



Ischebeck TITAN Push-Pull Props

Ischebeck offers four types of push-pull props for bracing and adjusting prefabricated concrete elements and formwork for walls and columns.

- TITAN RS
(page 2-7)
- TITAN RSK
(page 2-7)
- TITAN BKS
made of steel
(page 8-9)
- TITAN ALU-BKS
made of aluminum
(page 10-12)



The TITAN push-pull prop is a versatile, well engineered and complete system.

It replaces the traditional prop (shore) and tensioning chain arrangement with a single prop that works in both tension and compression to provide a versatile and economic solution for a wide variety of applications.

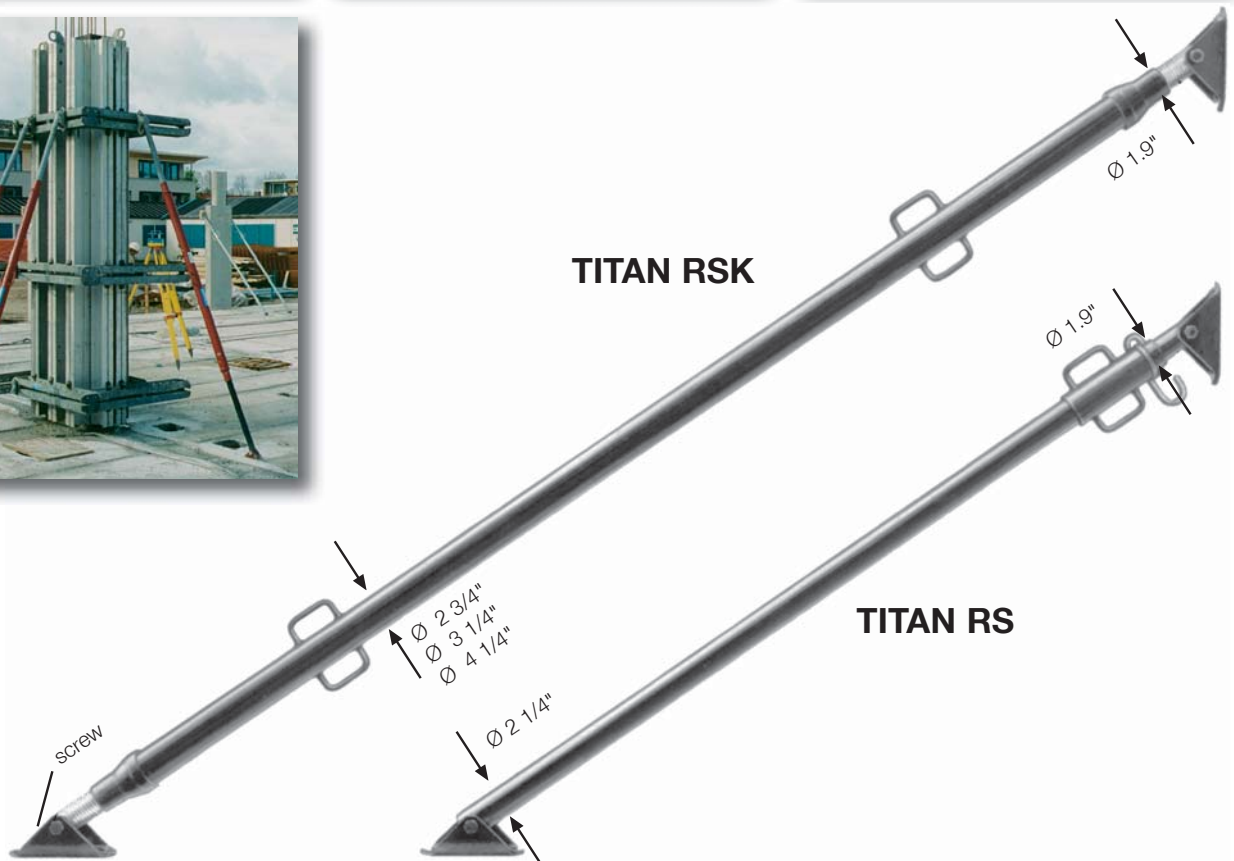
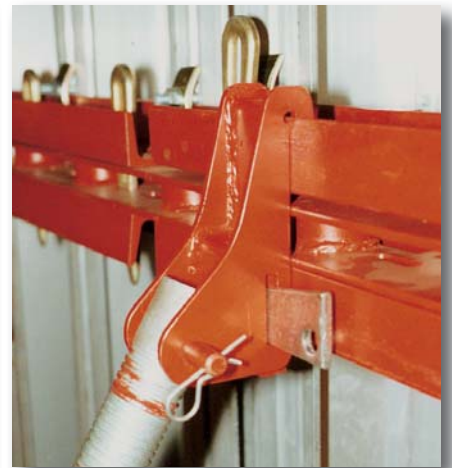


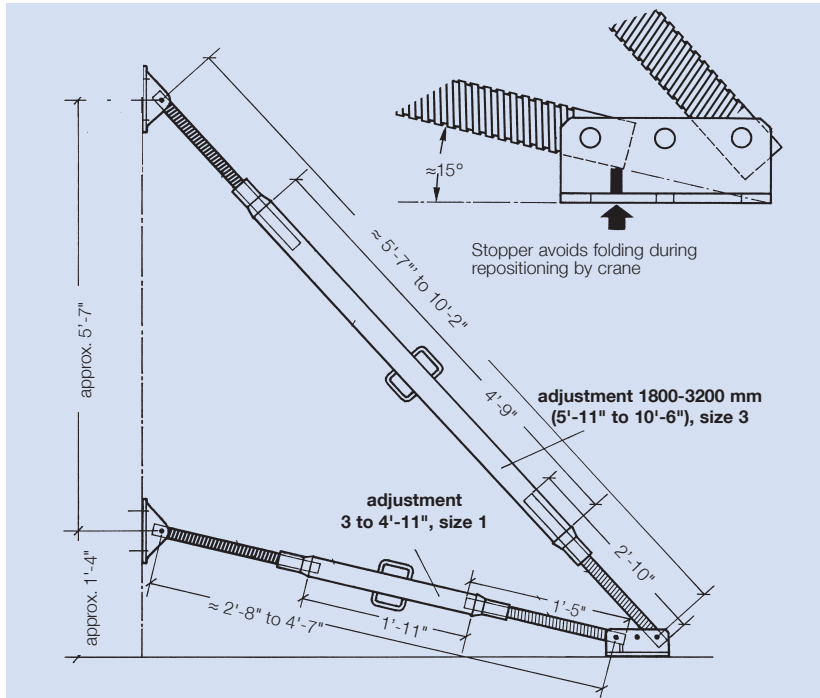
Ischebeck TITAN RS and TITAN RSK

Thousands of TITAN push-pull props have proven themselves over many years.

They have the following advantages:

- Virtually no play, adjustable by the millimetre (1/32")
- Takes tension and compression forces
- Efficient handles always in operative's reach
- Infinite adjustment by smooth but robust ACME thread with large adjustment range
- 3-dimensional swivel-end accommodates any slope or angle with single bolt fix
- Positive and safe – max. extension cannot be exceeded
- High strength with light weight – only 1 or 2 operatives to carry



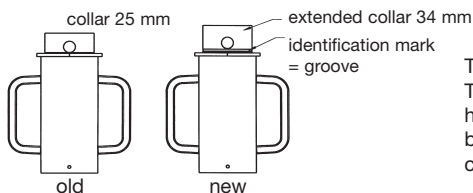


3-dimensional swivel-end accommodates any slope or angle with single bolt fix

Technical data

Type order ref.	TITAN RS no. 2	TITAN RS no. 3	TITAN RSK no. 1	TITAN RSK no. 3	TITAN RSK no. 4	TITAN RSK no. 6	TITAN RSK no. 8
adjustment m ft	1,70 - 2,90 5'-7" - 9'-6"	2,10 - 3,60 6'-11" - 11'-10"	0,90 - 1,50 3' - 4'-11"	1,80 - 3,20 5'-11" - 10'-6"	2,60 - 4,00 8'-6" - 13'-1"	4,60 - 6,00 15'-1" - 19'-8"	6,20 - 7,60 20'-4" - 24'-11"
perm. axial load on compression*	kN lbs 37 - 18 8300 - 4000	kN lbs 24 - 8 5400 - 1800	kN lbs 40 9000	kN lbs 40 - 29,2 - 15,4 9000 - 6600 - 3500	kN lbs 38,8 - 23,3 - 12,8 8700 - 5200 - 2900	kN lbs 30,5 - 18,4 - 9,9 6900 - 4100 - 2200	kN lbs 40 - 20,1 - 9,1 9000 - 4500 - 2000
on tension*	kN lbs. 25 5600	kN lbs. 25 5600	kN lbs. 40 9000	kN lbs. 40 9000	kN lbs. 40 9000	kN lbs. 40 9000	kN lbs. 40 9000
weight approx. kg (lbs)	14 (31)	17 (37)	11 (24)	19 (42)	23 (51)	38 (84)	72 (159)
outer tube Ø mm (in)	57 (2 1/4")	57 (2 1/4")	70 (2 3/4")	70 (2 3/4")	70 (2 3/4")	83 (3 1/4")	108 (4 1/4")

Subject to technical changes



The new version of the TITAN RS can resist a higher load on tension because of an extended collar on the handle.

* according to static calculation dd. 30. November 2005
Photos are illustrative only. Imperial figures are rounded.
Products must be used in conformity with safe practices and applicable codes and regulations

GENERAL RULES

- 1) The length of the brace (push-pull prop) should be identical to the height of the element
- 2) Each element must be supported by a minimum of two braces
- 3) If the swivel end is connected to the element at a single point, the brace should be at an angle of less than 45° to avoid additional offset forces
- 4) If several TITAN RSK props are used (e.g. along a wallform), it is recommended that all threads with

the same direction of rotation should be installed at the same side (e.g. all left handed threads at the ground). In this way, all props can be lengthened or shortened by rotating in the same direction

In order to see the difference between left handed and right handed screw jacks:

Left handed thread is **black** polyseal-coated,

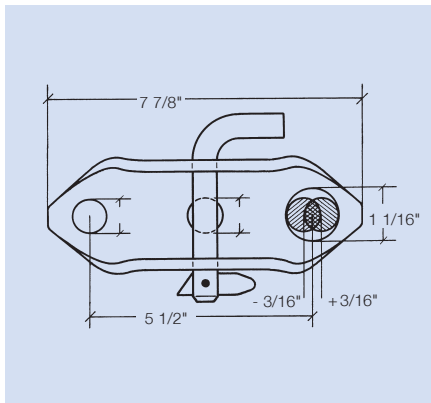
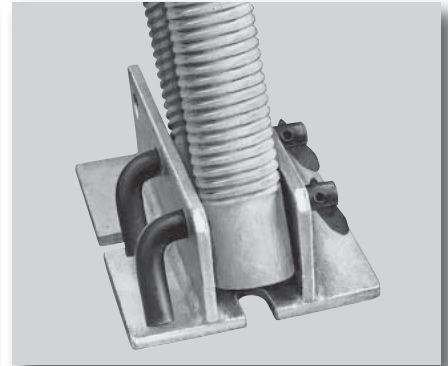
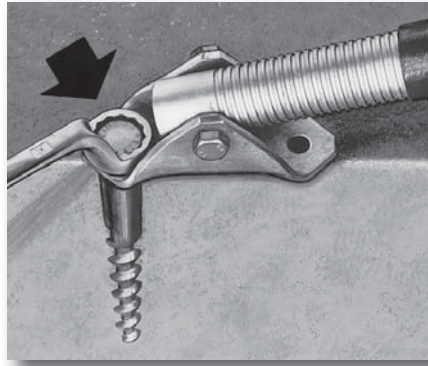
Right handed thread is hot-dip galvanized.

Ischebeck TITAN RS and TITAN RSK

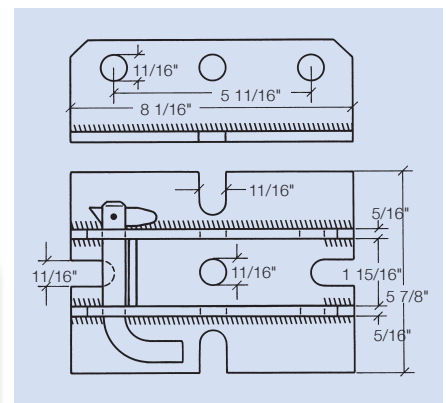
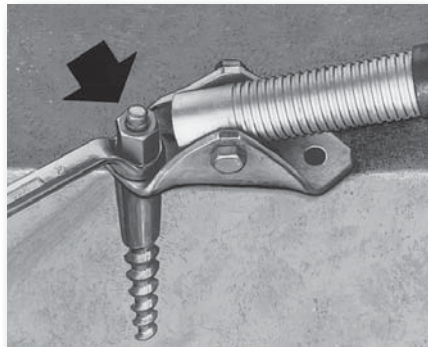
Proven anchorage to fix TITAN push-pull props in detail



Fixing to the ground



TITAN recoverable anchor screw M24 / D15 x 160 with **bolt M24 x 30** acc. to DIN 601, fits to ring spanner 36, perm. load 30 kN in concrete strength B30 (30 N/mm²). Always sufficient for single point fixing.



Swivel end

with fixing at 2 positions

with 2 heavy duty dowels M 16 (5/8"). The hole 27 mm dia. (1 1/16") has the function of a slotted hole to eliminate a tolerance of ± 5 mm ($\pm 3/16$ ") when positioning the dowel.

Swivel end with fixing at 1 position

is used when the brace is positioned inclined in two directions to the element that has to be supported. By rotating around the fixing position and simultaneous rotation around the axis of the brace the swivel end can be easily brought into the required position to facilitate erection of the element.

TITAN recoverable anchor screw M24 / D15 x 160 with **TITAN 15 tie rod** with hex. nut SW 30 x 50, fits to ring spanner 30, perm. load 30 kN in concrete strength B15 (15 N/mm²). Always sufficient for single point fixing.



Heavy duty dowel M 16 (5/8")
hole dia. 24 mm (15/16"), min. hole depth 130 mm (5 1/8"), with reducing sleeve 26 / 17 perm. load as dowel group 13.5 kN (3000 lbs) in concrete strength B 35 (5000 pci). Normally a 2-point fixing is mandatory.

Double end

for fixing two TITAN braces, ideal to push formwork exactly into position.



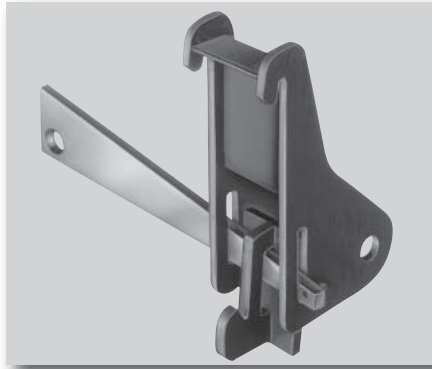
Fixing of prefabricated panels

Cast-in sleeve type "Robusta" $\varnothing 25 \times 200$ ($\varnothing 1" \times 8"$) with special bolt $\varnothing 25 \times 150$ mm ($\varnothing 1" \times 6"$) permissible load 10 kN (2250 lbs) in concrete strength B 30 (4200 psi) out of the design only one point fixing possible, this reduces the perm. load of the TITAN brace to 14 kN (3100 lbs) on compression.



Pin handle

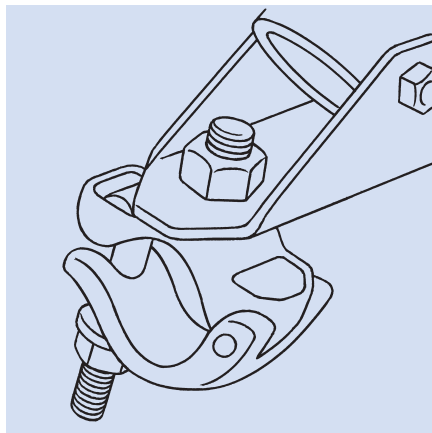
Fast and self-locking bolt to reduce time for assembly and crane handling.



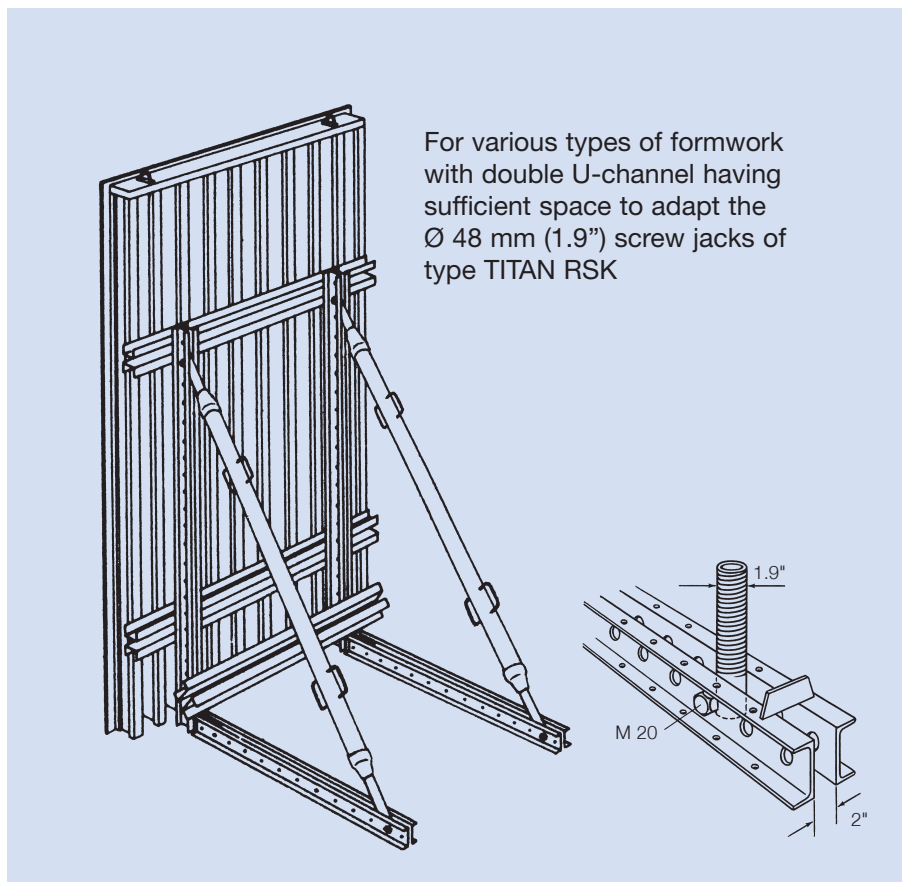
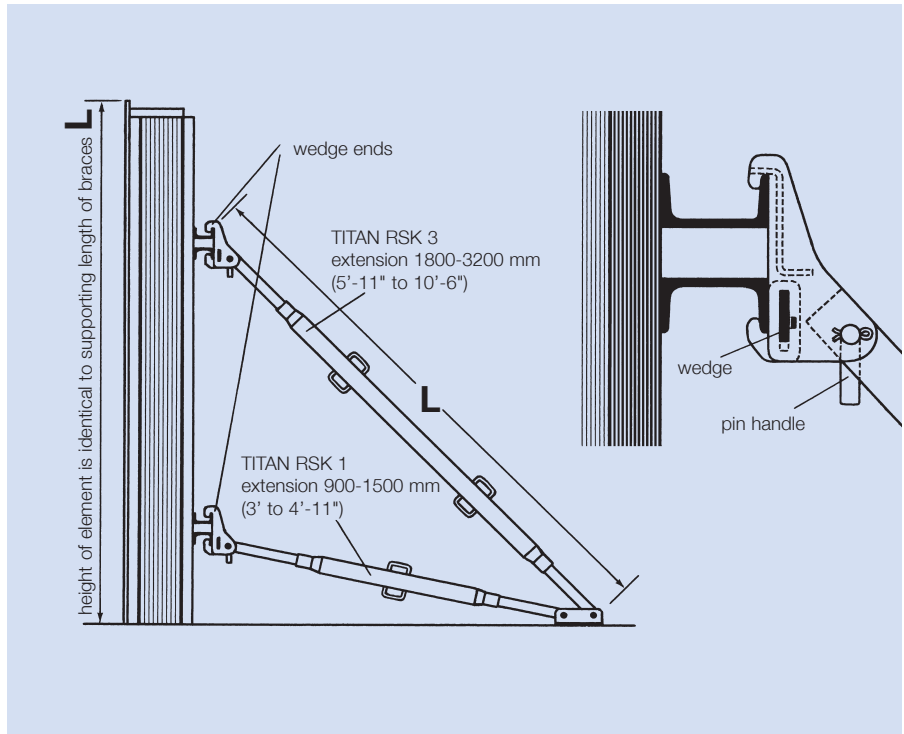
Fixing to steel or aluminum waler
Wedge end steel waler with pin handle, to reduce time for assembly and crane handling, adjustment from 145 to 155 mm (5 11/16" to 6"), perm. load 5 kN, suitable for all standard steel or aluminum waler made of double U 100 profile.



Spanner
500 mm (1'-8"), suitable for TITAN RSK push pull props

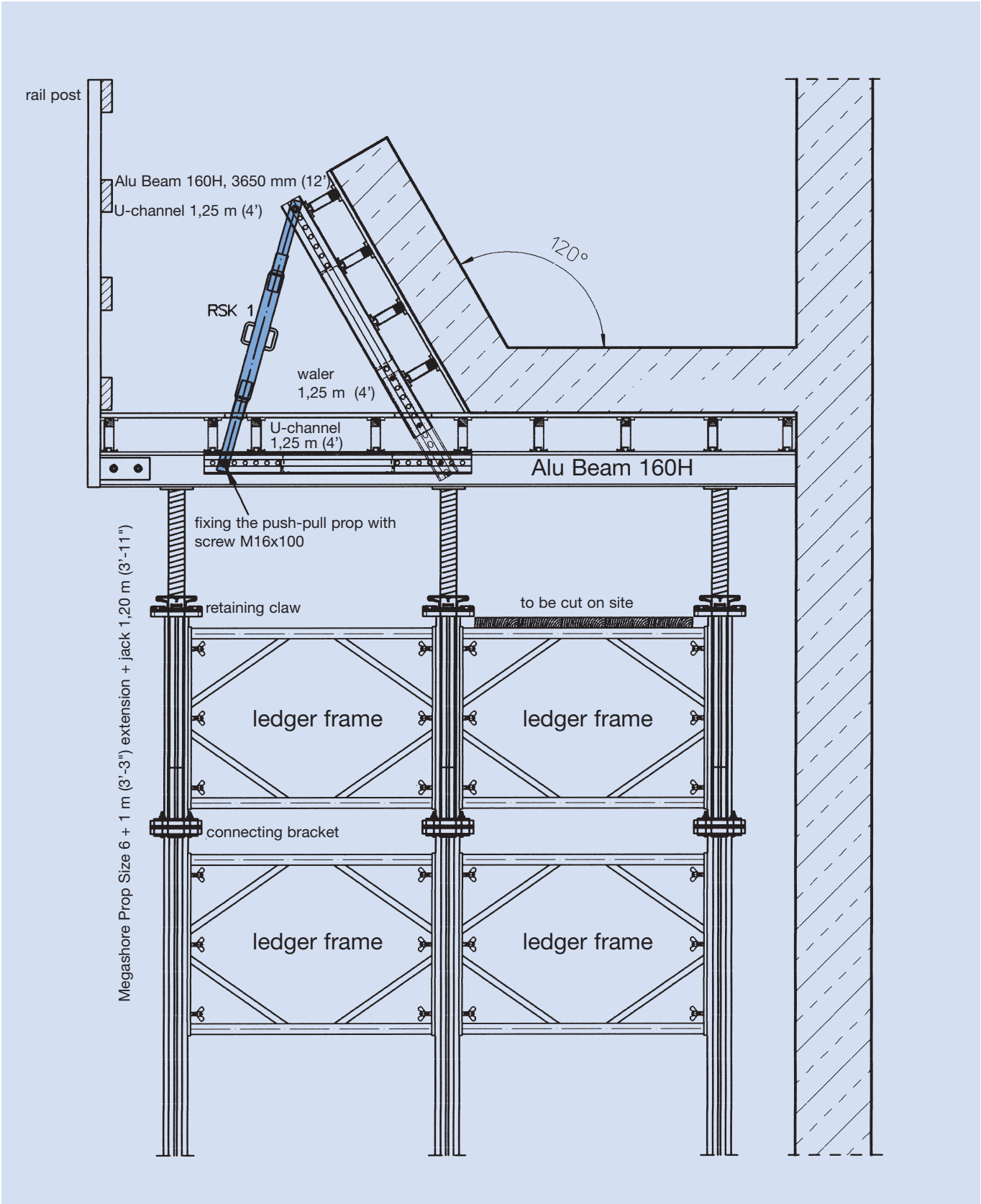


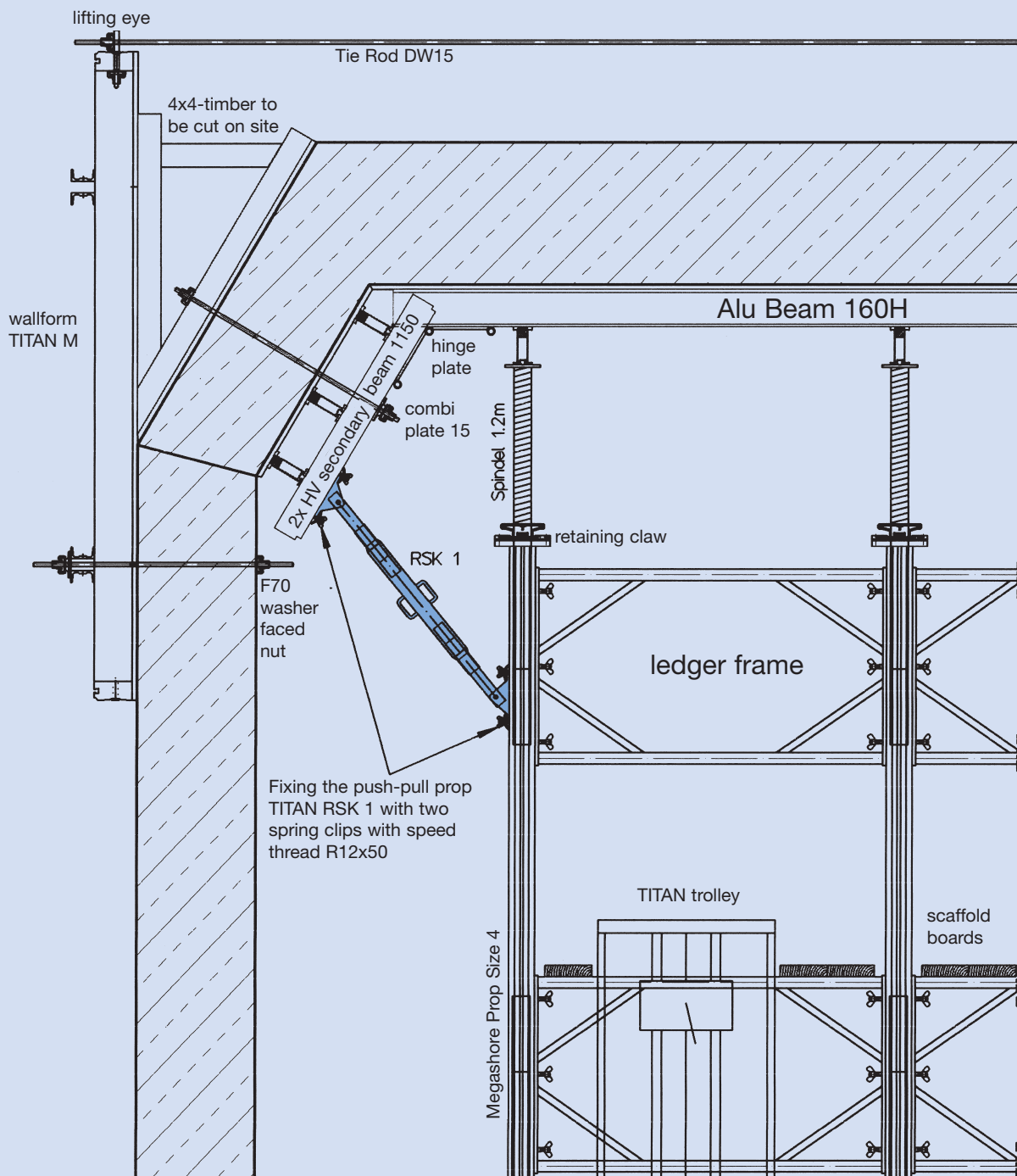
Fixing to scaffold tube 1.9" with bolted on half coupler (clamp)



For various types of formwork with double U-channel having sufficient space to adapt the Ø 48 mm (1.9") screw jacks of type TITAN RSK

Push-Pull Props for various applications





Ischebeck TITAN BKS

The TITAN BKS heavy duty push-pull props have the following advantages:

- Proven load capacities
- Flexible lengths up to 18 m (60 ft) with interchangeable modular sections
- Sturdy construction withstands abusive handling on site
- Fine adjustment up to 1.40 m (55 inch) with screw jacks top and bottom
- Adjustment of screw jacks always within arm's length for maximum safety
- Fast adjustment with double-start speed thread, 25 mm (1 inch) per turn



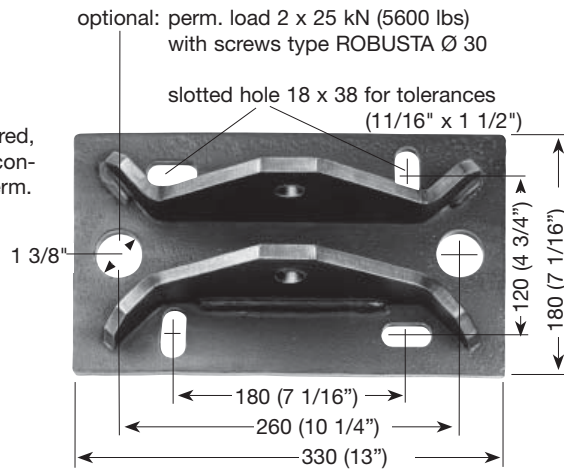
Ischebeck TITAN BKS

Endplate

for fixing with 4 dowels M 16 required,
bore hole depth 120 mm (4 3/4"), con-
crete strength B 25 (25 N/mm²), perm.
load
10 kN (2300 lbs) per dowel

Remarks:

4 screws M 16 x 60, strength 10.9,
galvanised are required to connect
prop elements. They are included
in the price.



Technical Data

Type	adjustment range	perm. axial load on compression			screw jack element	extension		weight
		min	half	max		short	long	
	L m ft	L kN lbs	L kN lbs	L kN lbs	pcs.	pcs.	pcs.	kg lbs
BKS 1	2,3 - 3,7 7'-7" to 12'-2"	50,0 11200	50,0 11200	50,0 11200	2	-	-	72 159
BKS 2	4,7 - 6,1 15'-5" to 20'	50,0 11200	50,0 11200	41,5 9300	2	1	-	122 269
BKS 3	6,0 - 7,4 19'-8" to 24'-3"	50,0 11200	50,0 11200	37,4 8400	2	-	1	144 317
BKS 4	7,1 - 8,5 23'-4" to 27'-11"	50,0 11200	45,3 10200	32,6 7300	2	2	-	172 379
BKS 5	8,4 - 9,8 27'-7" to 32'-2"	50,0 112040	39,1 8800	28,2 6300	2	1	1	194 427
BKS 6	9,7 - 11,1 31'-10" to 36'-5"	45,7 10300	33,2 7500	23,8 5400	2	-	2	216 476
BKS 7	10,8 - 12,2 35'-5" to 40'	39,0 8800	28,3 6400	20,1 4500	2	2	1	244 538
BKS 8	12,1 - 13,5 39'-8" to 44'-4"	32,5 7300	23,8 5400	16,7 3800	2	1	2	266 586
BKS 9	13,2 - 14,6 43'-4" to 47'-11"	25,1 5600	19,9 4500	13,7 3100	2	3	1	294 648
BKS 10	14,5 - 15,9 47'-7" to 52'-2"	19,3 4300	15,9 3600	11,2 2500	2	2	2	316 697
BKS 11	15,8 - 17,2 51'-10" to 56'-5"	14,6 3300	11,9 2700	9,1 2000	2	1	3	338 745
BKS 12	17,1 - 18,5 56'-1" to 60'-8"	10,8 2400	8,7 2000	6,8 1500	2	-	4	360 794

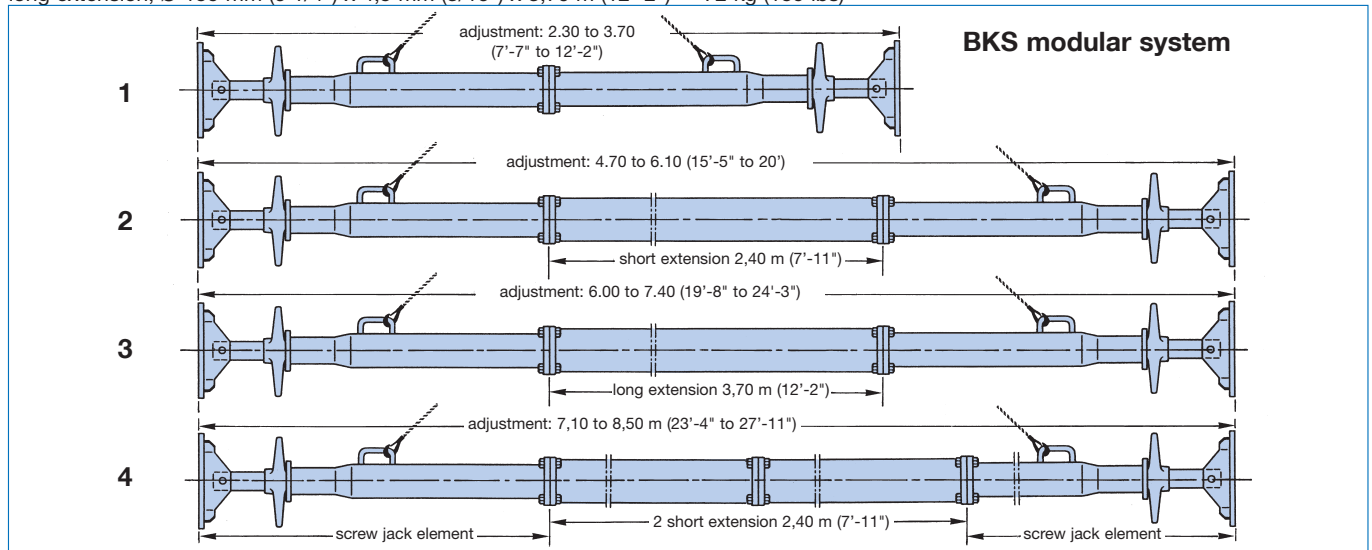
50 kN (11200 lbs) permissible
load on tension

Subject to technical changes

Imperial figures are rounded.

Components:

screw jack element adjustment 1,15 – 1,85 m (3'-9" to 6'-1") 36 kg (79 lbs)
short extension, Ø 159 mm (6 1/4") x 4,5 mm (3/16") x 2,40 m (7'-11") 50 kg (110 lbs)
long extension, Ø 159 mm (6 1/4") x 4,5 mm (3/16") x 3,70 m (12'-2") 72 kg (159 lbs)



TITAN BKS-ALU is a modular system consisting of BKS-Alu-spindle leg, Megashore ALU-extension leg and Mega connecting brackets.

One person can assemble different sizes of TITAN BKS-ALU Push-Pull Prop quickly and easily without using a crane.

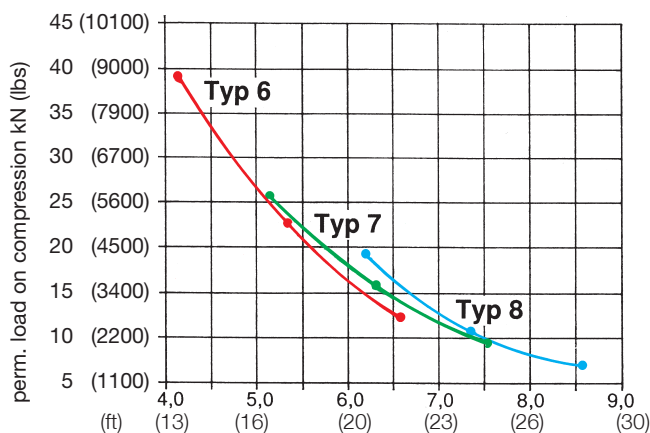
- For bracing and adjusting prefabricated concrete elements
- For bracing and aligning wall and column formwork
- Long-lasting rental system
- Modular system for different lengths and perm. loads
- Proven load capacities

Technical Data

Permissible axial load kN (lbs)

type / size	6	7	8
adjustment	m ft	m ft	m ft
	4,12 - 6,56 13'-6" to 21'-6"	5,12 - 7,56 16'-10" to 24'-10"	6,12 - 8,5 20'-1" to 27'-11"
perm. load min L	kN	kN	kN
on compression	lbs	lbs	lbs
	36,0 8100	23,8 5400	16,0 3600
perm. load half L	kN	kN	kN
on compression	lbs	lbs	lbs
	20,4 4600	13,8 3100	9,2 2100
perm. load max L	kN	kN	kN
on compression	lbs	lbs	lbs
	10,4 2300	7,3 1600	4,9 1100
perm. load on tension	kN	kN	kN
	40 9000	40 9000	40 9000
weight kg (lbs)	43 (95)	51 (112)	59 (130)
Alu-spindle leg	2	2	2
Mega Alu-extension 1 m	–	1	2
Mega connection bracket	2	4	6

weight and wind acc. to DIN 4420 have been included in the static calculation.



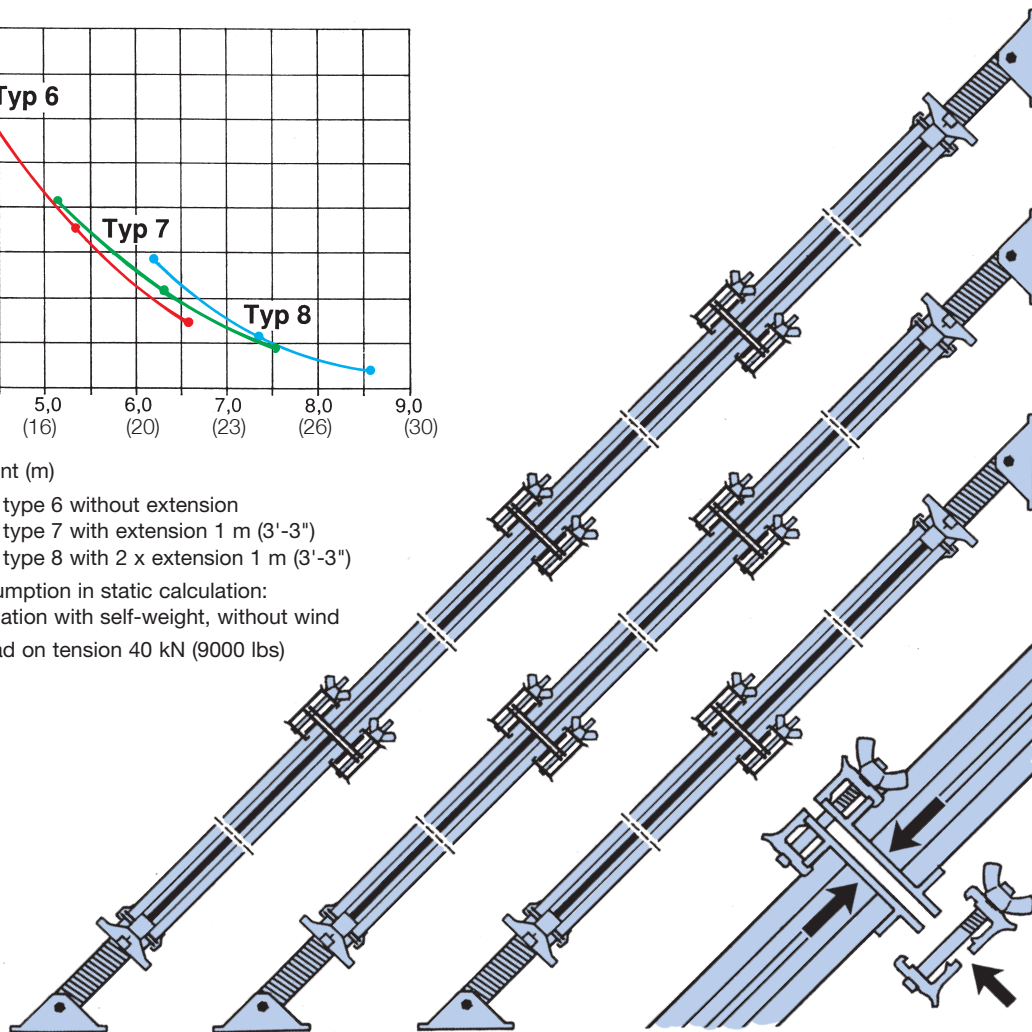
adjustment (m)

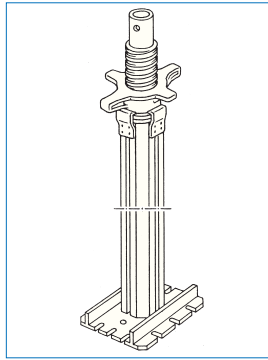
- type 6 without extension
- type 7 with extension 1 m (3'-3")
- type 8 with 2 x extension 1 m (3'-3")

load assumption in static calculation:

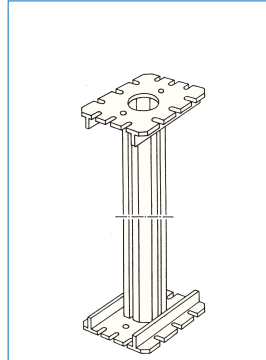
45° inclination with self-weight, without wind

perm. load on tension 40 kN (9000 lbs)

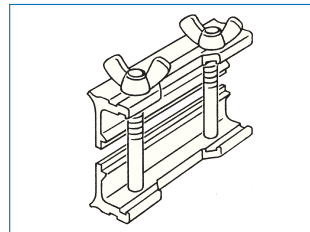




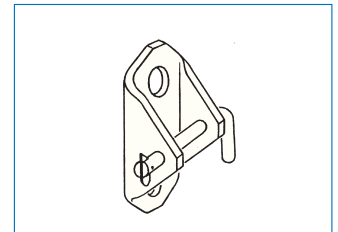
TITAN BKS-Alu-spindle leg
without swivel end, adjustment 2.06 to 3.28 m (6'-9" to 10'-9"), approx. 21 kg (47 lbs), a spanner is required to ease adjustment under full load.



Megashore extension leg
length weight
500 mm (1'-8") 3.5 kg (7.7 lbs)
1000 mm (3'-3") 6.5 kg (14.3 lbs)
5000 mm (16'-5") 24.0 kg (52.9 lbs)



Mega Connecting bracket
Two connecting brackets, one on each side, secure the connection between the TITAN-BKS-ALU spindle leg and the Megashore extension leg or between 2 extension legs.



Swivel end with pin handle
Fast and self-locking bolt for push-pull prop with swivel end to reduce time for assembly and crane

Aluminum push pull props TITAN BKS with Megashore ledger frames

Load chart – static calculation dd. 15.07.2005

Depending on the direction of the wind, strut length and spacing, the safe working load per strut will vary.

The least value between N_1 and N_2 should be the load allowed for.

The wind load was calculated with a wind pressure of $q = 0,8 \text{ kN/m}^2$ according to DIN 1055. Wind can be from all directions, and in this case the bottom line " N_2 wind included" is the limiting factor in deciding permissible strut load.

Example 1:

Length $L = 21 \text{ m}$; min. value of $N = N_2 = 18 \text{ kN}$

Example 2:

For example where $L = 15 \text{ m}$ with wind parallel to the wall the load chart says:

$N_1 = 47 \text{ kN}$, wind included

$N_2 = 48 \text{ kN}$, without wind $\Rightarrow N = N_1 = 47 \text{ kN}$

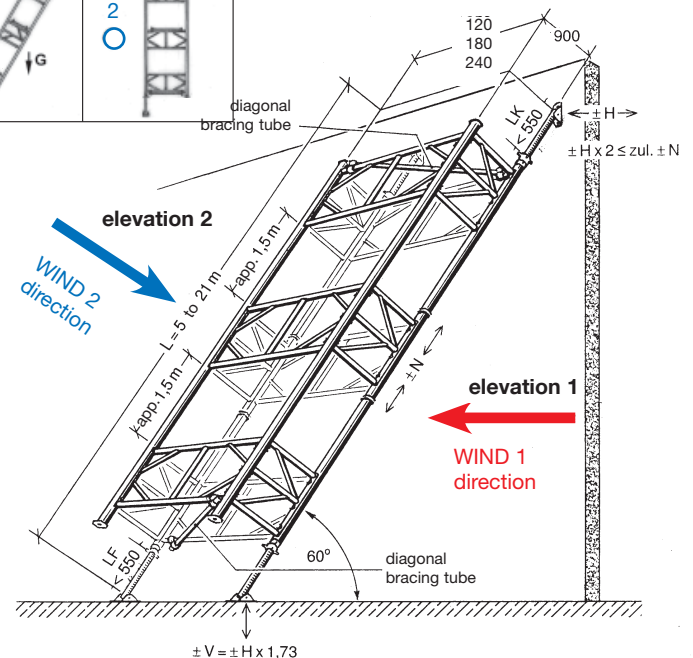
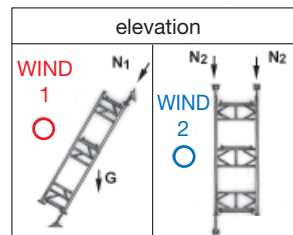
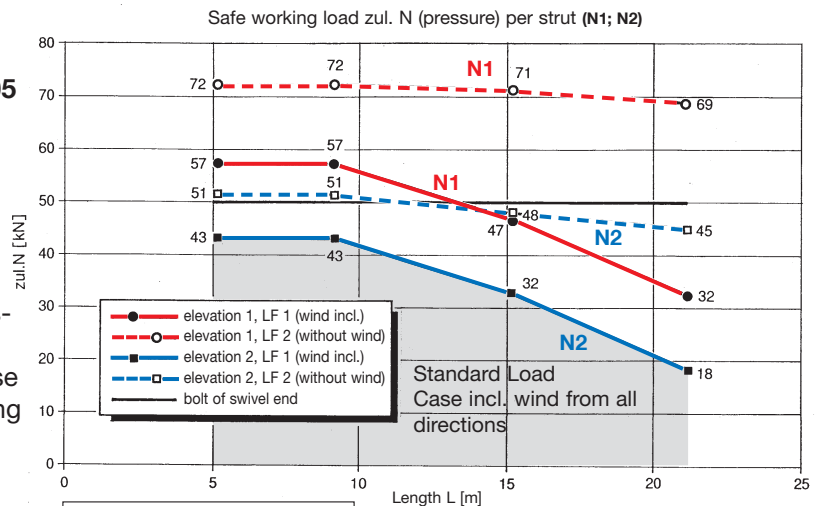
The load chart allows for specific loads depending on the direction of wind, strut spacing and length of strut.

Stabilizing the strut cross section

To stabilize the cross section you need diagonal bracing tubes. The tube has to be connected to the horizontal chord (1.9" dia.) of the ledger frame using a swivel coupler.

For a length of up to 8 m each end bay is fully braced and for lengths up to 16 m an additional braced bay is required at approximately mid point of the span. Beyond these lengths the bracing has to be uniformly distributed over the length.

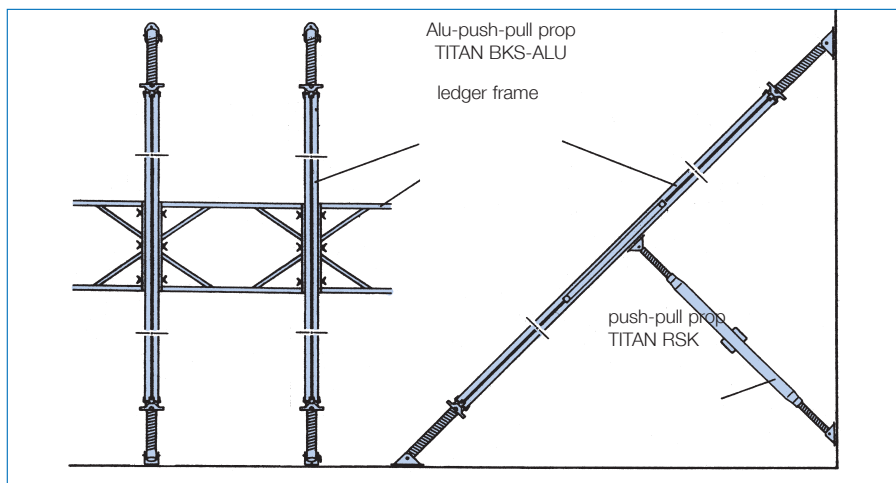
(Dr.-Ing. K.-C. Fröhlich)



Ischebeck Aluminum Push-Pull Prop TITAN BKS-ALU



Grouping the TITAN Push-Pull Props to avoid buckling,
e.g. with ledger frames or push-pull props



DIN EN ISO 9001

CERTIFIED QUALITY SYSTEM

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Registrierungsnummer DE-96-010

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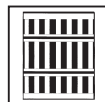
Megashore



HV-System



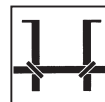
Slabforming
Systems



Wallform
Systems



Props



Beam
Forms



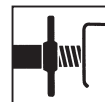
Column
Forms



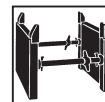
Formwork
Ties



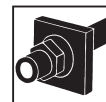
Rail Posts



Struts



Trenching
Systems



Geotechnical
Systems