Systems for supporting precast concrete elements

For partially and fully precast floor slabs and other elements

National Technical Approval and verified typical calculations
Systems for supporting precast concrete elements
For partially and fully precast floor slabs and other elements

Combining TITAN aluminium formwork beams with the ISCHEBECK range of props ensures optimum support for precast concrete floor slabs with just a few components. The systems can be adjusted to suit all requirements, e.g. height, slab depth, beam spacings and prop loads.
The wall-mounted supports complement the system, represent an alternative to traditional falsework and round off the range of support options for precast concrete elements.

**TITAN S option**
The proven prop solution for housing
- TITAN S steel props are available in four lengths (single props up to 5.50 m)
- e.g. with TITAN 120 or TITAN 200 aluminium formwork beams

**TITAN HV option**
For formwork with fewer props
- TITAN HV Lite props are available in two lengths (single legs up to 4.25 m)
- e.g. with TITAN 200 or TITAN 160H aluminium formwork beams
**TITAN HV tower option**
For carrying loads at great heights

- TITAN HV Lite prop – easily extended
- for towers up to 6.10 m high
- e.g. with TITAN 200 or TITAN 160H aluminium formwork beams

**Aluminium Megashore option**
For heavy loads at great heights

- multiple extensions possible
- for falsework up to 24.60 m high
- ideal for use with TITAN 160H or TITAN 225 aluminium formwork beams

**WK wall-mounted supports**
The alternative to traditional falsework – carrying loads while keeping the floor clear

- Can be fixed at any height
- Safe working load up to 100 kN (WK 1000) or 240 kN (WK 2000)
- National Technical Approval Z-21.6-2001

with verified typical to calculations DIN EN 12812

[pages 14–15]
TITAN S option
The proven prop solution for housing

Positioner 38
• for accurate positioning of props
• simply fixed in the multi-purpose slot
• for TITAN S2 and S3 steel props

Bracing clamp
ensures steel props are connected together for stability

Aluminium formwork beams
e.g. TITAN 120 or TITAN 200

TITAN S steel props
Available in four lengths from 1.75 to 5.50 m
• DIN EN 1065
  S2 – class B/D
  S3 – class B/D
  S4 – class C/D
  S7 – class C/D

Universal tripod
ensures secure support for all conventional telescopic props.
• Folds for space-saving transport and storage

Components and accessories
(suitable for all options)

The 4-way heads can accommodate one or two formwork beams and transfer the loads concentrically.

Locating disc
for attaching 4-way heads (not required for TITAN S2 and S3 telescopic props).
**TITAN HV option**

For formwork with fewer props

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**Positioner 50**

- for accurate positioning of props
- simply fixed in the multi-purpose slot
- suitable for all telescopic props (except TITAN S2 and S3)

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**TITAN HV Lite prop**

- Loads up to 96 kN
- Available in two lengths from 1.75 to 4.25 m
- Extendable
- Frame connection option
- Heights up to 6.10 m as support tower
- Steel screw jack, aluminium outer tube
- National Technical Approval Z-8.312-938
- Large range of adjustment, i.e. it is no longer necessary to change props on site.
- Low weight

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**Aluminium formwork beams**

e.g. TITAN 200 or TITAN 160H

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**Aluminium formwork beam TITAN 120**

- Available in two lengths for flexible formwork solutions
  - 2.50 and 3.75 m
  - Timber batten for nails
  - Multi-purpose slot
  - perm. $M = 3.3$ kNm
  - perm. $Q = 17$ kN

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**Aluminium formwork beam TITAN 160H**

- For higher loads
  - Available in 11 lengths from 2.75 to 11.90 m
  - High shear force capacity
  - Timber batten for nails
  - Multi-purpose slot
  - perm. $M = 10.7$ kNm
  - perm. $Q = 52$ kN

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**Aluminium formwork beam TITAN 200**

- The weatherproof alternative to H20 timber beams
  - Same depth as H20 timber formwork beams
  - Available in three lengths from 2.50 to 4.90 m
  - perm. $M = 10.2$ kNm
  - perm. $Q$ and $A = 30$ kN

---

**Spring clip**

- Quickly and easily fixed in the multi-purpose slot
- at top of prop
- at primary and secondary beams
TITAN HV tower option
For carrying loads at great heights

Aluminium formwork beams
e.g. TITAN 200 or TITAN 160H

TITAN ledger frame
• Available in seven sizes

Connecting bracket
• Max. 1 butt joint permitted over the height
• 2 No. connecting brackets required per butt joint

Components and accessories

TITAN HV Lite prop
Can be extended to 6.10 m as a tower with at least one ledger frame within that height.

Three captive T-head bolts
create an interlocking, structural connection between the aluminium ledger frame and the outer tube of the leg.

Aluminium formwork beam TITAN 160H
For higher loads
• Available in 11 lengths from 2.75 to 11.90 m
• High shear force capacity
• Timber batten for nails
• Multi-purpose slot
• perm. M = 10.7 kNm
• perm. Q = 52 kN

Aluminium formwork beam TITAN 200
The weatherproof alternative to H20 timber beams
• Same depth as H20 timber formwork beams
• Available in three lengths from 2.50 to 4.90 m
• perm. M = 10.2 kNm
• perm. Q and A = 30 kN

H20 Multi Clamp
for simple fixing of H20 timber formwork beams
• without damage
• high clamping force

TITAN ledger frames
for higher loadbearing capacity
• seven frame sizes
• easily fixed to props
• improved stability
The TITAN HV slab formwork system is an aluminium drop-head beam system with verified typical calculations. On building sites where the TITAN HV system is being used to support in situ concrete floor slabs, the system can also be used to support precast concrete elements. Changing to a different system is therefore unnecessary. The main benefits of this support system are:

- the few components and easy handling
- the early striking due to the drop-head system
- good stability because the main and secondary beams lie in the same plane
- easy adjustment to match the beam spacing thanks to three coordinated secondary beam lengths
- stable interlocking grid – no timber planks required for bracing

The perfect complement:

Mesh panel
(for foot traffic)

Formwork for large areas is quickly and easily erected using the grid system (ideal bay size: 1.80 x 1.80 m).
The **TITAN Aluminium Megashore System** is the versatile answer for carrying all kinds of loads: precast concrete elements, steel structures, in situ concrete slabs, etc. This modular system made from high-grade aluminium is lightweight and robust. Assembly is quick and easy.

- National Technical Approval for the aluminium props to DIN EN 16031 (Z-8.312-868) and the frame/leg connection for use in falsework (Z-8.22-874)
- Verified typical calculations to DIN EN 12812
- Heights up to 24.60 m covered by verified typical calculations
- Leg loads up to 128 kN

### Components and accessories

**Aluminium formwork beam TITAN 160H**
For higher loads
- Available in 11 lengths from 2.75 to 11.90 m
- High shear force capacity
- Timber batten for nails
- Multi-purpose slot
- perm. $M = 10.7 \, \text{kNm}$
- perm. $Q = 52 \, \text{kN}$

**Aluminium formwork beam TITAN 225**
Aluminium formwork beam for heavy loads
- Available in eight lengths from 1.50 to 7.20 m
- Many accessories available
- perm. $M = 23 \, \text{kNm}$
- perm. $Q = 89 \, \text{kN}$

**Coupling Set**
for butt-jointing beams
- For TITAN 160H and TITAN 225

**Aluminium scaffold board**
for creating an integral working platform. The aluminium scaffold boards are laid on the TITAN ledger frames.
- Complies with DIN EN 12811, load class 3
- Available in four sizes
Supporting precast concrete balconies with cantilevering aluminium formwork beams

Precast concrete balconies can be easily supported with edge tables and cantilevering TITAN 225 aluminium formwork beams (bridging beams). It is therefore unnecessary to erect elaborate scaffolding around the perimeter of the building which has to extend from ground level up to the highest balcony.

As an alternative to cantilevering bridging beams, it is possible to use the beam friction clamp, which fixes a push-pull prop to the TITAN 225 aluminium formwork beam to support the beam.

Please refer to our TITAN Aluminium Megashore Falsework brochure for more information.
Design tables for precast concrete floor slabs
Find the right prop/beam combination in just two steps.

The following design tables can be used to determine the right combination of telescopic prop and formwork beam. The tables are for initial design purposes only and are not intended to replace an analysis of the stability.
Step 1: Determine beam and prop spacings

The permissible beam spacings are frequently specified by the manufacturer of the precast elements. The maximum permissible prop spacings result from the floor slab depth and the beam spacing chosen.

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<th>TITAN 200</th>
<th>TITAN 225</th>
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Step 2: Determine the right prop for the job
Extended height and position of screw jack affect the loadbearing capacity of the prop.

### Table: Right Prop Selection

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<th>C 40</th>
<th>C 55</th>
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* The maximum load is limited to 40 kN when using legs with an Iflon disc.

** We recommend using two ledger frames over the height for better stability.
WK wall-mounted supports – the alternative to traditional falsework

Screw anchors can also be fixed in an existing concrete wall (core-drilling)

**TITAN WK wall-mounted supports** represent alternatives to falsework where elaborate and expensive temporary foundations would otherwise be necessary and openings must be kept clear for traffic. The support block for each wall-mounted support is fixed in place with a cast-in screw anchor that can be recovered afterwards. The structure is therefore supported on the wall-mounted supports fixed to the concrete wall cast in advance.

- Safe working load up to 100 kN (WK 1000) or 240 kN (WK 2000)
- Loads carried while keeping the floor clear – no need for separate (temporary) foundations
- No need for protection against impacts
- Ideal for creating large access openings
- Few parts only

Screw anchors can also be fixed in an existing concrete wall (core-drilling)

Please refer to our WK wall-mounted supports brochure for more information.
Support for bridging elements at any height
with WK wall-mounted supports and recoverable screw anchors

Erection of precast concrete bridge beams
Angers, Pays de la Loire, France
The precast concrete bridge beams were supported on a total of 44 WK 2000 wall-mounted supports. The screw anchors were recovered afterwards.
Components

**TITAN S steel prop**

Available in four sizes. The props have a paint finish (S). Size 2 is available galvanised on request (SZ).

- **Size 2, class B/D**
  - 1.80 – 3.00 m
  - Weight 16 kg
  - Paint finish (S)
  - Part No. 0120100001
  - Galvanised (SZ)
  - Part No. 0120120001

- **Size 3, class B/D**
  - 2.30 – 3.50 m (S)
  - Weight 18 kg
  - Part No. 0120100005

- **Size 4, class B/D**
  - 2.60 – 4.10 m (S)
  - Weight 26 kg
  - Part No. 0120100009

- **Size 7, class B/D**
  - 4.00 – 5.50 m (S)
  - Weight 33 kg
  - Part No. 0120100016

**TITAN HV adjustable leg**

Adjustable legs are available in two sizes.

- **HV 1.75 – 3.05 m**
  - Weight 16.4 kg
  - Part No. 0220490027

- **HV Maxi 2.95 – 4.25 m**
  - Weight 21 kg
  - Part No. 0120490048

**TITAN HV extension**

4 No. M12 x 35 bolts + nuts or 2 No. HV connecting brackets are required for a structural connection.

- **Length**
  - 1000 mm
  - Part No. 0120490028
  - 1250 mm
  - Part No. 0120490032

**HV connecting bracket**

2 No. connecting brackets are required per butt joint.

- Weight 1.22 kg
- Part No. 0120490033

**HV screw jack**

Separate steel screw jack. Hot-dip galvanised.

- Length 870 mm
- Adjustment range 500 mm
- Weight 5.9 kg
- Part No. 0120490045

**Retainer claw**

2 No. retainer claws are required to attach an additional screw jack. Galvanised.

- Weight 0.26 kg
- Part No. 0220490047

**TITAN Megashore leg**

Adjustable legs are available in three sizes.

- **Size 2**
  - 1.70 – 2.90 m
  - Weight 18.4 kg
  - Part No. 0220150001

- **Size 4**
  - 2.90 – 4.10 m
  - Weight 22.4 kg
  - Part No. 0220150003

- **Size 6**
  - 4.30 – 5.50 m
  - Weight 29.4 kg
  - Part No. 0220150005

**TITAN extension outer**

2 No. connecting brackets are required for a structural connection.

- Length
  - 500 mm
  - Part No. 0220150039
  - 1000 mm
  - Part No. 0220150041
  - 1250 mm
  - Part No. 0220150040
  - 5000 mm
  - Part No. 0220150051

**Connecting bracket**

2 No. connecting brackets are required per butt joint.

- Weight 0.79 kg
- Part No. 0120150084

**TITAN Megashore jack**

Separate aluminium screw jack. Depth of quick-action nut = 90 mm.

- Length 810 mm
- Adjustment range 400 mm
- Weight 6.1 kg
- Part No. 0220150021

- Length 1610 mm
- Ad. range 1200 mm
- Weight 10.4 kg
- Part No. 0220150020

**Retainer claw**

2 No. retainer claws are required to attach an additional screw jack. Galvanised.

- Weight 0.30 kg
- Part No. 0220150017
### TITAN aluminium formwork beams

#### TITAN 225
- with three Ø17 mm holes at each end.
- Weight/m 8.5 kg
- **Length** | **Weight** | **Part No.**
  |  |  |
 1.50 m | 12.75 kg | 0320420010 |
3.00 m | 25.50 kg | 0320420006 |
3.60 m | 30.60 kg | 0320420024 |
4.20 m | 35.70 kg | 0320420016 |
4.80 m | 40.80 kg | 0320420023 |
5.40 m | 45.90 kg | 0320420017 |
6.00 m | 51.00 kg | 0320420009 |
7.20 m | 61.20 kg | 0320420018 |
9.00 m** | 76.50 kg | 0620420002 |

#### TITAN 200
- with two Ø17 mm holes at each end.
- Weight/m 5.1 kg
- **Length** | **Weight** | **Part No.**
  |  |  |
 2.50 m | 12.8 kg | 0620410050 |
3.90 m | 20.0 kg | 0620410055 |
4.90 m | 25.1 kg | 0620410060 |

#### TITAN 160H
- with two Ø17 mm holes at each end.
- Weight/m 6.5 kg
- **Length** | **Weight** | **Part No.**
  |  |  |
 2.75 m | 18.00 kg | 0620410020 |
3.20 m | 20.00 kg | 0620410021 |
3.65 m | 24.00 kg | 0620410022 |
4.30 m | 28.00 kg | 0620410023 |
4.90 m | 32.00 kg | 0620410024 |
5.50 m | 36.00 kg | 0620410025 |
6.40 m | 42.00 kg | 0620410026 |
8.00 m | 52.00 kg | 0620410028 |
11.90 m | 77.35 kg | 0620410031 |

#### TITAN 120
- with strengthened plate at each end.
- Weight/m 2.9 kg
- **Length** | **Weight** | **Part No.**
  |  |  |
 2.50 m | 7.25 kg | 0620400002 |
3.75 m | 11.00 kg | 0620400006 |

### Coupling set
- for butt-joining TITAN aluminium formwork beams.
- Consists of two plates fitted either side of the beam which are fixed with the four bolts supplied.
- **For TITAN 160H (perm. M = 7.5 kNm)**
  - Weight | **Part No.**
  |  |  |
 11.4 kg | 0120454522 |
- **For TITAN 225 (perm. M = 23 kNm)**
  - Weight | **Part No.**
  |  |  |
 16 kg | 0120454521 |

* Other lengths on request  
** To be discontinued
Components

Connections between legs/props and timber or aluminium formwork beams

**TITAN 160H 4-way head**  
for 160H aluminium formwork beam.  
Galvanised.  
Weight 2.60 kg  
Part No. 0620140018

**TITAN 200 4-way head**  
for H20 timber beams and TITAN 200. Galvanised.  
Weight 2.90 kg  
Part No. 0620140017

**Locating disc**  
for fixing 4-way head and table form adapter (not required for TITAN S2 and S3).  
Weight 0.44 kg  
Part No. 0120140014

**TITAN 120 4-way head**  
for TITAN 120 aluminium formwork beam.  
Galvanised.  
Weight 1.70 kg  
Part No. 0620140016

**Positioners** for locating and retaining props beneath aluminium formwork beams.

**Positioner 50**  
for all props (except S2/S3).  
Weight 0.10 kg  
Part No. 0620490059

**Positioner 38**  
for TITAN S2 and S3.  
Weight 0.10 kg  
Part No. 0620490058

**TITAN HV drop-head**  
Hot-dip galvanised, fits on all conventional DIN props. Quickly lowered 100 mm with a hammer-blow to the release ring.  
Weight 4.7 kg  
Part No. 0120490030

**Secure fixings for beams and props**

**Universal tripod**  
Foldable, suitable for all telescopic props. Hot-dip galvanised.  
Weight 9.25 kg  
Part No. 0620140010

**Timber bracing clamp**  
for connecting steel props together with timber planks for stability. Paint finish.  
Weight 1.10 kg  
Part No. 1420140020

**Spring clip** with R12 x 50 mm bolt, 0–18 mm clamping capacity, with wing nut, galvanised.  
Weight 0.25 kg  
Part No. 0620450012

**H20 Multi clamp**  
for connecting H20 timber beams to TITAN aluminium formwork beams, steel beams or TITAN props.  
Weight 0.43 kg  
Part No. 0620450039
**Aluminium ledger frame (HV tower and aluminium Megashore system)**

**TITAN ledger frame**

All ledger frames are 840 mm high. Top and bottom chords are made from a Ø48 mm tube. Seven different sizes are available, divided into three frame groups.

### Frame group 0 (RG0)

- **c/c dim.** | **Weight** | **Part No.**
- 600 mm | 5.60 kg | 0220150067

### Frame group 1 (RG1)

- **c/c dim.** | **Weight** | **Part No.**
- 900 mm | 7.50 kg | 0220150068
- 1250 mm | 7.80 kg | 0120150070
- 1600 mm | 8.80 kg | 0120150071
- 1800 mm | 9.70 kg | 0120150072

### Frame group 2 (RG2)

- **c/c dim.** | **Weight** | **Part No.**
- 2400 mm | 13.50 kg | 0120150073
- 3000 mm | 15.40 kg | 0120150074

**Accessories for connecting to aluminium ledger frames**

**Aluminium scaffold board**

For creating an integral working platform. The aluminium scaffold boards are laid on the aluminium ledger frames. The boards comply with DIN EN 12811, load class 3.

- **Length** | **Weight** | **Part No.**
- 1.25 m | 6 kg | 0620160005

**Scaffold coupler 76/48**

for Ø76 mm aluminium screw jack.

- **Weight** | **Part No.**
- 1.70 kg | 0720300085

**TITAN Half coupler**

for connecting Ø48 mm scaffold tubes to multi-purpose slot (props, beams, etc.).

- **Weight** | **Part No.**
- 1.56 kg | 0620150089
TITAN Alu-Flex as minimal floor slab support
Apartments in Einsingen near Ulm
A combination of precast elements and in situ concrete was used for the floor over the basement. The precast elements were supported with TITAN S steel props and TITAN 120 aluminium formwork beams.

Please refer to our TITAN push-pull props brochure for more information on supporting precast concrete elements and wall/column formwork.

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.