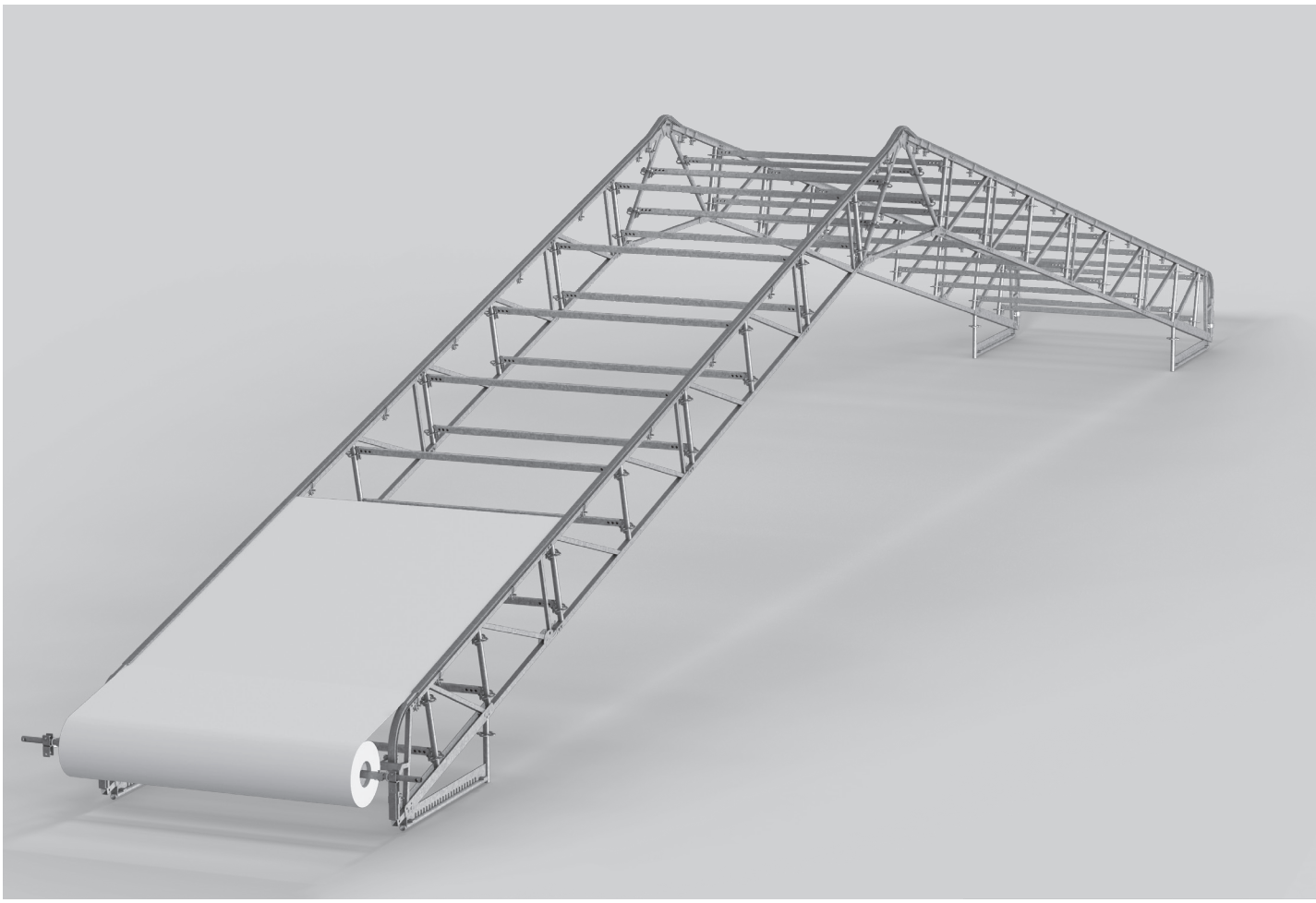
PERI UP Flex

Weather Protection Roof LGS 75

Instructions for Assembly and Use – Standard configuration – Version 2.1



Contents

Main components

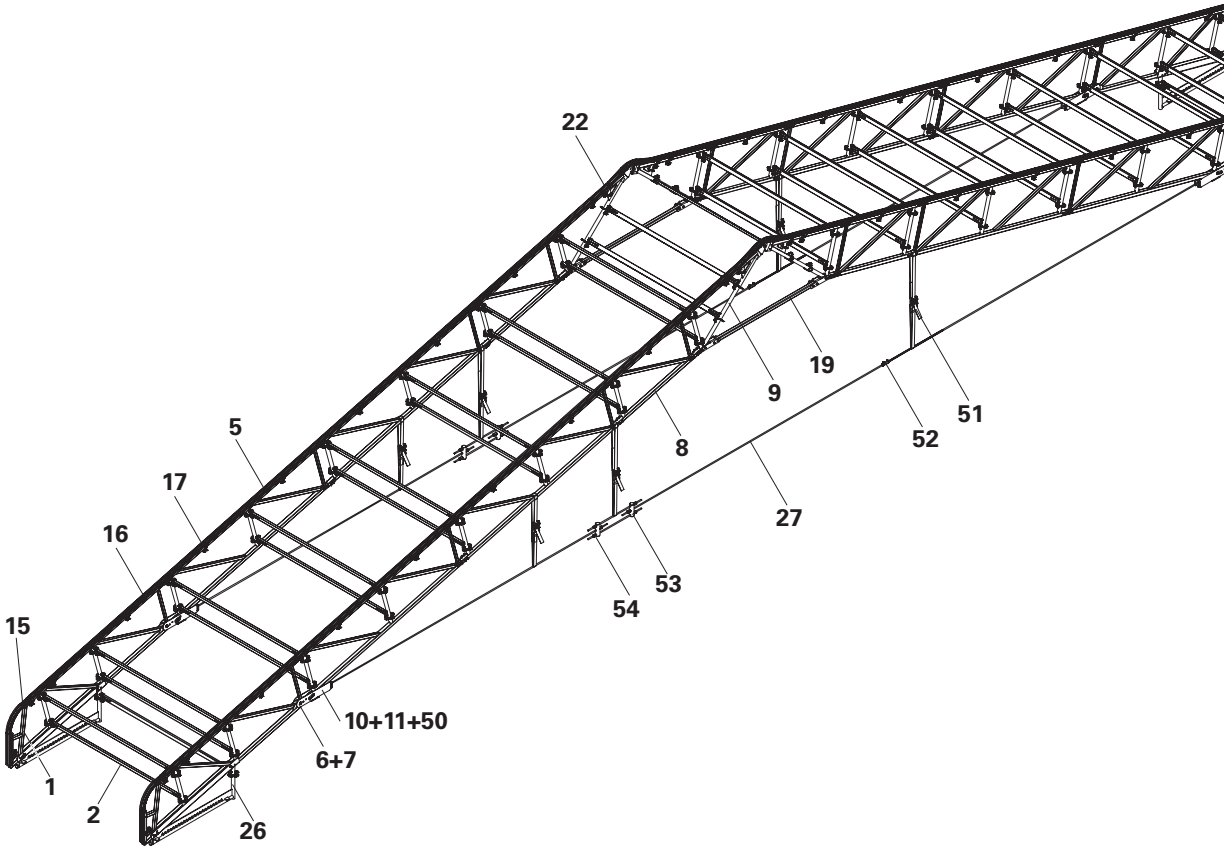


Fig. 01

1	Eave Element LGS URB 300/75	26	Support LGS URS
2	Horizontal Ledger UH-2	27	Tie Rod DW15
5	Basic Element LGS URB 300/75	50	Suspension Tie Connector URU
6	Bolt Ø 16	51	Tension belt
7	Cotter Pin 4/1 ga	52	Tie Rod Extension URU
8	Filler Element LGS URB 150/75	53	Anchor Tie Yoke URU
9	Ridge Element LGS URR 75	54	Hex-Nut DW15 SW30 50 mm ga
10	Bolt Ø 24		
11	Cotter Pin 5/1 ga		
15	Eave Rail LGS URK		
16	Keder Track LGS URK		
17	Keder Connector LGS URK		
19	Ridge Bar HD UR		
22	Ridge Rail LGS URK		

List of components

Pos. no.	Component name	Art. no.
1	Eave Element LGS URB 300/75	135793
2	Horizontal Ledger UH-2 250	132025
3	Horizontal Ledger UHV-2 250	137030
4a	H-Brace UBH Flex 250/100	114819
4b	H-Brace UBH Flex 250/150	124101
5	Basic Element LGS URB 300/75	135766
6	Pin Ø16x70 mm ga	106031
7	Cotter Pin 4/1 ga	018060
8	Filler Element LGS URB 150/75	135773
9	Ridge Element LGS URR 75	135782
10.1	Pin Ø24x70 mm ga	127468
10.2	Pin Ø24x105 mm ga	106191
11	Cotter Pin 5/1 ga	022230
15	Eave Rail LGS URK	126491
16a	Keder Rail LGS URK 600	126071
16b	Keder Rail LGS URK 300	127500
16c	Keder Rail LGS URK 150	127501
17	Keder Connector LGS URK	125166
18	Support Roller UEW unstopped	104854
19	Ridge Bar HD UR 150°	128334
22	Ridge Rail LGS URK 150	126051
23	Reel Connector LGS URG	126486
24	Tarpaulin Reel LGS URG 250	126484
25	Handle LGS URG	126488
26	Support LGS URS 15°	104771
27a	Tie Rod DW 15 6 m	030160
27b	Tie Rod DW 15, special length L = 5 m	030030
27c	Tie Rod DW 15 1 m	030480
28	Ledger URL 150/14	105386
29	Screw ISO 4014-M10x100-8.8-ga	710242
30	Hex-Nut ISO 7040-M10-8-ga	780356
31	Rail Support URF	104853
32	Alu Rail URT 250	104796
33	Rail End Piece URT	104852
34	Stopper URA-2	118022
35	Carriage URW	104777
36	Bearer LGS URS 75	135801
37	Anchor Chain 250/3.0 kN	065073
38	Turnbuckle M12/3.0 kN	065074
39	Ledger Bracket UHA-2 half Spi.	130684
40	Locking Pin Ø48-57 mm	111053

Pos. no.	Component name	Art. no.
50	Suspension Tie Connector URU	128823
51	Tension Belt PTB 12	118349
52	Tie Rod Extension URU	129435
53	Anchor Tie Yoke URU	128817
54	Hex-Nut DW15 SW30 50 mm ga	030070
55	Crank LGS URG	126487
56	Ledger to Ledger Cou. LGS URHA	139410

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 that could result in death or serious, irreversible injury if the safety instructions are not followed.


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


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


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

Format of the safety instructions


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

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

Conventions
- Instructions are numbered with: 1. ....., 2. ....., 3. .....
- The result of an instruction is shown by: →
- Position numbers are clearly provided for the individual components and are given
  - in the drawing, e.g. 1,
  - in brackets in the text, e.g. (**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.

Span
Span L_{sp} is the dimension from the centre of one support to the centre of the other support.
The exact position of the support is specified in the project drawing.

Target groups

Scaffolding contractors/contractors
These assembly instructions are intended for contractors who either
- assemble, modify and dismantle the scaffolds, or
- use them, e.g. for concreting, or
- allow them to be used for other operations, e.g. carpentry or electrical work.

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

Competent person
- is appointed by the scaffolding contractor,
- must be on site for all scaffolding work,
- prepares and updates the plan for assembly, modification and dismantling,
- prepares and updates the plan for use of the scaffold by the scaffold 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
Scaffolds 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 scaffold in an understandable form and language.
- Description of the measures for safely assembling, modifying or dismantling the scaffold.
- 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 scaffold, 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.**

* 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 documentation

- Instructions for Assembly and Use
  - PERI UP Flex Weather Protection Roof LGS
  - PERI UP Flex Core Components
  - PERI UP Flex Stair 75
  - PERI UP Flex Stair 100 and 125 with Deck UDG
  - PERI UP Easy Facade Scaffold 67 and 100
- Approvals
  - Approval Z-8.22-863 PERI UP Flex module system
  - Approval Z-8.1-957 PERI UP Easy Scaffolding System
- User information – pallets and stacking devices
- PERI UP – Design Tables
- Brochure – PERI UP Flex Weather Protection Roof LGS

Intended use

Product description
PERI products have been designed to be used exclusively in industrial and commercial sectors by suitably trained personnel only.

These Instructions for Assembly and Use are based on the Approval Z-8.22-863 for the PERI UP Flex Modular System.

These Instructions for Assembly and Use describe the standard configuration for a Weather Protection Roof as a temporary construction, e.g. enclosure construction, corresponding to the provisions of DIN EN 16508 and DIN EN 12811.

Features
The Weather Protection Roof is based on the PERI UP Flex Modular System with supplementary components.

Leak-tightness
Keder tracks are mounted on the roof construction and keder sheeting is inserted into them. This means that the enclosure is water-repellent and, to a large extent, water-tight. There is no entitlement to complete impermeability. This must be established using project-specific additional measures.

Technical data
- Span L_{sp} to 27.19 m
- Width W of the girder package from 1.00 m to 3.00 m in 25 cm steps
- Wind loads q according to DIN EN 1991-1-4
  - q_1 = 0.35 kN/m²
  - q_2 = 0.56 kN/m²
  - q_3 = 0.77 kN/m²
- Snow loads s are calculated according to DIN EN 1991-1-3 with snow/minimum load classes according to DIN EN 16508
  - SL1 = 0.10 kN/m²
  - SL2a = 0.25 kN/m²
  - SL2b = 0.60 kN/m²

Standard configuration
- Width W of the girder package from 1.00 m to 3.00 m in 25 cm steps
- Span L_{sp}
  - up to 27.19 m
  - is the distance from centre support to centre support.
- Roof construction closed on all sides
- Tension system fixed to the eave element.
- Mobile or fixed girder package
- Assembly
  - with bolts and cotter pins
  - alternatively with bolts and nuts – not shown.
- Instead of the Horizontal Ledger UH-2, the Horizontal Ledger UH Plus can also be used as an alternative.

The load-bearing substructure is not part of the scope of these Instructions for Assembly and Use.
- Refer to the project-specific details in the project drawings.
- The load-bearing substructures shown are indicated and incomplete.
- The stability of the overall construction consisting of weather protection roof and load-bearing substructure must be verified separately for each project – also for assembly conditions.

Instructions for Use

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

Deviations from the standard configuration must be verified for the application by means of separate strength and stability calculations and explicitly reflected in the assembly instructions.

Only PERI original components may be used. The use of other products and spare parts is not allowed.
Changes to PERI components are not permitted.

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

Cleaning and maintenance instructions

Clean the scaffolding components after each use to maintain the value and operational readiness of the PERI products over the long term.

Some repair work may also be inevitable due to the tough working conditions.

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

The contractor must ensure that the personal protective equipment required for cleaning, maintenance and repair work, e.g.

- Safety helmet,
- Safety shoes,
- Safety gloves,
- Safety goggles,

is available and used as intended.

Never use steel brushes or hard metal scrapers to clean powder-coated or galvanised components.

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

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

Do not clean components suspended on crane lifting gear.

Components with wood parts are to be stored in well-ventilated and dry conditions.

Any repairs to PERI products are to be carried out by PERI qualified personnel only.

Tension Belts PTB 12
Ensure that tension belts are stored tidily and in dry conditions.

Clean tension belts with cold water without
any cleaning agent and leave to dry in the air.

Moving parts of the ratchet are to be lightly oiled on a regular basis.

Observe the inspection obligation in accordance with national regulations.

Identification marking of the Tension Belt PTB 12

Belt label
(Fig. 02a + Fig. 02b)

Warning
If the belt label is missing or illegible, do not use Tension Belt PTB 12!
The belt may tear, causing parts to fall down.
⇒ Use a flawless tension belt.

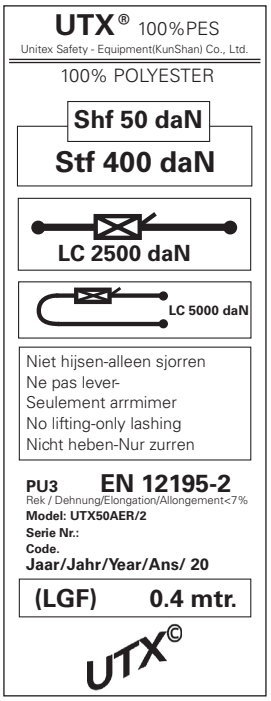


Fig. 02a

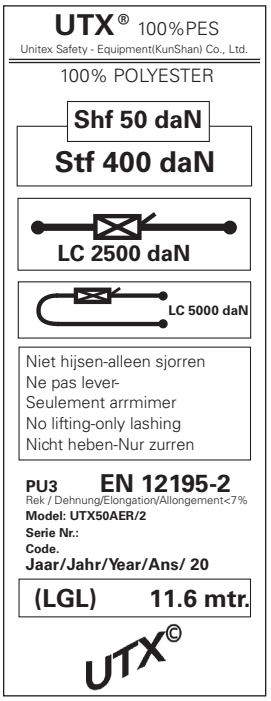


Fig. 02b

Cross-system

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

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

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

Observe and comply with the safety instructions and permissible loads.

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

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

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

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

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

Components provided by the contractor must comply with the characteristics stipulated in these Instructions for Assembly and Use and all applicable laws and standards.

Unless otherwise indicated, the following applies in particular:
- Timber components: strength class C24 for solid wood according to EN 338.
- Scaffolding tubes: galvanised steel tubing with minimum dimensions of Ø 48.3 x 3.2 mm according to EN 12811-1:2003 4.2.1.2.
- Scaffolding tube couplings according to EN 74-1 and EN 74-2.

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

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

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

Before and after exceptional occurrences that may have an adverse effect on the safety of the scaffolding 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 scaffolding system,
- arrange for an extraordinary inspection to be carried out by a competent person qualified to do so. The aim of this inspection is to identify and rectify any damage in good time in order to guarantee safe use of the scaffolding system.

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

Assembly, modification and dismantling work
Assembly, modification or dismantling of scaffolding systems 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 and the Instructions for Assembly and Use, the contractor must create installation instructions to guarantee safe assembly, modification and dismantling of the scaffolding system.

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

is available and used as intended.

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

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

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

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

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

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

System-specific

Tighten couplings with screw closures using 50 Nm. This corresponds to a force of 20 kg using a lever arm length of 25 cm.

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

Tension Belt PTB 12
- is to be checked during use and, if necessary, re-tensioned.
- is not to be used on sharp edges or cracked surfaces without protection. Use edge protection,
- protect against heat and chemical influences,
- avoid twisting and keep free of knots,
- do not use for pulling or lifting loads.

Do not set down any loads on the tension belt.

Ensure that the ratchet is not positioned on an edge when belt is tensioned.

At least 1.5 winds of the belt on the ratchet, maximum 3 winds.

Do not load belt hooks on the tips.

Discard state of Tension Belt PTB 12
Tension belts are to be replaced if:
- the belt label is illegible or missing,
- the belt has cuts, holes or abrasion marks,
- the tension belt shows signs of deformations,
- the hooks or ratchet are twisted or badly corroded,
- the hook aperture is open by more than 10 %.

Anchoring

For the support forces, see Section B2.

The enclosure of the scaffolds or mounting of additional surfaces exposed to the wind changes the stability and must be rechecked. If necessary, take additional measures.

Anchoring must be installed progressively with the erection of the scaffold assembly.

Transfer the anchoring forces into sufficiently load-bearing anchorage via wall ties and fixing materials (e.g. the building).

The anchoring and its components must be inspected by a competent person chosen by the scaffold contractor.

Inspecting the anchoring

Load tests must be carried out at the place of use.

Load tests are to be carried out using suitable test equipment.

The test load must be 1.2 times higher than the required anchoring force $F_{\perp}$.

The scope of testing must, however, include a minimum of 5 load tests for all dowels used for concrete anchoring bases (at least 10 %) and for other building materials (at least 30 %).

Storage and transportation

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

Do not drop the components.

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

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

Always guide pre-assembled scaffolding bays, scaffolding units or scaffolding sections with ropes when moving them by crane.

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

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

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

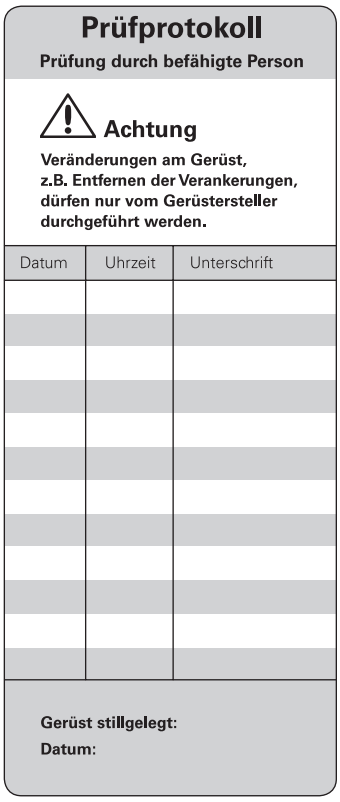
Identification marking

When carrying out the work the following identification markings must be observed:
If certain parts of the scaffold are not ready for use – especially during assembly, modification and dismantling – a "No Entry" warning sign restricting access must be clearly displayed (see Sign 1).
In addition, the area must be adequately closed off in order to prevent access.

After assembly has been completed, all scaffold entry points must clearly display the designated sign. (Sign 2)
The identification marking does not replace the inspection log!
(Sign 2, rear side)

Sign 1

Sign 2



Sign 2, rear side

Laws and regulations

When assembling, modifying, dismantling and using the scaffolds in Germany, accident prevention regulations and guidelines of the employer's liability insurance associations, as well as national health and safety regulations, must be followed, especially:
– German Product Safety Act (ProdSG)
– Directive 2009/104/EC
– Operating Safety Regulation (BetrSichV)
– Statutory Accident Insurance (DGUV) Information 201-011
– BGV A1 (Trade Association Regulations)
– TRBS 2121 (Technical Regulations for Operational Safety)
– TRBS 1203 (Technical Regulations for Operational Safety)
– Regulations for Occupational Health and Safety on Construction Sites 30 (RAB 30)
The latest version in each case is applicable.

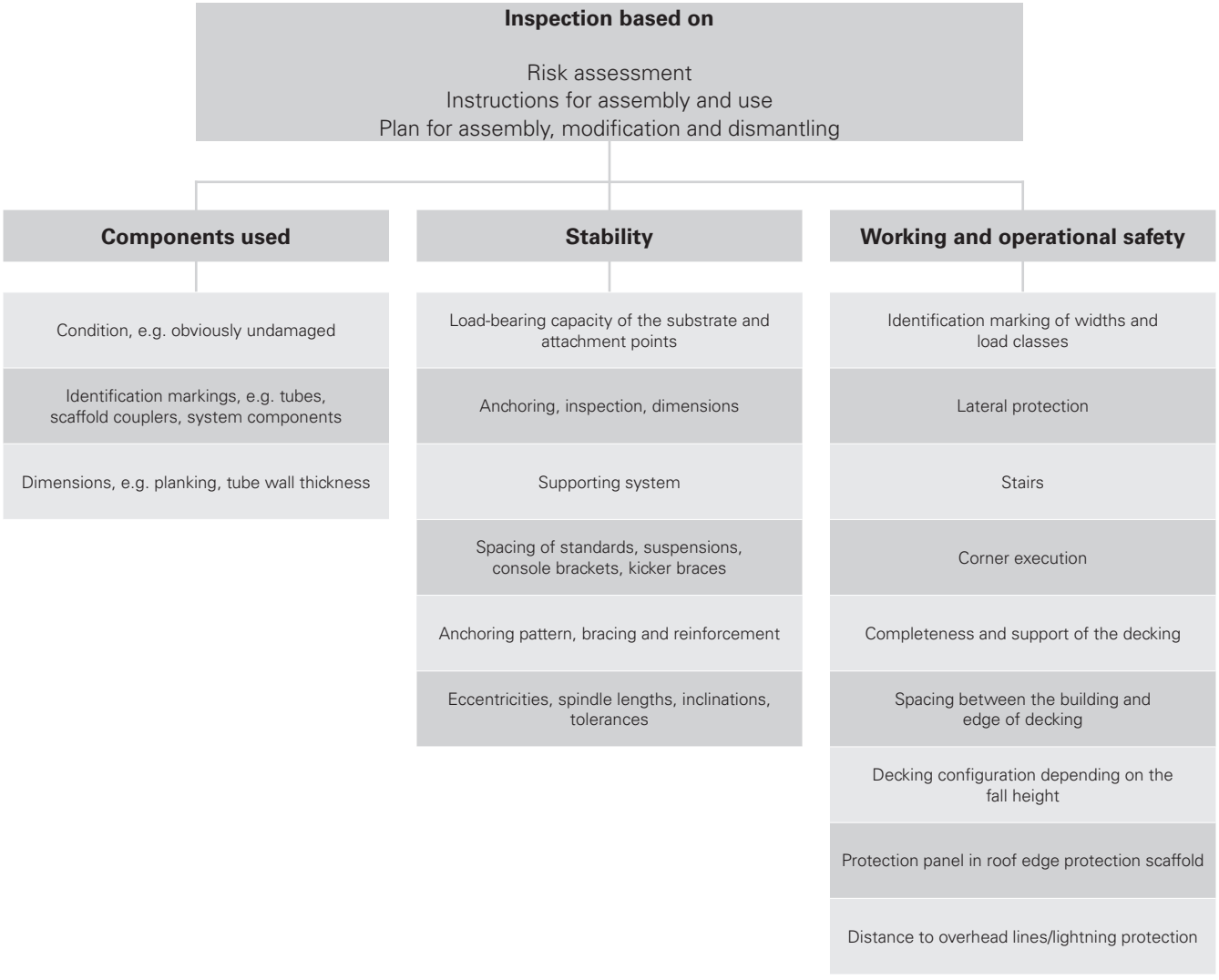
In other countries, ensure that the relevant national guidelines and regulations in the respective current version are complied with!

Inspection, handover and use

The erected scaffold must be inspected by the scaffolding contractor in order to determine that assembly has been carried out correctly. If the contractor is convinced that the scaffold has been correctly erected, it can then be handed over to the user.
It is advisable to carry out the handover with the user and, for example, to document this in a written report.

During the handover, the scaffolding contractor must advise the user of any possible risks involved with non-intended use and his obligation to provide adequate prevention against risk and danger!
- **Put up safety and warning signs at the scaffold access point.**
- **Handover of a usage plan.**

The contractor who uses scaffolding, must ensure that the scaffolding is in good condition and not arbitrarily altered in any way. In this respect, the qualified specialists must be instructed that if changes have obviously been made during use, these must be reported to the respective qualified and competent person.



Source: based on TRBS 2121 Part 1

Notes for all spans

Warning

Do not climb on the roof if at all possible.
Risk of falling.
⇒ Wear personal protective equipment to prevent falling from a height (PPE).

Attachment points for PPE
(Fig. B1.01)

The use of PPE to prevent falling from a height is regulated in the project-related risk assessment that has been prepared by the contractor.

1. Horizontal ledger
2. Rosette on element*
3. Top or bottom chord*

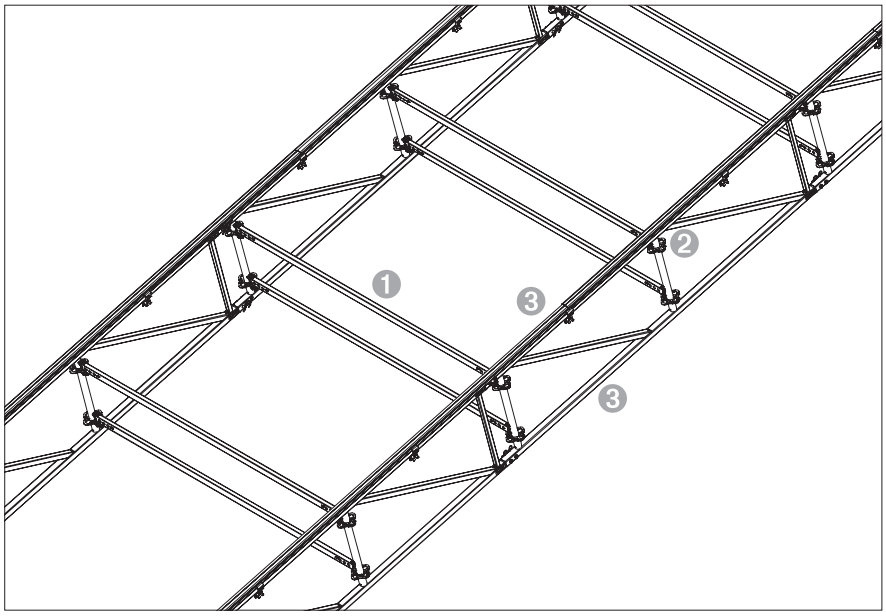


Fig. 03

* Intermediate, standard, eave element

Fitting the eave elements

- Width "W" is variable
  - in 25 cm increments,
  - from 1.00 m to 3.00 m,
  - 2.50 m is shown here.
- If a tension system is required, use squared timber as a means of support with height "$H_{squared\ timber}$" ≥ 16 cm.

(Fig. A1.01)

Components

1	Eave Element LGS URB 300/75	2x
2	Horizontal Ledger UH-2 250	4x

Connecting the eave elements

1. Place eave element (**1**) on two crosswise positioned squared timbers.
   → Squared timbers are used as support during assembly. (Fig. A1.01)
2. Attach horizontal ledgers (**2**) to the rosette on both sides (**1.1**) using the ledger heads and wedges (**2.1**). (Fig. A1.02)
3. Securely fix all wedges using a hammer. (Fig. A1.02a)
   → Horizontal ledgers are now secured.

- Instead of beginning with eave elements, a girder package with standard elements can also be used.

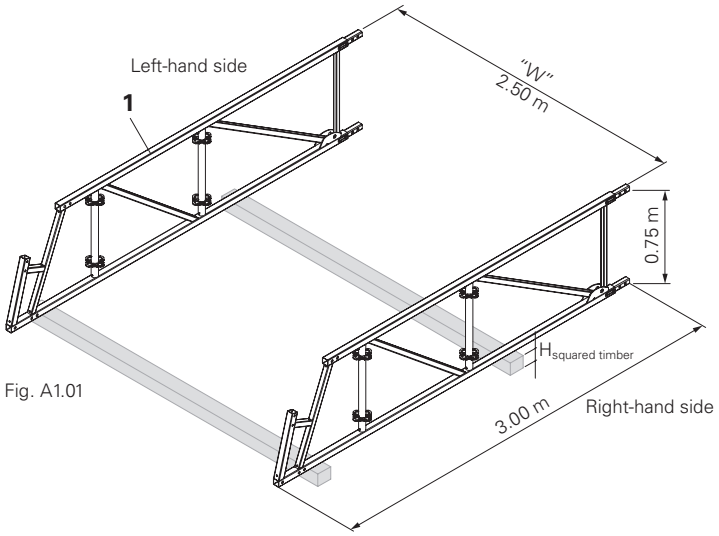


Fig. A1.01

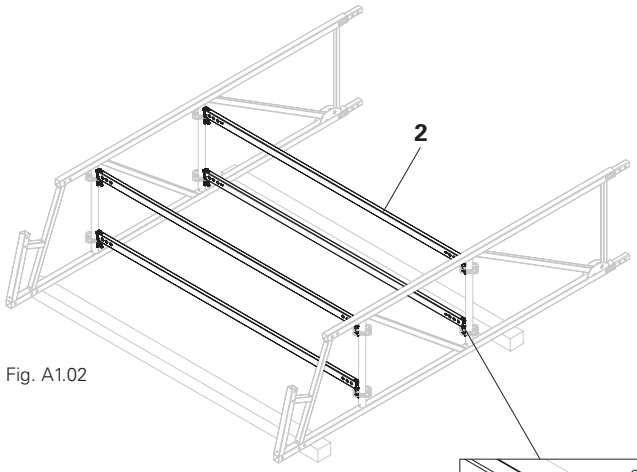


Fig. A1.02

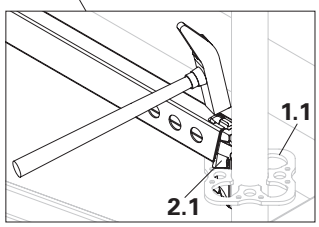


Fig. A1.02a

Fitting the standard elements

The rest of the assembly is carried out with standard elements. If necessary, install an intermediate element as the final element before the ridge element.

There are two variants:
– without tension system,
– with tension system.

Without tension system

Components

2	Horizontal Ledger UH-2 250	4x
5	Basic Element LGS URB 300/75	2x
6	Pin Ø16x70 mm ga	8x
7	Cotter Pin 4/1 ga	8x

Assembly

1. Slide the upper and lower chords of the standard element (**5**) onto the pins of the eaves elements. (Fig. A1.03)
2. Insert Bolts (**6**) – from the outside to the inside – through the holes of the bottom chord and secure with cotter pins (**7**) – 2x. (Fig. A1.03a)
3. Attach horizontal ledgers (**2**) to the rosette on both sides (**1.1**) using the ledger heads and wedges (**2.1**). (Fig. A1.04)
4. Securely fix all wedges using a hammer. (Fig. A1.02a)
   → Horizontal ledgers are now secured.

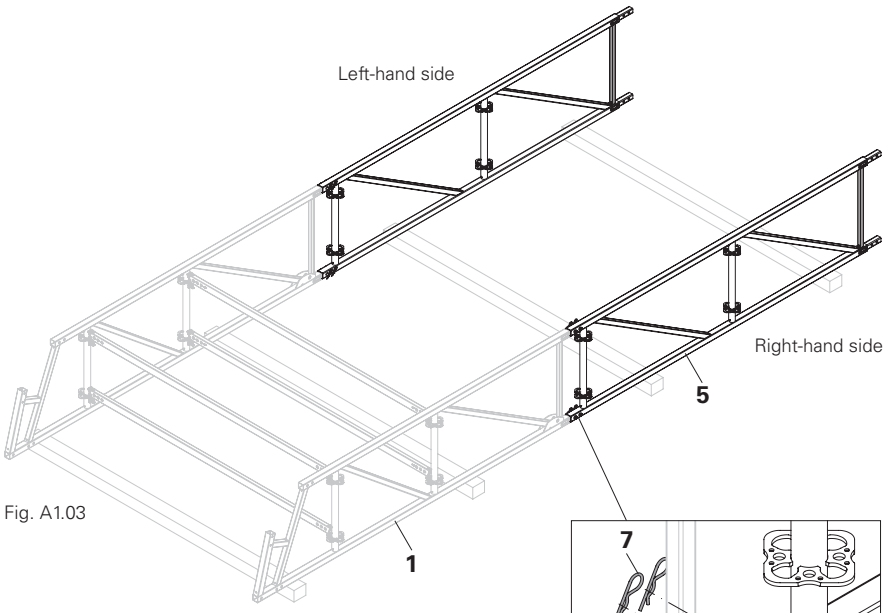


Fig. A1.03

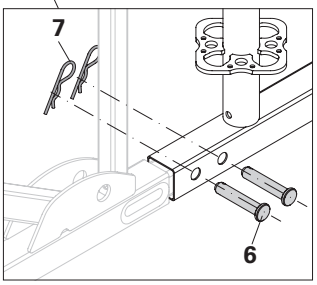


Fig. A1.03a

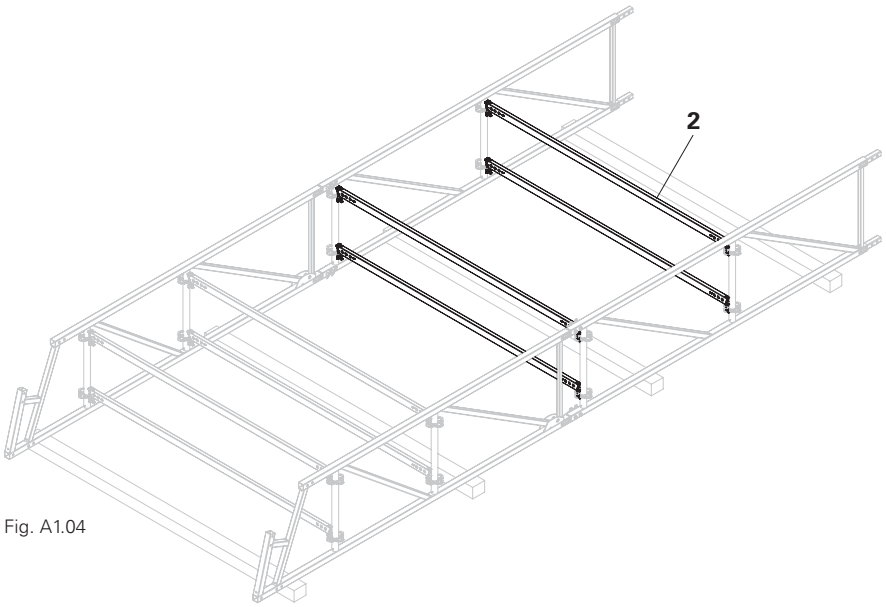


Fig. A1.04

With tension system
Installed on
- eave element.
- standard element.

Components

2	Horizontal Ledger UH-2 250	4x
5	Basic Element LGS URB 300/75	2x
6	Pin Ø16x70 mm ga	8x
7	Cotter Pin 4/1 ga	8x
10b	Pin Ø24x105 mm ga	2x
11	Cotter Pin 5/1 ga	2x
50	Suspension Tie Connector LGS URU	2x

Installation on eave element
1. Slide the upper and lower chords of the standard element (**5**) onto the pins of the eaves element (**1**). (Fig. A1.05)
2. Slip the suspension tie connector (**50**) over the bottom chord.
3. Only required for eave to standard element connection:
   Fit the bolt (**10b**) and cotter pin (**11**) – from the outside inwards.
   → Fixing to the eave element.
4. Insert Bolts (**6**) – from the outside to the inside – through the holes of the bottom chord and secure with cotter pins (**7**) – 2x. (Fig. A1.05a)

Alternative
Installation on standard element

Pay heed to the position of the holes when installing the standard element on the eave element.

1. Fit two standard elements (**5**) together. Ensure that the holes are congruent.
2. Slide the suspension tie connector (**50**) over the standard elements (**5**) and connect them with bolts (**6**) and cotter pins (**7**) – 2x.

(Fig. A1.05b)

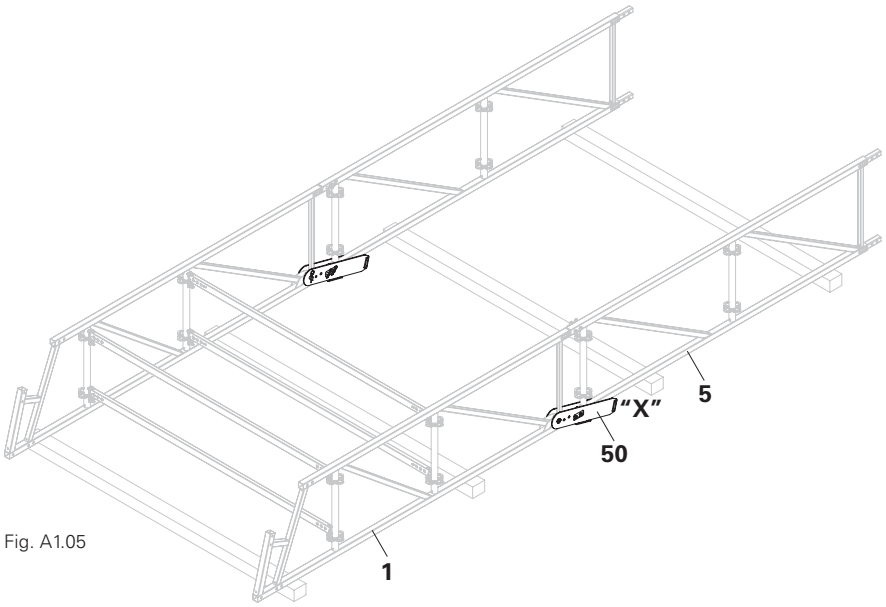


Fig. A1.05

Detail "X"
Connecting an eave element and standard element

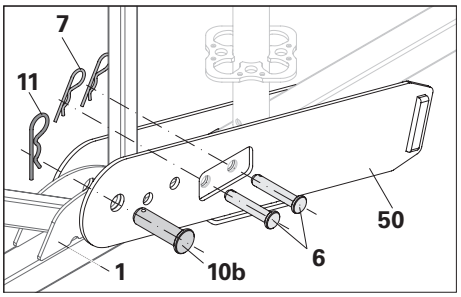


Fig. A1.05a

Alternative
Connecting two standard elements

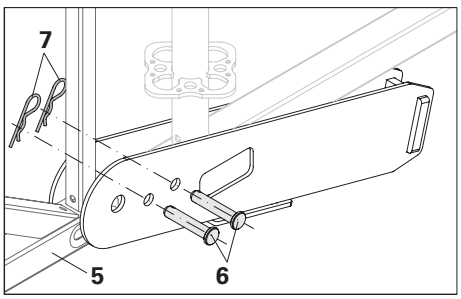


Fig. A1.05b

5. Attach horizontal ledgers (**2**) to the rosette on both sides (**1.1**) using the ledger heads and wedges (**2.1**). (Fig. A1.02a)
6. Securely fix all wedges using a hammer. (Fig. A1.02a)
   → Horizontal ledgers are now secured.

(Fig. A1.06 – without tension system)

Are all the bolts and cotter pins securely in position – right and left sides?

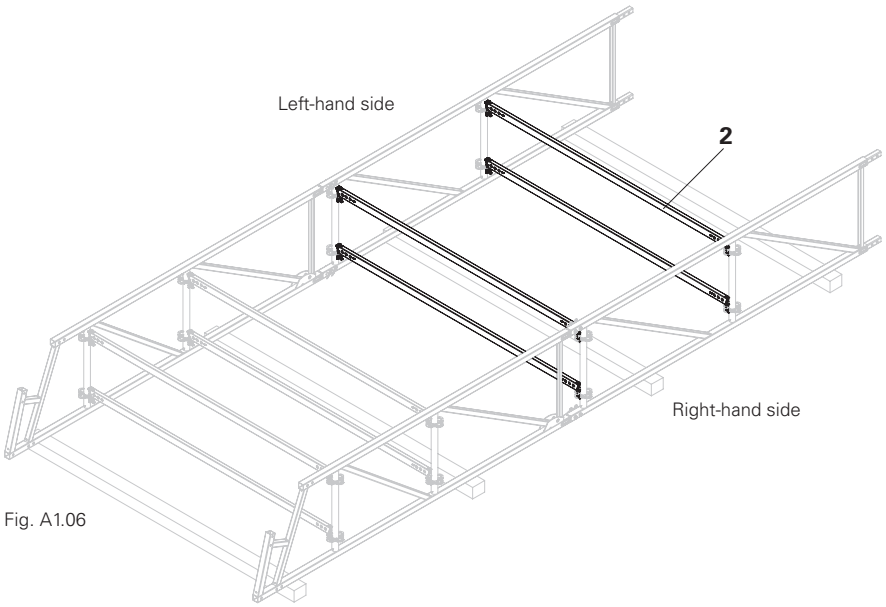


Fig. A1.06

Fit the other components of the tension system later on, see Section "Tie rods on both sides", from page 34 onwards.

Fitting other standard and intermediate elements

The subsequent assembly process is shown without a tension system.

Components

2	Horizontal Ledger UH-2 250	6x
5	Basic Element LGS URB 300/75	2x
6	Pin Ø16x70 mm ga	16x
7	Cotter Pin 4/1 ga	16x
8	Filler Element LGS URB 150/75	2x

Assembly without tension system

1. Mount further standard (**5**) and intermediate elements (**8**) – until the required length is reached, see Section "Fitting the standard elements", from page 17 onwards. If necessary, fit intermediate elements (**8**) as compensation.
2. Attach horizontal ledgers (**2**) to the rosette on both sides (**1.1**) using the ledger heads and wedges (**2.1**). (Fig. A1.02a)
3. Securely fix all wedges using a hammer. (Fig. A1.02a)
   → Horizontal ledgers are now secured.

(Fig. A1.07)

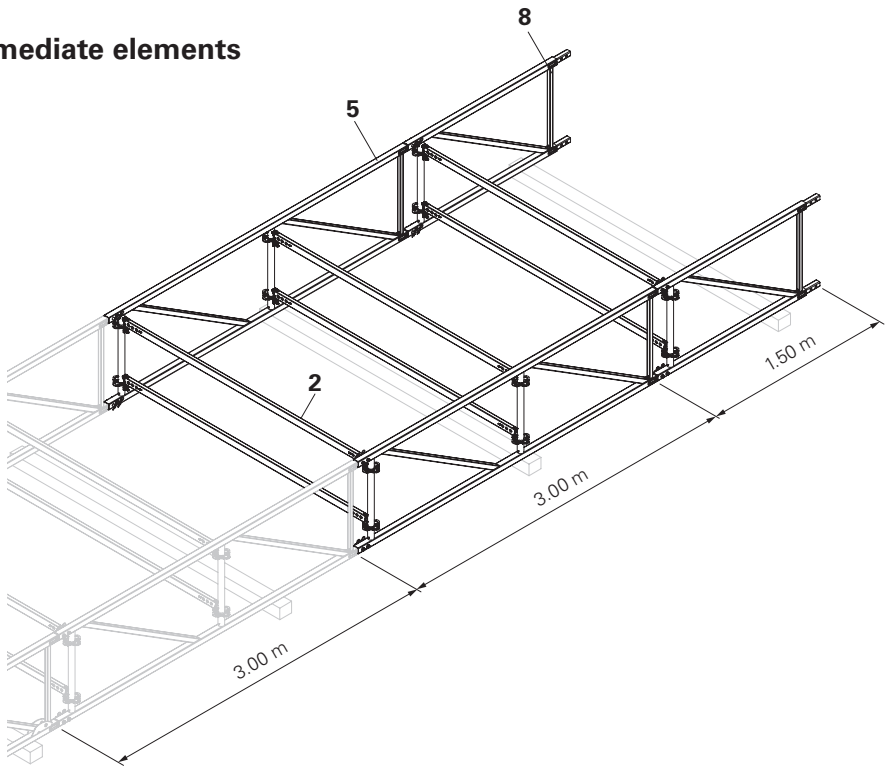


Fig. A1.07

Fitting the ridge element and ridge bar

Two ridge elements (**9**) and the ridge bar (**19**) together form the ridge, see Section "Fitting the ridge bar", from page 28 onwards.

Components

2	Horizontal Ledger UH-2 250	4x
6	Pin Ø16x70 mm ga	12x
7	Cotter Pin 4/1 ga	12x
9	Ridge Element LGS URR 75	2x
19	Ridge Bar HD UR 150°	2x

Preparation

1. Remove the cotter pin (**19.3**) and bolt (**19.2**) from the rectangular tube (**19.4**).
2. Set the rectangular tube (**19.4**), bolt (**19.2**) and cotter pin (**19.3**) to one side.

(Fig. A1.08)

Assembly

1. Fit the upper and lower chords of the ridge element (**9**) onto the pins of the last element (standard or intermediate element).
2. Slip the bracket (**19.1**) over the ridge element. (Fig. A1.09a)
3. Fix the bolts (**6**) and cotter pins (**7**) – 4x. (Fig. A1.09a)
   → Secured connection.
4. Fit the bracket of the ridge bar on the left side, see steps 1 – 3.
5. Attach horizontal ledgers (**2**). (Fig. A1.10)
6. Securely fix all wedges using a hammer. (Fig. A1.10)
   → Horizontal ledgers are now secured.

Rectangular tube (**19.4**) can remain in an articulated position on one side, i.e. mounted to the bracket (**19.1**) using a bolt. (not shown)

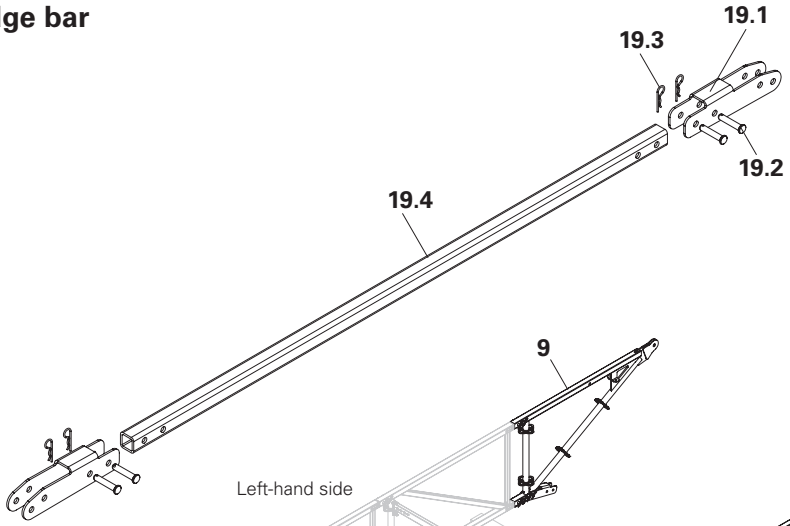


Fig. A1.08

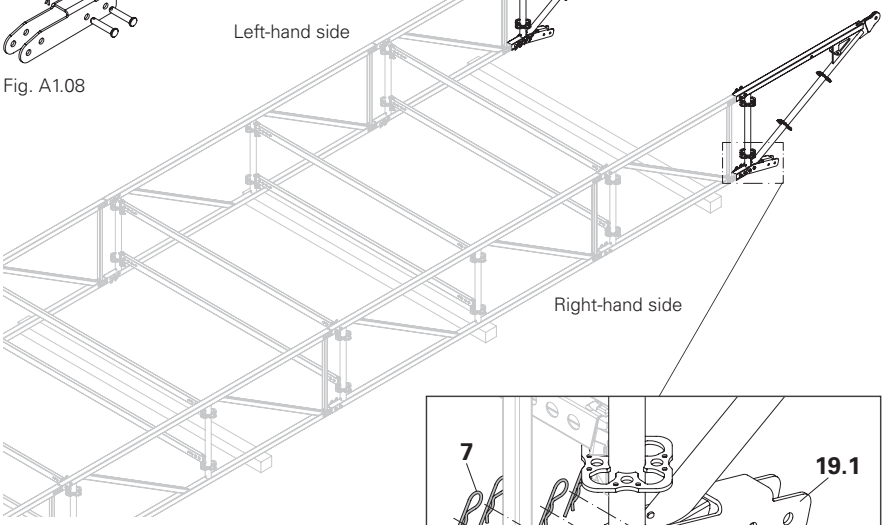


Fig. A1.09

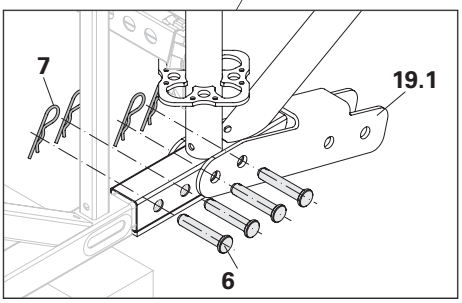


Fig. A1.09a

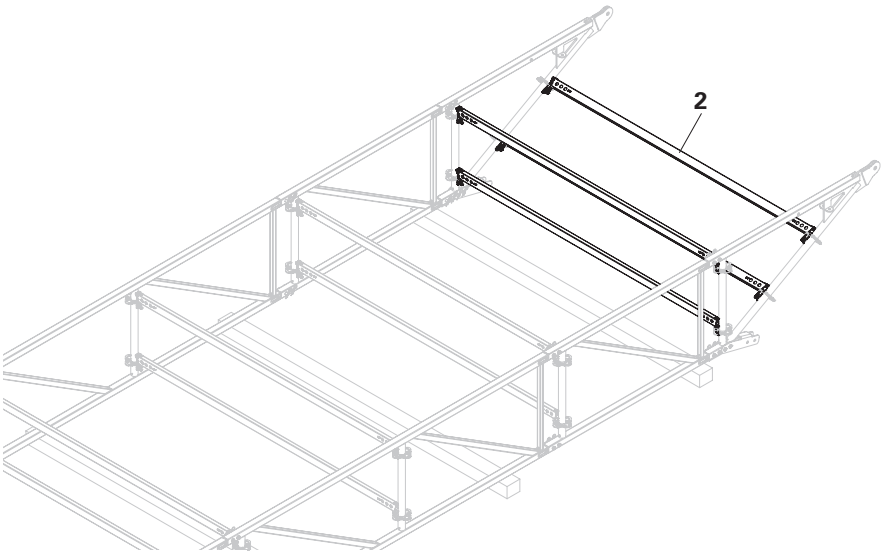


Fig. A1.10

Installing H-braces

Attention!
The truss packages on the gable ends must be braced with H-Braces UBH Flex (**4a / 4b**), see Section "A12 Structural arrangements", from page 50 onwards.

Components

4a	H-Brace UBH Flex 250/100	2x
4b	H-Brace UBH Flex 250/150	12x

Installing H-braces (**4a / 4b**):
- Install first side:
  Attach hook without slider (**4.1**) to the rosette and push down. (Fig. A1.11a + A1.11b)
- Fit second side diagonal to the first side:
  – Attach hook with slider (**4.2**) to the rosette. (Fig. A1.11c)
  – Push the slider towards the rosette until the bolt (**4.3**) falls into the longitudinal groove. (Fig. A1.11d)
  → Slider is secured.

→ First girder unit is now ready. (Fig. A1.11)

Have all sliders been secured, i.e., is each bolt (**4.3**) in the longitudinal groove?

H-Braces UBH Flex can be mounted from above or below.

Installing the first side

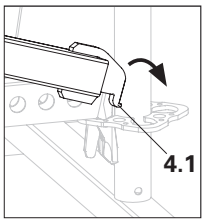


Fig. A1.11a

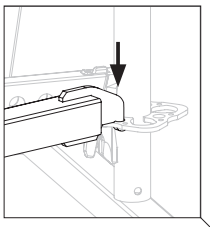


Fig. A1.11b

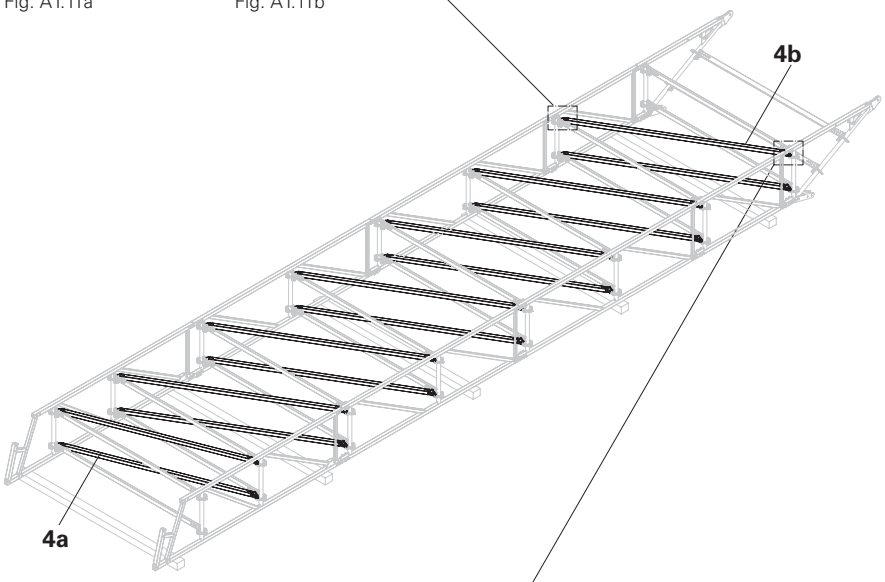


Fig. A1.11

Installing the second side

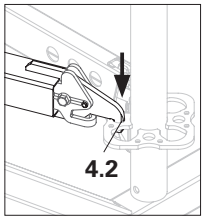


Fig. A1.11c

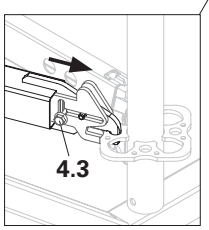


Fig. A1.11d

Slider must be pushed back in order to attach the hook.
→ Securing mechanism is released. (Fig. A1.11c)

Continuing to build the girder package

Components for second girder unit

1	Eave Element LGS URB 300/75	2x
2	Horizontal Ledger UH-2 250	18x
5	Basic Element LGS URB 300/75	4x
6	Pin Ø16x70 mm ga	36x
7	Cotter Pin 4/1 ga	36x
8	Filler Element LGS URB 150/150	2x
9	Ridge Element LGS URR 150	2x
10a	Pin Ø24x70 mm ga	2x
11	Cotter Pin 5/1 ga	2x

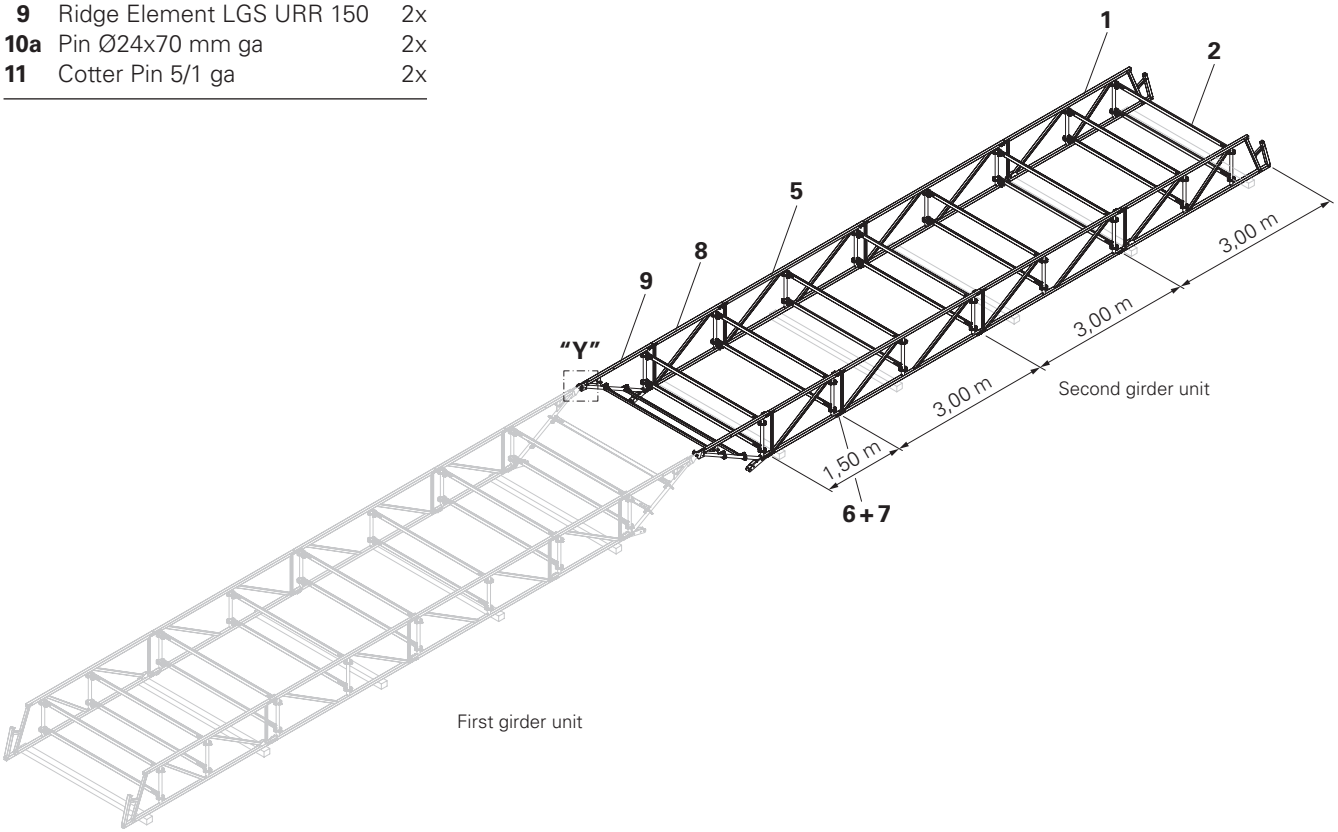


Fig. A1.13

Together, the first girder unit and second girder unit form one girder package.

Fitting the second girder unit

1. Fit the ridge element (**9**), see Section "Fitting the ridge element and ridge bar", from page 20 onwards.
2. Fit other standard (**5**) or intermediate elements (**8**), see Section "Fitting the standard elements", from page 17 onwards
3. Fit the eave element (**1**), see Section "Fitting the eave elements", from page 16 onwards.
4. In case of girder packages on the gable only:
   Fit H-braces (**4a + 4b**).

Connecting the first and second girder units

1. Join the brackets of the ridge elements together.
   Ensure that the tube (**9.1**) of the first girder unit is aligned with the tube (**9.2**) of the second girder unit.
   (Fig. A1.13a)
2. Secure bolts (**10a**) and cotter pins (**11**) – from the outside to the inside – in the holes of the head plates.
   → Secured connection.

(Fig. A1.13a)

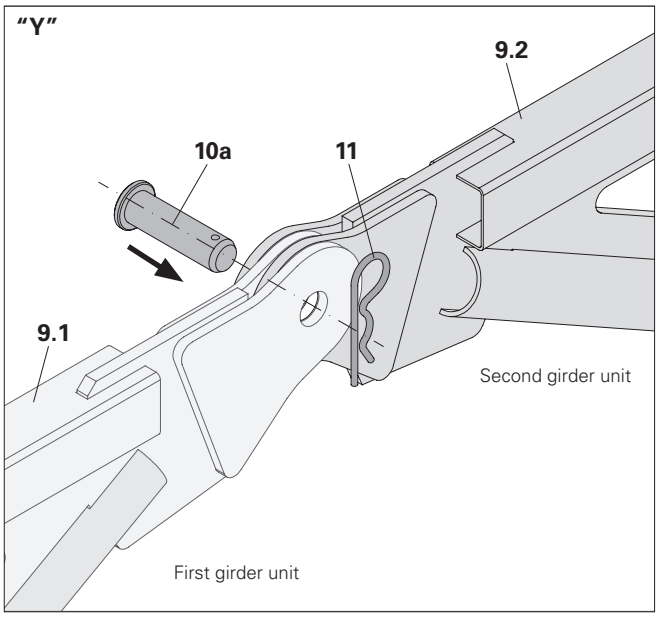


Fig. A1.13a

Are the areas of the rectangular tubes (**9.1 + 9.2**) aligned?

Fitting the keder track

Components

15	Eave Rail LGS URK	4x
16a	Keder Rail LGS URK 600	4x
16b	Keder Rail LGS URK 300	4x
16c	Keder Rail LGS URK 150	4x
17	Keder Connector LGS URK	36x

- Fix keder connectors at intervals ≤ 1.50 m.
- Valid up to wind load q = 0.77 kN/m².

Assembly

1. Position the eave rail (**15**) on the keder tube and top chord of an eave element (**1**). (Fig. A2.01)
2. Adjust the reference dimension 50 cm.
   → Eave rail projection on the top chord of the eave element. (Fig. A2.01a)
3. Fix the keder connector (**17**) to the eave rail. (Fig. A2.01a)

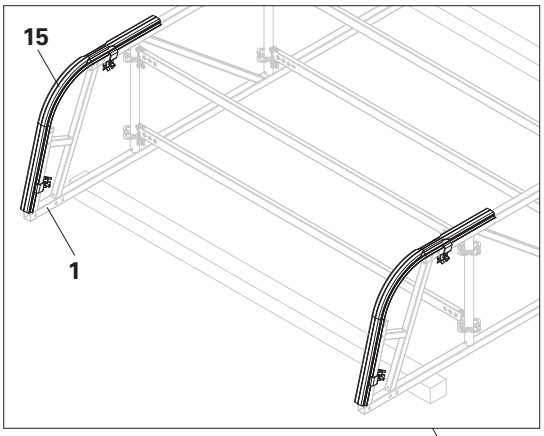


Fig. A2.01

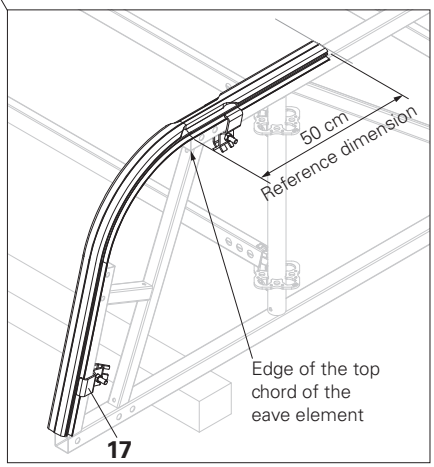


Fig. A2.01a

4. Lay additional keder tracks (**16a / 16b / 16c**) adjacent to the eaves track and fasten at the joint and at a distance ≤ 1.5 m with keder connector (**17**). (Fig. A2.02 + A2.02a)

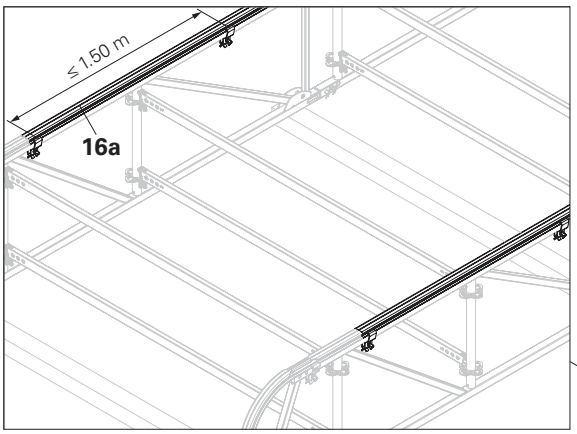


Fig. A2.02

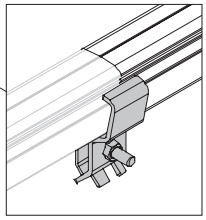


Fig. A2.02a

5. Check the reference dimension of 60 cm. (Fig. A2.03a)
   → Spacing of the last keder track from the end of the top chord to the ridge element.
   → The reference dimension of 60 cm is the placeholder for the ridge rail.
(Fig. A2.03)

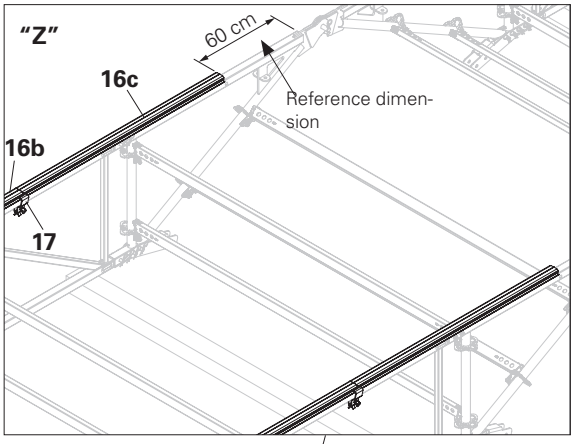


Fig. A2.03a

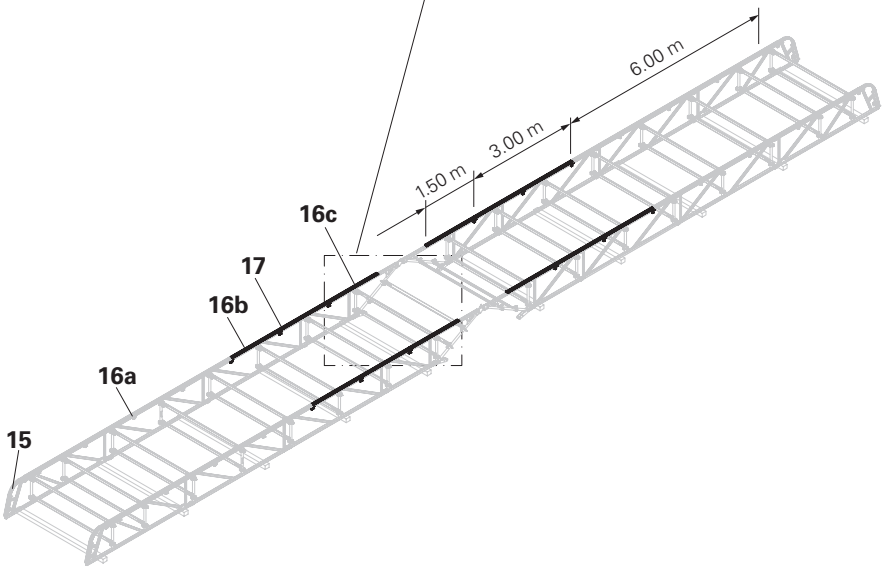


Fig. A2.03

Fitting the support roller

The support rollers
- are aids that allow you to pull up a girder package for installation of the ridge bar,
- are to be fitted onto eave, standard or intermediate elements.

Components

6	Bolt Ø 16 x 70	4x
7	Cotter Pin 4/1	4x
18	Support Roller UEW unstopped	4x

Fitting a support roller

1. Insert the support roller (**18**) into the bottom chord of the eave element (**1a**).
2. Insert a bolt (**6**) – from the outside to the inside – through the outer hole of the bottom chord and secure with a cotter pin (**7**).

(Fig. A3.01 + A3.01a)

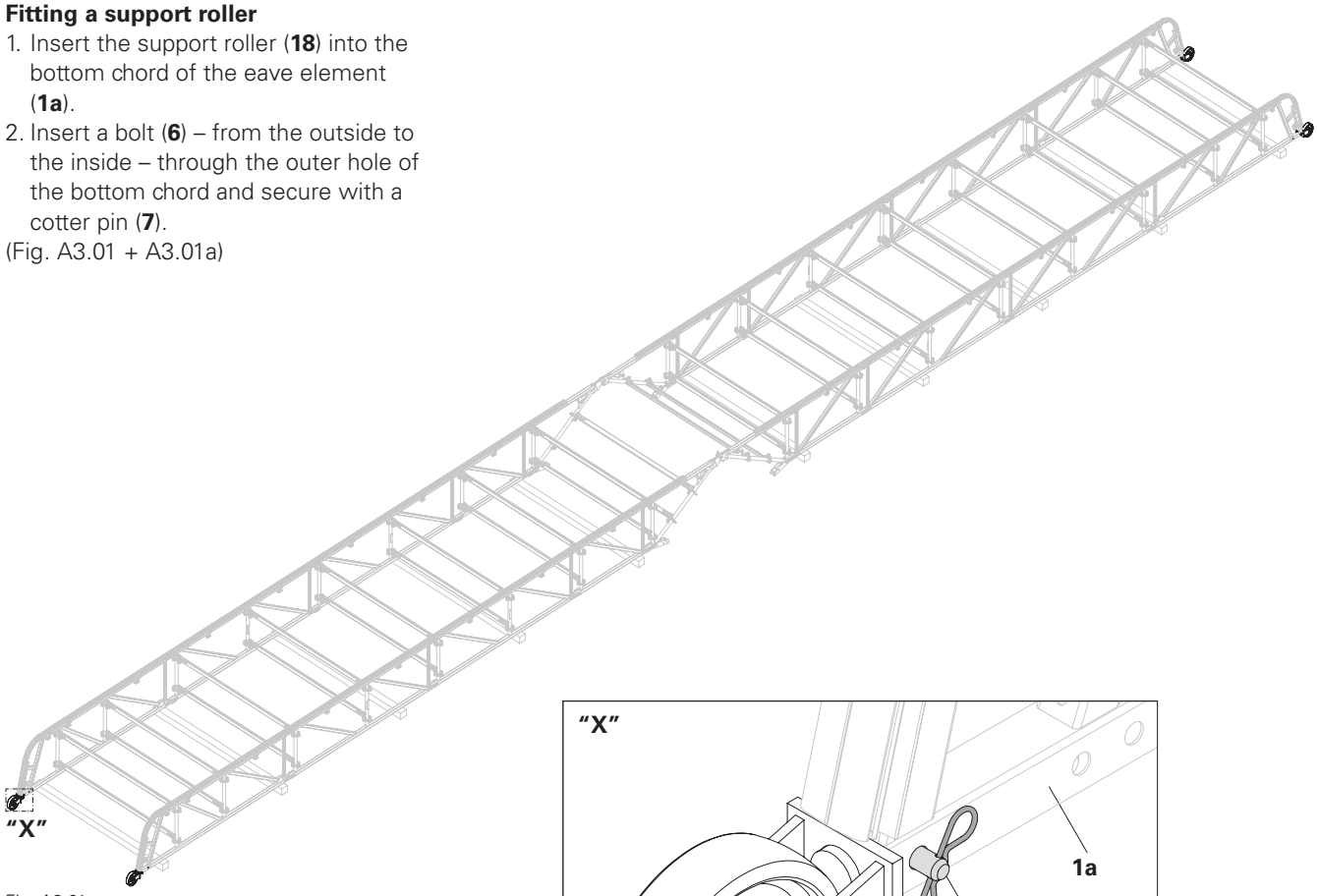


Fig. A3.01

Attach two ropes to the girder package. The keder tarpaulin can now be pulled in, see Section "Drawing in the keder tarpaulin", from page 30 onwards.

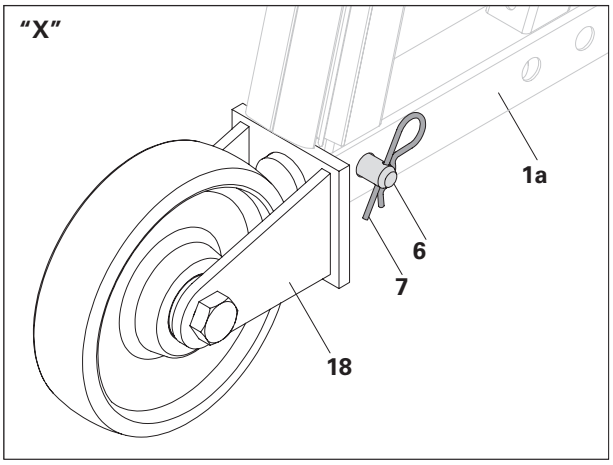


Fig. A3.01a

Attaching the girder package to the crane

Warning

People or the girder packages could fall down.
Risk of injury and falling when lifting or moving the girder package.
⇒ When lifting, no persons are allowed to remain on the girder package.
⇒ Standing under suspended loads is prohibited.

Note

Do not wrap the chains of a 4-sling lifting gear unit directly around the girder package.
When under load, the chain damages the components of the girder package.
⇒ When moving with the crane, use textile lifting gear, e.g. round slings.

Complete girder package
(Fig. A4.01 + A4.01a)

The PERI UP Flex Scaffolding System is well-suited to hoisting applications involving relocation by crane.
However, the relocation of the load-bearing substructure is not part of the scope of these Instructions for Assembly and Use.

Before using the crane for relocation purposes, always ensure that:
- all wedges have been securely fixed in place using a hammer,
- all locks against lifting are engaged,

no one is standing under the suspended load; to this end, guide the scaffolding with ropes.

Wrap the textile lifting gear around the leg above the top rosette – (Fig. A4.01b)

Attach the 4-sling lifting gear of the crane to textile lifting gear.
– Crane attachment points, see Section "Crane attachment points", from page 53 onwards.
– Weights, see Section "Weight", from page 53 onwards.

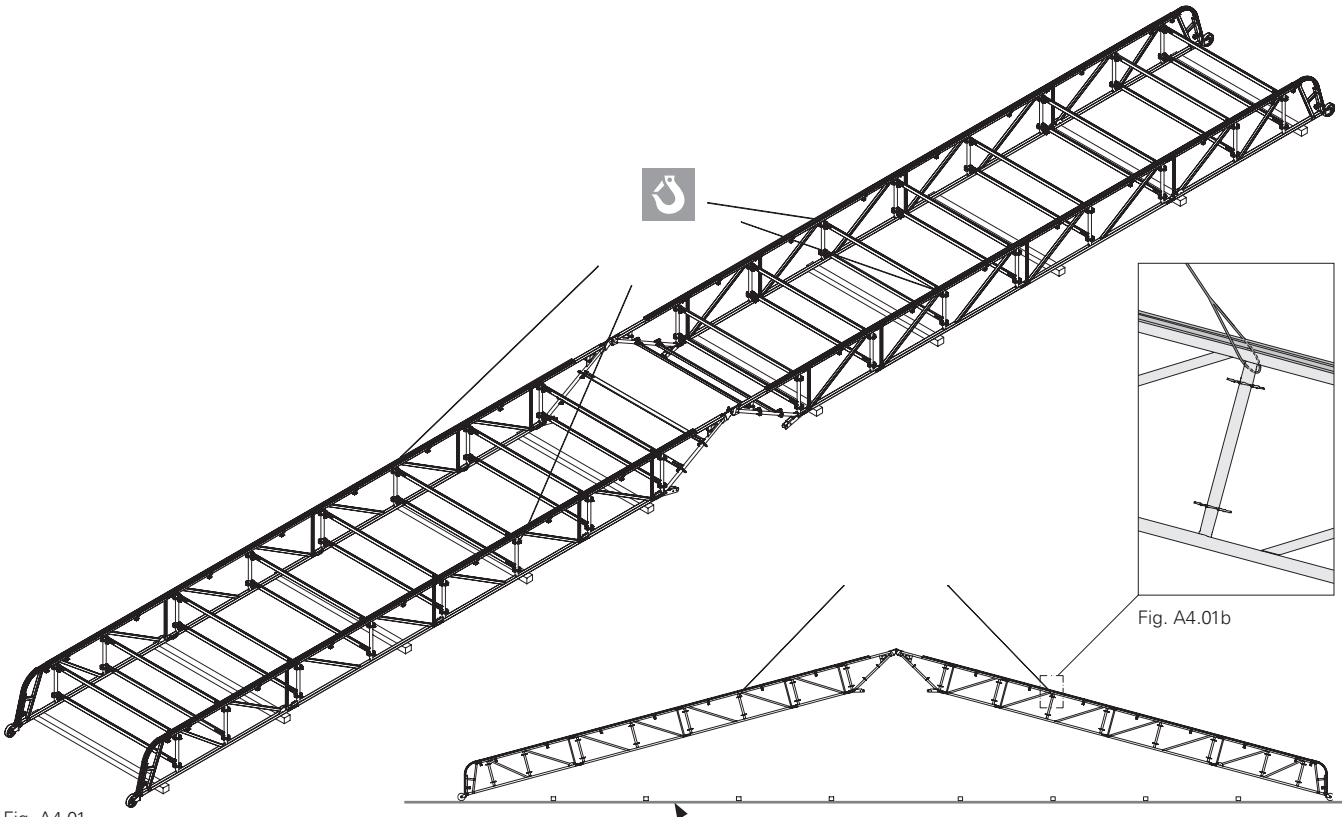


Fig. A4.01

Fig. A4.01b

Fig. A4.01a

Fitting the ridge bar

- The ridge bar determines the angle of the girder package.
- Fix the rectangular tube (**19.4**) of the ridge bar (**9**) to the brackets (**19.1**). For the bracket fixing process, see Section "With tension system", from page 18 onwards.

Assembly

1. Fit the rectangular tube (**19.4**) between the brackets (**19.1**) of the ridge bar (**19.5**) on one side with a bolt (**23.3**) and cotter pin (**23.4**) in an articulated manner.
2. Lift the girder package with the crane until the ridge bar can be swivelled into the second bracket. (Fig. A4.02a)
3. Align the holes and secure with 2 x bolts and 2 x cotter pins.
4. Fit another bolt and cotter pin on the hinged side. (Fig. A4.02b + A4.02c)

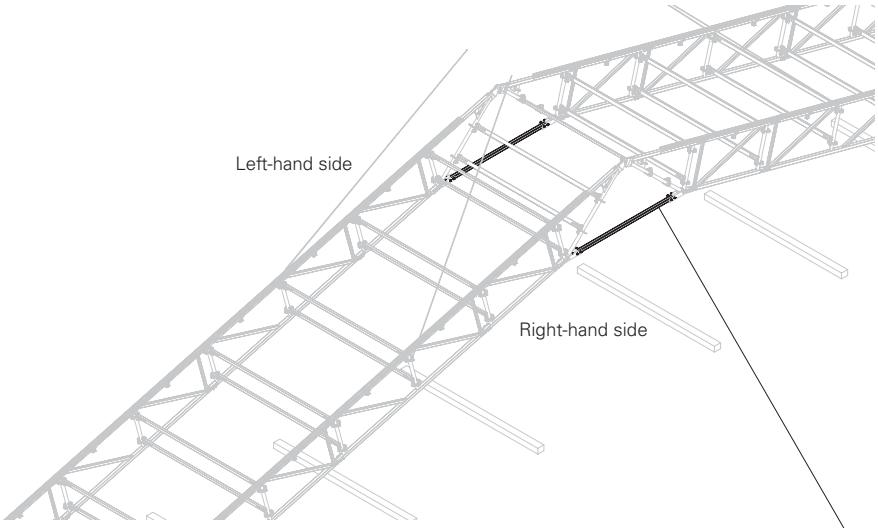


Fig. A4.02

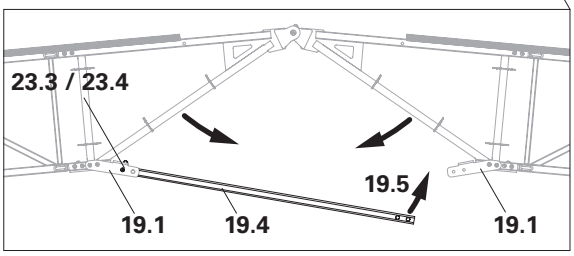


Fig. A4.02a

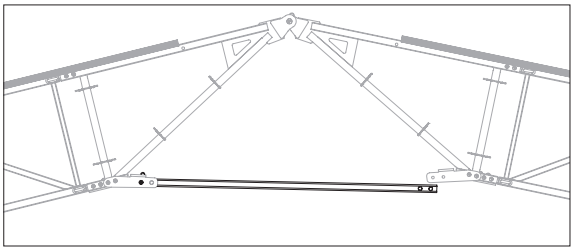


Fig. A4.02b

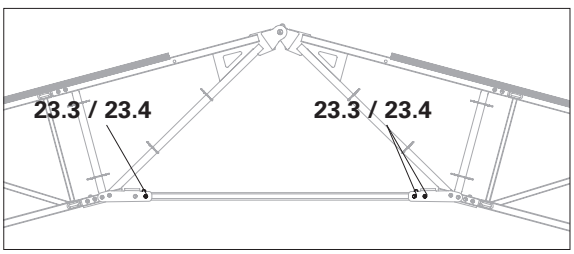


Fig. A4.02c

Fitting the ridge rail

Components

17	Keder Connector LGS URK	8x
22	Ridge Rail LGS URK 150	2x

Assembly

1. Place ridge rail (**22**) on the top chord of the ridge element.
2. Secure the keder connector (**17**) at the joint of the ridge rail and keder track – 2x.
3. Fit additional keder connectors.

(Fig. A4.03 + A4.03a)

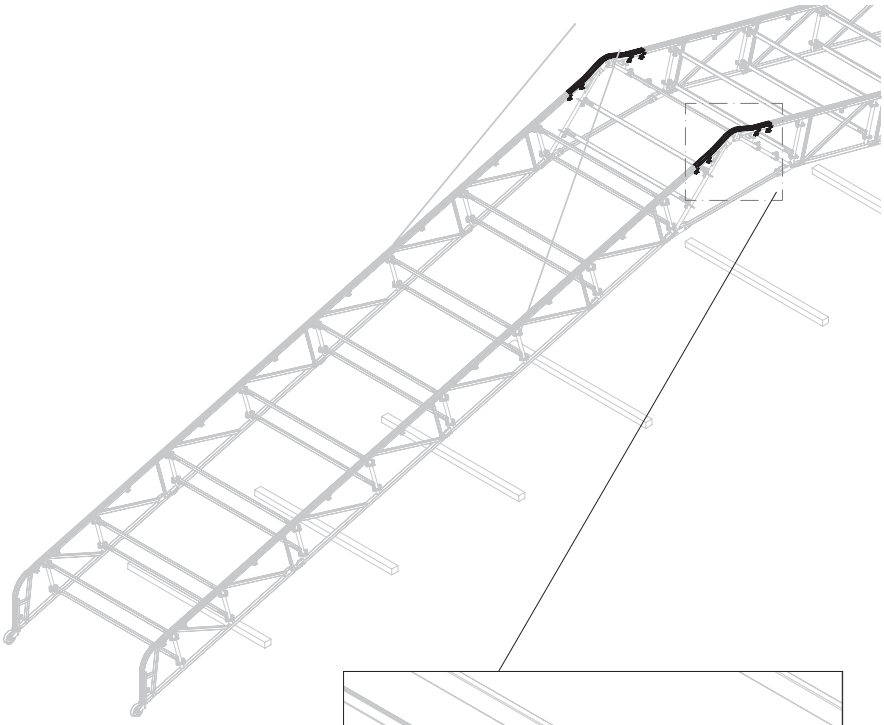


Fig. A4.03

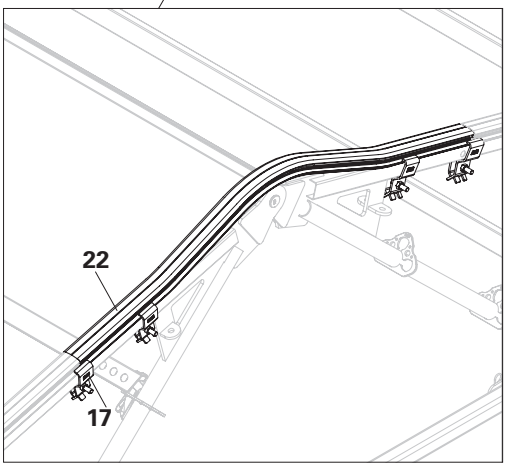


Fig. A4.03a

Fitting the reel connector

Components

23	Reel Connector LGS URG	2x

Preparation

1. Remove the nut (**23.4**) from the bolt (**23.3**) of the reel connector (**23**).

Assembly

1. Fix the reel connector (**23**) to the eave rail with bolts (**23.3**) and nuts (**23.4**) – 2x.

(Fig. A5.01 + A5.01a)

Fix the reel connector to the top holes. As a result, the tarpaulin can be pulled linearly into the guide.

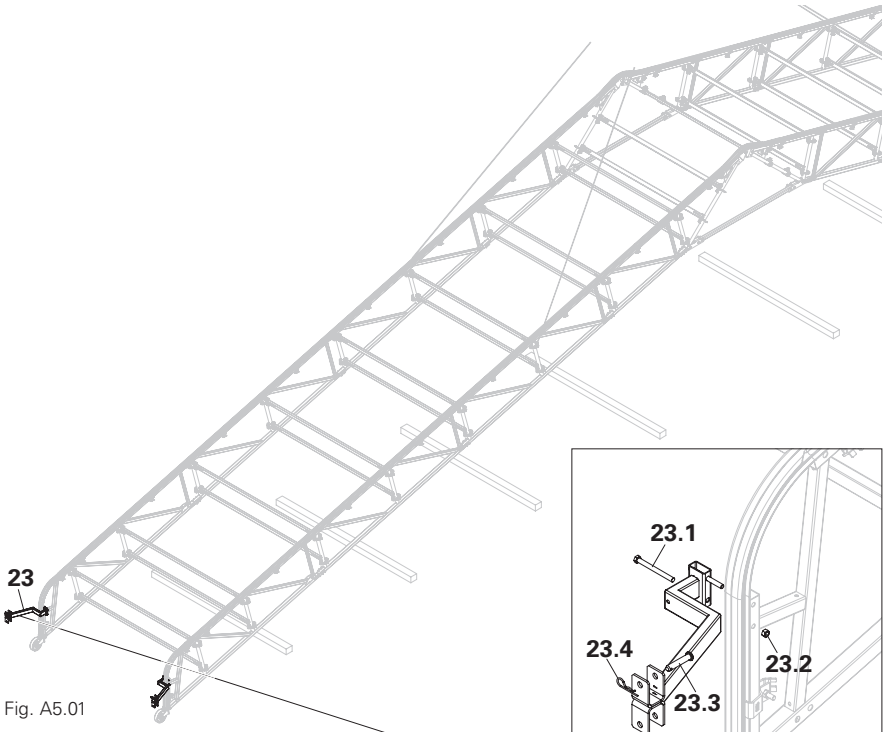


Fig. A5.01

Fig. A5.01a

Drawing in the keder tarpaulin

Components

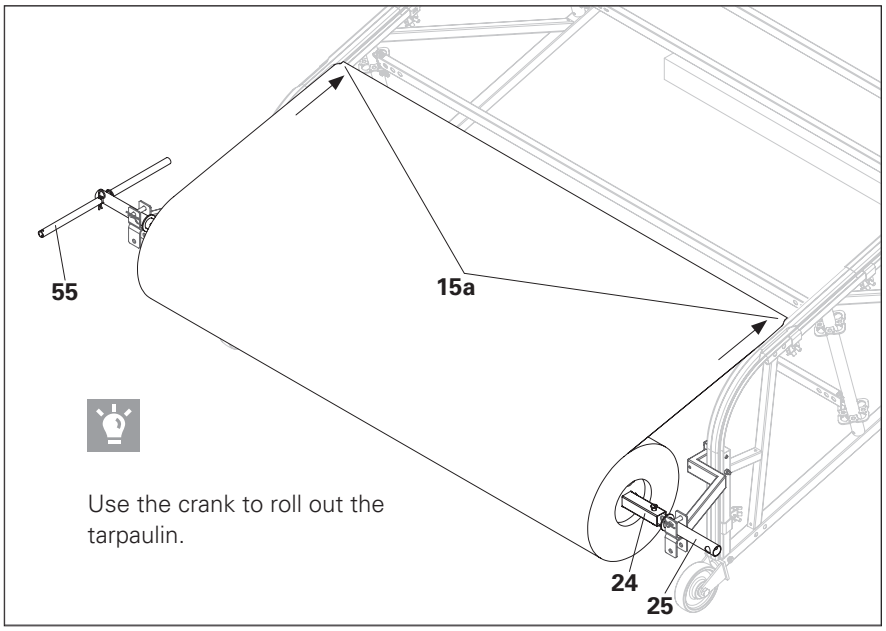
24	Tarpaulin Reel LGS URG 250	1x
25	Handle LGS URG	2x
55	Crank LGS URG	1x

Preparation

1. Remove the cotter pin (**23.4**) and bolt (**23.3**) from the reel connector (**23**). (Fig. A5.01a)
2. Fit the handles (**25**) onto the tarpaulin reel (**24**).
3. Fit the Crank LGS URG (**55**) in the handle on one side.

Assembly

1. Place the tarpaulin reel with the handles on both sides in the bearing plates of the reel connector. (Fig. A5.01a + Fig. A5.02)
2. Fix the bolts (**23.3**) and cotter pins (**23.4**).
   → The tarpaulin reel is secured.
3. Feed the keder cord (**24.2**) into the groove of the eave rails (**15a**). (Fig. A5.02)



Use the crank to roll out the tarpaulin.

Fig. A5.02

4. Hook the ropes into the keder tarpaulin (**24.1**).
5. Pull the keder tarpaulin smoothly and evenly over the girder package and allow the tarpaulin to hang loosely.
6. Unhook the ropes.
7. Feed the ends of the keder tarpaulin on the eave element into the groove of the eave rail.
8. Pull the tarpaulin downwards.
9. Unwind the last piece of the keder tarpaulin from the roller.
10. Remove the handle and tarpaulin reel.
11. Feed the keder cord into the groove.
12. Pull the tarpaulin downwards. (Fig. A5.04)

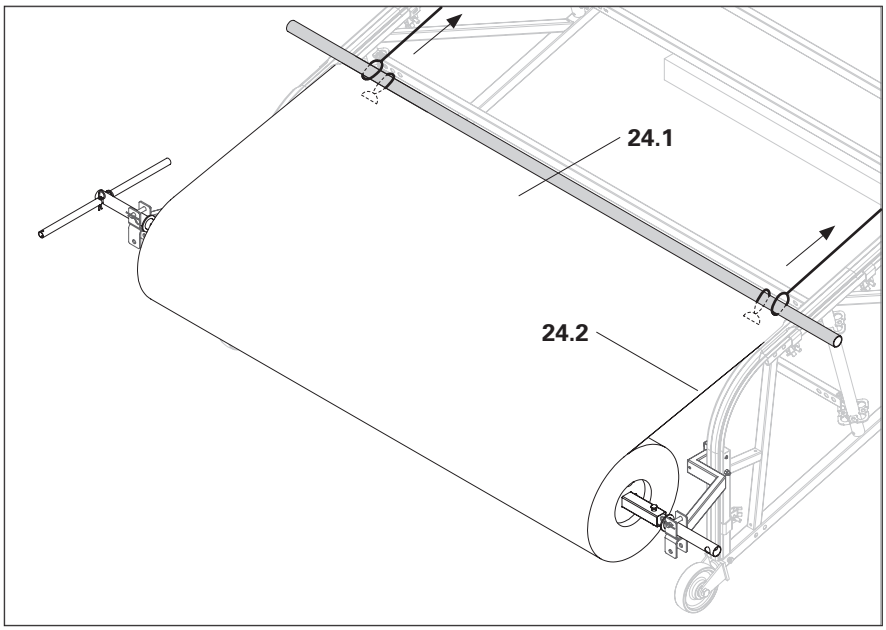


Fig. A5.03

- Place the tube on the keder rails and connect to the keder tarpaulin.
- Attach ropes to the tube. This allows the keder tarpaulin to be pulled easily over the girder package.
- Keep the keder tarpaulin tensioned on the roller, thus allowing the tarpaulin to be pulled straight.

(Fig. A5.03)

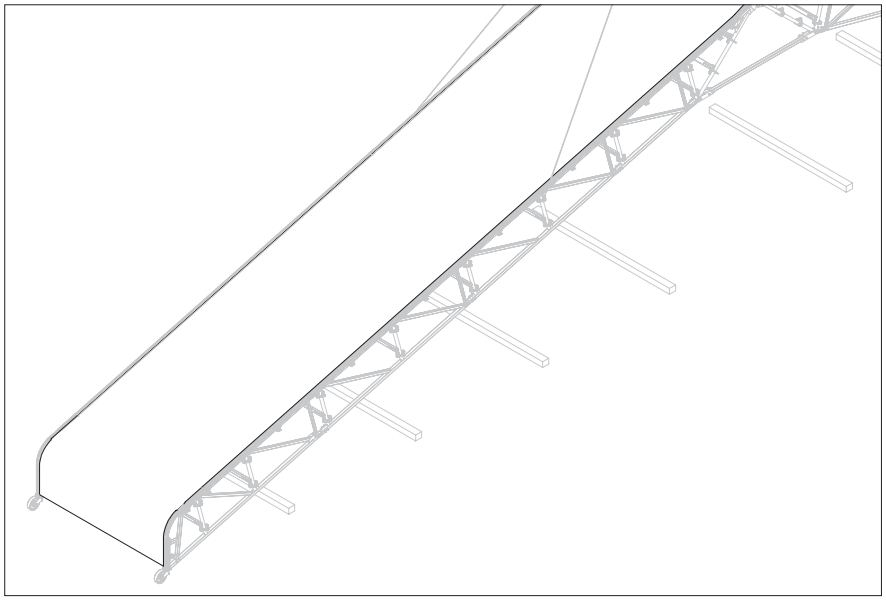


Fig. A5.04

Tarpaulin dimensions

The width of the tarpaulin (**24.1**) results from the system width, e.g. 2500 mm, minus 2 x 21 mm = 2458 mm.

The track (**24.2**) must have a diameter of 13 mm.
(Fig. A5.05)

The tarpaulin length must be determined on a project-specific basis.

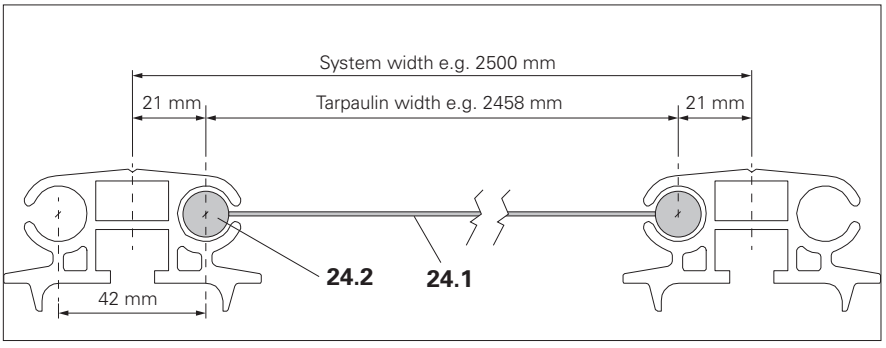


Fig. A5.05

Fitting the support

The support is designed for roofs with a 15° angle of inclination. (Fig. A6.01)

Components

2	Horizontal Ledger UH-2 250	2x
6	Pin Ø16x70 mm ga	12x
7	Cotter Pin 4/1 ga	12x
26	Support LGS URS 15°	4x

Preparation

1. Continue to raise the girder package with the crane.
2. Dismantle the support rollers – 4x.

Fitting a support

1. Attach the support (**26**) to the eave element with bolts (**6**) and secure with cotter pins (**7**):
   – 2x at the bottom through holes in the support and the eave element,
   – 1x above the bottom chord of the eave element.
2. Install the horizontal ledger (**2**).

(Fig. A6.01a)

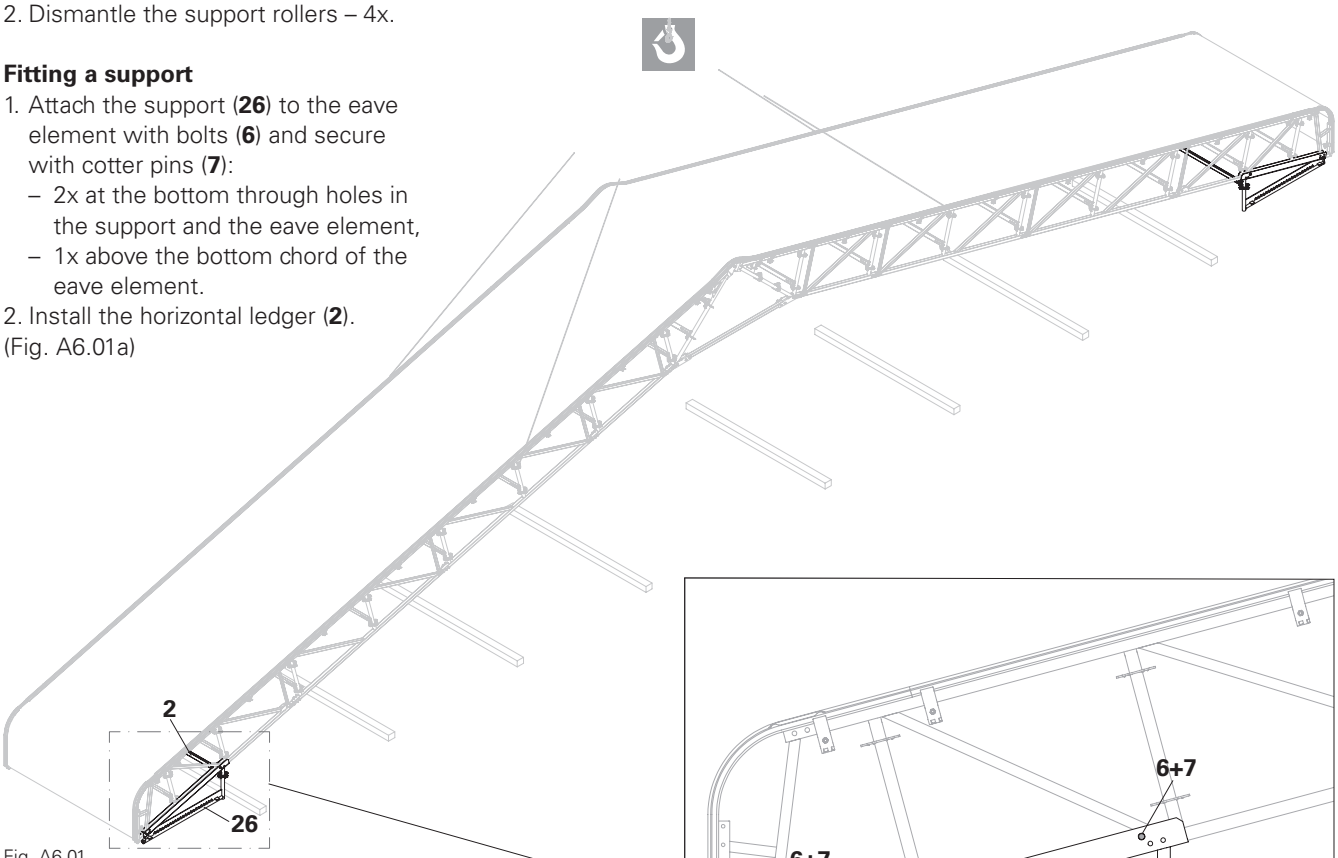
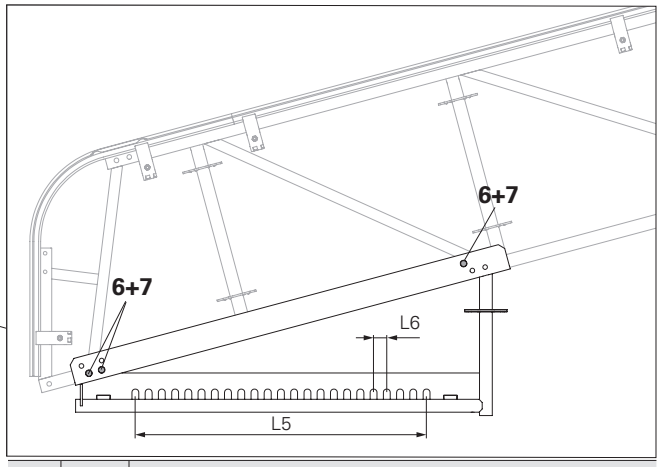


Fig. A6.01



L5	1.10	Adjustment range at Support URS
L6	0.05	Grid spacing at Support URS

Fig. A6.01a

Preparation

Larger spans are possible though the use of the tension system.

- Girder package must be placed on the ground for installing the tension system, and must not be suspended on the crane. (Fig. A7.01a)
- Suspension tie connector on standard element as eave element.

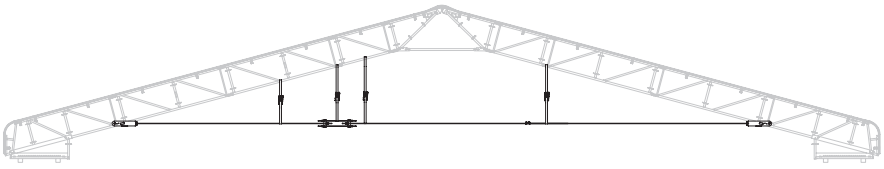


Fig. A7.01a

Preparation
Suspension Tie Connector URU is pre-assembled on eave element, see Section "With tension system", from page 18 onwards.

Full tension system fitted
(Fig. A7.02)

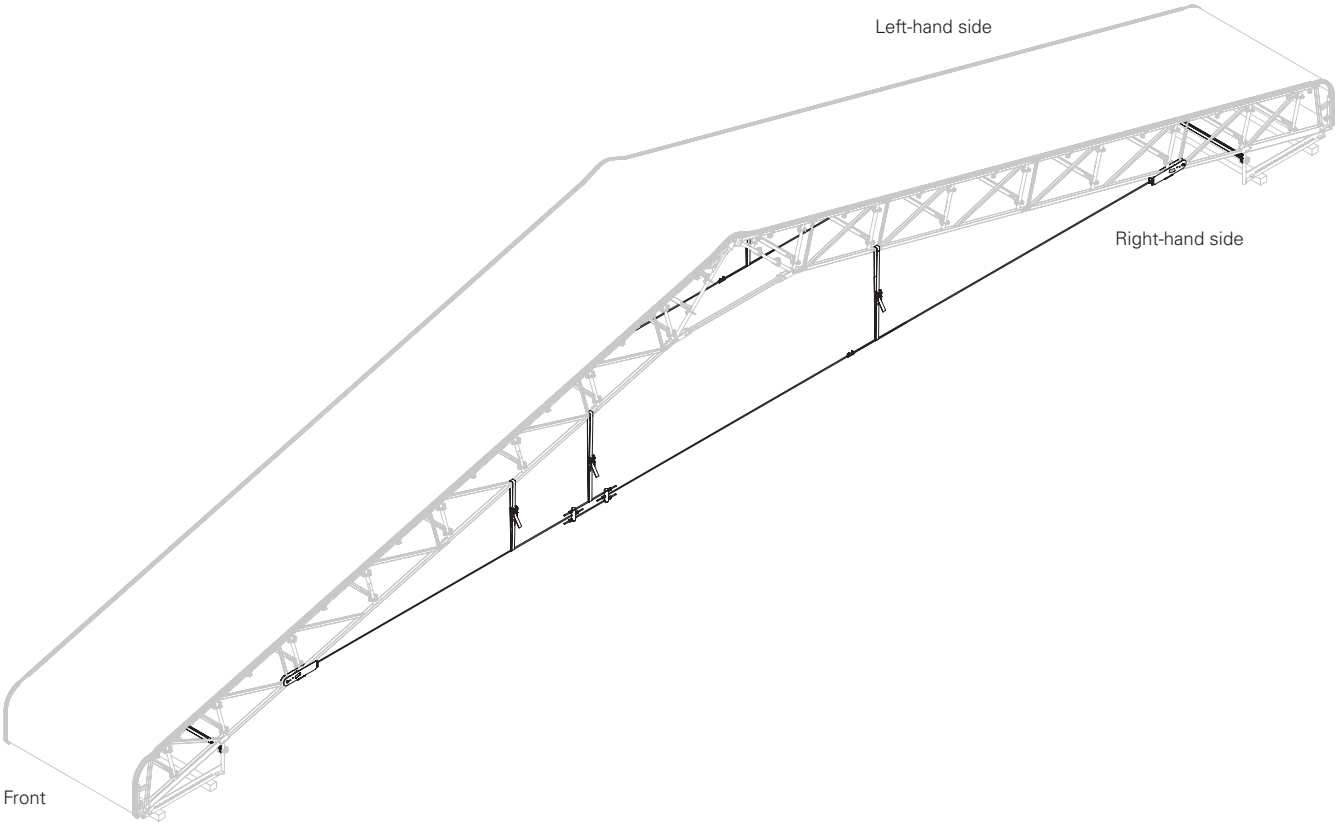


Fig. A7.02

Tie rods on both sides

Components

27a	Tie Rod DW 15, L = 6 m	4x
51	Tension Belt PTB 12	6x

Assembly

1. At each suspension tie connector (**50**), screw Tie Rod DW 15 (**27a**) into the hex nut (**50.3**) of the suspension tie connector (**50**).
   Make sure there is a projection of >100 mm! (Fig. A7.03a)
2. Fix the tie rods (**27a**) to the bottom chord with tension belts (**51**).

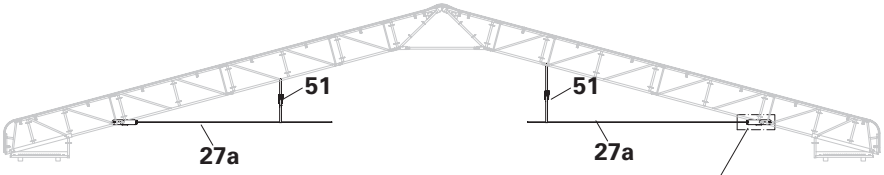


Fig. A7.03

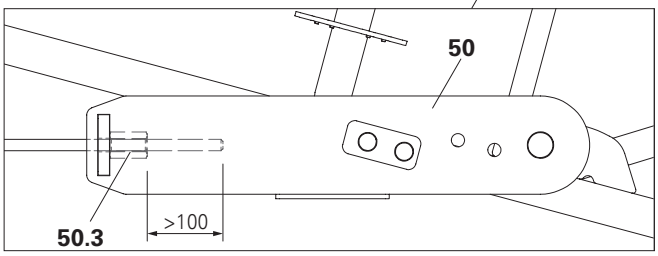


Fig. A7.04

Fig. A7.04a – Suspension tie connector on the eave element

Tie rod extensions

Components

27b	Tie Rod DW 15, L = 5 m	2x
52	Tie Rod Extension URU	2x

Preparation

1. Open the clamping screws (**52.2**).

Assembly

1. Screw the tie rod extension (**52**) onto the free end of the tie rod (**27a**) up to the stop.
2. Unscrew the tie rod extension until the flat side of the tie rod is perpendicular to the clamping screw (**52.2**).
3. Hand-tighten* the clamping screw (**52.2**).
4. Screw the second tie rod (**27b**) into the other end of the tie rod extension up to the stop. (Fig. A7.04a)
5. Unscrew the second tie rod until the flat side of the tie rod is perpendicular to the clamping screw (**52.2**).
6. Hand-tighten* the clamping screw (**52.2**).
   → Tie rods are coupled and secured.
7. Fix the tie rod (**27b**) to the bottom chord with a tension belt (**51**).

* hand-tightened = approx. 20 – 30 Nm

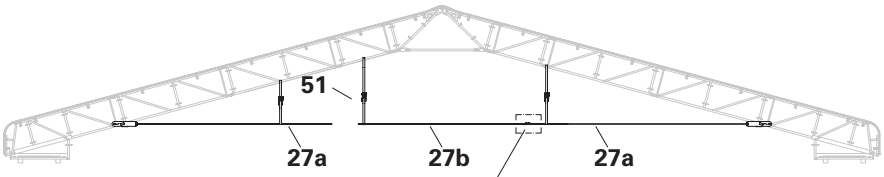


Fig. A7.04a

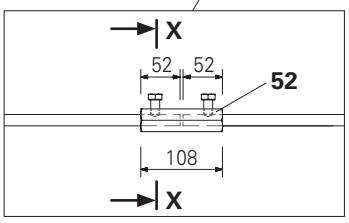


Fig. A7.04b

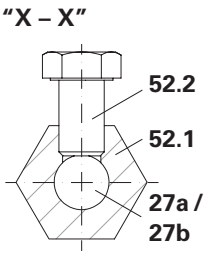


Fig. A7.04c

Tension system connector

Components

27c	Tie Rod DW 15, L = 1 m	4x
53	Anchor Tie Yoke URU	4x
54	Hex-Nut DW15 SW30 50 mm ga	12x

Assembly

1. Slide two anchor tie yokes (**53**) with the centre hole over one end of each of the tie rods (**27a / 27b**).
2. Loosely screw the hex nuts (**54**) onto the tie rods (**27a/27b**). Make sure there is a projection of >100 mm!
3. Push two tie rods (**27c**) through the outer holes of both anchor tie yokes.
4. Screw a hex nut (**54**) onto each of the 4 protruding ends of the tie rods (**27c**). Make sure there is a projection of >100 mm! (Fig. 7.05a)
5. Fix the tension belt (**51**) to one of the short tie rods.
6. Tighten both of the middle hex nuts (**54**) until the reference dimension of the respective span is reached. Reference dimensions for different spans, see Section "A12 Structural arrangements", from page 50 onwards

(Fig. A7.05)

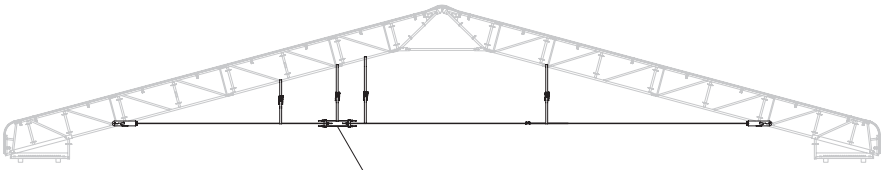


Fig. A7.05

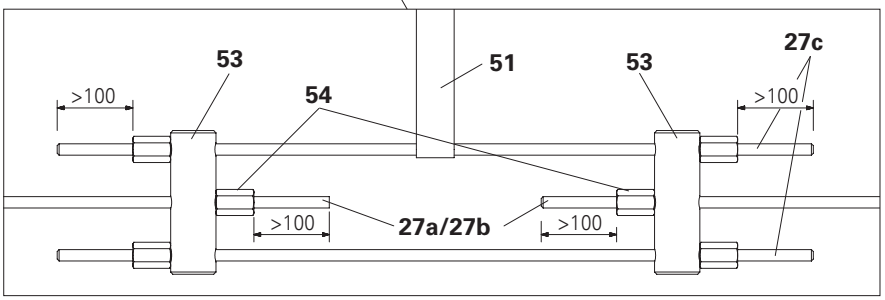


Fig. A7.05a

- Is the dimension of the protruding tie rod (**27a**) in the suspension tie connector > 100 mm? (Fig. A7.03a)
- Are the M12 x 20 clamping screws of the tie rod extensions tight? (Fig. A7.04b +c)
- Is the dimension of the 6 protruding tie rods (**27a / 27b / 27c**) in the tension system set > 100 mm? (Fig. A7.05a)
- Check reference dimension L1 and adjust if necessary. (Fig. A7.06)

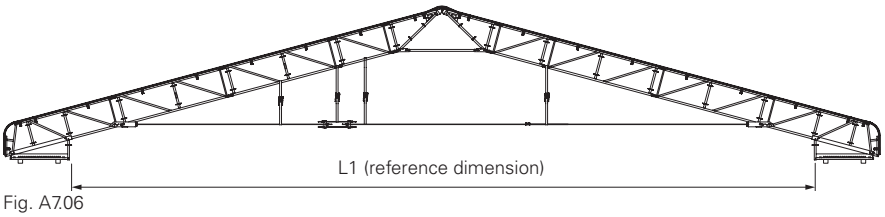


Fig. A7.06

- **Important distinction**
  The longitudinal pattern of the weather protection roof either
  – marries up with that of the load-bearing substructure, variant 1 (Fig. A8.01), or
  – does not marry up with that of the load-bearing substructure, variant 2 (Fig. A8.02).
- The load-bearing substructure begins with the lower edge of the ledger (**28**) and is not covered by these Instructions for Assembly and Use.
- The length "X" of the ledger is available in four sizes
  – URL 67/14
  – URL 75/14
  – URL 100/14
  – URL 150/14 – shown here

Variant 1

Components

28	Ledger URL 150/14	3x
29	Screw ISO 4014-M10x100-8.8-ga	6x
30	Nut ISO 7042 4032-M10	6x

Assembly

1. Fit the ledger (**28**) onto the ends of the standard – 3x. Ensure that the row of holes is at the top. (Fig. A8.01 + A8.01a)
2. Fit the bolt (**29**) and nut (**30**) onto the ledger and vertical – per ledger – 2x. (Fig. A8.01b)

Is the row of holes at the top?

In the further structure, a distinction is made between two variants:
- Moveable unit – with carriage, see Section "A9 Mobile girder package", from page 44 onwards.
- Fixed unit – with bearer, see Section "A10 Fixed girder package", from page 45 onwards.

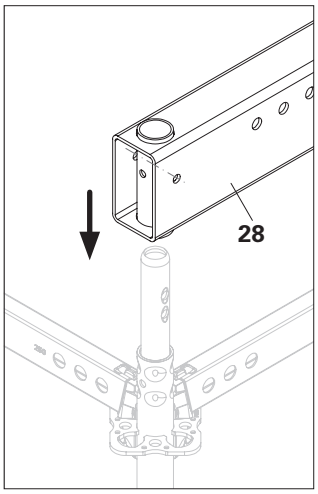


Fig. A8.01a

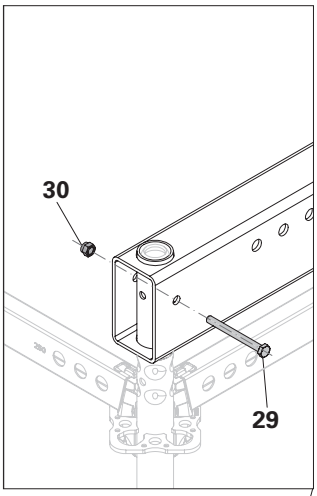


Fig. A8.01b

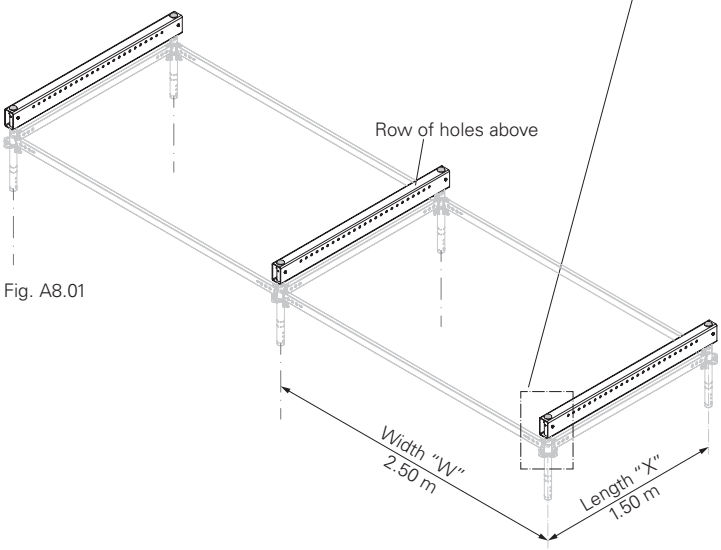


Fig. A8.01

When setting up the load-bearing substructure, pay attention to how the standards are aligned.

Variant 2

Required if the ledgers cannot be placed directly on the standards, e.g. due to structural conditions.

Components

3	Horizontal Ledger UHV-2 250	*2x
28	Ledger URL 150/14	1x
39	UH Spigot-2	*2x
40	Locking Pin Ø48/57	*2x

* 2x each ledger

Assembly

1. Fit the Horizontal Ledger UHV-2 (**3**) onto the load-bearing substructure.
2. Fit the UH Spigot-2 (**39**) onto the horizontal ledger (**3**) in 25 cm increments. (Fig. A8.02a)
3. Place the ledger (**28**) on UH Spigot-2 (**39**).
4. Secure the ledger (**28**) and the UH Spigot-2 (**39**) with the locking pin (**40**). (Fig. A8.02b)

(Fig. A8.02)

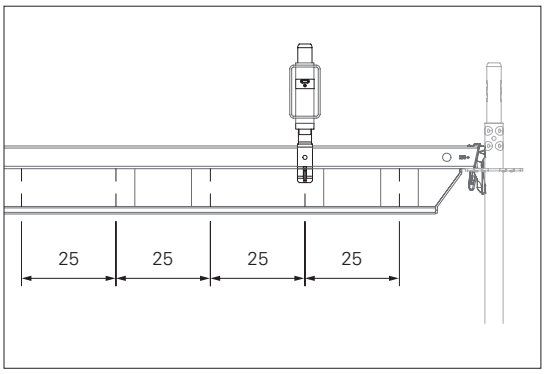


Fig. A8.02a

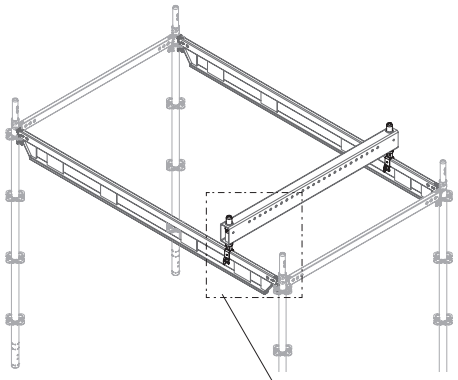


Fig. A8.02

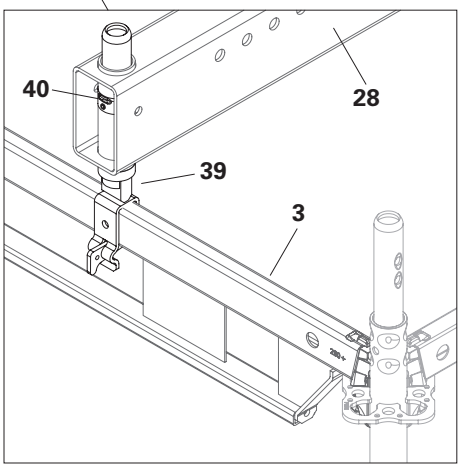


Fig. A8.02b

Permissible offset

- The following tables indicate the maximum permissible offset from the leg axis to the ledger in column "Y". The load is
  - conservatively set once on a UHV Ledger (P_z 100 %),
  - set in the centre of the Ledger URL (P_z 50 %).
- The distance **Y** is specified for all UHV ledger lengths together. For shorter ledger lengths, a greater distance **Y** may be possible for the respective UHV ledgers, see the PERI UP Design Tables in this regard. (Fig. A8.03)

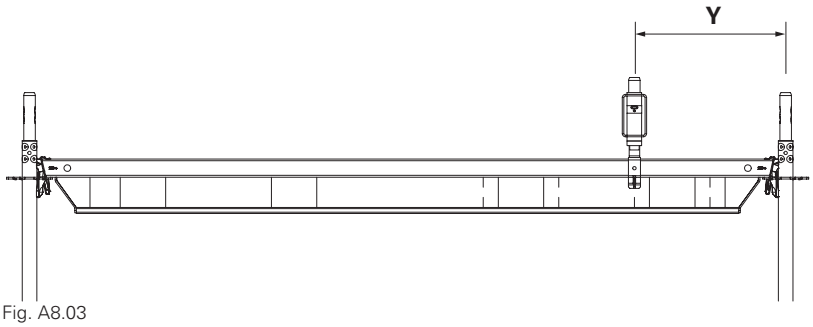


Fig. A8.03

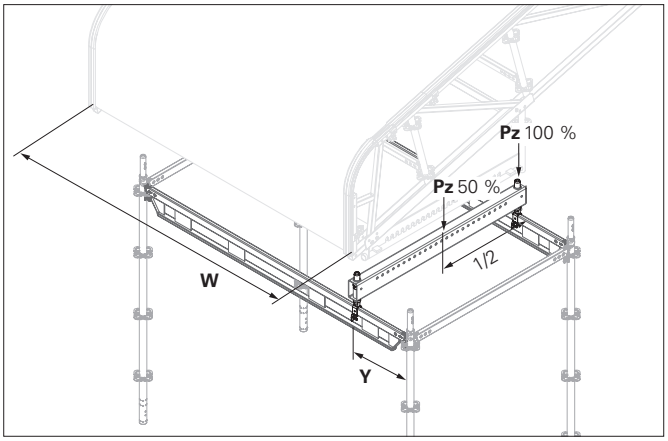


Fig. A8.04

Span 15.59 m
Single girder package

With tension system				
q [kN/m²]	**s** [kN/m²]	**W** [m]	**Y** (for all UHV)	
			P_Z 100 % [cm]	P_Z 50 % [cm]
0.35	0.10	3.00	50	centre
0.56	0.10	3.00	25	50
0.77	0.10	2.50	25	50
0.35	0.25	3.00	50	75
0.56	0.25	3.00	25	50
0.77	0.25	2.50	25	50
0.35	0.60	1.50	50	centre
0.56	0.60	1.50	25	75
0.77	0.60	1.50	25	50

Tab. A8.01

Without tension system				
q [kN/m²]	**s** [kN/m²]	**W** [m]	**Y** (for all UHV)	
			P_Z 100 % [cm]	P_Z 50 % [cm]
0.35	0.10	3.00	50	centre
0.56	0.10	3.00	25	50
0.77	0.10	2.50	25	50
0.35	0.25	2.50	50	centre
0.56	0.25	3.00	25	50
0.77	0.25	2.50	25	50

Tab. A8.02

Span 21.39 m
Girder package single or double

With tension system					
Girder package	**q** [kN/m2]	**s** [kN/m²]	**W** [m]	**Y** (for all UHV)	
				P_Z 100 % [cm]	P_Z 50 % [cm]
Single	0.35	0.10	3.00	50	75
Single	0.56	0.10	2.00	25	50
Double	0.77	0.10	1.00	25	75
Single	0.35	0.25	2.50	25	50
Single	0.56	0.25	2.00	25	50
Double	0.77	0.25	1.00	25	50
Single	0.35	0.60	1.00	25	75
Double	0.56	0.60	1.00	25	75
Double	0.77	0.60	1.00	25	50

Tab. A8.03

Without tension system					
Girder package	**q** [kN/m2]	**s** [kN/m²]	**W** [m]	**Y** (for all UHV)	
				P_Z 100 % [cm]	P_Z 50 % [cm]
Single	0.35	0.10	3.00	50	75
Single	0.56	0.10	2.00	25	75
Double	0.77	0.10	1.00	25	75

Tab. A8.04

Span 24.29 m
Girder package single or double

Span 24.29 m only possible with tension system.

With tension system					
Girder package	**q** [kN/m2]	**s** [kN/m²]	**W** [m]	**Y** (for all UHV)	
				P_Z 100 % [cm]	P_Z 50 % [cm]
Single	0.35	0.10	1.50	50	100
	0.56	–	–	–	–
	0.77	–	–	–	–
Double	0.35	0.25	1.00	50	centre
	0.56	–	–	–	–
	0.77	–	–	–	–

Tab. A8.05

q Wind load
s Snow load
W Width of the girder package
P_z Support point of the girder package on the ledger, load distribution on the two UHV 100/0 % offset 50/50 %
Y Distance between ledger and leg axis

Fitting the rail support

Connects the rail with the ledger.

Components

6b	Bolt Ø 16 x 150	3x
7	Cotter Pin 4/1 ga	3x
31	Rail Support URF	3x

Fitting a rail support

1. Place the rail support (**31**) on the ledger (**28**).
2. Secure the rail support on the ledger by means of bolts (**6b**) and cotter pins (**7**).
   → Secured connection

(Fig. A9.01 + A9.01a)

The exact position of the rail support (**31**) with the hole to be used is project-related and provided in the project drawing.

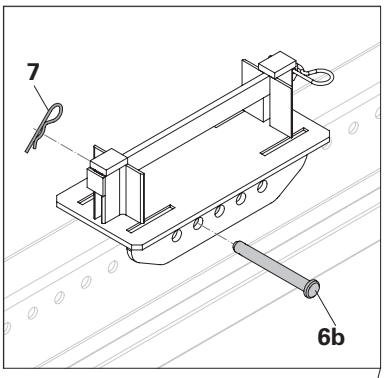


Fig. A9.01a

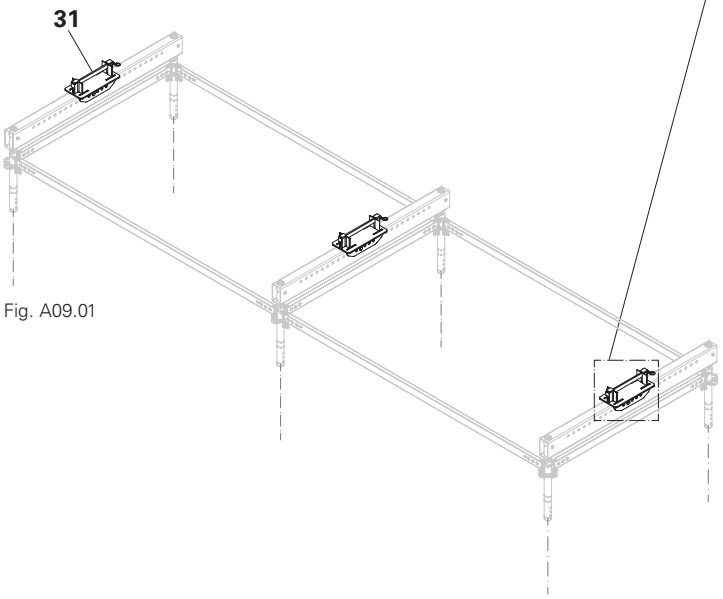


Fig. A09.01

Fitting the rail

The girder packages are moved on the rail.

The length "B" of the Rail URT has four different sizes:

- URT 150
- URT 200
- URL 250 – shown here
- URT 300

Components

32	Aluminium Rail URT 250	2x
33	Rail End Piece URD	1x

Preparation

1. Remove cotter pin (**31.1**) from the holder (**31.2**).
2. Pull out the holder (**31.2**).

"X" – view rotated

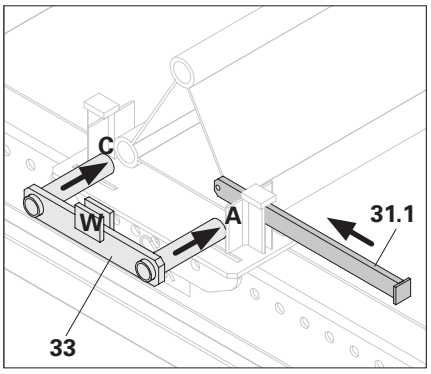


Fig. A9.02a

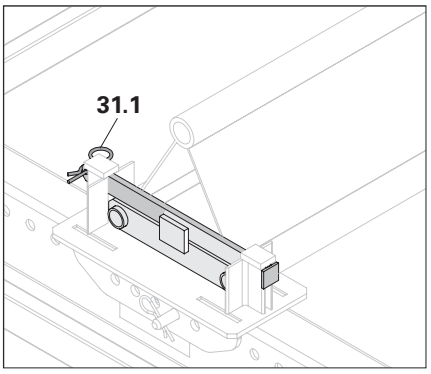


Fig. A9.02b

Assembly

1. Place one aluminium rail (**32**) between two rail supports (**31**). (Fig. 9.02)
2. Push one holder (**31.2**) through the guide of the rail support above the lower profile tubes (**32.1**). (Fig. 9.02c)
3. Insert a cotter pin (**31.1**) into the hole of the holder. (Fig. 9.02c)
   → The aluminium rail is securely locked.
4. Insert additional aluminium rails with pins (**32.1**) into the profile tubes of the first aluminium rails. (Fig. A9.02)
5. Repeat steps 2 + 3.
6. On the last aluminium rail, push the two pins of the rail end piece (**33**) into the two lower holes of the profile tube. (Fig. A9.02a)
7. Firstly, push the holder (**31.2**) through the guide of the rail support – at A – then between the brackets of the end piece – at B – and again through the guide of the rail support – at C. (Fig. A9.02a)
8. Insert a cotter pin (**31.1**) into the hole of the holder. (Fig. A9.02b)
   → The holder is secured.

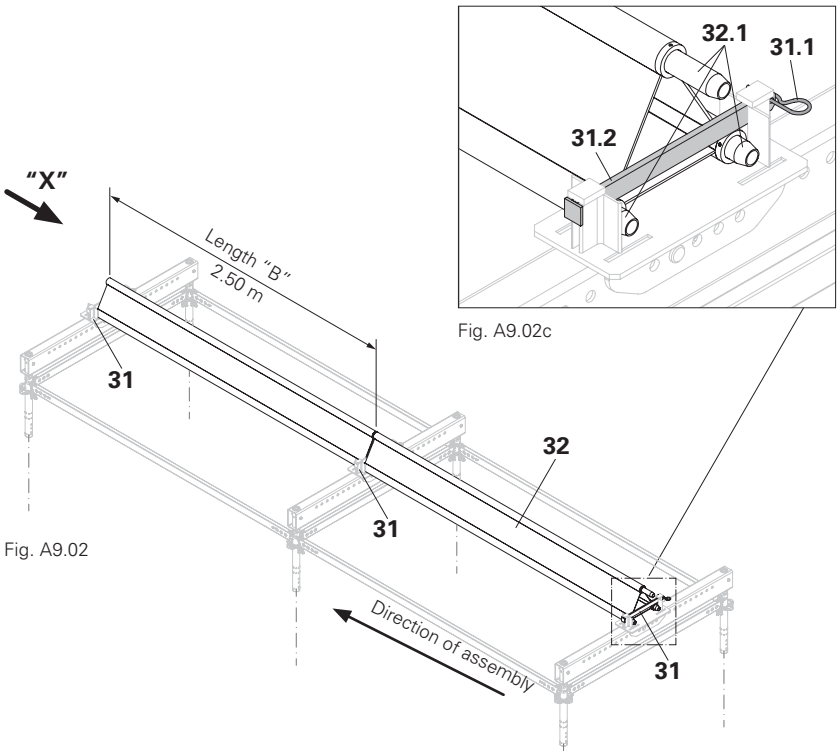


Fig. A9.02

Fig. A9.02c

Fitting stoppers

Stoppers limit the distance moved and are mounted at the open ends of the aluminium rail.

Components

34 Stopper URA–2	2x

Assembly

1. Place the stopper (**34**) with contour plate (**34.1**) and clamping piece (**34.2**) on the upper tube (**32.2**) of the aluminium rail. Take into consideration dimension > 100 mm. (Fig. A9.03a)
2. Secure the wedge (**34.3**) with a hammer.
   → The stopper is securely locked in position.

(Fig. A9.03)

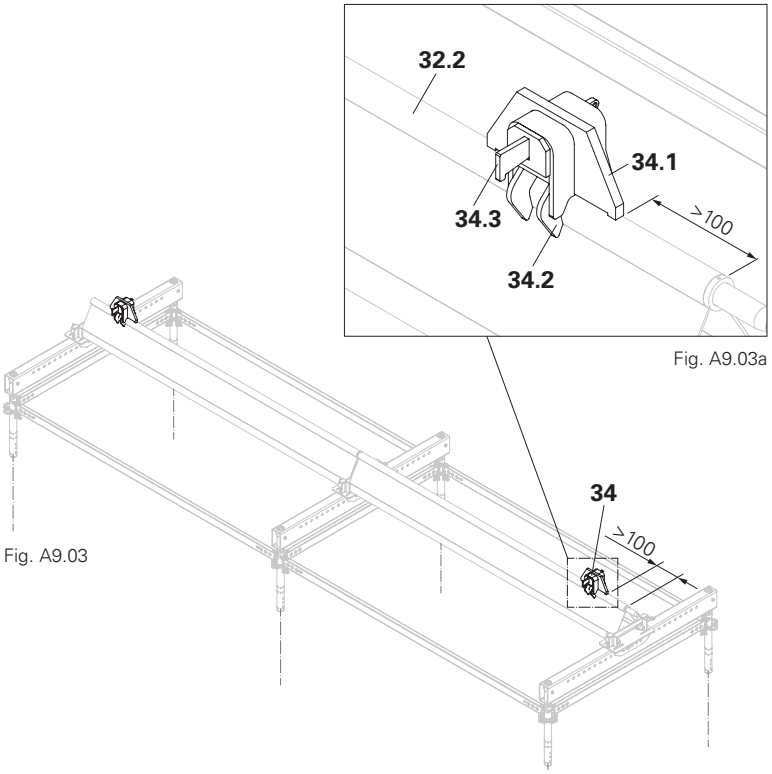


Fig. A9.03a

Fig. A9.03

Fitting the carriage

The carriage
- connects the support with the rail,
- can be moved in a longitudinal direction.
- allows for a horizontally movable bearing in the truss plane.

Components

35 Carriage URW	2x

Preparation

1. Release bolts M12 x 30 (**35.1**) – per block 2x – and remove blocks (**35.2**).
2. Remove cotter pin (**35.4**) and bolt (**35.3**).
3. Remove lift lock (**35.6**).
4. Set all components to one side.

Assembly

1. Place the carriage (**35**) with the rollers (**35.5**) on the tube (**32.2**) of the aluminium rail (**32.2**).
2. Fit the lift lock (**35.6**).
   → Carriage is secured against lifting.

(Fig. A9.04 + A9.04a)

Is the lift lock (**35.6**) lying on the side surfaces of the rail?

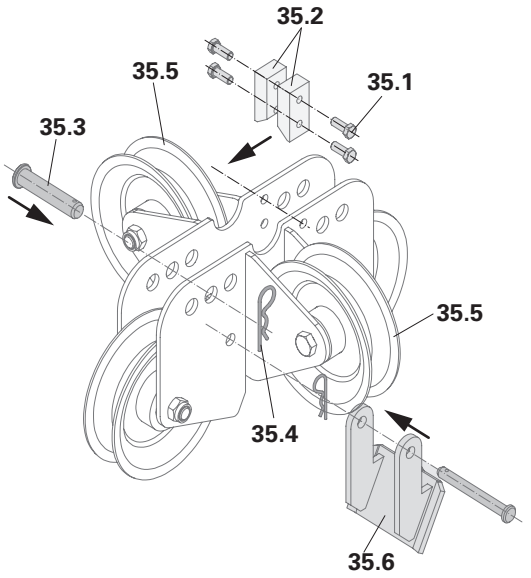


Fig. A9.04a

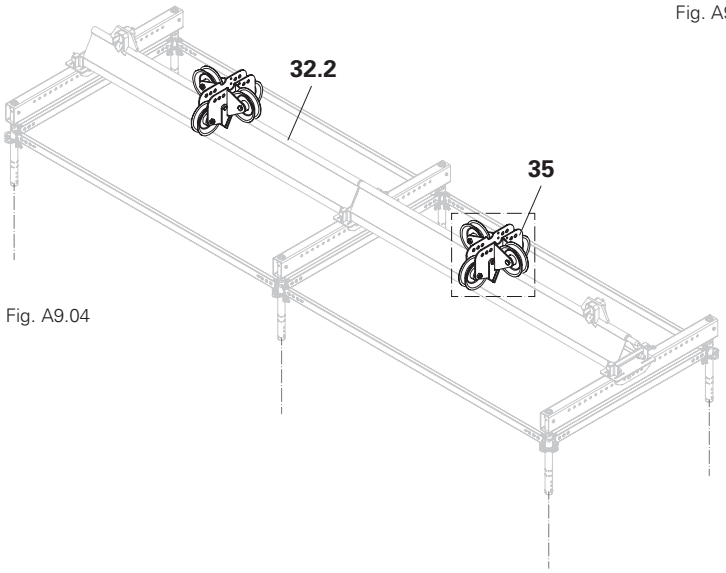
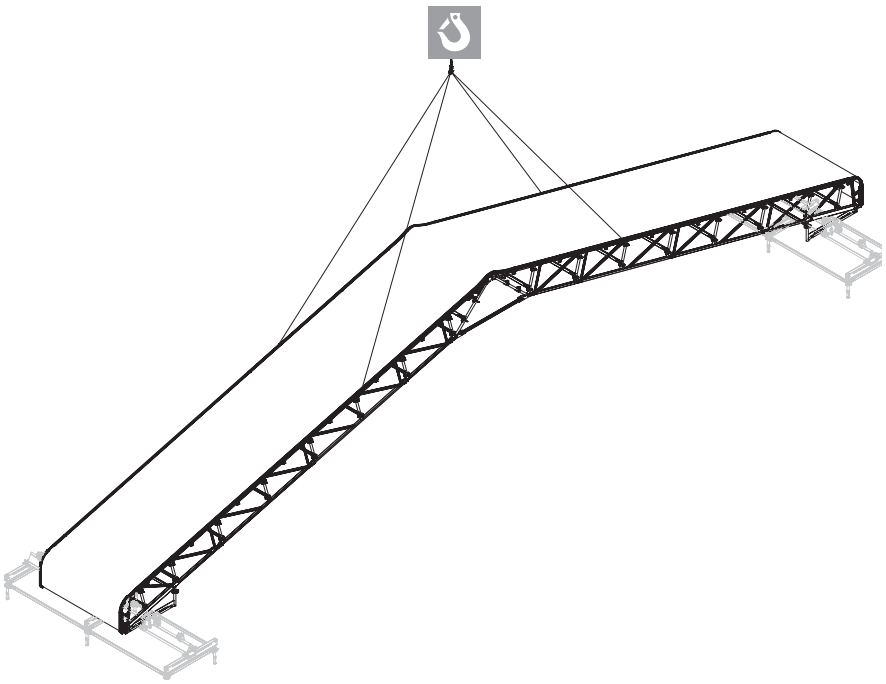


Fig. A9.04

Positioning the girder package on the carriage



Warning

- Component may swing out uncontrollably when lifted or due to wind and strike personnel. This can result in serious injuries or even death.

⇒ Keep a safe distance.

⇒ Guide the component with ropes.

- Loose parts can fall and strike personnel. This can result in serious injuries or even death.

⇒ Remove all loose parts before transportation by crane.

⇒ Do not stand under the suspended load!

- The girder package may roll away and crush body parts when it is set down. This can result in serious injuries.

⇒ Keep body parts away from pinch points.

⇒ When in the parking position, secure the girder package with additional means together with stoppers to prevent movement.

- The exact position of the support recesses (**26**) with the hole to be used on the carriage (**35**) is project-specific and is provided in the project drawing.
- Take into consideration the fixed and floating bearings.

Fitting a girder package

1. Lift the girder package with the crane and place it in the carriage.
2. Secure blocks with 2 bolts M12 x 30 (**35.1**) respectively – 2x. (Fig. A9.05a)
3. Insert bolts through the designated recess of the carriage (**35**) and hole of the support (**26**), and secure with cotter pins. (Fig. A9.05a)
   → Fixed bearing. (Fig. A9.05b)
4. Install the second side as described in step 2.
   Do not fasten bolts and cotter pins.
   → Floating bearing (Fig. A9.05c)
5. Secure the girder package to prevent it from rolling away unintentionally.

(Fig. A9.05)

Are the right and left sides of the girder package bolted in the same recess?

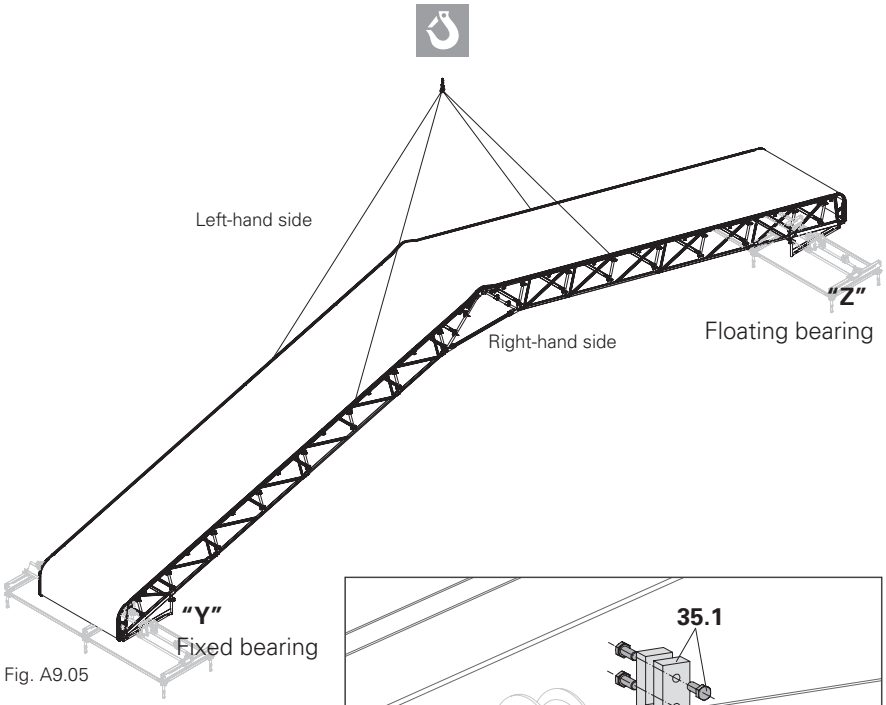


Fig. A9.05

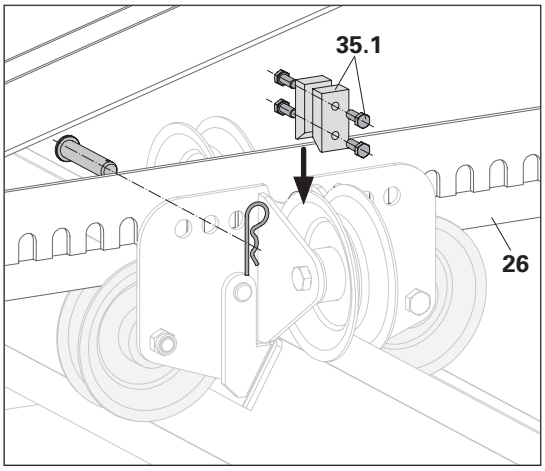


Fig. A9.05a – Bolts and cotter pins only on fixed bearing

"Y"

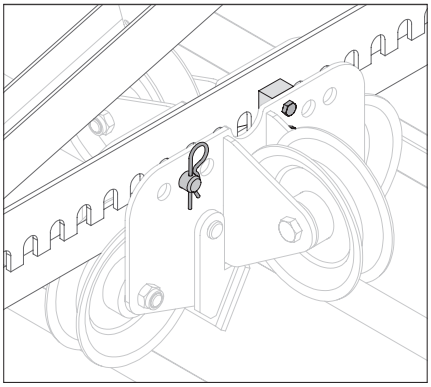


Fig. 9.05b Fixed bearing – bolted to the support

"Z"

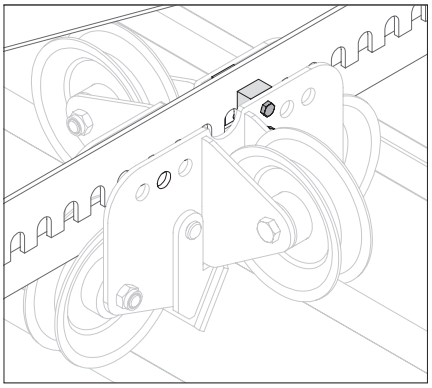


Fig. A9.05c Floating bearing – not bolted to the support

Fitting the bearer

- The exact position of the bearer (**36**) in the ledger (**28**) with the hole to be used is project-related and provided in the project drawing.
- Hole positions of the bearer are not mirrored. Therefore, always install the bearers in the same way.
- Use a maximum of 4 chains per bearer, i.e. one chain per bracket.
  For wider scaffolding bays, formwork chains may be lined up next to each other.
  For the number of chain pairs, see Section "Transfer of horizontal force", from page 58 onwards.

Preparation

1. Release cotter pins (**36.2**) and bolts (**36.1**) on the bearer (**36**) – 2x per bearer. (Fig. A10.01)

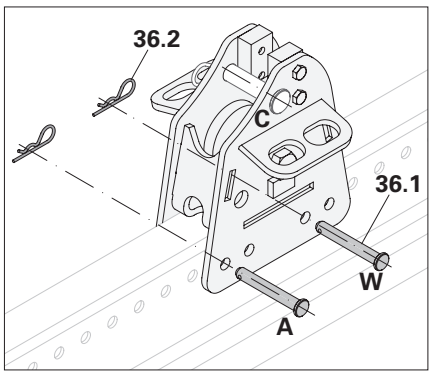


Fig. A10.01

Important distinction

The pattern of the weather protection roof either

- marries up with that of the load-bearing substructure, variant 1 (Fig. A10.02), or
- does not marry up with that of the load-bearing substructure, variant 2 (Fig. A10.03)

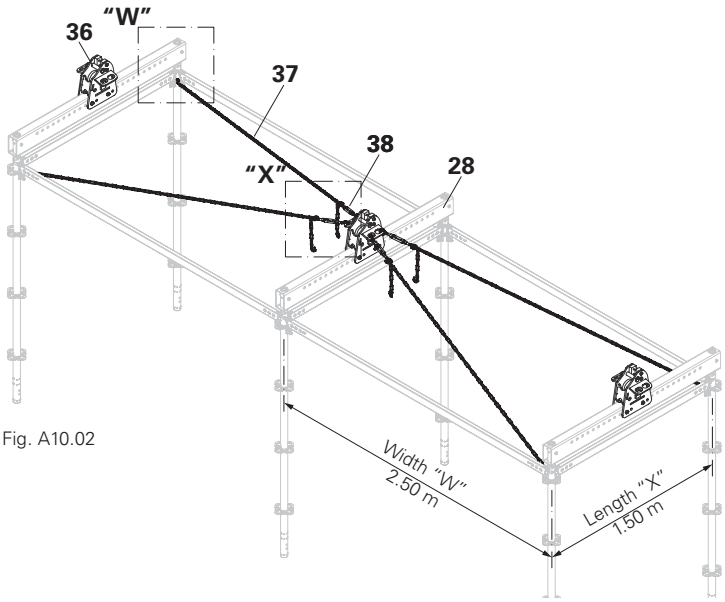


Fig. A10.02

Variant 1
Components

36	Barrier LGS URS 75	3x
37	Anchor chain L = 2.5 M / 3.0 kN	4x*
38	Turnbuckle M12 / 3.0 kN	4x*

* Number of chains according to Section B2.2

A10 Fixed girder package

Assembly

1. Place the bearer (**36**) on the ledger (**28**).
2. Fit one bolt (**36.1**) and one cotter pin (**36.2**) into both **A** + **B**. (Fig. A10.02a)
3. Attach the anchor chain (**37**) to the leg. (Fig. A10.02c)
4. Attach a turnbuckle (**38**) to a hole in the bracket on the bearer. (Fig. A10.02d)
5. Attach a turnbuckle (**38**) to the anchor chain (**37**). (Fig. A10.02d)
6. Tension the anchor chain with the turnbuckle.

→ The bearer with bracing has been fitted. (Fig. A10.02)

7. For fitting additional chains, see steps 3 to 6.

Have the bearers
– been installed with the same orientation?
– been bolted in the same hole?

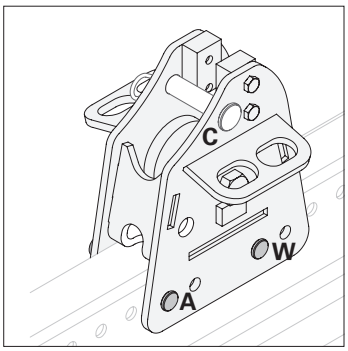


Fig. A10.02a Fixed bearing – with bolt C

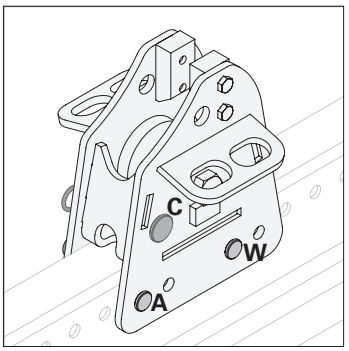


Fig. A10.02b Floating bearing – bolt C parked

Variant 2
(Fig. A10.03)

- Fit the Ledger URL (**28**) on Horizontal Ledger UHV-2.
- Components and assembly are the same as Variant 1, see Fig. A10.3.

If the round hole in the rosette is already occupied, place the anchor chain around the standard beneath the rosette and attach the hook to the chain link.

"W"

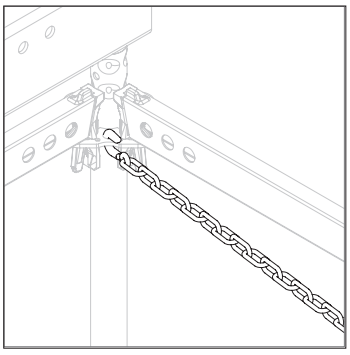


Fig. A10.02c

"X"

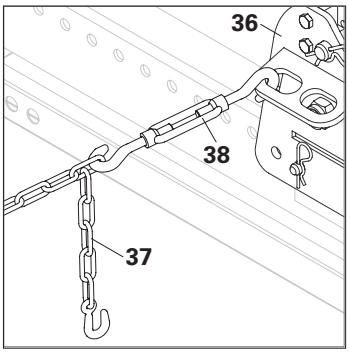


Fig. A10.02d

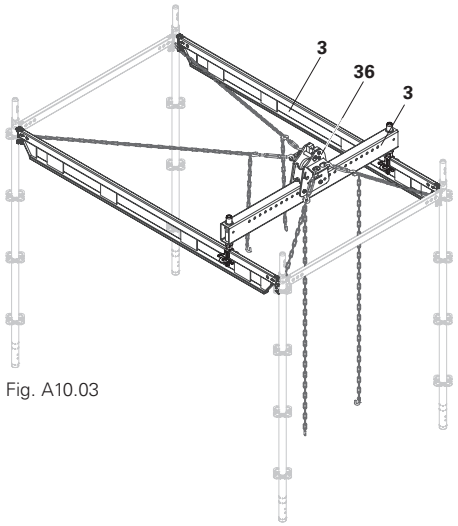


Fig. A10.03

Positioning the girder package on the bearer

Warning

- Component may swing out uncontrollably when lifted or due to wind and strike personnel. This can result in serious injuries or even death.

⇒ Keep a safe distance.
⇒ Guide the component with ropes.

- Loose parts can fall and strike personnel. This can result in serious injuries or even death.

⇒ Remove all loose parts before transportation by crane.
⇒ Do not stand under the suspended load!

Preparation

1. Remove the blocks (**36.1**). (Fig. A10.03a)

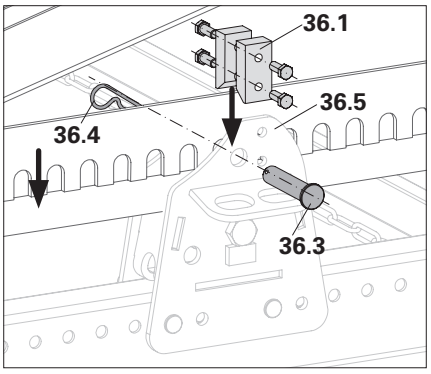


Fig. A10.03a

A10 Fixed girder package

Assembly

1. Lift the girder package with the crane and position it between the brackets of the bearer (**36.5**).
2. Secure blocks (**36.1**) with 2 bolts M12 x 30 respectively – 2x. (Fig. A10.03b + A10.03c)
3. Fixed bearing: Fit a bolt (**36.3**) and cotter pin (**36.4**) into the upper hole of the bearer.
   → The bearer and girder package are now securely connected. (Fig. A10.03b)
4. Floating bearing: Fit a bolt (**36.3c**) and cotter pin (**36.4**) into the lower hole of the bearer.

→ The bolt and cotter pin are parked. (Fig. A10.03c)

(Fig. A10.03 + A10.03a)

Are the right and left sides of the girder package bolted in the same recess?

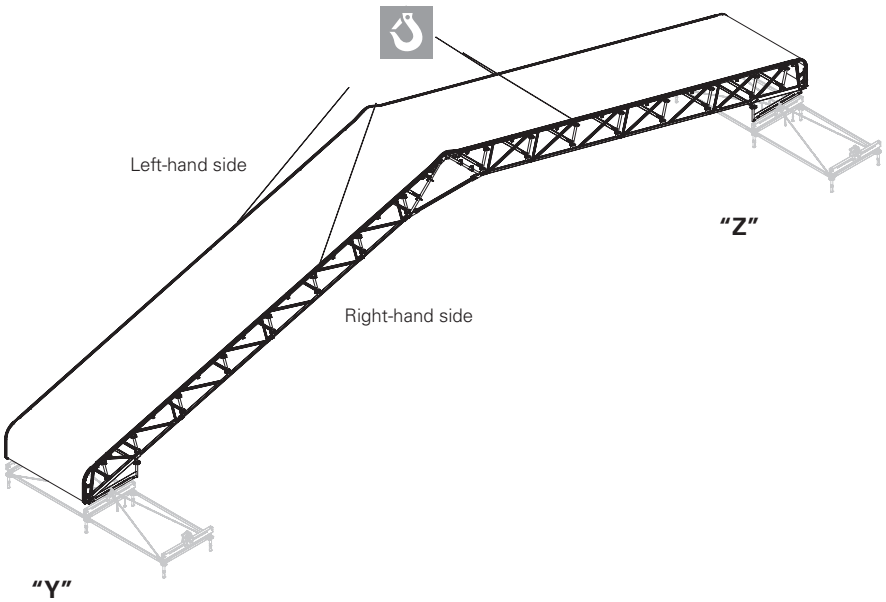


Fig. A10.03

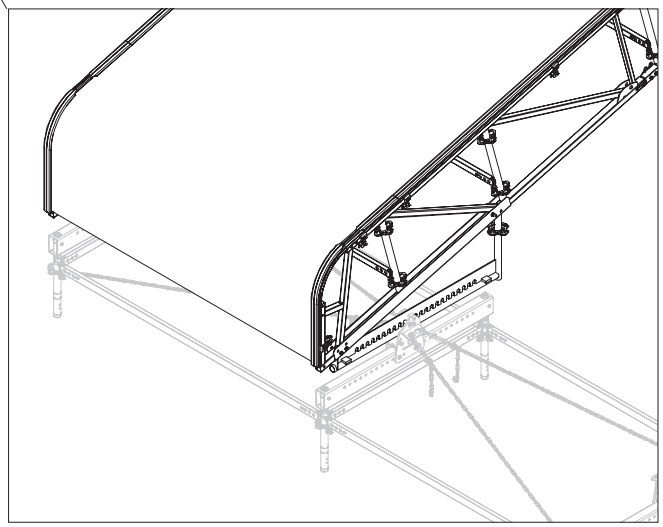


Fig. A10.03a

"Y" – Fixed bearing

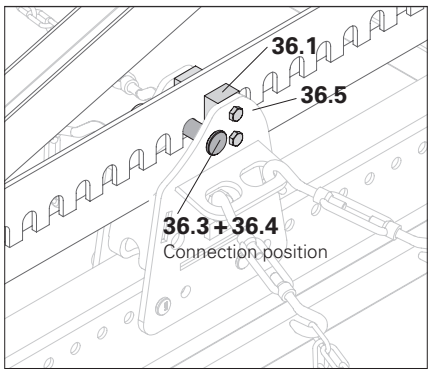


Fig. A10.03b

"Z" – Floating bearing

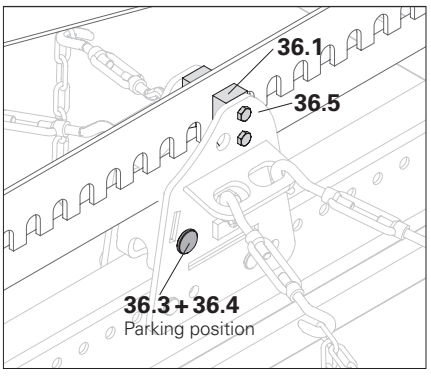


Fig. A10.03c

Dismantling the weather protection roof

Dismantle the LGS Weather Protection Roof in the reverse order as shown in the assembly procedure.

Removal

1. Release the bearer (fixed girder package) or carriage (mobile girder package), and lift girder package above the ground.
2. Dismantle supports 15°.
3. Fit the support rollers.
4. Place girder package on ground.
5. Dismantle keder tarpaulin with roller and crank.
6. Dismantle girder package.
7. Dismantle ledgers.
8. Dismantle bearer.

(Fig. A11.01)

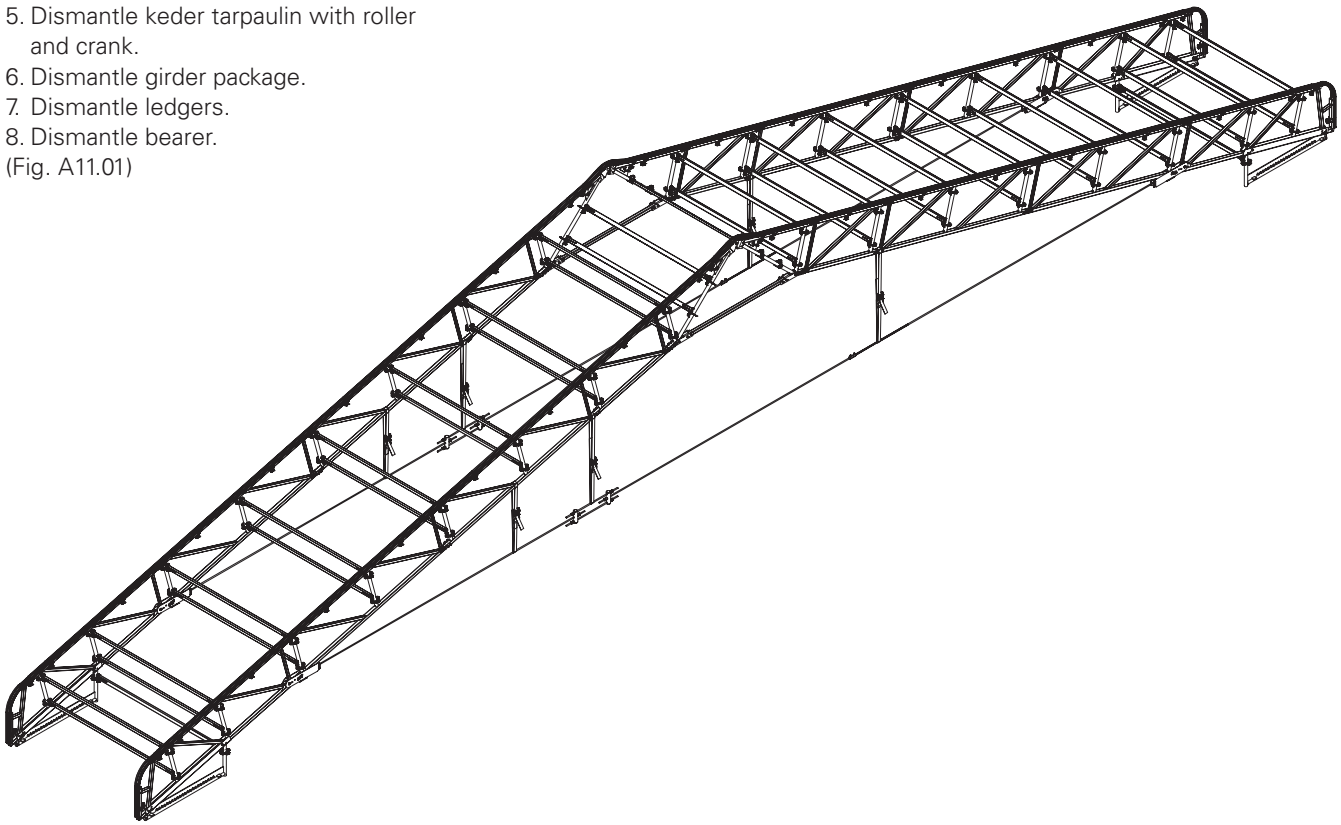


Fig. A11.01 – without keder tarpaulin

Span 15.59 m

- Caution, see Section "Safety instructions", from page 15 onwards.
- Ledgers on the support are mounted end-to-end.

Girder package permissible with or without tension system.
(Fig. A12.01)

Tension system
If necessary, connect the tension system to the eave element.
(Fig. A12.01)

Intermediate bays
Connect the individual girder packages with horizontal ledgers.
(Fig. A12.02)

The numbers in Fig. A12.01 refer to the suspension points of the connecting components of the intermediate bays in Fig. A12.02.

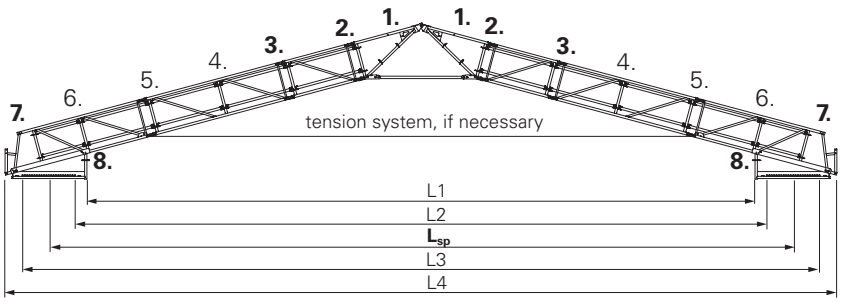


Fig. A12.01

System dimensions [m]		
L1	14.00	Clear width
L2	14.49	Minimum span
L_{sp}	**15.59**	**Span**

System dimensions [m]		
L3	16.69	Maximum span
L4	17.43	Total width of the roof

Tab. A12.01

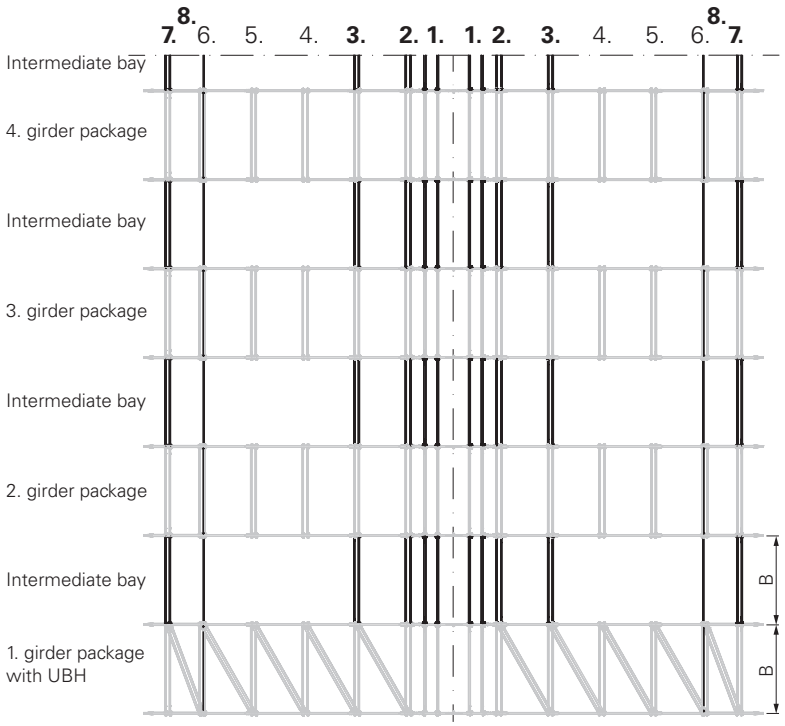


Fig. A12.02

Snow load s [kN/m²]		0.10			0.25			0.60		
Wind load q [kN/m²]		**0.35**	**0.56**	**0.77**	**0.35**	**0.56**	**0.77**	**0.35**	**0.56**	**0.77**
with tension system	**Max. width W [m]**	3.00	3.00	2.50	3.00	3.00	2.50	1.50	1.50	1.50
	Edge area	Single	Single	Single	Single	Single	Single	Single	Single	Single
without tension system	**Max. width W [m]**	3.00	3.00	2.50	2.50	2.50	2.50			
	Edge area	Single	Single	Single	Single	Single	Single			

Tab. A12.02

Span 21.39 m.

- Caution, see Section "Safety instructions", from page 15 onwards.
- Ledgers on the support are mounted end-to-end.

Girder package permissible with or without tension system.
(Fig. A12.03)

Tension system
If necessary, connect the tension system to the eave element.
(Fig. A12.03)

Intermediate bays
- Connect the individual girder packages with Horizontal Ledgers UH-2. (Fig. A12.04a)
- The edge bay can consist of one or two girder packages. (Fig. A12.04b)

The numbers in Fig. A12.03 refer to the suspension points of the connecting components of the intermediate bays in Fig. A12.03a + .Fig. A12.03b

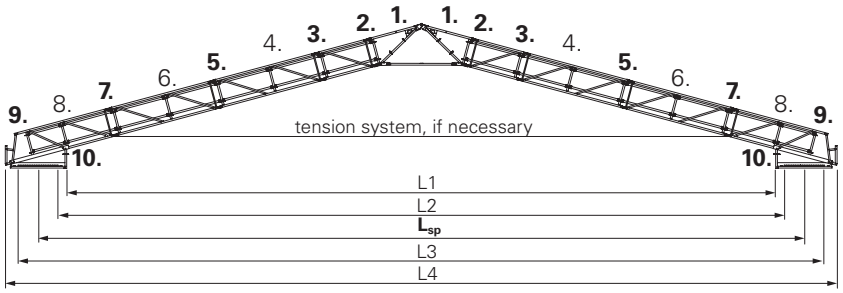


Fig. A12.03

System dimensions [m]		
L1	19.79	Clear width
L2	20.29	Minimum span
L_{sp}	**21.39**	**Span**

System dimensions [m]		
L3	22.49	Maximum span
L4	23.22	Total width of the roof

Tab. A12.03

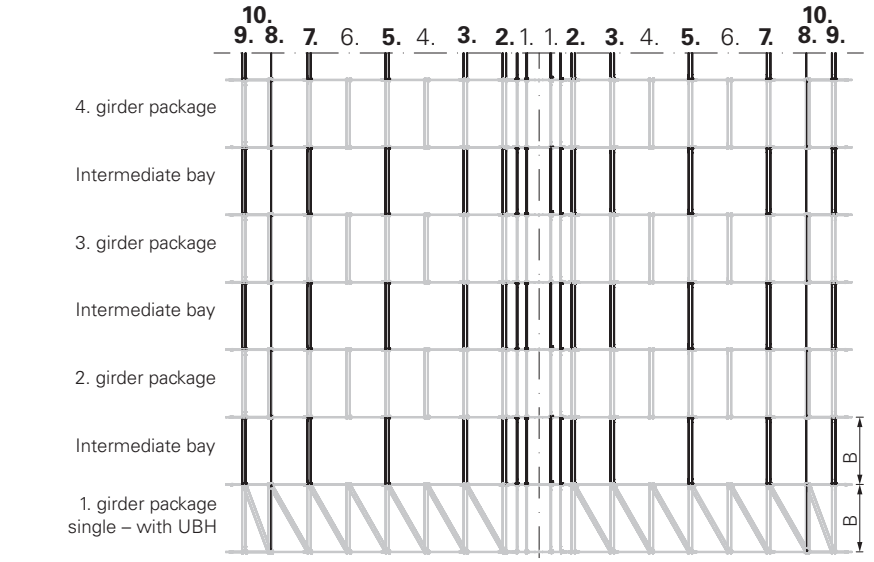


Fig. A12.03a

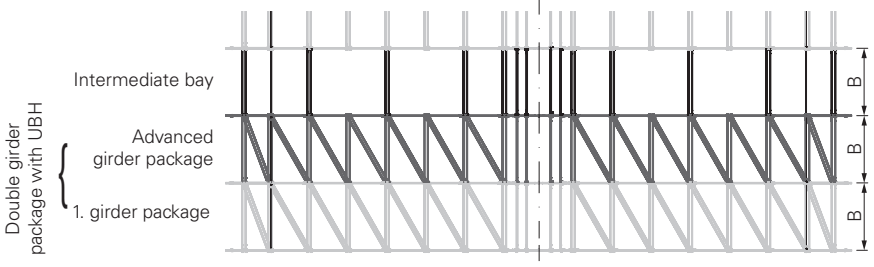


Fig. A12.03b

Snow load s [kN/m²]		0.10			0.25			0.60		
Wind load q [kN/m²]		**0.35**	**0.56**	**0.77**	**0.35**	**0.56**	**0.77**	**0.35**	**0.56**	**0.77**
with tension system	**Max. width W [m]**	3.00	2.00	1.00	2.50	2.00	1.00	1.00	1.00	1.00
	Edge area	Single	Single	Double	Single	Single	Double	Single	Double	Double
without tension system	**Max. width W [m]**	2.50	1.50	1.00						
	Edge area	Single	Single	Double						

Tab. A12.04

Span 24.29 m

- Caution, see Section "Safety instructions", from page 15 onwards.
- Ledgers on the support are mounted end-to-end.

Girder package permissible with or without tension system.
(Fig. A12.04)

Tension system
If necessary, connect the tension system to the eave element.
(Fig. A12.05)

Intermediate bays
- Connect the individual girder packages with Horizontal Ledgers UH-2. (Fig. A12.06a)
- The edge bay can consist of one or two girder packages. (Fig. A12.04b)

The numbers in Fig. A12.05 refer to the suspension points of the connecting components of the intermediate bays in Fig. A12.06a + A12.06b.

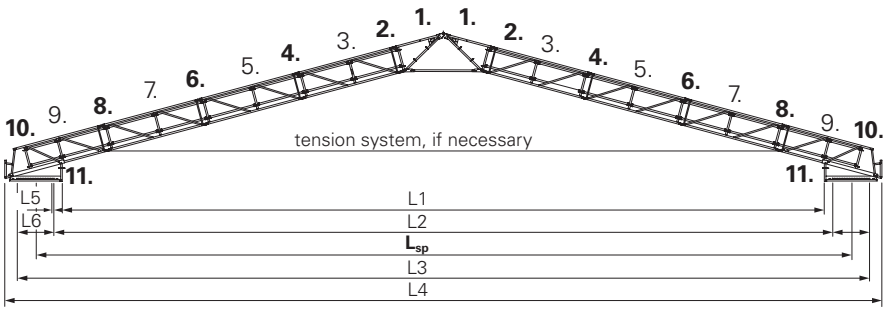


Fig. A12.04

System dimensions [m]		
L1	22.69	Clear width
L2	23.19	Minimum span
L_{sp}	**24.29**	**Span**

System dimensions [m]		
L3	25.39	Maximum span
L4	26.12	Total width of the roof

Tab. A12.05

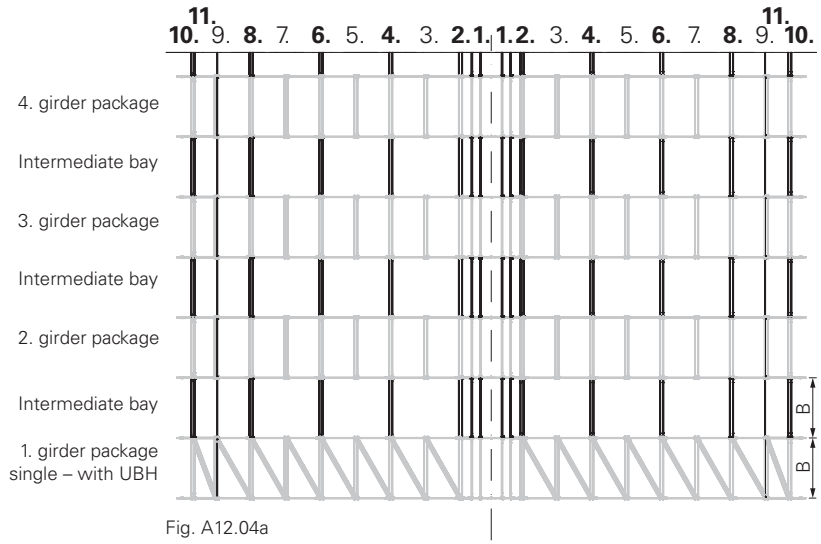


Fig. A12.04a

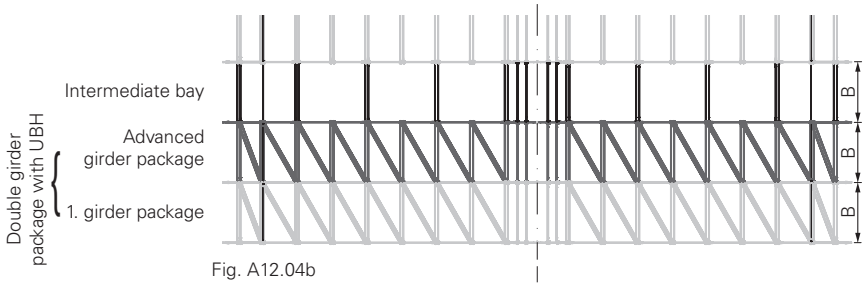


Fig. A12.04b

Snow load s [kN/m²]		0.10	0.25
Wind load q [kN/m²]		0.35	0.35
with tension system	Max. width W [m]	1.50	1.00
	Edge area	Single	Double

Tab. A12.06

Weight

- The weight is dependent on the
  - width W of the girder package.
  - Span L_{sp}.
  - Configuration of the girder package in the edge area
  - Weights include tarpaulin, tarpaulin 650 g/m².

Weight											
Girder package		single					double (edge area)				
Width W [m]		1.00	1.50	2.00	2.50	3.00	1.00	1.50	2.00	2.50	3.00
Span [m]	**15.59**	1,000 kg	1,040 kg	1,110 kg	1,180 kg	1,260 kg	1,640 kg	1,710 kg	1,850 kg	2,000 kg	2,150 kg
	18.49	1,130 kg	1,170 kg	1,250 kg	1,340 kg	1,430 kg	1,850 kg	1,930 kg	2,100 kg	2,270 kg	2,450 kg
	21.39	1,260 kg	1,310 kg	1,410 kg	1,510 kg	1,610 kg	2,080 kg	2,170 kg	2,360 kg	2,560 kg	2,760 kg
	24.29	1,390 kg	1,450 kg	1,550 kg	1,660 kg	1,770 kg	2,290 kg	2,400 kg	2,610 kg	2,830 kg	3,050 kg
	27.19	1,530 kg	1,590 kg	1,710 kg	1,830 kg	1,950 kg	2,510 kg	2,640 kg	2,870 kg	3,110 kg	3,360 kg

Tab. A12.07

Crane attachment points

Span 15.59 m
(Fig. A12.07)

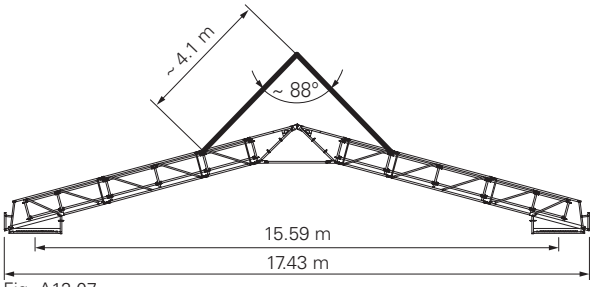


Fig. A12.07

Span 21.39 m
(Fig. A12.08)

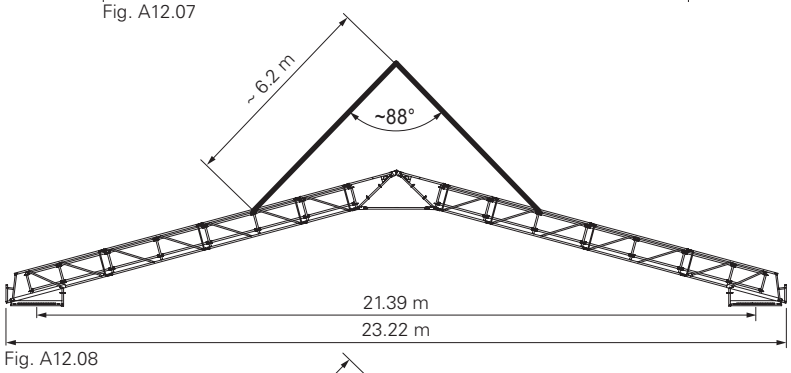


Fig. A12.08

Span 24.29 m
(Fig. A12.09)

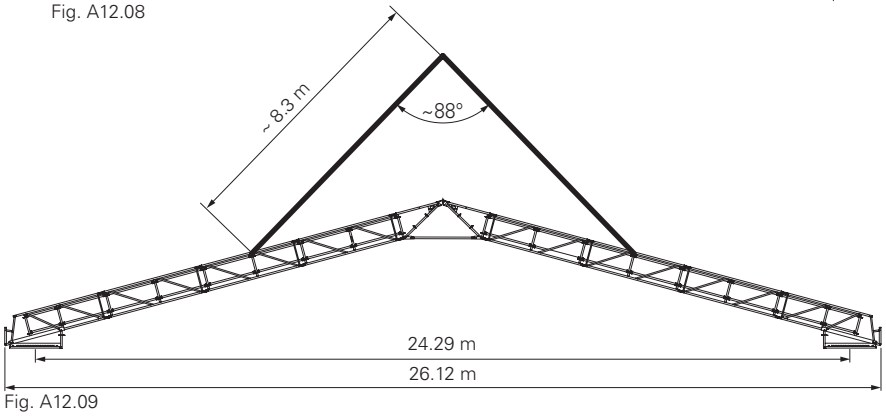


Fig. A12.09

The length of the lifting gear must be at least the same as the dimensions shown plus the length of the wrap.

A13 Ledger to Ledger Cou. LGS URHA

The Ledger to Ledger Cou. LGS URHA is available for creating an access point, e.g. for tarpaulin installation.

- The number of people per access point is limited to 2.

Warning

There is a risk of falling when walking on the walkway due to the lack of lateral protection.
A fall can result in serious injuries or even death.
⇒ Only enter the walkway when using PPE.

Technical data

Perm. F = 3 kN
Each Ledger to Ledger Cou. LGS URHA has been approved for 2 people, each weighing 100 kg.

Assembly

Determine the assembly positions by way of measurement.

1. Fold open the Ledger to Ledger Cou. LGS URHA (**56**), push it onto the beam tube (**5.1**) of Element LGS URB and release.
   → The ledger-to-ledger coupler (**56.1**) tilts into the horizontal position and locks in place.
   (Fig. A13.02 + Fig. A13.02a)
2. Pull the ledger-to-ledger coupler up so that the nose (**56.2**) is in contact with the beam tube.
3. Fit the Support UC 33 (**57**) in the ledger-to-ledger coupler and hammer in wedge tightly. (Fig. A13.03 + Fig. A13.03a)
   → The ledger-to-ledger coupler is clamped by the wedge.

→ Ledger-to-ledger coupler is installed.

4. Fit the Steel Decks UDG-2 (**58**). (Fig. A13.04)
5. Do not install the steel deck in the ridge area until the ridge bar has been installed. (not shown)

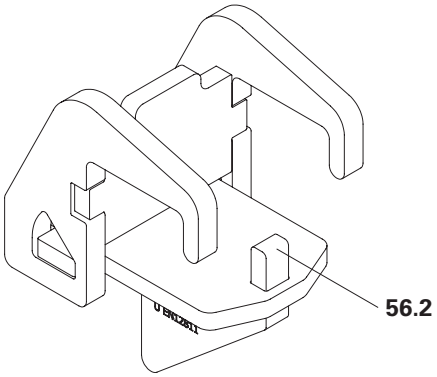


Fig. A13.01

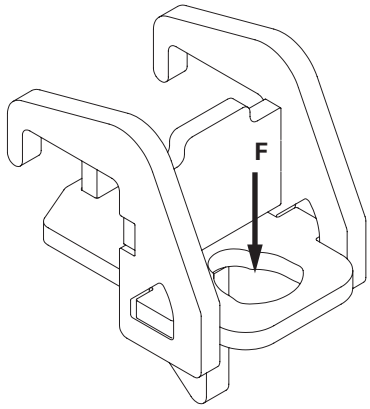


Fig. A13.01a

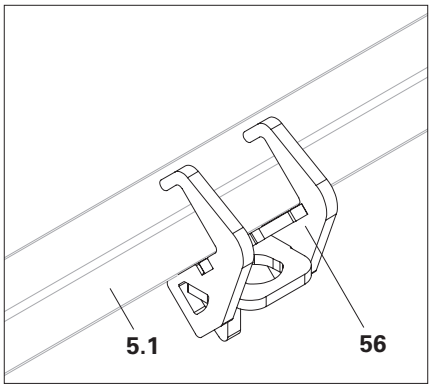


Fig. A13.02

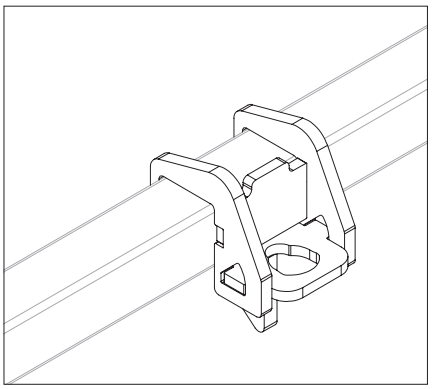


Fig. A13.02a

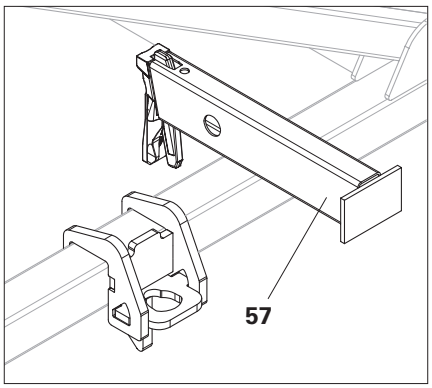


Fig. A13.03

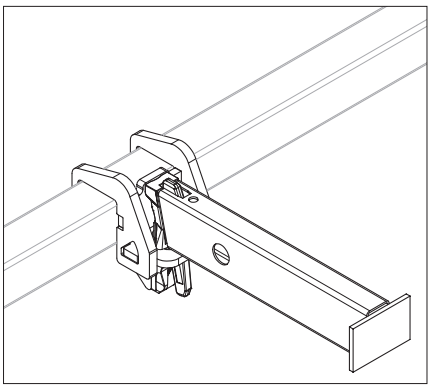


Fig. A13.03a

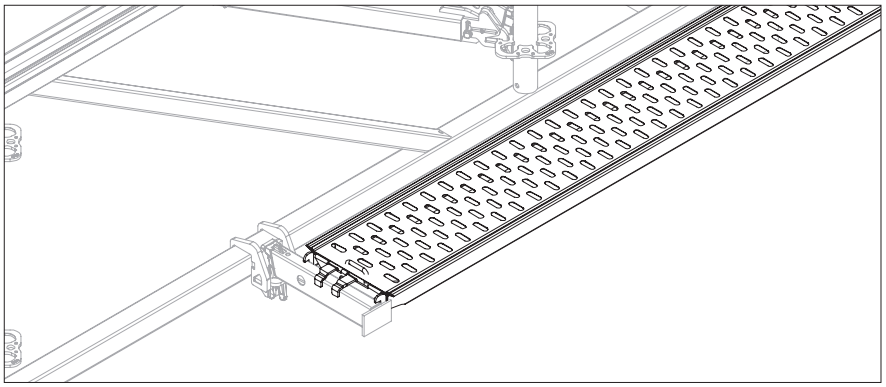


Fig. A13.04

B1 Support forces

- The support forces are dependent on
  - L_{sp} = Medium-sized span [m]
  - q = wind load [kN/m²]
  - s = snow load [kN/m²]
  - W = package width [m]
  - L4 = Total width of the roof [m]
  - n = total number of supports
  - Factors are unit-dependent
- Calculate the supporting structure in each case.
- Verification required for the load transfer from roof and scaffold to the ground.

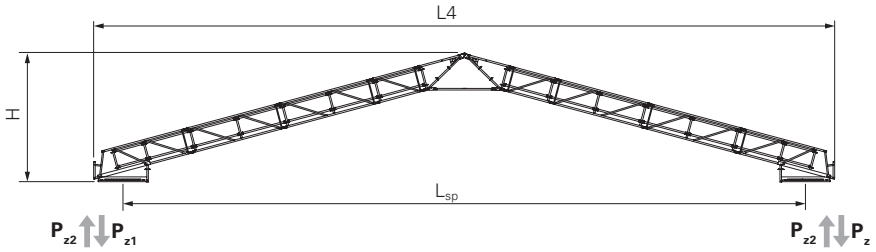


Fig. B2.01a

Diagram of girder package
(Fig. B2.01a + B2.01b)

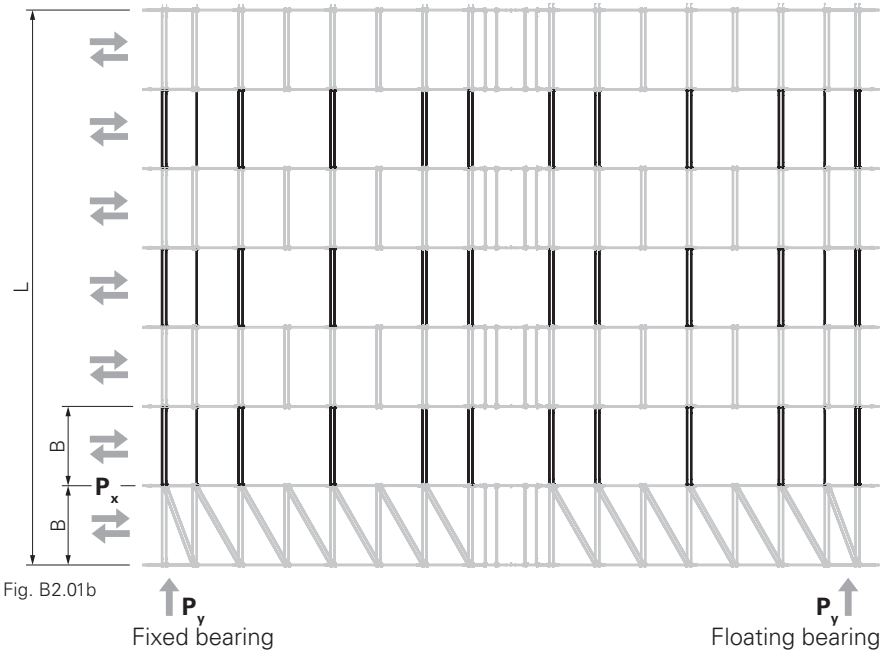


Fig. B2.01b

Span 15.59 m

Single girder package
(Tab. 06)

15.59 m – Single girder package			
Horizontal force [kN]	in direction of girder	P_x	1.84 * q * W
	in direction of gable	P_y	17.41 * q / n
Vertical force [kN]	downwards	P_{z1}	2.03 + 0.47 * W + 7.12 * s * W + 12.26 * q/W
	upwards	P_{z2}	-1.50 - 0.35 * W + 5.16 * q * W + 12.26 * q/W

Tab. B1.01

B1 Support forces

Span 21.39 m

Single girder package
(Tab. 07)

21.39 m – Single girder package			
Horizontal force [kN]	in direction of girder	P_x	2.31 * q * W
	in direction of gable	P_y	23.46 * q / n
Vertical force [kN]	downwards	P_{z1}	2.49 + 0.63 * W + 9.52 * s * W + 20.53* q/W
	upwards	P_{z2}	-1.84 - 0.47 * W + 6.32 * q * W + 20.53 * q/W

Tab. B1.02

Double girder package
(Tab. 08)

21.39 m – Double girder package			
Horizontal force [kN]	in direction of girder	P_x	2.31 * q * W
	in direction of gable	P_y	23.46 * q / n
Vertical force [kN]	downwards	P_{z1}	2.73 + 0.85 * W + 9.52 * s * W + 10.26 * q/W
	upwards	P_{z2}	-2.03 - 0.63 * W + 6.32 * q * W + 10.26 * q/W

Tab. B1.03

Span 24.29 m

Single girder package
(Tab. 09)

24.29 m – Single girder package			
Horizontal force [kN]	in direction of girder	P_x	2.43 * q * W
	in direction of gable	P_y	26.48 * q / n
Vertical force [kN]	downwards	P_{z1}	2.69 + 0.69 * W + 10.72 * s * W + 25.38* q/W
	upwards	P_{z2}	-1.99 - 0.51 * W + 6.47 * q * W + 25.38 * q/W

Tab. B1.04

Double girder package
(Tab. 10)

24.29 m – Double girder package			
Horizontal force [kN]	in direction of girder	P_x	2.43 * q * W
	in direction of gable	P_y	26.48 * q / n
Vertical force [kN]	downwards	P_{z1}	2.98 + 0.95 * W + 10.72 * s * W + 12.69 * q/W
	upwards	P_{z2}	-2.21 - 0.71 * W + 6.47 * q * W + 12.69 * q/W

Tab. B1.05

Transfer of horizontal force

- Transfer of horizontal force P_y in eave direction of the roof.
- Load-bearing capacity of the chain (**37**): 3 kN.
- Number of chain pairs n_c.
  – is for each load direction,
  – $n_c = P_y$ / perm. H_c round up to whole chain pairs.
- Always brace in both directions. Use a maximum of 4 chains per bearer, i.e. one chain per bracket.
- P_y acts in both directions.
  – Determine n_c for both directions.
  – If the bracing differs, calculate chain pairs for both directions.

Distinction
Pattern of the weather protection roof or bearer (**36**) with bracing
- marries up with the load-bearing substructure, see Fig. B2.02.
- does not marry up with the load-bearing substructure, see Fig. B2.03.

Angle α*	Transferable horizontal force perm. H_c per chain pair
0°	6.00
15°	5.80
30°	5.20
45°	4.24
60°	3.00
75°	1.56
90°	0.00

* If the angles differ, the larger angle shall take precedence.

Tab. B1.06

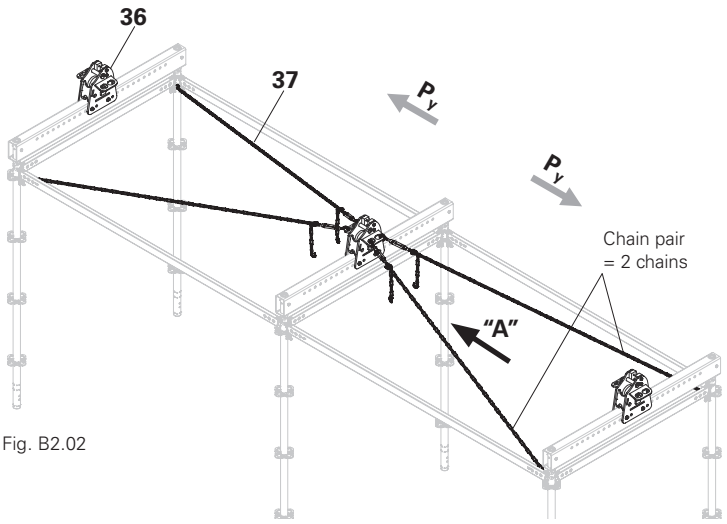


Fig. B2.02

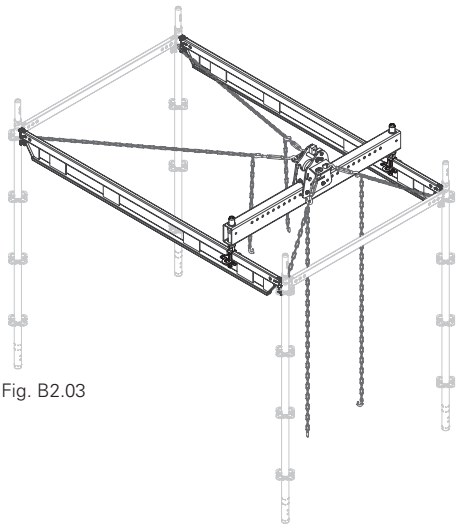


Fig. B2.03

Detail of matching bracing angles α
(Fig. B2.02a)

Detail of different bracing angles α_1 **and** α_2
(Fig. B2.03a)

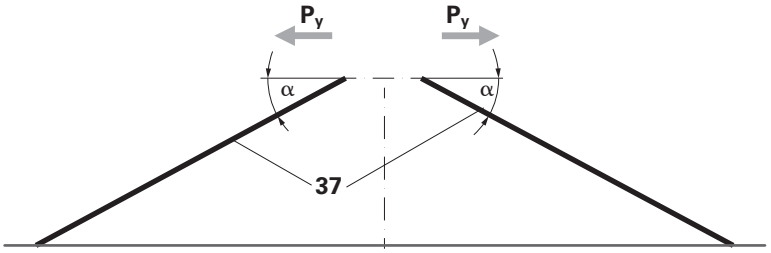


Fig. B2.02a

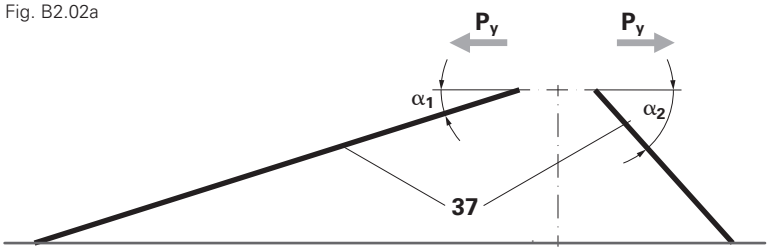


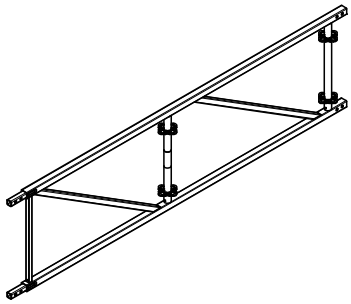
Fig. B2.03a

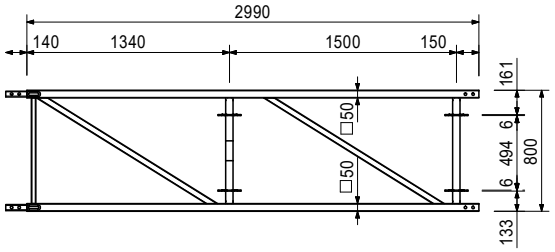
Art no.	Weight [kg]	
135766	31.700	**Basic Element LGS URB 300/75**

Basic Element for the Lattice Girder System LGS.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
721729 Screw ISO4014-M16x090-8.8-ga





Accessory (not included)

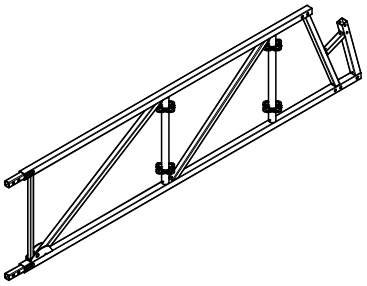
106031	0.142	**Pin Ø16x70mm ga**
018060	0.014	**Cotter Pin 4/1 ga**

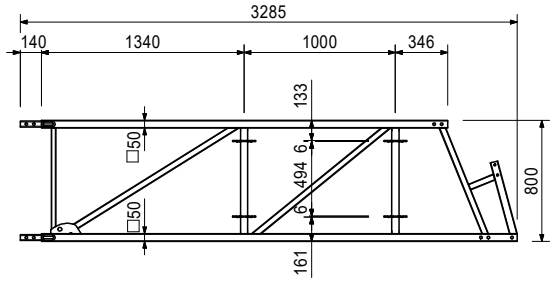
Art no.	Weight [kg]	
135793	35.100	**Eave Element LGS URB 300/75**

Eave Element for the Lattice Girder System LGS.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
721729 Screw ISO4014-M16x090-8.8-ga





Accessory (not included)

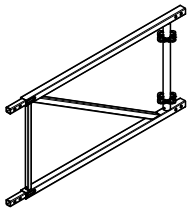
106031	0.142	**Pin Ø16x70mm ga**
018060	0.014	**Cotter Pin 4/1 ga**

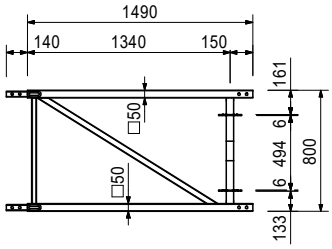
Art no.	Weight [kg]	
135773	17.100	**Filler Element LGS URB 150/75**

Filler Element for the Lattice Girder System LGS.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
721729 Screw ISO4014-M16x090-8.8-ga





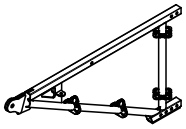
		Accessory (not included)
106031	0.142	**Pin Ø16x70mm ga**
018060	0.014	**Cotter Pin 4/1 ga**

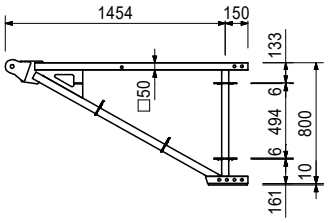
Art no.	Weight [kg]	
135782	19.300	**Ridge Element LGS URR 75**

Two Ridge Elements LGS form the ridge together with Ridge Bar HD UR.

Notes

Alternative accessories:
105032 Hex-Nut ISO7040-M24-8-ga
026220 Screw ISO4014-M24x080-10.9-ga





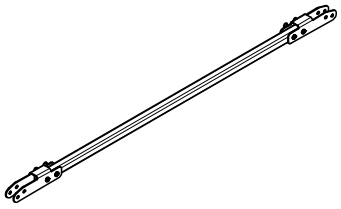
		Accessory (not included)
127468	0.325	**Pin Ø24x70mm ga**
022230	0.033	**Cotter Pin 5/1 ga**

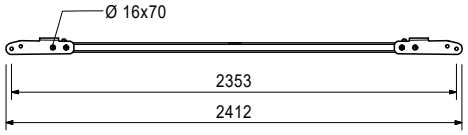
Art no.	Weight [kg]	
128334	21.700	**Ridge Bar HD UR 150°**

Connects two Ridge Elements LGS to a ridge angle of 150°.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
721729 Screw ISO4014-M16x090-8.8-ga





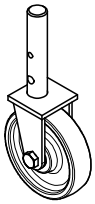
		Accessory (not included)
106031	0.142	**Pin Ø16x70mm ga**
018060	0.014	**Cotter Pin 4/1 ga**

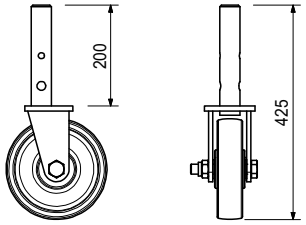
Art no.	Weight [kg]	
104854	5.220	**Support Roller UEW unstopped**

Mounted on Standard-, Eave- and Filler Element for hoisting the binder for installation of the Ridge Bar.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
721729 Screw ISO4014-M16x090-8.8-ga
Permissible load up to 12kN.





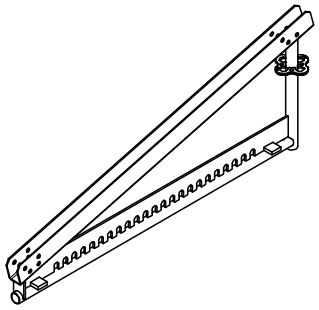
		Accessory (not included)
106031	0.142	**Pin Ø16x70mm ga**
018060	0.014	**Cotter Pin 4/1 ga**

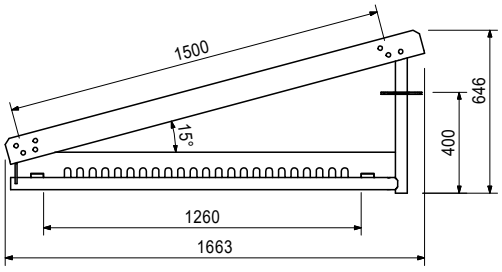
Art no.	Weight [kg]	
104771	33.400	**Support LGS URS 15°**

For roofs with a pitch of 15°.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
721729 Screw ISO4014-M16x090-8.8-ga

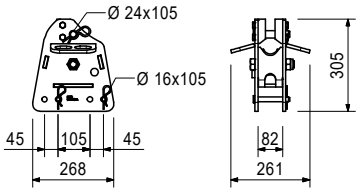




		Accessory (not included)
106031	0.142	**Pin Ø16x70mm ga**
018060	0.014	**Cotter Pin 4/1 ga**

Art no.	Weight [kg]	
135801	19.100	**Bearer LGS URS 75**

Connects the Support LGS with the Ledger URL.

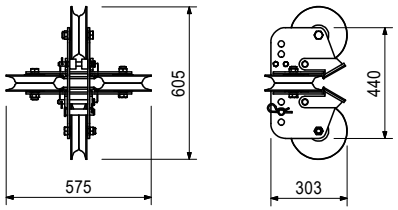


Consists of

3 pc 106194 Pin Ø16x105mm ga
3 pc 018060 Cotter Pin 4/1 ga
1 pc 106191 Pin Ø24x105mm ga
1 pc 022230 Cotter Pin 5/1 ga

Art no.	Weight [kg]	
104777	42.800	**Carriage URW**

Connects the Support with the Rail LGS URT.
Allows moving in a longitudinal direction and an horizontally moveable support at the truss level.

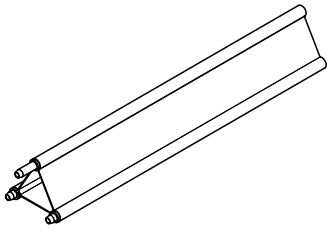


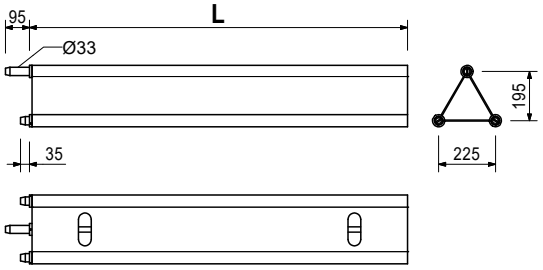
Consists of

1 pc 106191 Pin Ø24x105mm ga
1 pc 022230 Cotter Pin 5/1 ga

Art no.	Weight [kg]		L [mm]
		Alu Rails URT	
104790	21.300	**Alu Rail URT 150**	1500
104791	28.000	**Alu Rail URT 200**	2000
104796	34.600	**Alu Rail URT 250**	2500
104797	41.200	**Alu Rail URT 300**	3000

For moving LGS Units. Mounted on the Rail Support URF.



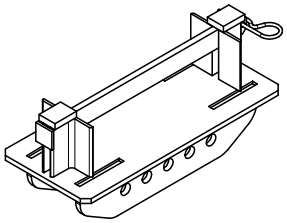


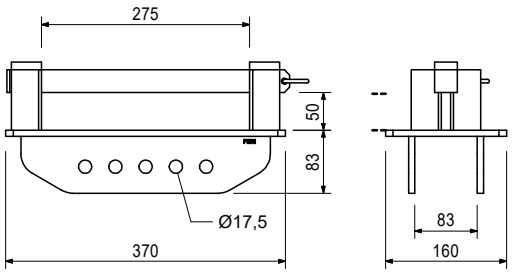
Art no.	Weight [kg]	
104853	8.260	**Rail Support URF**

Connects the Alu Rail URT to the Ledger URL.

Notes

Alternative accessories:
070890 Hex-Nut ISO7040-M16-8-ga
105402 Screw ISO4014-M16x120-8.8-ga



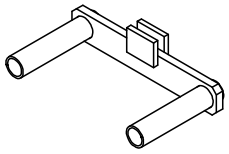


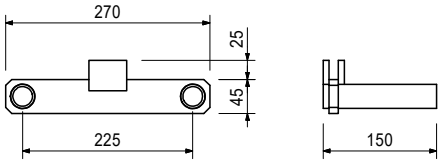
Accessory (not included)

136880	0.238	**Bolt Ø16x150mm coat**
022230	0.033	**Cotter Pin 5/1 ga**

Art no.	Weight [kg]	
104852	1.870	**Rail End Piece URT**

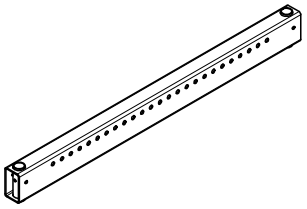
For securing the Alu Rail URT. Assembly on the last Rail Support URF.

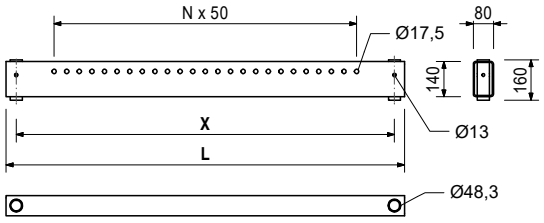




Art no.	Weight [kg]		L [mm]	X [mm]
		Ledgers URL		
132553	12.600	**Ledger URL 67/14**	750	670
131869	13.900	**Ledger URL 75/14**	830	750
115018	17.700	**Ledger URL 100/14**	1080	1000
105386	25.600	**Ledger URL 150/14**	1580	1500

Connects the LGS Unit with the PERI UP Substructure.



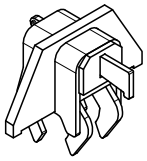


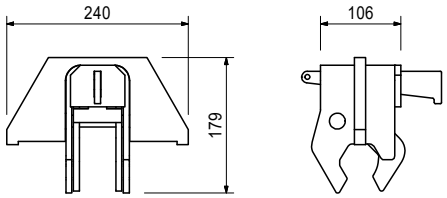
Accessory (not included)

710242	0.063	**Screw ISO4014-M10x100-8.8-ga**
780356	0.011	**Hex-Nut ISO7040-M10-8-ga**

Art no.	Weight [kg]	
118022	5.130	**Stopper URA-2**

End stop for the Wheel URW on the Alu Rail URT.

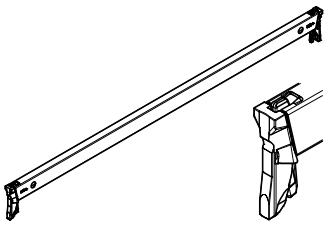


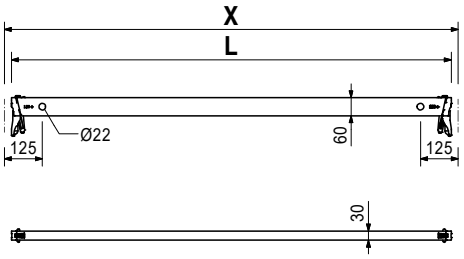


Art no.	Weight [kg]		L [mm]	X [mm]
		Horizontal Ledgers UH Plus		
414613	1.430	**Horizontal Ledger UH 25 Plus**	204	250
414595	2.080	**Horizontal Ledger UH 50 Plus**	454	500
429982	2.520	**Horizontal Ledger UH 67 Plus**	624	670
414629	2.740	**Horizontal Ledger UH 75 Plus**	704	750
414632	4.470	**Horizontal Ledger UH 100 Plus**	954	1000
414638	5.440	**Horizontal Ledger UH 125 Plus**	1204	1250
414641	4.720	**Horizontal Ledger UH 150 Plus**	1454	1500
417032	5.390	**Horizontal Ledger UH 175 Plus**	1704	1750
414645	6.050	**Horizontal Ledger UH 200 Plus**	1954	2000
416356	6.710	**Horizontal Ledger UH 225 Plus**	2204	2250
414648	7.370	**Horizontal Ledger UH 250 Plus**	2454	2500
414651	8.690	**Horizontal Ledger UH 300 Plus**	2954	3000

Notes

With length marking for easier identification.

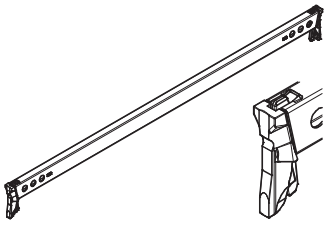


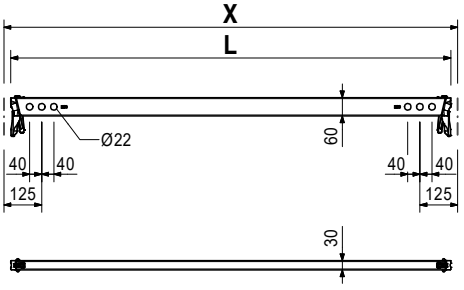


Art no.	Weight [kg]		L [mm]	X [mm]
		Horizontal Ledgers UH-2		
131995	1.400	**Horizontal Ledger UH-2 25**	204	250
133900	1.590	**Horizontal Ledger UH-2 33**	284	330
131998	2.030	**Horizontal Ledger UH-2 50**	454	500
133903	2.470	**Horizontal Ledger UH-2 67**	624	670
132213	2.680	**Horizontal Ledger UH-2 75**	704	750
132004	3.730	**Horizontal Ledger UH-2 100**	954	1000
132007	4.500	**Horizontal Ledger UH-2 125**	1204	1250
132010	4.670	**Horizontal Ledger UH-2 150**	1454	1500
132013	5.330	**Horizontal Ledger UH-2 175**	1704	1750
132016	5.990	**Horizontal Ledger UH-2 200**	1954	2000
132019	6.650	**Horizontal Ledger UH-2 225**	2204	2250
132025	7.310	**Horizontal Ledger UH-2 250**	2454	2500
132022	8.640	**Horizontal Ledger UH-2 300**	2954	3000

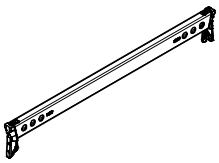
Notes

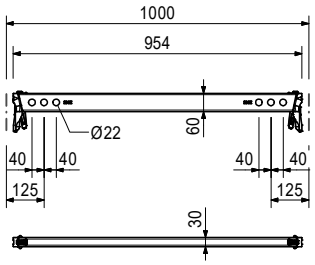
With color coding for length identification.



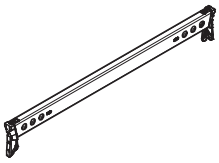


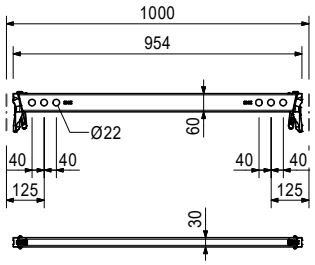
Art no.	Weight [kg]	
137911	3.750	**Ledger EVOTOP UH-2 100**





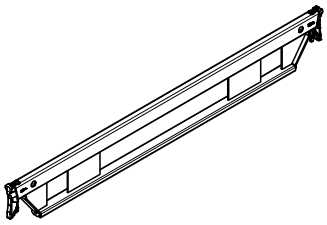
Art no.	Weight [kg]	
432004	3.740	**Horizontal Ledger UH-2 100**

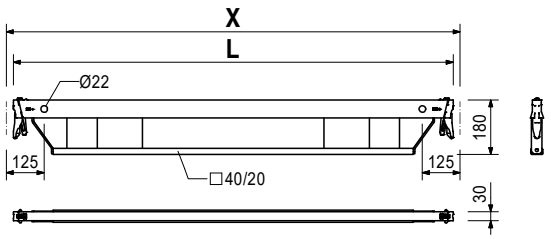




Art no.	Weight [kg]		L [mm]	X [mm]
		Horizontal Ledgers UHV Plus		
414681	11.000	**Horizontal Ledger UHV 150 Plus**	1454	1500
414687	14.900	**Horizontal Ledger UHV 200 Plus**	1954	2000
414691	18.100	**Horizontal Ledger UHV 250 Plus**	2454	2500
414695	21.800	**Horizontal Ledger UHV 300 Plus**	2954	3000

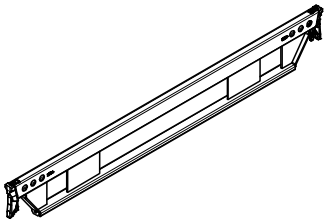
For high loads, e.g. in the case of material storage.

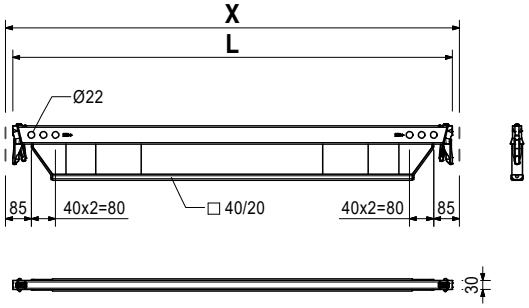




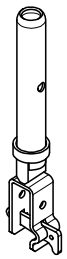
Art no.	Weight [kg]		L [mm]	X [mm]
		Horizontal Ledgers UHV-2		
137020	8.720	**Horizontal Ledger UHV-2 150**	1454	1500
137025	11.700	**Horizontal Ledger UHV-2 200**	1954	2000
137030	14.000	**Horizontal Ledger UHV-2 250**	2454	2500
137035	17.000	**Horizontal Ledger UHV-2 300**	2954	3000

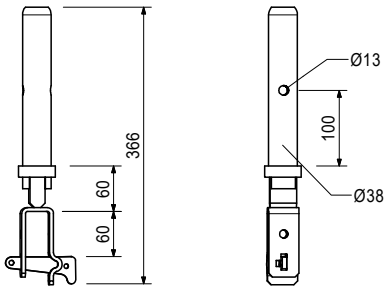
For high loads, e.g. in the case of material storage.



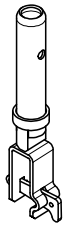


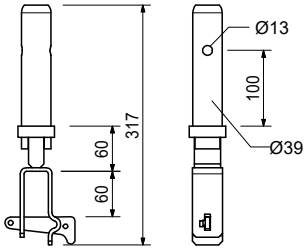
Art no.	Weight [kg]	
130681	1.360	**UH-Spigot-2**





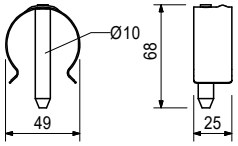
Art no.	Weight [kg]	
409764	1.220	**UH-Spigot**





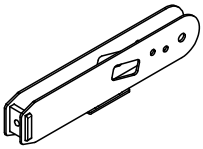
Art no.	Weight [kg]	
111053	0.059	**Locking Pin Ø48-57mm**

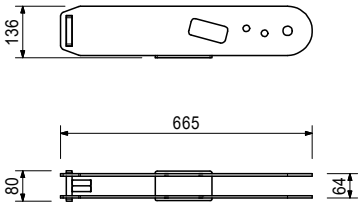
As tension-proof connection of standards with a diameter of 48 up to 57mm.



Art no.	Weight [kg]	
128823	8.750	**Suspension Tie Connector URU**

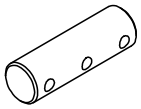
Connection to Eave or Standard Element LGS URB 300/150.

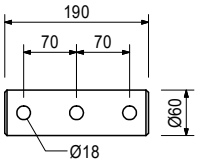




Art no.	Weight [kg]	
128817	3.850	**Anchor Tie Yoke URU**

For closing and tensioning of the suspension.



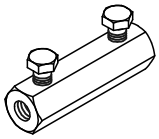


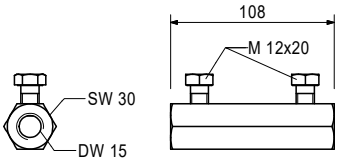
Art no.	Weight [kg]	
129435	0.444	**Tie Rod Extension URU**

For coupling and securing Tie Rod DW15.

Notes

Permissible tension force 90kN.

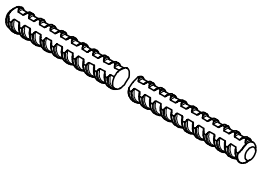


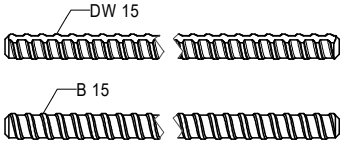


Art no.	Weight [kg]	
		Tie Rods DW 15
030050	0.000	**Cutting Cost DW15/B15**
030005	0.720	**Tie Rod DW15 0.5m**
030010	1.230	**Tie Rod DW15 0.85m**
030480	1.440	**Tie Rod DW15 1m**
030490	1.730	**Tie Rod DW15 1.2m**
030170	2.160	**Tie Rod DW15 1.5m**
030020	2.450	**Tie Rod DW15 1.7m**
030180	2.880	**Tie Rod DW15 2m**
030710	3.600	**Tie Rod DW15 2.5m**
030720	4.320	**Tie Rod DW15 3m**
030730	5.040	**Tie Rod DW15 3.5m**
030160	8.640	**Tie Rod DW15 6m**
030030	1.440	**Tie Rod DW15 spec. Length**

Notes

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



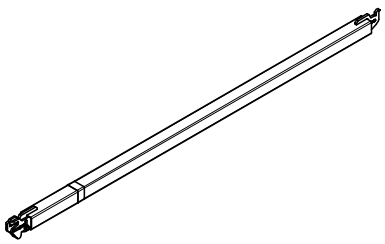


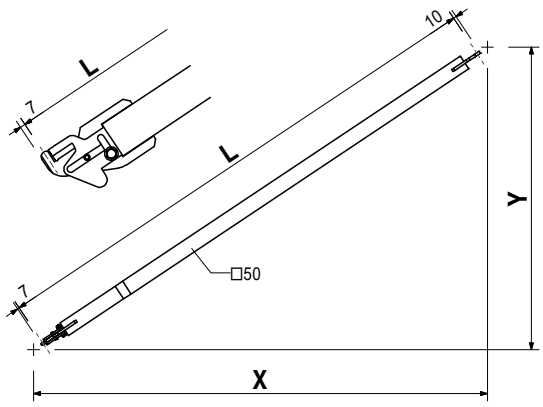
Art no.	Weight [kg]		L [mm]	X [mm]	Y [mm]
		H-Braces UBH Flex			
114818	4.590	**H-Brace UBH Flex 100/100**	1335	1000	1000
114821	5.730	**H-Brace UBH Flex 150/100**	1725	1500	1000
114912	6.660	**H-Brace UBH Flex 150/150**	2042	1500	1500
114820	7.010	**H-Brace UBH Flex 200/100**	2161	2000	1000
124097	7.780	**H-Brace UBH Flex 200/150**	2422	2000	1500
114819	8.360	**H-Brace UBH Flex 250/100**	2620	2500	1000
124101	9.000	**H-Brace UBH Flex 250/150**	2838	2500	1500
114892	9.740	**H-Brace UBH Flex 300/100**	3092	3000	1000
124105	10.300	**H-Brace UBH Flex 300/150**	3279	3000	1500

For horizontal bracing of towers.
Also for use beneath Decks UDG.

Notes

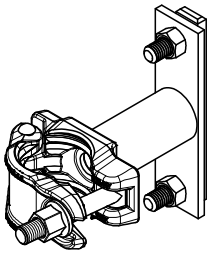
With color coding for length identification.

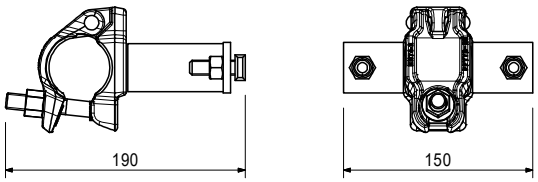




Art no.	Weight [kg]	
126009	1.630	**Keder Connection LGS URV**

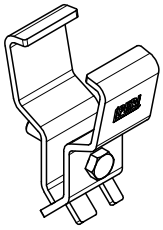
For fixing Keder Rails LGS URK to scaffold components with tube Ø48.3mm.

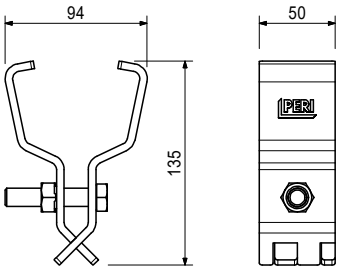




Art no.	Weight [kg]	
125166	0.674	**Keder Connector LGS URK**

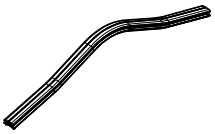
For mounting Keder Rails LGS URK at LGS Elements.

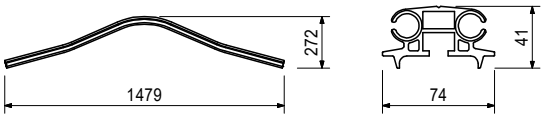




Art no.	Weight [kg]	
126051	3.640	**Ridge Rail LGS URK 150**

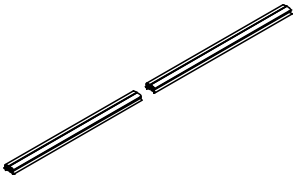
As transition of keder sheetings over Ridge Element LGS URR.

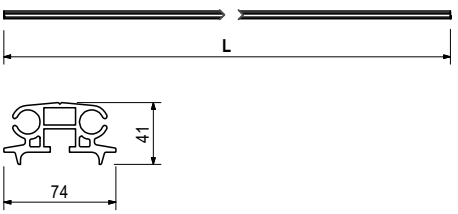




Art no.	Weight [kg]		L [mm]
		Keder Rails LGS URK	
127501	3.530	**Keder Rail LGS URK 150**	1500
127500	7.050	**Keder Rail LGS URK 300**	3000
126071	14.100	**Keder Rail LGS URK 600**	6000

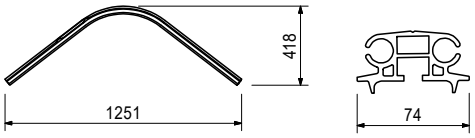
Track for drawing keder tarpaulins into scaffold constructions.





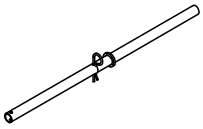
Art no.	Weight [kg]	
126491	3.370	**Eave Rail LGS URK**

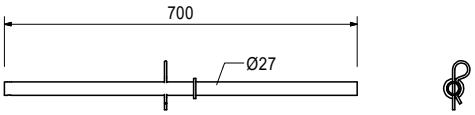
As transition of keder sheetings over the Eave Element LGS URB.



Art no.	Weight [kg]	
126487	1.150	**Crank LGS URG**

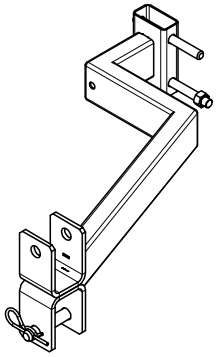
For winding the keder sheetings onto the LGS Tarpaulin Reels LGS URG.

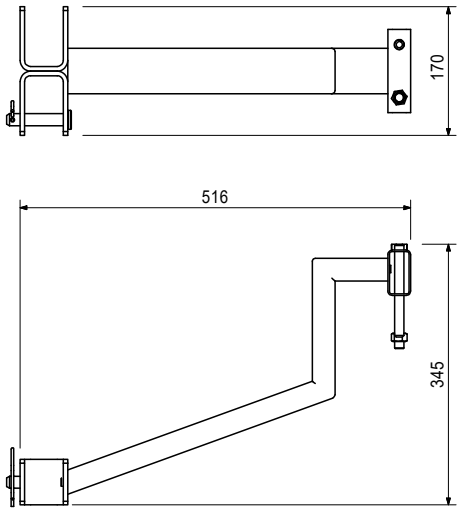




Art no.	Weight [kg]	
126486	3.420	**Reel Connector LGS URG**

For attaching Tarpauling Reel LGS URG on Eave Element LGS URB to assemble the keder sheetings.



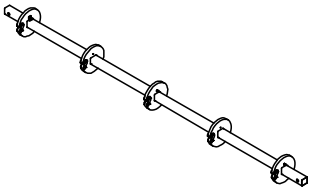


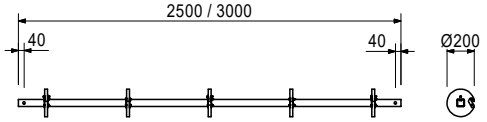
Consists of

1 pc 126924 Screw ISO4014-M12x130-8.8-ga
1 pc 710330 Hex-Nut ISO4032-M12-8-ga
1 pc 106031 Pin Ø16x70mm ga
1 pc 018060 Cotter Pin 4/1 ga

Art no.	Weight [kg]	
		Tarpaulin Reels LGS URG
126484	10.500	**Tarpaulin Reel LGS URG 250**
126485	11.900	**Tarpaulin Reel LPS URG 300**

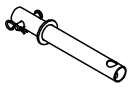
For transportation and installation / removing of keder sheetings.

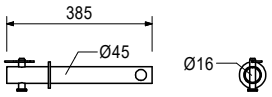




Art no.	Weight [kg]	
126488	1.240	**Handle LGS URG**

Extension for LGS Tarpaulin Reel LGS URG.

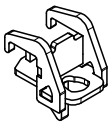


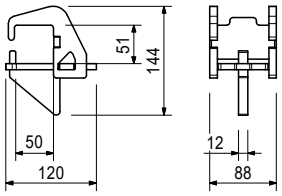


Consists of

1 pc 106031 Pin Ø16x70mm ga
1 pc 018060 Cotter Pin 4/1 ga

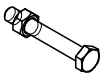
Art no.	Weight [kg]		B [mm]	L [mm]
139410	1.520	**Ledger to Ledger Cou. LGS URHA**	88	144

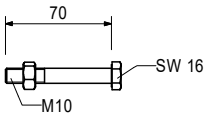




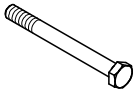
Art no.	Weight [kg]	
100719	0.060	**Screw ISO4014-M10x070-8.8-ga-N**

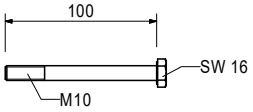
As tension-proof connection of standards at suspended scaffolds and formwork girders.





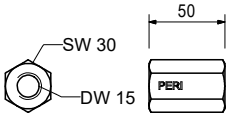
Art no.	Weight [kg]		L [mm]
710242	0.063	**Screw ISO4014-M10x100-8.8-ga**	100





Art no.	Weight [kg]	
030070	0.222	**Hex-Nut DW15 SW30 50mm ga**

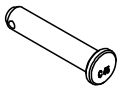
For anchoring with Tie Rod DW15 or B15.

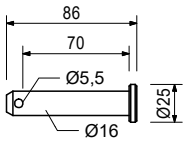


Art no.	Weight [kg]	
		Hex-Nuts ISO7040-ga
780356	0.011	**Hex-Nut ISO7040-M10-8-ga**
070890	0.030	**Hex-Nut ISO7040-M16-8-ga**
105032	0.070	**Hex-Nut ISO7040-M24-8-ga**

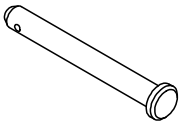
Self-locking.

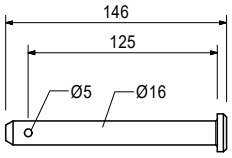
Art no.	Weight [kg]	
106031	0.142	**Pin Ø16x70mm ga**



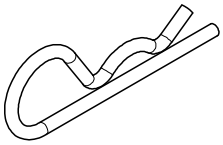


Art no.	Weight [kg]	
136880	0.238	**Bolt Ø16x150mm coat**

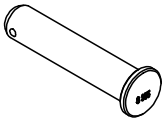


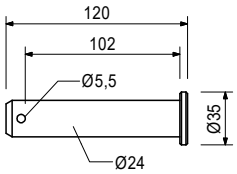


Art no.	Weight [kg]	
018060	0.014	**Cotter Pin 4/1 ga**

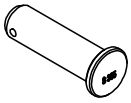


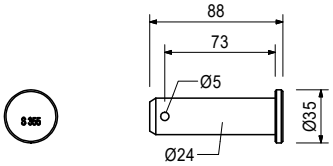
Art no.	Weight [kg]	
106191	0.438	**Pin Ø24x105mm ga**



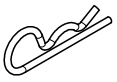


Art no.	Weight [kg]	
127468	0.325	**Pin Ø24x70mm ga**





Art no.	Weight [kg]	
022230	0.033	**Cotter Pin 5/1 ga**

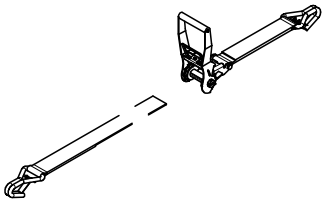


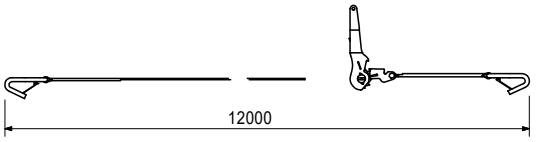
Art no.	Weight [kg]	
118349	3.530	**Tension Belt PTB 12**

Two parts.

Notes

Consider information on the belt label!
Total length 12m, max. span 8m.
Permissible tension force 2.5t.

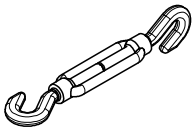


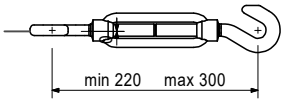


Art no.	Weight [kg]	
065074	0.450	**Turnbuckle M12/3.0kN**

Notes

Permissible tension force 3.0kN.

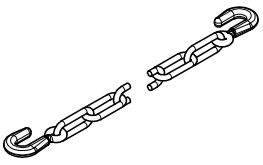


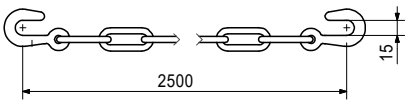


Art no.	Weight [kg]	
065073	1.370	**Anchor Chain 250/3.0kN**

Notes

Permissible tension force 3.0kN.





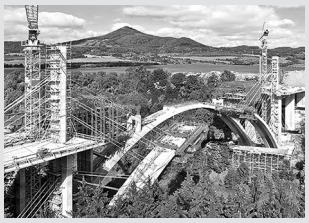
The optimal System for every Project and every Requirement

Wall Formwork

Column Formwork

Slab Formwork

Climbing Systems



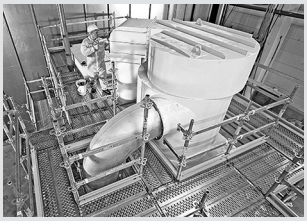
Bridge Formwork

Tunnel Formwork

Shoring Systems

Construction Scaffold

Facade Scaffold



Industrial Scaffold

Access

Protection Scaffold

Safety Systems

System-Independent Accessories

Services

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