Wedge jacks

Method statement
Introduction

Ischebeck Titan is renowned as one of the leading manufacturers and suppliers of equipment to the construction and civil engineering industries.

Our commitment to safety and site efficiency is evident in the design performance and quality of our products, which offer safe access and secure working platforms for an enormous variety of applications.

The enclosed method statement underlines our devotion to site safety by providing recommendations, based on tried and trusted methods, for the proper use and application of Ischebeck Titan wedge jacks.

Please take time to read and understand the information presented before using the products covered. If you need further advice or assistance consult a suitably qualified person within your own company or contact Ischebeck Titan.

Disclaimer

The methods presented in this document are solely for the use of Ischebeck Titan equipment and are intended for guidance only. When familiarity has been gained with the equipment preferred methods may be adopted, provided they do not contravene health and safety regulations or accepted safe working practices. The information is correct at time of publication, but Ischebeck Titan reserves the right to change, without prior notice, the specifications and methods mentioned. No responsibility whatsoever can be accepted for any errors or omissions in, or misrepresentation of, the contents. For specific information refer to Ischebeck Titan Limited.
Site safety is your responsibility

The importance of site safety cannot be over emphasized. You have a responsibility to yourself, your colleagues, site visitors, family, friends and others to ensure you do not injure yourself or take actions, which put the lives and health of other people at risk.

Site safety rules will form part of every site’s health and safety plan. You should familiarise yourself with these rules and make sure that you and fellow workers do not contravene their requirements. A prominent notice will identify personnel with overall responsibility for site safety.

You will have contractual and legal obligation to follow these rules and adhere to relevant legislation, such as the Health and Safety at Work Act, which place specific responsibilities on you and your employer to prevent accidents.

Site safety is the responsibility of everyone on site. If you have a reason to believe that safety is being compromised, you should report it to the appropriate personnel.

Your responsibilities

Following are a few suggestions to help you work safely and contribute to safety on your site:

- Make sure you fully understand the safe and proper way to do any job.
- If in doubt, ask your supervisor – do not guess.
- Always conduct yourself in a responsible and safe manner.
- Do not expose others to danger through your actions.
- Always use the correct tools and equipment for the job.
- Always use the appropriate safety equipment and protective clothing.
- Report ALL defects in plant and equipment.
- Observe and comply with warning and hazard notices.
- Advise newcomers of safe working practices.
- Make sure you know where to go for first aid treatment.
- Report any injury and ensure it is entered in the accident book.
- Never indulge in horseplay or practical jokes at work.
- Never attempt to work whilst under the influence of alcohol or drugs.
- Make sure you have read and understood the sites health and safety requirements.
- Report any situation which might compromise site safety to the sites safety officer.
Safe working practice

- Consider health and safety first. If you are not sure of procedures ask.
- Do not take shortcuts – use the access provided.
- Do not remove handrails or ladders from scaffolds unless instructed to do so and replace them as soon as possible.
- Play your part in keeping the site tidy and safe.
- Look out for hazard warning notices and obey them.
- Never attempt to operate machinery unless you have been trained and authorized to do so.
- Attempting to lift heavy objects or materials can cause injury – obtain assistance where necessary.
- Study your company’s policy.
- Remember you have a legal duty to take reasonable care of your own health and safety and to avoid placing other people at risk. Such as those who work with you and members of the public.
- If in doubt about your job, ask your immediate supervisor for guidance.
- Your co-operation in discouraging children from entering the site will help to reduce the risk of accidents to them and others.
- Remember that entering an unsafe area could render you liable to prosecution. If it looks or feels unsafe, report it. If you are unsure, ask site supervision for advice.

Personal protective equipment

For your protection, always use the safety helmets, ear protectors, face masks, goggles, gloves, safety harnesses and other items of personal protective equipment appropriate to the tasks you are undertaking.

When protective clothing and/or equipment is issued to you:-

- Wear or use the equipment when required and when there is any possibility of personal injury in the course of your work.
- Look after the equipment.
- If the equipment is on personal issue, store it carefully and ensure that it is available for use when needed.
- Make sure that equipment is properly maintained.
- Replace defective equipment immediately.
- If you have any doubts about the correct use, adjustment or maintenance of the equipment, ask your supervisor.
1 The wedge jacks and their use

The TITAN 500 and TITAN 1000 wedge jacks from Ishbeck Titan have been tested for use as jacks in heavy falsework applications.

The wedge jacks are generally used for the support of beams and beam falsework or single rolled steel props or heavy duty falsework props. The item to be supported may be fastened to the wedge jack by means of connecting brackets. The wedge jack is to be placed on a surface as solid and flat as possible, such as a concrete foundation, a foundation beam or a steel bracket.

The wedge jack may be subjected to both centric and eccentric vertical forces and also to a lesser extent horizontal forces.

The load-bearing capacity of the wedge jack is depending on the surface it has been placed on and how it has been placed there.

Figures 1-3 show the TITAN 500 wedge jack. The TITAN 1000 wedge jack is similar.

In this document, permitted maximum loads are indicated for the TITAN 500 and TITAN 1000 wedge jacks for specific cases with given conditions.
2 Design and function

The wedge jack consists of four identical wedges arranged at an angle of 90° to each other.

The wedges are held together by a tie rod (TITAN 500) or an anchor bolt (TITAN 1000) and by vertical bolts that limit the maximum height (see figures 4-7).

A layer of synthetic resin protects the wedge jack against corrosion.

The TITAN 500 Wedge Jack

The bottom wedge of the TITAN 500 has a welded-on base plate (200x200x10 mm), while angular headplates have been welded to both sides of the top wedge (see figures 4 and 5).

The side wedges are positioned vertically between the top and bottom wedges and held together by means of a threaded tie rod (Ø 26.5 mm) and nuts. One of the nuts has been tack welded to one of the side wedges.

Figure 4: The TITAN 500 Wedge Jack
Base plate 200 x 200 mm
Height H 168 – 268 mm
Adjustment range 100 mm

Figure 5: The TITAN 500 Wedge Jack
Top: Maximum height (268 mm)
Bottom: Minimum height (168 mm)
The TITAN 1000 Wedge Jack

On the TITAN 1000 wedge jack, plates (300x300x10 mm) have been welded to both the top and bottom wedges respectively (head plate and base plate, see figures 6 and 7).

The side wedges are positioned vertically between the top and bottom wedges and held together by means of an anchor bolt Tr 53 x 13 mm and nut.

Function

Tightening the adjustment nut will pull the side wedges together, thereby lifting the top wedge and increasing the total height of the wedge jack. Loosening the adjustment nut will make the side wedges move away from each other, letting the top wedge sink. In both cases, the wedges will slide along their 45° surfaces.

The adjustment range is 100 mm for the TITAN 500 and 90 mm for the TITAN 1000. Due to a large pitch thread, adjustment is fast and requires little force.

Figure 6: The TITAN 1000 Wedge Jack

- Base plate: 300 x 300 mm
- Height H: 182 – 272 mm
- Adjustment range: 90 mm

Figure 7: The TITAN 1000 Wedge Jack

- Top: Maximum height (272 mm)
- Bottom: Minimum height (182 mm)
Below maximum load, the wedge jack can be loosened by means of a ring spanner and a 2 kg hammer. For safety reasons, a wrench with a torque multiplier (preferably 1:15) is recommended when working on the falsework. The respective beams may be used for supporting torque multiplier lever.

The wedge jacks can lift and adjust loads up to 40 kN.

The TITAN wedge jacks have been developed from the traditional sand support, in comparison with which it has the following advantages:

- exact height adjustment
- data on load deformation properties
- insensitive to water

In comparison with spindle designs and hydraulic cylinders, the wedge jack is also capable of handling eccentric loads and horizontal forces within a certain limit. The

![Figure 8: Wedge jack with a ring spanner](image)

Figure 8: Wedge jack with a ring spanner

wedge jacks are less expensive yet more solid than hydraulic equipment with the same load capacity.

### Technical data

<table>
<thead>
<tr>
<th>Wedge jack</th>
<th>TITAN 500</th>
<th>TITAN 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum load according to DIN 4421 and DIN 18800</td>
<td>See Section 5: Maximum load for the wedge jack</td>
<td></td>
</tr>
<tr>
<td>Vertical load $F_z$ max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal load $F_x$, $F_y$ max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eccentricity $e_x$ max, $e_y$ max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settlement</td>
<td>1 mm / 100 kN</td>
<td>1 mm / 100 kN</td>
</tr>
<tr>
<td>Adjustment range</td>
<td>168 – 268 mm</td>
<td>182 – 272 mm</td>
</tr>
<tr>
<td>Base plate area</td>
<td>200 x 200 mm</td>
<td>300 x 300 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>29.5 kg</td>
<td>53.3 kg</td>
</tr>
</tbody>
</table>

For safety: The sliding surfaces of the wedges must not be lubricated.
3 Verification of stability based on structural analysis

For real applications, the stability of the wedge jack may be calculated and verified based on static calculation models of the wedge jack alone. In these calculation models, impact and load-bearing capacity are taken into consideration.

The calculation models that form the basis of the test type are described in detail in Chapter 4. Support conditions are governed by the foundation conditions and the connected elements or with the aid of technical applications.

In Chapter 8, various applications are shown with the appropriate static calculation model.

In the design of falsework it must be remembered that the wedge jack provides a very low degree of restraint for the surroundings. Because of its low torsional stiffness, the wedge jack will therefore not add to stability.

4 Description of load cases and static calculation models

The following examples are cases where wedge jacks may be used:

1. In the case of torque transfer with no horizontal loads, if one of the end plates (head and/or base plate) is not fixed so that it cannot rotate, it must be ensured that the end plates cannot shift in relation to each other in any direction.

At pure eccentric vertical loads, the following calculation models are to be used (static calculation models A):

- Figure 10: Static calculation model A-1 for view 1 (see figure 1) of the wedge jack
- Figure 11: Static calculation model A-2 for view 2 (see figure 2) of the wedge jack

The degree of restraint of the wedge jack is low. The end plates will rotate by more than 1° from the horizontal plane even at a very low load eccentricity without impeding the load-bearing capacity of the wedge jack.
2. If both end plates are fixed, the wedge jack can also transfer horizontal loads.

For the transfer of horizontal loads when there is a centric vertical load, the following static calculation models are to be used (static calculation models B):

![Image 12](static-calculation-model-B-1-view-1-wedge-jack)

**Figure 12:**
Static calculation model B-1 for view 1 (see figure 1) of the wedge jack

**Note:**
The wedge jack may not be used for taking up eccentric vertical loads and horizontal loads at the same time.

5 Maximum permissible loads for the wedge jack

The wedge jack load-bearing capacity and maximum permissible load eccentricity have been calculated analytically according to DIN 4421. Each case has been tested to verify the load-bearing behaviour. As long as the conditions mentioned in Chapter 4 are met, the wedge jack will meet the requirements of "Traggerüstgruppe III" (Framework Class III) of DIN 4421.

5.1 Maximum permissible centric load

a) End plates not fixed rotationwise

Static calculation models A-1 and A-2

![Image 14](static-calculation-model-A-1-view-1-wedge-jack)

**Figure 14:**
Static calculation model A-1 for view 1 (see figure 1) of the wedge jack

![Image 15](static-calculation-model-A-2-view-2-wedge-jack)

**Figure 15:**
Static calculation model A-2 for view 2 (see figure 2) of the wedge jack
b) End plates fixed rotationwise
Static calculation models B-1 and B-2

**Figure 16:**
Static calculation model B-1 for view 1
(see figure 1) of the wedge jack

**Figure 17:**
Static calculation model B-2 for view 2
(see figure 2) of the wedge jack

Maximum permissible load ($F_z$) regardless of the total height ($H$) and eccentricity ($e$):

- TITAN 500: $F_{z \text{ max}} = 420$ kN
- TITAN 1000: $F_{z \text{ max}} = 1000$ kN

### 5.2 Maximum permissible eccentric load

The maximum permissible eccentricity ($e$) is reduced with increasing total height ($H$) of the wedge jack (see diagram 1-1 and table 1-1 for TITAN 500 and diagram 1-2 and table 1-2 for TITAN 1000).

**Figure 18:**
Static calculation model A-1 for view 1
(see figure 1) of the wedge jack

**Figure 19:**
Static calculation model A-2 for view 2
(see figure 2) of the wedge jack
Permissible load eccentricity TITAN 500 wedge jack

Diagram 1-1:
Maximum permissible eccentricity
for the TITAN 500 wedge jack

<table>
<thead>
<tr>
<th>H [mm]</th>
<th>ex max = ey max [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>168</td>
<td>30</td>
</tr>
<tr>
<td>178</td>
<td>30</td>
</tr>
<tr>
<td>188</td>
<td>30</td>
</tr>
<tr>
<td>208</td>
<td>30</td>
</tr>
<tr>
<td>218</td>
<td>26</td>
</tr>
<tr>
<td>228</td>
<td>23</td>
</tr>
<tr>
<td>238</td>
<td>19</td>
</tr>
<tr>
<td>248</td>
<td>16</td>
</tr>
<tr>
<td>258</td>
<td>12</td>
</tr>
<tr>
<td>268</td>
<td></td>
</tr>
</tbody>
</table>

Table 1-1:
Maximum permissible eccentricity
for the TITAN 500 wedge jack

Permissible load eccentricity TITAN 1000 wedge jack

Diagram 1-2:
Maximum permissible eccentricity
for the TITAN 1000 wedge jack

<table>
<thead>
<tr>
<th>H [mm]</th>
<th>ex max = ey max [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>26</td>
</tr>
<tr>
<td>192</td>
<td>26</td>
</tr>
<tr>
<td>202</td>
<td>26</td>
</tr>
<tr>
<td>212</td>
<td>26</td>
</tr>
<tr>
<td>222</td>
<td>24</td>
</tr>
<tr>
<td>232</td>
<td>21</td>
</tr>
<tr>
<td>242</td>
<td>17</td>
</tr>
<tr>
<td>252</td>
<td>14</td>
</tr>
<tr>
<td>262</td>
<td></td>
</tr>
<tr>
<td>272</td>
<td></td>
</tr>
</tbody>
</table>

Table 1-2:
Maximum permissible eccentricity
for the TITAN 1000 wedge jack
5.3 Maximum permissible loads with simultaneous horizontal (Fx or Fy) and centric vertical (Fz) loads

If the end plates cannot rotate in relation to each other, the wedge jack can also take up horizontal loads.

![Diagram of wedge jack with horizontal and vertical loads](image)

**Figure 20:** Static calculation model B-1 for view 1 (see figure 1) of the wedge jack

**Figure 21:** Static calculation model B-2 for view 2 (see figure 2) of the wedge jack

- **Sliding stiffness from friction**

  **Height of the wedge jack (H)** (see diagram 2-1 and table 2-1 for TITAN 500 and diagram 2-2 and table 2-2 for TITAN 1000).

**Maximum permissible load TITAN 500 wedge jack**

<table>
<thead>
<tr>
<th>H [mm]</th>
<th>Fx max / Fz exist, Fy max / Fz exist, resp. [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>168</td>
<td>0.142</td>
</tr>
<tr>
<td>178</td>
<td>0.142</td>
</tr>
<tr>
<td>188</td>
<td>0.142</td>
</tr>
<tr>
<td>208</td>
<td>0.142</td>
</tr>
<tr>
<td>218</td>
<td>0.142</td>
</tr>
<tr>
<td>228</td>
<td>0.136</td>
</tr>
<tr>
<td>238</td>
<td>0.129</td>
</tr>
<tr>
<td>248</td>
<td>0.123</td>
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<tr>
<td>258</td>
<td>0.116</td>
</tr>
<tr>
<td>268</td>
<td>0.110</td>
</tr>
</tbody>
</table>

**Diagram 2-1:**

Maximum permissible horizontal load for the TITAN 500 wedge jack

**Table 2-1:**

Maximum permissible horizontal load for the TITAN 500 wedge jack
Diagram 2-2:
Maximum permissible horizontal load for the TITAN 1000 wedge jack

b) Maximum permissible vertical load (Fz max) at an existing horizontal load (Fx) or (Fy)

View 1 – Fx exist: The maximum vertical load (Fz max) is calculated taking the horizontal load (Fx exist) into consideration

TITAN 500  Fz max = 420 kN – 1,4 x Fx exist
TITAN 1000  Fz max = 1000 kN – 1,4 x Fx exist

View 2 – Fy exist: The maximum vertical load (Fz max) is independent of the horizontal load (Fy exist) and does not have to be reduced

TITAN 500  Fz max = 420 kN
TITAN 1000  Fz max = 1000 kN

The conditions a) Fx ≤ Fx max, Fy ≤ Fy max and b) Fz ≤ Fz max must be met at the same time.

<table>
<thead>
<tr>
<th>H mm</th>
<th>Fx max / Fz exist, resp. Fy max / Fz exist, [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>0.152</td>
</tr>
<tr>
<td>192</td>
<td>0.152</td>
</tr>
<tr>
<td>202</td>
<td>0.152</td>
</tr>
<tr>
<td>212</td>
<td>0.152</td>
</tr>
<tr>
<td>222</td>
<td>0.152</td>
</tr>
<tr>
<td>232</td>
<td>0.149</td>
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<tr>
<td>242</td>
<td>0.142</td>
</tr>
<tr>
<td>252</td>
<td>0.135</td>
</tr>
<tr>
<td>262</td>
<td>0.128</td>
</tr>
<tr>
<td>272</td>
<td>0.122</td>
</tr>
</tbody>
</table>
5.4 Maximum permissible loads at a double eccentric offset load

Meeting the support conditions in the chapters 5.2 and 5.3, respectively, the given eccentricities and load capacities are analogously valid for the direction xy in the figure below.

TITAN 500 Wedge jack
\( e_{xy} \text{ max} = e_x \text{ max} = e_y \text{ max} \)
\( F_z \text{ max} = 420 \text{ kN} \)
\( F_{xy} \text{ max} = F_x \text{ max} = F_y \text{ max} \)
\( F_z \text{ max} = 420 \text{ kN} - 1,4 \times F_{xy} \text{ exist} \)

TITAN 1000 Wedge jack
\( e_{xy} \text{ max} = e_x \text{ max} = e_y \text{ max} \)
\( F_z \text{ max} = 1000 \text{ kN} \)
\( F_{xy} \text{ max} = F_x \text{ max} = F_y \text{ max} \)
\( F_z \text{ max} = 1000 \text{ kN} - 1,4 \times F_{xy} \text{ exist} \)

6 Operating instructions and conditions

6.1 Positioning and placement of the wedge jack

The wedge jack is generally to be assembled in a vertical position. Make sure that the side wedges are in parallel with each other. This is also valid for the aligning of the top and bottom wedges (see figure 23).

Make sure that the wedges are at 90° angle to one another. It is not permitted to create a parallelogram and/or to tilt any of the end plates (see figures 24 and 25).

Figure 23:
Correct assembly

Figure 24:
Incorrect assembly

Figure 25:
Incorrect assembly

Important:

The inner surfaces of the wedges (sliding surfaces) must not be lubricated. Before using the wedge, make sure to clean the sliding surfaces from any oil or grease.

Place the wedge jack on solid, flat and non-rotating surfaces, such as concrete foundations, raft foundations, foundation beams, steel brackets, etc.

The surface on which the wedge jack is placed must be at least as large as its base plate.
6.2 Structural members on wedge jacks

The load on the wedge jack is to be distributed over the entire surface. Therefore the structural members resting on the wedge jack, or on which the wedge jack rests, must be adequately stiffened.

Sectional beams need stiffeners at every wedge jack location.

Figure 26:
Beam on wedge jack

The use of centering bars directly on top or underneath the wedge jack is not permitted.

Figure 27:
Not permitted:
Centering bar on a wedge jack

6.3 Flexible beams on wedge jacks

If a wedge jack is used for the support of a flexible beam, the tie rod is to be aligned in parallel with the axis of the beam. In this position the wedge jack will adjust in a controlled manner to the beam inclination ($\varphi<1^\circ$ or 0.0175 rad, see figure 28). Hereby the vertical load is automatically centered.

Wedge jacks may not be used as a support for structural beams where, due to loads, the rotation in the point of support $\varphi>1^\circ$.

Figure 28:
Flexible beam on wedge jack
6.4 Wedge jacks for the support of inclined beams

In cases where inclined beams are to be supported, the careful use of semicircular steel rods of different radii (see figure 29) may ensure that the wedge jacks may still be used as they can then still be positioned vertically. It is vital that the steel rods are positioned exactly above the edges of the top wedge and that they extend over the entire width of the wedge jack. The use of the steel rods and the load of the beam are to be verified by a suitably qualified person on site.

![Figure 29: Inclined beam on wedge jack](image)

6.5 Wedge jacks for the support of props

When used for the support of props, the wedge jack is to be positioned so that the line of action goes through the centre of gravity of the prop and of the wedge jack.

If rolled sections are used as props, end plates must be welded onto the sections for the correct transfer of the load. The positioning should be secured by means of beam clamps (see also Chapter 8.4 – Example IV).

At the positioning of the prop section it must be assumed that the wedge jack offers no degree of restraint. The ideal rotation point may be assumed to be on top of the wedge jack for view 1 and in the tie rod axis for view 2. See also the application example in chapter 8.4.

Note:
For view 1, ensure that the top of the wedge jack is fixed horizontally.

![Figure 29: Prop on wedge jack](image)
If heavy duty props are to be supported which may rotate freely around one axis, the rotation point must be in View 1.

The same applies for hinged props which have to be set up at an angle due to shifts in the superstructure.

The perpendicular deviation angle ($\varphi$) must not exceed $0.0175 \text{ rad} (=1^\circ)$.

7 Lowering of formwork with wedge jacks

Operating instructions

After the concrete has hardened sufficiently, the formwork may be lowered.

If no particular instructions have been issued by the erecting contractor, the following instructions should be followed:

1. Measure the heights between the bottom of the primary beam and the bases for the wedge jacks and write them down, e.g. with chalk on each section of the primary beam, for reference.

2. At the use of several wedge jacks in a row, loosen the adjustment nuts 1/4 turn beginning at the ends and moving inwards (in the figure below, this would mean the following order: 1, 8, 2, 7, 3, 6, 4 and 5). Repeat at all beams alternately until the beams have all been lowered by approx. 10mm. At this stage, the downward motion of the beams should not differ by more than 3mm.

3. Now loosen the adjustment nuts one full turn beginning at the outer ends and moving inwards. Repeat at all beams until

the beams have all been lowered approx. 50mm. The downward motion of the beams should not differ by more than 10 mm.

4. At this point, every second wedge jack may be removed. Remove the wedge jacks that have been lowered the most and are approaching the minimum height of 170mm. Otherwise, hydraulic equipment will be necessary for further lowering.

5. Lower the remaining wedge jacks until the formwork is clear. When applicable, remove extra steel plates underneath the wedge jacks before reaching the minimum height.

Figure 31:

Wrench with a torque multiplier for loosening the wedge jack under load
8 Suggestions for common applications

8.1 Example I
Using wedge jacks for falsework

Note:
Verification of the wedge jack in accordance with chapter 5.3
Note:
Verification of the wedge jack in accordance with chapter 5.3
8.2 Example II
Wedge jacks for direct support of primary beams

Note:
Verification of the wedge jack in accordance with chapter 5.3
Note:
Verification of the wedge jack in accordance with the chapters 5.1a and 5.2
A centering profile on top of the primary beam is not required if the end tangent angle under full load = 1° from the horizontal plane.
8.3 Example III
Wedge jacks on steel beam brackets

Note:
Verification of the wedge jack in accordance with 5.3
Note:
Verification of the wedge jack in accordance with chapter 5.1a and 5.2
A centering profile on top of the primary beam is not required if the end tangent angle under full load = 1° from the horizontal plane.
8.4 Example IV
Wedge jacks for support of individual props

Note:
Verification of the wedge jack in accordance with chapter 5.1a
Note:
Verification of the wedge jack in accordance with chapter 5.1a or 5.2
Ischebeck Titan Group

Founded in Germany over 120 years ago Ischebeck is renowned internationally for its aluminium formwork and false work systems, trench support systems and ground engineering products.

Ischebeck Titan Ltd

The company operates from headquarters centrally located in the heart of the UK.

Product Availability

Substantial stocks of equipment are available ex-stock from the company’s strategically located 4-acre distribution site, with most main product lines available nationwide on a 48-hour delivery. Products are available for both hire and outright purchase.

Technical Support

We will participate in concept stage development. Providing input on applications, production rates, budget design, programming and costings. Active for on site support and training. We can provide guidance on industry special European and national standards.