)
33.2 Hand lever 2 (right)
33.3 Connection P (unit feed)
33.4 Connection T (unit return)
33.5 Connection A1 (motor 1 feed)
33.6 Connection B1 (motor 1 return)
33.7 Connection A2 (motor 2 feed)
33.8 Connection B2 (motor 2 return)
33.9 Direction of movement forwards (large arrow)
33.10 Direction of movement backwards (small arrow)
(Fig. A4.01 + A4.02 + A4.03)

Hydraulic line	Hose type
Hydraulic unit - valve block ≤5 m	EN853-2SN-DN08-FF
Hydraulic unit - valve block >5 m	EN853-2SN-DN12-FF
Valve block - motor	EN853-2SN-DN12-FF
Leakage oil line	EN853-2SN-DN08-FF

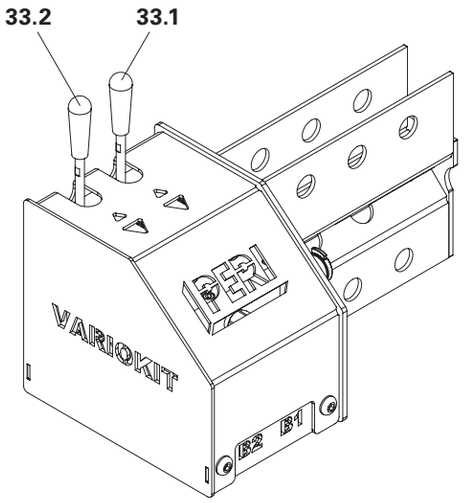


Fig. A4.01

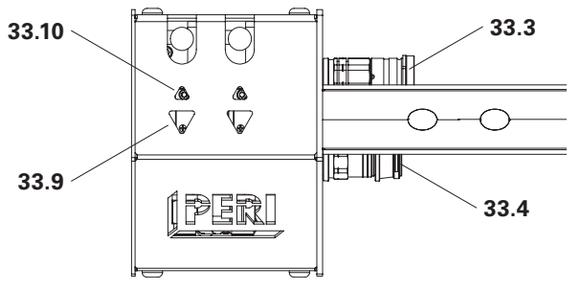


Fig. A4.02

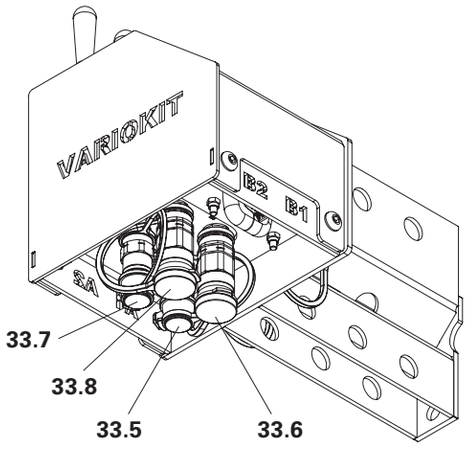


Fig. A4.03

Hydraulic Drive VARIOKIT

The Hydraulic Drive VARIOKIT together with the Wheel Block VARIOKIT 300 kN forms the hydraulic traversing drive.
The VTC Tunnel Formwork Carriage is moved to the next concreting section by means of the hydraulic traversing drive. Propulsion takes place with two hydraulic motors which are individually controlled. The VTC Tunnel Formwork Carriage is mounted on heavy-duty wheels running on longitudinal rails.

- The Hydraulic Drive VARIOKIT consists of a hydraulic motor with integrated holding brake.
- The Hydraulic Drive VARIOKIT is bolted to the Wheel Block VARIOKIT 300 kN and connected to the wheel.

32.1 Connection A (feed)
32.2 Connection B (return)
32.3 Connection Y (leakage oil line)
32.4 Attachment point
32.8 Holes for coupling bolts
(Fig. A4.04 + A4.05)

Technical data		
Wheel block	Load-bearing capacity	300 kN
	Max. speed	3 m/min
	Max. transmittable torque	7000 Nm
Hydraulic drive	Recommended operating pressure	170 bar
	Specific drive torque	35 Nm/bar
	Displacement per revolution	2.2 l/revolution
Wheel block incl. Hydraulic drive[1)]	Max. gradient/inclination under full load	4.5 %

[1)] For detailed information, see characteristic curves "Hydraulic Traversing Drive VARIOKIT: 2-wheel drive with Hydraulic Unit VARIOKIT" on page 32 or "Hyd raulic Traversing Drive VARIOKIT: 2-wheel drive with Hydraulic Unit RCS" on page 32.

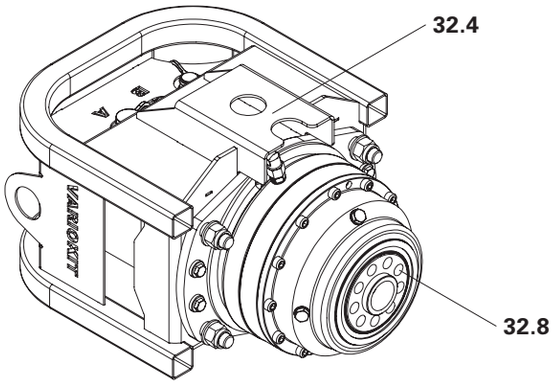


Fig. A4.04

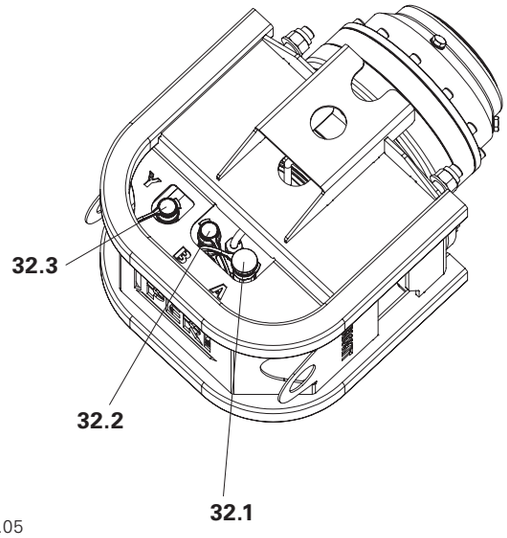


Fig. A4.05

Wheel Block VARIOKIT 300 kN

The Wheel Block VARIOKIT 300 kN serves as housing for the Hydraulic Drive VARIOKIT. The wheel is integrated in the wheel block. The guide rollers are used for lateral guidance on the longitudinal rails.
The coupling bolts (**31.3**) connect the drive shaft of the motor to the wheel. Loosening the coupling bolts creates a freewheeling mode and the tunnel formwork carriage can then be moved without requiring the hydraulic drive. (Fig. A4.06 + A4.07)

Fig. A4.08 shows the hydraulic traversing drive with the wheel block.

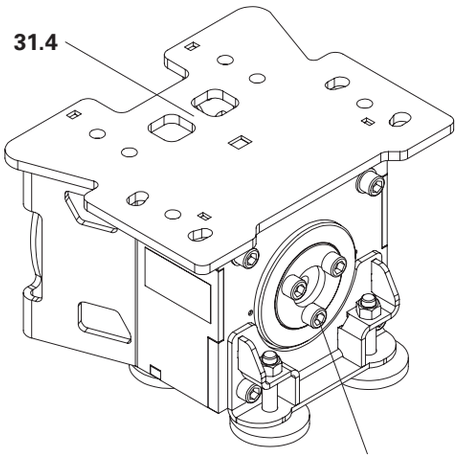


Fig. A4.06

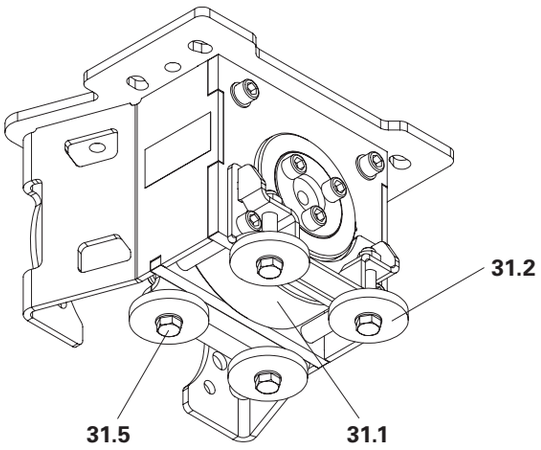


Fig. A4.07

Note

- The coupling bolts have Strength Class 10.9.
- The coupling bolts may only be replaced by bolts of the same strength class if they are lost.

31.1 Wheel
31.2 Guide roller
31.3 Coupling Bolt M20x200
31.4 Attachment point
31.5 Fitting Pin M20x120

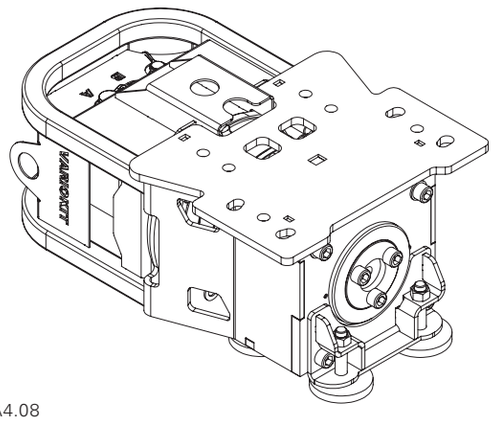


Fig. A4.08

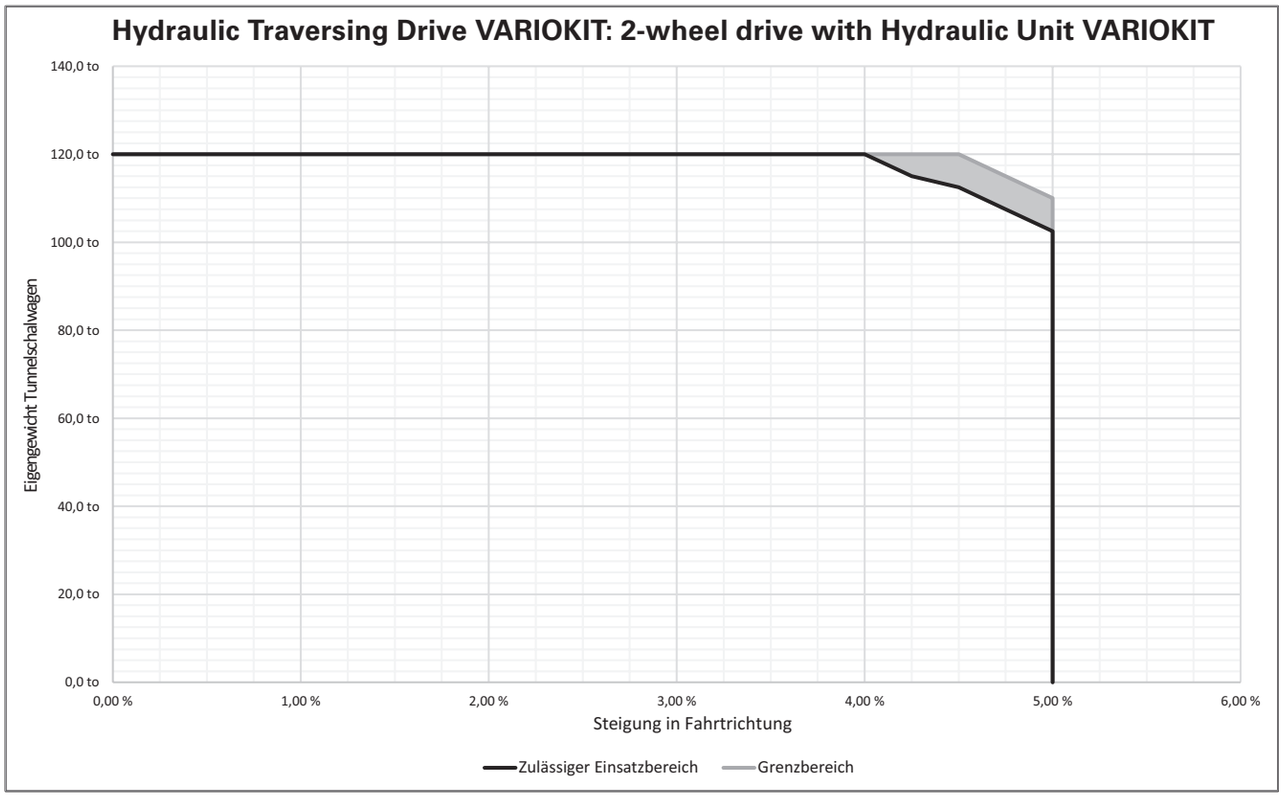


Fig. A4.09

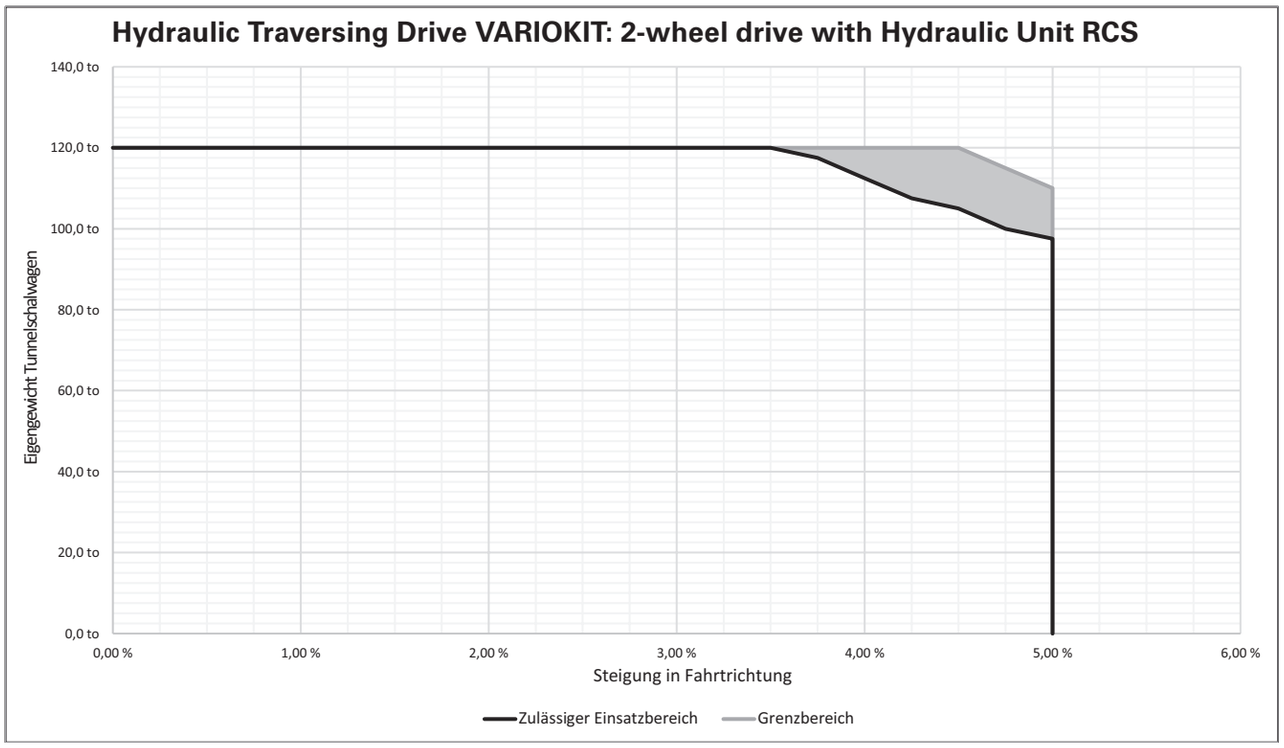


Fig. A4.10

Telescopic Prop VARIOKIT

The Telescopic Prop VARIOKIT is a height-adjustable heavy-duty prop for transferring vertical loads.

- The Telescopic Prop VARIOKIT is compatible with:
  - Longitudinal Beam VARIOKIT.
  - Climbing Rail RCS.
- The centre lugs offer connection possibilities for:
  - Heavy-Duty Spindles SLS.
  - DW15 Cross Bracing.
  - Corner Connector VARIOKIT SRU.
- The top and bottom lugs provide connection possibilities for:
  - Heavy-Duty Spindles SLS.
  - DW15 Cross Bracing.
  - Struts VARIOKIT.

34.1 Centre tube
34.2 Centre lugs
34.3 Stake-out hole
34.4 Telescopic tube at top
34.5 Head plate
34.6 Top lugs
34.7 Telescopic tube at bottom
34.8 Base Plate
34.9 Bottom lugs
34.10 Locking pin
34.11 Linch pin
34.12 Side marking
(Fig. A5.01)

Technical data	
Extension length min.	4000 mm
Extension length max.	6500 mm
Grid spacing	31.25 mm
Extension length 400 - 600 cm	Load-bearing capacity 250 kN [1) 2)]
Extension length > 600 cm	Load-bearing capacity 185 kN [1) 2)]

[1)] Symmetrical extension of the telescopic tubes
[2)] No additional load on the centre lugs

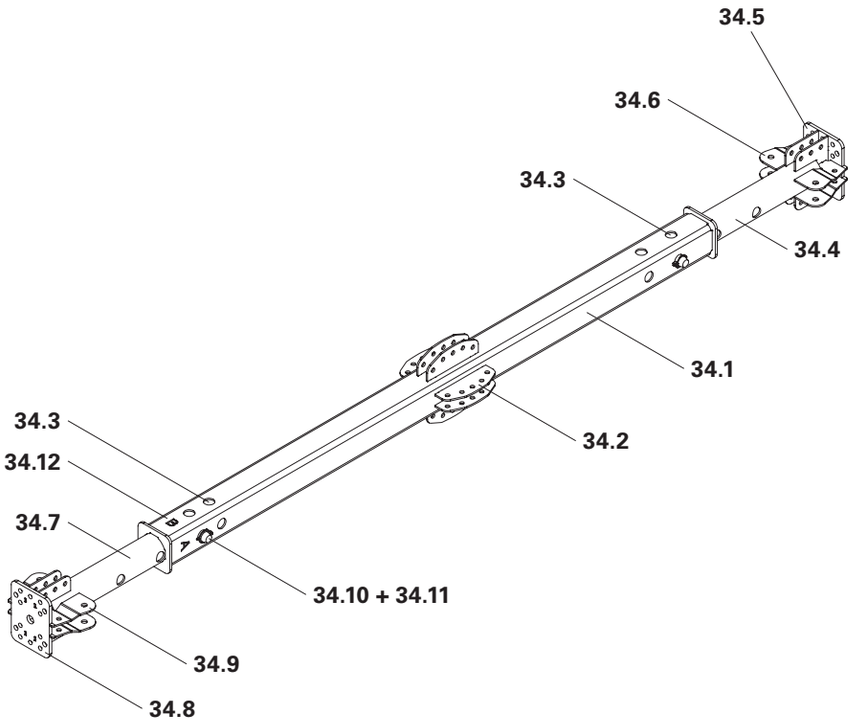


Fig. A5.01

Warning

Telescopic tubes can change their position during transportation by crane. As a result, this changes the centre of gravity and position of the telescopic prop!
Risk of crushing and trapping of hands and other body parts.

⇒ Fix the telescopic tubes with positioning pins and secure with linch pins.
⇒ Guide the telescopic tubes with ropes.
⇒ Keep clear of the slewing area.

- Uniformly extend the telescopic tube at the top and telescopic tube at the bottom.
- The extension above and below should be about the same.
- Always mount the base plate lengthways to the base beam.
- The base plate and head plate should have the same installation direction. The centre tube may need to be rotated by 90°. This depends on the required staking position.
- The alignment of the head piece is changed by re-bolting from A1 to B1 or A2 to B2. However, the extension length of the telescopic prop does not change.
- The following extension lengths cannot be realised:
  – 6437.50 mm
  – 6468.75 mm
  These missing extension lengths can be compensated with the adjustment range of the
  Lowering Wedge 420 kN painted or by turning the
  Support Wedgebox VARIOKIT.

Application

1. Support the centre section at the ends with squared timber.
2. Remove the linch pin (**34.11**) and pull out all positioning pins (**34.10**).
3. Extend the telescopic tube at the top and bottom to the required length.
4. Fix both telescopic tubes with positioning pins (**34.10**) and secure with linch pins (**34.11**).

An extension matrix for the telescopic prop and an example are available in the appendix. See “Matrix: Telescopic Prop Extension” on page 134.

Vertical Connector RCS

The Vertical Connector RCS connects two Climbing Rails RCS. The second Climbing Rail RCS is vertically mounted with the front side on the first Climbing Rail RCS.

- One Climbing Rail RCS acts as a base beam and is installed horizontally.
- One Climbing Rail RCS is mounted vertically as a prop on the base beam.
- The vertically mounted Climbing Rail RCS serves as a heavy-duty prop for transferring vertical loads.

Warning

Components can overturn and cause injuries!

⇒ Provide temporary support for the components.

Components

10.2	Climbing Rail RCS
14	Vertical Connector RCS
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga
125	Filler Pin 26x120
126	Cotter Pin 5/1 ga

Assembly

1. Fix the vertical connector (**14**) to the base beam at the designated assembly position using two filler pins 26x120 (**125**) and secure with Cotter Pins 5/1 ga (**126**).
2. Fix the Climbing Rail RCS (**10.2**) to the vertical connector (**14**) using filler pin 21x120 (**123**) and filler pin 26x120 (**125**). Secure with Cotter Pin 4/1 ga (**124**) and Cotter Pin 5/1 ga (**126**).

(Fig. A5.02)

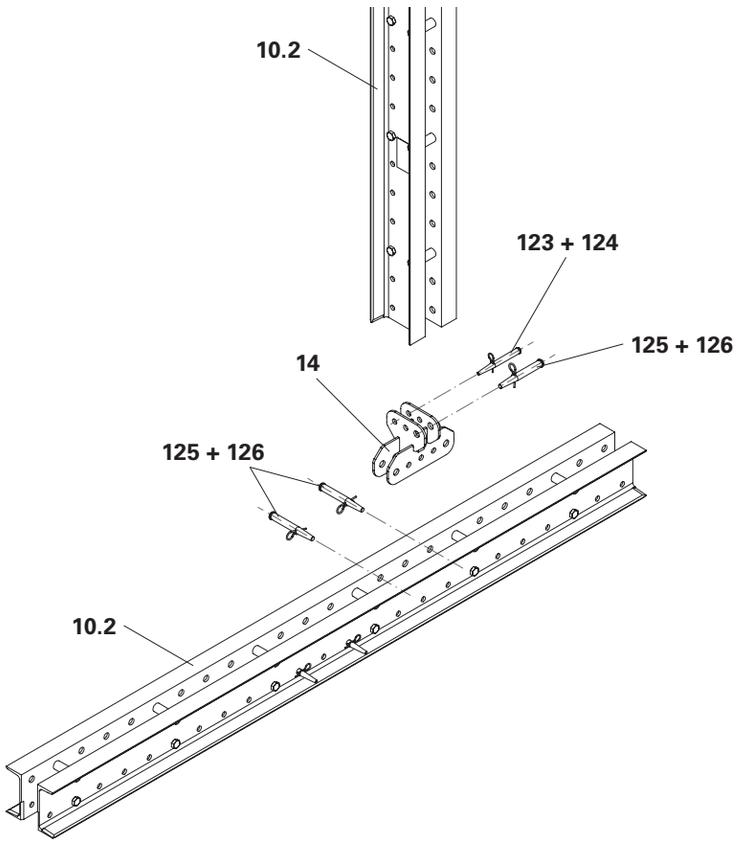


Fig. A5.02

Cross Connector RCS VARIOKIT

The Cross Connector RCS VARIOKIT connects one Longitudinal Beam VARIOKIT with one Climbing Rail RCS.

- The Longitudinal Beam VARIOKIT is the base beam.
- The Climbing Rail RCS is mounted transversely on the base beam as a formwork girder.
- The construction is used to transfer vertical loads.

Components

10.1	Longitudinal Beam VARIOKIT
10.2	Climbing Rail RCS
15	Cross Connector RCS VARIOKIT
109	Bolt M20x60
112	Nut M20
114	Washer M20
125	Filler Pin 26x120
126	Cotter Pin 5/1 ga

Assembly

1. Screw the cross connector (**15**) to the mounting position on the Longitudinal Beam VARIOKIT (**10.1**) using M20x60 bolts (**109**), M20 washers (**114**) and M20 nuts (**112**).
2. Position the Climbing Rail RCS (**10.2**) above the cross connector. The cross connector lies between the profiles of the Climbing Rail RCS.
3. Fix to the cross connector (**15**) with filler pins 26x120 (**125**) and secure with Cotter Pins 5/1 ga (**126**).

(Fig. A5.03)

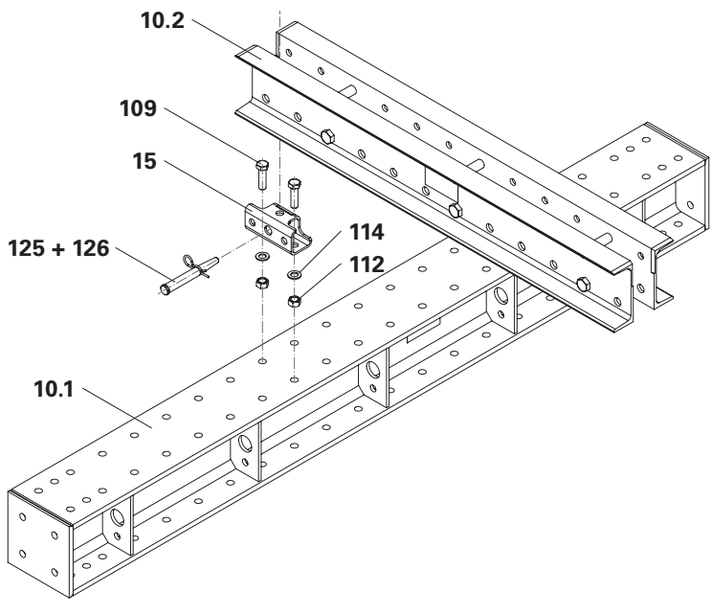


Fig. A5.03

Slab Shoe VARIOKIT

With the Slab Shoe VARIOKIT, shoring and heavy-duty constructions are anchored to the slab in the previous concreting section. The slab shoe is fixed to one climbing cone-2.
The following anchoring is possible:
- With Tie Rod DW15.
- With Heavy-Duty Spindles SLS.

Components

16 Slab Shoe VARIOKIT
117 Bolt M24x70
131 Tie Rod DW15
132 Hex Nut DW15
137 Tie Yoke SRU
138 Climbing Cone-2 M24/DW15

Assembly

1. Screw the slab shoe (**16**) to the climbing cone (**138**) with bolt M24x70 (**117**).
2. Insert the tie rod (**131**) through the anchor tie yoke (**137**) and screw on the hex nut (**132**).
3. Hook the assembly into the slab shoe (**16**) and secure against falling.
4. Tension the tie rod (**131**) with the hex nut (**132**).

(Fig. A5.04)

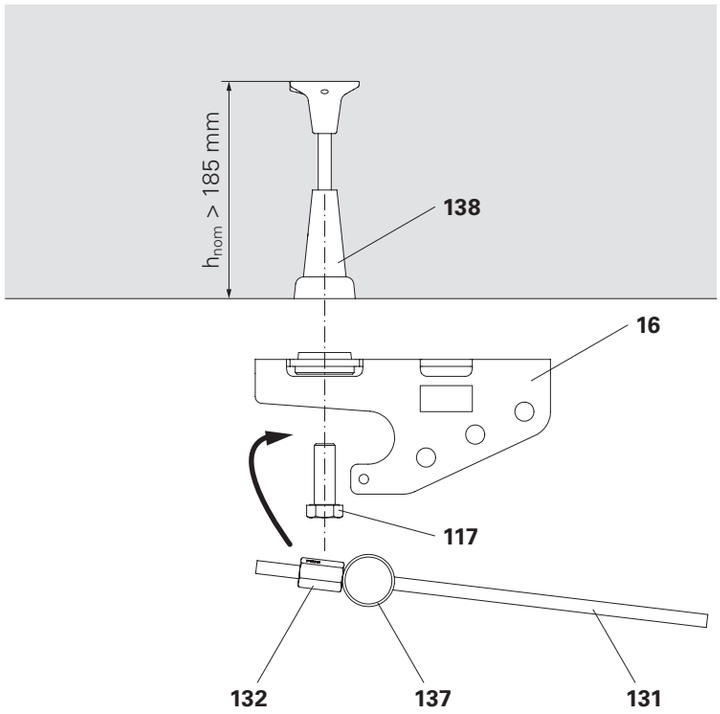


Fig. A5.04

Determine the required anchoring depth and concrete strength according to separate static calculations in accordance with Building Authority Approval Z-21.6-1767.

Hinge Connector RCS

The Hinge Connector RCS is an articulated connection for two Climbing Rails RCS. With the hinge connector, simplified radii can easily be realised during construction in the tunnel cross-section.

- The hinge connector allows for continuous angle formation up to 60°.
- The through bore serves to accommodate the Tie Yoke SRU.
- Depending on the project, the installation position and bolting of the hinge connector may differ.

(Fig. A5.05)

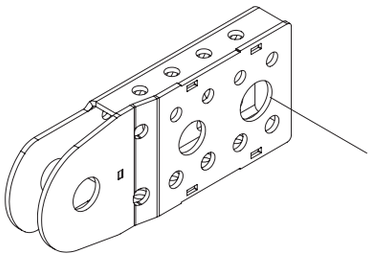


Fig. A5.05

- The hinge connector is used in pairs.
- During installation, ensure that an offset side corresponds with a straight side.
- Fix each hinge connector with two filler pins 21x120 and two filler pins 26x120.

Fig. A5.06 shows two hinge connectors from above, before assembly and in the final position.

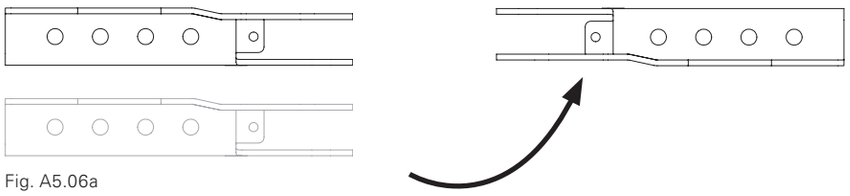


Fig. A5.06a

Fig. A5.06b

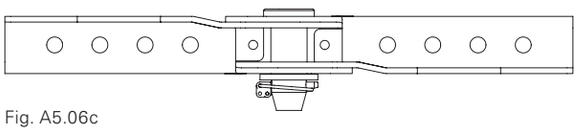


Fig. A5.06c

Warning

Components can overturn and cause injuries!

⇒ Provide temporary support for the components.

Components

10.2	Climbing Rail RCS
17	Hinge Connector RCS
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga
125	Filler Pin 26x120
126	Cotter Pin 5/1 ga
136	Pin Hinge Connector RCS

Modifying the Climbing Rail RCS

Modify the climbing rail when installing the hinge connector.

1. Remove the M20 and M24 bolts from the outermost spacers.
2. Move the spacers inwards by 1 or 2 holes.
3. Fix the spacer sleeves with bolts and nuts M20 and M24.

(Fig. A5.07)

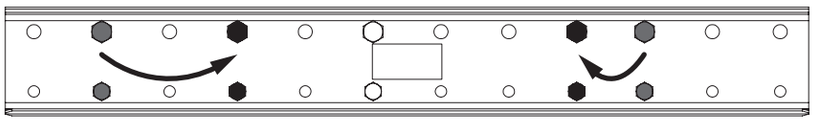


Fig. A5.07

Assembly

1. Fix the Hinge Connector RCS (**17**) to the ends of the Climbing Rails RCS (**10.2**) with filler pin 21x120 (**123**) and filler pin 26x120 (**125**). Secure with Cotter Pin 4/1 ga (**124**) and Cotter Pin 5/1 ga (**126**).
2. Connect the two Hinge Connectors RCS (**17**) with Pin Hinge Connector RCS (**136**).
3. Position the washer (**136.1**).
4. Secure with linch pin (**136.2**).

(Fig. A5.08)

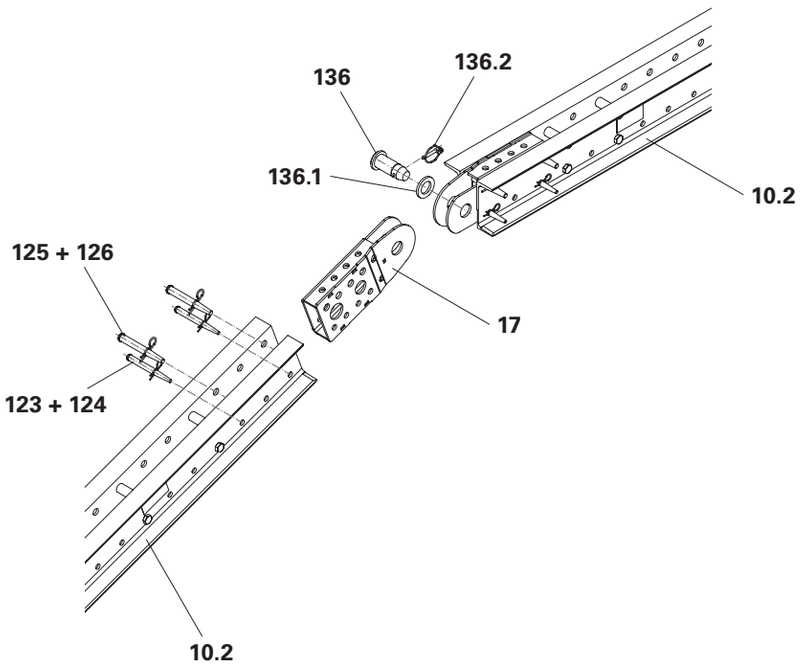


Fig. A5.08

A6 Component overview and tool list

PERI

Pos. no.	Component name	Article no.
1	Hydr.Pump VARIOKIT 8-fold	126852
2	Lifting and lowering cylinder	127480
3	Hydr.-Cylinder	127481
4	Hydr.Pump RCS 4x190 bar	109766
7	Rail	
7.1	Crane Rail A75	818555
7.2	Crane Rail S49	834862
7.3	Support Profile U140	806336
9	Power cable CEE 16A	
10	Base beam	
10.1	Longitudinal Beam VARIOKIT	
10.2	Climbing Rail RCS	
10.3	Main Beam HDT	
11	Multiadaptor RCS VARIOKIT	130848
12	Adaptor RCS SLR VARIOKIT	130842
13	Connector RCS LALD VARIOKIT	130972
14	Vertical Connector RCS	129800
15	Cross Connector RCS VARIOKIT	131040
16	Slab Shoe VARIOKIT	130820
17	Hinge Connector RCS	130825
18	Cross Connector VARIOKIT	111279
19	Angle Connector RCS/SRU	111283
20	Heavy Duty Wheel VARIOKIT	131001
21	Flange Cage HDW VARIOKIT	130981
22	Thrust Frame LALD HDW VARIOKIT	130843
23	Assembly Kit Thrust frame	133911
24	Hinge Slide LALD VARIOKIT	130902
25	Liftframe LALD VARIOKIT	130955
26	Support Wedgebox VARIOKIT	130970
27	Hydr. Jack 250 kN	130965
28	Lifting Tool LALD VARIOKIT	131072
31	Wheel Block VARIOKIT 300 kN	133664
32	Hydraulic Drive VARIOKIT	133953
33	Valve Block Hydr.-Drive	134002
34	Telescopic Prop VARIOKIT	131060
35	Distribution waler	
36	Connection bracket	
37	Steel Waler SRU 147 U120	103877
40	Support Frame 250 Rail	113770
41	Lowering Wedge 420 kN painted	024590
44	Heavy Duty Roller Swivel Plate	131811
46	Heavy Duty Roller 200 kN/A-II	022041

Pos. no.	Component name	Article no.
	Hydraulic item	
50	Hydraulic Hose DN08	
51	Hydraulic Hose DN12	
52	Hydraulic Twin Hose RCS	
53	Pin ISO16028 DN10 R3/8IG	128992
54	Sleeve ISO16028 DN10 R3/8IG	128993
55	Double Nipple G3/8	128994
56	Sealing Washer G3/8	128995
57	Hydr. Accum. Piece RCS	112421
58	Convers.Set Hydr-Pump RCS-VTC	133676
59	Hydr.T-Piece 2SN-DN08-FF	129423
60	Hydraulic quick coupler	
61	Male Stud Coupl. X-GE12PSR-ED	051750
	Small parts	
100	Screw ISO 4017-M12x055-8.8-ga	710710
101	Hex-Nut ISO 7040-M12-8-ga	710381
102	Washer ISO 7089-12-200HV-ga	780702
103	Screw ISO 4017-M16x025-8.8-ga	113990
104	Screw ISO 4014-M16x150-8.8-ga	710049
105	Hex-Nut ISO 7040-M16-8-ga	070890
106	Washer ISO 7094-16-100HV-ga	113349
107	Screw ISO 4017-M20x040-8.8-ga	706458
108	Screw ISO 4017-M20x055-8.8-ga	111137
109	Screw ISO 4017-M20x060-8.8-ga	057139
110	Screw ISO 4017-M20x070-8.8-ga	721912
111	Screw ISO 4014-M20x120-8.8-ga	104477
112	Hex-Nut ISO 4032-M20-8-ga	710334
113	Hex-Nut ISO 7040-M20-8-ga	781053
114	Washer ISO 7089-20-200HV-ga	706454
115	Screw ISO 4017-M24x050-8.8-ga	109199
116	Screw ISO 4017-M24x060-8.8-ga	125462
117	Screw ISO 4017-M24x070-8.8-ga	132382
118	Screw ISO 4014-M24x080-8.8-ga	105416
119	Screw ISO 4014-M24x130-8.8-ga	109612
120	Hex-Nut ISO 4032-M24-8-ga	022250
121	Hex-Nut ISO 7040-M24-8-ga	105032
122	Washer ISO 7089-24-200HV-ga	722663
123	Fitting Pin Ø21x120	104031
124	Cotter Pin 4/1 ga	018060
125	Fitting Pin Ø26x120	111567
126	Cotter Pin 5/1 ga	022230
127	Pin Ø40x160	127400
128	Pin Ø50x175	127397
129	Linch Pin DIN 11023-10x65	126417

A6 Component overview and tool list

Pos. no.	Component name	Article no.
130	Wingnut Pivot Plate DW15 ga	030370
131	Tie Rod 0.50 MTR DW 15	030005
132	Hex-Nut DW15 SW30/50 ga	030070
133	Hydr. Oil Filter Pump CE	131313
134	Screw ISO 4014-M20x130-8.8-ga	711078
135	Washer ISO 7093-1-16-200HV-ga	710886
136	Pin Hinge Connector RCS	130831
137	Tie Yoke SRU	110755
138	Climbing Cone-2 DW15 M24 ga	031220
150	Cable Binder NT-240H	051760

Tool name
Ratchet wrench 1/2"
Extension for the ratchet wrench
Socket wrench set 1/2" up to AF 36
Spirit level
Cordless screwdriver
Set of ring spanners/open-end spanners
4-sling lifting gear
Torque wrench
Hammer
Round slings

Tightening torques

Unless otherwise indicated, PERI recommends the following guide values for screw connections as "hand-tightened" tightening torques $M_{A,hand\text{-}tightened}$. These guide values are based on DIN EN 15048-1:2016-09 with minimum Safety Factor 3 against breakage.

Quality class	Quality 4.6		Quality 8.8 and 10.9
Lubrication	**Lightly oiled**	**MoS2**	**Undefined**
Screw M8	8 Nm	6.6 Nm	8 Nm
Screw M10	16 Nm	13.0 Nm	16 Nm
Screw M12	30 Nm	23.0 Nm	30 Nm
Screw M16	65 Nm	54.0 Nm	65 Nm
Screw M20	100 Nm		100 Nm
Screw M24	150 Nm		150 Nm
Screw M30	260 Nm		260 Nm
Screw M36	350 Nm		350 Nm

Tightening torques have been determined for the following components:

Scaffolding tube coupling	50 Nm
Clamping plate for the slab tie gauge	120 Nm

Tightening torques are specified for the following hydraulic components:

Union Nut DKOS12	42-50 Nm
Union Nut DKOS16	60-70 Nm
Screw-in thread G3/8	80 Nm

B1 General assembly procedure

Regular assembly

Warning

Heavy moving parts!
During assembly, there is a risk of hands and other body parts being crushed.
⇒ Wear personal protective equipment.
⇒ Guide components in such a way that no bodily parts can become trapped.
⇒ Do not stand between moving elements.
⇒ Maintain an appropriate safety distance.
⇒ Ensure a safe and secure position.

General information

The Assembly Instructions describe the assembly of a tunnel formwork carriage for the construction of a tunnel using cut-and-cover and semi-monolithic methods. External formwork and stop end formwork are also required for these construction methods. Neither of these assembly groups are part of these Assembly Instructions.

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

- The structure and assembly of the individual components are explained by way of example. The exact installation position can be found in the installation plan for the project.
- Both assembly and dismantling must be planned on a project-specific basis while taking into account all intermediate status and individual boundary conditions.
- Depending on the base beam, there are differences in the assembly which will be described separately in the following sections:
  – B2 Base Beam VARIOKIT.
  – B3 Base Beam RCS.
  – B4 Base Beam HDT.

Functionality

The tunnel formwork carriage consists of a supporting structure. The formwork construction is mounted on this supporting structure. The formwork construction is comprised of slab formwork and wall formwork. The slab formwork and the wall formwork can consist of several segments.
A hydraulic system is integrated into the tunnel formwork carriage. This facilitates hydraulic shuttering and deshuttering of the slab and walls. The tunnel formwork carriage is moved to the next concreting section by
- suitable construction site equipment provided by the customer.
- the hydraulic traversing drive.

Preparation

Measures before assembly

- Check the completeness of the technical documentation:
  – Assembly plan
  – Joinery plan
  – General arrangement drawings
  – Hydraulic plan
  – Electrical circuit diagram
  – Parts list
- Site personnel to familiarise themselves with the system using the available documentation.

Requirement

- Tunnel bottom plate and starters are concreted, allowed to harden and released for the assembly of the tunnel formwork carriage.
- The tunnel formwork carriage is assembled in the first concreting section.
- The supporting structure is assembled in full on the base beam (**10**).
- The supporting structure is positioned on support frames (**40**), lowering wedges (**41**) and support wedgeboxes (**26**).
- The rails (**7**) are placed in position and adjusted to suit the concreting position.
- Assembly takes place approx. 5 cm above the concreting height. This facilitates the installation of the components and allows accurate positioning at the concreting height after assembly.

(Fig. B1.01)

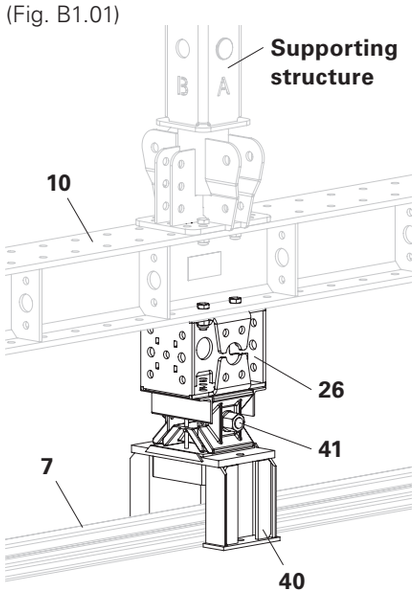


Fig. B1.01

Installing the hydraulic unit

- The standard position for installing the hydraulic unit is on the base beam.
- When moving the hydraulic unit, use suitable lifting straps or lifting eyes provided.
- Use attachment points on the hydraulic unit.

Components

1	Hydr.Pump VARIOKIT 8-fold
10.1	Longitudinal Beam VARIOKIT
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20

Assembly

1. Attach the hydraulic unit (**1**) to the crane lifting gear and fly in.
2. Position the hydraulic unit over the assembly position and lower onto the base beam (**10.1**).
3. Fix the hydraulic unit on the base beam with bolts M20x60 (**109**), self-locking nuts M20 (**113**) and washers M20 (**114**).
4. Remove the crane lifting gear.

(Fig. B2.01)

Fix the hydraulic unit to the base beam so that the oil tank is centred on the base beam.

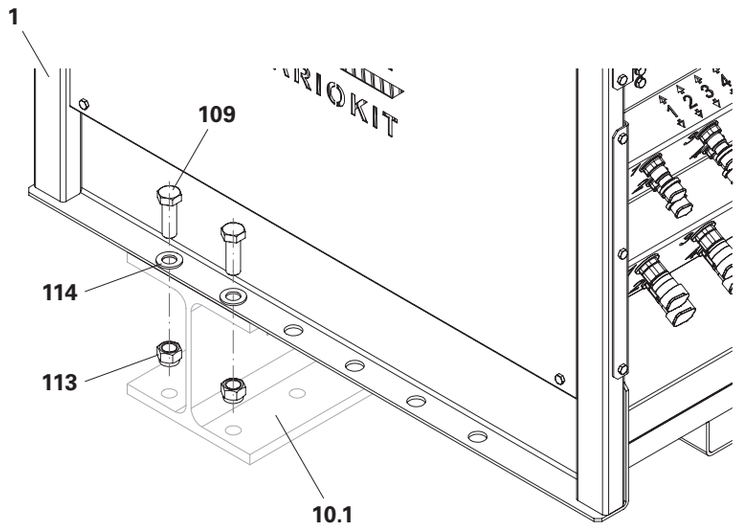


Fig. B2.01

Installing the liftframe

When moving the liftframe, use the lifting eyes provided.

Components

10.1	Longitudinal Beam VARIOKIT
25	Liftframe LALD VARIOKIT
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
120	Nut M24

Ensure that the upper support plate (**25.6**) is fixed in the middle slots. (Fig. B2.02)

Assembly

1. Loosen bolts M24x50 (**115a**).
2. Remove bolts M24x50 (**115b**) and remove bottom girder connection (**25.5**).
3. Attach the liftframe (**25**) to the crane lifting gear and fly in.
4. Lower the liftframe to the assembly position on the base beam (**10.1**).
5. Fix the bottom girder connection (**25.5**) in its original position with bolts M24x50 (**115b**) and nuts M24 (**120**).
6. Raise the liftframe so that it rests firmly against the base beam (**10.1**).
7. Fix the liftframe (**25**) to the base beam with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
8. Tighten bolts M24x50 (**115a**) at the upper girder connection (**25.6**).
9. Remove the crane lifting gear.

(Fig. B2.03)

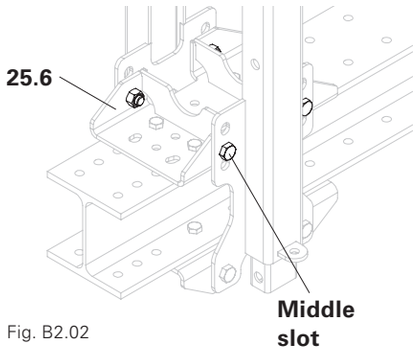


Fig. B2.02

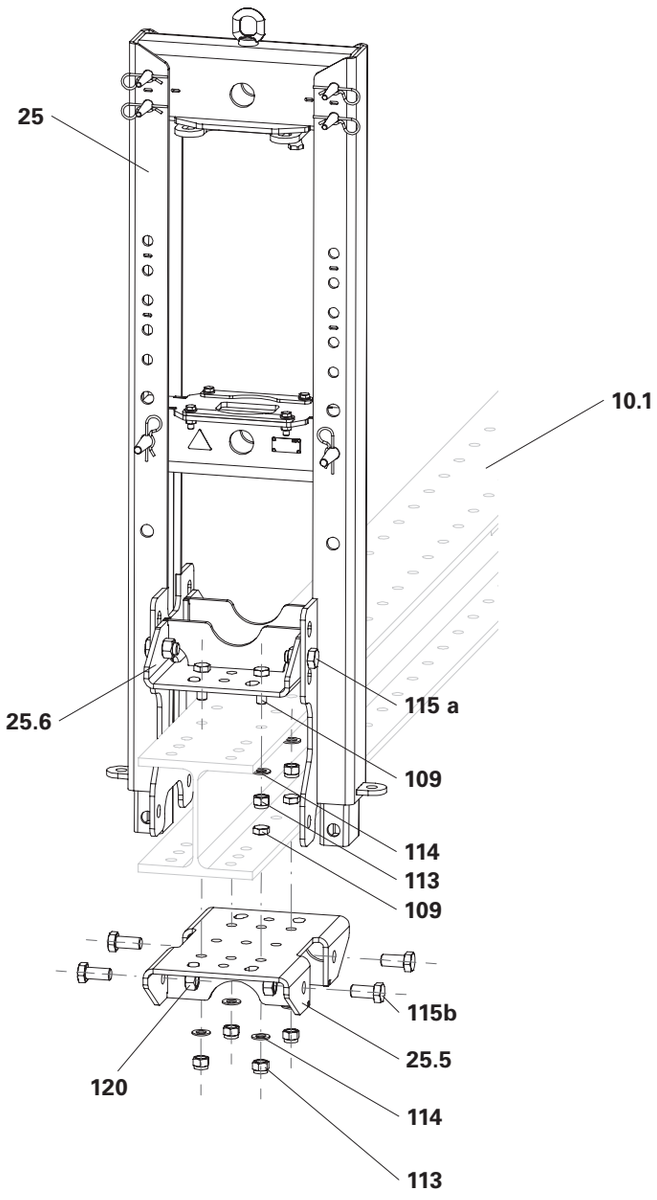


Fig. B2.03

Fitting the hinge slide

Warning
Heavy moving components!
During assembly, there is a risk of hands being crushed.
⇒ Wear safety gloves.
⇒ Ensure a safe and secure position.

Components

24	Hinge Slide LALD VARIOKIT
25	Liftframe LALD VARIOKIT

Assembly with Crane Rail A75

1. Position the hinge slide (**24**) under the liftframe (**25**).
2. Pull the cotter pin (**126b**) and the filler pin 26x120 (**125b**).
3. Hold the sliding part (**25.9**) in position.
4. Pull the cotter pin (**126a**) and the filler pin 26x120 (**125a**).
5. Lower the sliding part (**25.9**) and insert it into the mount of the hinge slide.
6. Insert filler pin 26x120 (**125b**) and secure with cotter pin (**126b**).
7. Insert the filler pin 26x120 (**125a**) one hole higher in the parking position and secure with cotter pin (**126a**).

(Fig. B2.04 + B2.05)

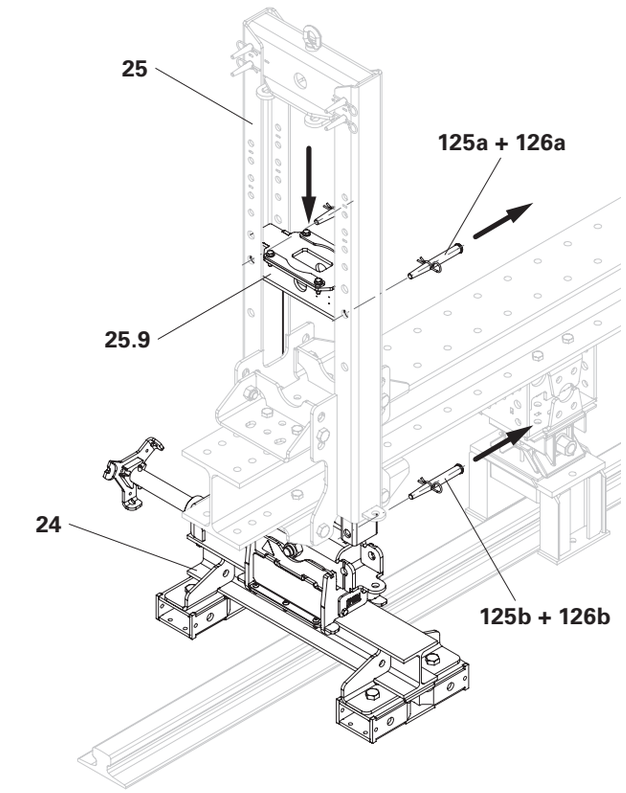


Fig. B2.04

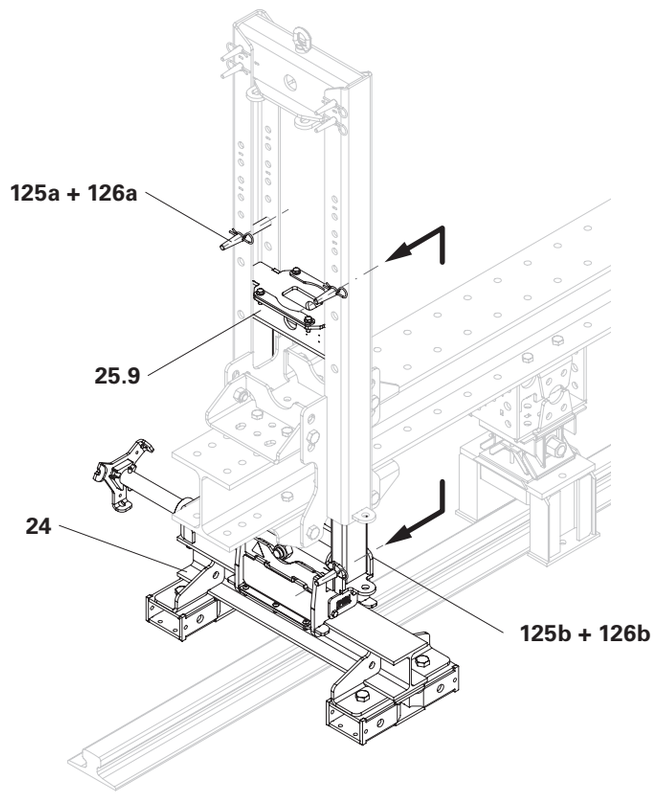


Fig. B2.05

Assembly with Crane Rail S49

1. Remove bolts M24x50 (**24.6**).
2. Turn the base profile (**24.5**) by 90°.
3. Fix the base profile with bolts M24x50 (**24.6**) and nuts M24 (**24.7**).
4. For the rest of the assembly process for the hinge slide, see Assembly with Crane Rail A75.

(Fig. B2.06)

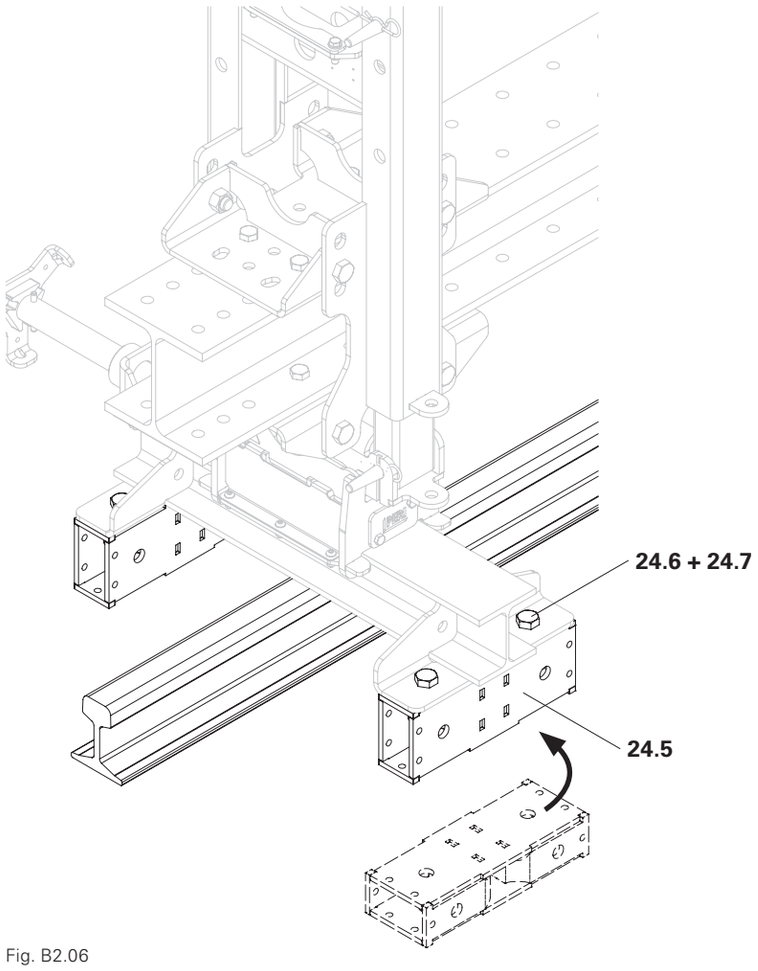


Fig. B2.06

Fitting the Wheel Block VARIOKIT 300 kN

The Wheel Block VARIOKIT is mounted on both base beams of the tunnel formwork carriage in the same installation position. The hydraulic drive protrudes to the left of the base beam in the direction of travel.

Components

10.1	Longitudinal Beam VARIOKIT
31	Wheel Block VARIOKIT 300 kN
110	Bolt M20x70
113	Nut M20 self-locking
114	Washer M20

Assembly without using the Lifting and lowering unit

1. Attach the wheel block (**31**) to the crane lifting gear and fly in.
2. Position the wheel block in the installation position.
3. Fix the wheel block to the base beam with bolts M20x70 (**110**), washers M20 (**114**) and self-locking nuts M20 (**113**).
4. Remove the crane lifting gear.

(Fig. B2.07)

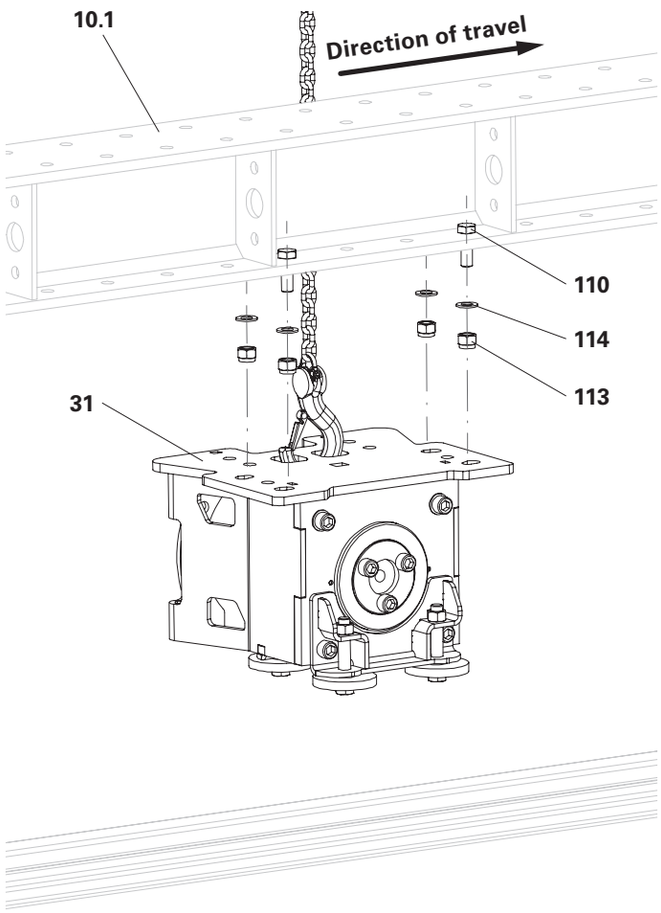


Fig. B2.07

Components

10.1	Longitudinal Beam VARIOKIT
22	Thrust Frame LALD HDW VARIOKIT
23	Assembly Kit Thrust frame
31	Wheel Block VARIOKIT 300 kN
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24

Assembly when using the Lifting and lowering unit

1. Fix the pressure frame (**22**) to the longitudinal beam (**10.1**) at the designated installation position using bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Attach the wheel block (**31**) to the crane lifting gear and fly in.
3. Position the wheel block in the installation position.
4. Fix the wheel block to the pressure frame (**22**) with bolts M24x70 (**117**), Assembly Kit Thrust frame (**23**), washers M24 (**122**) and self-locking nuts M24 (**121**).
5. Remove the crane lifting gear.

(Fig. B2.08)

The hydraulic drive turns in a clockwise direction when looking at the wheel hub.

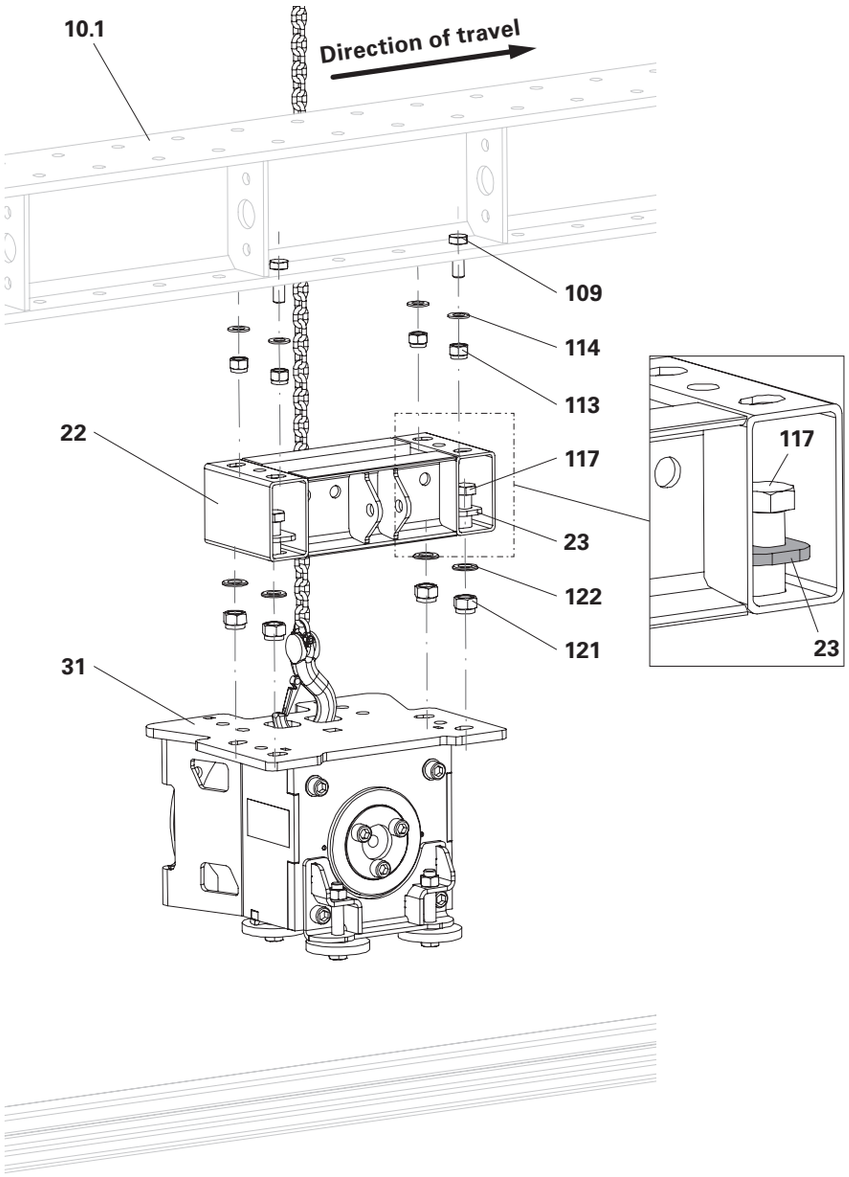


Fig. B2.08

Mounting the Hydraulic Drive VARIOKIT

Components

31	Wheel Block VARIOKIT 300 kN
32	Hydraulic Drive VARIOKIT

Assembly

1. Remove the coupling bolts M20x200 (**31.3**) and place to one side. The nuts will no longer be required.
2. Remove bolts M20x70 (**32.5**), nuts M20 (**32.6**) and washers M20 (**32.7**).
3. Attach the hydraulic drive (**32**) to the crane lifting gear and fly in.
4. Position the hydraulic drive in front of the wheel block (**31**) and then carefully push it into the wheel block.
5. Fix the hydraulic drive to the wheel block with bolts M20x70 (**32.5**), washers M20 (**32.7**) and nuts M20 (**32.6**).
   (Fig. B2.09a + B2.09b)
6. Remove the crane lifting gear.
7. Fit one coupling bolt M20x200 (**31.3**) in the wheel (**31.1**).
8. Turn the wheel until the coupling bolt on the hydraulic drive engages.
9. Position all coupling bolts and screw them in as far as they will go.

(Fig. B2.09b)

! Note

The coupling bolts leave a small gap after they have been fully tightened. This gap is important as it ensures that the bearings in the wheel block are not damaged.
Never close this gap with a higher tightening torque or shorter bolts!

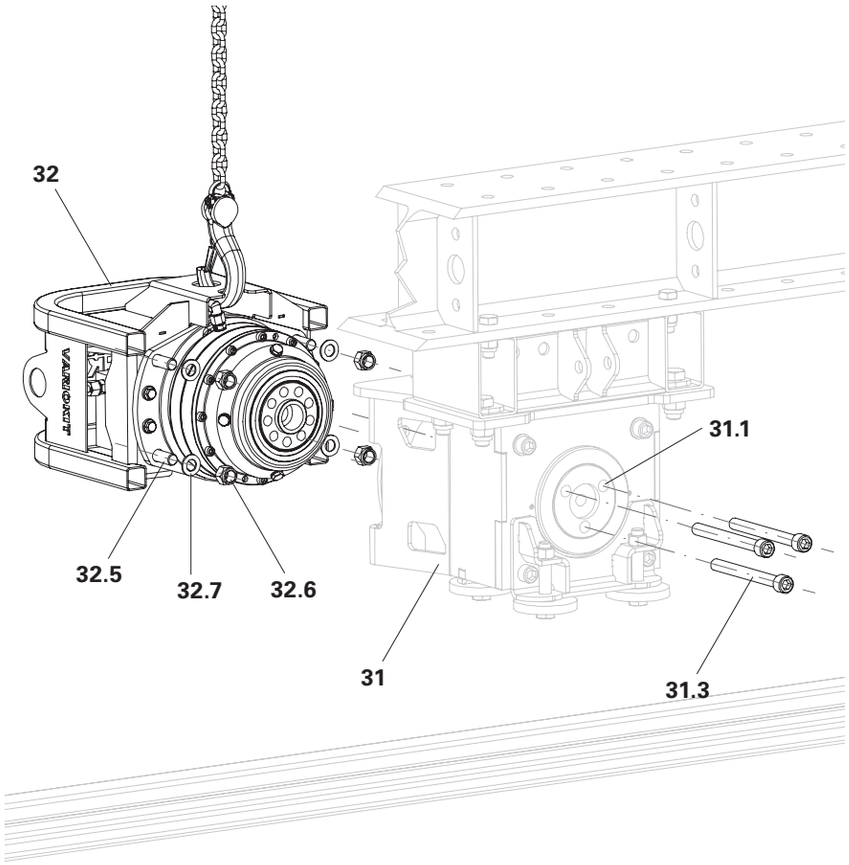


Fig. B2.09a

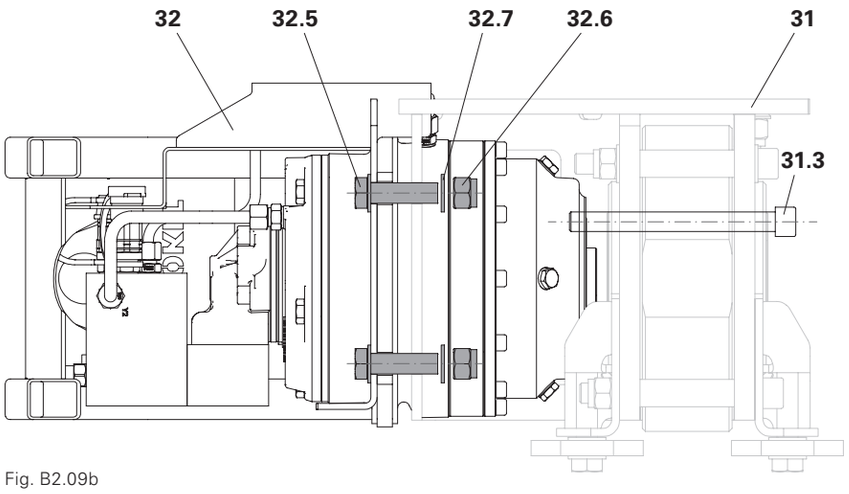


Fig. B2.09b

Mounting the Heavy Duty Wheel VARIOKIT

The heavy duty wheel is only used to move the tunnel formwork carriage. The heavy duty wheel runs on a crane rail; alternatively, on a U-rail.

Components

10.1	Longitudinal Beam VARIOKIT
20	Heavy Duty Wheel VARIOKIT
110	Bolt M20x70
113	Nut M20 self-locking
114	Washer M20

Assembly without using the Lifting and lowering unit

1. Position the heavy duty wheel (**20**) at the installation position.
2. Fix the heavy duty wheel to the base beam with bolts M20x70 (**110**), washers M20 (**114**) and self-locking nuts M20 (**113**).

(Fig. B2.10)

For easier and safer installation, insert two Tie Rods DW15 through the heavy duty wheel and secure them with DW15 cam nuts.

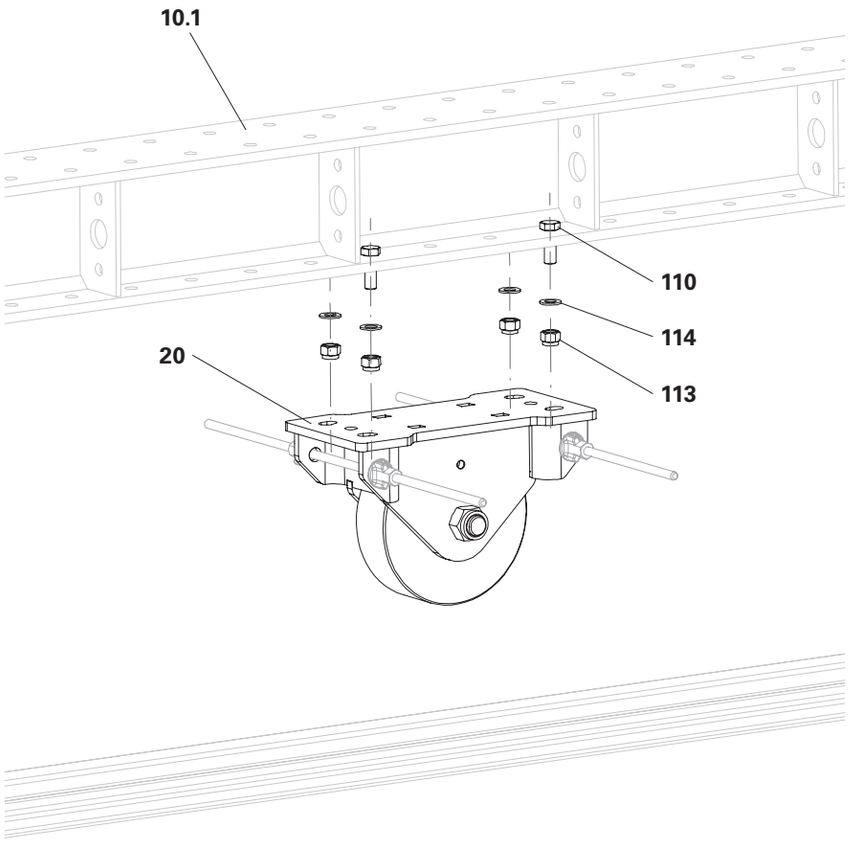


Fig. B2.10

B2 Base Beam VARIOKIT

Components

10.1	Longitudinal Beam VARIOKIT
20	Heavy Duty Wheel VARIOKIT
22	Thrust Frame LALD HDW VARIOKIT
23	Assembly Kit Thrust frame
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24

Assembly when using the Lifting and lowering unit

1. Fix the pressure frame (**22**) to the base beam (**10.1**) at the designated installation position using bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Position the heavy duty wheel (**20**) at the installation position.
3. Fix the heavy duty wheel to the pressure frame with bolts M24x70 (**117**), Assembly Kit Thrust frame (**23**), washers M24 (**122**) and self-locking nuts M24 (**121**).

(Fig. B2.11)

For easier and safer installation, insert two Tie Rods DW15 through the heavy duty wheel and secure them with DW15 cam nuts.

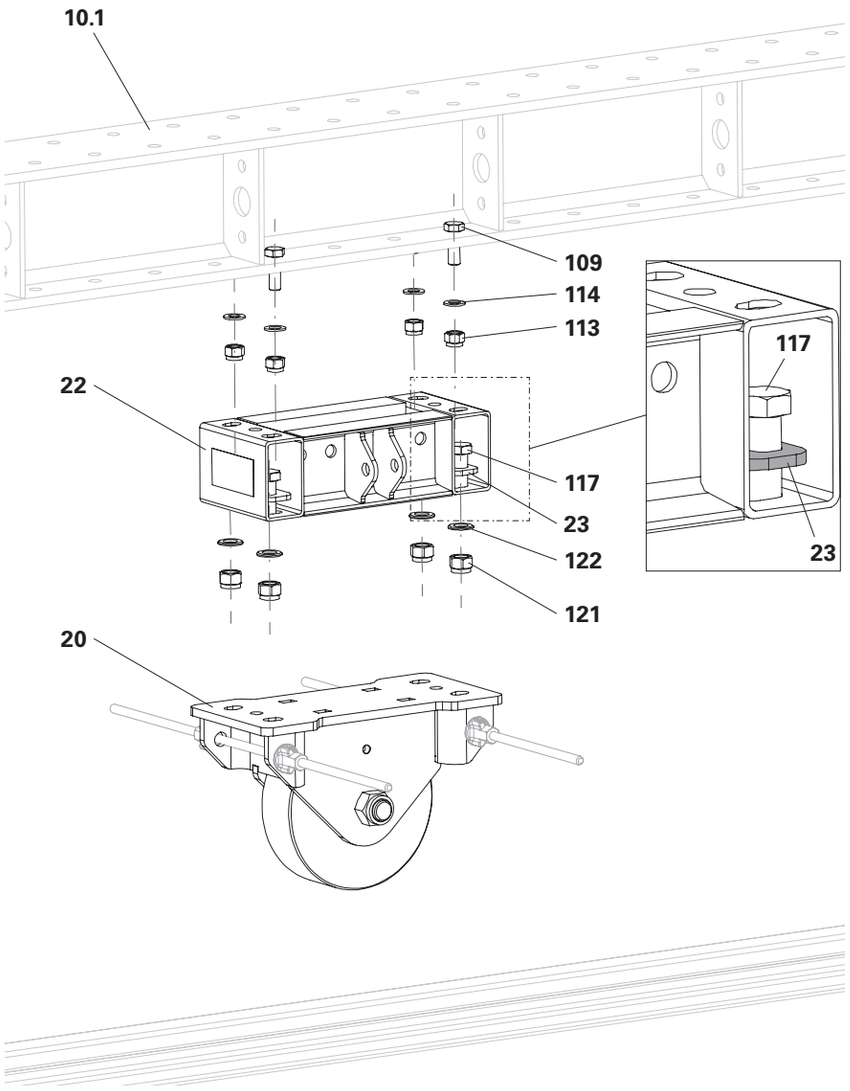


Fig. B2.11

Installing the Flange Cage HDW VARIOKIT

When using Crane Rail A75 or S49, the flange cage must be installed. The flange cage is used to guide the heavy duty wheel laterally on the rail.
The flange cage is used in pairs.

When using U-sections as rails, the flange cage must not be installed.

Components

20 Heavy Duty Wheel VARIOKIT
21 Flange Cage HDW VARIOKIT
103 Bolt M16x25
104 Bolt M16x150
105 Nut M16 self-locking
106 Washer M16

Assembly

1. Push the flange cage (**21**) over the wheel bolt (**20.1**) and press upwards.
2. Screw the flange cage (**21**) to the heavy duty wheel (**20**) on both sides using M16x25 bolts (**103**) and M16 washers (**106**).
3. Connect the two flange cages using M16x150 bolts (**104**) and M16 self-locking nuts (**105**).

(Fig. B2.12)

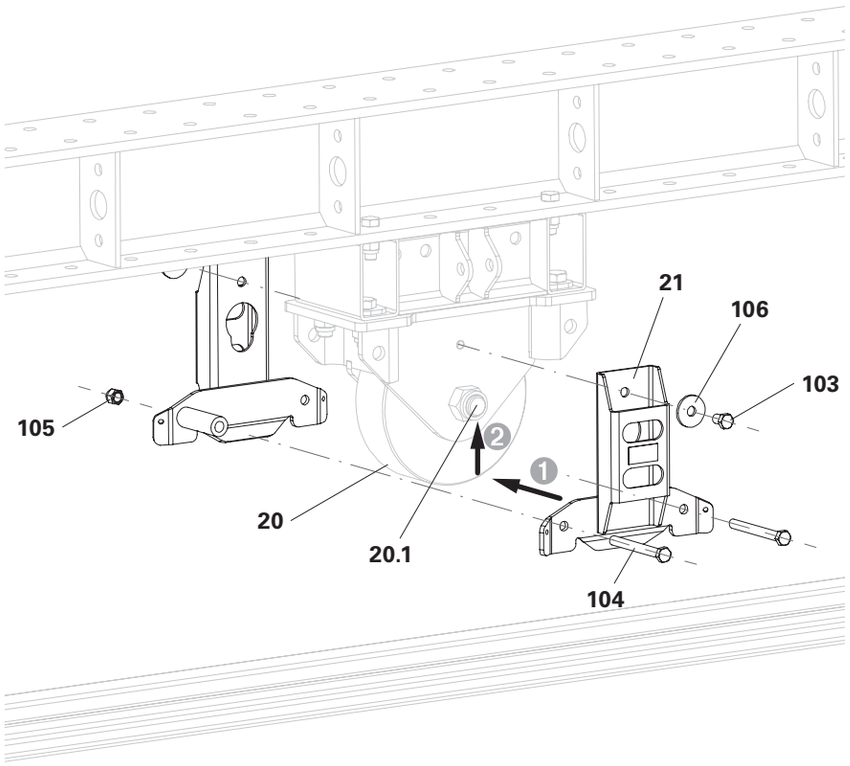


Fig. B2.12

Installing the Valve Block Hydr.-Drive

Components

33	Valve Block Hydr.-Drive	
37	Steel Waler SRU 147	1x
123	Filler Pin 21x120	2x
124	Cotter Pin 4/1 ga	2x
130	Wingnut pivot plate	2x
131	Tie Rod DW15	2x
132	Hex Nut DW15	4x

Assembly

1. Mount one Hex. Nut DW15 (**132a**) on each tie rod (**131**).
2. Insert the tie rods through the drilled holes in the base beam (**10.1**) and tighten with Hex. Nut DW15 (**132b**).
3. Position the Steel Waler SRU 147 (**37**) on the base beam and secure it with wingnut pivot plates (**130**).

(Fig. B2.13)

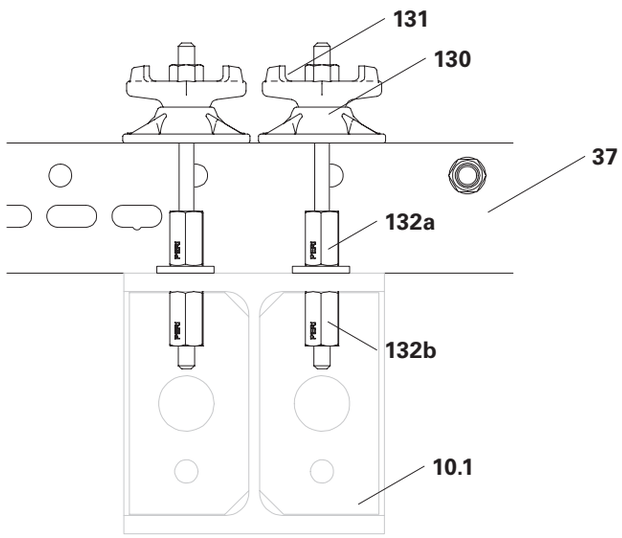


Fig. B2.13

4. Fix the Valve Block Hydr.-Drive (**33**) at the end of the Steel Waler SRU 147 (**37**) using two filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B2.14)

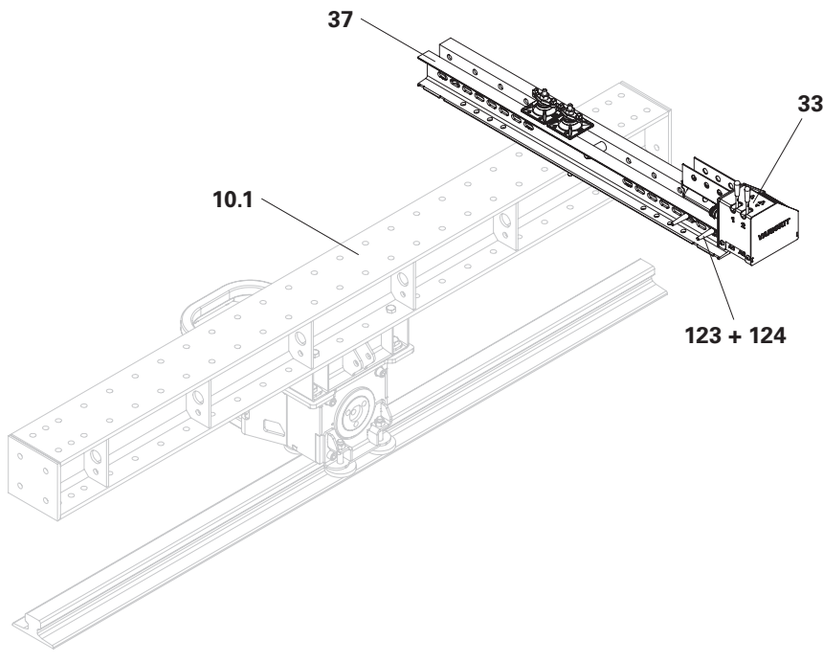


Fig. B2.14

Fitting the Support Wedgebox VARIOKIT

- The support wedgebox acts as a spacer and compensates for height differences between the base beam and the lowering wedge and support frame rail.
- The support wedgebox transfers vertical loads that occur during concreting. This completely relieves the lifting and lowering cylinders.

Components

10.1	Longitudinal Beam VARIOKIT
26	Support Wedgebox VARIOKIT
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20

- With the Crane Rail A75, the support wedgebox is mounted horizontally. (Fig. B2.15)
- With the Crane Rail S49, the support wedgebox is mounted vertically. (Fig. B2.16)

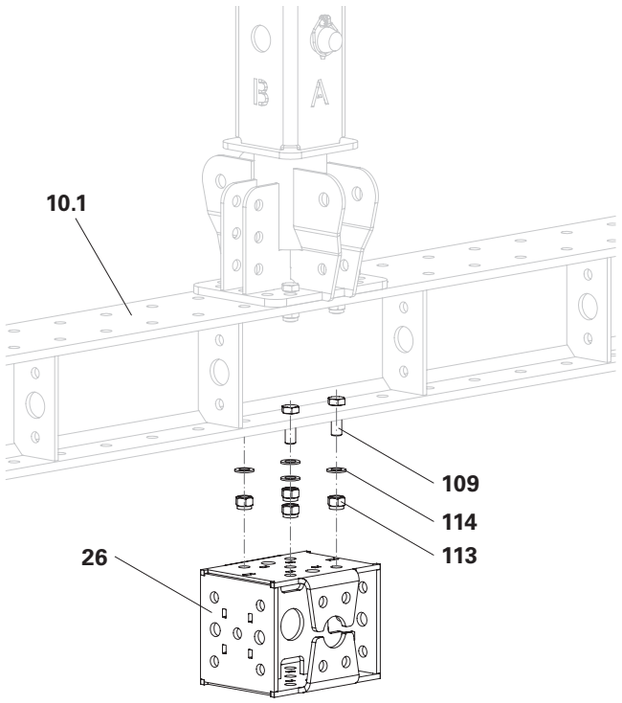


Fig. B2.15

Assembly

1. Position the support wedgebox (**26**) at the installation position.
2. Fix the support wedgebox to the base beam with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).

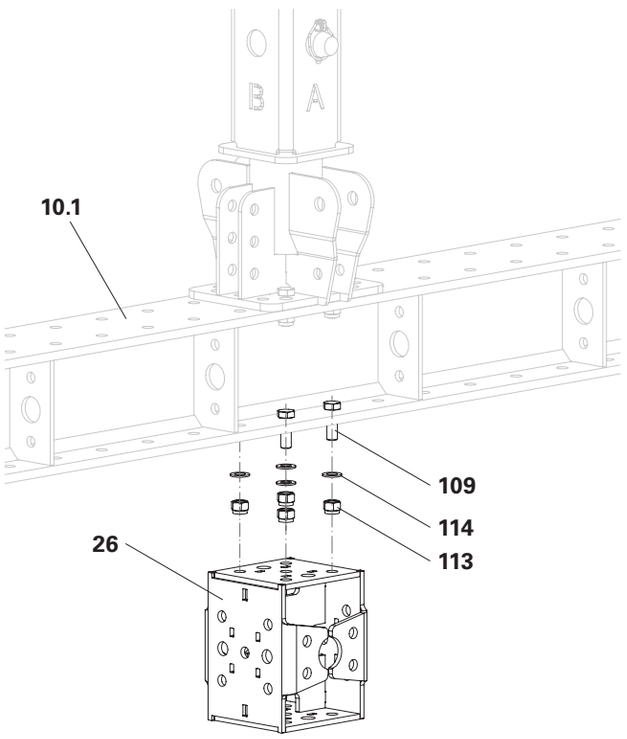


Fig. B2.16

Installing the heavy-duty roller gear 200 kN

The base beam including the superstructure can be moved with the heavy-duty roller gear 200 kN. Depending on the assembly direction on the base beam, this is possible in the longitudinal or transverse direction. The Heavy Duty Roller Swivel Plate is a connection component for installing the heavy-duty roller gear 200 kN on the base beam.

Components

10.1	Longitudinal Beam VARIOKIT
44	Heavy Duty Roller Swivel Plate
46	Heavy Duty Roller 200 kN/A-II
100	Bolt M12x55
101	Nut M12 self-locking
102	Washer M12
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20

The longer side of the Heavy Duty Roller Swivel Plate is parallel to the direction of travel.

Assembly

1. Insert the M12x55 bolts (**100**) into the holes in the Heavy Duty Roller Swivel Plate (**44**). The bolt head must be flush with the Heavy Duty Roller Swivel Plate.
2. Align the Heavy Duty Roller Swivel Plate at the installation position so that the holes in the Heavy Duty Roller Swivel Plate and the base beam are flush.
3. Insert the M20x60 bolts (**109**) through the holes. The bolt head must be flush with the Heavy Duty Roller Swivel Plate.
4. Fix the Heavy Duty Roller Swivel Plate using washers M20 (**114**) and self-locking nuts M20 (**113**).
5. Secure the heavy-duty roller gear 200 kN (**46**) with washers M12 (**102**) and self-locking nuts M12 (**101**).

(Fig. B2.17)

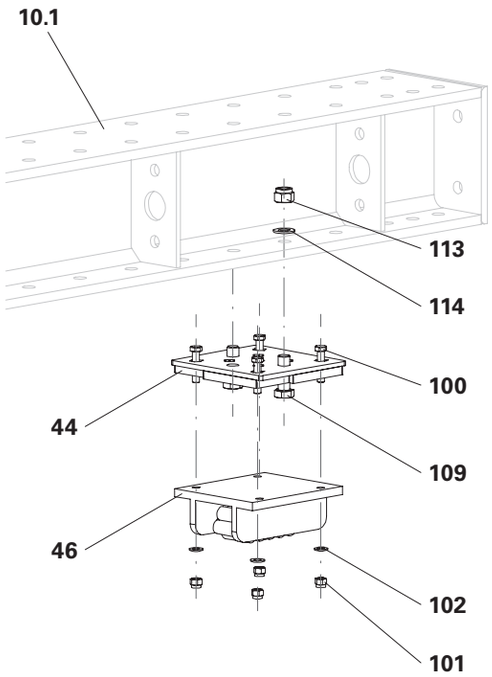


Fig. B2.17

Multiadaptor RCS VARIOKIT

The Multiadaptor RCS VARIOKIT is used to connect components to the Climbing Rail RCS. (Fig. B3.01)
The Multiadaptor RCS VARIOKIT is used individually or as a unit. In that case, two Multiadaptors RCS are positively connected to each other.

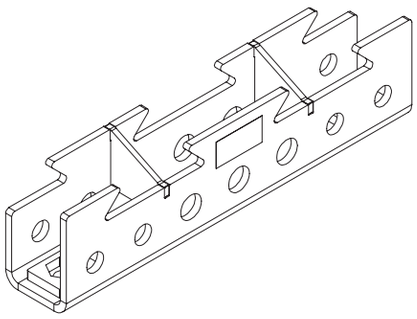


Fig. B3.01

Caution

The two multiadaptors of the assembly unit can come loose!
Risk of crushing and abrasions due to falling components.
⇒ Only ever support the complete assembly unit on the upper multiadaptor (**11a**).
⇒ Do not tilt the assembly unit.

Components

11	Multiadaptor RCS VARIOKIT	2x

Connecting two Multiadaptors RCS

1. Position two multiadaptors next to each other; both multiadaptors have the same mounting position.
2. Rotate one multiadaptor (**11a**) by 180° and hold it slightly offset over the other multiadaptor (**11b**).
3. Place multiadaptor (**11a**) on multiadaptor (**11b**).
4. Slide multiadaptor (**11a**) upwards along the inclination until both components engage.

(Fig. B3.02)

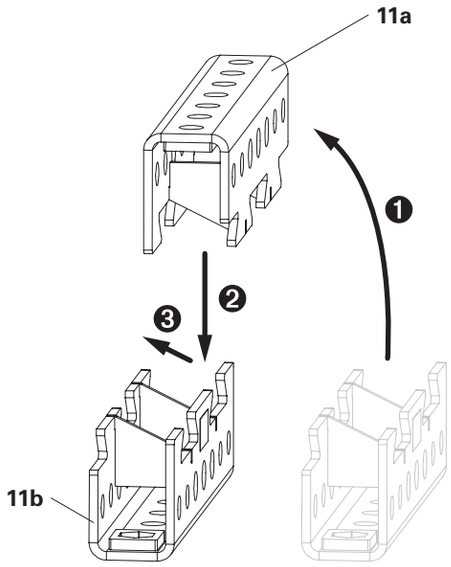


Fig. B3.02

Fig. B3.03 shows the multiadaptor assembly unit. The assembly unit is fixed in the Climbing Rail RCS with filler pins.

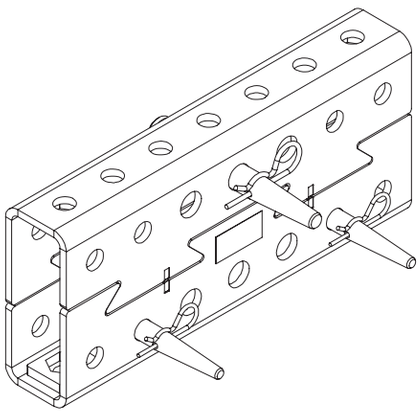


Fig. B3.03

Installing the hydraulic unit

- The standard position for installing the hydraulic unit is on the base beam.
- When moving the hydraulic unit, use suitable lifting straps or lifting eyes provided.
- Use attachment points on the hydraulic unit.

Components

1	Hydr.Pump VARIOKIT 8-fold
10.2	Climbing Rail RCS
11	Multiadaptor RCS VARIOKIT
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga
125	Filler Pin 26x120
126	Cotter Pin 5/1 ga

Assembly

1. Fix 2x Multiadaptors RCS (**11**) in the top row of holes of the Climbing Rail RCS (**10.2**) at the designated assembly position with filler pins 26x120 (**125**) and secure with Cotter Pins 5/1 ga (**126**).
2. Secure both Multiadaptors RCS (**11**) with filler pins 21x120 (**123**) to prevent twisting. Secure filler pins 21x120 with Cotter Pins 4/1 ga (**124**).
3. Attach the hydraulic unit (**1**) to the crane lifting gear and fly in.
4. Position the hydraulic unit over the assembly position and lower onto the base beam (**10.2**).
5. Fix the hydraulic unit on both multi-adaptors (**11**) with bolts M20x60 (**109**), self-locking nuts M20 (**113**) and washers M20 (**114**).
6. Remove the crane lifting gear.

(Fig. B3.04)

Fix the hydraulic unit to the base beam so that the oil tank is centred on the base beam.

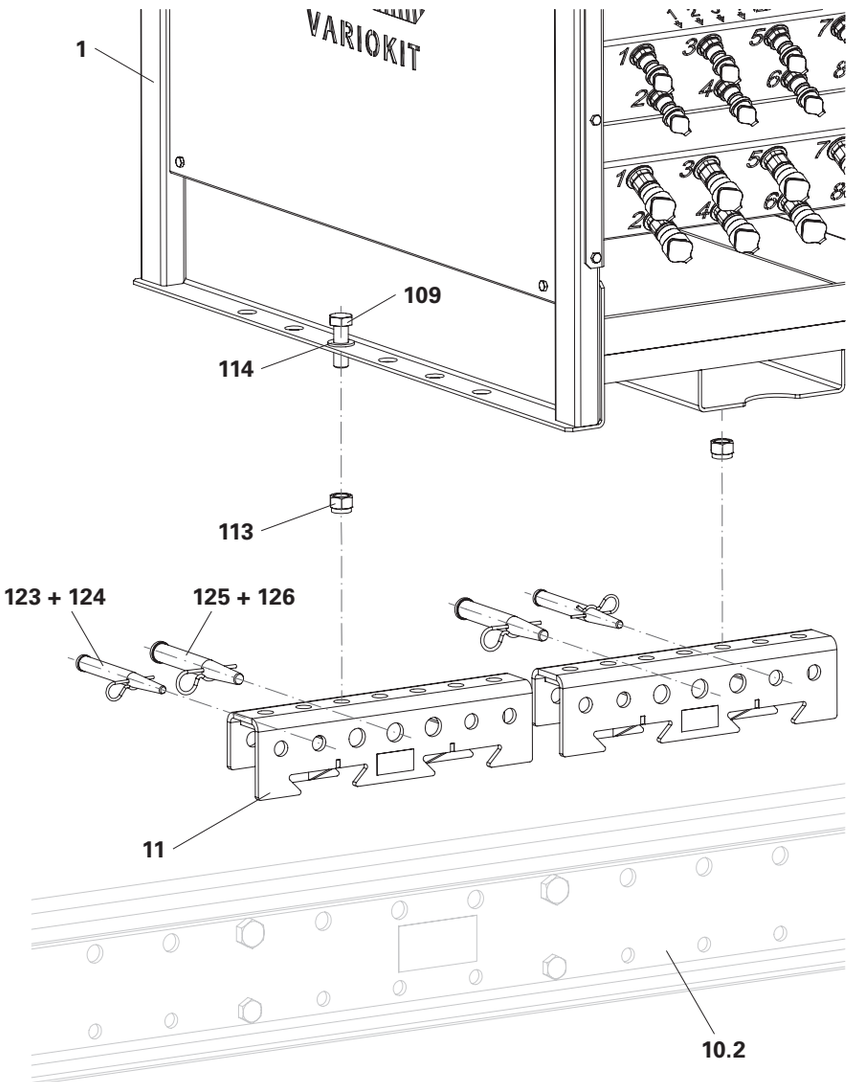


Fig. B3.04

Modifying the liftframe

- The liftframe must be modified before it can be fitted to the Base Beam RCS.
- When moving the liftframe, use the lifting eyes provided.

Components

25	Liftframe LALD VARIOKIT

Modifying

1. Remove bolts M24x50 (**115a**) and move the girder connection at the top (**25.6**) into the bottom slot.
2. Fix the girder connection at the top (**25.6**) with bolts M24x50 (**115a**), do not tighten the bolts.

(Fig. B3.05)

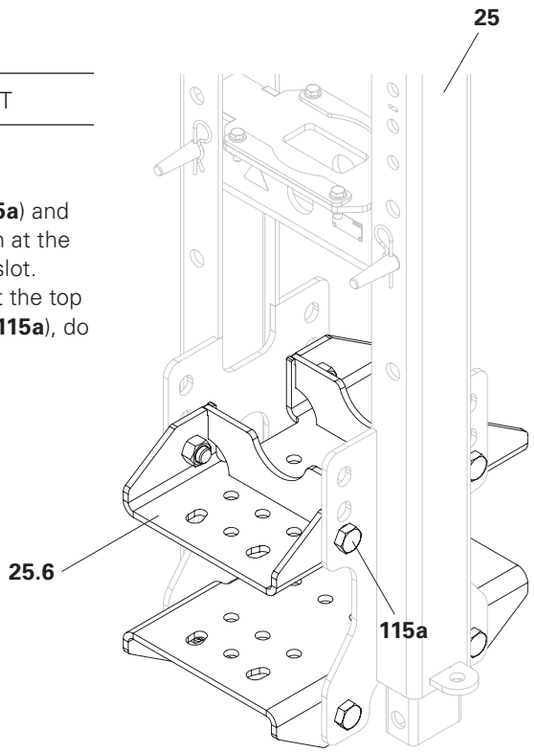


Fig. B3.05

Installing the liftframe

When moving the liftframe, use the lifting eyes provided.

Components

10.2	Climbing Rail RCS	
11	Multiadaptor RCS VARIOKIT	2x
25	Liftframe LALD VARIOKIT	
109	Bolt M20x60	
113	Nut M20 self-locking	
114	Washer M20	
123	Filler Pin 21x120	
124	Cotter Pin 4/1 ga	
125	Filler Pin 26x120	
126	Cotter Pin 5/1 ga	

Ensure that the upper support plate (**25.6**) is fixed in the bottom slots. (Fig. B3.06)

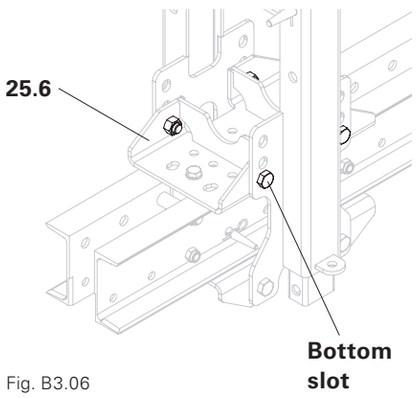


Fig. B3.06

Assembly

1. Connect two Multiadaptors RCS (**11**) to form one assembly unit.
2. Fix the assembly unit in the top row of holes at the designated assembly position with filler pin 26x120 (**125**) and secure with Cotter Pin 5/1 ga (**126**).
3. Fix the assembly unit in the bottom row of holes with two filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).
4. Remove bolts M24x50 (**115b**) and remove bottom girder connection (**25.5**).
5. Attach the liftframe (**25**) to the crane lifting gear and fly in.
6. Lower the liftframe to the assembly position on the base beam (**10.2**).
7. Fix the bottom girder connection (**25.5**) in its original position with bolts M24x50 (**115b**) and nuts M24 (**120**).
8. Raise the liftframe so that it rests firmly against the base beam (**10.2**).
9. Fix the liftframe (**25**) to the Multiadaptor RCS assembly unit with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
10. Tighten bolts M24x50 (**115a**) at the upper girder connection (**25.6**).
11. Remove the crane lifting gear.

(Fig. B3.07)

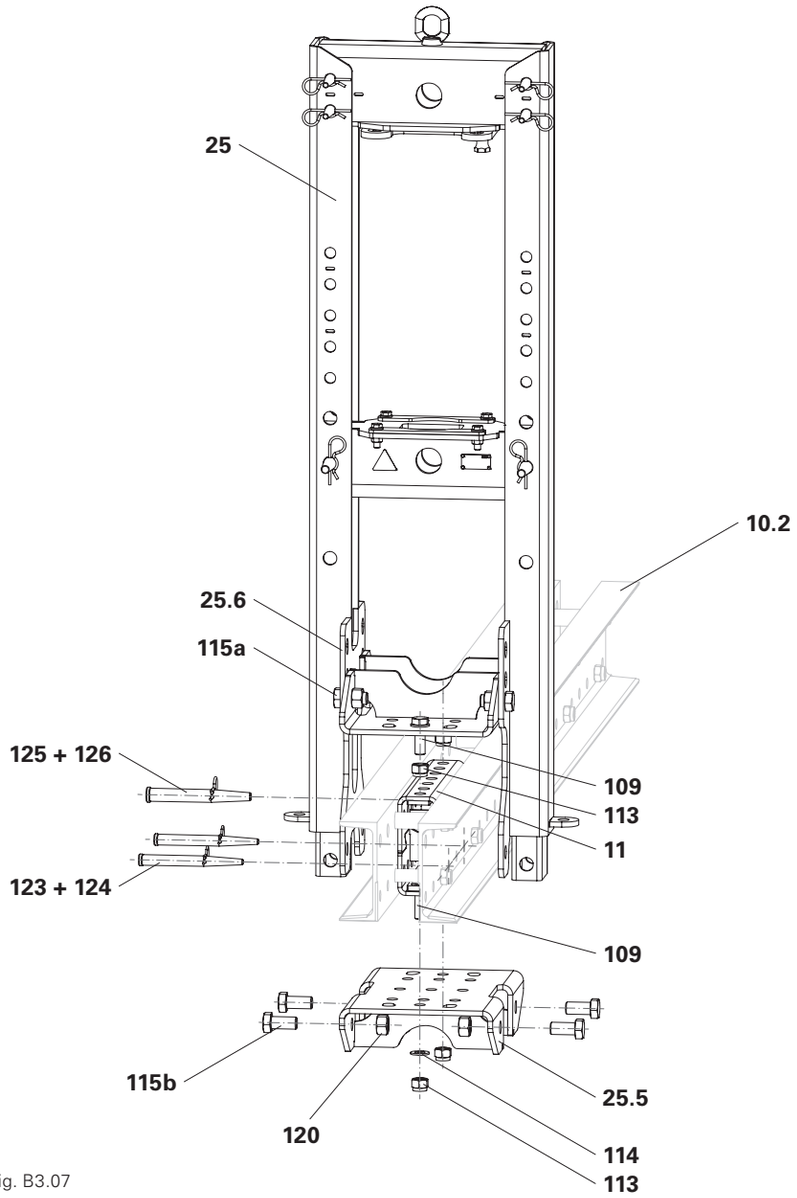


Fig. B3.07

Fitting the hinge slide

Warning
Heavy moving components!
During assembly, there is a risk of hands being crushed.
⇒ Wear safety gloves.
⇒ Ensure a safe and secure position.

Components

24	Hinge Slide LALD VARIOKIT
25	Liftframe LALD VARIOKIT

Assembly with Crane Rail A75

1. Position the hinge slide (**24**) under the liftframe (**25**).
2. Pull the cotter pin (**126b**) and the filler pin 26x120 (**125b**).
3. Hold the sliding part (**25.9**) in position.
4. Pull the cotter pin (**126a**) and the filler pin 26x120 (**125a**).
5. Lower the sliding part (**25.9**) and insert it into the mount of the hinge slide.
6. Insert filler pin 26x120 (**125b**) and secure with cotter pin (**126b**).
7. Insert the filler pin 26x120 (**125a**) one hole higher in the parking position and secure with cotter pin (**126a**).

(Fig. B3.08 + B3.09)

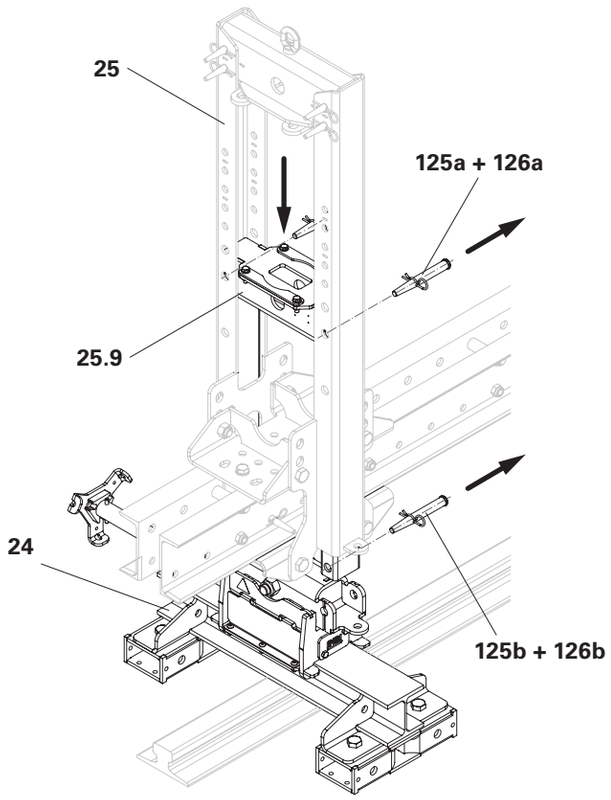


Fig. B3.08

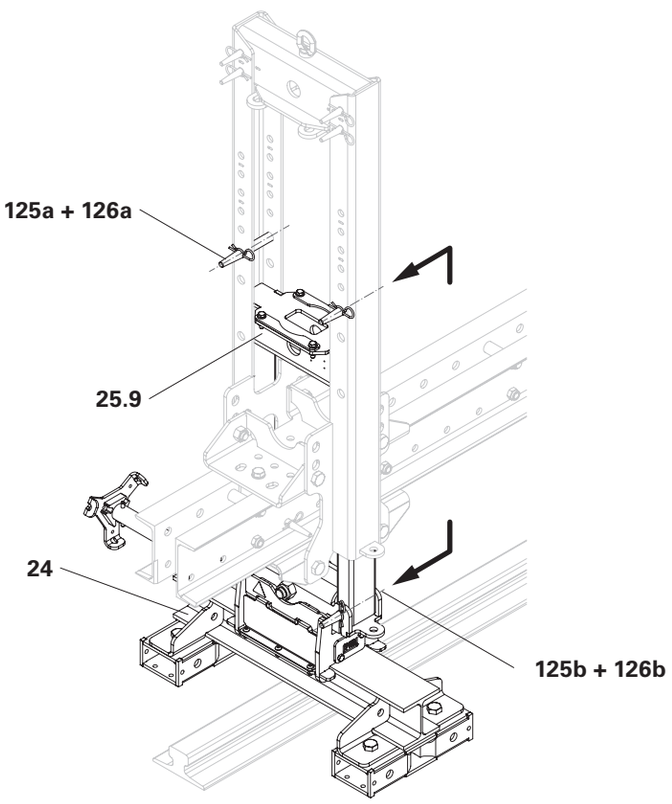


Fig. B3.09

Assembly with Crane Rail S49

1. Remove bolts M24x50 (**24.6**).
2. Turn the base profile (**24.5**) by 90°.
3. Fix the base profile with bolts M24x50 (**24.6**) and nuts M24 (**24.7**).
4. For the rest of the assembly process for the hinge slide, see Assembly with Crane Rail A75.

(Fig. B3.10)

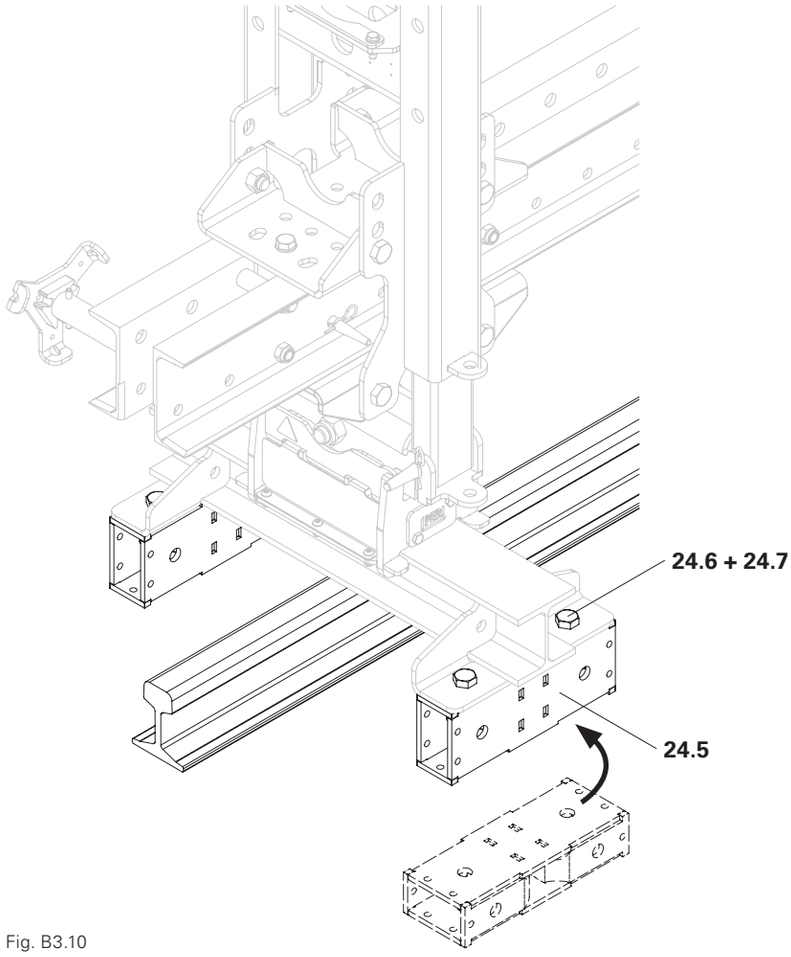


Fig. B3.10

Fitting the Wheel Block VARIOKIT 300 kN

The Wheel Block VARIOKIT is mounted on both base beams of the tunnel formwork carriage in the same installation position. The hydraulic drive protrudes to the left of the base beam in the direction of travel.

Components

10.2	Climbing Rail RCS
12	Adaptor RCS SLR VARIOKIT
31	Wheel Block VARIOKIT 300 kN
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga

Assembly without using the Lifting and lowering unit

1. Fix the Adaptor RCS SLR (**12**) to the wheel block (**31**) with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Attach the assembly unit to the crane lifting gear and fly in.
3. Fix the assembly unit at the designated assembly position with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).
4. Remove the crane lifting gear.

(Fig. B3.11)

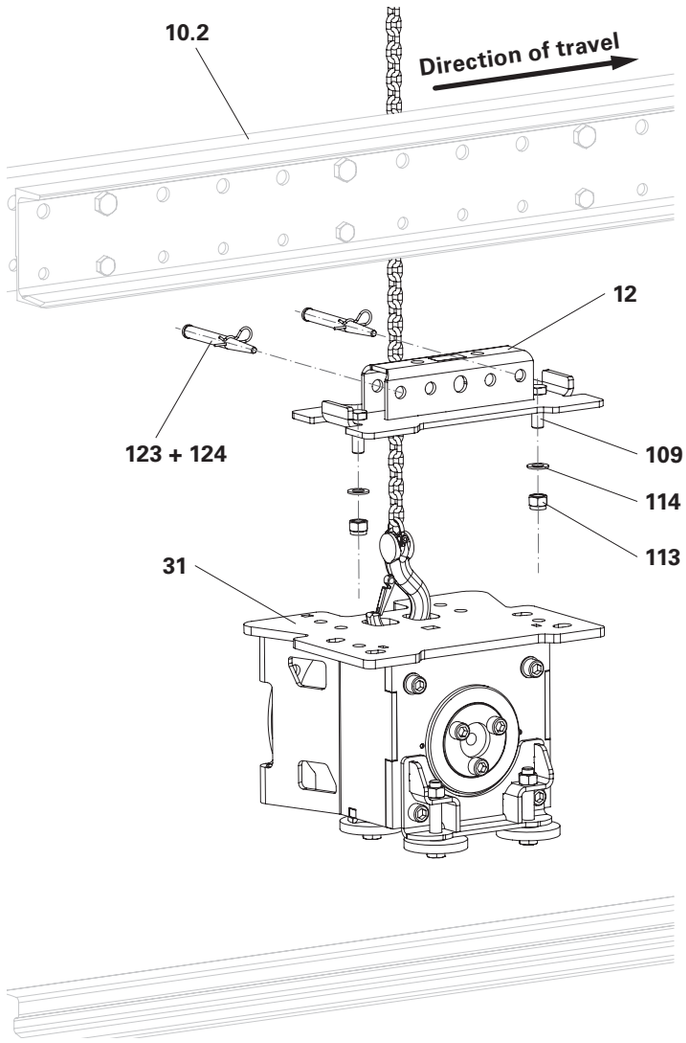


Fig. B3.11

Components

10.2	Climbing Rail RCS
12	Adaptor RCS SLR VARIOKIT
22	Thrust Frame LALD HDW VARIOKIT
23	Assembly Kit Thrust frame
31	Wheel Block VARIOKIT 300 kN
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga

Assembly when using the Lifting and lowering unit

1. Fix the Adaptor RCS SLR (**12**) to the pressure frame (**22**) with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Fix the assembly unit to the wheel block (**31**) with bolts M24x70 (**117**), Assembly Kit Thrust frame (**23**), washers M24 (**122**) and self-locking nuts M24 (**121**).
3. Attach the assembly unit to the crane lifting gear and fly in.
4. Fix the assembly unit at the designated assembly position with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).
5. Remove the crane lifting gear.

(Fig. B3.12)

The hydraulic drive turns in a clockwise direction when looking at the wheel hub.

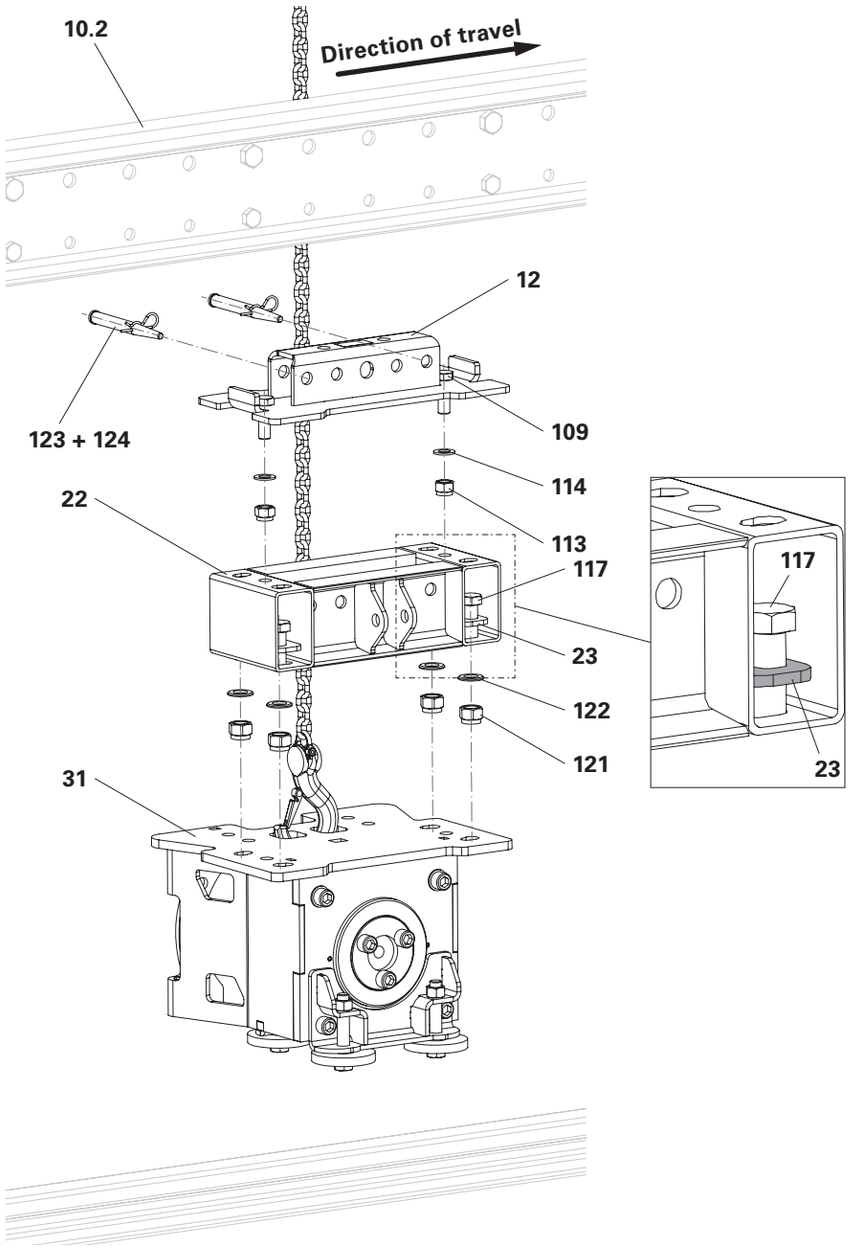


Fig. B3.12

Mounting the Hydraulic Drive VARIOKIT

Components

31	Wheel Block VARIOKIT 300 kN
32	Hydraulic Drive VARIOKIT

Assembly

1. Remove the coupling bolts M20x200 (**31.3**) and place to one side. The nuts will no longer be required.
2. Remove bolts M20x70 (**32.5**), nuts M20 (**32.6**) and washers M20 (**32.7**).
3. Attach the hydraulic drive (**32**) to the crane lifting gear and fly in.
4. Position the hydraulic drive in front of the wheel block (**31**) and then carefully push it into the wheel block.
5. Fix the hydraulic drive to the wheel block with bolts M20x70 (**32.5**), washers M20 (**32.7**) and nuts M20 (**32.6**).
   (Fig. B3.13a + B3.13b)
6. Remove the crane lifting gear.
7. Fit one coupling bolt M20x200 (**31.3**) in the wheel (**31.1**).
8. Turn the wheel until the coupling bolt on the hydraulic drive engages.
9 Position all coupling bolts and screw them in as far as they will go.

(Fig. B3.13b)

! Note

The coupling bolts leave a small gap after they have been fully tightened. This gap is important as it ensures that the bearings in the wheel block are not damaged.
Never close this gap with a higher tightening torque or shorter bolts!

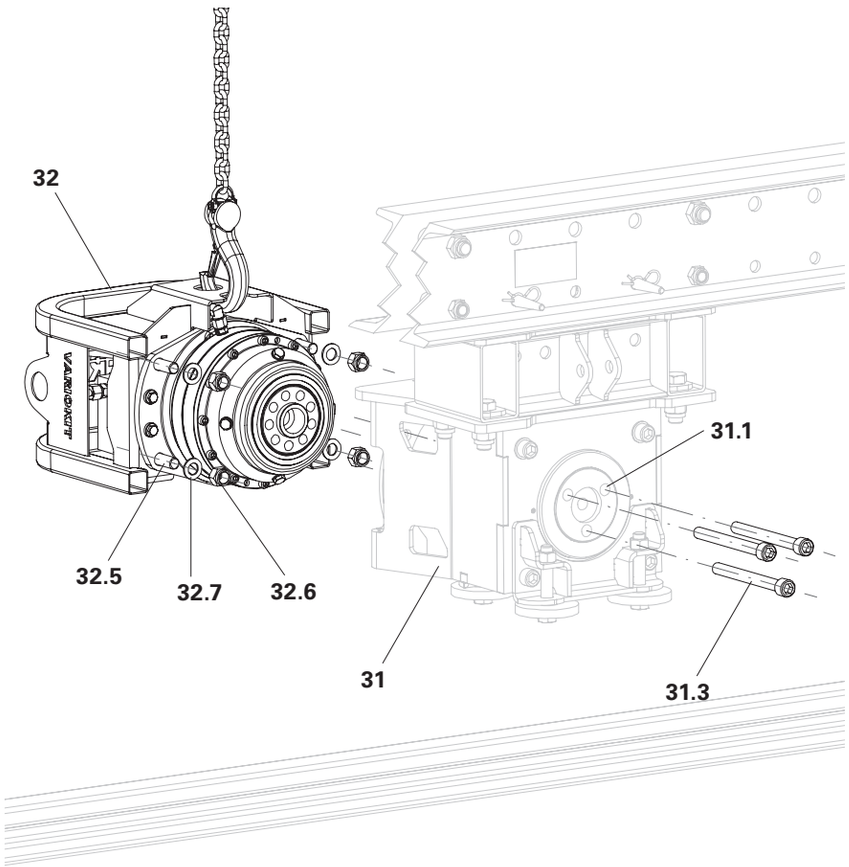


Fig. B3.13a

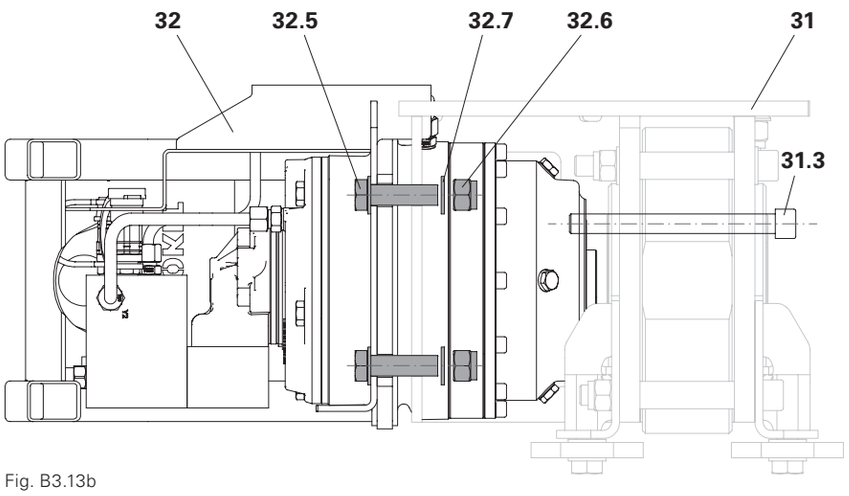


Fig. B3.13b

Mounting the Heavy Duty Wheel VARIOKIT

The heavy duty wheel is only used to move the tunnel formwork carriage. The heavy duty wheel runs on a crane rail; alternatively, on a U-rail.

Components

10.2	Climbing Rail RCS
12	Adaptor RCS SLR VARIOKIT
20	Heavy Duty Wheel VARIOKIT
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga

Assembly without using the Lifting and lowering unit

1. Fix the heavy duty wheel to the Adaptor RCS SLR (**12**) with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Fix the assembly unit at the designated assembly position with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B3.14)

For easier and safer installation, insert two Tie Rods DW15 through the heavy duty wheel and secure them with DW15 cam nuts.

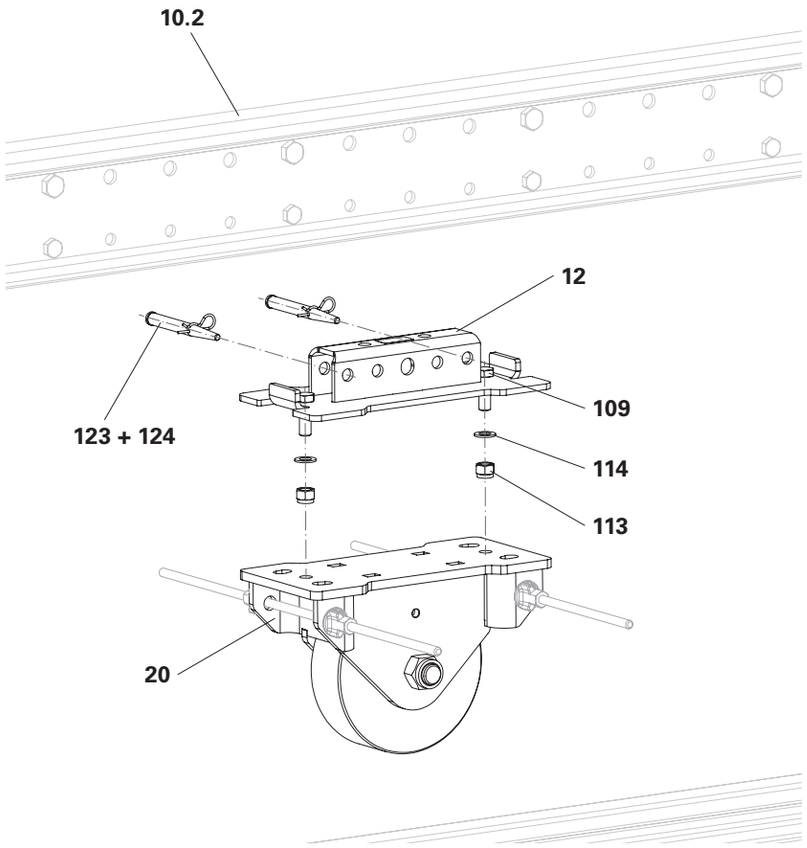


Fig. B3.14

Components

10.2	Climbing Rail RCS
12	Adaptor RCS SLR VARIOKIT
20	Heavy Duty Wheel VARIOKIT
22	Thrust Frame LALD HDW VARIOKIT
23	Assembly Kit Thrust frame
109	Bolt M20x60
113	Nut M20 self-locking
114	Washer M20
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga

Assembly when using the Lifting and lowering unit

1. Fix the Adaptor RCS SLR (**12**) to the pressure frame (**22**) with bolts M20x60 (**109**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Fix the assembly unit to the heavy duty wheel (**20**) with bolts M24x70 (**117**), Assembly Kit Thrust frame (**23**), washers M24 (**122**) and self-locking nuts M24 (**121**).
3. Fix the assembly unit at the designated assembly position with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B3.15)

For easier and safer installation, insert two Tie Rods DW15 through the heavy duty wheel and secure them with DW15 cam nuts.

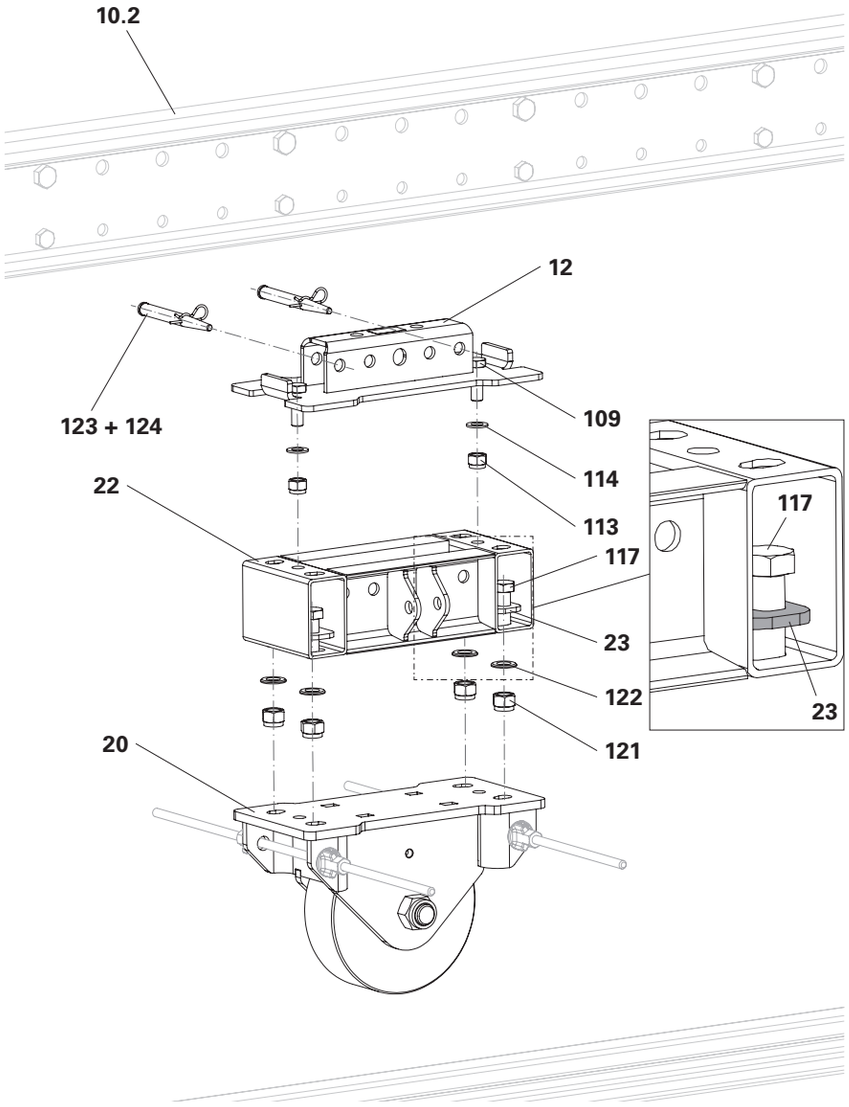


Fig. B3.15

Installing the Flange Cage HDW VARIOKIT

When using Crane Rail A75 or S49, the flange cage must be installed. The flange cage is used to guide the heavy duty wheel laterally on the rail.
The flange cage is used in pairs.

When using U-sections as rails, the flange cage must not be installed.

Components

20 Heavy Duty Wheel VARIOKIT
21 Flange Cage HDW VARIOKIT
103 Bolt M16x25
104 Bolt M16x150
105 Nut M16 self-locking
106 Washer M16

Assembly

1. Push the flange cage (**21**) over the wheel bolt (**20.1**) and press upwards.
2. Screw the flange cage (**21**) to the heavy duty wheel (**20**) on both sides using M16x25 bolts (**103**) and M16 washers (**106**).
3. Connect the two flange cages using M16x150 bolts (**104**) and M16 self-locking nuts (**105**).

(Fig. B3.16)

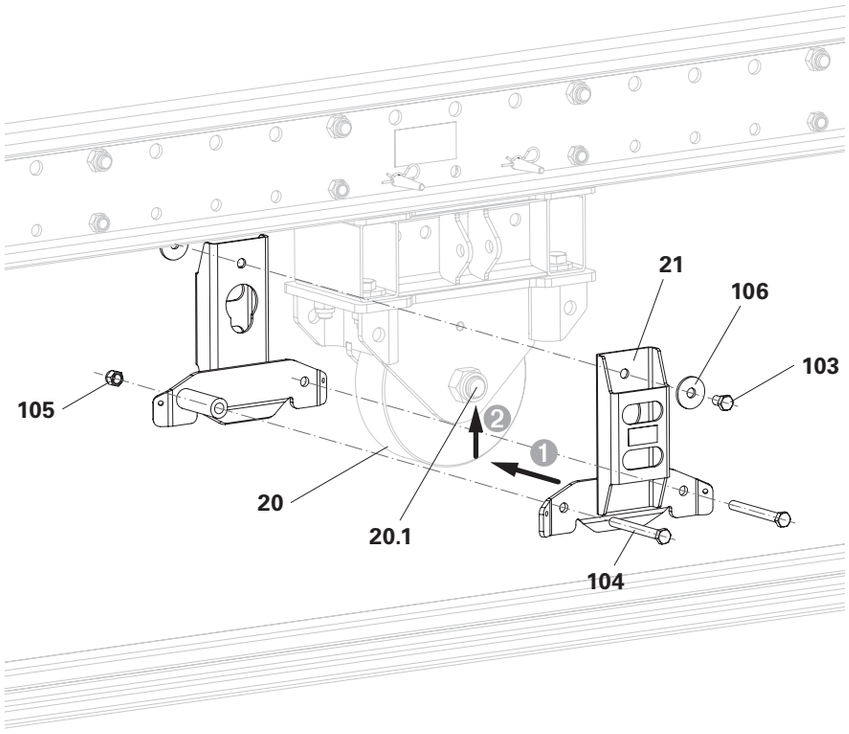


Fig. B3.16

Installing the Valve Block Hydr.-Drive
Version 1

Components

10.2	Climbing Rail RCS	1x
14	Vertical Connector RCS	1x
19	Angle Connector RCS/SRU	1x
33	Valve Block Hydr.-Drive	
37	Steel Waler SRU 147	1x
123	Filler Pin 21x120	5x
124	Cotter Pin 4/1 ga	5x
125	Filler Pin 26x120	5x
126	Cotter Pin 5/1 ga	5x

Assembly

1. Fix the vertical connector (**14**) to the base beam at the designated assembly position using two filler pins 26x120 (**125**) and secure with Cotter Pins 5/1 ga (**126**).
2. Fix the Climbing Rail RCS (**10.2**) to the vertical connector (**14**) using filler pin 21x120 (**123**) and filler pin 26x120 (**125**). Secure with Cotter Pin 4/1 ga (**124**) and Cotter Pin 5/1 ga (**126**).
3. Fix the angle connector (**19**) to the Climbing Rail RCS (**10.2**) with two filler pins 26x120 (**125**) and secure with Cotter Pins 5/1 ga (**126**).
4. Fix the Steel Waler SRU 147 (**37**) to the angle connector (**19**) with two filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).
5. Fix the Valve Block Hydr.-Drive (**33**) at the end of the Steel Waler SRU 147 (**37**) using two filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B3.17)

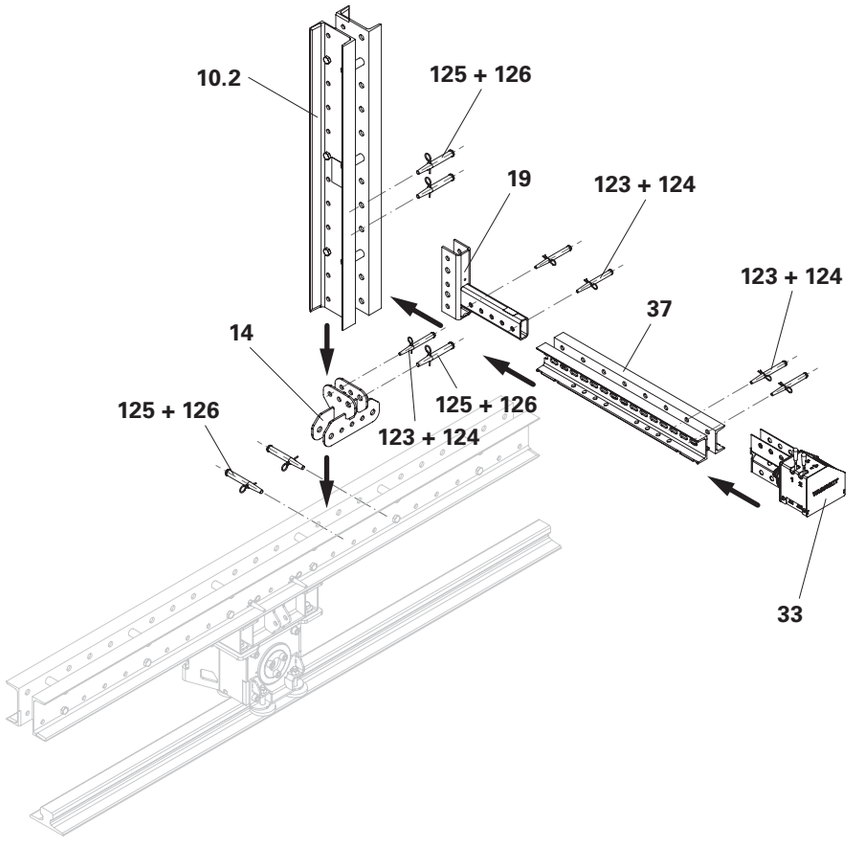


Fig. B3.17

Installing the Valve Block Hydr.-Drive
Version 2

Components

18	Cross Connector VARIOKIT	1x
33	Valve Block Hydr.-Drive	
37	Steel Waler SRU 147	1x
113	Nut M20 self-locking	1x
114	Washer M20	2x
123	Filler Pin 21x120	3x
124	Cotter Pin 4/1 ga	3x
134	Bolt M20x130	1x

Assembly

1. Fix the cross connector (**18**) to the base beam (**10.2**) at the designated installation position using bolts M20x130 (**134**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Position the Steel Waler SRU 147 (**37**) on the base beam (**10.2**), fix with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B3.18)

3. Fix the Valve Block Hydr.-Drive (**33**) at the end of the Steel Waler SRU 147 (**37**) using two filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B3.19)

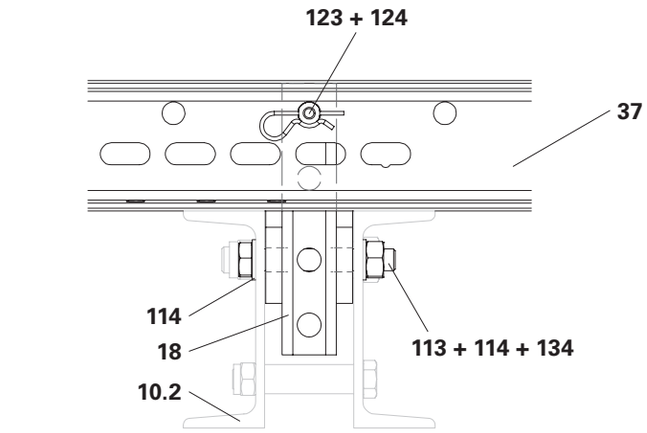


Fig. B3.18

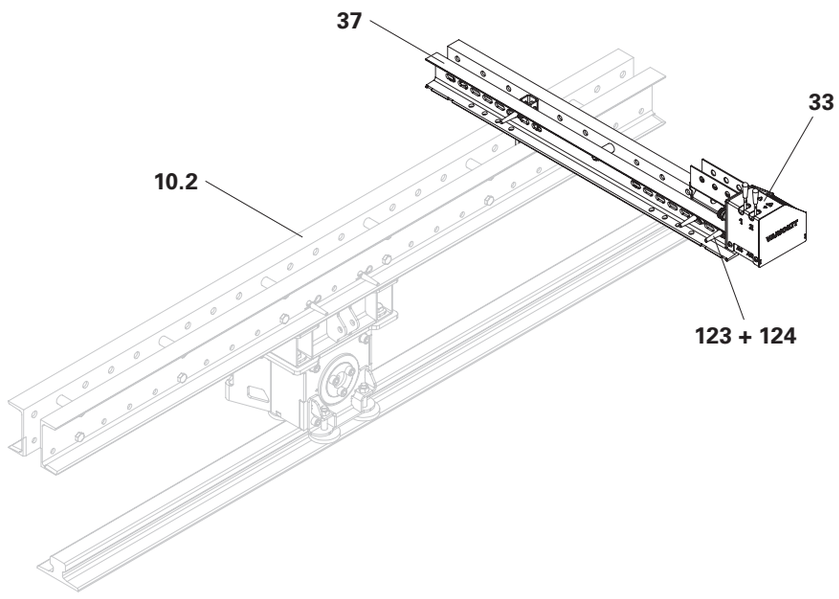


Fig. B3.19

Fitting the Support Wedgebox VARIOKIT

- The support wedgebox acts as a spacer and compensates for height differences between the base beam and the lowering wedge and support frame rail.
- The support wedgebox transfers vertical loads that occur during concreting. This completely relieves the lifting and lowering cylinders.

Components

10.2	Climbing Rail RCS
13	Connector RCS LALD VARIOKIT
26	Support Wedgebox VARIOKIT
108	Bolt M20x55
113	Nut M20 self-locking
114	Washer M20
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga

- With the Crane Rail A75, the support wedgebox is mounted horizontally. (Fig. B3.20)
- With the Crane Rail S49, the support wedgebox is mounted vertically. (Fig. B3.21)

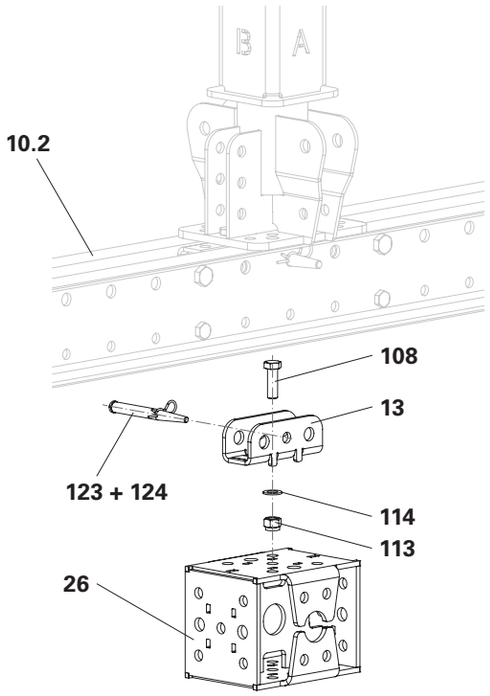


Fig. B3.20

Assembly

1. Fix the support wedgebox to the Connector RCS LALD (**13**) with bolts M20x55 (**108**), washers M20 (**114**) and self-locking nuts M20 (**113**).
2. Fix the assembly unit at the designated assembly position with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

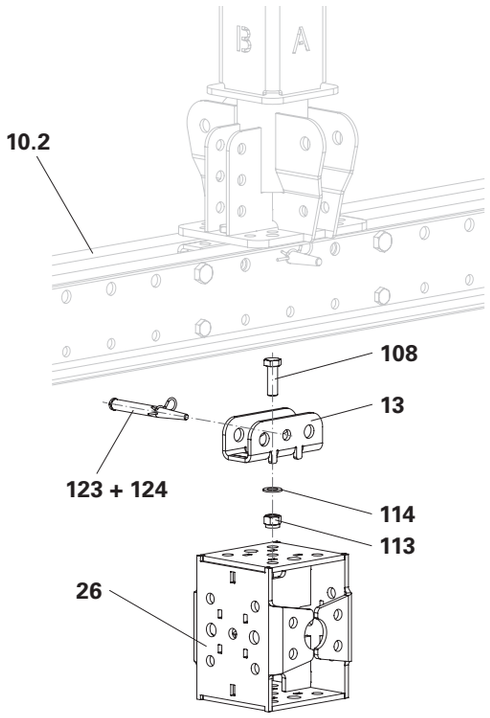


Fig. B3.21

Installing the heavy-duty roller gear 200 kN

The base beam including the superstructure can be moved with the heavy-duty roller gear 200 kN. Depending on the assembly direction on the base beam, this is possible in the longitudinal or transverse direction. The Heavy Duty Roller Swivel Plate is a connection component for installing the heavy-duty roller gear 200 kN on the base beam.

Components

10.2	Climbing Rail RCS
13	Connector RCS LALD VARIOKIT
44	Heavy Duty Roller Swivel Plate
46	Heavy Duty Roller 200 kN/A-II
100	Bolt M12x55
101	Nut M12 self-locking
102	Washer M12
107	Bolt M20x40
113	Nut M20 self-locking
114	Washer M20
123	Filler Pin 21x120
124	Cotter Pin 4/1 ga

The longer side of the Heavy Duty Roller Swivel Plate is parallel to the direction of travel.

Assembly

1. Insert the M20x40 bolt (**107**) through the centre hole of the Heavy Duty Roller Swivel Plate (**44**). The bolt head must be flush with the Heavy Duty Roller Swivel Plate.
2. Insert the Connector RCS LALD (**13**) into the Heavy Duty Roller Swivel Plate (**44**) and secure with washers M20 (**114**) and self-locking nuts M20 (**113**).

   Ensure that the snap tabs of the Connector RCS LALD (**13**) snap into the recesses of the Heavy Duty Roller Swivel Plate (**44**).
3. Insert the M12x55 bolts (**100**) into the holes (**44.1**) in the Heavy Duty Roller Swivel Plate (**44**). The bolt heads must be flush with the Heavy Duty Roller Swivel Plate.
4. Secure the heavy-duty roller gear 200 kN (**46**) with washers M12 (**102**) and self-locking nuts M12 (**101**).
5. Fix the assembly unit at the designated assembly position with filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B3.22)

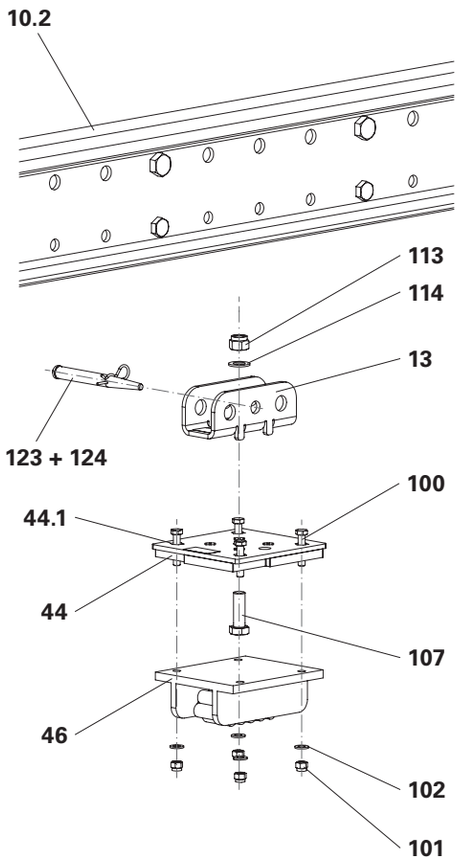


Fig. B3.22

Installing the hydraulic unit

- The standard position for installing the hydraulic unit is on the base beam.
- When moving the hydraulic unit, use suitable lifting straps or lifting eyes provided.
- Use attachment points on the hydraulic unit.

Components

1	Hydr.Pump VARIOKIT 8-fold
10.3	Main Beam HDT
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24

Assembly

1. Attach the hydraulic unit (**1**) to the crane lifting gear and fly in.
2. Position the hydraulic unit over the assembly position and lower onto the base beam (**10.3**).
3. Fix the hydraulic unit on the base beam with bolts M24x70 (**117**), self-locking nuts M24 (**121**) and washers M24 (**122**).
4. Remove the crane lifting gear.

(Fig. B4.01)

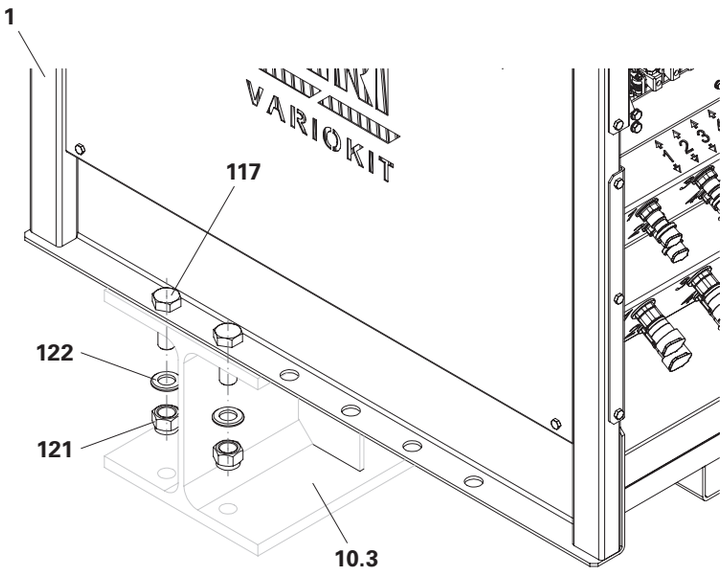


Fig. B4.01

Fix the hydraulic unit to the base beam so that the oil tank is centred on the base beam.

Modifying the liftframe

- The liftframe must be modified before it can be fitted to the Base Beam HDT.
- When moving the liftframe, use the lifting eyes provided.

Components

25	Liftframe LALD VARIOKIT

Modifying

1. Remove bolts M24x50 (**115a**) and move the girder connection at the top (**25.6**) into the top slot.
2. Fix the girder connection at the top (**25.6**) with bolts M24x50 (**115a**), do not tighten the bolts.

(Fig. B4.02)

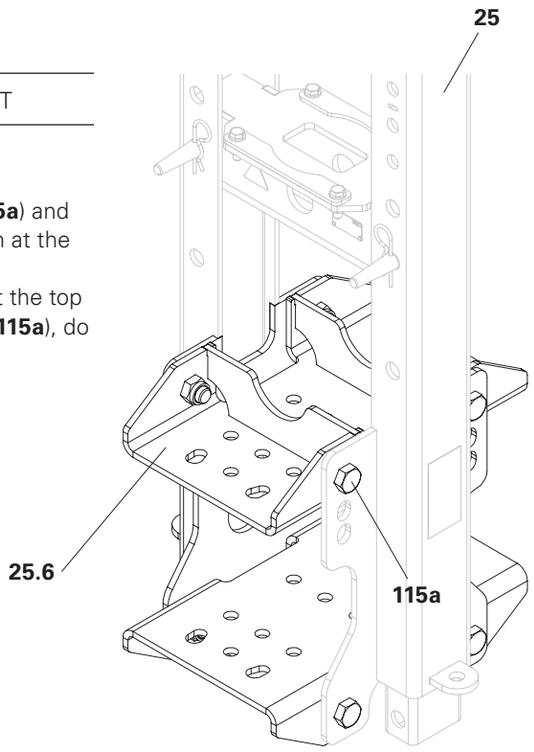


Fig. B4.02

Installing the liftframe

- When moving the liftframe, use the lifting eyes provided.
- Ensure that the upper support plate (**25.6**) is fixed in the top slots. (Fig. B4.03)

Components

10.3	Main Beam HDT
25	Liftframe LALD VARIOKIT
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24

Assembly

1. Loosen bolts M24x50 (**115a**).
2. Remove bolts M24x50 (**115b**) and remove bottom girder connection (**25.5**).
3. Attach the liftframe (**25**) to the crane lifting gear and fly in.
4. Lower the liftframe to the assembly position on the base beam (**10.3**).
5. Fix the bottom girder connection (**25.5**) in its original position with bolts M24x50 (**115b**) and nuts M24 (**120**).
6. Raise the liftframe so that it rests firmly against the base beam (**10.3**).
7. Fix the liftframe (**25**) to the base beam with bolts M24x70 (**117**), washers M24 (**122**) and self-locking nuts M24 (**121**).
8. Tighten bolts M24x50 (**115a**) at the upper girder connection (**25.6**).
9. Remove the crane lifting gear.

(Fig. B4.04)

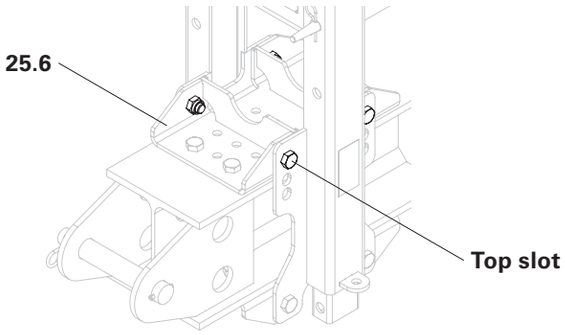


Fig. B4.03

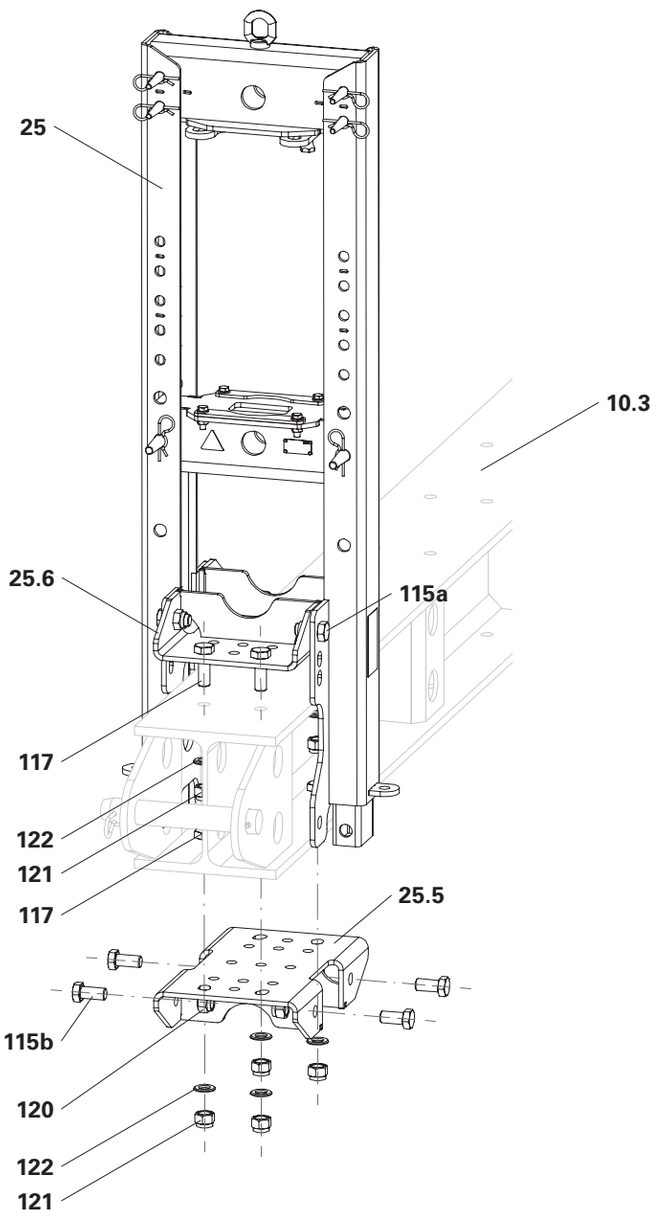


Fig. B4.04

Fitting the hinge slide

Warning
Heavy moving components!
During assembly, there is a risk of hands being crushed.
⇒ Wear safety gloves.
⇒ Ensure a safe and secure position.

Components

24	Hinge Slide LALD VARIOKIT
25	Liftframe LALD VARIOKIT

Assembly with Crane Rail A75

1. Position the hinge slide (**24**) under the liftframe (**25**).
2. Pull the cotter pin (**126b**) and the filler pin 26x120 (**125b**).
3. Hold the sliding part (**25.9**) in position.
4. Pull the cotter pin (**126a**) and the filler pin 26x120 (**125a**).
5. Lower the sliding part (**25.9**) and insert it into the mount of the hinge slide.
6. Insert filler pin 26x120 (**125b**) and secure with cotter pin (**126b**).
7. Insert the filler pin 26x120 (**125a**) one hole higher in the parking position and secure with cotter pin (**126a**).

(Fig. B4.05 + B4.06)

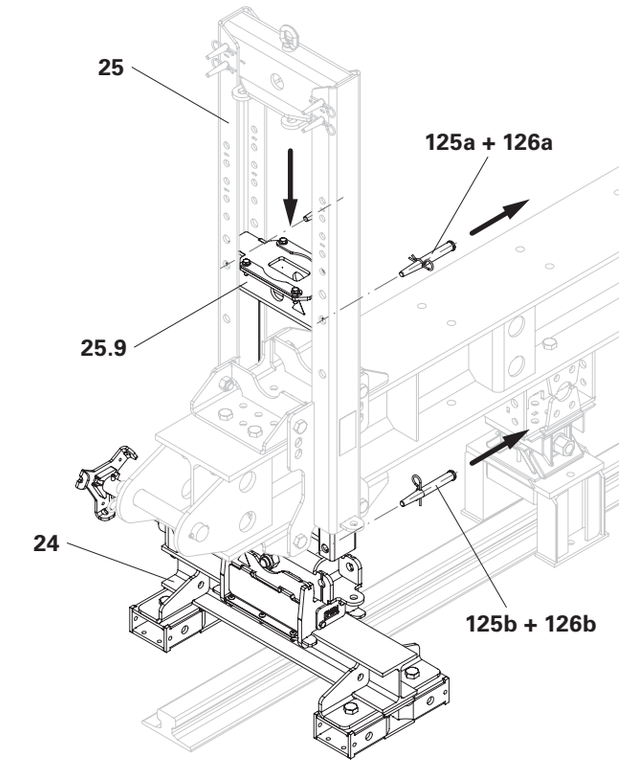


Fig. B4.05

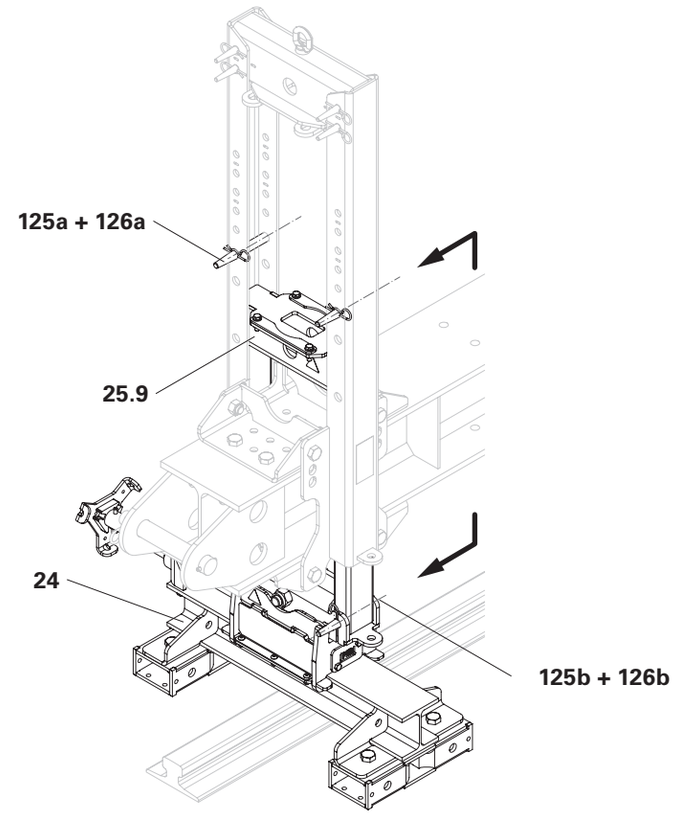


Fig. B4.06

Assembly with Crane Rail S49

1. Remove bolts M24x50 (**24.6**).
2. Turn the base profile (**24.5**) by 90°.
3. Fix the base profile with bolts M24x50 (**24.6**) and nuts M24 (**24.7**).
4. For the rest of the assembly process for the hinge slide, see Assembly with Crane Rail A75.

(Fig. B4.07)

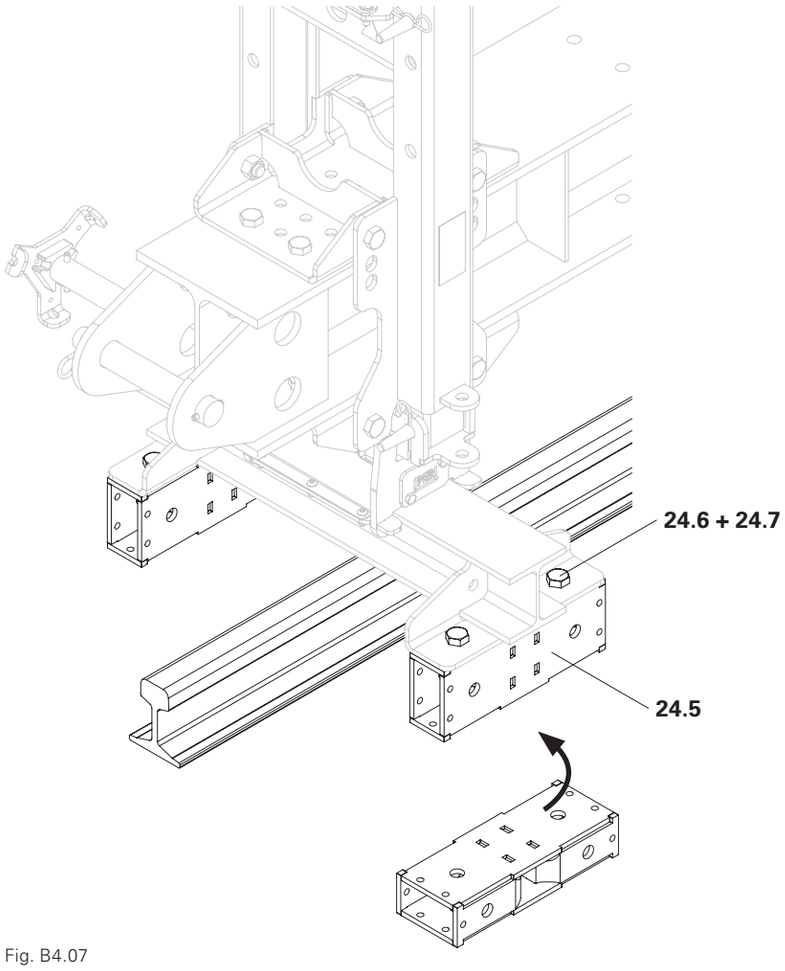


Fig. B4.07

Fitting the Wheel Block VARIOKIT 300 kN

The Wheel Block VARIOKIT is mounted on both base beams of the tunnel formwork carriage in the same installation position. The hydraulic drive protrudes to the left of the base beam in the direction of travel.

Components

10.3	Main Beam HDT
31	Wheel Block VARIOKIT 300 kN
118	Bolt M24x80
121	Nut M24 self-locking
122	Washer M24

Assembly without using the Lifting and lowering unit

1. Attach the wheel block (**31**) to the crane lifting gear and fly in.
2. Position the wheel block in the installation position.
3. Fix the wheel block to the base beam with bolts M24x80 (**118**), washers M24 (**122**) and self-locking nuts M24 (**121**).
4. Remove the crane lifting gear.

(Fig. B4.08)

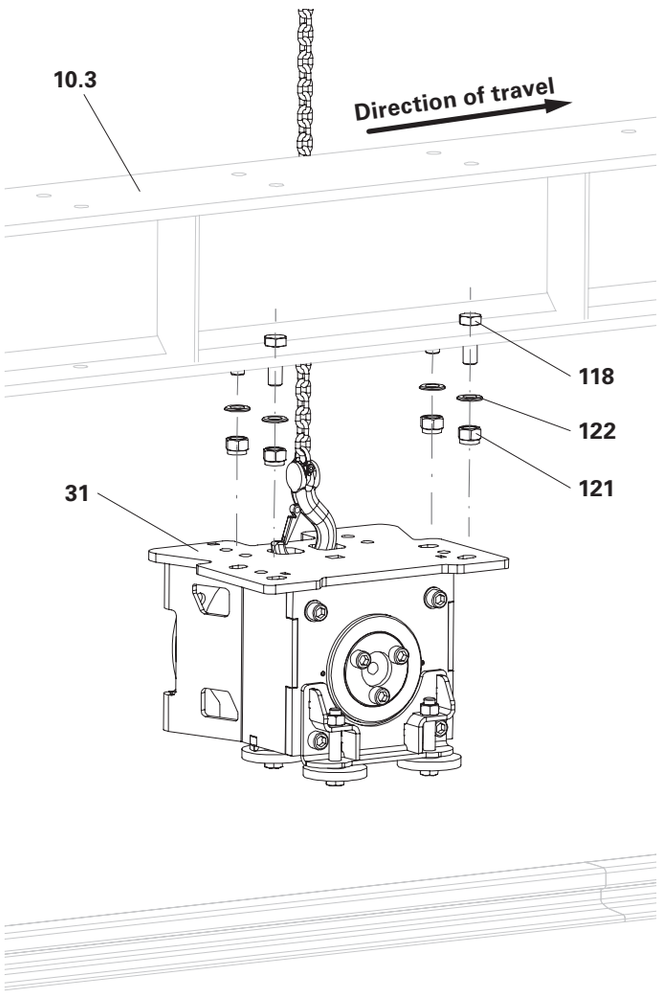


Fig. B4.08

Components

10.3 Main Beam HDT
22 Thrust Frame LALD HDW VARIOKIT
23 Assembly Kit Thrust frame
31 Wheel Block VARIOKIT 300 kN
117 Bolt M24x70
121 Nut M24 self-locking
122 Washer M24

Assembly when using the Lifting and lowering unit

1. Fix the pressure frame (**22**) to the base beam at the designated installation position using bolts M24x70 (**117**), washers M24 (**122**) and self-locking nuts M24 (**121**).
2. Attach the wheel block (**31**) to the crane lifting gear and fly in.
3. Position the wheel block in the installation position.
4. Fix the wheel block to the pressure frame with bolts M24x70 (**117**), Assembly Kit Thrust frame (**23**), washers M24 (**122**) and self-locking nuts M24 (**121**).
5. Remove the crane lifting gear.

(Fig. B4.09)

The hydraulic drive turns in a clockwise direction when looking at the wheel hub.

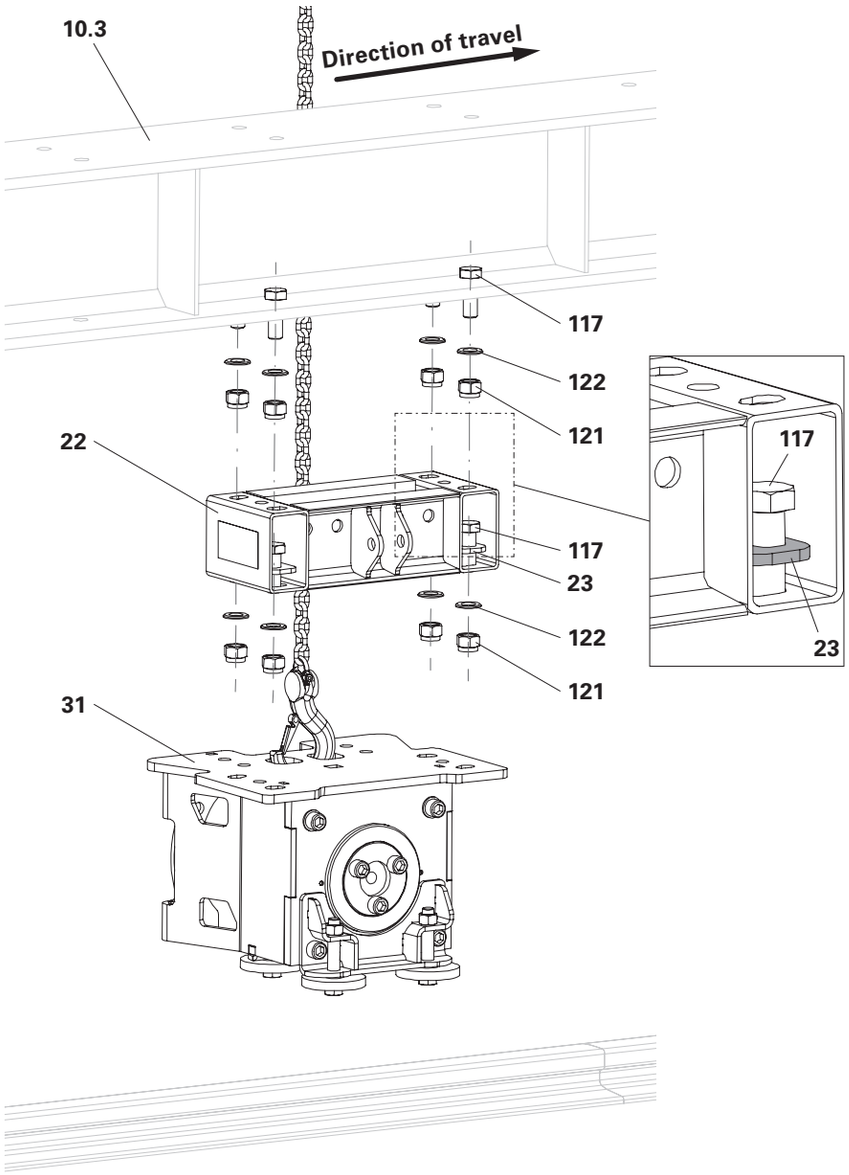


Fig. B4.09

Mounting the Hydraulic Drive VARIOKIT

Components

31	Wheel Block VARIOKIT 300 kN
32	Hydraulic Drive VARIOKIT

Assembly

1. Remove the coupling bolts M20x200 (**31.3**) and place to one side. The nuts will no longer be required.
2. Remove bolts M20x70 (**32.5**), nuts M20 (**32.6**) and washers M20 (**32.7**).
3. Attach the hydraulic drive (**32**) to the crane lifting gear and fly in.
4. Position the hydraulic drive in front of the wheel block (**31**) and then carefully push it into the wheel block.
5. Fix the hydraulic drive to the wheel block with bolts M20x70 (**32.5**), washers M20 (**32.7**) and nuts M20 (**32.6**).
   (Fig. B4.10a + B4.10b)
6. Remove the crane lifting gear.
7. Fit one coupling bolt M20x200 (**31.3**) in the wheel (**31.1**).
8. Turn the wheel until the coupling bolt on the hydraulic drive engages.
9. Position all coupling bolts and screw them in as far as they will go.

(Fig. B4.10b)

! Note

The coupling bolts leave a small gap after they have been fully tightened. This gap is important as it ensures that the bearings in the wheel block are not damaged.
Never close this gap with a higher tightening torque or shorter bolts!

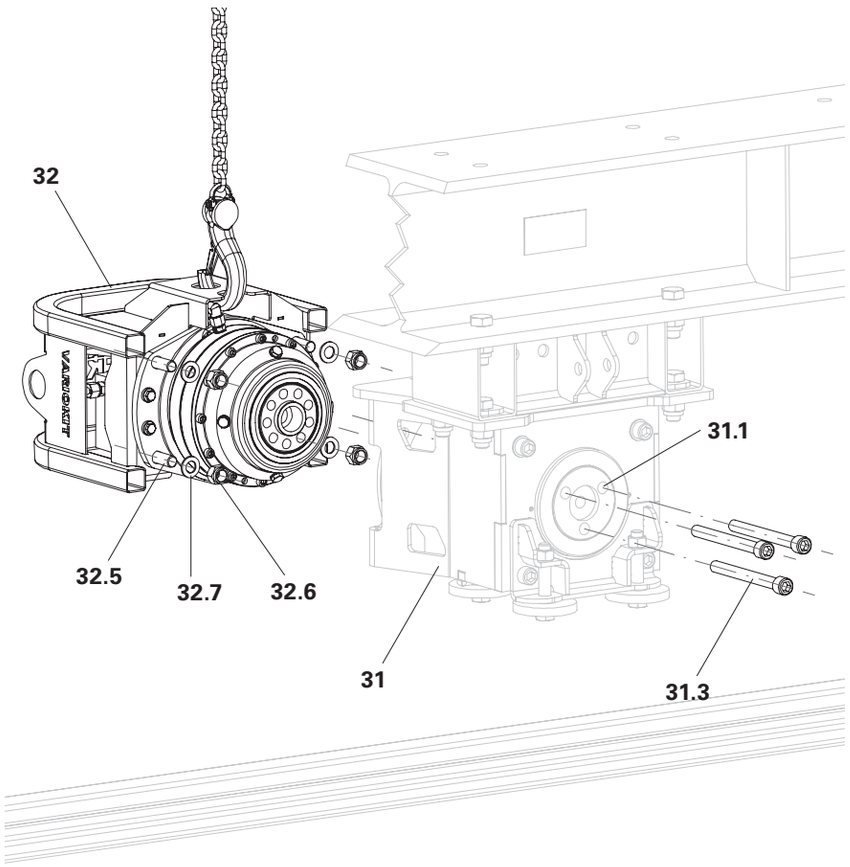


Fig. B4.10a

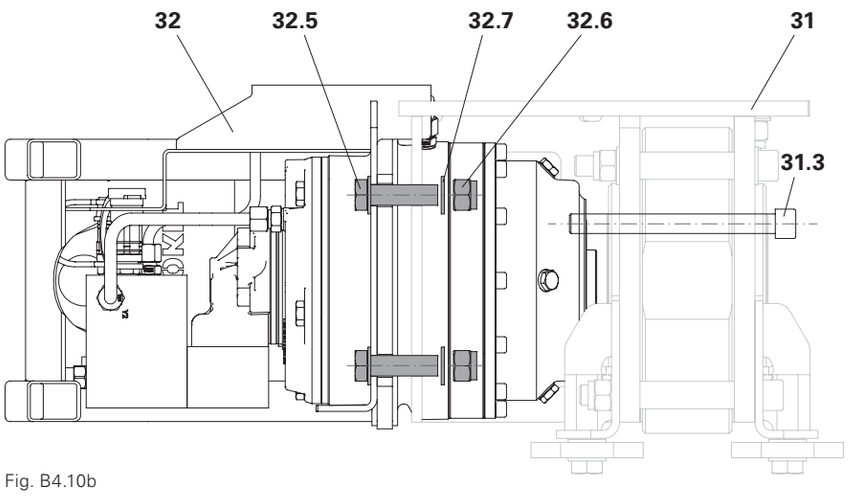


Fig. B4.10b

Mounting the Heavy Duty Wheel VARIOKIT

The heavy duty wheel is only used to move the tunnel formwork carriage. The heavy duty wheel runs on a crane rail; alternatively, on a U-rail.

Components

10.3	Main Beam HDT
20	Heavy Duty Wheel VARIOKIT
118	Bolt M24x80
121	Nut M24 self-locking
122	Washer M24

Assembly without using the Lifting and lowering unit

1. Position the heavy duty wheel (**20**) at the installation position.
2. Fix the heavy duty wheel to the base beam with bolts M24x80 (**118**), washers M24 (**122**) and self-locking nuts M24 (**121**).

(Fig. B4.11)

For easier and safer installation, insert two Tie Rods DW15 through the heavy duty wheel and secure them with DW15 cam nuts.

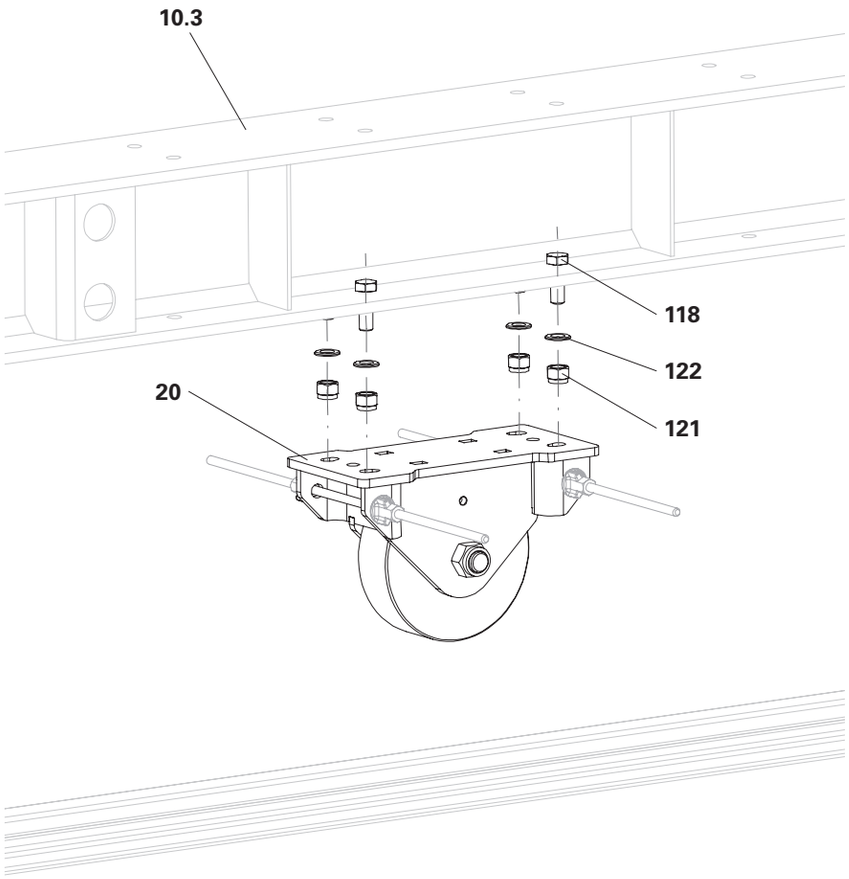


Fig. B4.11

Components

10.3	Longitudinal Beam VARIOKIT
20	Heavy Duty Wheel VARIOKIT
22	Thrust Frame LALD HDW VARIOKIT
23	Assembly Kit Thrust frame
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24

Assembly when using the Lifting and lowering unit

1. Fix the pressure frame (**22**) to the base beam (**10.3**) at the designated installation position using bolts M24x70 (**117**), washers M24 (**122**) and self-locking nuts M20 (**121**).
2. Position the heavy duty wheel (**20**) at the installation position.
3. Fix the heavy duty wheel to the pressure frame with bolts M24x70 (**117**), Assembly Kit Thrust frame (**23**), washers M24 (**122**) and self-locking nuts M24 (**121**).

(Fig. B4.12)

For easier and safer installation, insert two Tie Rods DW15 through the heavy duty wheel and secure them with DW15 cam nuts.

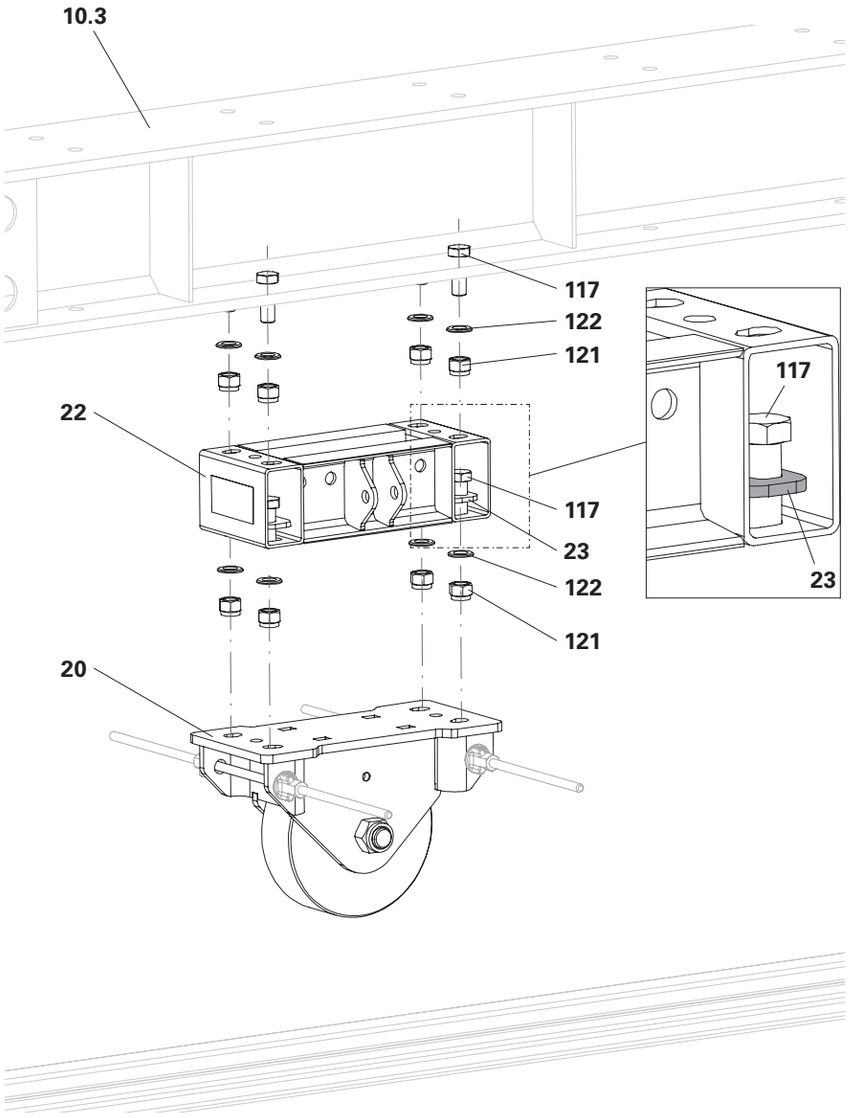


Fig. B4.12

Installing the Flange Cage HDW VARIOKIT

When using Crane Rail A75 or S49, the flange cage must be installed. The flange cage is used to guide the heavy duty wheel laterally on the rail.
The flange cage is used in pairs.

When using U-sections as rails, the flange cage must not be installed.

Components

20 Heavy Duty Wheel VARIOKIT
21 Flange Cage HDW VARIOKIT
103 Bolt M16x25
104 Bolt M16x150
105 Nut M16 self-locking
106 Washer M16

Assembly

1. Push the flange cage (**21**) over the wheel bolt (**20.1**) and press upwards.
2. Screw the flange cage (**21**) to the heavy duty wheel (**20**) on both sides using M16x25 bolts (**103**) and M16 washers (**106**).
3. Connect the two flange cages using M16x150 bolts (**104**) and M16 self-locking nuts (**105**).

(Fig. B4.13)

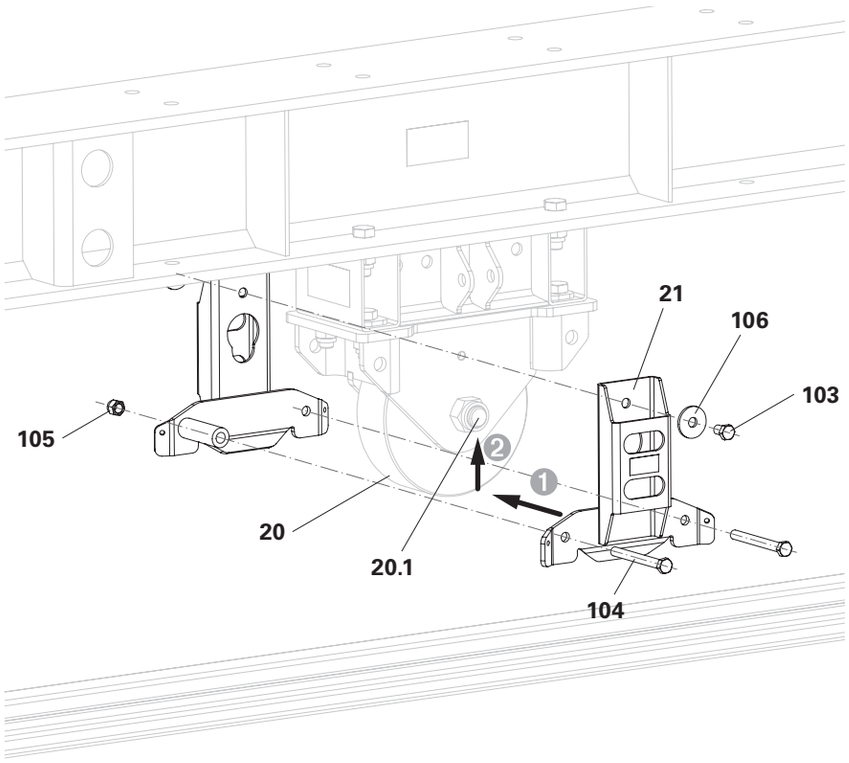


Fig. B4.13

Installing the Valve Block Hydr.-Drive

Components

33	Valve Block Hydr.-Drive	
37	Steel Waler SRU 147	1x
123	Filler Pin 21x120	2x
124	Cotter Pin 4/1 ga	2x
130	Wingnut pivot plate	2x
131	Tie Rod DW15	2x
132	Hex Nut DW15	4x

Assembly

1. Mount one Hex. Nut DW15 (**132a**) on each tie rod (**131**).
2. Insert the tie rods through the drilled holes in the base beam (**10.3**) and tighten with Hex. Nut DW15 (**132b**).
3. Position the Steel Waler SRU 147 (**37**) on the base beam and secure it with wingnut pivot plates (**130**).

(Fig. B4.14)

4. Fix the Valve Block Hydr.-Drive (**33**) at the end of the Steel Waler SRU 147 (**37**) using two filler pins 21x120 (**123**) and secure with Cotter Pins 4/1 ga (**124**).

(Fig. B4.15)

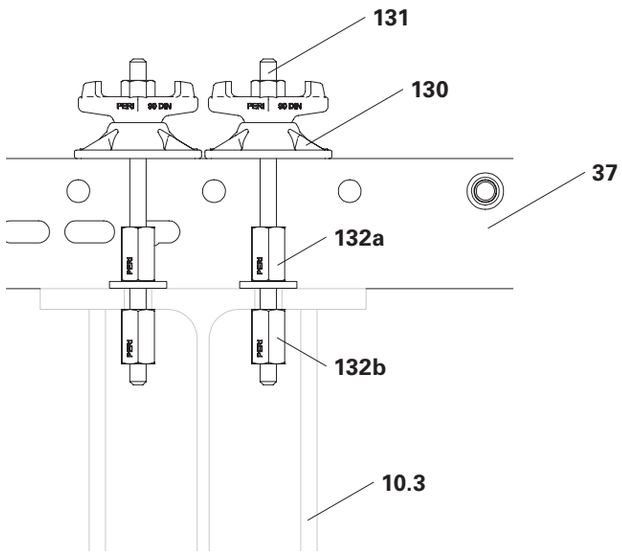


Fig. B4.14

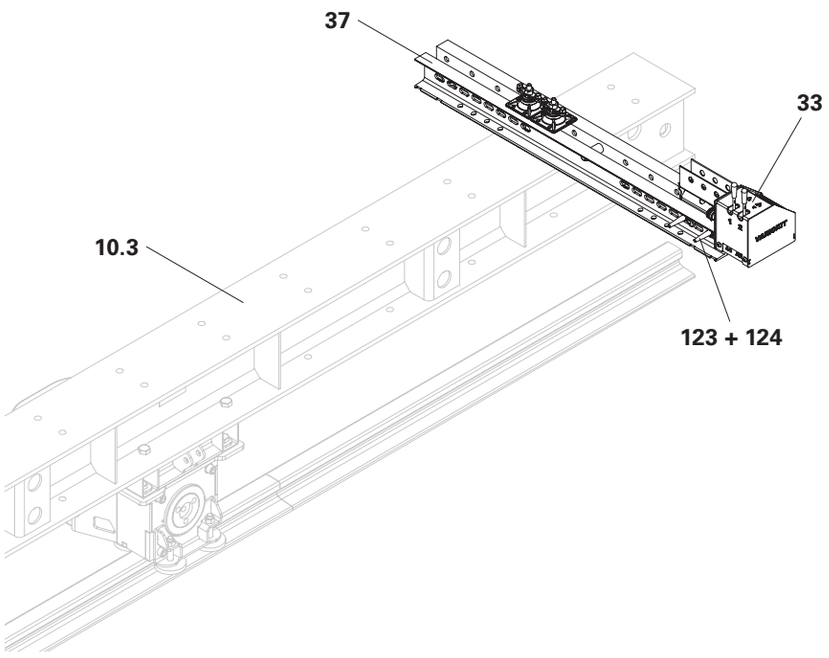


Fig. B4.15

Fitting the Support Wedgebox VARIOKIT

- The support wedgebox acts as a spacer and compensates for height differences between the base beam and the lowering wedge and support frame rail.
- The support wedgebox transfers vertical loads that occur during concreting. This completely relieves the lifting and lowering cylinders.

Components

10.3	Main Beam HDT
26	Support Wedgebox VARIOKIT
117	Bolt M24x70
121	Nut M24 self-locking
122	Washer M24

- With the Crane Rail A75, the support wedgebox is mounted horizontally. (Fig. B4.16)
- With the Crane Rail S49, the support wedgebox is mounted vertically. (Fig. B4.17)

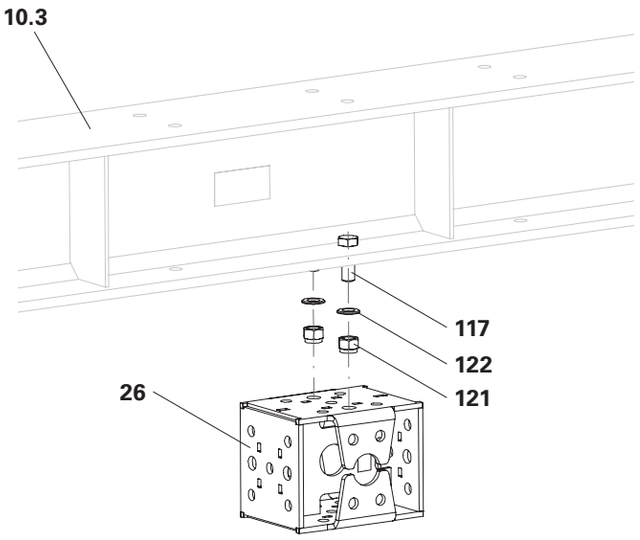


Fig. B4.16

Assembly

1. Position the support wedgebox (**26**) at the installation position.
2. Fix the support wedgebox to the base beam with bolts M24x70 (**117**), washers M24 (**122**) and self-locking nuts M24 (**121**).

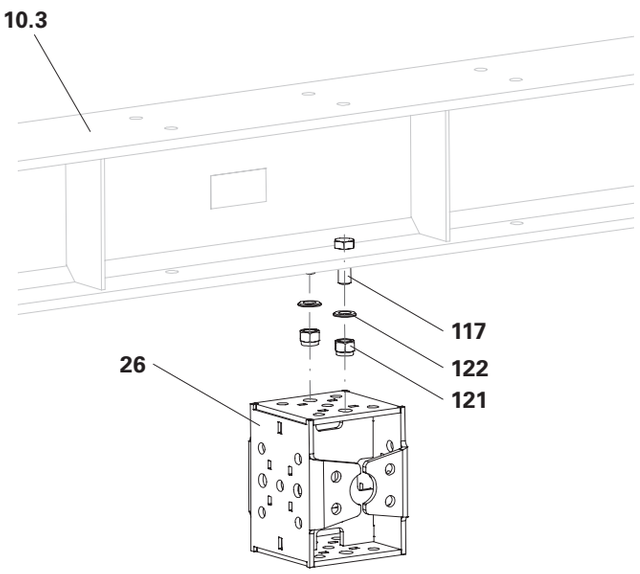


Fig. B4.17

Installing the lifting and lowering cylinder

Assembly

1. Attach the main beam (**25.1**) to the attachment point on the crane.
2. Pull the Cotter Pin 4/1 ga (**124**) and filler pin 21x120 (**123**).
3. Fly out the main beam and place next to the lifting and lowering cylinder (**2**).
4. Pull the linch pin 10x65 (**129a**) and bolt 50x175 (**128a**).
5. Loosen the threaded bolts (**25.8**), pull out the slide plate (**25.7**) and secure with threaded bolts (**25.8**). (Fig. B5.01)
   → The recess in the main beam is now visible.
6. Push the piston side into the main beam.
7. Insert bolt (**128a**) and secure with linch pin (**129a**).
8. Position the main beam with lifting and lowering cylinder above the liftframe.
9. Pull the linch pin 10x65 (**129b**) and Pin Ø50x175 (**128b**).
10. Lower the main beam together with the lifting and lowering cylinder, insert into the liftframe and the lower main beam.
11. Insert bolt (**128b**) and secure with linch pin (**129b**).
12. Insert filler pin 21x120 (**123**) and secure with Cotter Pin 4/1 ga (**124**).

(Fig. B5.02)

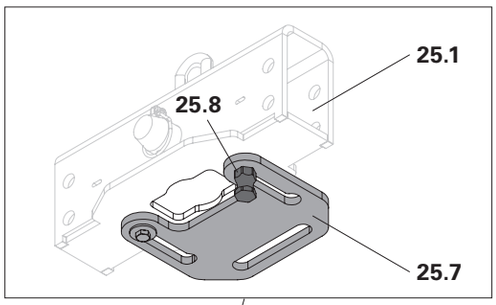


Fig. B5.01

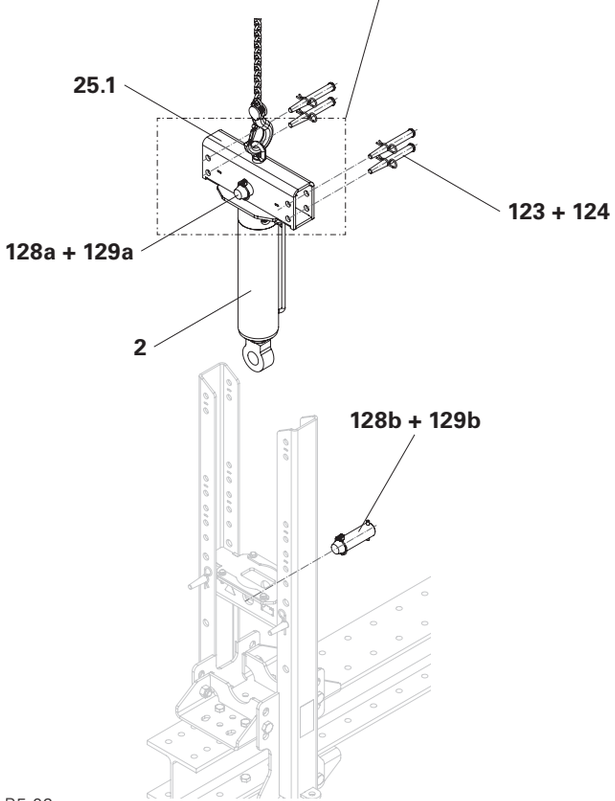


Fig. B5.02

Pay attention to the installation position of the lifting and lowering cylinder. Through the installation position shown, the slide plate also provides protection for the hydraulic connections.

Installing the Hydr. Jack 250 kN

Preparation

1. Extend the piston (**27.3**) by approx. 5 mm.
2. Unscrew the spindle (**27.4**) by approx. 40 mm.

(Fig. B5.03)

Assembly

1. Release the clamping screws M12x40 (**25.13**).
2. Position the Hydr. Jack 250 kN (**27**) on the cross girder (**25.2**) and turn until the Hydr. Jack fits between the clamping plates (**25.12**).
3. Raise the clamping plates and turn the Hydr. Jack by 90°.
4. Tighten the clamping screws.
5. Fix the main beam (**25.1**) in its position.
6. Pull the Cotter Pin 4/1 ga (**124**) and filler pin 21x120 (**123**).

(Fig. B5.04)

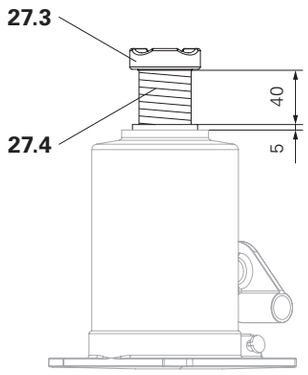


Fig. B5.03

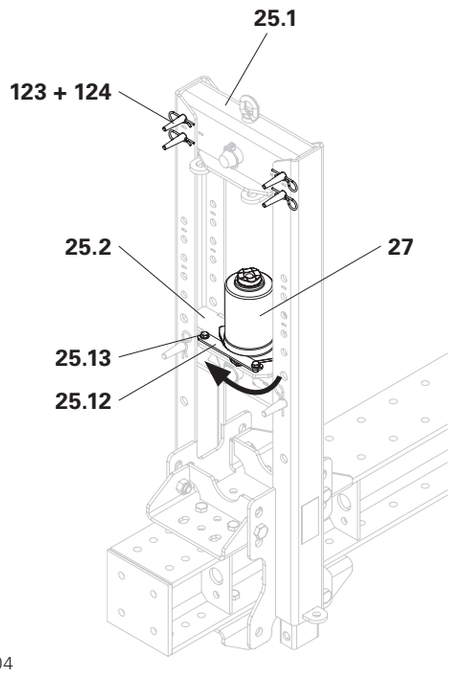


Fig. B5.04

7. Lower the main beam from position 1 to position 2; the markings on the gallows and main beam are positioned opposite each other.
8. Insert filler pin 21x120 (**123**) and secure with Cotter Pin 4/1 ga (**124**).

(Fig. B5.06)

9. Insert the slide plate (**25.7**) and secure with the threaded bolt (**25.8**).

(Fig. B5.05)

Only when the slide plate (**25.7**) is pushed in can the Hydr. Jack transfer the lifting force to the main beam (**25.1**).

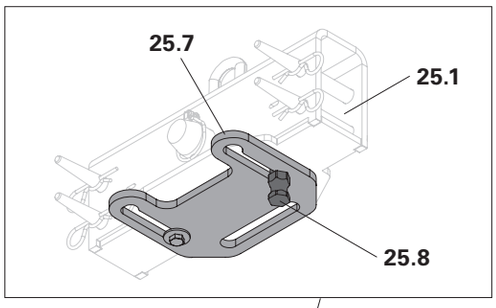


Fig. B5.05

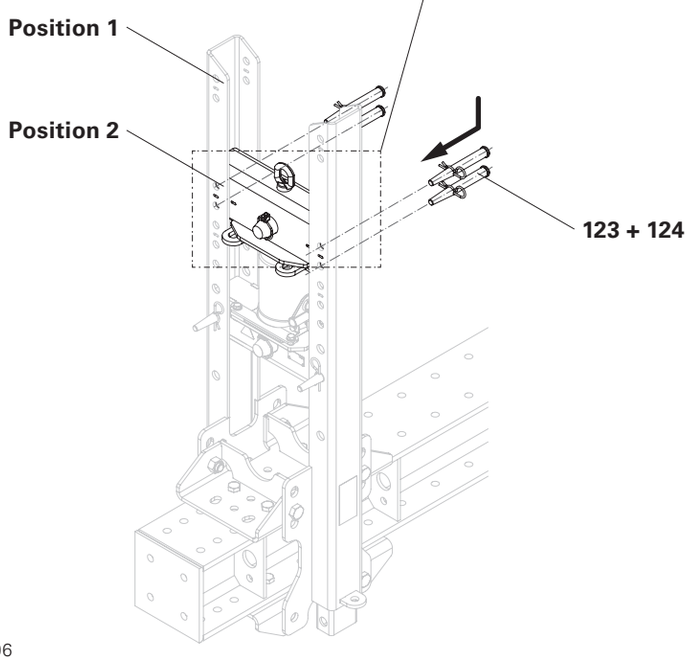


Fig. B5.06

Installing Hydr.-Cylinder

Requirement
- The formwork construction is installed.
- The work platforms are installed.

Components

3 Hydr.-Cylinder
126 Cotter Pin 5/1 ga
127 Pin Ø40x160

Assembly
1. Position the Hydr.-Cylinder (**3**) with the piston side at the assembly position.
2. Push the piston side (**3.4**) into the connection bracket (**36**).
3. Insert Pins Ø40x160 (**127a**) and secure with Cotter Pins 5/1 ga (**126a**).
4. Swivel the Hydr.-Cylinder in the distribution waler (**35**) and align.
5. Insert Pins Ø40x160 (**127b**) and secure with Cotter Pins 5/1 ga (**126b**).

(Fig. B5.07)

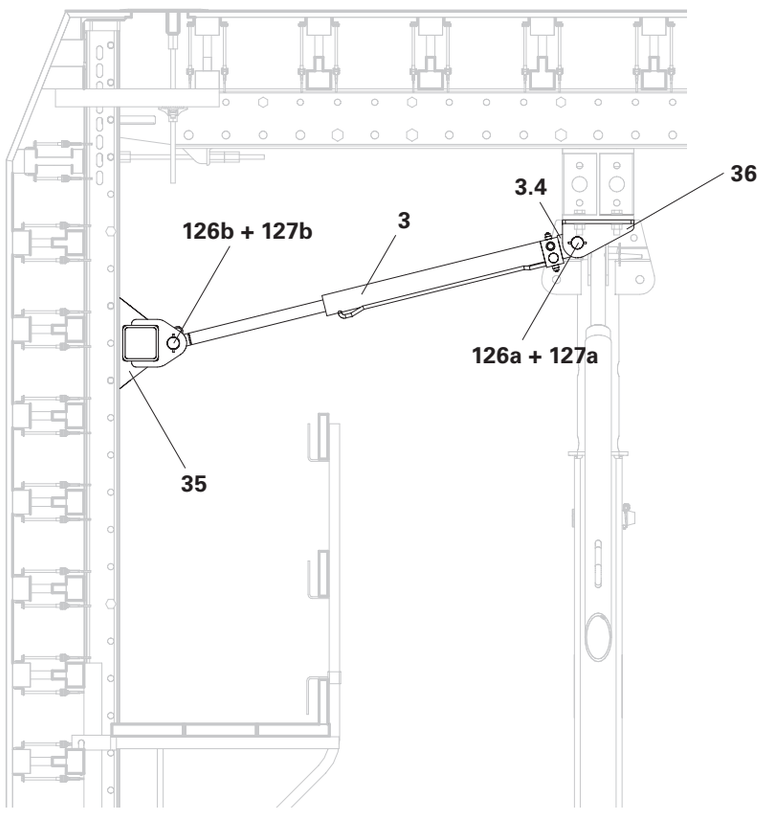


Fig. B5.07

Hydr.Pump RCS 4x190 bar for hydraulic traversing drive

If you are only installing the hydraulic traversing drive, it can be operated with the Hydr.Pump RCS 4x190 bar. The hydraulic traversing drive is controlled using the hand levers on the hydraulic unit.

Caution

Risk of tripping across the entire working area due to the hydraulic hoses!

⇒ Guide the hydraulic hoses along the supporting structure and secure with cable ties.

Components

4 Hydr.Pump RCS 4x190 bar
32 Hydraulic Drive VARIOKIT
50 Hydraulic Hose DN08
51 Hydraulic Hose DN12
57 Hydr. Accum. Piece RCS
58 Convers.Set Hydr-Pump RCS-VTC
59 Hydr.T-Piece 2SN-DN08-FF

The length of the hydraulic hoses is
- as short as possible.
- as long as required.

If the hydraulic hoses are too long, this creates unnecessary pressure losses.

Modifying the Hydr. Pump RCS 4x190 bar

! Depressurise the hydraulic system.

1. Release the return flow line (**4.1**) from the return flow filter connection (**4.2**).
2. Screw the Convers.Set Hydr-Pump RCS-VTC (**58**) to the return flow filter connection (**4.2**).
3. Screw the return flow filter connection (**4.1**) to the Convers.Set Hydr-Pump RCS-VTC (**58**).
4. Connect the Hydr.T-Piece 2SN-DN08-FF (**59**) to the Convers. Set Hydr-Pump RCS-VTC (**58**) and guide the two hose ends out of the hydraulic unit to the rear.

(Fig. B6.01)

Connecting the hydraulic traversing drive

! Depressurise the hydraulic system.

1. Clean the hydraulic quick couplers.
2. Connect the hydraulic traversing drive as shown in Fig. B6.02.

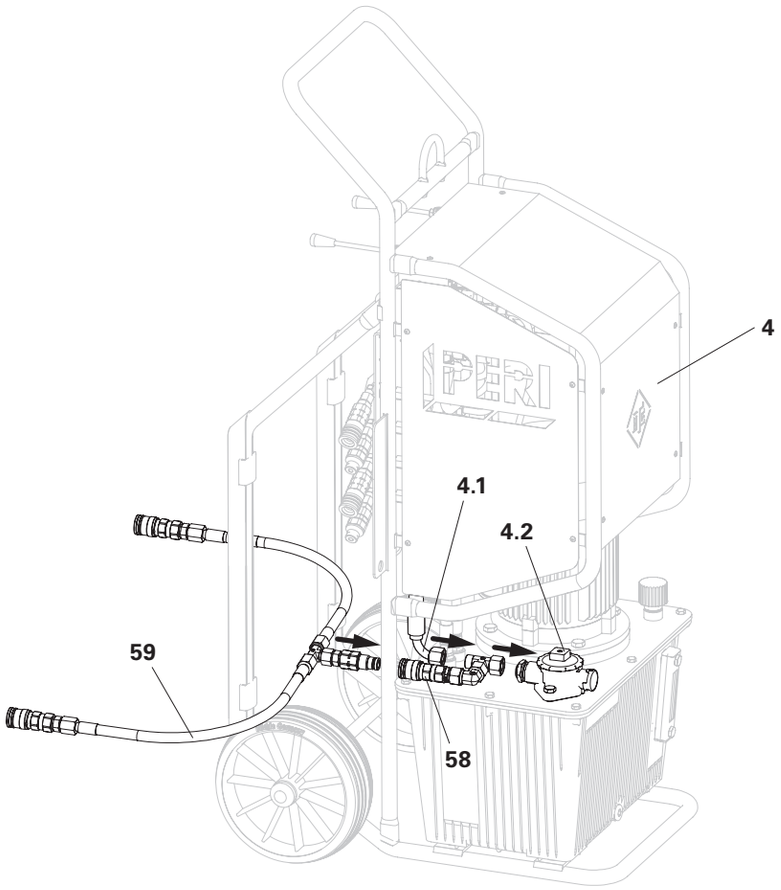


Fig. B6.01

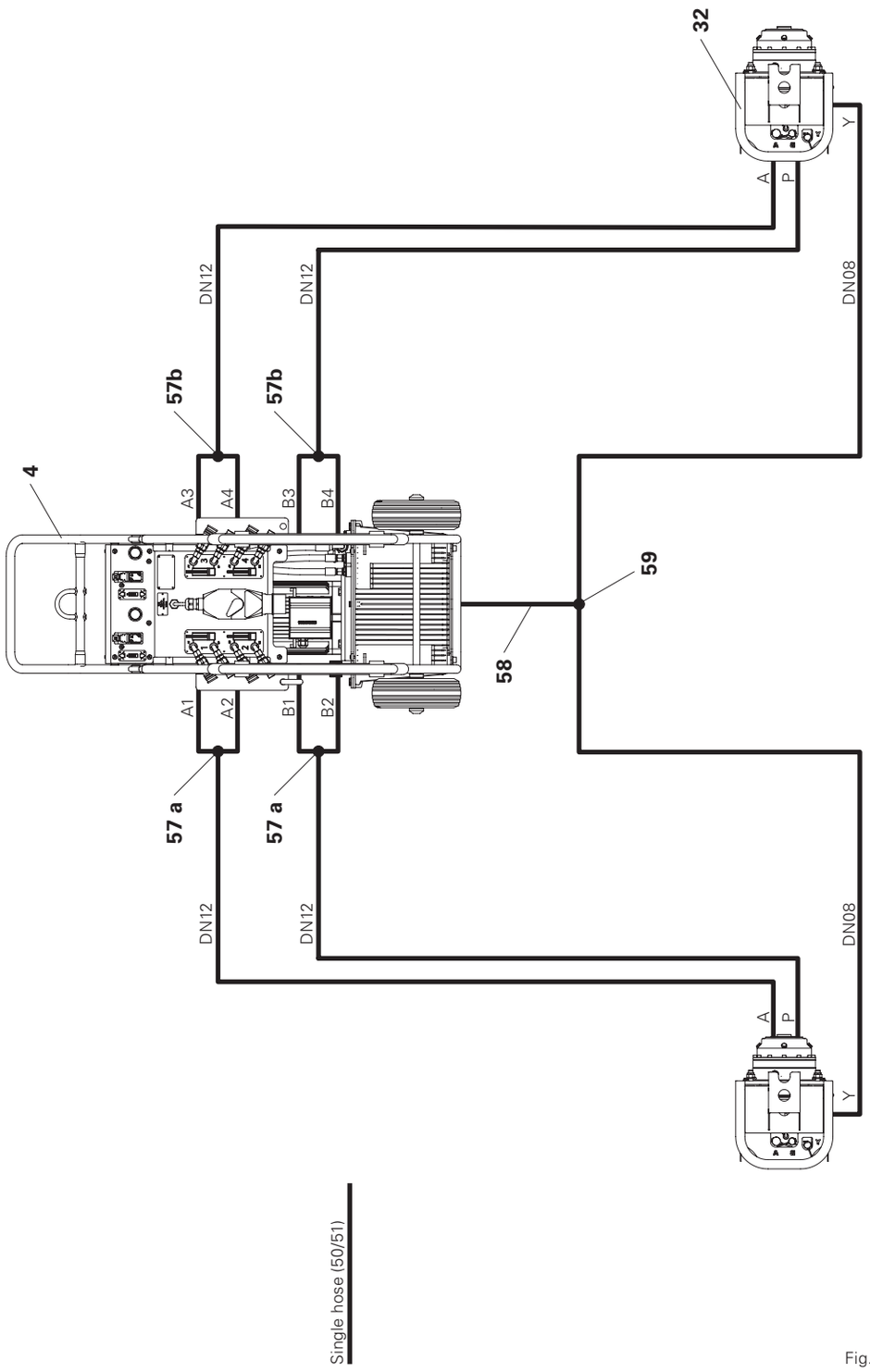

32
Y
A
P
DN12
DN12
DN08
57b
57b
4
A3
A4
B3
B4
59
58
A1
A2
B1
B2
57 a
57 a
DN12
DN12
DN08
A
P
Y
Single hose (50/51)

Fig. B6.02

Hydr.Pump VARIOKIT 8-fold with hydraulic traversing drive

If the hydraulic traversing drive is installed in addition to the lifting and lowering cylinders and the Hydr.-Cylinder, the hydraulic unit must be modified for this particular use.

Caution

Risk of tripping across the entire working area due to the hydraulic hoses!

⇒ Guide the hydraulic hoses along the supporting structure and secure with cable ties.

Components

1 Hydr.Pump VARIOKIT 8-fold
2 Lifting and lowering cylinder
3 Hydr.-Cylinder
32 Hydraulic Drive VARIOKIT
33 Valve Block Hydr.-Drive
50 Hydraulic Hose DN08
51 Hydraulic Hose DN12
52 Hydraulic Twin Hose RCS
59 Hydr.T-Piece 2SN-DN08-FF

The length of the hydraulic hoses is
- as short as possible.
- as long as required.

If the hydraulic hoses are too long, this creates unnecessary pressure losses.

Connecting the hydraulic traversing drive

! Depressurise the hydraulic system.

1. Open the hydraulic unit (**1**). (Fig. B6.03)
2. Disconnect the bypass connection (**1.12**) on the hydraulic quick coupler.
3. Guide the two hose ends forwards out of the hydraulic unit.
4. Remove the protective cap from the leakage oil connection (**1.17**).
5. Clean the hydraulic quick couplers.
6. Connect the Hydr.T-Piece 2SN-DN08-FF (**59**) to the leakage oil connection and guide the two hose ends forwards out of the hydraulic unit.
7. Connect the hydraulic traversing drive as shown in Fig. B6.04.

For line lengths ≤ 5 m between the bypass connection (**1.12**) and the Valve Block Hydr.-Drive (**33**), hydraulic hoses with DN08 can be used.

Connecting the hydraulic cylinder

! Depressurise the hydraulic system.

1. Clean the hydraulic quick couplers.
2. Connect the hydraulic cylinders (**2 + 3**) to the hydraulic unit (**1**) as shown in Fig. B6.04.

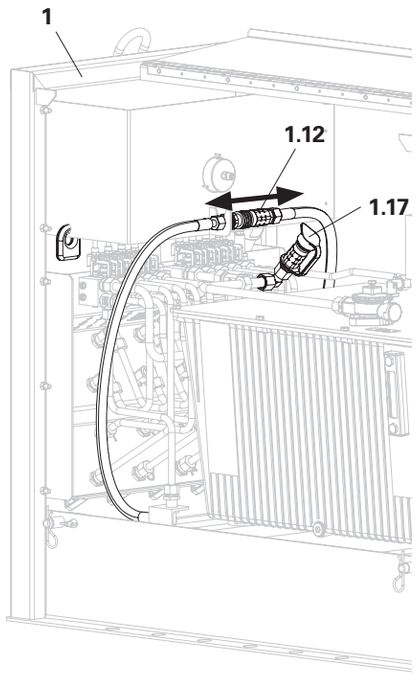


Fig. B6.03

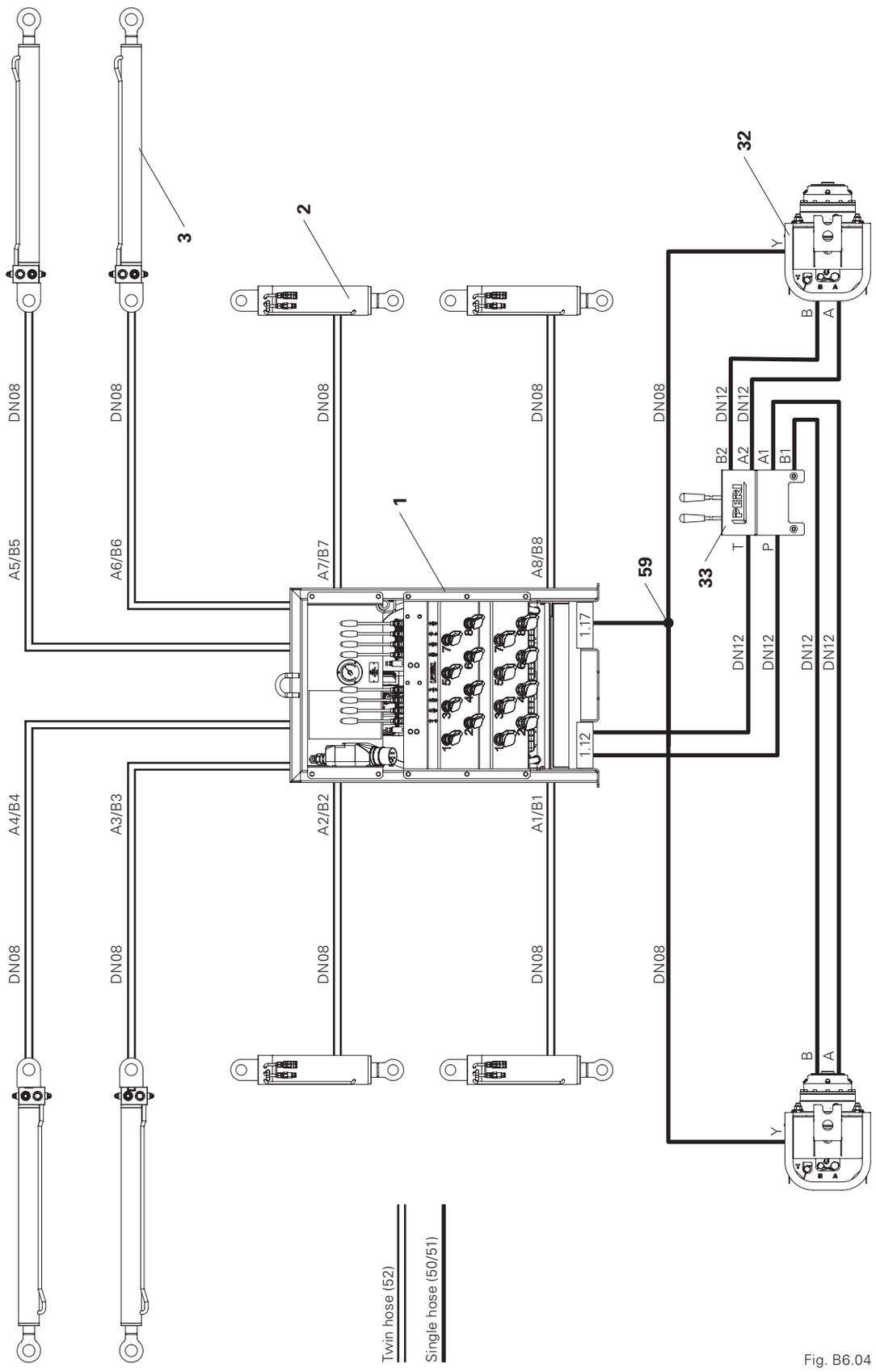

1
2
3
32
33
59
1.17
1.12
DN08
DN12
A5/B5
A6/B6
A7/B7
A8/B8
A4/B4
A3/B3
A2/B2
A1/B1
B2
A2
A1
B1
T
P
B
A
Y
Twin hose (52)
Single hose (50/51)

Fig. B6.04

Hydr.Pump VARIOKIT 8-fold without hydraulic traversing drive

Caution

Risk of tripping across the entire working area due to the hydraulic hoses!

⇒ Guide the hydraulic hoses along the supporting structure and secure with cable ties.

Components

1 Hydr.Pump VARIOKIT 8-fold
2 Lifting and lowering cylinder
3 Hydr.-Cylinder
52 Hydraulic Twin Hose RCS

Connecting the hydraulic cylinder

! Depressurise the hydraulic system.

1. Clean the hydraulic quick couplers.
2. Connect the hydraulic cylinders (**2 + 3**) to the hydraulic unit (**1**) as shown in Fig. B6.05.

The length of the hydraulic hoses is
- as short as possible.
- as long as required.

If the hydraulic hoses are too long, this creates unnecessary pressure losses.

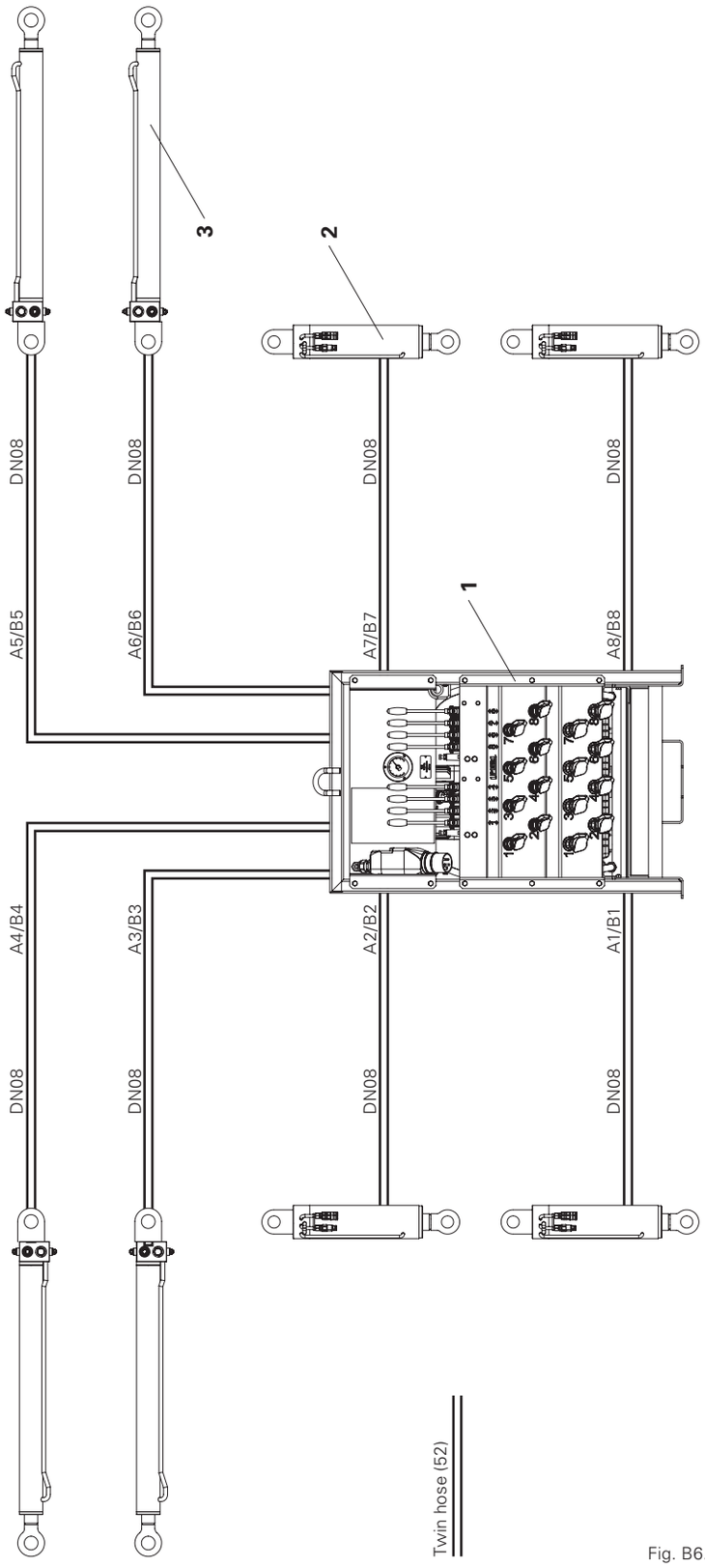


Fig. B6.05

Electrical supply line

Caution

Risk of tripping in the entire work area due to power cable!

⇒ Guide the power cable along the supporting structure and, if necessary, secure with cable ties.

⇒ Arrange the power cable in such a way that it does not get caught in the supporting structure or on the building when the hydraulic cylinders are moving in and out and when the tunnel formwork carriage is moving.

Danger

High voltage!
Injuries due to electric shock.

⇒ Do not
- **run over**
- **twist**
- **kink**
- **crush**
- **or tension the connection cable.**

Components

1.3	Adaptor Cable RCS
9	Power cable CEE 16A

Connecting the hydraulic unit

1. Insert the RCS adaptor cable (**1.3**) into the motor protection plug (**1.2**).
2. Insert power cable CEE 16A (**9**) into the Adaptor Cable RCS (**1.3**).
3. Insert the power cable CEE 16A (**9**) into a 16A CE connection.

(Fig. B6.06)

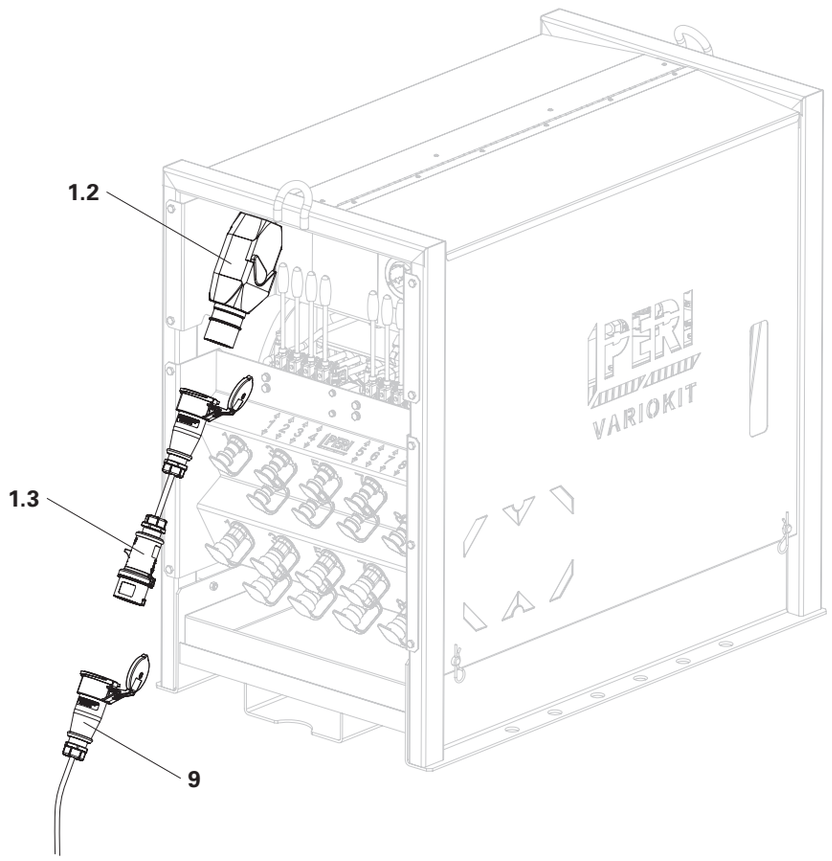


Fig. B6.06

General information

Wear safety goggles and suitable protective gloves when working on the hydraulic system.

Note

- For safe handling of the hydraulic oil, follow the instructions that are included in the safety data sheet of the hydraulic oil selected for use.
- Avoid any bodily contact with the hydraulic oil.
- Ensure that the hydraulic oil does not come into contact with the structure.
- For information on cleaning and correct disposal, see the safety data sheet of the hydraulic oil selected for use.
- Do not mix hydraulic oils of different quality.

Recommended hydraulic oil

- For operating temperatures from 0 °C to 45 °C:
  PERI Hydraulic Oil HV LP46, 20 litres
  Article no. 057376.
- For operating temperatures of -20 °C to -30 °C:
  – Shell Tellus T32
  – AVIA Syntofluid PE-B 30

- The hydraulic oil used must be free of water and dirt.
- Avoid overfilling.
- The hydraulic cylinders must always be fully retracted when filling.
- The oil tank and filling filter must be free of water and dirt.
- Filling must be carried out using a filling filter (filling sieve, filling funnel with sieve insert or ultra-fine filter).
- All information applies to
  – initial filling,
  – changing the hydraulic oil,
  – topping up the hydraulic oil.

Preparation

Filling the hydraulic unit with hydraulic oil

1. Clean the oil tank in the area of the filling opening (**1.9**).
2. Unscrew the sealing cap of the filling opening and put to one side. Ensure that the sealing cap remains free of any dirt.
3. Fill the oil tank with the help of the funnel up to the top marking of the oil level indicator (**1.8**). Avoid overfilling.
4. Close the filling opening with the sealing cap.
5. Check the leak tightness of the oil tank.
6. Record type of oil used and amount in the maintenance chart.

(Fig. C1.01)

- Approx. 80 litres of hydraulic oil are required for the first filling.
- The hydraulic oil filter pump facilitates the first filling process.
- Comply with the maintenance chart which can be found in the appendix of these assembly instructions.

Checking the oil temperature and oil level

- The oil level can vary depending on the type, quantity and size of the consumer.
- The operating temperature increases with an increase in the outside temperature.
- Recommended operating temperature: 0 °C to 45 °C (average temperature of the hydraulic oil in the tank).
- With low temperatures, warm up hydraulic oil by flushing the system (at least 20 °C) in order to reach the required start viscosity.

Note

If the oil temperature exceeds 70 °C, switch off the hydraulic unit.
Identify and eliminate the cause of overheating (e.g. no pressureless flow, outside temperature too high).

1. Read the operating temperature and oil level on the oil level indicator with temperature display (**1.8**).

(Fig. C1.01)

Oil level too low

- the operating temperature increases,
- air inclusions occur,
- the hydraulic cylinder may extend jerkily.

- Keep the oil level indicator (**1.8**) clean.
- Monitor the oil level at regular intervals.
- Top up missing hydraulic oil immediately.
- Determine and eliminate the cause of excessive oil consumption.
- Regularly check the temperature of the electric motor and hydraulic oil during operation.

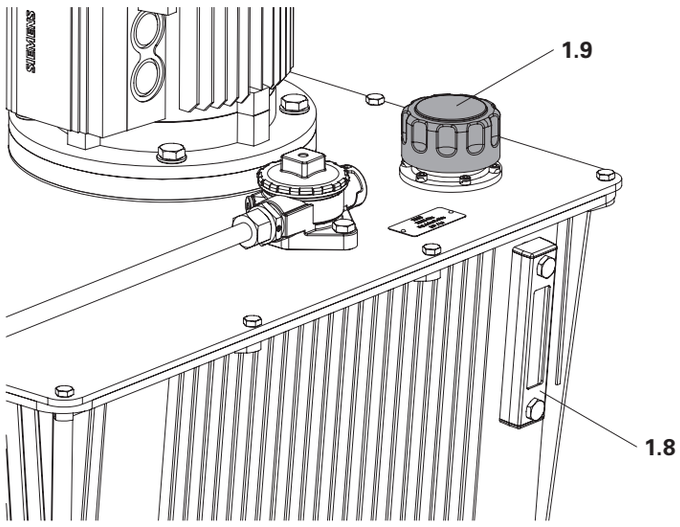


Fig. C1.01

Switching on the hydraulic unit

Danger

Risk of crushing through uncontrolled movement of the hydraulic cylinders!

⇒ Move all hand levers to the centre position.

⇒ Leave the danger zone behind the wall formwork and on the tunnel formwork carriage.

Switching on

1. Check that all hand levers are in the centre position.
2. Switch on the hydraulic unit with the motor switch (**1.24**).
3. Listen out for any unusual pump noises. This is an indication of the incorrect direction of rotation of the motor.
4. Check the direction of rotation of the motor. If the warning light is red, monitor the rotating field (**1.25**) (Fig. C1.02):
   – Switch off the hydraulic unit.
   – Unplug the power cable CEE 16A.
   – Turn the phase inverter by 180° in the Adaptor Cable RCS (**1.3**). (Fig. C1.03)
   → The rotating field is rotated.
   – Plug in the power cable CEE 16A.
5. Switch on the hydraulic unit.

→ The hydraulic unit is ready for operation and circulates freely.

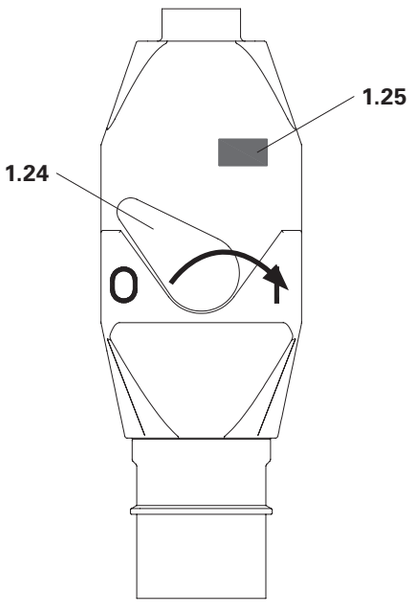


Fig. C1.02

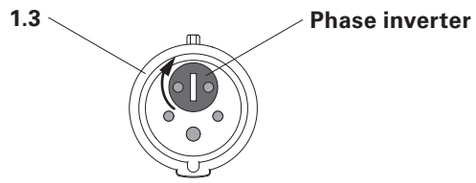


Fig. C1.03

Bleeding the hydraulic system

The hydraulic system must be bled to ensure that the system functions correctly.
This is necessary:
- for every initial start-up.
- after replacing hoses or hydraulic cylinders.
- after maintenance tasks.
- in the event of synchronisation problems.

Warning

If the hydraulic cylinder is not completely bled, this can lead to uncontrolled and jerky movements!
As a result, people can become trapped and seriously injured.
⇒ Keep clear of moving parts when operating the hydraulic system.
⇒ Bleed the system regularly and when necessary.

Note

- When topping up the hydraulic oil, all hydraulic cylinders must be fully retracted, otherwise the unit may overflow.
- Check the oil level in the hydraulic unit regularly and top up if necessary.

Requirement
- The hydraulic unit is filled with hydraulic oil.
- All hydraulic cylinders have been installed.
- The hydraulic traversing drive has been installed.
- All hydraulic hoses have been correctly connected.

Bleeding the hydraulic hoses
1. Disconnect all hydraulic hoses from the hydraulic cylinders and the hydraulic drive.
2. Short-circuit the two hose ends. (Fig. C1.04a + C1.04b)
3. Switch on the hydraulic unit.
4. Operate the hand lever for the first hydraulic cylinder for approx. one minute.
5. Check the level in the oil tank and top up if necessary.

Repeat steps 4 – 5 for all other hydraulic cylinders.

6. Connect all hydraulic hoses to the hydraulic cylinders.
7. Operate the hand lever for the left hydraulic drive for approx. one minute.
8. Check the level in the oil tank and top up if necessary.

Repeat steps 7 – 8 for the right hydraulic drive.

9. Connect all hydraulic hoses to the hydraulic drives.

→ The hydraulic hoses have now been bled.

Fig. C1.04a

Fig. C1.04b

Bleeding the Hydr.-Cylinder

1. Remove bolts from the Hydr.-Cylinder on the piston rod side.
2. Set down the hydraulic cylinders or let them hang so that the piston rod is free to move when extended.
3. Press the corresponding hand lever and hold for two minutes in order to displace the air pockets on the rod side.
   → The piston rods of the hydraulic cylinders extend.
   → The sound of blubbering in the oil tank indicates the bleeding procedure is taking place.
4. Check the level in the oil tank and top up if necessary.
5. Check the free circulation of the hydraulic oil with extended hydraulic cylinders.
6. Check components and connections for external leaks.
7. Fix flapping lines and hoses.
8. Pull the corresponding hand lever and hold for two minutes in order to displace the air pockets on the piston side.
   → The piston rods of the hydraulic cylinders retract.
   → The sound of blubbering in the oil tank indicates the bleeding procedure is taking place.

- Check the oil level.
- Check the synchronisation and end position of all hydraulic cylinders.

9. Switch off the hydraulic unit and leave it to stand for at least one hour so that the air bubbles are released from the oil.
10. Fully extend and retract all hydraulic cylinders several times until any vibrations in the hydraulic cylinders have subsided. Hold the hand levers for approx. one minute when the end position is reached.
11. Bolt in the Hydr.-Cylinder on the piston rod side.

Never tighten leaking screw connections under high pressure. Switch off the hydraulic unit to relieve the pressure.

Bleeding the lifting and lowering cylinder

1. Disconnect the hydraulic hoses from the lifting and lowering cylinders.
2. Remove the lifting and lowering cylinders with the main beam and place them next to the lifting and lowering unit.
   See Section "Installing the lifting and lowering cylinder" on page 85.
3. Set the hydraulic cylinders down in such a way that the piston rod can freely move when extended.
4. Connect the hydraulic hoses to the lifting and lowering cylinders.
5. Press the corresponding hand lever and hold for two minutes.
   → The piston rods of the hydraulic cylinders extend.
   → The sound of blubbering in the oil tank indicates the bleeding procedure is taking place.
6. Check the level in the oil tank and top up if necessary.
7. Check the free circulation of the hydraulic oil with extended hydraulic cylinders.
8. Check components and connections for external leaks.
9. Fix flapping lines and hoses.
10. Pull the corresponding hand lever and hold for two minutes.
    → The piston rods of the hydraulic cylinders retract.
    → The sound of blubbering in the oil tank indicates the bleeding procedure is taking place.

- Check the oil level.
- Check the synchronisation and end position of all hydraulic cylinders.

11. Switch off the hydraulic unit and leave it to stand for at least one hour so that the air bubbles are released from the oil.
12. Fully extend and retract all hydraulic cylinders several times until any vibrations in the hydraulic cylinders have subsided. Hold the hand levers for approx. one minute when the end position is reached.
13. Disconnect the hydraulic hoses from the lifting and lowering cylinders.
14. Install the lifting and lowering cylinders.
    See Section “Installing the lifting and lowering cylinder” on page 85.
15. Connect the hydraulic hoses to the lifting and lowering cylinders.

Never tighten leaking screw connections under high pressure. Switch off the hydraulic unit to relieve the pressure.

Bleeding the hydraulic traversing drive

The wheels in the wheel blocks must rotate freely.

1. Press both hand levers on the valve block and hold for two minutes.
   → The wheels turn in a clockwise direction.
   → The sound of blubbering in the oil tank indicates the bleeding procedure is taking place.
2. Check the level in the oil tank and top up if necessary.
3. Check the free circulation of the hydraulic oil.
4. Check components and connections for external leaks.
5. Fix flapping lines and hoses.
6. Pull both hand levers on the valve block and hold for two minutes.
   → The wheels turn in an anti-clockwise direction.
   → The sound of blubbering in the oil tank indicates the bleeding procedure is taking place.

Repeat steps 2 – 5.

- Check the oil level.

7. Switch off the hydraulic unit and leave it to stand for at least one hour so that the air bubbles are released from the oil.
8. Operate the hydraulic drive until any vibrations subside. Hold the respective hand lever for approx. one minute.

Never tighten leaking screw connections under high pressure. Switch off the hydraulic unit to relieve the pressure.

C2 Commissioning at low temperatures

Commissioning in low temperatures

In temperatures below 0 °C, warm up the hydraulic oil by flushing the system. As a result, the hydraulic oil will reach the required viscosity.

Warming up the hydraulic oil
The hydraulic cylinders are retracted.

1. Pull all hand levers in succession and hold until a temperature of 20 °C is reached.
2. Check that all hydraulic cylinders are running uniformly.

- For temperatures below -20 °C, use hydraulic oil with a low pour point (e.g. Shell Tellus T32 or AVIA Syntofluid PE-B 30).
- Do not use the hydraulic unit in temperatures below -30 °C.

Commissioning after a long downtime period

- Thoroughly clean and rinse preserved equipment before commissioning. Any remaining preservation agents can block the valves.
- Drain condensation water from the hydraulic tank. For this, drain the hydraulic oil.
- After a long downtime period, check hydraulic oil for usability and change if necessary.

The same measures apply for re-commissioning as for initial commissioning.

At low temperatures of < 10 °C, warm up hydraulic oil by flushing the system in order to reach the required start viscosity.

D1 First concreting section

Safety instructions

During shuttering and deshuttering operations, as well as when moving the tunnel formwork carriage, there must be two-way communications in place between all fitters.
When lifting, lowering and moving the tunnel formwork carriage, only the necessary personnel may be present in the working area.

Danger

- Risk of crushing when extending or retracting the wall formwork!
  ⇒ During modification work, keep clear of the swivel range of the wall formwork.
  ⇒ During shuttering and deshuttering operations, personnel must keep clear of the area behind the wall formwork.
- Risk of crushing when lifting and lowering the tunnel formwork carriage!
  ⇒ Do not reach between moving parts of the tunnel formwork carriage.
- Risk of crushing when moving the tunnel formwork carriage!
  ⇒ Do not remain in a danger zone caused by moving parts of the tunnel formwork carriage.

Note

- Never climb up or down the ladder cage of the work platforms and concreting platforms.
- Ensure that the hydraulic lines and electrical cables cannot be sheared or pinched when moving the tunnel formwork carriage.
- Avoid kinking, twisting and pulling of hoses and cables.

Extending or retracting the wall formwork

- Only retract or extend the wall formwork when all bracing, anchoring, etc. have been removed.
- Extend or retract the wall formwork first on one side and then the other.
- Simultaneously and smoothly retract or extend both hydraulic cylinders on one side.
- Avoid any jerky movement of the hydraulic cylinders when extending or retracting.
- If there is increased resistance or if the wall formwork does not move, interrupt the process immediately and return to the starting position.
  – Remove any obstacles or anchoring and struts that have been forgotten.
  – Repeat the process.

Raising or lowering the tunnel formwork carriage

- Ensure that the hydraulic lines and electrical cables are not crushed during the lifting or lowering procedures.
- Only lower the tunnel formwork carriage after all lowering wedges and support frames have been removed.
- Simultaneously and smoothly raise or lower the tunnel formwork carriage with all lifting and lowering equipment.
- Avoid any jerky movement of the hydraulic cylinders when extending or retracting.
- If there is increased resistance or if the tunnel formwork does not move, interrupt the process immediately and return to the starting position.
  – Remove any obstacles.
  – Repeat the process.

Moving the tunnel formwork carriage

Moving with the hydraulic traversing drive

- Move the tunnel formwork carriage with both hydraulic motors simultaneously and evenly.
- Avoid any jerky movements.
- If there is increased resistance or if the tunnel formwork does not move, interrupt the process immediately.
  - Locate and eliminate the problem.
  - Repeat the process.

Moving when using equipment supplied by the contractor

- Only use one pulling unit.
- Avoid any jerky movements.
- Attach chains of equal length to the attachment point on both base beams.
- Attach both chains to the pulling equipment.
- Brace the two base beams against each other with a compression brace.

(Fig. D1.01)

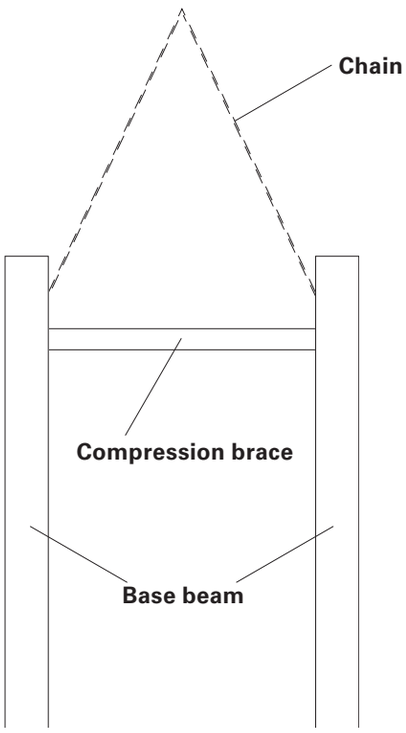


Fig. D1.01

Requirement

- The tunnel formwork carriage is assembled in the first concreting section.
- The tunnel formwork carriage is raised 5 cm above the concreting height.
- The wall formwork is extended into the concreting position.
- The length of the rail is twice as long as the tunnel formwork carriage:
  - one half protrudes into the current concreting section.
  - one half protrudes into the next concreting section.

- Relieve the hydraulic cylinders of the wall formwork by means of spindles or other measures.
- The rails are always laid out in the concreting position. This eliminates the need to align the tunnel formwork carriage in the transverse direction.
- The rails are simply placed in the required position and butt jointed.
- It is not necessary to connect or fix the rails in position.
- When concreting tunnel radii, the tunnel wall has no curve and consists of many polygons.

PERI recommends connecting and fixing the rail in place.

D1 First concreting section

Preparation

1. Check whether the tunnel formwork carriage is aligned in the transverse direction. If necessary, adjust with the hinge slide.
2. Check whether the longitudinal axis is correct.
3. Use the lowering wedges (**41**) to lower the tunnel formwork carriage to the concreting height and align it.
4. Support each support wedgebox (**26**) with a lowering wedge (**41**) and a support frame (**40**).
5. Extend the lowering wedges (**41**) so that they support the weight of the tunnel formwork carriage. (Fig. D1.02)
6. Fully retract the lifting and lowering device.
   → The hydraulic system is now completely relieved.
7. Adjust the transverse stop of the wall formwork and secure with a lock nut. (Fig. D1.03)

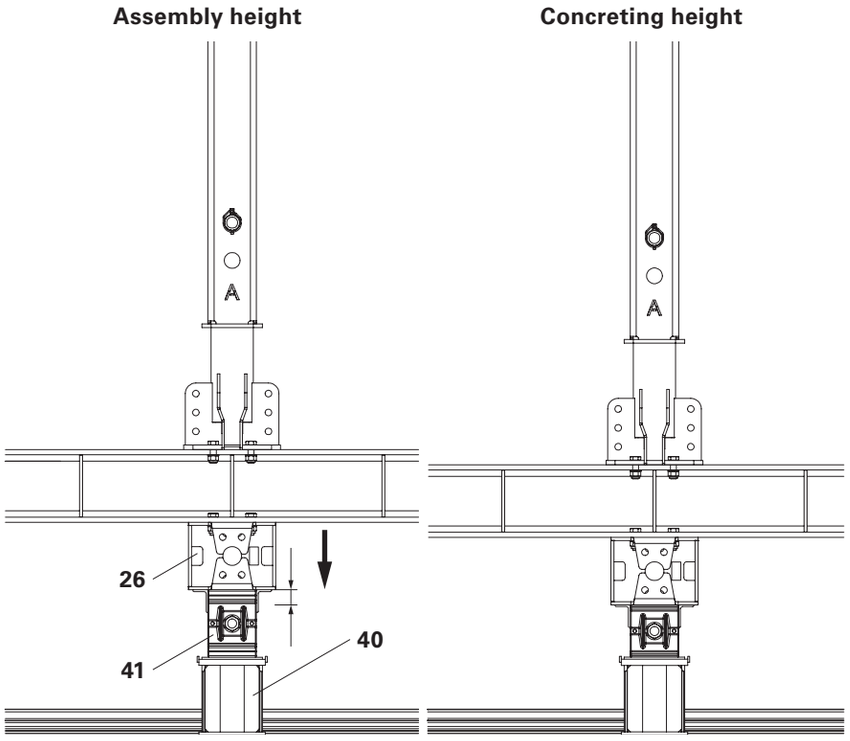


Fig. D1.02

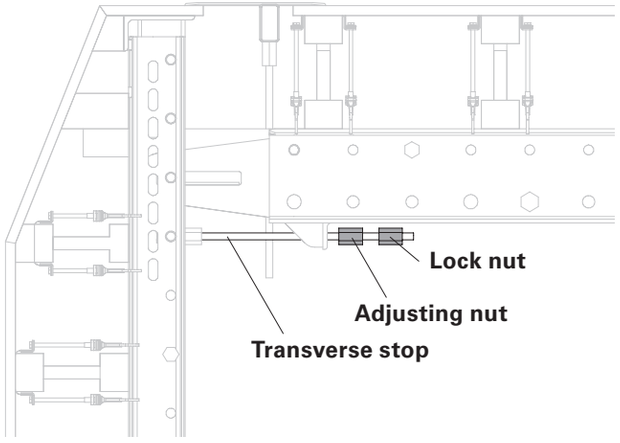


Fig. D1.03

D1 First concreting section

First concreting cycle

1. Mount the external formwork.
2. Mount the stop end formwork at both ends of the first concreting section.
3. Anchor the stop end formwork.
4. Relieve the Hydr.-Cylinder by means of spindles or other measures.
5. Anchor the tunnel formwork carriage to the tunnel floor.
6. Concrete the walls and slab of the first tunnel section.
7. Allow the concreting section to harden to the specified strength.

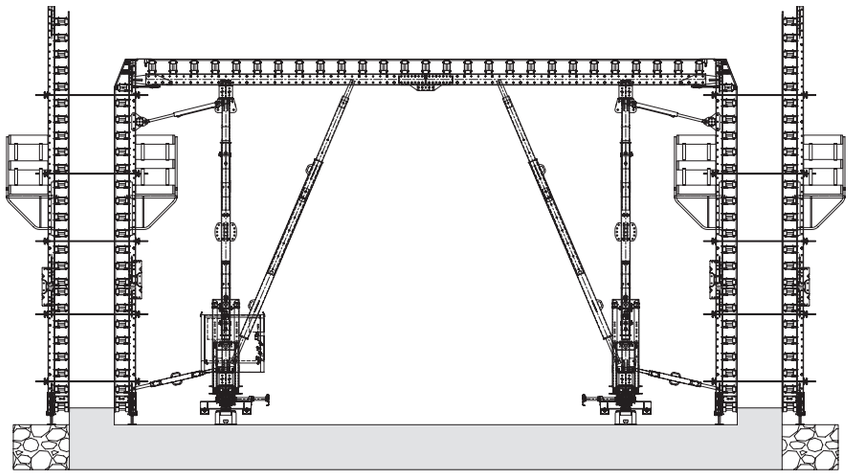


Fig. D1.04

Note

Approval for further work is the responsibility of the operating personnel.

Fig. D1.04 shows the tunnel formwork carriage with external formwork in the concreting position.

To ensure an even load distribution on the tunnel formwork carriage,

- fill the wall formwork evenly.
- concrete both walls at the same time.
- fill the slab formwork evenly.
- compact the concrete evenly.

Deshuttering the concreting section

1. Move the rails
   – one half protrudes into the current concreting section.
   – one half protrudes into the next concreting section.
2. Remove anchoring.
3. Remove stop end formwork.
4. Remove external formwork.
5. Retract wall formwork. (Fig. D2.01)
6. Lower the lowering wedges by approx. 5 cm.
   → The entire tunnel formwork carriage is lowered. (Fig. D2.02)
7. Extend the lifting and lowering unit and lift the tunnel formwork carriage until the lowering wedges are free. (Fig. D2.03)
   → The entire load of the tunnel formwork carriage is carried by the hydraulic system.
7. Remove the lowering wedges and place them on the base beam.
8. Remove the support frames and place them on the base beam.

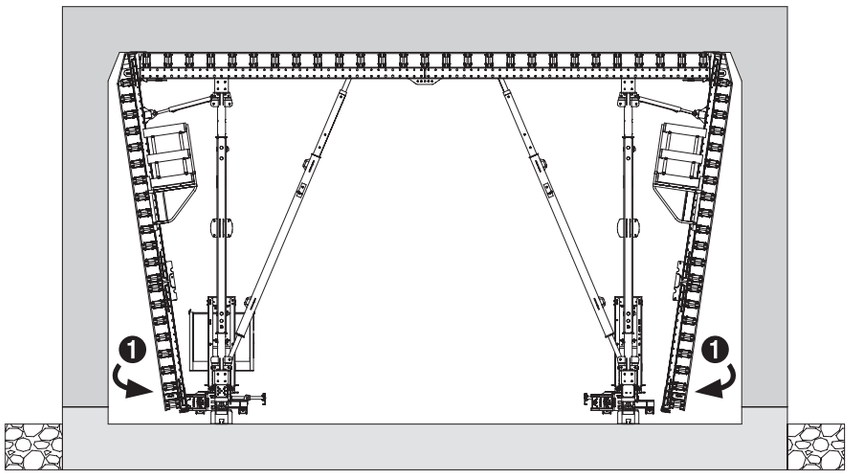


Fig. D2.01

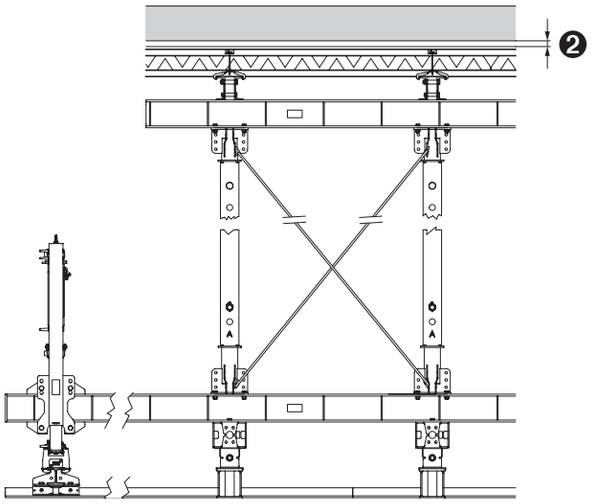


Fig. D2.02

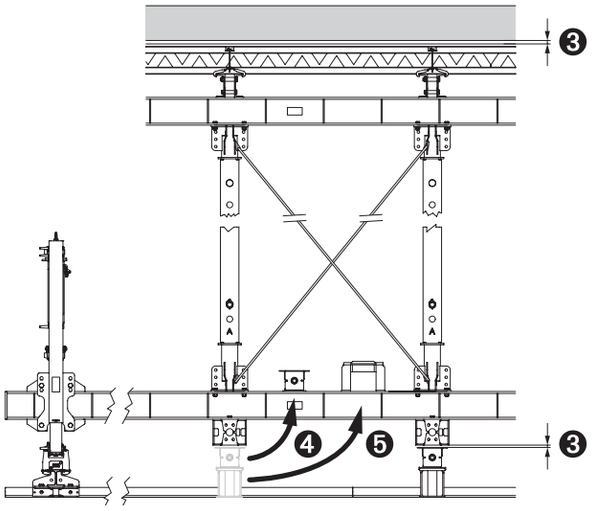


Fig. D2.03

Moving the tunnel formwork carriage

Danger

Risk of crushing when moving the tunnel formwork carriage!

⇒ Keep clear of the moving area of the tunnel formwork carriage.

1. Align the rail to suit the concreting position.
2. Lower the tunnel formwork carriage onto the rail. (Fig. D2.04)
   → The lifting and lowering unit is completely retracted.
3. Move the tunnel formwork carriage to the next concreting section.

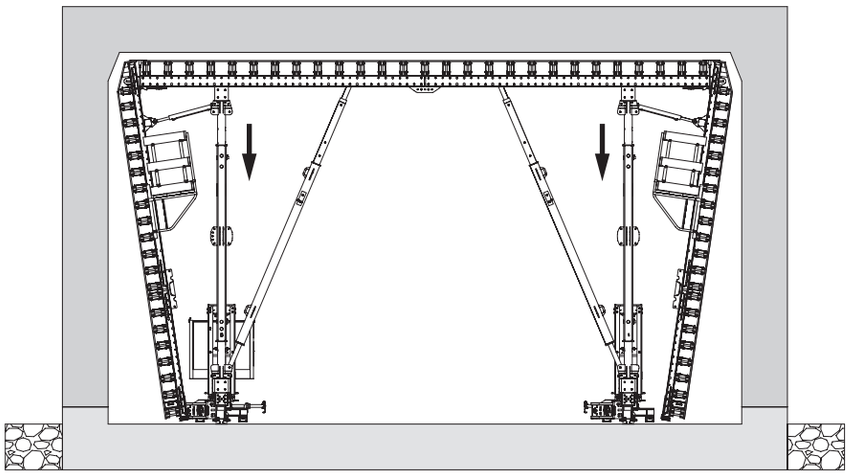


Fig. D2.04

- Ensure that the formwork has an overlap of 10 – 20 cm into the previous concreting section.

Note

- Observe the sequence when lifting the tunnel formwork carriage (steps 4 + 5).
- Do not lower the front of the tunnel formwork carriage once it has been raised and supported at the rear. This will damage the formwork and formwork girders.

4. Raise the front of the tunnel formwork carriage to concreting height.
5. Raise the rear of the tunnel formwork carriage to the limit stop of the previous concreting section.

(Fig. D2.05 + D2.06)

6. Support all support wedgeboxes (**26**) with a lowering wedge (**41**) and a support frame (**40**).
7. Extend the lowering wedges (**41**) so that they support the weight of the tunnel formwork carriage.
8. Fully retract the lifting and lowering device.
   → The hydraulic system is now completely relieved.

For moving the tunnel formwork carriage with the Hydr. Jack, see Page 112.

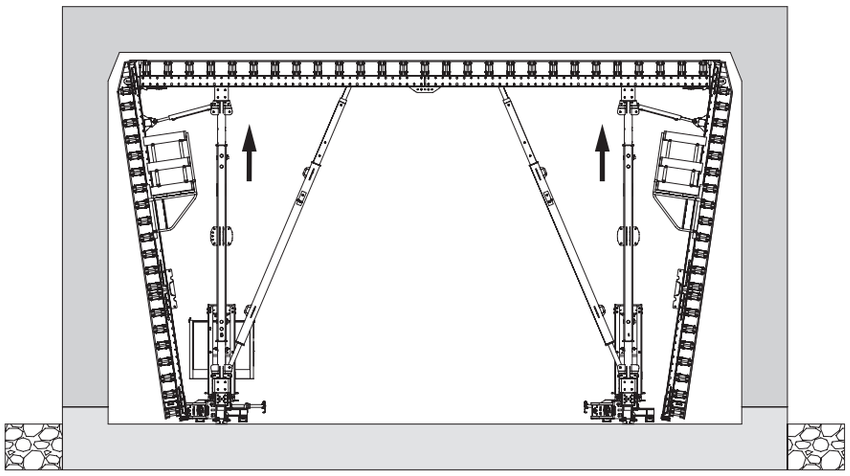


Fig. D2.05

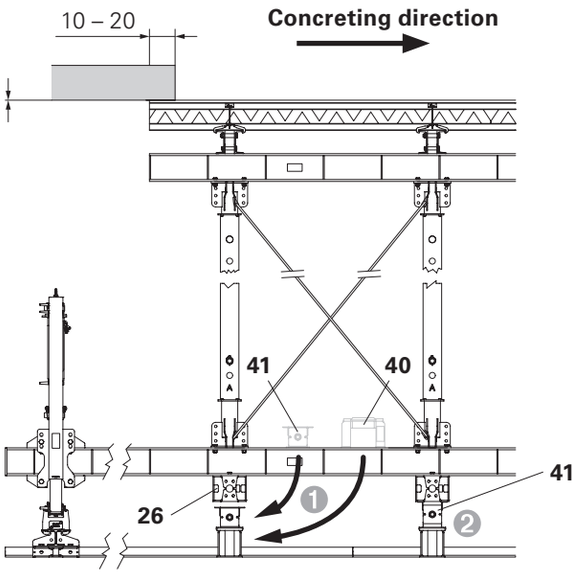


Fig. D2.06

Shuttering the concreting section

1. Move the wall formwork into the concreting position:
   → at the bottom, up to the limit stop against the starter.
   → at the top, up to the limit stop against the transverse stop.

(Fig. D2.07)

2. Mount the external formwork.
3. Mount the stop end formwork.
4. Anchor the stop end formwork.
5. Relieve the wall formwork by means of spindles or other measures.
6. Anchor the tunnel formwork carriage to the tunnel floor.

Fig. D2.08 shows the tunnel formwork carriage in the concreting position.

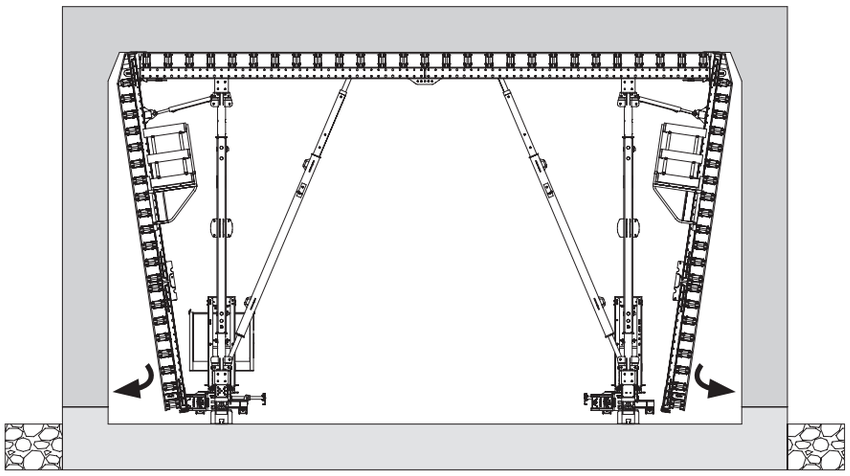


Fig. D2.07

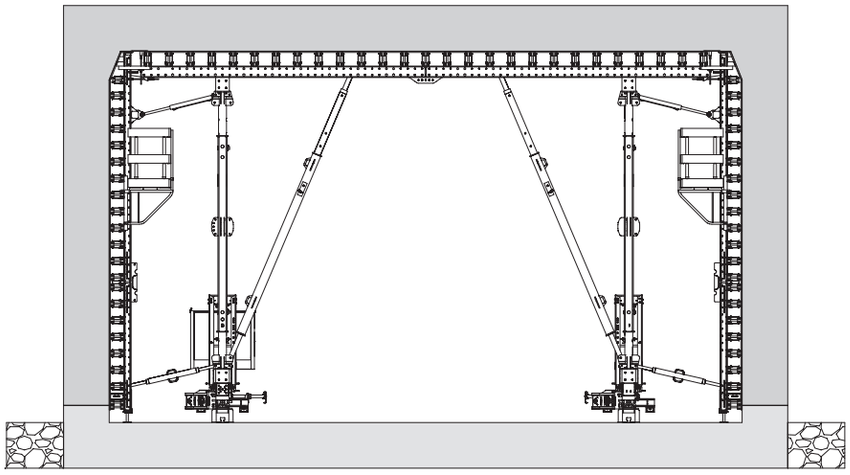


Fig. D2.08

Moving the tunnel formwork carriage with the Hydr. Jack

Requirement
The liftframe and tunnel formwork carriage are in the moving position.

Components

24 Hinge Slide LALD VARIOKIT
26 Support Wedgebox VARIOKIT
27 Hydr. Jack 250 kN
28 Lifting Tool LALD VARIOKIT
40 Support Frame 250 Rail
41 Lowering Wedge 420 kN painted
123 Fitting Pin Ø21x120
124 Cotter Pin 4/1 ga
125 Fitting Pin Ø26x120
126 Cotter Pin 5/1 ga

Warning

Incorrect operation or hydraulic damage can cause unforeseen movements of the components. As a result, body parts could become trapped and crushed.
⇒ While the liftframe is being moved, no other work is to be carried out on the tunnel formwork carriage or formwork.
⇒ Keep all body parts away from any raised components.
⇒ Otherwise support raised components, e.g. with timbers.

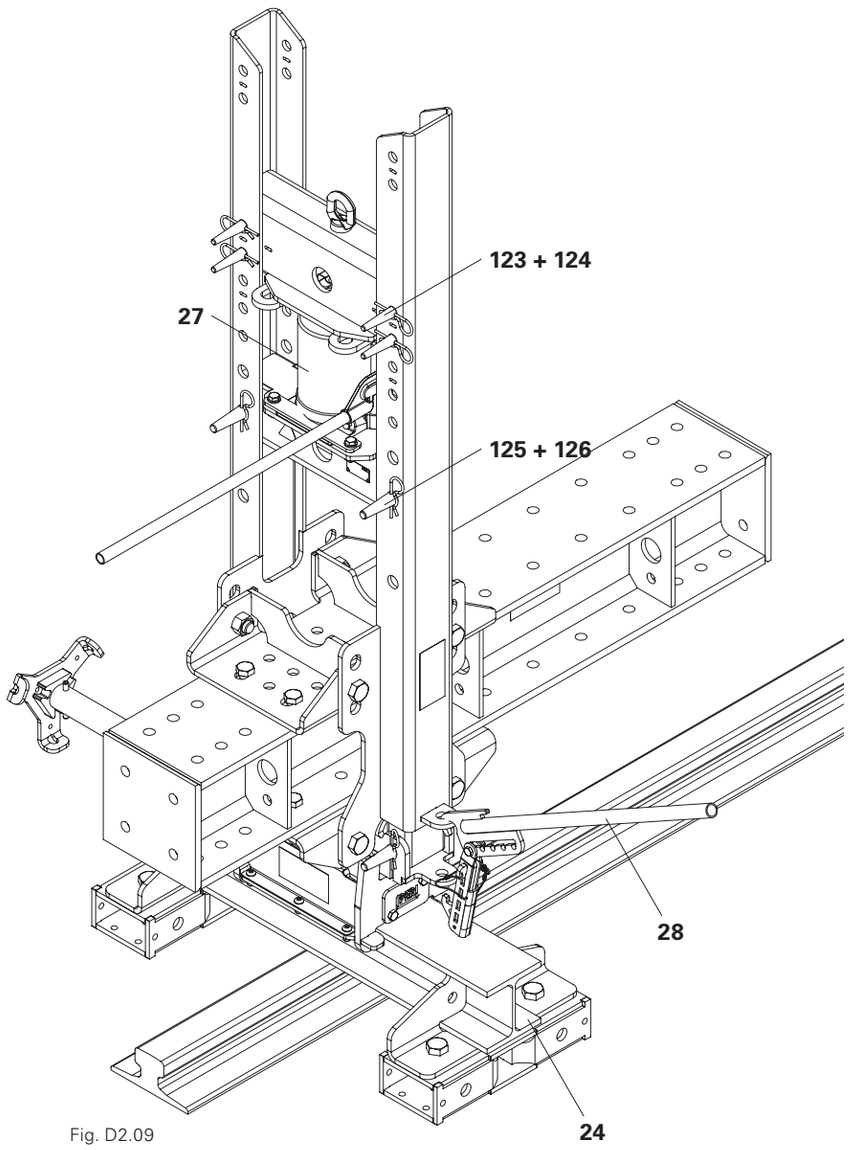


Fig. D2.09

Lowering the hinge slide

1. Raise the hinge slide (**24**) slightly with the lifting tool (**28**) and thereby relieve the filler pins (**125**) of the cross girder (**25.2**). See Section “Lifting Tool LALD VARIOKIT” on page 28.
2. Remove filler pins Ø 26 mm (**125**) and Cotter Pins 5/1 ga (**126**) and insert in the parking position (**25.15**).
3. Release the lifting tool and thereby lower the hinge slide (**24**) to the base of the structure.
4. Hook the lifting tool into the lift-frame for parking. (Fig. D2.10)

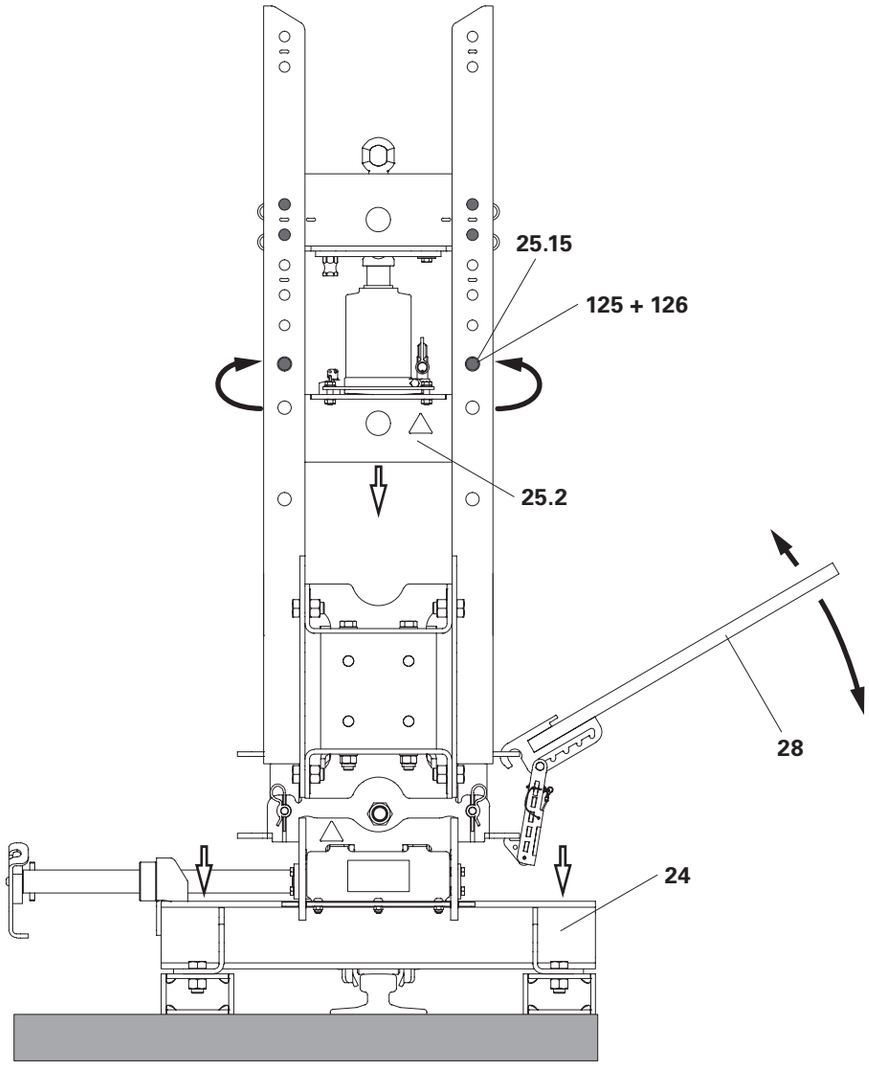


Fig. D2.10

Preparing for the lifting procedure

1. Insert the slide plate (**25.7**) and secure with the threaded bolt (**25.8**), see Section “Installing the Hydr. Jack 250 kN” on page 86.
2. Set the Hydr. Jack to lifting status according to the manufacturer information.

Carrying out the lifting procedure

1. Extend the Hydr. Jack. The piston of the Hydr. Jack lies against the slide plate (**25.7**) and raises the main beam (**25.1**) together with the Liftframe LALD and thus the complete lattice framework.
2. Continue with the lifting process until the shuttering position is reached.

(Fig. D2.11)

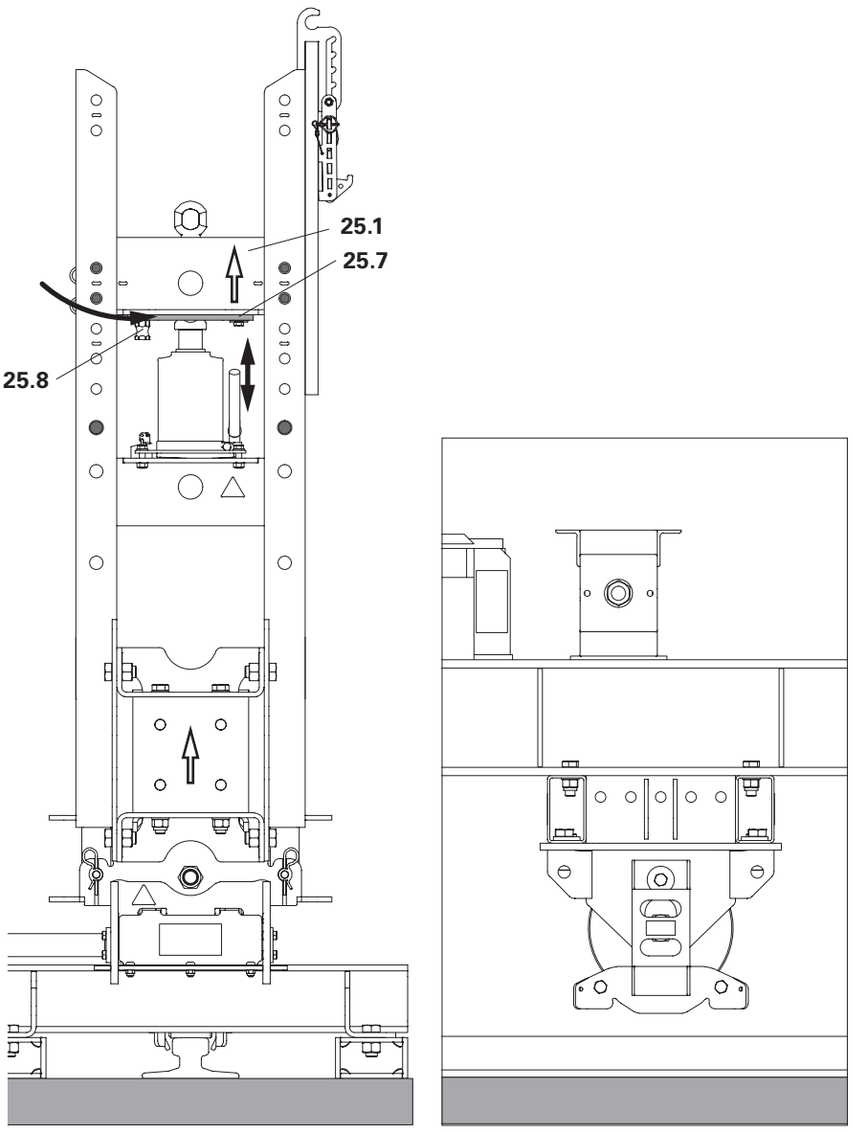


Fig. D2.11

Relieving the hydraulics

1. Position the support frame (**40**) and lowering wedge (**41**) under the support wedgebox.
2. Spindle out the lowering wedge (**41**) until pressure is applied against the support wedgebox (**26**).
3. Lower the Hydr. Jack all the way (**27**) in accordance with the manufacturer information.
4. Remove the threaded bolts (**25.8**) from the slide plate, and then remove the slide plate (**25.7**).
5. Raise the hinge slide (**24**) with the lifting tool (**28**) until the holes in the cross girder (**25.2**) correspond to the holes in the liftframe (**25.16**). See Section "Lifting Tool LALD VARIOKIT" on page 28.
6. Remove filler pins Ø 26 mm (**125**) and Cotter Pins 5/1 ga (**126**) from the parking position (**25.15**) and insert the cross girder (**25.2**) in the transport position (**25.16**).

(Fig. D2.12)

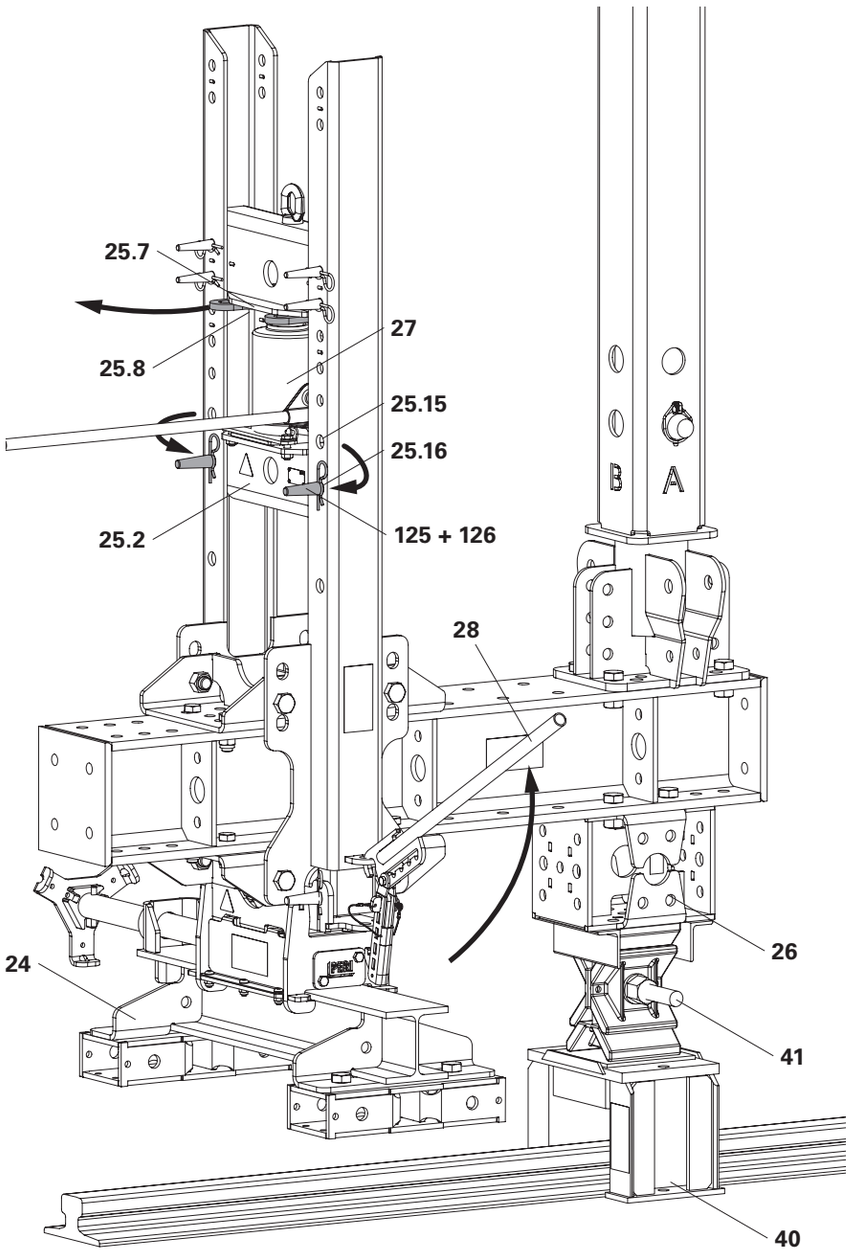


Fig. D2.12

If the lifting range is not sufficient

1. Adjust the lifting range of the Hydr. Jack so that the holes in the cross girder (**25.2**) correspond to the holes for the moving position (**25.17**) in the liftframe.
2. Secure the cross girder (**25.2**) at the moving position (**25.17**) in the liftframe with filler pin Ø 26 mm (**125**) and Cotter Pin 5/1 ga (**126**).
3. Lower the Hydr. Jack all the way.
4. Remove the main beam (**25.1**) from the top position (**A**) of the liftframe and install it in the bottom position (**B**) or intermediate position.
5. Carefully raise the Hydr. Jack until the filler pins (**125**) are free of load in the cross girder (**25.2**).
6. Remove filler pins Ø 26 mm (**125**) from the cross girder and insert them in the parking position (**25.15**) with Cotter Pins 5/1 ga (**126**).
7. Continue with the lifting procedure.

(Fig. D2.13)

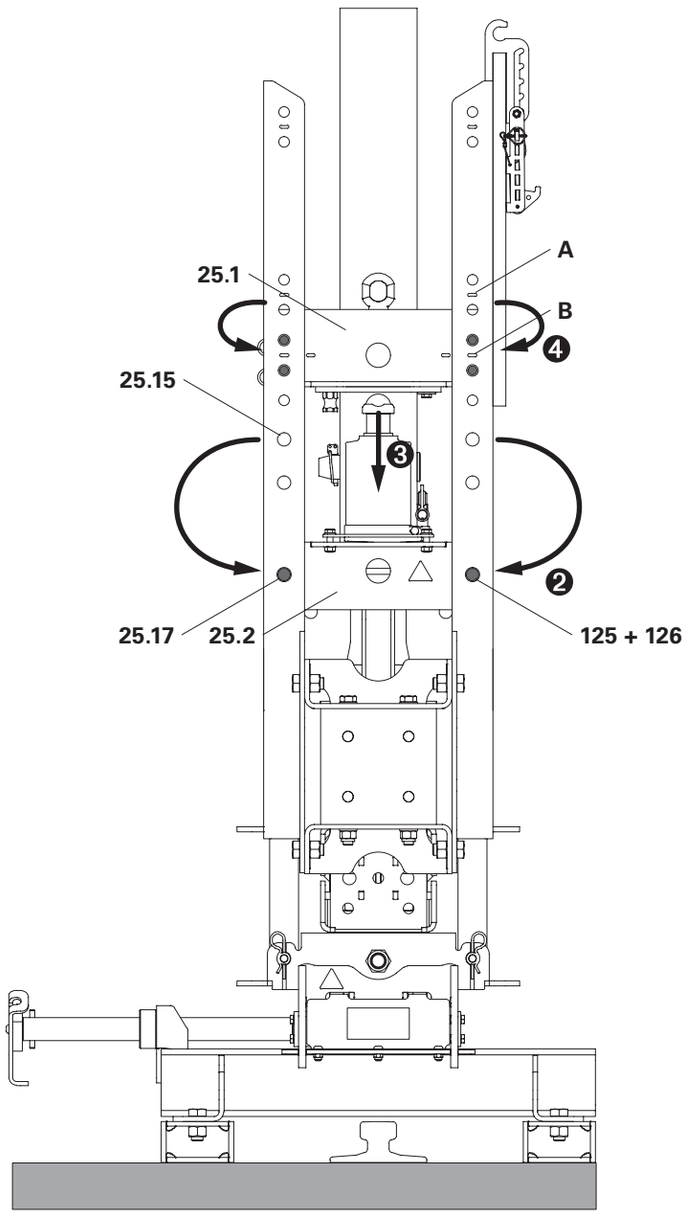


Fig. D2.13

E1 Malfunctions table for the hydraulic system

Malfunction	Cause	Remedial measure
Unusual motor noise coming from the hydraulic unit	Incorrect rotation direction of the motor	If the warning light for monitoring the rotating field is activated, turn the phase inverter in the CEE Motor Protection Plug by 180°.
	Insufficient hydraulic oil	Top up hydraulic oil.
	Dirt in the hydraulic system	Replace hydraulic oil and, if necessary, clean hydraulic tank and filter.
Hydraulic cylinder sinks	Air in the hydraulic system	Bleed the system.
	Pressure-retaining valve defective	Replace the hydraulic cylinder and have an inspection carried out by PERI.
	Seal defective	Replace the hydraulic cylinder and have an inspection carried out by PERI.
Hydraulic cylinders move unevenly	Air in the hydraulic system	Bleed the system.
	Dirt in the hydraulic system	Replace hydraulic oil and, if necessary, clean hydraulic tank and filter.
	Leakage between the hydraulic unit and hydraulic cylinder	Retract all hydraulic cylinders, identify the leakage point and seal; replace with new component if necessary.
	Hydraulic twin hose is broken or leaky	Stop work and replace the defective hydraulic twin hose. Check all hydraulic twin hoses.
Temperature of the hydraulic oil is too high	Dirt in the hydraulic system	Replace hydraulic oil and, if necessary, clean hydraulic tank and filter.
	Valve defective	Replace the hydraulic unit and have an inspection carried out by PERI.
	Hand lever operated for too long	Switch off hydraulic unit and allow to cool.
	Environmental temperature is too high	Adjust work procedures in hot climates and work with the hydraulic unit at night or in the mornings.
Hydraulic system is leaking hydraulic oil	Hydraulic hose is broken or leaks	Stop work and replace the defective hydraulic hose. Check all hydraulic hoses.
	Leaky connection	Switch off hydraulic unit for pressure relief, tighten or replace screw fitting.
Hydraulic cylinder extended or retracted unintentionally	Hand lever is dirty and not in centre position	Remove soiling.
	Hand lever valve soiled or defective	Replace the hand lever valve and have an inspection carried out by PERI.
■ Hydraulic cylinder cannot handle the load ■ Hydraulic cylinder does not extend	Insufficient hydraulic oil in the tank	Determine the cause of the hydraulic oil loss and eliminate. Top up hydraulic oil.
	Incorrect rotation direction of the motor	If the warning light for monitoring the rotating field is activated, turn the phase inverter in the CEE Motor Protection Plug by 180°.
	Leakage in hydraulic system	Identify leakage point and seal; if necessary, replace with new parts.
	Pressure-retaining valve defective	Replace the hydraulic cylinder and have an inspection carried out by PERI.

E2 Malfunctions table for the hydraulic traversing drive

Malfunction	Cause	Remedial measure
Brake does not release	Dirt in the hydraulic system	Replace the hydraulic oil and clean the hydraulic reservoir and filter if necessary.
	Hydraulic lines not connected correctly	Connect the hydraulic lines correctly.
	Brake pressure valve defective	Inspection by PERI.
Jerky movements when moving downwards	Lowering brake valves defective	Inspection by PERI.
■ Damage to the motor housing ■ Shaft sealing ring squeezed out	Overflow oil line not connected	Replace hydraulic motor and connect the overflow oil line.
Motor does not move despite brake being open	Pressure relief valve in the valve block set too low	Inspection by PERI.
	Load exceeds specified limits	Do not exceed the permissible operating limits. See “Hydraulic Traversing Drive VARIOKIT: 2-wheel drive with Hydraulic Unit VARIOKIT” on page 32 or “Hydraulic Traversing Drive VARIOKIT: 2-wheel drive with Hydraulic Unit RCS” on page 32.
Valve block heats up	Operating error: Hydraulic drive moves against obstacle and hand lever is still actuated.	Switch off the hydraulic unit and allow the valve block to cool down.
Quick coupler cannot be inserted	Quick coupler soiled	Clean the quick coupler.
	Quick coupler damaged	Replace the quick coupler.
	Hydraulic system is pressurised	Depressurise the hydraulic system.
■ Uneven moving procedure ■ Motors not running synchronously	Flow divider defective	Inspection by PERI.
One-sided drive	Air in the hydraulic system	Bleed the system.
	Dirt in the hydraulic system	Replace the hydraulic oil and clean the hydraulic reservoir and filter if necessary.
	Hydraulic line not connected correctly	Connect the hydraulic lines correctly.
	Operating error: only one hand lever operated	Operate the hand lever for both hydraulic drives.
Slight leakage	■ Sealing rings ■ Quick couplers ■ Screw connections damaged	Replace damaged component.
	■ Quick couplers ■ Screw connections not tightened correctly	■ Switch off the hydraulic unit. ■ Tighten to the specified torque.
Heavy leakage	■ Screw connections ■ Piping ■ Hydraulic lines damaged	■ Switch off the hydraulic unit. ■ Thicken spilled hydraulic oil immediately with oil binder and mop it up. ■ Replace damaged component.
Motor stops during operation	■ Hydraulic lines unplugged	Connect the hydraulic lines correctly.
	■ Hydraulic lines torn off or driven over	■ Switch off the hydraulic unit. ■ Thicken spilled hydraulic oil immediately with oil binder and mop it up. ■ Replace defective hydraulic line.

F1 Inspection of the hydraulic system

Damage and any resulting downtime can be avoided by carrying out scheduled maintenance work.

PERI recommends shortened maintenance intervals:
- For equipment showing signs of heavy wear.
- With high thermal and mechanical loads.
- When subject to heavy soiling.

Hydraulic unit **Inspection/Maintenance/Repairs**	**Maintenance interval**
■ Clean machine housing.	■ Daily
■ Clean or replace oil filter. ■ Change hydraulic oil.	■ Before each use on the construction site ■ At least 1x year
■ Replace seals.	■ If leaking
■ Check oil temperature and oil level. ■ Check for signs of leakage. ■ Check working and control pressures. ■ Check whether any unusual noises or vibrations are present.	■ Daily to weekly
■ Check device mounting. ■ Check tubes and hoses. (connections, chafe marks, kinks) ■ Check protective covers. ■ Check display devices. ■ Check ventilation filter in the filling piece.	■ Weekly to monthly
■ Check machine housing for signs of damage. ■ Check performance.	■ Monthly to quarterly
Check the entire hydraulic unit for: ■ Deposits ■ Rust formation	■ Yearly

Hydraulic hoses **Inspection/Maintenance/Repairs**	**Maintenance interval**
■ Replace fittings.	■ If connection points are leaking
■ Replace hoses.	■ If the hose body is damaged ■ In case of leaking hose fitting compression ■ If older than 6 years
■ Check for signs of leakage.	■ Daily to weekly
■ Check tubes and hoses. (connections, chafe marks, kinks)	■ Weekly to monthly

F1 Inspection of the hydraulic system

Hydraulic cylinder **Inspection/Maintenance/Repairs**	**Maintenance interval**
■ Clean the hydraulic cylinder.	■ As required
■ Check for signs of leakage.	■ Visual inspection during use ■ Replace hydraulic cylinder in the event of leakage

Hydraulic traversing drive **Inspection/Maintenance/Repairs**	**Maintenance interval**
■ Clean the motor housing.	■ Daily ■ Before each use
■ Check for signs of leakage.	■ Daily ■ Before each use
■ Check whether any unusual noises or vibrations are present.	■ Daily ■ Before each use
■ Check that fixing elements are firmly in place.	■ Daily ■ Before each use
■ Change hydraulic oil.	■ Before each use on the construction site ■ At least 1x year ■ Every 2,000 operating hours

F2 Inspection of the tunnel formwork carriage

Tunnel formwork carriage Inspection/Maintenance/Repairs	Maintenance interval
■ Check bolt/screw connections of the supporting structure and re-tighten if necessary. ■ Check bolt/screw connections of the formwork construction and re-tighten if necessary. ■ Check bolt/screw connections of the traversing drive and re-tighten if necessary. ■ Check all other bolt connections.	■ Before each use
■ Clean and oil the formlining of the wall elements.	■ After each use
■ All ■ Sliding surfaces ■ Spindles ■ Heavy-duty roller gear ■ Clean and grease.	■ Weekly ■ As required
■ Grease the spindle thread and sliding surface of the hinge slide.	■ Weekly ■ As required
■ Check all timber components for signs of damage and replace if necessary. ■ Check the steel structure for signs of deformation and replace if necessary. ■ Check the steel structure for signs of damage and replace if necessary.	■ Weekly to monthly
■ Repair or replace the corrosion prevention of steel components, e.g. with zinc spray.	■ Monthly

G1 Dismantling the hydraulic system

General information

Wear safety goggles and suitable protective gloves when working on the hydraulic system.

Note

- For safe handling of the hydraulic oil, follow the instructions that are included in the safety data sheet of the hydraulic oil selected for use.
- Avoid any bodily contact with the hydraulic oil.
- Ensure that the hydraulic oil does not come into contact with the structure.
- For information on cleaning and correct disposal, see the safety data sheet of the hydraulic oil selected for use.

Removing the hydraulic hoses

Warning

Hydraulic systems are under very high pressure!
When disconnecting the hydraulic lines, hydraulic oil can leak uncontrollably.

- Risk of eye injury.
  ⇒ Before disconnecting the hydraulic lines, switch off and depressurise the hydraulic system.
  ⇒ Wear safety goggles.
- Risk of fouling.
  ⇒ Wear personal protective equipment.
  ⇒ Thicken spilled hydraulic oil immediately with oil binder and mop it up.

1. Remove bolts from all hydraulic cylinders on the piston rod side, and then completely retract.
2. Switch off the hydraulic unit.
3. Disconnect the hydraulic unit from the mains.
4. Disconnect the hydraulic hoses from the hydraulic unit.
5. Disconnect the hydraulic hoses from the hydraulic cylinders.
6. Fit all quick-couplers with protective caps or couple them together.
7. If necessary, couple the bypass line together in the hydraulic unit.
8. Roll up all hydraulic hoses, tie them together and sort by length.
9. Place the hydraulic hoses in the transport container provided.

Removing the hydraulic cylinder

Warning

Heavy moving components!
During the removal process, there is a risk of hands being crushed.
⇒ Wear safety gloves.
⇒ Ensure a safe and secure position.

Removing the Hydr.-Cylinder

1. Remove bolts from the Hydr.-Cylinders.
2. Stack the Hydr.-Cylinders in the transport crate provided and secure to prevent them from slipping.

Removing the lifting and lowering cylinders

1. Attach the lifting and lowering cylinder with the main beam to the crane.
2. Remove the lifting and lowering cylinder with the main beam and place it next to the transport crate.
3. Remove bolts from the lifting and lowering cylinder on the piston side.
4. Stack the lifting and lowering cylinders in the transport crate provided and secure to prevent them from slipping.
5. Fit the main beam in its original position on the liftframe.

G1 Dismantling the hydraulic system

Removing the hydraulic unit

1. Disconnect the hydraulic unit from the mains.
2. Have empty hydraulic oil canisters at the ready.
3. Unscrew the cover of the hydraulic oil filling opening.
4. Use the CE filter pump to completely extract the hydraulic oil via the filling opening.
5. Attach the hydraulic unit to the crane lifting gear.
6. Unscrew the hydraulic unit from the base beam and fly it out.
7. Stack the hydraulic unit in the transport crate provided and secure it to prevent it from sliding away.

- Store or dispose of the hydraulic oil in accordance with the applicable environmental regulations.
- Follow the Instructions for Use of the filter pump CE.

Removing the hydraulic traversing drive

Warning

Heavy moving components!
During the removal process, there is a risk of hands being crushed.
⇒ Wear safety gloves.
⇒ Ensure a safe and secure position.

Removing the hydraulic drive

1. Remove the coupling bolts M20x200 and place to one side.
2. Attach the hydraulic drive to the crane lifting gear.
3. Remove bolts M20x70.
4. Pull the hydraulic drive out of the wheel block.
5. Re-attach bolts M20x70, nuts M20 and washers M20 to the hydraulic drive.
6. Refit the M20x200 coupling bolts with M20 nuts on the wheel block.
7. Fly out the hydraulic drive, stack in the transport crate provided and secure to prevent them from slipping.

Removing the wheel block

1. Attach the wheel block to the crane lifting gear.
2. Remove bolts M20x70.
3. Fly out wheel block, place in the transport crate provided and secure to prevent it from slipping.

Removing the hinge slide

Warning

Heavy moving components!
During the removal process, there is a risk of hands being crushed.
⇒ Wear safety gloves.
⇒ Ensure a safe and secure position.

Removal

1. Pull filler pins 26x120 (**125a + 125b**).
2. Raise the sliding part (**25.9**) to the transport position.
3. Insert filler pin 26x120 (**125a**) and secure with cotter pin (**126a**).
4. Insert filler pin 26x120 (**125b**) and secure with cotter pin (**126b**).

(Fig. G2.01 + G2.02)

5. Place the hinge slide (**24**) in the transport container provided.

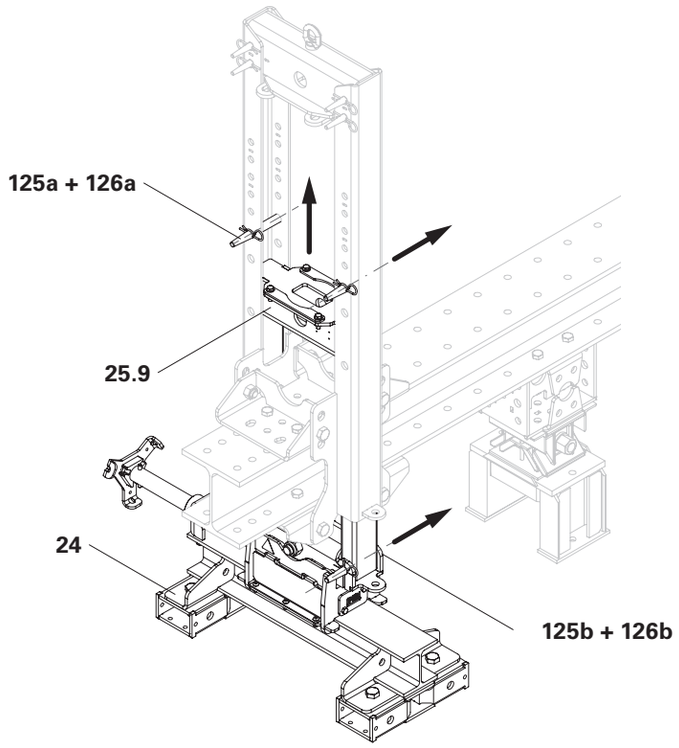


Fig. G2.01

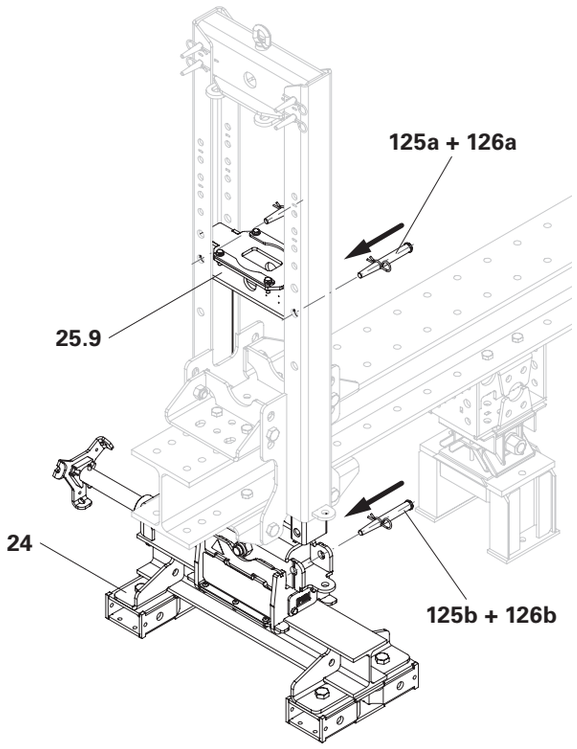


Fig. G2.02

Removing the liftframe

When moving the liftframe, use the lifting eyes provided.

1. Attach the liftframe to the crane lifting gear.
2. Remove bolts M20x60 (**109**).
3. Remove bolts M24x50 (**115b**) and remove bottom girder connection (**25.5**).
4. Fly out the liftframe and place next to the pallet.
5. Fix the bottom girder connection (**25.5**) in its original position with bolts M24x50 (**115b**) and nuts M24 (**120**).
6. Place the liftframe in the pallet and secure it to prevent it from slipping.

(Fig. G2.03)

For information on safe transport, see “Packaging” on page 128.

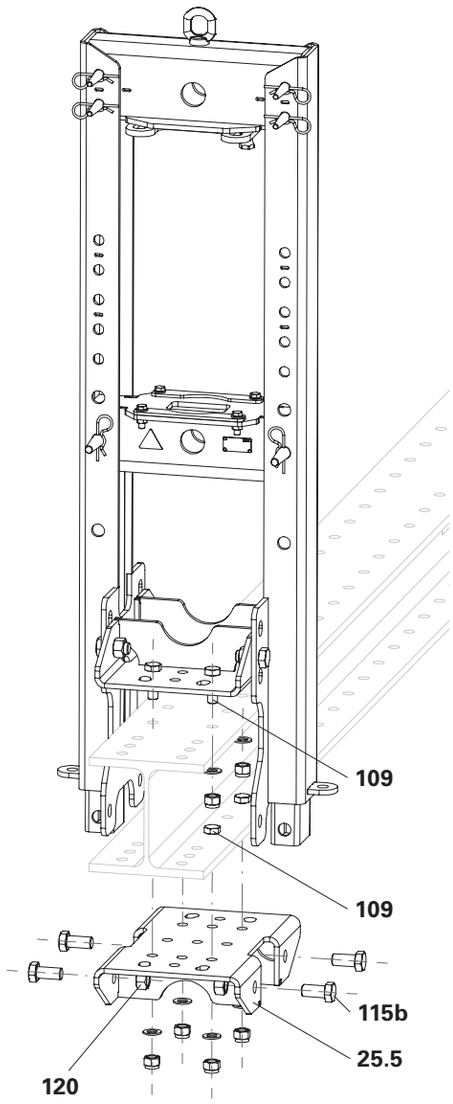


Fig. G2.03

G3 Disposal

Disposal of components must be arranged by an authorised person.

- Materials are to be sorted correctly and according to type.
- The materials are to be disposed of according to local regulations and guidelines.
- The safety data sheet of the hydraulic oil must be taken into consideration when disposing of the hydraulic oil.
- Operating materials, cleaning agents and solvents must not be allowed to enter the drainage system or the ground.

H1 General transport instructions

General safety instructions

- Do not drop the components.
- Store and transport components in such a way that no unintentional change in their position is possible. Detach lifting gear from the lowered units only if an unintentional change in their position is no longer possible.
- During movement procedures ensure that components are picked up and set down in such a way that unintentional falling over, falling apart, sliding or rolling is prevented.
- Do not stand under suspended loads.
- Use only suitable and approved load-carrying equipment.
- Use only designated load-bearing points on the component.
- During the lifting and moving procedure, ensure that all loose parts are removed or secured.
- During the moving procedure with the crane, always use a rope to guide the components.
- Transport and set down components on clean, flat and sufficiently load-bearing substrates only.
- Use original PERI storage and transport systems, e.g. crate pallets, pallets or stacking devices.
- PERI products must be stored in such a way that they are protected against the effects of the weather and aggressive materials if safety is then likely to be affected.
- The access areas on the construction site must be free of obstacles and tripping hazards and must also be slip-resistant.

Packaging

Transport crates

- Transport the hydraulic cylinders, hydraulic units and hydraulic traversing drives only in the designated transport crates.
- Clearly label the top of the transport crates.
- Fix lids to the transport crates.
- Drill holes in the bottom of the transport crates to allow drainage.
- Fix accurately cut squared timbers in the crates to secure the hydraulic cylinders, hydraulic units and hydraulic traversing drives.
- When moving transport crates with the crane, use only suitable lifting slings that are wrapped around the underside.
- Take into consideration all transport markings (stylised lines) on the crates.
- Only use designated transport crates for transportation or storage.

(Fig. H1.01)

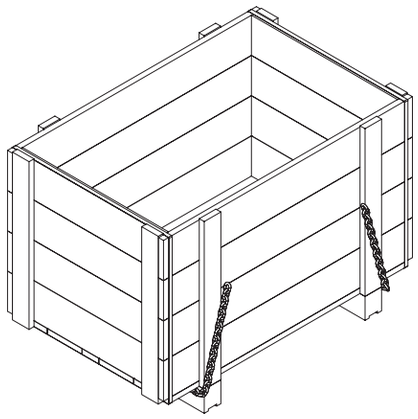


Fig. H1.01

Pallet

Stack the liftframes in pairs in a 120x80 pallet and secure with tensioning straps.
(Fig. H1.02)

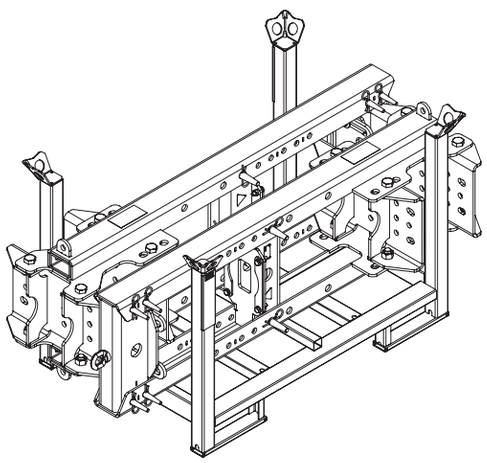


Fig. H1.02

H1 General transport instructions

Transport from and to the construction site

- Clean and dry the hydraulic cylinder and hydraulic unit before transport.
- Clean the bushings and plugs of all quick couplers and fit them with protective caps or couple them together.
- Only transport hydraulic cylinders with the piston rod retracted.
- Place the hydraulic cylinders in the transport crates provided and secure them.
- Empty the hydraulic unit.
- Place the hydraulic unit in the designated transport crate and secure it.
- Sort and clearly label hydraulic hoses according to length.
- Roll up the hydraulic hoses and store them in suitable transport containers.

Transport and temporary storage on the construction site

- If the storage temperature falls below -40 °C, check the hydraulic oil for uneven viscosity and replace if necessary.
- Keep the transport crates after delivery in order to allow safe return transport and storage.
- Clean and dry the hydraulic cylinder and hydraulic unit before putting them into storage.
- Clean the bushings and plugs of all quick couplers and fit them with protective caps or couple them together.
- Only transport and store hydraulic cylinders with the piston rod retracted.
- Place the hydraulic cylinders in the transport crates provided and secure them.
- Place the hydraulic unit in the designated transport crate and secure it.
- Do not store or transport the hydraulic unit horizontally, otherwise oil will escape through the ventilation valve.
- Roll up the hydraulic hoses and transport and store them in suitable transport containers.

Longer storage periods

- Protect connections against corrosion using a suitable preserving agent.
- Close all openings so they are airtight.
- If stored in regions characterised by high humidity, also fill the oil tank to the brim with hydraulic oil and ensure that the unit is firmly closed.

H2 Dimensions

Component	Dimensions			Weight[1)]	Figure	Article number
	L mm	W mm	H mm	kg		
Hydr.Pump VARIOKIT 8-fold	1128	675	1073	245	Fig. H2.01	126852
Hydr.-Cylinder VARIOKIT D120-300	832	140	177	55	Fig. H2.02	127480
Hydr.-Cylinder VARIOKIT D60-650	1040	133	160	21	Fig. H2.03	127481
Wheel Block VARIOKIT 300 kN	500	436	366	135	Fig. H2.04	133664
Hydraulic Drive VARIOKIT	420	581	337	102	Fig. H2.05	133953
Liftframe LALD VARIOKIT	1735	585	500	167	Fig. H2.06	130955
Hinge Slide LALD VARIOKIT	1221	400	475	132	Fig. H2.07	130902

[1)] All weight details do not include the oil

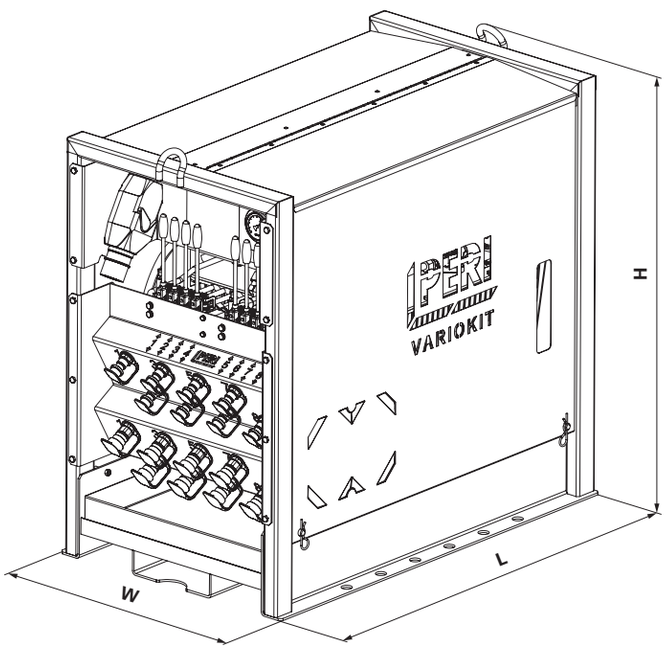


Fig. H2.01

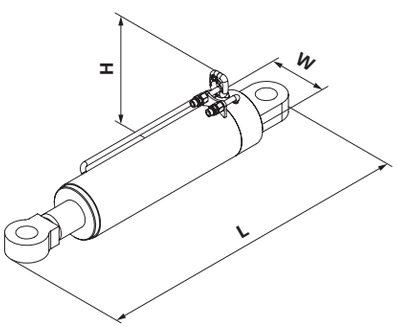


Fig. H2.02

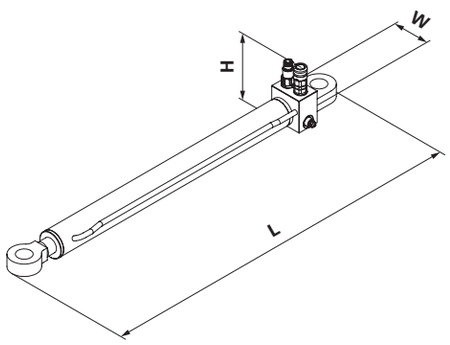


Fig. H2.03

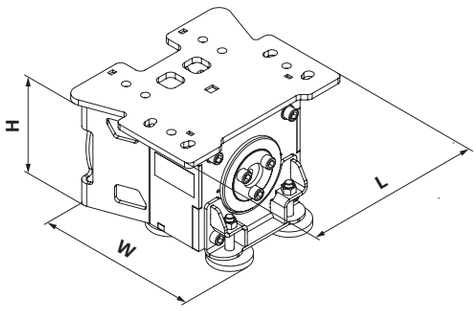


Fig. H2.04

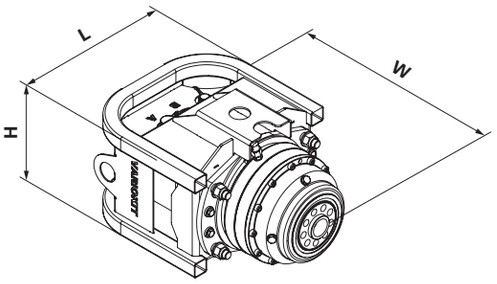


Fig. H2.05

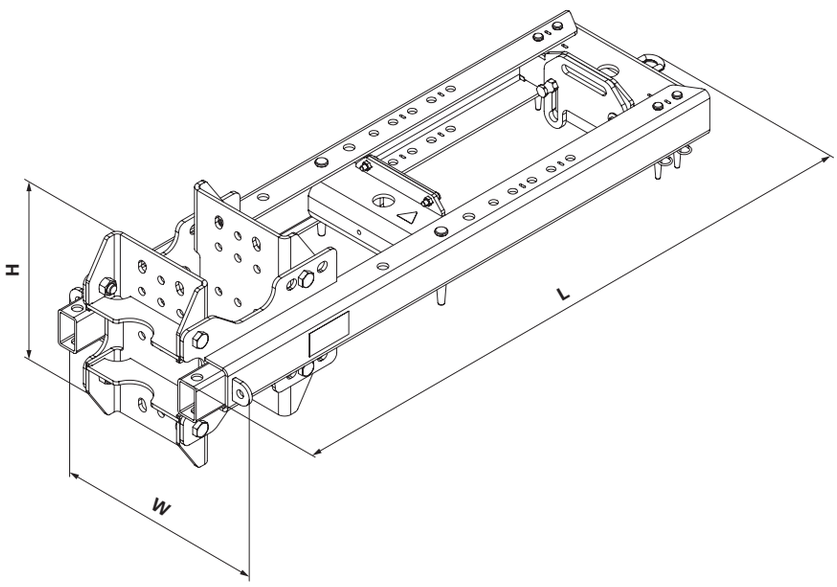


Fig. H2.06

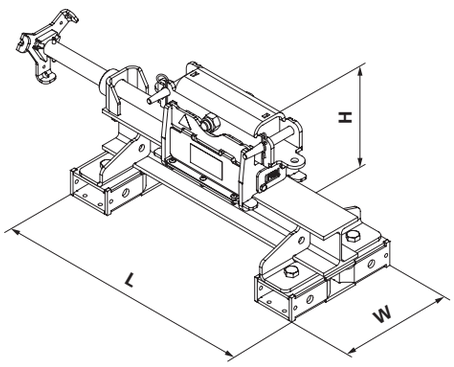


Fig. H2.07

I1 Maintenance schedule

Maintenance location	Serial number of the hydraulic unit	Maintenance work carried out, oil type and quantity	Date	Name/Signature

I2 Participation Protocol and Handover Certificate

Participation Protocol and Handover Certificate
VTC Tunnel Formwork Carriage and Hydraulics

Name: _____

Position: _____

Training: _____

- I have participated in the above training course.
- I have received and understood the assembly instructions for the VTC Tunnel Formwork Carriage.
- I know the safety regulations and will adhere to them in practice.
- If I have any questions or in case of uncertainty, I will contact:

_____

_____

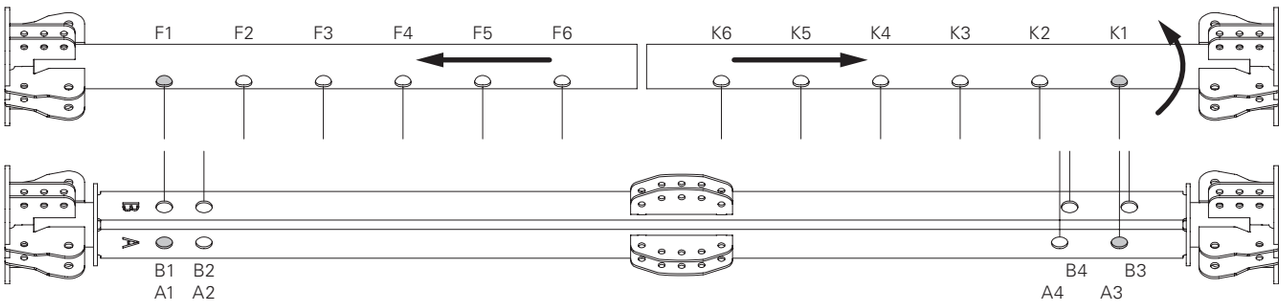
Date/Signature: _____

Germany
PERI GmbH
Postfach 1264

D - 89259 Weissenhorn

Phone: +49 7309 950 - 0
Fax: +49 7309 950 - 6210

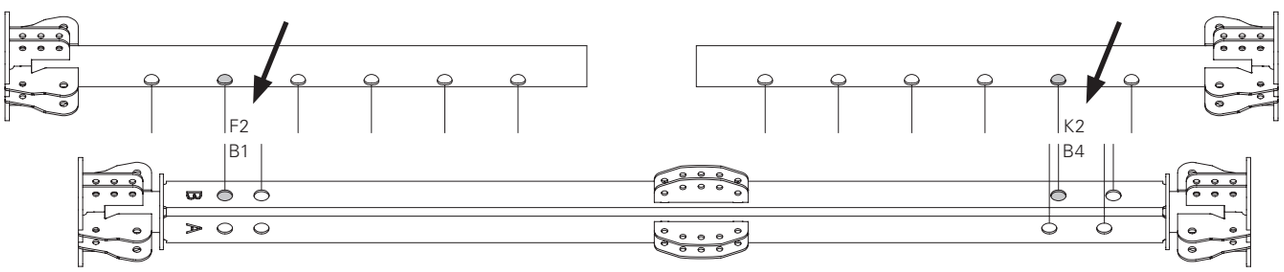
I3 Matrix: Telescopic Prop Extension



Example
Extend the telescopic prop to a length of 4343.75 mm.

1. In the table, look for the linear measure.
2. Read the marking out combination for the lower telescopic arm: B1F2
3. Read the marking out combination for the upper telescopic arm: B4K2

4281.25	B1F2	B3K1
4312.50	A1F2	A4K2
4343.75	B1F2	B4K2
4375.00	A2F3	A3K1
4406.25	B2F3	B3K1



I3 Matrix: Telescopic Prop Extension

Length [mm]	TR bottom[1)]	TR top[2)]
4000.00	A1F1	A3K1
4031.25	B1F1	B3K1
4062.50	A1F1	A4K2
4093.75	B1F1	B4K2
4125.00	A2F2	A3K1
4156.25	B2F2	B3K1
4187.50	A2F2	A4K2
4218.75	B2F2	B4K2
4250.00	A1F2	A3K1
4281.25	B1F2	B3K1
4312.50	A1F2	A4K2
4343.75	B1F2	B4K2
4375.00	A2F3	A3K1
4406.25	B2F3	B3K1
4437.50	A2F3	A4K2
4468.75	B2F3	B4K2
4500.00	A1F2	A3K2
4531.25	B1F2	B3K2
4562.50	A1F2	A4K3
4593.75	B1F2	B4K3
4625.00	A2F3	A3K2
4656.25	B2F3	B3K2
4687.50	A2F3	A4K3
4718.75	B2F3	B4K3
4750.00	A1F3	A3K2
4781.25	B1F3	B3K2
4812.50	A1F3	A4K3
4843.75	B1F3	B4K3
4875.00	A2F4	A3K2
4906.25	B2F4	B3K2
4937.50	A2F4	A4K3
4968.75	B2F4	B4K3

Length [mm]	TR bottom[1)]	TR top[2)]
5000.00	A1F3	A3K3
5031.25	B1F3	B3K3
5062.50	A1F3	A4K4
5093.75	B1F3	B4K4
5125.00	A2F4	A3K3
5156.25	B2F4	B3K3
5187.50	A2F4	A4K4
5218.75	B2F4	B4K4
5250.00	A1F4	A3K3
5281.25	B1F4	B3K3
5312.50	A1F4	A4K4
5343.75	B1F4	B4K4
5375.00	A2F5	A3K3
5406.25	B2F5	B3K3
5437.50	A2F5	A4K4
5468.75	B2F5	B4K4
5500.00	A1F4	A3K4
5531.25	B1F4	B3K4
5562.50	A1F4	A4K5
5593.75	B1F4	B4K5
5625.00	A2F5	A3K4
5656.25	B2F5	B3K4
5687.50	A2F5	A4K5
5718.75	B2F5	B4K5
5750.00	A1F5	A3K4
5781.25	B1F5	B3K4
5812.50	A1F5	A4K5
5843.75	B1F5	B4K5
5875.00	A2F6	A3K4
5906.25	B2F6	B3K4
5937.50	A2F6	A4K5
5968.75	B2F6	B4K5

Length [mm]	TR bottom[1)]	TR top[2)]
6000.00	A1F5	A3K5
6031.25	B1F5	B3K5
6062.50	A1F5	A4K6
6093.75	B1F5	B4K6
6125.00	A2F6	A3K5
6156.25	B2F6	B3K5
6187.50	A2F6	A4K6
6218.75	B2F6	B4K6
6250.00	A1F6	A3K5
6281.25	B1F6	B3K5
6312.50	A1F6	A4K6
6343.75	B1F6	B4K6
6375.00	A2F6	A3K6
6406.25	B2F6	B3K6
6437.50[3)]		
6468.75[3)]		
6500.00	A1F6	A3K6

1) TR bottom: Telescopic tube at bottom
2) TR top: Telescopic tube at top
3) These missing extension lengths can be compensated via the adjustment range of the lowering wedges and the alignment of the support wedgeboxes.

EG-Einbauerklärung

im Sinn der EG-Maschinenrichtlinie 2006/42/EG, Anhang II, Teil 1, Abschnitt B vom 17.05.2006.

Hersteller:	PERI SE Rudolf-Diesel-Straße 19 89264 Weißenhorn Deutschland

Die speziellen Technischen Unterlagen gemäß EG-Maschinenrichtlinie 2006/42/EG, Anhang VII, Teil B wurden erstellt! Auf begründetes Verlangen werden die speziellen Technischen Unterlagen an die zuständigen staatlichen Stellen übermittelt! Die Übermittlung kann elektronisch oder auf Papier erfolgen! Alle Schutzrechte verbleiben bei o.g. Hersteller.

Die Inbetriebnahme unseres Produktes bleibt so lange untersagt, bis festgestellt wurde, dass die Ausführung der Anlage/ Maschine, in welcher der Einbau erfolgen soll oder von dem es ein Teil sein wird, mit den entsprechenden Rechtsvorschriften übereinstimmt.

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen:	PERI SE, GROUP QUALITY Anschrift siehe Hersteller

Hiermit erklären wir, dass die Bauart und die Ausführung der

Unvollständigen Maschine	Hydraulikanlage VTC
für das System	VARIOKIT Tunnelschalwagen VTC
gemäß der Zeichnung	DR-23-043597
und der Funktion	Die Komponenten der Hydraulikanlage VTC sind Teil der Fahrmechanik, der Hub- und Absenkeinrichtung und der Ausschalmechanik des Tunnelschalwagens VTC. Mit dem Hydraulik-Zylinder VARIOKIT Ø120-300 eingebaut in die Hub- und Absenkeinrichtung wird der Tunnelschalwagen angehoben und in Betonierstellung gebracht oder abgesenkt und in Transportstellung gebracht. In der Transportstellung wird der Tunnelschalwagen mittels des hydraulischen Antriebs VARIOKIT als Teil der Fahrmechanik in Längsrichtung verfahren. Mit dem Hydraulik-Zylinder VARIOKIT Ø60-650, eingebaut in die Tunnelschalung, kann ein Teil der Schalung geschwenkt und somit ein- bzw. ausgeschalt werden. Nur die aufgeführten Hydraulikaggregate und Hydraulikschläuche sind zum Betrieb der aufgeführten Hydraulikzylinder und des Hydraulischen Antriebs zu verwenden.

folgenden geltenden Normen und Richtlinien entspricht.

EG-Richtlinie 2006/42/EG	Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen

Es wird erklärt, dass die folgenden grundlegenden Anforderungen der Maschinenrichtlinie 2006/42/EG erfüllt sind: 1.1.3, 1.3., 1.3.1, 1.3.2, 1.3.7, 1.3.9, 1.5.1, 1.5.15, 1.6.1, 1.6.3, 1.6.5

Angewandte harmonisierte Normen, insbesondere:

DIN EN ISO 12100: 2011-03	Sicherheit von Maschinen; Allgemeine Gestaltungsleitsätze – Risikobeurteilung und Risikominderung
DIN EN 60204-1: 2019-06	Sicherheit von Maschinen; Elektr. Ausrüstung von Maschinen Teil 1: Allgemeine Anforderungen
DIN EN ISO 13854: 2020-01	Sicherheit von Maschinen; Mindestabstände zur Vermeidung des Quetschens von Körperteilen
DIN EN ISO 13857: 2020-04	Sicherheit von Maschinen; Sicherheitsabstände gegen das Erreichen von Gefährdungsbereichen mit den oberen und unteren Gliedmaßen
DIN EN 614-1: 2009-06	Sicherheit von Maschinen – Ergonomische Gestaltungsgrundsätze Teil 1: Begriffe und allgemeine Leitsätze
DIN EN ISO 4413: 2011-04	Fluidtechnik – Allgemeine Regeln und sicherheitstechnische Anforderungen an Hydraulikanlagen und deren Bauteile
DIN EN ISO 14118: 2018-07	Sicherheit von Maschinen – Vermeidung von unerwartetem Anlauf

Weißenhorn, den 18.07.2023

Deifel, Dieter
2023.07.25 15:14:54 +02'00'

Dieter Deifel
Leiter R&D Civil Engineering

EC-Declaration of incorporation

according with the EC Machinery Directive 2006/42/EC, Annex II, Part 1, Section B of 17.05.2006.

Manufacturer:	PERI SE Rudolf-Diesel-Straße 19 89264 Weißenhorn Deutschland

The special technical documents according to EC Machinery Directive 2006/42/EC, Annex VII, Part B have been prepared! Upon justified request, the special technical documents will be forwarded to the responsible state authorities! The transmission can be made electronically or on paper! All property rights remain with the above-mentioned manufacturer.

The commissioning of our product remains prohibited until it has been determined that the design of the system/machine in which it is to be installed or of which it will be a part complies with the relevant legal regulations.

Person established in the Community authorized to compile the relevant technical documentation:	PERI SE, GROUP QUALITY Address, see manufacturer

We hereby declare that the design and construction of the

partly completed machinery	Hydraulic System VTC
for the system	VAROKIT Tunnel Formwork Carriage VTC
according drawing	DR-23-043597
and function	The components of the VTC hydraulic system are part of the moving mechanism, the lifting and lowering unit and the striking mechanism of the VTC tunnel formwork carriage. With the Hydraulic Cylinder VARIOKIT Ø120-300 installed in the lifting and lowering unit, the tunnel formwork carriage is lifted and brought into concreting position or lowered and brought into transport position. In the transport position, the tunnel formwork carriage is moved longitudinally by means of the Hydraulic Drive VARIOKIT as part of the travel mechanism. With the Hydraulic Cylinder VARIOKIT Ø60-650, installed in the tunnel formwork, a part of this formwork can be swivelled and thus be placed or stripped. Only the listed hydraulic units and hydraulic hoses are to be used to operate the listed hydraulic cylinders and the hydraulic drive.

complies with the following applicable standards and directives.

EC-Directive 2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council, dated 17th of May 2006 on machinery

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled: 1.1.3, 1.3., 1.3.1, 1.3.2, 1.3.7, 1.3.9, 1.5.1, 1.5.15, 1.6.1, 1.6.3, 1.6.5

Applied harmonised standards, in particular:

DIN EN ISO 12100: 2011-03	Safety of machinery - General principles for design - Risk assessment and risk reduction
DIN EN 60204-1: 2019-06	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
DIN EN ISO 13854: 2020-01	Safety of machinery – Minimum gaps to avoid crushing of parts of the human body
DIN EN ISO 13857: 2020-04	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
DIN EN 614-1: 2009-06	Safety of machinery – Ergonomic design principles – Part 1: Terminology and general principles;
DIN EN ISO 4413: 2011-04	Hydraulic fluid power – General rules and safety requirements for systems and their components
DIN EN ISO 14118: 2018-07	Safety of machinery – Prevention of unexpected start-up

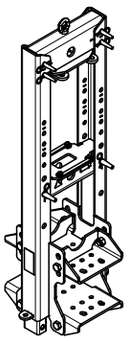
Weissenhorn, 2023-07-25

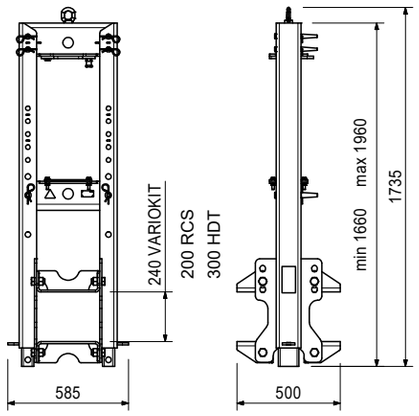
Deifel, Dieter
2023.07.25 15:14:13 +02'00'

Dieter Deifel
Head of R&D Civil Engineering

Art no.	Weight [kg]	
130955	166.000	**Liftframe LALD VARIOKIT**

Lifting device for screwing onto the base girders of the temporary shoring system. The entire heavy-duty structure is guided during the lifting and lowering process. To use with Hinge Slide LALD VARIOKIT item no.: 130902.



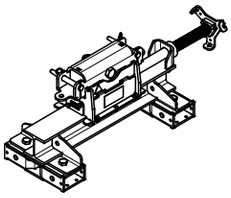


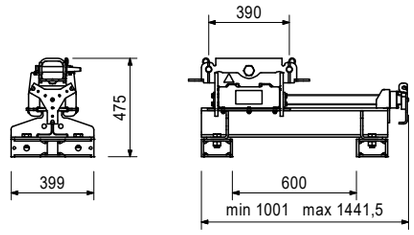
Art no.	Weight [kg]	
130902	132.000	**Hinge Slide LALD VARIOKIT**

Bottom-side, articulated bearing position and positioning aid for temporary shoring systems and heavy-duty structures during the lifting and lowering process. To use with Hinge Slide LALD VARIOKIT item no.: 130955.

Notes

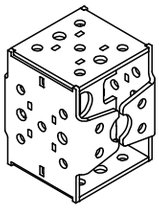
The Lifting Tool LALD VARIOKIT, item no.: 131072, can be used to lift and lower the Hinge Slide LALD VARIOKIT manually in a safe and convenient manner.

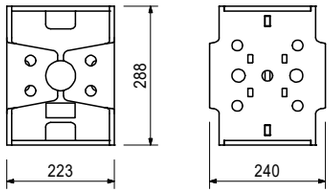




Art no.	Weight [kg]	
130970	20.700	**Support Wedgebox VARIOKIT**

Distance piece for transferring loads.



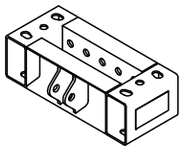


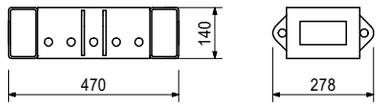
Art no.	Weight [kg]	
130843	17.900	**Thrust Frame LALD HDW VARIOKIT**

Distance piece between Heavy Duty Wheel VARIOKIT or Wheel Block VARIOKIT 300kN and the base girders.

Notes

Fixing of Heavy Duty Wheel VARIOKIT item no.: 131001 or Wheel Block VARIOKIT 300kN item no.: 133664 only together with Mounting Kit Pressure Frame item no.: 133911.



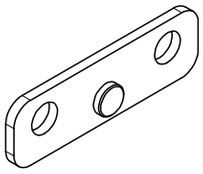


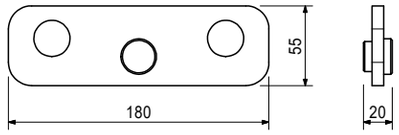
Accessory (not included)

133911	0.583	**Assembly Kit Thrust frame**

Art no.	Weight [kg]	
133911	0.583	**Assembly Kit Thrust Frame**

Necessary for mounting Heavy Duty Wheel VARIOKIT item no.: 131001 or Wheel Block VARIOKIT 300kN item no.: 133664 on Thrust Frame LALD HDW VARIOKIT item no.: 130843.



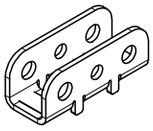


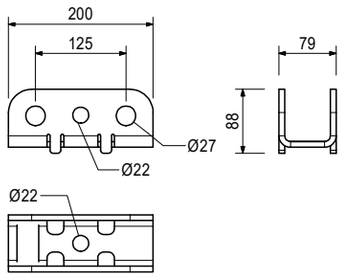
Accessory (not included)

130843	17.900	**Thrust Frame LALD HDW VARIOKIT**
132382	0.360	**Screw ISO4017-M24x070-8.8-ga**
105032	0.070	**Hex-Nut ISO7040-M24-8-ga**
722663	0.032	**Washer ISO7089-24-200HV-ga**

Art no.	Weight [kg]	
130972	2.320	**Connector RCS LALD VARIOKIT**

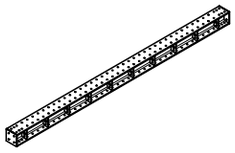
For the connection of Support Wedgebox VARIOKIT or Heavy Duty Roller Swivel Plate to Climbing Rail RCS.

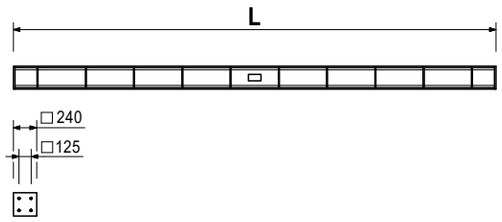




Art no.	Weight [kg]		L [mm]
		Longitudin. Beams VARIOKIT	
129895	141.000	**Longitudin. Beam VARIOKIT 150**	1500
129898	229.000	**Longitudin. Beam VARIOKIT 250**	2500
129901	273.000	**Longitudin. Beam VARIOKIT 300**	3000
129904	317.000	**Longitudin. Beam VARIOKIT 350**	3500
129907	448.000	**Longitudin. Beam VARIOKIT 500**	5000
129910	667.000	**Longitudin. Beam VARIOKIT 750**	7500
129913	886.000	**Longitudin. Beam VARIOKIT 1000**	10000

For use in temporary shoring systems and heavy-duty structures. Profile HEB 240.

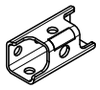


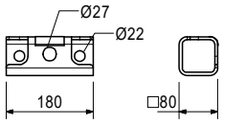


		Accessory (not included)
057139	0.199	**Screw ISO4017-M20x060-8.8-ga**
710334	0.064	**Hex-Nut ISO4032-M20-8-ga**

Art no.	Weight [kg]	
131040	1.810	**Cross Connector RCS VARIOKIT**

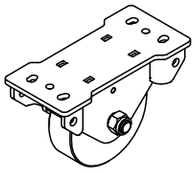
For crosswise connection of Longitudinal Beams VARIOKIT and Climbing Rails RCS.

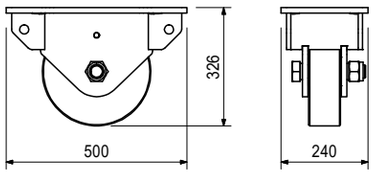




Art no.	Weight [kg]	
131001	75.100	**Heavy Duty Wheel VARIOKIT**

For Crane Rails additionally use Flange Cage HDW VARIOKIT item no.: 130981.



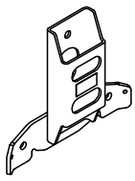


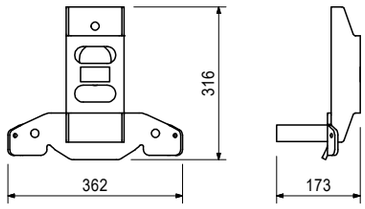
Art no.	Weight [kg]	
130981	4.830	**Flange Cage HDW VARIOKIT**

For mounting on both sides of Heavy Duty Wheel VARIOKIT when used with Crane Rail.

Notes

Use in pairs!





Accessory (not included)

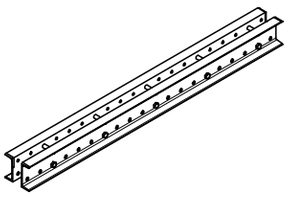
113990	0.600	**Screw ISO4017-M16x025-8.8-ga**
710049	0.262	**Screw ISO4014-M16x150-8.8-ga**
070890	0.030	**Hex-Nut ISO7040-M16-8-ga**
113349	0.087	**Washer ISO7094-16-100HV-ga**

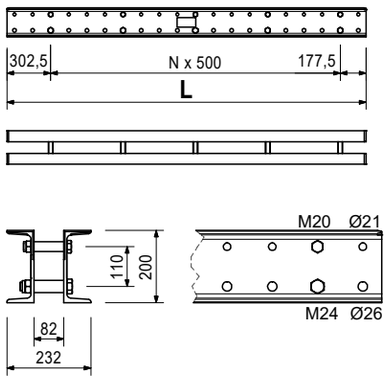
Art no.	Weight [kg]		L [mm]
		Climbing Rails RCS	
114166	78.200	**Climbing Rail RCS 148**	1480
135990	105.000	**Climbing Rail RCS 198**	1980
109469	130.000	**Climbing Rail RCS 248**	2480
112102	156.000	**Climbing Rail RCS 298**	2980
109470	182.000	**Climbing Rail RCS 348**	3480
112141	209.000	**Climbing Rail RCS 398**	3980
109471	262.000	**Climbing Rail RCS 498**	4980
109472	393.000	**Climbing Rail RCS 748**	7480
109610	524.000	**Climbing Rail RCS 998**	9980

Steel profile for all-purpose use of climbing application or civil constructions.
With Spacers M20x82mm and M24x82mm.

Notes

Wy=357.6cm³, Iy=3576cm⁴.



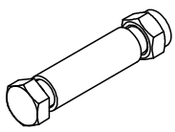


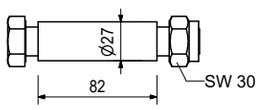
Accessory (not included)

136109	0.472	**Pin Set RCS MAX**

Art no.	Weight [kg]	
110022	0.491	**Spacer M20x82mm**

Spacer for Climbing Rails RCS.



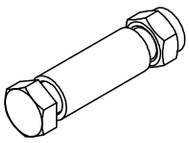


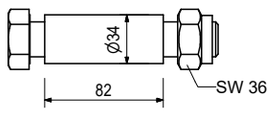
Consists of

1 pc 104477 Screw ISO4014-M20x120-8.8-ga
1 pc 130341 Hex-Nut ISO7042-M20-8-ga

Art no.	Weight [kg]	
110023	0.910	**Spacer M24x82mm**

Spacer for Climbing Rails RCS.



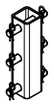


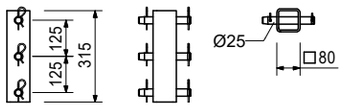
Consists of

1 pc 109612 Screw ISO4014-M24x130-8.8-ga
1 pc 130342 Hex-Nut ISO7042-M24-8-ga

Art no.	Weight [kg]	
109743	6.370	**Climbing Rail Conn. RCS 32**

For an articulated connection of Climbing Rails RCS.



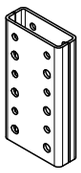


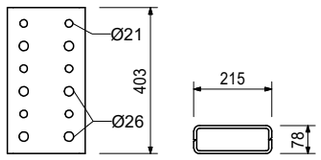
Consists of

3 pc 710894 Pin Ø25x180mm coat
6 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
111833	12.700	**Climbing Rail Conn. RCS 40**

For an articulated connection or doubling of the RCS Climbing Rails.



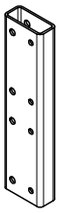


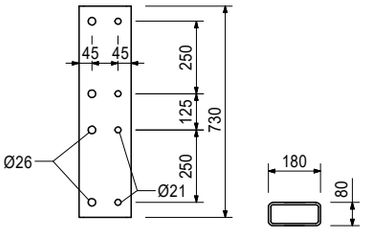
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
113744	21.000	**Climbing Rail Conn. RCS 73**

For rigid connection of Climbing Rails RCS. Perm. bending moment limited.



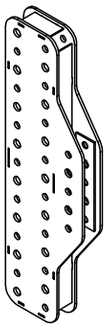


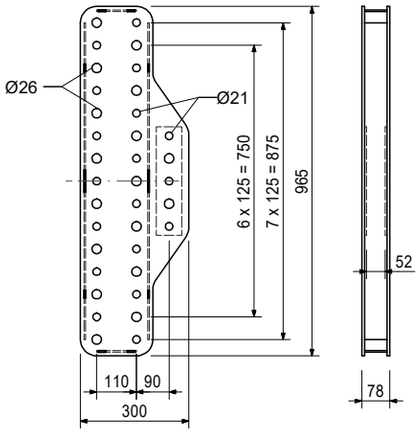
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
111390	32.800	**Climbing Rail Conn. RCS 97**

For rigidly connecting the Climbing Rails RCS. With connection for the Heavy-Duty Spindles SLS.



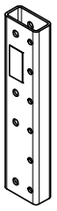


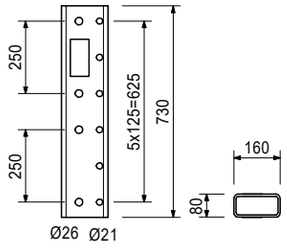
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
128671	19.100	**Climbing Rail Conn. RCS/LPS 73**

For height extension of Climbing Rails RCS in combination with Screen Elements LPS.



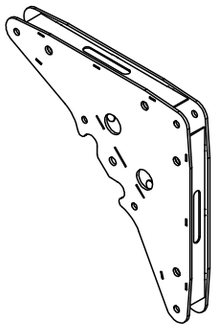


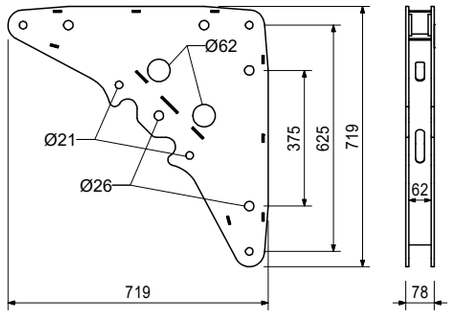
Accessory (not included)

127875	2.000	**Screen Support LPS M20**

Art no.	Weight [kg]	
111382	35.200	**Climbing Rail Angle Conn. RCS**

For rigidly connecting the Climbing Rails RCS at right-angles, for frame construction or as bracket. With connection for the Heavy-Duty Spindle SLS and Tie Rod Cylinder Yoke SRU.



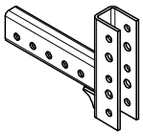


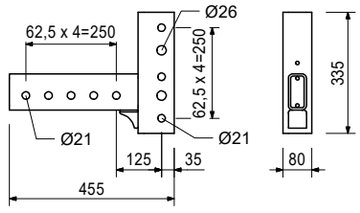
Accessory (not included)

110755	5.140	**Tie Yoke SRU**
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
111283	9.950	**Angle Connector RCS/SRU**

For right-angled connection of Steel Walers SRU to the Climbing Rails RCS and for attaching guardrail posts to Steel Walers SRU.



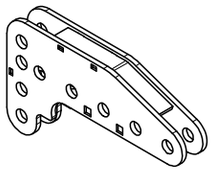


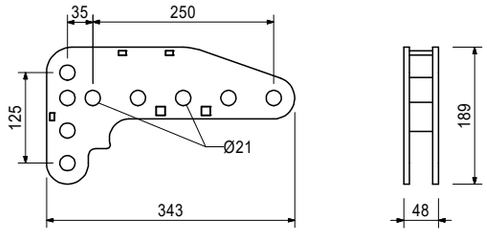
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
115623	5.040	**Corner Connector SRU VARIOKIT**

For a rigid connection of Steel Walers SRU.



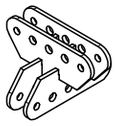


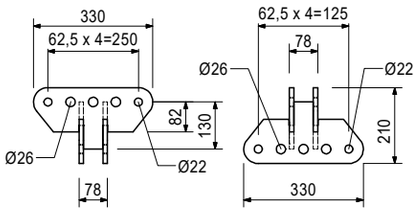
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
123509	13.400	**Cross Connector RCS**

For crosswise connection of two Climbing Rails RCS.



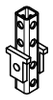


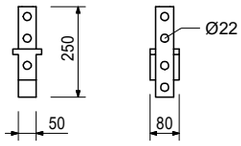
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
111279	2.450	**Cross Connector VARIOKIT**

For right-angled connection of Steel Walers SRU with SRU or Steel Walers SRU with RCS.

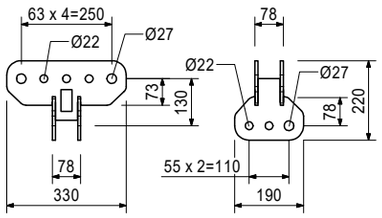




Accessory (not included)

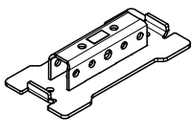
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

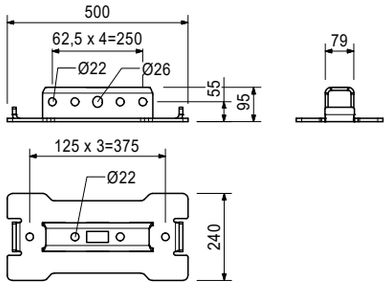
Art no.	Weight [kg]	
129800	7.500	**Vertical Connector RCS**



Art no.	Weight [kg]	
130842	11.600	**Adaptor RCS SLR VARIOKIT**

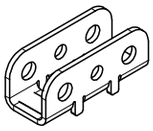
For the connection of Heavy Duty Wheel VARIOKIT or Wheel Block VARIOKIT 300kN to Climbing Rail RCS.
Compatible with Thrust Frame LALD HDW VARIOKIT.

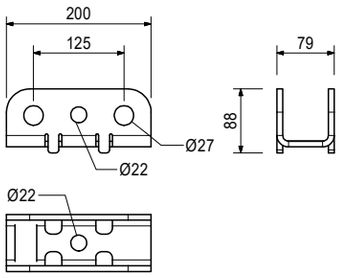




Art no.	Weight [kg]	
130972	2.320	**Connector RCS LALD VARIOKIT**

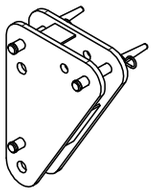
For the connection of Support Wedgebox VARIOKIT or Heavy Duty Roller Swivel Plate to Climbing Rail RCS.

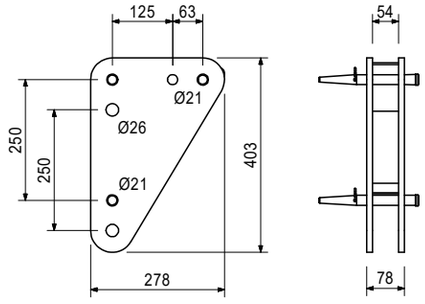




Art no.	Weight [kg]		X [mm]
123497	15.700	**Spindle Bracket VARIOKIT**	100

For mounting Heavy-Duty-Spindles SLS to the Climbing Rail RCS with little spindle inclination.



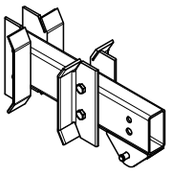


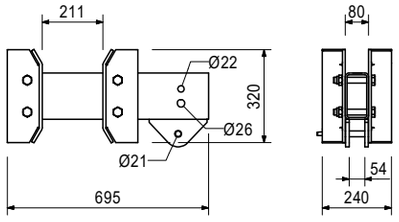
Consists of

3 pc 104031 Fitting Pin Ø21x120mm
3 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
123513	37.800	**Sliding Connector VARIOKIT**

For right-angled and slidable T-connection of Climbing Rails RCS.

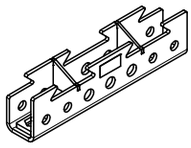


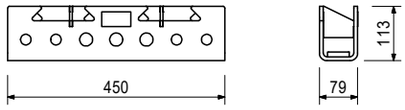


Consists of

1 pc 104031 Fitting Pin Ø21x120mm
1 pc 018060 Cotter Pin 4/1 ga

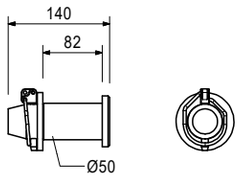
Art no.	Weight [kg]	
130848	6.980	**Multiadaptor RCS VARIOKIT**





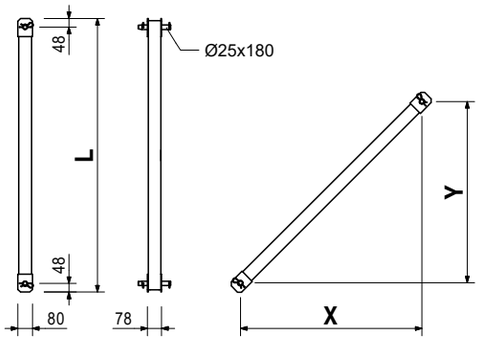
Art no.	Weight [kg]	
130831	2.430	**Pin Hinge Connector RCS**

For different connections. High strength.



Art no.	Weight [kg]		L [mm]	X [mm]	Y [mm]
		Diagonal Stuts RCS			
109718	16.600	**Diagonal Strut RCS 142**	1512	1000	1000
110473	18.300	**Diagonal Strut RCS 160**	1697	1500	1000
110012	23.500	**Diagonal Strut RCS 212**	2217	1500	1500

For bracing RCS framework brackets.



Consists of

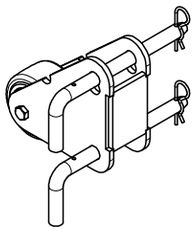
2 pc 109612 Screw ISO4014-M24x130-8.8-ga
1 pc 105032 Hex-Nut ISO7040-M24-8-ga
1 pc 710894 Pin Ø25x180mm coat
1 pc 018060 Cotter Pin 4/1 ga

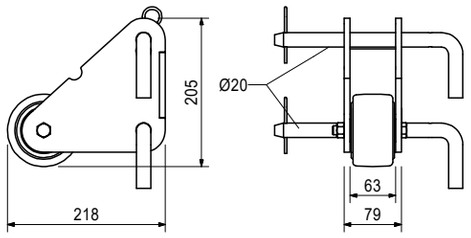
Art no.	Weight [kg]	
116469	5.920	**Heavy Duty Castor RCS 1.5t**

For assembling in Climbing Rails RCS, foldable.

Notes

Permissible load-bearing capacity 1.5t.



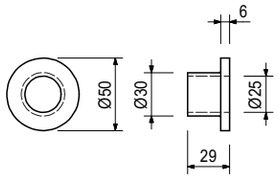


Consists of

2 pc 113012 Locking Pin Ø20x260mm coat
2 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
113822	0.108	**Reducing Sleeve Ø30-Ø25**

For using Stopend Slab Anchor M24/20-128 on the Stopend Slab Shoe RCS.

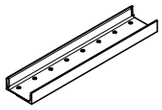


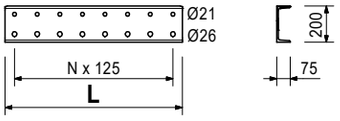
Accessory (not included)

026430	0.334	**Screw ISO4014-M24x070-10.9**

Art no.	Weight [kg]		L [mm]
		Climbing Rail Profiles RCS	
117585	24.300	**Climbing Rail Profile RCS 98**	980
116478	37.000	**Climbing Rail Profile RCS 148**	1480
116479	61.500	**Climbing Rail Profile RCS 248**	2480
112150	73.900	**Climbing Rail Profile RCS 298**	2980
116480	86.300	**Climbing Rail Profile RCS 348**	3480
113705	98.700	**Climbing Rail Profile RCS 398**	3980
116481	124.000	**Climbing Rail Profile RCS 498**	4980
116482	186.000	**Climbing Rail Profile RCS 748**	7480
116483	248.000	**Climbing Rail Profile RCS 998**	9980

Steel profile for all-purpose use of climbing application or civil constructions. Single profile.



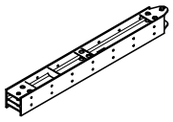


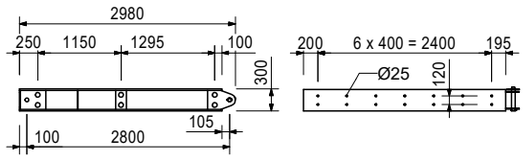
Accessory (not included)

110022	0.491	**Spacer M20x82mm**
110023	0.910	**Spacer M24x82mm**

Art no.	Weight [kg]	
022010	379.000	**Main Beam HDT 280**

System steel girder for use with HD 200 Main Beam areas and special constructions. Profile HEB 300.



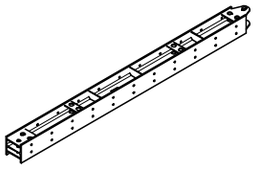


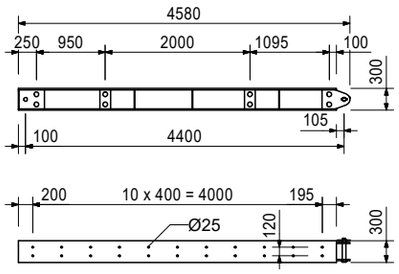
Consists of

1 pc 722457 Sleeve ISO8752-10.0x070-coat
1 pc 105435 Bolt Ø50x330mm coat
1 pc 710618 Cotter Pin 8/1 coat

Art no.	Weight [kg]	
022009	582.000	**Main Beam HDT 440**

System steel girder for use with HD 200 Main Beam areas and special constructions. Profile HEB 300.



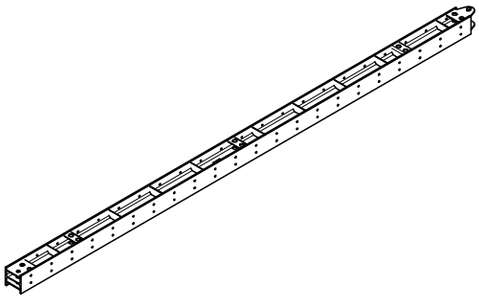


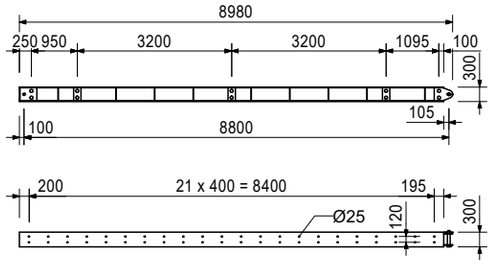
Consists of

1 pc 722457 Sleeve ISO8752-10.0x070-coat
1 pc 105435 Bolt Ø50x330mm coat
1 pc 710618 Cotter Pin 8/1 coat

Art no.	Weight [kg]	
022008	1,130.000	**Main Beam HDT 880**

System steel girder for use with HD 200 Main Beam areas and special constructions. Profile HEB 300.



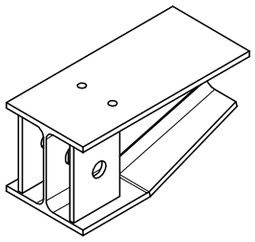


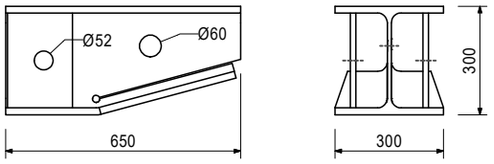
Consists of

1 pc 722457 Sleeve ISO8752-10.0x070-coat
1 pc 105435 Bolt Ø50x330mm coat
1 pc 710618 Cotter Pin 8/1 coat

Art no.	Weight [kg]	
115074	81.900	**Beam Starter HDT**

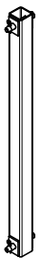
Access aid for HDT Main Beams onto the heavy duty rollers. Holes and connectors match the HDT Main Beam.

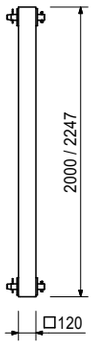




Art no.	Weight [kg]	
		Truss Struts HD
112548	51.100	**Truss Strut HD 2000**
112549	56.500	**Truss Strut HD 2247**

For assembling truss girders with Main Beam HDT.



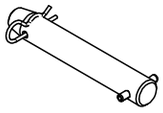


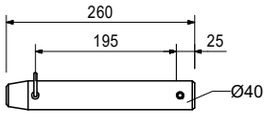
Consists of

2 pc 112547 Pin HD Ø40x260mm

Art no.	Weight [kg]	
112547	2.490	**Pin HD Ø40x260mm**

For connecting the Truss Strut HD with the Truss Bracket HD.



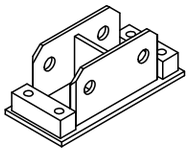


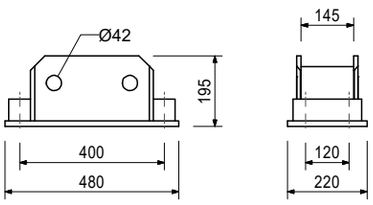
Consists of

1 pc 722457 Sleeve ISO8752-10.0x070-coat
1 pc 022230 Cotter Pin 5/1 ga

Art no.	Weight [kg]	
112558	34.900	**Truss Bracket HD**

For assembly on the Main Beam HDT.



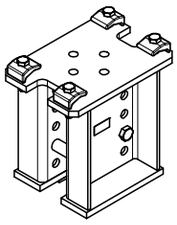


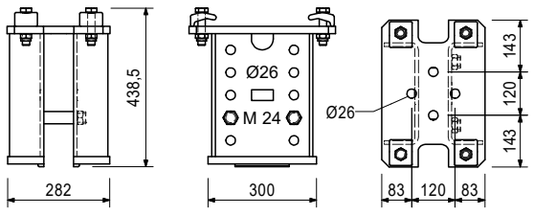
Art no.	Weight [kg]	
115599	53.300	**Brace Connector-2 VARIOKIT**

For connecting VARIOKIT Struts to the Main Beam HDT. Bolted to the main beam.

Notes

Min. locking torque for the clamping screws 100Nm.



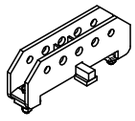


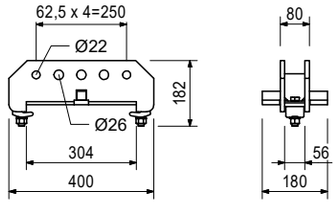
Consists of

2 pc 110023 Spacer M24x82mm
4 pc 115145 Clamping Plate M20 Nova Grip
4 pc 710226 Screw ISO4014-M20x090-8.8-ga
4 pc 108201 Hex-Nut DIN980-M20-8-ga

Art no.	Weight [kg]	
112816	12.100	**Spindle Spreader VARIOKIT**

For connecting spindles or Climbing Rail RCS transversely to the Main Beam HDT.





Consists of

2 pc 112815 Clamping Plate M16 Nova Grip
2 pc 714093 Screw ISO4014-M16x070-8.8-ga
2 pc 710229 Hex-Nut ISO4032-M16-8-ga
2 pc 711074 Washer ISO7089-16-200HV-ga

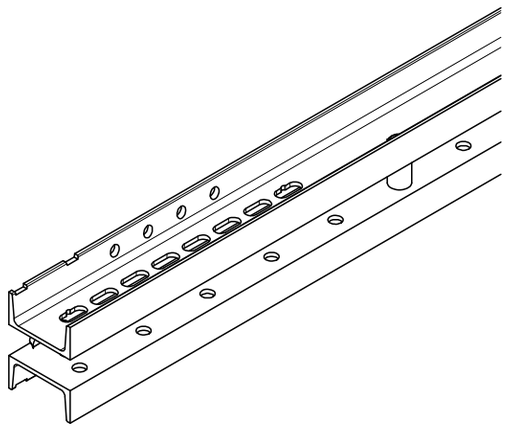
SRU Components VTC

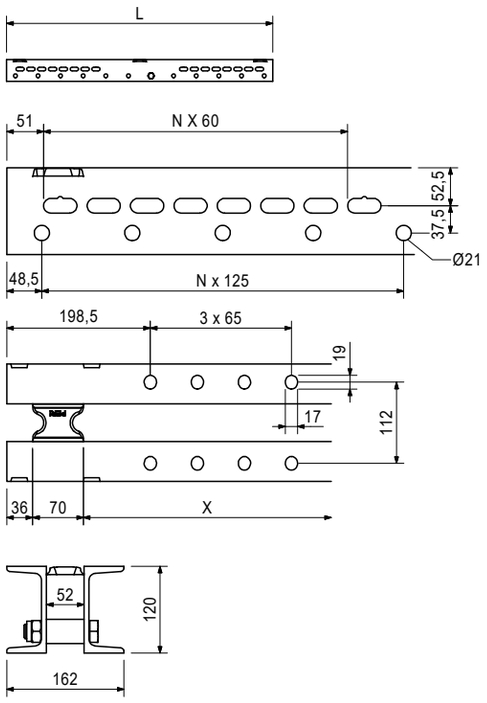
Art no.	Weight [kg]		L [mm]
		Steel Walers SRU	
103868	18.100	**Steel Waler SRU 72 U120**	722
103871	24.200	**Steel Waler SRU 97 U120**	972
123809	29.500	**Steel Waler SRU 117 U120**	1172
103874	30.900	**Steel Waler SRU 122 U120**	1222
103877	38.100	**Steel Waler SRU 147 U120**	1472
103886	44.700	**Steel Waler SRU 172 U120**	1722
125088	46.100	**Steel Waler SRU 177 U120**	1772
103889	52.000	**Steel Waler SRU 197 U120**	1972
103898	58.600	**Steel Waler SRU 222 U120**	2222
123812	63.000	**Steel Waler SRU 237 U120**	2372
103892	65.600	**Steel Waler SRU 247 U120**	2472
103929	72.000	**Steel Waler SRU 272 U120**	2722
103903	81.000	**Steel Waler SRU 297 U120**	2972
103906	92.600	**Steel Waler SRU 347 U120**	3472
103915	106.000	**Steel Waler SRU 397 U120**	3972
103918	119.000	**Steel Waler SRU 447 U120**	4472
103922	135.000	**Steel Waler SRU 497 U120**	4972
103925	146.000	**Steel Waler SRU 547 U120**	5472
103928	159.000	**Steel Waler SRU 597 U120**	5972

Universal Steel Waler Profile U120 used as waling for girder wall formwork and for diverse special applications. With adjustable spacers.

Notes

Permissible load: see PERI Design Tables.
SRU 120 Wy=121.4cm³, Iy=728cm⁴.
SRU 140 Wy=172,8cm³, Iy=1210cm⁴.





Accessory (not included)

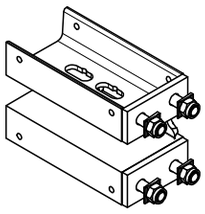
135912	0.067	**Spacer SRU**

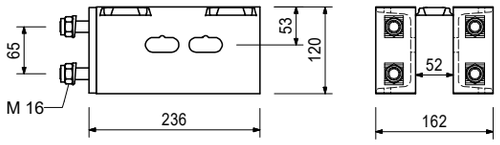
Art no.	Weight [kg]	
104027	7.770	**Extension f. Vario 24 U120 cpl**

For assembly on Steel Waler SRU.

Notes

U120: Wy=121.4cm³, Iy=728cm⁴.





Consists of

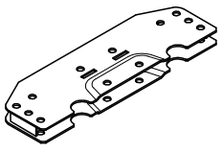
4 pc 710252 Screw ISO4017-M16x050-8.8-ga
4 pc 070890 Hex-Nut ISO7040-M16-8-ga
4 pc 710880 Washer DIN434-18-ga

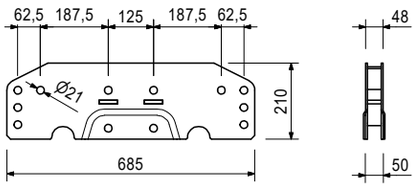
Art no.	Weight [kg]	
103737	10.800	**Universal Coupling UK 70**

For a rigid connection of Steel Walers SRU and for connecting Heavy-Duty Spindles SLS.

Notes

Permissible load: see PERI Design Tables.



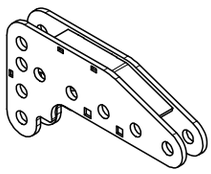


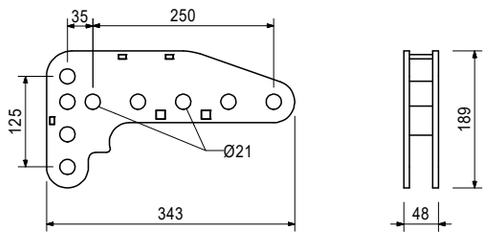
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
115623	5.040	**Corner Connector SRU VARIOKIT**

For a rigid connection of Steel Walers SRU.



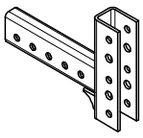


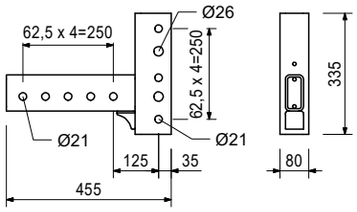
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
111283	9.950	**Angle Connector RCS/SRU**

For right-angled connection of Steel Walers SRU to the Climbing Rails RCS and for attaching guardrail posts to Steel Walers SRU.



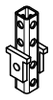


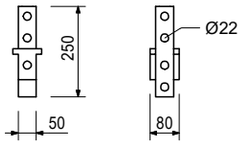
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
111279	2.450	**Cross Connector VARIOKIT**

For right-angled connection of Steel Walers SRU with SRU or Steel Walers SRU with RCS.



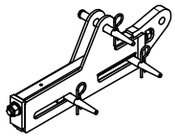


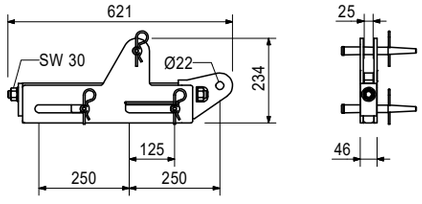
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
113933	17.400	**Adjusting Unit VARIOKIT**

For an articulated connection of Steel Walers SRZ and SRU. With integrated adjustment feature.





Accessory (not included)

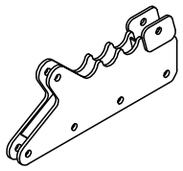
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

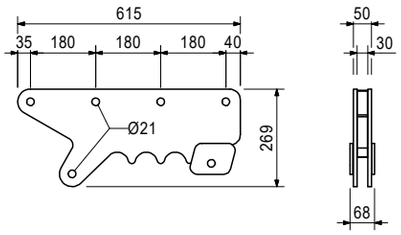
Consists of

3 pc 104031 Fitting Pin Ø21x120mm
3 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
022001	17.900	**Waler Hinge ga**

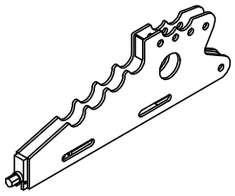
For an articulated connection of Steel Walers SRZ and SRU.

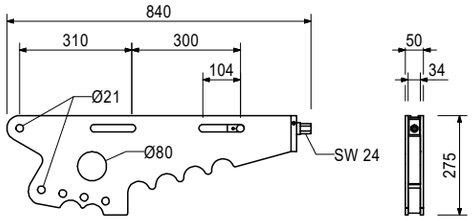




Art no.	Weight [kg]	
022002	18.500	**Waler Hinge adjustable ga**

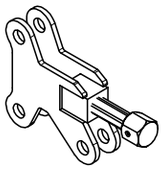
For an articulated connection of Steel Walers SRZ and SRU. With integrated adjustment feature.

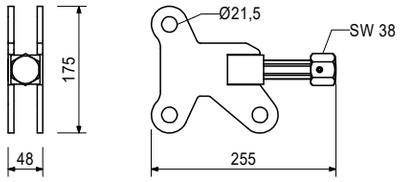




Art no.	Weight [kg]	
115616	3.210	**Bearing Packer VARIOKIT**

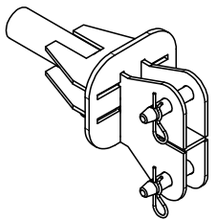
Used as connector part and adjustable compression point.

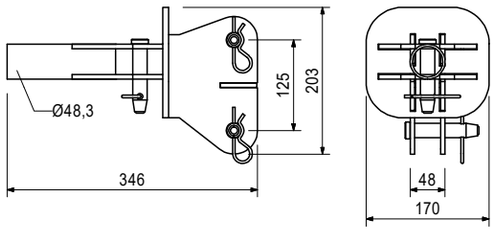




Art no.	Weight [kg]	
104083	5.580	**Waling Coupler FTF/SRU**

For assembly of a horizontal Steel Waler SRU on the FTF Bracket 500 or vertical Steel Walers SRU. With connection for scaffold tube.



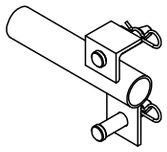


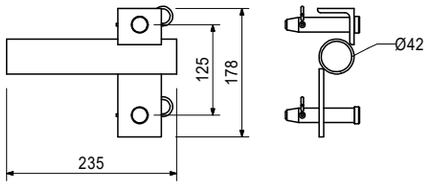
Consists of

3 pc 018060 Cotter Pin 4/1 ga
3 pc 105822 Pin 20x102-S355 ga

Art no.	Weight [kg]	
103945	1.840	**Scaffold Tube Connector FTF**

For connecting scaffold tubes to the Steel Walers SRU.



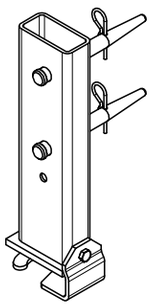


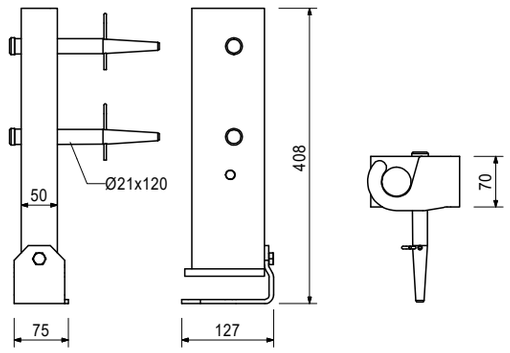
Consists of

2 pc 105822 Pin 20x102-S355 galv.
2 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
115682	5.770	**Height Adjustment VARIOKIT**

For height adjustment of Steel Walers SRU.





Accessory (not included)

100242	4.570	**Adj.Base Plate UJB Ø38mm 80/55**
100411	3.390	**Adj.Base Plate UJB Ø38mm 50/30**

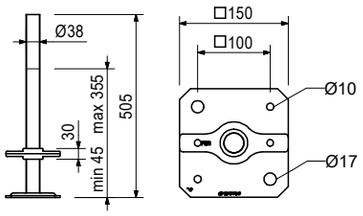
Consists of

2 pc 104031 Fitting Pin Ø21x120mm
2 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
100411	3.390	**Adj.Base Plate UJB Ø38mm 50/30**

Notes

With captive red quick jack nut.



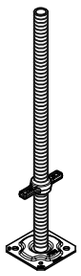
Accessory (not included)

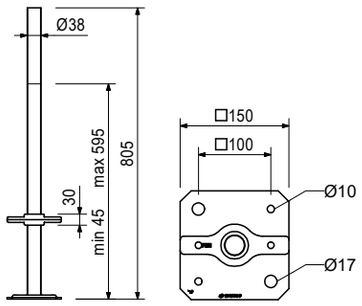
100863	1.020	**Handle Locking UJS**

Art no.	Weight [kg]	
100242	4.570	**Adj.Base Plate UJB Ø38mm 80/55**

Notes

With captive yellow quick jack nut.





Accessory (not included)

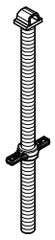
100863	1.020	**Handle Locking UJS**

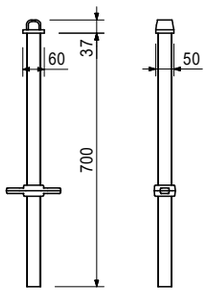
Art no.	Weight [kg]	
109630	4.240	**Spindle Head SRU**

For connecting the Steel Walers SRU and SRZ on shoring scaffolds.

Notes

With captive quick jack nut.



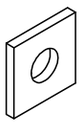


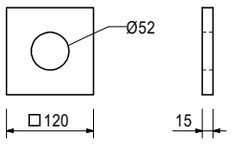
Accessory (not included)

104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
114618	1.450	**Spindle Counter Plate VARIOKIT**

For transferring the spindle load into Steel Waler SRU or SRZ.



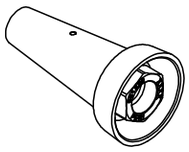


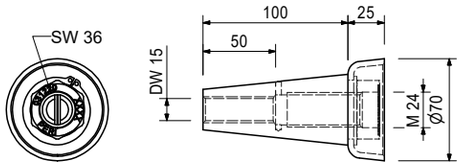
Art no.	Weight [kg]	
031220	1.050	**Climbing Cone-2 DW15 M24 ga**

Anchor System M24. For anchoring climbing systems.

Notes

Seperate design information on request.





Accessory (not included)

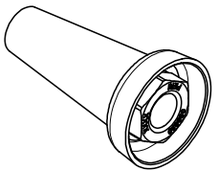
030840	0.515	**Threaded Anchor Plate DW15**
030030	1.440	**Tie Rod DW15 spec. Length**
030740	1.550	**Tie Rod B15 spec. Length**

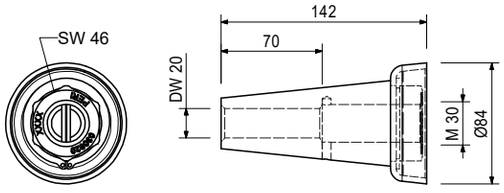
Art no.	Weight [kg]	
030920	1.650	**Climbing Cone-2 DW20 M30 ga**

Anchor System M30. For anchoring climbing systems.

Notes

Separate Design Information on request.





Accessory (not included)

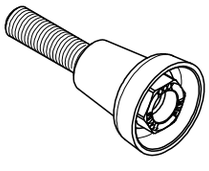
030860	0.792	**Threaded Anchor Plate DW20**
030700	2.560	**Tie Rod DW20 spec. Length**
030745	2.600	**Tie Rod B20 spec. Length**

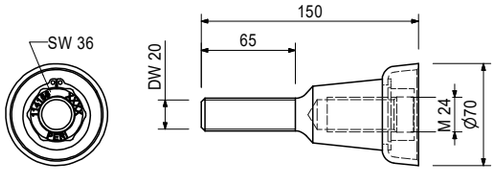
Art no.	Weight [kg]	
114158	1.030	**Screw-On Cone-2 DW20 M24 ga**

Anchor System M24. For anchoring climbing systems.

Notes

Seperate Design Information on request.





Accessory (not included)

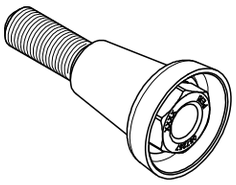
030860	0.792	**Threaded Anchor Plate DW20**

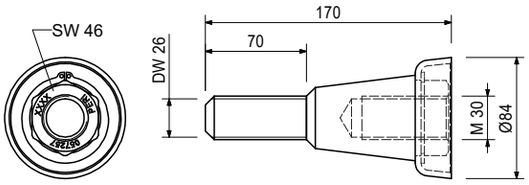
Art no.	Weight [kg]	
057257	1.810	**Screw-On Cone DW26 M30**

Anchor System M30. For anchoring climbing systems.

Notes

Separate dimensioning information on request.





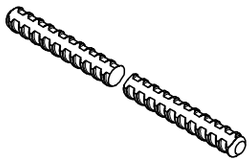
Accessory (not included)

030870	1.260	**Threaded Anchor Plate DW26**

Art no.	Weight [kg]	
		Tie Rods DW15
030050	0.000	**Cutting Cost DW15/B15**
030005	0.720	**Tie Rod DW15 0.5m**
030010	1.230	**Tie Rod DW15 0.85m**
030480	1.440	**Tie Rod DW15 1m**
030490	1.730	**Tie Rod DW15 1.2m**
030170	2.160	**Tie Rod DW15 1.5m**
030020	2.450	**Tie Rod DW15 1.7m**
030180	2.880	**Tie Rod DW15 2m**
030710	3.600	**Tie Rod DW15 2.5m**
030720	4.320	**Tie Rod DW15 3m**
030730	5.040	**Tie Rod DW15 3.5m**
030160	8.640	**Tie Rod DW15 6m**
030030	1.440	**Tie Rod DW15 spec. Length**

Notes

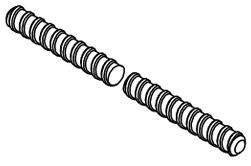
Non-weldable! Observe Approval! Permissible tension force 90kN.



Art no.	Weight [kg]	
		Tie Rods B15
030050	0.000	**Cutting Cost DW15/B15**
030150	0.420	**Tie Rod B15 0.30m**
030740	1.550	**Tie Rod B15 spec. Length**

Notes

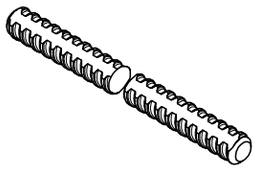
Weldable! Observe Approval! Permissible tension force 82kN.



Art no.	Weight [kg]	
		Tie Rods DW20
030800	0.000	**Cutting Costs DW20/B20**
030640	1.280	**Tie Rod DW20 0.5m**
030641	2.560	**Tie Rod DW20 1m**
030680	15.400	**Tie Rod DW20 6m**
030700	2.560	**Tie Rod DW20 spec. Length**

Notes

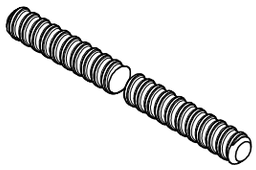
Weldable! Observe Approval! Permissible tension force 150kN.



Art no.	Weight [kg]	
		Tie Rods B20
030800	0.000	**Cutting Costs DW20/B20**
030745	2.600	**Tie Rod B20 spec. Length**

Notes

Weldable! Observe Approval! Permissible tension force 150kN.

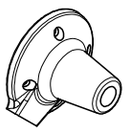


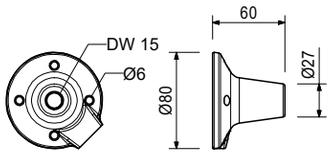
Art no.	Weight [kg]	
030840	0.515	**Threaded Anchor Plate DW15**

For use with Tie Rod DW15 or B15. For anchoring in concrete.

Notes

Lost anchor part.



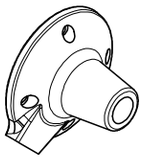


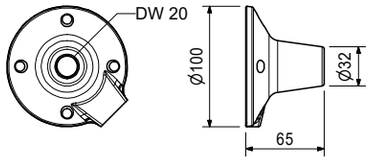
Art no.	Weight [kg]	
030860	0.792	**Threaded Anchor Plate DW20**

For use with Tie Rod DW20, B20 or Screw-On Cone-2 M24/DW20. For anchoring in concrete.

Notes

Lost anchor part.



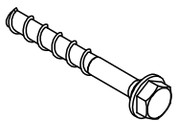


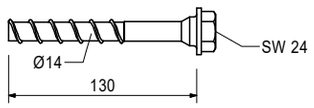
Art no.	Weight [kg]	
124777	0.210	**Anchor Bolt SW24 Ø14/20x130mm**

For temporary attachment to reinforced concrete components.

Notes

Take the PERI Data Sheet into consideration!
Hole Ø14mm.



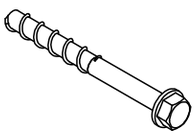


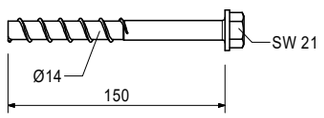
Art no.	Weight [kg]	
132889	0.213	**Anchor Bolt SW21 Ø14x150mm**

For temporary attachment to reinforced concrete components.

Notes

Take the PERI Data Sheet into consideration!
Drill hole Ø14mm.



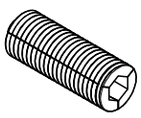


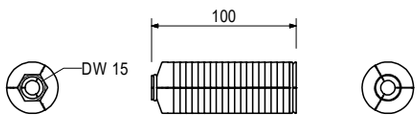
Art no.	Weight [kg]	
108795	0.450	**Rock Anchor HB DW15**

For subsequent anchoring with Tie Rods DW15.

Notes

Follow Instructions for Use!
Permissible load 90kN.
Drill hole Ø=36,5-38mm.



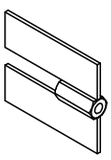


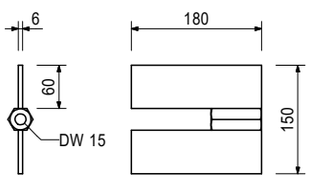
Art no.	Weight [kg]	
031300	1.350	**Weld on Anchor DW15**

For anchoring single-sided formwork.

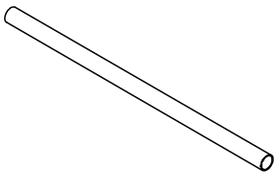
Notes

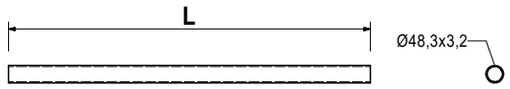
Permissible tension force 90kN.





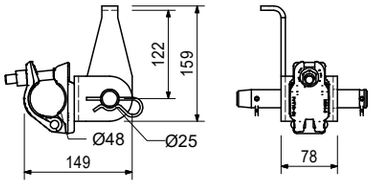
Art no.	Weight [kg]		L [mm]
		Scaff. Tubes 48.3x3.2mm ga	
026417	0.000	**Cutting Costs Scaffold Tube**	1
125976	8.900	**Scaff. Tube 48,3x3,2mm 2,5m ga**	2500
114287	12.500	**Scaff. Tube 48,3x3,2mm 3,5m ga**	3500
026411	3.550	**Scaff. Tube 48.3x3.2mm 1m ga**	1000
026412	7.100	**Scaff. Tube 48.3x3.2mm 2m ga**	2000
026413	10.650	**Scaff. Tube 48.3x3.2mm 3m ga**	3000
026414	14.200	**Scaff. Tube 48.3x3.2mm 4m ga**	4000
026419	17.750	**Scaff. Tube 48.3x3.2mm 5m ga**	5000
026418	21.600	**Scaff. Tube 48.3x3.2mm 6m ga**	6000
026415	3.550	**Scaff. Tube 48.3x3.2mm lfm ga**	1000





Art no.	Weight [kg]	
110084	2.510	**Scaff.Tube Holder RCS Ø48mm**

For connecting Scaffold Tubes Ø48mm to Climbing Rails RCS.

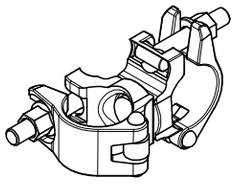


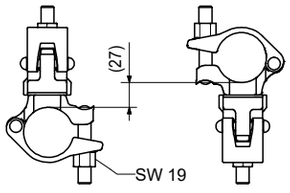
Consists of

1 pc 017040 Screw-On Coupler DK 48 ga
1 pc 710894 Pin Ø25x180mm coat
2 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
017010	1.400	**Swivel Coupler SW Ø48/48mm ga**

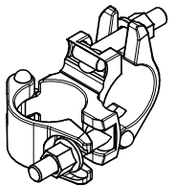
For Scaffold Tubes Ø48mm.

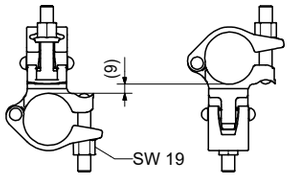




Art no.	Weight [kg]	
017020	1.120	**Standard Coupl. RA Ø48/48mm ga**

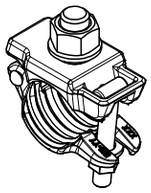
For Scaffold Tubes Ø48mm.

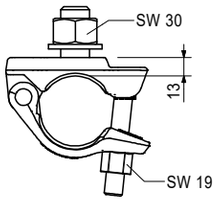




Art no.	Weight [kg]	
131404	1.080	**Screw-On Cou.-2 HT B Ø48mm M20**

For screwing Scaffold Tubes Ø48mm to components up to 9mm thickness.

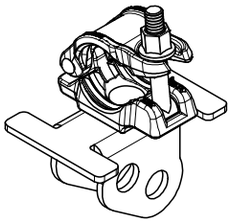


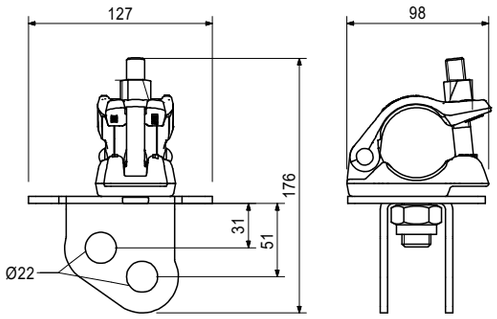


Art no.	Weight [kg]	
130045	1.670	**Scaff.Tube Adaptor Alpha Ø48mm**

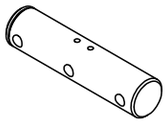
Notes

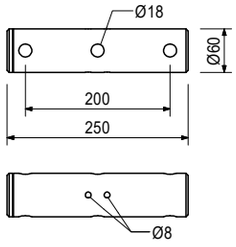
Also compatible for mounting in SRU Steel Walers.





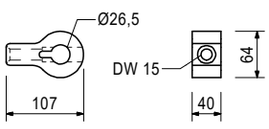
Art no.	Weight [kg]	
131352	5.130	**Tie Yoke Ø60x250xØ18mm**





Art no.	Weight [kg]	
115378	1.080	**Eye Nut RCS DW15**

As an articulated connection to the Climbing Rail RCS, Steel Waler SRU for bracing with DW15.



Accessory (not included)

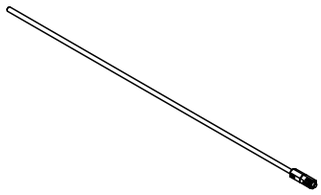
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

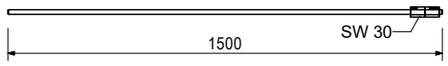
Art no.	Weight [kg]	
110797	2.790	**Tension Rod 15 SRU 150**

Suitable for Strut SRU L=1.65-2.40m, item no. 110765 and the Spacer Tube DW15-550 VARIOKIT.

Notes

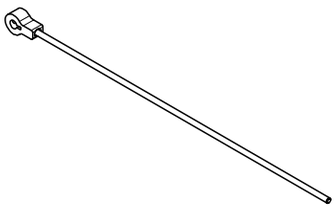
Permissible load 85kN.

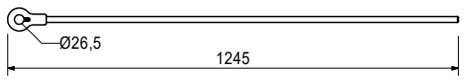




Art no.	Weight [kg]	
115538	3.190	**Tie Yoke Anker Rod VARIOKIT**

For anchoring tensionloads of the consol brackets.



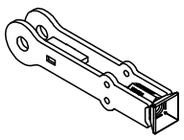


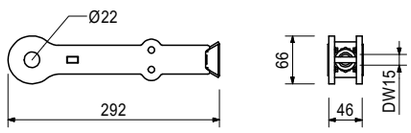
Accessory (not included)

111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
116532	1.890	**Tie Yoke VARIOKIT Ø22mm DW15**

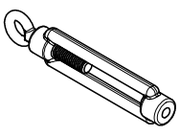
For assembling in Steel Waler SRU.

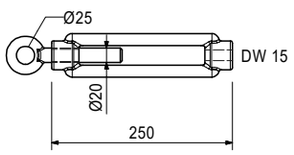




Art no.	Weight [kg]	
116807	1.850	**Turnbuckle CB Ø25-M20/DW15**

For tensioning of Tie Rod DW15.





Consists of

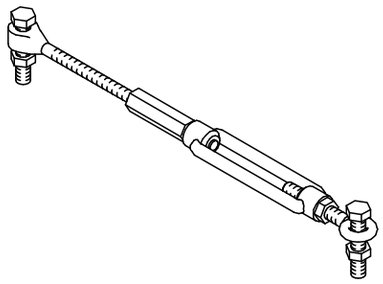
1 pc 711059 Turnbuckle CB coat
1 pc 711060 Eyebolt M20 left coat

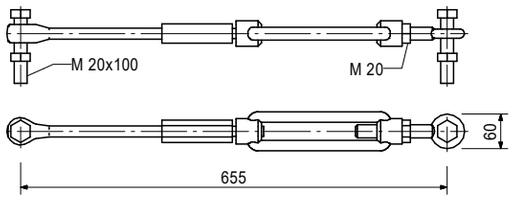
Art no.	Weight [kg]	
057083	3.820	**Bracing ACS DW15**

For bracing scaffolds. For bracing large VARIO GT 24 Elements.

Notes

Tie Rod DW15 must be ordered seperately. Transport dimension 655mm.





Accessory (not included)

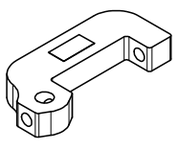
030030	1.440	**Tie Rod DW15 spec. Length**
030050	0.000	**Cutting Cost DW15/B15**

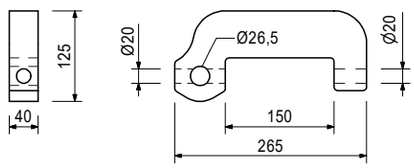
Consists of

1 pc 037150 Tie Yoke
1 pc 030090 Hex-Nut DW15 SW30 108mm ga
1 pc 701335 Tie Rod DW15 0.1m
1 pc 711059 Turnbuckle CB coat
1 pc 711060 Eyebolt M20 left coat
1 pc 057263 Hex-Nut ISO4032-M20-8-left-ga
2 pc 024910 Screw ISO4014-M20x080-8.8-ga
2 pc 710334 Hex-Nut ISO4032-M20-8-ga

Art no.	Weight [kg]	
115375	6.100	**Articulated Spanner RCS DW15**

For tensioning and as an articulated connection to the Climbing Rail RCS, Steel Waler SRU or Bracing Shoe RCS for bracing with DW15.



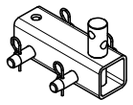


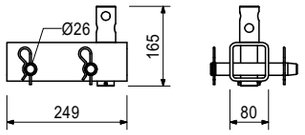
Accessory (not included)

030030	1.440	**Tie Rod DW15 spec. Length**
030070	0.222	**Hex-Nut DW15 SW30 50mm ga**
018060	0.014	**Cotter Pin 4/1 ga**
022230	0.033	**Cotter Pin 5/1 ga**
104031	0.462	**Fitting Pin Ø21x120mm**
111567	0.729	**Fitting Pin Ø26x120mm**

Art no.	Weight [kg]	
123534	5.910	**Brace Connector RCS/DW15-M20**

For mounting diagonal bracing with Tie Rod DW15 and a compression strut to the Climbing Rail RCS.

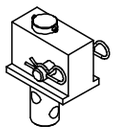


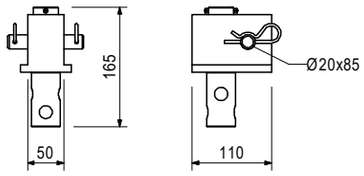


Consists of

2 pc 710894 Pin Ø25x180mm coat
4 pc 018060 Cotter Pin 4/1 ga

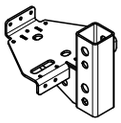
Art no.	Weight [kg]	
117766	4.450	**Brace Connector SRU/DW15**

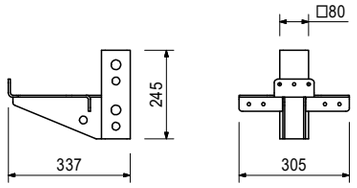




Art no.	Weight [kg]	
128519	6.840	**Enclosure Adaptor RCS Ø26-Ø21**

For the fixation of horizontal Enclosure Girders GT 24 or Climbing Rails profile RCS U200 on vertical Climbing Rails RCS.

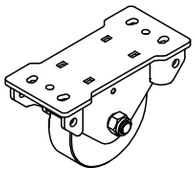


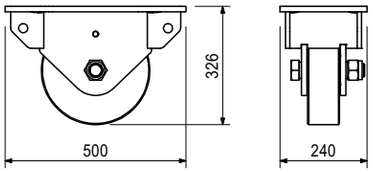


		Accessory (not included)
109612	0.600	**Screw ISO4014-M24x130-8.8-ga**
105032	0.070	**Hex-Nut ISO7040-M24-8-ga**
104477	0.300	**Screw ISO4014-M20x120-8.8-ga**
781053	0.065	**Hex-Nut ISO7040-M20-8-ga**

Art no.	Weight [kg]	
131001	75.100	**Heavy Duty Wheel VARIOKIT**

For Crane Rails additionally use Flange Cage HDW VARIOKIT item no.: 130981.



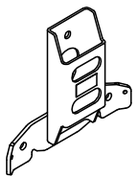


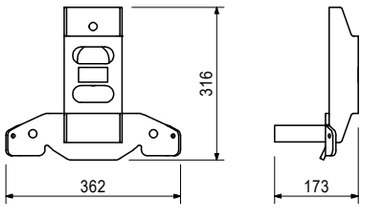
Art no.	Weight [kg]	
130981	4.830	**Flange Cage HDW VARIOKIT**

For mounting on both sides of Heavy Duty Wheel VARIOKIT when used with Crane Rail.

Notes

Use in pairs!

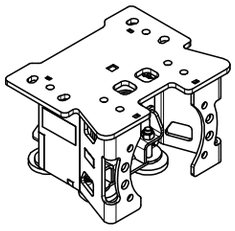


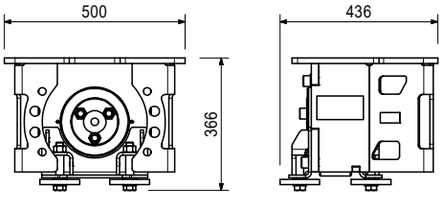


		Accessory (not included)
113990	0.600	**Screw ISO4017-M16x025-8.8-ga**
113349	0.087	**Washer ISO7094-16-100HV-ga**
710049	0.262	**Screw ISO4014-M16x150-8.8-ga**
070890	0.030	**Hex-Nut ISO7040-M16-8-ga**

Art no.	Weight [kg]	
133664	134.000	**Wheel Block VARIOKIT 300kN**

To use with Hydraulic Drive VARIOKIT item no.: 133953.



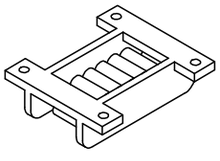


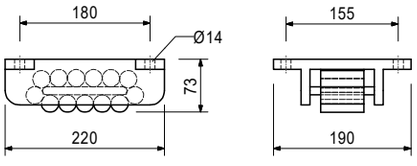
Art no.	Weight [kg]	
022040	8.400	**Heavy Duty Roller 150kN/B-II**

Moving device for special and heavy-duty constructions.

Notes

Permissible load-bearing capacity 150kN.



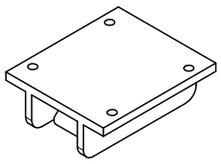


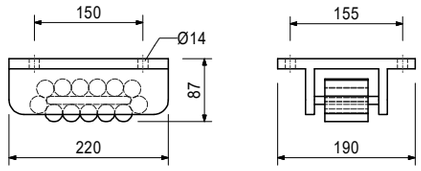
Art no.	Weight [kg]	
022041	11.700	**Heavy Duty Roller 200kN/A-II**

Moving device for special and heavy-duty constructions.

Notes

Permissible load-bearing capacity 200kN.



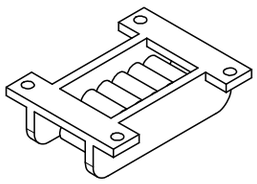


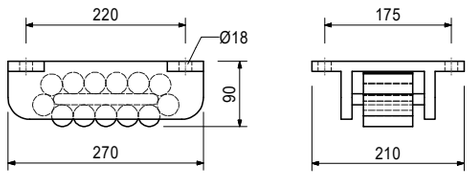
Art no.	Weight [kg]	
022042	14.100	**Heavy Duty Roller 300kN/B-III**

Moving device for special and heavy-dutyconstructions.

Notes

Permissible load-bearing capacity 300kN.



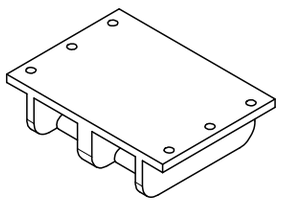


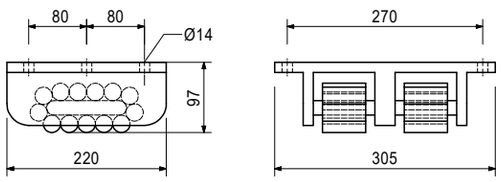
Art no.	Weight [kg]	
114335	24.000	**Rolling Cart 340kN/ZAM-H-II**

Moving device for special and heavy-dutyconstructions.

Notes

Permissible load-bearing capacity 340kN.



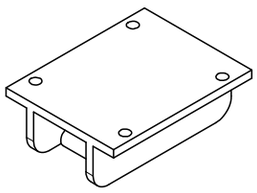


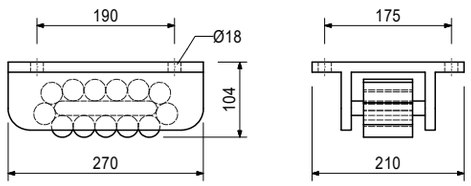
Art no.	Weight [kg]	
022044	19.300	**Heavy Duty Roller 400kN/A-III**

Moving device for special and heavy-dutyconstructions.

Notes

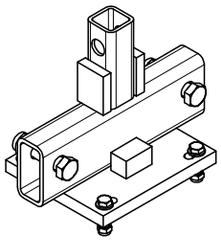
Permissible load-bearing capacity 400kN.

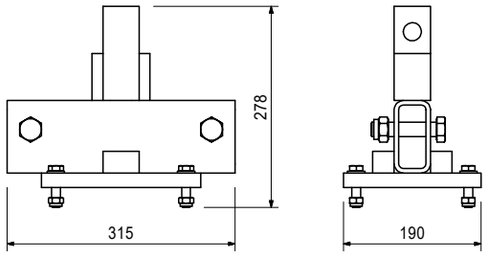




Art no.	Weight [kg]	
111274	13.600	**Heavy Duty Roll. Con. VARIOKIT**

For connecting the Heavy Duty Roller 150kN, item no. 022040 and 200kN, item no. 022041 to Steel Waler SRU.

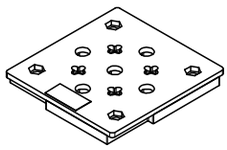


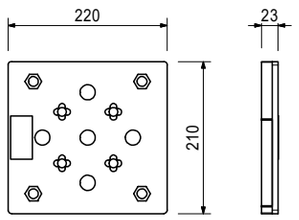


Consists of

4 pc 721817 Screw ISO4014-M12x050-8.8-ga
4 pc 710381 Hex-Nut ISO7040-M12-8-ga
4 pc 780702 Washer ISO7089-12-200HV-ga
2 pc 710226 Screw ISO4014-M20x090-8.8-ga
2 pc 781053 Hex-Nut ISO7040-M20-8-ga

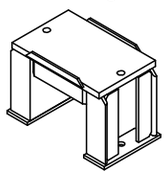
Art no.	Weight [kg]	
131811	7.050	**Heavy Duty Roller Swivel Plate**

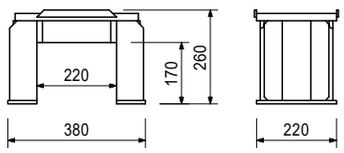




Art no.	Weight [kg]	
113770	32.200	**Support Frame 250 Rail**

For transferring loads when using rails.



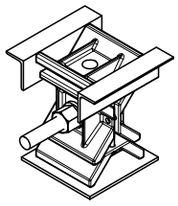


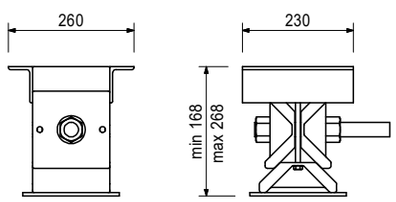
Art no.	Weight [kg]	
024590	32.000	**Lowering Wedge 420kN painted**

For releasing and lowering large loads.

Notes

Take Type Test into consideration.
Wrench size SW46.
Separate Design Information on request.





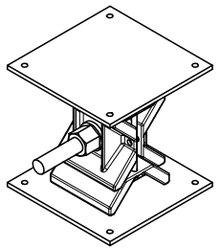
Traversing / Lowering Mechanism VTC

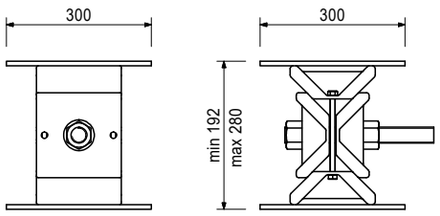
Art no.	Weight [kg]	
117930	53.300	**Lowering Wedge 1000kN painted**

For releasing and lowering large loads.

Notes

Take Type Test into consideration.
Wrench size SW80
Separate Design Information on request.

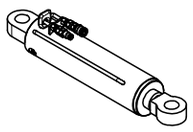


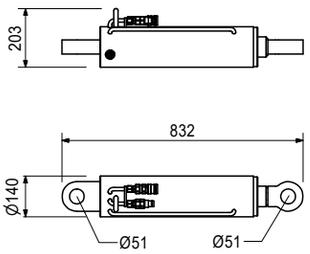


Art no.	Weight [kg]	
127480	55.200	**Hydr.-Cylinder VARIOKIT Ø12-30**

Notes

Follow Supplier Documentation!

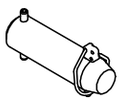


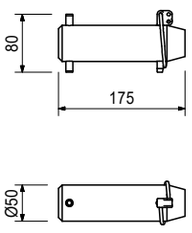


Accessory (not included)

127397	2.660	**Pin Ø50x175mm**

Art no.	Weight [kg]	
127397	2.660	**Pin Ø50x175mm**

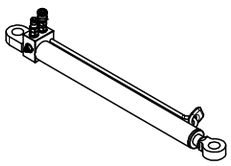


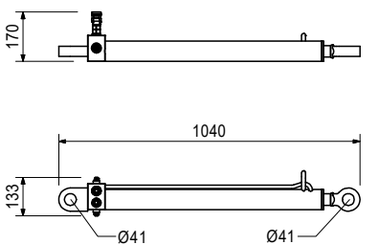


Art no.	Weight [kg]	
127481	21.500	**Hydr.-Cylinder VARIOKIT Ø6-65**

Notes

Follow Supplier Documentation!



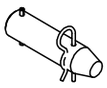


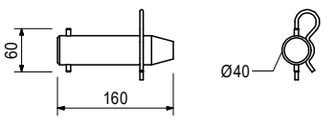
Accessory (not included)

127400	1.490	**Pin Ø40x160mm**

Art no.	Weight [kg]	
127400	1.490	**Pin Ø40x160mm**

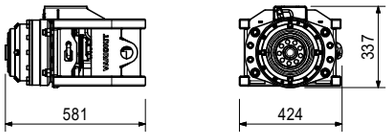
For different connections.





Art no.	Weight [kg]	
133953	102.000	**Hydraulic Drive VARIOKIT**

To use with Wheel Block VARIOKIT 300kN item no.: 133664.

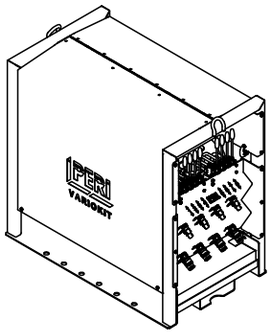


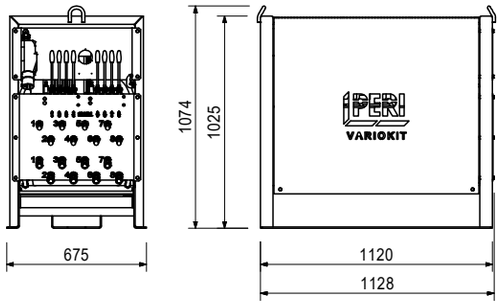
Art no.	Weight [kg]	
126852	245.000	**Hydr.Pump VARIOKIT 8-fold**

Hydraulic pump for shuttering and striking of up to 8 Hydraulic Cylinders (extendable up to 5 Way Valve Units 4-fold item-no. 128338).

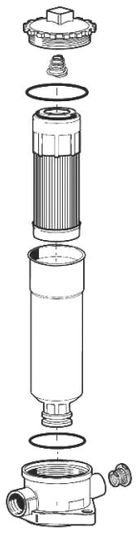
Notes

Follow Supplier Documentation!

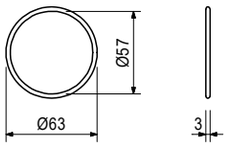




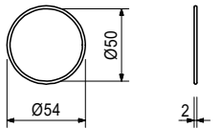
Art no.	Weight [kg]	
128336	0.200	**Return Flow Filter Element**



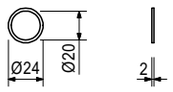
Art no.	Weight [kg]	
128537	0.002	**O-Ring DIN3771 Ø57x3mm**



Art no.	Weight [kg]	
128538	0.002	**O-Ring DIN3771 Ø50x2mm**

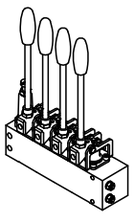


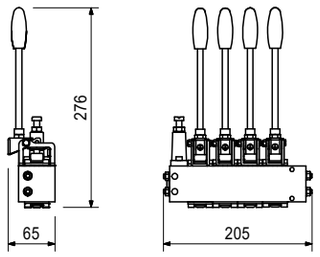
Art no.	Weight [kg]	
128337	0.002	**CU-Gasket 20x24x1.5**



Art no.	Weight [kg]	
128338	4.200	**Way Value Unit 4-fold**

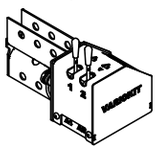
With more than 8 cylinders which can be controled with the connectors of the hydraulic unit a connection is used to connect further way valve units.

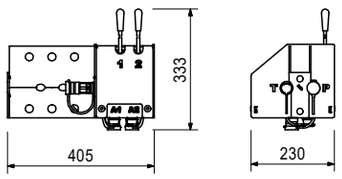




Art no.	Weight [kg]	
134002	25.000	**Valve Block Hydr.-Drive**

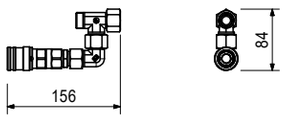
For the hydraulic control of Hydraulic Drive VARIOKIT.





Art no.	Weight [kg]	
133676	0.687	**Convers.Set Hydr-Pump RCS-VTC**

Conversion set for the use of Hydraulic Drive VARIOKIT with Hydraulic Pump RCS 4x190 bar.

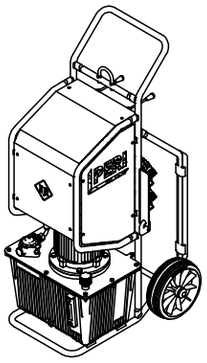


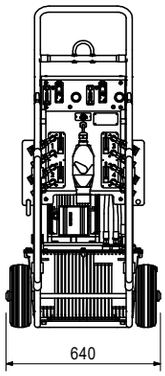
Art no.	Weight [kg]	
109766	109.000	**Hydr.Pump RCS 4x190/380-460V**

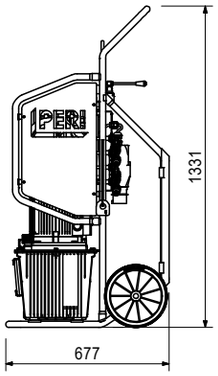
Hydraulic pump for actuating the Climbing Device RCS 50 or LPS 30.

Notes

Follow Instructions for Use.
Use only original PERI Hydraulic Oil.







Accessory (not included)

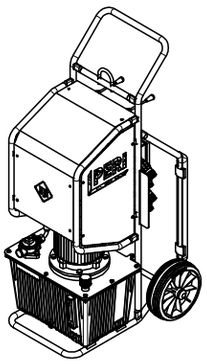
057376	18.300	**Hydr.Oil ISO11158 HVI46 20l**
131270	17.900	**Hydr.Oil ISO11158 HM10 20l**
131274	18.300	**Hydr.Oil ISO11158 HVI22 20l**
137373	18.300	**Hydr.Oil ISO11158 HVI32 20l**

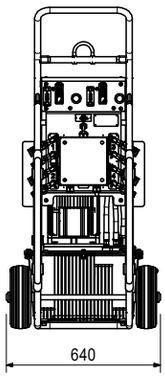
Art no.	Weight [kg]	
114243	109.000	**Hydr.Pump RCS 4x190/460V CSA**

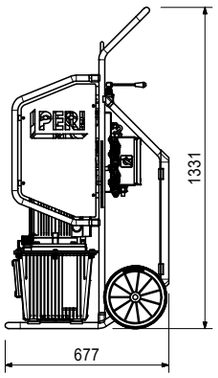
Hydraulic pump for actuating the Climbing Device RCS 50 or LPS 30 (Application area North America).

Notes

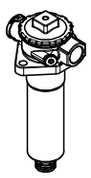
Follow Instructions for Use!
Only use original PERI Hydraulic Oil.

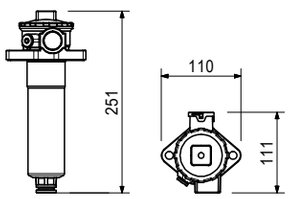




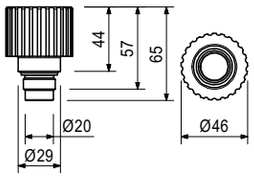


Art no.	Weight [kg]	
130528	0.500	**Return Oil Filter Pump RCS**





Art no.	Weight [kg]	
130529	0.600	**Ventilation Filter Pump RCS**

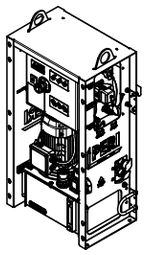


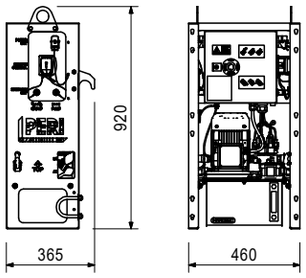
Art no.	Weight [kg]	
135500	47.000	**Hydr.P. RCS MAX 2x210/380-460V**

Hydraulic Pump for driving two Climbing Devices RCS MAX 75 or Climbing Device-2 RCS 50.
Connecting several units enables synchronous climbing of all climbing units.

Notes

Follow Assembly Instructions of the manufacturer!
See PERI Product Information.
Only use original PERI Hydraulic Oil.





Accessory (not included)

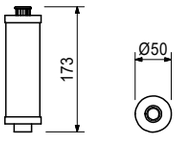
135606	0.100	**Return Filter RCS MAX**
135607	0.100	**Tank Breather Filter RCS MAX**
137281	14.000	**Hydr.Oil Filter Pump CE**
137282	1.000	**Hydr.Oil Filterelement 500**
137283	1.000	**Suction-/Pressure Hose 250**

Art no.	Weight [kg]	
135606	0.100	**Return Filter RCS MAX**

Spare part for Hydraulic Pump RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions of the manufacturer!

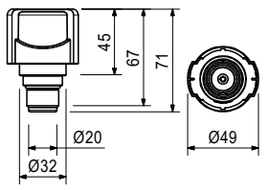


Art no.	Weight [kg]	
135607	0.100	**Tank Breather Filter RCS MAX**

Spare part for Hydraulic Pump RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions of the manufacturer!

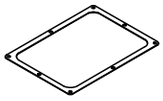


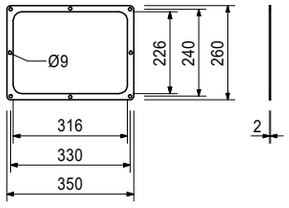
Art no.	Weight [kg]	
136597	0.050	**Gasket Hydr. Tank RCS MAX**

Spare part for Hydraulic Pump RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions!





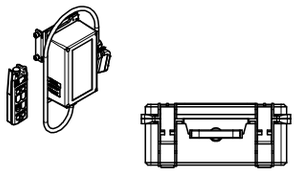
Art no.	Weight [kg]	
136530	5.080	**Remote Contr. RCS MAX wireless**

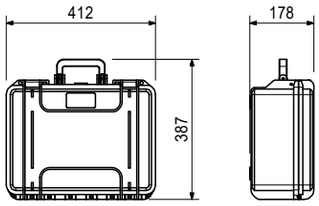
For a wireless operation of Hydraulic Pump RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions of the manufacturer!

Scope of delivery:
1 pc. Remote Control RCS MAX wireless
1 pc. Receiver paired with Remote Control RCS MAX wireless
1 pc. Battery charger with base adapters
2 pc. Chargeable batteries
1 pc. case remote control RCS MAX
2 pc. Magnetic keys
1 pc. Protective casing with harmess



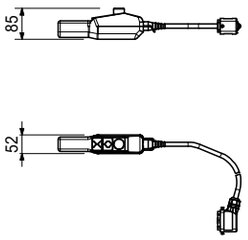


Art no.	Weight [kg]	
135506	2.500	**Remote Control RCS MAX**

Remote control for the simultaneous operation of a climbing unit.

Notes

Follow Assembly Instructions of the manufacturer!

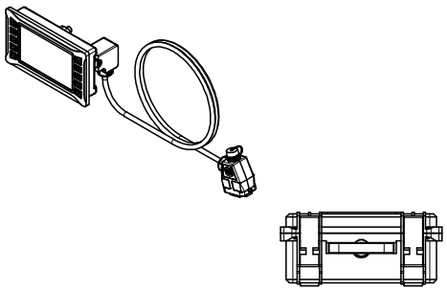


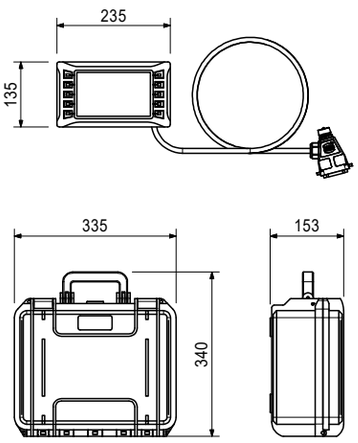
Art no.	Weight [kg]	
135507	3.360	**Display RCS MAX**

For displaying extended information and monitoring of interconnected Hydraulic power packs RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions of the manufacturer!
Cable length: 1.5m.



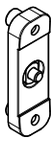


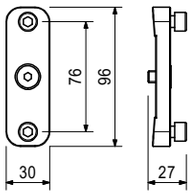
Consists of

1 pc 136675 Case Display RCS MAX

Art no.	Weight [kg]	
136043	0.058	**Display Holder RCS MAX**

For attachement of Display RCS MAX on the Power Unit RCS MAX 2x210 bar.





Consists of

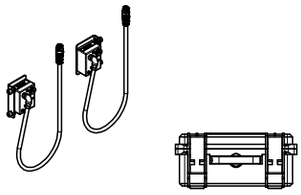
1 pc 136045 Screw ISO10642-M08x016-8.8-ga

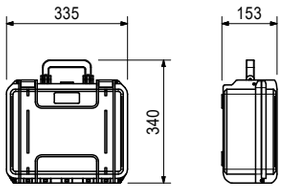
Art no.	Weight [kg]	
136531	2.330	**Data Conn. RCS MAX wireless**

For a wireless group connection between Hydraulic Pumps RCS MAX 2x210 bar.

Notes

Group IN and Group OUT modules are compatible paired.
Technical data see PERI Product Information.





Consists of

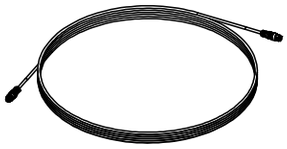
1 pc 136673 Case Data Conn. RCS MAX

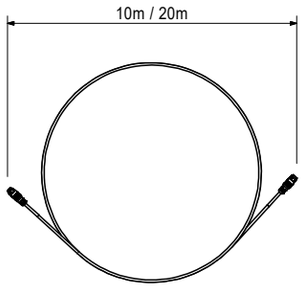
Art no.	Weight [kg]	
		Data Conn. Cables RCS MAX
135503	0.600	**Data Conn. Cable RCS MAX 10m**
135504	1.200	**Data Conn. Cable RCS MAX 20m**

For data connection between Hydraulic Pumps RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions of the manufacturer!





Accessory (not included)

135505	0.100	**Conn. Data Cable RCS MAX**

Art no.	Weight [kg]	
135505	0.100	**Conn. Data Cable RCS MAX**

For connecting two Data Connection Cables RCS MAX.

Notes

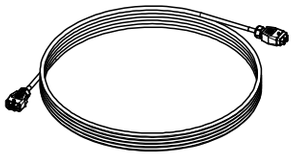
Follow Assembly Instructions of the manufacturer!
Length 18cm.

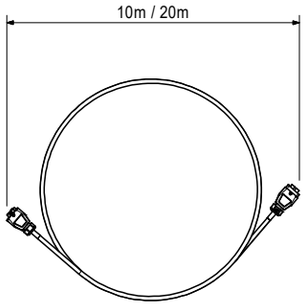
Art no.	Weight [kg]	
		Power Conn. Cables RCS MAX
135498	2.500	**Power Conn. Cable RCS MAX 10m**
135501	4.700	**Power Conn. Cable RCS MAX 20m**

For the power supply between max. 8 Hydraulic Pumps RCS MAX 2x210 bar.

Notes

Follow Assembly Instructions of the manufacturer!





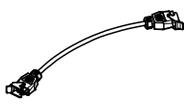
		Accessory (not included)
135502	0.200	**Conn. Power Cable RCS MAX**

Art no.	Weight [kg]	
135502	0.200	**Conn. Power Cable RCS MAX**

For connecting two Power Connection Cables RCS MAX.

Notes

Follow Assembly Instructions of the manufacturer!
Lenght 18cm.

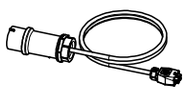


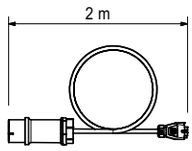
Art no.	Weight [kg]	
135499	0.800	**Power Cab. RCS MAX CEE-32A 2m**

For connecting max. 8 Hydraulic Pumps RCS MAX 2x210 bar to the power supply.

Notes

Follow Assembly Instructions of the manufacturer!
With CEE-Plug 400V, 32A. Manual phase inverter inside.



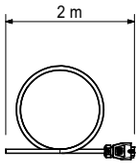


Art no.	Weight [kg]	
136532	0.400	**Power Cable RCS MAX 2m**

For making a country specific power cable.

Notes

Follow Assembly Instructions of the manufacturer!
To connect a country-specific connector to the cable. Only qualified electricians are permitted to work on and repair electrical components.

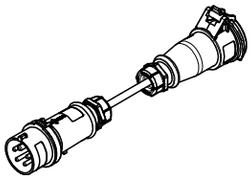


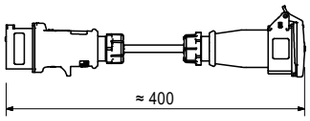
Art no.	Weight [kg]	
110280	0.500	**Adapter Cable RCS**

For the power supply to the Hydraulic Pump RCS.

Notes

Follow Instructions for Use!
With CEE plug connector 400V 16A.



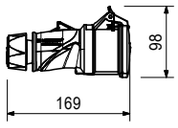


Art no.	Weight [kg]	
110279	0.291	**Plug Socket RCS black**

For providing the power supply to the Hydraulic Pump RCS with 380–460V, 50–60Hz.

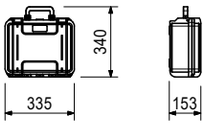
Notes

Follow Instructions for Use!



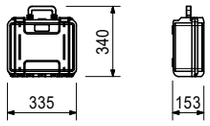
Art no.	Weight [kg]	
136673	1.700	**Case Data Conn. RCS MAX**

For packaging wireless RCS MAX group connections.



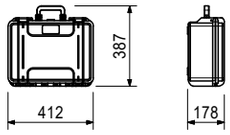
Art no.	Weight [kg]	
136675	1.700	**Case Display RCS MAX**

For packaging of RCS MAX display.



Art no.	Weight [kg]	
136674	2.300	**Case Remote Control RCS MAX**

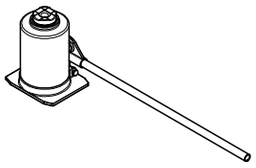
For packaging of wireless RCS MAX remote control.

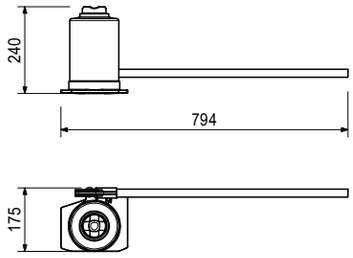


Art no.	Weight [kg]	
130965	21.170	**Hydr. Jack 250kN**

Notes

Hydraulic Jack 250kN always to be used in connection with item no. 131072 Lifting Tool LALD VARIOKIT.



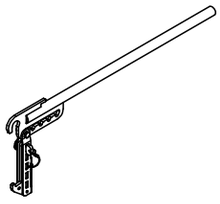


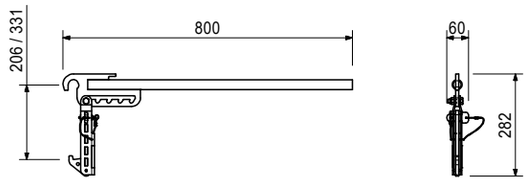
Art no.	Weight [kg]	
131072	2.560	**Lifting Tool LALD VARIOKIT**

For manual lifting of the Hinge Slide LALD VARIOKIT with hydraulic jack while the operation of the lifting and lowering device.

Notes

Is needed to lift and lower manually the Hing Slide LALD VARIOKIT item no.: 130902 safely and comfortably.



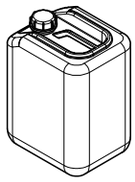


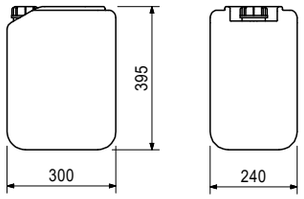
Art no.	Weight [kg]	
		Hydr.Oils ISO11158 in Canister
131270	17.900	**Hydr.Oil ISO11158 HM10 20l**
131274	18.300	**Hydr.Oil ISO11158 HVI22 20l**
137373	18.300	**Hydr.Oil ISO11158 HVI32 20l**
057376	18.300	**Hydr.Oil ISO11158 HVI46 20l**

High-quality synthetic hydraulic oils for PERI Hydraulic Power Units with different viscosity suitable for different temperature ranges.

Notes

Filter with filter pump before filling the aggregates.
Observe Safety Data Sheet and applicable National Safety Regulations regarding hydraulic oil, in particular for transport, storage and disposal! Observe the technical documentation for the hydraulic power unit! Product Data Sheet on request.



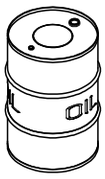


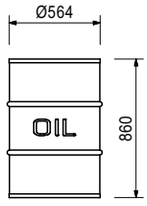
Art no.	Weight [kg]	
		Hydr.Oils ISO11158 in Drum
131273	200.000	**Hydr.Oil ISO11158 HM10 210l**
131275	200.000	**Hydr.Oil ISO11158 HVI22 210l**
137374	201.000	**Hydr.Oil ISO11158 HVI32 210l**
131277	201.000	**Hydr.Oil ISO11158 HVI46 210l**

High-quality synthetic hydraulic oils for PERI Hydraulic Power Units with different viscosity suitable for different temperature ranges.

Notes

Filter with filter pump before filling the aggregates.
Observe Safety Data Sheet and applicable National Safety Regulations regarding hydraulic oil, in particular for transport, storage and disposal! Observe the technical documentation for the hydraulic power unit! Product Data Sheet on request.



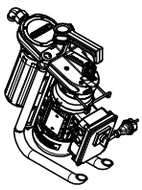


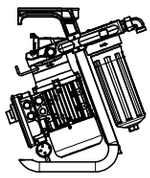
Art no.	Weight [kg]	
137281	14.000	**Hydr.Oil Filter Pump CE**

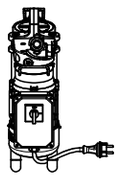
Filter pump for quick and clean transfer of hydraulic oil with simultaneous filtration.

Notes

Follow Instructions for Use!
Power connection 220V/50Hz, plug CEE 7/7







Accessory (not included)

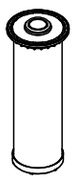
137282	1.000	**Hydr.Oil Filterelement 500**
137283	1.000	**Suction-/Pressure Hose 250**

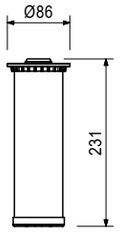
Art no.	Weight [kg]	
137282	1.000	**Hydr.Oil Filterelement 500**

Wear part of the Hydr.Oil Filter Pump CE.

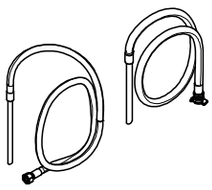
Notes

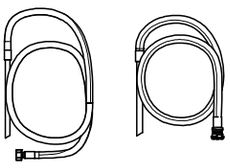
Follow Instruction for use!
Observe the maintenance instructions in the technical documentation for the oil filter pump!
Observe disposal instructions!





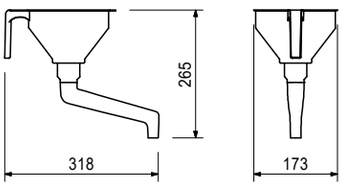
Art no.	Weight [kg]	
137283	1.000	**Suction-/Pressure Hose 250**





Art no.	Weight [kg]	
130685	0.225	**Universal Funnel**

For easy filling of hydraulic pumps with oil.

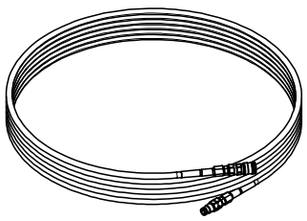


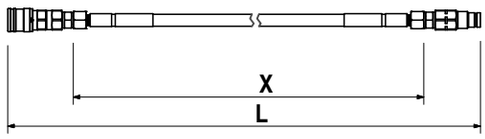
Art no.	Weight [kg]		L [mm]	X [mm]
		Hydr.Hoses 853-2SN-DN08-FF		
129035	0.996	**Hydr.Hose 853-2SN-DN08-FF 1m**	1169	1000
129036	1.430	**Hydr.Hose 853-2SN-DN08-FF 2m**	2169	2000
129419	2.690	**Hydr.Hose 853-2SN-DN08-FF 5m**	5170	5000
129420	4.900	**Hydr.Hose 853-2SN-DN08-FF 10m**	10170	10000
129421	7.120	**Hydr.Hose 853-2SN-DN08-FF 15m**	15170	15000
129422	9.330	**Hydr.Hose 853-2SN-DN08-FF 20m**	20170	20000

Hydraulic hoses with quick couplings and nominal diameter 8mm.

Notes

Follow applicable Safety Regulations for the installation and maintenance of hydraulic lines!



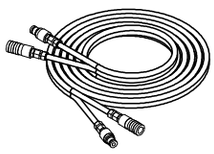


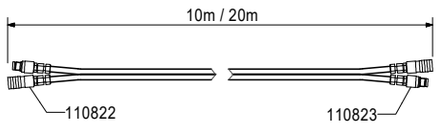
Consists of

1 pc 128992 Pin ISO16028 DN10 R3/8IG
1 pc 128993 Sleeve ISO16028 DN10 R3/8IG
2 pc 051750 Male Stud Coupl. X-GE12PSR-ED

Art no.	Weight [kg]	
		Hydr.Twin Hoses RCS
110069	8.500	**Hydr.Twin Hose RCS 10m**
110070	15.300	**Hydr.Twin Hose RCS 20m**

Two permanently connected hydraulic hoses for connecting hydraulic pumps with hydraulic climbing devices.

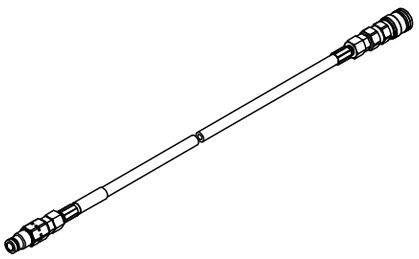


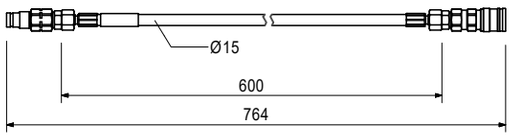


Consists of

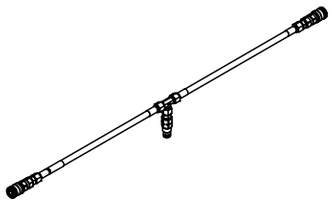
2 pc 128992 Pin ISO16028 DN10 R3/8IG
2 pc 128993 Sleeve ISO16028 DN10 R3/8IG
4 pc 051750 Male Stud Coupl. X-GE12PSR-ED

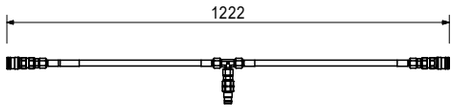
Art no.	Weight [kg]	
126646	0.651	**Bypass Hose RCS**





Art no.	Weight [kg]	
129423	1.370	**Hydr.T-Piece 2SN-DN08-FF**



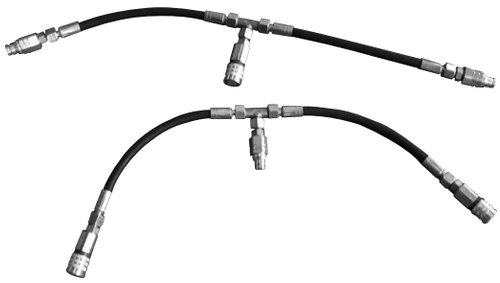


Consists of

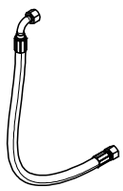
1 pc 128992 Pin ISO16028 DN10 R3/8IG
2 pc 128993 Sleeve ISO16028 DN10 R3/8IG
3 pc 051750 Male Stud Coupl. X-GE12PSR-ED

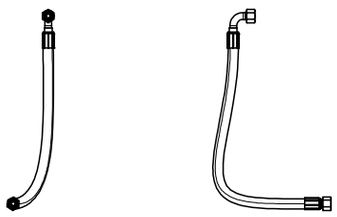
Art no.	Weight [kg]	
112421	3.000	**Hydr. Accum. Piece RCS**

To double the volume of the oil at the Hydraulic Pump RCS. Also doubles the speed of the Hydraulic Winch RCS.



Art no.	Weight [kg]	
137400	0.350	**Hydr.Hose 2SN DN8 65 90°**



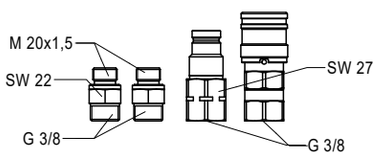


Art no.	Weight [kg]	
129424	0.440	**FF-Coupling Pair X-GE12PSR-ED+**

Spare parts set for PERI Hydraulic Components with quick couplings X-GE 12PSR-ED+.

Notes

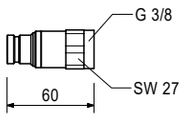
For assembling on hydraulic hoses EN853-2SN-DN08.



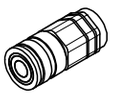
Consists of

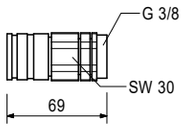
1 pc 128992 Pin ISO16028 DN10 R3/8IG
1 pc 128993 Sleeve ISO16028 DN10 R3/8IG
2 pc 051750 Male Stud Coupl. X-GE12PSR-ED

Art no.	Weight [kg]	
110823	0.171	**Quick Coupler Nipple RCS**



Art no.	Weight [kg]	
110822	0.297	**Quick Coupler Bushing RCS**



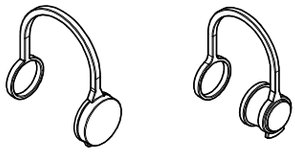


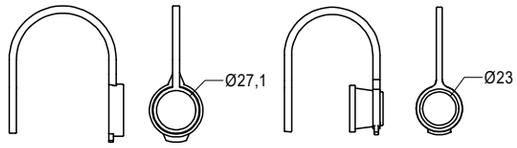
Art no.	Weight [kg]	
125632	0.050	**Prot. Covers Climb. Device RCS**

Spare part.
To protect unplugged quick couplings against dirt and damage.

Notes

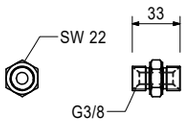
Use with hydraulic hoses with FF couplings possible.
1 set for 1 Climbing Device RCS 50 (2x bushing and 2x nipple each).



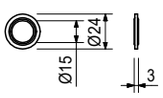


Art no.	Weight [kg]	
051750	0.060	**Male Stud Coupl. X-GE12PSR-ED**

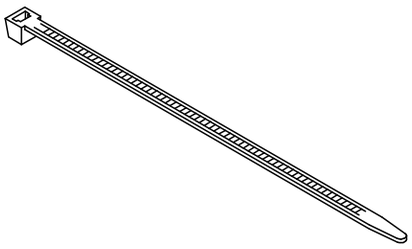
Art no.	Weight [kg]	
128994	0.045	**Double Nipple G3/8**



Art no.	Weight [kg]	
128995	0.004	**Sealing Washer G3/8**

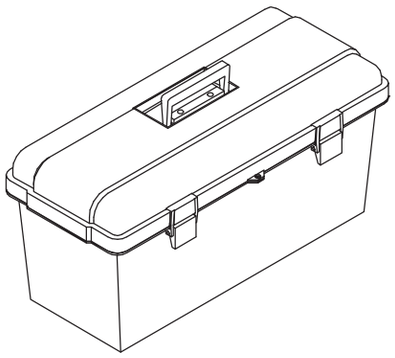


Art no.	Weight [kg]	
137346	0.007	**Cable Binder 7.8x540mm**



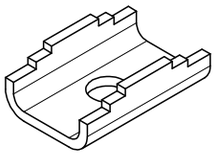
Art no.	Weight [kg]	
115581	10.280	**Service Box Hydraulics**

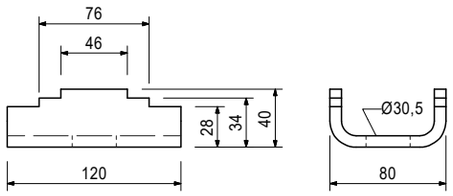
Consisting of:
1 pc. 115590 Tool Box 580x260x285mm
6 pc. 115583 Pressure Gauge Typ 570 VA-Geh.
6 pc. 115584 Hose MKT 6-02 DN 02
12 pc. 115582 Measuring Coupl. SMK 20-G 1/4-PC
2 pc. 115591 Double Spanner SW10x13
1 pc. 115592 Double Spanner SW13x17
1 pc. 135172 Double Spanner SW19x22
1 pc. 115588 Double Spanner SW19x24
1 pc. 051778 Double Spanner SW24x27
1 pc. 115589 Double Spanner SW27x32
1 pc. 057278 Allen Key Set 8 pcs.
1 pc. 115585 Allen Key SW12
1 pc. 057279 Allen Key SW14
1 pc. 057282 Pipe Wrench
1 pc. 115147 Angle Fitting Set PS
2 pc. 115396 Fitting Set PS RCS short
1 pc. 072180 Ratchet Wrench 1/2“
20 pc. 123881 Tube Screw Plug ROV12SX
20 pc. 123880 Threaded Plug VKAN 12S VIT
100 pc. 051760 Cable Binder NT-240H
2 pc. 126425 Distance Piece Ø120mm coat
1 pc. 126440 Socket SW17 1/2“
1 pc. 135173 Allen Key SHR-Bit SW05
1 pc. 135174 Allen Key SHR-Bit SW06
1 pc. 135175 Allen Key SHR-Bit SW08
1 pc. 135176 Allen Key SHR-Bit SW10
1 pc. 135177 SHR Screwdriver Bit 6 parts Slot/PH
2 pc. 711035 PERI Label 128x65mm
1 pc. 126434 List of contents Hydraulic Service Case



Art no.	Weight [kg]	
110055	0.861	**Cross Strap coat**

For fixing formworks at the Strongbacks by means of Tie Yokes DW15.



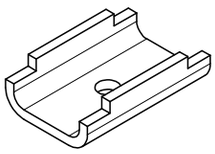


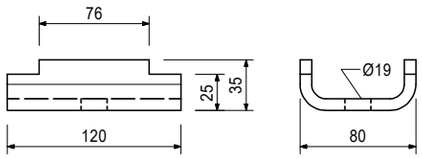
Accessory (not included)

030440	0.686	**Spherical Nut DW15 ga**

Art no.	Weight [kg]	
722137	0.849	**Cross Strap 2 coat**

For fixing formwork at the Strongbacks by means of Tie Yokes DW15.





Accessory (not included)

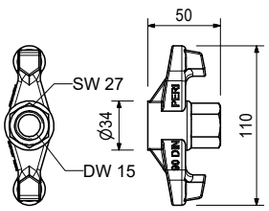
030100	0.439	**Wingnut DW15 ga**

Art no.	Weight [kg]	
030100	0.439	**Wingnut DW15 ga**

For anchoring with Tie Rod DW15 or B15.

Notes

Permissible load 90kN.

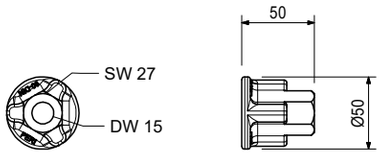


Art no.	Weight [kg]	
030130	0.318	**Cam Nut DW15 coat**

For anchoring with Tie Rod DW15 or B15.

Notes

Permissible load 90kN.

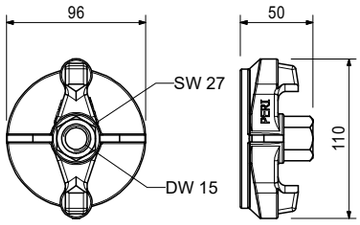


Art no.	Weight [kg]	
030110	0.799	**Wingnut Counterplate DW15 ga**

For anchoring with Tie Rod DW15 or B15.

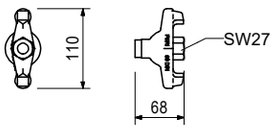
Notes

Permissible load 90kN.



Art no.	Weight [kg]	
030440	0.686	**Spherical Nut DW15 ga**

For pivotable anchoring with Tie Rod DW15 or B15.

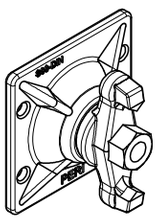


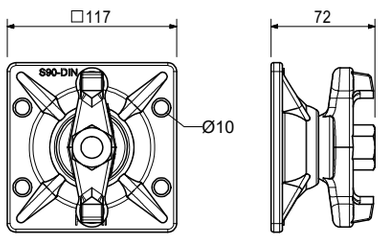
Art no.	Weight [kg]	
030370	1.660	**Wingnut Pivot Plate DW15 ga**

For anchoring with Tie Rod DW15 or B15.
With articulated, captive nut. Maximum inclination of anchor: +/- 8°.

Notes

Wrench size SW27.
Permissible load 90kN.



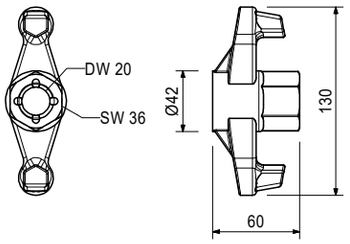


Art no.	Weight [kg]	
030990	0.786	**Wingnut DW20 ga**

For anchoring with Tie Rod DW20 or B20.

Notes

Permissible load 150kN.

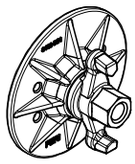


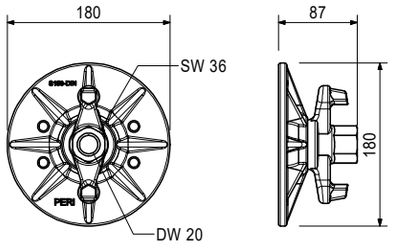
Art no.	Weight [kg]	
127587	3.210	**Wingnut Pivot Plate DW20 ga**

For anchoring with Tie Rod DW20. With pivoting captive nut. Maximum angle of tilting +/- 8°.

Notes

Permissible load 150kN.



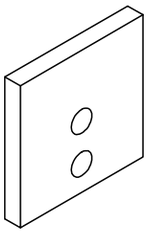


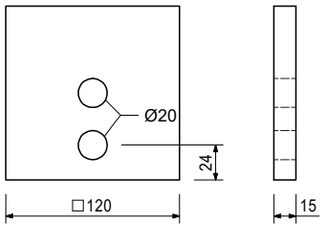
Art no.	Weight [kg]	
030140	1.620	**Counterplate DW15 120x120x15mm**

For anchoring with Tie Rod DW15 or B15.

Notes

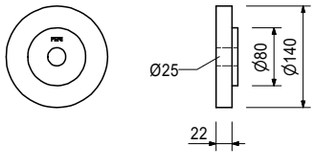
Permissible tension force 90kN.





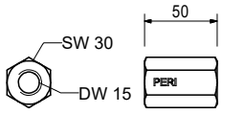
Art no.	Weight [kg]	
114082	2.860	**Counterplate RCS DW20**

Counterplate with centring for anchoring through the Climbing Rail RCS.



Art no.	Weight [kg]	
030070	0.222	**Hex-Nut DW15 SW30 50mm ga**

For anchoring with Tie Rod DW15 or B15.

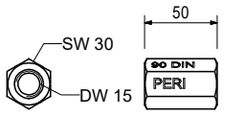


Art no.	Weight [kg]	
030550	0.233	**Hex-Nut DW15 SW30 50mm weldab**

For anchoring with Tie Rod DW15 or B15.

Notes

Weldable! Permissible load 90kN.

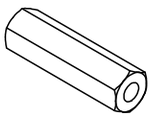


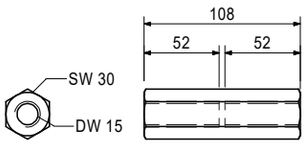
Art no.	Weight [kg]	
030090	0.402	**Hex-Nut DW15 SW30 108mm ga**

For coupling Tie Rod DW15 or B15.

Notes

Permissible load 90kN.



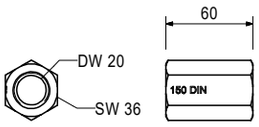


Art no.	Weight [kg]	
030580	0.371	**Hex-Nut DW20 SW36 60mm weldab**

For anchoring with Tie Rod DW20 or B20.

Notes

Weldable! Permissible load 150kN.

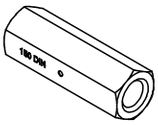


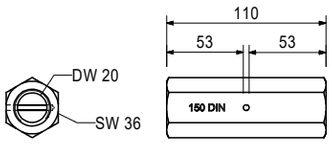
Art no.	Weight [kg]	
030590	0.685	**Hex-Nut DW20 SW36 110mm weldab**

For coupling Tie Rod DW20 oder B20.

Notes

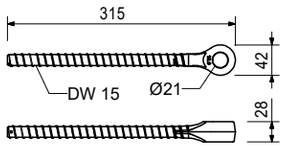
Weldable! Permissible load 150kN.





Art no.	Weight [kg]	
037150	0.641	**Tie Yoke**

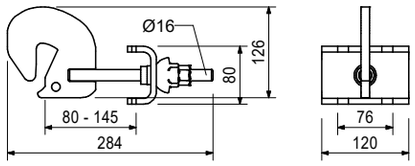
For fixing SRZ Steel Walers to the strongback.



		Accessory (not included)
037160	0.736	**Pin Ø20x205mm ga**
710226	0.340	**Screw ISO4014-M20x090-8.8-ga**
781053	0.065	**Hex-Nut ISO7040-M20-8-ga**

Art no.	Weight [kg]	
110059	2.840	**Waler Fixation U100/U120**

For fixing VARIO GT 24 Panels to Strongbacks CB, SCS and Steel Waler SRU.

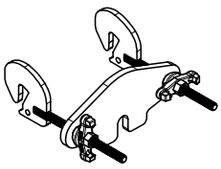


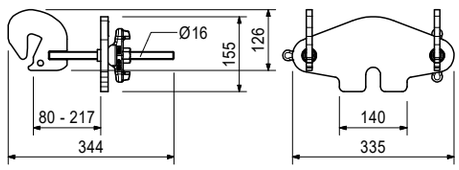
Consists of

1 pc 110055 Cross Strap coat
1 pc 118260 Spherical Nut RD16 coat

Art no.	Weight [kg]	
129720	8.040	**Waler Fixation U100/U120 doub.**

For fixing VARIO GT 24 Panels to Strongbacks CB, SCS, Steel Waler SRU if anchoring is done through the strongback.



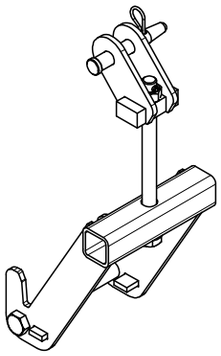


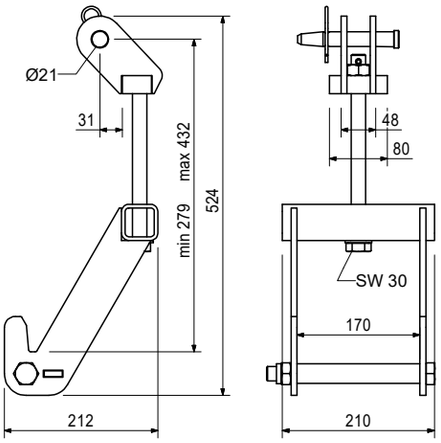
Consists of

2 pc 118260 Spherical Nut RD16 coat

Art no.	Weight [kg]	
110400	7.150	**Adjusting Unit Carriage RCS**

For the external height adjustment of the formwork element at the strongback (Steel Waler SRU).



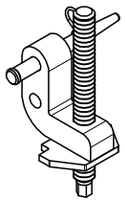


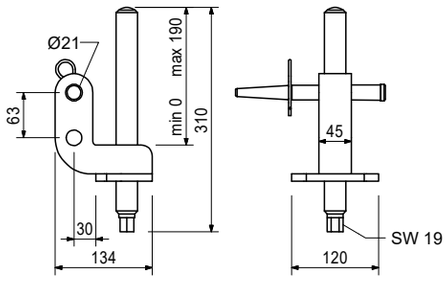
Consists of

1 pc 105400 Pin Ø20x140mm ga
1 pc 018060 Cotter Pin 4/1 ga
1 pc 706454 Washer ISO7089-20-200HV-ga
1 pc 110637 Screw ISO4017-M20x260-mach
1 pc 780807 Sleeve ISO8752-08.0x028-coat

Art no.	Weight [kg]	
111135	5.620	**Adjusting Unit SRU internal**

For internal height adjustment of the formwork on the strongback (Steel Waler SRU) or Climbing Rail RCS.





Consists of

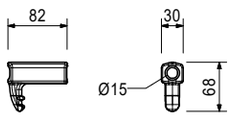
1 pc 105400 Pin Ø20x140mm ga
1 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
023820	0.375	**Hook Tie Head DW15 ga**

For connecting accessories to MAXIMO and TRIO Panels. DW15 Thread.

Notes

Permissible tension force 20kN.

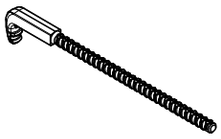


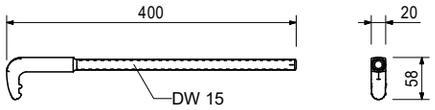
Art no.	Weight [kg]	
023650	0.769	**Hook Tie DW15x400mm ga**

For connecting accessories to MAXIMO and TRIO Panels. DW15 Thread.

Notes

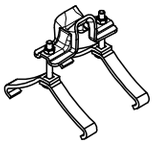
Permissible tension force 20kN.

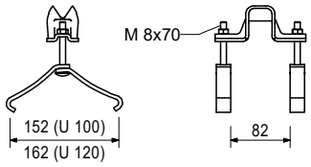




Art no.	Weight [kg]	
024070	0.691	**Hook Strap 24 U100/U120**

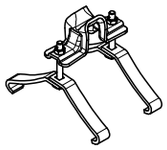
For fixing GT 24 Girders to Steel Walers SRZ, SRU and BR Profile U100–U120.

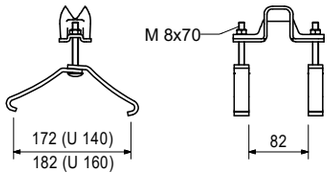




Art no.	Weight [kg]	
024080	0.735	**Hook Strap 24 U140/U160**

For fixing GT 24 Girders to Steel Walers SRZ, SRU and BR Profile U140–U160.



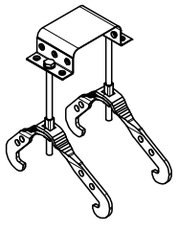


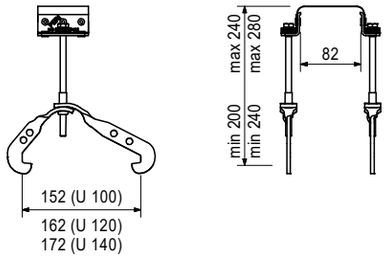
Art no.	Weight [kg]	
		Hook Straps Uni HBU
104931	0.839	**Hook Strap Uni HBU 20-24**
103845	0.893	**Hook Strap Uni HBU 24-28**

For fixing GT 24 Girders or VT 20 Girders to Steel Walers SRZ and SRU Profiles U100–U140.

Notes

The girders can be mounted right-angled or diagonally to the steel walers and also outside of the nodes.





Accessory (not included)

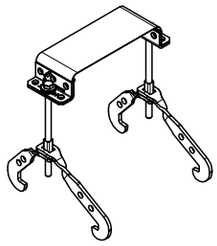
024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**

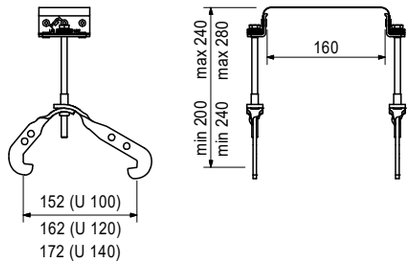
Art no.	Weight [kg]	
		Hook Straps Uni dou. HBUD
104930	0.887	**Hook Strap Uni dou. HBUD 20-24**
104096	0.912	**Hook Strap Uni dou. HBUD 24-28**

For fixing two GT 24 Girders or VT 20 Girders to SRZ Steel Walers and SRU Profiles U100–U140.

Notes

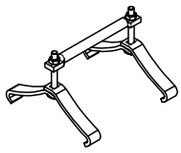
The girders can be mounted right-angled or diagonally to the steel walers and also outside of the nodes.

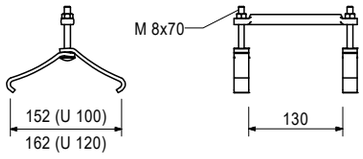




Art no.	Weight [kg]	
024860	0.616	**Hook Strap 24 Cross Bar 150mm**

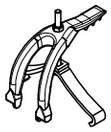
For fixing GT 24 Girders independent from girder node or timber beams with drilling Ø20mm to Steel Walers SRZ, SRU and BR Profile U100–U120.

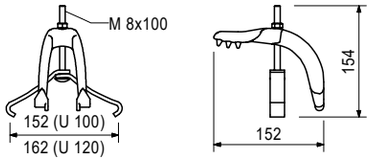




Art no.	Weight [kg]	
024600	0.907	**Girder Claw HB**

For mounting the GT 24 Edge Girder on the Steel Waler SRZ and SRU Profile U100–U120.



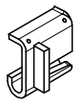


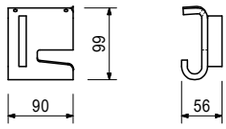
Art no.	Weight [kg]	
024640	0.923	**Impact Strap 24**

For fixing GT 24 Girders to Steel Waler SRZ and SRU Profile U100–U140 outside of the girder nodes.

Notes

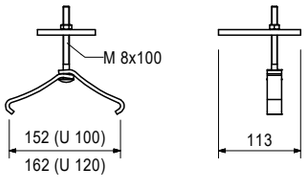
Girders fixed in position with the quick strap must be screwed to the formlining when using crane lifting gears.





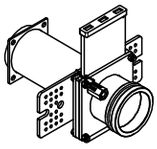
Art no.	Weight [kg]	
024630	0.742	**Fix Clamp ga**

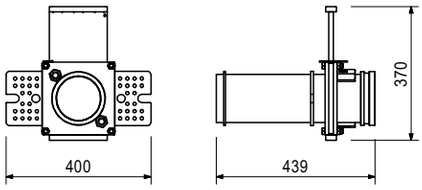
For fixing the GT 24 Girder in the VARIO Corner.



Art no.	Weight [kg]	
115009	21.700	**Conc.Pump Conn. BPA-2 Ø125mm**

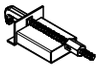
For connecting concrete feed pipes to the formwork.

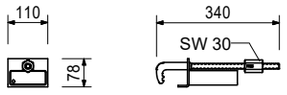




Art no.	Weight [kg]	
108688	1.810	**Adaptor TRIO BPA Ø125mm**

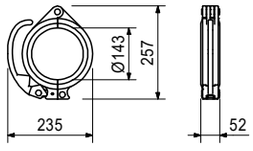
For attaching the Concrete Pump Connector BPA-2 Ø125mm to TRIO Panels.





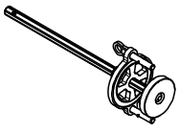
Art no.	Weight [kg]	
108543	4.900	**Coupling BPA Ø125mm**

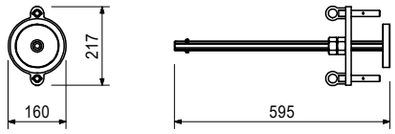
Suitable for all standard concrete feed lines with Ø125mm or 5.5".



Art no.	Weight [kg]	
115010	6.400	**Clear Slide BPA-2 Ø125mm**

For removing residual concrete from the Concrete Pump Connector BPA-2 Ø125mm.



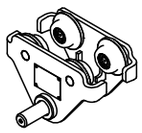


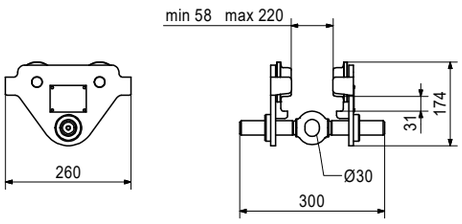
Art no.	Weight [kg]	
057043	9.000	**Trolley HTP 1000kg Type A**

For the movable suspension of the formwork on Steel Profiles HEB, IPE or similar.
Width = 58-220mm.

Notes

Follow Instructions for Use!



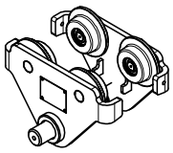


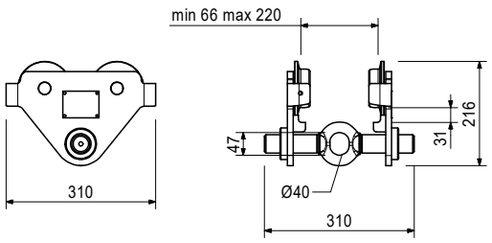
Art no.	Weight [kg]	
057045	16.000	**Trolley HTP 2000kg Type A**

For the movable suspension of the formwork on Steel Profiles HEB, IPE or similar.
Width = 66-220mm.

Notes

Follow Instructions for Use!



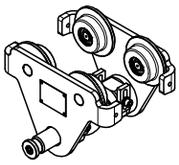


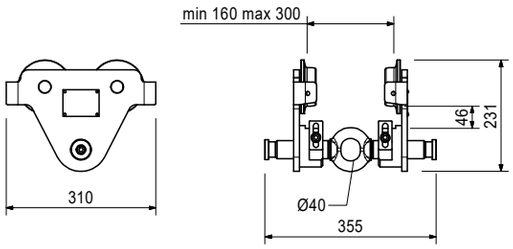
Art no.	Weight [kg]	
057046	19.300	**Trolley HTP 2000kg Type B**

For the movable suspension of the formwork on Steel Profiles HEB, IPE or similar.
Width = 160-300mm.

Notes

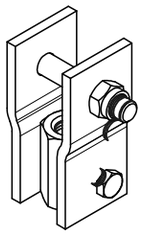
Follow Instructions for Use.

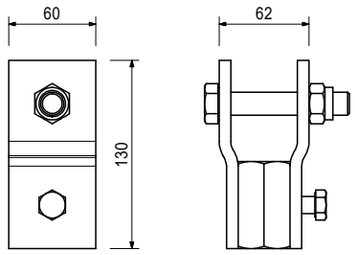




Art no.	Weight [kg]	
057049	2.570	**Panel Suspens.Adaptor ACS DW20**

Connecting Tensioning Steel B20 with Trolley HTP.



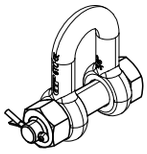


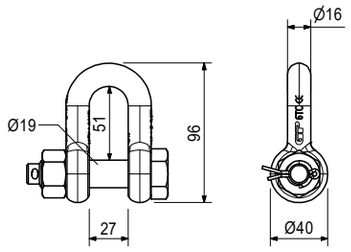
Consists of

1 pc 70890 Hex-Nut ISO7040-M16-8-ga
1 pc 710266 Screw ISO4017-M12x025-8.8-ga
1 pc 721729 Screw ISO4014-M16x090-8.8-ga

Art no.	Weight [kg]	
130616	0.670	**Shackle Ø16/Ø19mm 3.25t Hex-N.**

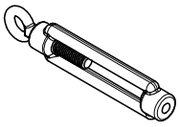
For attaching loads or mounting formwork elements on Trolleys HTP 2000kg by means of Turnbuckle CB Ø25-M20/DW15.

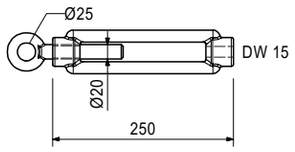




Art no.	Weight [kg]	
116807	1.850	**Turnbuckle CB Ø25-M20/DW15**

For tensioning of Tie Rod DW15.





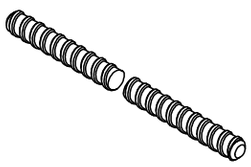
Consists of

1 pc 711059 Turnbuckle CB coat
1 pc 711060 Eyebolt M20 left coat

Art no.	Weight [kg]	
		Tie Rods B15
030050	0.000	**Cutting Cost DW15/B15**
030740	1.550	**Tie Rod B15 spec. Length**

Notes

Weldable! Observe the permissions! Permissible tension force 82kN.

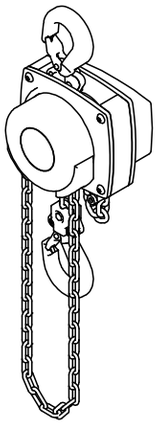


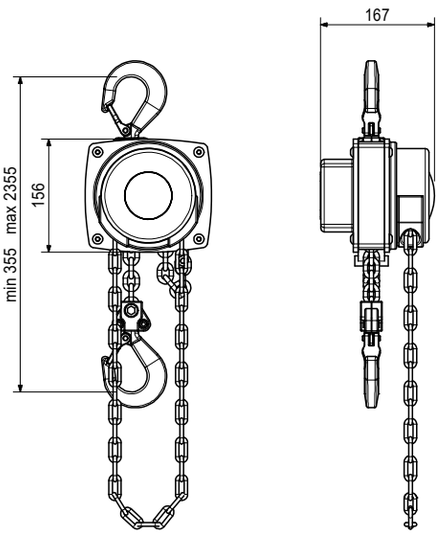
Art no.	Weight [kg]	
057517	13.000	**Winch 1.0t**

For the height-adjustable suspension of the formwork or for lifting and lowering loads.

Notes

Follow Instructions for Use!
Lifting height 2m.
Hand chain 3m.



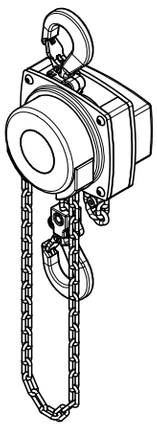


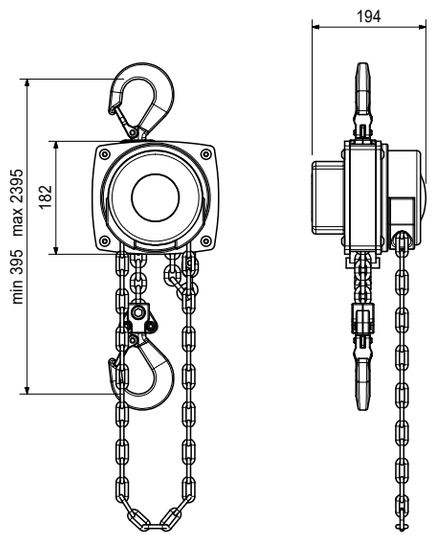
Art no.	Weight [kg]	
129981	20.000	**Winch 2.0t**

For the height-adjustable suspension of the formwork or for lifting and lowering loads.

Notes

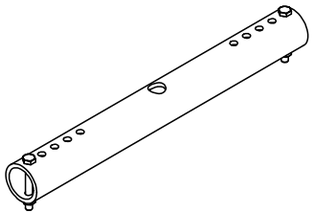
Follow Instructions for Use!
Lifting height 2m.
Hand chain 3m.

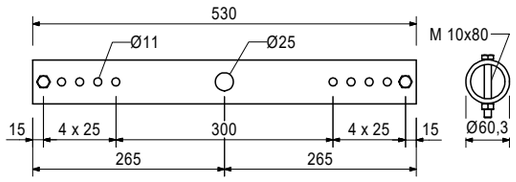




Art no.	Weight [kg]	
057050	4.450	**Panel Suspens. Tube VARIO 53**

For attaching VARIO GT 24 Elements.





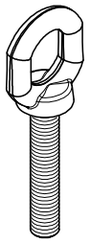
Accessory (not included)

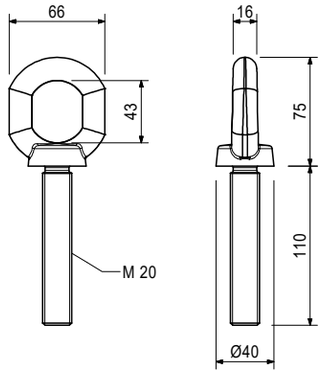
057095	0.902	**Plywood Insert GT 24 ACS**
125823	2.170	**Formwork Suspension VARIO Ø60**
724812	0.656	**Eyebolt M20x110mm coat**

Consists of

2 pc 710593 Screw ISO4014-M10x080-8.8-ga
2 pc 710234 Hex-Nut ISO4032-M10-8-ga

Art no.	Weight [kg]	
724812	0.656	**Eyebolt M20x110mm coat**





Accessory (not included)

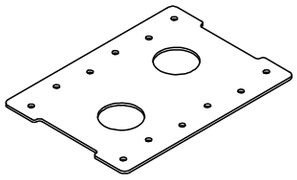
781053	0.065	**Hex-Nut ISO7040-M20-8-ga**
113350	0.174	**Washer ISO7094-20-100HV-ga**

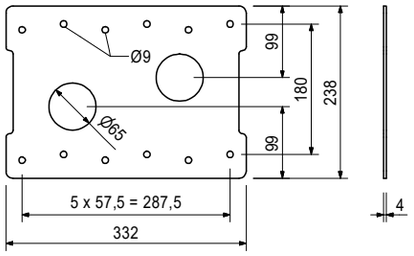
Art no.	Weight [kg]	
125823	2.170	**Formwork Suspension VARIO Ø60**

For connecting the Suspension Tube VARIO 53 to Formwork Girders GT 24.

Notes

Permissible load-bearing capacity see PERI Design Information (on request).
At least 2 pieces per fixing point.



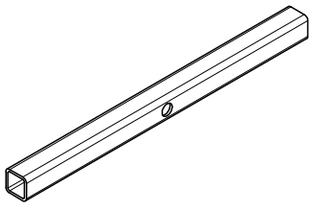


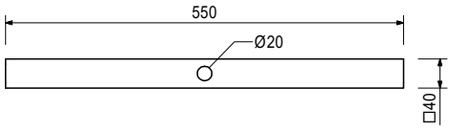
Accessory (not included)

024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**
024470	0.008	**Wood Screw 6x60 SK-TX30 HPI**

Art no.	Weight [kg]	
123806	2.320	**Tube 40x40x4mm 55**

For clamping compensation plates.



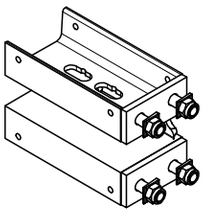


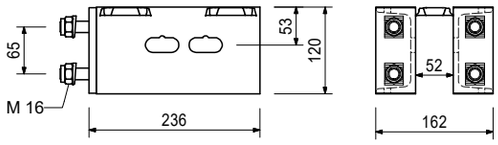
Art no.	Weight [kg]	
104027	7.770	**Extension f. Vario 24 U120 cpl**

For assembly on Steel Waler SRU.

Notes

U120: Wy=121.4cm³, Iy=728cm⁴.



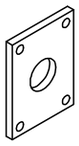


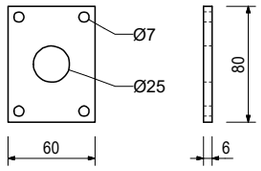
Consists of

4 pc 710252 Screw ISO4017-M16x050-8.8-ga
4 pc 070890 Hex-Nut ISO7040-M16-8-ga
4 pc 710880 Washer DIN434-18-ga

Art no.	Weight [kg]	
029280	0.196	**Anchor Posit. Plate M24 ga**

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



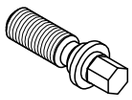


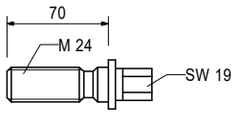
Accessory (not included)

029440	0.005	**Hex-Wood Screw DIN571-6x20-ga**

Art no.	Weight [kg]	
029270	0.331	**Advancing Screw M24 ga**

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





Accessory (not included)

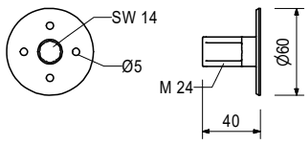
029280	0.196	**Anchor Posit. Plate M24 ga**

Art no.	Weight [kg]	
026420	0.123	**Anchor Posit. Stud M24 ga**

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

Notes

Allen Key SW14.

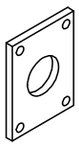


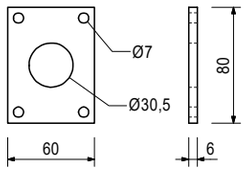
Accessory (not included)

027212	0.445	**Hexag. Recess Wrench SW14 long**
710312	0.005	**Wire Nail 3.0x80mm**

Art no.	Weight [kg]	
029380	0.184	**Anchor Posit. Plate M30 ga**

For fixing the M30 Anchor System if the plywood formlining is drilled through.

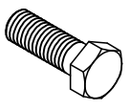


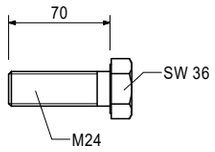


Accessory (not included)

029440	0.005	**Hex-Wood Screw DIN571-6x20-ga**

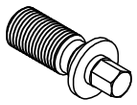
Art no.	Weight [kg]	
132382	0.360	**Screw ISO4017-M24x070-8.8-ga**

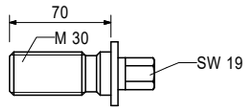




Art no.	Weight [kg]	
029450	0.339	**Advancing Screw M30x70 ga**

For fixing the M30 Anchor System if the plywood formlining is drilled through.



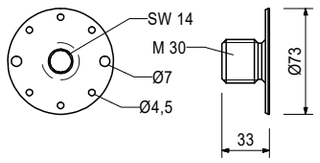


Accessory (not included)

029380	0.184	**Anchor Posit. Plate M30 ga**

Art no.	Weight [kg]	
026450	0.214	**Anchor Posit. Stud M30 ga**

For fixing the M30 Anchor System if the plywood formlining is not drilled through.

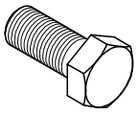


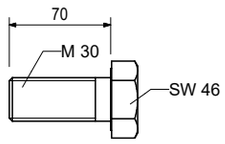
Accessory (not included)

027212	0.445	**Hexag. Recess Wrench SW14 long**
710312	0.005	**Wire Nail 3.0x80mm**

Art no.	Weight [kg]		L [mm]
029420	0.590	**Screw ISO4017-M30x070-8.8-ga**	70

Alternative to Leading Screw M30 galvanized, item number: 029450.



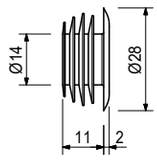


Art no.	Weight [kg]	
030300	0.002	**Plug Ø20-24mm**

For sealing unused tie holes Ø20 to Ø24mm.

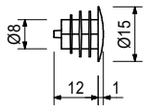
Notes

Delivery unit 250 pieces.



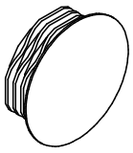
Art no.	Weight [kg]	
057093	0.001	**Plug SFL Ø15x0.8-2mm**

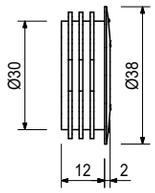
For sealing unused tie holes with Ø11mm to Ø13.4mm.



Art no.	Weight [kg]	
057094	0.004	**Plug SFL Ø38x1-3mm**

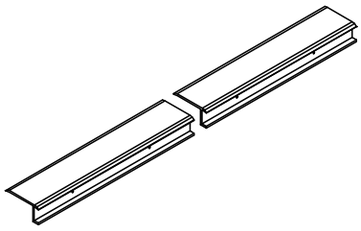
For closing advancing Anchor Holes Ø32mm to Ø36mm.

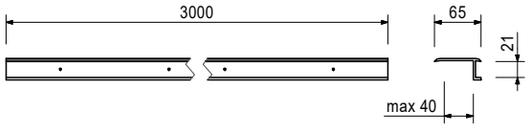




Art no.	Weight [kg]	
101706	1.230	**Formwork Joint 21/40mm 300**

Plastic profile strip for easier striking of shafts.



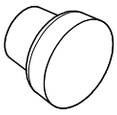


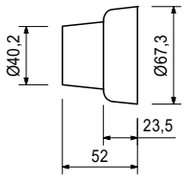
Art no.	Weight [kg]	
031652	0.247	**Concrete Cone KK M24 Ø67x52mm**

For closing anchor points with Climbing Cone-2, M24/DW15 or Screw-On Cone-2 M24/DW20.

Notes

Delivery unit 50 pieces.





Accessory (not included)

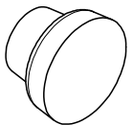
131709	9.980	**Sealing Adhesive-3 6-Cans-Set**

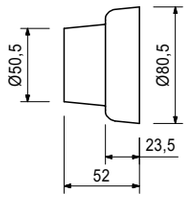
Art no.	Weight [kg]	
031653	0.364	**Concrete Cone KK M30 Ø80x52mm**

For closing anchor points with Climbing Cone-2 M30/DW20 or Screw Cone M30/DW26.

Notes

Delivery Unit 50 pieces.





Accessory (not included)

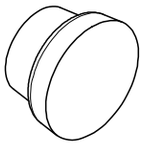
131709	9.980	**Sealing Adhesive-3 6-Cans-Set**

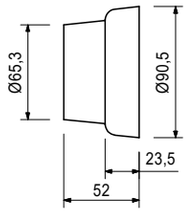
Art no.	Weight [kg]	
031654	0.512	**Concrete Cone KK M36 Ø90x52mm**

For closing anchor points with Climbing Cone-2 M36/DW26.

Notes

Delivery unit 50 pieces.



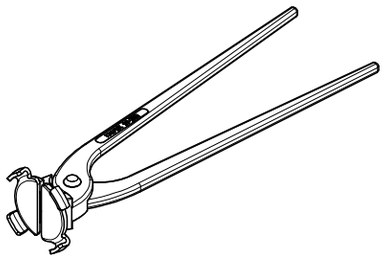


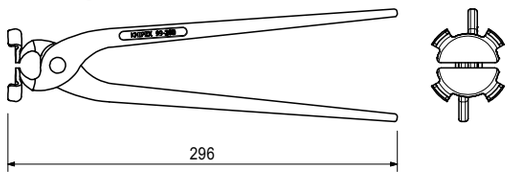
Accessory (not included)

131709	9.980	**Sealing Adhesive-3 6-Cans-Set**

Art no.	Weight [kg]	
031644	0.588	**Cone Pliers DK Ø58mm**

For holding DK, SK or KK Concrete Cones with corresponding diameter during installation.



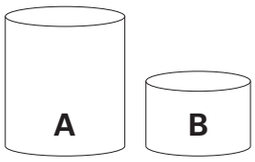


Art no.	Weight [kg]	
131709	9.980	**Sealing Adhesive-3 6-Cans-Set**

For bonding PERI Concrete Cones.

Notes

See Safety Data sheet!
Consisting of: 6 x Component A, 6 x Component B
Component A = Net quantity / Can 459ml / 752g
Component B = Net quantity / Can 356ml / 583g



Consists of

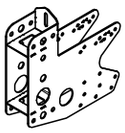
6 pc 131710 Sealing Adhesive-3 Can CO-A
6 pc 131711 Sealing Adhesive-3 Can CO-B

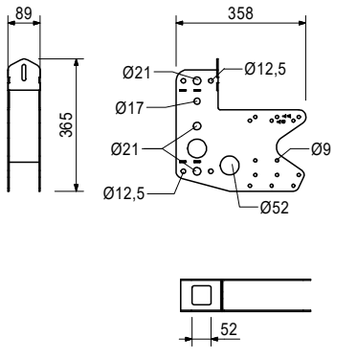
Art no.	Weight [kg]	
126088	4.390	**Guardrail Post Holder Multi**

For fixing of an end guardrail post on Girders GT 24, VT 20 or KH 80/160. Fixing of the guardrail posts by means of Screws M20.

Notes

Suitable for
Guardrail Post RCS 226 item no.: 109720
Guardrail Post RCS/SRU 184 item no.: 114328
Vertical scaffold tubes
Special post QR 50x50

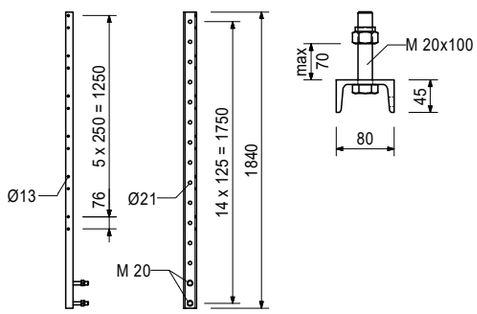




		Accessory (not included)
710285	0.050	**Screw ISO4014-M08-100-8.8-ga**
024090	0.005	**Self-cleaning Nut M8 coat**
024470	0.008	**Wood Screw 6x60 SK-TX30 HPI**

Art no.	Weight [kg]	
114328	16.600	**Guardrail Post RCS/SRU 184**

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



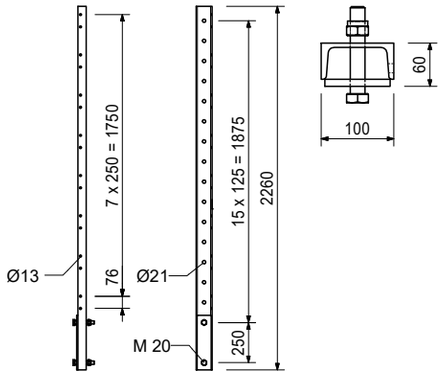
		Accessory (not included)
780354	0.002	**Washer ISO7089-08-200HV-ga**
110296	0.220	**Clamp A64 DIN3570-M12-ga**
710330	0.017	**Hex-Nut ISO4032-M12-8-ga**
710709	0.036	**Screw DIN603-M08x065-4.8-ga-Nu**
057345	0.010	**Washer 9mm DIN434 ga**

Consists of

2 pc 114727 Screw ISO4017-M20x100-8-8-ga
2 pc 781053 Hex-Nut ISO7040-M20-8-ga

Art no.	Weight [kg]	
109720	26.600	**Guardrail Post RCS 226**

For assembly of the guardrail on the main platform with RCS Climbing System or on Guardrail Post Holder Multi .



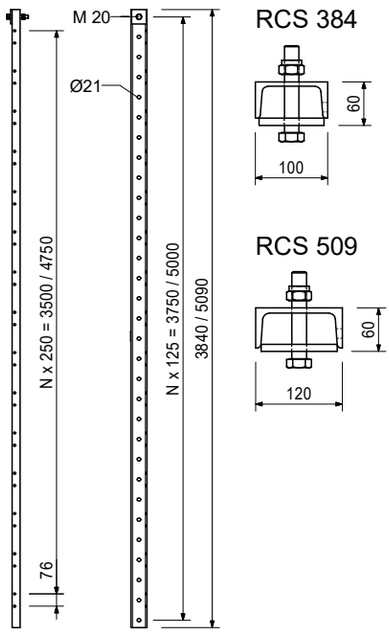
		Accessory (not included)
110296	0.220	**Clamp A64 DIN3570-M12-ga**
710330	0.017	**Hex-Nut ISO4032-M12-8-ga**
710709	0.036	**Screw DIN603-M08x065-4.8-ga-Nu**
780354	0.002	**Washer ISO7089-08-200HV-ga**
057345	0.010	**Washer 9mm DIN434 ga**

Consists of

2 pc 104477 Screw ISO4014-M20x120-8.8-ga
2 pc 781053 Hex-Nut ISO7040-M20-8-ga

Art no.	Weight [kg]	
		Guardrail Posts RCS
109773	67.900	**Guardrail Post 509 RCS**
109721	40.700	**Guardrail Post 384 RCS**

For assembly of the guardrail on the intermediate and finishing platforms with RCS Climbing System or as horizontal strut in the bracing.

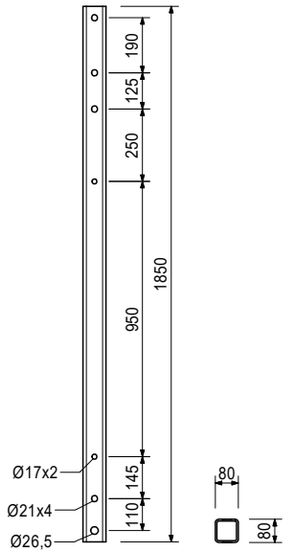


Consists of

1 pc 104477 Screw ISO4014-M20x120-8.8-ga
1 pc 781053 Hex-Nut ISO7040-M20-8-ga

Art no.	Weight [kg]	
126495	24.200	**Guardrail Post RCS-MP**

For fixation of the side protection on Material Platforms RCS-MP with horizontal Climbing Rail RCS.



Accessory (not included)

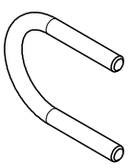
104477	0.300	**Screw ISO4014-M20x120-8.8-ga**
781053	0.065	**Hex-Nut ISO7040-M20-8-ga**
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**

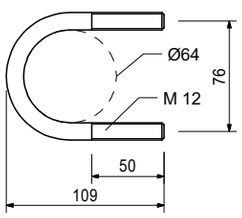
Art no.	Weight [kg]	
110296	0.220	**Clamp A64 DIN3570-M12-ga**

For assembling Scaffold Tubes on Railing Posts RCS.

Notes

Wrench size SW19.

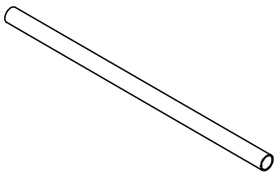


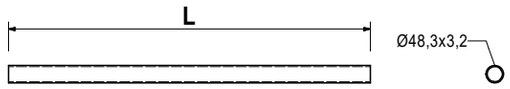


Accessory (not included)

710330	0.017	**Hex-Nut ISO4032-M12-8-ga**

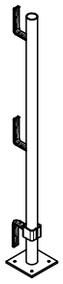
Art no.	Weight [kg]		L [mm]
		Scaff. Tubes 48.3x3.2mm ga	
026417	0.000	**Cutting Costs Scaffold Tube**	1
125976	8.900	**Scaff. Tube 48,3x3,2mm 2,5m ga**	2500
114287	12.500	**Scaff. Tube 48,3x3,2mm 3,5m ga**	3500
026411	3.550	**Scaff. Tube 48.3x3.2mm 1m ga**	1000
026412	7.100	**Scaff. Tube 48.3x3.2mm 2m ga**	2000
026413	10.650	**Scaff. Tube 48.3x3.2mm 3m ga**	3000
026414	14.200	**Scaff. Tube 48.3x3.2mm 4m ga**	4000
026419	17.750	**Scaff. Tube 48.3x3.2mm 5m ga**	5000
026418	21.600	**Scaff. Tube 48.3x3.2mm 6m ga**	6000
026415	3.550	**Scaff. Tube 48.3x3.2mm lfm ga**	1000

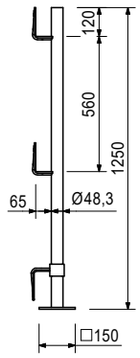




Art no.	Weight [kg]	
019040	6.480	**Guardrail Post PD8**

As guardrail for different systems. Screwed onto sub-structure.



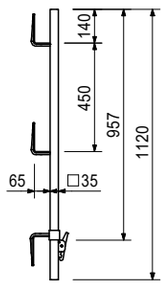


Art no.	Weight [kg]	
117325	4.270	**Post PP**

For the fixation of the Side-Mesh-Barriers.

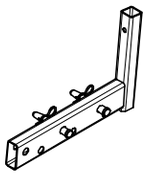
Notes

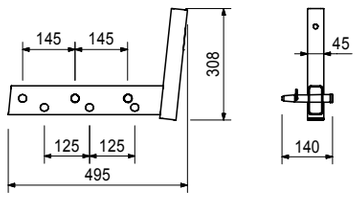
Distance of posts with Side-Mesh-Barrier PMB 260 max. 2.4m.



Art no.	Weight [kg]	
104131	3.940	**Guardrail Holder SRU/SRZ**

For assembling a guardrail to the Steel Walers SRU or SRZ Profile U100 to U140.





Accessory (not included)

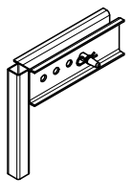
116292	4.720	**Guardrail Post-2 HSGP**
061260	6.150	**Guardrail Post SGP**

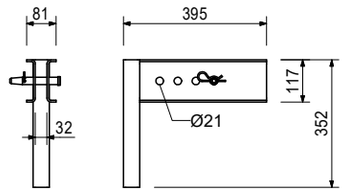
Consists of

2 pc 105400 Pin Ø20x140mm ga
2 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
101290	5.670	**Guardrail Holder GT 24/VT 20**

For assembling a guardrail to GT 24 or VT 20 Girders.





Accessory (not included)

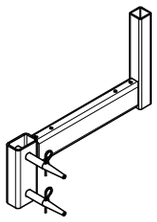
116292	4.720	**Guardrail Post-2 HSGP**
061260	6.150	**Guardrail Post SGP**

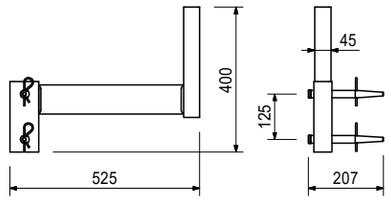
Consists of

1 pc 105400 Pin Ø20x140mm ga
1 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
114557	6.980	**Platform Beam SRU**

For assembling a platform and guardrail at vertical Steel Waler SRU.





Accessory (not included)

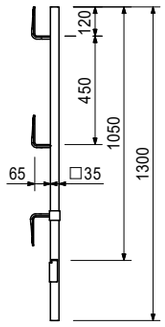
116292	4.720	**Guardrail Post-2 HSGP**

Consists of

2 pc 104031 Fitting Pin Ø21x120mm
2 pc 018060 Cotter Pin 4/1 ga

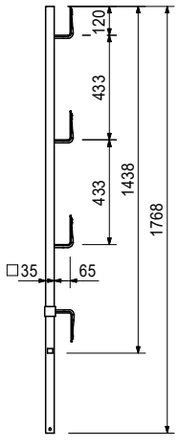
Art no.	Weight [kg]	
116292	4.720	**Guardrail Post-2 HSGP**

As guardrail for different systems.



Art no.	Weight [kg]	
061260	6.150	**Guardrail Post SGP**

As guardrail for different systems.

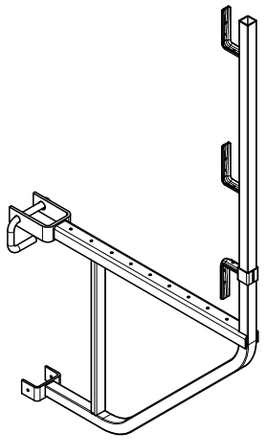


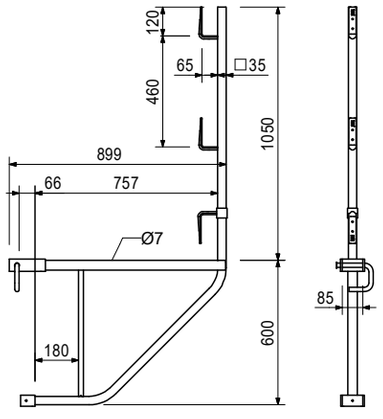
Art no.	Weight [kg]	
027110	11.000	**Scaffold Bracket GB 80**

For assembly of a working and concreting scaffold with GT 24 Girder.

Notes

Permissible load 150kg/m².
Maximum width of influence 1.25m.



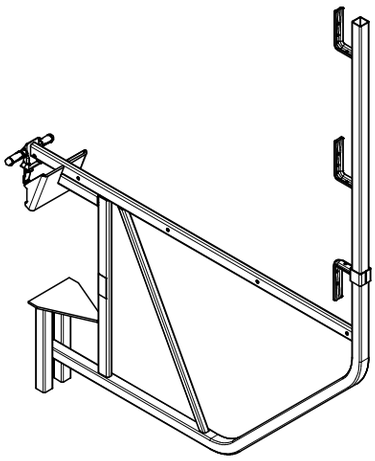


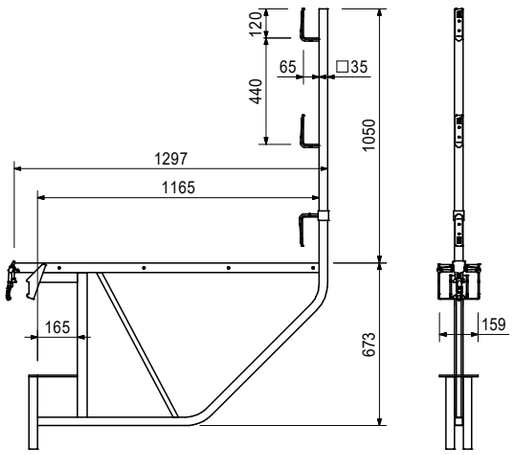
Art no.	Weight [kg]	
023680	16.600	**Scaffold Bracket TRG 120**

For assembly of a working and concreting scaffold at MAXIMO or TRIO Panels.
Mounting on horizontal or vertical struts is possible.

Notes

Automatically secured by hooking.
Permissible load 150kg/m² with maximum width of influence 1.35m.



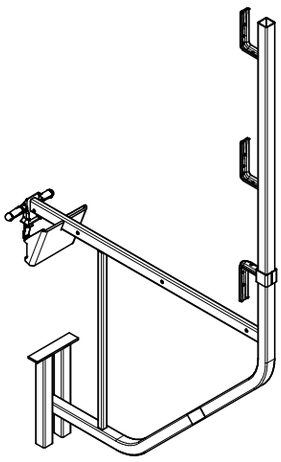


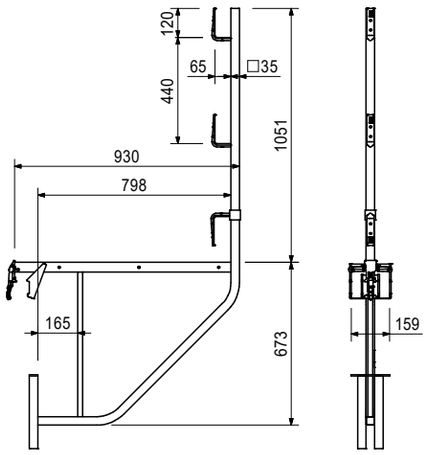
Art no.	Weight [kg]	
023670	12.500	**Scaffold Bracket TRG 80**

For assembly of a working and concreting scaffold at MAXIMO or TRIO Panels.
Mounting on horizontal or vertical struts is possible.

Notes

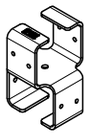
Permissible load 150kg/m² with maximum width of influence 1.35m.

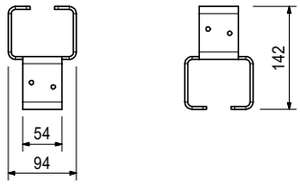




Art no.	Weight [kg]	
129724	0.817	**Cross Connector GT 24/GT 24**

For the connection of crossing GT 24 Formwork Girders.



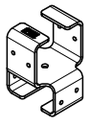


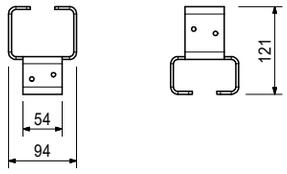
Accessory (not included)

024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**
024470	0.008	**Wood Screw 6x60 SK-TX30 HPI**

Art no.	Weight [kg]	
129722	0.746	**Cross Connector GT 24/VT 20**

For connecting a Girder GT 24 to a crossing Girder VT 20.



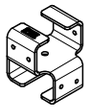


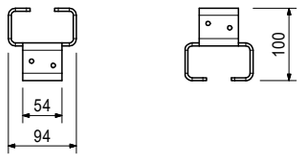
Accessory (not included)

024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**
024470	0.008	**Wood Screw 6x60 SK-TX30 HPI**

Art no.	Weight [kg]	
129817	0.675	**Cross Connector VT 20/VT 20**

For the connection of crossing Girders VT 20.





Accessory (not included)

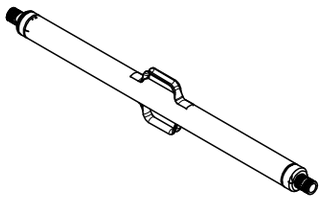
024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**
024470	0.008	**Wood Screw 6x60 SK-TX30 HPI**

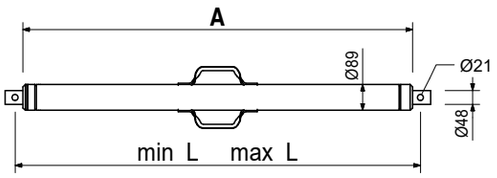
Art no.	Weight [kg]		min. L [mm]	max. L [mm]
		Heavy-Duty Spindles SLS		
111035	12.000	**Heavy Duty Spindle SLS 40-80**	400	800
101773	15.300	**Heavy Duty Spindle SLS 80-140**	800	1400
101774	18.300	**Heavy Duty Spindle SLS 100-180**	1000	1800
101776	24.900	**Heavy Duty Spindle SLS 140-240**	1400	2400
101778	32.300	**Heavy Duty Spindle SLS 200-300**	2000	3000
101779	38.500	**Heavy Duty Spindle SLS 260-360**	2600	3600
109726	44.800	**Heavy Duty Spindle SLS 320-420**	3200	4200
109785	51.000	**Heavy Duty Spindle SLS 380-480**	3800	4800

Used as adjustable spindle for truss beams made of Steel Walers SRU and Climbing Rails RCS.

Notes

Permissible load see PERI Design Tables, Type Test is available.



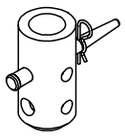


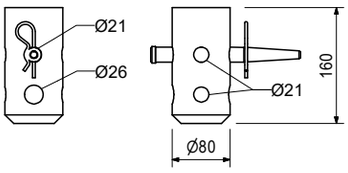
Accessory (not included)

18060	0.014	**Cotter Pin 4/1 ga**
104031	0.462	**Fitting Pin Ø21x120mm**
110477	3.990	**Spindle Adaptor SLS/RCS**

Art no.	Weight [kg]	
110477	3.990	**Spindle Adaptor SLS/RCS**

For connecting the Heavy-Duty Spindle SLS to the Climbing Rail RCS.





Accessory (not included)

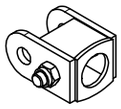
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

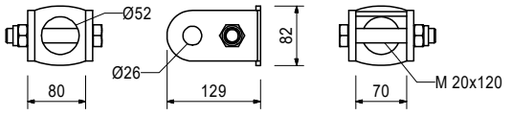
Consists of

1 pc 104031 Fitting Pin Ø21x120mm
1 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
115388	1.910	**Forkhead Adaptor SLS/RCS**

For horizontal bracing of the climbing protection panel against the Slab Stopend Shoe RCS with a Heavy Duty Spindle SLS.



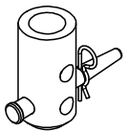


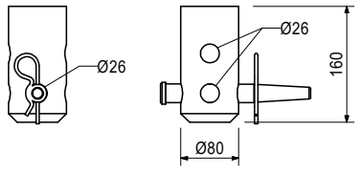
Consists of

1 pc 104477 Screw ISO4014-M20x120-8.8-ga
1 pc 781053 Hex-Nut ISO7040-M20-8-ga

Art no.	Weight [kg]	
116039	4.910	**Spindle Adaptor SKS/RCS**

For connecting the Compression Spindle SCS/RCS to the Climbing Rail RCS.





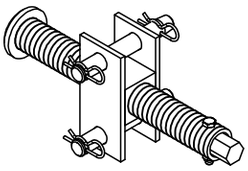
		Accessory (not included)
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

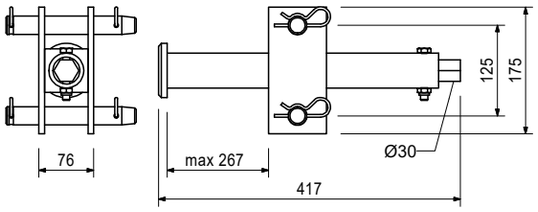
Consists of

1 pc 111567 Fitting Pin Ø26x120mm
1 pc 022230 Cotter Pin 5/1 ga

Art no.	Weight [kg]	
110000	7.540	**Spindle Compression Point RCS**

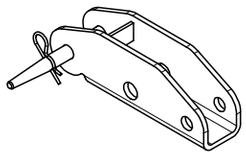
The Spindle Pressure Point RCS is used to support the RCS Climbing Rail. For this purpose, the Spindle Pressure Point RCS is bolted between the two profiles of the RCS Climbing Rail.

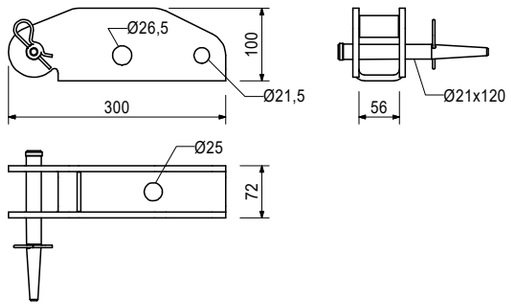




Art no.	Weight [kg]	
115298	4.210	**Spindle Shoe SLS/RCS M24**

For horizontal bracing of the climbing protection panel against the Advancing Anchor M24 set in concrete with a Heavy Duty Spindle SLS.





		Accessory (not included)
104031	0.462	**Fitting Pin Ø21x120mm**
111567	0.729	**Fitting Pin Ø26x120mm**

Consists of

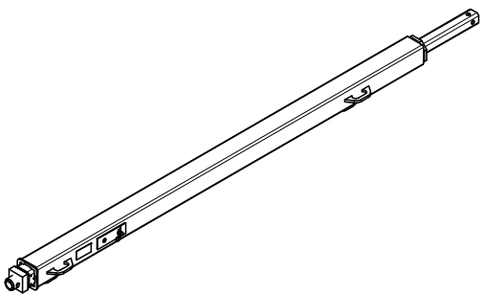
1 pc 104031 Fitting Pin Ø21x120mm
1 pc 018060 Cotter Pin 4/1 ga

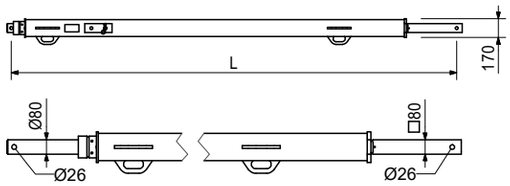
Art no.	Weight [kg]		min. L [mm]	max. L [mm]
		Struts VARIOKIT		
118404	165.000	**Strut VARIOKIT 275-450**	2750	4500
112840	239.000	**Strut VARIOKIT 400-700**	4000	7000
112841	295.000	**Strut VARIOKIT 600-900**	6000	9000

For the bracing of system solutions.

Notes

Permissible load: see PERI Design Tables.

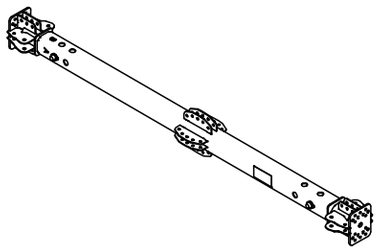


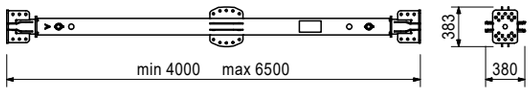


		Accessory (not included)
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
131060	288.000	**Telescopic Prop VARIOKIT**

Height-adjustable heavy-duty prop for transferring vertical loads in temporary shoring systems and heavy-duty constructions.





Accessory (not included)

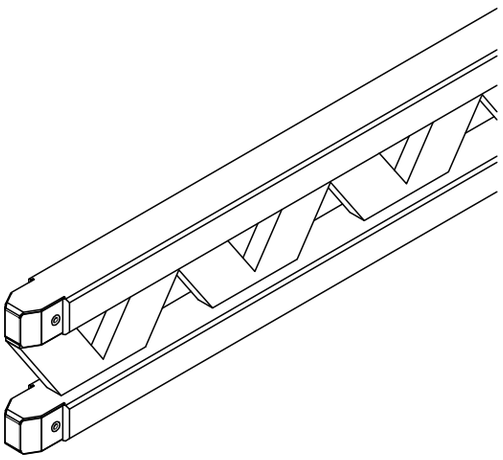
130848	6.980	**Multiadaptor RCS VARIOKIT**

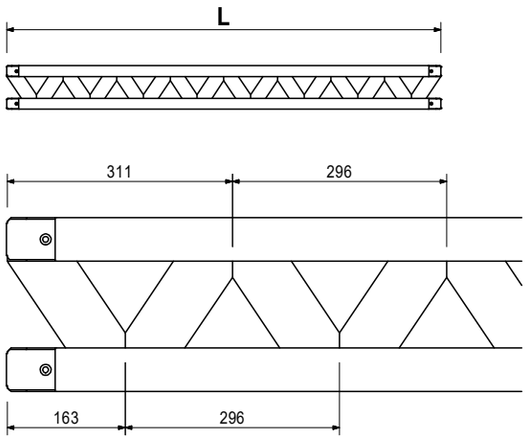
Art no.	Weight [kg]		L [mm]
		Girders GT 24	
075100	5.300	**Girder GT 24 90**	918
075120	7.100	**Girder GT 24 120**	1214
075150	8.900	**Girder GT 24 150**	1510
075180	10.600	**Girder GT 24 180**	1806
075210	12.400	**Girder GT 24 210**	2102
075240	14.200	**Girder GT 24 240**	2398
075270	15.900	**Girder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

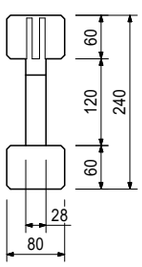
Universal formwork girder made of wood.

Notes

Special lengths over 6m are possible and can be provided on request.







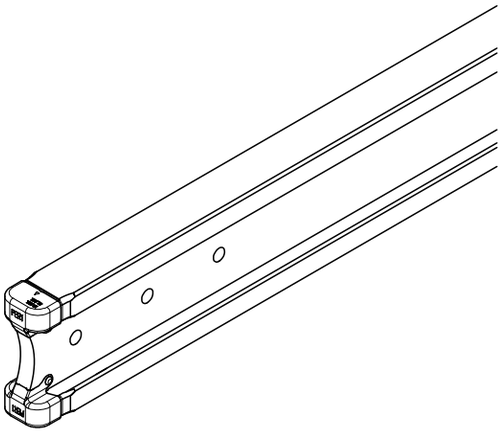
Art no.	Weight [kg]	
078010	36.875	**Girder GT 24 625 spec. Length**

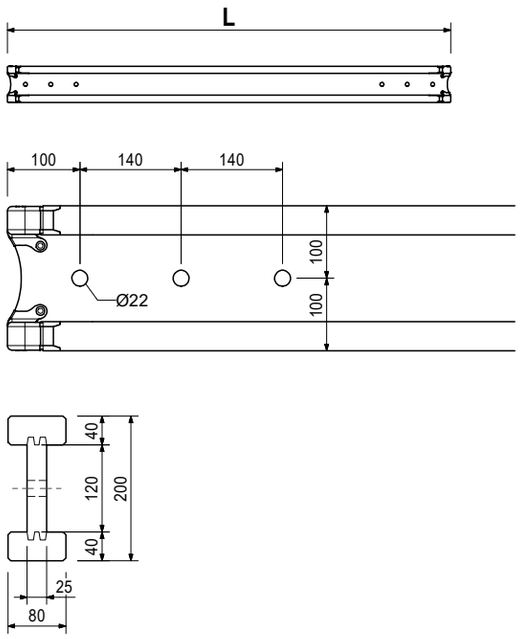
Art no.	Weight [kg]		L [mm]
		Girders VT 20K	
074990	8.230	**Girder VT 20K 145**	1447
074905	12.010	**Girder VT 20K 215**	2152
074910	13.630	**Girder VT 20K 245**	2452
074890	14.710	**Girder VT 20K 265**	2652
074920	16.060	**Girder VT 20K 290**	2902
074930	18.220	**Girder VT 20K 330**	3292
074940	19.840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

Universal formwork girder made of wood.

Notes

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



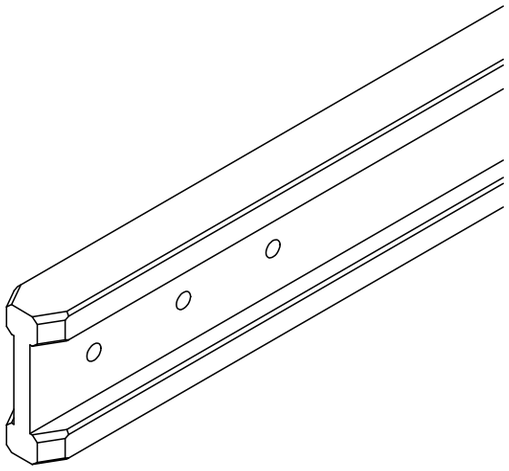


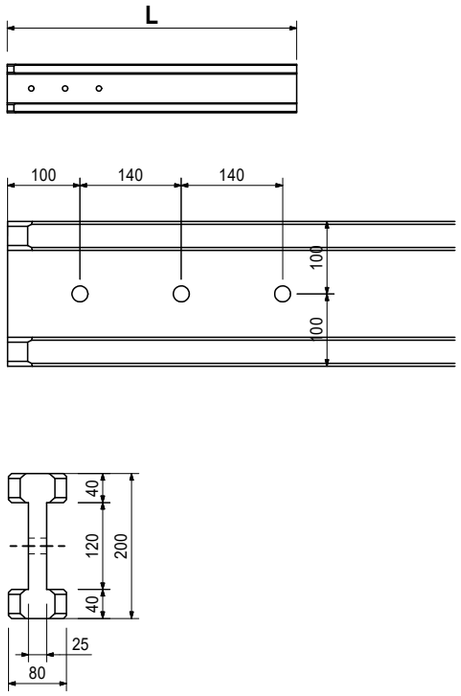
Art no.	Weight [kg]	
		Girders VT 20 Alpha
073650	7.830	**Girder VT 20 Alpha 145**
073651	11.610	**Girder VT 20 Alpha 215**
073652	13.230	**Girder VT 20 Alpha 245**
073653	14.310	**Girder VT 20 Alpha 265**
073654	15.660	**Girder VT 20 Alpha 290**
073655	17.820	**Girder VT 20 Alpha 330**
073656	19.440	**Girder VT 20 Alpha 360**
073657	21.060	**Girder VT 20 Alpha 390**
073658	24.300	**Girder VT 20 Alpha 450**
073659	26.460	**Girder VT 20 Alpha 490**
073660	31.860	**Girder VT 20 Alpha 590**

Universal formwork girder made of wood.

Notes

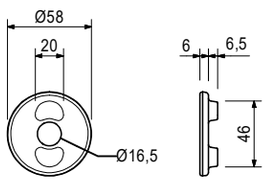
The girder fulfils all requirements of DIN EN 13377 class P20 (Declaration of Conformity).





Art no.	Weight [kg]	
024000	0.131	**Compensat. Washer 16 ga**

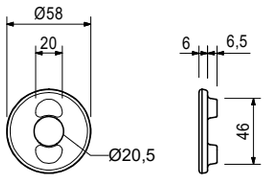
For assembling in the Holes of VARIO Coupler VKZ.



		Accessory (not included)
710219	0.184	**Screw ISO4014-M16x100-8-8-ga**
070890	0.030	**Hex-Nut ISO7040-M16-8-ga**

Art no.	Weight [kg]	
024180	0.126	**Compensation Washer 20 ga**

For assembling in the Holes of VARIO Coupler VKZ or Steel Ledger SRU.

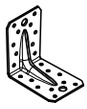


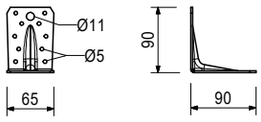
Accessory (not included)

024910	0.303	**Screw ISO4014-M20x080-8.8-ga**
781053	0.065	**Hex-Nut ISO7040-M20-8-ga**

Art no.	Weight [kg]	
123478	0.255	**Angle Connector 90x90x65mm**

For diverse timber connections.



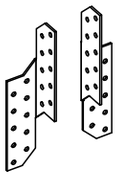


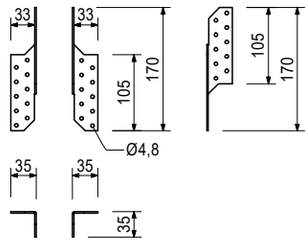
Accessory (not included)

129711	0.010	**Wood Screw 6x20 HRK-TX30 HSX**
024550	0.005	**Wood-Screw 8x20 SK-TX30 HSX**

Art no.	Weight [kg]	
018290	0.098	**Framing Clip ga**

For various wood connections.



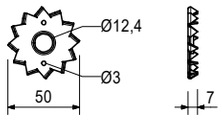


Accessory (not included)

018280	1.000	**Double Head Nail 65mm**

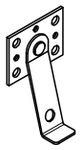
Art no.	Weight [kg]	
070030	0.015	**Plate Conn. Ø50/12mm single**

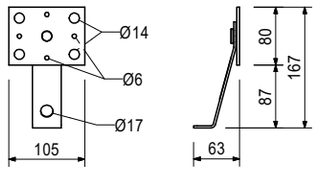
To strengthen the timber fixation and for other connections of timber with steel.



Art no.	Weight [kg]	
114937	0.402	**Fixation Bar RCS**

For fixing the cover flap to the climbing protection panel during climbing.



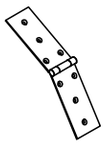


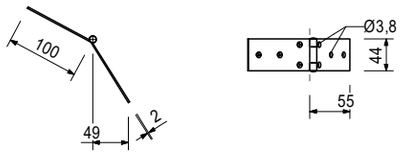
Accessory (not included)

111437	0.004	**Wood Screw 5x20 SK-TX25 HSX**

Art no.	Weight [kg]	
111436	0.150	**Hinge DIN7957-200-ST-zn**

For mounting the cover flap at the climbing protection panel.



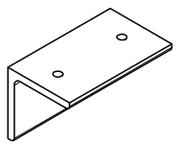


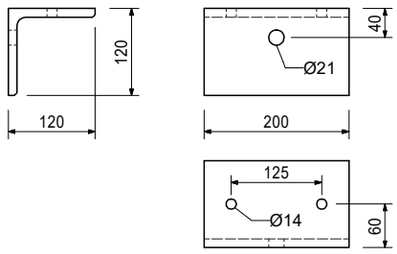
Accessory (not included)

111437	0.004	**Wood Screw 5x20 SK-TX25 HSX**
110642	0.006	**Wood Screw 5x40 SK-TX20 HSX**

Art no.	Weight [kg]	
110289	4.260	**L-Angle RCS 120x120x200mm**

For fixing end handrail posts on the decking.



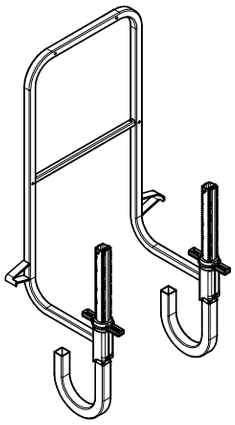


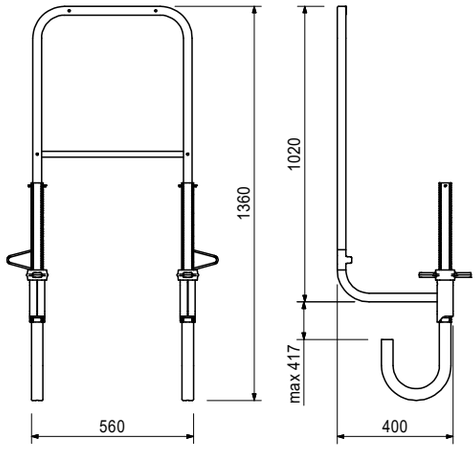
Accessory (not included)

131404	1.080	**Screw-On Cou.-2 HT B Ø48mm M20**

Art no.	Weight [kg]	
065066	14.800	**End Guardrail Frame 55**

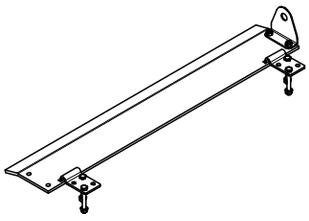
End guardrail for clamping to all PERI Scaffold Platforms and Climbing Systems.

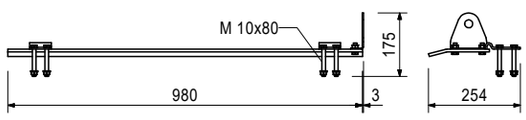




Art no.	Weight [kg]	
117771	11.400	**Platform Flap RCS 90**

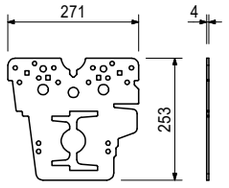
Hinged cover for the gap between the extending platform and the building ceiling. Fastening to the Platform Decking.





Art no.	Weight [kg]	
136622	1.450	**Multifunction Plate RCS**

For fixing the Guardrail Posts RCS and Scaffold Tubes Ø48,3mm to platform decks and decking girders.

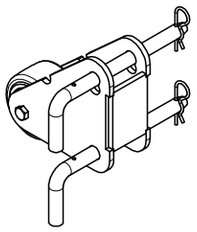


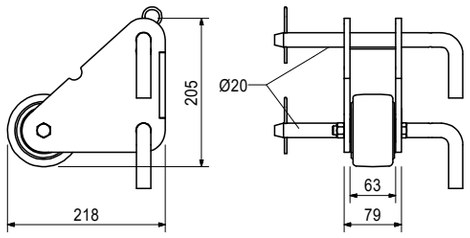
Art no.	Weight [kg]	
116469	5.920	**Heavy Duty Castor RCS 1.5t**

For assembling in Climbing Rails RCS, foldable.

Notes

Permissible load-bearing capacity 1.5t.





Consists of

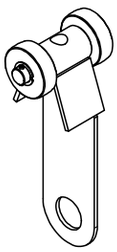
2 pc 113012 Locking Pin Ø20x260mm coat
2 pc 018060 Cotter Pin 4/1 ga

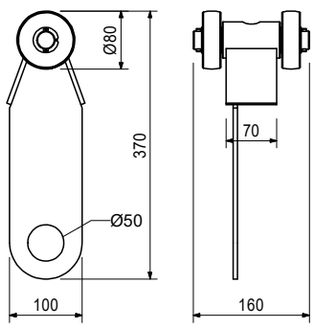
Art no.	Weight [kg]	
111403	4.840	**Mounting Castor Climb Rail RCS**

For mounting and moving formwork elements on horizontally-positioned Climbing Rails RCS.

Notes

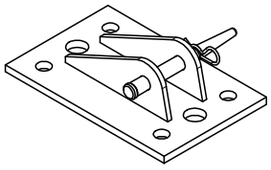
Permissible load-bearing capacity 1.5t.

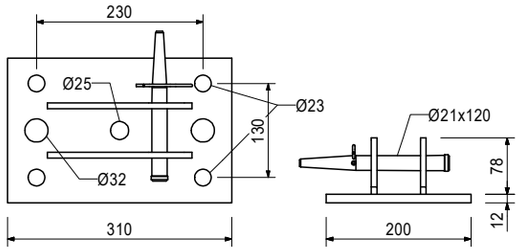




Art no.	Weight [kg]	
114997	7.160	**Bracing Shoe RCS DW15**

For anchoring the bracing with DW15 to the building slab. Fixation with Anchor System M24 or corresponding dowels.



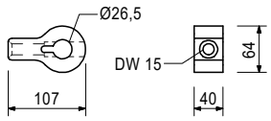


Consists of

1 pc 104031 Fitting Pin Ø21x120mm
1 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
115378	1.080	**Eye Nut RCS DW15**

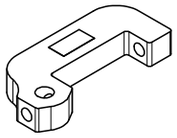
As an articulated connection to the Climbing Rail RCS, Steel Waler SRU for bracing with DW15.

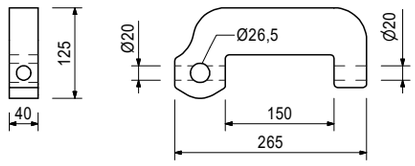


		Accessory (not included)
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
115375	6.100	**Articulated Spanner RCS DW15**

For tensioning and as an articulated connection to the Climbing Rail RCS, Steel Waler SRU or Bracing Shoe RCS for bracing with DW15.

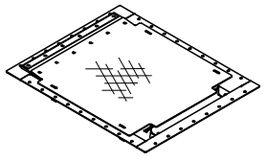


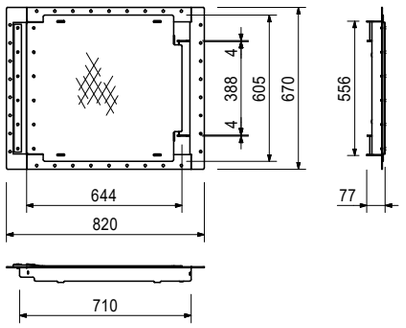


		Accessory (not included)
104031	0.462	**Fitting Pin Ø21x120mm**
018060	0.014	**Cotter Pin 4/1 ga**
111567	0.729	**Fitting Pin Ø26x120mm**
022230	0.033	**Cotter Pin 5/1 ga**
030070	0.222	**Hex-Nut DW15 SW30 50mm ga**
030030	1.440	**Tie Rod DW15 spec. Length**

Art no.	Weight [kg]	
126431	12.300	**Hatch-2 RCS 55x60 foldable**

Self-closing hatch for ladder access. Clear opening approx. 55x60cm.
Ladder fixation with bolts or by hanging up.





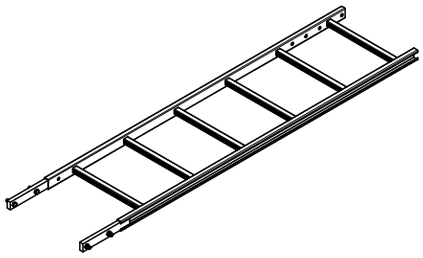
		Accessory (not included)
024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**
710224	0.047	**Screw ISO4017-M12x040-8.8-ga**
710381	0.017	**Hex-Nut ISO7040-M12-8-ga**

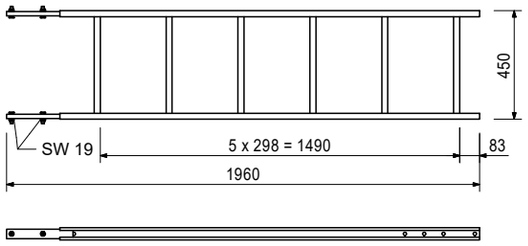
Consists of

1 pc 126785 Hatch Hinge RCS
12 pc 108647 Rivet ISO15979-5.0x20-ST/ST
2 pc 022230 Cotter Pin 5/1 ga

Art no.	Weight [kg]	
051410	11.700	**Ladder 180/6**

For accessing PERI Formwork Systems.



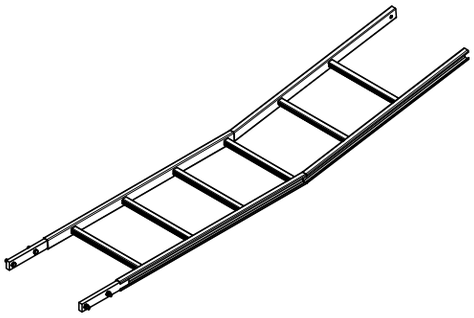


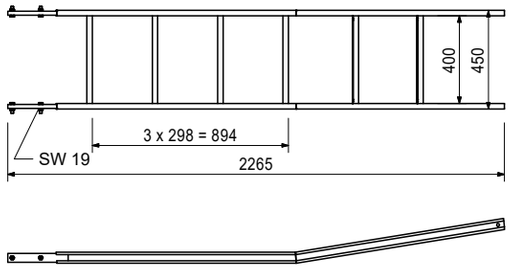
Consists of

4 pc 710224 Screw ISO4017-M12x040-8.8-ga
4 pc 710381 Hex-Nut ISO7040-M12-8-ga

Art no.	Weight [kg]	
051420	12.800	**Ladder 220/6**

As access for PERI Formwork Systems.



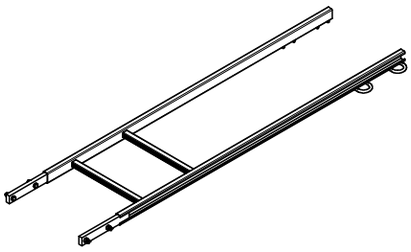


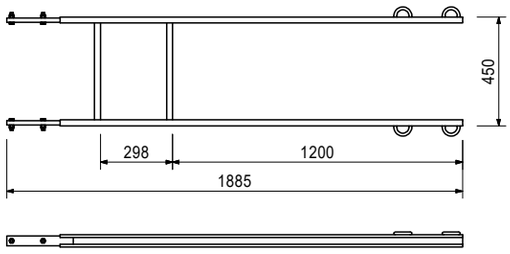
Consists of

4 pc 710224 Screw ISO4017-M12x040-8.8-ga
4 pc 710381 Hex-Nut ISO7040-M12-8-ga

Art no.	Weight [kg]	
103724	10.400	**End Ladder 180/2 cpl**

As access for PERI Formwork Systems.



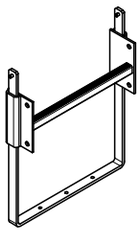


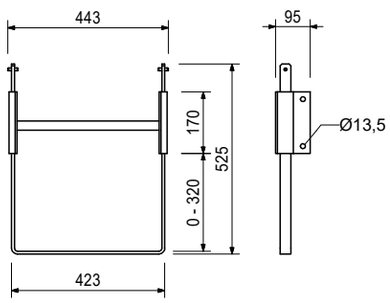
Consists of

4 pc 710224 Screw ISO4017-M12x040-8.8-ga
4 pc 710381 Hex-Nut ISO7040-M12-8-ga

Art no.	Weight [kg]	
109105	5.070	**Ladder Base 30 ga**

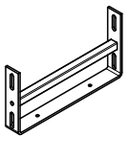
For horizontal fixing of ladders on the platform decking.

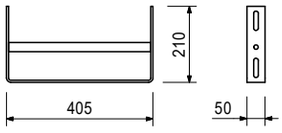




Art no.	Weight [kg]	
051460	2.180	**Ladder Base ga**

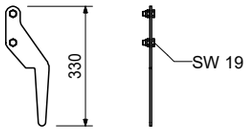
As bottom ladder connection and for securing ladders against sliding on the scaffold decks.





Art no.	Weight [kg]	
103718	0.684	**Ladder Hook**

For adjusting the bottom ladder. Always use in pairs.

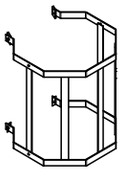


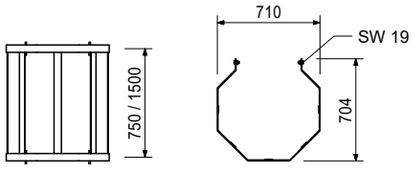
Consists of

2 pc 710266 Screw ISO4017-M12x025-8.8-ga
2 pc 710381 Hex-Nut ISO7040-M12-8-ga

Art no.	Weight [kg]	
		Ladder Cages
104132	15.600	**Ladder Safety Cage 75**
051450	25.200	**Ladder Safety Cage 150**

Ladder cage for PERI Ladder Access.



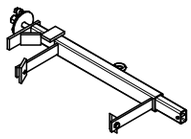


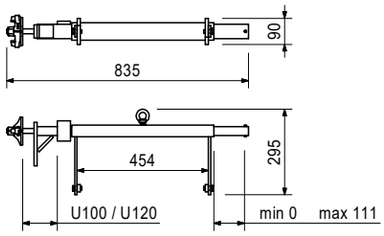
Consists of

4 pc 710266 Screw ISO4017-M12x025-8.8-ga
4 pc 701763 Clamping Plate FL 25x10x90mm

Art no.	Weight [kg]	
111165	6.260	**Ladder Connector VARIO adj.**

For connecting ladders to Steel Walers SRZ or SRU Profile U100–U120.



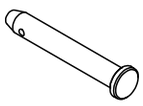


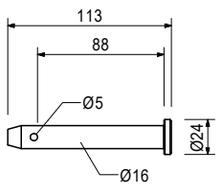
Consists of

2 pc 710266 Screw ISO4017-M12x025-8.8-ga
2 pc 701763 Clamping Plate FL 25x10x90mm

Art no.	Weight [kg]	
118463	0.181	**Pin Ø16x90mm coat**

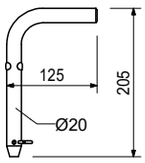
For different connections. High strength.





Art no.	Weight [kg]	
037160	0.736	**Pin Ø20x205mm ga**

For various connections.

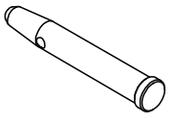


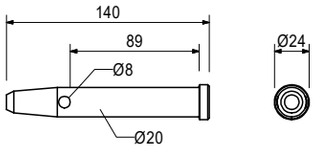
Consists of

1 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
105400	0.330	**Pin Ø20x140mm ga**

For different connections.



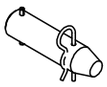


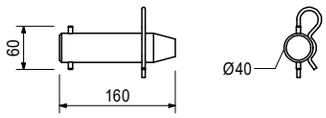
Accessory (not included)

018060	0.014	**Cotter Pin 4/1 ga**

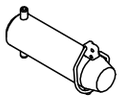
Art no.	Weight [kg]	
127400	1.490	**Pin Ø40x160mm**

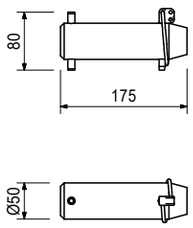
For different connections.





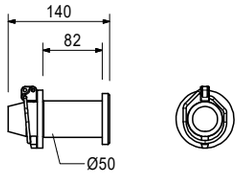
Art no.	Weight [kg]	
127397	2.660	**Pin Ø50x175mm**





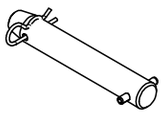
Art no.	Weight [kg]	
130831	2.430	**Pin Hinge Connector RCS**

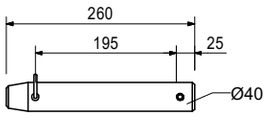
For different connections. High strength.



Art no.	Weight [kg]	
112547	2.490	**Pin HD Ø40x260mm**

For connecting the Truss Strut HD with the Truss Bracket HD.



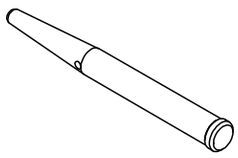


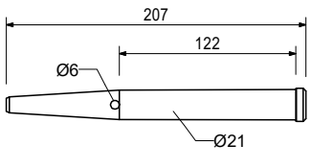
Consists of

1 pc 722457 Sleeve ISO8752-10.0x070-coat
1 pc 022230 Cotter Pin 5/1 ga

Art no.	Weight [kg]	
104031	0.462	**Fitting Pin Ø21x120mm**

For different connections. High strength.



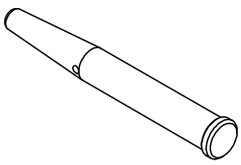


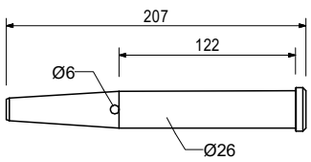
Accessory (not included)

018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
111567	0.729	**Fitting Pin Ø26x120mm**

For different connections. High strength.

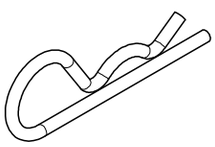




Accessory (not included)

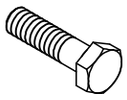
018060	0.014	**Cotter Pin 4/1 ga**

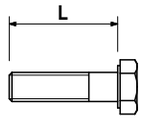
Art no.	Weight [kg]	
018060	0.014	**Cotter Pin 4/1 ga**



Art no.	Weight [kg]	
022230	0.033	**Cotter Pin 5/1 ga**

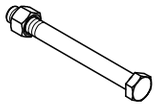
Art no.	Weight [kg]	
		Screws ISO4014-8.8-ga
710285	0.050	**Screw ISO4014-M08-100-8.8-ga**
101949	0.015	**Screw ISO4014-M08x030-8.8-ga**
710220	0.087	**Screw ISO4014-M12x080-8.8-ga**
710049	0.262	**Screw ISO4014-M16x150-8.8-ga**
024900	0.255	**Screw ISO4014-M20x080-8.8-ga**
024910	0.303	**Screw ISO4014-M20x080-8.8-ga**
710226	0.340	**Screw ISO4014-M20x090-8.8-ga**
104477	0.300	**Screw ISO4014-M20x120-8.8-ga**
711078	0.360	**Screw ISO4014-M20x130-8.8-ga**
113766	0.518	**Screw ISO4014-M20x180-8.8-ga**
105416	0.360	**Screw ISO4014-M24x080-8.8-ga**
109612	0.600	**Screw ISO4014-M24x130-8.8-ga**

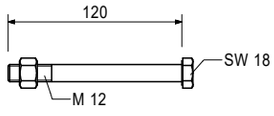




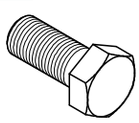
Art no.	Weight [kg]		L [mm]
070100	0.132	**Screw ISO4016-M12x120-4.6-ga-N**	120

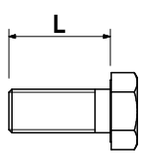
For uses with small loads, including nut.





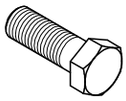
Art no.	Weight [kg]	
		Screws ISO4017-8.8-ga
710224	0.047	**Screw ISO4017-M12x040-8.8-ga**
110598	0.142	**Screw ISO4017-M12x140-8.8-ga**
110599	0.242	**Screw ISO4017-M12x240-8.8-ga**
113990	0.600	**Screw ISO4017-M16x025-8.8-ga**
123844	0.130	**Screw ISO4017-M20x035-8.8-ga**
706458	0.157	**Screw ISO4017-M20x040-8.8-ga**
111137	0.223	**Screw ISO4017-M20x55-8.8-ga**
057139	0.199	**Screw ISO4017-M20x060-8.8-ga**
721912	0.244	**Screw ISO4017-M20x070-8.8-ga**
109199	0.280	**Screw ISO4017-M24x050-8.8-ga**
125462	0.343	**Screw ISO4017-M24x060-8.8-ga**
132382	0.360	**Screw ISO4017-M24x070-8.8-ga**
029420	0.590	**Screw ISO4017-M30x070-8.8-ga**

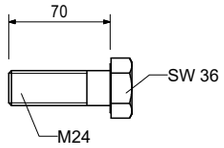




Art no.	Weight [kg]		L [mm]
026430	0.334	**Screw ISO4014-M24x070-10.9**	70

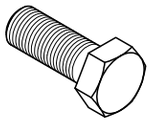
High-strength bolt for anchoring climbing systems.

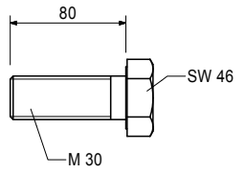




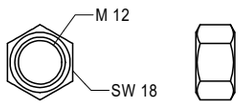
Art no.	Weight [kg]	
123843	0.623	**Screw ISO4017-M30x080-10.9**

For attaching Anchor Shoe H ACS and Anchor Shoe V ACS to Climbing Cone-2 M30/DW20 or Screw-On Cone M30/DW26.

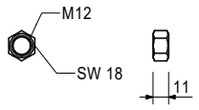




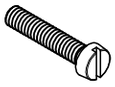
Art no.	Weight [kg]	
104526	0.017	**Hex-Nut ISO4032-M12-8**

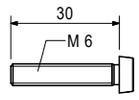


Art no.	Weight [kg]	
710330	0.017	**Hex-Nut ISO4032-M12-8-ga**

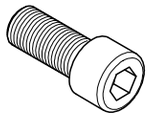


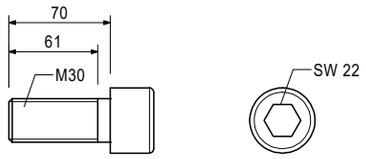
Art no.	Weight [kg]	
051759	0.050	**Screw ISO1207-M06x030-4.8-ga**





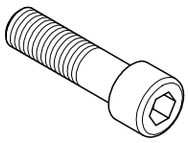
Art no.	Weight [kg]		L [mm]
113007	0.700	**Screw ISO4762-M30x070-8.8-ga**	70

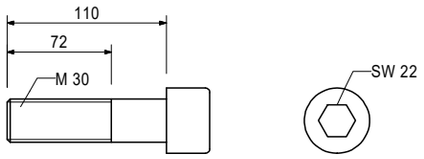




Art no.	Weight [kg]	
051728	0.800	**Screw ISO4762-M30x110-10.9**

For attaching Climbing Shoe ACS, Climbing Shoe-2 ACS and Anchor Tube ACS right or left to Climbing Cone-2 M30/DW20 or Screw-On Cone M30/DW26



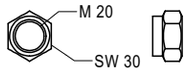


Art no.	Weight [kg]	
		Hex-Nut ISO7040-ga
711071	0.004	**Hex-Nut ISO7040-M08-8-ga**
710381	0.017	**Hex-Nut ISO7040-M12-8-ga**
070890	0.030	**Hex-Nut ISO7040-M16-8-ga**
781053	0.065	**Hex-Nut ISO7040-M20-8-ga**
105032	0.070	**Hex-Nut ISO7040-M24-8-ga**

Self-locking.

Art no.	Weight [kg]	
130341	0.063	**Hex-Nut ISO7042-M20-8-ga**

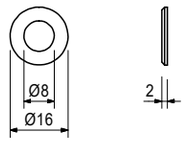
Self-locking.



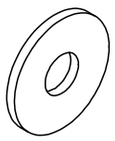
Art no.	Weight [kg]	
		Hex-Nut ISO4032-8-ga
710334	0.064	**Hex-Nut ISO4032-M20-8-ga**
022250	0.100	**Hex-Nut ISO4032-M24-8-ga**

Art no.	Weight [kg]	
		Washers ISO7089-200HV-ga
706454	0.017	**Washer ISO7089-20-200HV-ga**
725574	0.009	**Washer ISO7089-14-200HV-ga**
780354	0.002	**Washer ISO7089-08-200HV-ga**

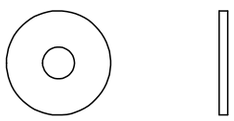
Art no.	Weight [kg]	
722356	0.002	**Washer ISO7090-08-200HV**



Art no.	Weight [kg]	
		Washers ISO7093-1-200HV-vz
750350	0.027	**Washer ISO7093-1-12-200HV-ga**
710342	0.007	**Washer ISO7093-1-08-200HV-ga**

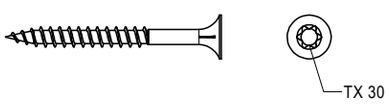


Art no.	Weight [kg]	
		Washers ISO7094-100HV-ga
113819	0.368	**Washer ISO7094-30-100HV-ga**
129975	0.210	**Washer ISO7094-24-100HV-ga**
113350	0.174	**Washer ISO7094-20-100HV-ga**
113349	0.087	**Washer ISO7094-16-100HV-ga**
113348	0.043	**Washer ISO7094-12-100HV-ga**
125719	0.019	**Washer ISO7094-10-100HV-ga**
113347	0.013	**Washer ISO7094-08-100HV-ga**

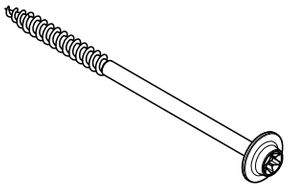


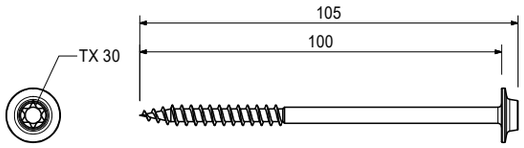
Art no.	Weight [kg]	
		Wood Screws SK-HPI
113806	0.002	**Wood Screw 4.5x40 SK-TX20 HPI**
024540	0.005	**Wood Screw 6x40 SK-TX30 HPI**
024470	0.008	**Wood Screw 6x60 SK-TX30 HPI**
024670	0.010	**Wood Screw 6x60 SK-TX30 HPI ma**
110272	0.006	**Wood Screw 6x60 ZK-TX30 HPI**
024690	0.008	**Wood Screw 6x80 SK-TX30 HPI**
109790	0.008	**Wood Screw 8x35 SK-TX30 HPI**
103444	0.009	**Wood Screw 8x37 SK-TX30 HPI**
104892	0.010	**Wood Screw 8x44 SK-TX30 HPI**
104647	0.013	**Wood Screw 8x58 SK-TX30 HPI**
103443	0.036	**Wood Screw 8x78 SK-TX30 HPI**

For Torx Bit Points TX 30. Self-drilling.

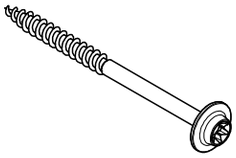


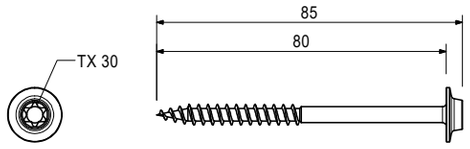
Art no.	Weight [kg]	
104911	0.013	**Wood-Screw 6x100 RK-TX30 HPI**





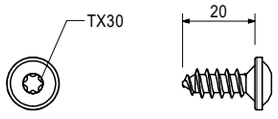
Art no.	Weight [kg]	
104912	0.011	**Wood-Screw 6x80 RK-TX30 HPI**



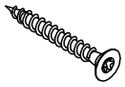


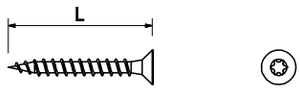
Art no.	Weight [kg]		L [mm]
024550	0.005	**Wood-Screw 8x20 SK-TX30 HSX**	20

For Torx blade TX30. Self-drilling.

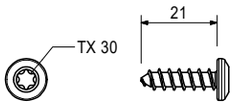


Art no.	Weight [kg]	
		Wood Screws SK HSX
102109	0.005	**Wood Screw 3.5x45 SK-Z2 HSX**
138247	0.005	**Wood Screw 4x70 SK-TX20 HSX**
111437	0.004	**Wood Screw 5x20 SK-TX25 HSX**
138238	0.004	**Wood Screw 5x25 SK-TX20 HSX**
105847	0.005	**Wood Screw 5x25 SK-Z2 HSX**
110642	0.006	**Wood Screw 5x40 SK-TX20 HSX**
138239	0.006	**Wood Screw 6x60 SK-TX30 HSX**
138240	0.006	**Wood Screw 6x70 SK-TX30 HSX**
138241	0.006	**Wood Screw 6x80 SK-TX30 HSX**
138242	0.006	**Wood Screw 6x90 SK-TX30 HSX**
024950	0.012	**Wood Screw 6x100 SK-TX30 HSX**
024960	0.015	**Wood Screw 6x120 SK-TX30 HSX**
024970	0.017	**Wood Screw 6x140 SK-TX30 HSX**
024980	0.019	**Wood Screw 6x160 SK-TX30 HSX**
024990	0.021	**Wood Screw 6x180 SK-TX30 HSX**

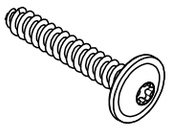


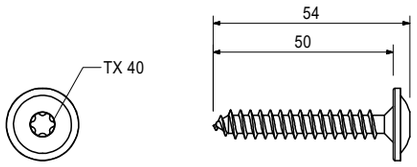


Art no.	Weight [kg]		
129711	0.010	**Wood Screw 6x20 HRK-TX30 HSX**	

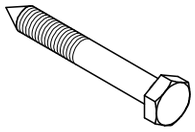


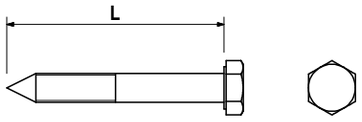
Art no.	Weight [kg]		L [mm]
138246	0.005	**Wood Screw 8x50 TK-TX40 HSX**	54





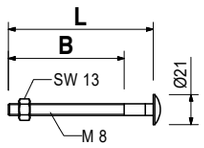
Art no.	Weight [kg]		L [mm]
		Hex-Wood Screws DIN571-ga	
024270	0.023	**Hex-Wood Screw DIN571-8x60-ga**	60
029440	0.005	**Hex-Wood Screw DIN571-6x20-ga**	20



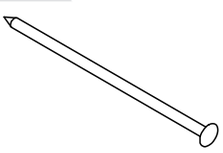


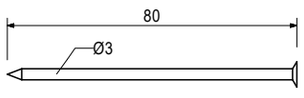
Art no.	Weight [kg]		B [mm]	L [mm]
		Screws DIN306-M08-ga-Nu		
710295	0.028	**Screw DIN603-M08x045-4.8-ga-Nu**	22	45
710326	0.030	**Screw DIN603-M08x060-4.8-ga-Nu**	22	60
710709	0.036	**Screw DIN603-M08x065-4.8-ga-Nu**	22	65
024140	0.033	**Screw DIN603-M08x070-4.8-ga-Nu**	58	70
710240	0.050	**Screw DIN603-M08x100-4.8-ga-Nu**	80	100
108834	0.085	**Screw DIN603-M08x180-4.6-ga-Nu**	28	180
024390	0.090	**Screw DIN603-M08x200-4.8-ga-Nu**	150	200

With nut.

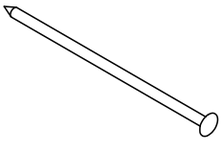


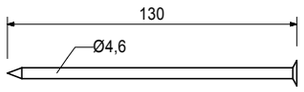
Art no.	Weight [kg]	
710312	0.005	**Wire Nail 3.0x80mm**





Art no.	Weight [kg]	
129157	0.017	**Wire Nail 4.6x130mm**

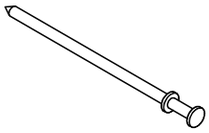


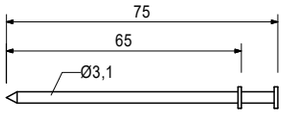


Art no.	Weight [kg]	
018280	1.000	**Double Head Nail 65mm**

Notes

Delivery unit: carton with 1000 pieces.



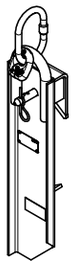


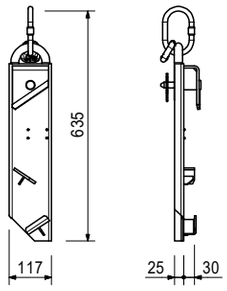
Art no.	Weight [kg]	
070760	4.680	**Crane Splice GT 24**

For transporting elements by crane with the GT 24 Girder.

Notes

Follow Instructions for Use!
Permissible load-bearing capacity 700kg with crane sling angle ≤ 15°.





Consists of

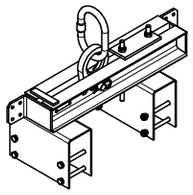
1 pc 018050 Pin Ø16x65/86mm ga
1 pc 018060 Cotter Pin 4/1 ga

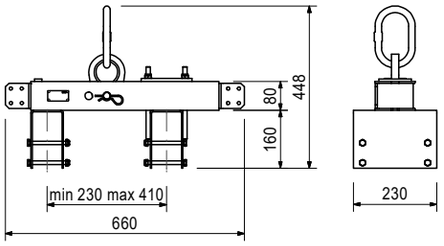
Art no.	Weight [kg]	
111238	19.800	**Crane Splice GT 24 2t**

For transporting elements by crane with the GT 24 Girder. Adjustable from 230 to 410mm.

Notes

Follow Instructions for Use!
Permissible load-bearing capacity 2t with crane sling angle ≤ 30°.





Consists of

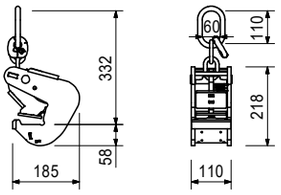
1 pc 018060 Cotter Pin 4/1 ga
8 pc 710138 Screw ISO4014-M10x110-8.8-ga
8 pc 780356 Hex-Nut ISO7040-M10-8-ga

Art no.	Weight [kg]	
115168	6.950	**Lifting Hook MX 1.5t**

For transporting MAXIMO and TRIO Panels.

Notes

Follow Instructions for Use!
Permissible load-bearing capacity: Steel elements 1.5t. Alu elements 750kg.

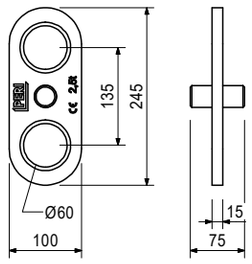


Art no.	Weight [kg]	
127834	2.210	**Crane Eye-2 BR 2.5t ga**

As attachment point for moving climbing systems or Platform Beam BR.

Notes

Follow Instructions for Use!
Permissible load-bearing capacity 2.5t.

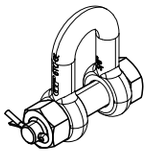


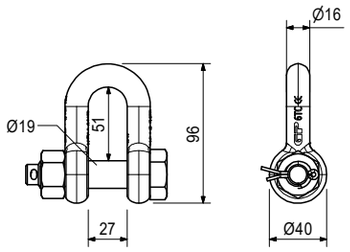
Accessory (not included)

020620	0.561	**Spacer for BR**

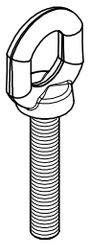
Art no.	Weight [kg]	
130616	0.670	**Shackle Ø16/Ø19mm 3.25t Hex-N.**

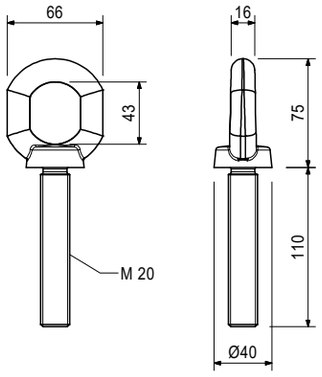
For attaching loads or mounting formwork elements, Trolleys HTP 2000kg by means of Turnbuckle CB Ø25-M20/DW15.





Art no.	Weight [kg]	
724812	0.656	**Eyebolt M20x110mm coat**



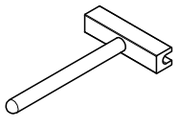


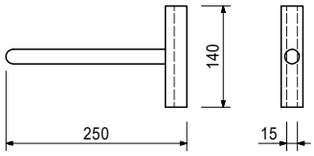
Accessory (not included)

781053	0.065	**Hex-Nut ISO7040-M20-8-ga**
113350	0.174	**Washer ISO7094-20-100HV-ga**

Art no.	Weight [kg]	
031070	1.260	**Tie Rod Wrench 15**

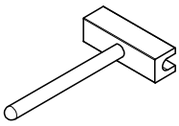
For easy handling of Tie Rod DW15.

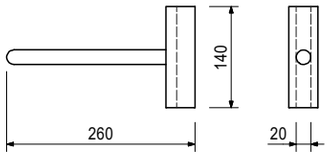




Art no.	Weight [kg]	
031050	1.780	**Tie Rod Wrench 20**

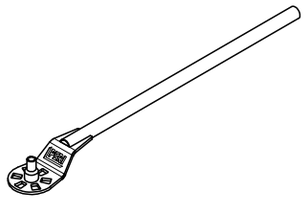
For easy handling of Tie Rod DW20.

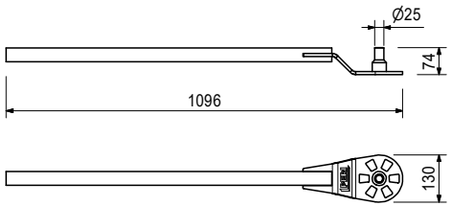




Art no.	Weight [kg]	
108129	3.480	**Tie Spanner DW15**

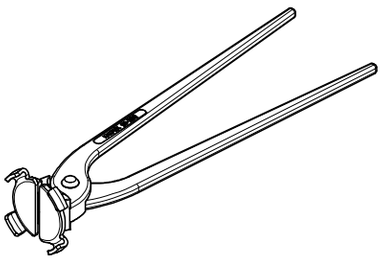
For Wingnut Counterplate DW15, Wingnut Pivot Plate DW15 and Wingnut DW15.

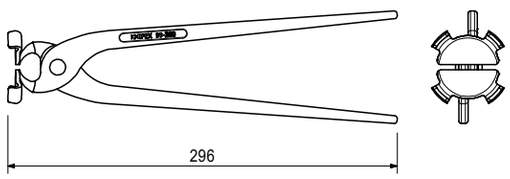




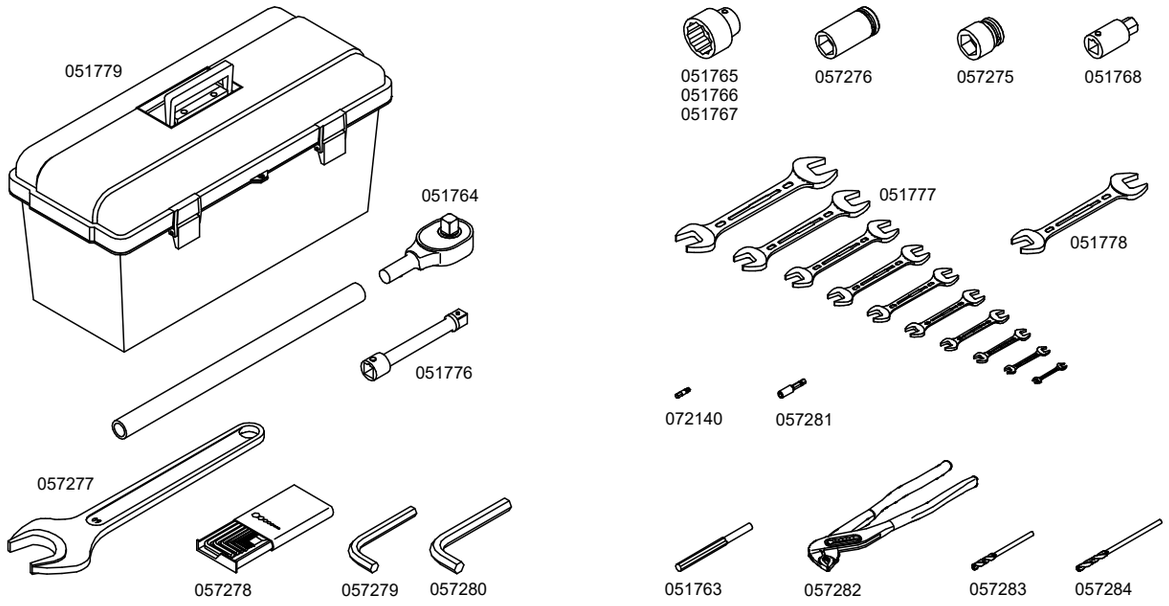
Art no.	Weight [kg]	
031644	0.588	**Cone Pliers DK Ø58mm**

For holding DK, SK or KK Concrete Cones with corresponding diameter during installation.



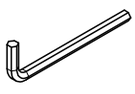


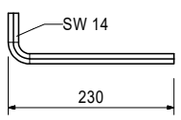
Art no.	Weight [kg]	
		Tools ACS
057281	0.042	**Bit Clip for TX30**
051777	1.650	**Double Spanner Set 10-pcs.**
051778	0.350	**Double Spanner SW24/SW27**
051763	0.125	**Driftpin 10mm**
057284	0.065	**Drill Bit HSS 9mm long**
057283	0.042	**Drill Bit HSS 9mm short**
051776	0.520	**Extension 3/4“ 200mm**
057277	1.510	**Open-End Wrench SW60**
057282	0.500	**Pipe Wrench**
051764	2.650	**Ratchet Wrench 3/4“**
057278	0.405	**Socket Set 8 Pieces**
057279	0.260	**Socket SW14**
057280	0.430	**Socket SW17**
051765	0.235	**Socket SW19 3/4“**
051768	0.500	**Socket SW22 3/4“**
051766	0.215	**Socket SW24 3/4“**
057276	0.625	**Socket SW30 3/4“**
051767	0.660	**Socket SW46 3/4“**
051779	3.500	**Tool Box 457x257x255mm**
051761	13.700	**Tool Set ACS**
072140	0.005	**Torx Bit TX30**



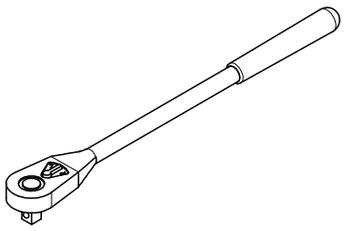
Art no.	Weight [kg]	
027212	0.445	**Hexag. Recess Wrench SW14 long**

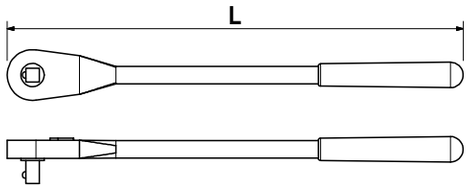
Fits PERI Positioning Discs and Allen Key Bolts M16.





Art no.	Weight [kg]		L [mm]
		Ratchet Wrenches	
072180	0.560	**Ratchet Wrench 1/2 „**	300
029610	5.300	**Ratchet Wrench 1“**	900
051764	2.650	**Ratchet Wrench 3/4“**	630





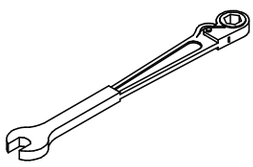
Art no.	Weight [kg]	
		Sockets
029620	0.075	**Socket SW19 1/2“**
057276	0.625	**Socket SW30 3/4“**
102785	0.452	**Socket SW36 3/4“**
029630	0.580	**Socket SW46 1“**

Art no.	Weight [kg]	
021790	1.000	**Combi Ratchet Spanner SW24**

For adjusting RUNDFLEX Panels and Cantilevered Parapet Platform GKB.

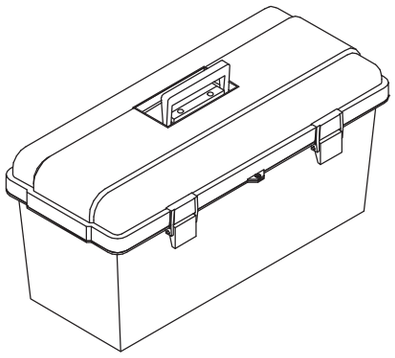
Notes

Length approx. 500mm.



Art no.	Weight [kg]	
115581	10.280	**Service Box Hydraulics**

Consisting of:
1 pc. 115590 Tool Box 580x260x285mm
6 pc. 115583 Pressure Gauge Typ 570 VA-Geh.
6 pc. 115584 Hose MKT 6-02 DN 02
12 pc. 115582 Measuring Coupl. SMK 20-G 1/4-PC
2 pc. 115591 Double Spanner SW10x13
1 pc. 115592 Double Spanner SW13x17
1 pc. 135172 Double Spanner SW19x22
1 pc. 115588 Double Spanner SW19x24
1 pc. 051778 Double Spanner SW24x27
1 pc. 115589 Double Spanner SW27x32
1 pc. 057278 Allen Key Set 8 pcs.
1 pc. 115585 Allen Key SW12
1 pc. 057279 Allen Key SW14
1 pc. 057282 Pipe Wrench
1 pc. 115147 Angle Fitting Set PS
2 pc. 115396 Fitting Set PS RCS short
1 pc. 072180 Ratchet Wrench 1/2“
20 pc. 123881 Tube Screw Plug ROV12SX
20 pc. 123880 Threaded Plug VKAN 12S VIT
100 pc. 051760 Cable Binder NT-240H
2 pc. 126425 Distance Piece Ø120mm coat
1 pc. 126440 Socket SW17 1/2“
1 pc. 135173 Allen Key SHR-Bit SW05
1 pc. 135174 Allen Key SHR-Bit SW06
1 pc. 135175 Allen Key SHR-Bit SW08
1 pc. 135176 Allen Key SHR-Bit SW10
1 pc. 135177 SHR Screwdriver Bit 6 parts Slot/PH
2 pc. 711035 PERI Label 128x65mm
1 pc. 126434 List of contents Hydraulic Service Case

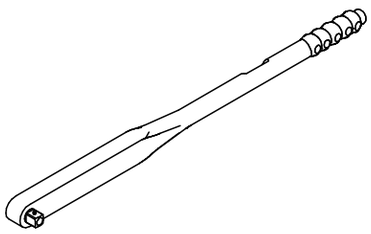


Art no.	Weight [kg]	
133372	6.800	**Cordless Screwdriver-Set ACS**

Consists of

1 pc 111435 Socket SW17 1/2“
1 pc 133356 Screwdriver ACS 18V
1 pc 133369 Extension 125mm 1/2“
1 pc 133370 Adaptor 1/4“ to C6.3 hex.
1 pc 133371 Adaptor 1/4“ on 1/2“

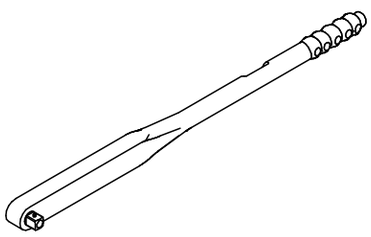
Art no.	Weight [kg]		B [mm]	L [mm]
138813	1.000	**Torque Wrench 40-200Nm**	50	459



Art no.	Weight [kg]	
057090	6.700	**Torque Wrench 140-760Nm**

Notes

Outer square 3/4“
length: 812mm
incl. sheet metal case

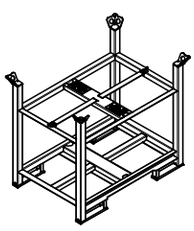


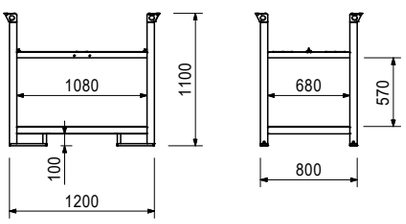
Art no.	Weight [kg]	
136165	59.000	**Pallet RB Hydr.Pump RCS MAX**

For transportation of up to 4 Hydraulic Pumps RCS MAX.

Notes

Pay attention to the stacking height!
Follow Assembly Instructions!



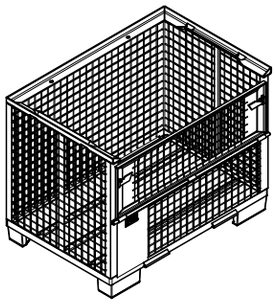


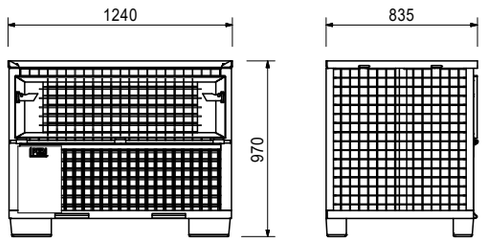
Art no.	Weight [kg]	
065068	88.200	**Grate Pallet 80x120 ga**

For stacking and transportation of formwork and scaffold components.

Notes

Follow Instructions for Use!
Capacity approx. 0.75m³.
Load-carrying capacity 1.5t.



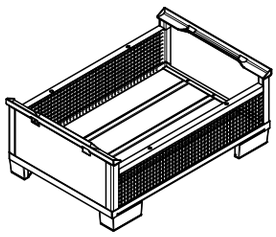


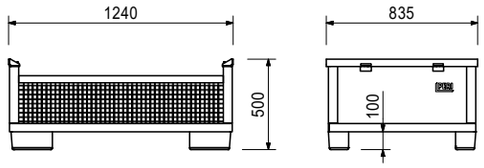
Art no.	Weight [kg]	
025660	66.500	**Hardware Box 80x120 ga**

For stacking and transportation of formwork and scaffold components.

Notes

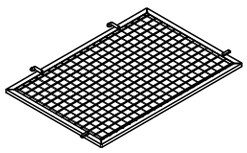
Follow Instructions for Use!
Capacity approx. 0.28m³.
Permissible load-bearing capacity 1.5t.

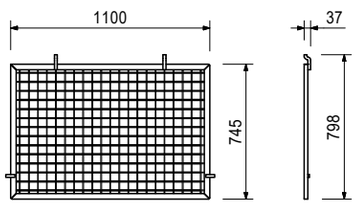




Art no.	Weight [kg]	
065067	9.410	**Lid for Grate Pallet 80x120**

For closing Crate Pallets 80x120 or Hardware Boxes 80x120.



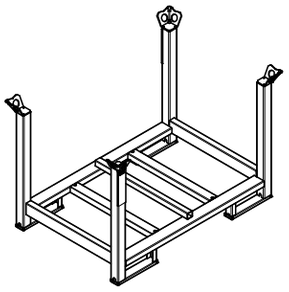


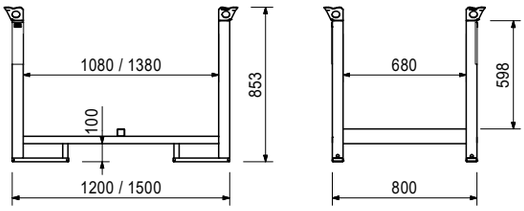
Art no.	Weight [kg]		L [mm]
		Pallets RP-2	
103434	38.500	**Pallet RP 80x120/2 ga**	1200
103429	45.300	**Pallet RP 80x150/2 ga**	1500

For stacking and transportation of formwork and scaffolding components.

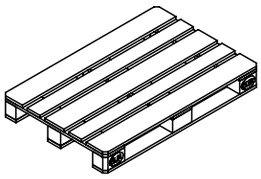
Notes

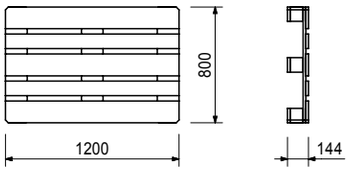
Follow Instructions for Use!
Permissible load-bearing capacity 1.5t.





Art no.	Weight [kg]	
065015	28.000	**Euro Flat Pallet 80x120**



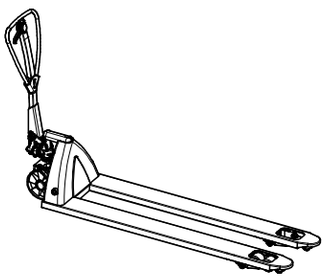


Art no.	Weight [kg]	
061510	105.000	**Pallet Lifting Trolley 1800mm**

For moving pallets and crate pallets.

Notes

Follow Instructions for Use!
Forklift arm length 1800mm, forklift arm width 550mm, stroke range 115mm.
Permissible load-bearing capacity 2t.



The optimal System for every Project and every Requirement

Wall Formwork

Column Formwork

Slab Formwork

Climbing Systems

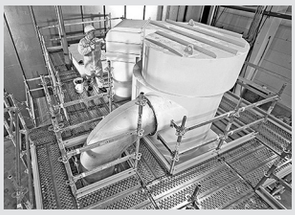
Bridge Formwork

Tunnel Formwork

Shoring Systems

Construction Scaffold

Facade Scaffold



Industrial Scaffold

Access

Protection Scaffold

Safety Systems

System-Independent Accessories

Services

PERI

PERI Danmark A/S
Forskalling & Stilladssystemer
Greve Main 26
2670 Greve
Tlf. +45 4345.3627
peri@peri.dk
www.peri.dk