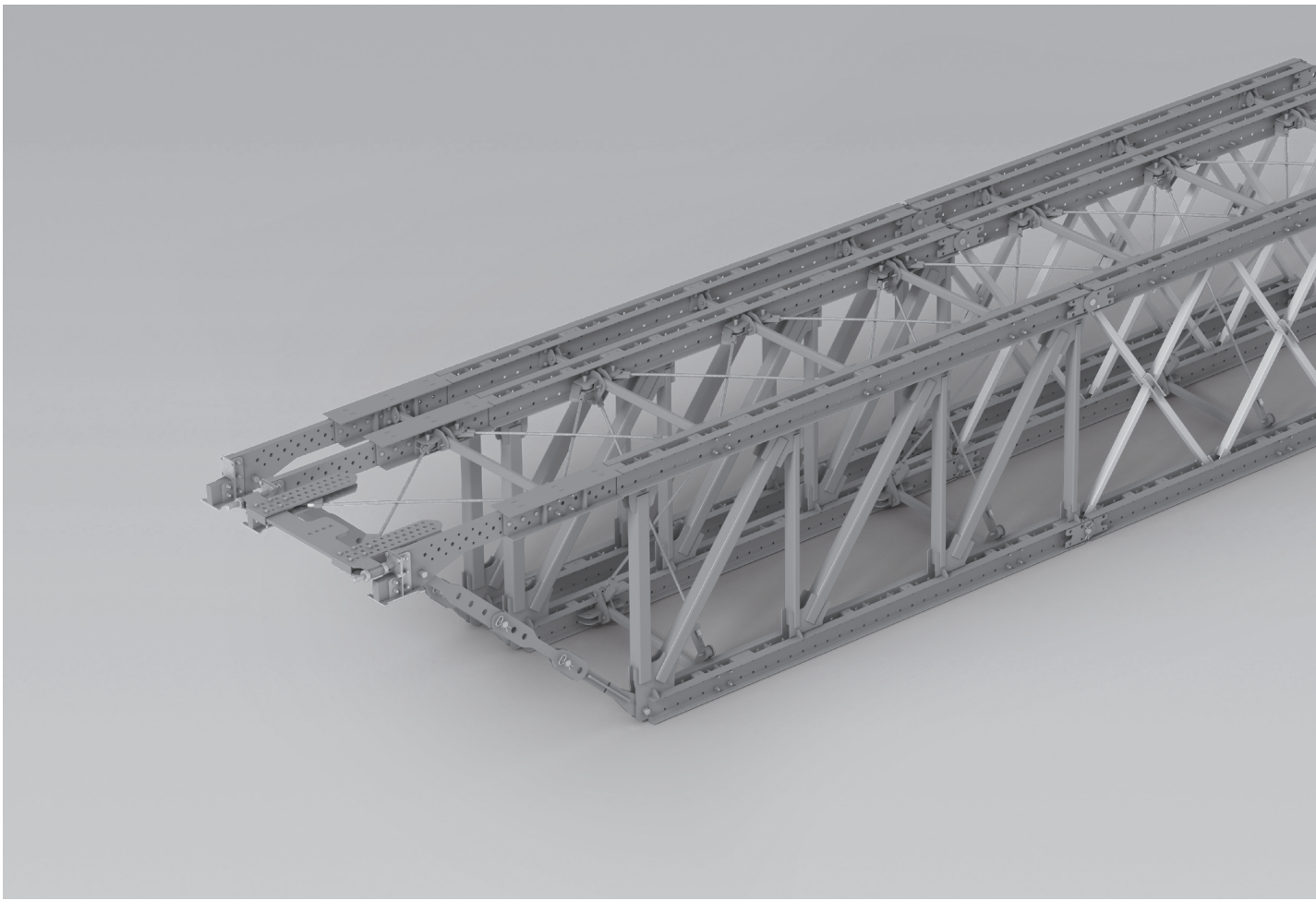
PERI

VARIOKIT VRB

Heavy-Duty Truss Girder

Instructions for Assembly and Use – Standard Configuration – Version 2.0



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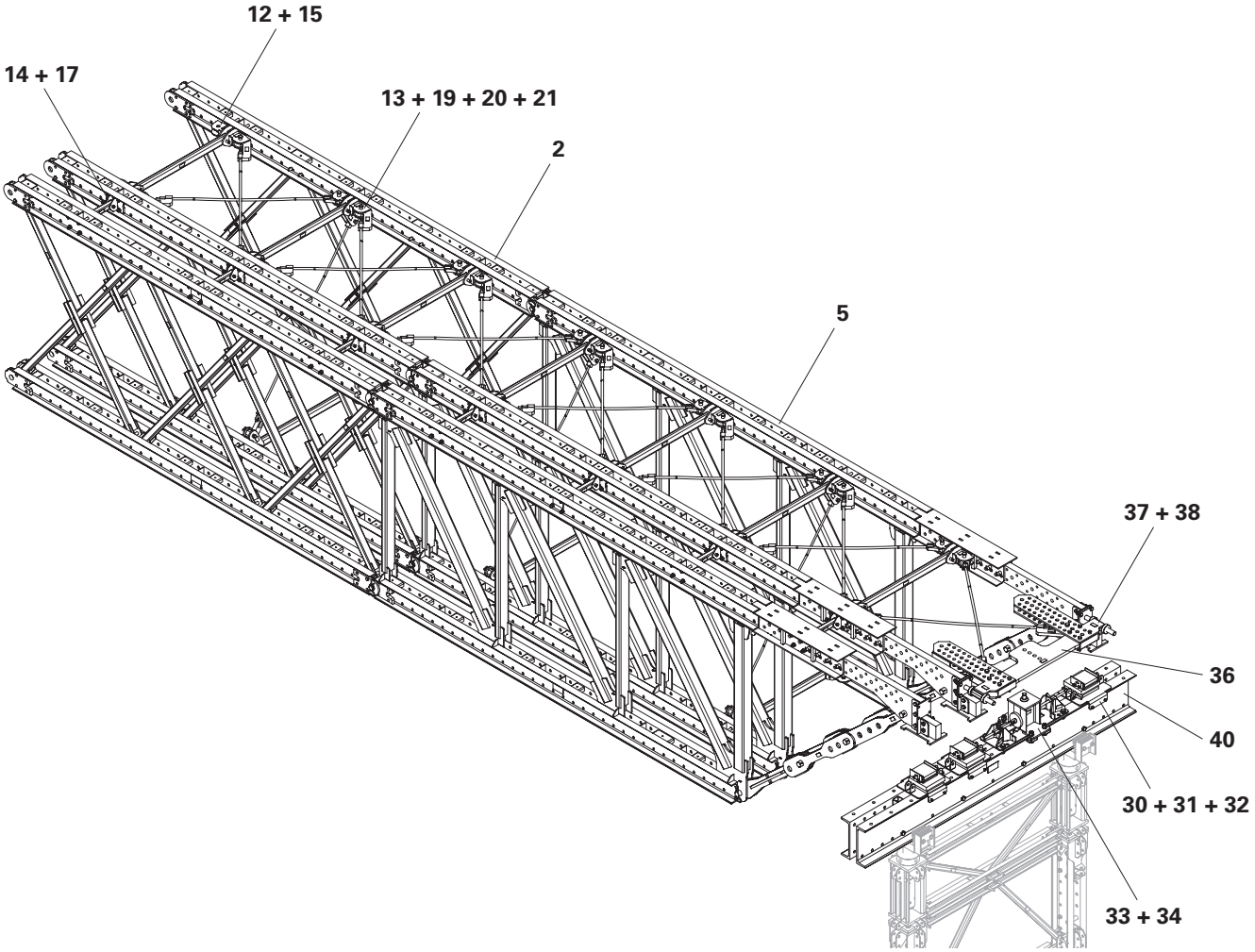
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Main components



2 Standard Frame 4.5 m VRB
5 Bearing Frame 6.0 m VRB
12 Bracing Shoe VRB
13 Vertical Bracing Shoe VRB
14 Coupling Shoe VRB
15 Bracing Post 1.50 m VRB
17 Coupling Post 0.5 m VRB
19 Eye Nut DW 20 VRB
20 Articulated Spanner DW 20 VRB
21 Tie Rod DW 20, special length
30 Centring Plate HDT-VRB
31 Cross Fall Bearing VRB
32 Longitudinal Bearing VRB
33 Horizontal Bearing-2 VRB
34 Cross Fall Adapter VRB
36 Bracing Traverse 150 VRB
37 Bracing Traverse Connector VRB
38 Bracing Spindle VRB
40 Main Beam 350 VRB

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)

Arrows

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

* If not identical to the action arrow.

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


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


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


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


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

Format of the safety instructions


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

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

Conventions
- Instructions are numbered with: 1. ...., 2. ...., 3. .....
- The result of an instruction is shown by: →
- Position numbers are clearly provided for the individual components and are given in the drawing, e.g. **1**, in the text in brackets, for example (**1**).
- 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 for Assembly and Use are shown in the form of examples with only one component size. They are valid for all component sizes contained in the standard configuration.

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

Target groups

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

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

Competent person
(Construction Site Coordinator)
- is appointed by the contractor,
- must be on site for all work,
- prepares and updates the plan for assembly, modification and dismantling,
- prepares and updates the plan for use of the formwork 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 products 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 necessary to safely assemble, modify or dismantle the PERI product.
- Designation of the preventive measures to be taken to avoid the risk of persons and objects falling.
- Designation of the safety precautions in the event of changing weather conditions that could adversely affect the safety of the PERI products, as well as the personnel concerned.
- Details regarding permissible loads.
- Description of all other risks and dangers associated with assembly, modification or dismantling operations.

- **In other countries, ensure that the relevant national guidelines and regulations in the respective current version are complied with!**
- **If no country-specific regulations are available, it is recommended to proceed according to German guidelines and regulations.**
- **A competent person must be on site when any work is carried out on the PERI product.**

* Valid in Germany: Regulations for Occupational Health and Safety on Construction Sites 30 (RAB 30).
** Instructions are given by the contractor themselves or a competent person selected by them.

Additional technical documentation

Instructions for Assembly and Use:
- VST Heavy-Duty Shoring Tower
- PERI UP Flex Facade Scaffold 75 and 100
- PERI UP Flex Stair 75
- PERI UP Flex Stair 100 and 125
- PERI UP Scaffolding Kit core components
- Design information for individual components

Instructions for Use:
- Hydraulic Head Spindle Unit VST

- PERI Design Tables – Formwork and Shoring

Product description

Regular assembly
These Instructions for Assembly and Use describe the standard assembly of the VRB Heavy-Duty Truss Girder.

The VRB Heavy-Duty Truss Girder construction consists of bearing frames and standard frames that are mounted using connecting parts to form single trusses or truss packages, and then positioned on the main beam.

Two single trusses are coupled together to create a truss package and connected by means of bracing connectors and bracing posts. This package is braced using horizontal and vertical bracing. For connecting additional single trusses, corresponding coupling connections are fitted.

The typical construction consists of truss packages whereby additional single trusses are coupled on the left and right respectively.

Features
Continuous length adjustment is made possible by the telescopic bearing frame.

Trusses are transported to the place of operation by crane fully assembled. Depending on the inclination, position the cross fall bearing and longitudinal bearing between the bearing frames and main beams.

The trusses are mounted on the main beams. Horizontal forces are transferred using the horizontal bearing. Crossing angles can be realised by means of the telescopic bearing frame along with the flexible bracing traverse.

PERI UP Flex can be mounted on the trusses with the corresponding connections to provide safe access technology.

Technical data
- Max. span 40 m
- Continuous length adjustment
- approx. 3,000 kNm perm. bending moment
- Max. longitudinal inclination: 7%
- Max. lateral inclination: 7%
- Crossing angle: 90° - 63.4°

Intended use
- The VRB Heavy-Duty Truss Girder is used for the temporary transfer of static loads from in-situ concrete or prefabricated elements in bridge construction.
- Temporary spans can be carried out in scaffolding construction or industrial structures.

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

Instructions for Use

Use in a manner not intended, deviating from the project-specific planning or the intended use detailed in the Instructions for Assembly and Use, represents a misapplication with a potential safety risk, e.g. risk of falling.

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

Changes to PERI components are not permitted.

Only ever use approved and calculated components.

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

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

- The description of the assembly and operation of the assemblies and components in these Instructions for Assembly and Use 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.

Cleaning and maintenance instructions

In order to maintain the value and operational readiness of the materials over the long term, clean the panels after each use.
Some repair work will be inevitable due to the working conditions.

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

Spray components of the system that are exposed to concrete contamination with concrete release agent before each use; this makes them 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.

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

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

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

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

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

Mechanical components, e.g. climbing rails in the sliding area of the climbing shoes, spindles or gear mechanisms, must be cleaned of dirt or concrete residue before and after use, and then greased with a suitable lubricant.

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

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.



Wear suitable protective equipment when cleaning components with high water pressure, such as:
- safety helmet,
- safety shoes,
- safety gloves,
- safety goggles.

Damaged components
- Separate out damaged components immediately on site and label them.
- Do not use damaged components.
- Only PERI original components are to be used when replacing parts.
- Any repairs to PERI products are to be carried out by PERI qualified personnel only.

Information regarding the use of the longitudinal and cross fall bearings
- The bearing surfaces of the longitudinal and cross fall bearings are lubricated with long-life grease and require no special maintenance.
- Avoid contamination of the bearings. It is essential to remove external contamination before use. See "Bearing with cross fall bearing" on page 49 and "Bearing without cross fall bearing" on page 51.

Cross-system

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

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

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

Observe and comply with the safety instructions and permissible loads.

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

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 may no longer be used.

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

When on slab formwork, scaffolds and working platforms:
- do not jump,
- do not run,
- do not throw anything off them.

Components provided by the contractor must comply with the requirements stipulated in these Instructions for Assembly and Use, the project-specific documents, and all applicable laws and standards. Unless otherwise indicated, the following applies in particular:
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 74-1:2005-12 and DIN EN 74-2:2009-01.

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 if required, 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 and make use of its results to take suitable steps to guarantee the stability of the scaffold,
- arrange for an extraordinary inspection to be carried out by a competent person qualified to do so. The aim of this inspection is to identify and rectify any damage in good time in order to guarantee safe use of the heavy-duty truss girder.

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

Assembly, modification and dismantling work
Assembly, modification or dismantling of heavy-duty truss girders may only be carried out by qualified persons under the supervision of a competent person. 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, the Instructions for Assembly and Use, and the project-specific documents, the contractor must create installation instructions to guarantee safe assembly, modification and dismantling of the heavy-duty truss girder.



The contractor must ensure that the personal protective equipment required for the assembly, modification or dismantling of the shoring 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.

Use
Before initial use, the safe functioning of the heavy-duty truss girder must be checked by a person qualified to carry out the inspection. The results of the inspection must be documented in an inspection log.

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

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

Notes for use
- Working areas must remain free of any tripping hazards.
- Do not walk on components and assembly units, always ensure that they are in a secure position.
- Always keep components and assembly units free of dirt, ice and snow. In wet weather conditions in particular, there is an increased risk of slipping.
- Always keep work platforms clean.
- Do not remain in the danger zone created by the moving parts.
- Avoid installing working areas and access routes in danger zones.
- Cordon off danger zones.
- Ensure that the guardrails and edge covers are fully installed.

System-specific



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

For each time of use, a detailed project-specific static calculation and planning is required!

Both assembly and dismantling must be planned on a project-specific basis while taking into account all intermediate statuses and individual boundary conditions.

Strike 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.

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.

Reliable lightning conduction must be ensured by the contractor.

Assembly work
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.

Load-distributing support used for the assembly, e.g. planking, must be suitable for the respective base. If several layers are required, planks are to be arranged crosswise.

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 anti-fall protection 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.

Scaffolding system
Lock the decking transom using the lift lock. The brackets must be flush with the deck.

Secure the wedges with a jarring blow using a 500 g hammer.

When transporting by crane:
- 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.
- Leave the danger zone at the main beam.
- Remove or secure loose parts.
- Do not transport persons, building materials or tools when moving with the crane.

Access means
Safe access to all working areas must be guaranteed at all times, e.g. with PERI UP Flex.

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

Use walkways, stairs, stair towers or site lifts as passageways. 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.

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.

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

Components at risk of structural collapse
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.

Storage and transportation

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

Do not drop the components.

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

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

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.

Component overview and tool list

Pos. no.	Component name	Article no.
	Frame	
1	Standard Frame 3.0 m VRB	127285
2	Standard Frame 4.5 m VRB	125155
3	Standard Frame 6.0 m VRB	125156
4	Bearing Frame 5.25 m VRB	128086
5	Bearing Frame 6.0 m VRB	126578
6	Coupling Joint Frame 3M-2 VRB	133727
7	Pressure Pole Starter-2	133732
	Bracing components	
12	Bracing Shoe VRB	125764
13	Vertical Bracing Shoe VRB	125770
14	Coupling Shoe VRB	125732
15	Bracing Post 1.50 m VRB	125734
16	Bracing Post 2.25 m VRB	125736
17	Coupling Post 0.5 m VRB	125746
18	Coupling Post 1.0 m VRB	125756
19	Eye Nut DW 20 VRB	125727
20	Articulated Spanner DW 20 VRB	125741
21	Tie Rod DW 20, special length	030700
22	Eye Nut RCS DW 15	115378
23	Articulated Spanner RCS DW 15	115375
24	Tie Rod DW 15, special length	030030
25	Heavy Duty Spindle SLS 100/180	101774
	Storage	
30	Centring Plate HDT-VRB	128019
31	Cross Fall Bearing VRB	127136
32	Longitudinal Bearing VRB	127143
33	Horizontal Bearing-2 VRB	131852
34	Cross Fall Adapter VRB	131031
36	Bracing Traverse 150 VRB	128091
37	Bracing Traverse Connector VRB	128103
38	Bracing Spindle VRB	128098
39	Filler Plate for Telescopic Box VRB	128025
	Main beam	
40	Main Beam 350 VRB	126059
41	Main Beam 500 VRB	126062
42	Main Beam 800 VRB	126065
43	Main Beam Connector VRB	126050
	Small parts	
50	Cotter pin 4/1	018060
51	Cotter pin 5/1	022230
52	Cotter pin 6/1 Ø 50 VRB	125356
53	Filler pin Ø 21 x 105 VRB	125349
54	Filler pin Ø 21 x 120	104031

Pos. no.	Component name	Article no.
55	Filler pin Ø 26 x 105 VRB	125345
56	Filler pin Ø 26 x 120	111567
57	Filler pin Ø 30 VRB	125347
58	Bolt Ø 50 x 155	113626
59	Bolt Ø 50 x 250	125355
60	Filler pin D = 26 SR VRB	125351
61	Bolt ISO 4014 M20 x 150-8.8	711084
62	Hex Nut DW 15 AF 30/50	030070
63	Hex Nut DW 20 AF 36/60	030580
64	Nut ISO 7040 M20-8	781053
65	Bolt ISO 4014 M24 x 80-8.8	105416
66	Nut ISO 7040 M24-8	105032
67	Bolt ISO 4014 M24 x 180-10.9	135464
70	Climbing Rail RCS	
71	Cross Connector RCS	123509
72	Spacer M20-82	110022
73	Spacer M24-82	110023
	PERI UP Flex	
80	Connector UP-VRB	126355
81	Bracket Connector UP-VRB	126345
	Type I components	
100	Bearing Frame VRB	125152
101	Coupling Joint Frame 1.5 m VRB	125153
102	Coupling Joint Frame 3.0 m VRB	125154
103	Pressure Pole Starter 1.5 m VRB	125413
104	Horizontal Bearing VRB	126173
105	Filler Plate VRB	126402
	Tools/Aids	
111	Climbing Beam 9 t	127320
112	Tension belt	
	Transport container	
	Crate Pallet Ø 80 x 120	065068
	Pallet RP-2 80 x 120	103434
	Pallet RP-2 80 x 150	103429
	Hardware Box 80 x 120	025660
	Pallet Lifting Truck 1800 mm	061510

Tool name	Article no.
Ratchet wrench	
Extension for the ratchet wrench	
Socket wrench AF 36	
Allen Key AF 6/AF 8/AF 10	
Spirit level	
Cordless screwdriver	
Screw bits TORX 25, 30	
Ring/open-end wrench: AF 13/AF 16/AF 18/AF 24/AF 30/AF 36	
4-sling lifting gear	
Circular saw	
Torque wrench	
Hammer 500 g	
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 EN 15048 with minimum Safety Factor 3 against breakage.

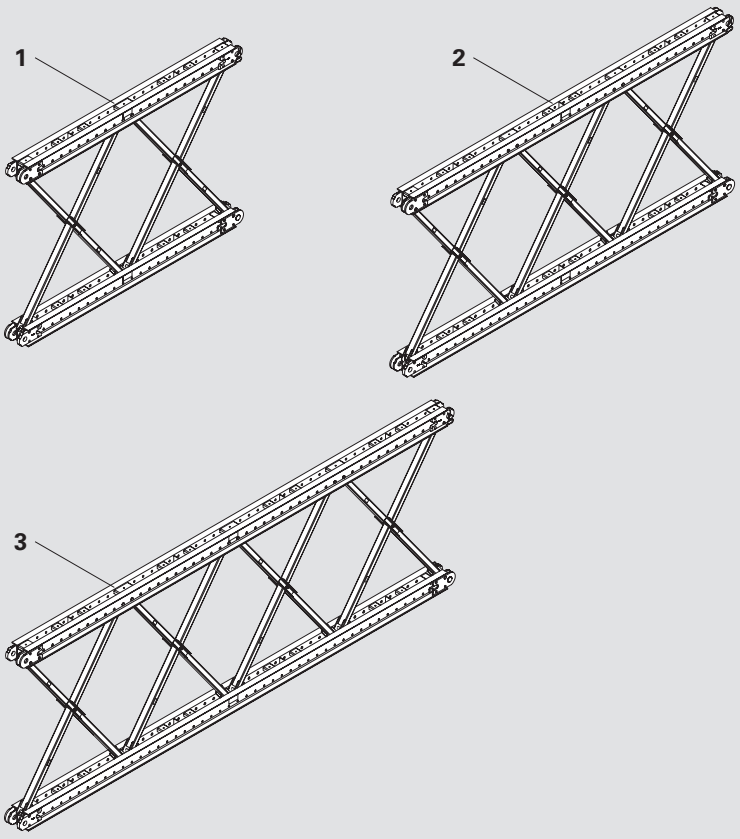
Quality class	Quality 4.6		Quality 8.8 and 10.9
Lubrication	**Lightly oiled**	**MoS2**	**undefined**
Screw M8	8 Nm	6.6 Nm	8 Nm
Screw M10	16 Nm	13.0 Nm	16 Nm
Screw M12	30 Nm	23.0 Nm	30 Nm
Screw M16	65 Nm	54.0 Nm	65 Nm
Screw M20	100 Nm		100 Nm
Screw M24	150 Nm		150 Nm
Screw M30	260 Nm		260 Nm
Screw M36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

Type I and Type II components

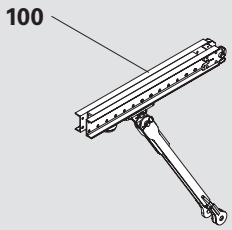
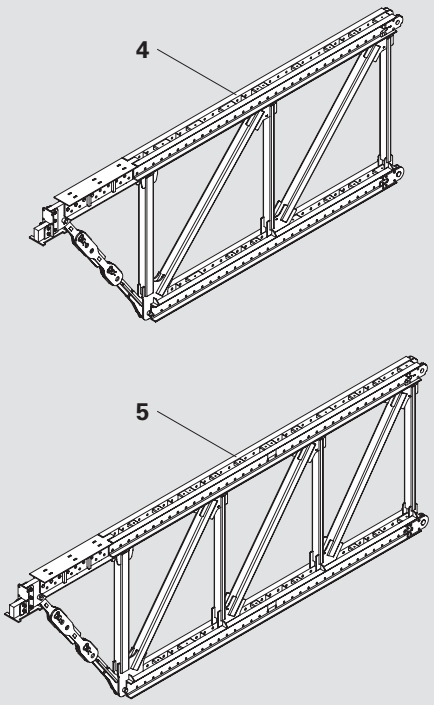
In the course of product optimisation, Type I and Type II components are used subject to the application.

- Type I and Type II components cannot be combined in some cases.
- Type I components are only available as rental material.

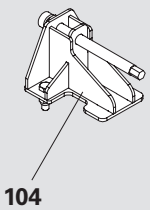
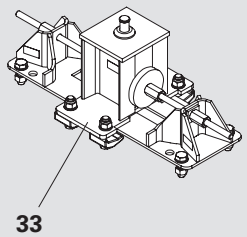
The comparison tables show the difference between the Type I and Type II components.

Standard frame	
	Type I
	Standard Frame 3.0 m VRB (**1**) Standard Frame 4.5 m VRB (**2**) Standard Frame 6.0 m VRB (**3**)
Article number	127285 125155 125156
Standard frames are stressed exclusively by tension forces.	

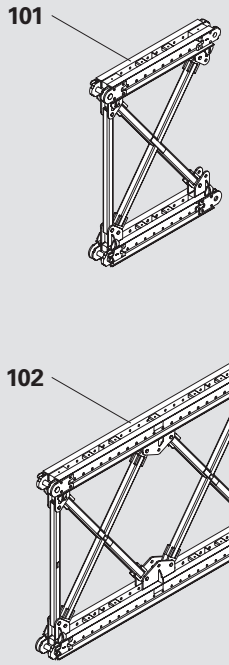
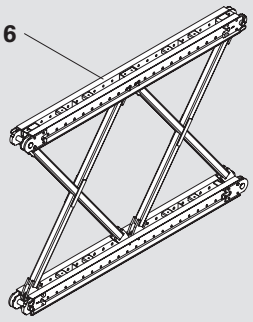
Tab. A1.01

Bearing Frame		
	Type I	**Type II**
	Bearing Frame VRB (**100**)	Bearing Frame 5.25 m VRB (**4**) Bearing Frame 6.0 m VRB (**5**)
Article number	125152	128086 126578
Bearing Frame s transfer vertical forces from the heavy-duty truss girder to the main beam.		
Used for		

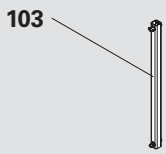
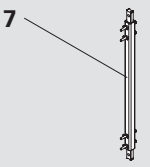
Tab. A1.02

Horizontal bearing		
	Type I	**Type II**
	Horizontal Bearing VRB (**104**)	Horizontal Bearing-2 VRB (**33**)
Article number	126173	131852
Horizontal bearings transfer horizontal forces, e.g. wind loads, from the heavy-duty truss girder to the main beam.		
Used for	Bearing Frame VRB (**100**)	Bearing Frame 5.25 m VRB (**4**) Bearing Frame 6.0 m VRB (**5**)

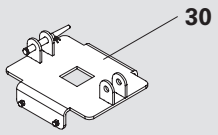
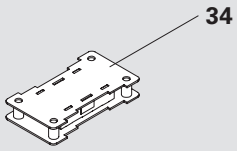
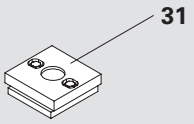
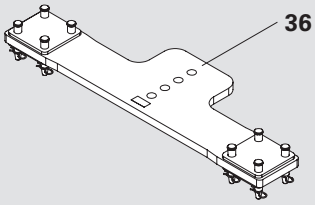
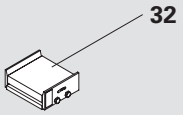
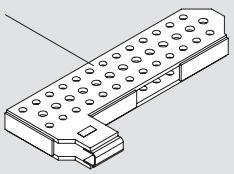
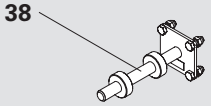
Tab. A1.03

Coupling frame		
	Type I	**Type II**
	Coupling Joint Frame 1.5 m VRB (**101**) Coupling Joint Frame 3.0 m VRB (**102**)	Coupling Joint Frame 3M-2 VRB (**6**)
Article number	125153 125154	133727
Coupling frames are stressed by tension and compressive forces. Therefore, in a coupling frame, the top chord is connected to the bottom chord by a pressure pole starter.		
Used for	Bearing Frame VRB	

Tab. A1.04

Pressure Pole Starter		
	Type I	**Type II**
	Pressure Pole Starter 1.5 m VRB (**103**)	Pressure Pole Starter-2 (**7**)
Article number	125413	133732
Transfers vertical compressive forces from the bottom chord to the top chord.		
Used for	Coupling Joint Frame 1.5 m VRB (**101**) Coupling Joint Frame 3.0 m VRB (**102**)	Coupling Joint Frame 3M-2 VRB (**6**)

Tab. A1.05

Attachment parts for bearing type II		
	Support	**Horizontal Bearing-2 VRB**
	Centring Plate HDT-VRB (**30**) Cross Fall Bearing VRB (**31**) Longitudinal Bearing VRB (**32**)	Cross Fall Adapter VRB (**34**) Bracing Traverse 150 VRB (**36**) Bracing Traverse Connector VRB (**37**) Bracing Spindle VRB (**38**)
Article number	128019 127136 127143	131031 128091 128103 128098
Additionally required attachments for bearing frame type II.		
		
		
		
Used for	Bearing Frame 5.25 m VRB (**4**) Bearing Frame 6.0 m VRB (**5**)	

Tab. A1.06

Bearing Frame VRB

The Bearing Frame VRB cannot be connected directly to a standard frame. A coupling frame must be installed between the Bearing Frame VRB and the Standard Frame VRB.
The following versions are possible.

Version 1
Installation with Coupling Joint Frame VRB

Components

1 Standard Frame 3.0 m VRB
2 Standard Frame 4.5 m VRB
3 Standard Frame 6.0 m VRB
100 Bearing Frame VRB
101 Coupling Joint Frame 1.5 m VRB
102 Coupling Joint Frame 3.0 m VRB

(Fig. A2.01 – A2.02)

Version 2
Installation with Coupling Joint Frame 3M-2 VRB

Components

1 Standard Frame 3.0 m VRB
2 Standard Frame 4.5 m VRB
3 Standard Frame 6.0 m VRB
6 Coupling Joint Frame 3M-2 VRB
7 Pressure Pole Starter-2
100 Bearing Frame VRB

1. Install a Pressure Pole Starter-2 (**7**) between the top chord and the bottom chord of Coupling Joint Frame 3M-2 VRB (**6**).
   ➔ The Pressure Pole Starter-2 (**7**) is on the side of the Bearing Frame VRB (**100**).

(Fig. A2.03)

Version 1		
Bearing Frame VRB (**100**)	Coupling Joint Frame 1.5 m VRB (**101**)	Standard Frame 3.0 m VRB (**1**)
		Standard Frame 4.5 m VRB (**2**)
		Standard Frame 6.0 m VRB (**3**)
	Coupling Joint Frame 3.0 m VRB (**102**)	Standard Frame 3.0 m VRB (**1**)
		Standard Frame 4.5 m VRB (**2**)
		Standard Frame 6.0 m VRB (**3**)

Tab. A2.01

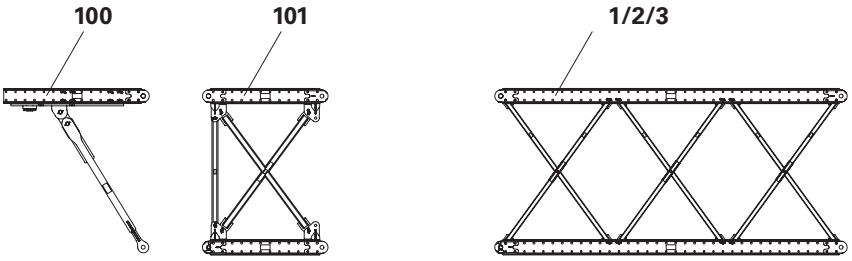


Fig. A2.01

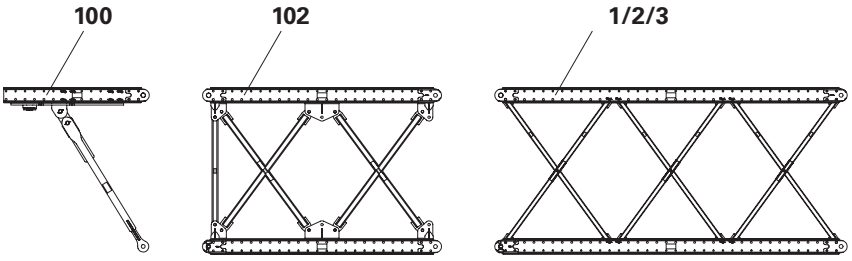


Fig. A2.02

Version 2		
Bearing Frame VRB (**100**)	Coupling Joint Frame 3M-2 VRB (**6**) + Pressure Pole Starter-2 (**7**)	Standard Frame 3.0 m VRB (**1**)
		Standard Frame 4.5 m VRB (**2**)
		Standard Frame 6.0 m VRB (**3**)

Tab. A2.02

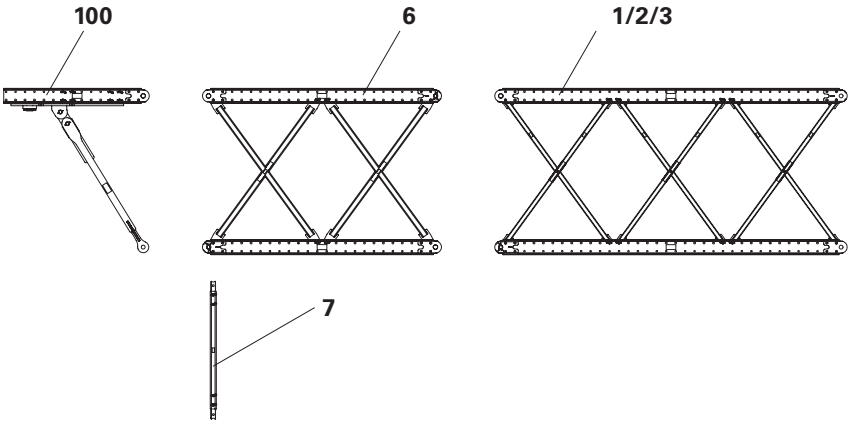


Fig. A2.03

Bearing Frame 5.25 m VRB
Bearing Frame 6.0 m VRB

When using the Support Frames 5.25 m VRB and Support Frames 6.0 m VRB, no coupling frame is required.
→ The bearing frame is connected directly to the standard frame.

Components

1 Standard Frame 3.0 m VRB
2 Standard Frame 4.5 m VRB
3 Standard Frame 6.0 m VRB
4 Bearing Frame 5.25 m VRB
5 Bearing Frame 6.0 m VRB

(Fig. A2.04 – A2.05)

Version 1	
Bearing Frame 5.25 m VRB (**4**)	Standard Frame 3.0 m VRB (**1**)
	Standard Frame 4.5 m VRB (**2**)
	Standard Frame 6.0 m VRB (**3**)
Bearing Frame 6.0 m VRB (**5**)	Standard Frame 3.0 m VRB (**1**)
	Standard Frame 4.5 m VRB (**2**)
	Standard Frame 6.0 m VRB (**3**)

Tab. A2.03

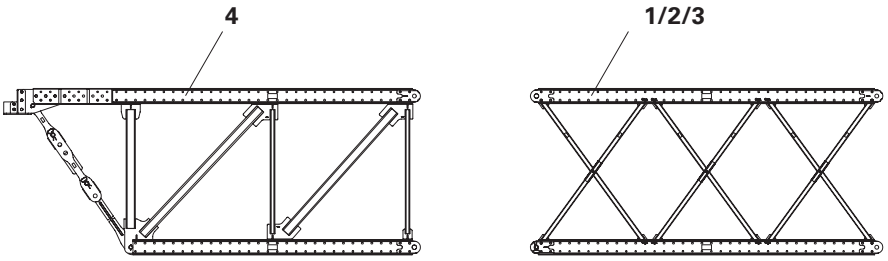


Fig. A2.04

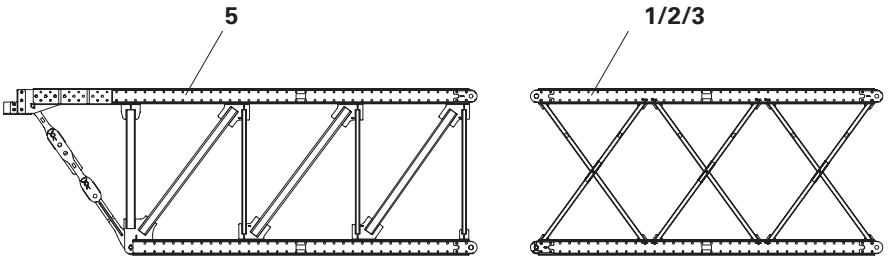


Fig. A2.05

Preparing for assembly

Measures prior to assembly

- Check the completeness of the technical documentation:
  - Assembly plans for heavy-duty truss girders and formwork
  - Arrangement drawings for heavy-duty truss girders and formwork
  - Parts list
- Site personnel to familiarise themselves with the project using the available documentation.

General information

- Prepare a level assembly surface with sufficient load-bearing capacity.
- The area must be at least the size of the fully assembled truss package.
- A crane or other lifting device with sufficient load-bearing capacity is required for the assembly process.
- Make sure that the Ø 21 holes in the stringers of the assembly aid (Climbing Rail RCS) are at the top.
- Bolts that are fitted vertically should be screwed in from top to bottom.
- For bolts that are fitted horizontally, no fitting direction is prescribed. PERI recommends that you always fit the bolts in the same direction.
- All bolts must be secured using the appropriate cotter pins.

- The project-related assembly plan from PERI is binding for assembly operations.
- Refer to the project-related assembly plan for the installation positions of the components.
- PERI recommends using the Climbing Rail RCS as an assembly aid. This facilitates safe assembly of the heavy-duty truss girder and its components.
- Alternatively, assembly can also take place horizontally.
- Secure interim assembly states correctly by means of temporary supports in order to prevent any items from toppling over.

- Reserve an adequate space for temporary storage of components and assemblies.

Load-bearing capacity

Note

- Observe the project-specific weight of the assemblies.
- PERI recommends using the Climbing Beam 9 t whenever possible.

- Attach the frames to filler pins in the top chord or to the crane with lifting straps (Fig. B1.01).
- Alternatively, round slings with the appropriate load capacity can be used.

Load-bearing capacity of the load-bearing points:

- Filler pin Ø 21 (**54**): 2,000 kg
- Filler pin Ø 26 (**56**): 3,650 kg

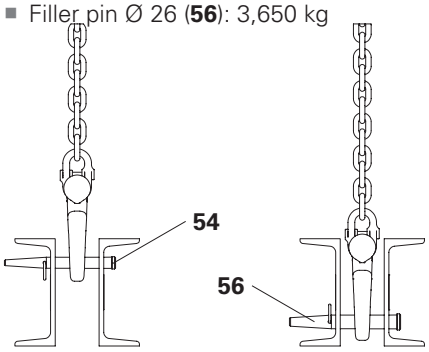


Fig. B1.01

Stability

The following applies to the stability of the components and assemblies during installation:
Projection x ≥ 1/3 component height y (Fig. B1.02)

$x_1 \geq 1/3\ y$
and
$x_2 \geq 1/3\ y$

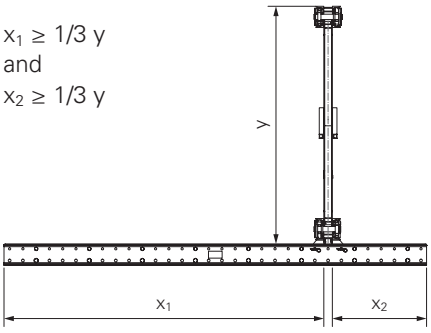


Fig. B1.02

Safety instructions

Danger

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

Attachment points

Attachment points for crane

- Specify the weight of the assemblies in the arrangement drawings.
- Always attach components and assemblies to the crane in a positive-locking manner.
- Use component and project-specific attachment points.
  In case of missing data, determine the attachment points through a series of tests so that components and trusses are in the correct position when being flown in.
- In the case of supplied parts, use the attachment points specified by the manufacturer.
- Observe the load-bearing capacity of the attachment points.

Mounting the standard frames

Components

1	Standard Frame 3.0 m VRB	1x
or		
2	Standard Frame 4.5 m VRB	1x
or		
3	Standard Frame 6.0 m VRB	1x

Assembly aids for the components

50	Cotter pin 4/1	4x
54	Filler pin Ø 21 x 120	4x
70	Climbing Rail RCS	2x
71	Cross Connector RCS	2x

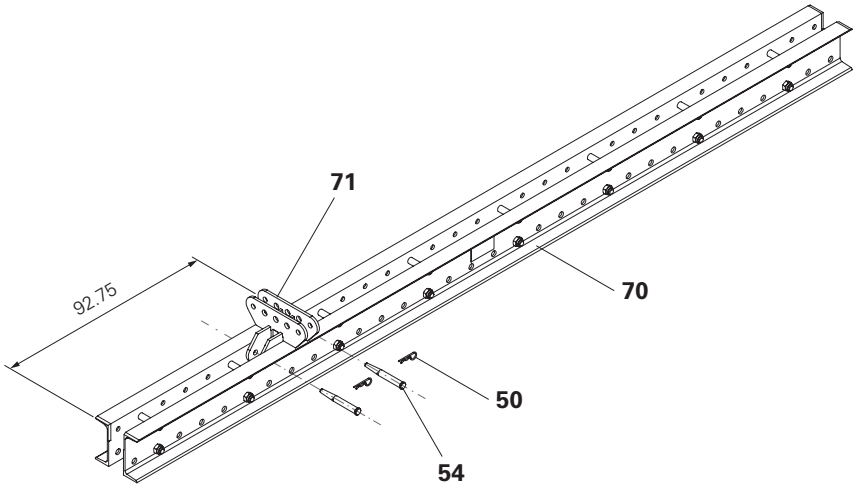


Fig. B1.03

- The length of the Climbing Rail RCS depends on the width of the truss package.
  Consider the projection of the Climbing Rail RCS on both sides and use a Climbing Rail RCS with a sufficient length.
- As a rule of thumb for a tilt-free assembly, the following applies:

  The minimum distance from the centre of the cross connector to the edge is 92.75 cm.
- The cross connector can only be mounted at certain positions on the frame. Ensure that all the other components of the heavy-duty truss girder can also be mounted.

(Fig. B1.03)

Note

Detach the frame from the crane lifting gear only after all bolts have been inserted and secured.

Mounting the assembly aids

1. To assemble the first standard frame (**1**), lay out two climbing rails (**70**).
2. Fix one cross connector (**71**) to each of the climbing rails by means of filler pins (**54**) and secure with a cotter pin (**50**). (Fig. B1.03)

B1 Assembling the frames

- The climbing rails are positioned transverse to the direction of assembly of the single trusses or truss package.
- The distance x_1 between the climbing rails is dependent on the component. (Fig. B1.04)
- Ensure that there is sufficient space to assemble the bearing frame.

Assembly

1. Place the standard frame (**1**) over the cross connectors (**71**) using the crane and set down on the climbing rails (**70**).
2. Align the standard frame with the holes in the bottom chord.
3. Fix the standard frame using filler pins (**54**) and secure with cotter pins (**50**).

(Fig. B1.04)

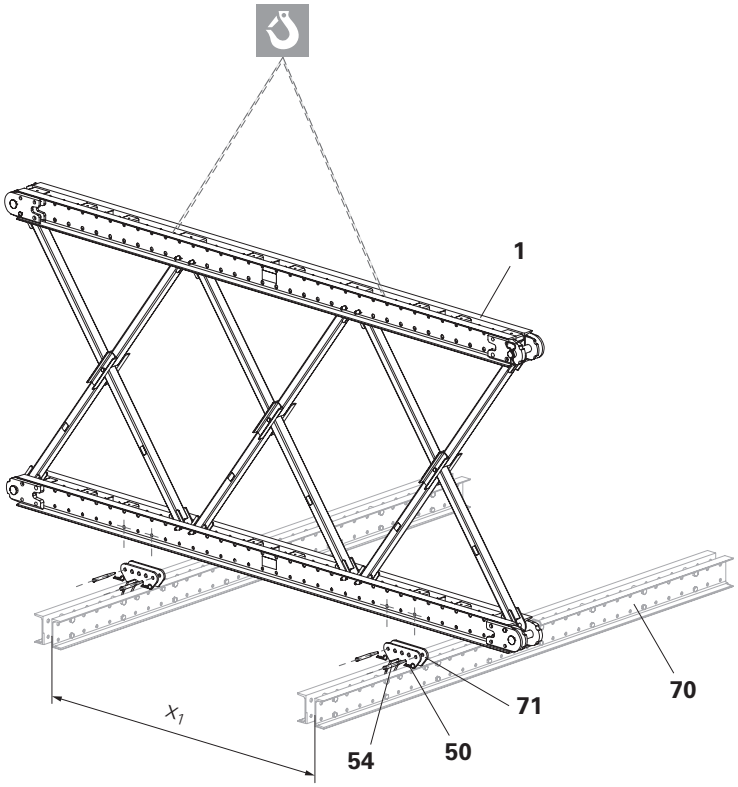


Fig. B1.04

The climbing rails serve as assembly aids for ensuring safe and secure assembly of the heavy-duty truss girder. It is important that the climbing rails are mounted as close as possible beneath the centre of gravity of the frames. This is not always possible because the cross connector cannot be mounted in this position, see Detail A. Fig. B1.05 shows a schematic view of the truss assembly complete with bearing frame and various standard frames.

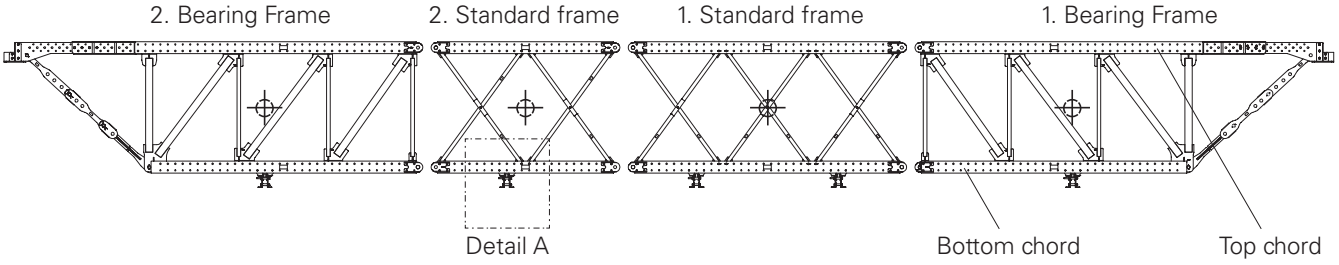


Fig. B1.05

Connecting the standard frames

Assembly

1. Lay out another climbing rail next to the first standard frame.
2. Fix one cross connector (**71**) to the climbing rail (**70**) by means of filler pins and secure with cotter pins.

(Fig. B1.06)

The position of the cross connectors is the same on all climbing rails.
(Fig. B1.03)

3. Place an additional standard frame (**1b**) over the cross connector using the crane and set down on the climbing rail.

(Fig. B1.06)

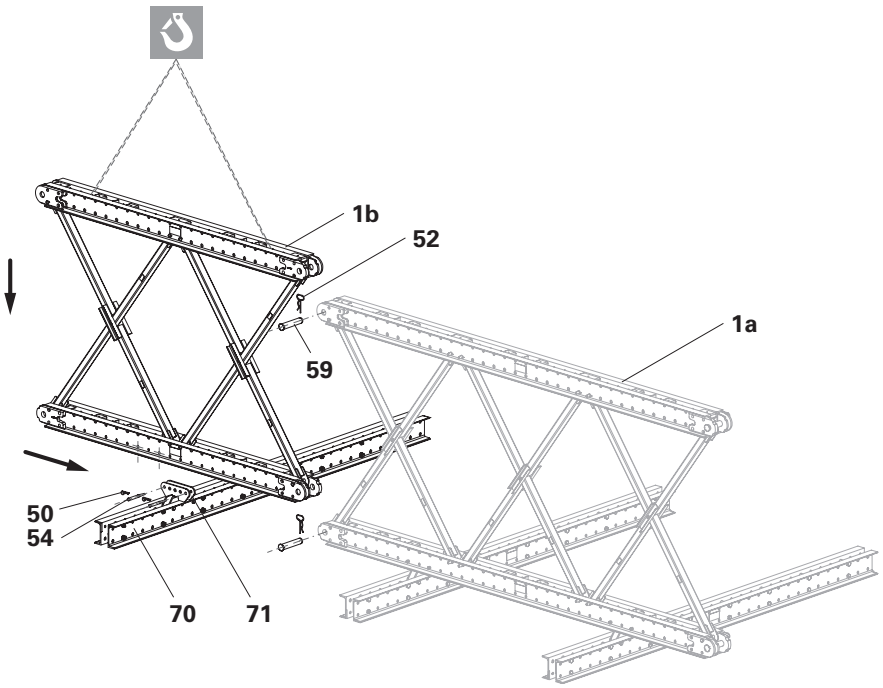


Fig. B1.06

Warning

Risk of crushing due to heavy moving components!
Risk of hands being crushed when the two frames are coupled.

⇒ Do not reach between the chord plate connections.
⇒ Guide the frame using only the top and bottom chords.

4. Remove cotter pins (**52**) from both frames and pull out bolts (**59**).
5. Push the second standard frame (**1b**) together with the first standard frame (**1a**).

- Ensure that the single chord plate is inserted into the double chord plate in the chord plate connections of the top and bottom chords.
- Make sure that the holes in the single chord plates and double chord plates are congruent.

(Fig. B1.07)

6. Connect the standard frames (**1a + 1b**) using two bolts (**59**) and secure each with a cotter pin (**52**). (Fig. B1.07)
7. Align the climbing rail with the holes in the bottom chord of the standard frame and the cross connector.
8. Fix the standard frame on the cross connector using filler pins and secure with cotter pins.
9. Mount all additional standard frames in the same way, as specified in the assembly plan.

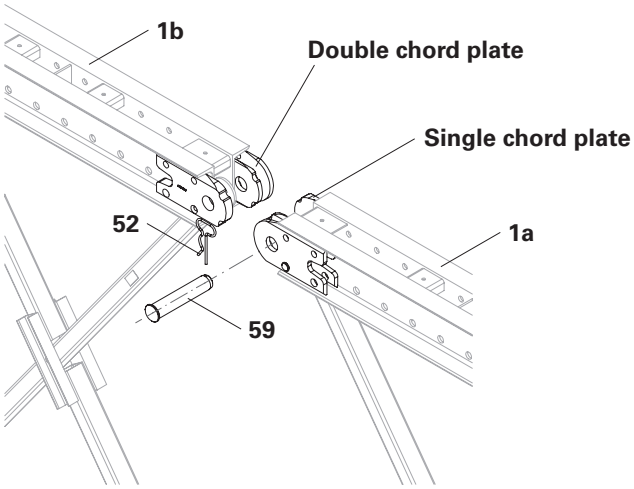


Fig. B1.07

Connecting the bearing frames

Components

4 Bearing Frame 5.25 m VRB
or
5 Bearing Frame 6.0 m VRB
50 Cotter pin 4/1
52 Cotter pin 6/1 Ø 50 VRB
54 Filler pin Ø 21 x 120
59 Bolt Ø 50 x 250

! Note

Detach the frame from the crane lifting gear only after all bolts have been inserted and secured.

Assembly

1. Lay out one climbing rail (**70**) next to the first standard frame (**1**). The climbing rail must be positioned under the centre of gravity of the bearing frame (**4**).
2. Fix one cross connector (**71**) to the climbing rail (**70**) by means of filler pins (**56**) and secure with cotter pins (**51**).
3. Place the bearing frame over the cross connector using the crane and set down on the climbing rail.
4. Remove cotter pins (**52**) from both frames and pull out bolts (**59**).

(Fig. B1.08)

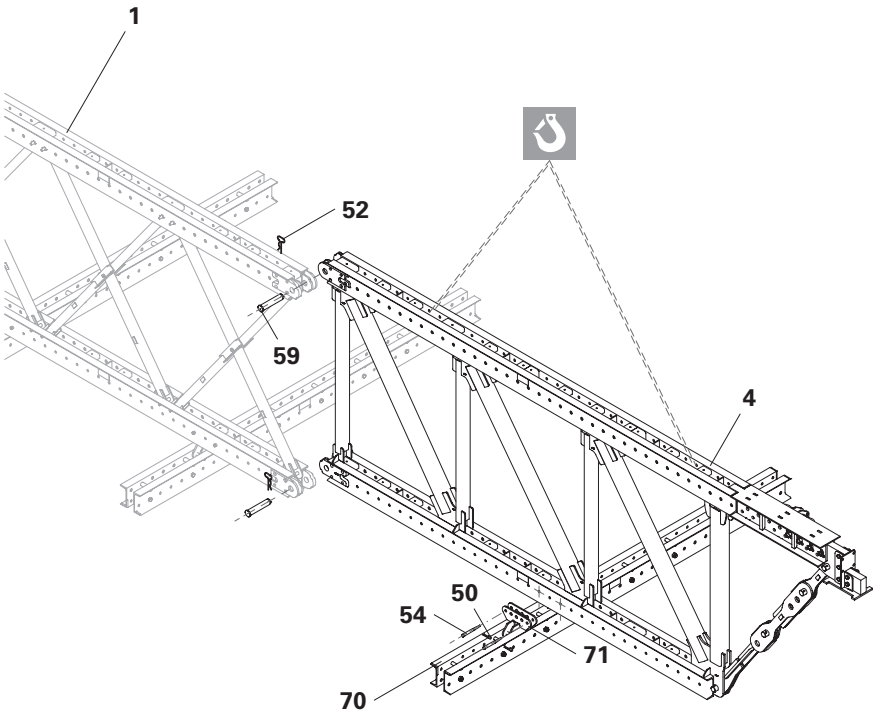


Fig. B1.08

Warning

Risk of crushing due to heavy moving components!
Risk of hands being crushed when the two frames are coupled.
⇒ Do not reach between the chord plate connections.
⇒ Guide the frame using only the top and bottom chords.

5. Couple the bearing frame (**4**) to the standard frame (**1**).

- Ensure that the single chord plate is inserted into the double chord plate in the chord plate connections of the top and bottom chords.
- Make sure that the holes in the single chord plates and double chord plates are congruent.

(Fig. B1.09).

6. Connect both frames using two bolts (**59**) and secure each bolt with a cotter pin (**52**).
7. Align the climbing rail with the holes in the bottom chord of the bearing frame and the cross connector.
8. Fix the bearing frame on the cross connector using filler pins (**54**) and secure with cotter pins (**50**).
9. Mount the second bearing frame at the other end of the single girder in the same way.

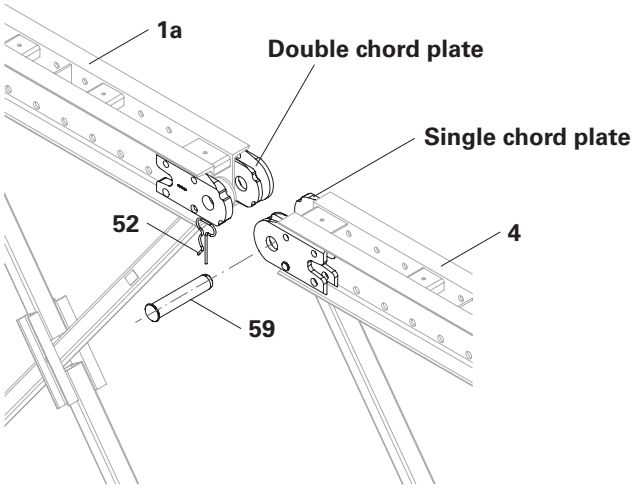


Fig. B1.09

Adjusting the bearing frames

The bearing frame consists of:
- Top chord
- Bottom chord
- Vertical struts
- Diagonal struts
- Telescopic box

(Fig. B1.10)

The telescopic box consists of:
- Tension profile (**4.3**)
- Telescopic arm (**4.4**)
- Telescopic arm guide (**4.5**)

With the help of the telescopic arm, the bearing frame can be extended in six increments of 12.5 cm.
The bearing frame can be extended by a total of 75 cm.

Note

⇒ The four filler pins (**57**) must be inserted in the four outer holes of the telescopic arm guide (**4.5**).
⇒ Also when fully extended, all four filler pins (**57**) must be securely inserted.
⇒ The telescopic arm (**4.4**) must always be fixed with all four filler pins (**57**).

(Fig. B1.11)

It is helpful having a second person to assist in carrying out the following work steps.

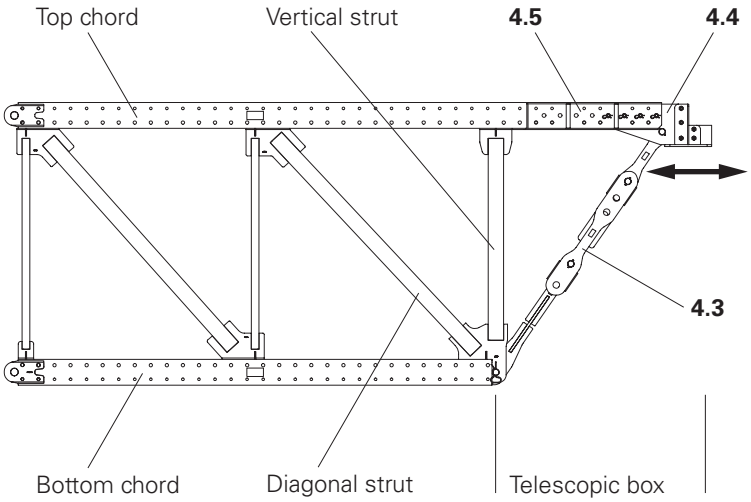


Fig. B1.10

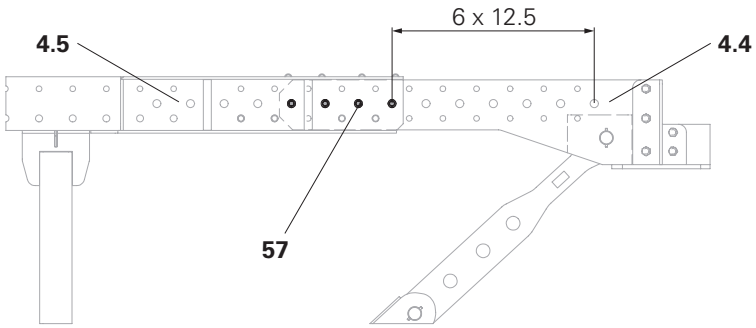


Fig. B1.11

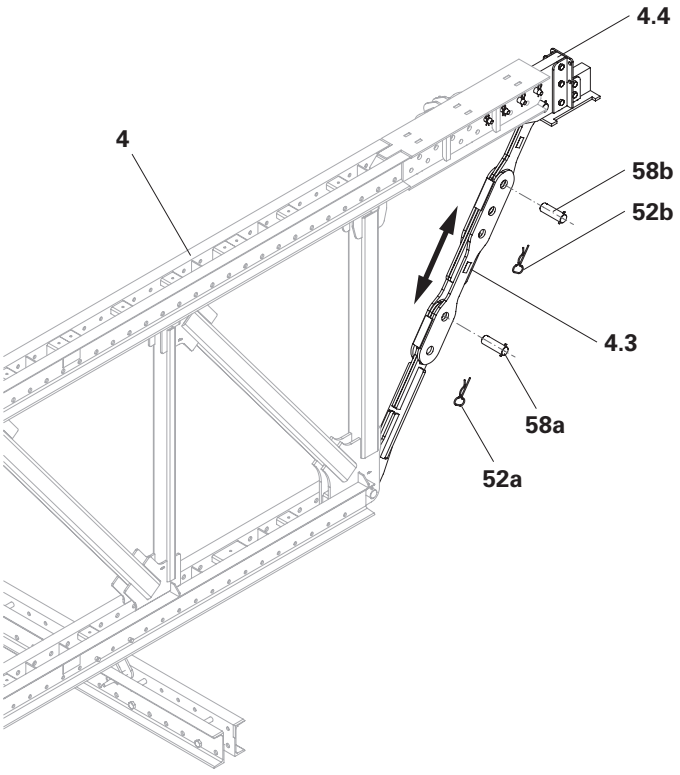


Fig. B1.12

Components

51 Cotter pin 5/1
52 Cotter pin 6/1 Ø 50 VRB
57 Filler pin Ø 30 VRB
58 Bolt Ø 50 x 155

Assembly

1. Remove the cotter pin (**52a**) and (**52b**).
2. Pull out bolts (**58a**) and (**58b**).

(Fig. B1.12)

3. Move tension profile (**4.3**) until the required position of the bolt (**58a**) corresponds to the positioning matrix.

(Fig. B1.14)

Warning

Heavy moving components!
These can fall down or cause hands to be crushed.

⇒ Move tension profile carefully thus ensuring that it does not slide out of the guide.
⇒ Keep hands well away from the holes on the tension profile.
⇒ Wear protective gloves and safety shoes.

4. Insert bolt (**58a**) and secure with cotter pin (**52a**). (Fig. B1.12)
5. Remove cotter pins (**51**) and pull out filler pins (**57**). (Fig. B1.13)
6. Adjust the telescopic arm (**4.4**) to the required length.
   → The tension profile (**4.3**) is automatically adjusted to the correct length.
7. Insert filler pins (**57**) and secure with cotter pins (**51**).
8. Insert bolt (**58b**) and secure with cotter pin (**52b**).

(Fig. B1.13 – B1.14)

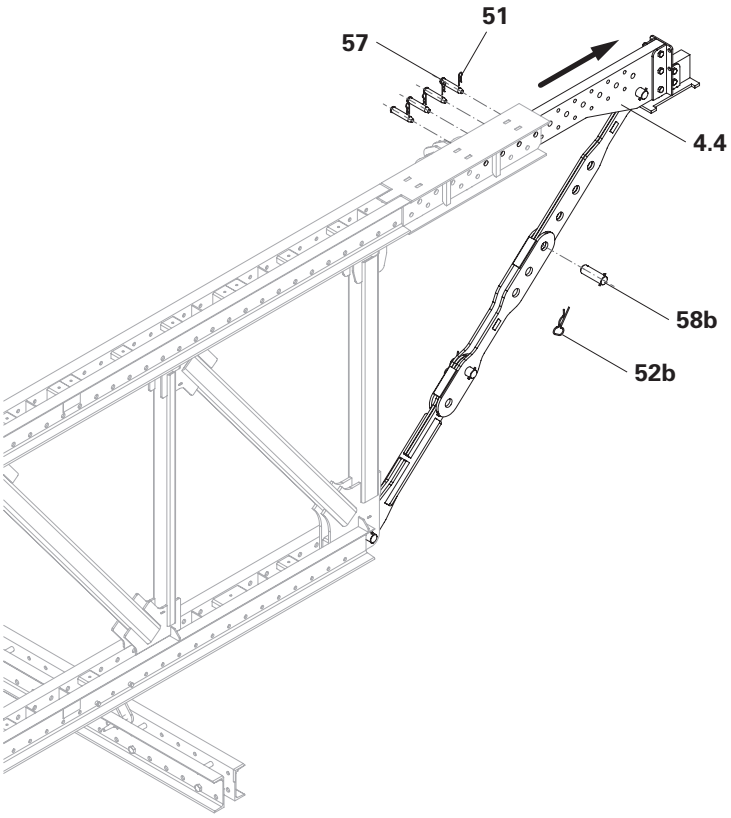


Fig. B1.13

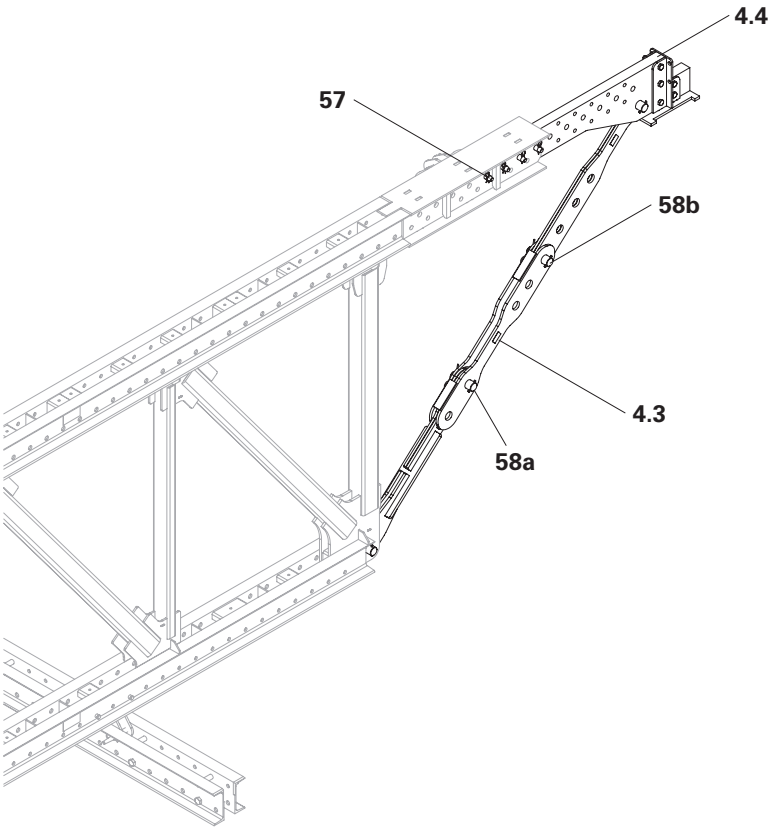


Fig. B1.14

Tension profile positioning matrix

Fig. B1.15 shows the positions for inserting bolts 58a and 58b depending on the extension of the telescopic arm.

Assembly of the frames is now complete.
If a truss package is to be installed, see Section “B2 Montage zum Binderpaket” on page 33.
If a single truss is to be installed, see Section “B3 Montage zum Einzelbinder” on page 45.

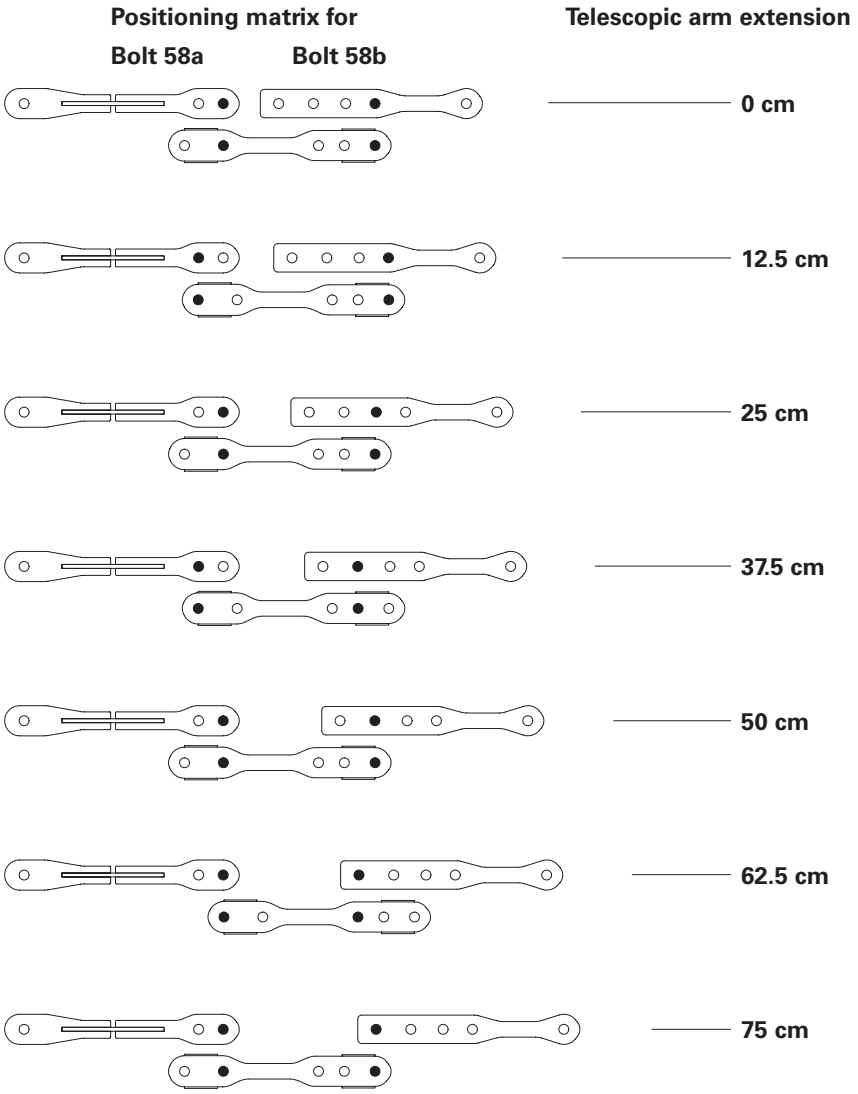


Fig. B1.15

Fitting the bracing connectors

Components

12 Bracing Shoe VRB
13 Vertical Bracing Shoe VRB
14 Coupling Shoe VRB
61 Bolt ISO 4014 M20 x 150-8.8
64 Nut ISO 7040 M20-8

Assembly

1. Position the bracing connector (**12a**) between the two ribs in the telescopic arm guide. (Fig. B2.01a)
2. Fix with bolt (**61**) and nut (**64**).
3. Alternately fit a bracing connector (**12**) and a vertical bracing shoe (**13**) in the top chord.
   – For Support Frames 6.0 m VRB, the distance is 150 cm in each case. (Fig. B2.01)
   – For Support Frames 5.25 m VRB, the distance is 125 cm or 150 cm in each case. (Fig. B2.02)
   – Follow project-specific assembly plans!
4. Fit the vertical bracing shoes (**13**) in the bottom chord in the same way. The position corresponds to the vertical bracing shoes (**13**) in the top chord.

(Fig. B2.01 – B2.03)

Bearing Frame 6.0 m VRB

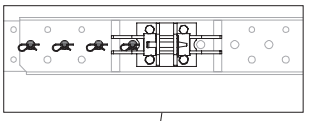


Fig. B2.01a

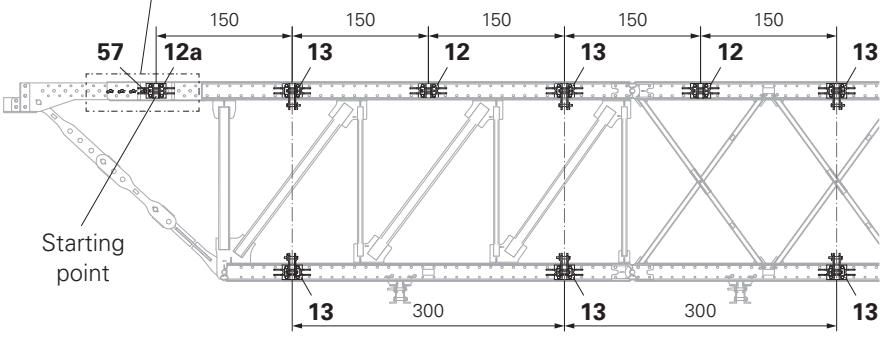


Fig. B2.01

Bearing Frame 5.25 m VRB

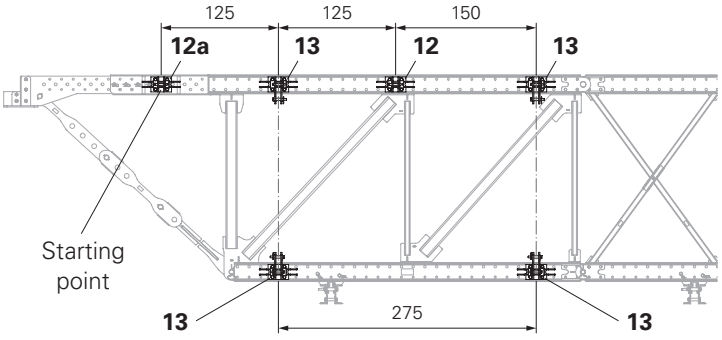


Fig. B2.02

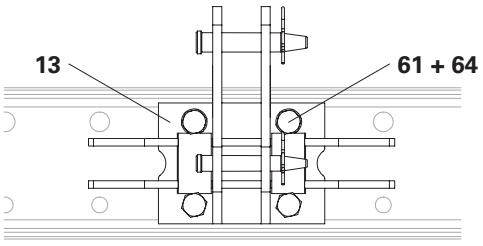


Fig. B2.03

Connecting a single truss
When connecting a single truss to the truss package, coupling connections (**14**) must be fitted on the rear side. In this case, a coupling connection (**14**) is fitted in the top chord and bottom chord together with a bracing connector (**12**) or vertical bracing shoe (**13**). (Fig. B2.04)

Fit the connections for the PERI UP Flex system together with the bracing connectors. See Section "E1 Einbau PERI UP Flex" on page 66.

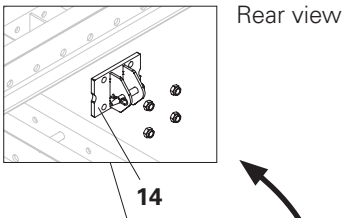


Fig. B2.04a

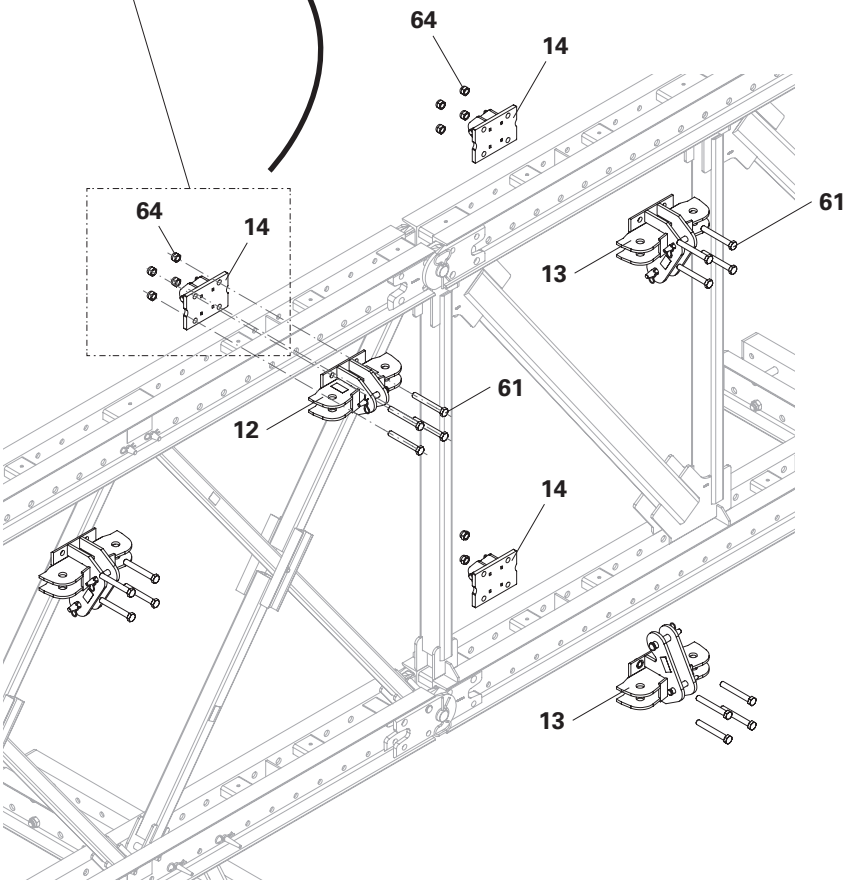


Fig. B2.04

Fitting the bracing posts

Components

15 Bracing Post 1.50 m VRB
50 Cotter pin 4/1
53 Filler pin Ø 21 x 105 VRB

Assembly

1. Attach a bracing post (**15**) to each bracing connector (**12**) using filler pins (**53**) and secure with cotter pins (**50**).
2. Attach a bracing post (**15**) to each vertical bracing shoe (**13**) using filler pins (**53**) and secure with cotter pins (**50**).

(Fig. B2.05 – B2.06)

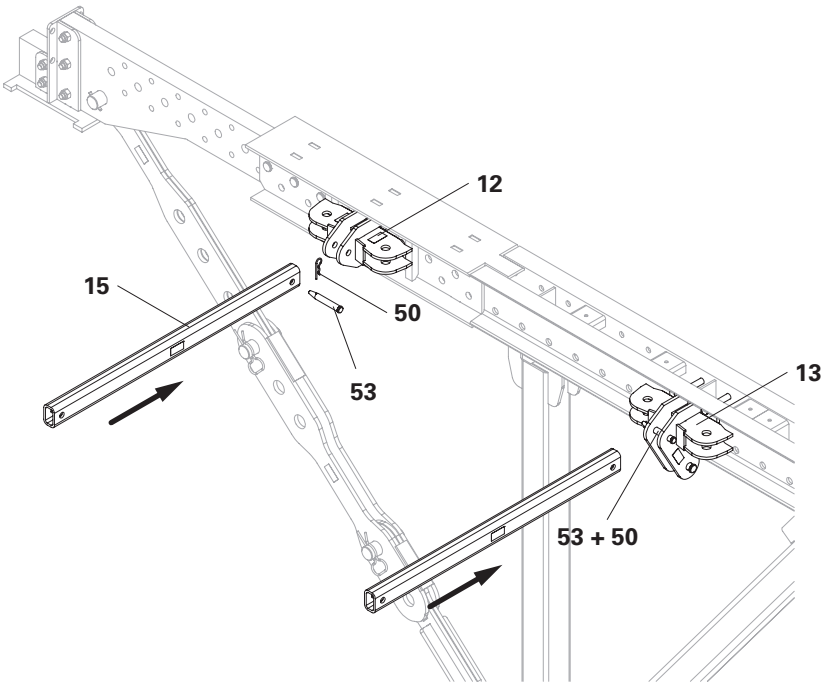


Fig. B2.05

Fitting the second frame

Assembly of the bracing components takes place inversely to those of the first single truss.

Mount a second single truss on the climbing rail (**70**) in the same way. (Fig. B2.06)
The spacing to the first single truss is axis - axis 150 cm.

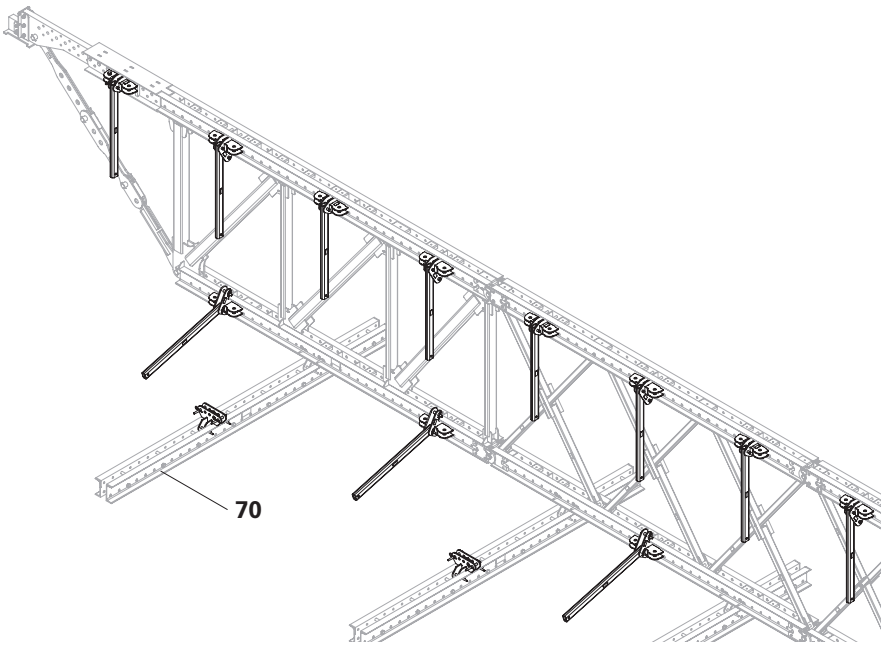


Fig. B2.06

Connecting both single trusses

Components

50 Cotter pin 4/1
53 Filler pin Ø 21 x 105 VRB

Assembly

1. Fix all pre-assembled bracing posts (**15**) to the second single truss using filler pins (**53**) and secure with cotter pins (**50**). (Fig. B2.07)

Fig. B2.07 is rotated by 180° for better representation.

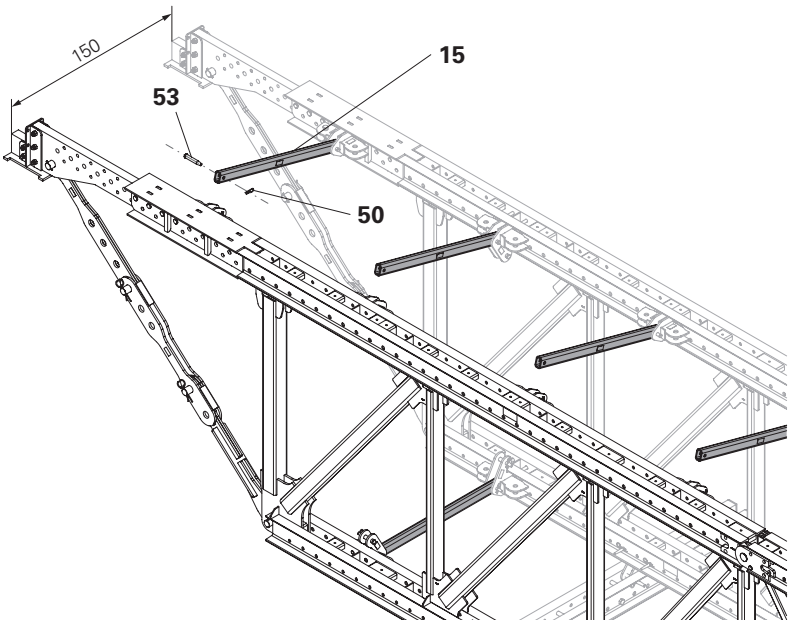


Fig. B2.07

Front view of the truss package assembly

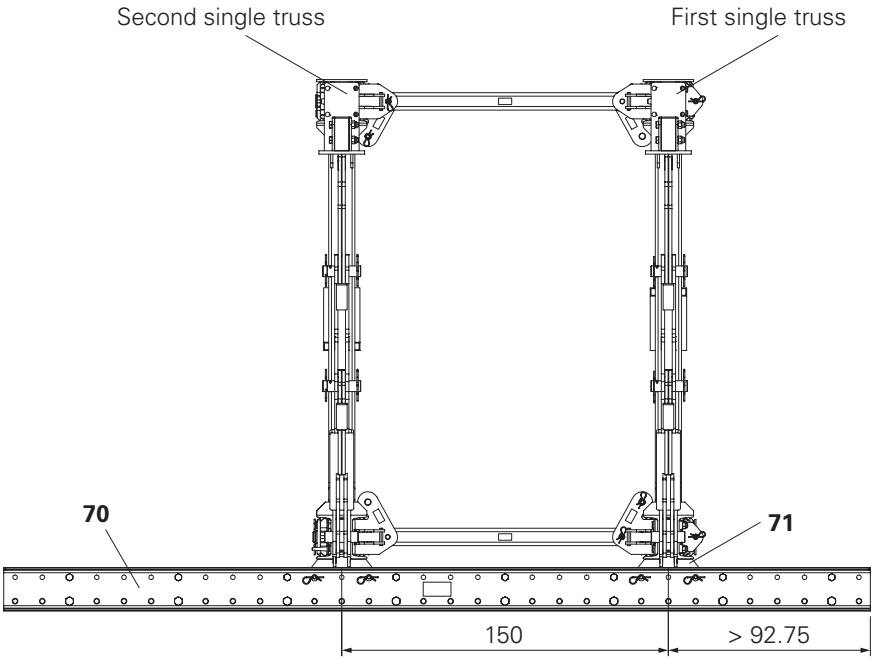


Fig. B2.08

Fitting the bracing traverse

Fit the bracing traverse at both ends of the truss package.

Components

36 Bracing Traverse 150 VRB
37 Bracing Traverse Connector VRB
38 Bracing Spindle VRB
50 Cotter pin 4/1
55 Filler pin Ø 26 x 105 VRB

Assembly

1. Screw the bracing spindle (**38**) to the bearing frame (**4**) with four screws (**38.2**) and nuts (**38.3**). (Fig. B2.09)
2. Unscrew front nut (**38.1**).
3. Fix two bracing traverse connectors (**37**) to the bracing traverse (**36**) with the bolts (**55**) and secure with cotter pins (**50**). (Fig. B2.10)
   Refer to the assembly plan for the exact connection position.
4. Attach the assembled bracing traverse to a crane with four straps.
5. Position the bracing traverse in front of the bracing spindles and push it onto the bracing spindles.
5. Secure the bracing traverse with the nuts (**38.1**).

(Fig. B2.11)

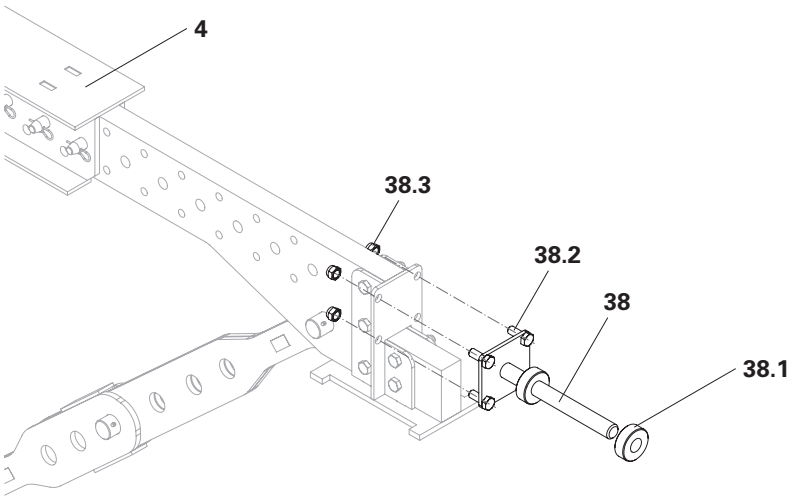


Fig. B2.09

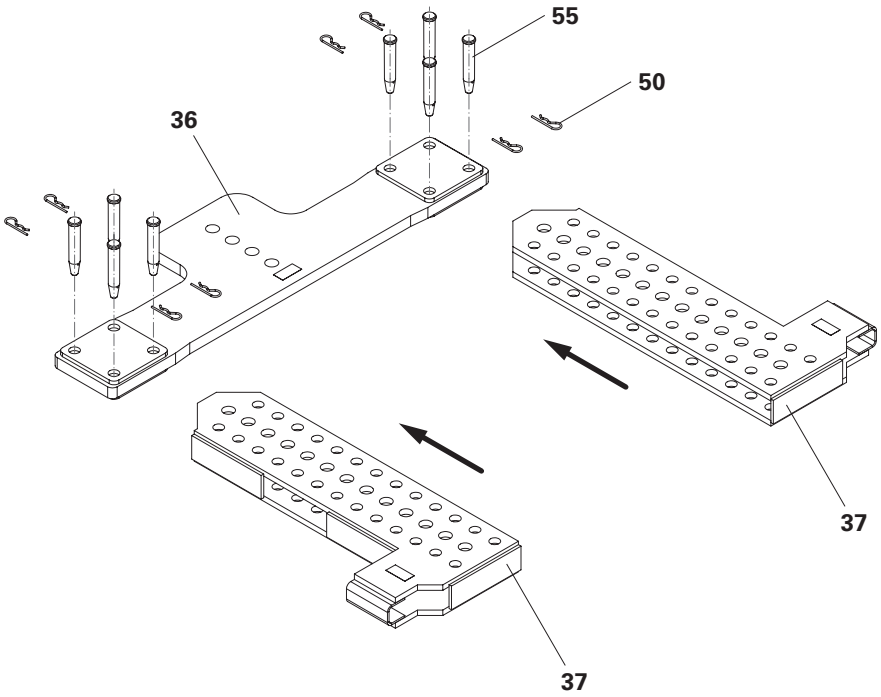


Fig. B2.10

For bridge crossing angles, adjust the bracing traverse and telescopic box. See Section "D3 Auflagersituation bei Kreuzungswinkel" on page 62.

Fitting the horizontal bracing

Components

19 Eye Nut DW 20 VRB
20 Articulated Spanner DW 20 VRB
21 Tie Rod DW 20, special length
50 Cotter pin 4/1
57 Filler pin Ø 30 VRB
63 Hex Nut DW 20 AF 36/60

With a frame spacing of 150 cm, the tie rod has a length of 157 cm for the horizontal bracing.

Fitting the eye nut

1. Screw the tie rod (**21**) into the eye nut (**19**). (Fig. B2.12)

Has the tie rod been screwed all the way into the eye nut?

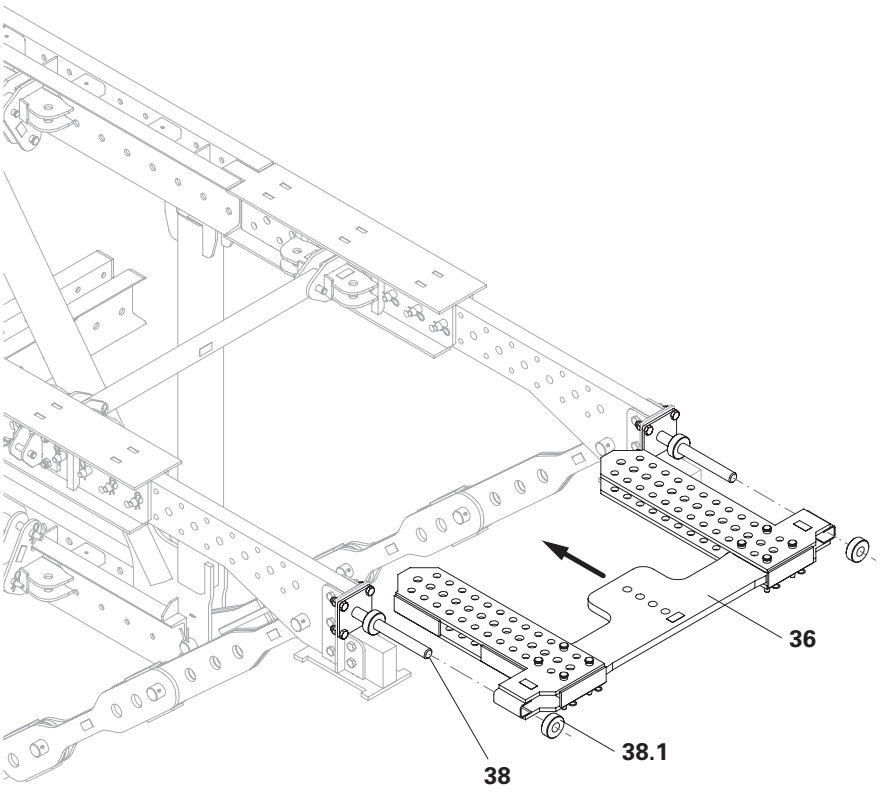


Fig. B2.11

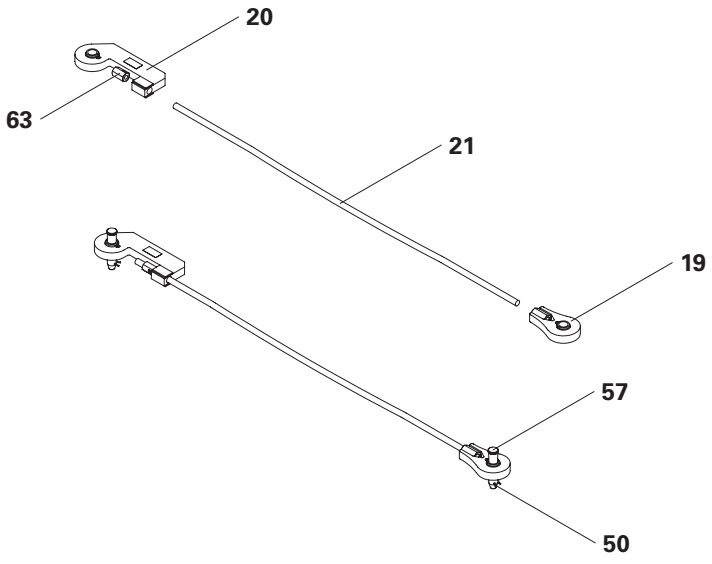


Fig. B2.12

Fitting the articulated spanner

1. Insert the articulated spanner (**20**) into the horizontal connections of the bracing connectors (**12**), vertical bracing shoes (**13**) and the bracing traverse connections (**37**).
2. Fix the articulated spanner with bolts (**57**) and secure with cotter pins (**50**).

(Fig. B2.13)

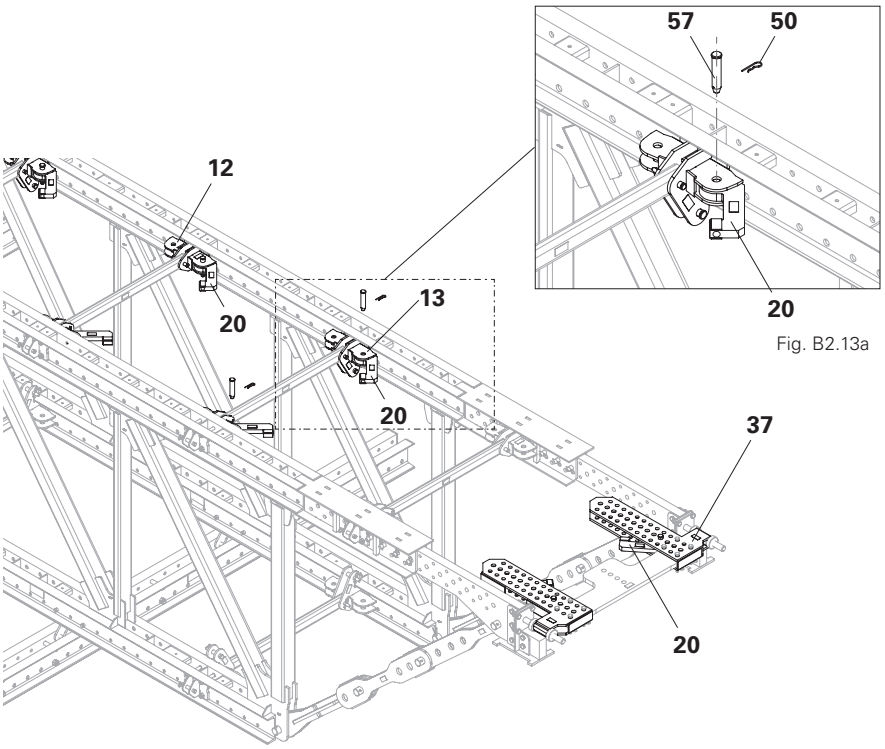


Fig. B2.13a

Fig. B2.13

Fitting the tie rod

1. Insert the tie rod (**21**) into the articulated spanner.
2. Screw the nut (**63**) onto the tie rod until it no longer protrudes.
3. Push the tie rod as far as possible into the articulated spanner.
4. Swivel the eye nut (**19**) diagonally opposite into the bracing connector (**12**) or vertical bracing shoe (**13**). (Fig. B2.14)
5. Fix the eye nut in position with bolts (**57**) and secure with cotter pins (**50**).
6. Tighten all nuts (**63**) on the articulated spanner (**20**) with a wrench and adjust the bracing struts so they are free of play. (Fig. B2.15)

Note

- The installation position x and length of the tie rods may vary depending on the project. (Fig. B2.14b)
- The tie rod must project from the nut by at least 10 mm.

- Have all connections been made on the bracing connectors and the vertical bracing shoes?
- Have all filler pins been inserted and secured with cotter pins?
- Have all bracing struts been adjusted to ensure they are free of play?

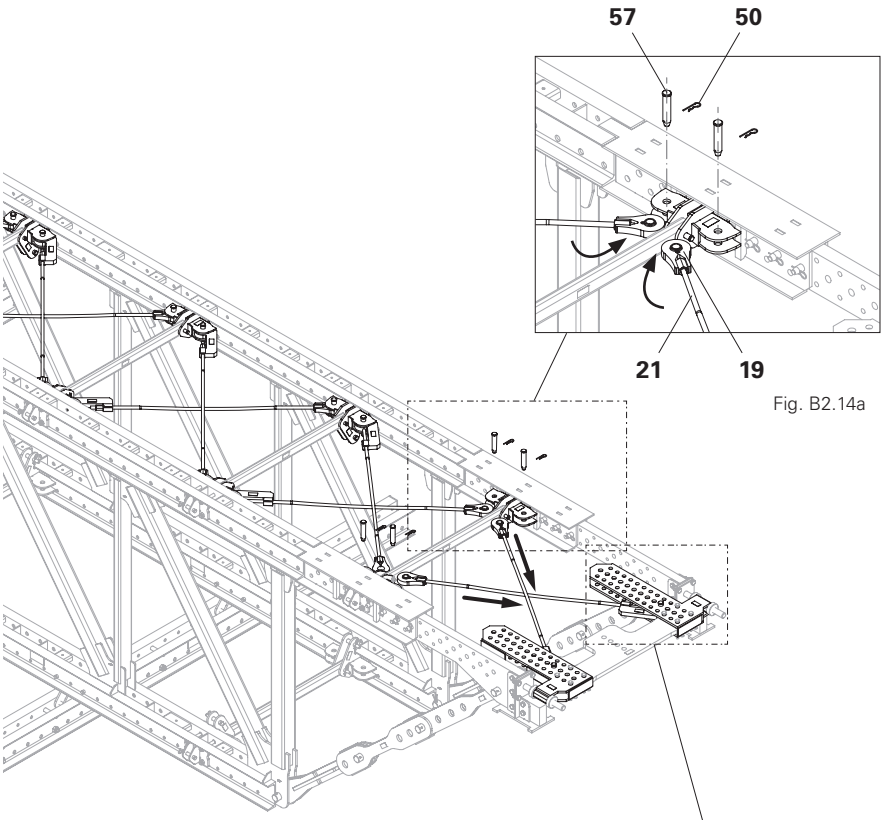


Fig. B2.14a

Fig. B2.14

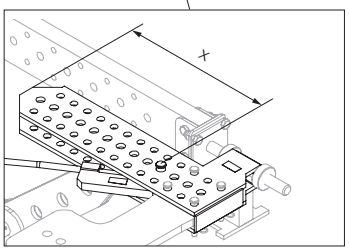


Fig. B2.14b

Note

Assembly on the bearing frame

- Always fit the articulated spanner as close as possible to the bracing traverse. Consider the individual position specified in the project planning.
- Adjust the tie rod to suit the bridge crossing angle and position of the bracing traverse.
  See Section "D3 Auflagersituation bei Kreuzungswinkel" on page 62.

In a bearing situation with longitudinal or transverse inclination, the nuts must not be adjusted without play.
In this case, only attach the nuts.
See Section "D1 Auflagersituation bei Längsneigung" on page 59 and Section "D2 Auflagersituation bei Querneigung" on page 60.

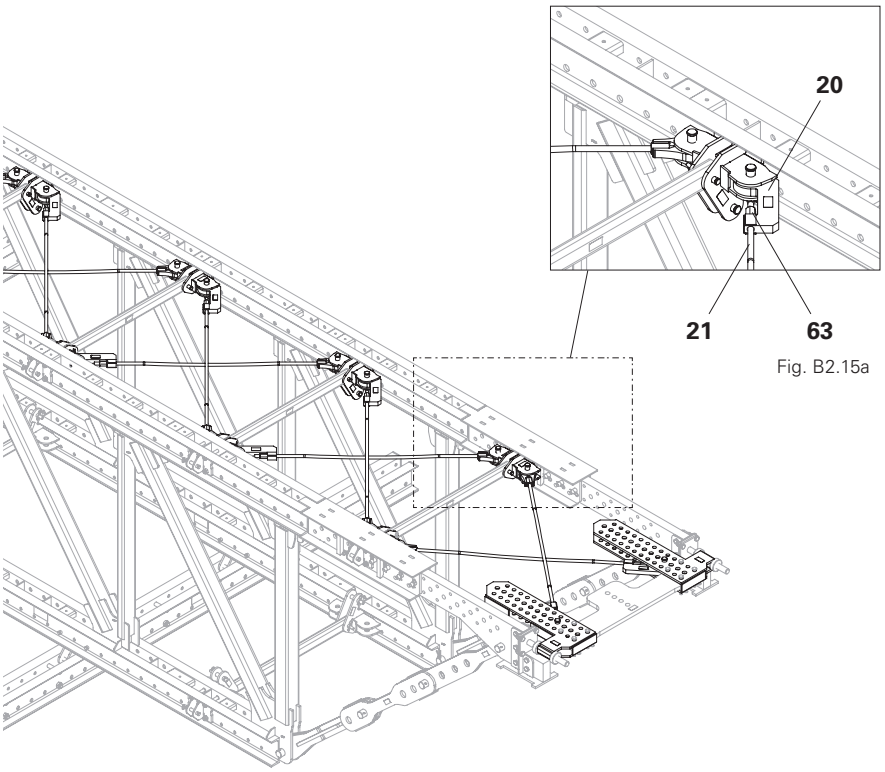


Fig. B2.15a

Fig. B2.15

Overall view of the horizontal bracing

Fig. B2.16 shows the truss package with horizontal bracing from above.
The truss package is positioned on the main beams at an angle of 90°.

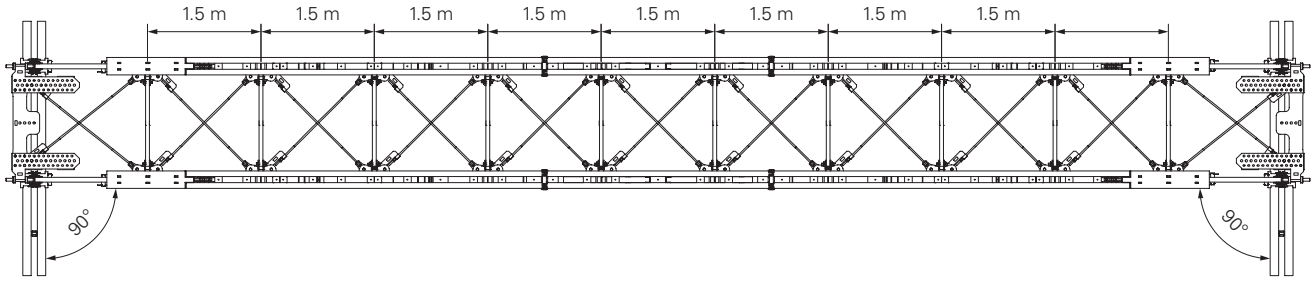


Fig. B2.16

Top view

Fitting the vertical bracing

Components

22 Eye Nut RCS DW 15
23 Articulated Spanner RCS DW 15
24 Tie Rod DW 15, special length
50 Cotter pin 4/1
55 Filler pin Ø 26 x 105 VRB
62 Hex Nut DW 15 AF 30/50

With a frame spacing of 150 cm, the tie rod has a length of 195 cm for the vertical bracing.

Fitting the eye nut

1. Screw the tie rod (**24**) into the eye nut (**22**) (Fig. B2.17).

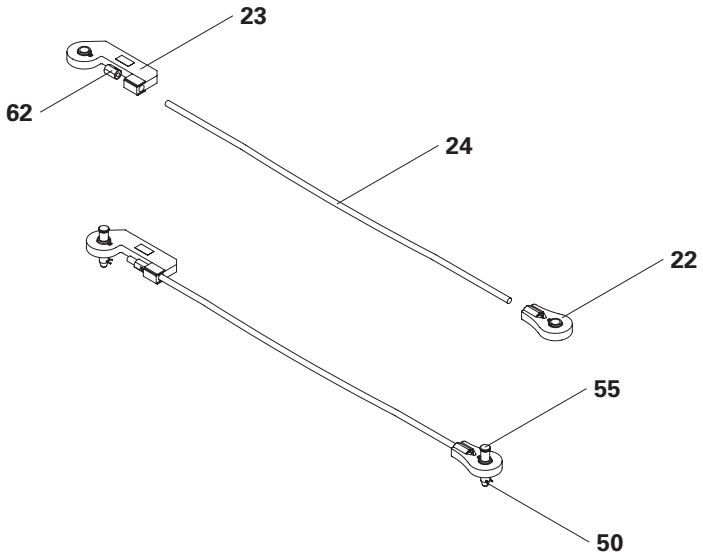


Fig. B2.17

Has the tie rod been screwed all the way into the eye nut?

Fitting the articulated spanner

1. Insert the articulated spanner (**23**) into the vertical chord plates of the vertical bracing shoes (**13**) in the top chord. (Fig. B2.18)
2. Fix the articulated spanner with filler pins (**55**) and secure with cotter pins (**50**).

Fitting the tie rod

1. Insert the tie rod (**24**) into the articulated spanner. (Fig. B2.19)
2. Screw the nut (**62**) onto the tie rod until it no longer protrudes.
3. Push the tie rod as far as possible into the articulated spanner.

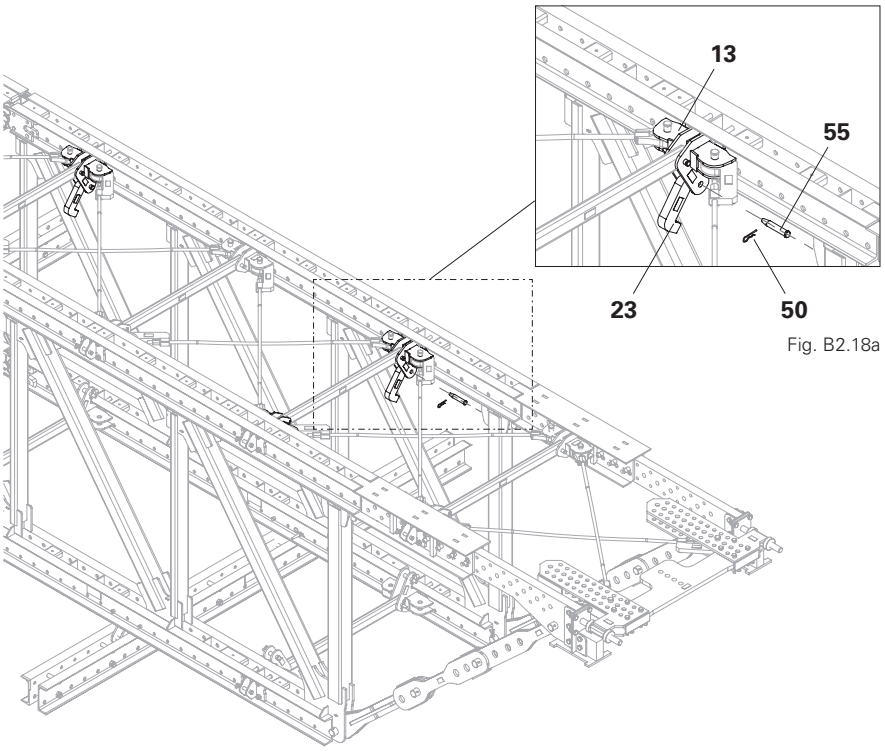


Fig. B2.18a

Fig. B2.18

4. Swivel the eye nut (**22**) diagonally opposite into the vertical bracing shoe (**13**) in the bottom chord.
5. Fix the eye nut in position with bolts (**55**) and secure with cotter pins (**50**).
6. Tighten all nuts (**62**) on the articulated spanner with a wrench and adjust the bracing struts so they are free of play. (Fig. B2.20)

Note

The tie rod must project from the nut by at least 10 mm.

- Have all connections been made on the vertical bracing shoes?
- Have all filler pins been inserted and secured with cotter pins?
- Have all bracing struts been adjusted to ensure they are free of play?

In a bearing situation with longitudinal or transverse inclination, the nuts must not be adjusted without play.
In this case, only attach the nuts. See Section "D1 Auflagersituation bei Längsneigung" on page 59 and Section "D2 Auflagersituation bei Querneigung" on page 60.

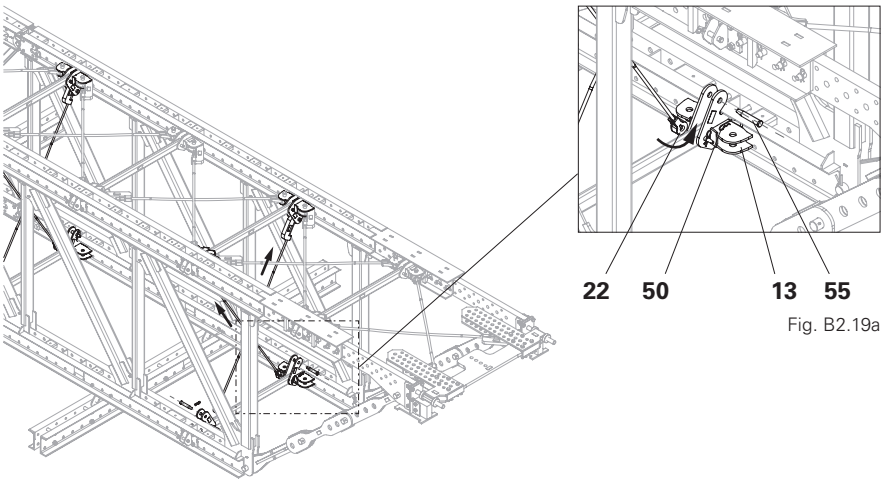


Fig. B2.19a

Fig. B2.19

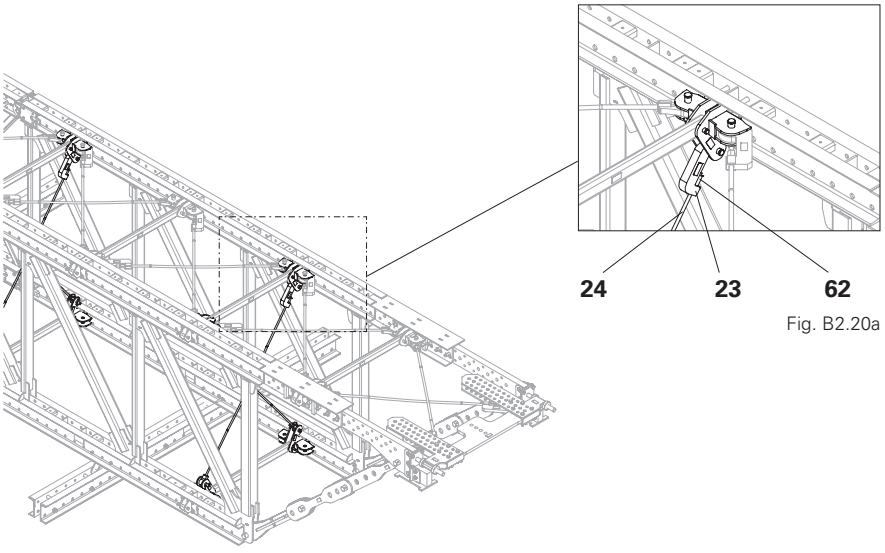


Fig. B2.20a

Fig. B2.20

Overall view of the vertical bracing

Fig. B2.21 shows the truss package with vertical bracing from the side.

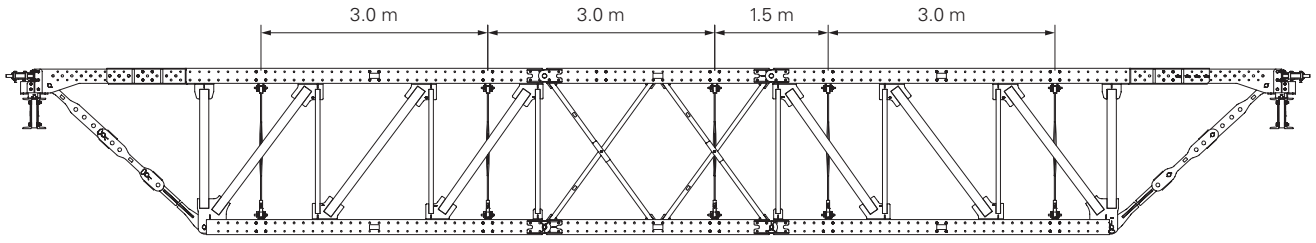


Fig. B2.21

Side view

Coupling with a single truss

Components

17 Coupling Post 0.5 m VRB
or
18 Coupling Post 1.0 m VRB
50 Cotter pin 4/1
53 Filler pin Ø 21 x 105 VRB

This work step is omitted if there is no single truss coupled to the truss package.
If a single truss is connected to this truss package, then the coupling posts have already been mounted on the truss package. This facilitates on-site assembly of the packages.

Pre-assembly
The coupling connectors (**14**) should already be fitted to the top and bottom chords. See Section "Connecting a single truss" on page 34.

Assembly
1. Fix the coupling posts (**17**) to the coupling connections (**14**) using filler pins (**53**) and secure with cotter pins (**50**). (Fig. B2.22)

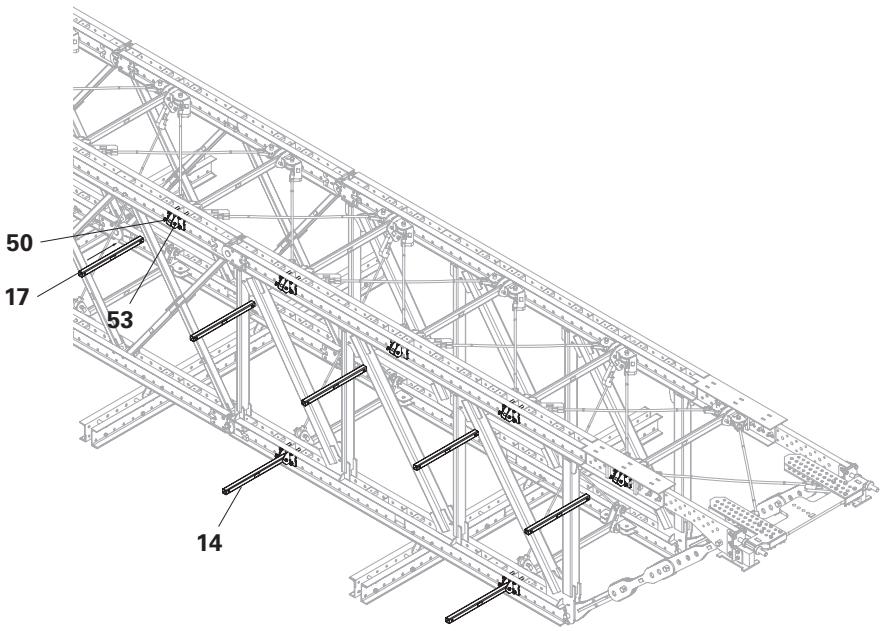


Fig. B2.22

Fitting the coupling connections

Components

14 Coupling Shoe VRB
61 Bolt ISO 4014 M20 x 150-8.8
64 Nut ISO 7040 M20-8

Assembly

1. Position the coupling connection (**14a**) between the two ribs in the telescopic arm guide. (Fig. B3.01a)
2. Fix with bolt (**61**) and nut (**64**).
3. Fit more coupling connections (**14**) in the top chord.
   – For Support Frames 6.0 m VRB, the distance is 150 cm in each case. (Fig. B3.01)
   – For Support Frames 5.25 m VRB, the distance is 125 cm or 150 cm in each case. (Fig. B3.02)
   – Follow project-specific assembly plans!
4. Fit coupling connections (**14**) in the bottom chord in the same way. The spacing is 300 cm in each case.

(Fig. B3.01 – B3.03)

Bearing Frame 6.0 m VRB

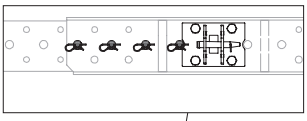


Fig. B3.01a

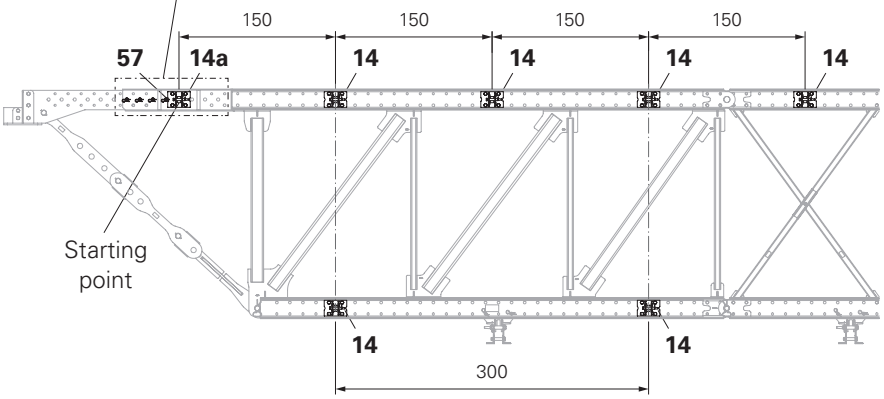


Fig. B3.01

Bearing Frame 5.25 m VRB

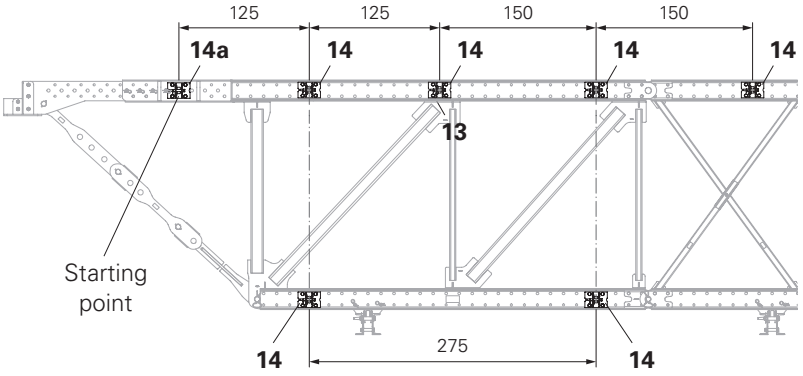


Fig. B3.02

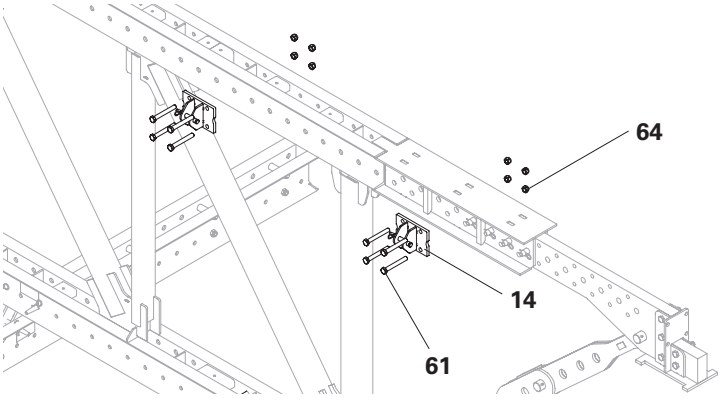


Fig. B3.03

For connecting a single truss or truss package

- When connecting a single truss or truss package, a coupling connection (**14**) must be fitted on the rear side. Fit this together with the coupling connection (**14**) of the front side. (Fig. B3.04)
- If a single truss or truss package is coupled to this single truss, the coupling posts (**17**) are mounted on the truss package. This facilitates on-site assembly of the packages. (Fig. B3.05)

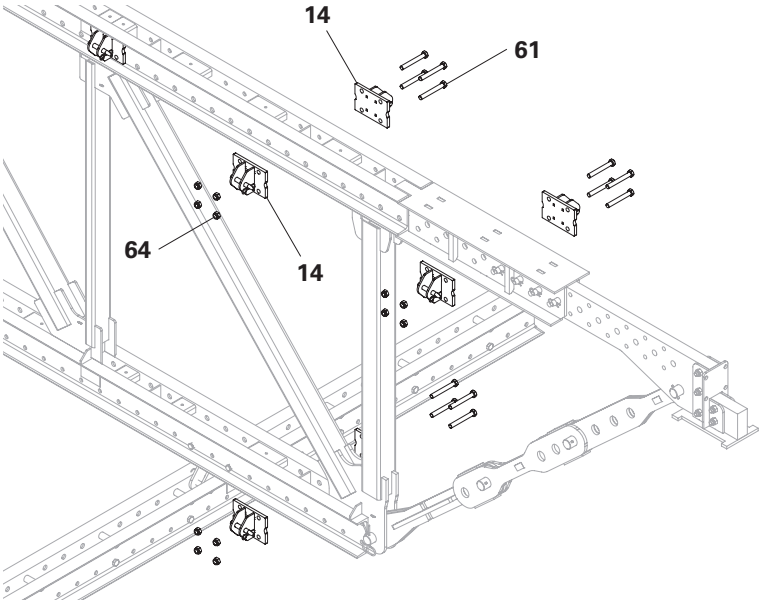


Fig. B3.04

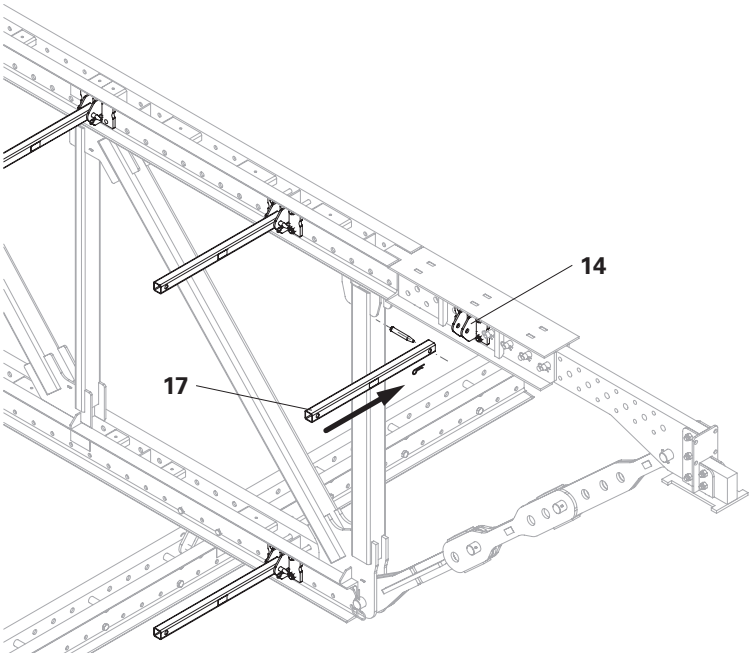


Fig. B3.05

Fitting the horizontal bearing

The horizontal bearing accommodates the horizontal forces F_h, e.g. wind loads, and transfers them to the main beam.
(Fig. B4.01)

Components

33 Horizontal Bearing-2 VRB
40 Main Beam 350 VRB
or
41 Main Beam 500 VRB
or
42 Main Beam 800 VRB

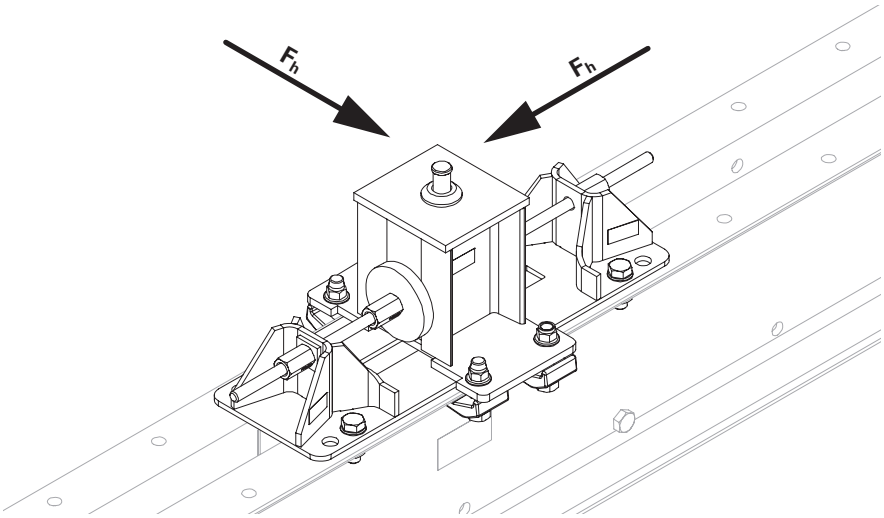


Fig. B4.01

Assembly

1. Place the horizontal bearing (**33**) centrally on the main beam (**40**) so that the holes of the main beam (**40**) and the horizontal bearing (**33**) are flush with each other.
2. Fit the horizontal bearing (**33**) on the main beam (**40**) with the four bolts (**33.1**) and nuts (**33.8**).
3. Use the clamps (**33.2**) to secure the horizontal bearing (**33**) further still. (Fig. B4.02)

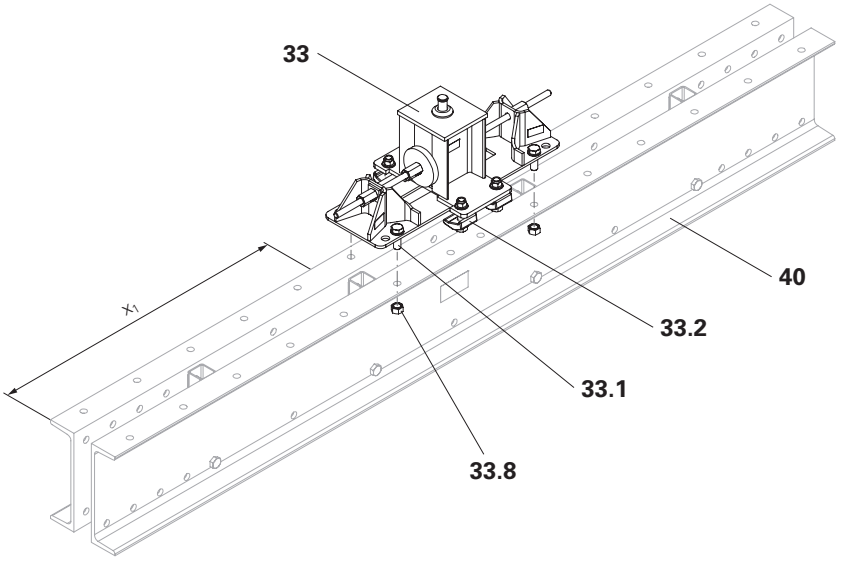


Fig. B4.02

- The support, which consists of a cross fall bearing and longitudinal bearing, accommodates the vertical forces and transfers them to the main beam.
- If a cross fall bearing is required on the support in addition to the longitudinal bearing, see Section "Bearing with cross fall bearing" on page 49.
- If no cross fall bearing is required on the support, then see Section "Bearing without cross fall bearing" on page 51.

Aligning the horizontal bearing

1. Loosen all hex. nuts (**33.4**).
2. Move the horizontal bearing (**33**) laterally until it is in the required position.
3. Align the tie rod (**33.5**). Ensure that the tie rod projection on the left and right is the same size.
3. Tighten both hex. nuts (**33.4a**).
4. Counter with the two hex. nuts (**33.4b**).

(Fig. B4.03)

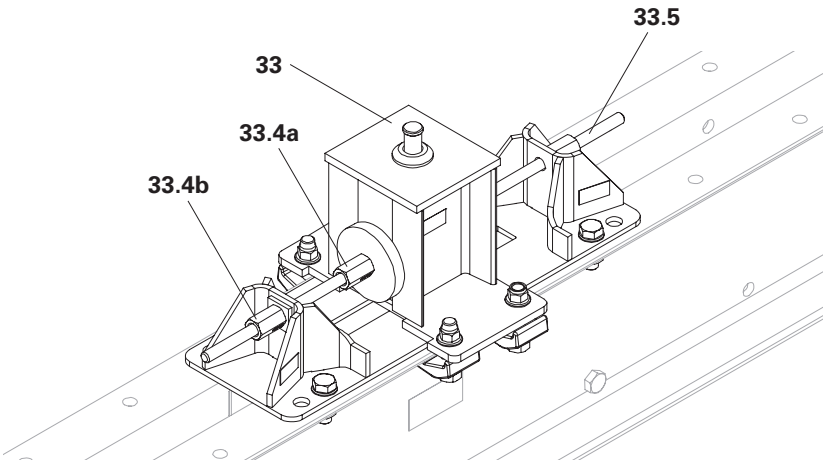


Fig. B4.03

Bearing with cross fall bearing

Components

33 Horizontal Bearing-2 VRB
34 Cross Fall Adapter VRB
67 Bolt ISO 4014 M24 x 180-10.9

Fitting the cross fall adapter

- The cross fall adapter (**34**) is required if a cross fall bearing is installed on the bearing in addition to the longitudinal bearing. The cross fall adapter evens out the resulting height difference on the horizontal bearing (**33**).
- When fitting the cross fall adapter (**34**), replace the bolts (**33.3**) with bolt ISO 4014 M24 x 180-10.9 (**67**).

Assembly

1. Remove bolts (**33.3**) and clamps (**33.2**).
2. Loosen both hex. nuts (**33.4**) and unscrew the tie rod (**33.5**).
3. Lift the upper section of the horizontal bearing (**33**).
4. Slide the cross fall adapter (**34**) in between and position it so that the holes are aligned with the top of the horizontal bearing.

(Fig. B4.04)

5. Screw in the tie rod. Ensure that the tie rod projection on the left and right is the same size.
5. Tighten the horizontal bearing (**33**) with the clamps (**33.2**) and bolts (**67**).
6. Tighten the nuts (**33.4**).

(Fig. B4.05)

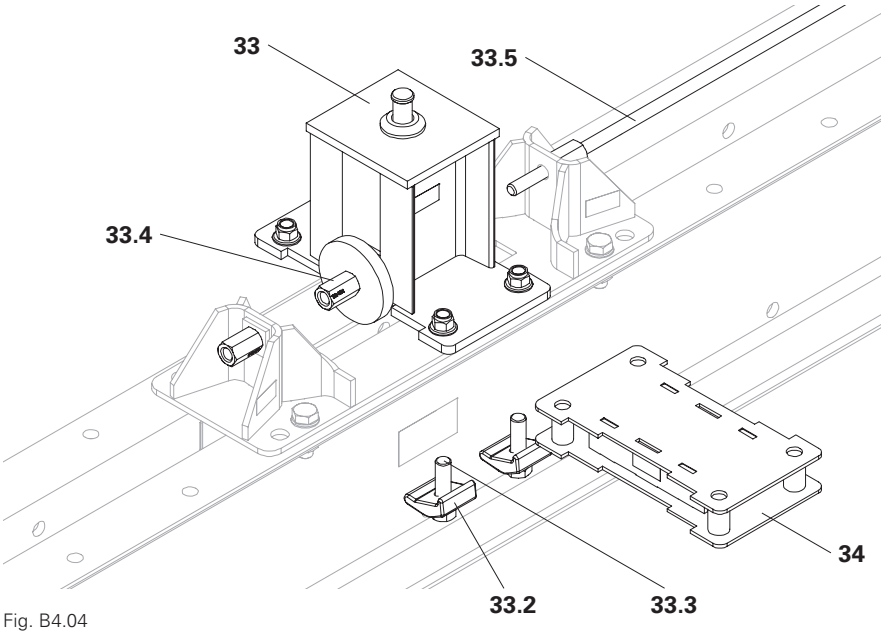


Fig. B4.04

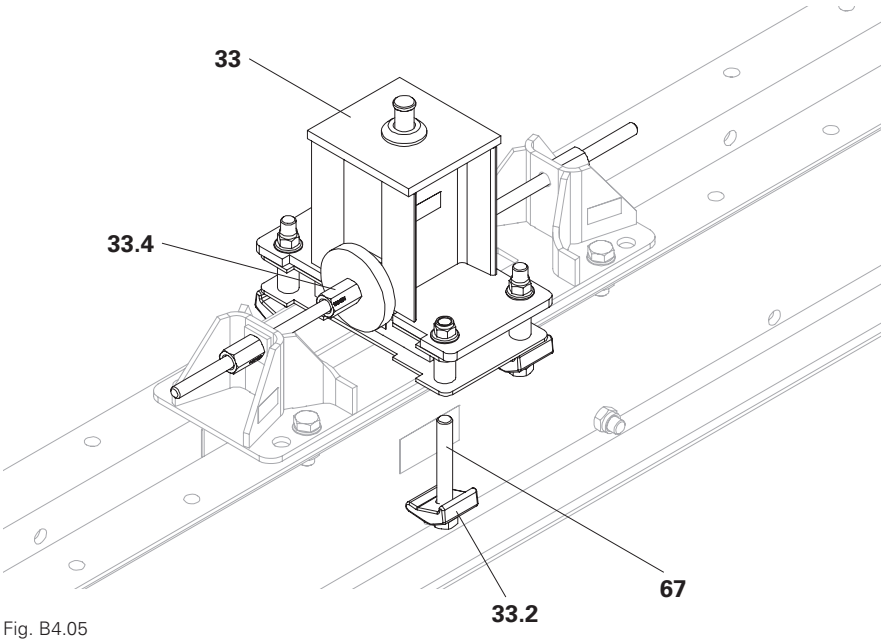


Fig. B4.05

Components

30 Centring Plate HDT-VRB
31 Cross Fall Bearing VRB
32 Longitudinal Bearing VRB
40 Main Beam 350 VRB
or
41 Main Beam 500 VRB
or
42 Main Beam 800 VRB

Installing the support for truss package 150 cm

For easier dismantling, apply lubricant beneath the centring plate (**30**).

Assembly

1. Place the centring plate (**30**) on the main beam (**40**). The distance to the horizontal bearing (**33**) is 75 cm centre - centre.
2. Secure the centring plate with bolts (**30.1**).
3. Place the cross fall bearing (**31**) on the centring plate.
4. Position the longitudinal bearing (**32**) on the cross fall bearing.

(Fig. B4.06)

- Is the square centring aid of the cross fall bearing correctly positioned in the square recess of the centring plate?
- Is the circular centring aid of the longitudinal bearing correctly positioned in the circular recess of the cross fall bearing?

- The spacing of both supports is 150 cm (Fig. B4.06).
- Fig. B4.07 shows the direction of movement of the two bearings.

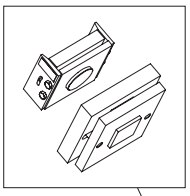


Fig. B4.06a

Fig. B4.06

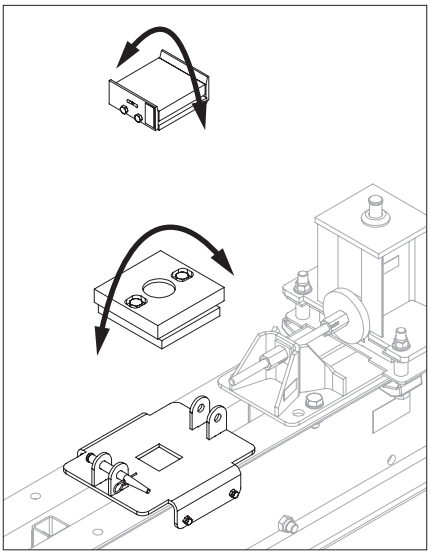


Fig. B4.07

Bearing without cross fall bearing

Components

30 Centring Plate HDT-VRB
32 Longitudinal Bearing VRB
40 Main Beam 350 VRB
or
41 Main Beam 500 VRB
or
42 Main Beam 800 VRB

For easier dismantling, apply lubricant beneath the centring plate (**30**).

Assembly

1. Place the centring plate (**30**) on the main beam (**40**). The distance to the horizontal bearing (**33**) is 75 cm centre - centre.
2. Secure the centring plate with bolts (**30.1**).
3. Place the longitudinal bearing (**32**) on the centring plate.

(Fig. B4.08)

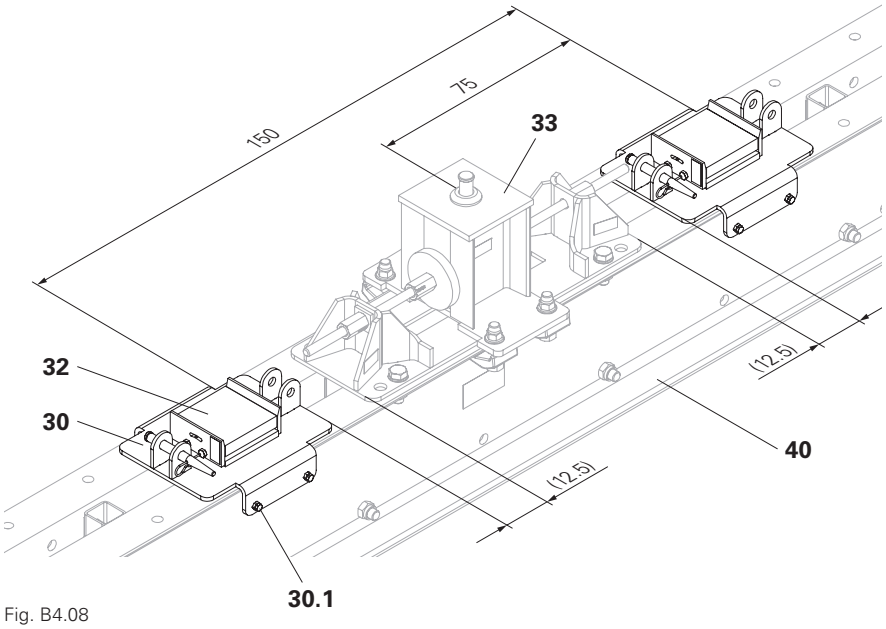


Fig. B4.08

Is the square centring aid of the longitudinal bearing correctly positioned in the square recess of the centring plate?

The spacing of both supports is 150 cm (Fig. B4.08).

In the same way, fit additional supports precisely on the main beam using the frame spacing dimensions of the truss packages or single trusses.

Coupling the main beams

Components

40 Main Beam 350 VRB
or
41 Main Beam 500 VRB
or
42 Main Beam 800 VRB
43 Main Beam Connector VRB
51 Cotter pin 5/1
56 Filler pin Ø 26 x 120

To extend the support area, several main beams can be coupled together.

Assembly

1. Fit the main beam connector (**43**) to the main beam (**40a**) using 8 filler pins (**56**) and secure with cotter pins (**51**).

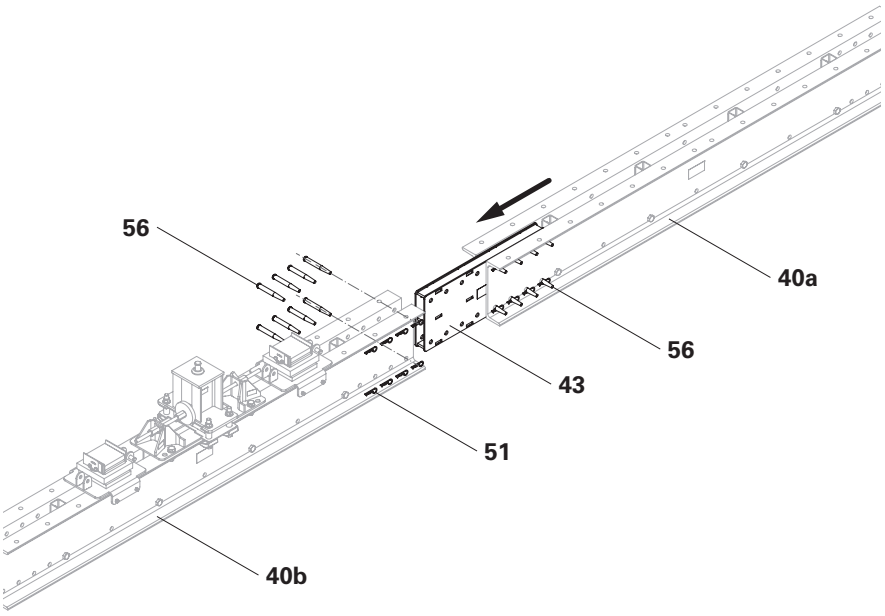


Fig. B4.09

Warning

Risk of crushing due to heavy moving components!
Risk of hands being crushed when the two main beams are coupled.
⇒ Do not reach between the components.

2. Push the main beam (**40b**) together with the main beam (**40a**).
3. Connect both main beams using 8 filler pins and secure with cotter pins.

(Fig. B4.09)

Have all filler pins been inserted and secured with cotter pins?

Due to different hole spacing at the joint of the main beams, it is not possible to fit the horizontal bearing in this area. (Fig. B4.10)

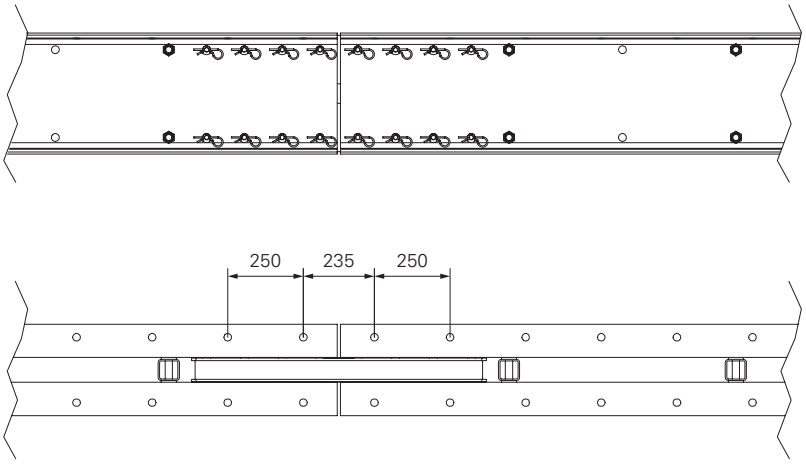


Fig. B4.10

C1 Mounting the truss package on the main beam

Danger

Heavy moving components can fall down or overturn!
During assembly, there is a risk of hands and other body parts being crushed.

⇒ Leave the danger zone at the main beams.
⇒ Do not stand under suspended loads.
⇒ Use guide ropes when moving components.
⇒ Maintain an appropriate safety distance.
⇒ Do not stand between moving elements.

Use PPE!

Note

- Take into account project-specific attachment positions on the truss package.
- If the two main beams are not at the same height, you must compensate for the difference in height when transporting by crane. The truss package must be set down on both main beams at the same time, dimension x_1 corresponds to dimension x_2. (Fig. C1.01a + Fig. C1.01b)
- Determine the inclination by trial and error when attaching to the crane lifting gear.
- If the truss package touches down too early on one side, horizontal forces arise that can cause the main beam to shift or overturn. (Fig. C1.01)

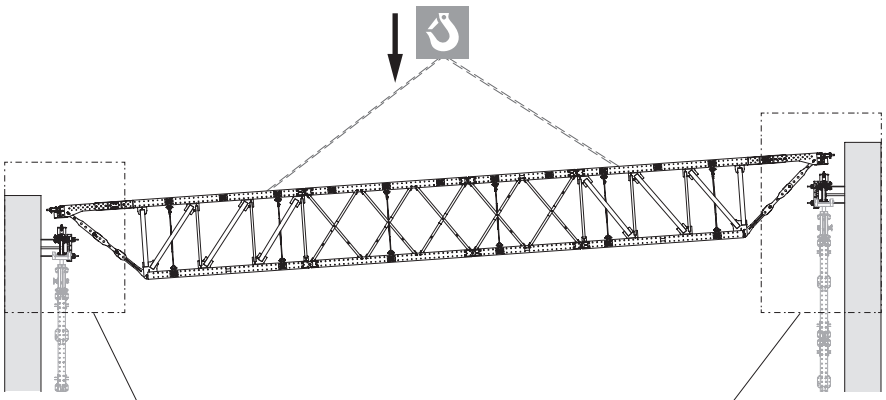


Fig. C1.01

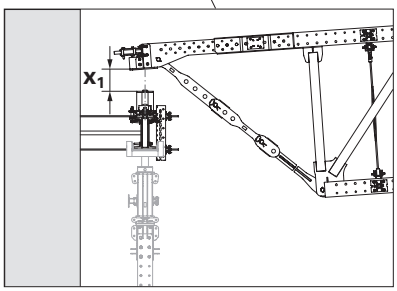


Fig. C1.01a

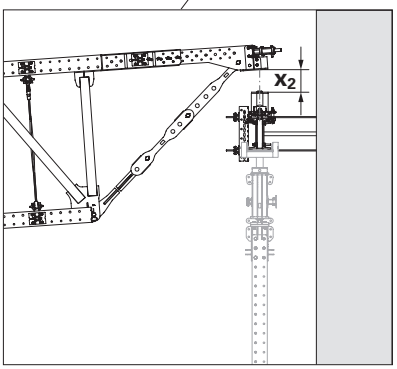


Fig. C1.01b

C1 Mounting the truss package on the main beam

Before transporting the truss package (Fig. C1.02) by crane, the PERI UP Flex system must be mounted on the truss package. See Section "E1 Einbau PERI UP Flex" on page 66.

Use PPE!

Assembly

1. Remove cotter pins (**33.7**) and pull bolts (**33.6**) out of the horizontal bearing (**33**).
2. Attach the truss package using suitable load-carrying means.
3. Loosen the connection between the truss package and the assembly aid (climbing rail). For this, remove the cotter pins and pull out the filler pins.
4. Fly in the truss package and position above the main beams (**40**).
5. Slowly lower the truss package and place the bearing frames (**4**) on the longitudinal bearings (**32**).
6. On one side of the truss package, insert the bolt (**33.6**) through the matching hole and connect the truss (**36**) to the horizontal bearing (**33**).
7. Secure the bolt (**33.6**) with a cotter pin (**33.7**).

(Fig. C1.03)

8. Repeat steps 5 to 7 on the other side of the truss package.

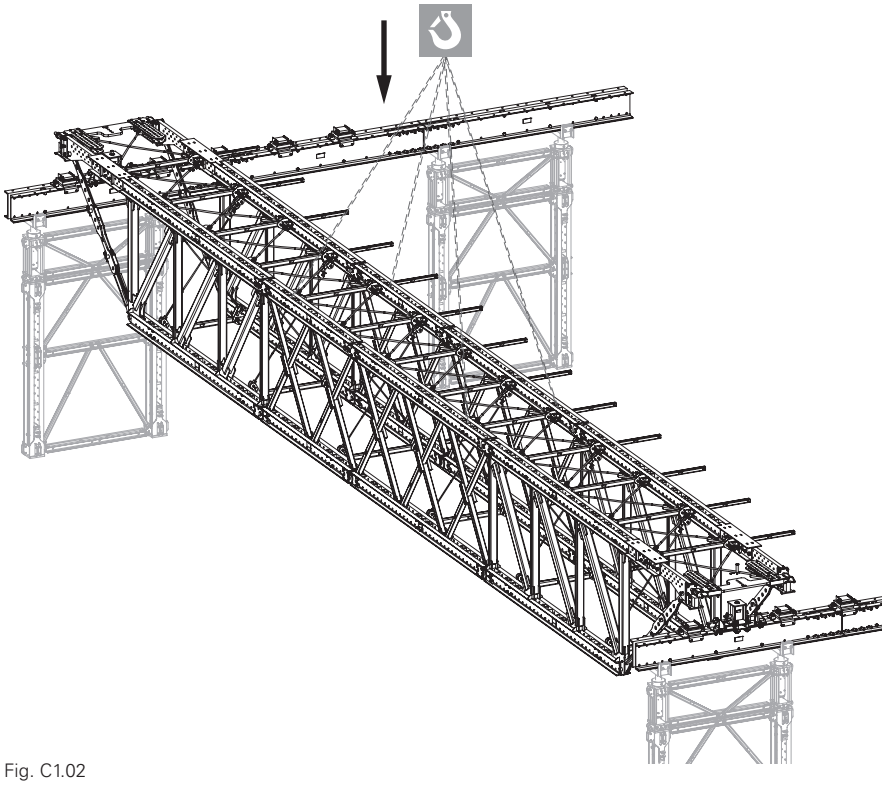


Fig. C1.02

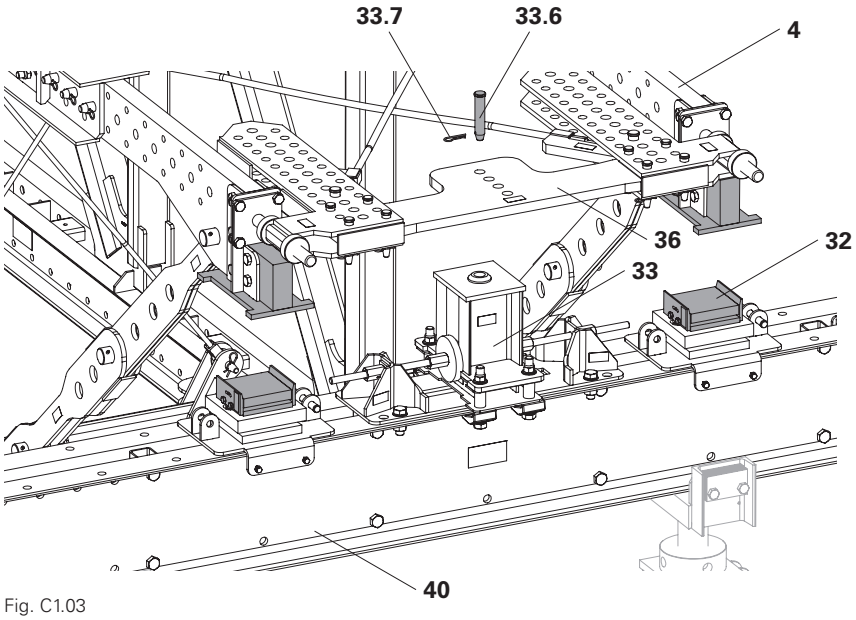


Fig. C1.03

C1 Mounting the truss package on the main beam

If the holes in the bracing traverse (**36**) and horizontal bearing (**33**) are not aligned, the position of the bracing traverse must be adjusted. (Fig. C1.04)

Adjusting the bracing traverse

1. Loosen the tie rod (**21**) on the articulated spanner (**20**).
2. Loosen the nuts (**38.1**).
3. Adjust the bracing traverse (**36**) so that one of the holes is aligned with the hole in the horizontal bearing (**33**).
4. Insert the bolt (**33.6**) through the designated hole and connect the bracing traverse to the horizontal bearing (**33**).
5. Secure the bolt (**33.6**) with a cotter pin (**33.7**).
6. Tighten the nuts (**38.1**).
7. Adjust the tie rod (**21**) on the articulated spanner (**20**) so that it is free of any play.

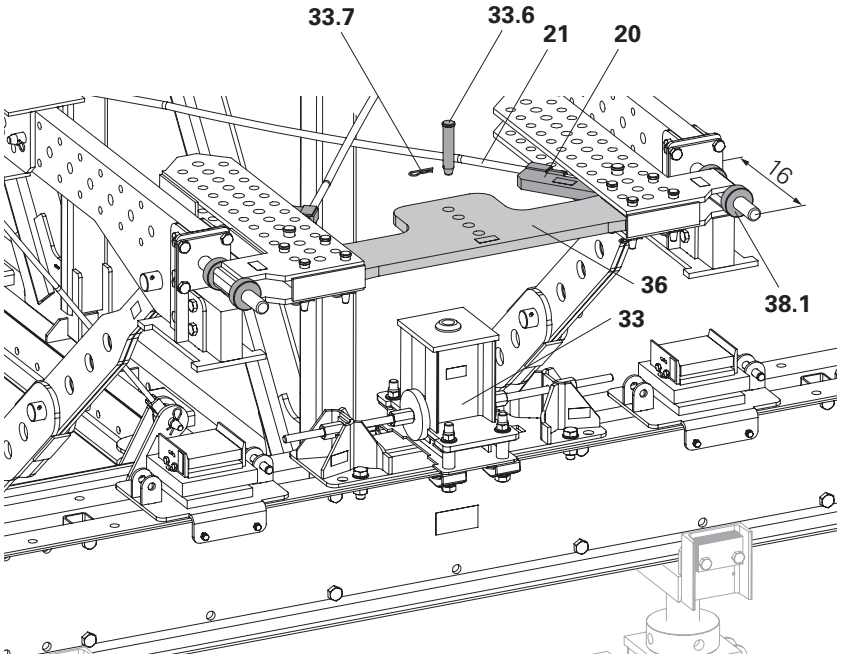


Fig. C1.04

- The bearing frame has a 29-cm-long recess. This allows longitudinal adjustment of the truss package by up to 13 cm. (Fig. C1.05 – C1.06)
- If the horizontal bearing (**33**) needs to be shifted to reach the exact position, see "Aligning the horizontal bearing" on page 48.

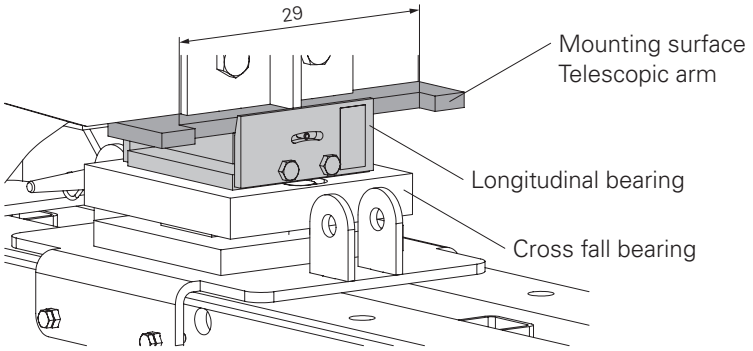


Fig. C1.05

Is the bearing frame resting fully in the longitudinal bearing? (Fig. C1.06)

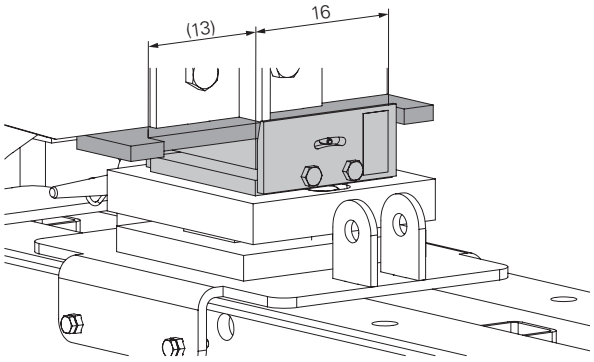


Fig. C1.06

C2 Mounting single trusses on the main beam

Danger

Heavy moving components can fall down or overturn!
During assembly, there is a risk of hands and other body parts being crushed.

⇒ Leave the danger zone at the main beams.
⇒ Do not stand under suspended loads.
⇒ Use guide ropes when moving components.
⇒ Maintain an appropriate safety distance.
⇒ Do not stand between moving elements.

Use PPE!

Note

Take into account project-specific attachment positions on the single truss.

Assembly

1. Attach the single truss using suitable load-carrying means.
2. Raise the crane lifting gear until it is tensioned.
3. Loosen the connection between the single truss and the assembly aid (climbing rail). For this, remove the cotter pins and pull out the filler pins.
4. Fly in the single truss and position above the main beams (**40**). (Fig. C2.01)
5. Slowly lower the single truss and place the bearing frames (**4**) on the longitudinal bearings (**32**). (Fig. C2.01a)

Is the bearing frame resting fully in the longitudinal bearing?

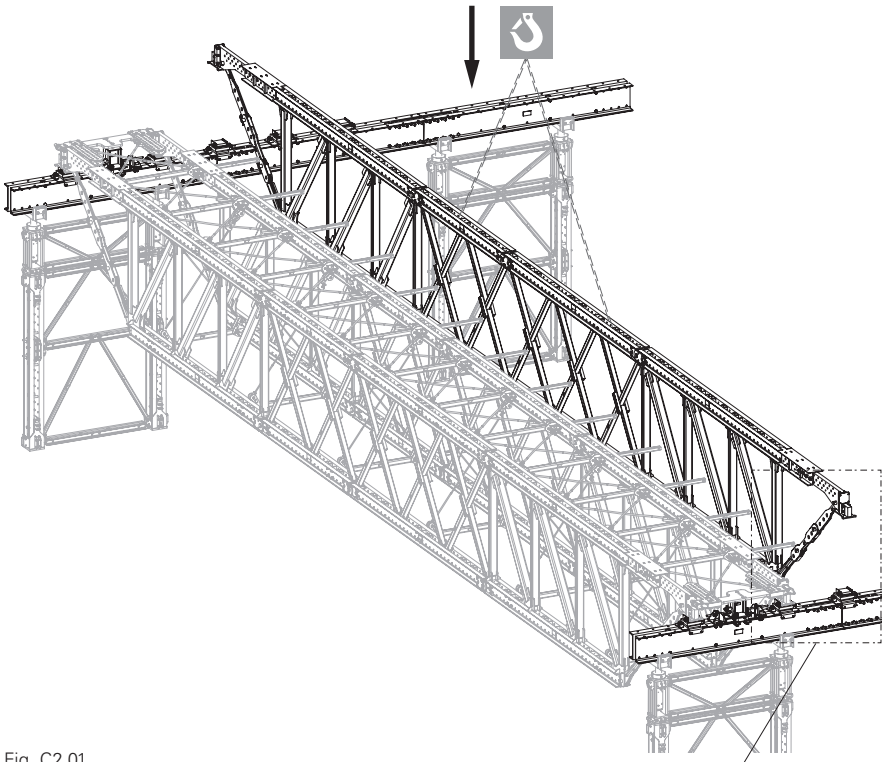


Fig. C2.01

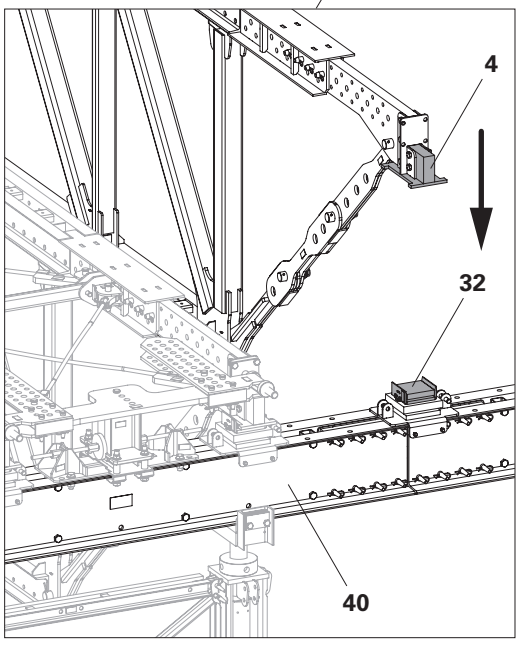


Fig. C2.01a

C3 Connecting single trusses to the truss package

- The coupling posts (**17**) are already mounted on the truss package.
- The coupling connections (**14**) are already mounted on the single truss.

See Section "Coupling with a single truss" on page 44.

Use PPE!

Assembly

1. Fold the coupling posts (**17**) upwards. (Fig. C3.01)
2. Connect all coupling posts (**17**) in the top and bottom chords with the coupling connection (**14**).
3. Insert filler pins (**53**) and secure with cotter pins (**50**).

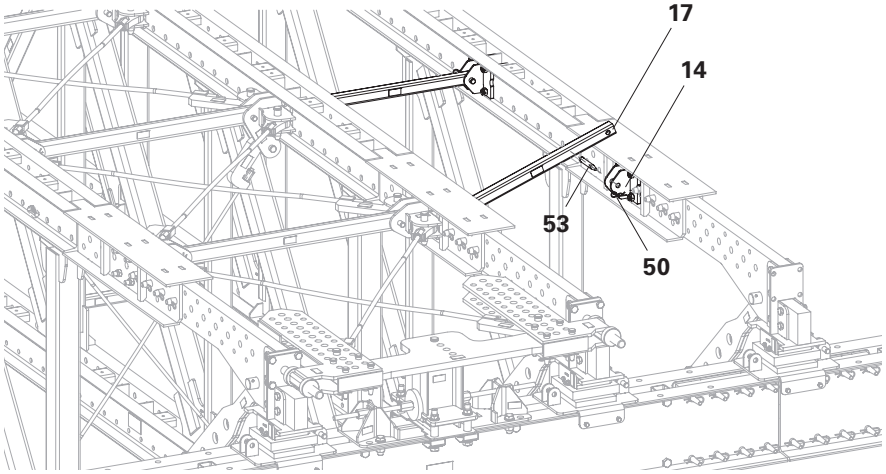


Fig. C3.01

- Have all coupling posts been fitted?
- Have all filler pins been inserted and secured with cotter pins?

D1 Support situation for longitudinal inclinations

The longitudinal bearing compensates for a difference in height between the supports. This is possible up to an angle of 4°. (Fig. D1.01)

! Note

The longitudinal inclination between the supports must not exceed an angle of 4° This corresponds to an inclination of 7%.

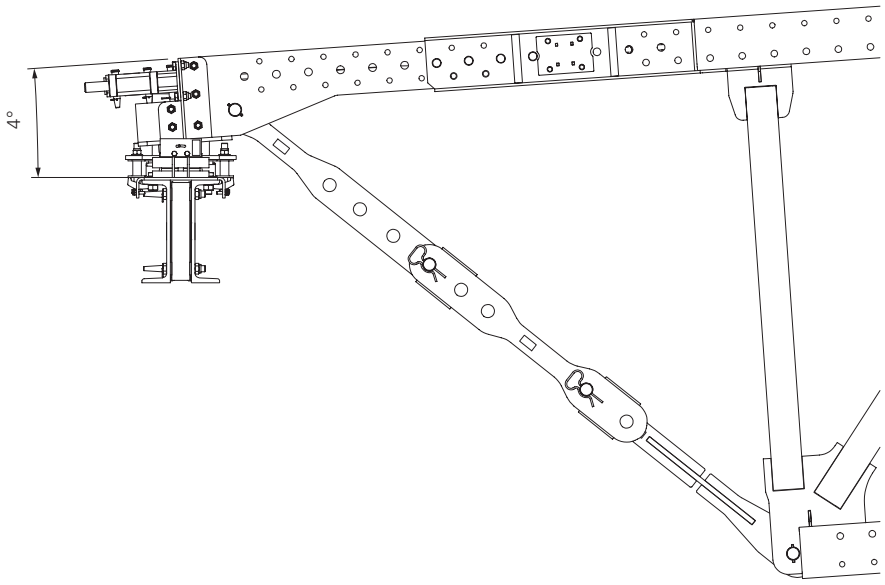


Fig. D1.01

D2 Support situation for lateral inclinations

The cross fall bearing compensates for an inclination in the main beam. This is possible up to an angle of 4°.
The frame remains in a vertical position in spite of the lateral inclination.

Note

The lateral inclination of the main beam must not exceed an angle of 4° . This corresponds to a gradient of 7%.

- The tie rods of the horizontal and vertical bracing must have correspondingly adapted lengths for accommodating lateral inclinations.
- The tie rod must project from the nut by at least 10 mm.

Note

The truss package must be vertically aligned when placed on the main beam. For this, the tie rods (**21**) and (**24**) of the horizontal and vertical bracing must have sufficient play.

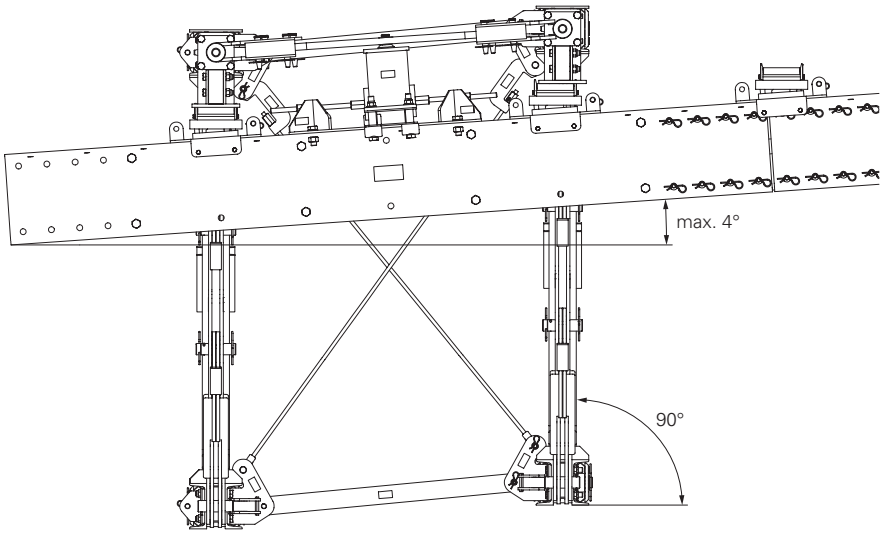


Fig. D2.01

D3 Support situation for crossing angles

Assembly

1. Loosen all nuts (**63**) of the horizontal bracing on the articulated spanner (**20**).
2. Loosen all nuts (**62**) of the vertical bracing on the articulated spanner (**23**).
3. Fly in the truss package and position it on the main beam.
4. Adjust all tie rods (**21**) of the horizontal bracing using the nuts (**63**) on the articulated spanner (**20**) so they are free of play.
5. Adjust all tie rods (**24**) of the vertical bracing using the nuts (**62**) on the articulated spanner (**23**) so they are free of play.

(Fig. D2.02)

See "Fitting the horizontal bracing" on page 38 and "Fitting the vertical bracing" on page 42.

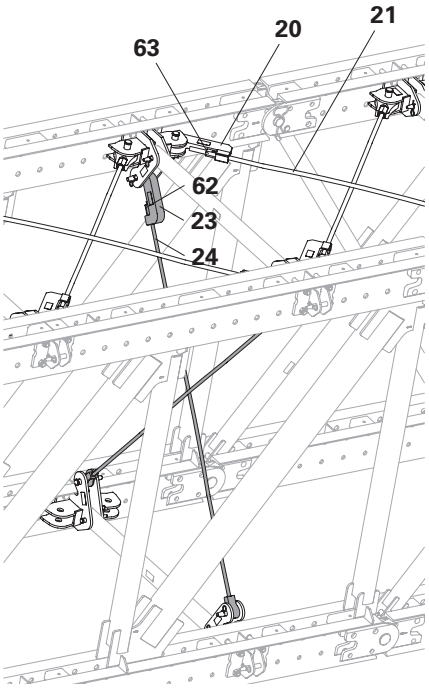


Fig. D2.02

D3 Support situation for crossing angles

Depending on the project, the support angle between the truss package and the main beam is not always 90°. In these cases, the crossing angle between the truss package and main beam can be continuously adjusted between 63.4° and 90°.

- The following work steps describe in general which activities have to be carried out.
- Figures D3.01 and D3.02 serve as examples.
- The exact assembly position of some components can differ from the illustration due to specific project requirements.
- The details provided in the assembly drawings are binding.

Crossing angle from 67.4° to 90°

Assembly

1. Extend the bearing frame (**4**). (Fig. D3.01)
2. Fit the bracing traverse (**36**).
3. Adjust the bracing traverse with the help of the bracing spindles (**38**). One of the four holes must be centred on the connecting line of the two bracing spindles. In this example, hole no. 2. (Fig. D3.01a)
4. Fit the articulated spanner (**20**). For this, insert the bolts (**57**) into the first available hole and secure with a cotter pin.
5. Adjust the tie rod (**21**) so that it is free of any play.

Note

⇒ The four filler pins (**57**) must be inserted in the four outer holes of the telescopic arm guide (**4.5**).

⇒ Also when fully extended, all four filler pins (**57**) must be securely inserted. See "Adjusting the bearing frames" on page 30.

⇒ The telescopic arm (**4.4**) must always be fixed with all four filler pins (**57**).

⇒ The bracing traverse (**36**) must always be mounted with all bolts (**55**) on the bracing traverse connector (**37**).

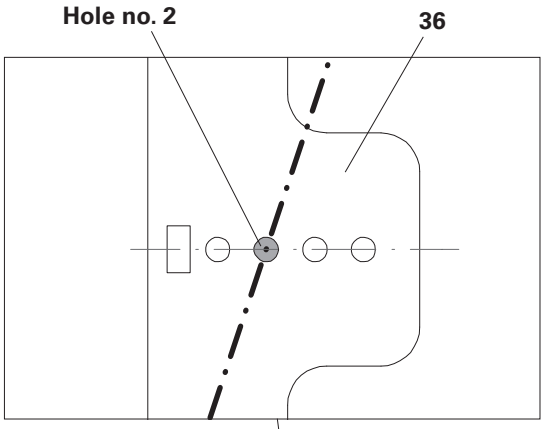


Fig. D3.01a

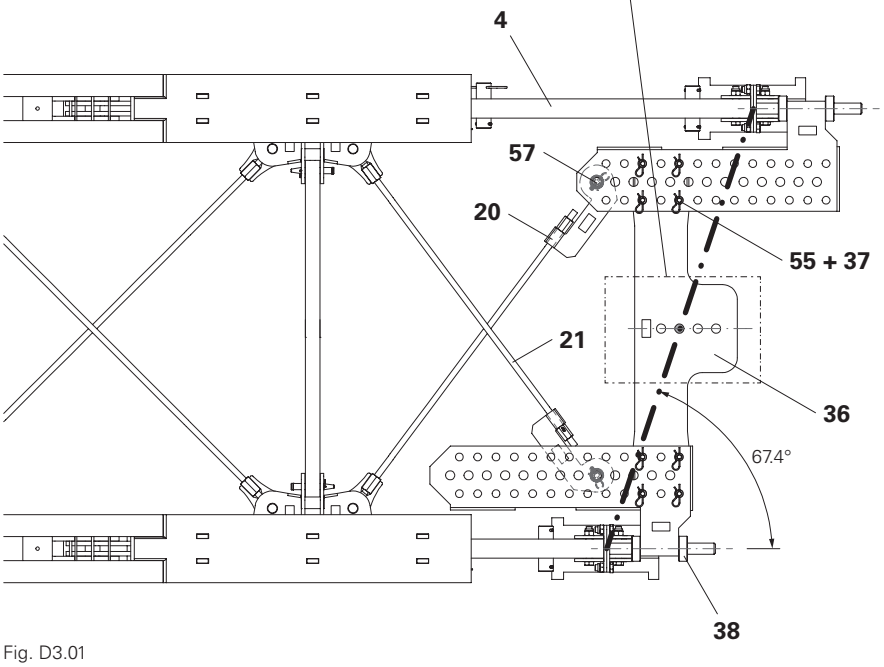


Fig. D3.01

Crossing angle from 63.4° to 67.4°

Here, the bracing traverse connector is turned on the shorter side of the telescopic box. This is necessary in order to be able to connect the bracing traverse.

Assembly

1. Extend the bearing frame (**4**). (Fig. D3.02)
2. Fit the bracing traverse (**36**).
3. Adjust the bracing traverse (**36**) with the help of the bracing spindles (**38**). One of the four holes must be centred on the connecting line of the two bracing spindles. In this example, hole no. 3. (Fig. D3.02a).
4. Fit the articulated spanners (**20**). For this, insert the bolts (**57**) into the first available hole and secure with a cotter pin.
5. Adjust the tie rod (**21**) so that it is free of any play.

If additional single trusses are connected for strong crossing angles, project-specific alternative solutions are required.

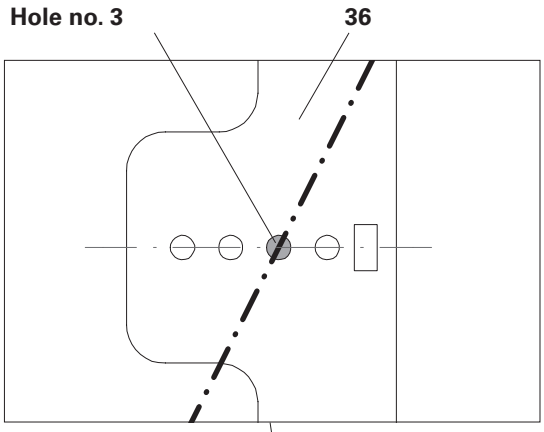


Fig. D3.02a

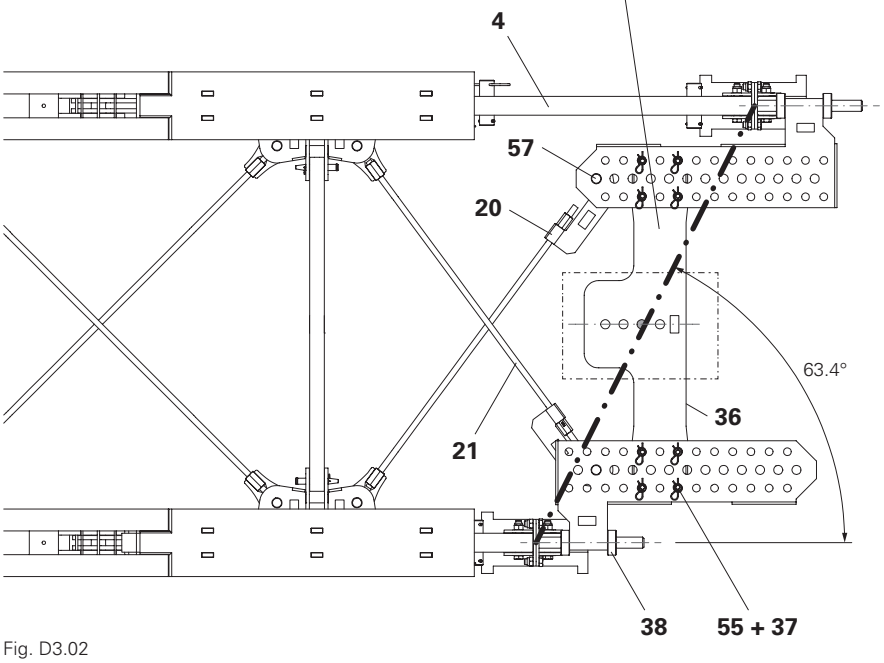


Fig. D3.02

General information

If higher project-specific forces occur in the diagonal braces, then standard frames are replaced by coupling frames.
Other typical applications for the coupling frame are in the area of an intermediate support (coupling joint suspension), in the area of a thrust bearing in the case of cantilevers, as well as when the type I bearing frame is used. In these cases, it is also necessary to use a pressure post.

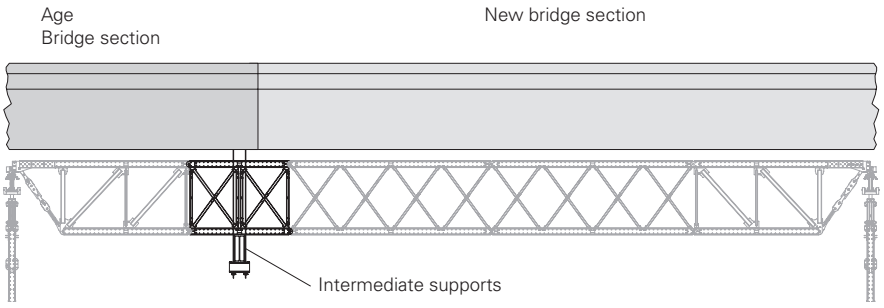


Fig. D4.01

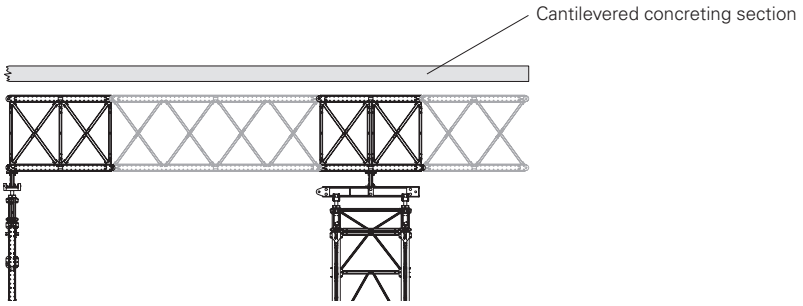


Fig. D4.02

Note

Coupling frames are required for:
- High vertical shear forces in the system.

Coupling frames with pressure posts are required for:
- Intermediate supports.
- Cantilevers.
- Support Frames VRB.

Intermediate supports
When constructing superstructures in sections, e.g. bridges, an additional intermediate support is installed. This results in shorter spans which allow for a more economical use of the heavy-duty truss girders. (Fig. D4.01)

Cantilever
In the case of an overhanging building geometry, the heavy-duty truss girder absorbs vertical forces and moments from the cantilever and transfers them, for example to VST Heavy-Duty Shoring Towers or existing building sections with sufficient load-bearing capacity. (Fig. D4.02)

Installing pressure post starters

The number of pressure pole starters-2 is project-specific.
Up to four pressure pole starters-2 can be mounted in a
Coupling Joint Frame 3M-2 VRB.
(Fig. D4.03)

Components

6 Coupling Joint Frame 3M-2 VRB
7 Pressure Pole Starter-2

Assembly

1. Pull both cotter pins 4/1 (**7.2**) on one side of pressure pole starter-2 (**7**) and remove the filler pin Ø 26 x 120 (**7.3**).
2. Push the pressure block (**7.1**) into the square tube profile.

(Fig. D4.04)

3. Fitting the pressure post
   – Single pressure post
   Place pressure pole starter-2 (**7**) with pressure block (**7.1**) on the central curvature of the pressure node (**6.1**) in the top chord of Coupling Joint Frame 3M-2 VRB (**6**). (Fig. D4.05)
   – Double pressure post
   Place two pressure pole starters-2 (**7**) with pressure block (**7.1**) on the two external curvatures of the pressure node (**6.1**) of Coupling Joint Frame 3M-2 VRB (**6**). (Fig. D4.06)
4. Position the pressure pole starter-2 (**7**) so it is perpendicular to the top and bottom chord.
5. Pull pressure block (**7.1**) out of the square tube profile and place it on the pressure node (**6.1**).
6. Insert both filler pins Ø 26 x 120 (**7.3**) and secure with cotter pins 4/1 (**7.2**).

(Fig. D4.04 – D4.06)

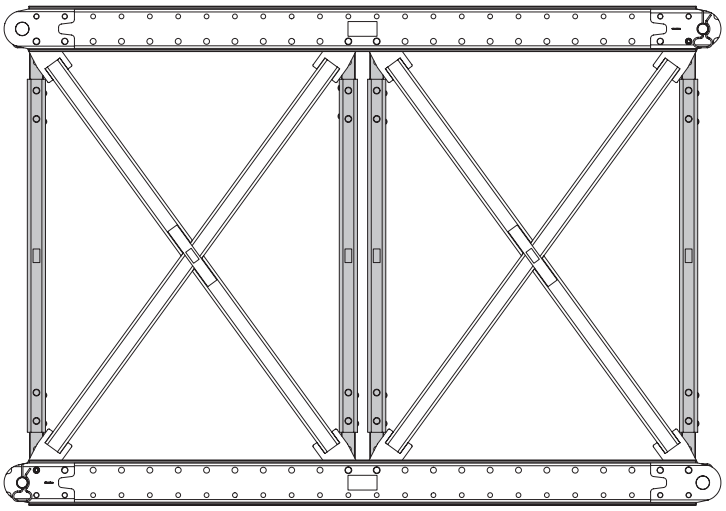


Fig. D4.03

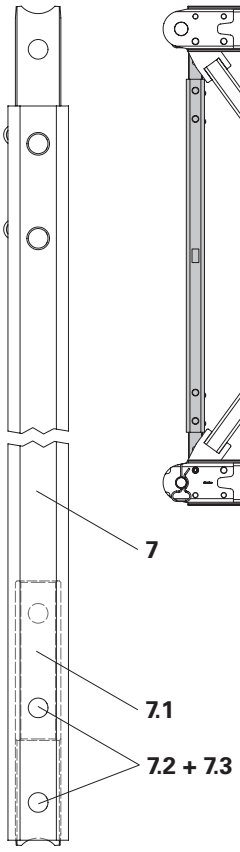


Fig. D4.04

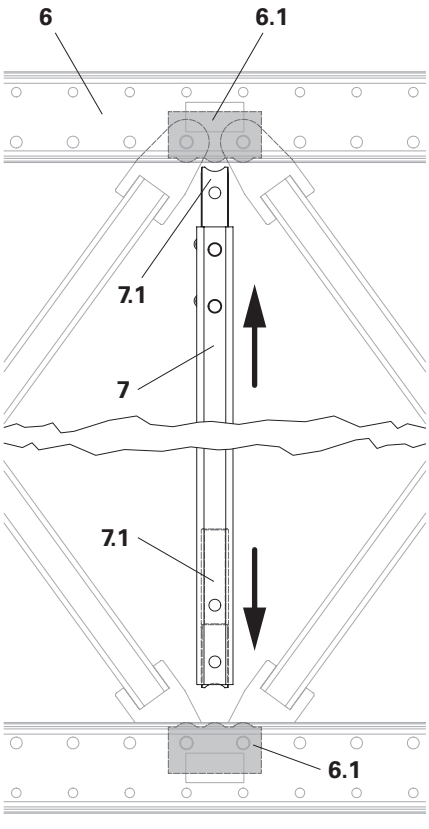


Fig. D4.05

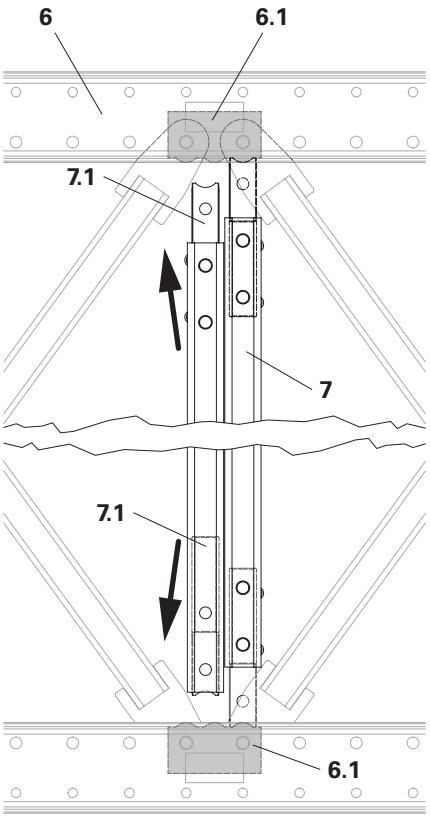


Fig. D4.06

E1 Installing PERI UP Flex

For easier access to the heavy-duty truss girder, install the PERI UP Flex scaffolding system. Figures E1.01 and E1.04 serve as potential project examples.
PERI recommends using
PERI UP Flex Stair Towers (not shown) as access technology.

Connector UP-VRB

Components

51 Cotter pin 5/1
56 Filler pin Ø 26 x 120
80 Connector UP-VRB

- This step is carried out together with the assembly of the bracing connections. See "Fitting the bracing connectors" on page 33.
- Assembly of the Connector UP-VRB is carried out on the inner side of the truss package.

Assembly

1. At a distance of x_1, insert the Connector UP-VRB (**80**) between the two guardrails of the bottom chord. (Fig. E1.02)
2. Fit bolts (**56**) and secure with cotter pins (**51**).
3. Fit additional connections (**80**) at a spacing of x_2. (Fig. E1.03)

- The distances can be changed according to the needs of the project, especially in the area of the supports.
- To assemble the scaffolding system, see the Instructions for Assembly and Use
  - PERI UP Flex Facade Scaffold 75 and 100.
  - PERI UP Scaffolding Kit core components.

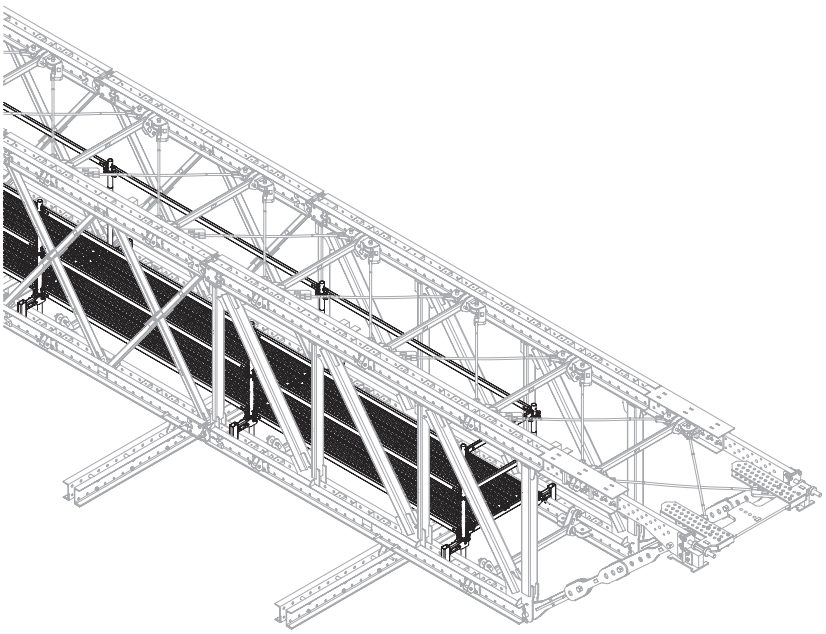


Fig. E1.01

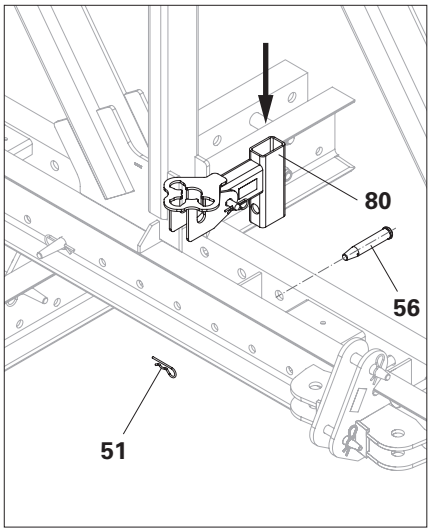


Fig. E1.02a

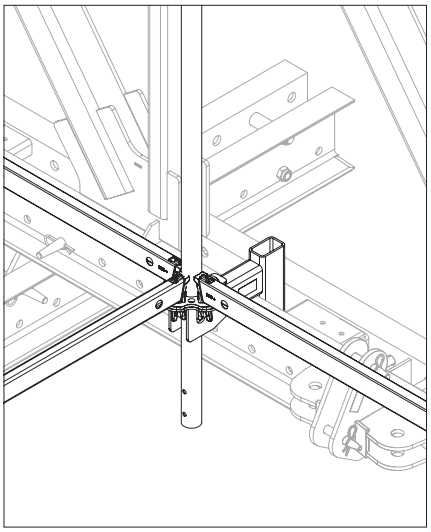


Fig. E1.02b

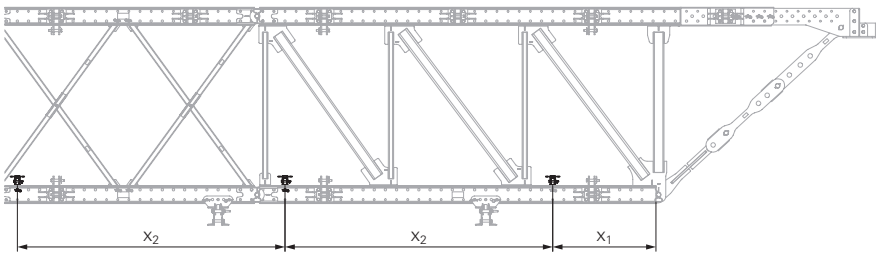


Fig. E1.03

Console Bracket Connector UP-VRB

Components

51 Cotter pin 5/1
56 Filler pin Ø 26 x 120
81 Console Bracket Connector UP-VRB

- This step is carried out together with the assembly of the bracing connections. See "Fitting the bracing connectors" on page 33.
- Assembly of the Console Bracket Connector UP-VRB takes place on the outer side of the truss package.

Assembly

1. At a distance of x_3, insert the console bracket connector (**81**) between the two guardrails of the bottom chord.
2. Fit bolts (**56**) and secure with cotter pins (**51**).

(Fig. E1.05)

3. Fit additional console bracket connections (**81**) at a spacing of x_4.

(Fig. E1.07)

- The distances can be changed according to the needs of the project, especially in the area of the supports.
- To assemble the scaffolding system, see the Instructions for Assembly and Use
  - PERI UP Flex Facade Scaffold 75 and 100.
  - PERI UP Scaffolding Kit core components.

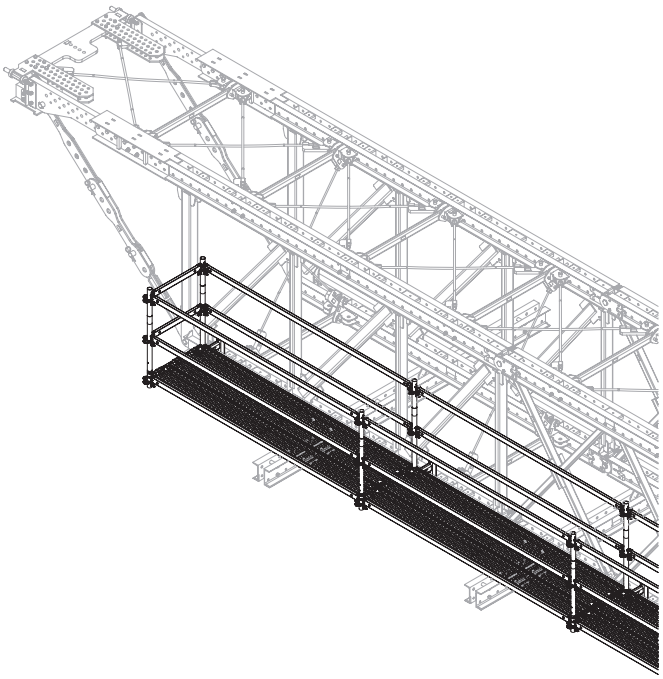


Fig. E1.04

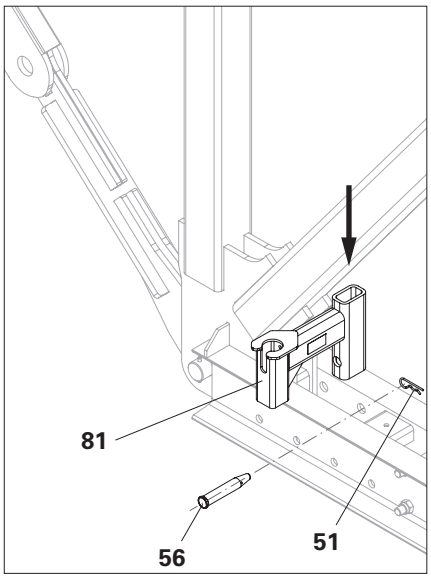


Fig. E1.05a

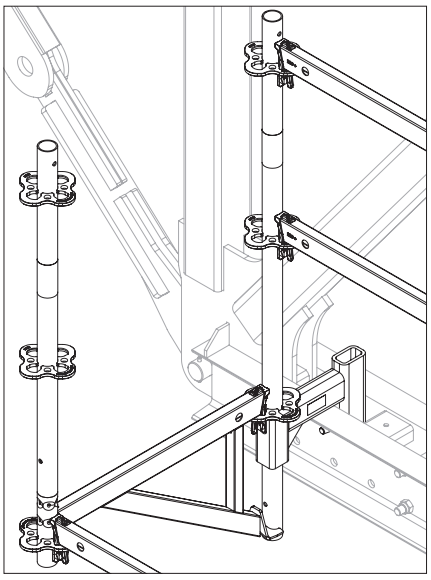


Fig. E1.05b

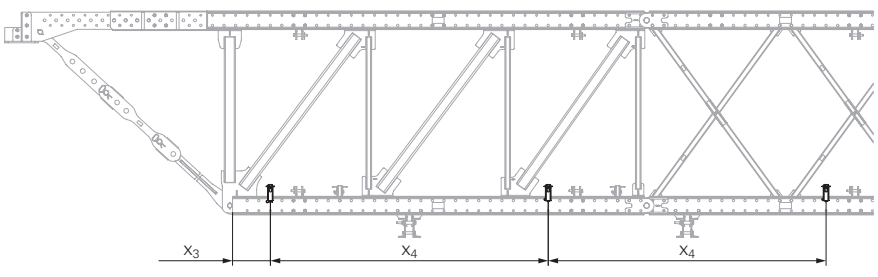


Fig. E1.06

Fitting the heavy-duty truss girder

1. Heavy-duty truss girder assembly. (Fig. F1.01)
2. Installation of heavy-duty truss girder on VST Heavy-Duty Shoring Tower. (Fig. F1.02)
3. Measuring the deflection of the VRB Heavy-Duty Truss Girder.

Determining the deflection
Decisive factors for the total deflection are:
– Dead weight of the heavy-duty truss girder
– Weight of the formwork structure
– Weight of the fresh concrete

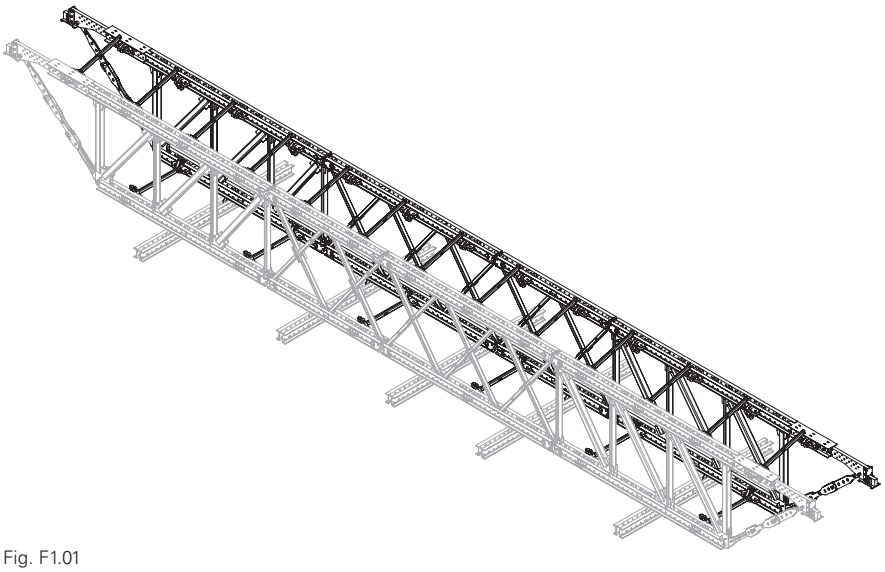


Fig. F1.01

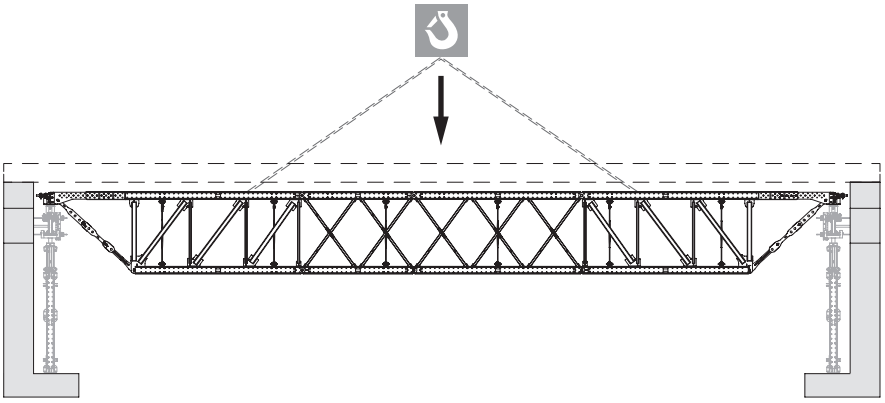


Fig. F1.02

Determining the deflection
Decisive factors for the total deflection are:

y_1	Dead weight of the heavy-duty truss girder
y_2	Weight of the formwork structure
y_3	Weight of the fresh concrete
y_4	Structural influences
y_{tot}	$y_1 + y_2 + y_3 + y_4$

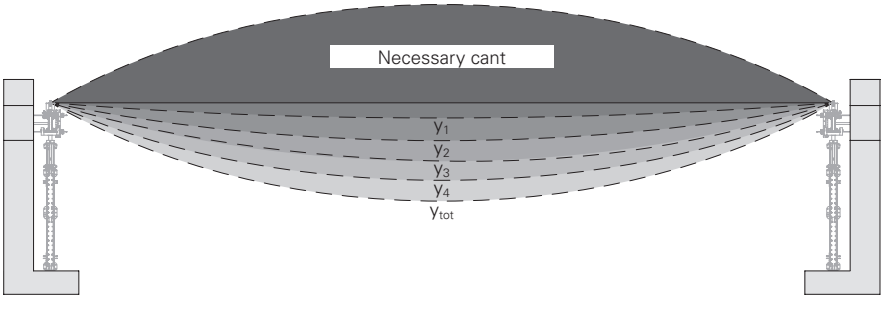


Fig. F1.03

Fig. F1.03 shows the decisive factors for deflection.
The necessary cant for the formwork structure must be greater than/equal to y_{tot}.

Heavy-duty truss girder application

4. Installing the cant. (Fig. F1.04)
5. Installing the formwork. (Fig. F1.05)
6. Reinforcement and concreting.

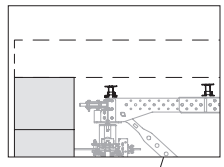


Fig. F1.04a

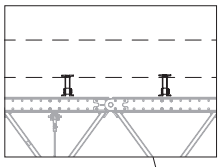


Fig. F1.04a

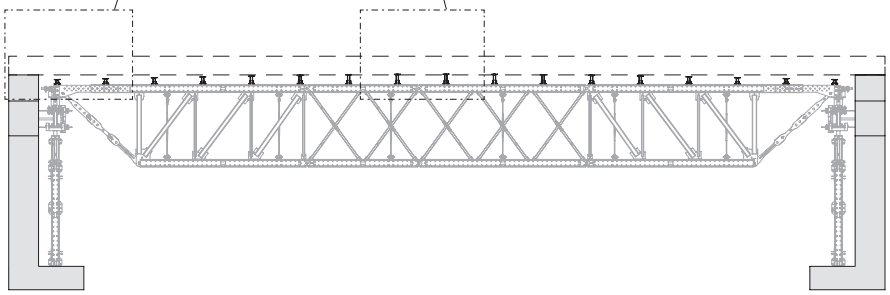


Fig. F1.04

Dismantling the heavy-duty truss girder

7. Removing the formwork.
8. Removing and dismantling the heavy-duty truss girder. (Fig. F1.06)

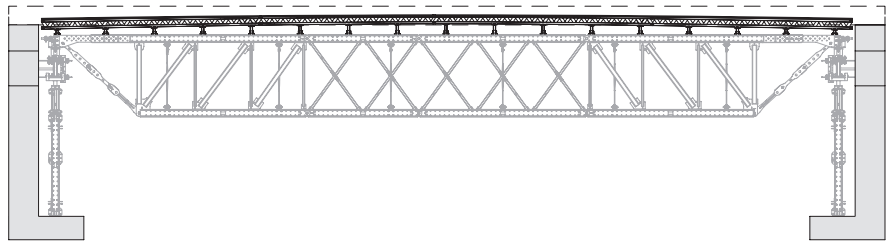


Fig. F1.05

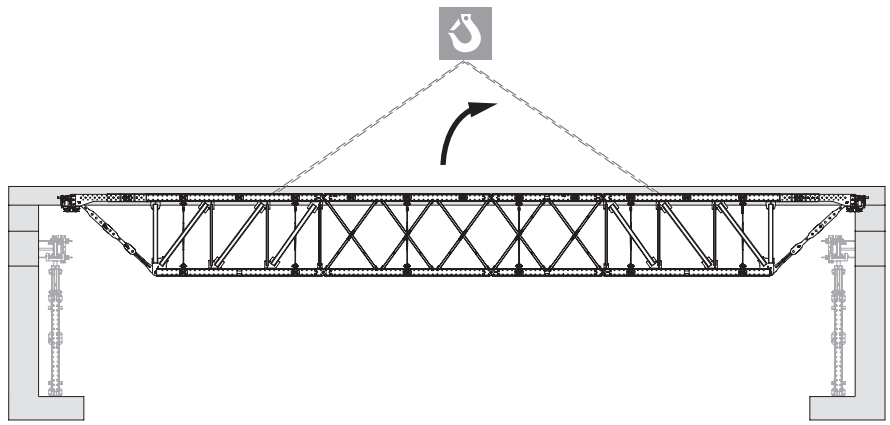


Fig. F1.06

G1 Dismantling single trusses

Note

- The system is dismantled on a project-by-project basis.
- A project-specific dismantling plan complete with all intermediate states is required! The dismantling plan is binding and must be followed at all times.
- The dismantling procedure described is simply an example and is not applicable on a general basis!
- The heavy-duty truss girder is only dismantled once the project manager has given the go-ahead.
- Use a long four-sling lifting gear to attach the assembly.
- Minimum chain length L:
  L ≥ distance between attachment points.
- Alternatively, use a 9 t climbing beam.
- A pulling unit is provided by the customer.

Use PPE!

Dismantling single trusses

1. Lower the main beams (**40**), including the heavy-duty truss girder and formwork, onto the supports.
2. Remove the entire formwork assembly.
3. Loosen the connection of the coupling posts to the single truss.
4. Attach the lifting chain to the centring plate (**30**) with the bolt (**54**) and secure with cotter pin. Repeat procedure at the other end of the single truss.

(Fig. G1.01)

- Apply lubricant to the main beam. This makes it easier to remove the truss packages and single trusses.
- To avoid a collision with the bolts of the main beam, remove the bolts (**30.1**) of the centring plate. (Fig. G1.01a)

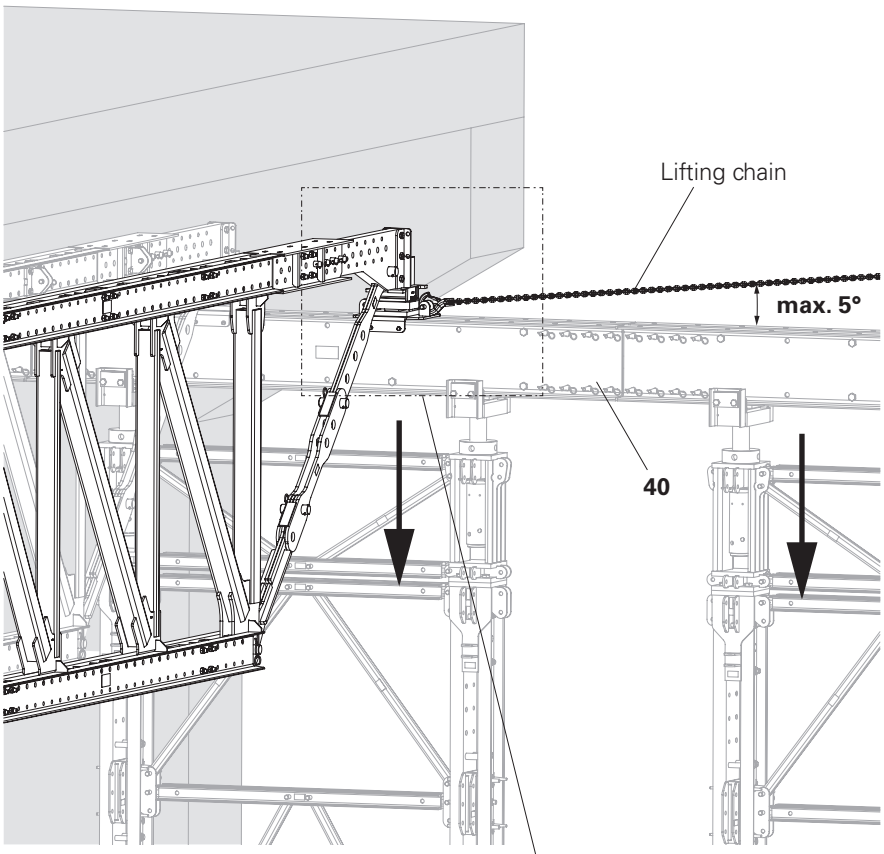


Fig. G1.01

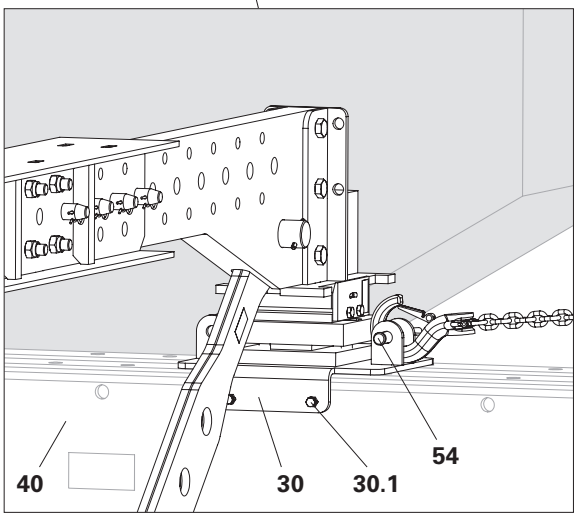


Fig. G1.01a

G1 Dismantling single trusses

Danger

Single truss could slide off the main beam!
Risk of serious injury or death from falling component.

⇒ Pull single trusses outwards on both sides evenly and smoothly.

⇒ Leave the danger zone beneath the single truss.

5. Pull the single truss outwards along the main beam until the single truss is completely removed. The centring plate guides the single truss on the main beam.
6. Attach the single truss to the crane lifting gear and fly it out. For this, select suitable load-bearing points on the single truss.

(Fig. G1.02)

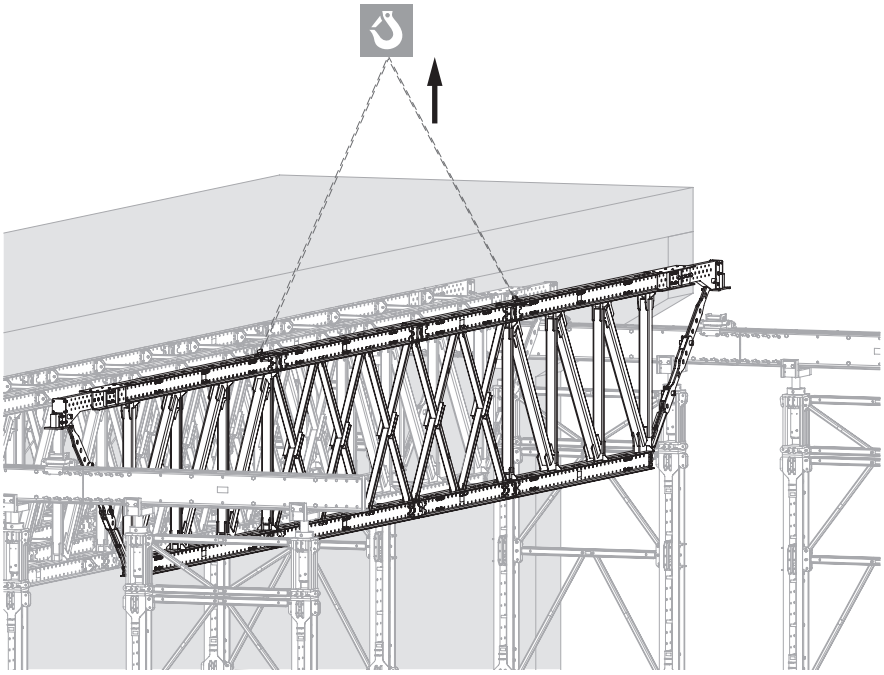


Fig. G1.02

G2 Dismantling the truss package

The horizontal bearing is removed together with the truss package. For this purpose, the horizontal bearing is clamped to the
Bracing Traverse 150 VRB.

Preparing the horizontal bearing

1. Remove bolts (**33.1**) and clamps (**33.2**).
2. Loop two tension belts (**112a**) around the tie rod (**33.5**) and the Bracing Traverse 150 VRB (**36**).
3. Tension the horizontal bearing (**33**) on the Bracing Traverse 150 VRB (**36**) with the tension belts.
4. If support is provided by a cross fall bearing, tension the cross fall adapter (**34**) to the Bracing Traverse 150 VRB (**36**) with a third tension belt (**112b**).

(Fig. G2.01)

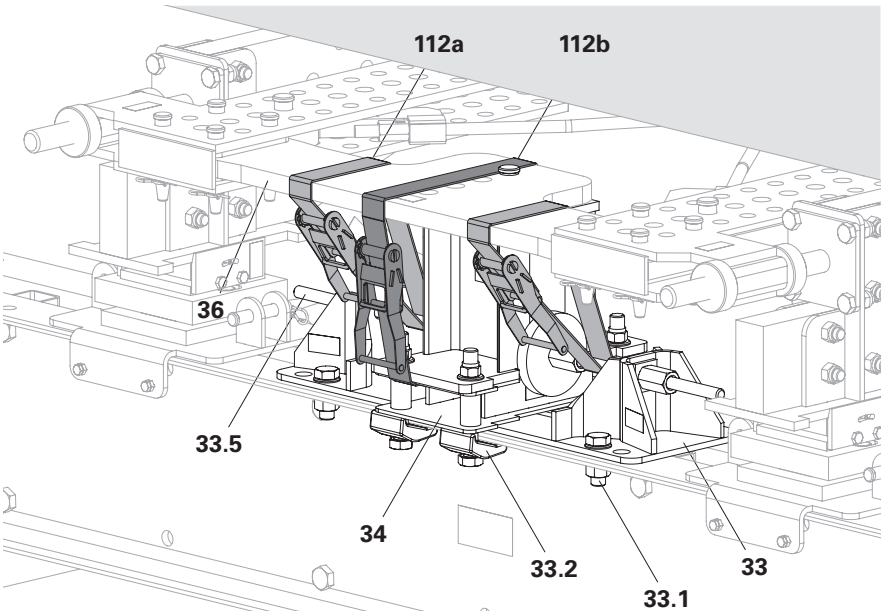


Fig. G2.01

Dismantling the truss package

1. Suspend the entire formwork assembly from the bridge with a tie rod.
2. Lower the main beams (**40**), including the heavy-duty truss girder, onto the VST Heavy-Duty Shoring Towers.
3. If fitted, release the coupling post or bracing post connections to the adjacent trusses or packages.
4. Attach the lifting chain to the centring plate (**30**) with the bolt (**54**) and secure with cotter pin. Repeat procedure at the other end of the truss package.

(Fig. G2.02)

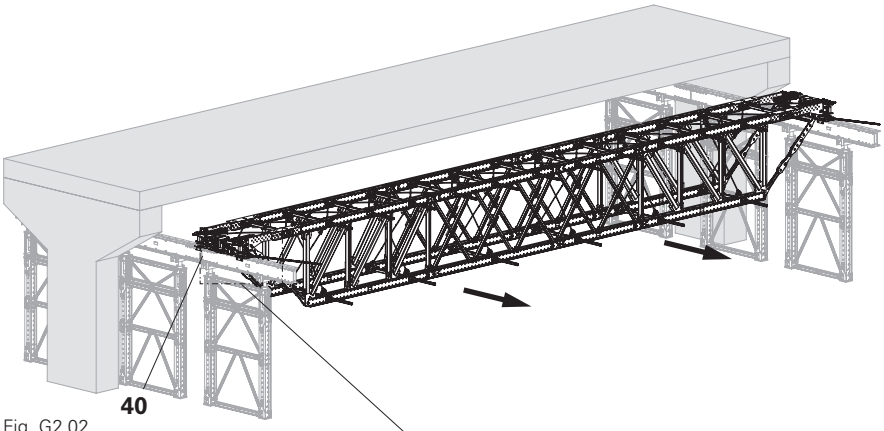


Fig. G2.02

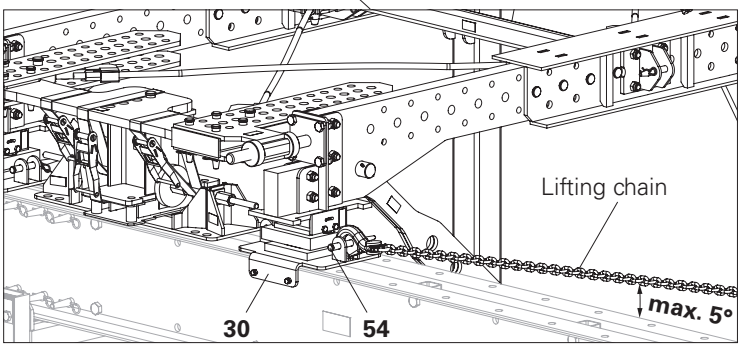


Fig. G2.02a

Danger

Truss package could slide off the main beam!
Risk of serious injury or death from falling component.

⇒ Pull the truss package outwards on both sides evenly and smoothly.
⇒ Leave the danger zone beneath the truss package.

5. Pull the truss package outwards along the main beam (**40**) until the truss package is completely removed. The centring plates guide the truss package on the main beam.
6. Attach the truss package to the crane lifting gear and fly it out. For this, select suitable load-bearing points on the truss package.

(Fig. G2.03)

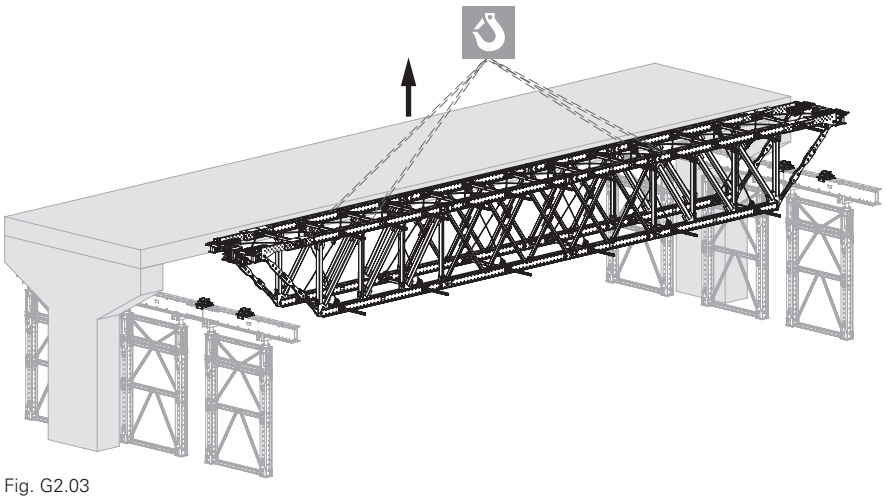


Fig. G2.03

Dismantling single trusses

- Position climbing rails (**70**) on the dismantling area. Ensure that each frame element is supported by at least one climbing rail. (Fig. G3.01)
- The final frame element on each side must be supported by two climbing rails.
- Fit the cross connector (**71**) at a distance of 92.75 cm from the edge of the climbing rail.
- Place the single truss on the climbing rails and fasten it to the cross connectors.

Dismantling the bearing frame
If necessary, retract the telescopic box. (Fig. G3.02 – G3.03)

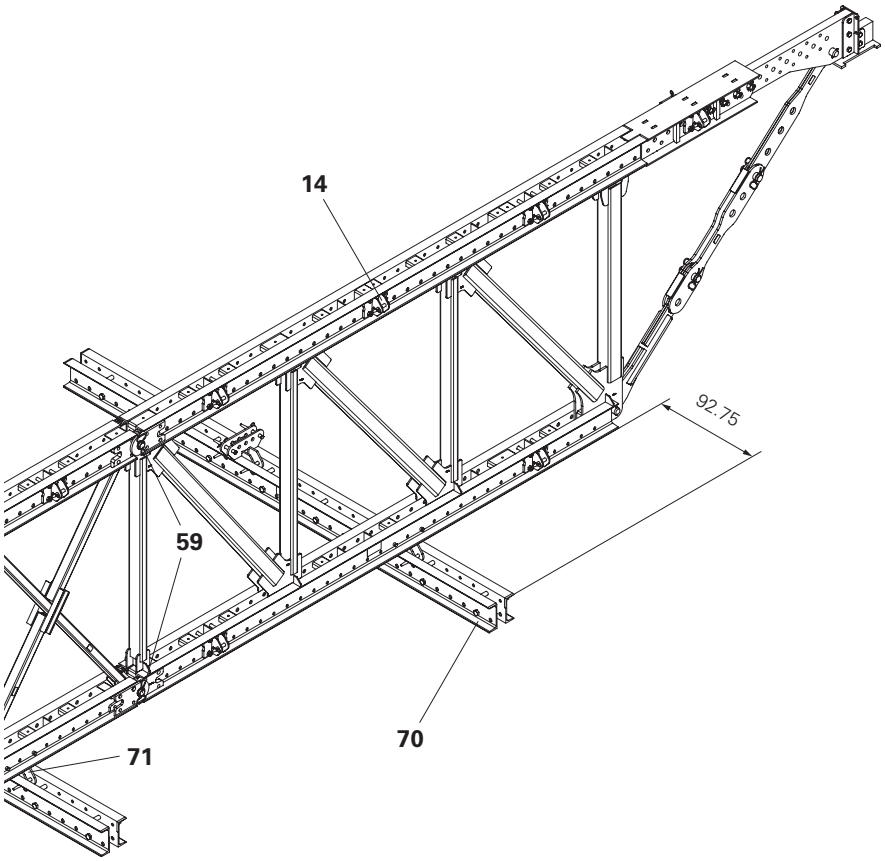


Fig. G3.01

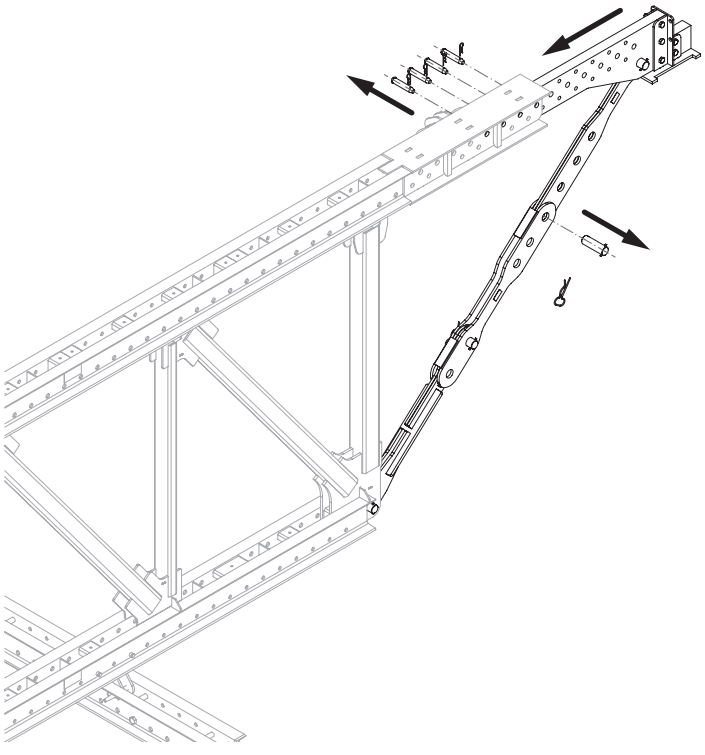


Fig. G3.02

Dismantling

1. Unscrew the coupling connections (**14**) in the top and bottom chords.
2. Attach the frame to the filler pins in the top chord or with lifting straps to the crane.
3. Remove the connecting bolts (**59**) from the adjacent frame element.

(Fig. G3.04 – G3.05)

4. Fly out the frame and stack it ready for transportation.

Repeat Steps 2 to 4 for all additional frame elements of the single truss.

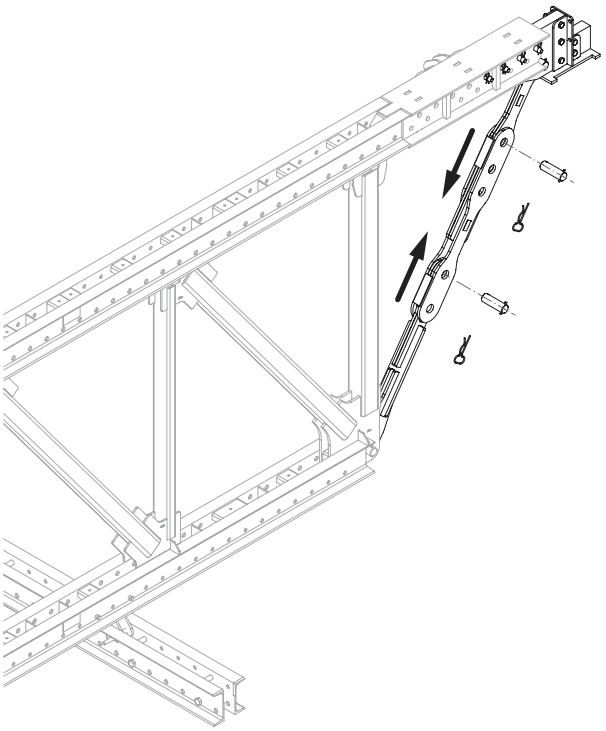


Fig. G3.03

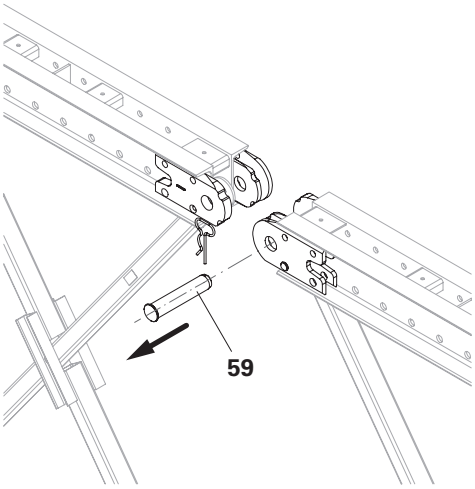


Fig. G3.04

Dismantling the truss package

- Position climbing rails (**70**) on the dismantling area. Ensure that each frame element is supported by at least one climbing rail. (Fig. G3.05)
- The final frame element on each side must be supported by two climbing rails.
- Fit the cross connector (**71**) at a distance of 92.75 cm from the edge of the climbing rail.
- Fit additional cross connectors on the climbing rails at the same spacing as the bracing posts (**15**).
- Place the truss package on the climbing rails and fasten it to the cross connectors.

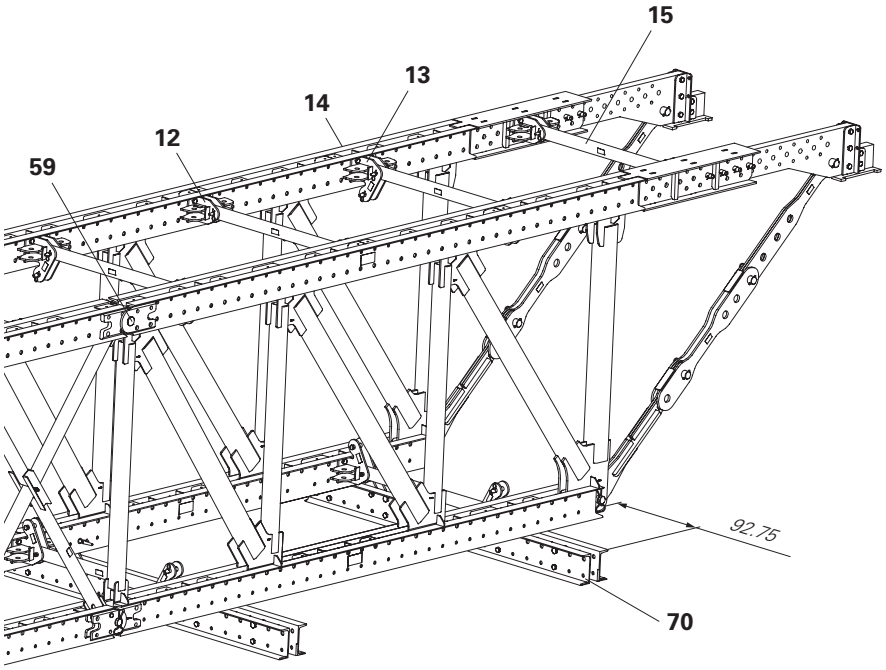


Fig. G3.05

Dismantling the bearing frame
If necessary, retract the telescopic box before carrying out steps 1 to 9. (Fig. G3.02 and G3.03)

Dismantling
1. If present, remove the bracing posts or coupling posts that are connected to the adjacent package.
2. Remove vertical and horizontal bracing.
3. Attach the bracing traverse to the crane, remove it and fly it out.
4. Remove the bracing posts (**15**).

5. Unscrew the bracing connectors (**12**), vertical bracing shoes (**13**) and coupling connections (**14**).
6. Attach the frame to the filler pins in the top chord or with lifting straps to the crane.
7. Knock out the filler pins from the cross connector.
8. Remove the connecting bolts (**59**) from the adjacent frame element. (Fig. G3.04)

Warning

Be aware of heavy moving components that can overturn or move in an uncontrolled way!
Severe bruising may occur.

⇒ Raise the crane lifting gear until it is tensioned.
⇒ Do not stand under suspended loads.
⇒ Do not stand between elements of the truss package.

9. Fly out the frame and stack it ready for transportation.

Repeat steps 6 to 9 for all additional frame elements of the truss package.

H1 Fitting support type I

General information

Bearing Frame VRB (**100**) consists of:
- Support chord (**100.1**)
- Telescopic box (**100.2**)
- Calotte (**100.3**)
- Connecting link (**100.4**)
- Tension profile (**100.5**)

(Fig. H1.01

- With the help of the telescopic arm, the Bearing Frame VRB can be extended in three increments of 25 cm. The Bearing Frame VRB can be extended by a total of 75 cm. (Fig. H1.01)
- The calotte (**100.3**) is used for fine adjustment of the extension length by ±13 cm (Fig. H1.02)

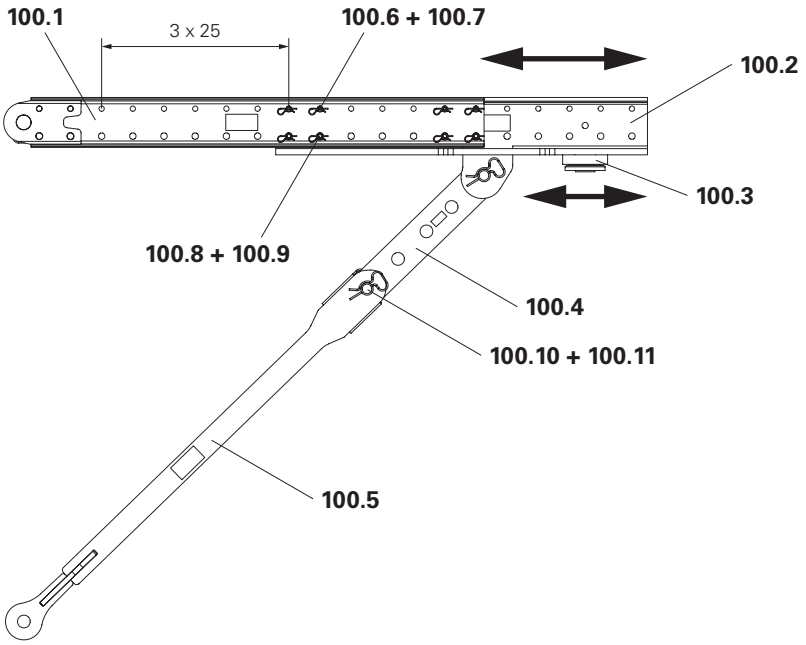


Fig. H1.01

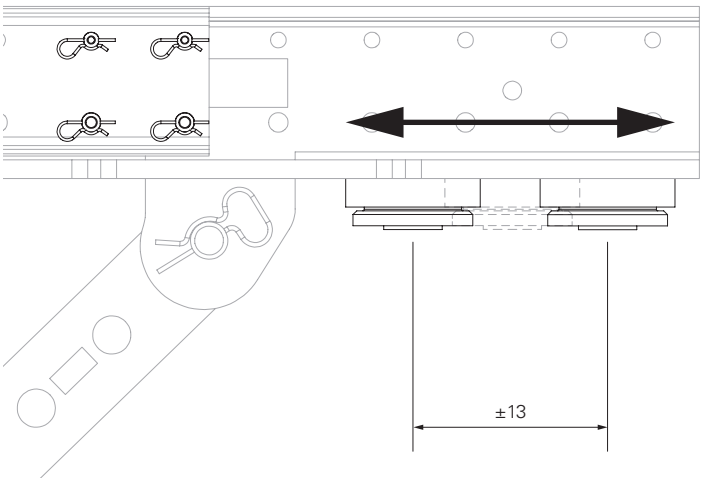


Fig. H1.02

Telescopic box extension
Fig. H1.03 shows the positions for inserting bolts depending on the extension length of the telescopic box.

Extension 0 cm

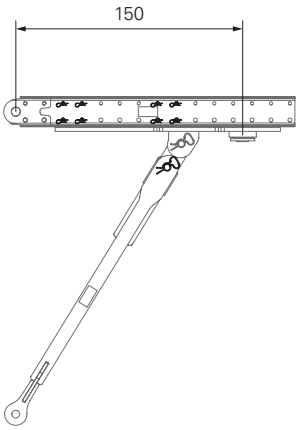


Fig. H1.03a

Extension 25 cm

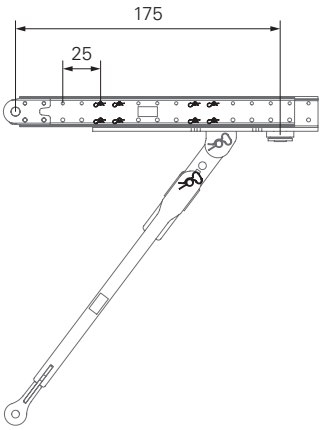


Fig. H1.03b

Extension 50 cm

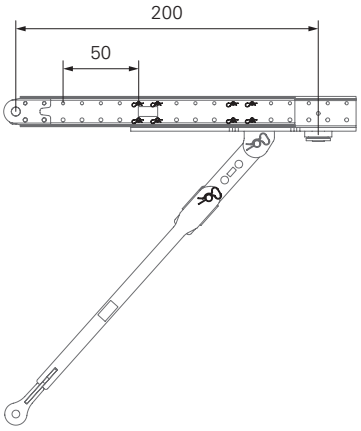


Fig. H1.03c

Extension 75 cm

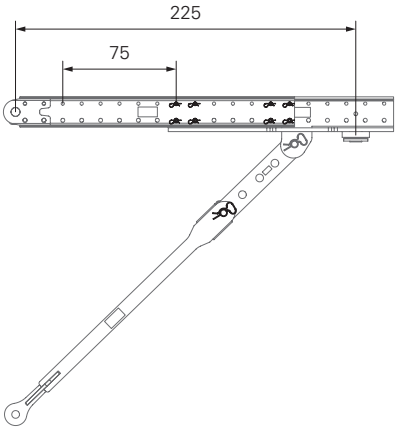


Fig. H1.03d

Adjusting Bearing Frame VRB

Warning
Heavy moving components!
These can fall down or cause hands to be crushed.
⇒ Move tension profile carefully thus ensuring that it does not slide out of the guide.
⇒ Keep hands well away from the holes on the tension profile.
⇒ Wear protective gloves and safety shoes.

Note
Always fit the telescopic box (**100.2**) with all four filler pins (**100.6 + 100.8**). (Fig. H1.01)

It is helpful having a second person to assist in carrying out the following work steps.

Components

100 Bearing Frame VRB

Assembly
1. Remove cotter pins (**100.7 + 100.9**) and pull out filler pins (**100.6 + 100.8**).
2. Adjust the telescopic box (**100.2**) to the required length.
3. Insert filler pins (**100.6 + 100.8**) and secure with cotter pins (**100.7 + 100.9**).

(Fig. H1.04)
4. Remove cotter pin (**100.11**).
5. Remove bolt (**100.10**).
6. Move tension profile (**100.5**) until the required position of the bolt (**100.10**) corresponds to the positioning matrix.
7. Fit bolt (**100.10**) and secure with cotter pin (**100.11**).

(Fig. H1.05)

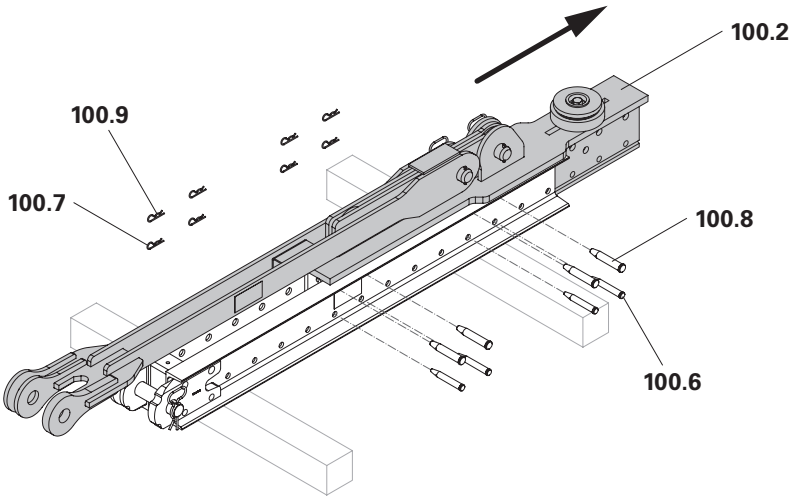


Fig. H1.04

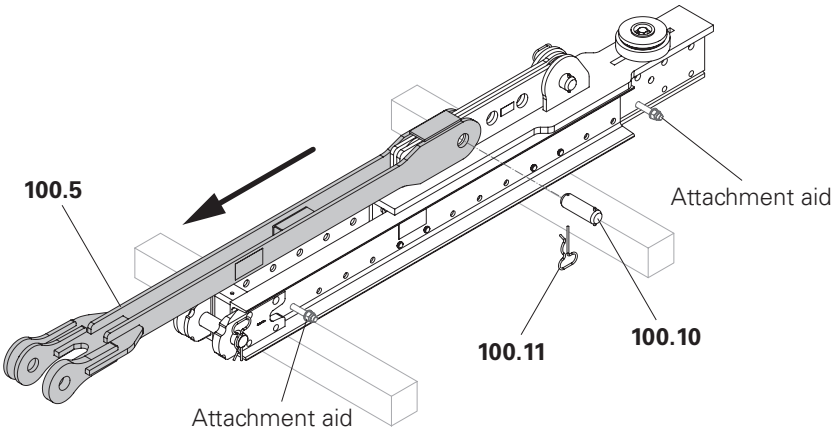


Fig. H1.05

Fitting Bearing Frame VRB

Warning

Risk of crushing due to heavy moving components!
Risk of hands being crushed when the two frames are coupled.
⇒ Do not reach between the chord plate connections.
⇒ Guide the frame using only the top and bottom chords.

Note

Detach the Bearing Frame VRB from the crane lifting gear only after all bolts have been inserted and secured.

Components

100 Bearing Frame VRB
101 Coupling Joint Frame 1.5 m VRB
or
102 Coupling Joint Frame 3.0 m VRB

Assembly

1. Position Bearing Frame VRB (**100**) with the crane in front of Coupling Joint Frame 1.5 m VBR (**101**).
2. Bolt the tension profile (**100.5**) with bolt Ø 50 x 250 (**59a**) into the bottom chord of Coupling Joint Frame 1.5 m VBR (**101**) and secure with cotter pin 6/1 Ø 50 VRB (**52a**).

(Fig. H1.06)

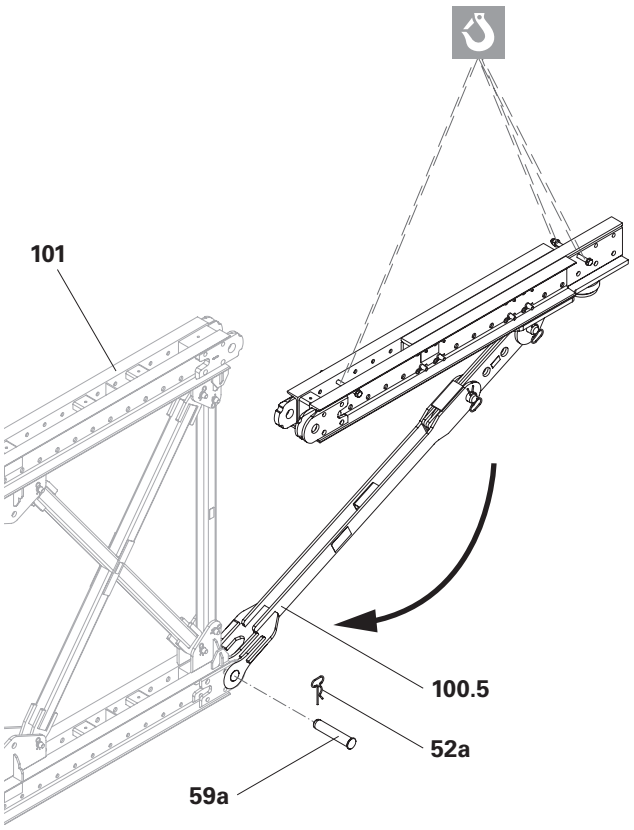


Fig. H1.06

3. Swing the Bearing Frame VBR (**100**) upwards with the crane.
4. Bolt the Bearing Frame VBR (**100**) with bolt Ø 50 x 250 (**59b**) into the top chord of Coupling Joint Frame 1.5 m VBR (**101**) and secure with cotter pin 6/1 Ø 50 VRB (**52b**).

(Fig. H1.07)

Ensure that the single chord plate is inserted into the double chord plate in the chord plate connections of the top and bottom chords (Fig. H1.08).

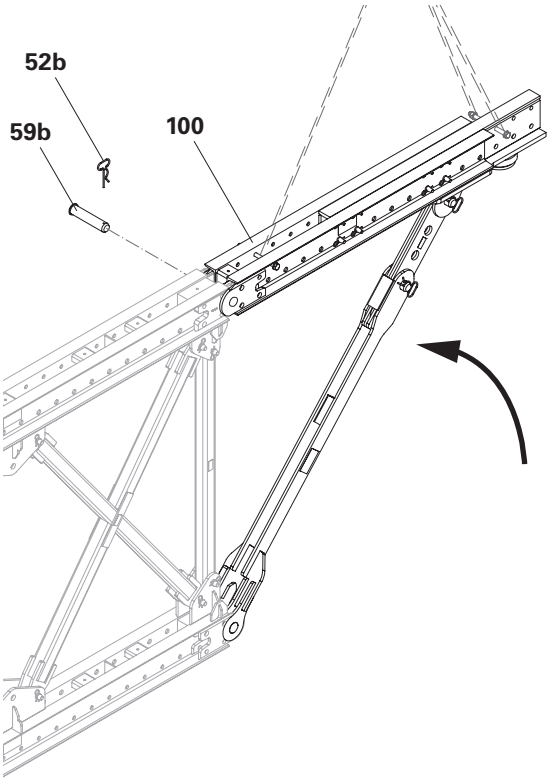


Fig. H1.07

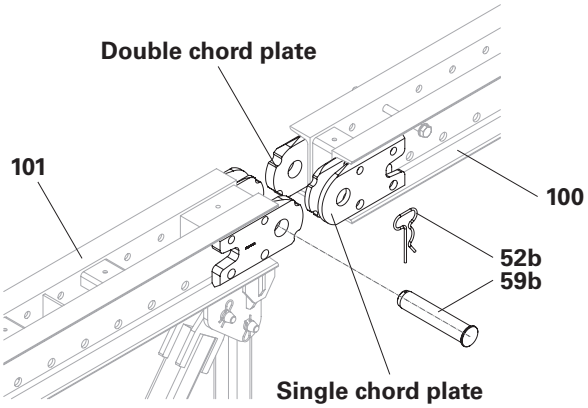


Fig. H1.08

Horizontal Bearing VRB

The horizontal bearing accommodates the horizontal forces, e.g. wind loads, and transfers them to the main beam. When using the Horizontal Bearing VRB, fit a bracing post in the telescopic box! The bracing post is positioned in the axis between the two horizontal bearings.

Components

12 Bracing Shoe VRB
40 Main Beam 350 VRB
or
41 Main Beam 500 VRB
or
42 Main Beam 800 VRB
61 Bolt ISO 4014 M20 x 150-8.8
64 Nut ISO 7040 M20-8
104 Horizontal Bearing VRB
105 Filler Plate VRB

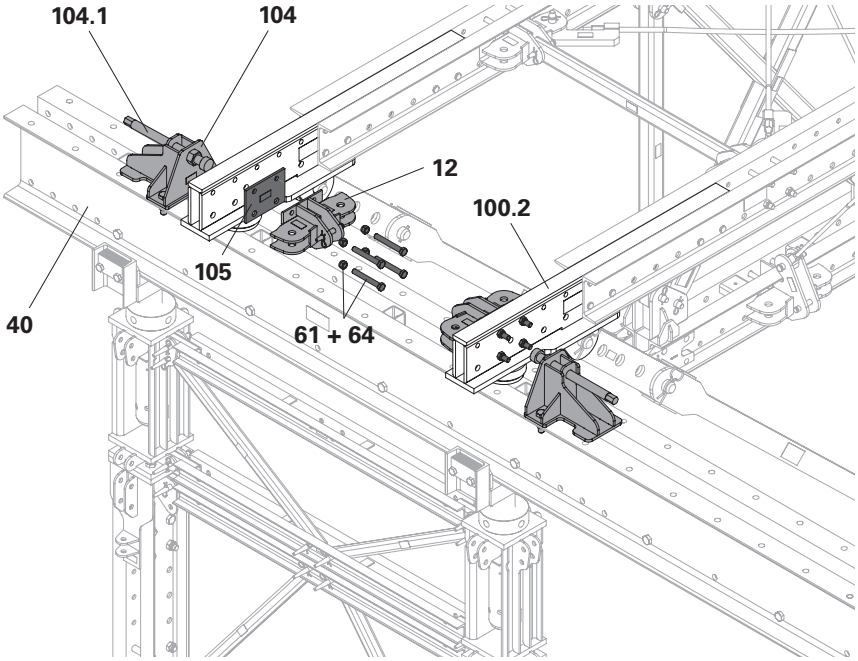


Fig. H1.09

Preparing the telescopic box

1. Screw Bracing Shoe VRB (**12**) and Filler Plate VRB (**105**) onto the assembly position of the telescopic box (**100.2**) with bolt ISO 4014 M20 x 150-8.8 (**61**) and nut ISO 7040 M20-8 (**64**). (Fig. H1.09)

Fitting the horizontal bearing

1. Turn the threaded rod (**104.1**) of Horizontal Bearing VRB (**104**) all the way back.
2. Place the Horizontal Bearing VRB (**104**) at the assembly position of the main beam (**40**) and attach it to the main beam (**40**) with the assembly materials provided.
   Only hand-tighten the nut!

(Fig. H1.09)

H1 Fitting support type I

Fitting the bracing posts

Components

15 Bracing Post 1.50 m VRB
50 Cotter pin 4/1
53 Filler pin Ø 21 x 105 VRB

1. Attach a bracing post (**15**) between the bracing connectors (**12**) using filler pins (**53**) and secure with cotter pins (**50**).

(Fig. H1.10)

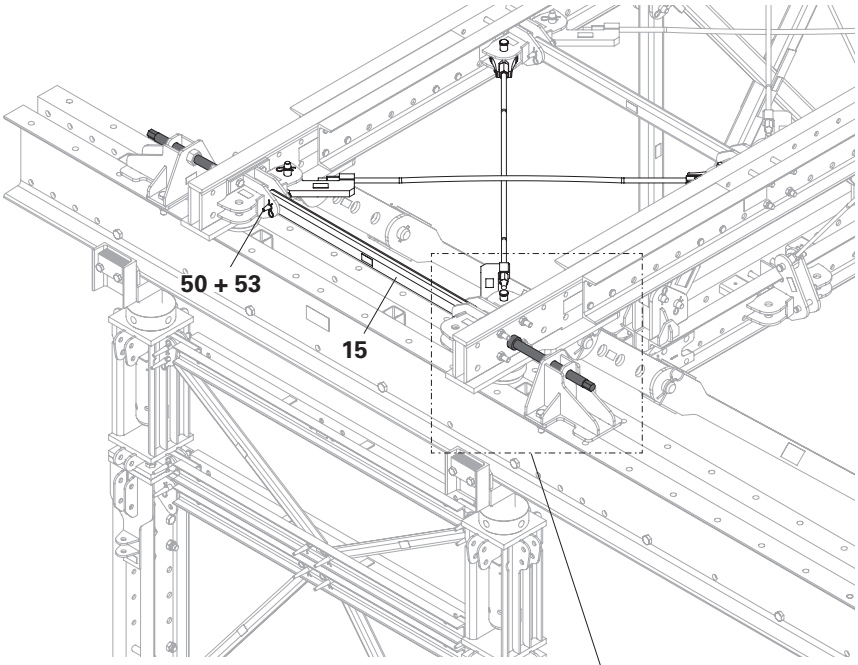


Fig. H1.10

Fitting the horizontal bracing

Components

19 Eye Nut DW 20 VRB
20 Articulated Spanner DW 20 VRB
21 Tie Rod DW 20, special length
50 Cotter pin 4/1
57 Filler pin Ø 30 VRB
63 Hex Nut DW 20 AF 36/60

1. To fit the horizontal bracing, see "Fitting the horizontal bracing" on page 38.

Adjusting the horizontal bracing

1. Spindle out the threaded rod (**104.1**) from Horizontal Bearing VRB until the head of the threaded rod rests on the telescopic box (**100.2**) without any play.
2. Secure the threaded rod (**104.1**) with a lock nut (**104.2**).

(Fig. H1.10a)

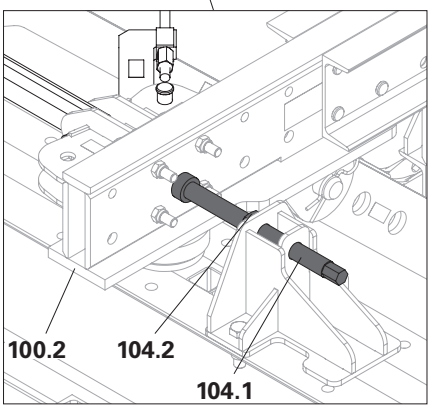


Fig. H1.10a

The thread of threaded rod (**104.1**) must be free of grease.

H1 Fitting support type I

Alternative assembly process using Heavy Duty Spindle SLS
Use a Heavy Duty Spindle SLS 100/180 for the assembly process instead of a Bracing Post 1.50 m VRB. Assembly of the Filler Plate VRB is not required.

Components

12 Bracing Shoe VRB
25 Heavy Duty Spindle SLS 100/180
61 Bolt ISO 4014 M20 x 150-8.8
64 Nut ISO 7040 M20-8

Assembly
1. Screw Bracing Shoe VRB (**12**) onto the assembly position of the telescopic box (**100.2**) with bolt ISO 4014 M20 x 150-8.8 (**61**) and nut ISO 7040 M20-8 (**64**).
2. Adjust Heavy Duty Spindle SLS 100/180 (**25**) to length.
3. Bolt the Heavy Duty Spindle SLS 100/180 (**25**) to the bracing connectors (**12**) and secure with cotter pin.

(Fig. H1.11)

The work steps for
- Fitting the horizontal bearing
- Fitting the horizontal bracing
- Adjusting the horizontal bracing

should be carried out as described.

Figures H1.12 show the spindle travel of Horizontal Bearing VRB.

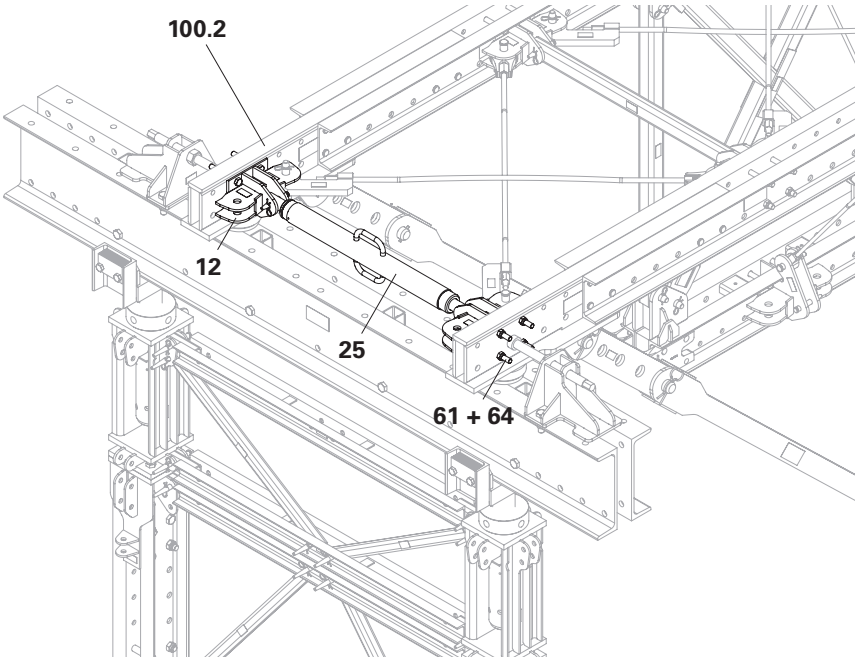


Fig. H1.11

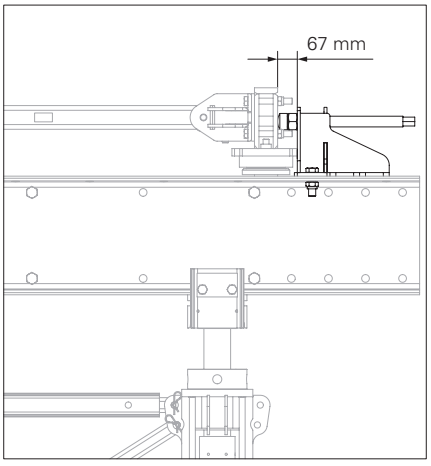


Fig. H1.12a

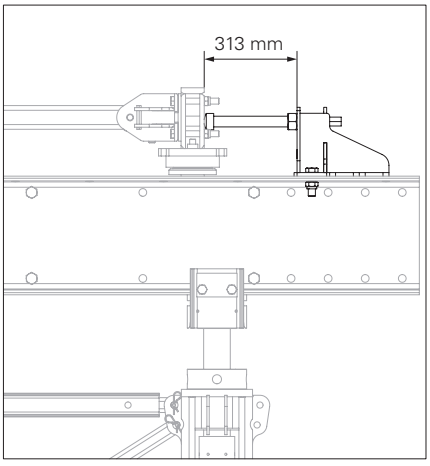


Fig. H1.12b

Fitting the bracing connectors

Note

The spacing of the bracing connectors must not exceed 1.50 m.

Components

12 Bracing Shoe VRB
13 Vertical Bracing Shoe VRB
61 Bolt ISO 4014 M20 x 150-8.8
64 Nut ISO 7040 M20-8

Assembly

1. Screw on the Vertical Bracing Shoe VRB (**13**) centrally above the first intersection point of the coupling frame.
   To fit the bracing connectors, see "Fitting the bracing connectors" on page 33.
2. Screw on all other bracing connectors as shown in Figure H2.01.
   Note the extension length of the telescopic box!

(Fig. H2.01)

Extension 0 cm

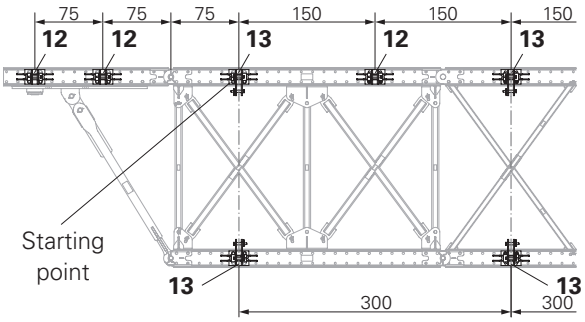


Fig. H2.01a

Extension 25 cm

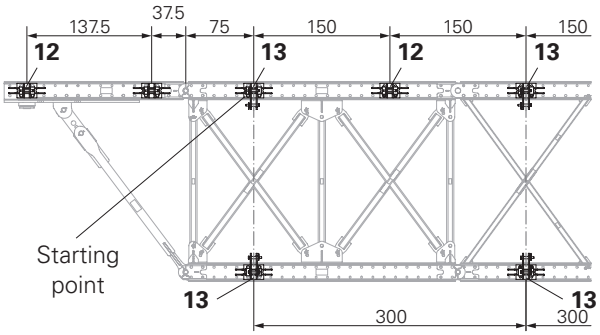


Fig. H2.01b

Extension 50 cm

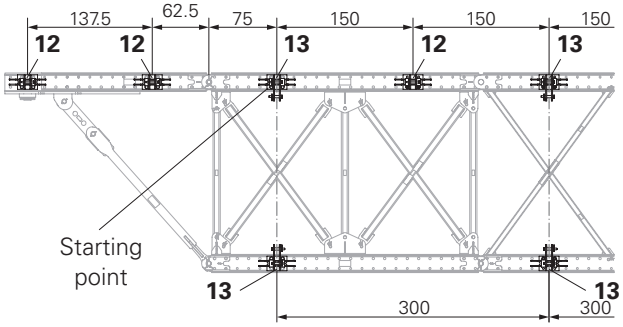


Fig. H2.01c

Extension 75 cm

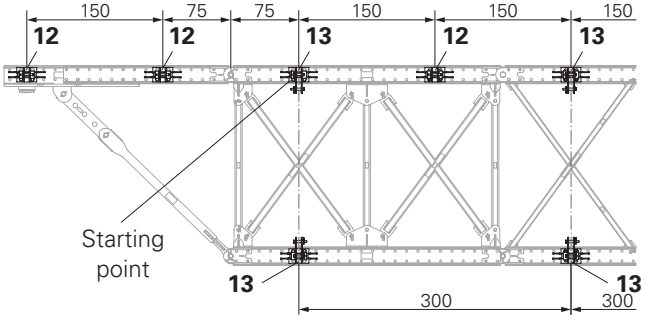


Fig. H2.01d

General information

If higher project-specific compression forces occur, standard frames are replaced by coupling frames with pressure post starters.
Installing an intermediate support and transferring loads in the case of cantilevers are other typical applications.

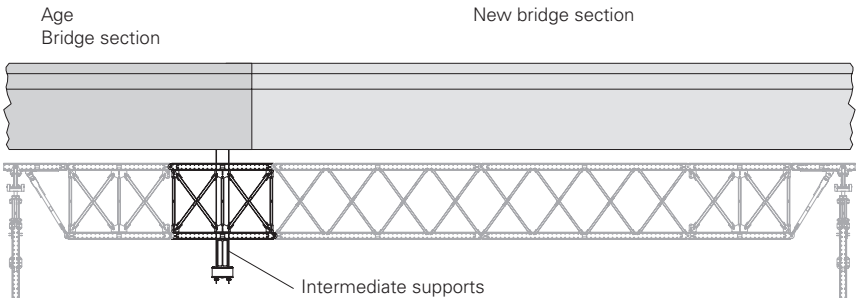


Fig. H3.01

Note

Coupling frames with pressure posts are required for:
- Higher compression forces.
- Intermediate supports.
- Cantilevers.

Intermediate supports

When constructing superstructures in sections, e.g. bridges, an additional intermediate support is installed. This results in shorter spans and the heavy-duty truss girder being able to transfer higher loads.
Figure H3.01 shows the combination involving the Bearing Frame VRB and Coupling Joint Frame 3.0 m VRB.
Figure H3.02 shows the combination involving the Bearing Frame VRB and Coupling Joint Frame 3M-2 VRB.

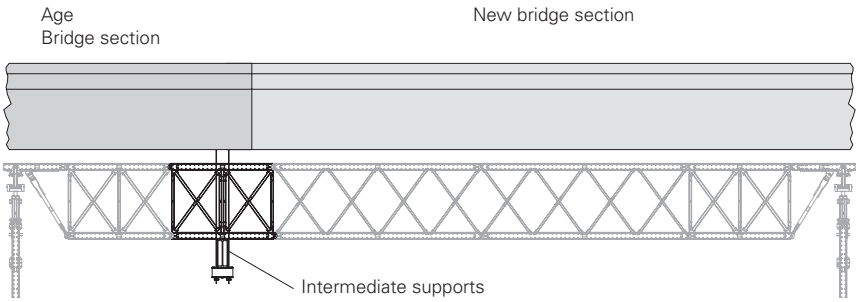
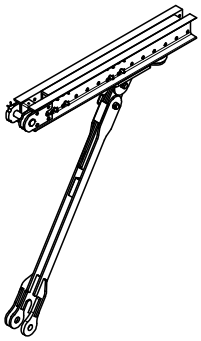
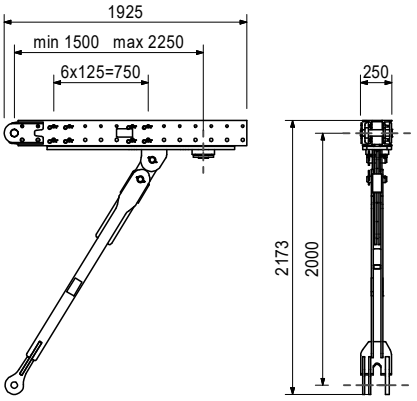


Fig. H3.02

Art no.	Weight [kg]	
125152	364.000	**BEARING FRAME VRB**

Functional dimension: 1.50 m - 2.25 m.
Frame for top chord support on the yoke beams.



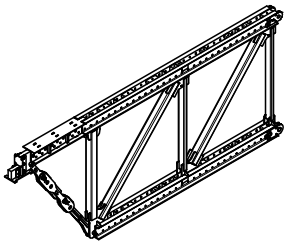


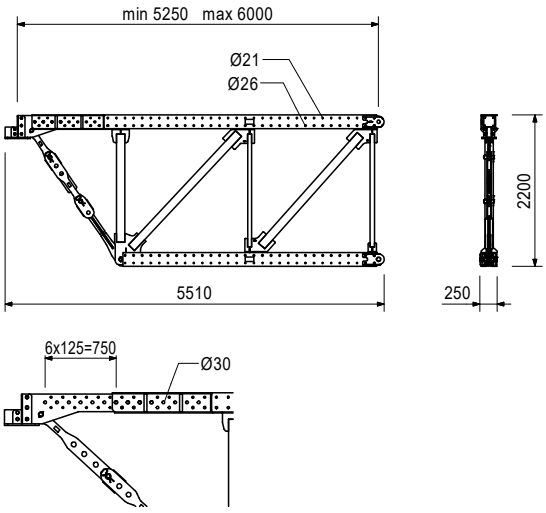
Consists of

8 pc 018060 Cotter Pin 4/1, galv.
4 pc 125345 Fitting Pin Ø 26 x 105, VRB
4 pc 125349 Fitting Pin Ø 21 x 105, VRB
1 pc 125355 Bolt Ø 50 x 250, VRB
1 pc 125356 Cotter PIN 6/1 Ø 50, VRB

Art no.	Weight [kg]	
128086	1,120.000	**BEARING FRAME 5.25M VRB**

Functional dimension: 5.25 m - 6.00 m.
Frame for the upper chord support on the Main Beam.



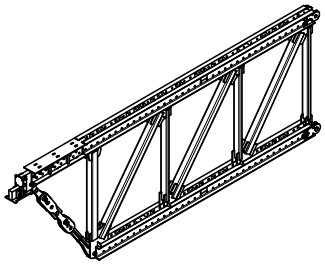


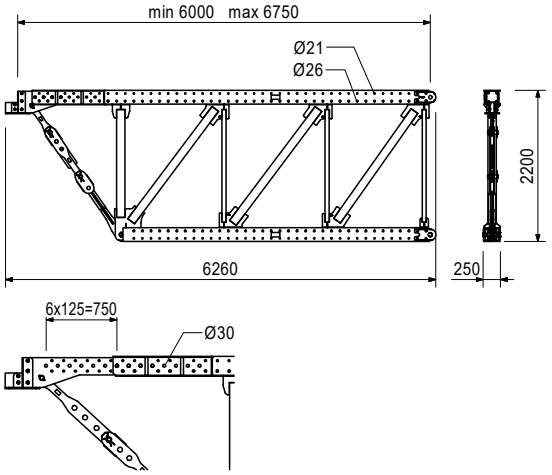
Consists of

4 pc 018060 Cotter Pin 4/1, galv.
4 pc 113626 Bolt Ø 50 x 155
4 pc 125347 Fitting Pin Ø 30, VRB
1 pc 125355 Bolt Ø 50 x 250, VRB
4 pc 125356 Cotter PIN 6/1 Ø 50, VRB

Art no.	Weight [kg]	
126578	1,300.000	**BEARING FRAME 6M VRB**

Functional dimension: 6.00 m - 6.75 m.
Frame for the upper chord support on the Main Beam.



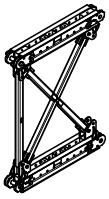


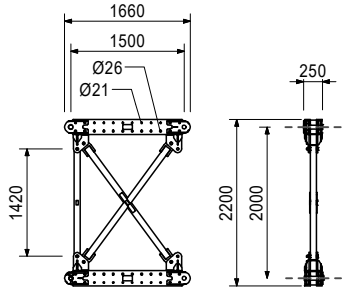
Consists of

4 pc 018060 Cotter Pin 4/1, galv.
4 pc 113626 Bolt Ø 50 x 155
4 pc 125347 Fitting Pin Ø 30, VRB
1 pc 125355 Bolt Ø 50 x 250, VRB
4 pc 125356 Cotter PIN 6/1 Ø 50, VRB

Art no.	Weight [kg]	
125153	401.000	**COUPLING JOINT FRAME 1,5M VRB**

Frame for high shear forces, for bottom chord support of coupling joint suspensions.





Accessory (not included)

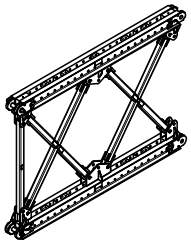
125413	28.000	**PRESSURE POLE STARTER VRB**

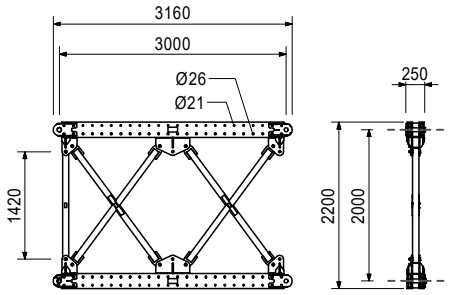
Consists of

4 pc 018060 Cotter Pin 4/1, galv.
4 pc 125347 Fitting Pin Ø 30, VRB
2 pc 125355 Bolt Ø 50 x 250, VRB
2 pc 125356 Cotter PIN 6/1 Ø 50, VRB
2 pc 125405 Chord 1.5 m VRB, coat
1 pc 125409 Diagonal Bracing 1.5 m VRB
1 pc 125413 Pressure Pole Starter VRB

Art no.	Weight [kg]	
125154	675.000	**COUPLING JOINT FRAME 3,0M VRB**

Frame for high shear forces, for bottom chord support of coupling joint suspensions.





Accessory (not included)

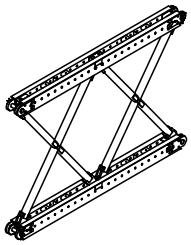
125413	28.000	**PRESSURE POLE STARTER VRB**

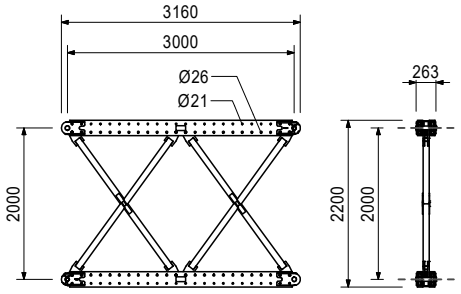
Consists of

8 pc 018060 Cotter Pin 4/1, galv.
8 pc 125347 Fitting Pin Ø 30, VRB
2 pc 125355 Bolt Ø 50 x 250, VRB
2 pc 125356 Cotter PIN 6/1 Ø 50, VRB
2 pc 125409 Diagonal Bracing 1.5 m VRB
1 pc 125413 Pressure Pole Starter VRB
2 pc 125419 Chord 3,0 m, coat

Art no.	Weight [kg]	
133727	616.000	**COUPLING JOINT FRAME 3M -2 VRB**

Frame for high shear forces, for bottom chord support of coupling joint suspensions.





Accessory (not included)

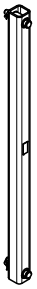
133732	43.700	**PRESSURE POLE STARTER -2**

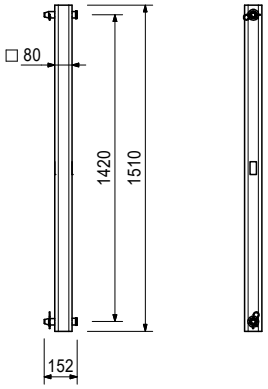
Consists of

8 pc 018060 Cotter Pin 4/1, galv.
4 pc 125345 Fitting Pin Ø 26 x 105, VRB
4 pc 125351 Fitting Pin Ø 26 SR, VRB
4 pc 125355 Bolt Ø 50 x 250, VRB
4 pc 125356 Cotter PIN 6/1 Ø 50, VRB
2 pc 133719 GURT 3M BESCH
2 pc 133726 DIAGONALVERBAND 1,5M BESCH

Art no.	Weight [kg]	
125413	28.000	**PRESSURE POLE STARTER VRB**

Additional pressure pole for the assembly in Coupling Joint Frame 1.5 m VRB and Coupling Joint Frame 3.0 m VRB.





Accessory (not included)

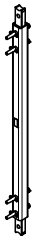
125153	401.000	**COUPLING JOINT FRAME 1,5M VRB**
125154	675.000	**COUPLING JOINT FRAME 3,0M VRB**

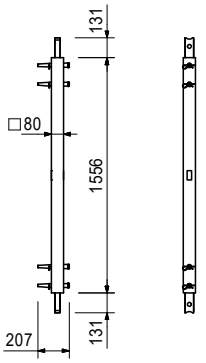
Consists of

2 pc 018060 Cotter Pin 4/1, galv.
2 pc 125347 Fitting Pin Ø 30, VRB

Art no.	Weight [kg]	
133732	43.700	**PRESSURE POLE STARTER -2**

Additional pressure pole for the assembly in Coupling Joint Frame 1.5 m VRB and Coupling Joint Frame 3.0 m VRB.





Accessory (not included)

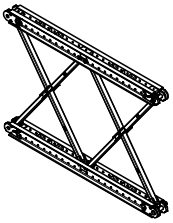
133727	616.000	**COUPLING JOINT FRAME 3M -2 VRB**

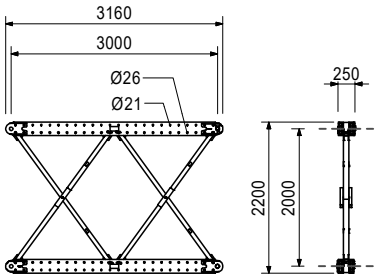
Consists of

4 pc 018060 Cotter Pin 4/1, galv.
4 pc 111567 Fitting Pin Ø 26 x 120
2 pc 133730 DRUCKKLOTZ BESCH
1 pc 133731 DRUCKPFOSTEN BESCH

Art no.	Weight [kg]	
127285	501.000	**STANDARD FRAME 3M VRB**

Frame for high bending moment loads.



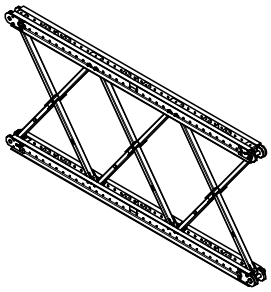


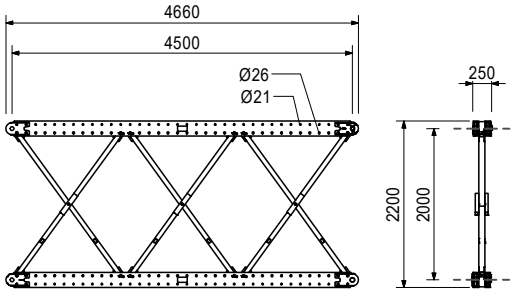
Consists of

8 pc 018060 Cotter Pin 4/1, galv.
4 pc 125345 Fitting Pin Ø 26 x 105, VRB
4 pc 125351 Fitting Pin Ø 26 SR, VRB
2 pc 125355 Bolt Ø 50 x 250, VRB
2 pc 125356 Cotter PIN 6/1 Ø 50, VRB
2 pc 125371 Diagonal Pole Interrupted VRB
2 pc 125381 Diagonal Pole Continuous VRB
2 pc 127284 Chord 3,0 m, coat

Art no.	Weight [kg]	
125155	708.000	**STANDARD FRAME 4,5M VRB**

Frame for high bending moment loads.





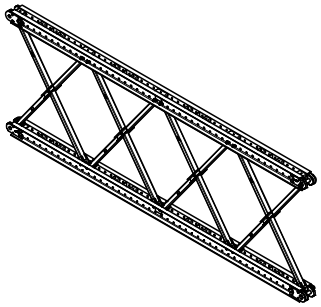
Consists of

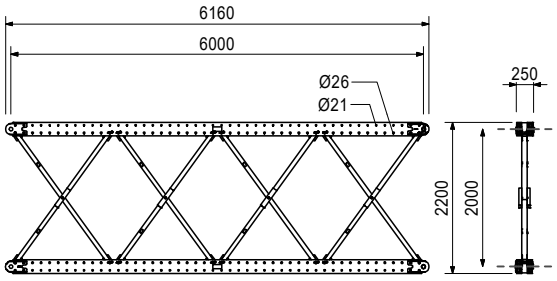
12 pc 018060 Cotter Pin 4/1, galv.
8 pc 125345 Fitting Pin Ø 26 x 105, VRB
4 pc 125351 Fitting Pin Ø 26 SR, VRB
2 pc 125355 Bolt Ø 50 x 250, VRB
2 pc 125356 Cotter PIN 6/1 Ø 50, VRB
3 pc 125371 Diagonal Pole Interrupted VRB
2 pc 125379 Chord 4.5 m VRB, coat
3 pc 125381 Diagonal Pole Continuous VRB

VRB Heavy-Duty Truss Girder

Art no.	Weight [kg]	
125156	915.000	**STANDARD FRAME 6,0M VRB**

Frame for high bending moment loads.



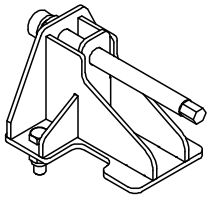


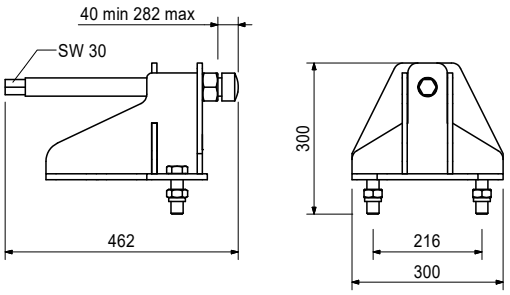
Consists of

16 pc 018060 Cotter Pin 4/1, galv.
12 pc 125345 Fitting Pin Ø 26 x 105, VRB
4 pc 125351 Fitting Pin Ø 26 SR, VRB
2 pc 125355 Bolt Ø 50 x 250, VRB
2 pc 125356 Cotter PIN 6/1 Ø 50, VRB
4 pc 125371 Diagonal Pole Interrupted VRB
4 pc 125381 Diagonal Pole Continuous VRB
2 pc 125387 Chord 6 m, coat

Art no.	Weight [kg]	
126173	23.800	**HORIZONTAL BEARING VRB**

For deriving horizontal forces of the entire system into the Main Beam.



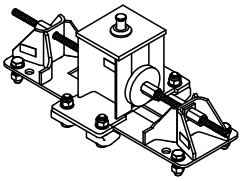


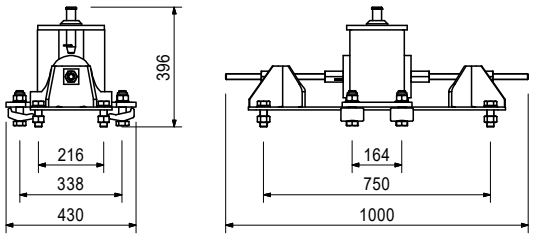
Consists of

2 pc 105032 Nut ISO 7040 M24-8, galv.
2 pc 105416 Bolt ISO 4014 M24 x 80-8.8, galv.
1 pc 126166 GEWINDESTANGE M36 L=450MM VZ

Art no.	Weight [kg]	
131852	69.500	**HORIZONTAL BEARING-2 VRB**

For deriving horizontal forces of the entire system into the Main Beam.





Accessory (not included)

131031	10.100	**CROSS FALL ADAPTOR VRB**

Consists of

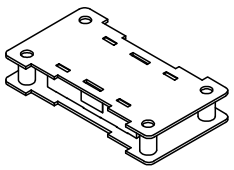
1 pc 022230 Cotter Pin 5/1, galv.
4 pc 022250 Nut ISO 4032 M24-8, galv.
1 pc 030641 Tie Rod DW 20, l = 1.00 m
4 pc 106803 Nuts ISO 7042 M24-10, galv.
2 pc 114082 Counterplate RCS DW 20
4 pc 114440 Hex. Nut DW 20 SW 36/60, galv.
1 pc 125347 Fitting Pin Ø 30, VRB
4 pc 127024 CLAMPING PLATE M24 NOVA GRIP
8 pc 132362 WASHER ISO7090-24-200HV-VZ
4 pc 132382 Bolt ISO 4017 M24 x 70-8.8, galv.
4 pc 135465 Hex Bolt ISO 4014 M24 x 100-10.9

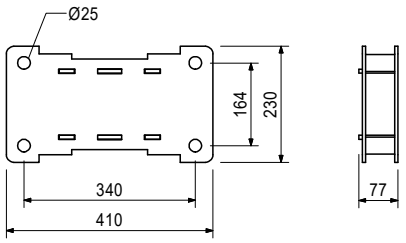
Art no.	Weight [kg]	
131031	10.100	**CROSS FALL ADAPTOR VRB**

For the height compensation at the Horizontal Bearing-2 VRB when using Cross Fall Bearing VRB.

Notes

For fixation to the horizontal Bearing-2 VRB - Art.no.: 131852 replacement of bolts is needed, see accessories. Clamping plates and nuts can be used.



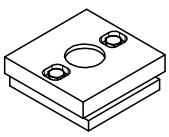


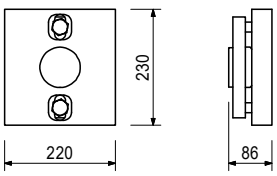
Accessory (not included)

135464	0.670	**HEX BOLT ISO4014-M24X180-10.9**

Art no.	Weight [kg]	
127136	25.200	**CROSS FALL BEARING VRB**

For supporting the Bearing Frames on the yoke when the Main Beam is inclined transversely > 0% - 7%.



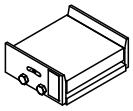


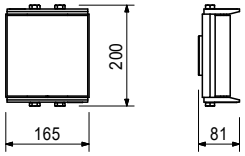
Consists of

2 pc 111137 Bolt ISO4017 M20 x 55-8.8, galv.

Art no.	Weight [kg]	
127143	12.200	**LONGITUDINAL BEARING VRB**

For supporting the Bearing Frames on the Main Beam from 0% - 7% longitudinal inclination.





Accessory (not included)

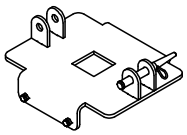
128019	13.500	**CENTERING PLATE HDT - VRB**

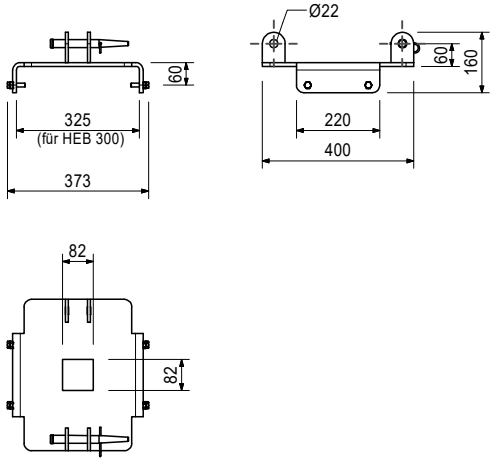
Consists of

4 pc 710266 Bolt ISO 4017 M12 x 25-8.8, galv.
2 pc 710417 Sleeve ISO 8752-06, 0 x 025,galv.

Art no.	Weight [kg]	
128019	13.500	**CENTERING PLATE HDT - VRB**

For centring the Longitudinal Bearing VRB on the Main Beam and for pulling out the Truss Girder from the side during disassembly.



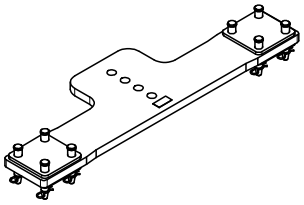


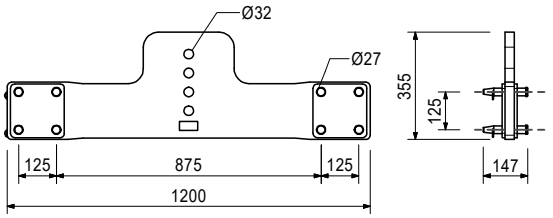
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 104031 Fitting Pin Ø 21 x 120
4 pc 710328 Hex.Bolt ISO 4017 M10x40-8.8, galv.

Art no.	Weight [kg]	
128091	75.900	**BRACING TRAVERSE 150 VRB**

For the connection of the truss package (1.5 m) at the Horizontal Bearing-2.





Accessory (not included)

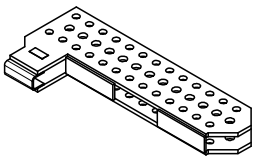
128098	8.100	**BRACING SPINDLE VRB**
128103	45.000	**BRACING TRAVERSE CONNECTOR VRB**
131852	69.500	**HORIZONTAL BEARING-2 VRB**

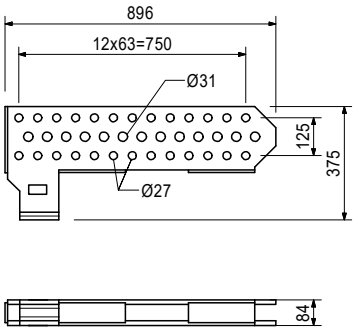
Consists of

8 pc 018060 Cotter Pin 4/1, galv.
8 pc 125345 Fitting Pin Ø 26 x 105, VRB

Art no.	Weight [kg]	
128103	45.000	**BRACING TRAVERSE CONNECTOR VRB**

For the connection of the truss package (1.5 m) at the Horizontal Bearing-2.



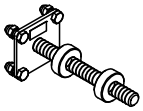


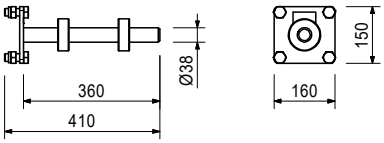
Accessory (not included)

128091	75.900	**BRACING TRAVERSE 150 VRB**
128098	8.100	**BRACING SPINDLE VRB**
131852	69.500	**HORIZONTAL BEARING-2 VRB**

Art no.	Weight [kg]	
128098	8.100	**BRACING SPINDLE VRB**

For the connection of the truss package (1.5 m) at the Horizontal Bearing-2.





Accessory (not included)

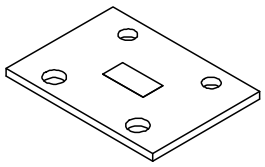
128091	75.900	**BRACING TRAVERSE 150 VRB**
128103	45.000	**BRACING TRAVERSE CONNECTOR VRB**
131852	69.500	**HORIZONTAL BEARING-2 VRB**

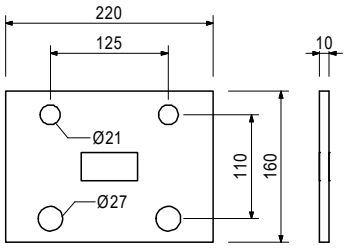
Consists of

2 pc 128093 TR38 Nut Sher
4 pc 780357 Bolt ISO 4017 M20 x 50-8.8, galv.
4 pc 781053 Nut ISO 7040 M20-8, galv.

Art no.	Weight [kg]	
126402	2.630	**FILLER PLATE VRB**

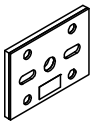
For mounting the dressing connections in the VRB telescopic box support frame (type 1).

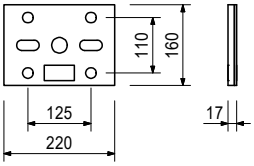




Art no.	Weight [kg]	
128025	4.340	**FILLER PLATE TELESCOP. BOX VRB**

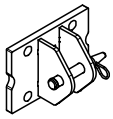
For mounting the dressing connections in the VRB telescopic box support frame (type 2).

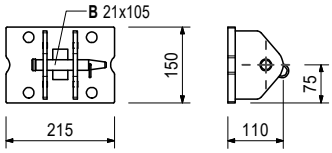




Art no.	Weight [kg]	
125732	5.190	**COUPLING SHOE VRB**

Connection for coupling single trusses to the truss package.





Accessory (not included)

711084	0.420	**HEX BOLT ISO4014-M20X150-8.8VZ**
781053	0.065	**HEX NUT ISO7040-M20-8-VZ**

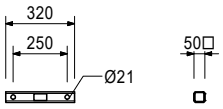
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 125349 Fitting Pin Ø 21 x 105, VRB

Art no.	Weight [kg]	
125746	1.700	**COUPLING POST 0,5M VRB**

Post for coupling single trusses with 0.5 m axis spacing.



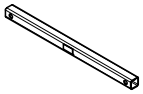


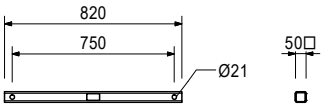
Accessory (not included)

125732	5.190	**COUPLING SHOE VRB**

Art no.	Weight [kg]	
125756	4.430	**COUPLING POST 1,0M VRB**

Post for coupling single trusses with 1.0 m axis spacing.



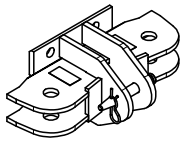


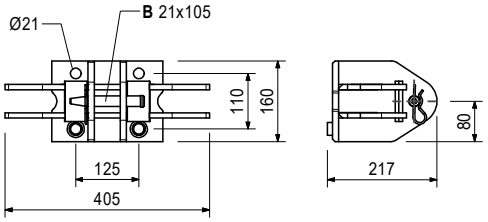
Accessory (not included)

125732	5.190	**COUPLING SHOE VRB**

Art no.	Weight [kg]	
125764	15.000	**BRACING SHOE VRB**

Connection for the horizontal bracing on the top chord of the truss package.





Accessory (not included)

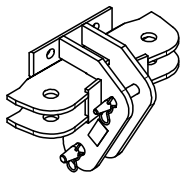
126402	2.630	**FILLER PLATE VRB**
128025	4.340	**FILLER PLATE TELESCOP. BOX VRB**
711084	0.420	**HEX BOLT ISO4014-M20X150-8.8VZ**
781053	0.065	**HEX NUT ISO7040-M20-8-VZ**

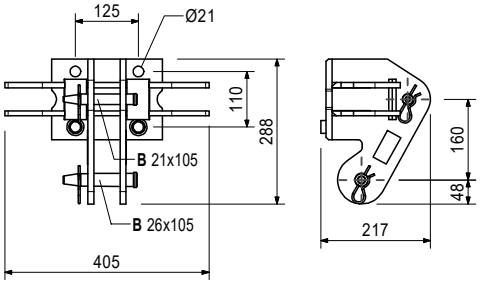
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 125349 Fitting Pin Ø 21 x 105, VRB

Art no.	Weight [kg]	
125770	17.900	**VERTICAL BRACING SHOE VRB**

Connection for the horizontal and vertical bracing on the upper and lower chord of the truss package.





Accessory (not included)

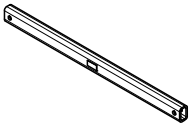
711084	0.420	**HEX BOLT ISO4014-M20X150-8.8VZ**
781053	0.065	**HEX NUT ISO7040-M20-8-VZ**

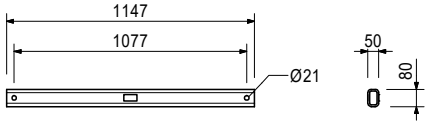
Consists of

2 pc 018060 Cotter Pin 4/1, galv.
1 pc 125345 Fitting Pin Ø 26 x 105, VRB
1 pc 125349 Fitting Pin Ø 21 x 105, VRB

Art no.	Weight [kg]	
125734	14.900	**BRACING POST 1,50M VRB**

Bracing post for a truss package with 1.5 m axis spacing.



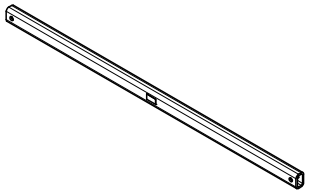


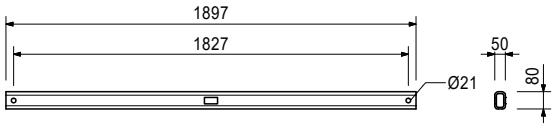
Accessory (not included)

125764	15.000	**BRACING SHOE VRB**
125770	17.900	**VERTICAL BRACING SHOE VRB**

Art no.	Weight [kg]	
125736	24.600	**BRACING POST 2,25M VRB**

Bracing post for a truss package with 2.25 m axis spacing.



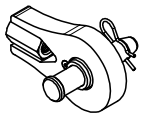


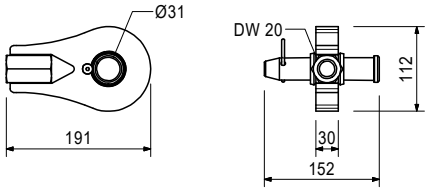
Accessory (not included)

125764	15.000	**BRACING SHOE VRB**
125770	17.900	**VERTICAL BRACING SHOE VRB**

Art no.	Weight [kg]	
125727	4.020	**EYE NUT DW20 VRB**

Articulated connection component for
DW20 - bracing.





Accessory (not included)

030700	2.560	**TIE ROD DW20 SPEC LENGTH**

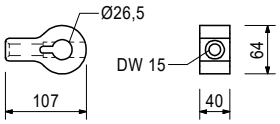
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 125347 Fitting Pin Ø 30, VRB

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

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



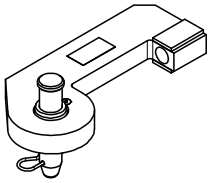


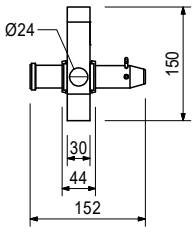
Accessory (not included)

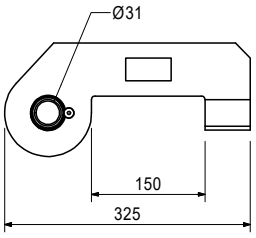
018060	0.014	**COTTER PIN 4/1, GALV.**
022230	0.033	**COTTER PIN 5/1, GALV.**
104031	0.462	**FILLER PIN D=21X120**
111567	0.729	**PIN D=26X120**

Art no.	Weight [kg]	
125741	7.870	**ARTICULATED SPANNER DW20 VRB**

Articulated clamping component for DW20 - bracing in the upper chord.







Accessory (not included)

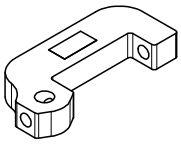
030700	2.560	**TIE ROD DW20 SPEC LENGTH**
030580	0.371	**HEX NUT SW 36/60 WELDABLE DW20**

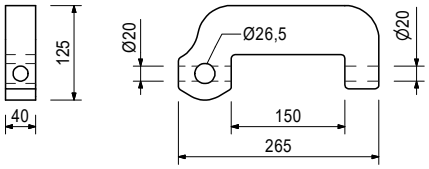
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 125347 Fitting Pin Ø 30, VRB

Art no.	Weight [kg]	
115375	6.100	**ARTICULATED SPANNER RCS DW**

For tensioning and as an articulated connection to the Climbing Rail RCS, Steel Waler SRU or Bracing Shoe RCS for bracing with DW 15.





Accessory (not included)

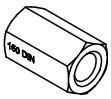
018060	0.014	**COTTER PIN 4/1, GALV.**
022230	0.033	**COTTER PIN 5/1, GALV.**
030030	1.440	**TIE ROD DW15 SPEC LENGTH**
030070	0.222	**HEX NUT DW15 SW 30/50, GALV.**
104031	0.462	**FILLER PIN D=21X120**
111567	0.729	**PIN D=26X120**

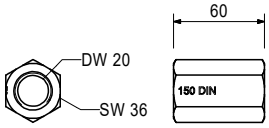
Art no.	Weight [kg]	
030580	0.371	**HEX NUT SW 36/60 WELDABLE DW20**

For anchoring with Tie Rod DW 20 and B 20.

Notes

Weldable!
Permissible load 150 kN.





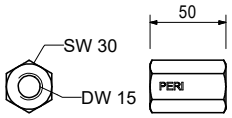
Art no.	Weight [kg]	
030070	0.222	**HEX NUT DW15 SW 30/50, GALV.**

For anchoring with Tie Rod DW 15 and B 15.

Notes

Weldable!

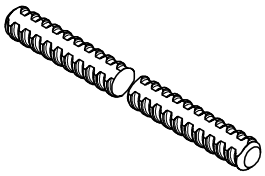




Art no.	Weight [kg]	
		Tie Rod DW 20
030800	0.000	**DYW.TIE ROD DW20 CUTTING COST**
030700	2.560	**TIE ROD DW20 SPEC LENGTH**

Notes

Non-weldable! Take official Approval into consideration!
Permissible tension force 150 kN.

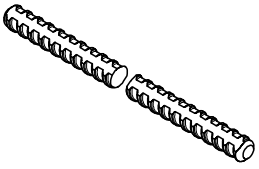




Art no.	Weight [kg]	
		Tie Rod DW 15
030050	0.000	**TIE ROD DW15 CUTTING COST**
030030	1.440	**TIE ROD DW15 SPEC LENGTH**

Notes

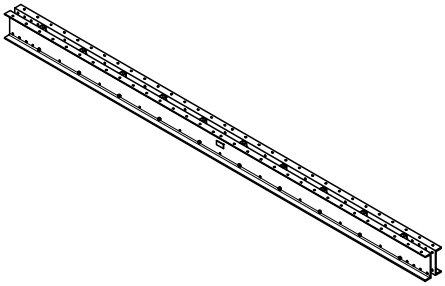
Non-weldable! Observe the permissions!
Permissible tension force 90 kN.

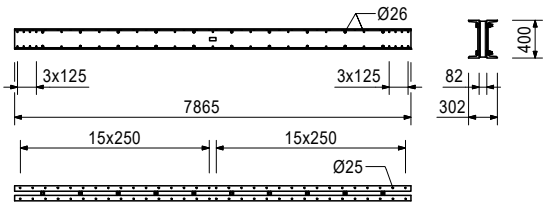




Art no.	Weight [kg]	
126065	1,170.000	**MAIN BEAM 800 VRB**

Main Beam for supporting Truss Girder VRB compatible with PERI VST Heavy Duty Shoring Tower.



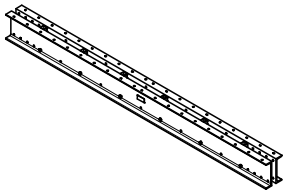


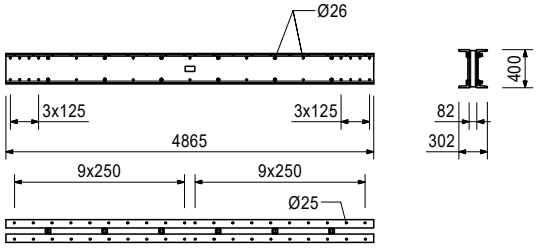
Accessory (not included)

126050	78.400	**MAIN BEAM CONNECTOR VRB**

Art no.	Weight [kg]	
126062	725.000	**MAIN BEAM 500 VRB**

Main Beam for supporting Truss Girder VRB compatible with PERI VST Heavy Duty Shoring Tower.



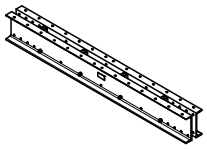


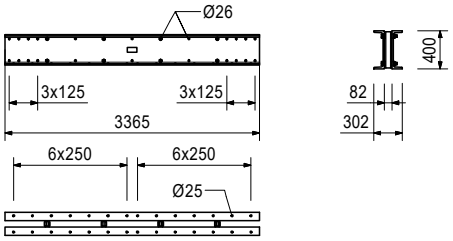
Accessory (not included)

126050	78.400	**MAIN BEAM CONNECTOR VRB**

Art no.	Weight [kg]	
126059	500.000	**MAIN BEAM 350 VRB**

Main Beam for supporting Truss Girder VRB compatible with PERI VST Heavy Duty Shoring Tower.



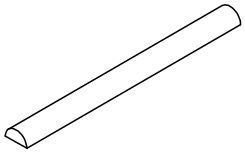


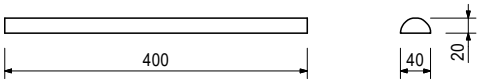
Accessory (not included)

126050	78.400	**MAIN BEAM CONNECTOR VRB**

Art no.	Weight [kg]	
022025	1.970	**CENTERING BAR HD 40X20X400 GAL**

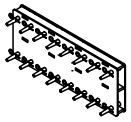
For centering crossbeams on the Main Beam HDT.

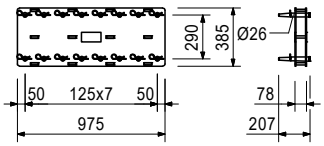




Art no.	Weight [kg]	
126050	78.400	**MAIN BEAM CONNECTOR VRB**

For the connection of Main Beams VRB.





Accessory (not included)

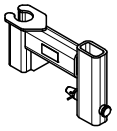
126059	500.000	**MAIN BEAM 350 VRB**
126062	725.000	**MAIN BEAM 500 VRB**
126065	1170.000	**MAIN BEAM 800 VRB**

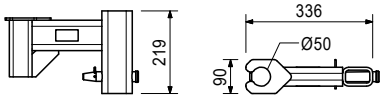
Consists of

16 pc 022230 Cotter Pin 5/1, galv.
16 pc 111567 Fitting Pin Ø 26 x 120

Art no.	Weight [kg]	
126345	7.390	**BRACKET CONNECTOR UP- VRB**

For connecting a PERI UP Bracket Scaffold to a truss girder.



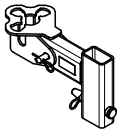


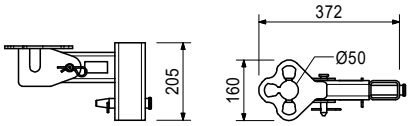
Consists of

1 pc 018060 Cotter Pin 4/1, galv.
1 pc 125345 Fitting Pin Ø 26 x 105, VRB

Art no.	Weight [kg]	
126355	5.610	**CONNECTOR UP- VRB**

For connecting a PERI UP Scaffold between two truss girders.





Consists of

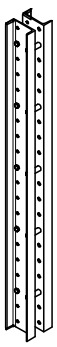
1 pc 018050 Pin Ø 16 x 65/86, galv.
2 pc 018060 Cotter Pin 4/1, galv.
1 pc 125345 Fitting Pin Ø 26 x 105, VRB

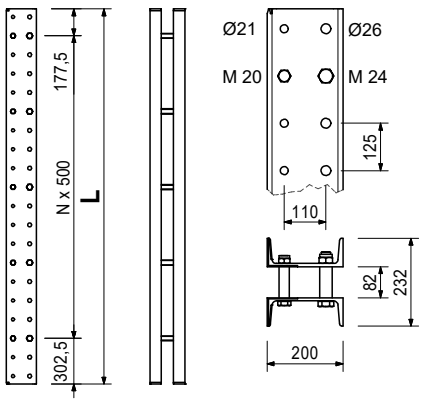
Art no.	Weight [kg]		L [mm]
		Climbing Rails RCS	
114166	78.200	**CLIMBING RAIL RCS 148**	1480
109469	130.000	**CLIMBING RAIL RCS 248**	2480
112102	156.000	**CLIMBING RAIL RCS 298**	2980
109470	182.000	**CLIMBING RAIL RCS 348**	3480
112141	209.000	**CLIMBING RAIL RCS 398**	3980
109471	262.000	**CLIMBING 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 M20-82 and M24-82.

Notes

2 x U200 DIN 1026



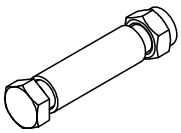


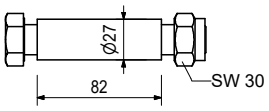
Accessory (not included)

136109	0.472	**PIN SET RCS MAX**

Art no.	Weight [kg]	
110022	0.491	**SPACER M20-82**

Spacer for Climbing Rails RCS.



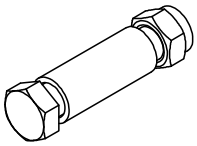


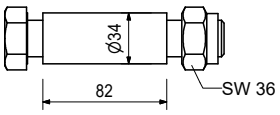
Consists of

1 pc 104477 Bolt ISO 4014 M20 x 120-8.8, galv.
1 pc 130341 Nut ISO 7042 M20-8, galv.

Art no.	Weight [kg]	
110023	0.910	**SPACER M24-82**

Spacer for Climbing Rails RCS.



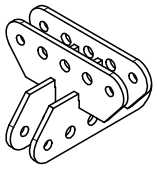


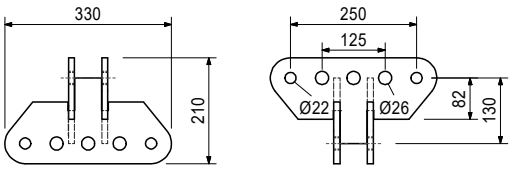
Consists of

1 pc 109612 Bolt ISO 4014 M24 x 130-8.8, galv.
1 pc 130342 Nut ISO 7042 M24-8, galv.

Art no.	Weight [kg]	
123509	13.400	**CROSS CONNECTOR RCS**

For crosswise connection of Climbing Rails RCS.





Accessory (not included)

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

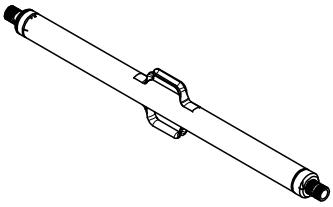
VRB Heavy-Duty Truss Girder

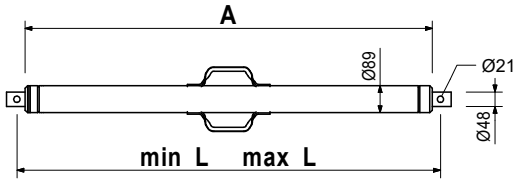
Art no.	Weight [kg]		min. L [mm]	max. L [mm]
		Heavy Duty Spindles SLS		
111035	12.000	**HEAVY DUTY SPINDLE SLS 40/ 80**	400	800
101773	15.300	**HEAVY DUTY SPINDLE SLS 80/140**	800	1400
101774	18.300	**HEAVY DUTY SPINDLE SLS 100/180**	1000	1800
101776	24.900	**HEAVY DUTY SPINDLE SLS 140/240**	1400	2400
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.

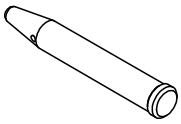


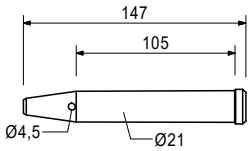


Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**
104031	0.462	**FILLER PIN D=21X120**
110477	3.990	**SPINDLE ADAPTOR SLS/RCS**

Art no.	Weight [kg]	
125349	0.351	**FITTING PIN D=21X105 VRB**



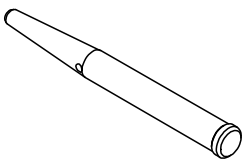


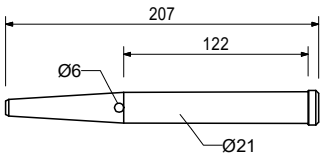
Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**

Art no.	Weight [kg]	
104031	0.462	**FILLER PIN D=21X120**

For different connections.

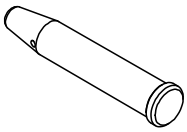


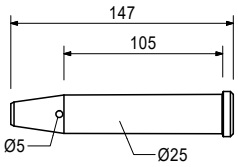


Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**

Art no.	Weight [kg]	
125345	0.548	**FITTING PIN D=26X105 VRB**



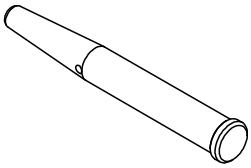


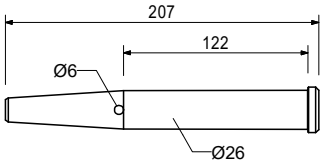
Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**

Art no.	Weight [kg]	
111567	0.729	**PIN D=26X120**

For different connections.

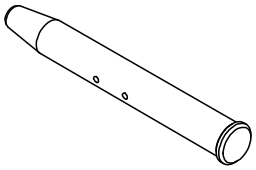


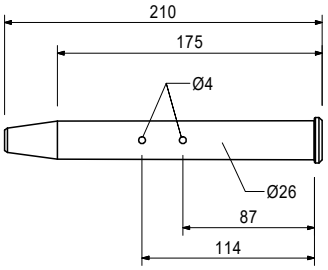


Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**

Art no.	Weight [kg]	
125351	0.795	**FITTING PIN D=26 SR VRB**

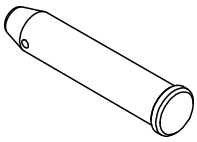


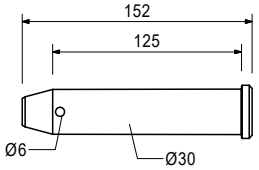


Accessory (not included)

018060	0.014	**COTTER PIN 4/1, GALV.**

Art no.	Weight [kg]	
125347	0.800	**FITTING PIN D=30 VRB**

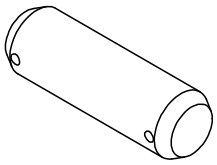


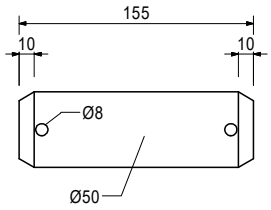


Accessory (not included)

022230	0.033	**COTTER PIN 5/1, GALV.**

Art no.	Weight [kg]	
113626	2.280	**BOLT D=50X155 COAT**



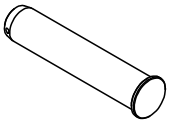


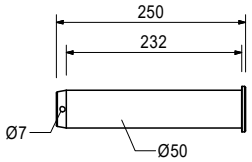
Accessory (not included)

125356	0.086	**COTTER PIN 6/1 D=50 VRB**

Art no.	Weight [kg]	
125355	3.850	**BOLT D=50 L=250 COAT**

For connecting the Truss Girder VRB-Frames.





Accessory (not included)

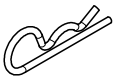
125356	0.086	**COTTER PIN 6/1 D=50 VRB**

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



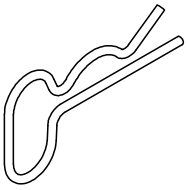


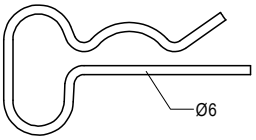
Art no.	Weight [kg]	
022230	0.033	**COTTER PIN 5/1, GALV.**



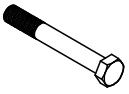


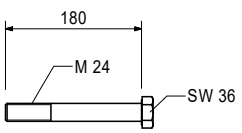
Art no.	Weight [kg]	
125356	0.086	**COTTER PIN 6/1 D=50 VRB**



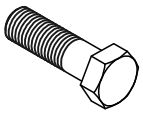


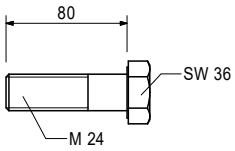
Art no.	Weight [kg]	
135464	0.670	**HEX BOLT ISO4014-M24X180-10.9**





Art no.	Weight [kg]		L [mm]
105416	0.360	**HEX BOLT ISO4014-M24X080-8.8-G**	80

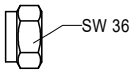




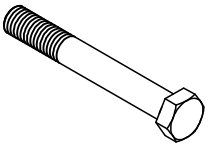
Art no.	Weight [kg]	
105032	0.070	**HEX NUT ISO7040-M24-8-GALV.**

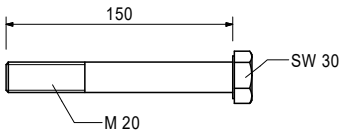
Self-locking.





Art no.	Weight [kg]		L [mm]
711084	0.420	**HEX BOLT ISO4014-M20X150-8.8VZ**	150





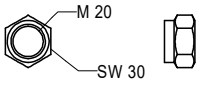
Accessory (not included)

781053	0.065	**HEX NUT ISO7040-M20-8-VZ**

Art no.	Weight [kg]	
781053	0.065	**HEX NUT ISO7040-M20-8-VZ**

Self-locking.



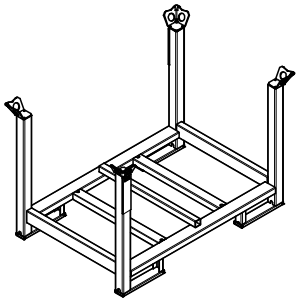


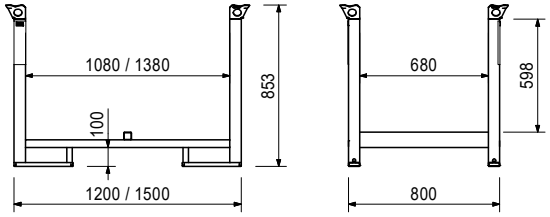
Art no.	Weight [kg]		L [mm]
103434	38.500	**PALLET RP 80X120/2, GALV.**	1200

For stacking and transportation of formwork and scaffolding components.

Notes

Follow Instructions for Use!
Permissible load-bearing capacity 1.5 t.



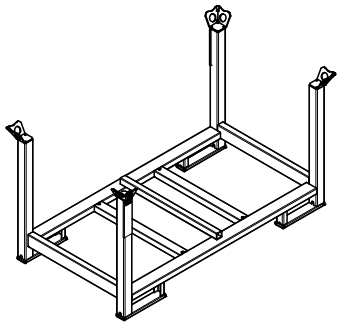


Art no.	Weight [kg]		L [mm]
103429	45.300	**PALLET RP 80X150/2, GALV.**	1500

For stacking and transporting formwork and scaffolding components.

Notes

Follow Instructions for use!

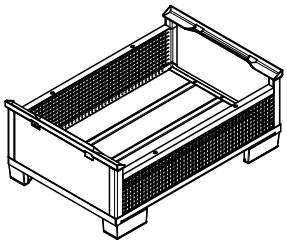


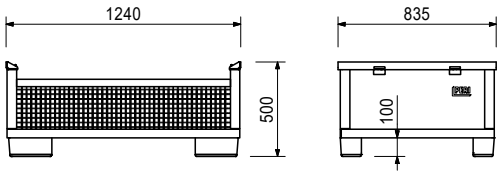
Art no.	Weight [kg]	
025660	66.500	**HARDWARE BOX 80X120, GALV.**

For stacking and transportation of formwork and scaffold components.

Notes

Follow Instructions for Use!
Capacity approx. 0.28 m³
Permissible load-bearing capacity 1.5 t.



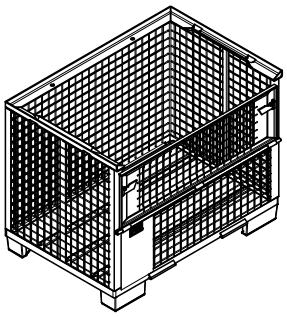


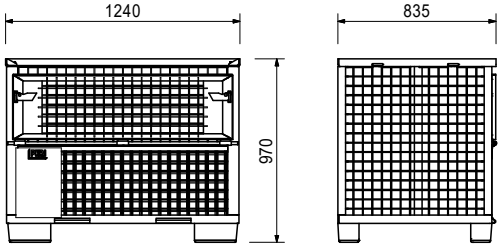
Art no.	Weight [kg]	
065068	88.300	**GRATE PALLET 80X120, GALV.**

For stacking and transportation of formwork and scaffold components.

Notes

Follow Instructions for Use!
Capacity approx. 0.75 m³.
Permissible load-bearing capacity 1.5 t.



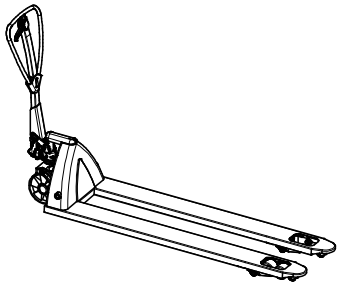


Art no.	Weight [kg]	
061510	105.000	**PALLET LIFTING TRUCK 1800MM**

For moving pallets and crate pallets.

Notes

Follow Instructions for Use!
Forklift arm length 1800 mm, forklift arm width 550 mm, stroke range 115 mm.
Permissible load-bearing capacity 2.0 t.



The optimum system for every project and any requirement



Wall formwork



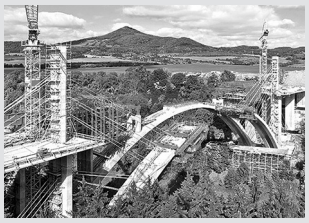
Column formwork



Slab formwork



Climbing systems



Bridge formwork



Tunnel formwork



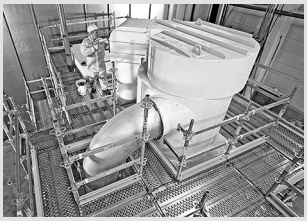
Shoring



Working scaffolds for construction



Working scaffolds for facades



Working scaffolds for industry



Access means



Safety scaffolds



Safety systems



System-independent accessories



Services

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