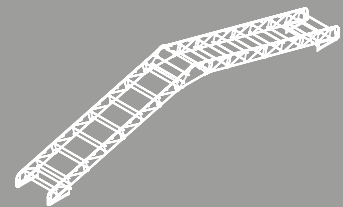
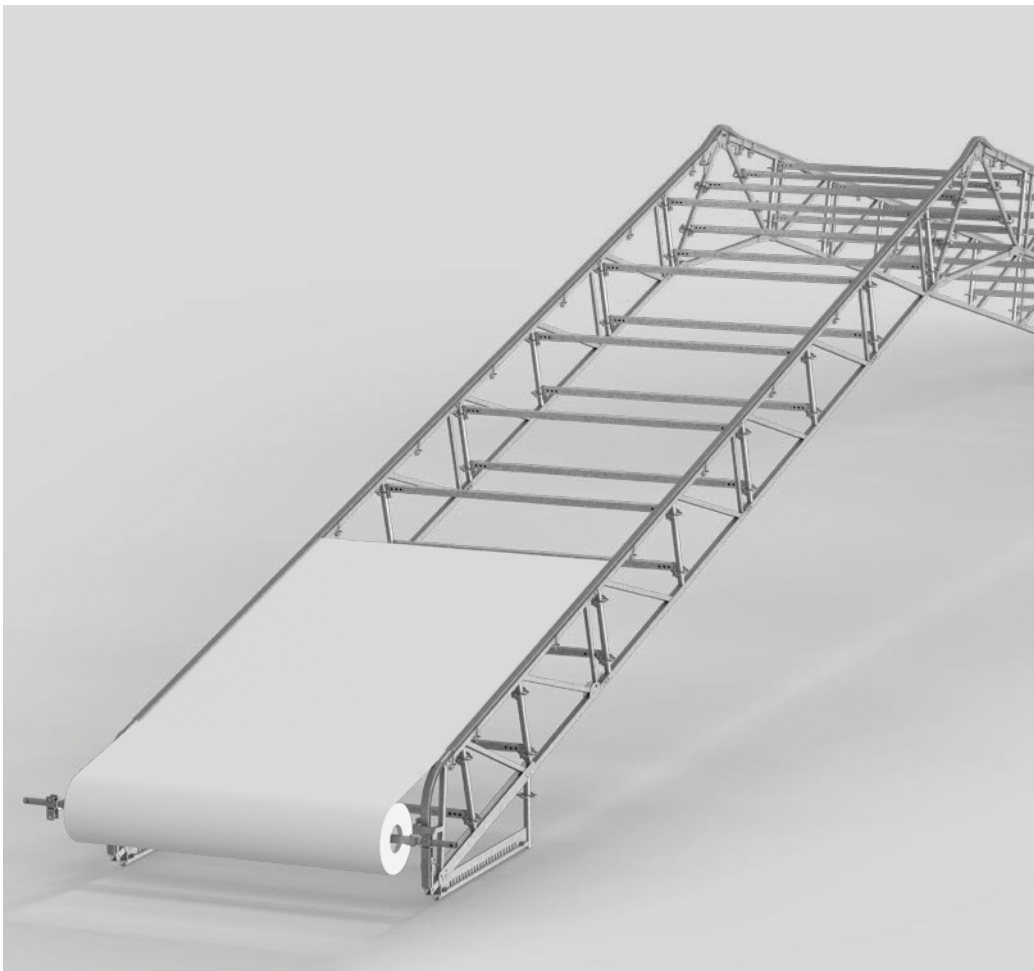


# PERI UP Flex

## Weather Protection Roof LGS 75

Instructions for Assembly and Use – Standard Configuration – Issue 04/2020



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## Main components

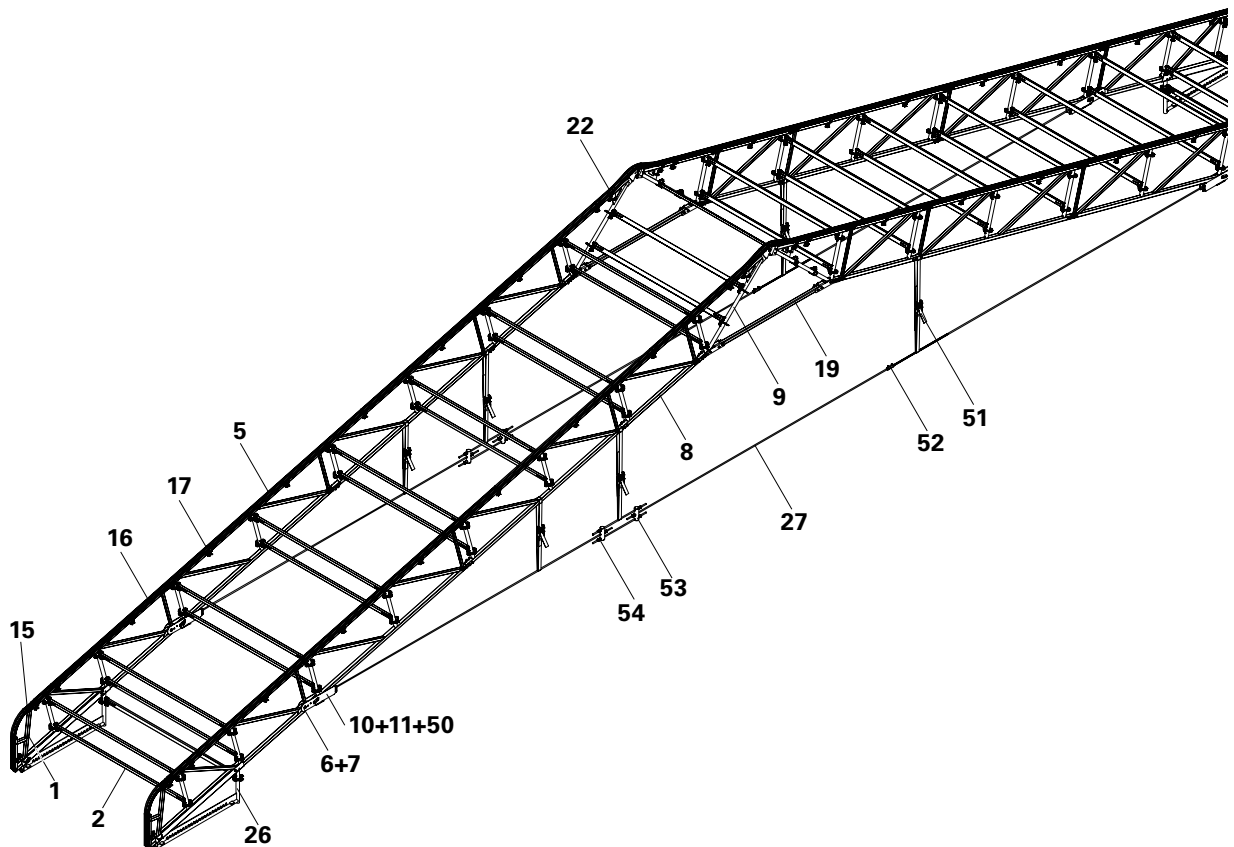


Fig. 01

1	LGS Eave Element URB 300/75	19	Ridge Bar HD UR
2	Horizontal Ledger UH Plus	22	LGS Ridge Rail URK
5	LGS Standard Element URB 300/75	26	LGS Support URS
6	Bolt Ø 16	27	Tie Rod DW15
7	Cotter pin 4/1	50	Suspension Tie Connector URU
8	LGS Intermediate Element URB 150/75	51	Tension belt
9	LGS Ridge Element URR 75	52	Tie Rod Extension URU
10	Bolt Ø 24	53	Anchor Tie Yoke URU
11	Cotter pin 5/1	54	Hex. Nut DW 15 SW 30/50
15	LGS Eave Rail URK		
16	LGS Keder Track URK		
17	LGS Keder Connector URK		

## List of components

Pos. no.	Component name	Item no.
1	LGS Eave Element URB 300/75	135793
2	Horizontal Ledger UH 250 Plus	114648
3	Horizontal Ledger UHV 250 Plus	114691
4a	H-Brace UBH Flex 250/100	114819
4b	H-Brace UBH Flex 250/150	124101
5	LGS Standard Element URB 300/75	135766
6	Bolt Ø 16 x 70	106031
7	Cotter pin 4/1	018060
8	LGS Intermediate Element URB 150/75	135773
9	LGS Ridge Element URR 75	135782
10.1	Bolt Ø 24 x 70	127468
10.2	Bolt Ø 24 x 105	106191
11	Cotter pin 5/1	022230
15	LGS Eave Rail URK	1226491
16.1	LGS Keder Track URK 600	126071
16.2	LGS Keder Track URK 300	127500
16.3	LGS Keder Track URK 150	127501
17	LGS Keder Connector URK	125166
18	Support Roller UEW unstopped	104854
19	Ridge Bar HD UR 150°	128334
22	LGS Ridge Rail URK 150	126051
23	LGS Reel Connector URG	126486
24	LGS Tarpaulin Reel URG 250	126484
25	LGS Handle URG	126488
26	LGS Support URS 15°	104771
27.1	Tie Rod DW 15, L = 6 m	030160
27.2	Tie Rod DW 15, special length L = 5 m	030030
27.3	Tie Rod DW 15, L = 1 m	030480
28	Ledger URL 150/14	105386
29	Bolt ISO 4014-M10x100	710242
30	Nut ISO 7040-M10	780356
31	Rail Support URF	104853
32	Aluminium Rail URT 250	104796
33	Rail End Piece URD	104852
34	Stopper URA-2	118022
35	Carriage URW	104777
36	LGS Bearer URS 75	135801
37	Anchor chain	065073
38	Turnbuckle	065074
39	Ledger UHA-2 half with pin	130684
40	Locking pin Ø48/57	111053
50	LGS Suspension Tie Connector URU	128823

Pos. no.	Component name	Item no.
51	Tension Belt PTB 12	118349
52	Tie Rod Extension URU	129435
53	Anchor Tie Yoke URU	128817
54	Hex. Nut DW 15 SW 30/50	030070
55	LGS Crank URG	126487

Tab. 01

## Key

### Pictogram | Definition



Danger/Warning/Caution



Note



To be complied with



Load-bearing point



Visual check



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 are featured at the beginning of the section or ahead of the instructions, and are highlighted as follows:



#### Danger

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



#### Warning

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



#### Caution

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



#### 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 installations which have possibly not been shown in these detailed illustrations must nevertheless be available.

### Span

Span 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 Instructions for Assembly and Use are designed for contractors who

- assemble, modify and dismantle the scaffolding, or
- use them, e.g. for concreting, or
- allow them to be used, e.g. for forming operations.

### Competent person

(Construction Site Coordinator)  
The Safety and Health Protection Coordinator\*

- is appointed by the client,
- must identify potential hazards during the planning phase,
- determines measures that provide protection against risks,
- creates a 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 persons qualified to carry out inspections

Due to the specialist knowledge gained from professional training, work experience and recent professional activity, the competent person qualified to carry out inspections has a reliable understanding of safety-related issues and can 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

Scaffolding systems may only be assembled, modified or dismantled by personnel who are suitably qualified to do so. Qualified personnel must have completed a course of training\*\* in the work to be performed, covering the following points at least:

- Explanation of the plan for the assembly, modification or dismantling of the scaffolding in an understandable form and language.
- Description of the measures for safely assembling, modifying or dismantling the scaffolding.

- Naming of the preventive measures to be taken to avoid the risk of persons and objects falling.
- Designation of the safety precautions in the event of changing weather conditions that could adversely affect the safety of the scaffolding, as well as the personnel concerned.
- Details regarding permissible loads.
- Description of all other risks and dangers associated with assembly, modification or dismantling operations.



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

\* 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 Reinforcement Scaffolds 75 and 100
  - PERI UP Flex Staircase 75
  - PERI UP Flex Staircase 100 and 125 with Deck UDG
  - PERI UP Easy Facade Scaffolding 67 and 100
- Approvals
  - Approval Z-8.22-863 PERI UP Flex Modular System
  - Approval Z-8.1-957 PERI UP Easy Scaffold System
- User information – pallets and stacking devices
- PERI UP – Design Tables
- PERI program overview – scaffolding
- Brochure – PERI UP Flex Weather Protection Roof LGS

## Intended use

### Product description

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

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  $L_{sp}$  from 15.50 m to 27.20 m  
The spans are based on a weather protection construction enclosed on all sides (roof and supporting structure) with max. 10 % openings per wall.
- Width B 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
  - $q_1 = 0.35 \text{ kN/m}^2$
  - $q_2 = 0.56 \text{ kN/m}^2$
  - $q_3 = 0.77 \text{ kN/m}^2$
- Snow loads s are calculated according to DIN EN 1991-1-3 with snow/minimum load classes according to DIN EN 16508
  - $SL1 = 0.10 \text{ kN/m}^2$
  - $SL2a = 0.25 \text{ kN/m}^2$
  - $SL2b = 0.60 \text{ kN/m}^2$

### Standard configuration

The following is shown in Section A:

- Width of girder package B = 2.50 m
- Span  $L_{sp,w} = 20.30 \text{ m}$  – distance from one centre of support to the other centre of support.
- Snow load  $SL1 = 0.10 \text{ kN/m}^2$
- Wind load  $q_1 = 0.35 \text{ kN/m}^2$
- Roof closed on all sides with max. 10 % openings per wall
- 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.

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, yet incomplete.

The stability of the overall construction consisting of weather protection roof and load-bearing substructure is to 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 (Industrial Safety Regulation Appendix 1, No. 3.2.1) 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 usability of the PERI products over the long term.

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

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



The contractor must ensure that the personal protective equipment required for cleaning, maintenance and repair work such as

- safety helmets,
  - 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.

## 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.

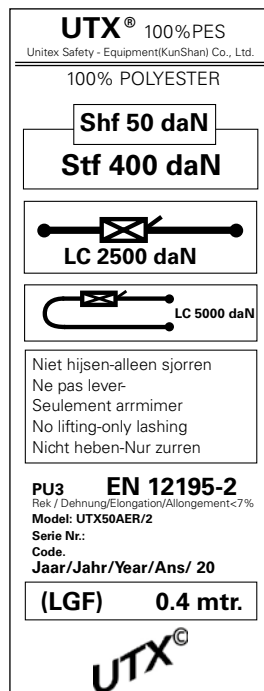


Fig. 02a

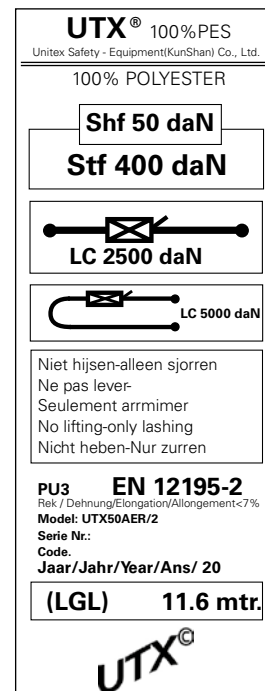


Fig. 02b



## Cross-system



### Safety instructions apply to all phases of the system.

#### General

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

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

Refer to and comply with the safety instructions and permissible loads.

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

Materials and working areas are to be inspected before each use and assembly, for:

- damage,
- stability and
- functional correctness.

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

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

When on slab formwork, scaffolds and working platforms:

- do not jump,
- do not run,
- do not 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.
- scaffold tubes: galvanised steel tubing with minimum dimensions  $\text{Ø } 48.3 \times 3.2$  mm according to EN 12811-1:2003 4.2.1.2.
- scaffold 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 ensure 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 helmets,
  - 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 against falling to be used 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. Areas of risk must be cordoned off and clearly marked.
- ensure stability during all stages of construction, in particular during assembly, modification and dismantling operations.
- ensure and provide evidence that all loads that occur are transferred safely.

## 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 scaffolding is 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 scaffolding free of dirt, objects, snow and ice.

Close off the scaffolding 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 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 scaffolding or mounting of additional surfaces exposed to the wind changes the stability and must be rechecked. If necessary, take additional measures.

Ties must be installed progressively with the erection of the scaffolding.

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

Do not drop the components.

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

During the relocation procedure

- ensure that components are picked up and set down so that unintentional falling over, falling apart, sliding, falling down or rolling is avoided.
- no persons are allowed to remain under the suspended load.

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, as well as being slip-resistant.

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

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



## Inspection, handover and use

The erected scaffolding 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 scaffolding 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.

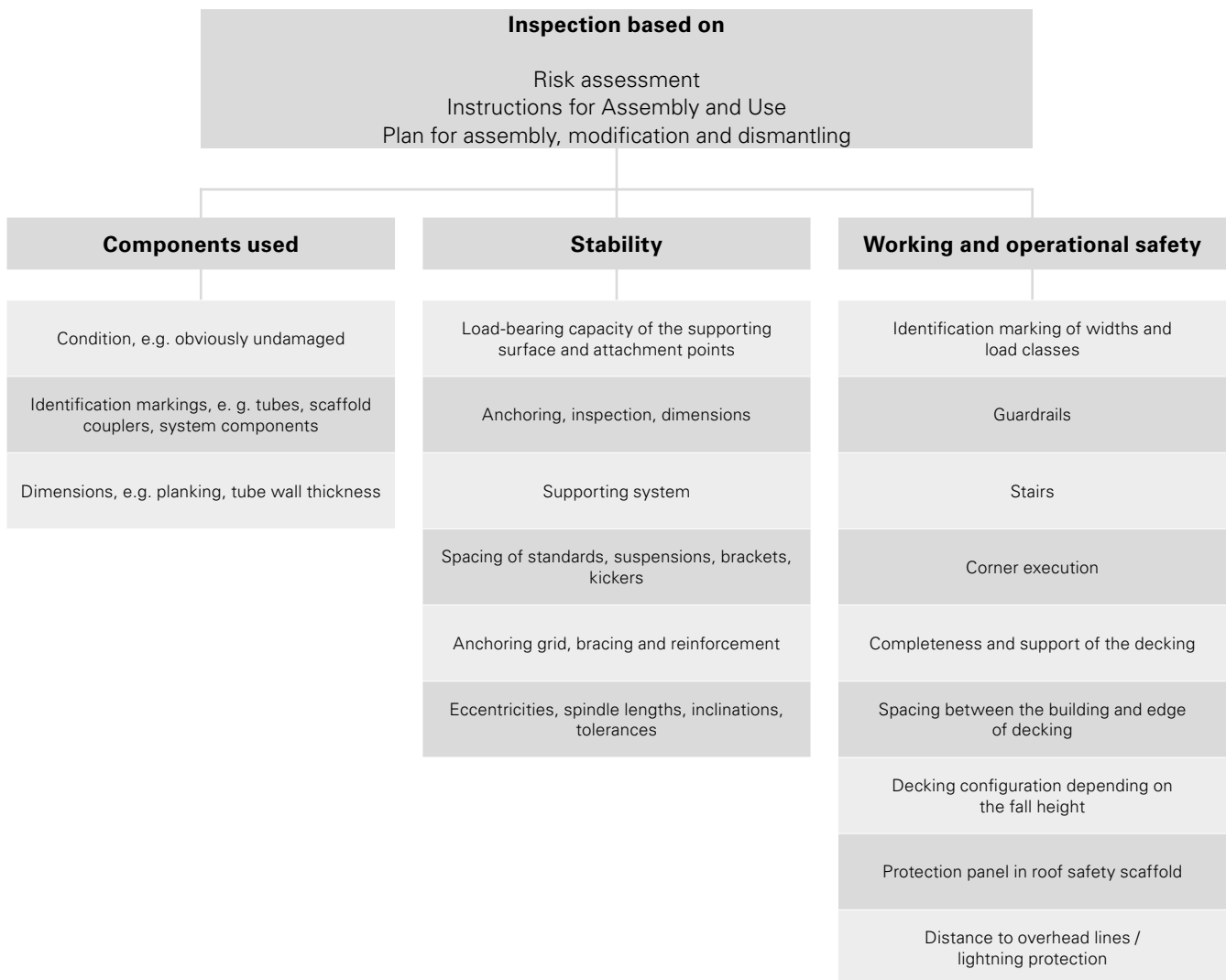


**During the handover, the scaffold contractor must advise the user of any possible risks involved with non-intended use and his obligation to provide adequate prevention against risk and danger!**

- 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

## Fitting the eave elements



- Width "B" 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 " $H_{\text{squared timber}}$ "  $\geq 16$  cm. (Fig. A1.01)

### Components

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

### Connecting the eave elements

1. Place eave element (1) on two cross-wise 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.
- Install intermediate elements in front of the ridge element for length compensation.

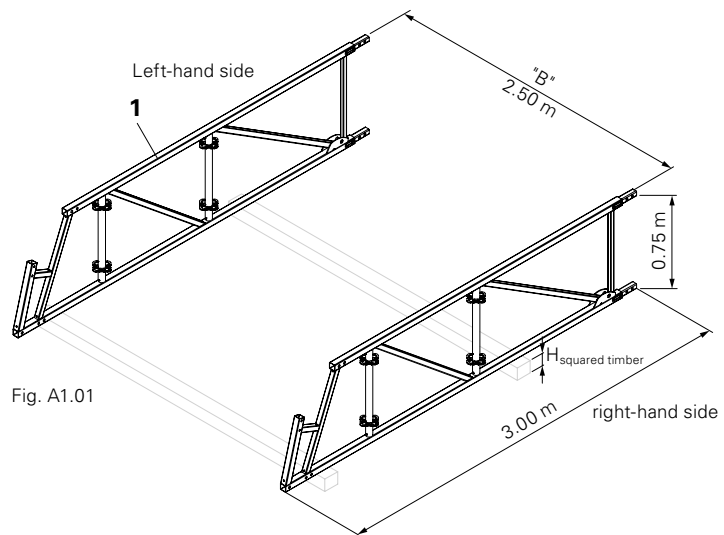


Fig. A1.01

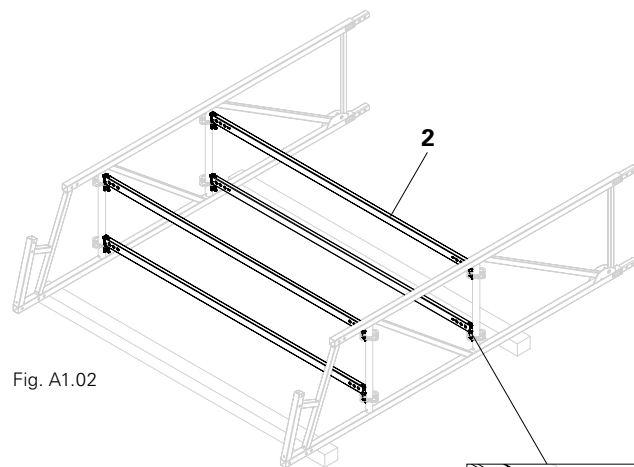


Fig. A1.02

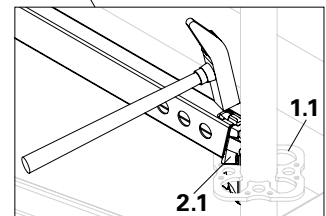


Fig. A1.02a

## Fitting the standard elements



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

### Without tension system

#### Components

<b>2</b>	Horizontal Ledger UH 250 Plus	4x
<b>5</b>	LGS Standard Element URB 300/75	2x
<b>6</b>	Bolt $\varnothing$ 16 x 70	8x
<b>7</b>	Cotter pin 4/1	8x

#### Assembly

- Slide the tubes of the standard element (**5**) into the pins of the eave elements. (Fig. A1.03)
- 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)
- Attach horizontal ledgers (**2**) to the rosette on both sides (**1.1**) using the ledger heads and wedges (**2.1**). (Fig. A1.04)
- Securely fix all wedges using a hammer. (Fig. A1.02a)  
 → Horizontal ledgers are now secured.

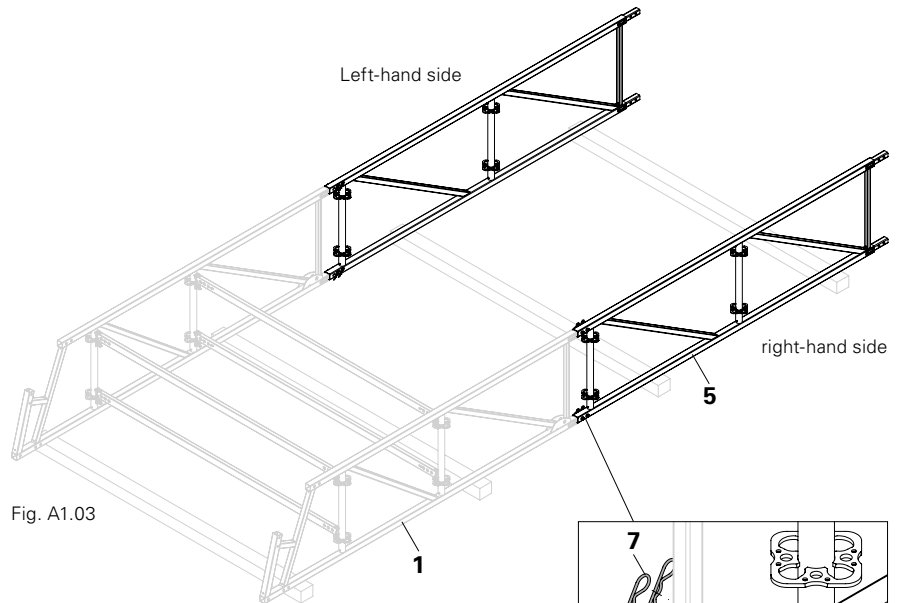


Fig. A1.03

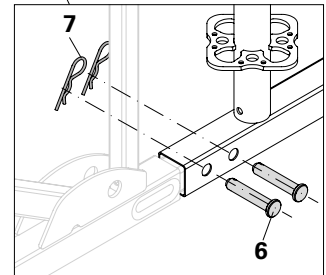


Fig. A1.03a

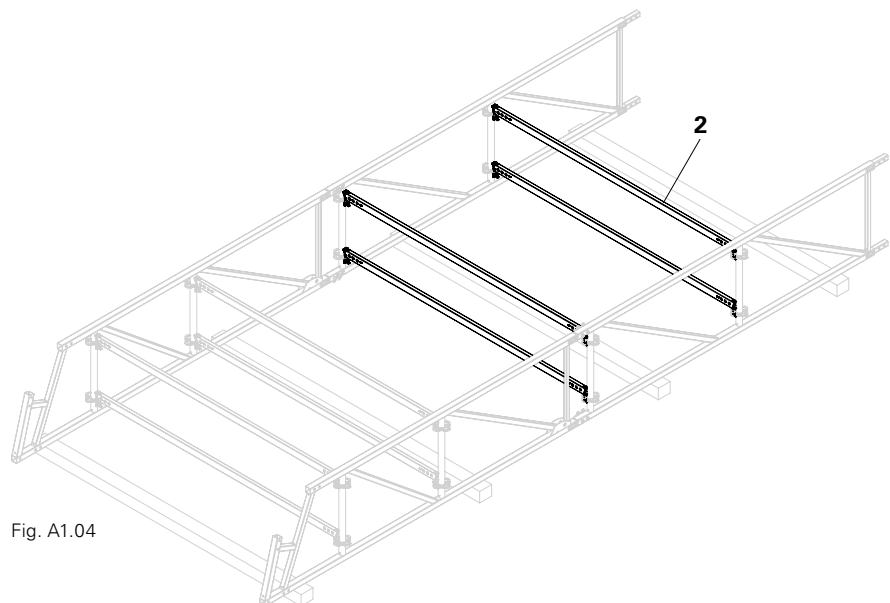


Fig. A1.04

## With tension system

Installed on

- eave element.
- Standard element – but only installed as an eave element.

## Components

<b>2</b>	Horizontal Ledger UH 250 Plus	4x
<b>5</b>	LGS Standard Element URB 300/75	2x
<b>6</b>	Bolt Ø 16 x 70	8x
<b>7</b>	Cotter pin 4/1	8x
<b>10b</b>	Bolt Ø 24 x 105	2x
<b>11</b>	Cotter pin 5/1	2x
<b>50</b>	LGS Suspension Tie Connector URU	2x

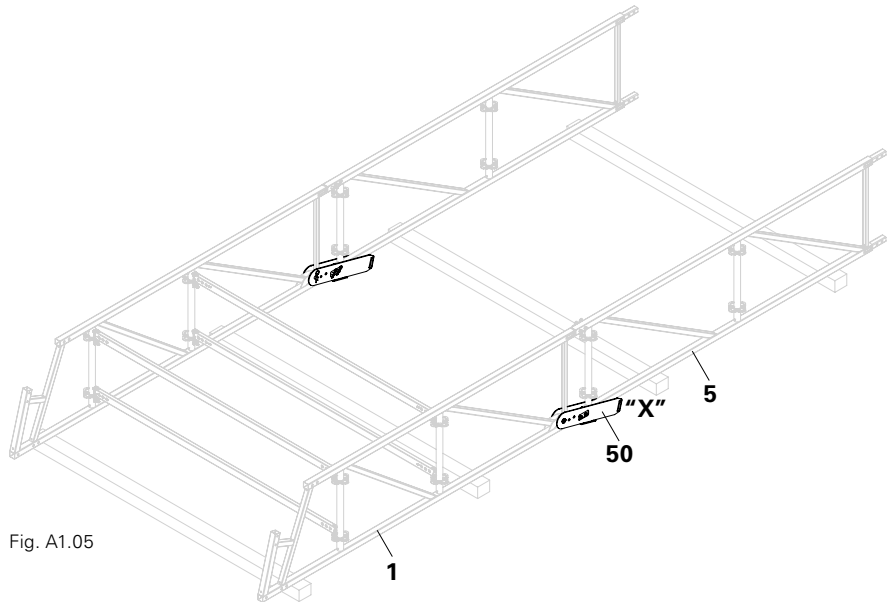


Fig. A1.05

## Installation on eave element

1. Slide the tube of the standard element (**5**) into the pin of the eave element (**1**). (Fig. A1.05)
2. Slip the suspension tie connector (**50**) over the bottom chord. (Fig. A1.06a)
3. Only required for eave to standard element connection:  
Fit the bolt (**10b**) and cotter pin (**11**) – from the outside inwards. (Fig. A1.05a)  
→ 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)

## Detail "X"

Connecting an eave element and standard element

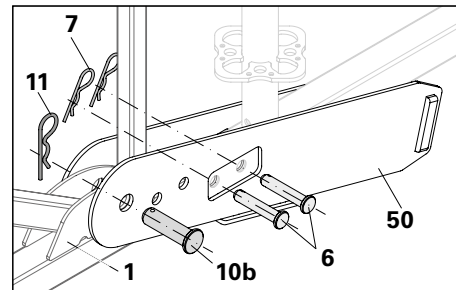


Fig. A1.05a

## 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)

## Alternative

Connecting two standard elements

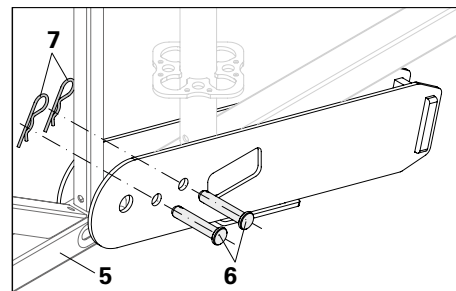


Fig. A1.05b



3. Attach horizontal ledgers (2) to the rosette on both sides (1.1) using the ledger heads and wedges (2.1). (Fig. A1.02a)
4. 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?



Fit the other components of the tension system later on, See Chapter “Tie rods on both sides”, page 32 onwards.

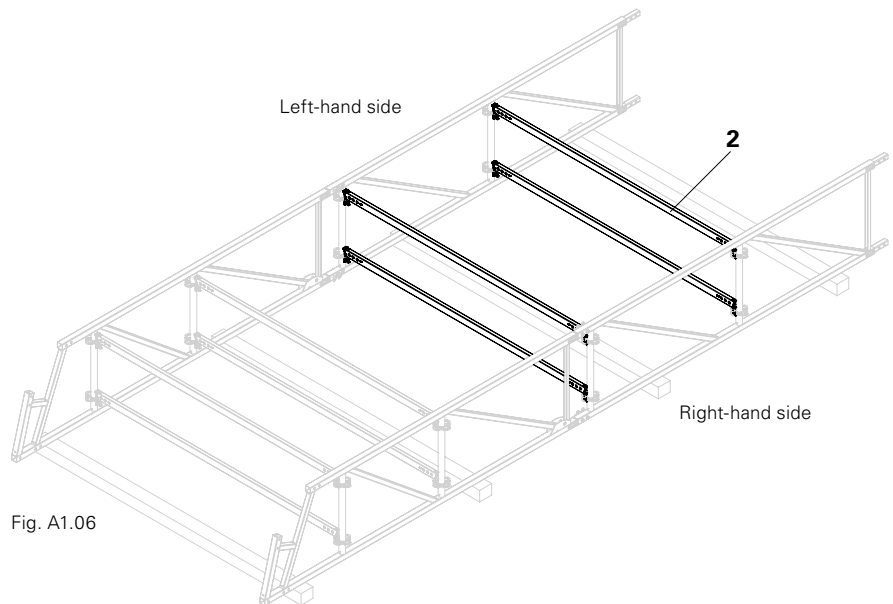


Fig. A1.06

## Fitting other standard and intermediate elements



The subsequent assembly process is shown without a tension system.

### Components

2	Horizontal Ledger UH 250 Plus	6x
5	LGS Standard Element URB 300/75	2x
6	Bolt Ø 16 x 70	16x
7	Cotter pin 4/1	16x
8	LGS Intermediate Element URB 150/75	2x

### Assembly without tension system

1. Fit other standard (5) and intermediate elements (8) – until required length is achieved, See Chapter “Fitting the standard elements”, page 15 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)

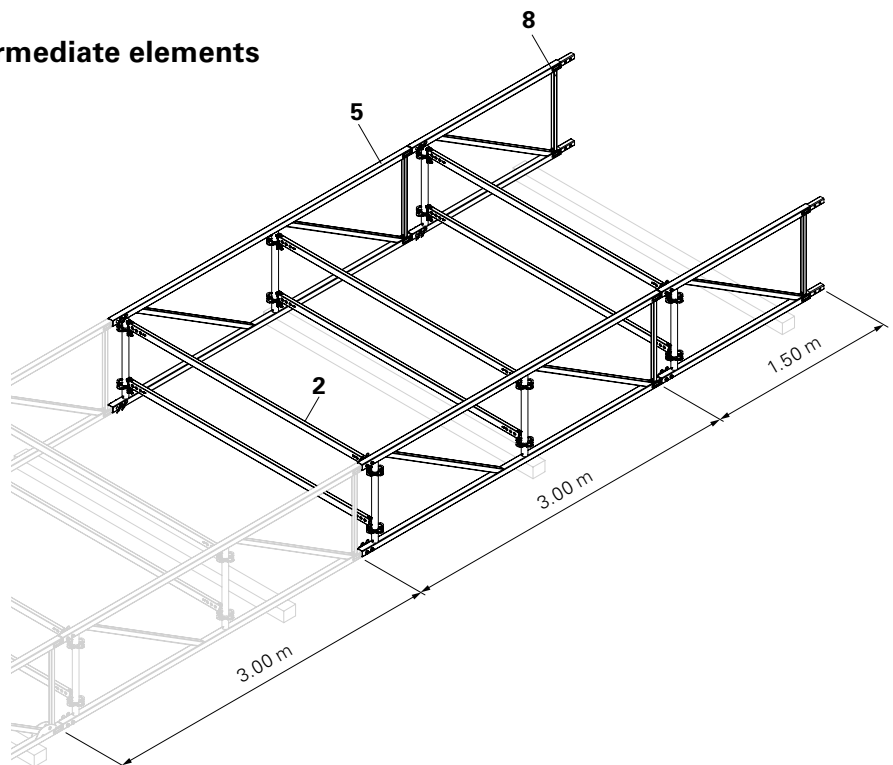


Fig. A1.07

## Fitting the ridge element and ridge bar

Two ridge elements (9) and the ridge bar (19) together form the ridge, See Chapter "Fitting the ridge bar", page 26 onwards.

### Components

<b>2</b>	Horizontal Ledger UH 250 Plus	4x
<b>6</b>	Bolt Ø 16 x 70	12x
<b>7</b>	Cotter pin 4/1	12x
<b>9</b>	LGS Ridge Element URR 75	2x
<b>19</b>	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 tube of the ridge element (9) onto the pin 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.

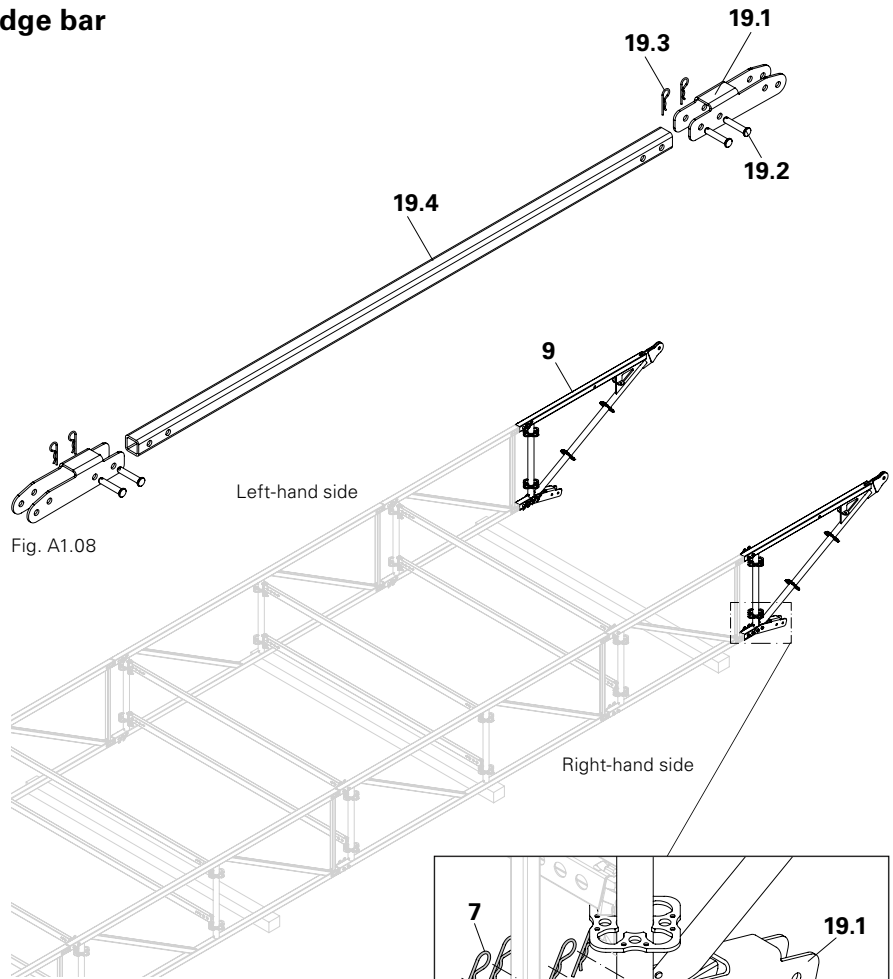


Fig. A1.08

Fig. A1.09

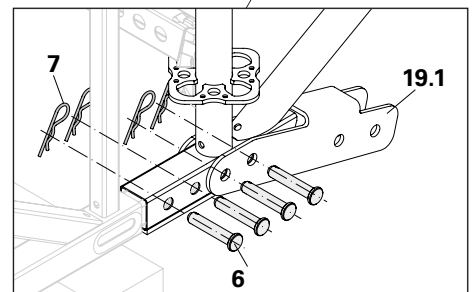


Fig. A1.09a

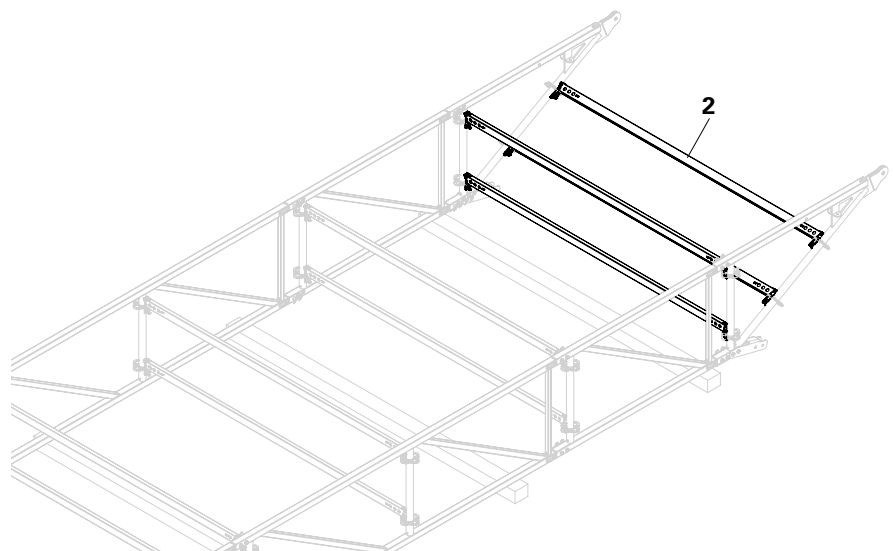


Fig. A1.10



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)

## Installing H-braces



### Attention!

#### Important distinction

- Girder package on the gable:
  - UBH (**4a** / **4b**) required, so install it, see See "Span 15.50 m", page 45 onwards to See "Span 25.17 m", page 47 onwards.
- Girder package after the gable, e.g. in the centre:
  - UBH (**4a** / **4b**) not required, so do not install it.

#### Components

<b>4a</b>	H-Brace UBH Flex 250/100	2x
<b>4b</b>	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)

#### Installing the first side

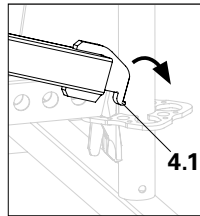


Fig. A1.11a

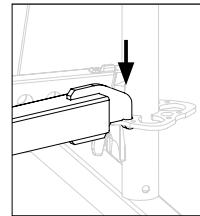


Fig. A1.11b

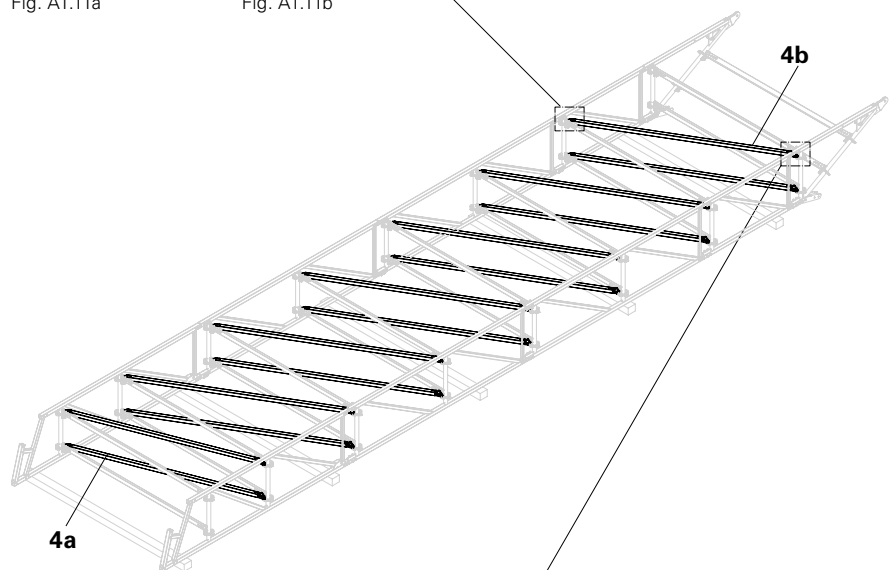


Fig. A1.11

#### Installing the second side

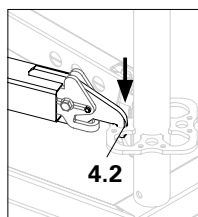


Fig. A1.11c

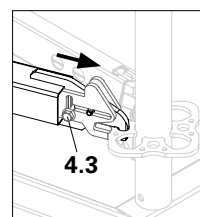


Fig. A1.11d



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.



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

<b>1</b>	LGS Eave Element URB 300/75	2x
<b>2</b>	Horizontal Ledger UH 250 Plus	18x
<b>5</b>	LGS Standard Element URB 300/75	4x
<b>6</b>	Bolt $\varnothing$ 16 x 70	36x
<b>7</b>	Cotter pin 4/1	36x
<b>8</b>	LGS Intermediate Element URB 150/150	2x
<b>9</b>	LGS Ridge Element URR 150	2x
<b>10a</b>	Bolt $\varnothing$ 24 x 70	2x
<b>11</b>	Cotter pin 5/1	2x

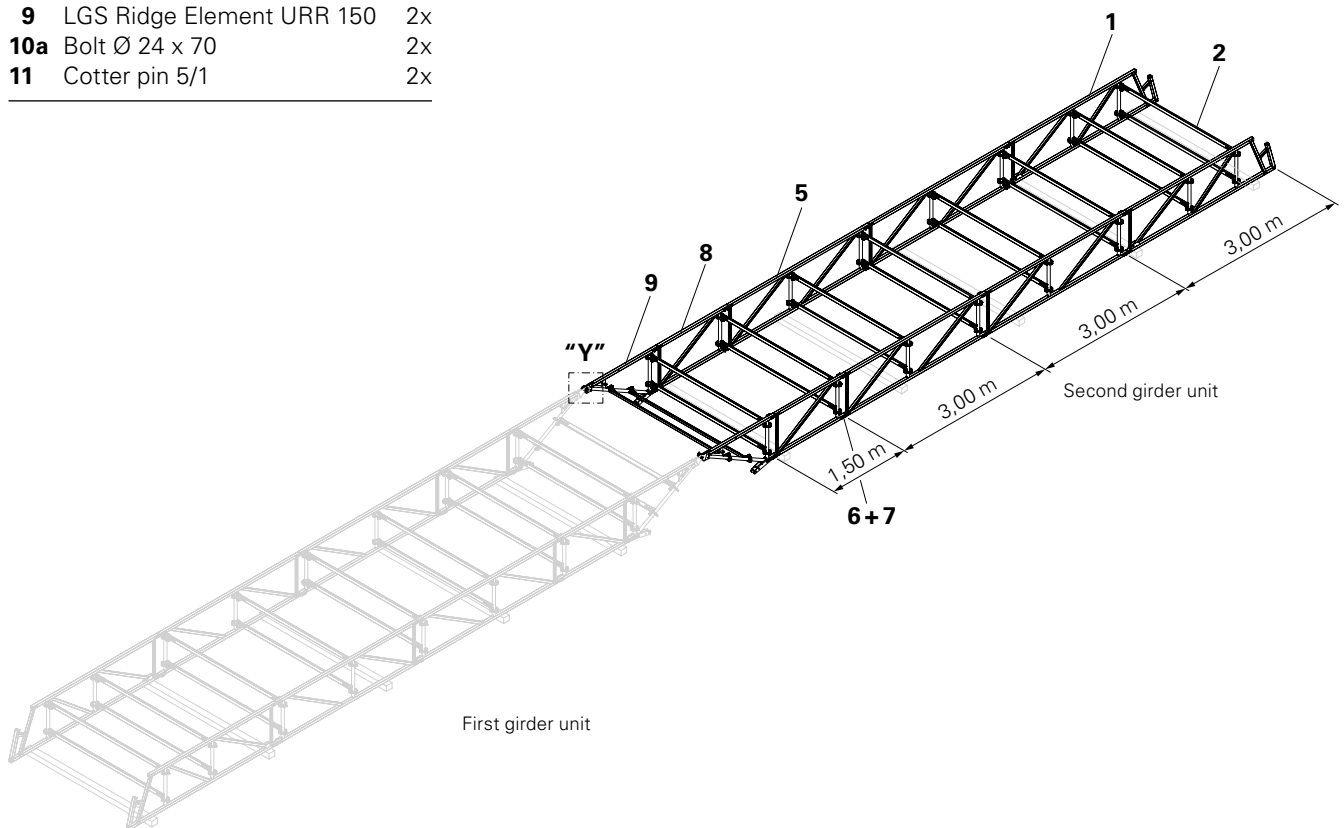


Fig. A1.13



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 "Fitting the ridge element and ridge bar", page 18 onwards.
2. Fit other standard (5) or intermediate elements (8), See "Fitting the standard elements", page 15 onwards
3. Fit the eave element (1),  
See "Fitting the eave elements", page 14 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)

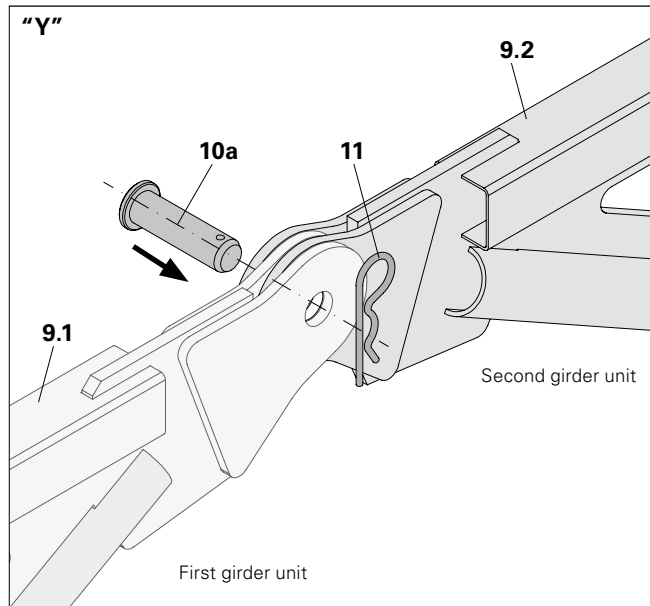


Fig. A1.13a



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

## Fitting the keder track

### Components

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



- Fit keder connectors at  $< 1.50$  m spacings.
- Valid up to wind load  $q = 0.77$  kN/m<sup>2</sup>.

### 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)

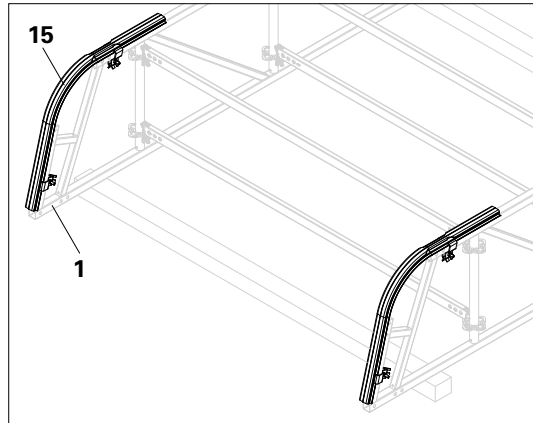


Fig. A2.01

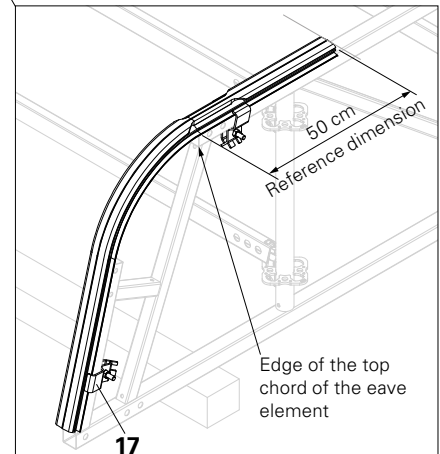


Fig. A2.01a

4. Next, position other keder tracks (**16a / 16b / 16c**) on the eave rail and fix them in place at the joint with a keder connector (**17**) at spacings of  $\leq 1.5$  m. (Fig. A2.02 + A2.02a)

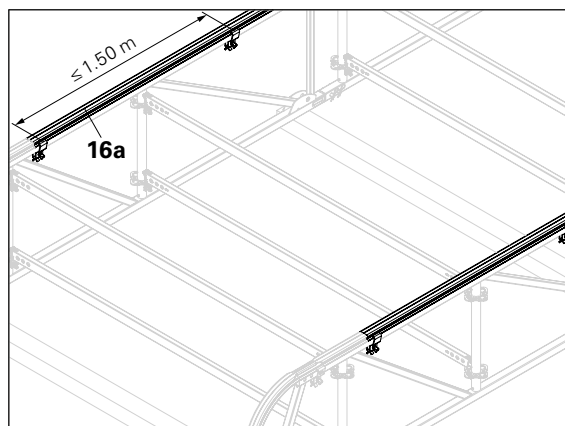


Fig. A2.02

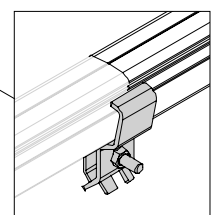


Fig. A2.02a

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)

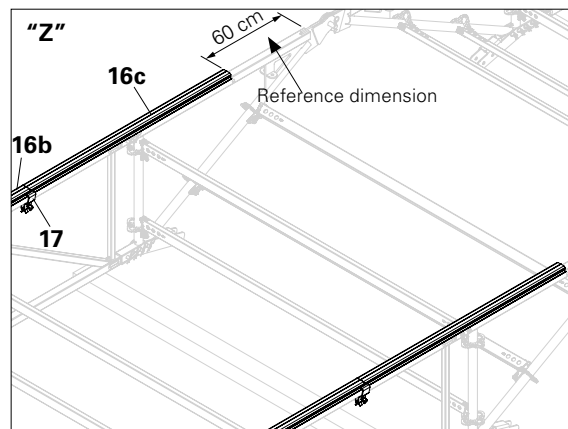


Fig. A3.03a

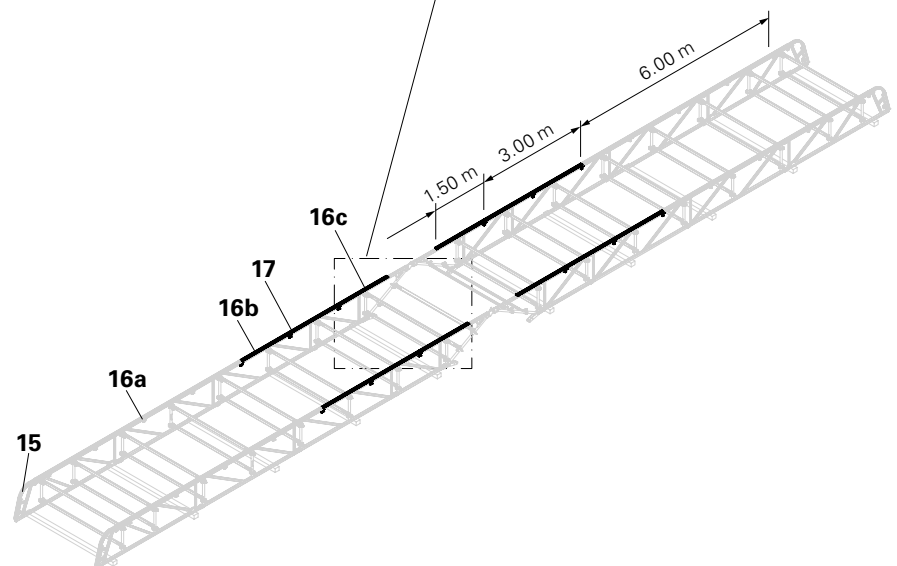


Fig. A3.03

## Fitting the support roller

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

<b>6</b>	Bolt Ø 16 x 70	4x
<b>7</b>	Cotter pin 4/1	4x
<b>18</b>	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)

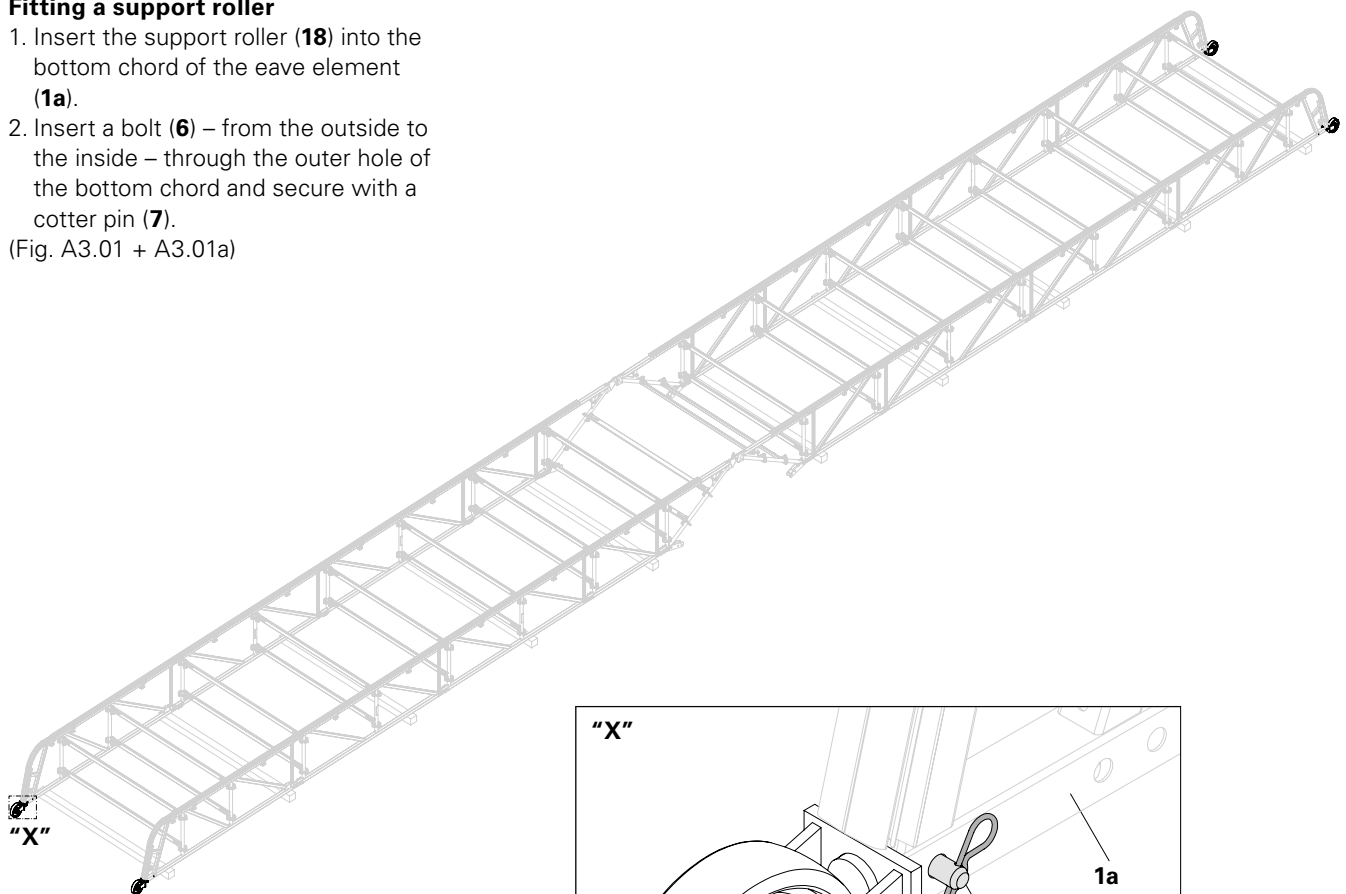


Fig. A3.01



Attach two ropes to the girder package. The keder tarpaulin can now be pulled in. See Chapter "Drawing in the keder tarpaulin", page 28 onwards.

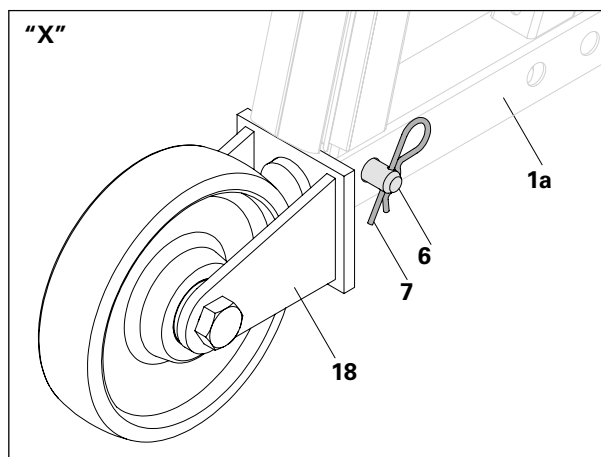


Fig. A3.01a



## 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.



The PERI UP Flex scaffold system is well-suited to hoisting applications involving cranes.

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.

## Complete girder package

(Fig. A4.01 + A4.01a)

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 “Crane attachment points”, page 48 onwards.
- Support forces, See Chapter “Support forces”, page 49 onwards.

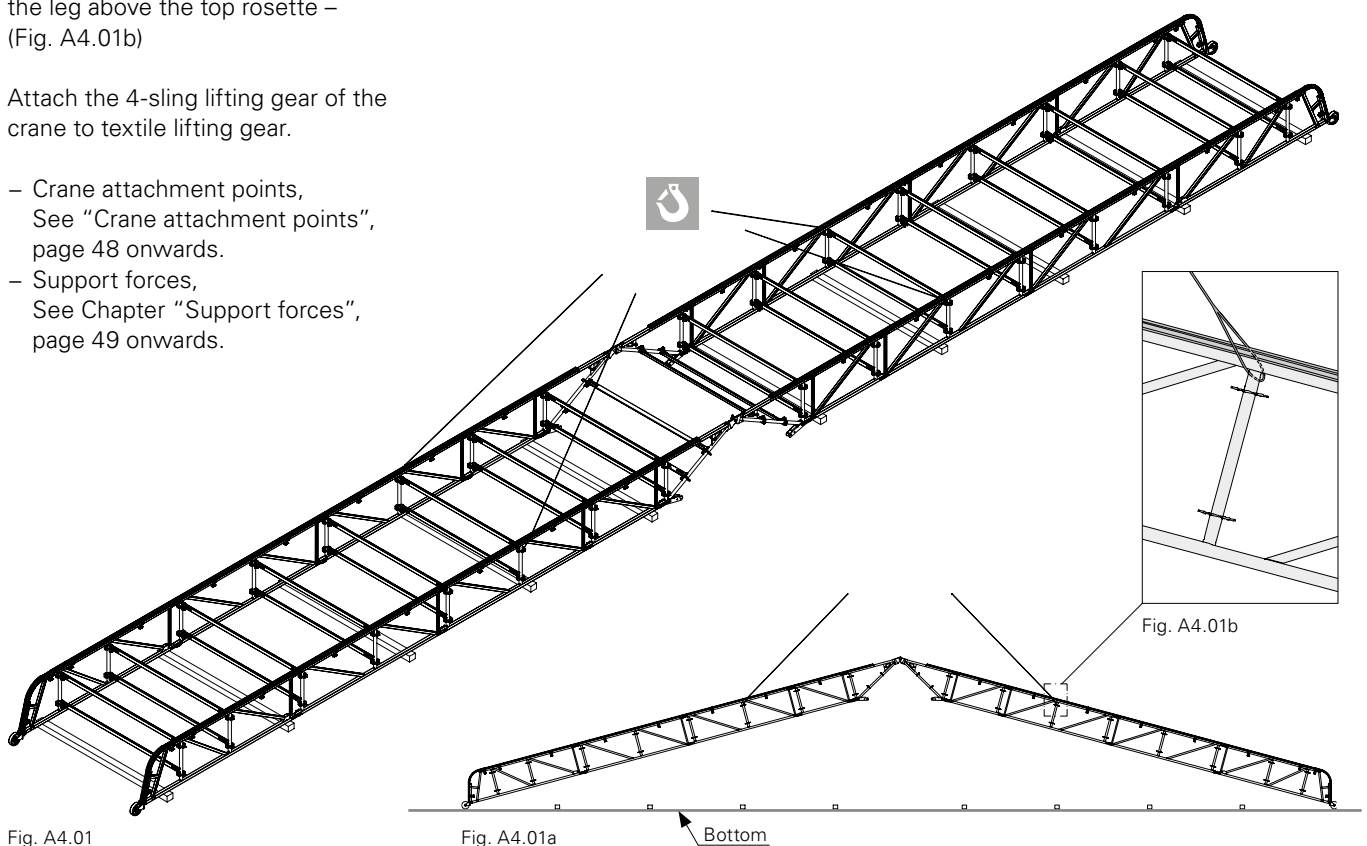


Fig. A4.01

Fig. A4.01a

Bottom

Fig. A4.01b

## 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 "With tension system", page 16 onwards.

### Assembly

1. Push the rectangular tube (19.4) on one side between the brackets (19.1) of the ridge bar. (Fig. A4.02a)
2. Insert bolts through the holes and secure with cotter pins – 2x. Repeat steps 1 + 2 on the other side. (Fig. A4.02a)
3. Lift the girder package with the crane until the holes at the free end of the rectangular tube are level with the holes in the brackets of the ridge bar (19.5). (Fig. A4.02b)
4. Insert bolts through the holes and secure with cotter pins – 2x. (Fig. A4.02 + A4.02c)

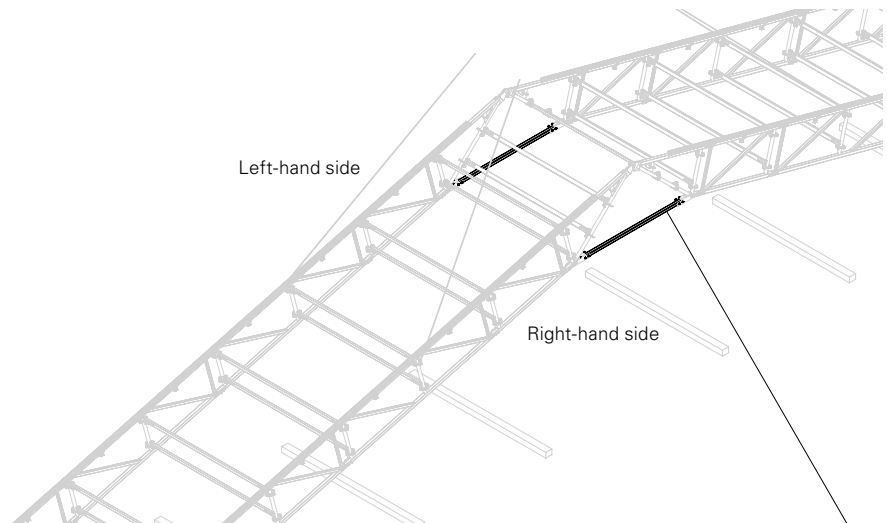


Fig. A4.02

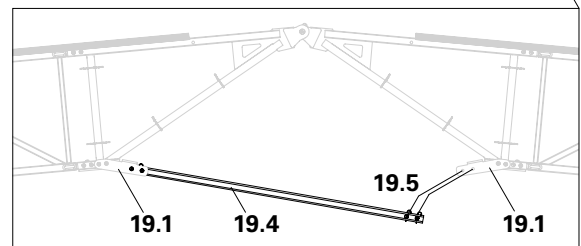


Fig. A4.02a

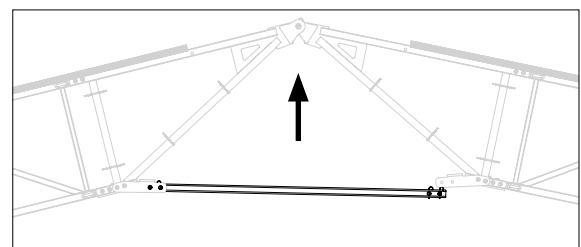


Fig. A4.02b

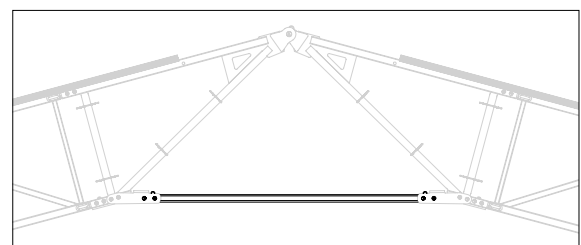


Fig. A4.02c

## Fitting the ridge rail

### Components

<b>17</b>	LGS Keder Connector URK	8x
<b>22</b>	LGS Ridge Rail 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 rail – 2x.
  3. Fit another keder connector.
- (Fig. A4.03 + A4.03a)

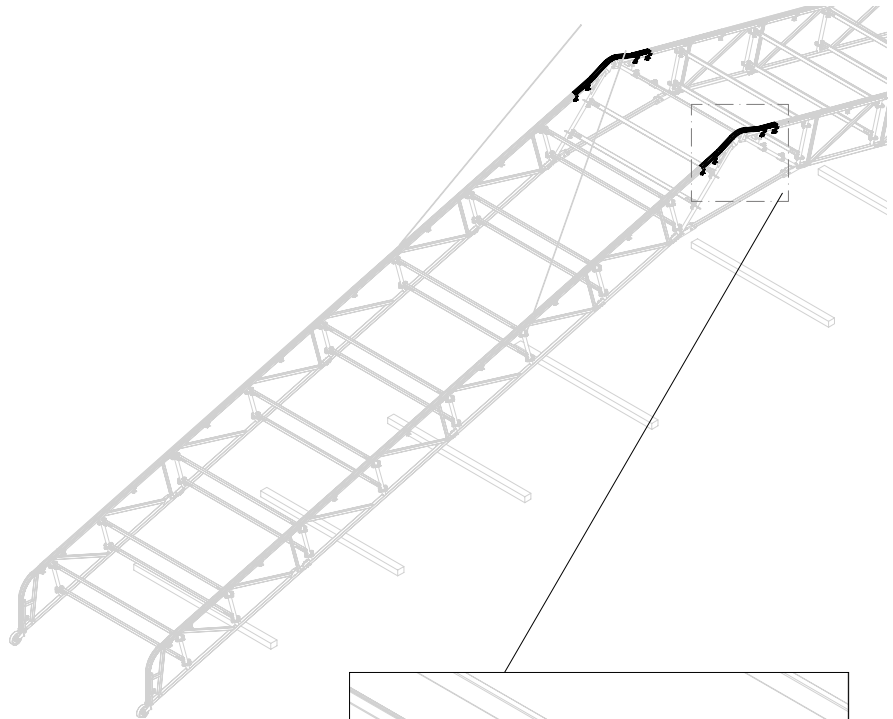


Fig. A4.03

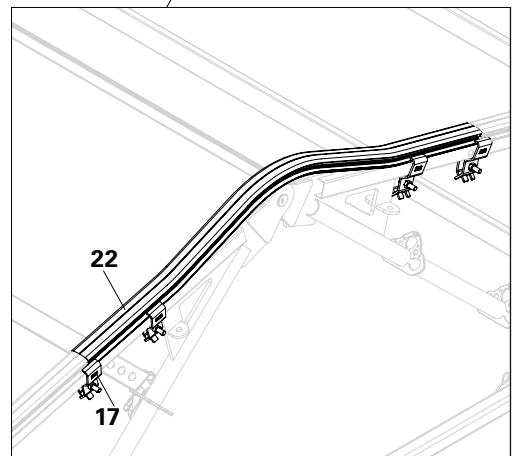


Fig. A4.03a

## Fitting the reel connector

### Components

<b>23</b>	LGS Reel Connector 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.

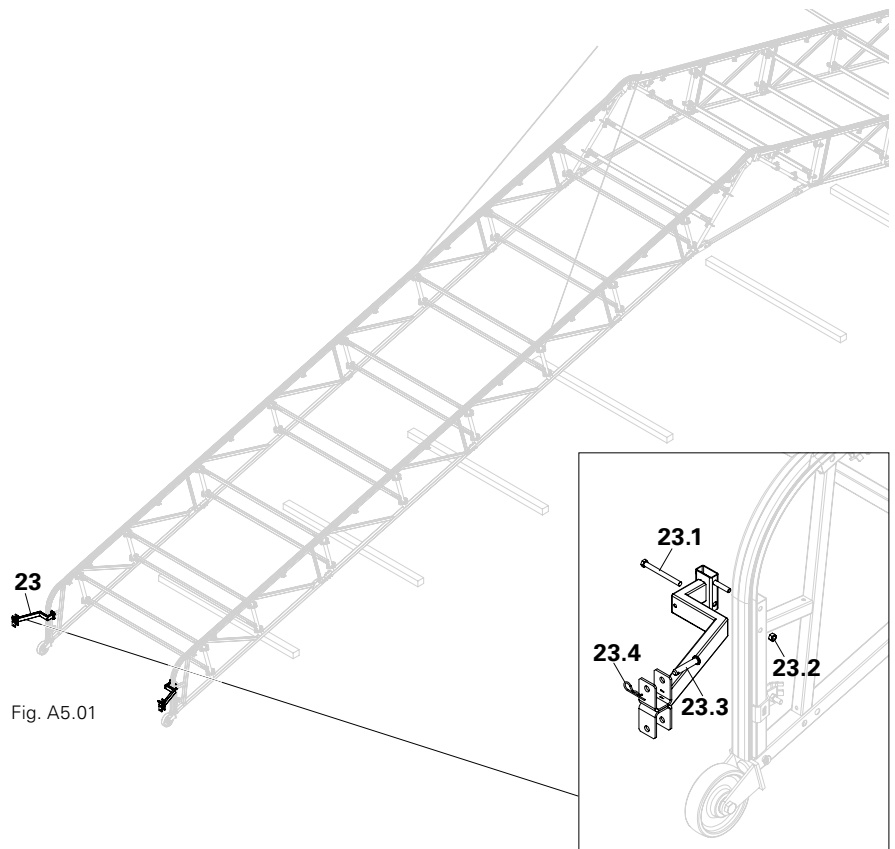


Fig. A5.01

Fig. A5.01a

## Drawing in the keder tarpaulin



Rolls of tarpaulin can be purchased from PERI directly.

### Components

<b>24</b>	LGS Tarpaulin Reel URG 250	1x
<b>25</b>	LGS Handle URG	2x
<b>55</b>	LGS Crank 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 handle (**25**) onto the tarpaulin reel (**24**).

### 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 into the groove of the eave rails (**15a**). (Fig. A5.02)

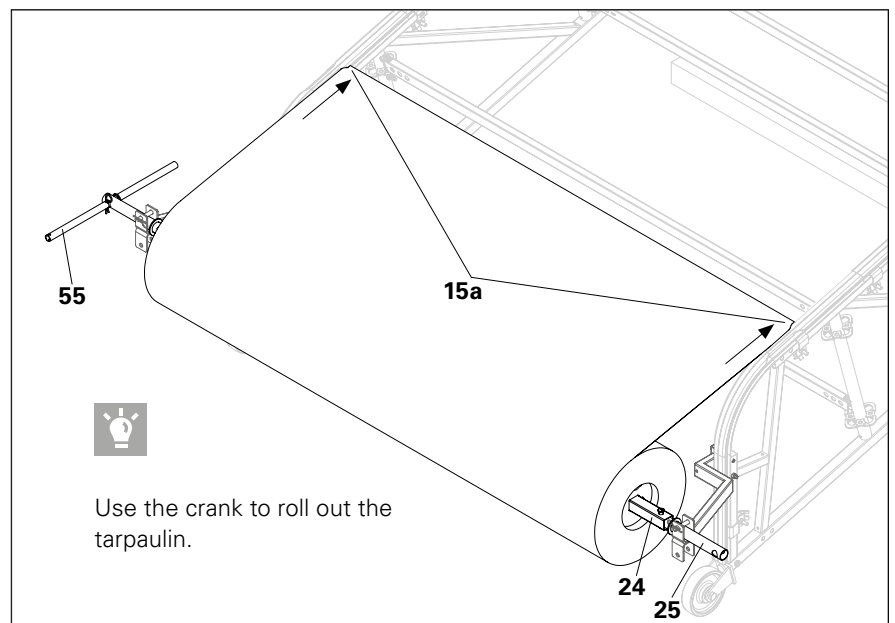


Fig. A5.02



Use the crank to roll out the tarpaulin.

4. Attach the rope.
5. Pull the keder tarpaulin smoothly and evenly over the girder package and allow the tarpaulin to hang loosely.
6. Detach the rope.
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)

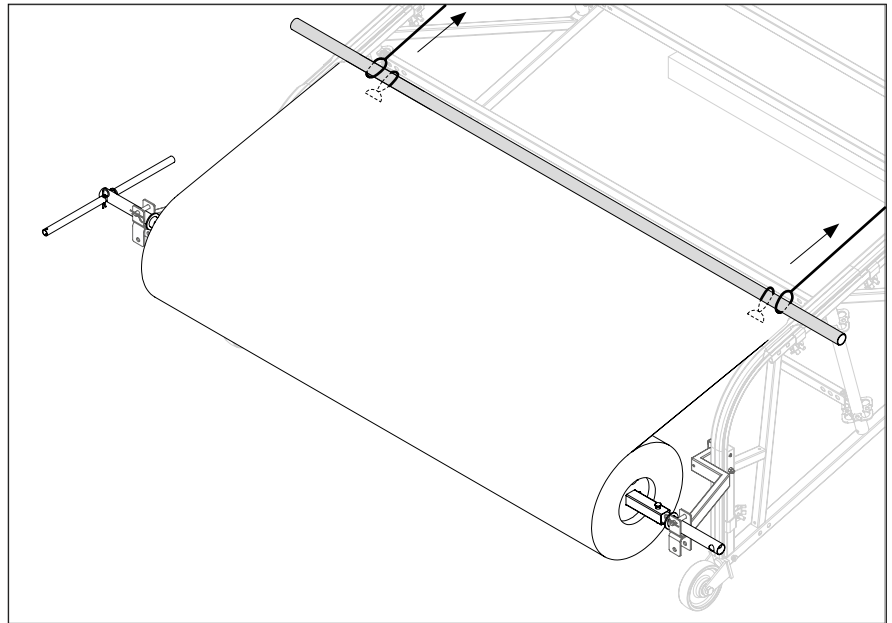


Fig. A5.03



- 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)

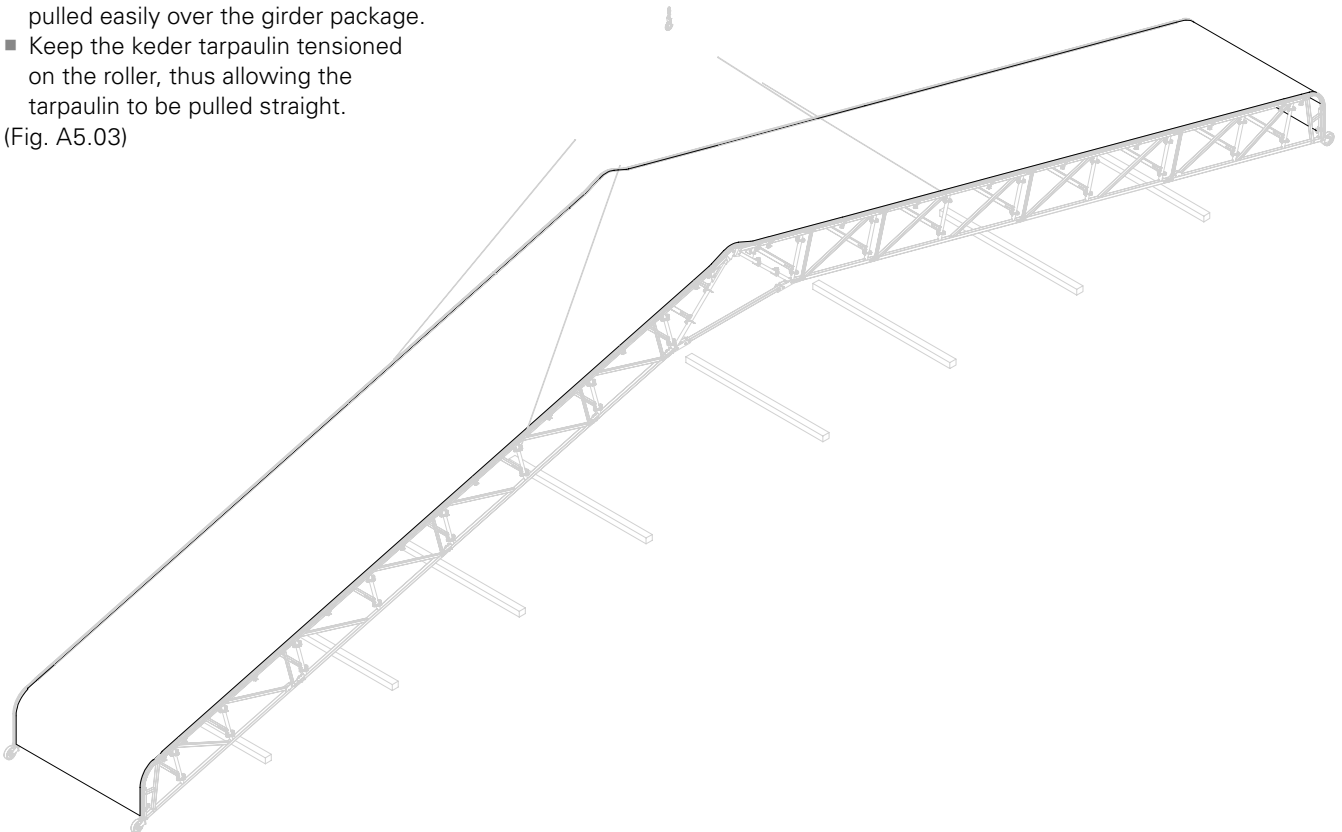


Fig. A5.04

## Fitting the support

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

### Components

<b>6</b>	Bolt Ø 16 x 70	12x
<b>7</b>	Cotter pin 4/1	12x
<b>26</b>	LGS Support URS 15°	4x

### Preparation

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

### Fitting a support

Attach the support (**26**) to the eave element with bolts (**6**) and secure with cotter pins (**7**):

- 2x below on the side of the leg through the holes of the support and eave element,
- 1x above the bottom chord of the eave element.

(Fig. A6.01a)

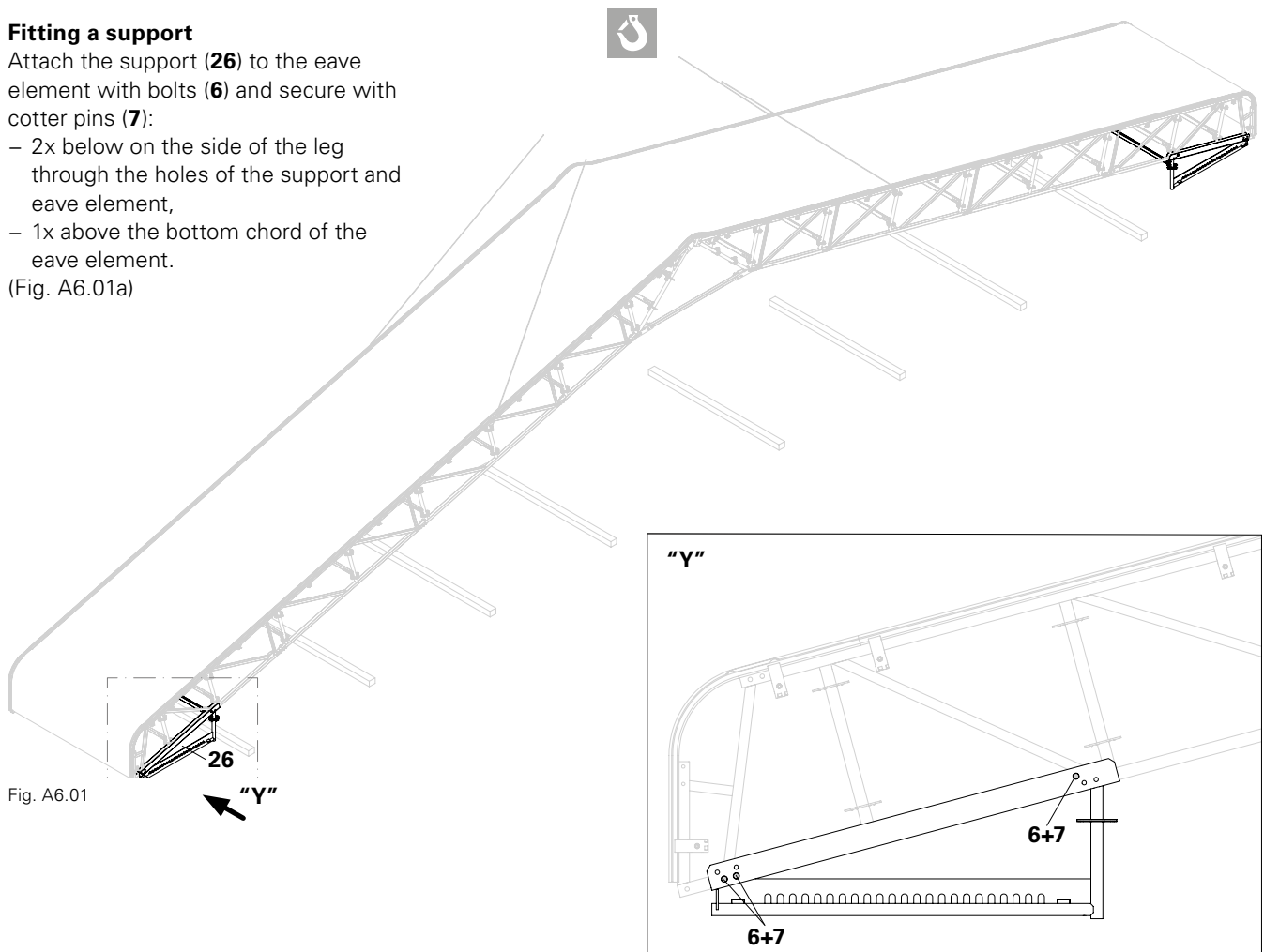


Fig. A6.01

Fig. A6.01a

## Preparation

Larger spans are possible through 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.

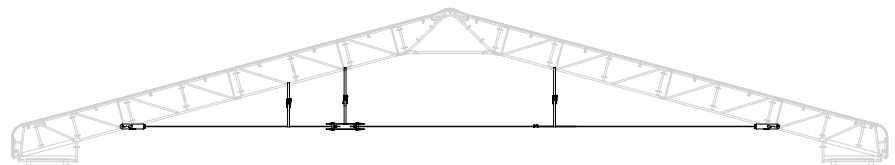


Fig. A7.01a

## Preparation

Suspension Tie Connector URU is pre-assembled on eave element, See "With tension system", page 16 onwards.

## Complete tension system fitted

(Fig. A7.02)

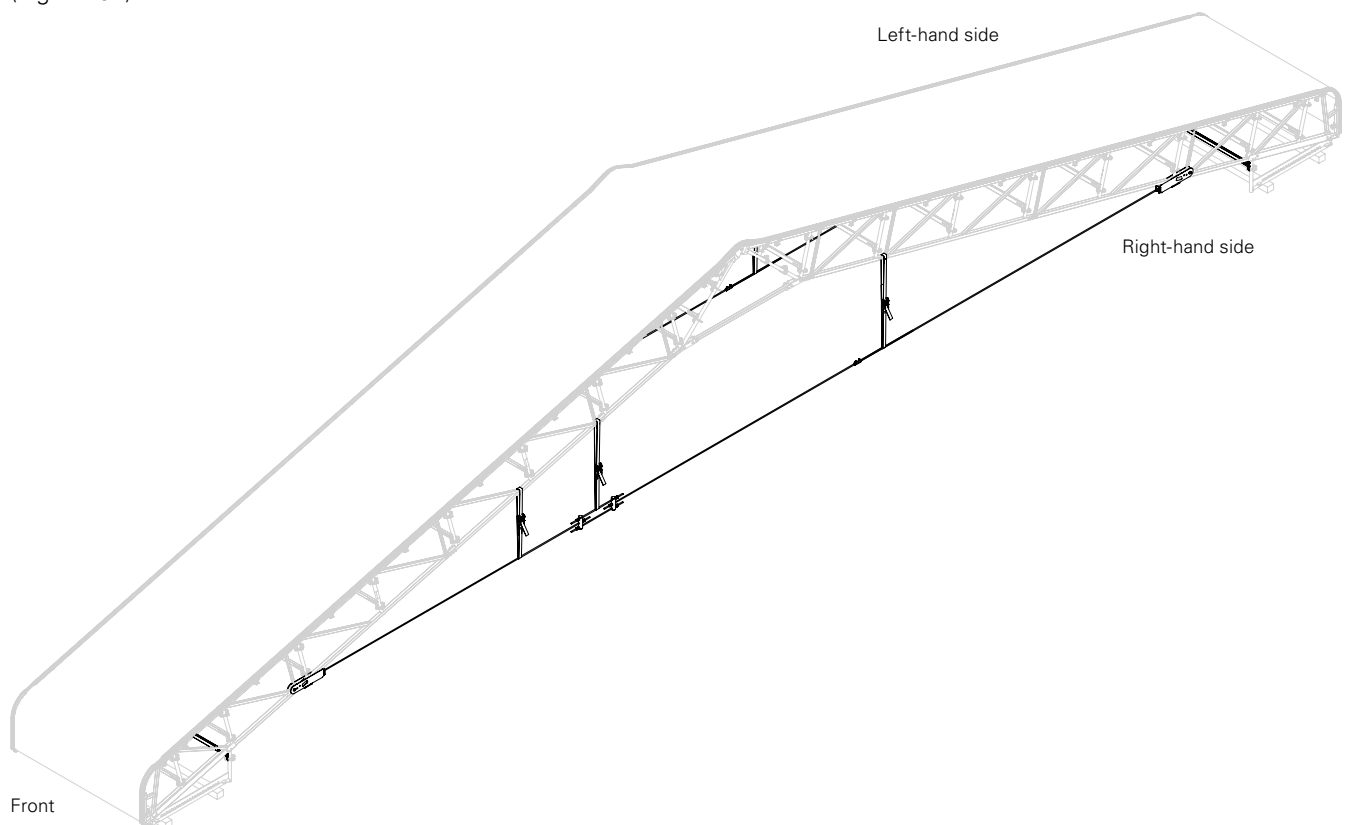


Fig. A7.02

## Tie rods on both sides

### Components

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

### Assembly

1. Turn Tie Rod DW 15 (**27.1**) in the hole of the Suspension Tie Connector (**50**) – 2x, front and rear. Allow projection > 100 mm! (Fig. A7.03a)
2. Wrap tension belts (**51**) around the bottom chord of the standard elements.

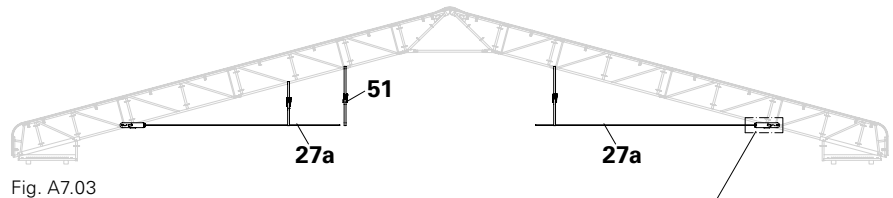


Fig. A7.03

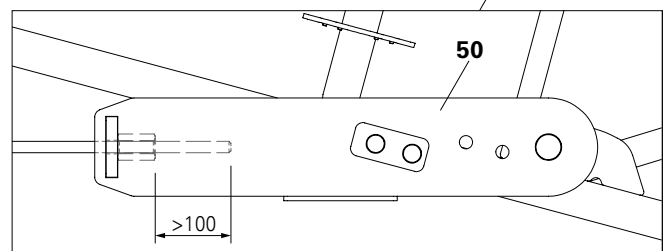


Fig. A7.04

Fig. A7.03a – Suspension tie connector on the eave element

## Tie rod extensions

### Components

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

### Preparation

1. Open the locking screw (**52b**).

### Assembly

1. Turn tie rod extension (**52**) with hex. nut (**52.1**) on the free end of a tie rod as far as possible.
2. Screw the hex. nut (**52.1**) back until the flat side of the tie rod (**27a/27b**) is perpendicular to the bolt (**52.2**).
3. Hand-tighten\* the bolt (**52.2**) on the screwed-in tie rod.
4. Screw-in an additional tie rod (**27a / 27b**) into the other end of the hex. nut of the tie rod extension as far as possible. (Fig. A7.04a) → Tie rods are coupled.
5. Screw the hex. nut back until the flat side of the tie rod is perpendicular to the bolt. (Fig. A7.04b + c)
6. Hand-tighten\* the second hex. bolt (**52.2**). (Fig. A7.04b + c) → Coupled tie rods are secured.
7. Fix tension belt (**51**) to the freely suspended tie rod.

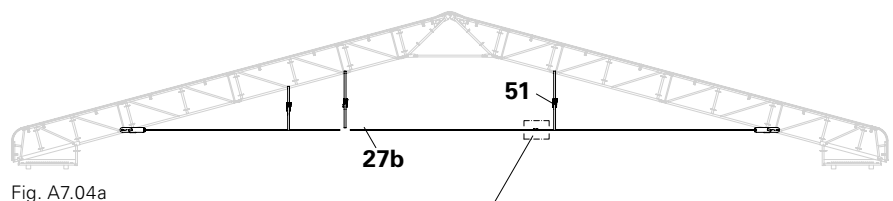


Fig. A7.04a

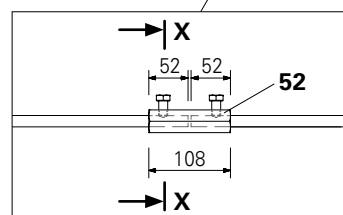


Fig. A7.04b

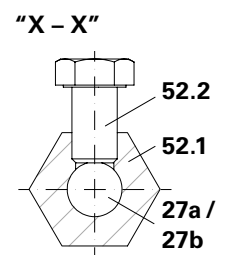


Fig. A7.04c

\* hand-tightened = approx. 20 – 30 Nm



## Tension system connector



Girder package must be placed on the ground when tensioning the tension system, and must not be suspended on the crane.

### Components

<b>27.3</b> Tie Rod DW 15, L = 1 m	4x
<b>53</b> Anchor Tie Yoke URU	4x
<b>54</b> Hex. Nut DW 15 SW 30/50	12x

### Assembly

1. Push the middle hole of the anchor tie yoke (**53**) over the end of the tie rod (**27a/ 27b**).
2. Loosely screw hex. nut (**54**) onto the tie rod (**27a/27b**).  
Allow projection > 100 mm!
3. Repeat steps 2 + 3 on the other tie rod.
4. Push two tie rods (**27c**) through the outer holes of both anchor tie yokes.
5. Screw hex. nut (**54**) onto each of the projecting ends of the tie rods (**27c**) – 4x.  
Allow projection > 100 mm!  
(Fig. 7.05a)
6. Fix the tension belt (**51**) to one of the short tie rods.
7. Tighten middle hex. nut (**54**) until the reference dimension of the respective span is reached – 2x.  
For reference dimensions for various spans, see Page 45 to Page 47.  
(Fig. A7.05)

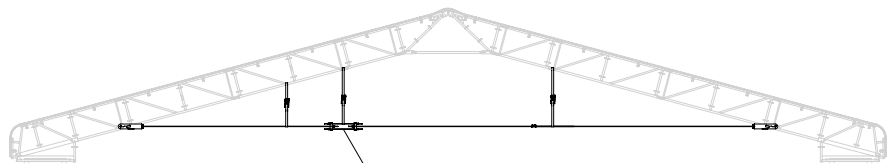


Fig. A7.05

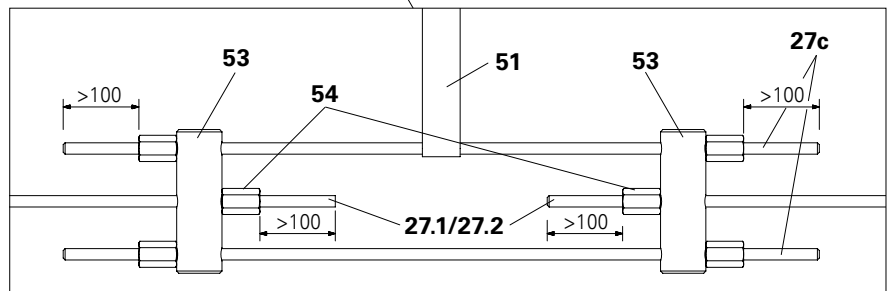


Fig. A7.05a



- Check the projecting tie rod (**27a**) – dimension > 100 mm – in the suspension tie connector. (Fig. A7.03a)
- Check tightness of bolts M12 x 20 of the tie rod extensions. (Fig. A7.04b +c)
- Check projecting tie rod (**27b**) – dimension > 100 mm, 6x – in the tension system connector. (Fig. A7.05a)
- Check reference dimension and adjust if necessary. (Fig. A7.06)

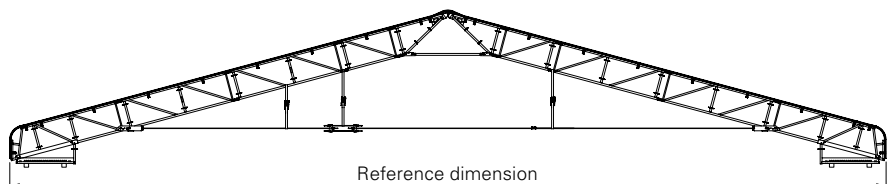


Fig. A7.06

## Fitting ledgers



### Attention!

#### Important distinction

The pattern of the weather protection roof

- either marries up with the load-bearing substructure, variant 1.
  - does not marry up with the load-bearing substructure, variant 2.
- The load-bearing substructure is not part of the scope of these Instructions for Assembly and Use.
  - The ledger length "X" is available in four sizes
    - URL 67/14
    - URL 75/14
    - URL 100/14
    - URL 150/14 – shown here

### Variant 1

#### Components

<b>28</b> Ledger URL 150/14	3x
<b>29</b> Bolt ISO 4014-M10x100	6x
<b>30</b> 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 leg – per ledger – 2x. (Fig. A8.01b)



Is the row of holes at the top?



During further assembly, please note that there are two variants:

- Moveable unit – with carriage, See Chapter "A9 Mobile girder package", page 39 onwards.
- Fixed unit – with bearer, See Chapter "A10 Fixed girder package", page 40 onwards.

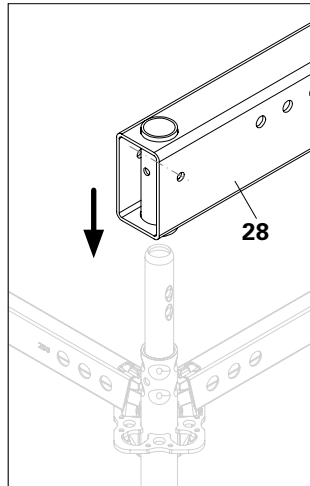


Fig. A8.01a

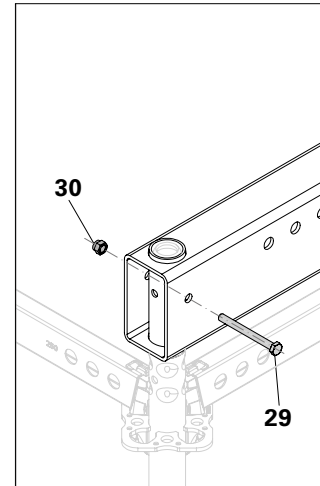


Fig. A8.01b

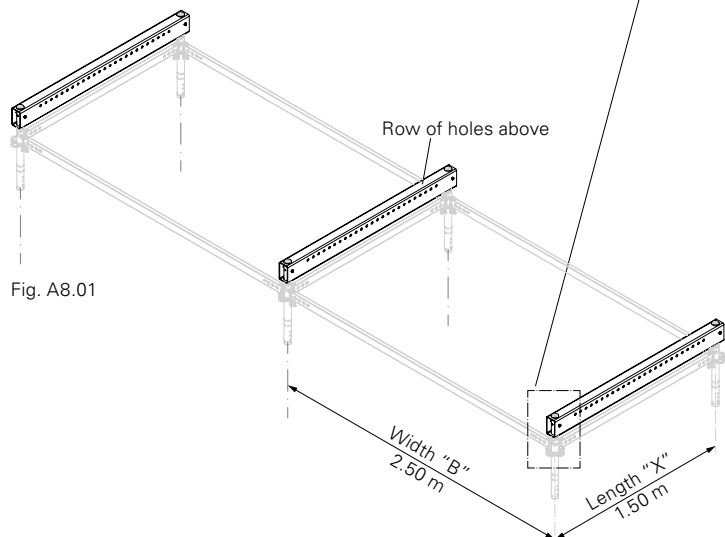


Fig. A8.01



When assembling the load-bearing substructure, pay attention to how the legs are aligned.

## Variant 2

### Components

<b>3</b> Horizontal Ledger UHV 250 Plus	*2x
<b>28</b> Ledger URL 150/14	1x
<b>39</b> Ledger-to-ledger coupler UHA-2 half with pin	*2x
<b>40</b> Locking pin Ø48/57	*2x

\* 2x each ledger

### Assembly

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

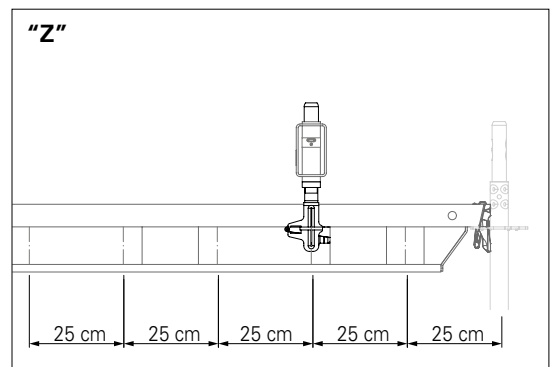


Fig. A8.02a

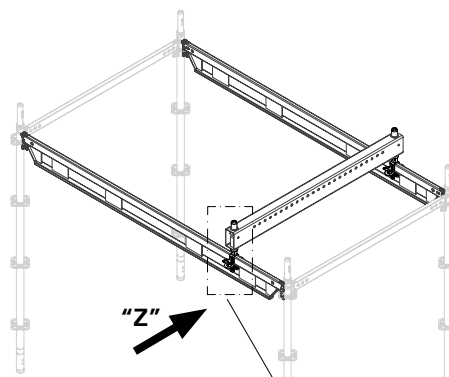


Fig. A8.02

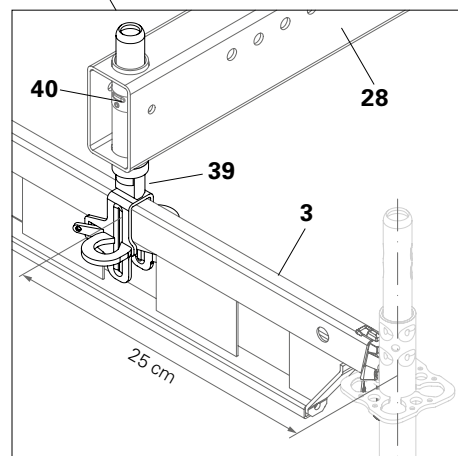


Fig. A8.02b

## Fitting the rail support

Connects the rail with the ledger.

### Components

<b>6b</b>	Bolt Ø 16 x 150	3x
<b>7</b>	Cotter pin 4/1	3x
<b>31</b>	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.

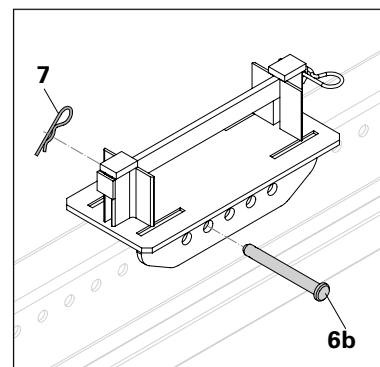


Fig. A9.01a

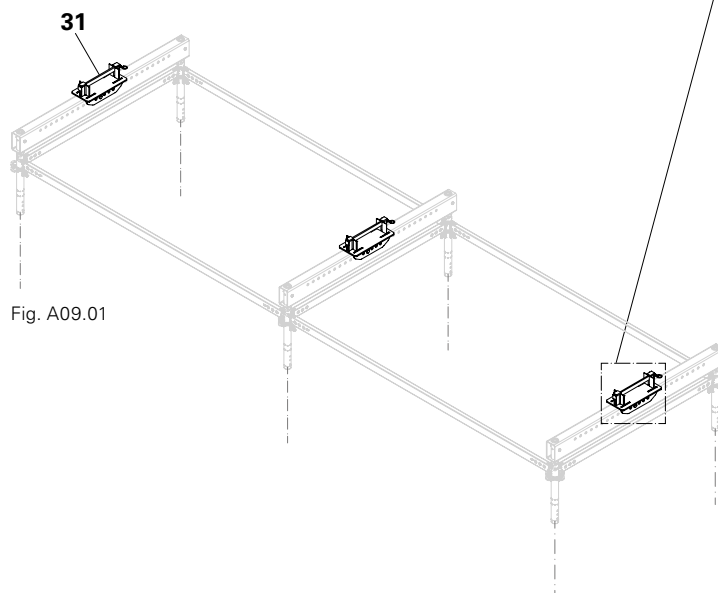


Fig. A09.01

## 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

<b>32</b>	Aluminium Rail URT 250	2x
<b>33</b>	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

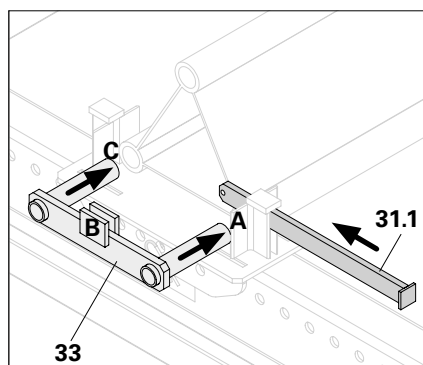


Fig. A9.02a

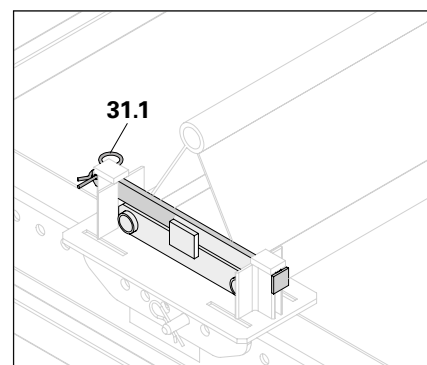
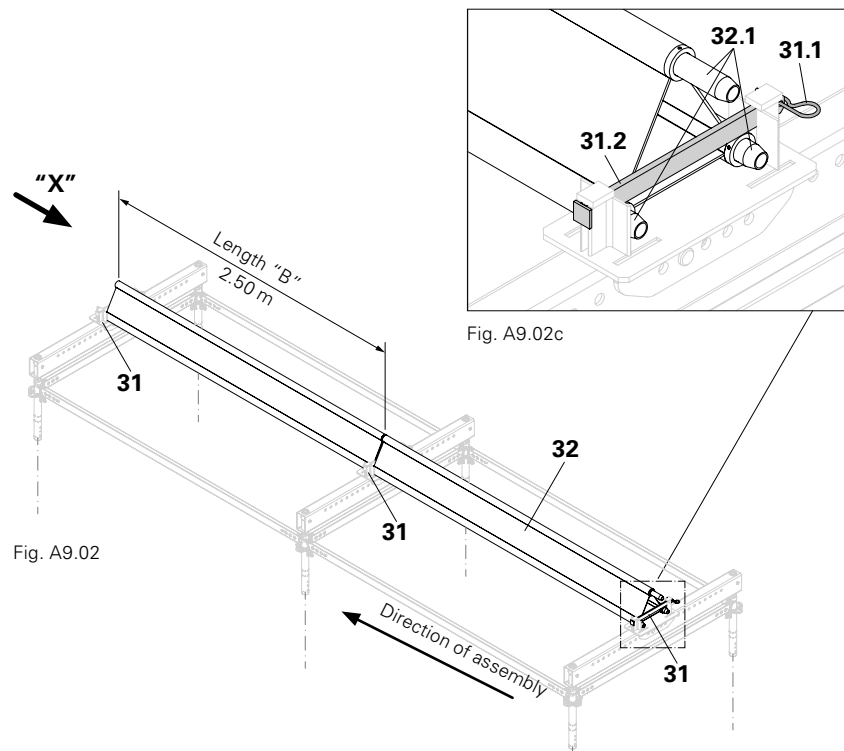


Fig. A9.02b

## 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.



## Fitting stoppers

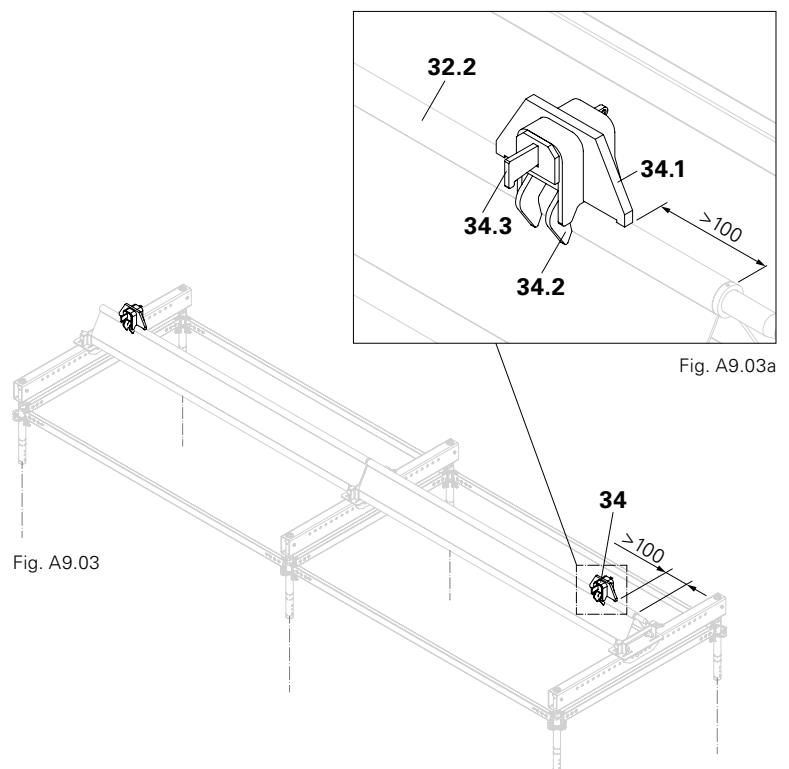
Stoppers limit the distance moved and are mounted at the open ends of the aluminium rail.

### Components

<b>34</b> 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)



## Fitting the carriage

The carriage

- connects the support with the rail,
- can be moved in a longitudinal direction.

### Components

<b>35</b> Carriage URW	4x
------------------------	----

### 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)

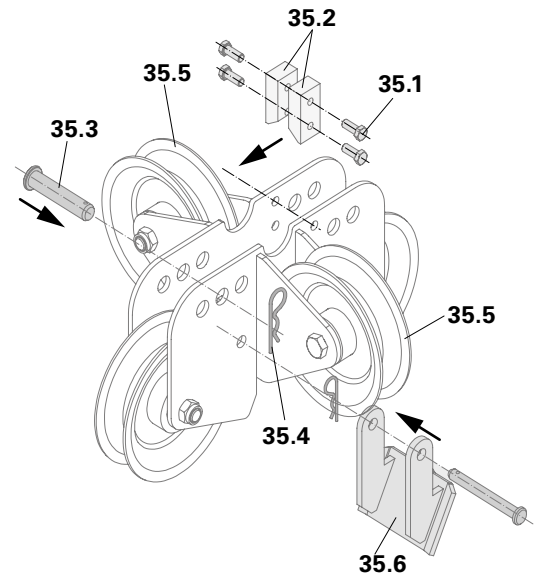


Fig. A9.04a



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

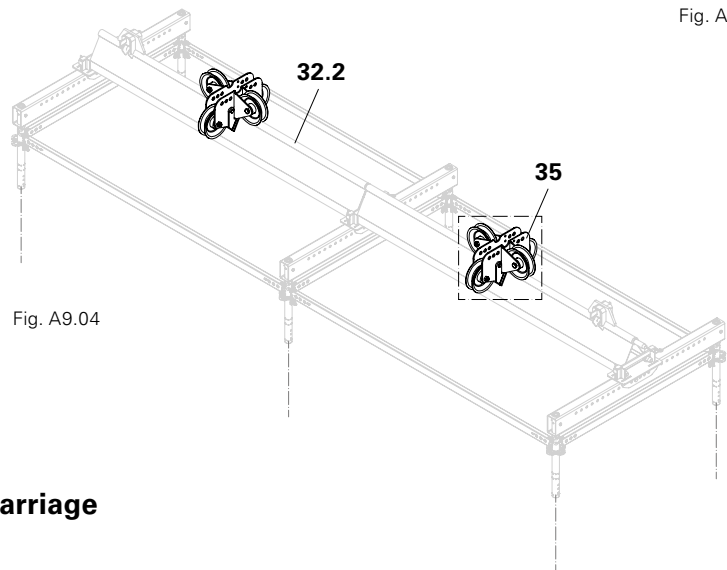


Fig. A9.04

## Positioning the girder package on the carriage



### 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.



## Warning

Girder package may roll away and crush body parts.

This can result in serious injuries.

⇒ 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-related 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 on 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 second side, as described in steps 1 + 2.
  - Do not fix bolts and cotter pins.
  - Floating bearing (Fig. A9.05c)
5. Secure the girder package to prevent it from rolling away unintentionally. (Fig. A9.05)

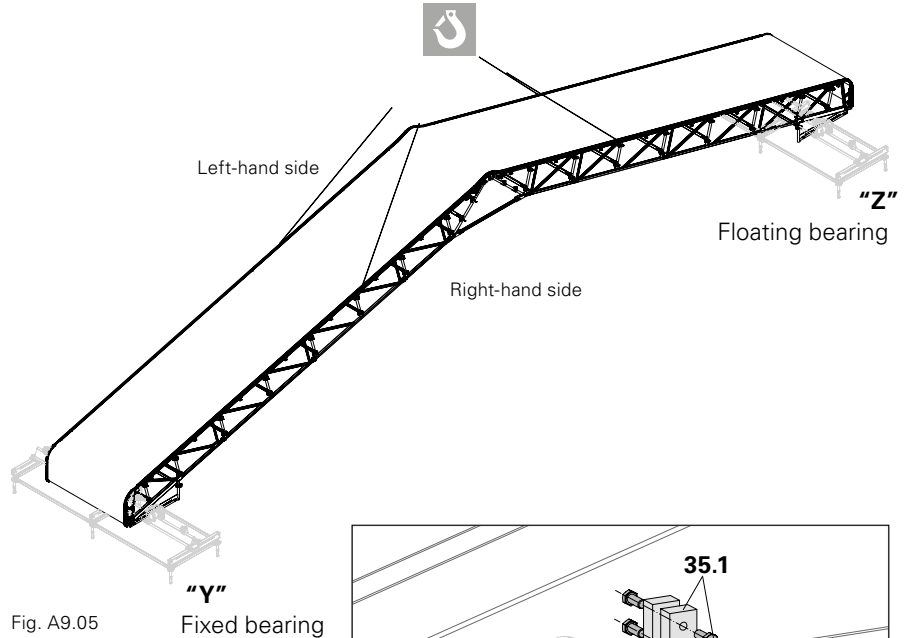


Fig. A9.05

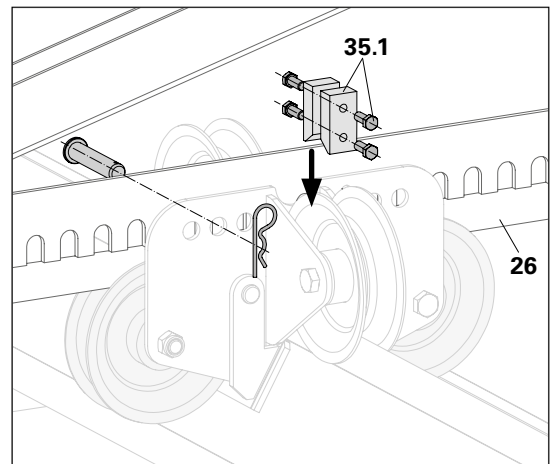


Fig. A9.05a – Bolts and cotter pins only on fixed bearing



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



Guide the girder package with ropes when transporting it by crane

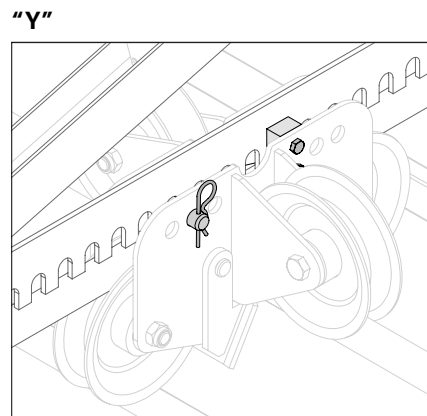


Fig. 10.05b

Fixed bearing – bolted to the support

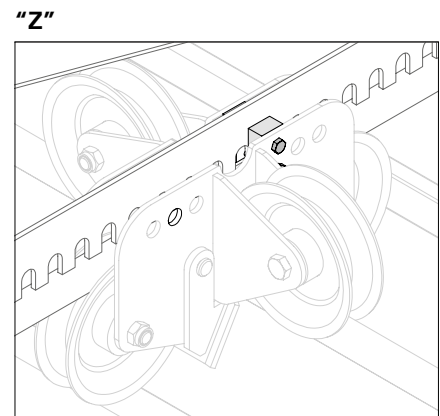


Fig. A10.05c

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.
- For the number of chain pairs, See "Transfer of horizontal force", page 51 onwards.

### Preparation

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



### Attention!

#### Important distinction

The pattern of the weather protection roof

- either marries up with the load-bearing substructure and is variant 1, see Fig. A10.02
- does not marry up with the load-bearing substructure and is variant 2, see Fig. A10.03

### Variant 1

#### Components

36	LGS Bearer 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

### 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 – 2x. (Fig. A10.02a)
3. Attach the anchor chain (37) to the leg. (Fig. A10.02c)

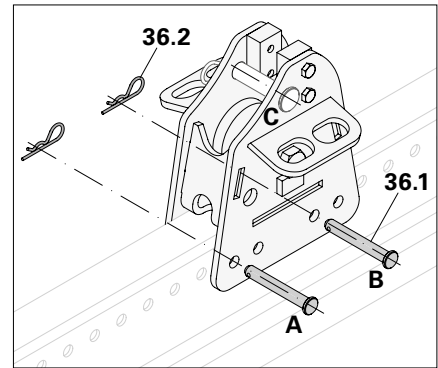


Fig. A10.01

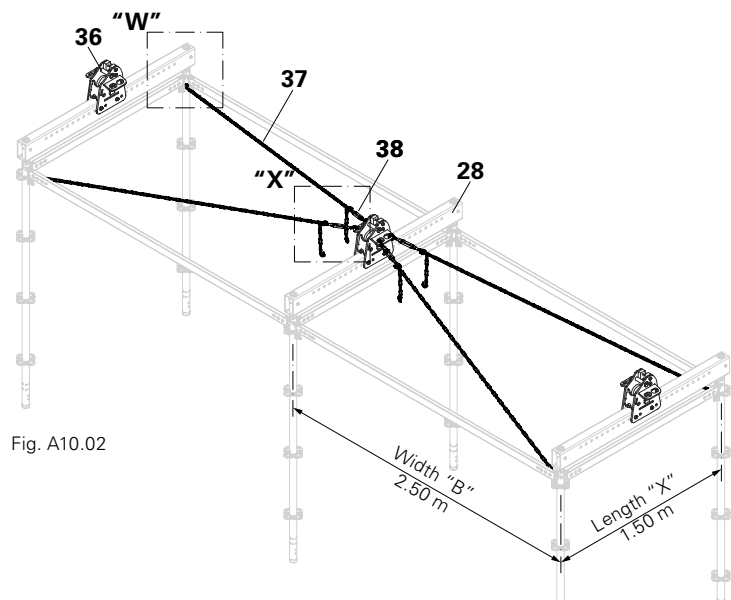


Fig. A10.02

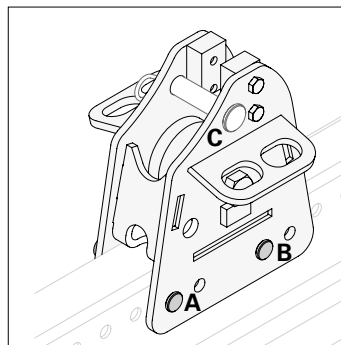


Fig. A10.02a Fixed bearing – with bolt C

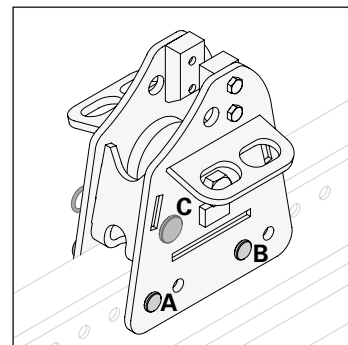


Fig. A10.02b Floating bearing – bolt C parked



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.

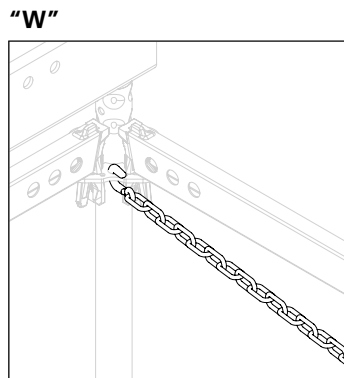


Fig. A10.02c

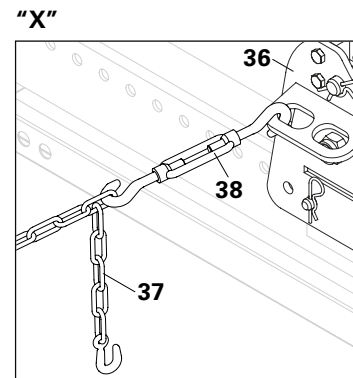


Fig. A10.02d



Have the bearers

- been installed in the same way?
- been bolted in the same hole?

## Variant 2

(Fig. A10.03)



- Horizontal Ledgers UHV (3) are mounted in 25-cm increments.
- Components and assembly are the same as variant 1, see Fig. A10.3.

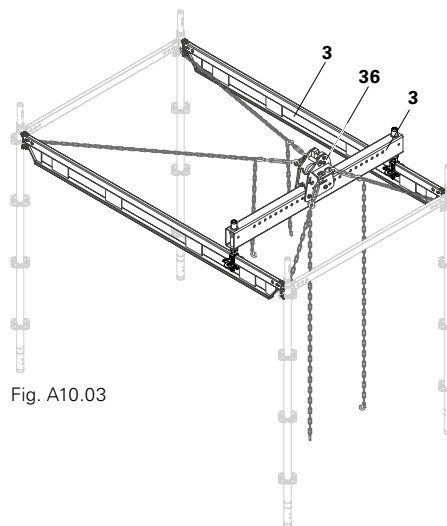


Fig. A10.03

## Positioning the girder package on the bearer



### 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!

### Preparation

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

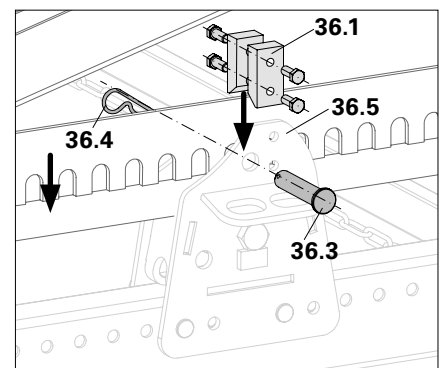


Fig. A10.03a

## 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)

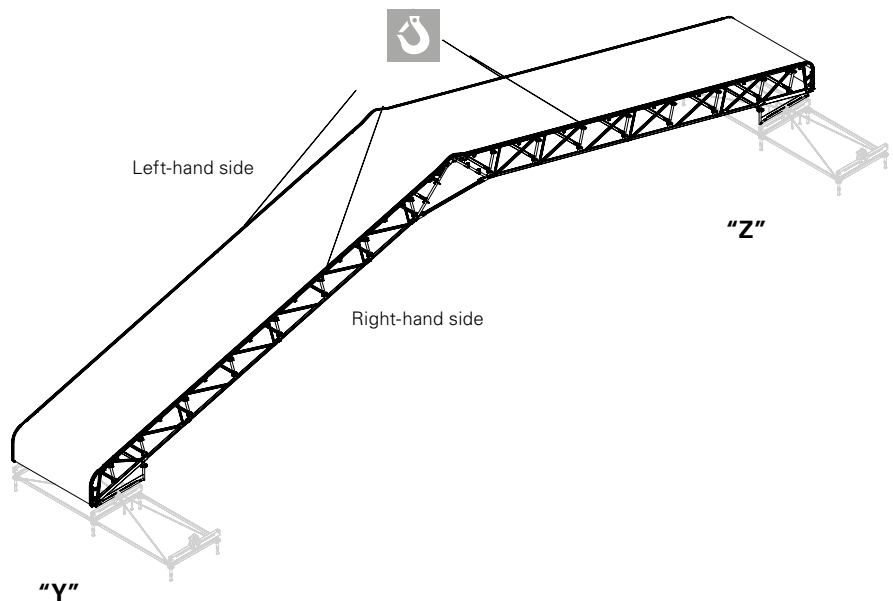


Fig. A10.03



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

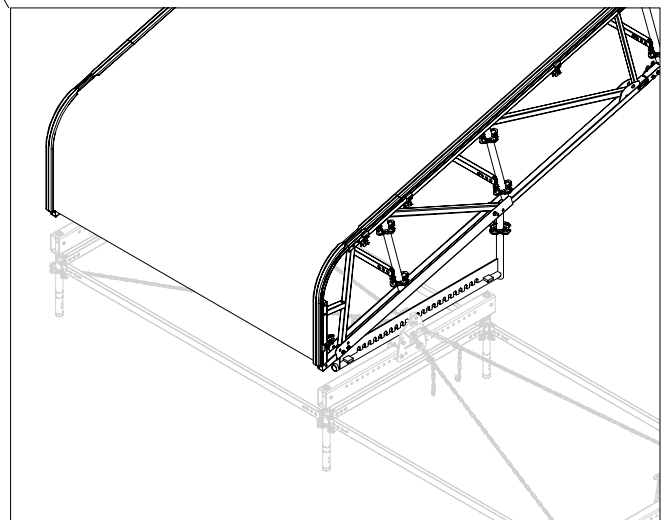


Fig. A10.03a

**"Y"** – Fixed bearing

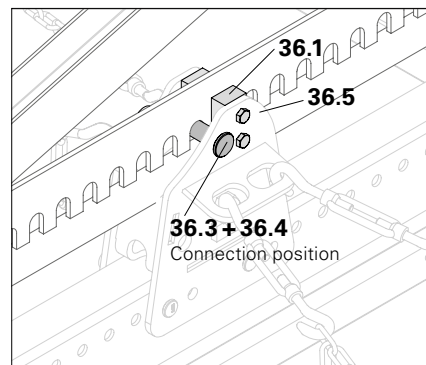


Fig. A10.03b

**"Z"** – Floating bearing

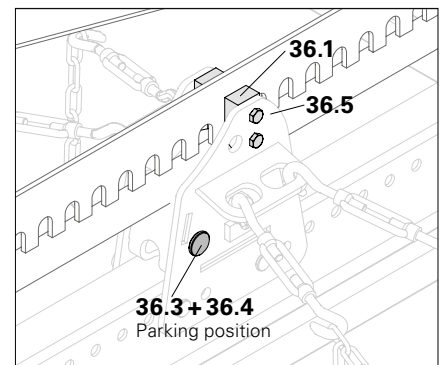


Fig. A10.03c

## Dismantling the weather protection roof



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

### Dismantling

1. Release the bearer (fixed girder package) or carriage (mobile girder package), and lift girder package above the ground.
  2. Dismantle supports 15°.
  3. Dismantle 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)

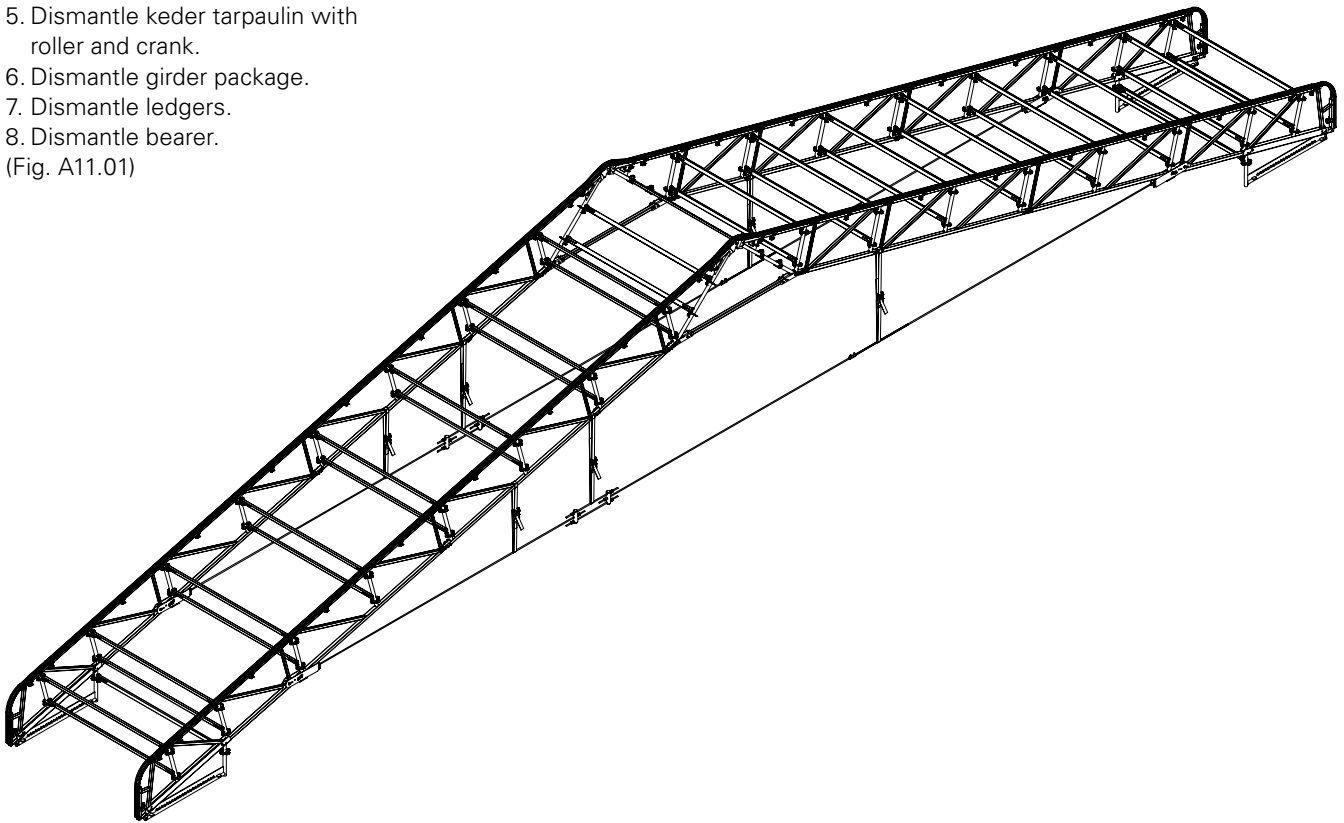


Fig. A11.01 – without keder tarpaulin

## 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).



### Attention!

#### Important distinction

- Girder package on the gable:
    - UBH (4a / 4b) required, so install it.
  - Girder package after the gable, e.g. in the centre:
    - UBH (4a / 4b) not required, so do not install it.
- Install Horizontal Ledger UH in 15° support from one end to the other.

## 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\*

\* Intermediate, standard, eave element

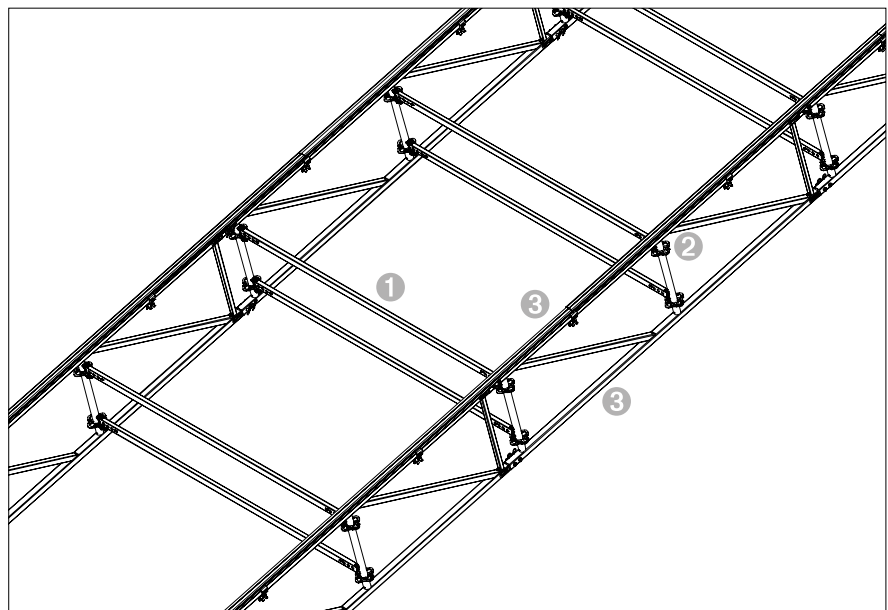


Fig. B1.01

## Span 15.50 m



Attention, See Chapter "Notes for all spans", page 44 onwards.

Girder package permissible

- with tension system (Fig. B1.02a),
- without tension system (Fig. B1.02b).

### With tension system

Connect tension system to the eave element. (Fig. B1.02a)

### Intermediate bays

Connect the individual girder packages with horizontal ledgers. (Fig. B1.03)

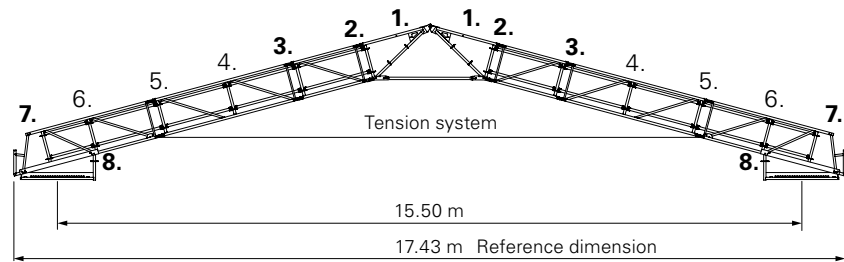


Fig. B1.02a

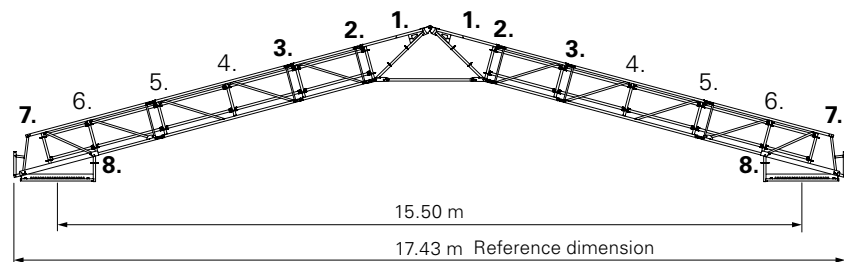


Fig. B1.02b

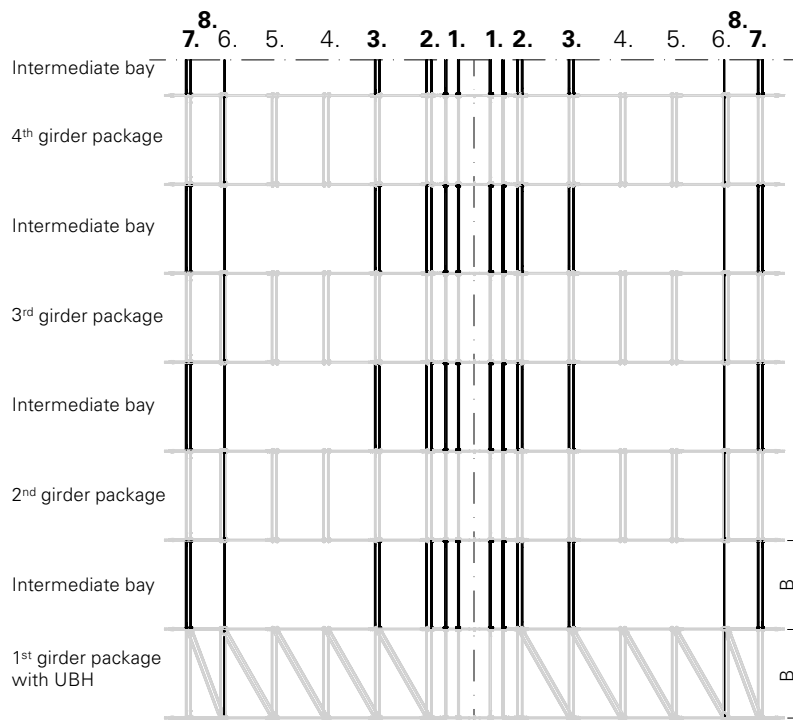


Fig. B1.03

Snow load $s$ [kN/m <sup>2</sup> ]		0.10			0.25			0.60		
Wind load $q$ [kN/m <sup>2</sup> ]		0.35	0.56	0.77	0.35	0.56	0.77	0.35	0.56	0.77
with tension system	max. width $B$ [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 $B$ [m]	3.00	3.00	2.50	2.50	2.50	2.50			
	Edge area	Single	Single	Single	Single	Single	Single			

Tab. 02

## Span 20.30 m



Attention, See Chapter "Notes for all spans", page 44 onwards.

Girder package permissible

- with tension system (Fig. B1.04a),
- without tension system (Fig. B1.04b).

### With tension system

Connect tension system to the eave element. (Fig. B1.04a)

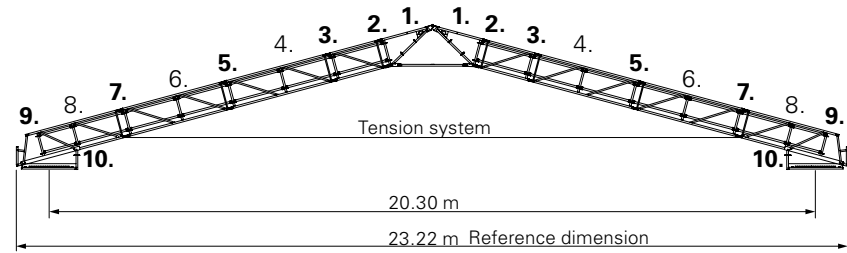


Fig. B1.04a

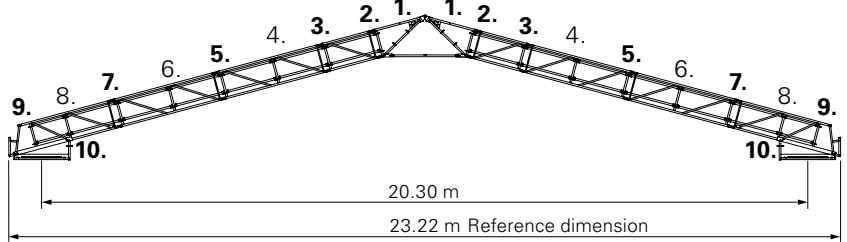


Fig. B1.04b

### Intermediate bays

- Connect the individual girder packages with
  - horizontal ledgers and
  - H-braces.
- In the process, differentiate in the edge area between
  - 1<sup>st</sup> girder package, single (Fig. B1.05a)
  - double girder package (Fig. B1.05b)
  - with UBH

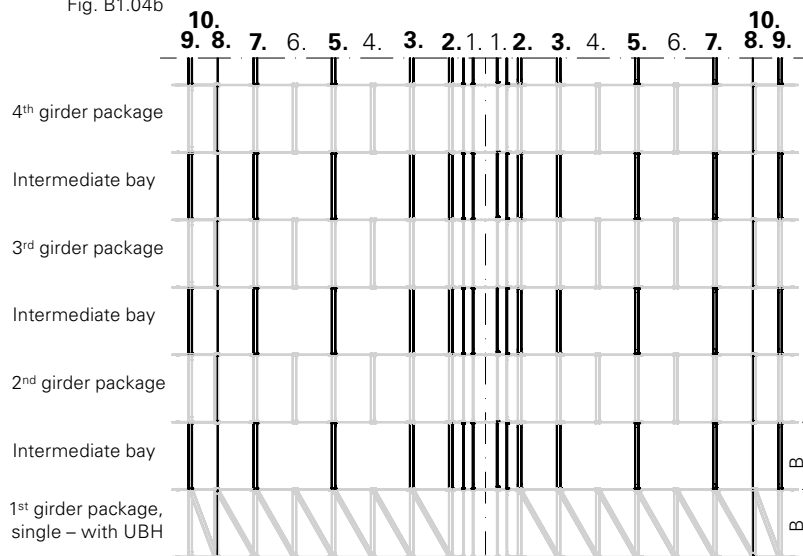


Fig. B1.05a

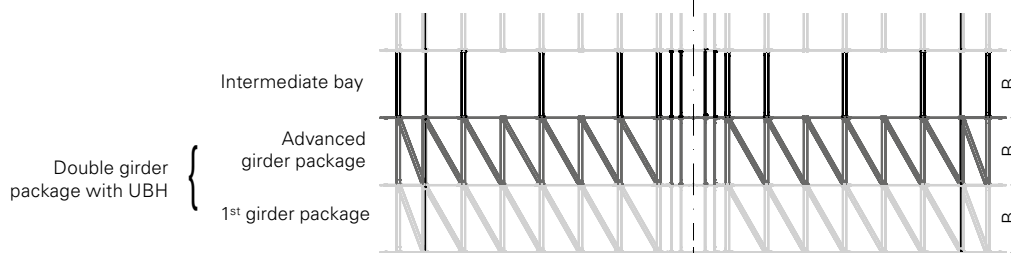


Fig. B1.05b

Snow load $s$ [kN/m <sup>2</sup> ]		0.10			0.25			0.60		
Wind load $q$ [kN/m <sup>2</sup> ]		0.35	0.56	0.77	0.35	0.56	0.77	0.35	0.56	0.77
with tension system	max. width $B$ [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 $B$ [m]	2.50	1.50	1.00						
	Edge area	Single	Single	Double						

Tab. 03

## Span 25.17 m



Attention, See Chapter "Notes for all spans", page 44 onwards.

Girder package permissible

- with tension system (Fig. B1.06a),
- without tension system (Fig. B1.06b).

### With tension system

Connect tension system to the eave element.

(Fig. B1.06a)

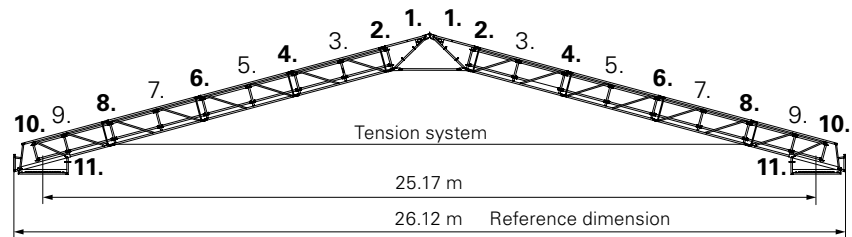


Fig. B1.06a

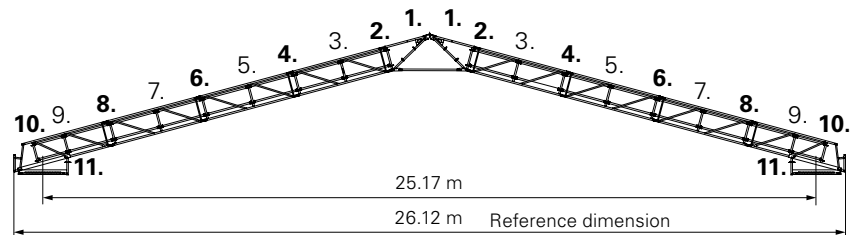


Fig. B1.06b

### Intermediate bays

- Connect the individual girder packages with
  - horizontal ledgers and
  - H-braces.
- In the process, differentiate in the edge area between
  - 1<sup>st</sup> girder package, single (Fig. B1.07a)
  - double girder package (Fig. B1.07b)

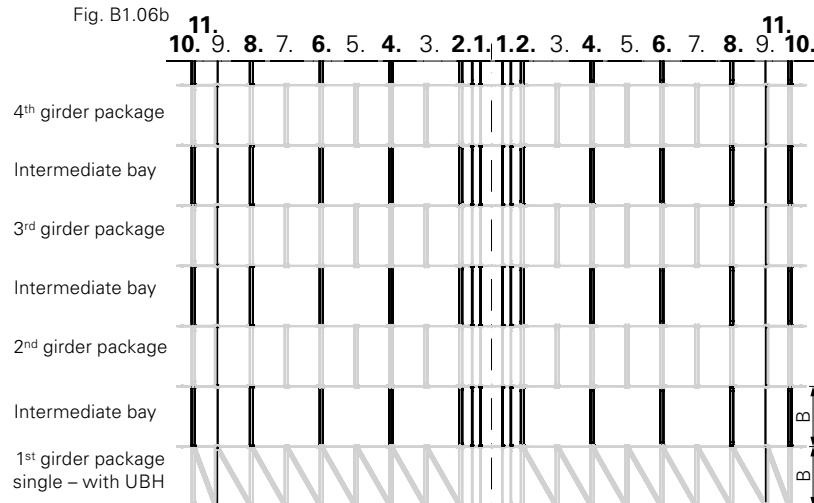


Fig. B1.07a

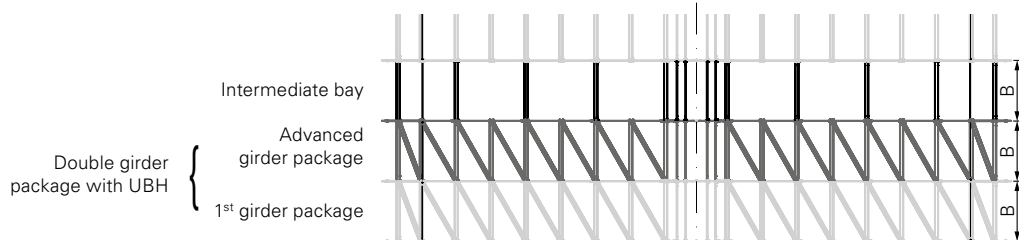


Fig. B1.07b

<b>Snow load <math>s</math> [kN/m<sup>2</sup>]</b>		<b>0.10</b>	<b>0.25</b>
<b>Wind load <math>q</math> [kN/m<sup>2</sup>]</b>		<b>0.35</b>	<b>0.35</b>
<b>with tension system</b>	<b>max. width <math>B</math> [m]</b>	1.50	1.00
	<b>Edge area</b>	Single	Double

Tab. 04

## Weight



- The weight is dependent on the
  - width B of the girder package.
  - Span  $L_{sp}$ .
  - Configuration of the girder package in the edge area
  - Weights include tarpaulin, tarpaulin 650 g/m<sup>2</sup>.

Weight											
Girder package		Single					Double (edge area)				
Width B [m]		1.00	1.50	2.00	2.50	3.00	1.00	1.50	2.00	2.50	3.00
Span [m]	15.6	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
	18.5	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
	21.4	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
	24.3	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
	27.2	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. 05

## Crane attachment points

### Span 15.50 m

(Fig. B1.08)

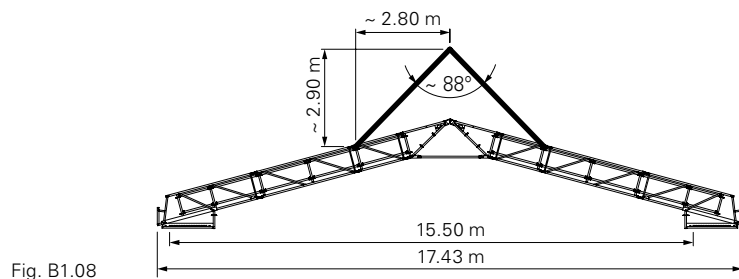


Fig. B1.08

### Span 20.30 m

(Fig. B1.09)

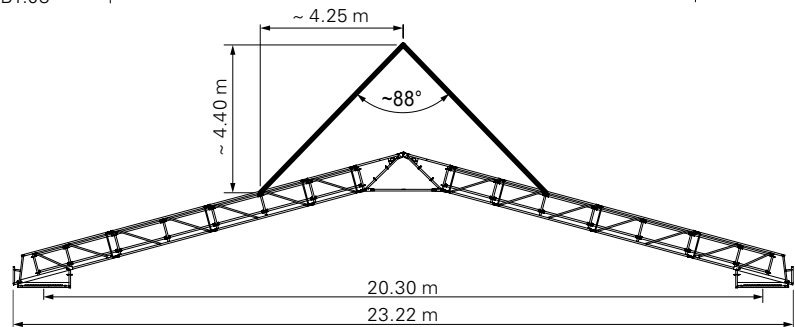


Fig. B1.09

### Span 25.17 m

(Fig. B1.10)

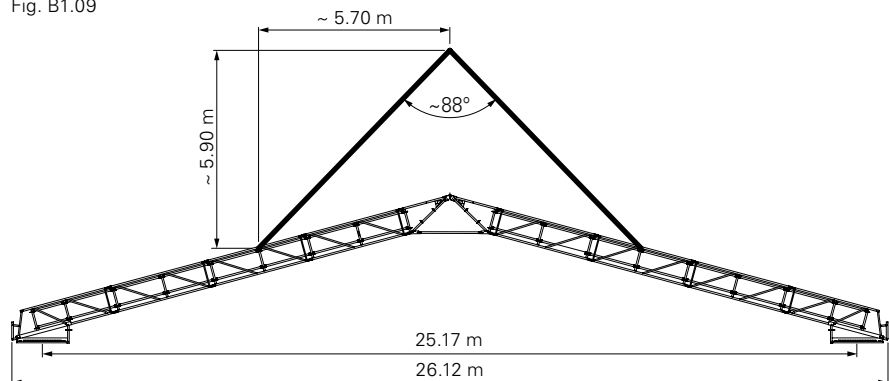


Fig. B1.10



## Support forces



- The support forces are dependent on
  - $L_{sp}$  = span [m]
  - $q$  = wind load [kN/m<sup>2</sup>]
  - $s$  = snow load [kN/m<sup>2</sup>]
  - $B$  = width [m]
  - $L$  = total length 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 scaffolding to the ground.

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

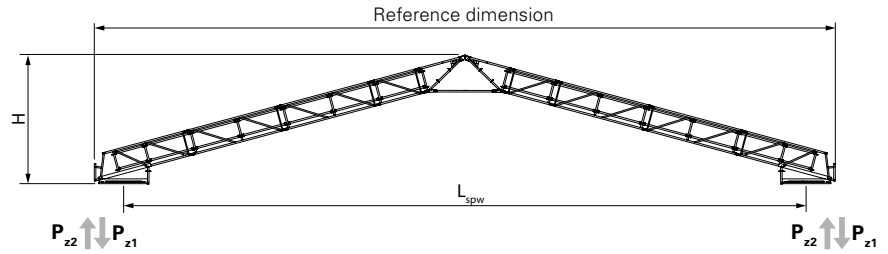


Fig. B2.01a

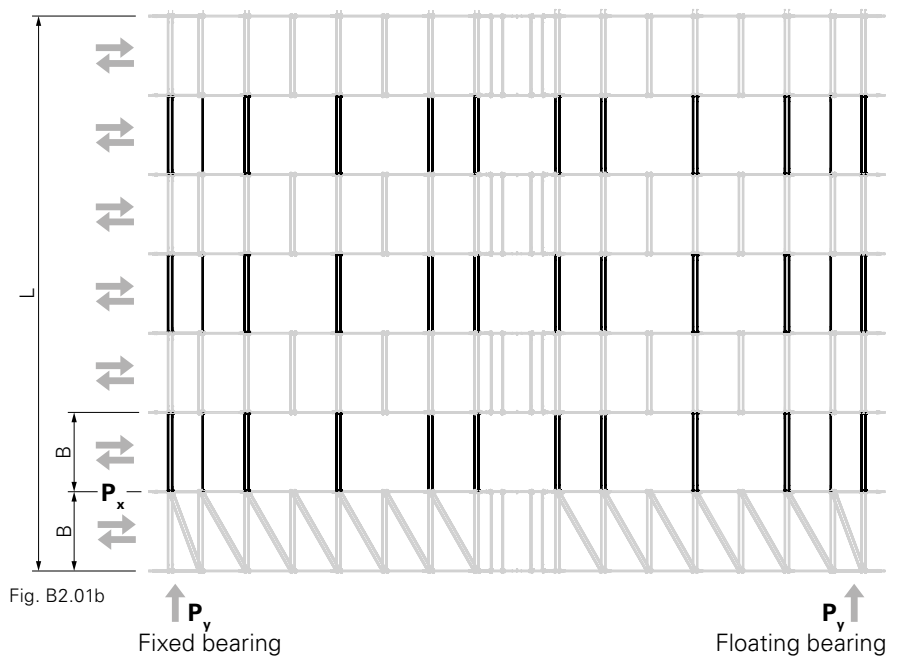


Fig. B2.01b

### Span 15.50 m

#### Single girder package (Tab. 06)

15.50 m – Single girder package			
<b>Horizontal force [kN]</b>	in direction of girder	$P_x$	$2.76 * q * B$
	in direction of gable	$P_y$	$26.11 * q / n$
<b>Vertical force [kN]</b>	downwards	$P_{z1}$	$3.04 + 0.71 * B + 10.68 * s * B + 18.39 * q/B$
	upwards	$P_{z2}$	$-2.25 - 0.52 * B + 7.74 * q * B + 18.39 * q/B$

Tab. 06

## B2 Support forces

### Span 20.30 m

#### Single girder package

(Tab. 07)

20.30 m – Single girder package			
<b>Horizontal force [kN]</b>	in direction of girder	$P_x$	$3.46 * q * B$
	in direction of gable	$P_y$	$35.19 * q / n$
<b>Vertical force [kN]</b>	downwards	$P_{z1}$	$3.73 + 0.95 * B + 14.28 * s * B + 30.79 * q/B$
	upwards	$P_{z2}$	$-2.76 - 0.71 * B + 9.48 * q * B + 30.79 * q/B$

Tab. 07

#### Double girder package

(Tab. 08)

20.30 m – Double girder package			
<b>Horizontal force [kN]</b>	in direction of girder	$P_x$	$3.46 * q * B$
	in direction of gable	$P_y$	$35.19 * q / n$
<b>Vertical force [kN]</b>	downwards	$P_{z1}$	$4.10 + 1.27 * B + 14.28 * s * B + 15.39 * q/B$
	upwards	$P_{z2}$	$-3.04 - 0.94 * B + 9.48 * q * B + 15.39 * q/B$

Tab. 08

### Span 25.17 m

#### Single girder package

(Tab. 09)

25.17 m – Single girder package			
<b>Horizontal force [kN]</b>	in direction of girder	$P_x$	$3.64 * q * B$
	in direction of gable	$P_y$	$39.72 * q / n$
<b>Vertical force [kN]</b>	downwards	$P_{z1}$	$4.03 + 1.04 * B + 16.08 * s * B + 38.07 * q/B$
	upwards	$P_{z2}$	$-2.99 - 0.77 * B + 9.71 * q * B + 38.07 * q/B$

Tab. 09

#### Double girder package

(Tab. 10)

25.17 m – Double girder package			
<b>Horizontal force [kN]</b>	in direction of girder	$P_x$	$3.64 * q * B$
	in direction of gable	$P_y$	$39.72 * q / n$
<b>Vertical force [kN]</b>	downwards	$P_{z1}$	$4.47 + 1.42 * B + 16.08 * s * B + 19.03 * q/B$
	upwards	$P_{z2}$	$-3.31 - 1.06 * B + 9.71 * q * B + 19.03 * q/B$

Tab. 10

## 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,
  - $n_c = P_y / \text{perm. } H_c$  round up to whole chain pairs.
- Always brace in both directions.
- $P_y$  acts in both directions.
  - Determine  $n_c$  for both directions.
  - If the bracing differs, calculate chain pairs for both directions.

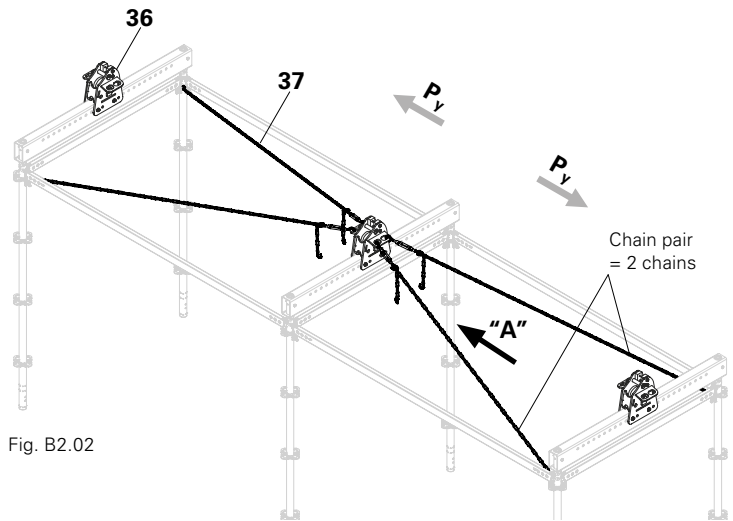


Fig. B2.02

### 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.

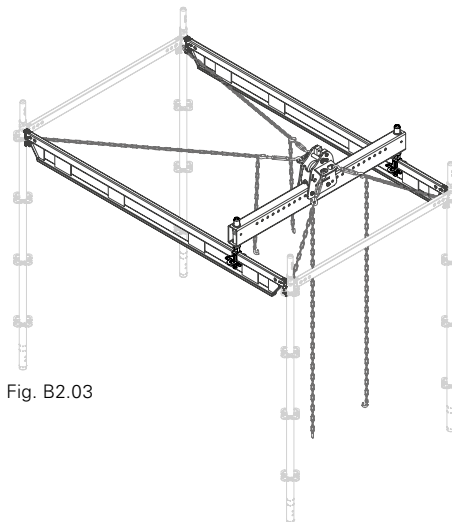


Fig. B2.03

Angle $\alpha^*$	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. 11

### Detail of matching bracing angles $\alpha$ (Fig. B2.02a)

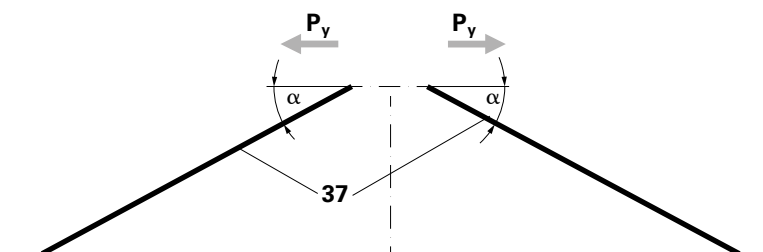


Fig. B2.02a

### Detail of different bracing angles $\alpha_1$ and $\alpha_2$ (Fig. B2.03a)

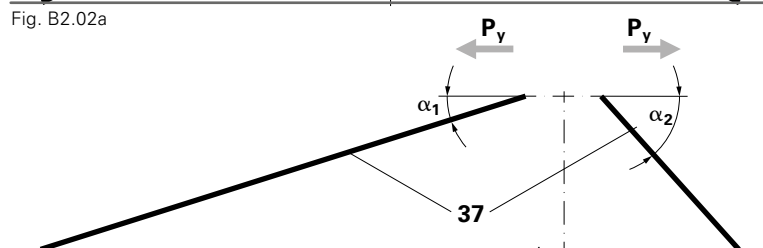


Fig. B2.03a

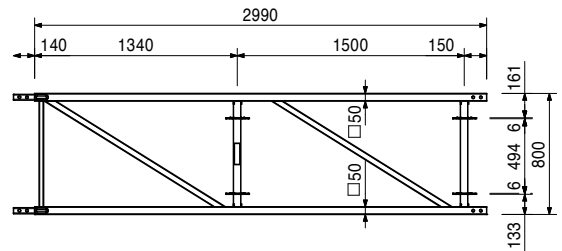
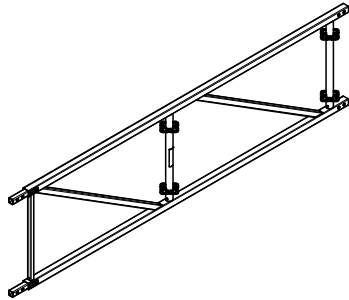
Item. no.	Weight kg
135766	31.700

### LGS Standard Element URB 300/75

Standard element for the LGS Lattice Girder System.

### Note

Alternative accessories:  
070890 nut ISO 7040 M 16-8, galv.  
721729 bolt ISO 4014 M16 x 90-8.8, galv.



### Accessories

106031	0.142
018060	0.014

**Bolt Ø 16 x 70, coated**  
**Cotter pin 4/1, galv.**

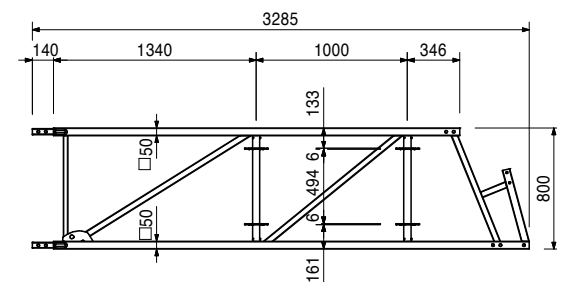
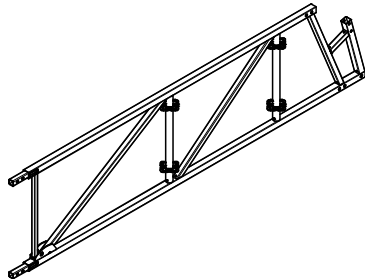
135793	35.100
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### LGS Eave Element URB 300/75

Eave element for the LGS Lattice Girder System.

### Note

Alternative accessories:  
070890 nut ISO 7040 M 16-8, galv.  
721729 bolt ISO 4014 M16 x 90-8.8, galv.



### Accessories

106031	0.142
018060	0.014

**Bolt Ø 16 x 70, coated**  
**Cotter pin 4/1, galv.**

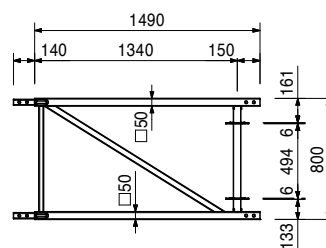
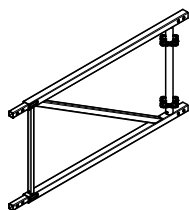
135773	17.100
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### LGS Intermediate Element URB 150/75

Filler element for the LGS Lattice Girder System.

### Note

Alternative accessories:  
070890 nut ISO 7040 M 16-8, galv.  
721729 bolt ISO 4014 M16 x 90-8.8, galv.



### Accessories

106031	0.142
018060	0.014

**Bolt Ø 16 x 70, coated**  
**Cotter pin 4/1, galv.**

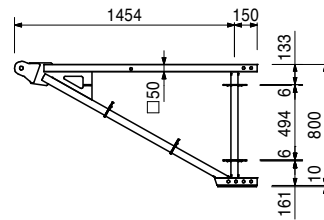
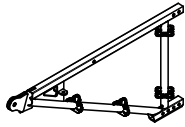
Item. no.	Weight kg
135782	19.300

### LGS Ridge Element URR 75

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

### Note

Alternative accessories:  
105032 nut ISO 7040 M24-8, galv.  
026220 bolt ISO 4014 M24 x 80-10.9, galv.



127468	0.325
022230	0.033

### Accessories

**Pin Ø 24 x 70, galv.**  
**Cotter pin 5/1, galv.**

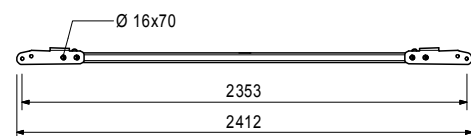
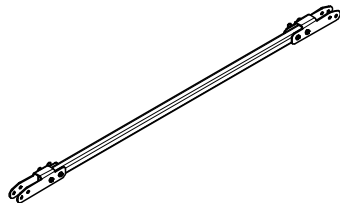
128334	21.700
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### Ridge Bar HD UR 150°

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

### Note

Alternative accessories:  
070890 nut ISO 7040 M16-8, galv.  
721729 bolt ISO 4014 M16 x 90-8.8, galv.



106031	0.142
018060	0.014

### Accessories

**Bolt Ø 16 x 70, coated**  
**Cotter pin 4/1, galv.**

104854	5.220
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### Support Roller UEW unstopped

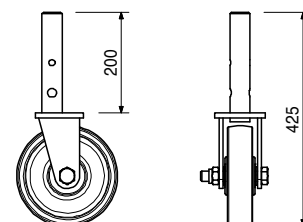
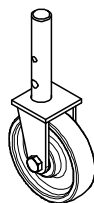
Attachment to standard, eave and intermediate element when raising a girder in order to install the ridge bar.

### Note

Alternative accessories:  
070890 nut ISO 7040 M16-8, galv.  
721729 bolt ISO 4014 M16 x 90-8.8, galv.

### Technical data

Permissible load up to 12 kN.



106031	0.142
018060	0.014

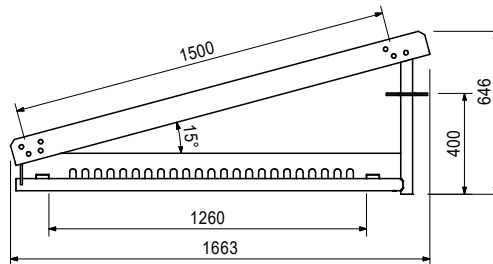
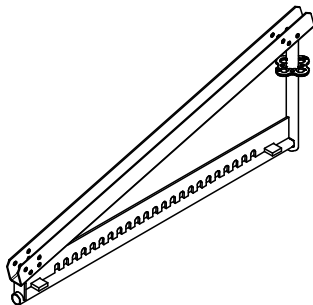
### Accessories

**Bolt Ø 16 x 70, coated**  
**Cotter pin 4/1, galv.**

Item. no.	Weight kg
104771	33.400

**LGS Support URS 15°**  
For roofs with 15° angle of inclination.

**Note**  
Alternative accessories:  
070890 nut ISO 7040 M16-8, galv.  
721729 bolt ISO 4014 M16 x 90-8.8, galv.



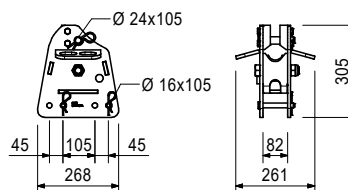
106031	0.142
018060	0.014

Accessories  
**Bolt Ø 16 x 70, coated**  
**Cotter pin 4/1, galv.**

135801	19.100
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**LGS Bearer URS 75**  
Connects the LGS Support to the Ledger URL.

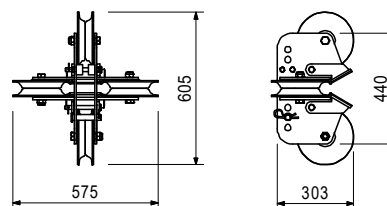
**Complete with**  
1 pc. 106191 bolt Ø 24 x 105, coated  
3 pc. 106194 bolt Ø 16 x 105, coated  
1 pc. 022230 cotter pin 5/1, galv.  
3 pc. 018060 cotter pin 4/1, galv.



104777	42.800
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**Carriage URW**  
Connects the support to the rail URT.  
Allows movement in the longitudinal direction and horizontal sliding in the direction of the girder.

**Complete with**  
1 pc. 106191 bolt Ø 24 x 105, coated  
1 pc. 022230 cotter pin 5/1, galv.



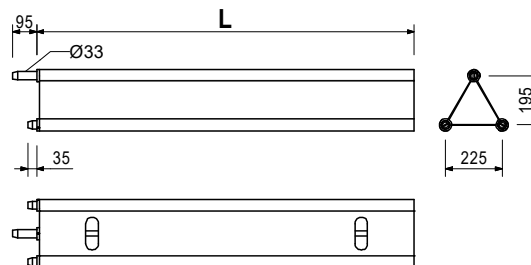
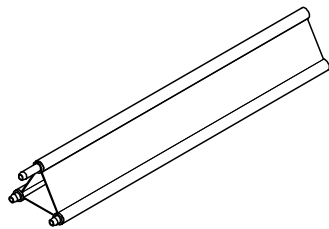
# PERI UP Flex Weather Protection Roof LGS 75



Item. no. Weight kg

Item. no.	Weight kg	Aluminium Rails URT	L
104790	20.600	<b>Aluminium Rail URT 150</b>	1,500
104791	27.300	<b>Aluminium Rail URT 200</b>	2,000
104796	33.900	<b>Aluminium Rail URT 250</b>	2,500
104797	40.500	<b>Aluminium Rail URT 300</b>	3,000

For moving LGS units. Mounted to the Rail Support URF.



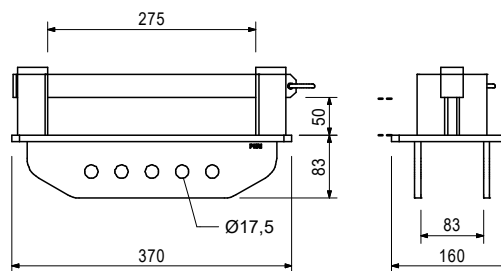
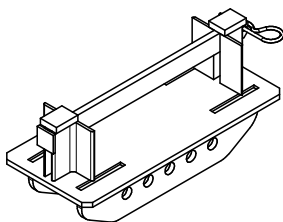
104853 8.190

## Rail Support URF

Connects the Rail URT to the Ledger URL.

### Note

Alternative accessories:  
070890 nut ISO 7040 M16-8, galv.  
105402 bolt ISO 4014 M16 x 120-8.8, galv.



715357 0.238  
022230 0.033

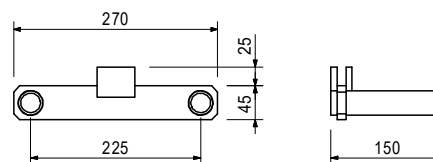
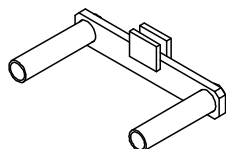
Accessories

**Pin Ø 16 x 150, galv.**  
**Cotter pin 5/1, galv.**

104852 1.870

## Rail End Piece URD

To secure the Aluminium Rail URT. Assembly at the last Rail Support URF.



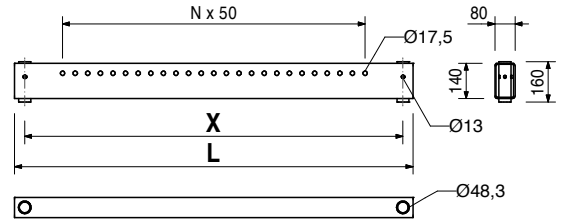
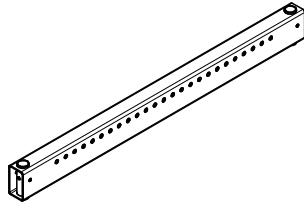
Item. no. Weight kg

132553	12.600
131869	13.900
115018	17.700
105386	25.600

**Ledger URL**  
**Ledger URL 67/14**  
**Ledger URL 75/14**  
**Ledger URL 100/14**  
**Ledger URL 150/14**

Connects the LGS Unit to the PERI UP substructure.

L	X
750	670
830	750
1,080	1,000
1,580	1,500



Accessories

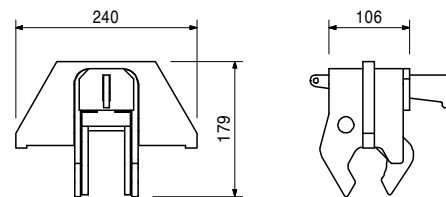
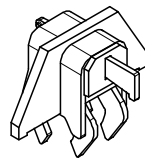
780356	0.011
710242	0.063

**Nut ISO 7040 M10-8, galv.**  
**Bolt ISO 4014 M10 x 100-8.8, galv.**

118022 5.130

**Stopper URA-2**

Limit stop for the Carriage URW on the Aluminium Rail URT.



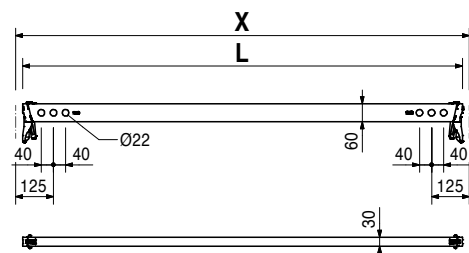
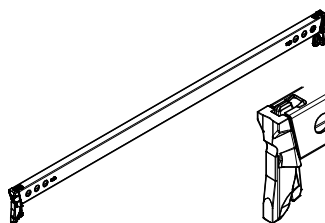
114613	1.410
114595	2.030
114629	2.690
114632	3.740
114638	4.510
114641	4.680
117032	5.340
114645	6.000
116356	6.660
114648	7.320
114651	8.650

**Horizontal Ledger UH Plus**  
**Horizontal Ledger UH 25 Plus**  
**Horizontal Ledger UH 50 Plus**  
**Horizontal Ledger UH 75 Plus**  
**Horizontal Ledger UH 100 Plus**  
**Horizontal Ledger UH 125 Plus**  
**Horizontal Ledger UH 150 Plus**  
**Horizontal Ledger UH 175 Plus**  
**Horizontal Ledger UH 200 Plus**  
**Horizontal Ledger UH 225 Plus**  
**Horizontal Ledger UH 250 Plus**  
**Horizontal Ledger UH 300 Plus**

L	X
204	250
454	500
704	750
954	1,000
1,204	1,250
1,454	1,500
1,704	1,750
1,954	2,000
2,204	2,250
2,454	2,500
2,954	3,000

**Note**

With length marking for easier identification.





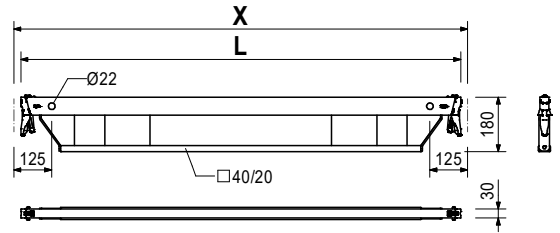
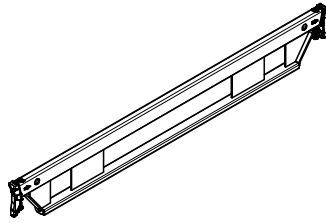
# PERI UP Flex Weather Protection Roof LGS 75



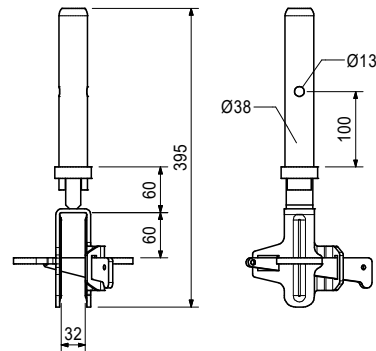
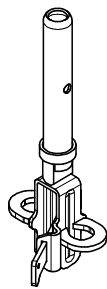
Item. no. Weight kg

Item. no.	Weight kg		L	X
114681	10.900	<b>Horizontal Ledger UHV Plus</b>	1,454	1,500
114687	14.700	<b>Horizontal Ledger UHV 150 Plus</b>	1,954	2,000
114691	17.900	<b>Horizontal Ledger UHV 200 Plus</b>	2,454	2,500
114695	21.600	<b>Horizontal Ledger UHV 250 Plus</b>	2,954	3,000
		<b>Horizontal Ledger UHV 300 Plus</b>		

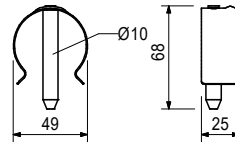
For high loads, e.g. in the case of material storage.



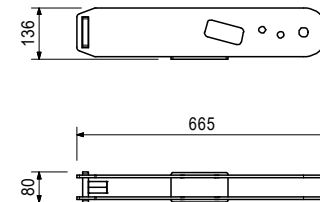
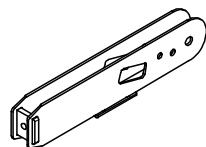
130684 2.030 **Ledger-To-Ledger Coupler UHA-2 half with pin**



111053 0.059 **Locking Pin Ø 48/57**  
As tension-proof connection of standards with a diameter of 48 up to 57 mm.



128823 8.750 **Suspension Tie Connector URU**  
Connection to Eave Element or Standard Element URB 300/150.

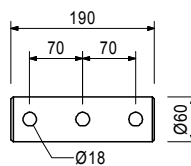
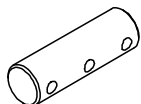


Item. no. Weight kg

128817 3.850

### Anchor Tie Yoke URU

For closing and tensioning the tension system.



129435

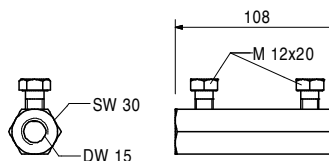
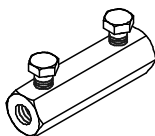
0.444

### Tie Rod Extension URU

For coupling and securing Tie Rod DW 15.

### Technical data

Permissible tension force 90 kN.



030030  
030050  
030005  
030010  
030480  
030490  
030170  
030020  
030180  
030710  
030720  
030730  
030160

1.440  
0.000  
0.720  
1.230  
1.440  
1.730  
2.160  
2.450  
2.880  
3.600  
4.320  
5.040  
8.640

### Tie Rod DW 15

### Tie Rod DW 15, special length

### Cutting cost Tie Rod DW 15, B 15

Tie Rod DW 15, L = 0.50 m

Tie Rod DW 15, L = 0.85 m

Tie Rod DW 15, L = 1.00 m

Tie Rod DW 15, L = 1.20 m

Tie Rod DW 15, L = 1.50 m

Tie Rod DW 15, L = 1.70 m

Tie Rod DW 15, L = 2.00 m

Tie Rod DW 15, L = 2.50 m

Tie Rod DW 15, L = 3.00 m

Tie Rod DW 15, L = 3.50 m

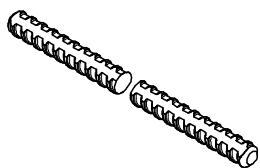
Tie Rod DW 15, L = 6.00 m

### Note

Non-weldable! Observe the permissions!

### Technical data

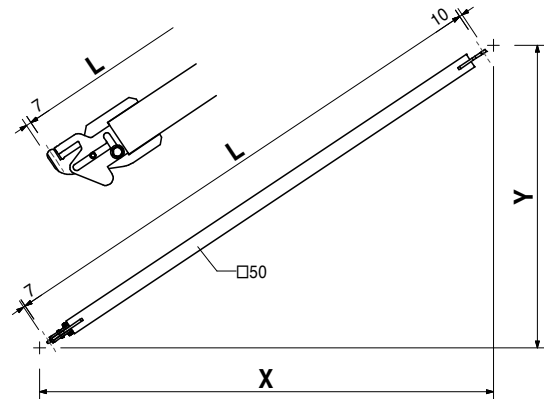
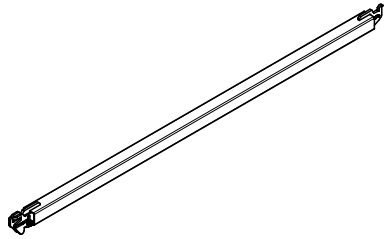
Permissible tension force 90 kN.



Item. no. Weight kg

Item. no.	Weight kg		L	X	Y
		<b>Horizontal Braces UBH Flex</b>			
114818	4.580	<b>Horizontal Brace UBH Flex 100/100</b>	1,335	1,000	1,000
114821	5.720	<b>Horizontal Brace UBH Flex 150/100</b>	1,725	1,500	1,000
114912	6.650	<b>Horizontal Brace UBH Flex 150/150</b>	2,042	1,500	1,500
114820	7.000	<b>Horizontal Brace UBH Flex 200/100</b>	2,161	2,000	1,000
124097	7.770	<b>Horizontal Brace UBH Flex 200/150</b>	2,422	2,000	1,500
114819	8.350	<b>Horizontal Brace UBH Flex 250/100</b>	2,620	2,500	1,000
124101	8.990	<b>Horizontal Brace UBH Flex 250/150</b>	2,838	2,500	1,500
114892	9.730	<b>Horizontal Brace UBH Flex 300/100</b>	3,092	3,000	1,000
124105	10.300	<b>Horizontal Brace UBH Flex 300/150</b>	3,279	3,000	1,500

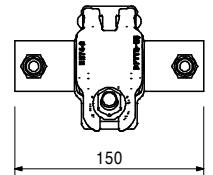
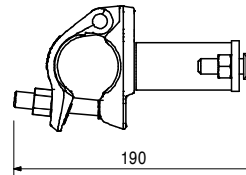
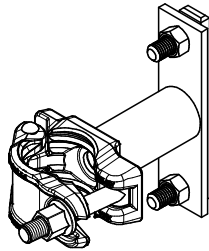
For horizontal bracing of towers.  
Also for use beneath Decks UDI or UDG.



126009 1.630

### LGS Keder Connector URV

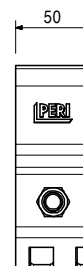
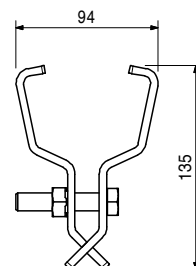
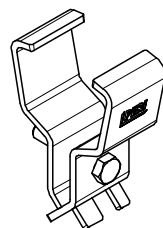
For fixing Keder Tracks URK to scaffold components with tube  $\varnothing$  48.3 mm.



125166 0.674

### LGS Keder Connector URK

For fixing Keder Tracks URK to LGS elements.

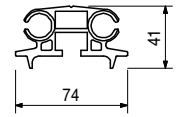
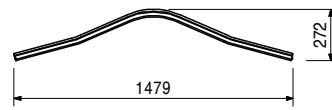
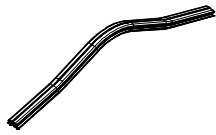


Item. no. Weight kg

126051 3.640

### LGS Ridge Rail URK 150

As a keder tarpaulin transition over the LGS Ridge Element URR.



127501 3.530  
127500 7.050  
126071 14.100

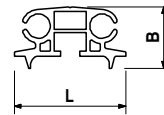
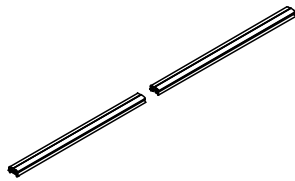
### LGS Keder Tracks URK

#### LGS Keder Track URK 150

#### LGS Keder Track URK 300

#### LGS Keder Track URK 600

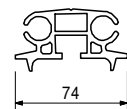
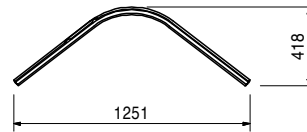
Track for drawing keder tarpaulins into scaffold constructions.



126491 3.370

### LGS Eave Rail URK

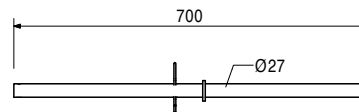
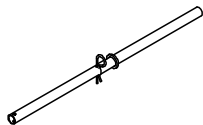
As a keder tarpaulin transition over the LGS Eave Element URB.



126487 1.150

### LGS Crank URG

For winding the keder tarpaulins onto the Tarpaulin Reel URG.



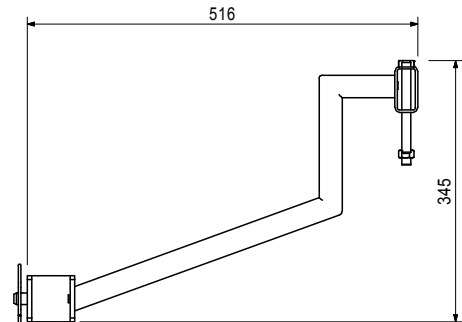
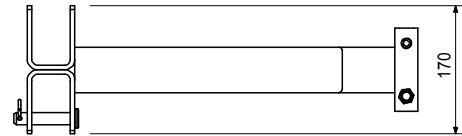
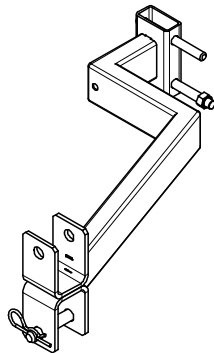
Item. no.	Weight kg
126486	3.550

### LGS Reel Connector URG

For attaching the Tarpaulin Reel URG onto the Eave Element URB in order to assemble the keder tarpaulins.

### Complete with

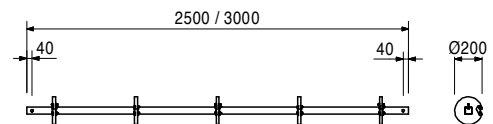
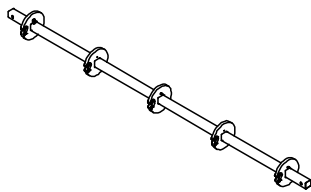
- 1 pc. 126924 bolt ISO 4014 M12 x 130-8.8, galv.
- 1 pc. 710330 nut ISO 4032 M12-8, galv.
- 1 pc. 106031 bolt Ø 16 x 70, coated
- 1 pc. 018060 cotter pin 4/1, galv.



126484	10.500
126485	11.900

### LGS Tarpaulin Reel URG LGS Tarpaulin Reel URG 250 LGS Tarpaulin Reel URG 300

For transport and assembly / disassembly of keder tarpaulins.



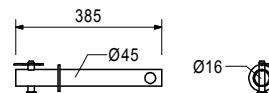
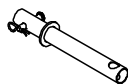
126488	1.240
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### LGS Handle URG

Extension for the Tarpaulin Reel URG.

### Complete with

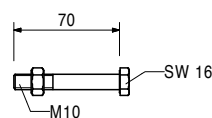
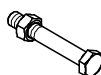
- 1 pc. 106031 bolt Ø 16 x 70, coated
- 1 pc. 018060 cotter pin 4/1, galv.



100719	0.060
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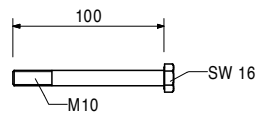
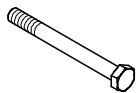
### Bolt ISO 4014 M10 x 70-8.8

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



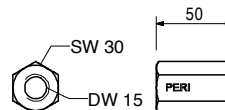
Item. no. Weight kg

710242 0.063 **Bolt ISO 4014 M10 x 100-8.8, galv.**



030070 0.222 **Hex. Nut DW 15 SW 30/50, galv.**  
For anchoring with Tie Rod DW 15 and B 15.

**Technical data**  
Permissible load 90 kN.

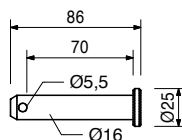
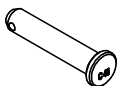


780356 0.011 **Nut ISO 7040-8, galv.**  
070890 0.030 **Nut ISO 7040 M10-8, galv.**  
105032 0.070 **Nut ISO 7040 M16-8, galv.**  
**Nut ISO 7040 M24-8, galv.**  
Self-locking.

**Note**  
Wrench size SW 16.



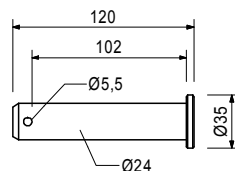
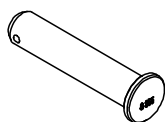
106031 0.142 **Bolt Ø 16 x 70, coated**



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

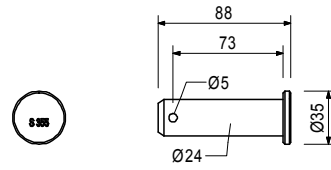
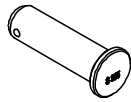


106191 0.438 **Bolt Ø 24 x 105, coated**



Item. no. Weight kg

127468 0.325 Pin Ø 24 x 70, galv.

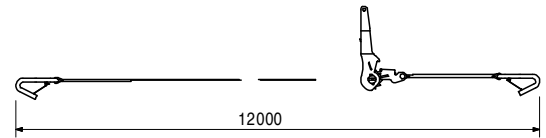
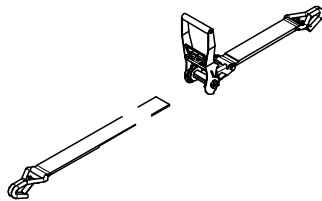


022230 0.033 Cotter pin 5/1, galv.



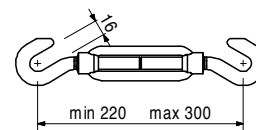
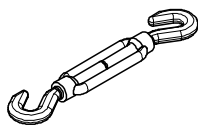
118349 3.530 Tension Belt PTB 12  
Two-piece.

**Note**  
Observe the notes on the belt label!  
**Technical data**  
Total length 12 m, max. span 8 m.  
Permissible tension force 2.5 t.



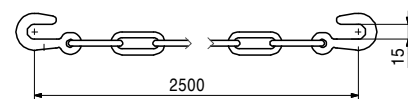
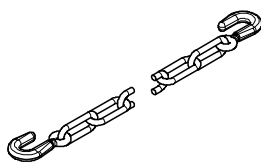
065074 0.450 Turnbuckle 3.0 kN, M12

**Technical data**  
Permissible tension force 3.0 kN.



065073 1.370 Anchor chain 3.0 kN, l = 2.5 m

**Technical data**  
Permissible tension force 3.0 kN.



**The optimal System  
for every Project and  
every Requirement**



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