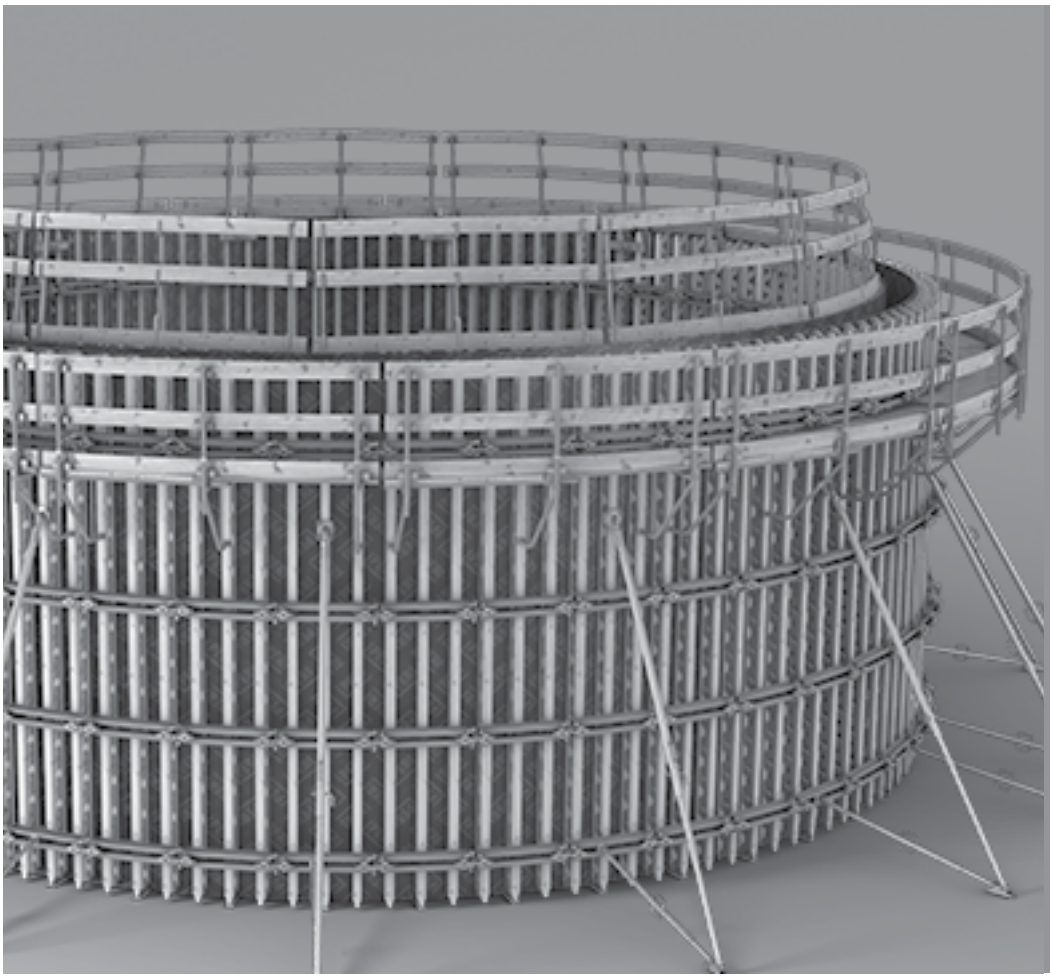
PERI®

GRV
Circular Formwork

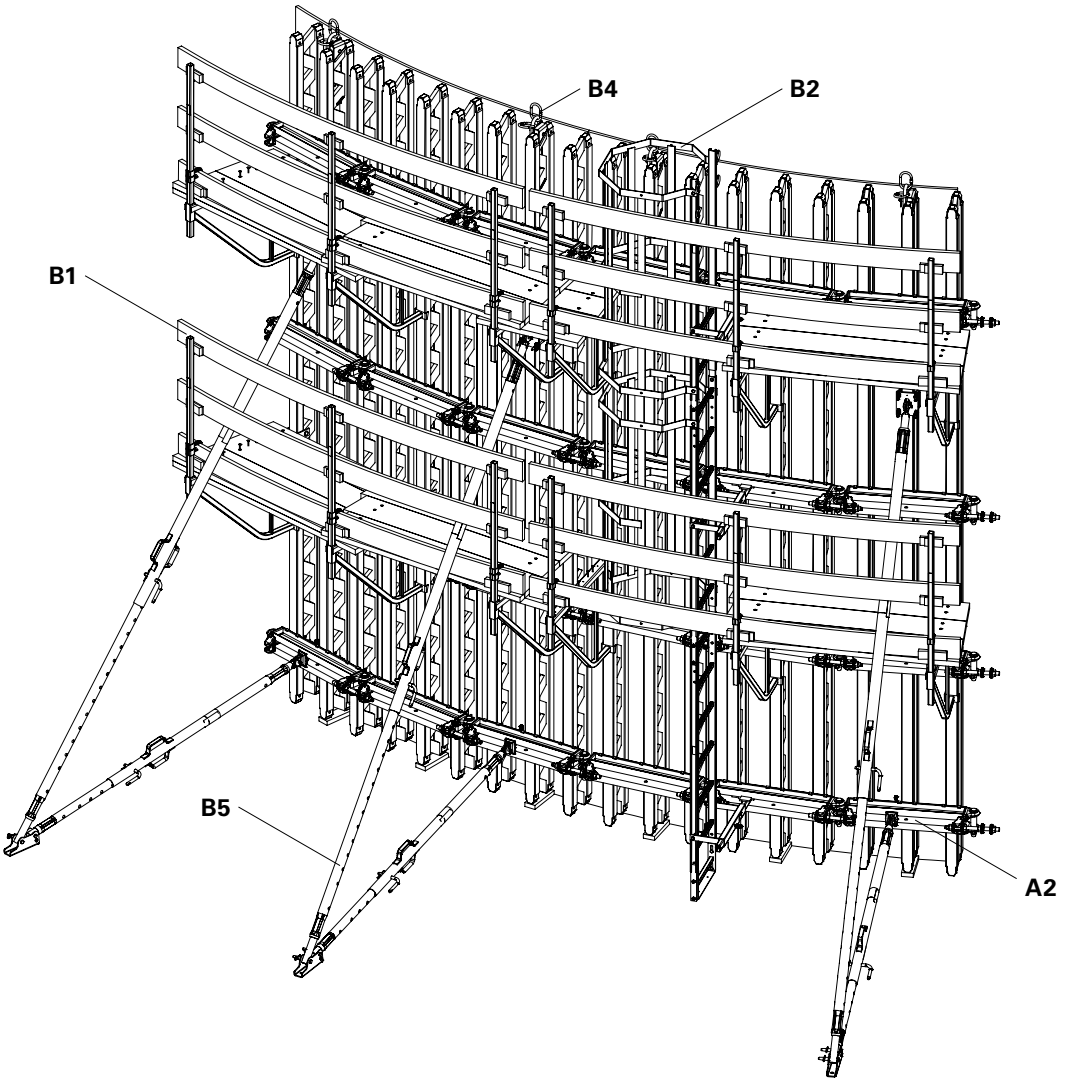
Instructions for Assembly and Use – Standard Configuration – Edition 03/2017





Overview

Main components



A2 Articulated Waler GRV
B1 Working and concreting scaffold
B2 Ladder access
B5 Push-pull props
B4 Crane suspension

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Overview

Key

Pictogram | Definition

Safety instructions

Note

Load-bearing point

Visual check

Tip

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

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

Arrows

Arrow representing an action

Arrow representing a reaction of an action*

Forces

* If not identical to the action arrow

Presentational reference

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

For a better understanding, detailed illustrations are partly incomplete. The safety installations which have possibly not been included in these detailed drawings must nevertheless still be available.

Target groups

Contractors
These Instructions for Assembly and Use are designed for contractors who use the formwork systems for
- assembling, modifying and dismantling operations, or use
- them, e.g. for concreting, or
- allow them to be used for other work operations, e.g. carpentry or electrical work.

Competent person
(Construction Site Coordinator)
The Safety and Health Protection Coordinator*
- is appointed by the client,
- must identify potential hazards during the planning phase,
- determines measures that provide protection against risks,
- creates a safety and health 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.

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

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



- **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 rules and regulations.**
- **A competent person must be present on site during formwork operations.**

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

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

Additional technical documentation

- Instructions for Use:
  – Crane Splice 24
  – Crane Splice 24 left/right

- Design Tables 2015 – Formwork and Shoring

- Brochure:
  – GRV Circular Formwork

Intended use

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

With the Articulated Walers GRV, curved shapes such as container walls and arched structures can be formed.

Radii adjustment is carried out by turning the Adjusting Bolt STS and with the help of an assembly template.

Components for working and concreting scaffolds, height extensions and other applications are included in the GRV Circular Formwork system.

Features
With GRV Circular Formwork, the loads from the fresh concrete pressure are not transferred via formwork ties to the opposite side of the formwork.

The fresh concrete pressure is accommodated via tension forces in the Articulated Walers GRV of the external elements and via compressive forces in the Articulated Walers GRV of the internal elements.

The GRV Circular Formwork is particularly suitable for round containers where no anchor points are permitted.

Technical data
Perm. compression or tension force: 300 kN.

Radii (with standard nuts)
Articulated Waler GRV 90: 2.20 m
Articulated Waler GRV 75: 1.85 m
Articulated Waler GRV 60: 1.35 m
Articulated Waler GRV 30: 1.30 m

Instructions on use

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

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

Changes to PERI components are not permitted.

Cleaning and maintenance instructions

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

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

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

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

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

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

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

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

Never clean powder-coated components, e.g. elements and accessories, with a steel brush or hard metal scraper; this will ensure that the powder-coating remains intact.
Use spacers for reinforcement with large-sized supports or extensive areas of support; this largely avoids impressions being formed in the formlining when under load.

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

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

Do not clean components suspended on a crane.

Cross-system

General
The contractor must ensure that the Instructions for Assembly and Use supplied by PERI are available at all times and are 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. These Instructions for Assembly and Use do not replace the risk assessment!

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

For the application and inspection of PERI products, the current safety regulations and guidelines must be observed in the respective countries where they are being used.

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

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

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

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

Deviations from the standard configuration are only permitted after a further risk assessment has been carried out by the contractor.
On the basis of this risk assessment, appropriate measures for working and operational safety as well as stability are to be determined.
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 had an adverse effect regarding the safety of the formwork system, the contractor must immediately
- create another risk assessment, with appropriate measures for ensuring the stability of the formwork system being carried out based on the results,
- arrange for an extraordinary inspection to be carried out by a qualified and competent person. The aim of this inspection is to identify and rectify any damage in good time in order to guarantee the safe use of the formwork system.

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

Assembly, modification and dismantling work
Assembly, modification or dismantling of formwork systems may only be carried out by qualified persons under the supervision of a competent person. The qualified specialists 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 Instructions for Assembly and Use, the contractor must create installation instructions in order to ensure safe assembly, modification and dismantling of the formwork system.

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

is available and used as intended.

If personal protective equipment against falling (PPE) is required or specified in local regulations, the contractor must determine appropriate attachment points on the basis of the risk assessment.
The personal protective equipment 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 the stability during all stages of construction, in particular during assembly, modification and dismantling of the formwork.
- ensure and prove that all loads can be safely transferred.

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

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

System-specific

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

Only use PERI lifting accessories.

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

When using the Articulated Waler GRV, formwork ties are not required; therefore, when removing the closure formwork ensure that the elements are secured against falling over.

If a storm warning is given, additional push-pull props are to be attached or other bracing measures are to be carried out along with implementing the details contained in the PERI design tables.

The contractor must ensure that appropriate fire protection measures are in place.

For heat-producing equipment, such as welding equipment, heaters or lamps, suitable safety measures must be taken.

Fire-fighting equipment must be available and emergency exits clearly marked.

Open fires and smoking on the platforms is prohibited.

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 as well as only those lifting points provided on the component.

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

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

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

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

When planning the elements, the maximum possible transportation width on public roads must be taken into consideration.

Dimensioning

– On the basis of the specified fresh concrete pressure, the required formlining thickness, the max. permissible girder spacing and the distance between the walers are to be selected accordingly.
– Take into consideration PERI Design Tables 2015 - Formwork and Shoring.
– The following static equivalent model can be used for calculating the internal forces on the Articulated Waler GRV and bolt connection.

Design resistances

Waler GRV: UU100 S235J	$N_{R,d}$ [kN] 570,0	$V_{R,d}$ [kN] 140,0	$M_{y,el,d}$ [kNcm] 2070,0
Waler weld seam - Hinge GRV	$N_{R,d}$ [kN] 450,0	$V_{R,d}$ [kN] 200,0	$M_{y,el,d}$ [kNcm] 1350,0
Pin for GRV:	Tension force: F_{Rd} = 1.5 x 266.3 kN = 400 kN Compression force: F_{Rd} = 1.5 x -300.0 kN = -450 kN $F_{Ed} = \sqrt{N_d^2 + V_d^2}$		
Adjusting Bolt:	Tension force: $F_{t,Rd}$ = 91.50 kN Compression force: $F_{c,Rd}$ = -68.4 kN (with maximum extension)		

Table A1.01

Forces

Elliptical or non-closed formwork with Articulated Walers GRV must be project-specifically calculated.

With a closed formwork ring, the PERI GRV Circular Formwork can accommodate a maximum compression or tension force of 300 kN.

The tension force Z_{Ring} is always bigger than the compression force D_{Ring}. Therefore, the outer ring is always decisive regarding the dimensioning of the walers.

For calculating the actual waler tension force:

$Z_{Ring} = r \times P_b \times h$

whereby:
r = outside radius [m]
P_b = fresh concrete pressure [kN/m²]
h = height of load carried by the waler [m]

Example:
Radius r = 11 m
Fresh concrete pressure P_b = 30 kN/m²
Loading height h = 90 cm

Z_{Ring} = 11 m x 30 kN/m² x 0.90 m

Z_{Ring} = 297 kN < 300 kN permissible

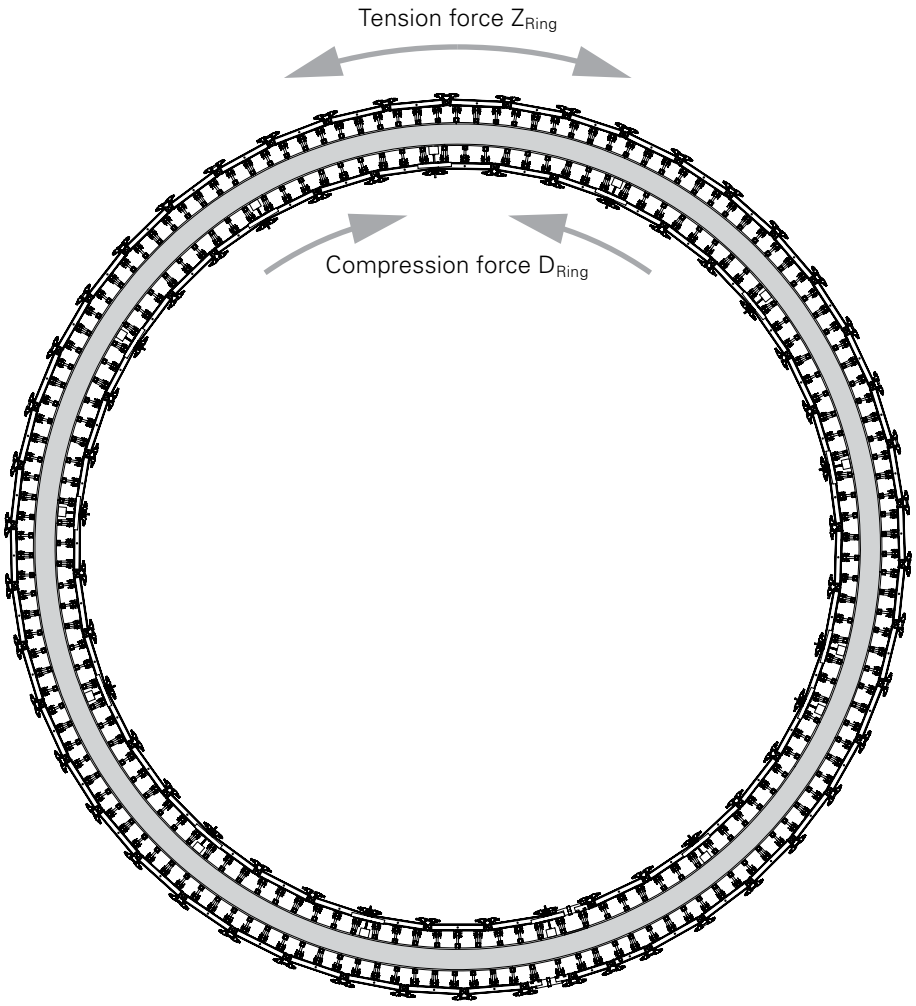


Fig. A1.02

Minimum pin radii

Smaller radii and oval formwork configurations are possible and must be project-specifically planned and calculated.

The maximum possible angle between two internal walers is 28°. Therefore, a minimum of 12 x Articulated Walers GRV and 1x Articulated Spindle Waler GSRV must be used for the inner ring.

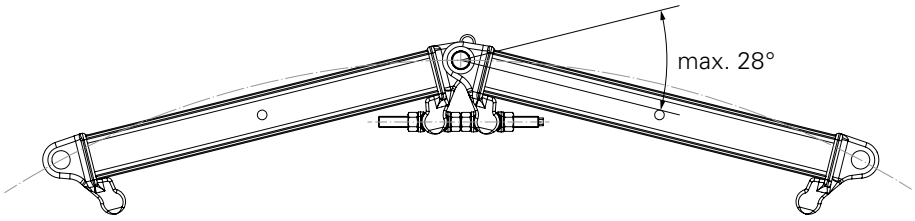


Fig. A1.03

Minimum pin radii [m]					
	Internal			External	
	Standard nut	Half nut	Adjusting bolt	Standard nut	Adjusting bolt
Articulated Waler GRV 90	2.20	1.72	STS 360	1.58	STS 360
Articulated Waler GRV 75	1.85	1.44	STS 360	1.35	STS 360
Articulated Waler GRV 60	1.35	1.10	STS 360	0.91	STS 360
Articulated Waler GRV 30	1.30 – 1.15		STS 260		
Standard nut: Hex. Nut ISO 4032 M24-8, galv. (Item no. 022250)					
Half nut: Hex. Nut ISO 4032 M24-8, galv.					

Table A1.02

Planning

Bolt radius r must be calculated for assembling the Articulated Waler GRV. The bolt radius r can be determined using a CAD program, a mathematical calculation or a 1: 1 layout.

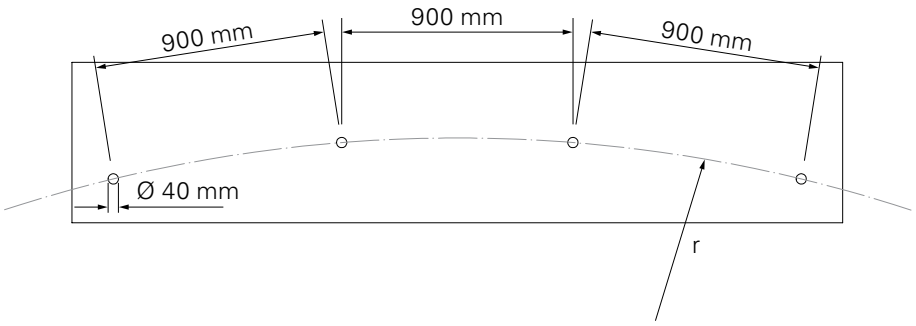


Fig. A1.04

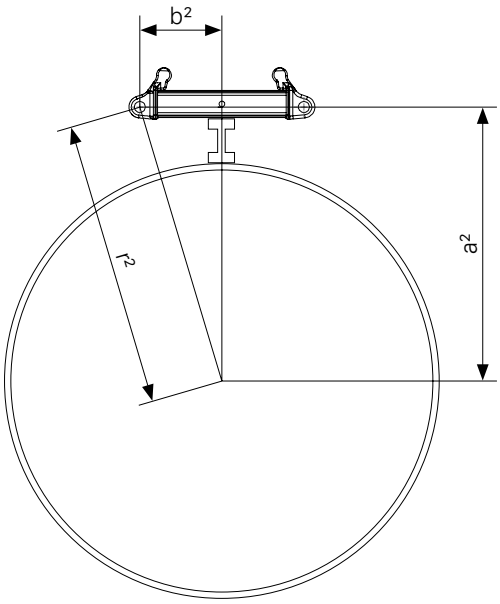


Abb. A1.05

Example of a mathematical calculation of the pin radius r for the outer ring:

a²

Radius concrete core =	400 cm
Formlining =	2.1 cm
Girder GT 24 =	24 cm
Offset pin centre line =	3.9 cm

2 x b²

L Articulated Waler GRV = 90 cm

Pin radius r =

$\sqrt{(a^2 + b^2)}$

$\sqrt{((\text{radius concrete core} + \text{formlining} + \text{Girder GT 24} + \text{offset pin centre line})^2 + (\text{L Articulated Waler GRV} / 2)^2)}$

$\sqrt{((400 + 2.1 + 24 + 3.9)^2 + (90 / 2)^2)}$

= 432.35 cm

For calculating an inner ring, the respective values as well as the required packing timber must be subtracted from the concrete radius.

Inclined haunches

Structures with inclined haunches must be planned project-specifically.

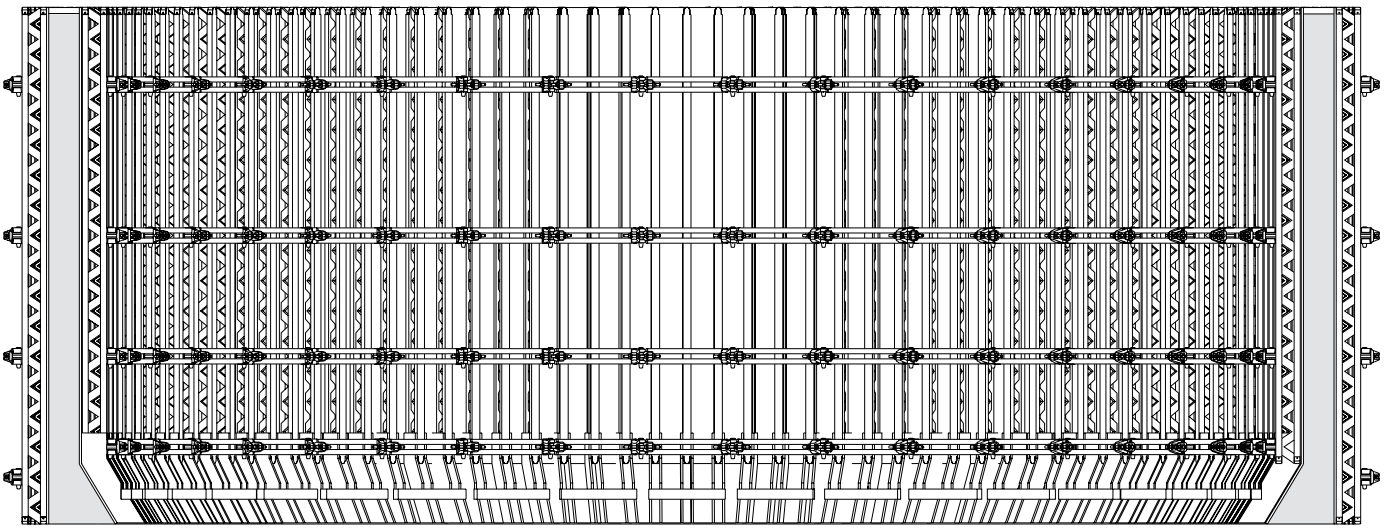


Fig. A1.06

Arched bridges

With Bearing Blocks GRV, bridges consisting of system components can be formed with Articulated Walers GRV.

Arched bridges must be project-specifically planned.

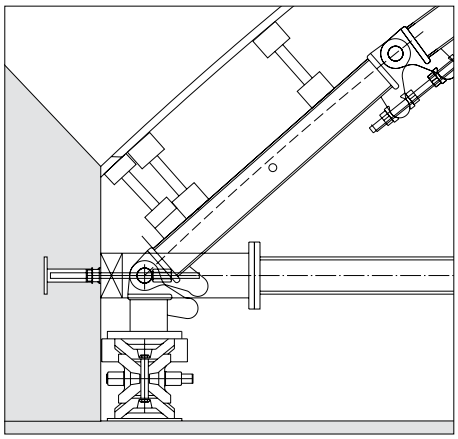


Fig. A1.07

Assembly template

1. Mark off a circular arc with radius r on a flat assembly area.
2. Depending on the Articulated Waler GRV, drill four Ø 40 mm holes with spacings of 90, 75, 60 or 30 cm into the assembly area.

For high quantities, make a larger hole and insert a metal sleeve with an internal diameter of 40 mm into the hole.

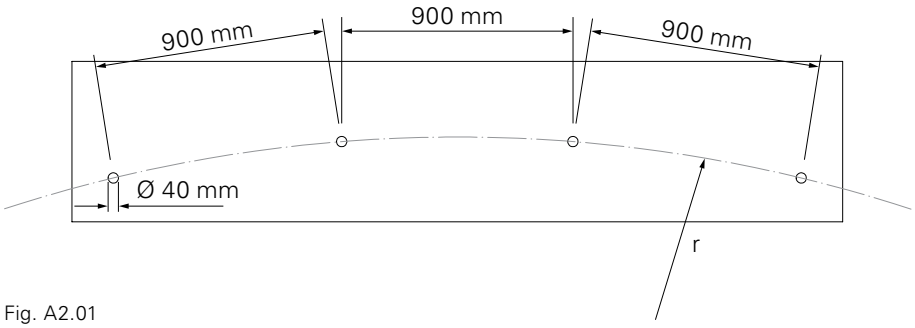


Fig. A2.01

Articulated Waler GRV

Depending on the radius, an additional 1, 2 or 3 elements must be fitted with Articulated Spindle Waler GSRV.

1. Place 3x Articulated Walers GRV (1) on the assembly template so that the centre bolt holes are positioned above the holes.
2. Connect the Articulated Walers GRV (1) with Pins for GRB (3).
   → The Pins for GRB (3) drop into the holes.
   (Fig. A2.02)
3. Adjust the external Articulated Walers GRV (1) to the radius so that the external bolt holes are positioned above the holes.
4. Fix the external Articulated Walers GRV (1) in the external holes using Pins for GRB (3).
   → The Pins for GRB (3) drop into the holes.
   (Fig. A2.03)
3. Mount Nuts ISO 4032 M24-8 (6) and Half Round Washers HRS (7) to the Adjusting Bolts STS (5).
   (Fig. A2.04a)
4. Insert Adjusting Bolt STS between two Articulated Walers GRV (1).
5. Lock Nuts ISO 4032 M24-8.
   (Fig. A2.04)

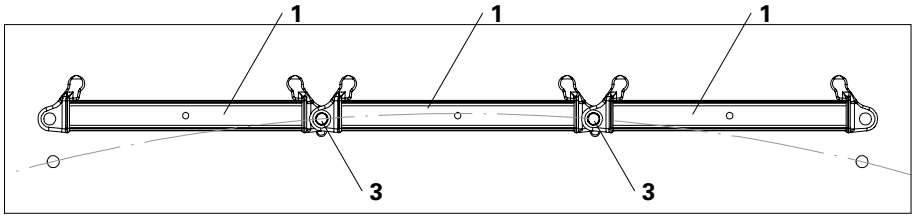


Fig. A2.02

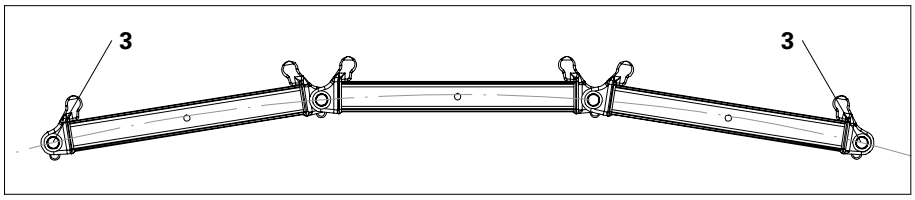


Fig. A2.03

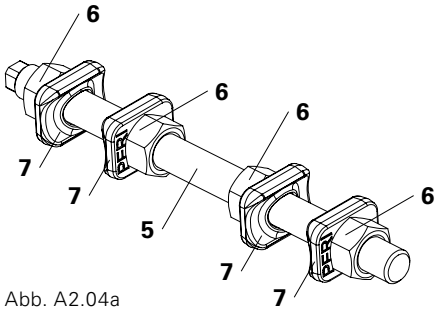


Abb. A2.04a

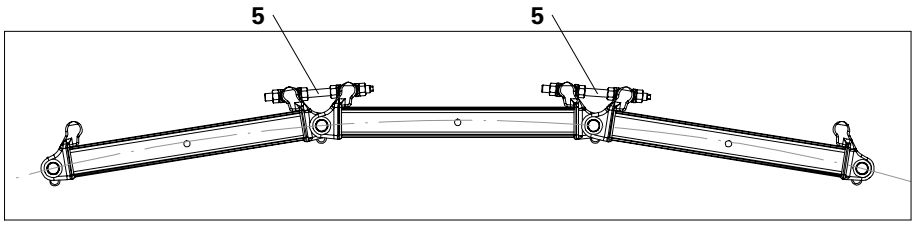


Fig. A2.04

Assembly area

We recommend preparing a flat assembly area.
– Pre-assembled stops at the correct distance simplify the exact and fast pre-assembly of the GRV elements.
– More information can be provided by PERI on request.

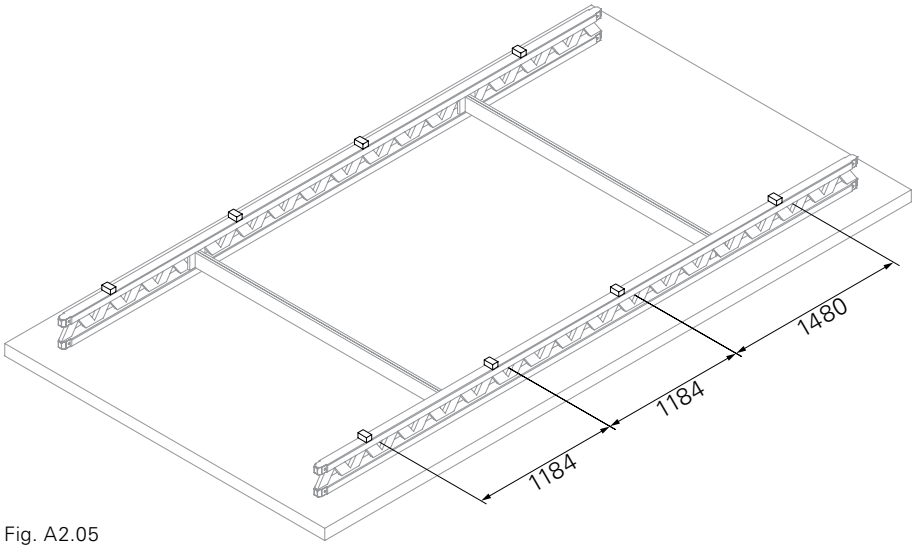


Fig. A2.05

Laying out
1. Prepare articulated waler connections for the element.
2. Place articulated waler connections with the Adjusting Bolts STS (5) face down on the assembly area at the correct distance.
3. Align the articulated waler connections parallel to each other.

(Fig. A2.06)

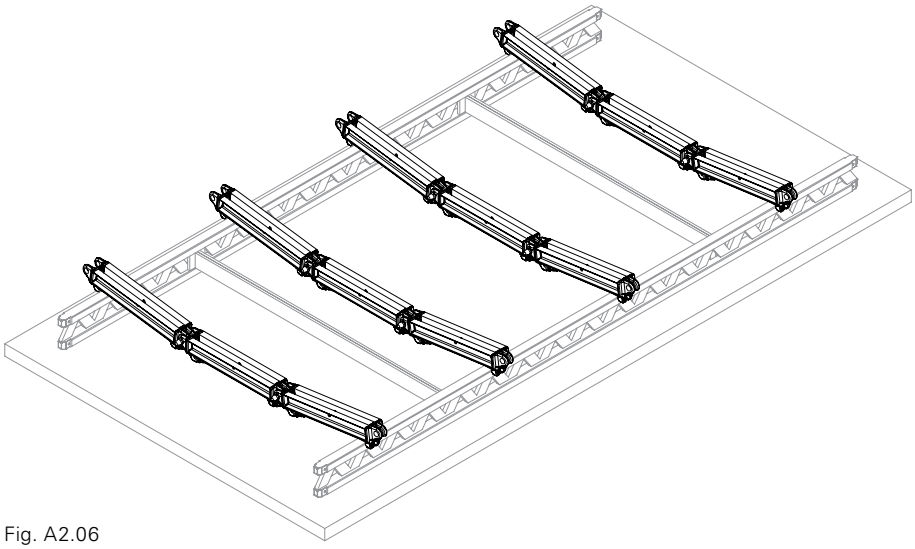


Fig. A2.06

Lattice Girder GT 24

Assembly

1. Evenly position Lattice Girders GT 24 (8) on the articulated waler connections.
2. Fix Lattice Girders GT 24 (8) to the articulated waler connections using Hook Straps HB 24-100/120 (9).

(Fig. A2.07)

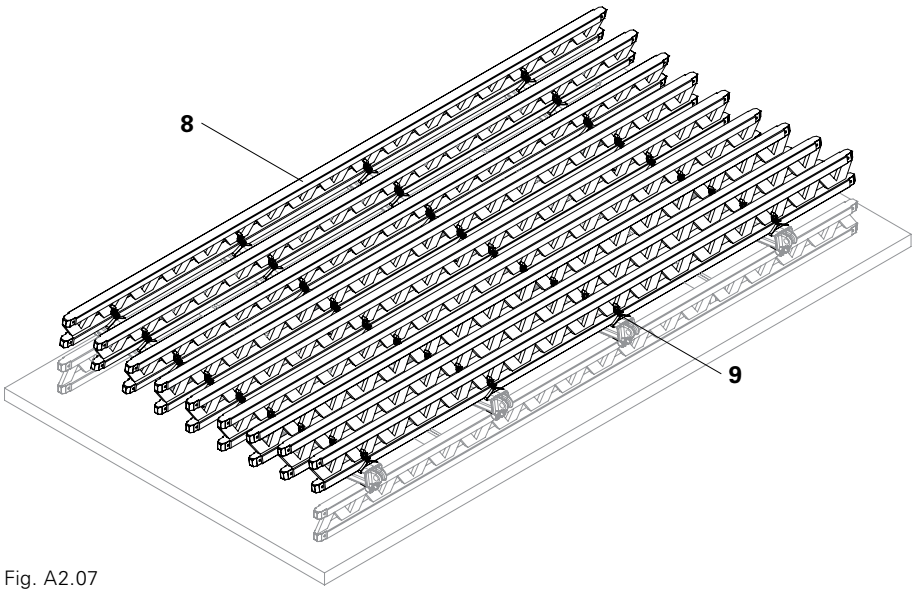


Fig. A2.07

Centering bar

Assembly

1. Arrange centering bars on the Lattice Girders GT 24 (8).
2. Fix centering bars to the Lattice Girders GT 24 (8) using nails.

(Fig. A2.08)

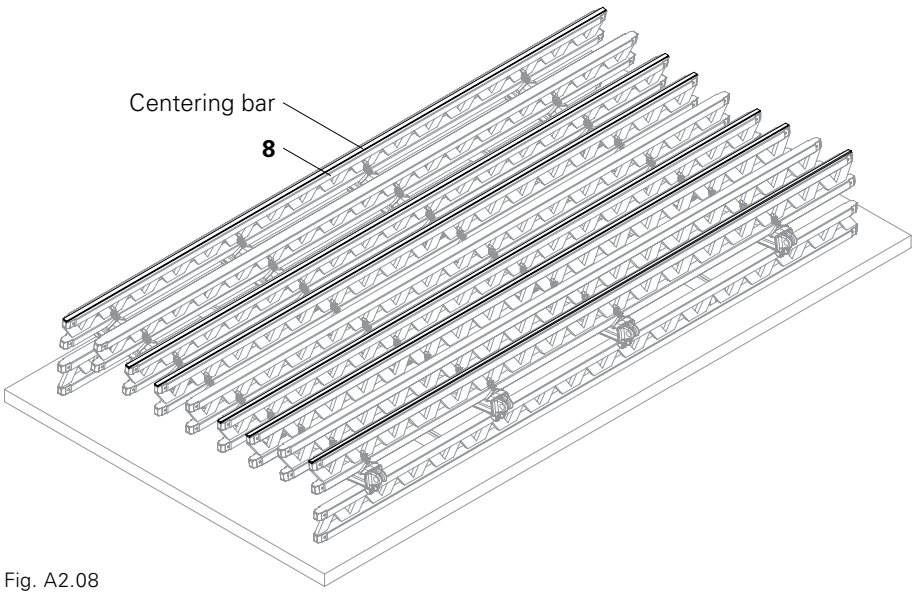


Fig. A2.08

Formlining

Assembly

1. Hold formlining in place with screw clamps.
2. Fix formlining with screws.

(Fig. A2.09)

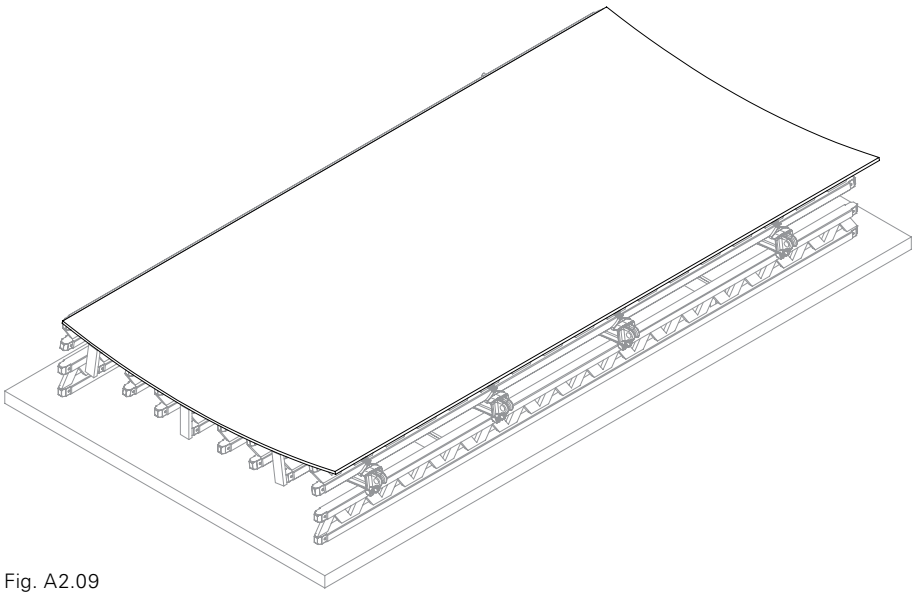


Fig. A2.09

Turn element in order to mount push-pull props, working and concreting scaffolds. (Fig. A2.10)

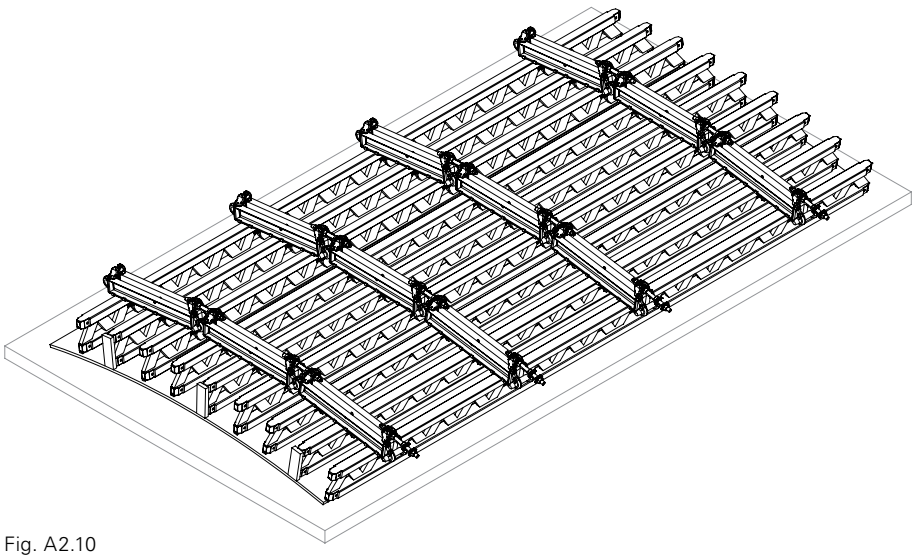


Fig. A2.10

A3 Curvatures

Radii ≥ 3.5 m

Use packing timber.
For this purpose, mount centering bars (formlining strips) 4 x 20 mm on all girders in order to ensure a neat and tidy curvature.
(Fig. A3.01)

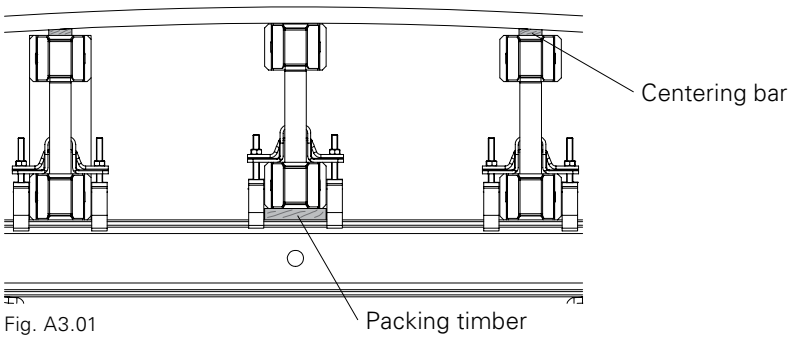


Fig. A3.01

Radii ≥ 3.5 m

Use curved timber.
(Fig. A3.02)

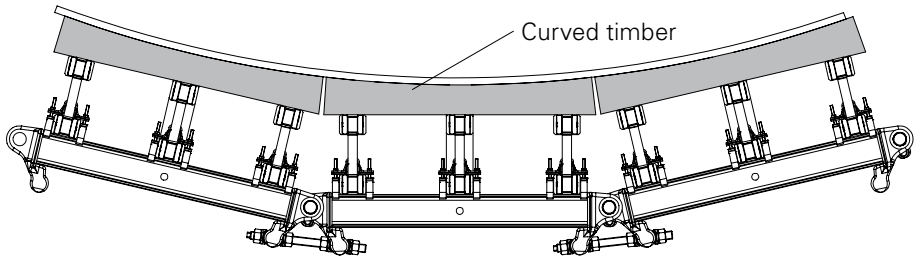


Fig. A3.02

Bending radii of standard plywood
First dimension❶ the panel size specifies the dimension in the fibre direction of the face veneer.
(Fig. A3.03a + A3.03b)

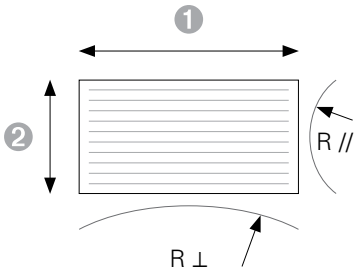


Fig. A3.03a

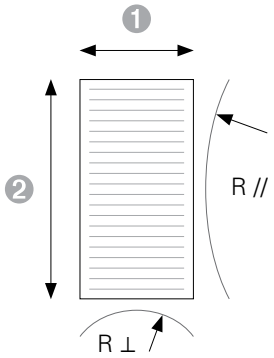


Fig. A3.03b

Minimum bending radii [m]						
			Internal formwork		External formwork	
Plywood formlining	Panel size	Panel thickness [mm]	R ⊥	R //	R ⊥	R //
FinPly	1.50 x 3.00 m	12	6.20	2.70	6.10	2.60
FinPly	1.50 x 3.00 m	18	6.70	3.20	6.60	3.10
FinPly	1.25 x 2.50 m	21	7.70	4.70	7.60	4.60
PERI Beto S	1.25 x 2.50 m	21	8.20	5.20	8.10	5.10
PERI Beto S	1.50 x 3.00 m	21	7.20	5.10	7.10	5.10

Table A3.01

Formlining cantilevers

Tension the formlining on the inner element with the aid of a tensioning device on the adjacent edge beam.
The tensioning device consists of timbers, Wingnut Pivot Plate DW 15, Anchor Sleeve DW 15 and Tie Rod DW 15. (Fig.A4.01 + A4.01a)

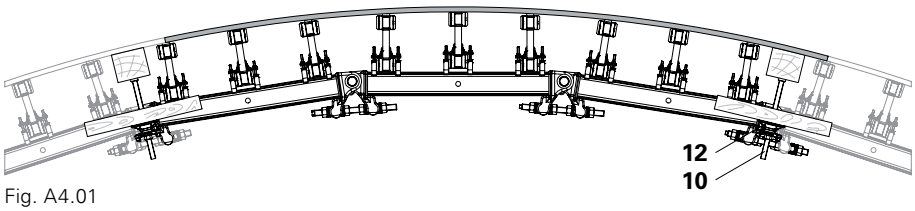


Fig. A4.01

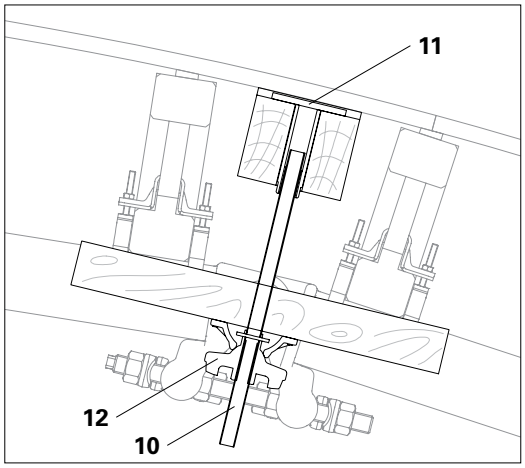


Fig. A4.01a

Packing timber

It may be necessary to raise the Lattice Girder GT 24 in the middle with packing timber in order to achieve the required bending. (Fig. A4.02)

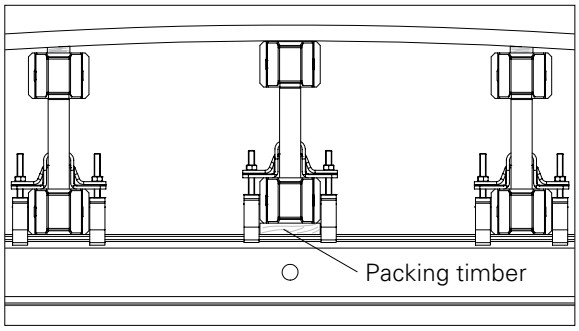


Fig. A4.02

A5 Articulated Spindle Waler GSRV

The Articulated Spindle Waler GSRV (2) is used for closing the GRV Circular Formwork on the inside and outside, for compensation and as a striking aid. (Fig. A5.01 + A5.01a)

Radius r up to 5 m:
1x Articulated Spindle Waler GSRV

Radius r up to 10 m:
2x Articulated Spindle Waler GSRV

Radius r up to 15 m:
3x Articulated Spindle Waler GSRV

Distribute the Articulated Spindle Walers GSRV evenly around the circumference.
For extensions, the Articulated Spindle Walers GSRV must be arranged one above the other.

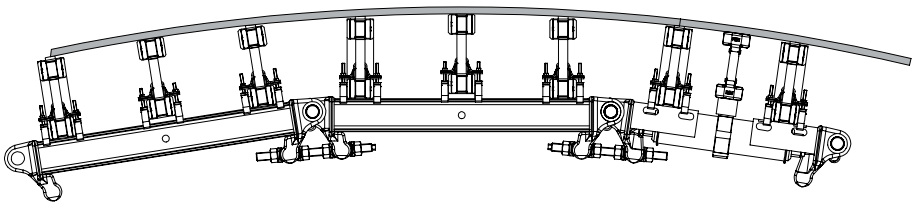


Fig. A5.01

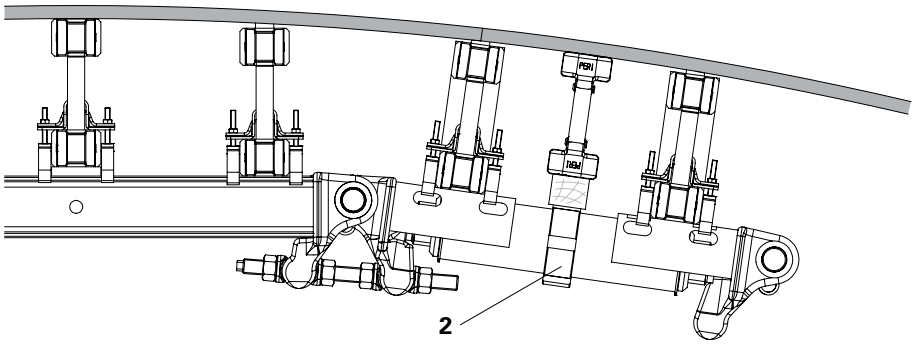


Fig. A5.01a

Individual brackets

Permissible load 150 kg/m².
Maximum width of influence 1.25 m.

- **Assembly on horizontally-positioned elements.**
- **Decking components and guardrails must be positioned so that any movement is prevented.**
- **Secure decking components and guardrails.**

Additional Platform Brackets VARIO VBK 90 must be installed in order to close the formwork.

Closing the formwork:
– Mount Pins for GRB (3).
– Mount Adjusting Bolts STS.

Pos.	Components
20	Platform Bracket VARIO VBK 90
21	Guardrail Post HSGP-2
22	Decking
23	Guardrail Boards

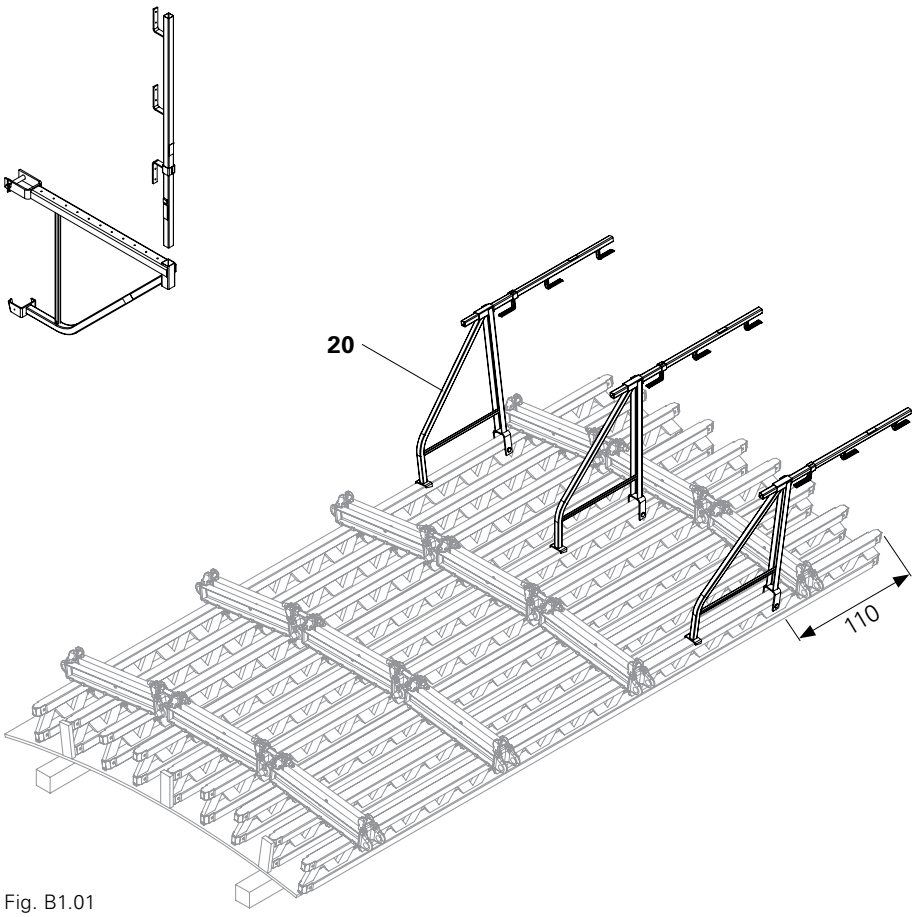


Fig. B1.01

The Platform Bracket VARIO VBK 90 can be mounted at each nodal point of the Lattice Girder GT 24.

Assembly

1. Remove Pins ø 20 x 120 (34) from the Platform Bracket VARIO VBK 90 (20).
2. Place the Platform Bracket VARIO VBK 90 (20) on the girder using the top connecting claw and secure with Pins Ø 20 x 120 (34) and Cotter Pins 4/1 (19). (Fig. B1.01a)
3. Secure bottom connecting claw (20.1) with nails.(Fig. B1.01b)
4. Mount additional Platform Brackets VARIO VBK 90 (20).

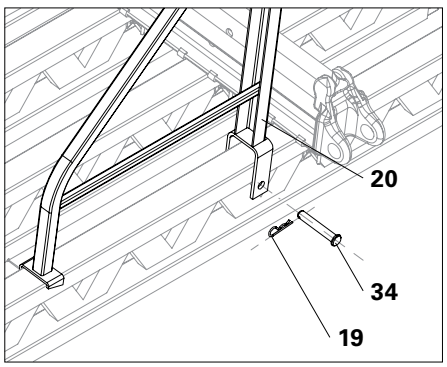


Fig. B1.01a

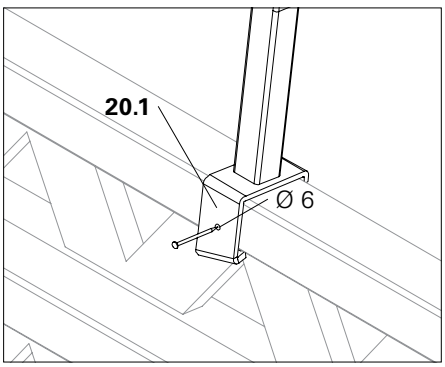


Fig. B1.01b

Scaffold boards and guard-rails

1. Fix decking (22) across complete bracket width from below using TSS-Torx 6 x 40.
2. Insert Guardrail Post HSGP-2 (21).
3. Insert and secure handrail boards (23).

(Fig. B1.02)

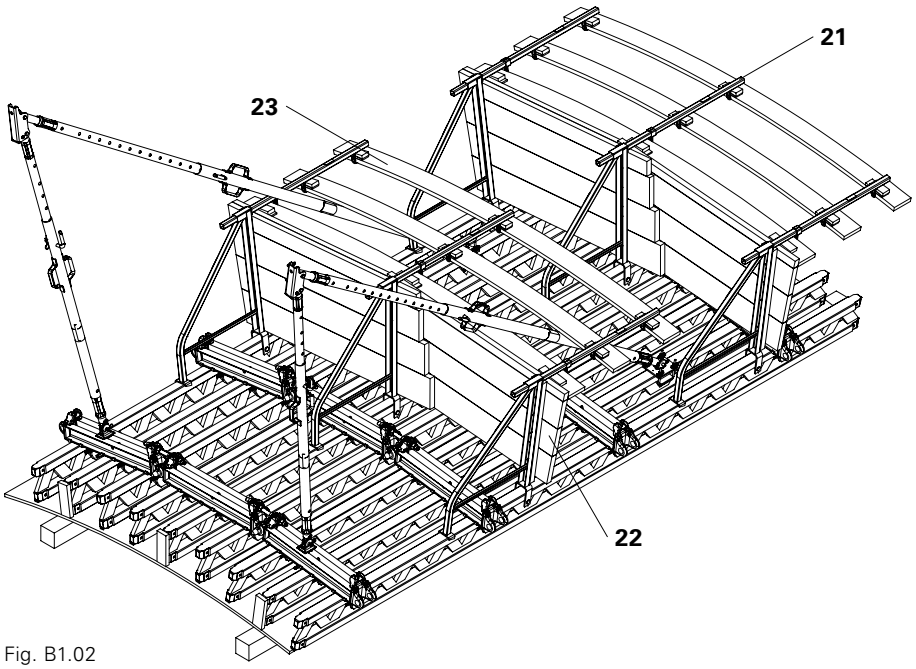


Fig. B1.02

Lifting

Make sure that the chains do not come into contact with the guardrails during lifting. (Fig. B1.02a)

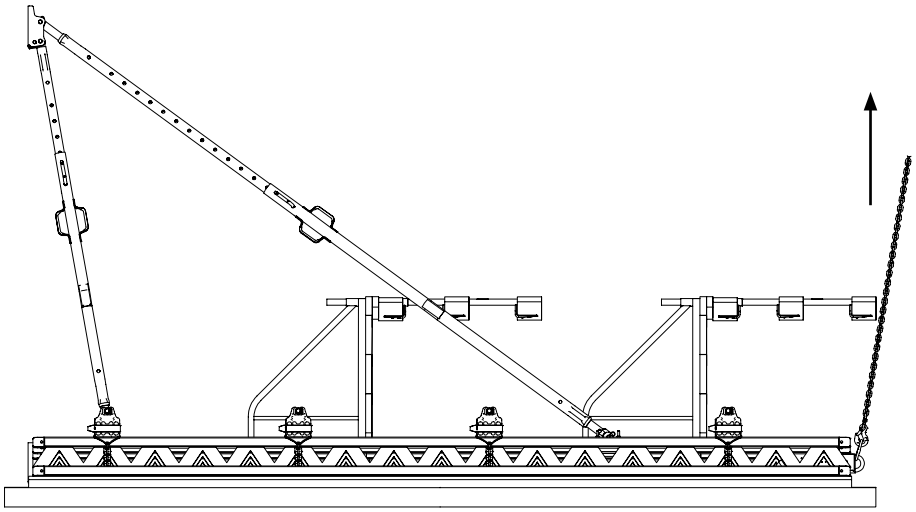


Fig. B1.02a

B2 Ladder access

Ladder combinations
– Ladder Access A: End Ladder 180/2 (26) and below: Ladder 180/6 (25).
– Ladder Access B: 2x Ladder 180/6 (25).

Ladder pre-assembly

Pre-assembling the ladder:
1. Loosen Bolts and Nuts M12 x 40 of the top ladder (25a) and remove.
2. Connect both ladders with Bolts and Nuts M12 x 40. (Fig. B2.01)
3. If the bottom ladder is suspended:
   – Loosen Bolts and Nuts M12 x 25 on the ladder hook and remove.
   – Fix ladder hook (27) to Ladder 180/6 (25b) at the top using Bolts and Nuts M12 x 25. (Fig. B2.02)
   – On the rungs of the bottom ladder (65) attach both ladder hooks of the Ladder 180/6 (25b) to be mounted and pull downwards. (Fig. B2.03)

Visual check of the rungs.
The rungs of both ladders must be positioned at the same height.
(Fig. B2.03)

Ladder base

Mounting the ladder base:
1. Fix ladder base (28) to the bottom Ladder 180/6 (25b) using Bolts and Nuts M12 x 40.

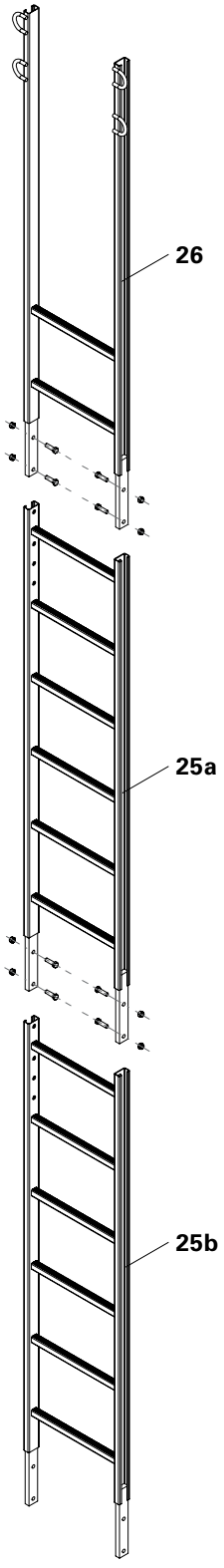


Fig. B2.01

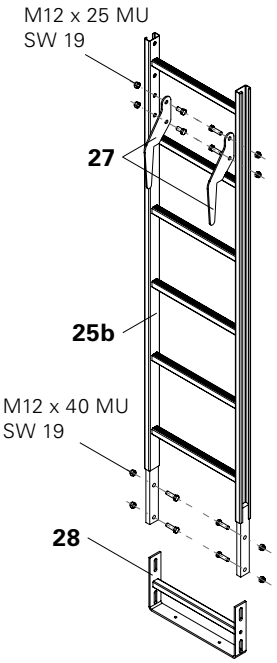


Fig. B2.02

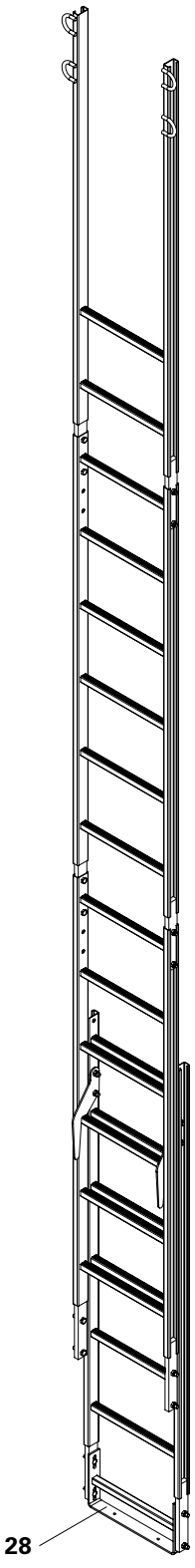


Fig. B2.03

Ladder access

Assembly on horizontally-positioned elements.

Assembly

1. Insert Ladder Connector VARIO (33) through the Articulated Waler (1).
2. Fix Ladder Connector VARIO (33) using the Wingnut Counterplate DW 15 (33.1). (Fig. B2.04 + B2.05a)
3. Pre-assemble the ladder.
4. Fix the pre-assembled ladder to the Ladder Connectors VARIO (33) by means of clamping plates (25.1), SW 19.
5. Mount Ladder Safety Cage 75/150 (29) with clamping plates (25.1) according to plan. Depending on the situation, mount with overlapping ladder joints. (Fig. B2.04 + B2.05b)

Visual check of the clamping plates. The contact surface must rest against the ladder profile.
(Fig. B2.06a + B2.06b)

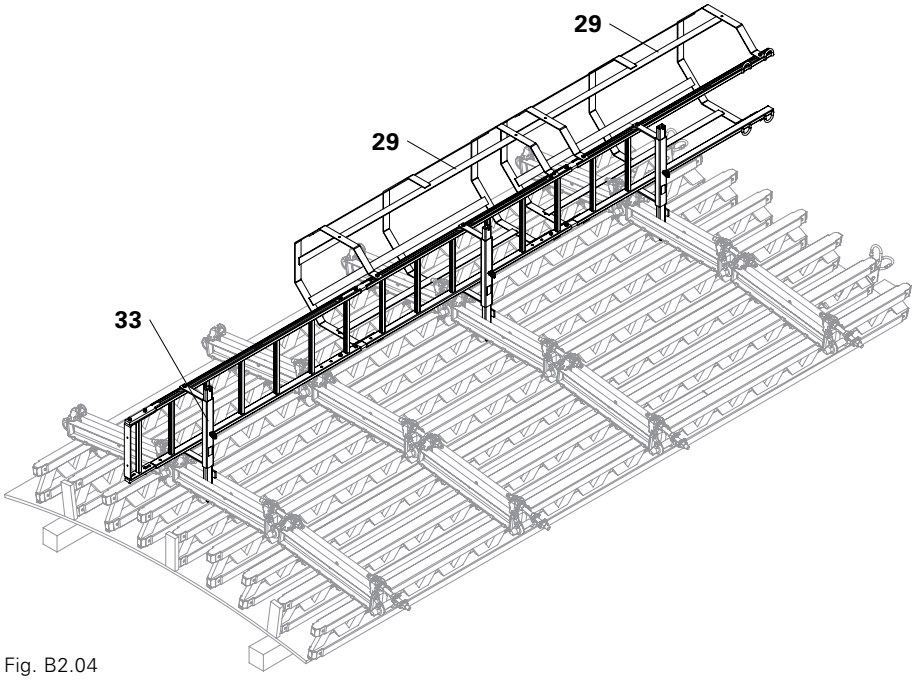


Fig. B2.04

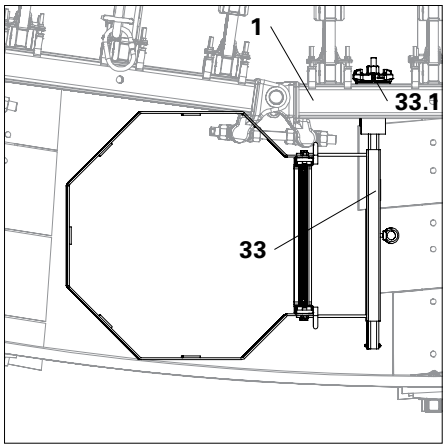


Fig. B2.05a

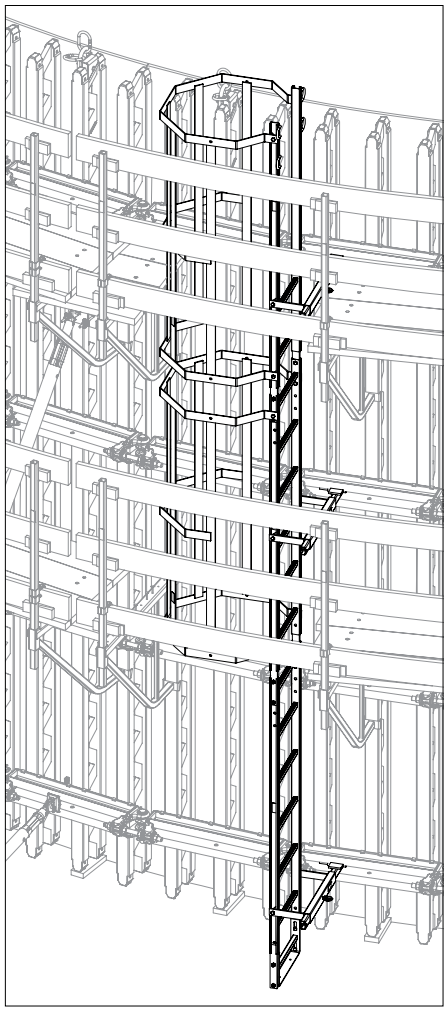


Fig. B2.05b

Insertion position

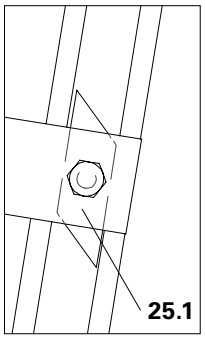


Fig. B2.06a

Clamping position

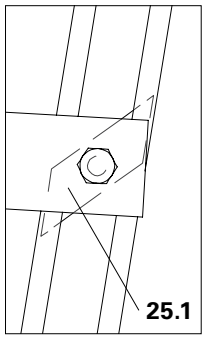


Fig. B2.06b

B3 Oppositely-arranged guardrails

Assembly on horizontally-positioned elements.

Maximum width of influence of the Handrail Post Holder VARIO with Guardrail Post HSGP-2: 2.00 m.

Pos.	Components
21	Guardrail Post HSGP-2
23	Guardrail Boards
24	Handrail Post Holder VARIO

Assembly

1. Insert Handrail Post Holder VARIO (24) into the lattice of the Lattice Girder GT 24 (8) and secure by means of a wedge (24.1).
2. Insert Guardrail Post HSGP-2 (21).
3. Insert and secure handrail boards (23).

(Fig. B3.01a)

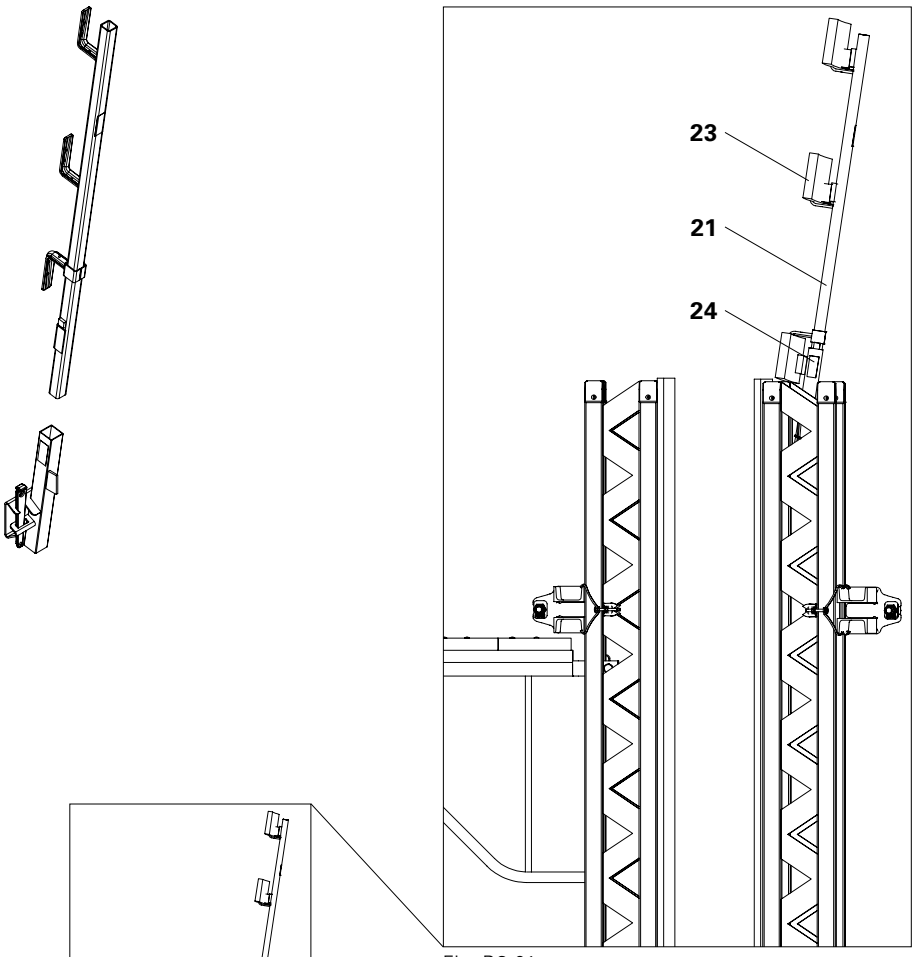


Fig. B3.01a

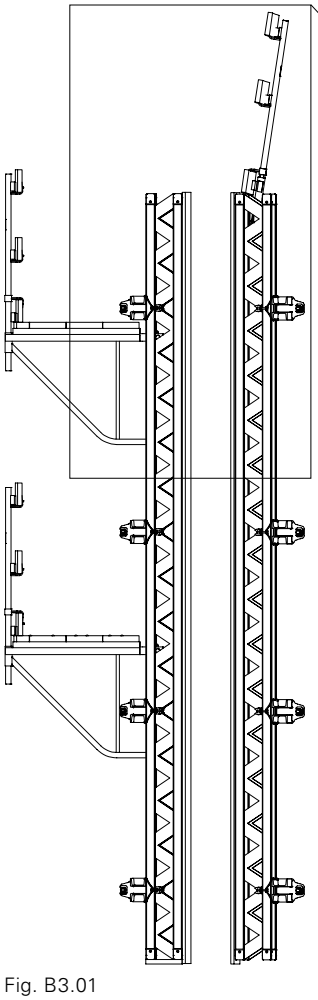
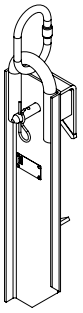


Fig. B3.01

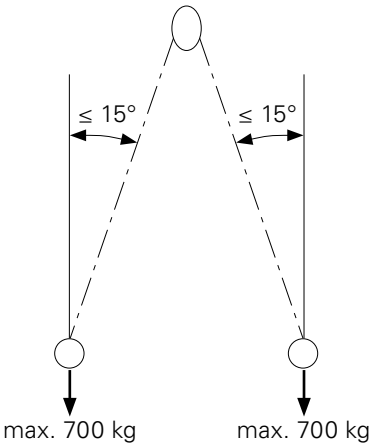
Crane Splice 24



- **Permissible load-bearing capacity 700 kg.**
- **Always attach two Crane Splices 24 symmetrically to the load centre of gravity.**
- **Follow the Instructions of Use for the Crane Splice 24.**

Load Factor: 3
(according to DIN 13155)

Max. crane sling angle = 15°
The cantilever length of the girder must not exceed L ≤ 75 cm.



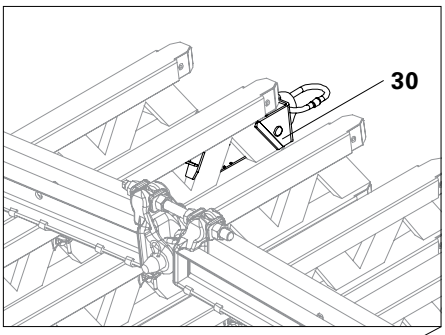


Fig. B4.01a

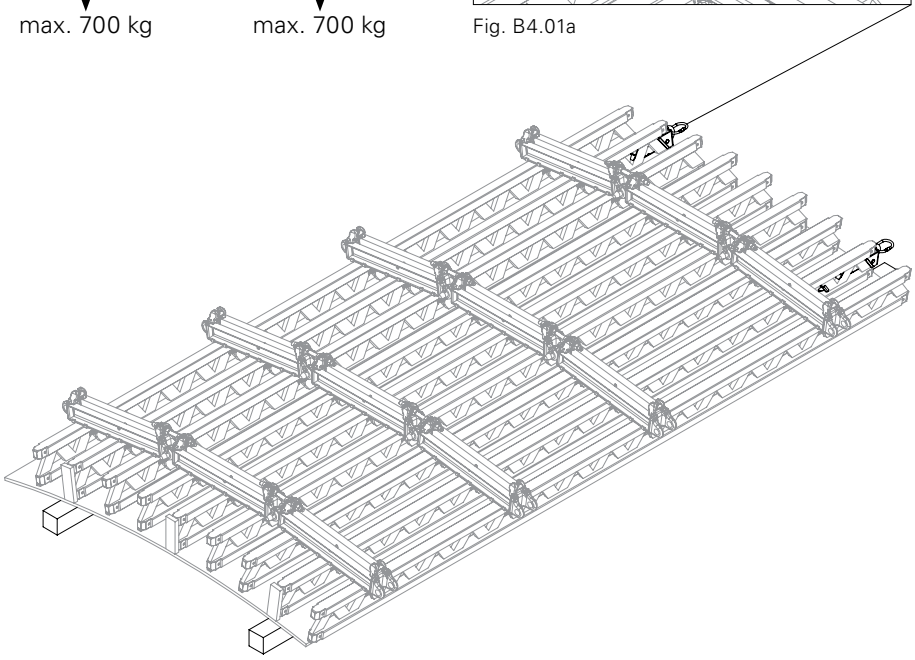


Fig. B4.01

Connections

– Support elements with push-pull props and kickers.
– Assembly on horizontally-positioned elements.

– Working and concreting scaffolds must be mounted before the push-pull props.
– Always attach two push-pull props and kickers to the first element which is to be positioned.
– On each additional element, a minimum of one push-pull prop and kicker are to be attached.
– For widths of influence refer to Design Tables 2015 – Formwork and Shoring.

Girder Headpiece GT 24
For mounting push-pull props to the Lattice Girder GT 24.

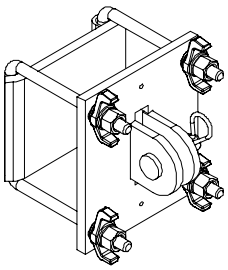
Assembly
1. Release wingnuts (14.1) and push plate through the lattice of the Lattice Girder GT 24 (8).
2. Clamp plate to Lattice Girder GT 24 (8) using bow (14.2).
3. Tighten wingnuts. (14.1).

(Fig. B5.01a)

Wedge Headpiece SRZ/SRU
For mounting push-pull props to the Articulated Waler GRV.

Assembly
1. Push Wedge Headpiece SRZ/SRU (15) with wedge openings through the profile of the Articulated Waler GRV (1).
2. Insert K-wedge (15.1) into the Profile U100 and hammer in tightly.

(Fig. B5.01b)



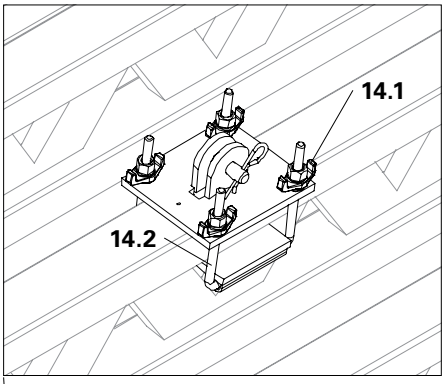


Fig. B5.01a

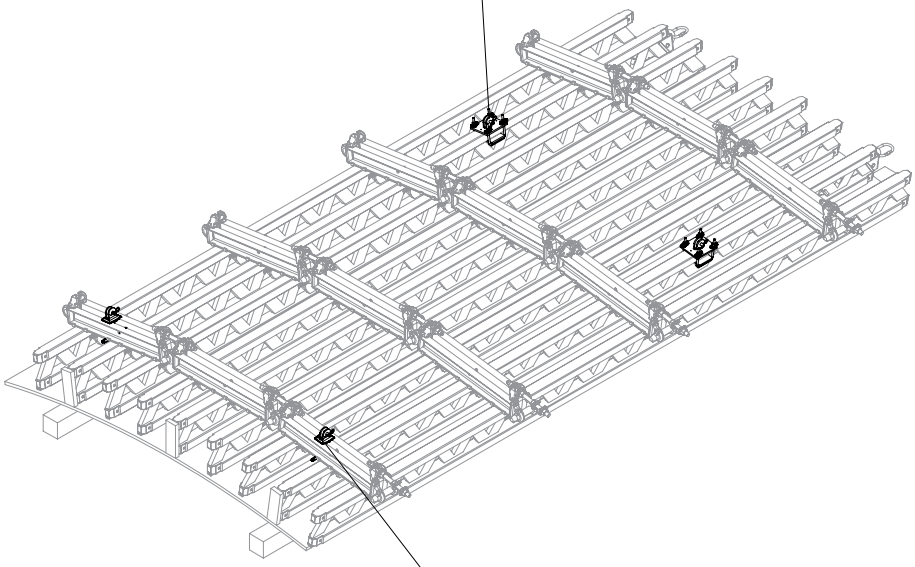
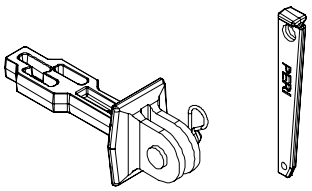


Fig. B5.01



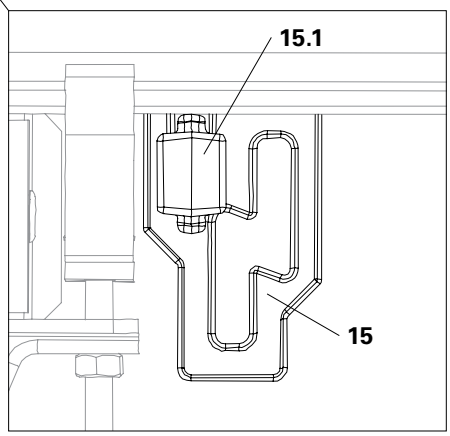


Fig. B5.01b

Push-pull props

Assembly

1. Secure push-pull prop (16a) in the Girder Headpiece GT 24 (14) using Bolts Ø 16 x 42 (17) and Cotter Pins 4/1 (19). (Fig. B5.02a)
2. Secure second push-pull prop (16b) to the Wedge Headpiece SRZ/SRU (15) using Bolts Ø 16 x 42 (17) and Cotter Pins 4/1 (19). (Fig. B5.02b)
3. Secure push-pull props (16) in the base plate (18) using 1x Bolt Ø 20 x 140 (32) each and Cotter Pins 4/1 (19). (Fig. B5.02c)

Base plate

1. Mount base plate (18) on the ground using, e.g. Anchor Bolt PERI 14/20 x 130.

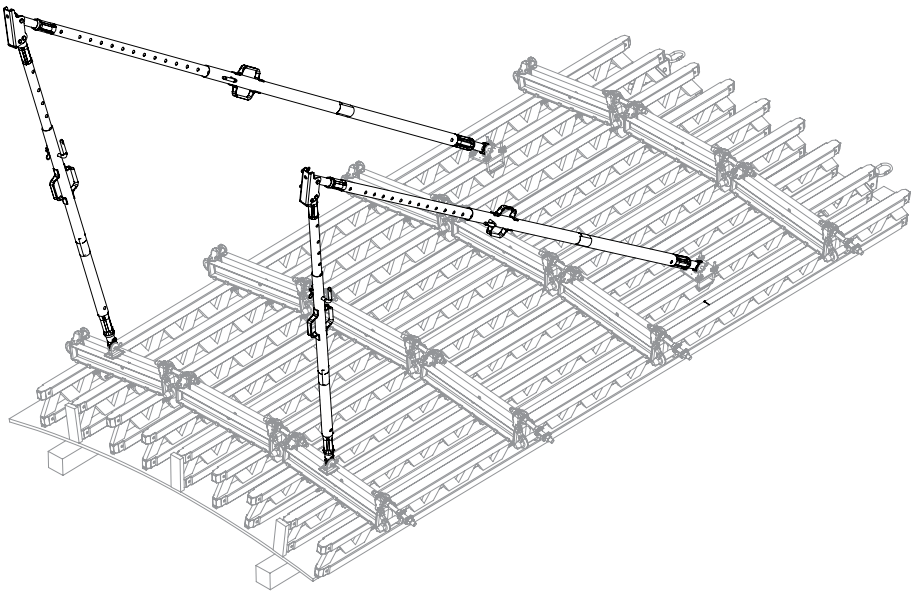


Fig. B5.02

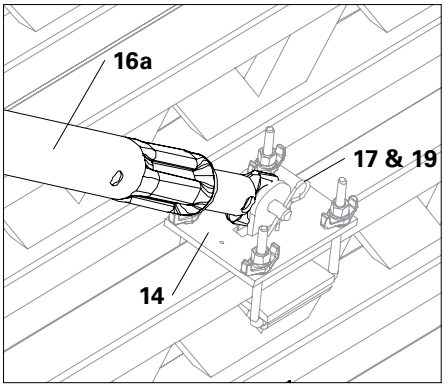


Fig. B5.02a

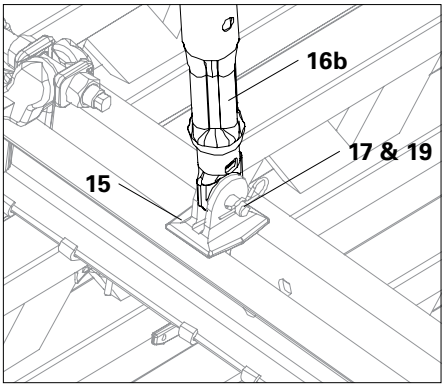


Fig. B5.02b

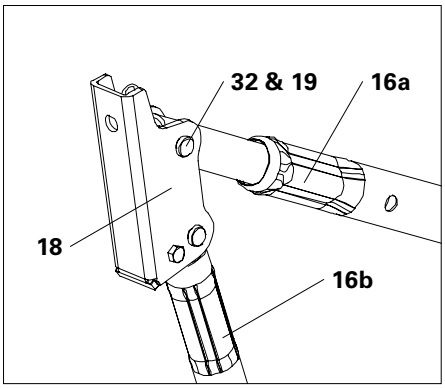
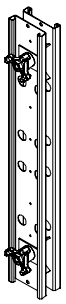


Fig. B5.02c

Extension Splice 24 up to max. 8.00 m

For higher extensions up to max. 11.90 m, overlapping girders must be used.

The required number of Extension Splices 24 (31) depends on the height of the element.



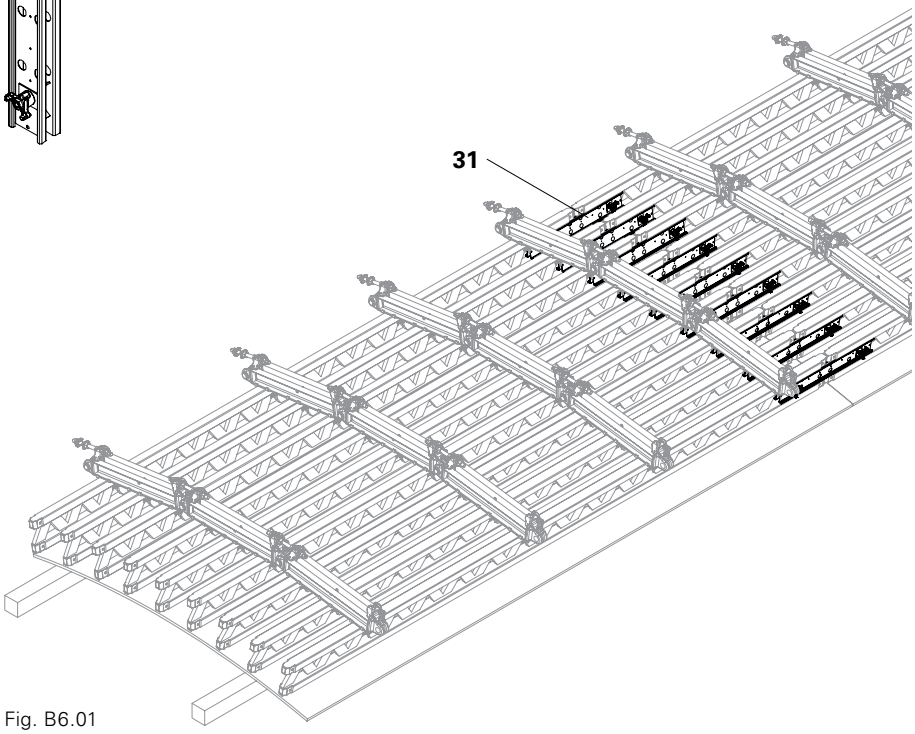


Fig. B6.01

Static values

$M_{perm.}$ = 1.73 kNm
$Q_{perm.}$ = 0

or
$M_{perm.}$ = 0
$Q_{perm.}$ = 5 kN

$$\frac{M + 0{,}07\ Q}{0{,}28} + Q \leq 6{,}2$$

Static values when moving GRV Circular Formwork Elements

$Z_{perm.}$ = 5.7 kN
M = 0
Q = 0

Assembly on horizontally-positioned elements

With extended elements, the Crane Splice 24 must be mounted on the girders with the Extension Splice 24.

1. Release Triple Wingnuts (31.2).
2. Arrange splice parts (31.1) right and left of the Lattice Girder GT 24 (8).
3. Connect both splice parts (31.1) and tighten by means of Triple Wingnuts (31.2).

(Fig. B6.02)

The connection is now tight, rigid and flush.

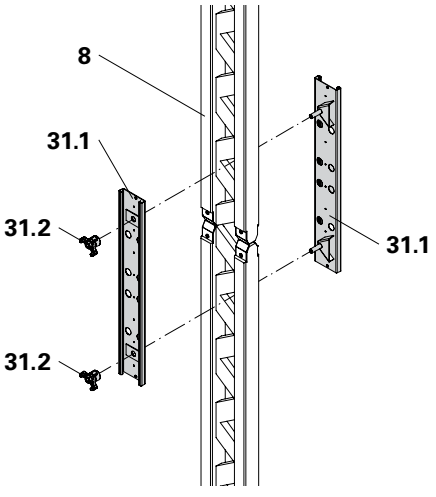


Fig. B6.02

B7 Rubbing boards

Assembly

1. Evenly install the rubbing boards on the underside of the Lattice Girder GT 24 (8).

(Fig. B7.01)

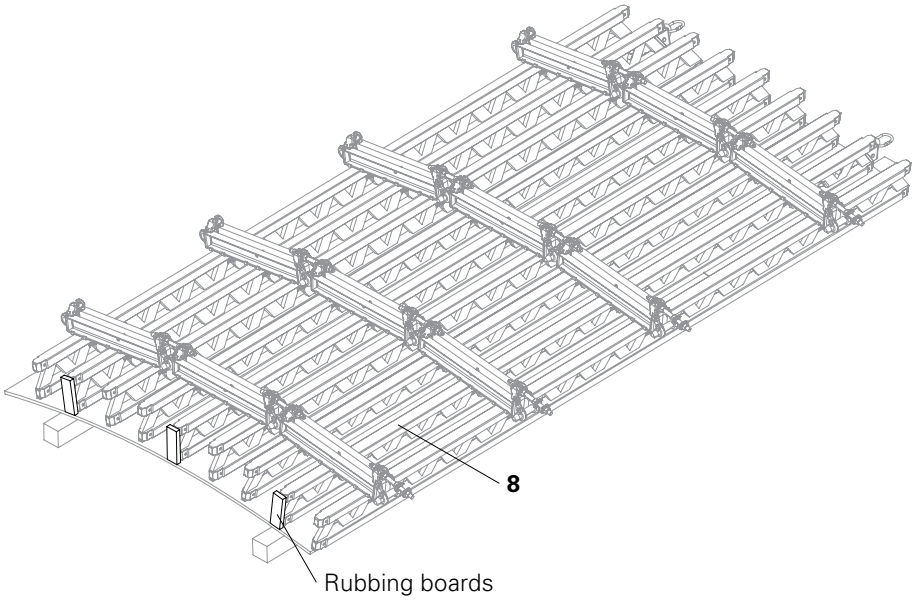


Fig. B7.01

Preparation

1. Mark the inner and outer edges of the wall on the bottom slab.
2. Fix the formwork stops along the radii on the inside of the wall to the bottom slab in sufficient numbers.

Internal formwork

Position elements on flat, sufficiently load-bearing surfaces only.

– Position the complete internal formwork.
– Take into account the project-specific planning.

Positioning

1. Position the first inner element and push it against the formwork stops.
2. Vertically align the inner element with push-pull props (16) and secure.
3. Perpendicularly align the vertical element edge.
4. Position the second inner element on the side of the protruding formlining of the first inner element.
5. Hammer in Pin for GRB (3) and secure with Cotter Pin 5/1 (4).
6. Install Adjusting Bolts (5) and tighten securely (see Section A2).
7. Align element with push-pull prop (16).
8. Release crane lifting gear.
9. Pull the formlining of the first inner element onto the edge lattice girder of the second element. (Fig. C1.01a)
10. Position additional elements in the same way.

– Chamfer the formlining edges on the penultimate and last elements in order to facilitate closing.
– Position the element with the Articulated Spindle Waler GSRV (2) as the last element.

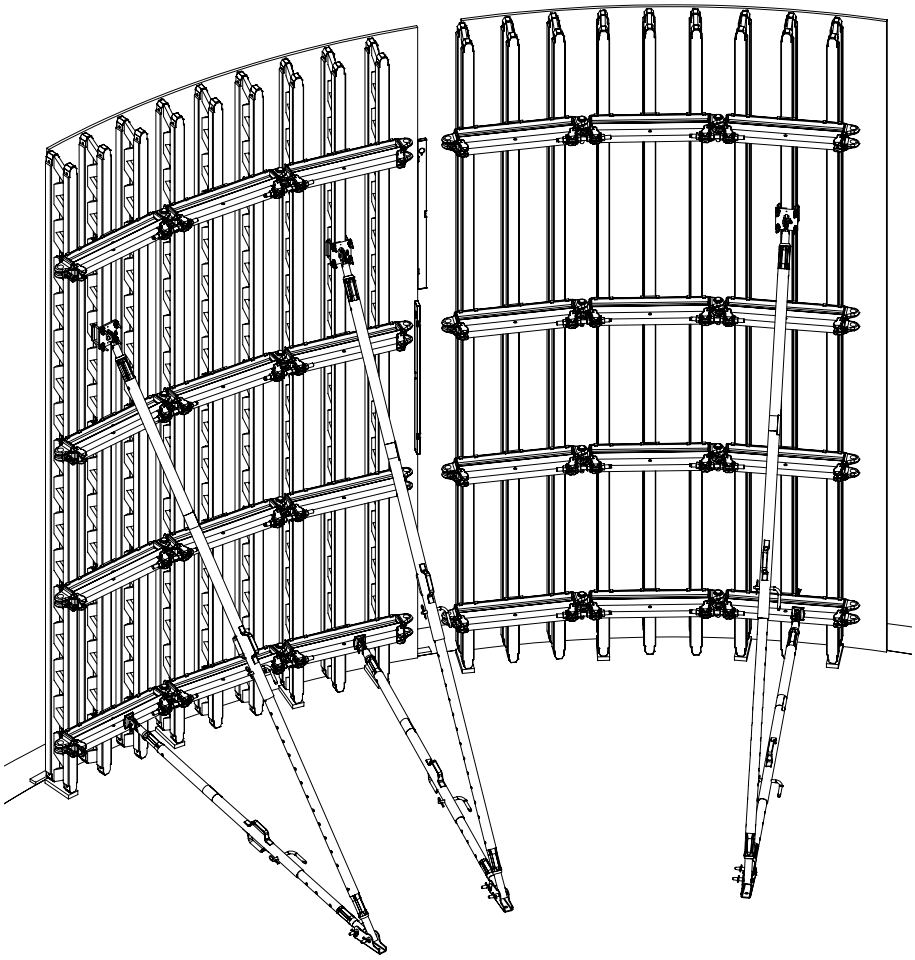


Fig. C1.01

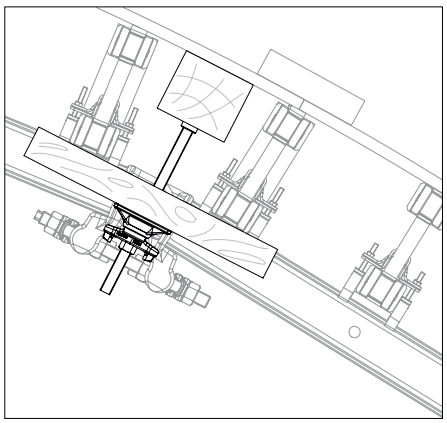


Fig. C1.01a

External formwork

Position elements on flat, sufficiently load-bearing surfaces only.

Positioning

1. Position the first outer element and push it against the formwork stops.
2. If no push-pull props and kickers can be used, secure the outer element in the lower area against movement using spindles or timbers.
3. Secure the upper edge of the formwork with Extension Splices 24 (31), Tie Rod DW 15 (10) and Wingnut Pivot Plates DW 15 (12) to prevent tipping.
4. Position the next outer element in the same way.
5. Hammer in Pin for GRB (3) and secure with Cotter Pin 5/1 (4).
6. Install Adjusting Bolts (5) and tighten securely (see Section A2).
7. Position additional elements in the same way.

(Fig. C1.02 + C1.02a)

– Check whether all Pins for GRB have been mounted and secured.
– Check whether all Adjusting Bolts have been mounted and the nuts tightly secured.

Position the element with the Articulated Spindle Waler GSRV (2) as the last element.

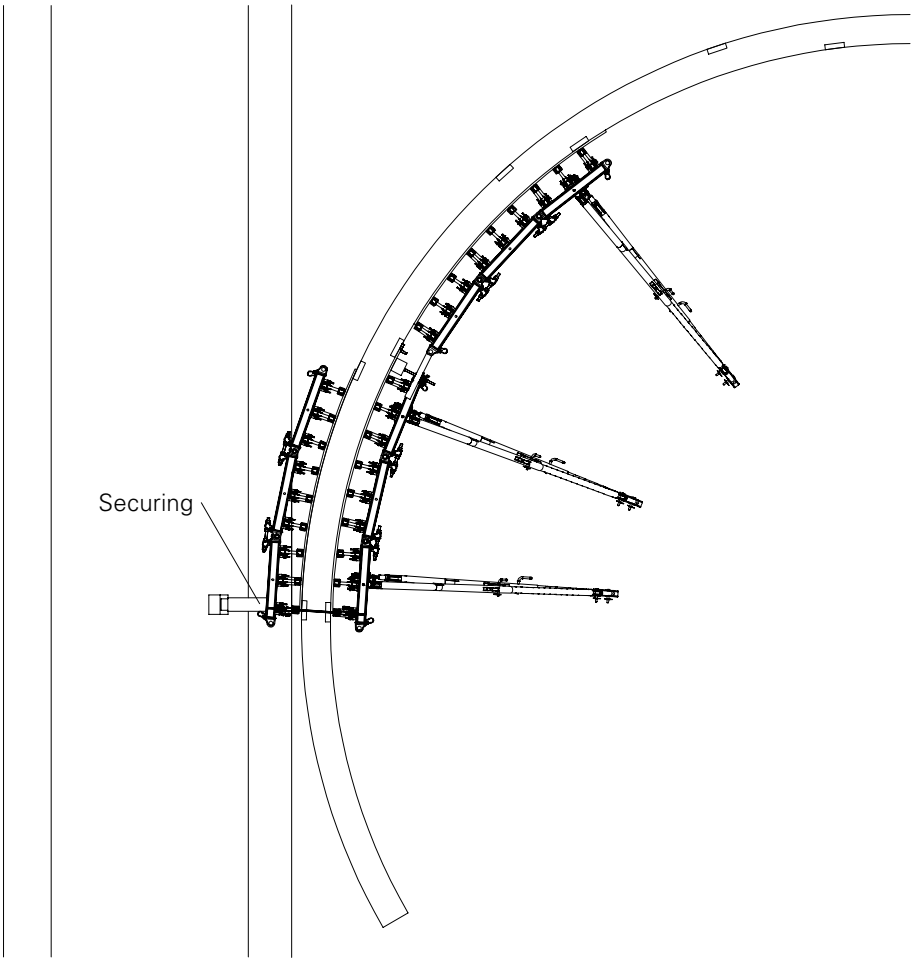


Fig. C1.02

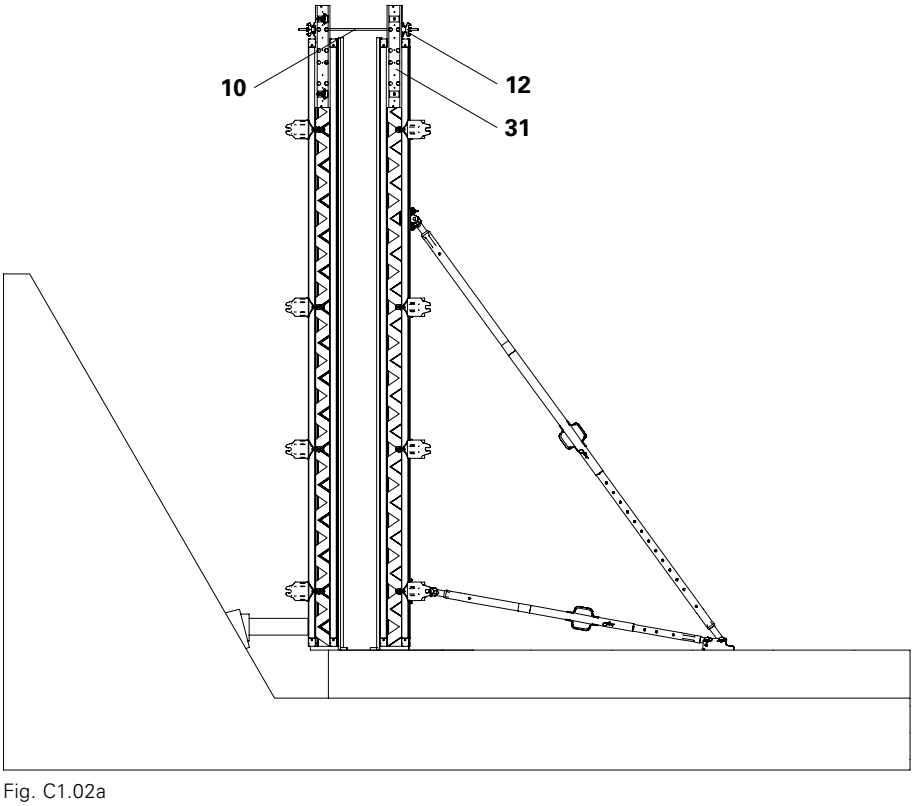


Fig. C1.02a

– **Stabilise the formwork by using four phased concreting operations.**
– **Maximum pouring height: 50 cm.**

Concreting operations

1. Pour concrete at four opposite points.
2. Circumferentially pour the concrete into the formwork.
3. Compact concrete.

(Fig. C2.01)

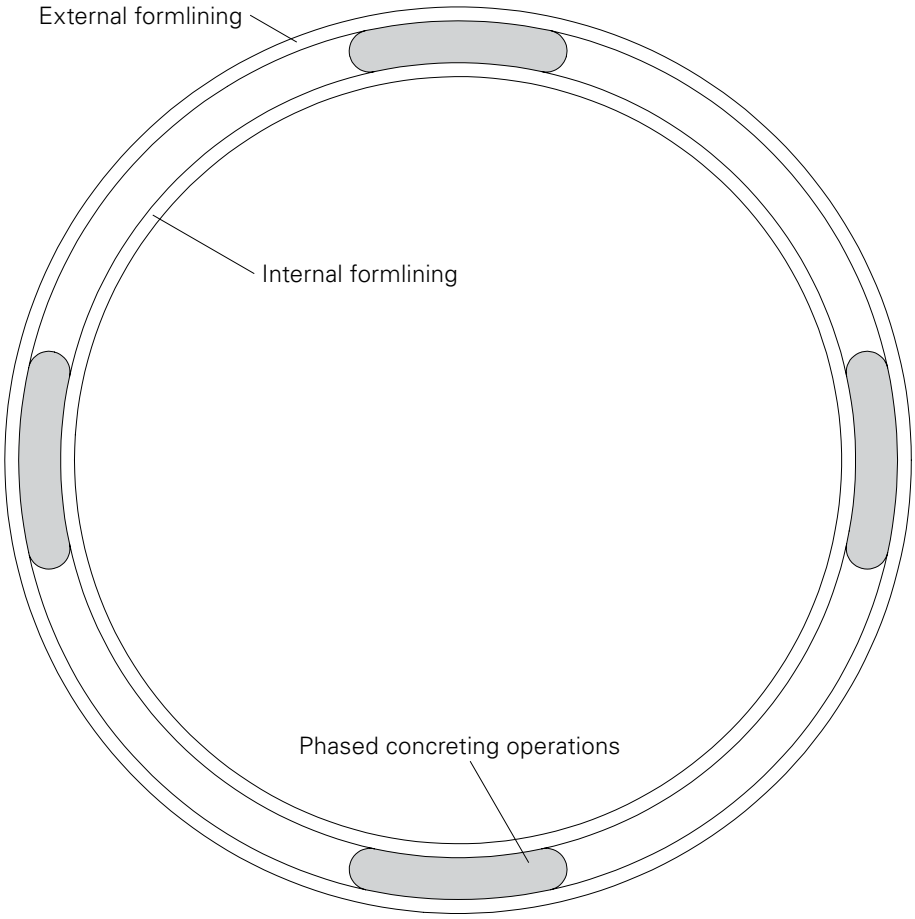


Fig. C2.01

- **Only remove the Pins for GRB when the element is attached to the crane lifting gear.**
- **Only remove the anchorage over the element when the element is attached to the crane lifting gear.**
- **Remaining elements must be adequately secured against tipping by means of push-pull props.**

- Remove Pins for GRB firstly from an element with the Articulated Spindle Waler GSRV.
- Work from bottom to top.
- When striking, begin with the external formwork.

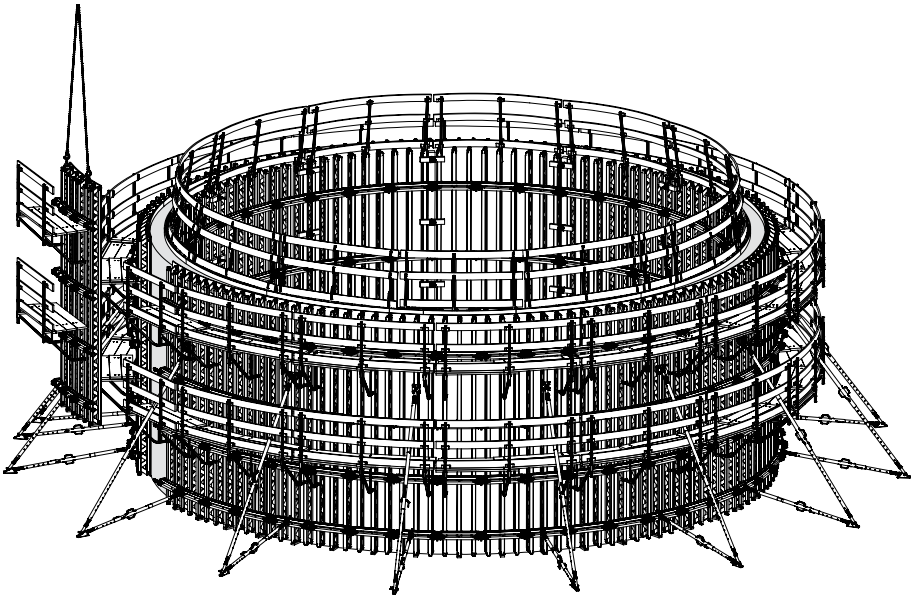


Fig. C3.01

Striking procedure

1. Attach crane lifting gear.
2. Remove Adjusting Bolts STS, Nuts ISO 4032 M24-8 and Half Round Washers HRS from the element.
3. Remove Pins for GRB from the outer Articulated Walers GRV.
4. Lift element with the crane. (Fig. C3.01)
5. Safely set down the element or place it on a level surface for dismantling.

Press adjacent elements with Nuts ISO 4032 M24-8 of the Adjusting Bolts away from the concrete. This facilitates easier striking.

D1 Dismantling

Dismantling procedure

1. Attach element to the crane lifting gear.
2. Position the element on the assembly area or timbers. (Fig. D1.01)

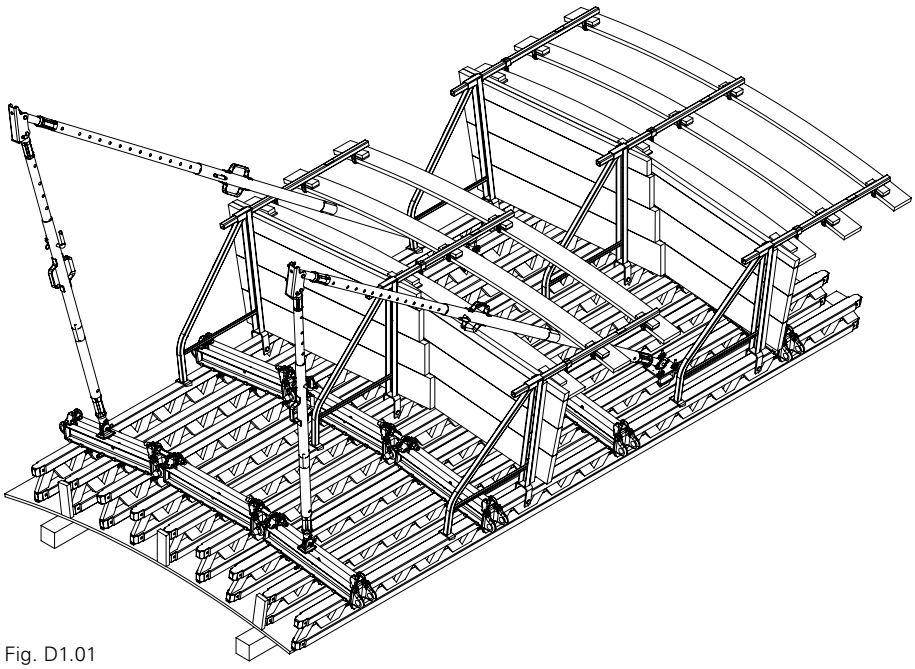


Fig. D1.01

3. Dismantle push-pull props, ladders, working and concreting scaffold. (Fig. D1.02)

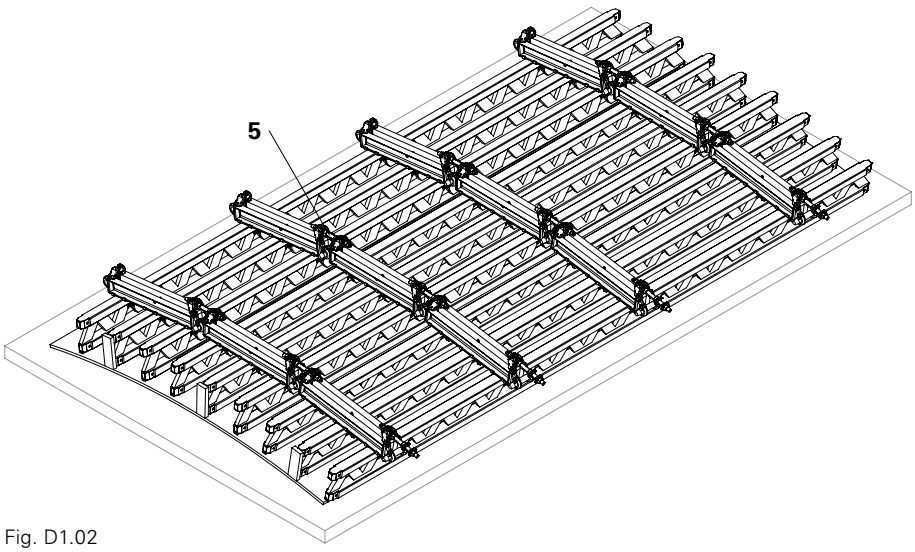


Fig. D1.02

4. Dismantle Adjusting Bolts STS (5).
   → Formlining is now loosened.
(Fig. D1.03)

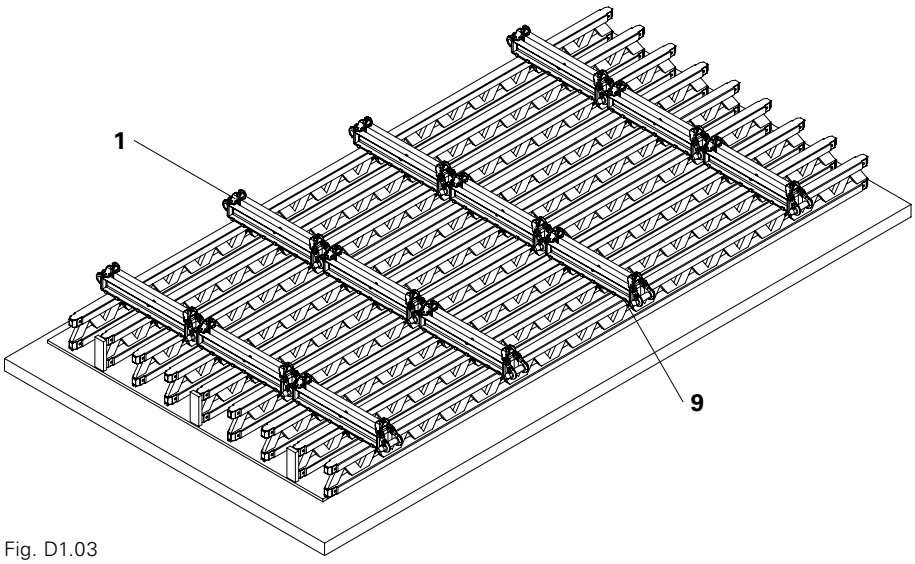


Fig. D1.03

5. Dismantle Hook Straps HB 24-100/120 (9). (Fig. D1.04)
6. Dismantle Articulated Walers GRV (1).
7. Dismantle formlining and Lattice Girders GT 24 (8).

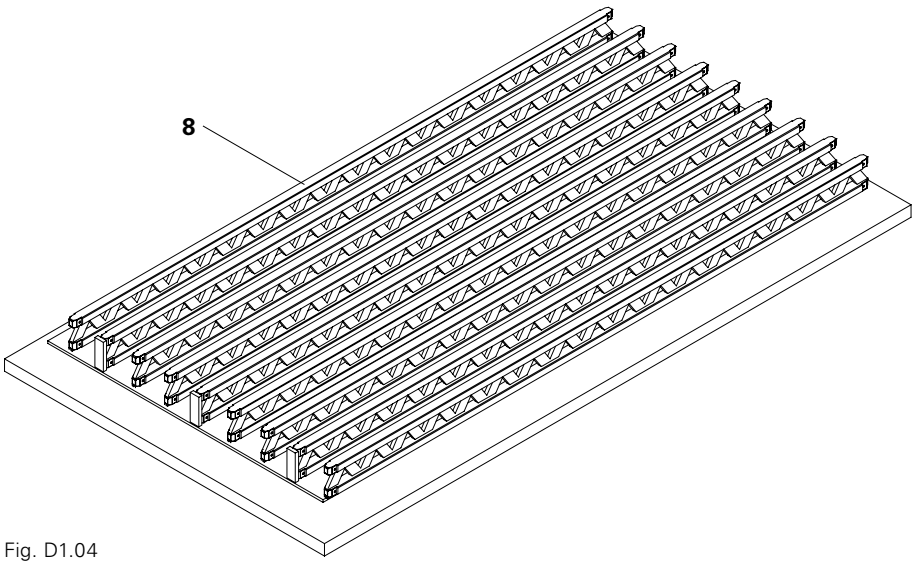


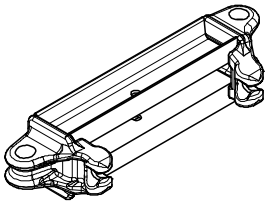
Fig. D1.04

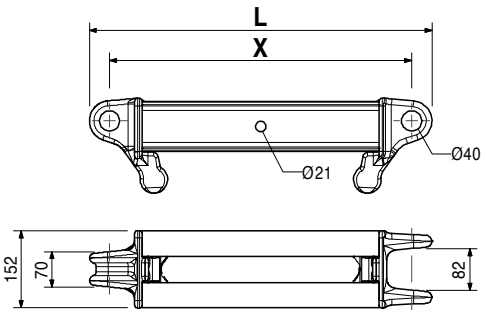
Item no.	Weight kg	
		Articulated Walers GRV
021140	17.600	**Articulated Waler GRV 30**
021130	23.900	**Articulated Waler GRV 60**
021120	27.100	**Articulated Waler GRV 75**
021110	30.200	**Articulated Waler GRV 90**

For tie-less forming of circular structures with closed formwork ring. Continuously adjustable to suit all radii.

L	X
380	300
680	600
830	750
980	900

Technical Data
Permissible compressive and tension force 300 kN.

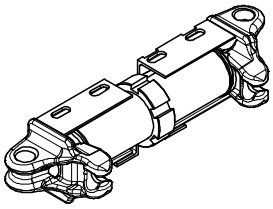


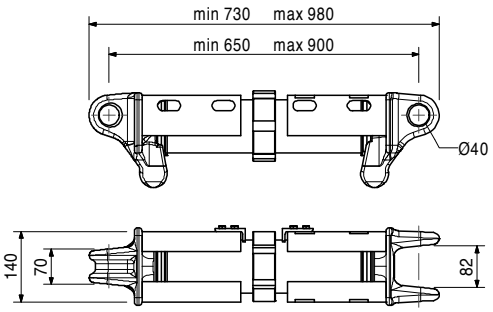


021150	49.200	**Articulated Spindle Waler GSRV 65 – 90**

For forming circular structures without ties by means of a completely closed circular formwork construction. For compensations, adjustable from 65 to 90 cm.

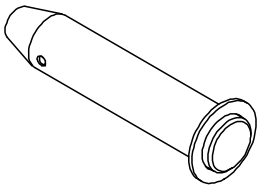
Technical Data
Permissible compressive and tension force 300 kN.

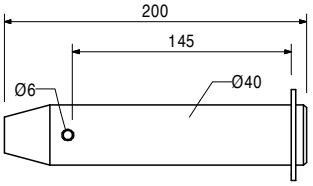




022210	1.900	**Pin for GRB, galv.**

For connecting the Articulated Waler GRV and Articulated Adjustable Waler GSRV 65 – 90.

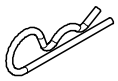




Accessories

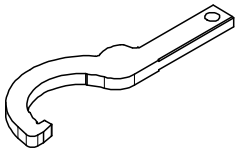
022230	0.033	**Cotter Pin 5/1, galv.**

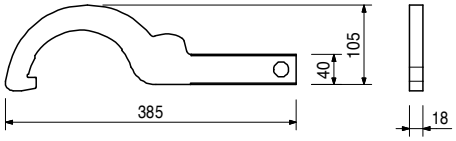
Item no.	Weight kg	
022230	0.033	**Cotter Pin 5/1, galv.**





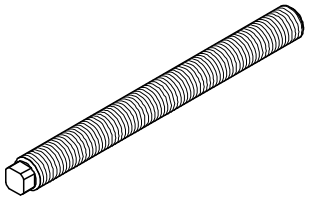
021160	2.450	**Hook Spanner HKS for GRV** For adjusting the Articulated Adjustable Waler GSRV 65 – 90.

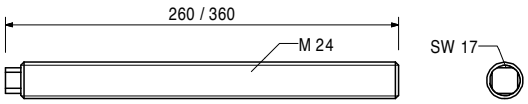




		Adjusting Bolts STS, galv.
021240	0.907	**Adjusting Bolt STS 260, galv.**
021250	1.260	**Adjusting Bolt STS 360, galv.**

For adjusting Articulated Waler GRV and Articulated Adjustable Waler GSRV 65 – 90.



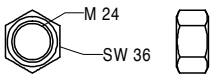


Accessories

022250	0.100	**Nut ISO 4032 M24-8, galv.**
021260	0.178	**Half Round Washer HRS, galv.**

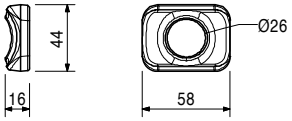
022250	0.100	**Nut ISO 4032 M24-8, galv.**



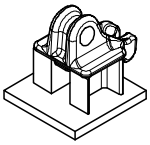


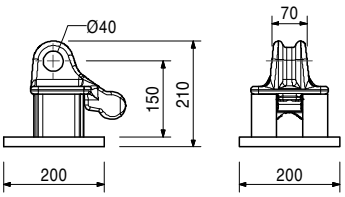
021260	0.178	**Half Round Washer HRS, galv.**



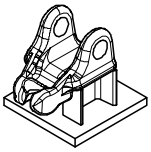


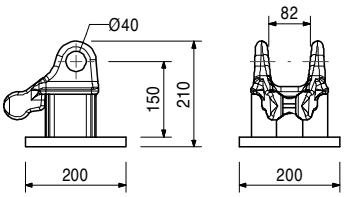
Item no.	Weight kg	
021270	15.000	**GRV Bearing Block, left** For using the Articulated Waler GRV for special applications.



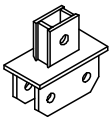


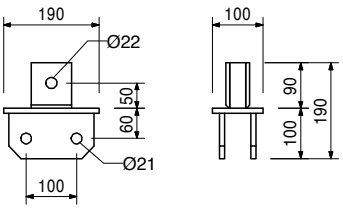
021280	15.100	**GRV Bearing Block, right** For using the Articulated Waler GRV for special applications.





021290	4.880	**GRV Spindle Connector** For using the Articulated Waler GRV for special applications.

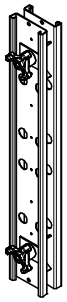


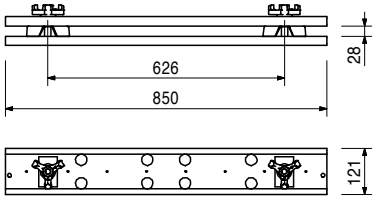


Item no.	Weight kg
024480	7.040

Extension Splice 24-2
For extending GT 24 girders and VARIO GT 24 panels up to max. height of 8.00 m.

Complete with
2 pc. 030190 Three Wingnut DW 15, galv.
Note
Permissible load: see PERI Design Tables.

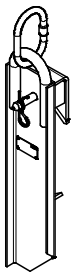


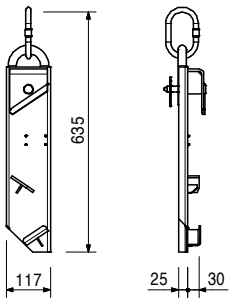


070760	4.650

Crane Splice GT 24
For transporting elements by crane with the GT 24 girder.

Complete with
1 pc. 018050 Pin Ø 16 x 65/86, galv.
1 pc. 018060 Cotter Pin 4/1, galv.
Note
Follow Instructions for Use!
Technical Data
Permissible load-bearing capacity 700 kg with crane sling angle ≤ 15°.

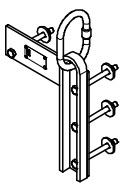


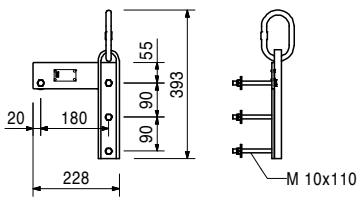


021990	2.780
021980	2.780

Crane Eyes 24
Crane Eye 24, right
Crane Eye 24, left
For transporting elements by crane with the GT 24 girder. Mounted securely to the element.

Complete with
4 pc. 710138 Bolt ISO 4014 M10 x 110-8.8, galv.
4 pc. 780356 Nut ISO 7042 M10-8, galv.
4 pc. 710139 Washer R11 DIN 440, galv.
Note
Illustration shows Crane Eye 24, left.
Follow Instructions for Use!
Technical Data
Permissible load-bearing capacity 700 kg with crane sling angle ≤ 15°.

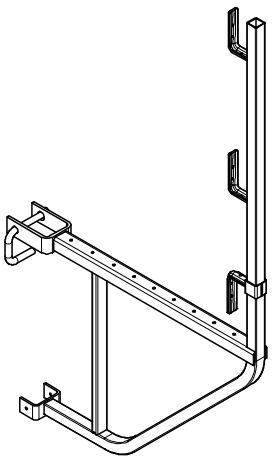


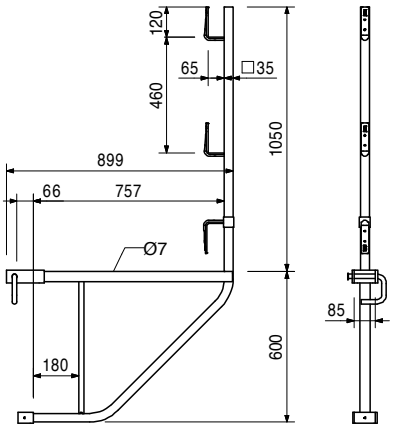


Item no.	Weight kg
027110	11.000

Scaffold Bracket GB 80
For assembly of a working and concreting scaffold with GT 24 girder.

Technical Data
Permissible load 150 kg/m². Maximum width of influence 1.25 m.



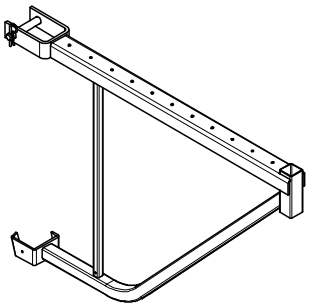


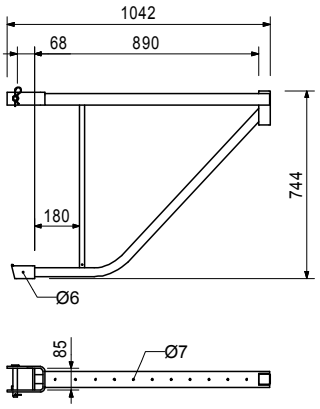
105823	9.310

Platform Bracket VARIO VBK 90
For assembly of a working and concreting scaffold on elements with GT 24 girders. With safety pins and cotter pins.

Complete with
1 pc. 106336 Bolt Ø 20 x 120, galv.
1 pc. 018060 Cotter Pin 4/1, galv.

Technical Data
Permissible load 150 kg/m² with a maximum width of influence 1.25 m.





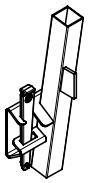
Accessories

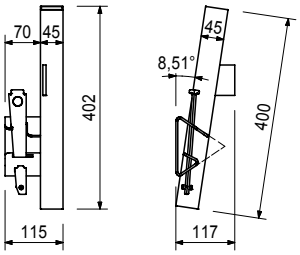
116292	4.720

Guardrail Post HSGP-2

Item no.	Weight kg	
112159	2.120	**Handrail Post Holder VARIO** For assembling a guardrail with GT 24 Girder.

Complete with
1 pc. 024250 Wedge K, galv.
1 pc. 780800 Sleeve ISO 8752 8 x 20, galv.
Technical Data
Maximum width of influence 2.00 m.



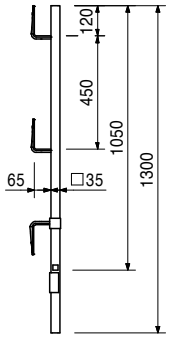


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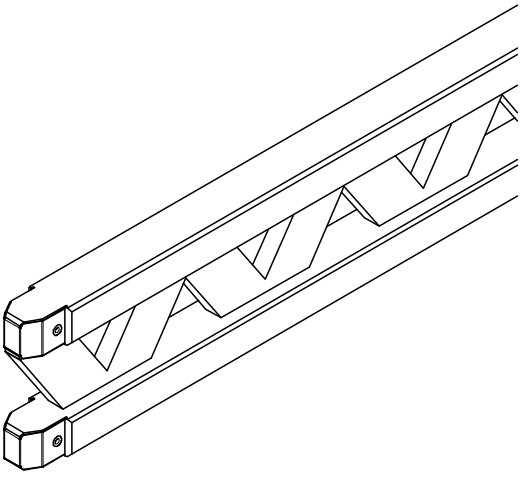
116292	4.720	**Guardrail Post HSGP-2**

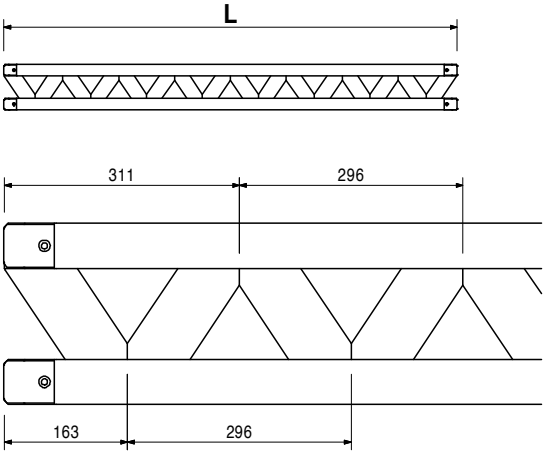
116292	4.720	**Guardrail Post HSGP-2** As guardrail for different systems.

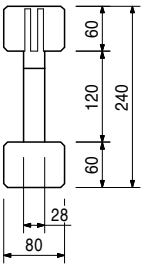




Item no.	Weight kg	Girders GT 24	L
075100	5.300	**Girder GT 24, l = 0.90 m**	918
075120	7.100	**Girder GT 24, l = 1.20 m**	1214
075150	8.900	**Girder GT 24, l = 1.50 m**	1510
075180	10.600	**Girder GT 24, l = 1.80 m**	1806
075210	12.400	**Girder GT 24, l = 2.10 m**	2102
075240	14.200	**Girder GT 24, l = 2.40 m**	2398
075270	15.900	**Girder GT 24, l = 2.70 m**	2694
075300	17.700	**Girder GT 24, l = 3.00 m**	2990
075330	19.500	**Girder GT 24, l = 3.30 m**	3286
075360	21.200	**Girder GT 24, l = 3.60 m**	3582
075390	23.000	**Girder GT 24, l = 3.90 m**	3878
075420	24.800	**Girder GT 24, l = 4.20 m**	4174
075450	26.600	**Girder GT 24, l = 4.50 m**	4470
075480	28.300	**Girder GT 24, l = 4.80 m**	4766
075510	30.100	**Girder GT 24, l = 5.10 m**	5062
075540	31.900	**Girder GT 24, l = 5.40 m**	5358
075570	33.600	**Girder GT 24, l = 5.70 m**	5654
075600	35.400	**Girder GT 24, l = 6.00 m**	5950

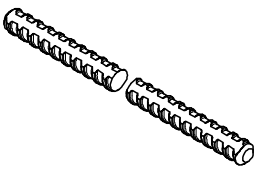






		Tie Rods DW 15
030030	1.440	**Tie Rod DW 15, spec. length**
030050	0.000	**Cutting Cost Tie Rod DW 15, B 15**

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

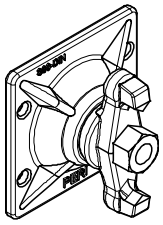


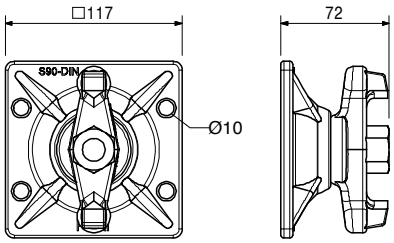


Item no.	Weight kg
030370	1.660

Wingnut Pivot Plate DW 15, galv.
For anchoring with Tie Rod DW 15 and B 15. With pivoting captive nut. Maximum angle of tilting 8°.

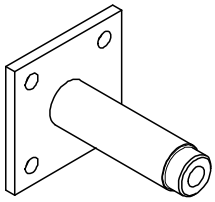
Note
Wrench size SW 27.
Technical Data
Permissible load 90 kN.

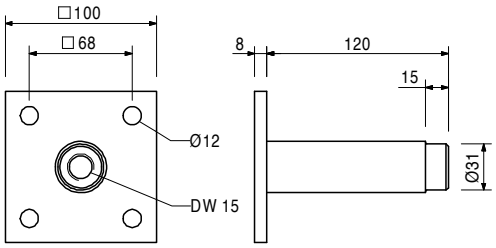




026280	1.220

Anchor Sleeve DW 15

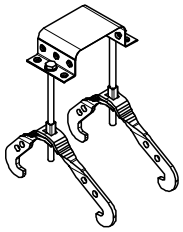


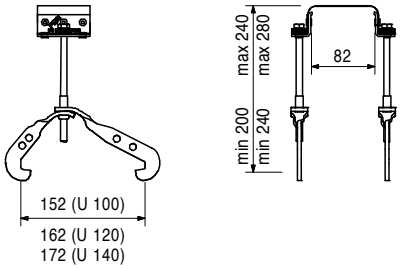


104931	0.865
103845	0.893

Hook Straps Uni HBU
Hook Strap Uni HBU 20-24
Hook Strap Uni HBU 24-28
For fixing GT 24 Girders or VT 20 Girders to Steel Walers SRZ and SRU Profiles U100 – U140.

Note
The girders can be mounted at right-angles or diagonally to the steel walers and also outside of the nodes.



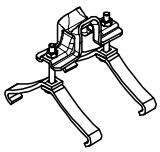


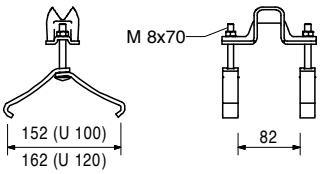
Accessories

024540	0.005

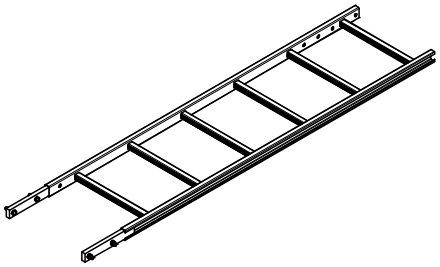
TSS-Torx 6 x 40, galv.

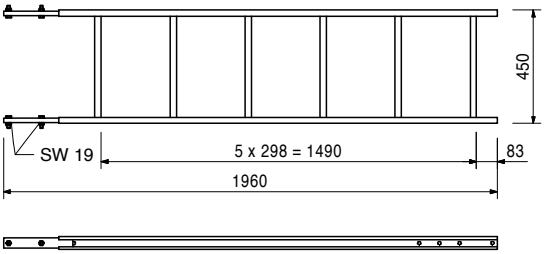
Item no.	Weight kg	
024070	0.691	**Hook Strap HB 24-100/120, galv.** For fixing GT 24 Girders to Steel Walers SRZ, SRU and BR: U100 – U120.



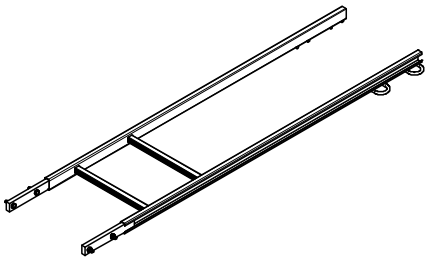


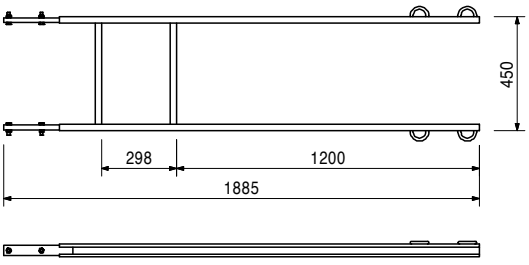
051410	11.700	**Ladder 180/6, galv.** As access for PERI Formwork Systems. **Complete with** 4 pc. 710224 Bolt ISO 4017 M12 x 40-8.8, galv. 4 pc. 710381 Nut ISO 7042 M12-8, galv.



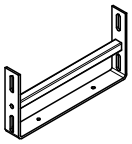


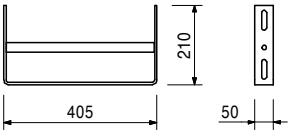
103724	10.400	**End Ladder 180/2, galv.** As access for PERI Formwork Systems. **Complete with** 4 pc. 710224 Bolt ISO 4017 M12 x 40-8.8, galv. 4 pc. 710381 Nut ISO 7042 M12-8, galv.



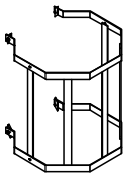


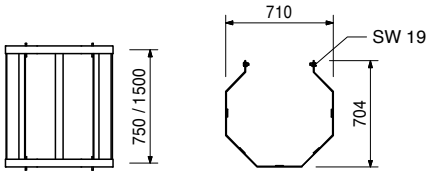
051460	2.180	**Ladder Base, galv.** As bottom ladder connection and for securing ladders against sliding on the scaffold decks.





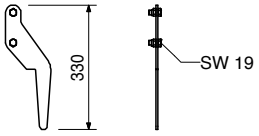
Item no.	Weight kg		
104132	15.600	**Lader Safety Cages, galv.** **Ladder Safety Cage 75, galv.**	**Complete with** 4 pc. 710266 Bolt ISO 4017 M12 x 25-8.8, galv. 4 pc. 701763 Clamping Plate Fl 25 x 10 x 90
051450	25.200	**Ladder Safety Cage 150, galv.** Ladder safety cage for PERI Access Ladders.	



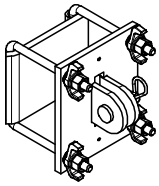


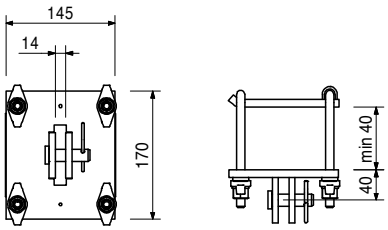
103718	0.684	**Ladder Hook, galv.** For adjusting the bottom ladder. Always use in pairs.	**Complete with** 2 pc. 710266 Bolt ISO 4017 M12 x 25-8.8, galv. 2 pc. 710381 Nut ISO 7042 M12-8, galv.



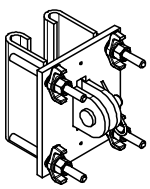


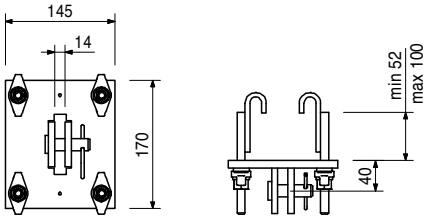
028050	4.550	**Girder Headpiece GT 24, galv.** For connecting push-pull props and kicker braces to GT 24 Girders	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.



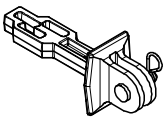


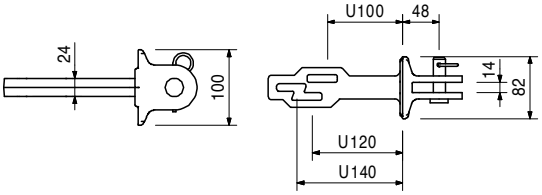
028070	4.680	**Girder Headpiece GT 24/A, galv.** For connecting push-pull props and kicker braces to extended GT 24 Girders in the area of the Extension Splice 24-2.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.





Item no.	Weight kg		
028060	1.940	**Wedge Headpiece SRZ/SRU** For connecting push-pull props and kicker braces to Steel Waler SRZ and SRU Profile U100 – U140.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.

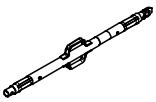


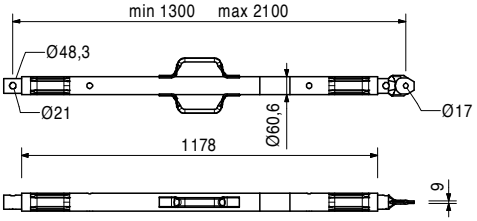


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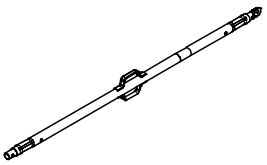
024250	0.331	**Wedge K, galv.**

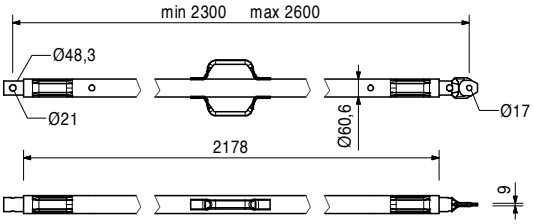
117466	10.600	**Push-Pull Prop RS 210, galv.** Extension length l = 1.30 – 2.10 m. For aligning PERI formwork systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.



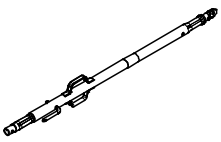


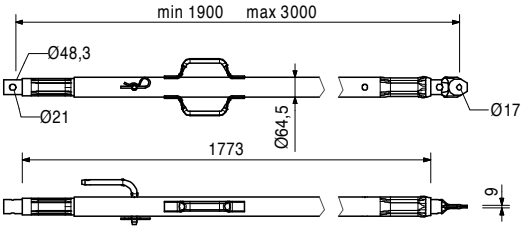
118238	12.100	**Push-Pull Prop RS 260, galv.** Extension length l = 2.30 – 2.60 m. For aligning PERI formwork systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.





117467	15.500	**Push-Pull Prop RS 300, galv.** Extension length l = 1.90 – 3.00 m. For aligning PERI formwork systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.

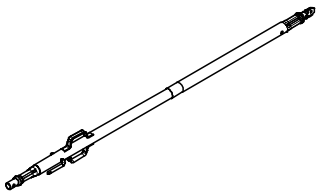


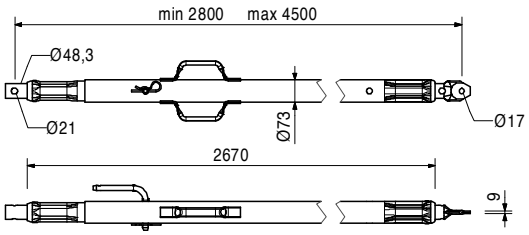


Item no.	Weight kg
117468	23.000

Push-Pull Prop RS 450, galv.
Extension length l = 2.80 – 4.50 m.
For aligning PERI formwork systems and precast concrete elements.

Note
Permissible load see PERI Design Tables.

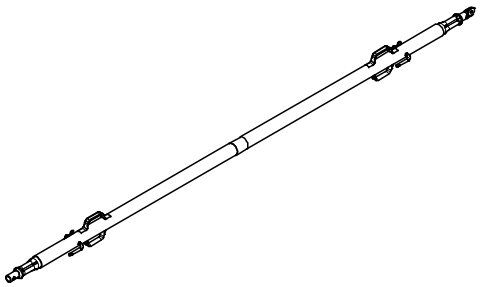


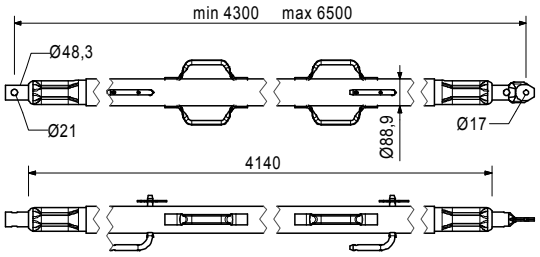


117469	39.900

Push-Pull Prop RS 650, galv.
Extension length l = 4.30 – 6.50 m.
For aligning PERI formwork systems and precast concrete elements.

Note
Permissible load see PERI Design Tables.

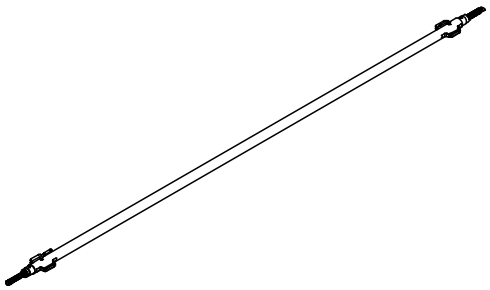


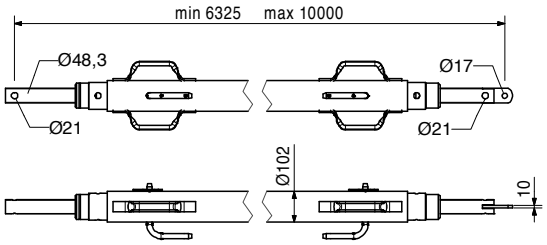


028990	115.000

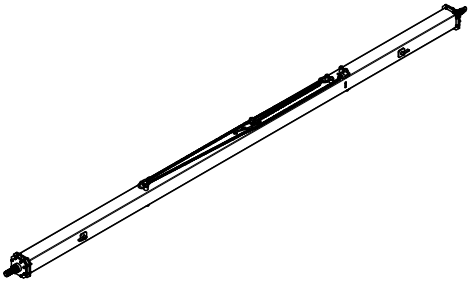
Push-Pull Prop RS 1000, galv.
Extension length l = 6.40 – 10.00 m.
For aligning PERI formwork systems.

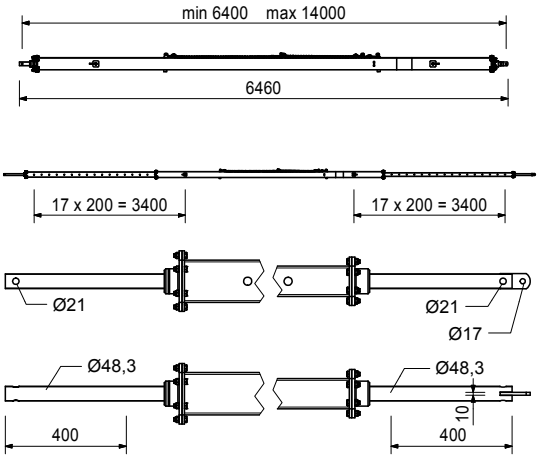
Note
Permissible load see PERI Design Tables.



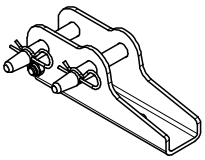


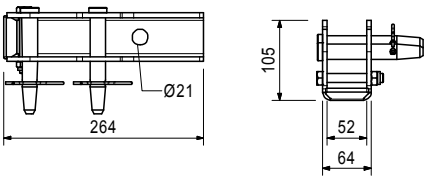
Item no.	Weight kg		
103800	271.000	**Push-Pull Prop RS 1400, galv.** Extension length l = 6.40 – 14.00 m. For aligning PERI formwork systems.	**Note** Permissible load see PERI Design Tables. Chain can be operated from bottom.





126666	3.070	**Base Plate-3 for RS 210 - 1400** For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000 and 1400.	**Complete with** 2 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv. 1 pc. 113063 Bolt ISO 4014 M12 x 80-8.8, galv. 1 pc. 113064 Hex Nut ISO7042-M12-8-G, galv.

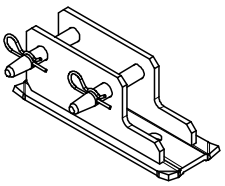


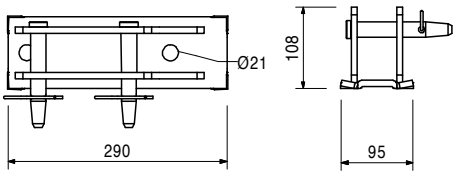


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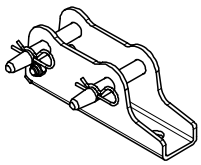
124777	0.210	**Anchor Bolt PERI 14/20 x 130**

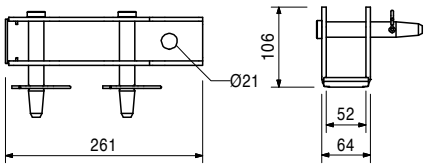
102018	4.880	**Base Plate-2 for RS 1000/1400, galv.** For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000, 1400 and Heavy Duty Spindles.	**Complete with** 2 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv.





Item no.	Weight kg		
117343	3.250	**Base Plate-2 for RS 210 - 1400, galv.** For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000 and 1400.	**Complete with** 2 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv.

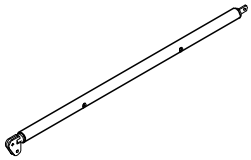


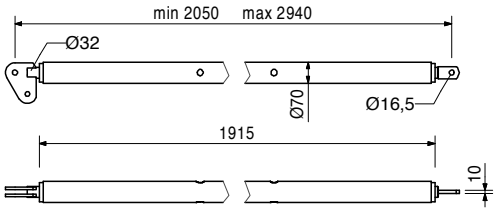


Accessories

124777	0.210	**Anchor Bolt PERI 14/20 x 130**

028010	17.900	**Push-Pull Prop RSS I** Extension length l = 2.05 – 2.94 m. For aligning PERI formwork systems.	**Note** Permissible load see PERI Design Tables.

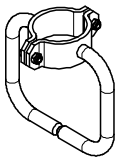


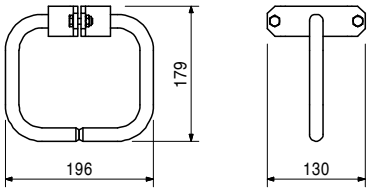


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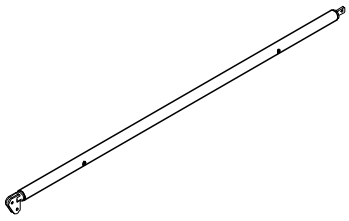
113397	1.600	**Spindle Handle RSS / AV**

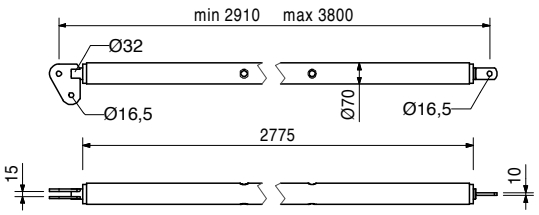
113397	1.600	**Spindle Handle RSS / AV** Spindle handle for screwing on Push-Pull-Props RSS I, RSS II and Kickers AV 210 and AV RSS III.	**Complete with** 2 pc. 722342 Screw ISO 4017 M8 x 25-8.8, galv. 2 pc. 711071 Nut ISO 7042 M8-8, galv.





028020	22.000	**Push-Pull Prop RSS II** Extension length l = 2.91 – 3.80 m. For aligning PERI formwork systems.	**Note** Permissible load see PERI Design Tables.

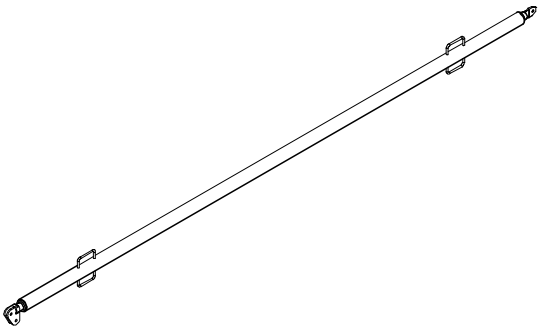


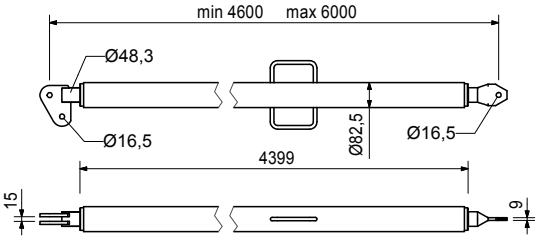


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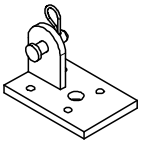
113397	1.600	**Spindle Handle RSS / AV**

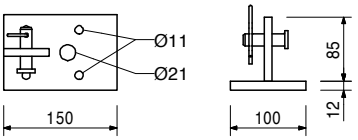
Item no.	Weight kg		
028030	38.400	**Push-Pull Prop RSS III** Extension length l = 4.60 – 6.00 m. For aligning PERI formwork systems.	**Note** Permissible load see PERI Design Tables.





106000	1.820	**Base Plate-2 for RSS, galv.** For assembly of Push-Pull Props RSS.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.





Accessories

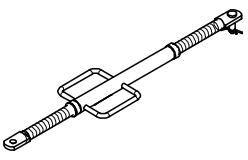
124777	0.210	**Anchor Bolt PERI 14/20 x 130**

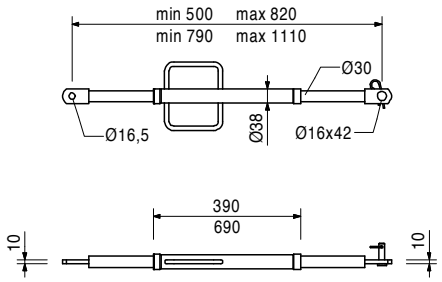
		Kickers AV	**min. L**	**max. L**
057087	3.720	**Kicker AV 82**	500	820
057088	4.410	**Kicker AV 111**	790	1110

For aligning PERI formwork systems.

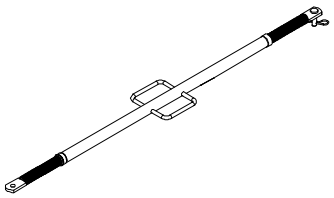
Complete with
1 pc. 027170 Pin Ø 16 x 42, galv.
1 pc. 018060 Cotter Pin 4/1, galv.

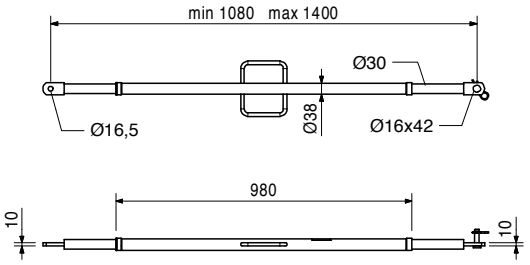
Note
Permissible load see PERI Design Tables.



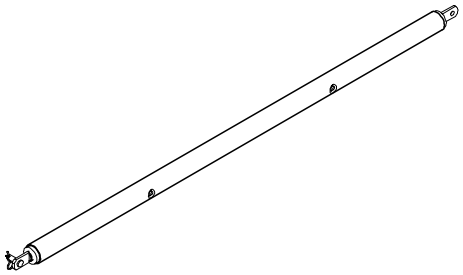


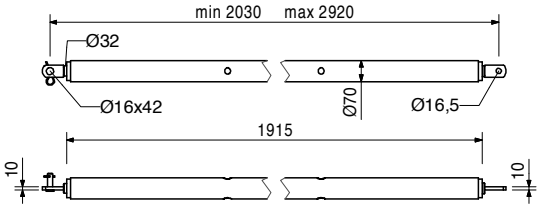
Item no.	Weight kg		
028110	5.180	**Kicker AV 140** Extension length l = 1.08 – 1.40 m. For aligning PERI formwork systems.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv. **Note** Permissible load see PERI Design Tables.





028120	17.000	**Kicker AV RSS III** Extension length l = 2.03 – 2.92 m. For aligning PERI formwork systems.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv. **Note** Permissible load see PERI Design Tables.

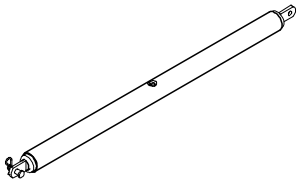


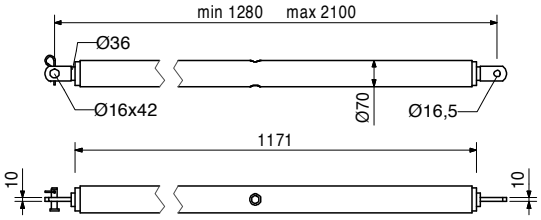


Accessories

113397	1.600	**Spindle Handle RSS / AV**

108135	12.900	**Kicker AV 210** Extension length l = 1.28 – 2.10 m. For aligning PERI formwork systems.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv. **Note** Permissible load see PERI Design Tables.

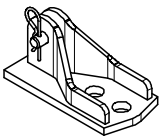


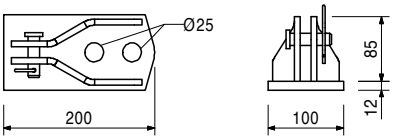


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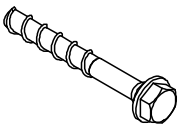
113397	1.600	**Spindle Handle RSS / AV**

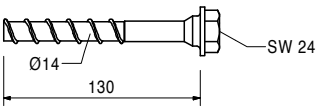
Item no.	Weight kg		
028080	2.970	**Connector Kicker/Push-Pull Prop, galv.** For connecting push-pull props and kicker braces to Main Beam HDT.	**Complete with** 1 pc. 018060 Cotter Pin 4/1, galv. 1 pc. 027170 Pin Ø 16 x 42, galv.





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





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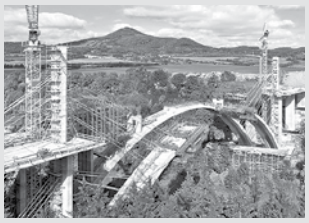
Column Formwork



Slab Formwork



Climbing Systems



Bridge Formwork



Tunnel Formwork



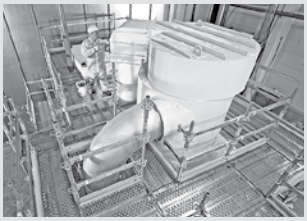
Shoring Systems



Construction Scaffold



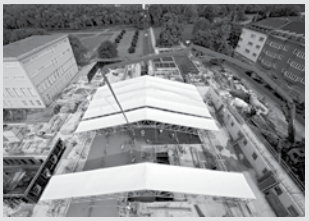
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Access



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