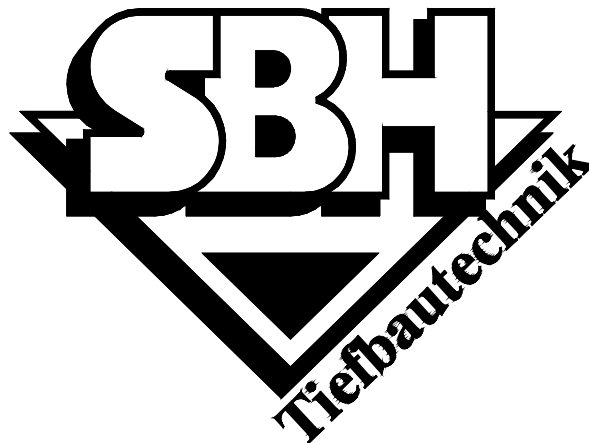


**OPERATING MANUEL**  
**WALER HEB 500 Series 450**



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## **General instructions**

The shoring must be without gap and close to the ground. The limit values for the max. loads have to be kept strictly.

The following rules and regulations 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 & 2 construction equipment)
- Regeln für Sicherheit und Gesundheit bei der Arbeit (rules for health & safety at work)
- Unfallverhütungsvorschriften / Arbeitsschutzvorschriften (accident prevention and safety at work rules)

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

During installation the instructions of this operating manual have to be followed.

## ***Lifting & transporting***

- The shoring may only be attached to the corresponding eyes and openings and/or lifting accessories.
- The lifting accessories must be adapted to the weight which must be transported.
- For safety reasons only load hooks with hook safety must be used.
- The allowed tensile forces have to be kept in any case.
- The transporting has to be carried out next to the soil and unneeded pendulum movements have to be avoided.
- It is forbidden to enter the swivel range of the lifting tool and to stay under floating loads.
- It has to be paid attention to overhead contact lines.
- Engine driver and instructor must have face-to-face interaction.

## ***Measures to reduce danger***

- The construction site has to be sufficiently secured and marked.
- Neighbouring traffic flow has to be made possible by means of security personnel if needed.
- The personnel must wear protective clothing (helmet / safety shoes / gloves).
- Possible instabilities as a result of wind loads, during the assembly and installation, must be considered.
- The shoring components must be layed down – preferably in horizontal way – on a firm underground.
- In case of slopes you have to focus on a stable storage of mounted or pre-assembled components.

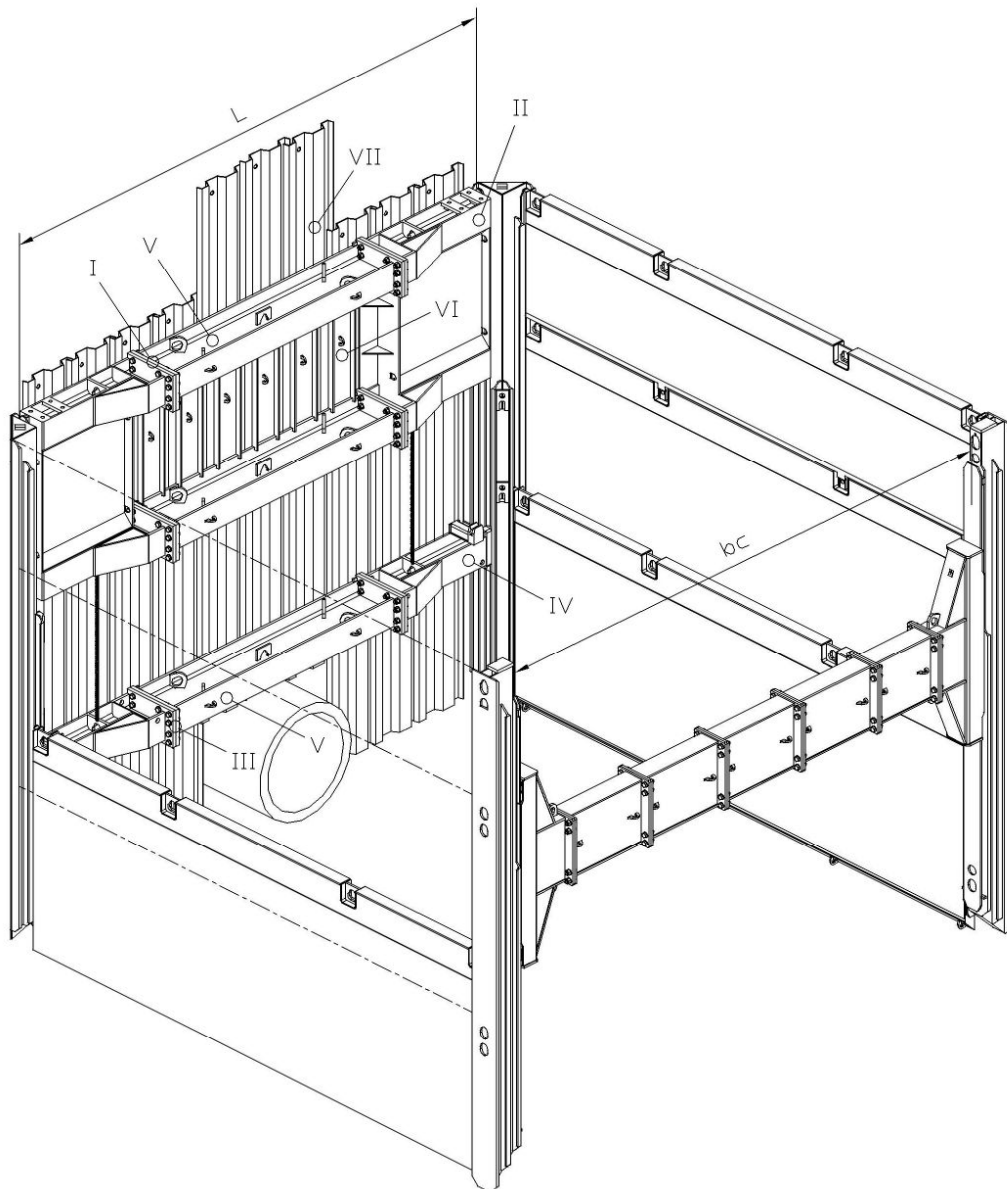
## ***Maintenance & repair***

- As a matter of principle, the operability of all shoring components must be checked before use.
- Defective or deformed components may not be used in any case.
- Slighter damages may be repaired by yourselves after consulting SBH. Otherwise, our service at SBH is at your disposal if desired.
- Only original spare parts of SBH may be used.
- According to intenseness of use, the components should be painted with anti-corrosive paint every 2 years

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## System drawing



I waler plate  
II waler plate half  
III waler beam

IV waler half  
V distance pc. HEB 500  
VI closing sheet

VII trench sheets  
L plate length  
bc ww between RS rails

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## Technical parameter

### *Upper waler plate*

length ~ working width	height	Length distance piece HEB 500	Boom bracing load max / min	Compressive force min / max	Weight per plate	Number of closing sheets
L ~ b <sub>c</sub> [ m ]	H [ m ]	L <sub>zwst</sub> [ m ]	q [kN/m]	N [kN]	[ kg ]	n
6,00	2,01	3,00	220 95	0 2800	3975	6
6,50	2,01	3,50	199 90	0 2520	4235	7
7,00	2,01	4,00	171 85	0 2250	4500	8
7,50	2,01	4,50	149 80	0 2025	4760	9
8,00	2,01	5,00	131 75	0 1820	5020	10

### *Lower waler plate*

length	height	Length distance piece HEB 500	Boom bracing load max / min	Compressive force min / max	Weight per waler
L [ m ]	H [ m ]	L <sub>zwst</sub> [ m ]	q [kN/m]	N [kN]	[ kg ]
6,06	0,39	3,00	220 95	0 2800	1540
6,56	0,39	3,50	199 90	0 2520	1635
7,06	0,39	4,00	171 85	0 2250	1730
7,56	0,39	4,50	149 80	0 2025	1825
8,06	0,39	5,00	131 75	0 1820	1920

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## Distance piece (dp.)

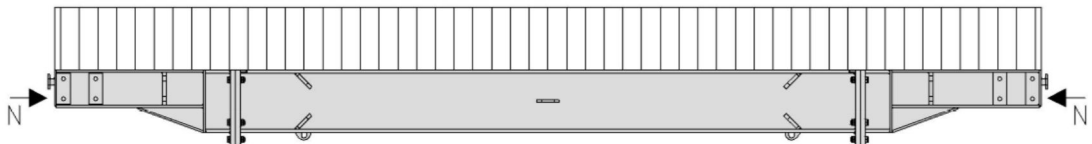
length $L_{dp}$ [ m ]	flange [ mm ]	weight [ kg ]
3,00	390 * 600	730
3,50	390 * 600	826
4,00	390 * 600	922
4,50	390 * 600	1018
5,00	390 * 600	1114

## Accessories

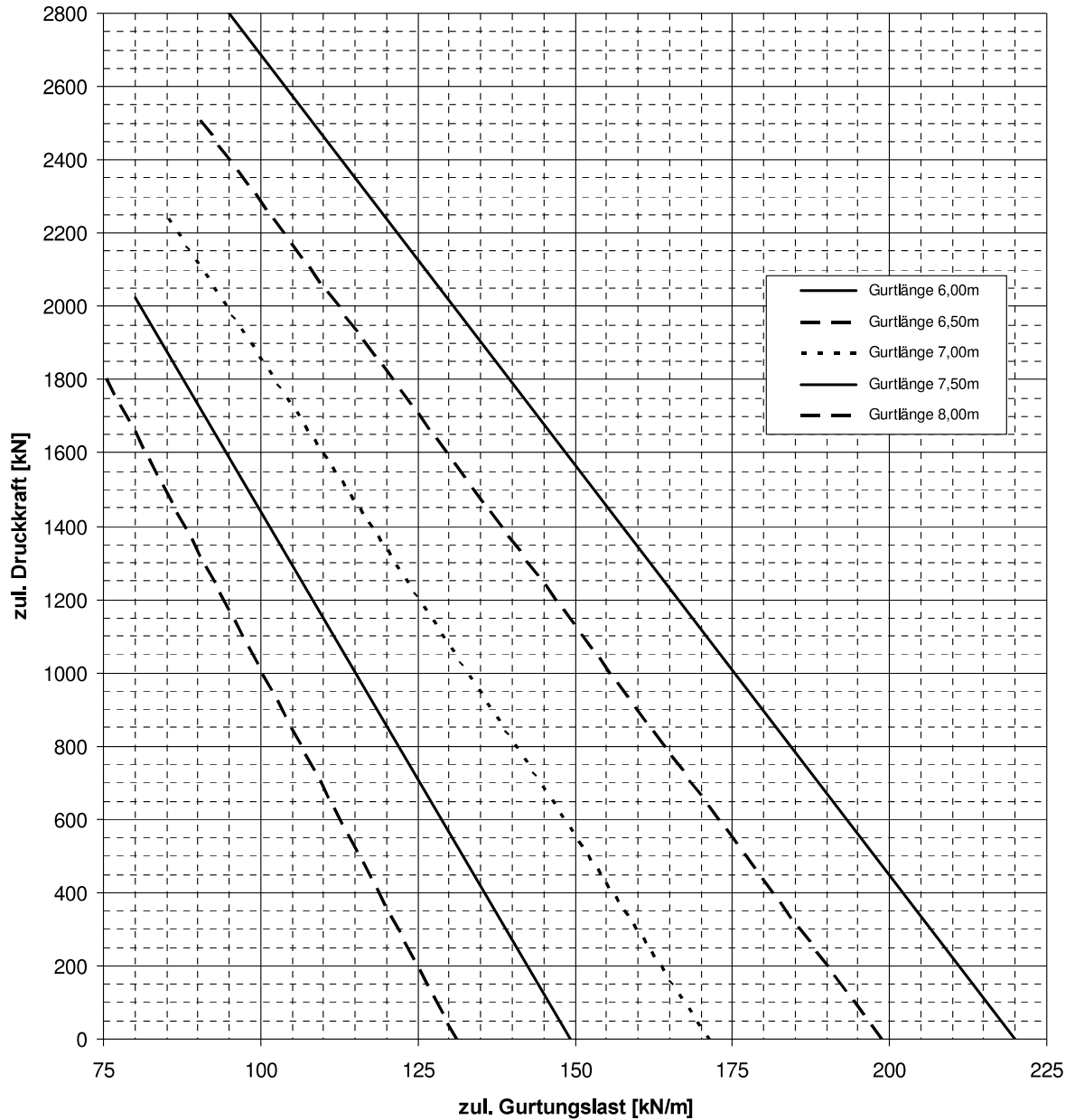
description	Use for	dimensions [ mm ]	weight [ kg ]
Hexag. Bolt	Flange	M30*120	1,15
Hexag. Nut	Bed plate	M30*100	1,01
Washer	Hexag. Bolt	A31	0,05
Closing sheet.	Waler plate	500 * 1600	69
Bed plate	Waler plate	510 * 790	60

## Load diagram

Allowed boom bracing loads depending on the compressive forces from the shoring long sides



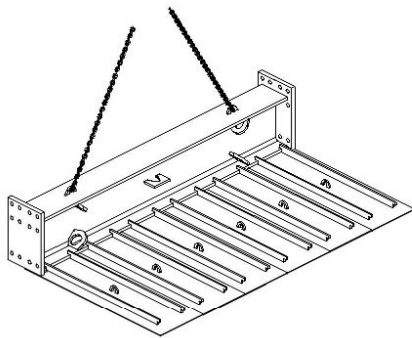
# WALER HEB 500 Series 450



# WALER HEB 500 Series 450



## Assembly instructions

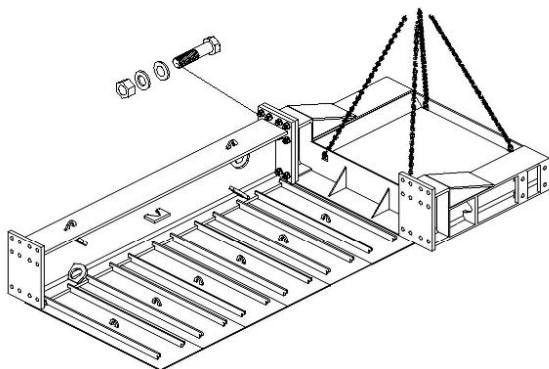


### Waler plate

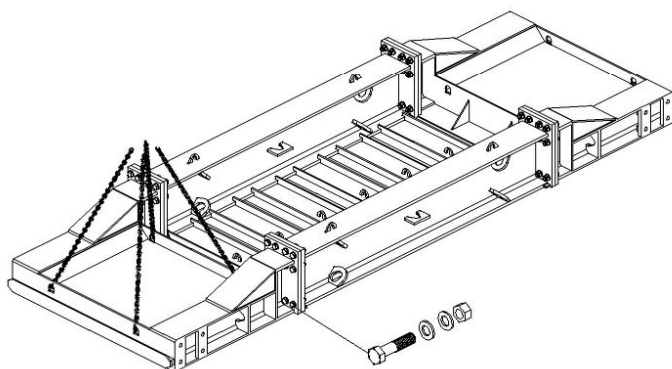
The waler plate is assembled from 2 waler plate halves, 2 distance pieces HEB 500 and from the closing sheets and bolted together.

Put the required number of closing sheets one to another onto an even and compact ground with the flat bar steels upwards so that the latches are in line.

Place one distance piece HEB 500 onto the closing sheets and move the flange under the latches.



Connect the first waler plate half with the flange of the distance piece by means of 12 bolts M30\*120 of quality 10.9. Put one washer under the bolt head and one washer under the nut.



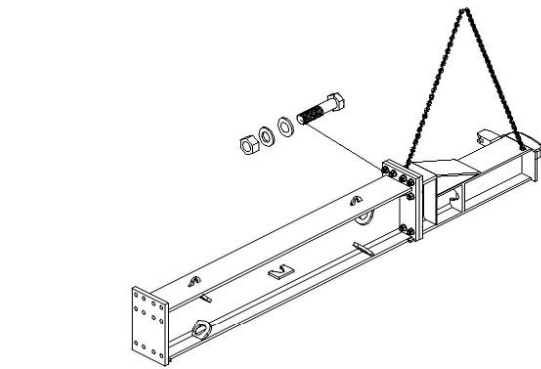
Place the second distance piece onto the free end of the closing sheets and move the flange under the latches. Bolt the two flanges together.

Then connect the second waler plate half with the flanges of the distance pieces.

**Turn the bolts crosswise with a torque of 1350 Nm**



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## Waler

The waler is assembled from the right and left waler half and the distance piece HEB 500 and bolted together.

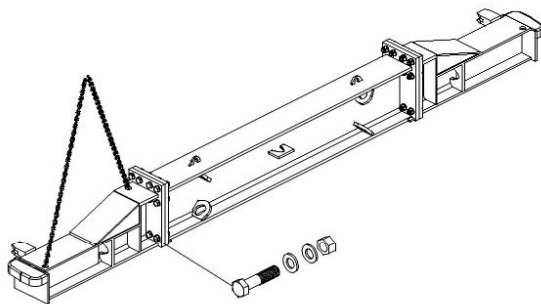
Put the distance piece HEB 500 onto an even and compact ground with the flange upwards.

Then align the right and left waler half to the flanges of the distance piece and connect each by means of 12 bolts M30\*120 of quality 10.9.

Put one washer under the bolt head and one washer under the nut.

It is important that the guides are in the same direction.

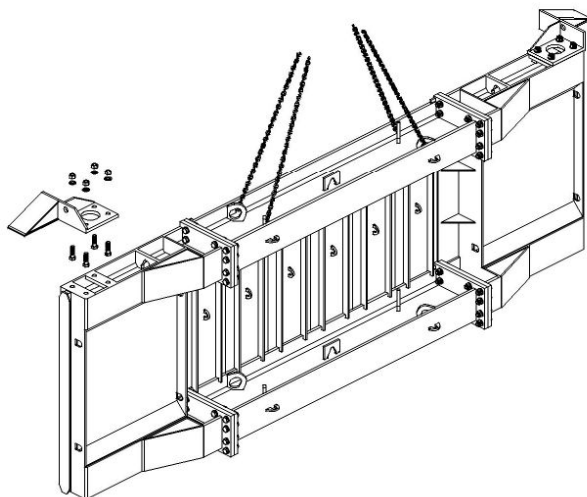
**Turn the bolts crosswise with a torque of 1350 Nm**



## Bed plate

Optionally it is possible to flange-mount 2 bed plates at the upper edge of the waler plate in order to avoid an unintentional slipping of the plate and to position it at the top ground surface.

For this purpose align the right and left bed plate according to the sketch and connect each by means of 4 bolts M30\*100 of quality 10.9.



## Installation instructions

### **Allowed tensile forces**

At the single attachment points the following tensile forces can be beared:

#### Distance piece HEB 500

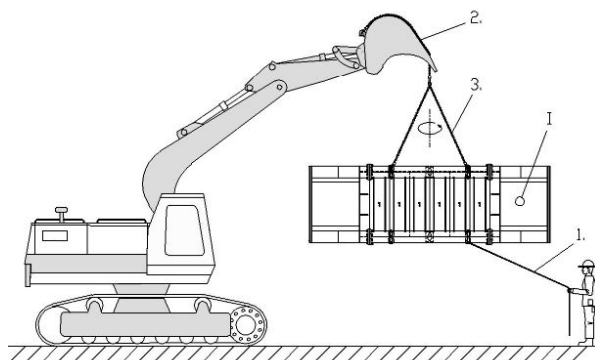
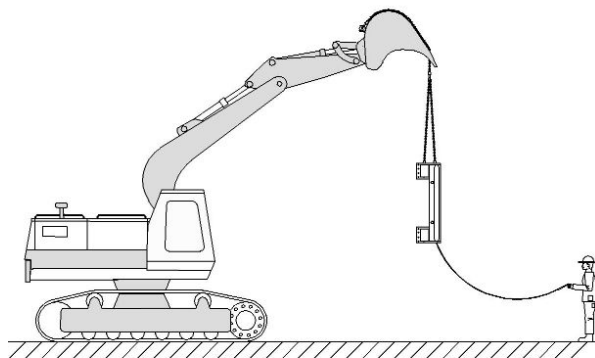
per beveled lifting eye	= 218 kN
per central eye	= 153 kN
per eyebolt	= 49 kN

#### waler plate half

per eye	= 153 kN
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#### waler half

per eye	= 153 kN
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I waler plate  
1. rope

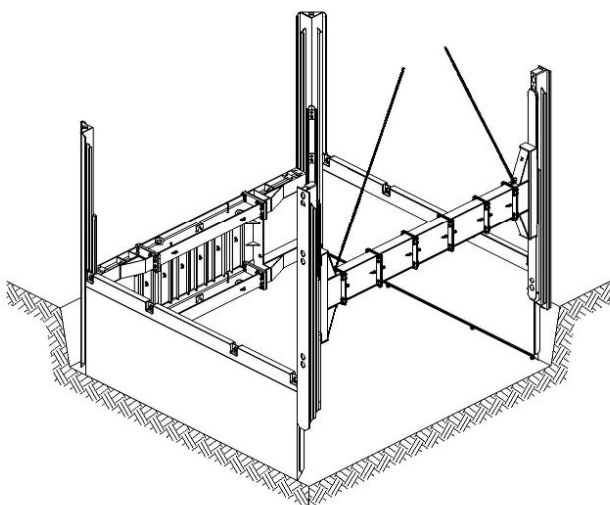
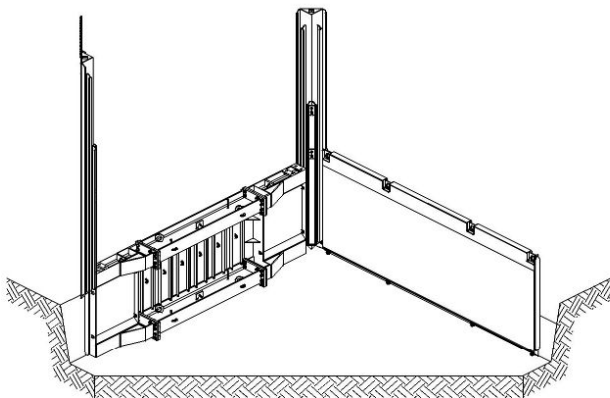
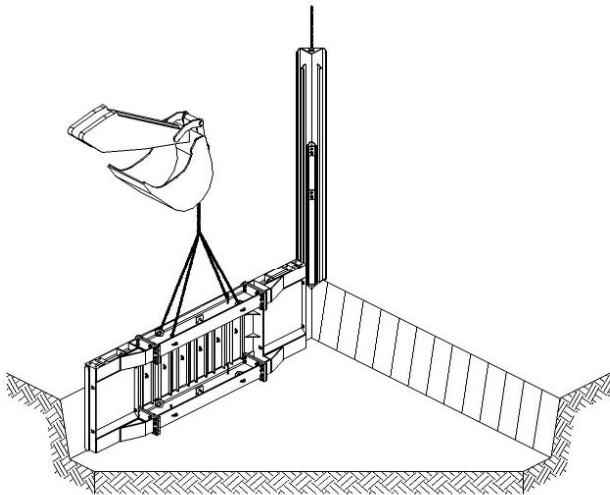
2. chain 1-fold  
3. chain 4-fold

### **Handling of waler plates**

For transporting the waler plate we recommend the use of a 1-fold and a 4-fold chain. The 1-fold chain is fixed to an appropriate attachment point of the excavator shovel. The length of the chain has to be chosen that way, that the ring of the 4-fold chain is located underneath the shovel in any position of the shovel. This allows an easy and safe turning of the shoring plate into the required direction without expecting the plate to knock over jerkily.

When turning the plate, the excavator must not be moved.

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## Installation

Pre-excavate max. 1,25 m and 10 cm wider than the pit dimensions. In principle, the pre-excitation complies with the type of soil and safety regulations.

### With crossings on the face

Place the waler plate in the pre-excavated trench, push in and protect against tilting.

The first corner rail which is attached to an excavator with an appropriate height of stroke, is moved over the waler plate, installed in the outer guide (facing the trench wall) and pushed down. At this phase the trench must not be entered.

Align the corner rail and push down.

Install the shoring plate from the long side into the free outer guide of the corner slide rail and align rectangularly.

Move the second corner slide rail over the free guide profile of the waler plate, align and push down into the ground.

Afterwards install the 2nd plate from the long side in the free outer guide of the corner slide rail and align parallelly by means of a spacer / installing tool. Make sure all corners have 90°.

Now the RS slide rail frame is moved over the plate guide profiles, aligned and pushed down.

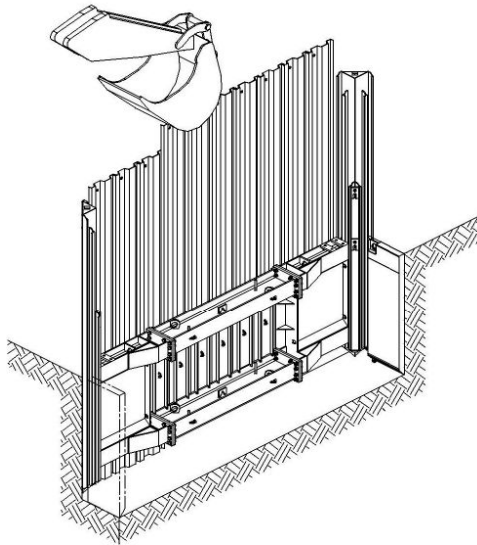
The installation of the long sides is described in the operating manual „Rolling Strut Shoring Series 750“.

Excavate about another 50 cm and push down alternately.

Make sure that the plates do not stick out of the slide rails by more than 50 cm.

The space between shoring and soil has to be filled and compacted!

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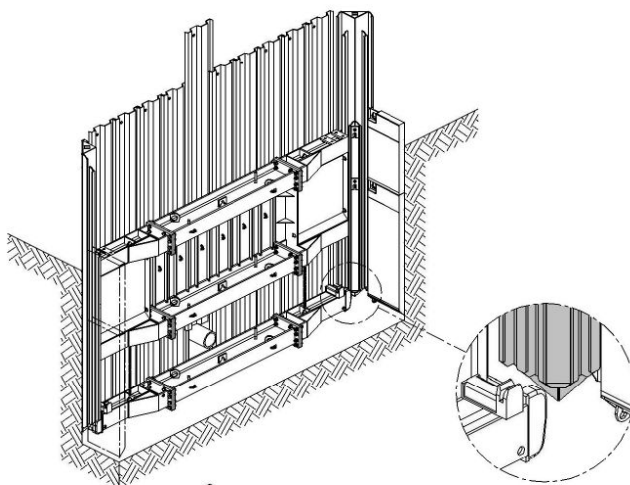


When the waler plate reaches the top edge of the ground, the required trench sheets (according to design calculation) are installed behind the waler plate.

## **Placing of waler**

As soon as possible the waler has to be installed in the inner guide of the corner slide rail underneath the crossing.

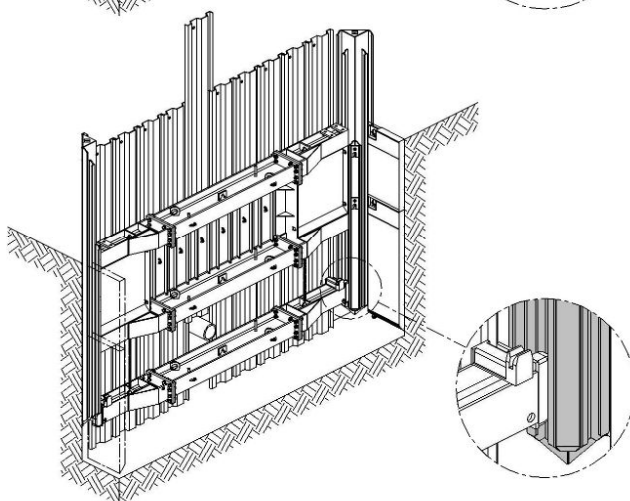
For this purpose the waler is aligned and placed in excavation depth – directly in front of the trench sheets, underneath the corner slide rails. The guides of the waler must be below the inner guide of the corner rails.



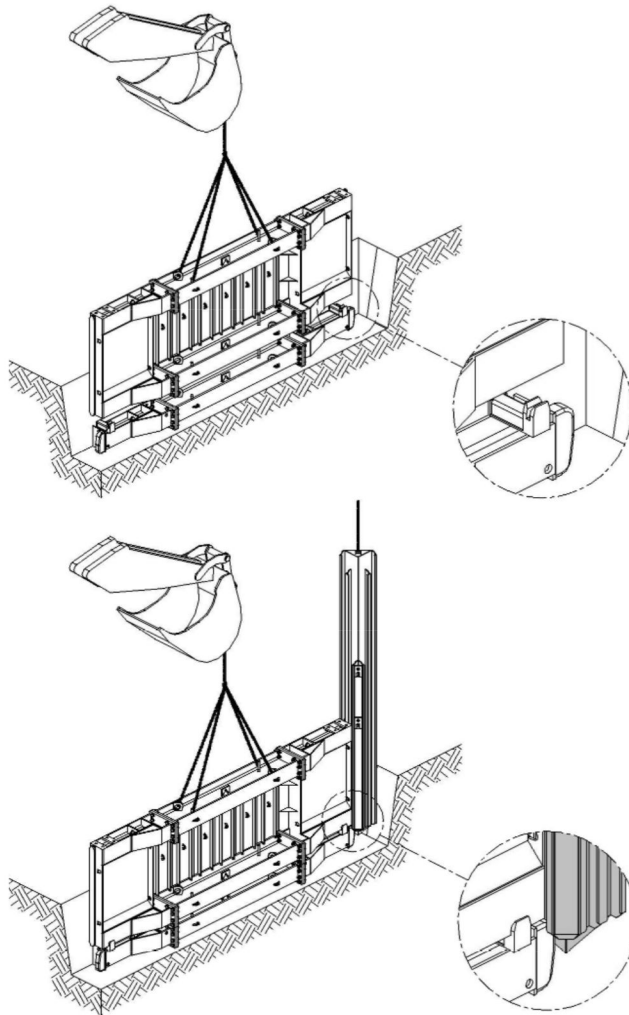
Push in the corner slide rails with caution and align if needed.

Another possibility of assembly or installation of the waler is to move it underneath the crossing, across the trench sheets. Therefore, the guides at the trench sheets are formed eccentrically in order to facilitate the moving.

Afterwards fix the waler by means of chains to the upper waler plates. Depending on static requirements, provide further walers.



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## ***Installation without crossings***

If there are no crossings at the front faces, the walers together with the waler plates can be placed into the pre-excavated trench.

Therefore, the walers are installed with their guides upwards. When putting the walers onto the waler plate, these guides grab into the flanges of the components above and thus are aligned. Apart from that the assembly and installation is effected as described before.

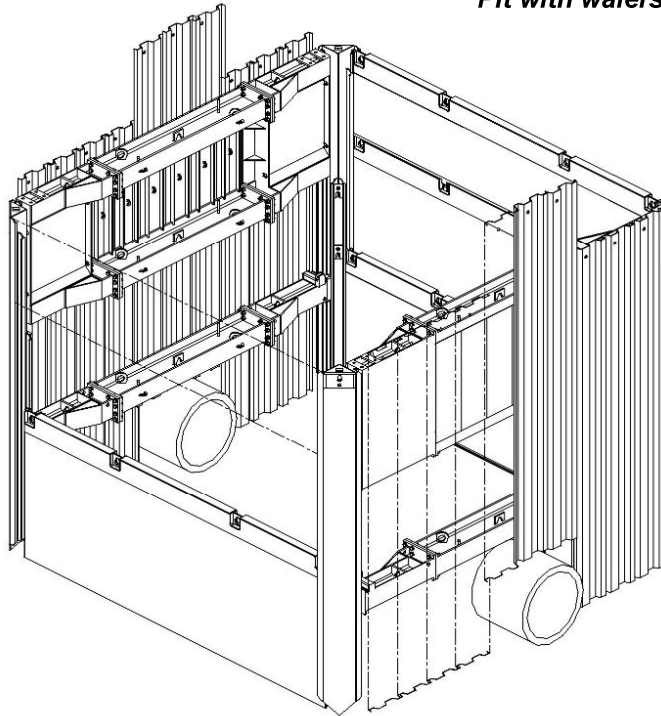


# WALER HEB 500 Series 450



## Further combinations

*Pit with walers on the faces*



*In the continuing trench*

