

ASSEMBLY AND OPERATING MANUAL

LTW MINI PILE GUIDE BOX



Manufacturer: **LTW Tiefbauvertriebs GmbH**
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General Instructions

The following regulations and rules have to be followed in their valid version:

- Regulations of the BG-Fachausschuss Tiefbau (technical committee civil and underground engineering)
- DIN 4124 Baugruben und Gräben (excavation pits and trenches)
- DIN EN 13331 Teil 1 & 2 Grabenverbaugeräte (part 1 and 2 construction equipment)
- Regeln für Sicherheit und Gesundheit bei der Arbeit (rules for safety and health during work)
- Unfallverhütungsvorschriften / Arbeitsschutzvorschriften (regulations for the prevention of accidents and safety at work rules)

Our shoring components have the GS-Sign „Certified Safety“.

Please follow the instructions making use of our Boxes.

Lifting & Transportation

The shoring may only be attached at the corresponding eyes and openings and/or lifting accessories.

Lifting chains must be chosen to suit the weight being handled.

To prevent the accidental detachment of the load use only load hooks with safety catches.

The allowed tensile forces have to be kept in any cases.

Transportation has to be carried out next to soil and unneeded oscillations have to be avoided.

It is prohibited to stand within the pivoting range of the excavator or crane and beneath suspended loads.

When handling and removing the shoring, watch out for overhead contact lines (power cables).

A load operator must stand to the front of the excavator and be in eye contact with the machine operator.

Measures to reduce hazards

The safety of persons on site must be enhanced with the aid of signs, cones, warning tapes and/or safety staff specially deployed on site for this purpose.

Neighbouring traffic flow has to be made possible by means of safety staff if needed.

Personnel must wear protective clothing (helmet/safety shoes/gloves).

The risk of instability as a consequence of wind loads when setting up or using the shoring must be considered.

The shoring must be lowered onto level and firm ground. Where the ground is sloping or uneven, the shoring should be set up, if possible, at right angles to the slope.

Maintenance & Repair

Before use, all shoring components must be checked for their correct function.

Faulty or deformed parts must be replaced in any case.

Minor repairs can be carried out by the user, after consultation with LTW.

There is no warranty on incorrectly performed repairs and the use of non-original parts.

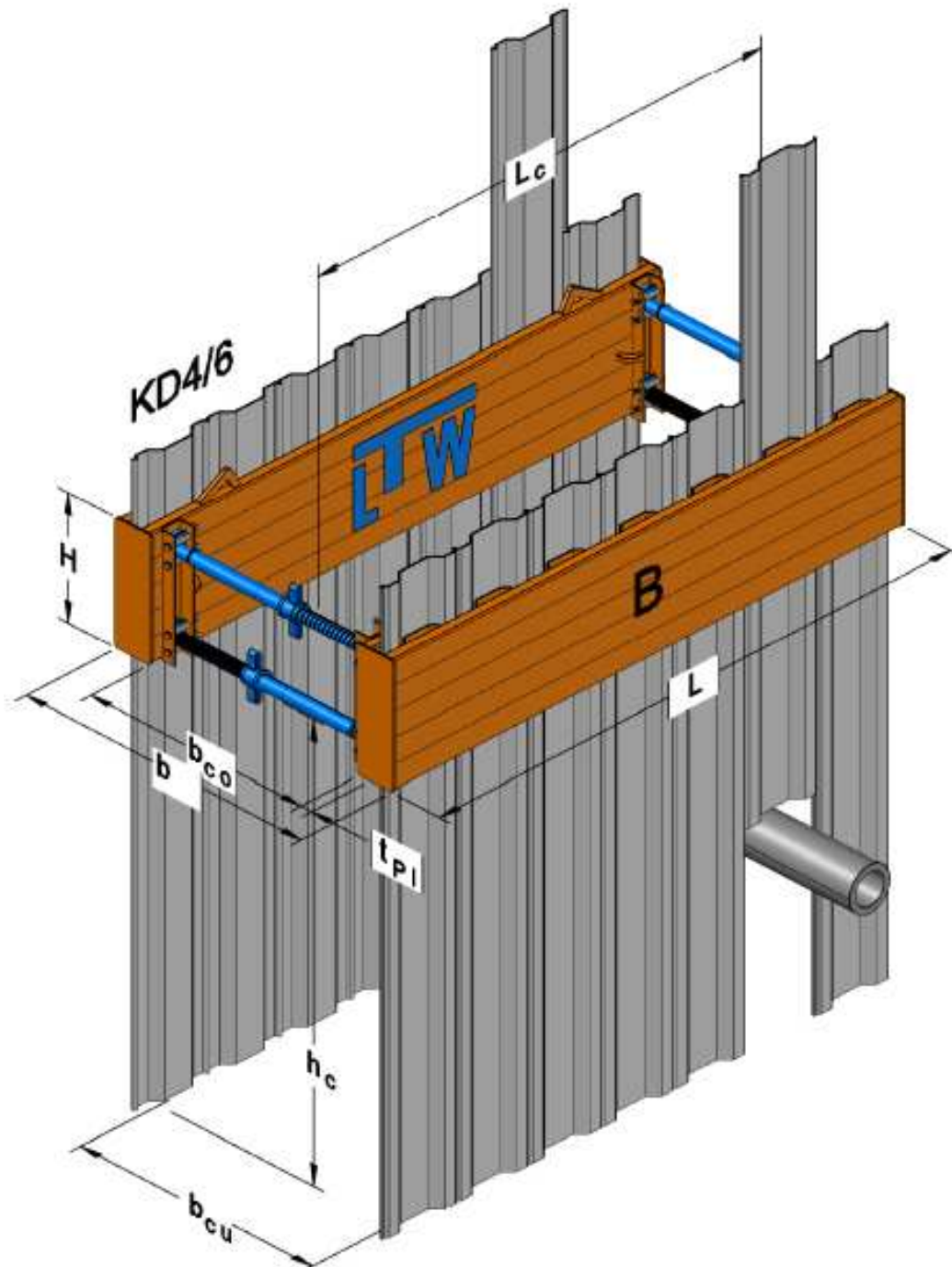
According to intenseness of use, the components should be painted with anticorrosion paint every two years.

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System view



B Mini Pile Guide Box
H Plate Height
b Shoring Width

b_{co} Inner working width (top/plates)
 b_{cu} Inner working width between KD4/6
 t_{PI} Plate thickness (inside profile)

h_c Pipe Culvert Height
L Plate Length
 L_c Pipe Culvert Length

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Technical Characteristics Mini - Pile Guide Box t_{PI} -inside profile = 60 mm

Plate Length L [m]	Plate Height H [m]	Pipe culvert length L_c [m]	Trench Sheets No. per plate	Limit state design beam load q_d [kN / m]	Plate weight G_{PL} [kg]	Box weight G_E [kg]
2,04	0,60	1,74	5 * KD4	92,6	255	560
2,44	0,60	2,14	6 * KD4	61,8	300	650
2,84	0,60	2,54	7 * KD4	44,2	345	740

Trench Sheet Type KD 4/6 in S275JRC

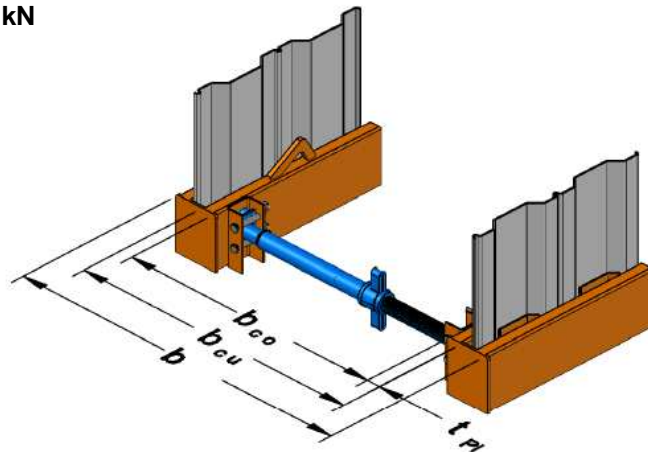


Width b [mm]	Height h [mm]	Thickness t [mm]	Section Modulus W_y [cm ³ /m]	Moment of inertia I_y [cm ⁴ /m]	Bending Moment M_d [kNm/m]	Weight single pile [kg/m]	Weight Wall [kg/m ²]
400	50	6	102	254	25,5	22,1	55,3

Tensile Forces

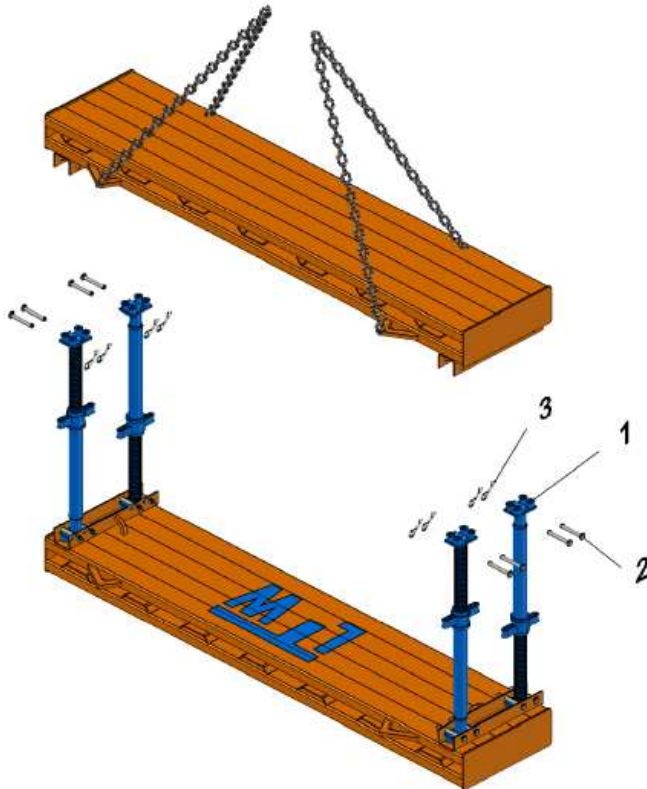
lifting eyes at the plate head $R_d = 229 \text{ kN}$

Minibox Strut



Type	Stroke [m]	inner working width (top) between plates b_{co} [m]	inner working widths between sheets b_{cu} [m]	Shoring Width b [m]	Weight G [kg]
A	0,10	0,53 - 0,63	0,65 - 0,75	0,89 - 0,99	12
B	0,19	0,62 - 0,81	0,74 - 0,93	0,98 - 1,17	13
C	0,37	0,80 - 1,17	0,92 - 1,29	1,16 - 1,53	16
D	0,73	1,16 - 1,89	1,28 - 2,01	1,52 - 2,25	21
E	0,73	1,87 - 2,60	2,00 - 2,73	2,24 - 2,97	34

Assembly Instruction

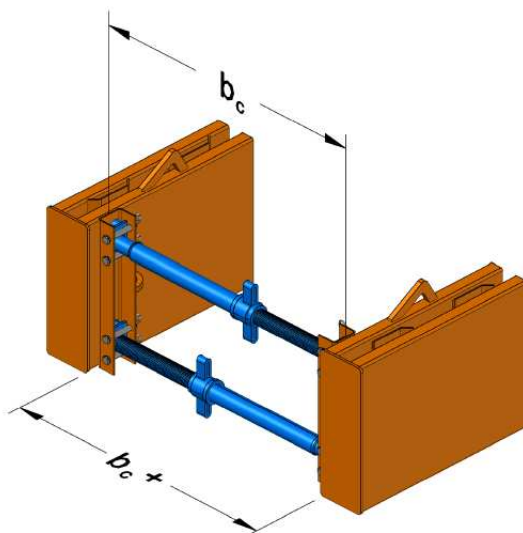


Place the Mini Pile Guide Plate on the attachment points facing upwards.

Put the 4 nos. Minibox Struts (with the thread respectively staggered down and accordingly upwards) into the profiles and secure each with two nos. bolts and locking clips.

After mounting all struts, one plate is connected to the corresponding lifting/transportation points at the top. Lift the second plate above the first plate. Carefully and slowly lower into place and secure with bolts and locking clips.

- 1 Minibox-Strut 2 Bolt $\varnothing 20 \times 148$ 3 Locking Clip Strebe

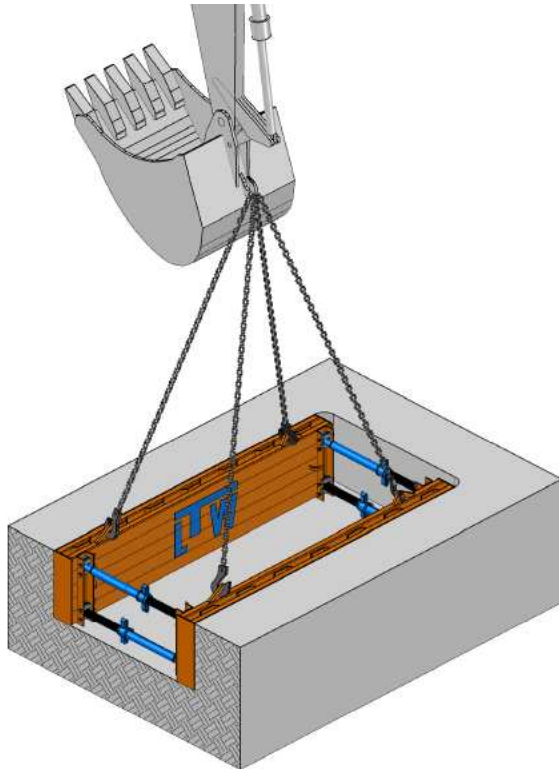


Adjust the Minibox Struts to the desired trench width (fine adjustment).

Take care, to ensure that the two lower Minibox Struts are adjusted wider than the top two. You must achieve an "A" Position

Installation Instruction

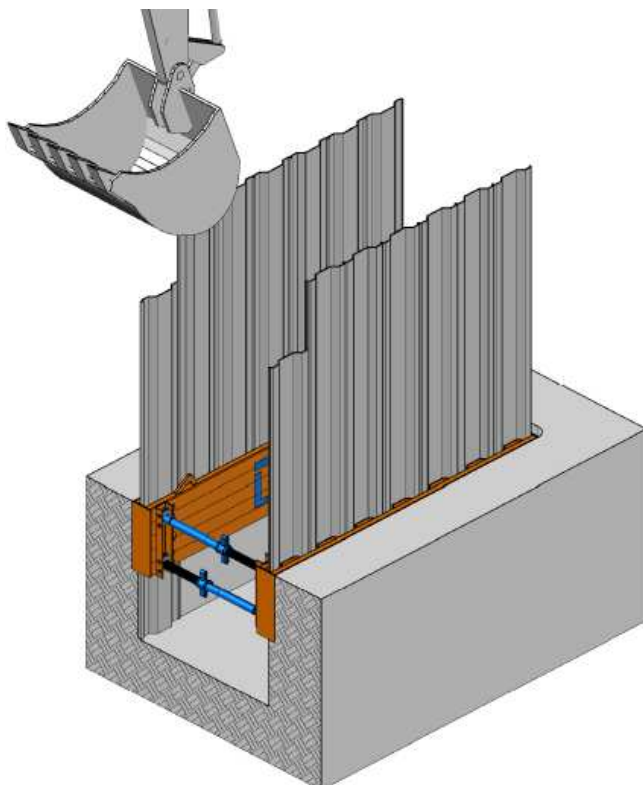
The shoring must be without gap and close to the ground. The limiting values for the max. loads have to be kept strictly. Single shoring boxes may only be used if the front and rear faces are properly secured.



Pre-excitation max. 0,60m and not longer
In principle the pre-excitation complies with the type of soil and the safety regulations.

Attach the chains to the four lifting eyes at the top of the inner plates. Place the completely assembled Mini Pile Guide Box as a whole into the entirely pre-excavated trench by means of lifting tools and appropriate lifting accessories. Observe the details regarding Box weights as per our technical data sheet.

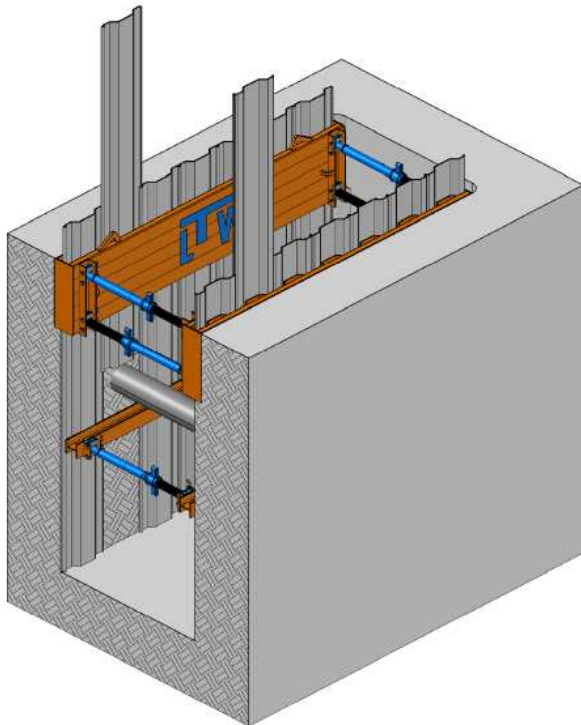
Spindle out the Mini Pile Guide Box against the trench walls. The gap between the trench walls and the inserted shoring unit must be backfilled and compacted.



Place the trench sheets type KD4/6 into the guides between the inner and outer plate and press in with the excavator bucket. The welded guides ensure, that the sheets are properly guided and kept.

The lowering of the trench sheets is effected in turn with the excavation. The trench sheets are to be pressed and not to be „hammered“.

Excavate about 0,5m and press in the trench sheets by turn. Repeat this procedure until reaching the required trench depth.



If service lines are crossing the excavation the installation of the sheets is effected up to the summit of the service line. Lock these sheets against further sliding! You have to shore underneath the service line conventionally; e.g. with timber.

Depending on soil conditions and depths and/or if buildings at risk of settlements are close to the excavation, wailers have to be provided and installed on site. These have to be chosen according to static requirements and must be checked upon every case of operation. The site specific engineering will report position and rating of the required wailer.

Re-Installation

After completion of the Pipe laying the re-installation of the trench sheets can be effected.

According to compacting possibilities bring in 0,5m filling material. Lift the trench sheets by the filled height and start compacting. Repeat this procedure as described until the trench sheets can be lifted out of the trench. Finally the Mini Pile Guide Box can be lifted out of the trench; observe the safety regulations. Attach the lifting accessories at least at 2 lifting eyes of the particular plate. **It is not allowed to lift at the Minibox Struts!**

It is prohibited to stand within the pivoting range of the excavator or crane and beneath suspended loads.