

LIWA

The simple lightweight steel panel formwork with the cleverly-devised corner panel

Product Brochure









Content

LIWA system advantages

- 2 The simple lightweight steel panel formwork with the cleverly devised corner panel
- 4 Very few different components
- 6 Simple design
- 7 Can also be used without a crane
- 8 Ingenious system for corners, wall connections and T-junctions

System overview

10 LIWA at a glance

Standard applications and execution details

- 2 Panel connections, formwork alignment
- 14 Stopend formwork, transport aids, working and concreting scaffolds

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Components

16 LIWA components

Important notes

All current laws, guidelines and safety regulations must be observed in those countries where our products are used.

The photos shown in this brochure feature construction sites in progress. For this reason, safety and anchor details in particular cannot always be considered as conclusive or final. These are subject to the risk assessment carried out by the contractor.

In addition, computer graphics are used which are to be understood as system representations. For ensuring a better understanding, these and the detailed illustrations shown have been partially

reduced to show certain aspects. The safety installations which have possibly not been shown in these detailed descriptions must nevertheless be available. The systems or items shown might not be available in every country.

Safety instructions and load specifications are to be strictly observed at all times. Separate structural calculations are required for any deviations from the standard design data.

The information contained herein is subject to technical changes in the interests of progress. Errors and typographical mistakes reserved.

LIWA

The simple lightweight steel panel formwork with the cleverly-devised corner panel

LIWA is the lightest PERI steel panel formwork and deliberately dispensed with more elaborate equipment features in favour of lower investment costs. LIWA has only a minimum of different panel elements. In addition, the perforated strip allows each panel to be used as a multi-purpose panel. This means that corners and columns can also be formed without requiring any special panels. LIWA is a market-oriented solution if, for example, users are working with system formwork for the first time.

LIWA's standard configuration is used for wall thicknesses from 15 cm to 40 cm. The system is designed for a fresh concrete pressure of 50 kN/m² according to DIN 18218 (evenness: line 6 in accordance with DIN 18202). The perforated strip with all standard panels increases the system's range of applications as, through this, the panels can also be used, among other things, for beams, foundations and columns. This simultaneously optimizes work preparation and storage of materials.

Through the construction with a flat steel frame, LIWA has a very small overall height of 10 cm. Among other things, this has a positive effect regarding transport volumes.

For panel connections, there are different system components available. The easy to handle Wedge Clamp is used for standard panel connections whilst the Wedge Clamp Compensation allows compensations up to 5 cm thick. For higher requirements, the LRS Alignment Coupler ensures flush and even connections.



Very few different components

Only 4 panel widths, and each standard panel is simultaneously a multi-purpose panel

Can also be used without a crane

Can be installed by hand – also the 75 Panel

Simple design

With powder-coated flat steel frames, a minimum of formwork guidelines and simple connecting means

Cleverly-devised system for corners, wall connections and T-junctions

Geometrical adjustments with very few components









Very few different components

Each standard panel is simultaneously a multi-purpose panel

All LIWA panels are fitted with an end-to-end perforated strip. As a result, each panel can also be used for columns as well as corner panels. Thus, the LIWA system contains a very small number of panelised components.

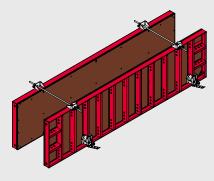
Fewer system components means not only less investment costs. Rather, a smaller number of individual components in day-to-day activities brings numerous advantages. Then, from work preparation and logistics through to handling on the construction site, workloads are reduced thus saving on costs.

With LIWA, each anchor strut has an end-to-end perforated strip with 5 cm spacings between the anchor holes. Each standard panel can therefore also be used for foundations, parapets, beams and columns. A Multi Panel with a 75 cm width complements the range of LIWA panelized elements.



LIWA panels can also be used horizontally for the construction of foundations. Instead of a bottom row of ties, the Foundation Tie Clamp and Perforated Foundation Tie are used. At the top, panels are held in position with the top tie bracket and tie rod. The Brace Connector-2 can be mounted on the horizontally-positioned panels.







An overview of the LIWA range of panels shows the reduced number of individual panels: with only four panel widths and one multi-purpose panel, LIWA provides the appropriate programme for standard heights up to 3.00 m. The standard configuration provides extensions up to 3.85 m using horizontal panels. The corner panel can be used very flexibly in straight wall sections, internal corners and T-junctions.

	Width [cm]					
	75	60	50	40	LWM 75	Corner 25
300						
Height [cm]				55111153		
150						
75						

Simple design

With powder-coated flat steel frames, a minimum of formwork guidelines and simple connecting means

LIWA deliberately dispenses with elaborate designs and equipment in favour of cost-effectiveness – however, not at the expense of application diversity or quality.

With a small range of different panels, fewer formwork guidelines and easy to mount couplers, LIWA is very simple to plan and use. Apart from the panels and corner panels, any additional components are kept to an absolute minimum. This simplifies work preparation as well as numerous other work procedures on the jobsite.

As a result, LIWA is suitable, among other things, for those users who are working with steel system formwork for the first time.





The details clearly show the uncomplicated design of the components: the narrow flat steel frame is connected using a simple Wedge Clamp.



The simply designed Brace Connector can be mounted to vertical LIWA panels. For aligning horizontally-positioned panels, e.g. with foundations, the Brace Connector-2 is used.

Can also be used without a crane

Can be installed by hand – also the 75 Panel

Due to the construction using a flat steel frame, the weight of the LIWA panels is substantially lower than with other standard panel formwork with welded hollow profiles. Therefore, LIWA can be erected by hand.

If there is no crane capacity on the jobsite or crane operation times have to be reduced, LIWA can also be installed manually. For lifting the formwork, the LIWA Lifting Pin is used which is simply attached to the connection holes on the panels.





The Lifting Pin can also be used to perfectly align the LIWA panels: it is simply mounted in the connection holes on the panels after which timbers are inserted.

Cleverly-devised system for corners, wall connections and T-junctions

Geometrical adjustments with very few components

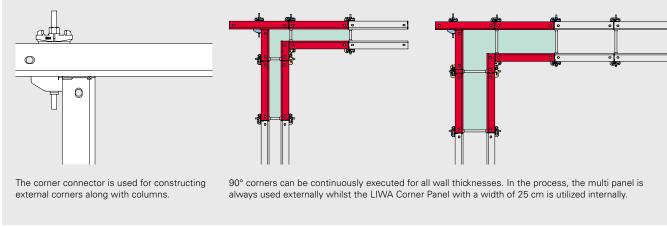
All required adjustments for right-angled and obtuse corners, T-junctions as well as obtuse wall connections can be realized with very few system components.

The ingenious corner panel with a width of 25 cm makes an important contribution for reducing the number of system components. The corner panel is used on internal formwork for 90° corners as well as T-junctions. Wall offsets can also be constructed with the corner panel without requiring any conventional solutions using timbers.

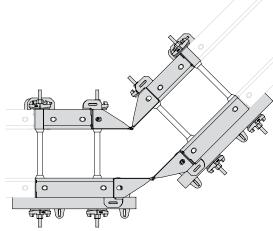
The Multi Panel is used as external formwork for realizing 90°corners and no special corner panels are required in this case.

With only a minimum of system components, all geometrical adjustment requirements such as right-angled and obtuse corners as well as Fjunctions can be realized with LIWA.

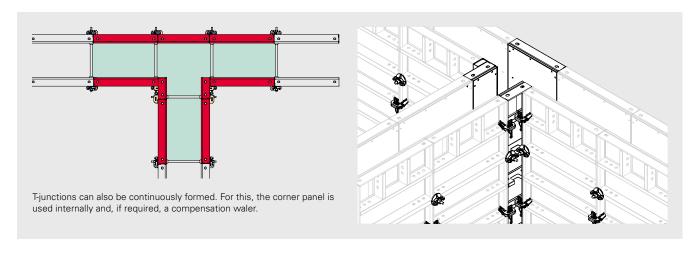








With the LIWA Articulated Corner, obtuse corners from 75° to 165° are formed; thereby compensation walers are to be mounted on the external corners.



LIWA at a glance

Standard applications and execution details





The special features of the light-weight LIWA Steel Panel Formwork are the very simple application and low weight. At the same time, the system provides solutions for all panel connections whilst requiring only a minimum of additional components, necessary geometrical adjustments as well as regarding the safety of the user. The following pages feature standard applications and execution details.

Standard applications and execution details

Panel connections, formwork alignment

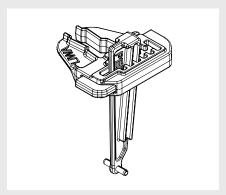
Panel connections with LIWA couplers

The lightweight and easy to handle LIWA Wedge Clamp is used on standard panel joints as well as for internal corners. For heights of 3.00 m, panels require only three wedge clamps whilst only 2 clamps are needed for panel heights of 2.50 m.



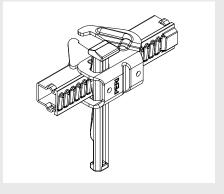


The Wedge Clamp Compensation LIWA is used for wall compensations up to 5 cm wide. Either timbers or the 5 cm wide Wall Thickness Compensation are used for the compensation area. In addition, the wedge clamp compensation can be used for standard panel joints.





For aligning LIWA panels, the LRS Alignment Coupler is used. It can be used for standard panel joints, extensions, and length compensations up to 5 cm. When the wedge is hammered in, the LIWA panels are flush and aligned as well as being pulled tightly together. Alternatively, the panels are perfectly aligned using the lifting pin and timbers, or with timbers and formwork girders.





Panel connections with compensation walers

For longitudinal compensations up to 25 cm as well as extensions, the Compensation Waler LWR 60 is used as a bracing, aligning and force-transmitting panel connection.

When using the articulated corner, the Compensation Waler LWR 60 takes on a bracing function on the adjoining LIWA panel.



The compensation waler for compensations up to 25 cm with timber infill and filler plate.

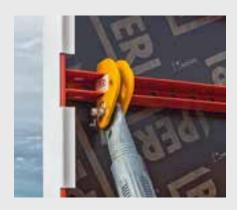


Extensions up to heights of 3.85 m are possible with horizontal LIWA panels. The compensation waler provides the required transfer of forces as well as bracing.

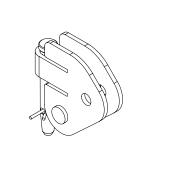
Aligning with push-pull props

In order to align the formwork and secure against wind loads, push-pull props with kickers are mounted. For fixing the push-pull props to vertical panels, a brace connector is available which is simply inserted into the anchor strut and secured with a bolts and cotter pins.

For use on horizontal panels with extensions as well as strip foundations, the Brace Connector-2 is available which can be attached to both the horizontal and vertical struts.



The simply designed LW Brace Connector for use on vertically-positioned panels can be attached to the anchor struts by means of bolts and cotter pins.



Standard applications and execution details

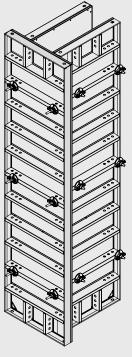
Stopend formwork, transport aids, working and concreting scaffolds

Stopend formwork

Stopend formwork can be continuously realized with timber, filler plates and the Walers LWR 80. Alternatively, the LIWA Multi Panel can be used.



The simple stopend formwork with timber and filler plates.



The LIWA Multi Panel can also be used for stopend formwork.

Transport aids

For lifting the LIWA panels without the use of a crane, an easy to use lifting pin is available. For moving the panels by crane, crane lifting gear with a load-bearing capacity of 300 kg is used.



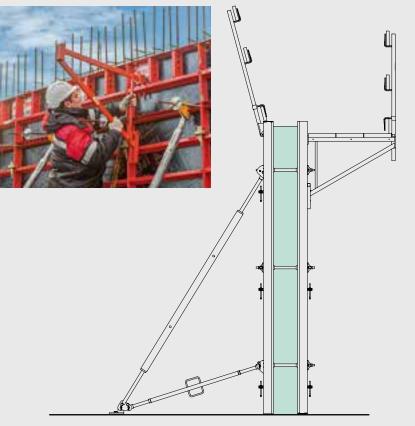


Working and concreting scaffolds

With scaffold brackets and Guardrail Posts HSGP-2, 80 cm wide working and concreting scaffolds can be mounted to the LIWA panels. In the process, the scaffold brackets can be attached to both the horizontal and vertical struts – can therefore also be used with extended panels.

For realizing the guardrails opposite, Guardrail Posts LIWA are used. These are slid over the profile and then secured by means of bolts and cotter pins.



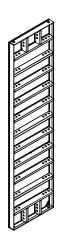


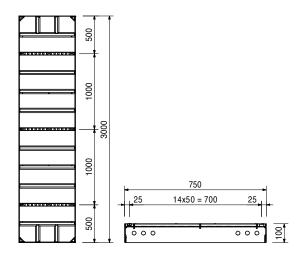


Item no. Weight kg 116878 77.900

Panel LW 300 x 75

Panel with 12 mm plywood.



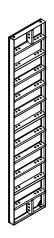


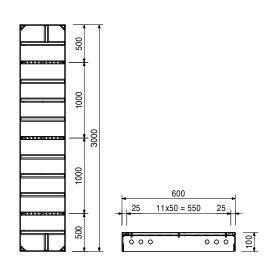
116906

66.400

Panel LW 300 x 60

Panel with 12 mm plywood.



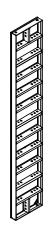


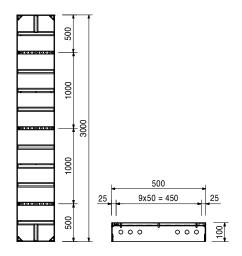
116916

59.400

Panel LW 300 x 50

Panel with 12 mm plywood.





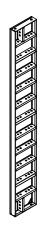


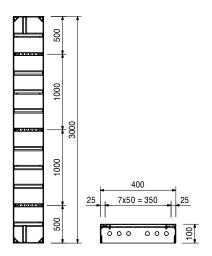
 Item no.
 Weight kg

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 52.500

Panel LW 300 x 40

Panel with 12 mm plywood.

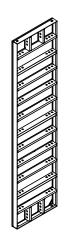


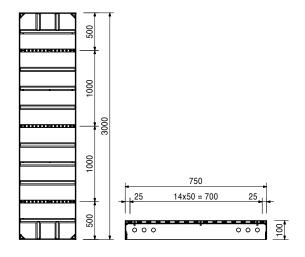


116984 77.900

Multi Panel LWM 300 x 75

Panel with 12 mm plywood. For oblique angels, wall connections etc.



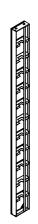


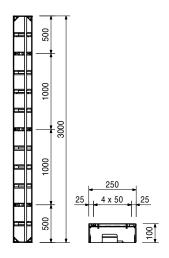
116930

45.200

Corner Panel LW 300 x 25

For 90° internal corners.







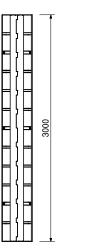
Item no. Weight kg

117209 34.700

Articulated Corner LIWA 300

Alu panel with aluminium formlining. For oblique angles from 75°, can be used internally and externally.





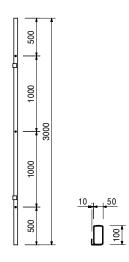


117364 13.900

Wall Thickness Comp. LW 300 x 5

For adjusting to wall thicknesses.



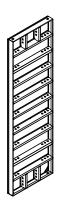


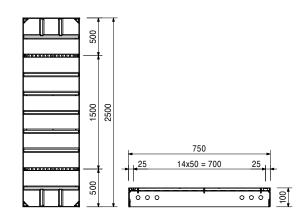
117717

65.400

Panel LW 250 x 75

Panel with 12 mm plywood.



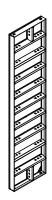


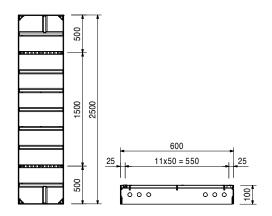


Item no. Weight kg
117721 55.500

Panel LW 250 x 60

Panel with 12 mm plywood.

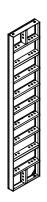


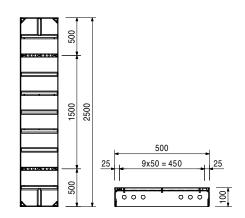


117725 49.700

Panel LW 250 x 50

Panel with 12 mm plywood.



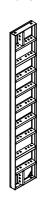


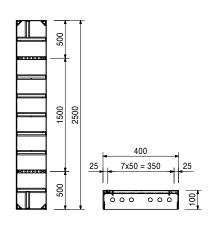
117730

43.900

Panel LW 250 x 40

Panel with 12 mm plywood.



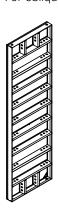


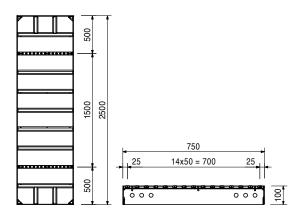


Item no. Weight kg 117738 65.200

Multi Panel LWM 250 x 75

Panel with 12 mm plywood. For oblique angles, wall connections etc.

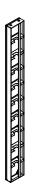


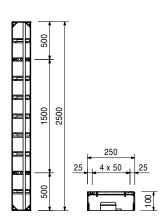


117736 37.800

Corner Panel LW 250 x 25

For 90° internal corners.





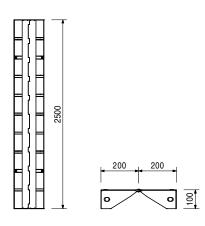
124006

29.100

Articulated Corner LIWA 250

Alu panel with aluminium formlining. For oblique angles from 75°, can be used internally and externally.





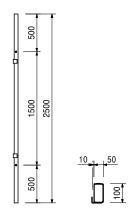


Item no. Weight kg
117746 11.600

Wall Thickness Comp. LW 250 x 5

For adjusting to wall thicknesses.

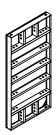


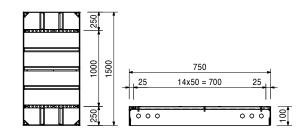


117013 42.900

Panel LW 150 x 75

Panel with 12 mm plywood.



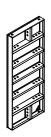


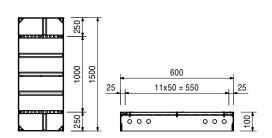
117024

36.000

Panel LW 150 x 60

Panel with 12 mm plywood.



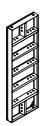


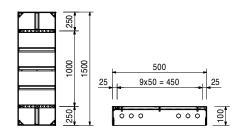


Item no. Weight kg 117107 32.100

Panel LW 150 x 50

Panel with 12 mm plywood.

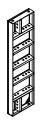


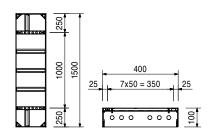


117111 28.300

Panel LW 150 x 40

Panel with 12 mm plywood.



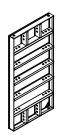


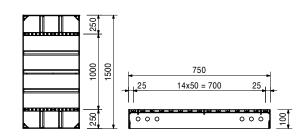
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42.900

Multi Panel LWM 150 x 75

Panel with 12 mm plywood. For oblique angles, wall connections etc.



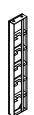


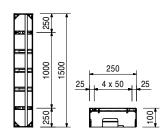
117510

23.600

Corner Panel LW 150 x 25

For 90° internal corners.





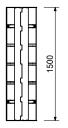


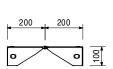
Item no. Weight kg
117275 17.500

Articulated Corner LIWA 150

Alu panel with aluminium formlining. For oblique angles from 75°, can be used internally and externally.





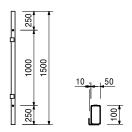


117367 7.140

Wall Thickness Comp. LW 150 x 5

For adjusting to wall thicknesses.





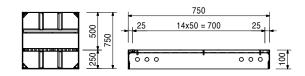
117125

24.800

Panel LW 75 x 75

Panel with 12 mm plywood.





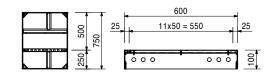
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20.300

Panel LW 75 x 60

Panel with 12 mm plywood.





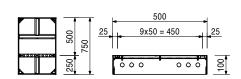
117140

18.100

Panel LW 75 x 50

Panel with 12 mm plywood.





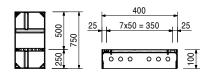


Item no. Weight kg 117144 15.900

Panel LW 75 x 40

Panel with 12 mm plywood.





117146

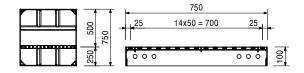
24.700

Multi Panel LWM 75 x 75

Panel with 12 mm plywood.

For oblique angles, wall connections etc.



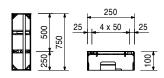


117541 12.600

Corner Panel LW 75 x 25

For 90° internal corners.





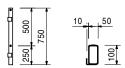
117370

3.760

Wall Thickness Comp. LW 75 x 5

For adjusting to wall thicknesses.





117573

1.120

Wedge Clamp LIWA

For standard panel connections.







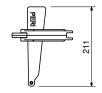
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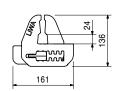
2.000

Wedge Clamp Compensation LIWA

For compensations up to 5 cm thickness.





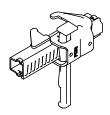


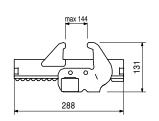


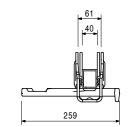
Item no. Weight kg 127460 3.920

LIWA Alignment Coupler LRS

For compensations up to 5 cm theckness.



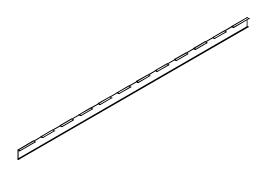




118612

1.160

Chamfer Strip LIWA I = 3.00 m





117320

4.880

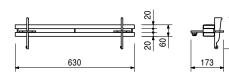
Compensation Waler LWR 60

For longitudinal compensation and stopends with LIWA. Maximum compensation width 25 cm.



Technical Data

Permissible bending moment 1.38 kNm.



118380

3.810

Waler LWR 80

For stopend formwork.



Technical Data

Permissible bending moment 1.38 kNm.

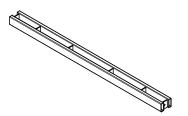




Item no. Weight kg 125473 18.400

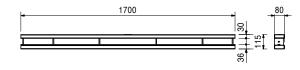
Waler 170

For bracing the formwork if you use the articulated corner $\leq 120^{\circ}$.



Technical Data

Permissible bending moment 3.9 kNm.



112080

1.130

Corner Connector-2, LIWA

For external corners and columns.







117169 1.520

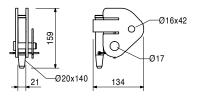
Brace Connector LIWA

For connecting push-pull props and kicker braces to LIWA Panels.



Complete with

1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv.

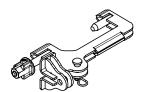


125329

3.050

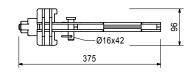
Brace Connector-2 LIWA

For connecting push-pull props and kicker braces to LIWA Panels. Mounted on vertical and horizontal struts.



Complete with

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







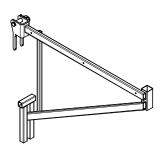
Item no. Weight kg 117354 6.470

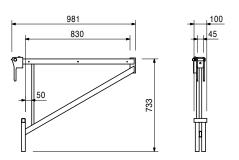
Scaffold Bracket LW 80

For assembly of a working and concreting scaffold with LIWA. Mounted on horizontal and vertical struts.

Technical Data

Permissible load 150 kg/m². Maximum width of influence 1.50 m.





Accessories

116292 4.720

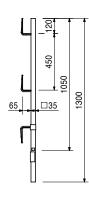
Guardrail Post HSGP-2

116292 4.720

Guardrail Post HSGP-2

As guardrail for different systems.



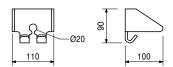


125448

Tie Bracket LIWA

For grid-independent anchoring outside of the panel, especially for foundations.





117231

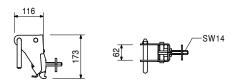
2.230

0.774

Foundation Tie Clamp LIWA

For anchoring foundation formwork in combination with the Perforated Foundation Tie.







Item no.	Weight kg
023020	0.676

Item no.	Weight kg
023020	0.676

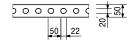
Perforated Foundation Tie, 25 m

For use with Foundation Tie Clamp TRIO, DOMINO, LIWA and HANDSET.



Technical Data

Permissible tension force 12.9 kN.



117747

5.230

Crane Hook LIWA

For transporting LIWA panels.

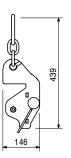


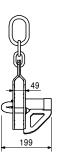
Follow Instructions for Use!

Technical Data

Permissible load-bearing capacity 300 kg.







115560

0.029

Stacking Aid LIWA







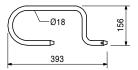
117931

1.460

Lifting Pin LIWA

For vertical transportation of the elements or aligning the formwork with timbers up to 8 cm.



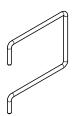


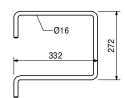
125229

1.630

Timber Holder LIWA

For aligning LIWA panels with timbers or girders VT 20, GT 24.





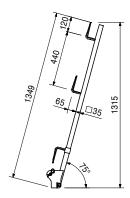


Item no. Weight kg 125100 5.160

Guardrail Post LIWA

For assembling a guardrail on LIWA panels.





117466 10.600

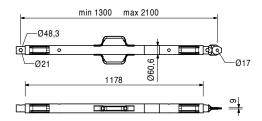
Push-Pull Prop RS 210, galv.

Extension length $I=1.30-2.10\ m.$ For aligning PERI formwork systems and precast concrete elements.



Note

Permissible load see PERI Design Tables.



118238 12.100

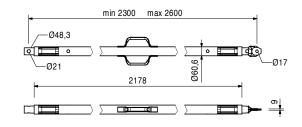
Push-Pull Prop RS 260, galv.

Extension length I = 2.30 - 2.60 m. For aligning PERI formwork systems and precast concrete elements.



Note

Permissible load see PERI Design Tables.





Item no. Weight kg 117467 15.500

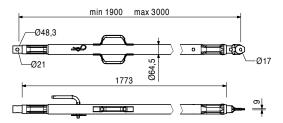
Push-Pull Prop RS 300, galv.

Extension length I = 1.90 - 3.00 m. For aligning PERI formwork systems and precast concrete elements.



Note

Permissible load see PERI Design Tables.



117468

23.000

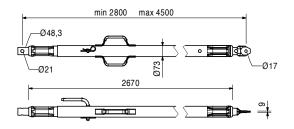
Push-Pull Prop RS 450, galv.

Extension length I = 2.80 - 4.50 m. For aligning PERI formwork systems and precast concrete elements.



Note

Permissible load see PERI Design Tables.



117469

39.900

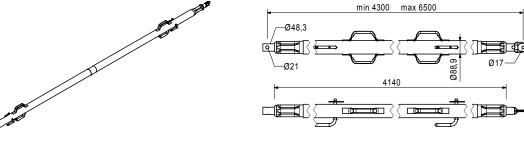
Push-Pull Prop RS 650, galv.

Extension length I = 4.30 - 6.50 m. For aligning PERI formwork systems and precast concrete elements.



Note

Permissible load see PERI Design Tables.

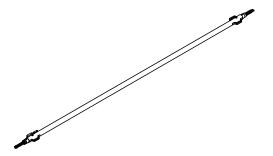


028990

115.000

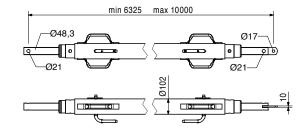
Push-Pull Prop RS 1000, galv.

Extension length I = 6.40 - 10.00 m. For aligning PERI formwork systems.



Note

Permissible load see PERI Design Tables.





Item no. Weight kg
103800 271.000

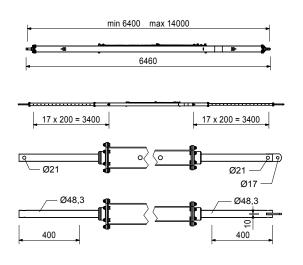
Push-Pull Prop RS 1400, galv.

Extension length I = 6.40 - 14.00 m. For aligning PERI formwork systems.

Note

Permissible load see PERI Design Tables. Chain can be operated from bottom.





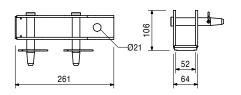
117343 3.250

50 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

3.070

Anchor Bolt PERI 14/20 x 130

126666

Base Plate-3 for RS 210 - 1400

For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000 and 1400.

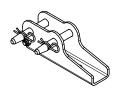
Complete with

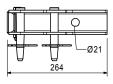
2 pc. 105400 Pin Ø 20 x 140, galv.

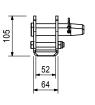
2 pc. 018060 Cotter Pin 4/1, galv.

1 pc. 113063 Bolt ISO 4014 M12 x 80-8.8, galv.

1 pc. 113064 Hex Nut ISO7042-M12-8-G, galv.







Accessories

124777 0.210

Anchor Bolt PERI 14/20 x 130



 Item no.
 Weight kg

 028010
 17.900

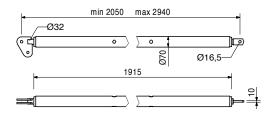
Push-Pull Prop RSS I

Extension length I = 2.05 - 2.94 m. For aligning PERI formwork systems.



Note

Permissible load see PERI Design Tables.



113397

1.600

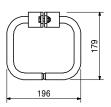
Spindle Handle RSS / AV

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.



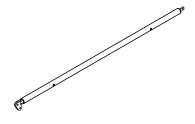


028020

22.000

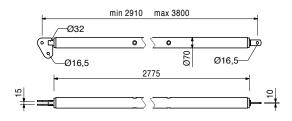
Push-Pull Prop RSS II

Extension length I = 2.91 - 3.80 m. For aligning PERI formwork systems.



Note

Permissible load see PERI Design Tables.



113397

028030

1.600

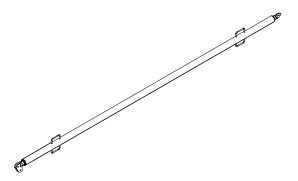
Accessories
Spindle Handle RSS / AV

00

38.400

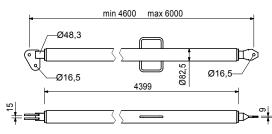
Push-Pull Prop RSS III

Extension length I = 4.60 - 6.00 m. For aligning PERI formwork systems.



Note

Permissible load see PERI Design Tables.





 Item no.
 Weight kg

 106000
 1.820

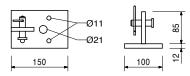
Base Plate-2 for RSS, galv.

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**

Anchor Bolt PERI 14/20 x 130

057087	3.720
057088	4.410

Kickers AV Kicker AV 82 Kicker AV 111

For aligning PERI formwork systems.

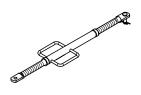
min. L	max. L
500	820
790	1110

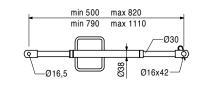
Complete with

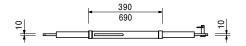
1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.

Note

Permissible load see PERI Design Tables.







028110 5.180

Kicker AV 140

Extension length I = 1.08 - 1.40 m. For aligning PERI formwork systems.

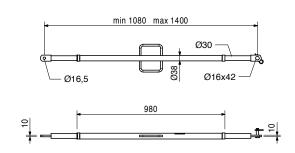
Complete with

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

Note

Permissible load see PERI Design Tables.







Item no. Weight kg 108135 12.900

Kicker AV 210

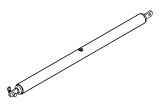
Extension length I = 1.28 - 2.10 m. For aligning PERI formwork systems.

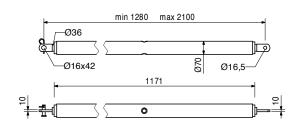
Complete with

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

Note

Permissible load see PERI Design Tables.





Accessories

113397 1.600

Spindle Handle RSS / AV

028120 17.000

Kicker AV RSS III

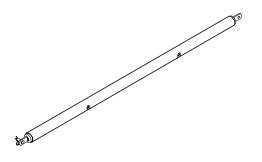
Extension length I = 2.03 - 2.92 m. For aligning PERI formwork systems.

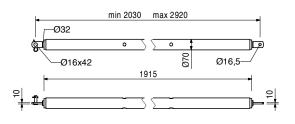
Complete with

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

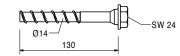
124777 0.210

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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Slab Formwork



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Tunnel Formwork



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Industrial Scaffold



Access



Protection Scaffold



Safety Systems



System-Independent Accessories



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