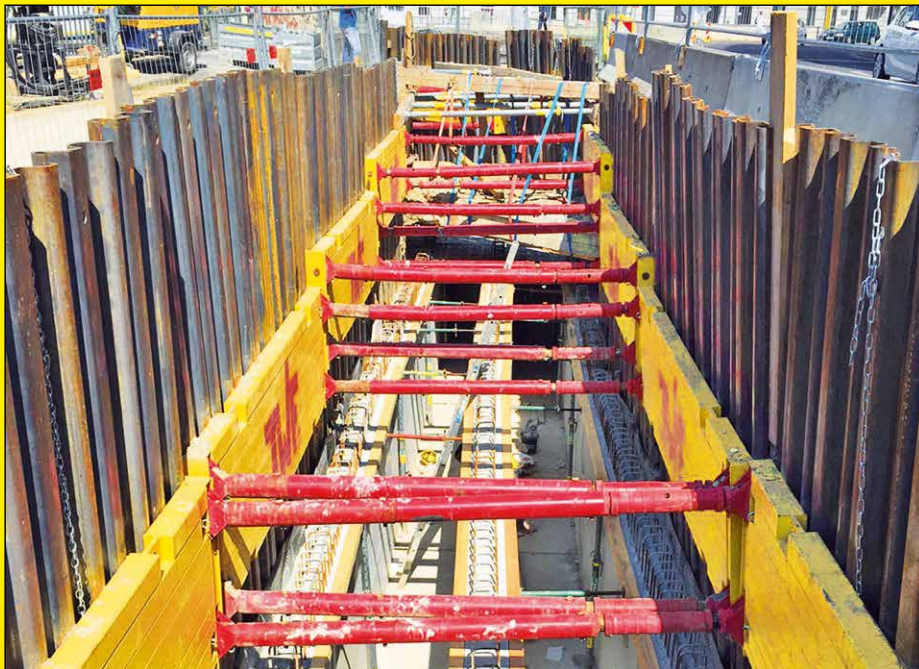


TWF TIEFBAUTECHNIK

Sales | Rental | Leasing



PILE CHAMBER TYPE 400

www.twf-tiefbautechnik.de

www.twf.at

OPERATING MANUAL

► TWF - Pile Chamber Type 400

Contents

General Instructions	3
Lifting & transporting, Measures to reduce danger, Maintenance & repair	
Technical parameters / System drawings	4 - 5
Base element, Top element, Standard spindle	
Accessories	6
Connector, Pins, Protection rail	
Assembly Instruction / Installation	7 - 11
Assembly Instruction, Place and adjust method, Cut and lower method, Installation of the base boxes, Use of protection rails, Installation of top boxes, Installation of further shoring sections	
Re-Installation	11
Re-Installation instructions	
Systemdrawing - Pile chamber with rolling strut shoring & walers	12 - 13
Systemdrawing - with rolling strut shoring plates	
Technical parameter / sketches	14
pile chamber inner plate	
Installation Instructions	15 - 17
Pile chamber with rolling strut shoring & walers, Putting in of trench sheets KD6/8 Installation of walers, Pile chamber with rolling strut shoring & slide rail plates	
Re-Installation	17
Re-Installation instructions	





► Operating Manual

General Instructions

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 sections (boxes) may only be used if the front and rear faces are properly secured.

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 safety and health during work)
- Unfallverhütungsvorschriften / Arbeitsschutzvorschriften (accident prevention and safety at work rules)

Lifting and transporting

- The shoring may only be attached at 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 it has to focus on a stable storage or mounting of pre-assembled components.

Maintenance and 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 TWF. Otherwise, our service at TWF is at your disposal if desired.
- Only original spare parts of TWF may be used.

According to intenseness of use, the components should be painted with anti-corrosive paint every 2 years



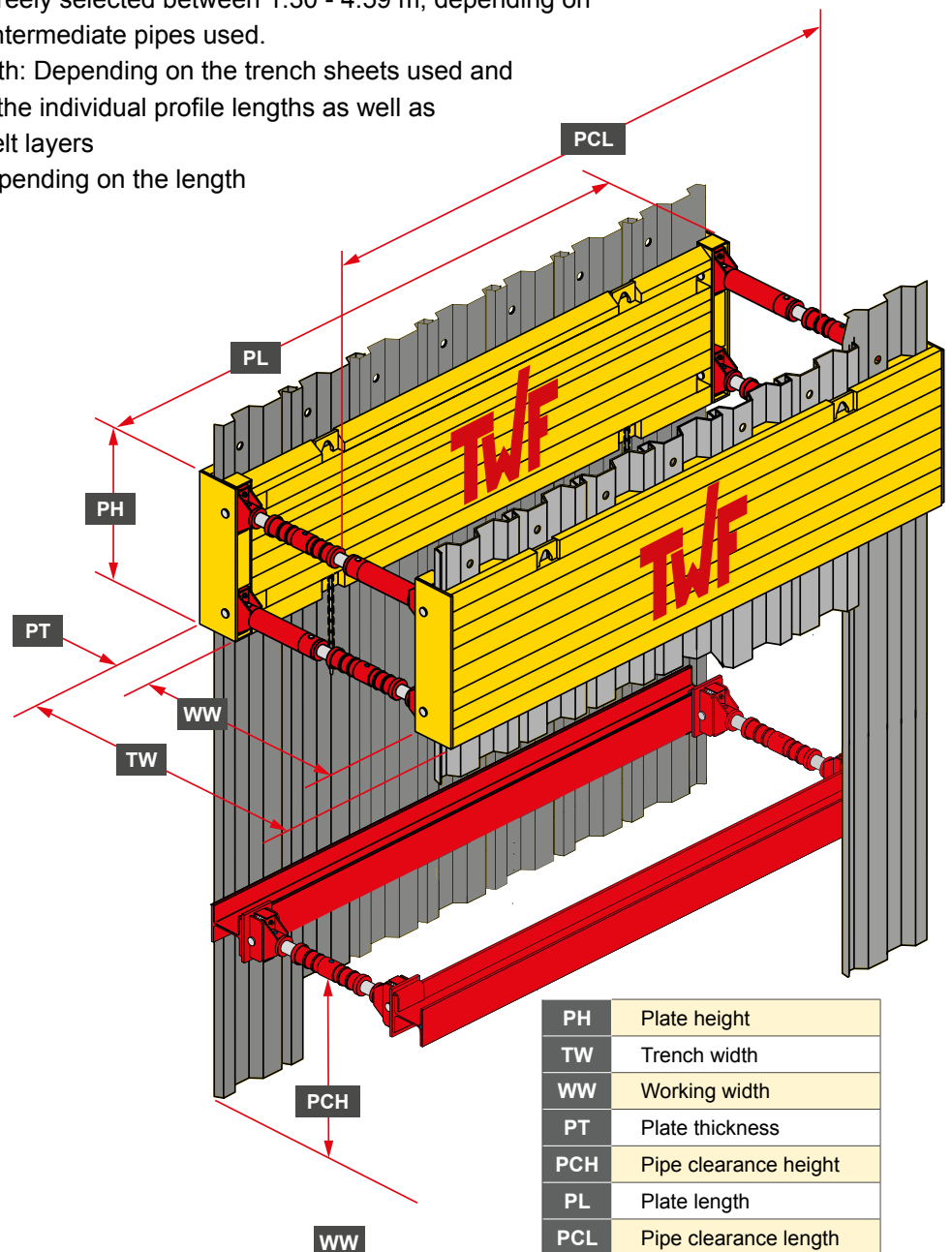
► TWF - Pile Chamber Type 400

■ Technical description

- Combined System (**plates and trench sheets**) applicable where **supply lines are crossing**. Also possible in combination with **slide rail shoring**.
- The trench width can be freely selected between 1.30 - 4.59 m, depending on the spindle size and the intermediate pipes used.
- Maximum installation depth: Depending on the trench sheets used and their resistance moment, the individual profile lengths as well as integration depths and belt layers
- Pipe clearance height: depending on the length of the trench sheets



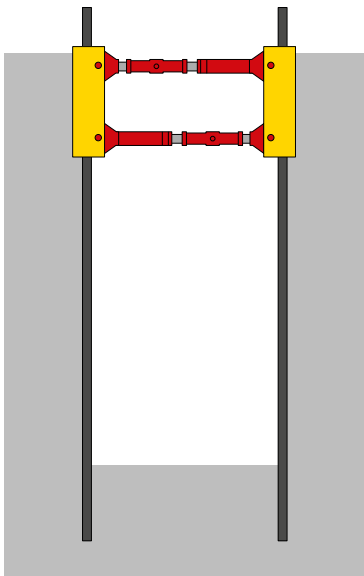
► End hooks for steel walings - special solution



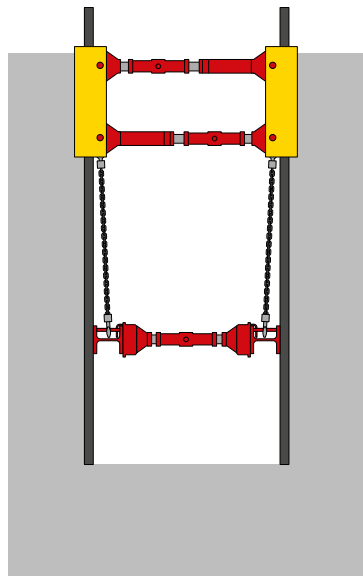


► Operating Manual

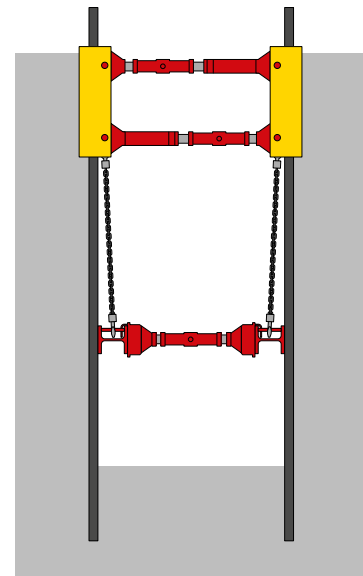
■ Pile chamber shoring – application examples



Example 1
Pile chamber shoring with ground integration of sheet piles



Example 2
Pile chamber shoring with additional supports



Example 3
Pile chamber shoring with additional supports, and ground integration of sheet piles

Plate-length PL (m)	Plate height with guide PH (m)	PC-length PCL (m)	Quantity Trench sheets (n / plate)	Permissible beam load (kN/m)	Weight Plate (kg)	Weight Box (kg)
---------------------	--------------------------------	-------------------	------------------------------------	------------------------------	-------------------	-----------------

► PC Type 100 with light weight spindle „B“ + Trench sheets KD 4

2,10	0,60	1,70	5	45,70	274	612
2,50	0,60	2,10	6	30,56	318	700
2,90	0,60	2,50	7	21,86	363	790

► PC Typ 400 with standard spindle + Trench sheets KD 6*

2,80	1,00	2,50	5	132,80	613	1309
3,40	1,00	3,00	6	90,04	689	1461
3,90	1,00	3,50	7	67,82	849	1781



09-2023

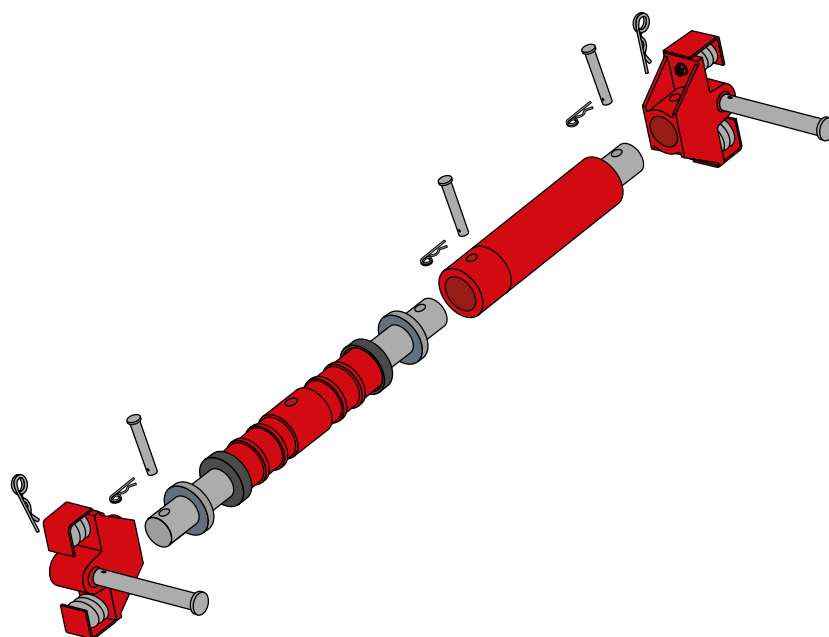


► TWF - Pile Chamber Type 400

■ Standard Spindle



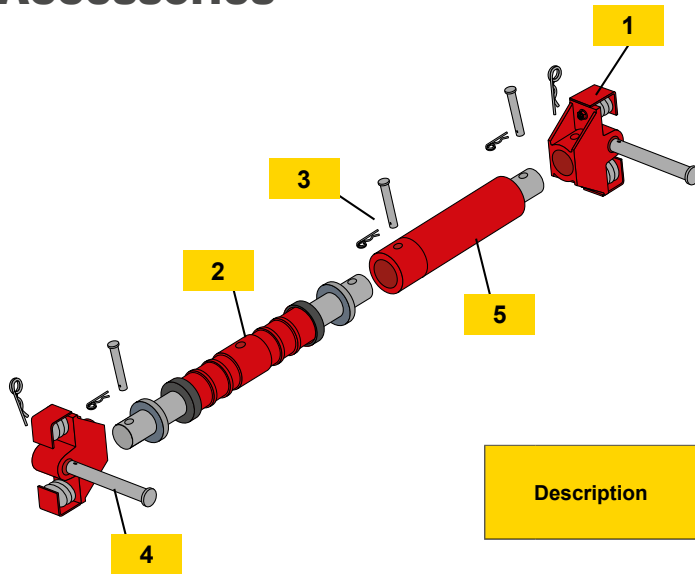
Number intermediate pipe	Working width WW (m)		Trench width TW (m)	Safe working load (kN)	Weight complete (kg)
	Trench sheets	Inner plates			
0	1,00 – 1,29	0,76 – 1,05	1,30 – 1,59	468	65
1	1,50 – 1,79	1,26 – 1,55	1,80 – 2,09	403	86
2	2,00 – 2,29	1,76 – 2,05	2,30 – 2,59	348	107
3	2,50 – 2,79	2,26 – 2,55	2,80 – 3,09	299	128
4	3,00 – 3,29	2,76 – 3,05	3,30 – 3,59	254	149
5	3,50 – 3,79	3,26 – 3,55	3,80 – 4,09	210	170
6	4,00 – 4,29	3,76 – 4,05	4,30 – 4,59	165	191





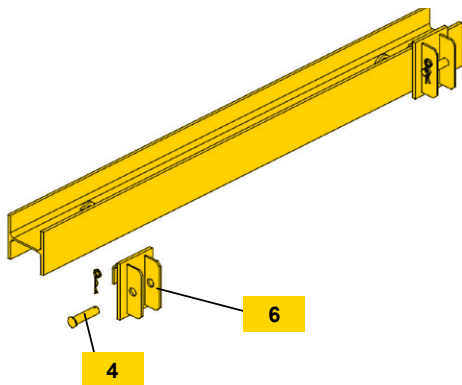
▶ Operating Manual

■ Accessories



Description	Use for	Dimension (mm)	Weight (kg/piece)
-------------	---------	----------------	-------------------

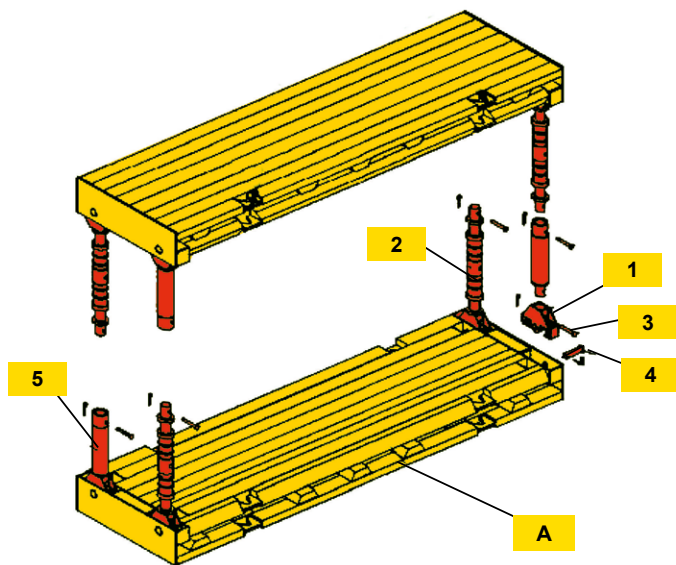
1	Spring spindle holder / Mushroom	Spindle	95/290 x 193	13,1
2	Spindle	Plates		40,2
3	Pin with Safety Clip 4, 5	Extension pipe	Ø20 x 147	0,4
4	Pin with Safety Clip 6, 3	Spring spindle holder & connector	Ø40 x 230	2,4
5	Extension pipe	Spindle	Ø121 x 500 Ø121 x L	19,8



6	Spring spindle holder socket	for HEB Beams	according to static requirements
		for HEM Beams	according to static requirements

► TWF - Pile Chamber Type 400

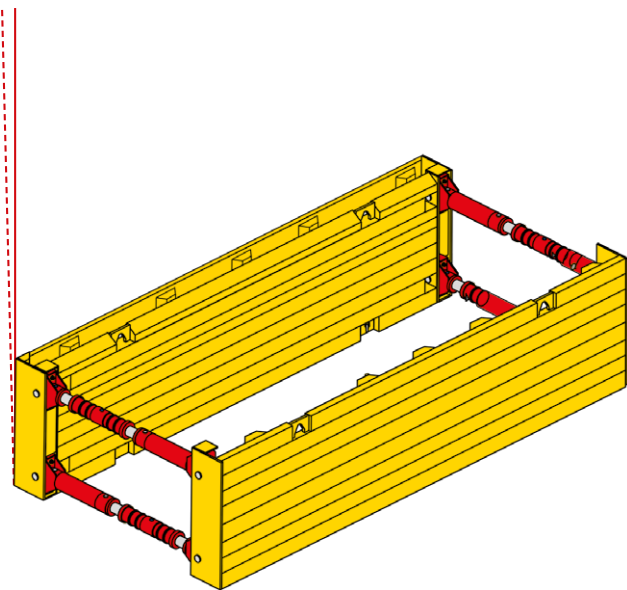
■ Assembly instructions



A	Pile chamber plate
1	spring spindle holder
2	Spindle
3	Pin Ø20 x 147
4	Pin Ø40 x 230
5	Extension pipe

- Put the pile chamber plate with the spindle sockets to the top onto a flat and firm underground.
- Afterwards put the spring spindle holders into the spindle sockets, fix with the pins 040x160mm and secure by means of the clips.
- For trench widths up to 2,00m the spindles and extension pipes are offset mounted to the spring spindle holders at one pile chamber plate, for larger trench widths at the two pile chamber plates. Then fixed with the pins 020x147mm and secured by means of the clips.
- The extension up to the required trench width is effected by means of extensions pipes as described before.
- After mounting all spindles, one pile chamber plate is put into the corresponding lifting/transportation eyes at the top and the bottom of the plate and put from the top onto the spindles of the plate below, pinned and secured.

- The spindles are now extended/spindled out up to the required trench width (fine adjusting).
- Attention has to be paid that the bottom spindles have to be spindled out more than the upper ones in order to achieve an A- arrangement of the plates.
- The shoring width above must be lower than below.



► Operating Manual

■ Installation instructions

In general

The usage of pile chambers is best for crossing supply lines. This system combines shoring plates with trench sheets. The pile chamber thereby provides the guiding frame for the trench sheets and at the same time is the upper waler.

Installation of the first pile chamber unit

- Pre-excitation of max. 1,00 m and not more than one pile chamber length. In principle the pre-excitation complies with the type of soil and safety regulations.
- Attach the chains to the four eyes at the top of the inner plate and place the pile chamber box which is already spindled out to the required trench depth into the pre-excavated trench and align.
- Spindle out the pile chamber against the trench walls. The excavation or hole between pile chamber and soil has to be filled and compacted!

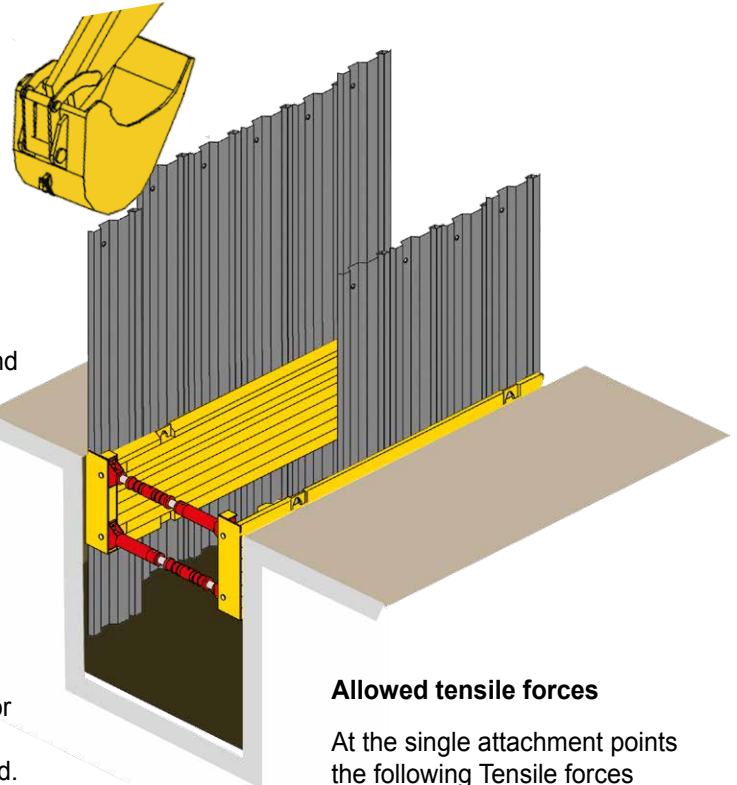
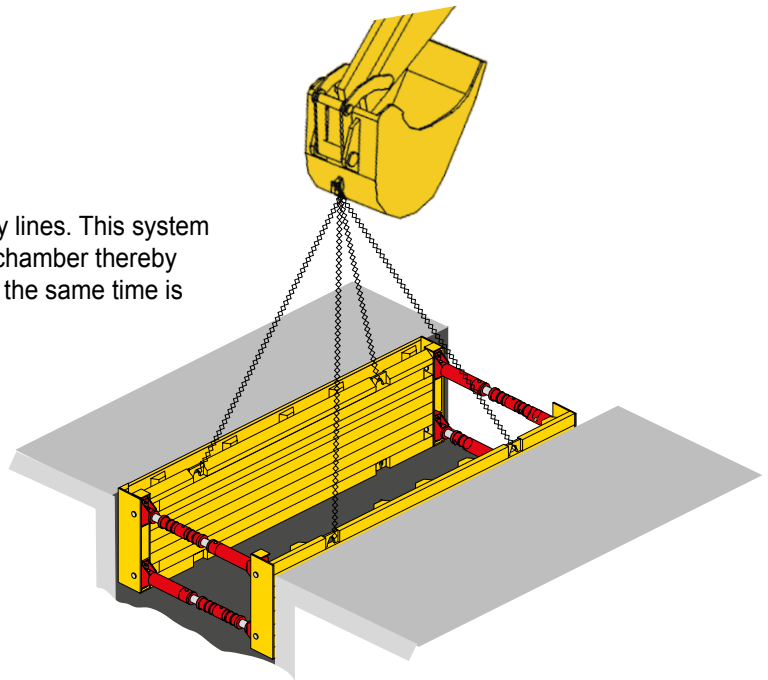
The excavator preferably works ahead of the trench.

Placement of trench sheet KD400 and KD600

- Place the trench sheets into the guides between inner and outer plate and press in by the excavator bucket. By means of the welded guides, the trench sheets are properly guided and kept.

Alternatively, the trench sheets can also be carefully pushed into the ground..

- The lowering of the trench sheets is effected in turns with the excavation.
- The trench sheets have to be pressed in by the excavator bucket or by vibration and not by battering. Barriers e.g. fragments of walls or boulders must be removed by hand.
- **Excavate about further 0,50m and press in the trench sheets by turns.**



Allowed tensile forces

At the single attachment points the following Tensile forces can be borne
Per lifting eye = 153 kN

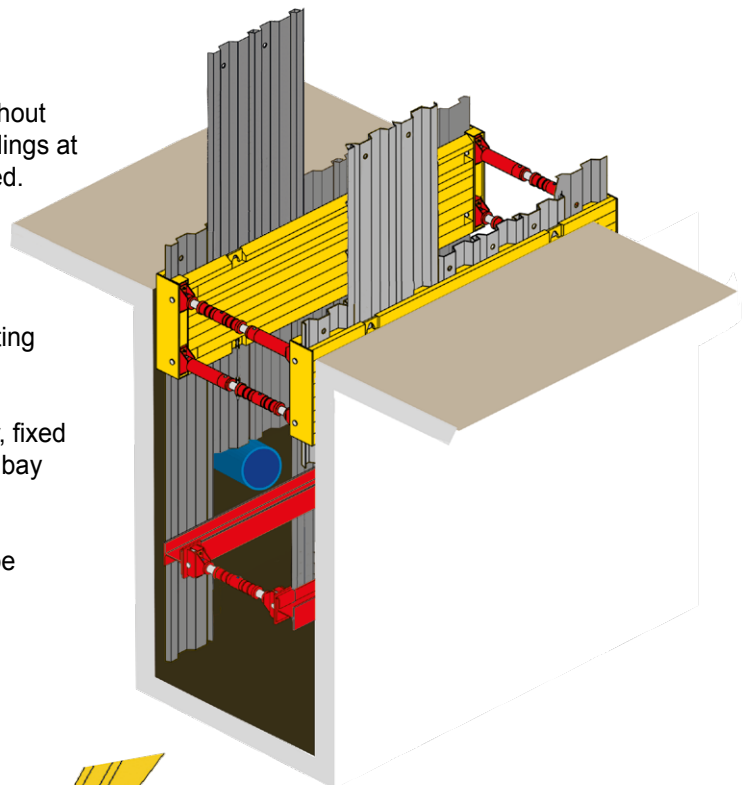
► TWF - Pile Chamber Type 400

- **Repeat** this procedure until reaching the required trench depth. At intersections, the trench plate is laid to the top of the intersection. The trench sheets may need to be installed with additional walers.

Installation of walers on site

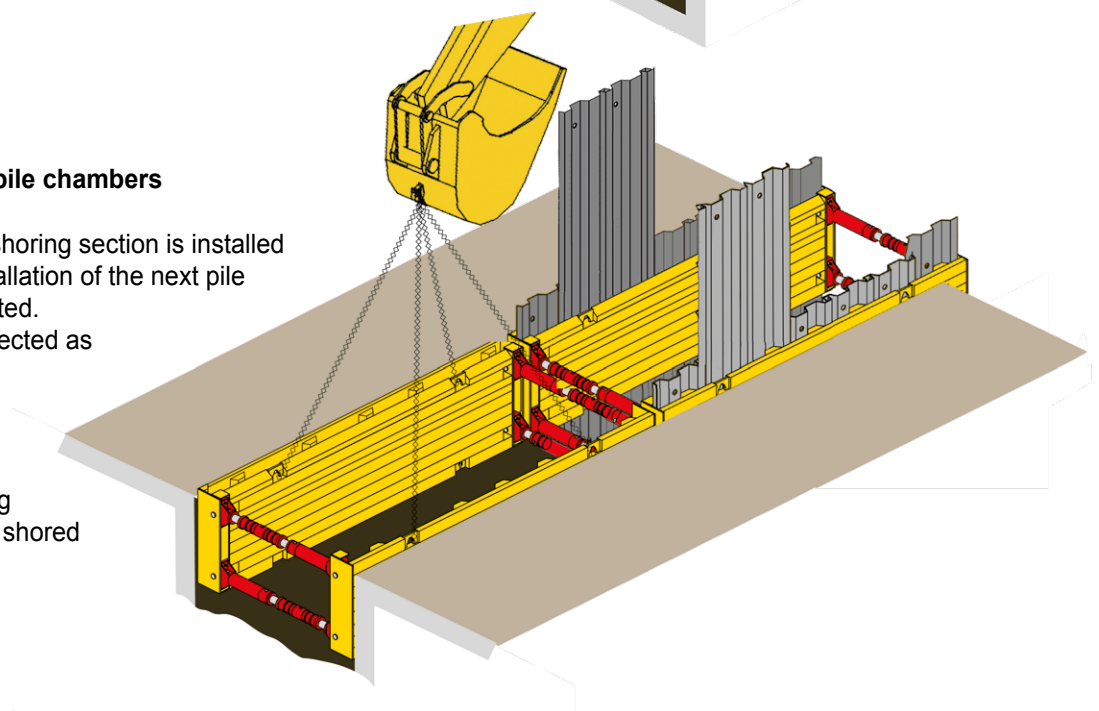
- Up to a trench depth of ~3,00 m it can be shored without walers on site. For deeper trenches and/or with buildings at risk of settlements, walers on site have to be provided. These have to be chosen according to statical requirements and have to be checked upon every case of operation!
- The site specific engineering reports position and rating of the required waler.
- The walers are aligned underneath the pile chamber, fixed to the pile chamber by means of chains and kept at bay by spring spindle holder sockets and spindles.

Depending on trench depth the sheet piles have to be integrated in the ground or have to be secured with additional supports and struts.



Installation of further pile chambers

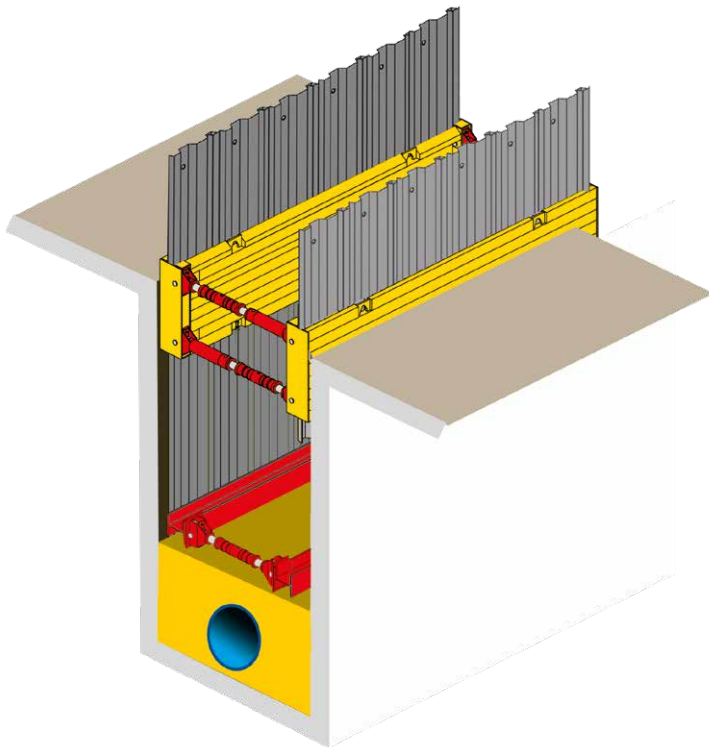
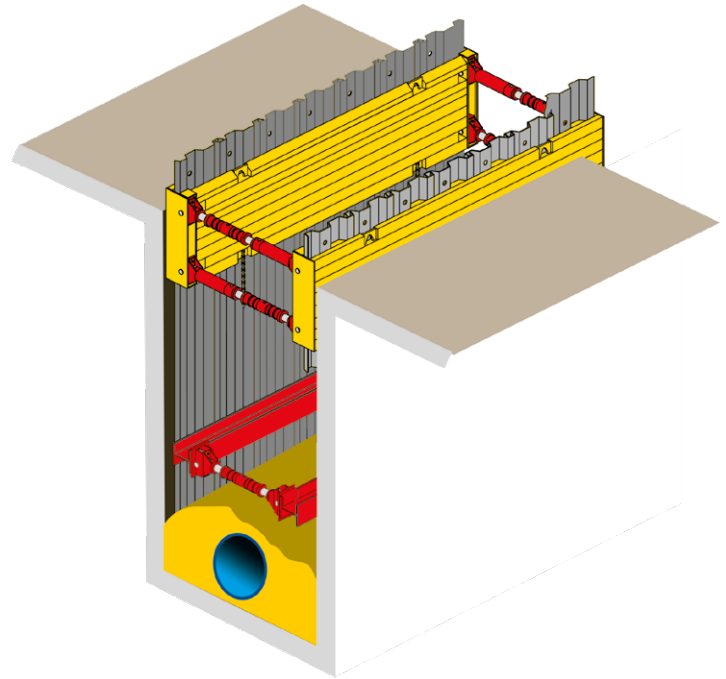
- Once the foregoing shoring section is installed to full depth, the installation of the next pile chamber can be started. The installation is effected as described before.
- After the installation of the pile chamber boxes, the pipe laying can be started in the shored and secured trench.



► Operating Manual

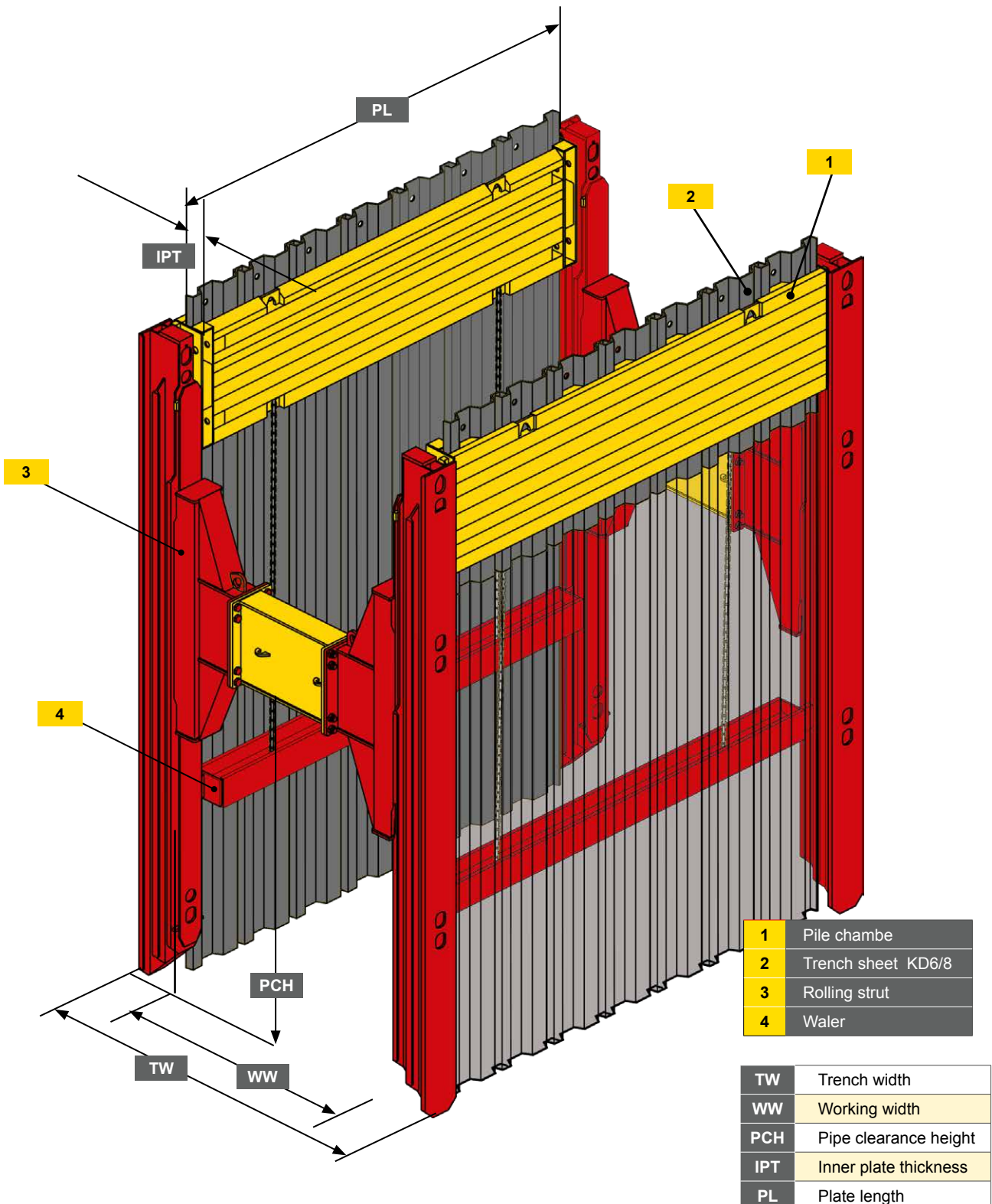
Re-Installation

- After completion of the pipe laying the re- installation of the trench sheets is effected.
- According to compacting possibilities bring in about 0,50 m filling material. Lift the trench sheets by the filed height. That followed the compaction of the filling material.
- Repeat this procedure as described before until the walers and finally the trench sheets can be lifted out of the trench according to the safety regulations. Finally the pile chamber is lifted out of the trench, to carry out the residual filling and compaction.



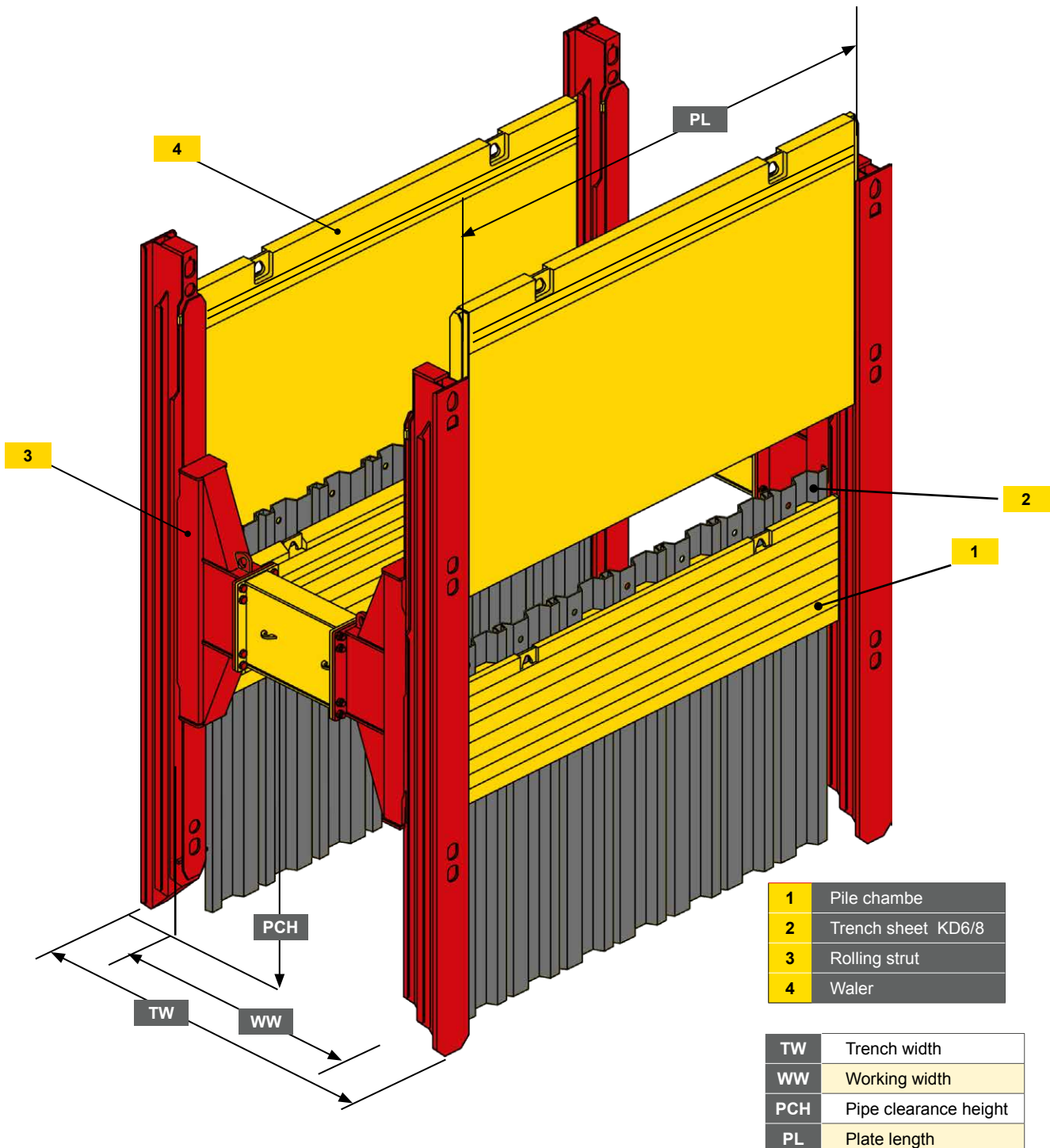
- Use the appropriate eyes at the inner plates to lift the pile chamber only. It is not allowed to lift at the extension pipes!
- We strongly advise that it is forbidden to enter the danger zone during the installation and re- installation.
- Attach lifting accessories at least at 2 eyes of the particular pile chamber plate.

► TWF - Pile Chamber Type 400





► Operating Manual



1	Pile chambe
2	Trench sheet KD6/8
3	Rolling strut
4	Waler

TW	Trench width
WW	Working width
PCH	Pipe clearance height
PL	Plate length

09-2023



► TWF - Pile Chamber Type 400

■ Technical parameters

Plate- length PL (m)	Plate height with guide PH (m)	PC-length PCL (m)	Quantity Trench sheets (n / plate)	Permissible beam load (kN/m)	Weight Plate (kg)
-------------------------	--------------------------------------	----------------------	--	------------------------------------	----------------------

► PC Typ 400 for slide rails + Trench sheets KD 6					
2,00	1,00	1,80	3	n.B	487
2,50	1,00	2,30	4	169,54	582
3,00	1,00	2,80	5	116,02	677
3,50	1,00	3,30	6	80,52	778
4,00	1,00	3,80	7	61,53	873
5,00	1,00	4,80	9	69,52	1250

► Special lengths and inner plates 170 mm are available on request!

In general

► Pile chamber plates with lateral guide are also used with the Rolling Strut shoring. There are two possibilities for the use of pile chamber plates in the area of crossings.

1. Pile Chamber with Rolling Strut Shoring and waler

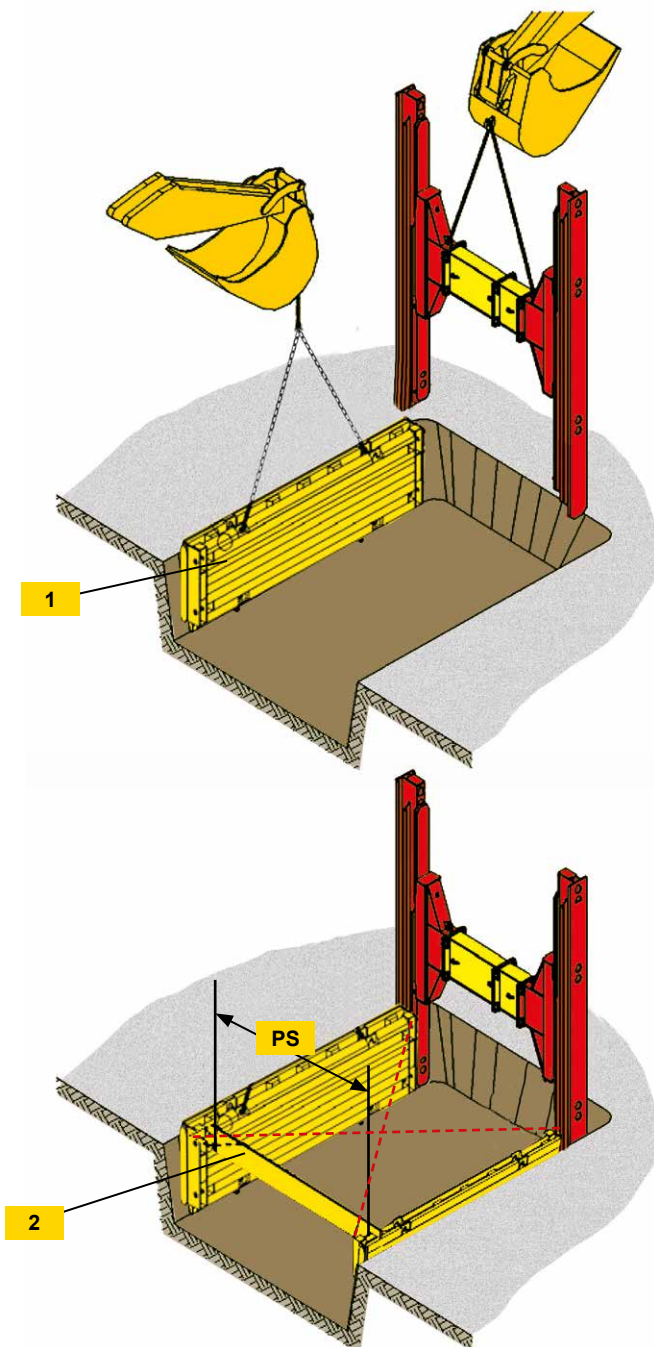
The pile chamber plate is placed in the outer guide of the slide rail, flush with the top ground surface. According to static requirements, one or several walers are positioned beneath in the inner guide of the slide rails.

2. Pile Chamber with Rolling Strut Shoring and shoring plates

The installation of the pile chamber plate is effected in combination with shoring plates, whereat the shoring plates are placed in the outer guides and the pile chamber plates beneath in the inner guides of the slide rails.

► Operating Manual

■ Installation instructions



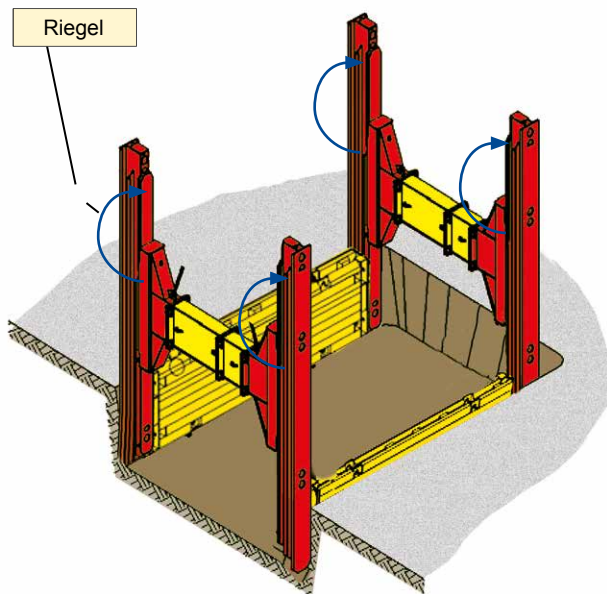
- If the pile chamber plates are used with the Rolling Strut shoring no further assembling at the pile chamber plates is needed. The pile chamber plates with lateral guides are used like shoring plates. We here do not go into the assembly of the Rolling Strut shoring (please see operating manual Slide Rail Shoring).

Pile Chamber with RS-shoring & waler

- Pre-excavation max. 1,00 m and not more than one shoring section length. In principle the pre-excavation complies with the type of soil and the safety regulation.
- Place the pile chamber plate in the pre-excavated trench, push in and hold/ supported by means of the boom of the first excavator. Hook in the pre-assembled slide rail frame at the second excavator, which must have an appropriate height of stroke, swing over the pile chamber plate into the pre-excavated trench, mount into the outer slide rail guide and push in.
- In this phase the trench may not be entered.
- Mount the second pile chamber plate into the outer guide of the slide rail and slide down to the trench sole.
- Align the two pile chamber plates by means of spacers / assembly help parallel and rectangular over the diagonal.

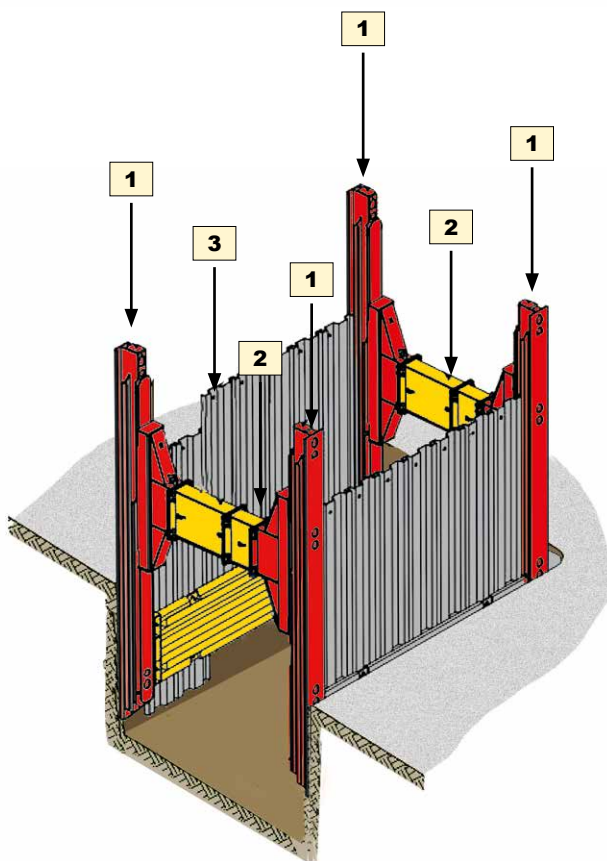
1	Pile chamber plate
2	Installation support
PS	Plate Spacing

► TWF - Pile Chamber Type 400



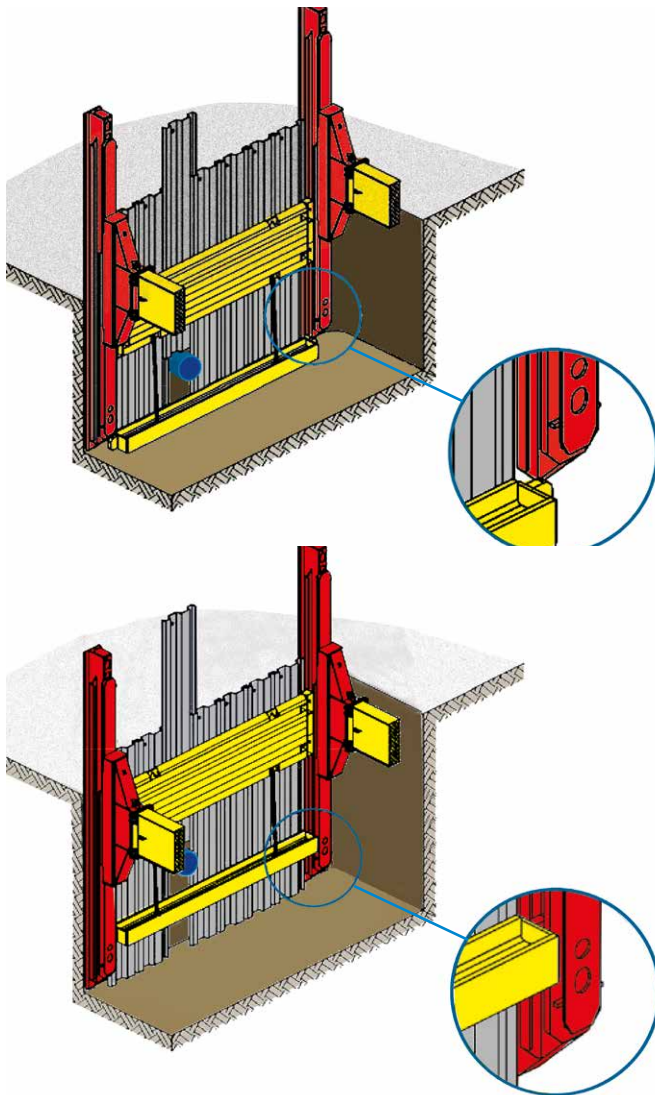
- Now the second pre-assembled slide rail frame is directed over the two plate guide profiles and pushed into the soil. Re-push the slide rails and if necessary align. Fill the excavation / hole between shoring and soil and compact!
- The upper limit pins now have to be repositioned, as described. Now the rolling strut pair can slide on the rails and allows the method of operation of the rolling strut shoring. By positioning of the limit pin in the upper hole, an unintentional slipping of the rolling strut is avoided.

Einsetzen der Kanaldielen KD6 / KD8



- Place the trench sheets into the guides between inner and outer plate and press in by the excavator bucket. By means of the welded guides, the trench sheets are properly guided and kept.
- Excavate about further 50 cm and press in rails, rolling struts and trench sheets by turns. Please pay attention that all components are pressed or pushed in about the same lift and that the rolling strut ist positioned most centrally in the slide rail frame.
- The single shoring components have to be pressed in by the excavator bucket and not by battering. Barriers e.g. fragments of walls or boulders must be removed by hand.

► Operating Manual



Installation of the waler

- As soon as practicable the waler has to be installed in the inner guide of the slide rail, underneath the crossing.
- Thereby, the waler is placed and aligned in excavation depth, directly in front of the trench sheets, underneath the slide rail. The guides at the waler must be underneath of the inner guide of the slide rail.

- Carefully push in the slide rails and if necessary align the waler.

Afterwards fix the waler by means of chains to the pile chamber plates. According to statical requirements, provide further walers.

Pile Chamber with Rolling Strut Shoring and shoring plates

- Is there a crossing in the lower area of the trench only, it can be shored above with shoring plates and below with pile chamber plates. In this case the installation is effected corresponding to the instructions described before, whereat the the pile chamber plates are placed in the inner guide of the slide rail.

Re-Installation

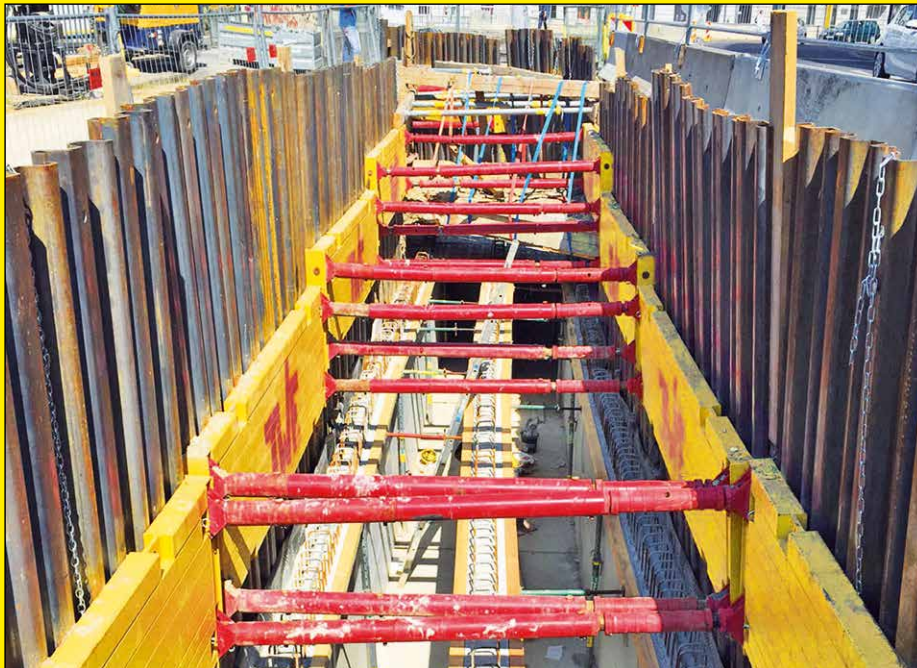
- At the beginning of the re-installation remove the lower limit pins at the rolling strut.
- According to compacting possibilities bring in max. 50cm filling material.
- Lift the shoring components by the filled height. That followed the compaction of the filling material.
- Repeat this procedure as described before until the shoring can be lifted out of the trench according to the safety regulations.

Use the appropriate eyes only to lift the shoring components.

- We strongly advise that it is forbidden to enter the danger zone during the installation and re-installation.

TWF TIEFBAUTECHNIK

Sales | Rental | Leasing



PILE CHAMBER TYPE 400

TWF Tiefbautechnik GmbH

Düsseldorfer Straße 2, D-52525 Heinsberg, GERMANY

T: +49 2452 15678-0

F: +49 2452 15678-19

office@twf-tiefbautechnik.de

www.twf-tiefbautechnik.de

TWF International GmbH

Klingerstraße 8, A-1230 VIENNA, AUSTRIA

T: +43 1 8653333

F: +43 1 8653333-33

office@twf.at

www.twf.at

OPERATING MANUAL