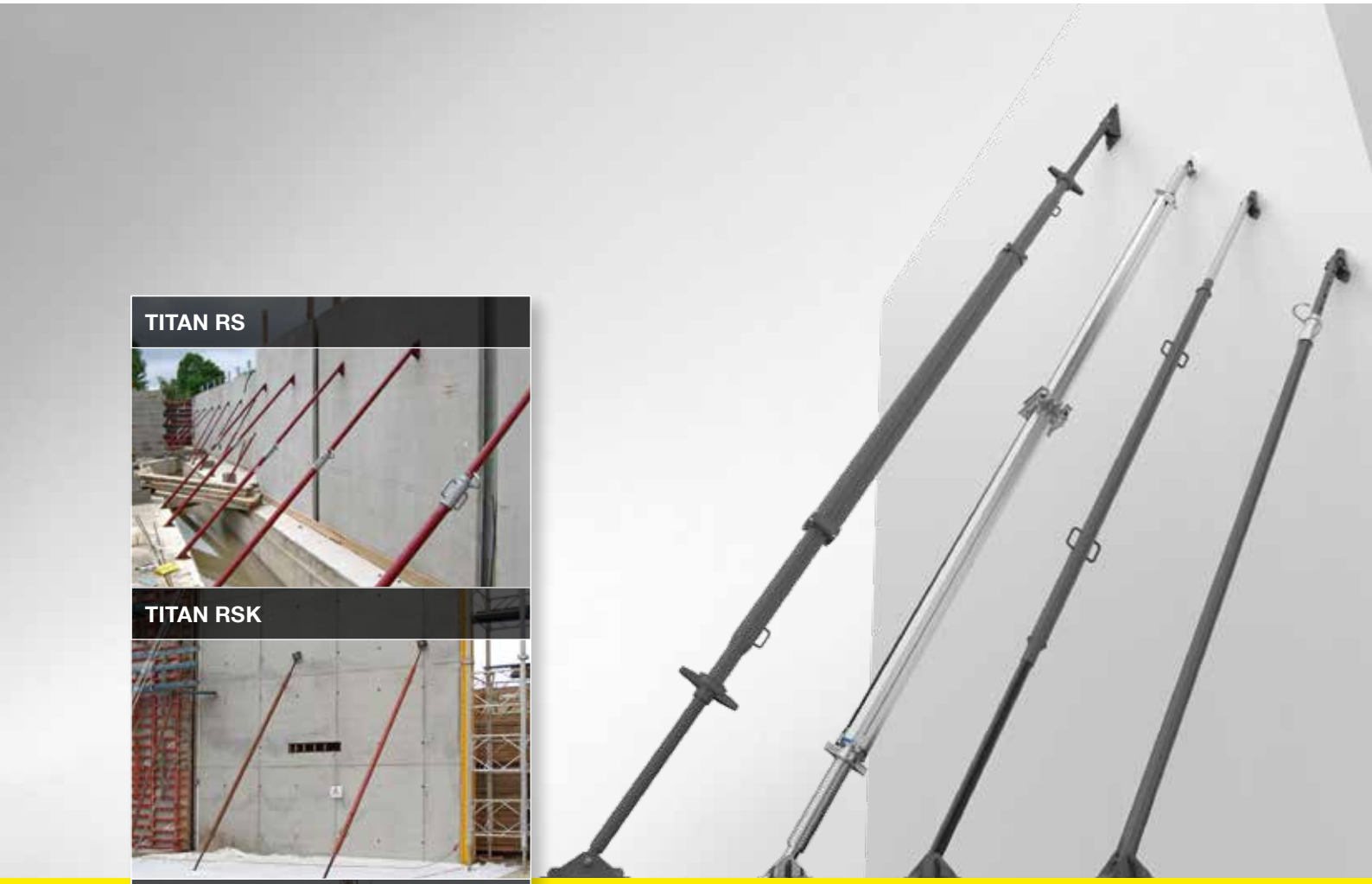
ISCHEBECK TITAN



TITAN RS

TITAN RSK

TITAN BKS

TITAN Alu-BKS

TITAN push-pull props for supporting precast concrete elements and wall/column formwork

Single props and modular systems in steel or aluminium

with verified calculations for many common applications

The right push-pull prop for every job

Whether made from steel or lightweight aluminium, the four products in the ISCHEBECK push-pull prop range are ideal for the quick alignment and secure support of precast concrete elements as well as wall and column formwork. In terms of the heights and angles possible, this versatile, coordinated range is flexible and economic. All TITAN push-pull props are suitable for tension and compression loads. The movable end fittings enable the props to be set up at any angle.

Contents

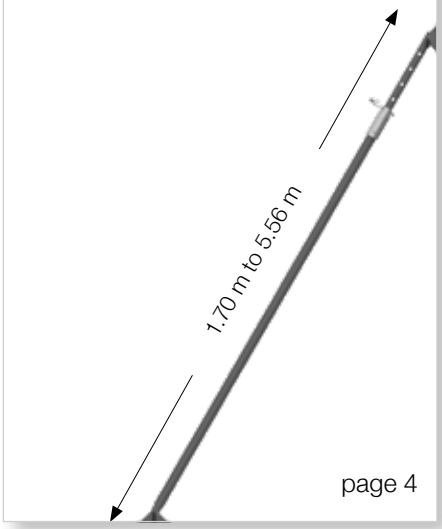
Rules of thumb for the use of push-pull props 4

Push-pull props
TITAN RS and TITAN RSK 4

End fittings
for TITAN RS, TITAN RSK and TITAN ALU-BKS 6
End fittings for special cases 8

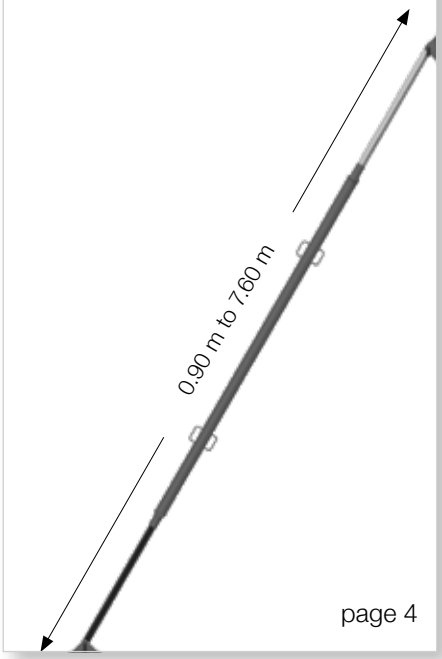
Modular push-pull prop systems
TITAN BKS 9
TITAN Alu-BKS 12

TITAN RS push-pull props (steel)
The tried-and-tested inclined prop with quick adjustment
- Available in four lengths
- Suitable for tension and compression
- Connecting pins every 100 mm for quick adjustment
- Collar for exact fine adjustment



page 4

TITAN RSK push-pull props (steel)
Inclined prop with screw jacks and handles at both ends
- Available in five lengths
- Suitable for tension and compression loads up to 40 kN
- Exact fine adjustment
- Handles always within easy reach



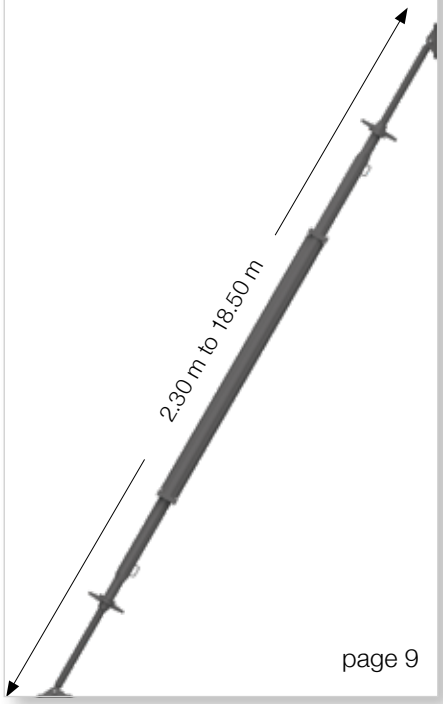
page 4

ISCHEBECK TITAN

with verified calculations

TITAN BKS push-pull props (steel)
Modular system – flexible up to great heights

- Available in 12 lengths
- Suitable for tension and compression loads up to 50 kN
- Screw jack and outer tube in steel
- Very high load-carrying capacity



page 9

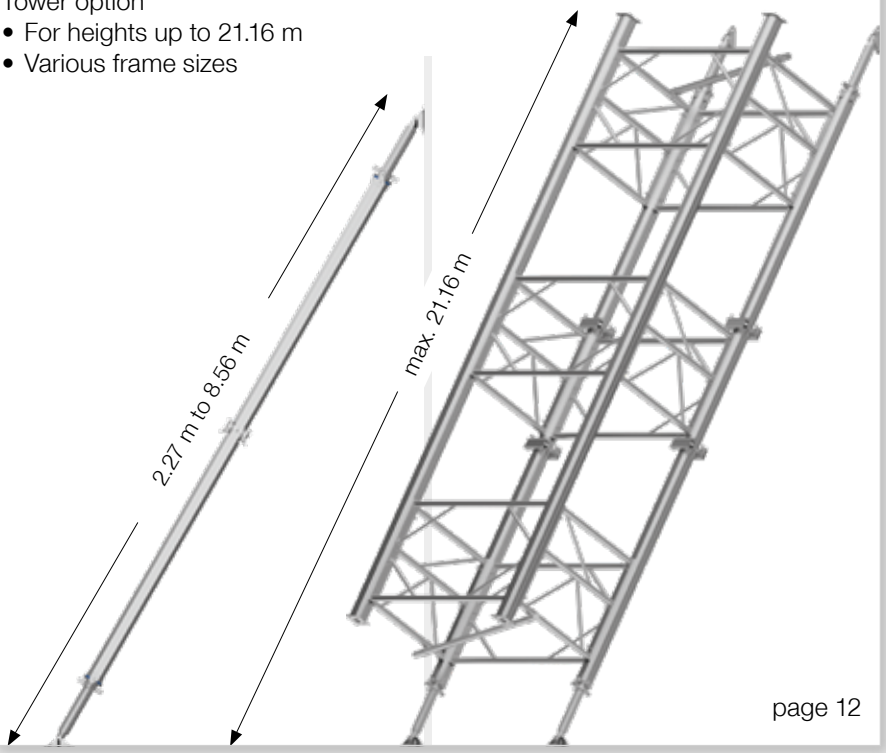
TITAN Alu-BKS push-pull props
As single prop or tower – with aluminium components

Single props available in five lengths

- Suitable for tension and compression
- Very economic modular system
- No component weighs more than 24 kg

Tower option

- For heights up to 21.16 m
- Various frame sizes



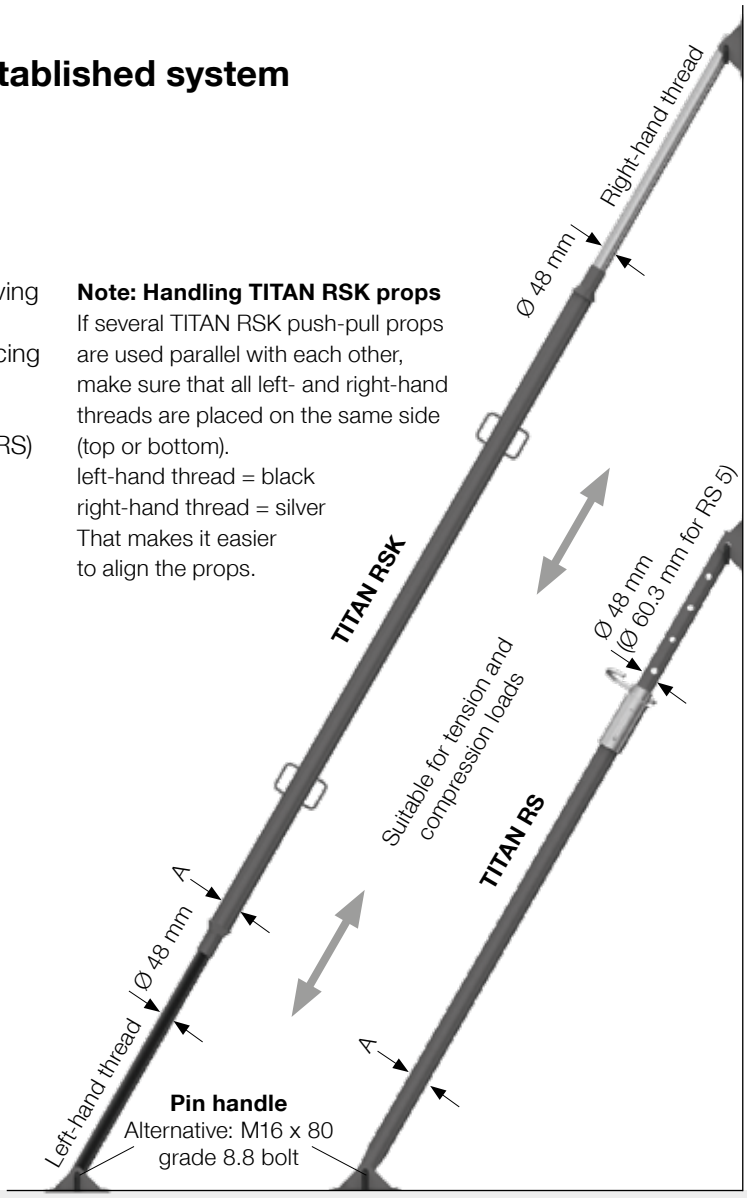
page 12

TITAN push-pull props – the well-established system

TITAN RS and TITAN RSK inclined props have been proving their benefits on building sites of all types and sizes for many decades. And it's the details that are really convincing in terms of everyday practice and ease of use:

- Handles always within easy reach
- Connecting pins every 100 mm for quick adjustment (RS)
- Exact fine adjustment
  - with collar (RS)
  - with screw jacks both ends (RSK)

Note: Handling TITAN RSK props
If several TITAN RSK push-pull props are used parallel with each other, make sure that all left- and right-hand threads are placed on the same side (top or bottom).
left-hand thread = black
right-hand thread = silver
That makes it easier to align the props.



Rules of thumb for the use of push-pull props

1 Length L of push-pull prop
The length **L** of the push-pull prop should be equal to the height **H** of the element requiring support. The length calculation does not take account of the loads occurring. These must be calculated separately.

2 Height of anchorage
The height of the anchorage must comply with the stipulations of the precast concrete element supplier. In normal cases the anchorage point is located at 2/3 the height of the element requiring support.

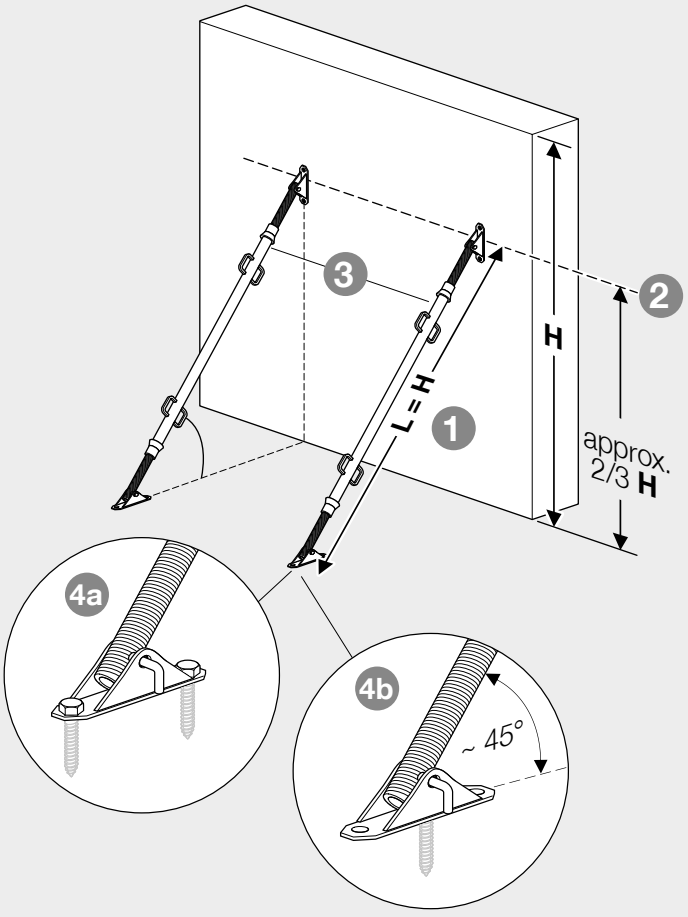
3 Number of push-pull props
Every element should be supported in at least two places.

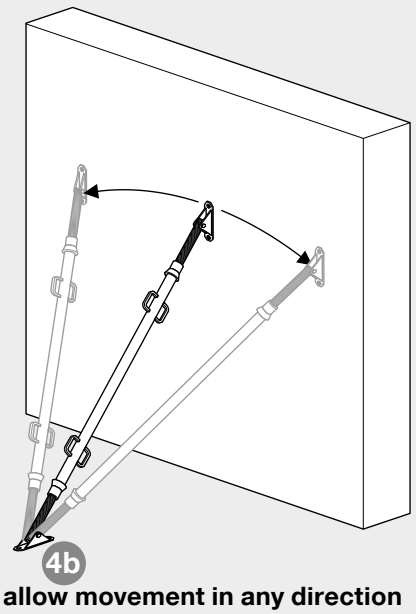
4a Two fixings for swivel ends
Two fixings should be used to attach each swivel end to the element requiring support and to the floor. Exception: Quick-action swivel end adapter – only a single fixing on the element.

4b Single fixing for swivel end
Swivel ends with single fixings are used when the push-pull prop cannot be positioned at 90° to the element requiring support. When using a single fixing, the push-pull prop should be set up at an angle of approx. 45° so that no additional eccentricity moment occurs.

Table of permissible loads, TITAN RS and TITAN RSK

	Total length L [m] incl. 2 standard swivel ends	**Permiss. load** [kN] **in compression** [kN] min. L	half L	max. L	**in tension** [kN]	**Weight** [kg]	**Outer tube A** [mm]	**art.-no.**
RS 2	1.70 – 2.90	37.0	27.5	18.0	25.0	11.3	Ø 57	0220200021
RS 3	2.10 – 3.60	24.0	16.0	8.0	25.0	14.0	Ø 57	0220200022
RS 4	2.80 – 4.30	19.8	9.7	4.8	25.0	20.9	Ø 57	0220200025
RS 5	4.06 – 5.56	24.6	16.2	10.7	22.0	32.1	Ø 70	0220200027
RSK 1	0.90 – 1.50	40.0	40.0	40.0	40.0	7.8	Ø 70	0220200023
RSK 3	1.80 – 3.20	40.0	29.2	15.4	40.0	15.5	Ø 70	0220200039
RSK 4	2.60 – 4.00	38.8	23.3	12.8	40.0	19.8	Ø 70	0220200041
RSK 6	4.60 – 6.00	30.5	18.4	9.9	40.0	35.0	Ø 83	0220200042
RSK 8	6.20 – 7.60	40.0	20.1	9.1	40.0	69.0	Ø 108	0220200043

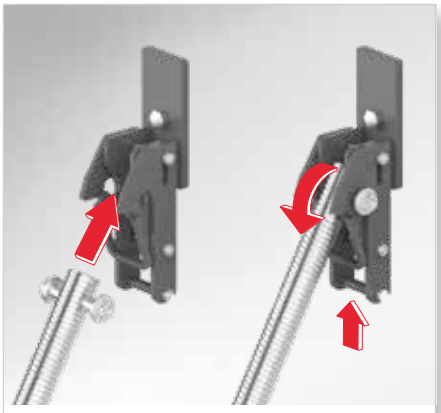




Swivel ends allow movement in any direction
Turn the swivel end about its fixing point and rotate the axis of the prop at the same time in order to attach the swivel end in a position that prevents additional restraint and simplifies erection.

End fittings for TITAN RS, TITAN RSK and TITAN Alu-BKS

Every push-pull prop must be fixed to the floor and wall with end fittings attached with concrete bolts or heavy-duty anchors. Both single and double fixings are possible, but the maximum possible loads must be taken into account.



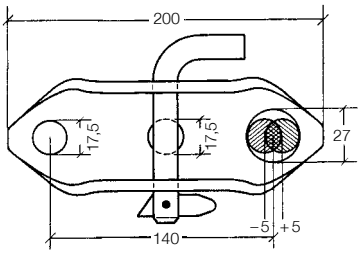
Quick connector
simplifies the erection of precast concrete elements because the push-pull prop is simply hooked on the adapter and unhooked afterwards.

- Quick connector fitted to precast element beforehand, i.e. no working at dangerous heights
- Push-pull prop quickly positioned and removed
- Fits all RS, RSK and Alu-BKS push-pull props

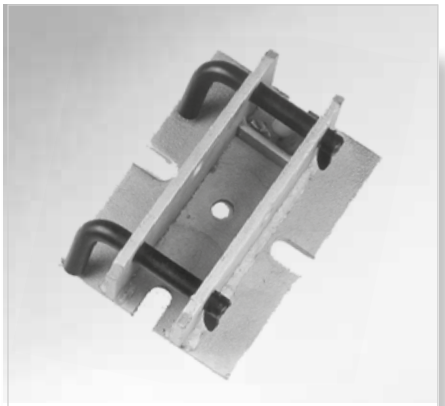
Quick-connector
Weight 5.10 kg
art.-no. 0420210020

Self-centring bolt for quick-action swivel end adapter (obligatory)
Weight 0.45 kg
art.-no. 0420214509

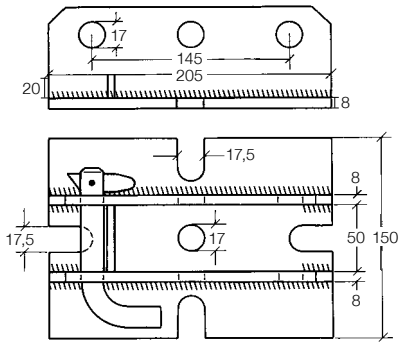
Standard swivel end
Fixed with two M16 bolts. The oversized Ø27 mm hole compensates for inaccuracies when installing anchors with ±5 mm tolerance. Fits RS, RSK and Alu-BKS push-pull props.



Supplied with pin handle
Weight 1.37 kg
Painted
art.-no. 0420214504
Galvanised
art.-no. 0420214505



Double RSK adapter
for fixing two push-pull props. The built-in stopper lug prevents props from folding up during repositioning by crane.



Supplied with 2 pin handles
Weight 4.00 kg
art.-no. 0420214516

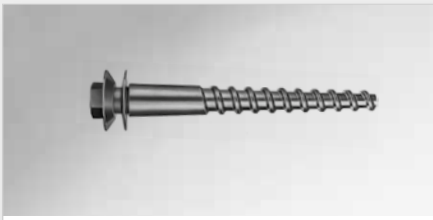
Fixings

Pin handle
Ø16 mm, fits all swivel ends, with polyseal coating

Weight 0.24 kg
art.-no. 0220210027

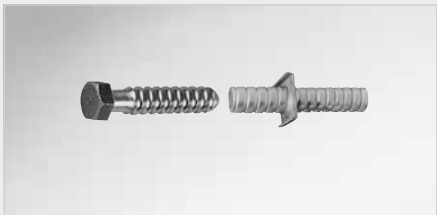
Alternative to pin handle
(not illustrated):
Hexagon-head bolt with nut
M16 x 80, grade 8.8, fits all swivel ends, galvanised

Weight 0.18 kg
art.-no. 0420214507



TITAN screw anchor M24/D15x160
recoverable, with M24 x 30 bolt, always adequate as single fixing.

Weight 0.73 kg
art.-no. 0620750007



Robusta cast-in sleeve,
Ø15/20/26.5, fits Dywidag formwork ties. Available in various lengths.
The permissible loads between 5 and 60 kN depend on diameter, length and concrete strength (details available on request).

Reducing sleeve 26/X
for use with standard swivel end, available in various diameters.
Weight 0.03 kg
art.-no. 0720210058

Concrete bolt
Ø16 x 130, 24AF, recoverable, self-cutting thread, Ø14 mm pre-drilled hole required.

Weight 0.21 kg
art.-no. 0620210030

Erection tools

Universal spanner
500 mm long, fits all push-pull and telescopic props, painted.

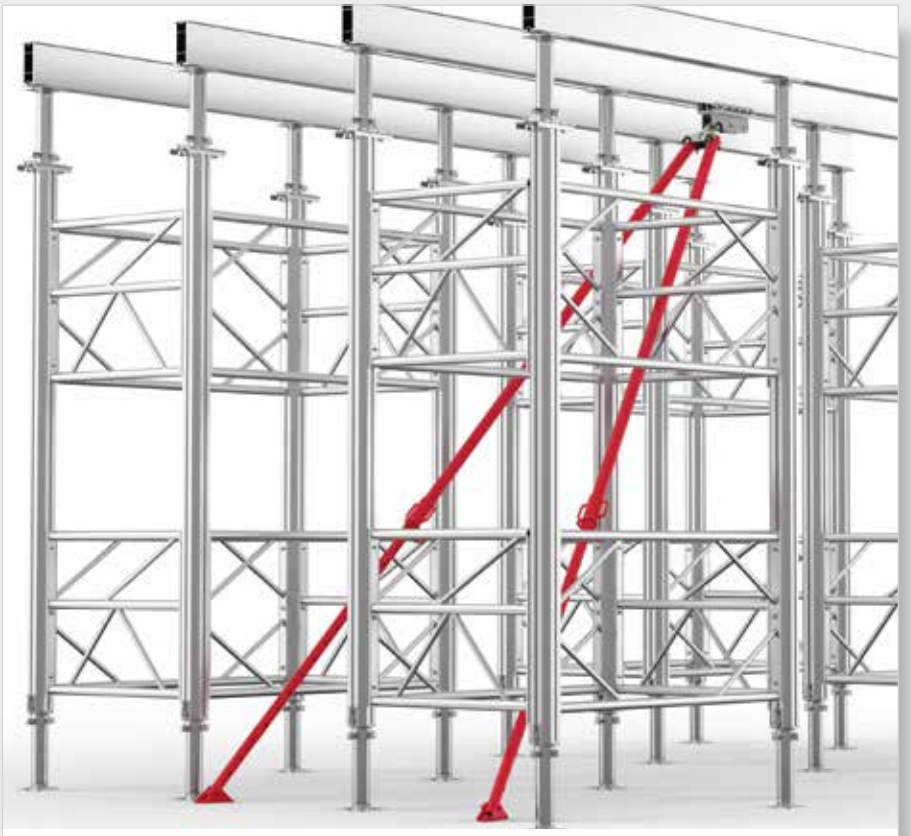
Weight 2.30 kg
art.-no. 0620210060

RSK bit for faster working
Adapter for cordless drill for extending and retracting screw jacks easily.
- Fits all common drill chucks
- Easily used with existing drills
- with polyseal coating
- Fits all RSK push-pull props

Weight 0.36 kg
art.-no. 0620210026

End fittings for special cases

Special situations call for special solutions. Many special solutions are available for connecting props to scaffolds, formwork and beams. Please get in touch with us so that we can show you a solution to suit your situation.



❶ Beam friction clamp for push-pull prop
for transferring horizontal forces on the beam axis
- For fixing to TITAN 225 aluminium formwork beam
- Can be used to attach up to 3 push-pull props (design software available)
- Verified calculations

Weight 6.20 kg
art.-no. 0120420045

❷ H-load adapter
for transferring horizontal loads eccentric to the beam axis
- For fixing to beam friction clamp for push pull prop

Weight 1.82 kg
art.-no. 0620420047

Adapter for steel walers
for fixing to U 100 and SF 100 walings without bolts, painted.
adjustable: 145 – 155 mm
Permiss. load 5 kN

Weight 2.30 kg
art.-no. 0320210006

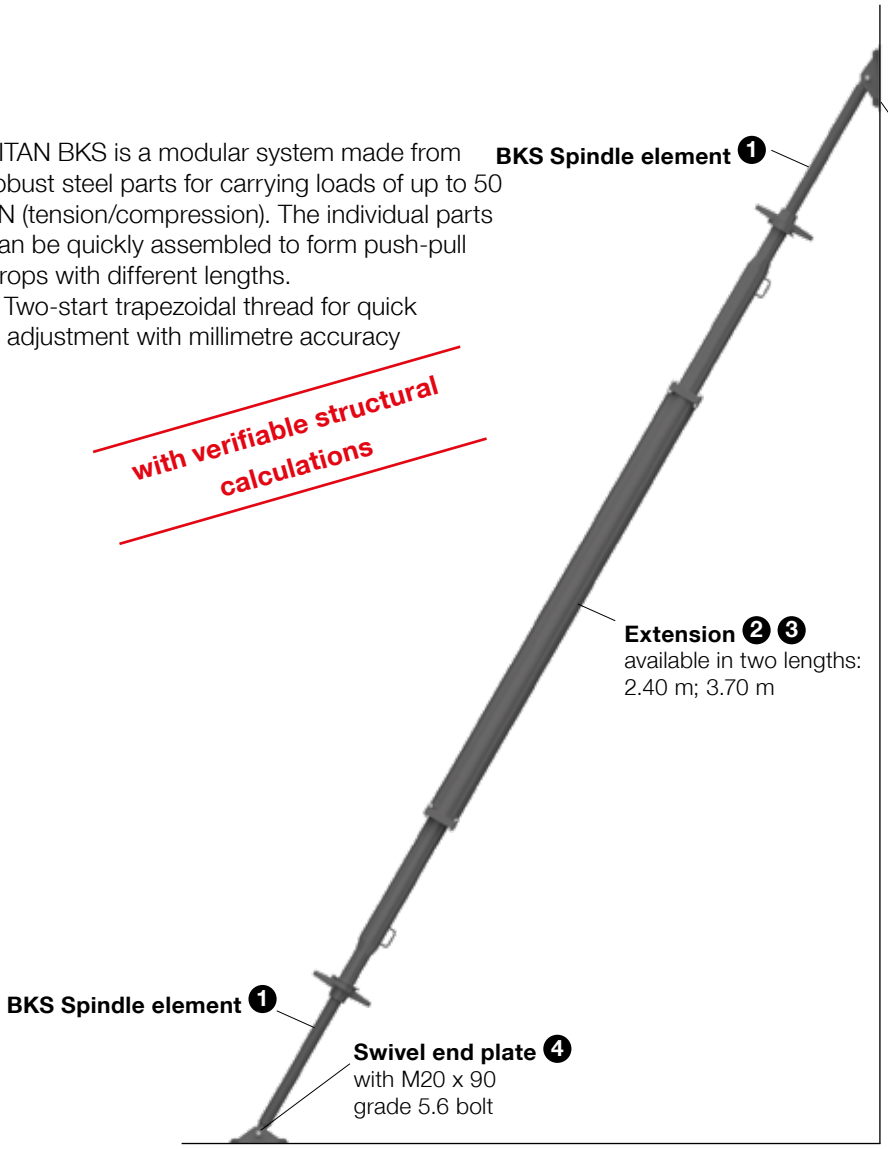
TITAN BKS – modular system

From 2.30 to 18.50 m

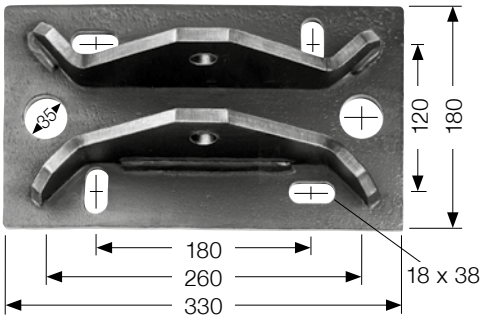
TITAN BKS is a modular system made from robust steel parts for carrying loads of up to 50 kN (tension/compression). The individual parts can be quickly assembled to form push-pull props with different lengths.

- Two-start trapezoidal thread for quick adjustment with millimetre accuracy

with verifiable structural calculations



Flexible erection with **swivel end plate**
with elongated holes to allow for tolerances
(18 x 38 mm)



all dims. in mm

Historic facade retention
Prague, Czech Republic

TITAN BKS – modular system

Push-pull prop combinations
The right sequence of extension pieces is very important when assembling TITAN BKS push-pull props:

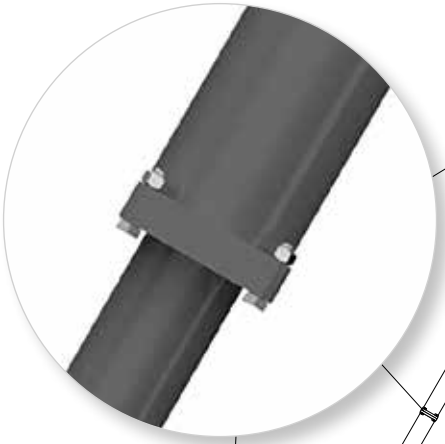
TITAN BKS = spindle element + extension(s) + spindle element

❶ **Spindle element** 1150 – 1850 mm

❷ **Short extension** 2400 mm

❸ **Long extension** 3700 mm

Structural connection
4 bolts per butt joint
M16 x 60 (10.9 galv.)
Preload P_v = 100 kN
Tightening torque M_v = 350 Nm
Apply a little oil when assembling



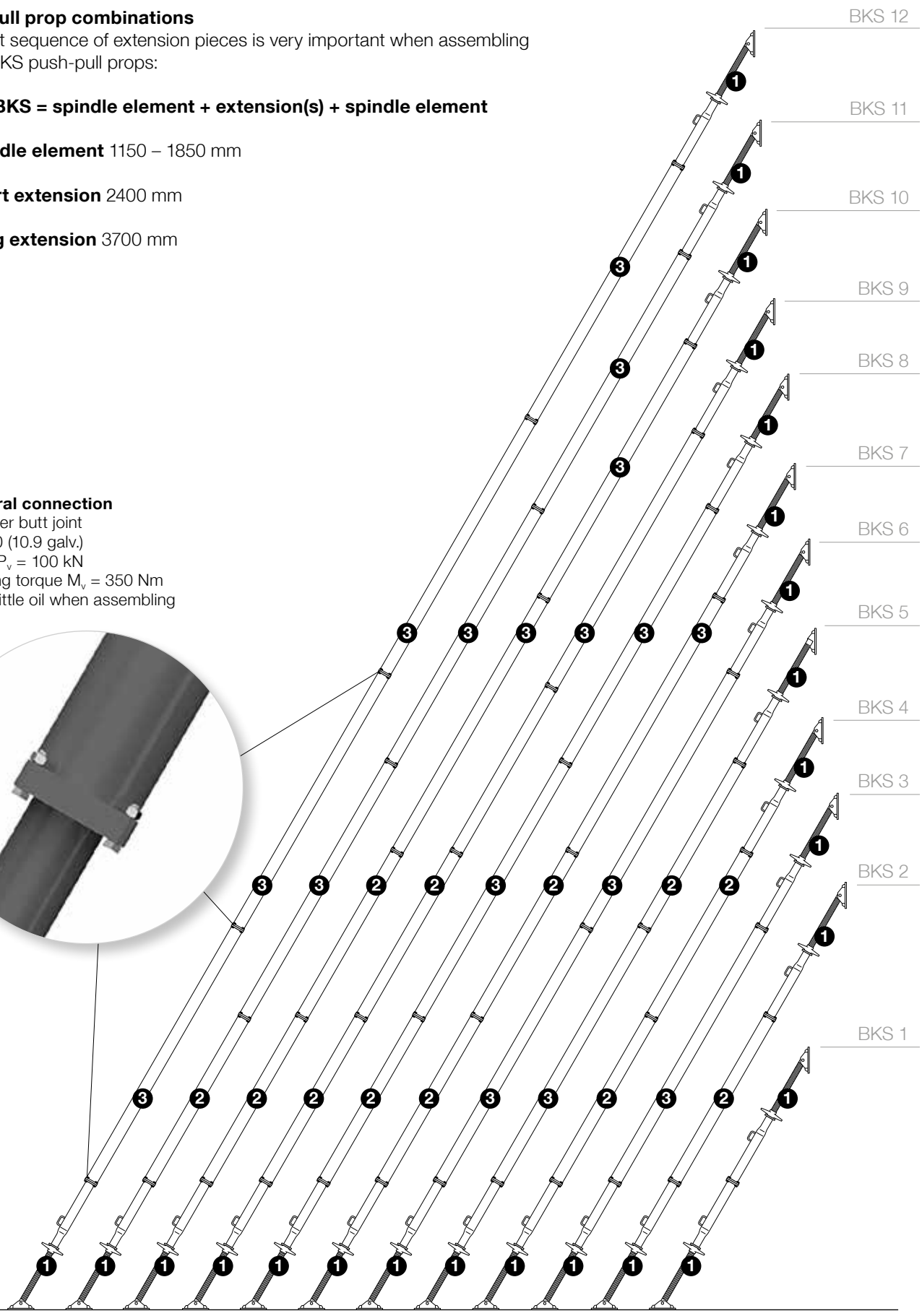


Table of permissible loads, TITAN BKS

Type	Total length L	Permissible axial load				Individual parts				Weight
	from – to [m]	in compression [kN]			in tension [kN]	Spindle element ❶	Extension ❷	Extension ❸	Joints*	[kg]
		min. L	half L	max. L		1.15 - 1.85 m	2.40 m	3.70 m		
BKS 1	2.3 – 3.7	50.0	50.0	50.0	50.0	2	-	-	1	72
BKS 2	4.7 – 6.1	50.0	50.0	41.5	50.0	2	1	-	2	122
BKS 3	6.0 – 7.4	50.0	50.0	37.4	50.0	2	-	1	2	144
BKS 4	7.1 – 8.5	50.0	45.3	32.6	50.0	2	2	-	3	172
BKS 5	8.4 – 9.8	50.0	39.1	28.2	50.0	2	1	1	3	194
BKS 6	9.7 – 11.1	45.7	33.2	23.8	50.0	2	-	2	3	216
BKS 7	10.8 – 12.2	39.0	28.3	20.1	50.0	2	2	1	4	244
BKS 8	12.1 – 13.5	32.5	23.8	16.7	50.0	2	1	2	4	266
BKS 9	13.2 – 14.6	25.1	19.9	13.7	50.0	2	3	1	5	294
BKS 10	14.5 – 15.9	19.3	15.9	11.2	50.0	2	2	2	5	316
BKS 11	15.8 – 17.2	14.6	11.9	9.1	50.0	2	1	3	5	338
BKS 12	17.1 – 18.5	10.8	8.7	6.8	50.0	2	-	4	5	360

*Four M16 x 60 bolts (grade 10.9, galv.) required per joint

Components

❶ Spindle element
painted, supplied in packs of 24 in square “Barelle”, with swivel end plate
Weight 36.62 kg
art.-no. 0120220001

❷ Extension, 2400 mm
Ø 159 x 4.5 mm, painted, supplied in packs of 15 in “Barelle”
Weight 50.00 kg
art.-no. 0120220005

❸ Extension, 3700 mm
Ø 159 x 4.5 mm, painted, supplied in packs of 15 in “Barelle”
Weight 72.00 kg
art.-no. 0120220009

Hexagon-head bolt (not illustrated)
with nut, M16 x 60, grade 10.9, for connecting extension pieces
Weight 0.15 kg
art.-no. 0620224550

❹ Swivel end plate
galvanised, with M20 x 90 grade 5.6 bolt for fixing push-pull props
Weight 7.22 kg
art.-no. 0220224525

Hexagon-head bolt (not illustrated)
with nut, M20 x 90, grade 5.6, for swivel end plates
Weight 0.32 kg
art.-no. 0220224527

TITAN Alu-BKS

A combination of just a few lightweight parts

TITAN Alu-BKS is a modular system made from lightweight aluminium parts.

- Individual components can be set up, taken down and transported without the need for a crane.
- Individual components are quickly assembled to form push-pull props in different sizes.
- Outer tube includes multi-purpose slot suitable for attaching ledger frames.

TITAN aluminium BKS spindle element ❶
As an alternative, it is possible to use the **standard swivel end adapter** ❷.

TITAN aluminium extension outer ❹
available in four lengths
0.50 / 1.00 / 1.25 / 5.00 m

Connecting brackets ❸
quickly and easily fitted

TITAN aluminium BKS spindle element ❶
with screw jack retainer. Can be adjusted under load with the universal prop spanner for TITAN adjustable aluminium legs.

End fitting for further information see page 6.

Components

❶ **TITAN aluminium spindle element**
with screw jack retainer (standard swivel end required)

- Adjustment with standard swivel end: 2.07 – 3.28 m
- Supplied in packs of 30/“Barelle”

Weight 21.00 kg
art.-no. 0220200045

❷ **Racking bracket for Alu-BKS** for wall connection without aluminium screw jack (standard swivel end req.)

- Only one screw jack required
- Short push-pull prop lengths from 2.27 m possible in modular system
- Special for type 9

Weight 2.39 kg
art.-no. 0220210020

❸ **Connecting brackets**
quickly and easily fitted, two brackets required per butt joint.

Weight 0.79 kg
art.-no. 0120150084

Table of permissible loads, Alu-BKS

	Total length L Extension [m]			Permiss. load in compression [kN]			in tension [kN]	Individual parts					Weight [kg]
								Spindle element	Connecting brackets	Aluminium extension pieces 1.00 m	Aluminium extension pieces 5.00 m	Racking bracket	
	min.	half	max.	min.	half	max.		❶	❸	❹	❹	❷	
Type 5	2.27	2.88	3.48	33.0 (33.2*)	31.9 (32.5*)	29.4 (30.3*)	32	1	-	-	-	1	23.4
Type 6	4.13	5.34	6.56	36.0 (37.8*)	20.4 (22.3*)	10.4 (12.3*)	32	2	2	-	-	-	43.0
Type 7	5.13	6.34	7.56	23.8 (25.5*)	13.8 (16.1*)	7.3 (9.5*)	32	2	4	1	-	-	51.0
Type 8	6.13	7.34	8.56	16.0 (18.0*)	9.2 (11.7*)	4.9 (7.3*)	32	2	6	2	-	-	59.0
Type 9	7.27	7.88	8.48	8.0 (11.5*)	5.4 (9.1*)	3.3 (7.1*)	32	1	-	-	1	1	48.2

*Permissible load without wind on push-pull props

Assembly tool

❹ TITAN aluminium extension outer
requires two connecting brackets for a structural connection.

500 mm
Weight 4.30 kg
art.-no. 0220150039

1000 mm
Weight 5.70 kg
art.-no. 0220150041

1250 mm
Weight 8.50 kg
art.-no. 0220150040

5000 mm
Weight 24.00 kg
art.-no. 0220150051

Spanner
for TITAN Alu-BKS, green paint finish.

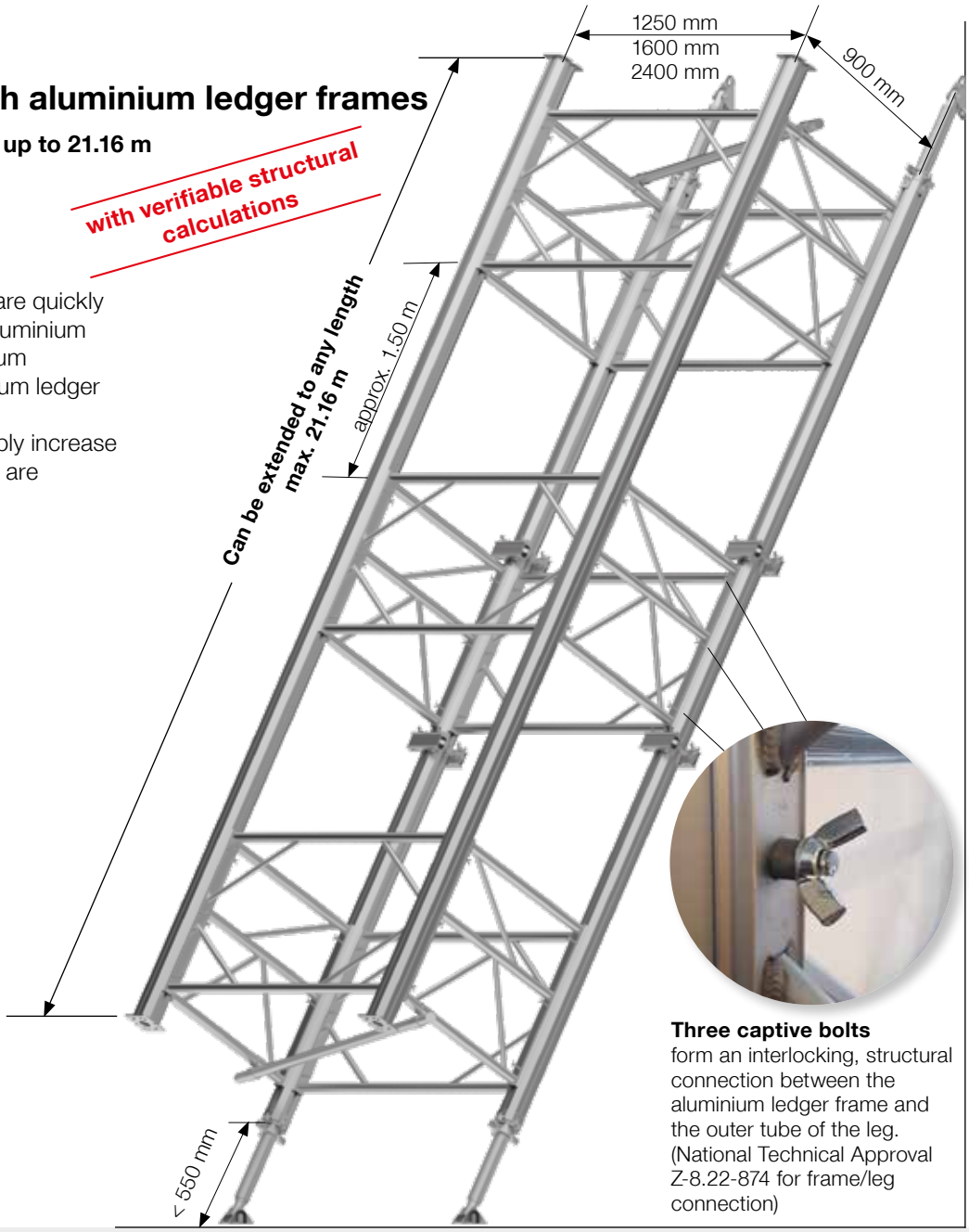
Weight 4.30 kg
art.-no. 0220150055

TITAN Alu-BKS with aluminium ledger frames

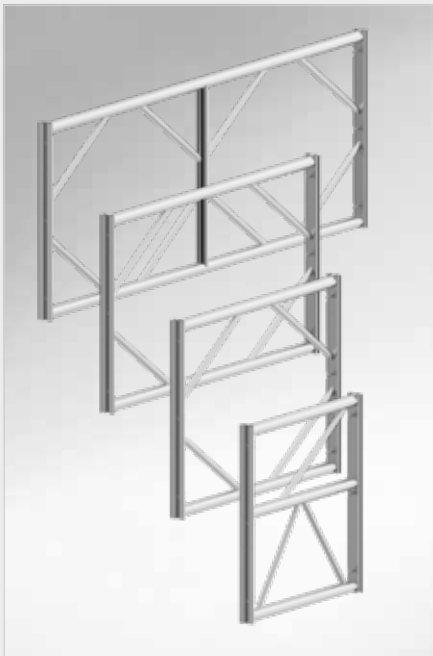
Support tower for heights up to 21.16 m

with verifiable structural calculations

Stable 4-leg support towers are quickly and easily assembled from aluminium screw jack elements, aluminium extension pieces and aluminium ledger frames.
The ledger frames considerably increase the loadbearing capacity and are available in four sizes.



Three captive bolts
form an interlocking, structural connection between the aluminium ledger frame and the outer tube of the leg. (National Technical Approval Z-8.22-874 for frame/leg connection)



Aluminium ledger frame
850 mm total height, Ø48 mm tubes, suitable for attaching scaffold couplers.
Packed in bundles of 20 pcs.

Available in four widths:

2400 mm	
Weight	13.50 kg
art.-no.	0120150073
1600 mm	
Weight	8.80 kg
art.-no.	0120150071
1250 mm	
Weight	7.80 kg
art.-no.	0120150070
900 mm	
Weight	7.50 kg
art.-no.	0220150068

Assembly tool

Cordless impact wrench (with torque limiter)
for faster assembly of aluminium ledger frames.
Supplied complete with sockets, manual torque wrench, extension bars and carry case.

Weight	5.70 kg
art.-no.	0620150019

Design

TITAN Alu-BKS with aluminium ledger frames

A dynamic pressure of 0.8 kN/m2 according to DIN 1055 was used for the wind load.

- Self-weight has been taken into account
- Screw jack extension < 550 mm
- Frames parallel to wall, 1.25 m, 1.60 m, 2.40 m
- Frames perpendicular to wall, 0.9 m

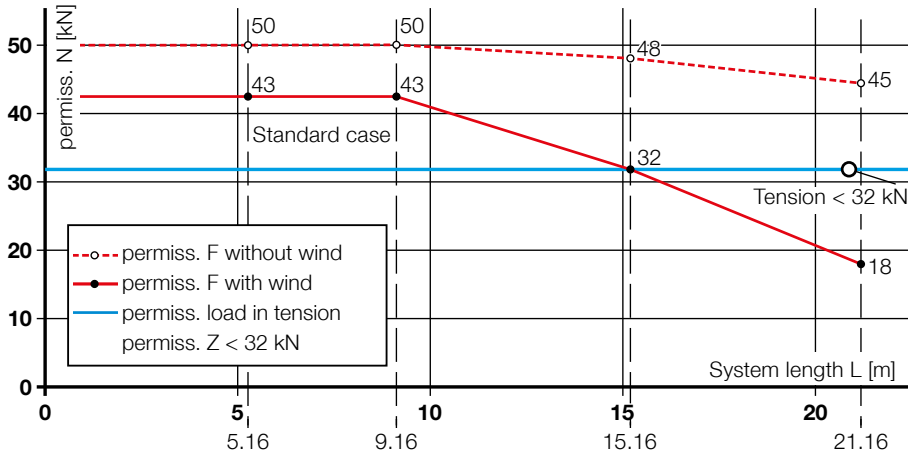
Cross-section maintained with diagonal braces

Scaffold tube braces should be attached diagonally to maintain the cross-section. The scaffold tubes are attached to the Ø48 mm top or bottom members of the 900 mm ledger frames with swivel couplers.

- Up to 8 m long: one diagonal brace required at each end.
- From 8 to 16 m long: one additional diagonal brace required in the middle.
- More than 16 m long: four diagonal braces required, spaced equally over the length.

Design chart

Verified calculation from 15 July 2005. Permissible load per loadbearing leg. Self-weight and wind load to DIN 1055 are considered in the calculations. Safety factors γ_M = 1.1 for materials and γ_F = 1.5 for actions have already been taken into account in the data given here.



Precast concrete elements aligned and supported
with TITAN RSK push-pull props (size 8 shown here) up to a height of 7.60 m

The photos reproduced in this brochure represent momentary snapshots of work on building sites. It is therefore possible that certain facts and circumstances do not fully correspond to the technical (safety) requirements.

Falsework and Formwork systems

Trench lining systems

Geotechnical solutions

Certified Management-System to DIN EN ISO 9001:2015 DVS ZERT

ISCHEBECK TITAN®

FRIEDR. ISCHEBECK GMBH
Managing Directors: Dipl.-Wi.-Ing. Björn Ischebeck, Dr. jur. Lars Ischebeck
Loher Str. 31-79 | 58256 Ennepetal | Germany | Phone +49 (2333) 8305-0 | Fax +49 (2333) 8305-55
E-mail: export@ischebeck.de | www.ischebeck.de

482.15.01.59.1/2004/April 2020/