SBH TRENCH SHORING

State-of-the-art trench shoring solutions for all excavation projects

Planning

Production

Provision

CONTENTS

Made in Germany

SBH is synonymous with high-quality Trench Shoring Technology “Made in Germany” and your partner for practice-oriented and bespoke solutions since 1986. We have a broad selection of Trench Shoring Solutions – ranging from Ultra-light Aluminium Shoring for smaller excavation projects using small-sized excavators to Triple Slide Rail Shoring for deeper excavations – all made and developed at our own plant and the home of our company in Heinsberg, Germany. And it is because we are located in the heart of Europe that we are always able to provide our customers with the products and service they need – on demand and on time.
In addition to our company headquarters in Heinsberg, Germany, SBH also operates a widespread network of sales offices, including offices in Dubai, Moscow, Kuala Lumpur, Brisbane and the USA.

Innovative production techniques and extensive automation of major processes not only ensures that production runs smoothly at all times but also that we are always able to provide the same high quality which our customers have come to expect. All the sheet piles made by SBH are manufactured in our in-house rolling mill. The commitment we have to both the location of our company headquarters in Germany and the need for state-of-the-art manufacturing facilities with cutting-edge technology enables us to react quickly, effectively and reliably to any changes in the market or our customers’ needs. It is this high degree of flexibility with regard to production technology, logistics and prices that sets us clearly apart from the rest of the field and suppliers of similar products.

Cost efficiency in pipe and sewer construction

Our customers are keen to rely on practice-oriented complete solutions all from one and the same source. It is the know-how we have acquired in the field and decades of experience in trench shoring which form the foundation of all our services – together with the recognition that we need to continue to develop our shoring systems if they are to meet the ever increasing demands that are put on trench shoring solutions. That’s why the permissible load values are partially substantiated by extensive trials and testing.
By continuing to optimise construction and refusing to compromise on the quality of the steel we use, we are able to ensure that all the products made by SBH are designed to cope with maximum loads, thereby effectively cutting down on the amount of material you need.
As well as being monitored closely from order to delivery, the quality procedures in the company are certified according to ISO 9001 and checked once a year by the German TÜV (Technical Inspection Association). This ensures that any mistakes that may be made are rectified in as short a time as possible and that the products our customers receive are of the highest possible quality.

SBH International

About 70% of all SBH shoring products are produced for the export market. It is no small wonder then that these products can be found on building and construction sites all over the world. In fact, customers in no fewer than 41 different countries benefit from the advantages of high-quality shoring systems made in Heinsberg.
We have a close-knit sales and distribution network that reaches out to all four corners of the globe and which ensures that SBH Trench Shoring Technology is always able to provide a complete portfolio of readily available products and excellent on-site service. SBH products are licensed in Germany and are GS approved and/or issued with a Type Examination Certificate. The internationally renowned, high standards imposed by the German licensing bodies also make it easier for customers to introduce these systems to other countries.

Your partner right from the very start

SBH is the company that many local and government authorities and agencies, engineering firms and construction companies choose to contact - often at the outset of a project - when it comes to planning and implementing civil engineering projects. We at SBH can help you draft your planning documents and are there to provide assistance and support right from the very start.
We have our own Structural Engineering Department and can look back on many years of experience in the field of trench shoring. This enables us to plan ahead and identify any potential dangers or threats to health and safety before effectively eliminating them by correctly assessing which shoring equipment needs to be used and which building and construction machines are needed.

robot welding station

mechanical processing centre

rolling mill

longitudinal welding station

saw room and materials storeroom

plate production line

FUNCTIONS AND BENEFITS OF LARGE-SCALE TRENCH SHORING

- Safety in the Workplace
- Shoring and Sheeting
- Cost Effective Work Processes
- Less Material Dug Out
- Less Filling In and Compacting

When and why are shoring systems used?

Making excavations safe

Unshored trenches or excavations pose a potentially dangerous and sometimes even lethal threat to all those who work in them. Being buried in a trench or excavation is similar to being buried in an avalanche – with the same dramatic and often traumatic consequences.

That's why there are rules and regulations in place which state that a complete and gap-free shoring system must be installed in all unsloped building excavations.

Generally speaking, there is no need for trench shoring up to a depth of 1.25 m. If the ground is firm and the soil cohesive, the top of the trench may also be sloped at an angle of 45° over a height of 50 cm so that the trench has an overall depth of 1.75 m. All further depths must be made safe using suitable shoring.

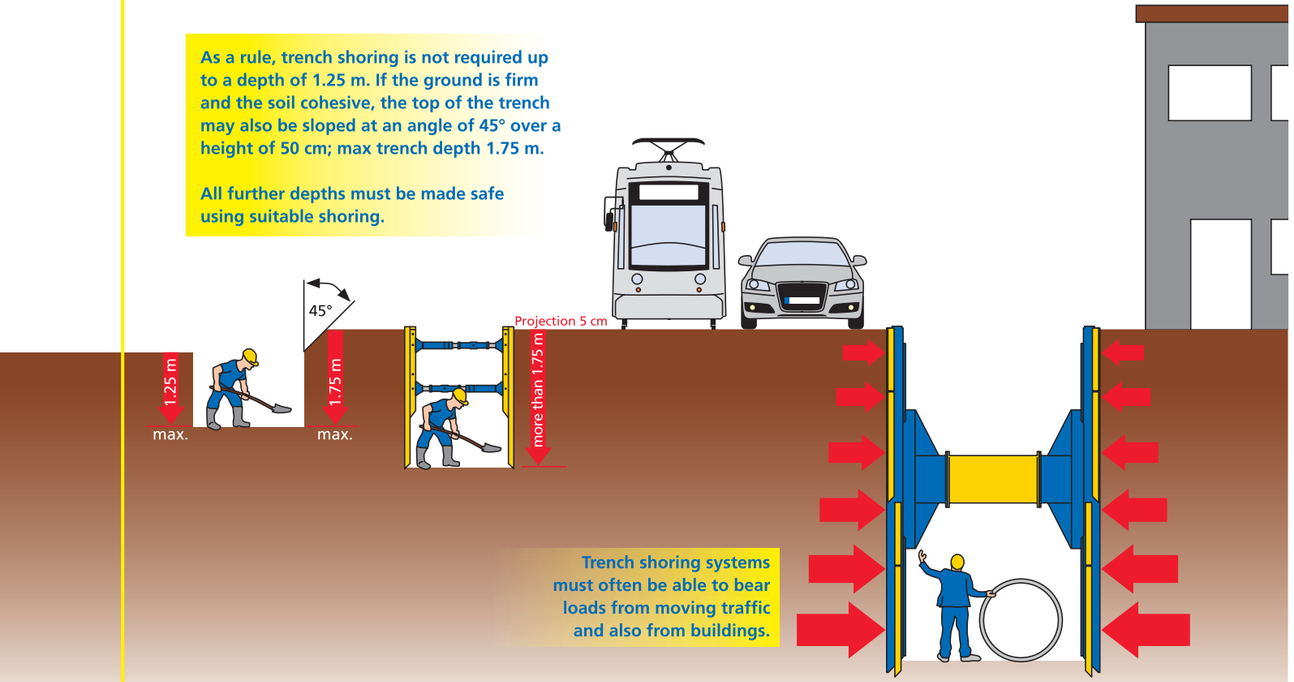
Large-scale trench shoring systems are excellently suited for this purpose. SBH Trench Shoring Systems are approved by BG BAU – the German Social Accident Insurance Institution for the Building Trade – and are either GS approved and/or issued with a Type Examination Certificate. This certification is based on extensive, certified structural calculations, which are partially substantiated by extensive trials and testing.

In addition to being able to withstand earth pressure loads, trench shoring systems must also be able to support any loads which are caused by moving traffic or track systems or the foundations of buildings close to the excavation site. Trench shoring systems have to be extremely robust in order to be able to bear such loads.

Not only are the trench shoring systems from SBH able to bear significantly greater loads than conventional shoring solutions, they also show fewer signs of distortion when in use.

As a rule, trench shoring is not required up to a depth of 1.25 m. If the ground is firm and the soil cohesive, the top of the trench may also be sloped at an angle of 45° over a height of 50 cm; max trench depth 1.75 m.

All further depths must be made safe using suitable shoring.



Trench shoring systems must often be able to bear loads from moving traffic and also from buildings.

Large-scale shoring – the cost efficient work process

Trench shoring systems account for approximately 33% of the total costs of a pipe construction project. That's a pretty hefty chunk of money for something that disappears out of the ground once the pipes have been laid. It's because shoring makes up such a significant percentage of the costs that competition is fierce when it comes to tendering and why workers are often under enormous pressure to keep up with and meet deadlines.

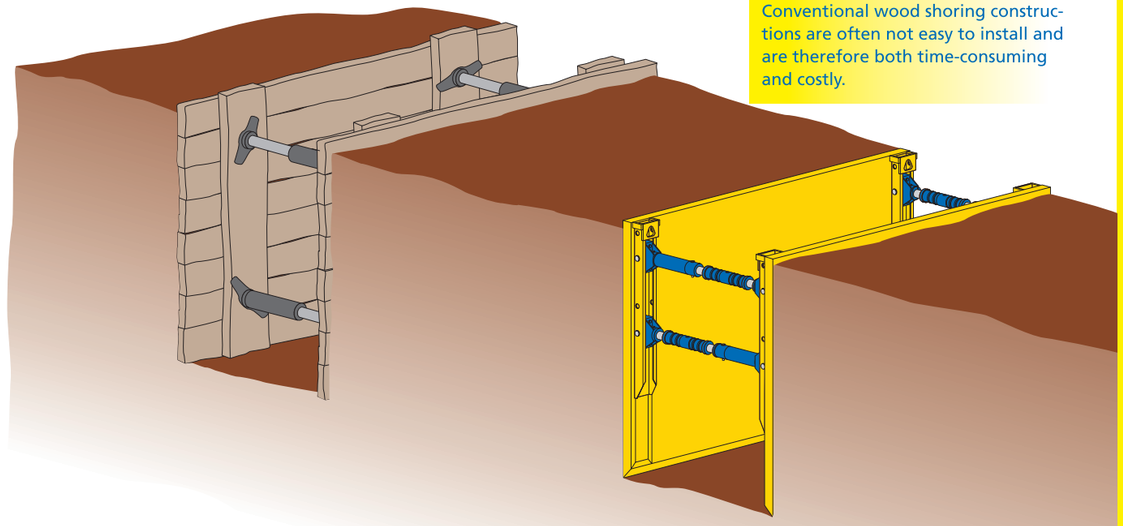
Even today wood is used as a form of shoring.

Wood shoring is frequently used to cover smaller gaps or around crossing utilities despite the fact that Pile Chamber Shoring is without doubt the more economical alternative where utilities cross.

As soon as the high costs for labour and other additional costs are taken into account, it quickly becomes evident that large-scale trench shoring systems are by far the most economical and cost-effective means of ensuring that your trenches and excavations are safe to use.

SBH provides trench shoring systems for a variety of different installation conditions. The following pages contain more information on each of the individual shoring systems.

Conventional wood shoring constructions are often not easy to install and are therefore both time-consuming and costly.



The cost-effective solution for safe trench shoring: large-scale trench shoring systems from SBH.

AN OVERVIEW OF SHORING PLANNING

What factors have an influence on the choice of shoring system?

- Trench Depth and Course of Terrain
- Soil Conditions
- Ground Water
- Additional Loads (Traffic / Buildings)
- Pipe Length and Diameter

Earth pressure loads

The earth pressure load increases with the depth of the trench. Other factors which also have an influence on earth pressure loads are:

- course of terrain along edge of excavation
- slopes or embankments
- soil conditions
- ground water levels
- loads arising from building site traffic or tracks
- loads from foundations of buildings close to excavation site

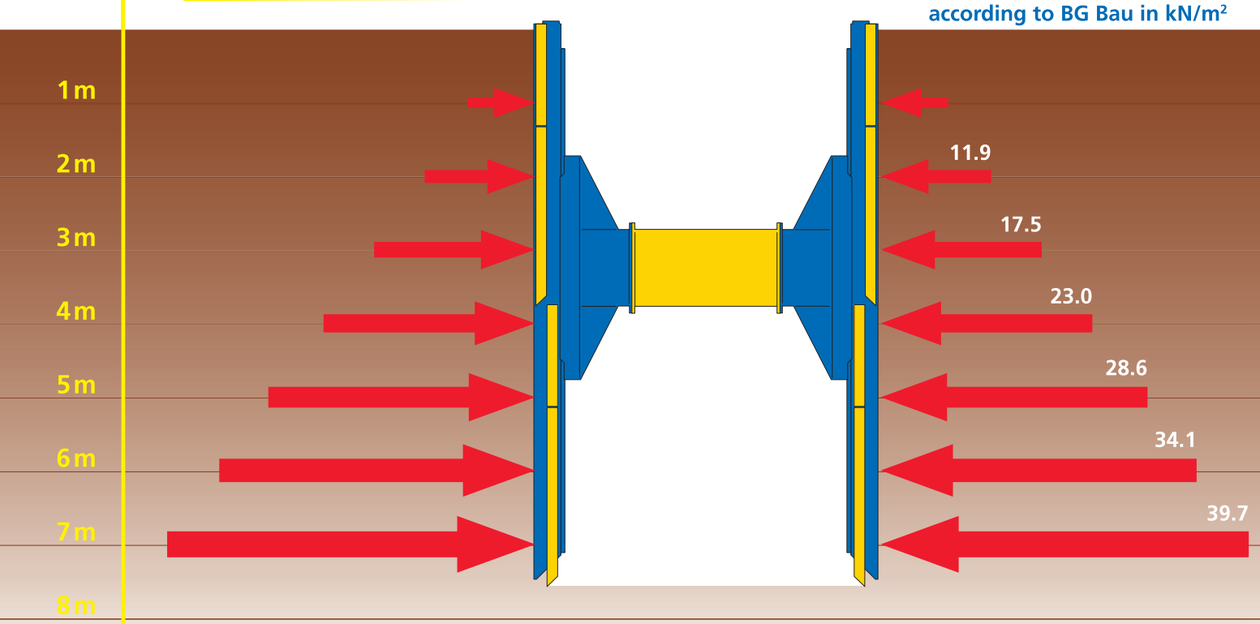
The following diagram serves as a rough guide to illustrate which earth pressure load exists if there are no sensitive buildings or structures that need to be taken into account.
The values contained in the diagram have been determined by BG Bau and are based on a lateral traffic load of 20 kN/m² and average ground conditions. As such they can be adopted for use for the majority of trench shoring projects.

Relevant construction site documents pertaining to any buildings or structures which are susceptible to or in danger of subsidence within the area must be kept.

SBH will gladly provide you with advice and support for the planning of your construction project.

The earth pressure increases with the depth of the excavation. The following diagram can be used to determine the earth pressure in the majority of cases.

Earth pressure according to BG Bau in kN/m²



Pipe clearance heights

The diameter of the pipe determines the width of the working space and the position of the lower spindles. When calculating the height that is required for pipe laying, several centimetres must be allowed for both the height of the pipe bed and head clearance. The lower the position of the lower spindle, the sounder the structure.

This in turn results in a reduction of the moments and forces which occur and to fewer distortions in the sides of the plates. Please contact our Structural Engineering Department for help and support regarding any pipe clearance heights greater than those mentioned.

When Rolling Strut (RS) shoring is used, pipe clearance heights can be matched to meet requirements. The maximum possible pipe clearance height depends on the depth of the trench, the length of the plates and the width of the trench.

Working width

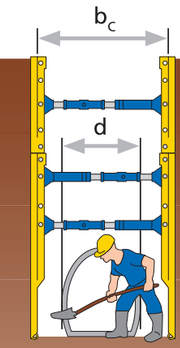
In order to determine the overall width of the working space, enough clearance must be allowed for work, including the compaction of the filling material, to be carried out either side of the pipe. The length of the spindle corresponds to the overall width of the working space and also determines the number of extension pipes which have to be used.

Minimum clearance widths for trenches in which work is to be carried out are laid down in DIN 4124.

The adjacent table is an extract from this norm. The final value is determined by the diameter of the outer pipe or the greatest width in case of non-circular pipes.

diameter of outer pipe or pipe shaft [d in m]	minimum working width [b_c in m]
up to 0.40	$b_c = d + 0.40$
0.40 to 0.80	$b_c = d + 0.70$
0.80 to 1.40	$b_c = d + 0.85$
more than 1.40	$b_c = d + 1.00$

Trenches for pipes and building pits in which work is being carried out must provide enough clearance for the people who work in them. The length of the spindles and number of extension pipes depend on the diameter of the pipe.



Rolling struts can be adjusted so as to meet the required pipe height and provide adequate clearance. This system is also excellently suited for use with wider trenches and higher earth pressure loads.

Here's just one example of RS shoring using the Series 750:

Installation depth	6.00 m
Plate length	3.50 m
Trench width	3.00 m
Pipe height incl. clearance	***3.54 m !***

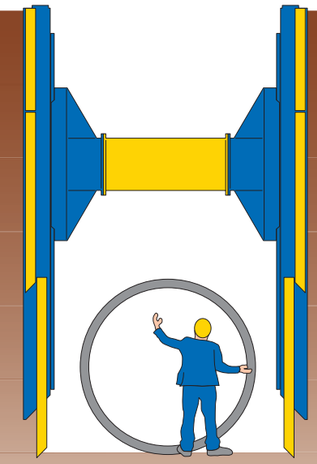


Plate lengths

The length of the individual pipes determines the distance between the spindles and therefore also the length of the individual plates.

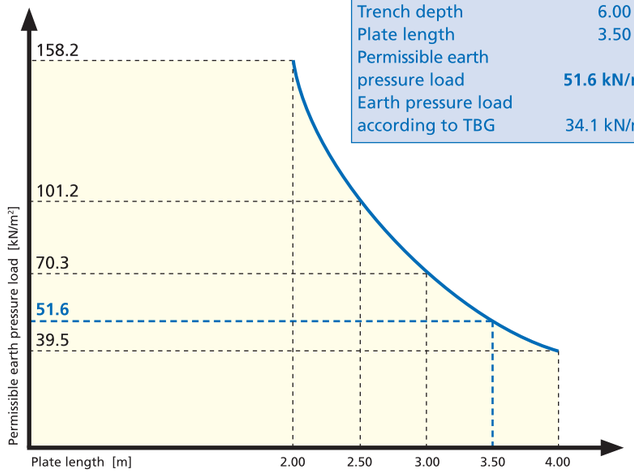
The maximum pipe length can be found in the technical information of the respective shoring systems.

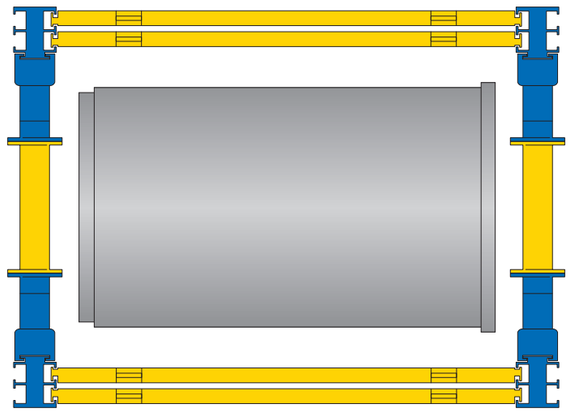
If the plates are structurally identical (same shoring type), the permissible earth pressure load decreases quadratically with the length of plate. This means that shorter plates are generally able to support far greater earth pressure loads than longer plates and can actually support far higher earth pressure loads than those which actually occur at the depths for which they are recommended.

The greatest bending moments and distortions occur in the middle of the plates. This can be counteracted by either using shorter plates or thicker plates of a different shoring type.

An example from the field
with SBH Series 750 Rolling Strut Shoring

Trench depth	6.00 m
Plate length	3.50 m
Permissible earth pressure load	**51.6 kN/m²**
Earth pressure load according to TBG	34.1 kN/m²





The length of plate depends on the length of pipe.

Trench depth and choice of shoring system

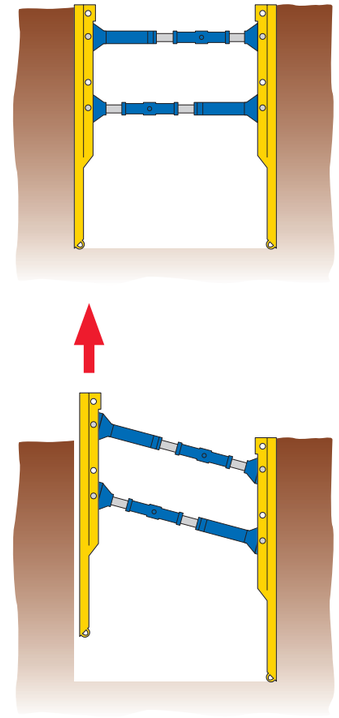
Shoring Boxes or Rolling Strut Shoring? The type of system you use depends on the depth of the trench. In our opinion, the installation depth at which a line should be drawn is 4.00 m.

Theoretically at least, shoring boxes can be stacked one on top of the other up to a total depth of 6.00 m.

This may, however, make it impossible to lower the sides of the box alternately all the way down to the bottom of the trench or to pull the plates out of the trench because of the excessive friction between the earth and the plates themselves.

Because the opposite sides of the box are connected by joint-mounted spindles, the box invariably ends up being shaped liked a parallelogram when it is being raised or lowered. This means that with every push or pull of the plates, the opposite sides move closer to one another before being pressed against the walls of the trench again. The width of the box changes constantly in both cases.

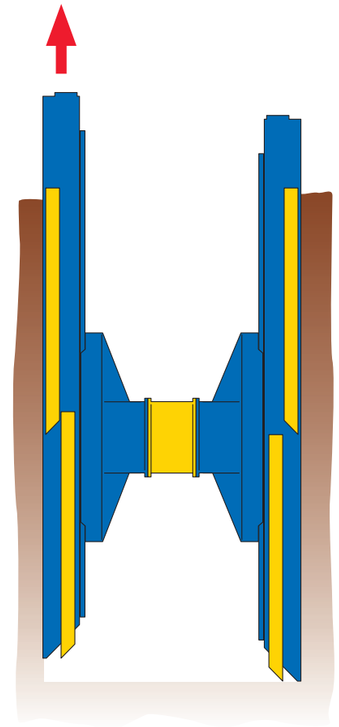
Up to a depth of 4.00 m



Approximate values for tractive forces can be calculated from the product of	Standard box Series 600	RS shoring Series 750
earth pressure **e**	23 kN/m²	23 kN/m²
friction surface **A** (plate length x shoring height)	14.0 m² 3.50 m x 4.00 m	8.4 m² 3.50 m x 2.40 m
and the friction value **μ = 0.5** **F = e x A x μ**	161 kN ≈ 16 t	96.6 kN ≈ 9.7 t ➡ only 60%

This is not the case with Rolling Strut Shoring. Each of the shoring components is pushed in or pulled out individually but still remains parallel to the other components. The shoring width remains unchanged throughout. The tractive force which is applied need only be sufficient to overcome the friction between the shoring component that is being pulled out and the earth pressure which acts against it.

Over a depth of 4.00 m

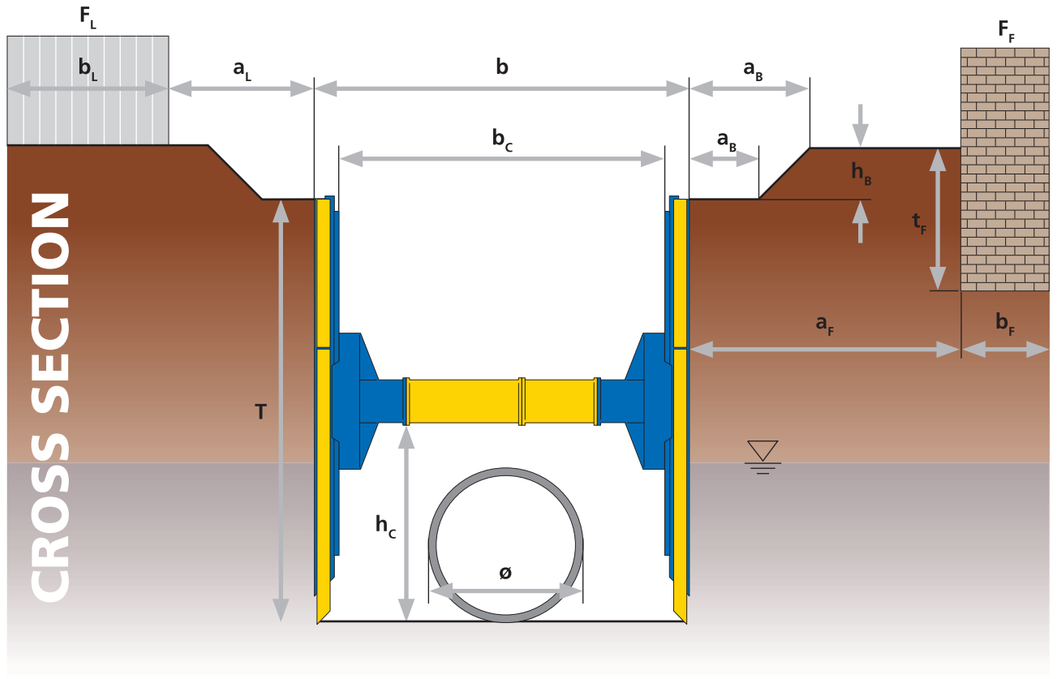


The tractive forces are a result of the friction surface and the earth pressure. Both factors increase with depth. That's why we recommend using Shoring Boxes up to a depth of 4.00 m and Rolling Strut Shoring for greater depths.

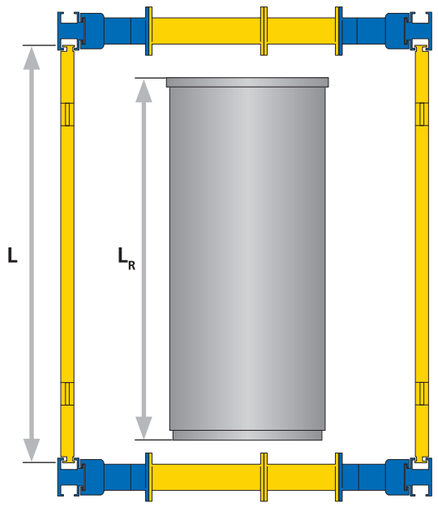
Structural engineering calculations – a special service from SBH

SBH is happy to provide you with support for your individual project and structural engineering calculations for your construction site.

CROSS SECTION



PLAN VIEW



What information do we need?

In order to be able to provide you with a sound and reliable structural engineering analysis, we need to ensure that any influencing factors which have been established at the construction site are taken into account.

SBH has created a question and answer form which has been developed especially to record the data at your construction site. This data is used to provide you with the most favourable shoring solutions and your individual structural engineering analysis.

In addition, we are able to provide you with bespoke solutions designed to meet your unique requirements, e.g. for trenches with greater pipe heights or strut-free excavations.

SBH QUESTION AND ANSWER FORM

Name of company:

Phone number: | **Fax number:**

Key contact person: | **Email address:**

DESCRIPTION OF CONSTRUCTION SITE

TRENCH

Trench depth	T	
Trench width	b	
Strut clear. height	h_C	

PIPE

Pipe diameter	Ø	
Pipe length	L_R	

SLOPE

Distance to bottom of slope	a_B	
Distance to top of slope	a_B	
Height of slope	h_B	

FOUNDATION

Foundation load	F_F	
Distance to foundation	a_F	
Width of foundation	b_F	
Depth of foundation	t_F	

TRAFFIC

Traffic load	F_L	
Distance to load	a_L	
Width of load	b_L	

SOIL PARAMETERS *γ/φ/c*

Drilling profile/Soil layers

Ground water T_W

Dewatering: ☐ yes ☐ no

SHORING SYSTEM

Own: ☐ Rent: ☐ Buy : ☐

Plate length	L	
Plate height	H	
Number of sections	n	

Please copy, fill in and fax this form to:

+49 (0) 2452 9104 50

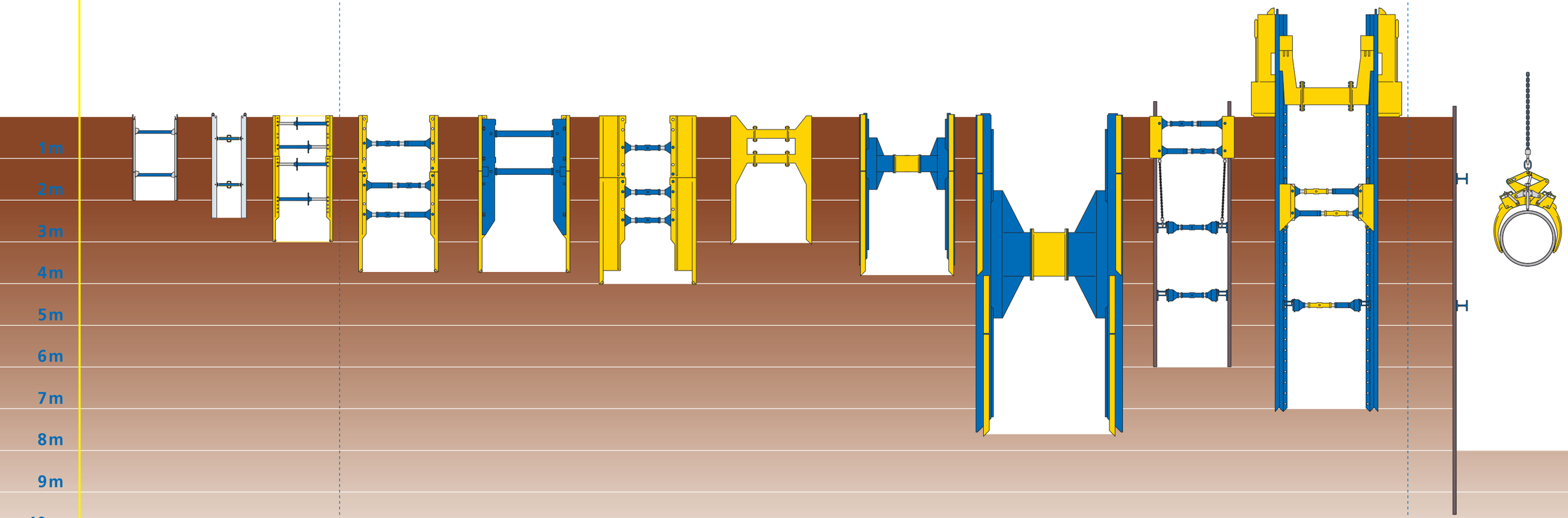
STRUCTURAL ANALYSIS Q&A FORM

SBH SHORING PORTFOLIO

PLACE AND ADJUST METHOD
for stable soil

CUT AND LOWER METHOD
for stable and unstable soil

other
SBH products



Quickshore	Aluminium Shoring	Lightweight Shoring	Trench boxes	Boxes for large pipe diameters	Special boxes		Rolling Strut Shoring		In case of crossing utilities		Trench sheet	Pipe grab
					Manhole box	Drag box	Single slide rail	Double slide rail	Pile chamber shoring	Pressbox		
recommended up to 2.00 m	recommended up to 2.40 m	recommended up to 3.00 m	recommended up to 4.00 m	recommended up to 4.00 m	recommended up to 4.00 m	recommended up to 3.00 m	recommended up to 3.80 m	recommended up to 7.60 m	recommended up to 6.00 m	recommended up to 7.00 m		
			Light Box Extra Box Standard Box	transformation profile Maxi Box RS Box	for manholes	in open terrain			in combination with KD6/8 trench sheets	box profiles pushed in hydraulically	KD6/8 LP profiles OMEGA Z profiles	Type I - RK 2,5 Type II - RK 5,0

Required construction machinery

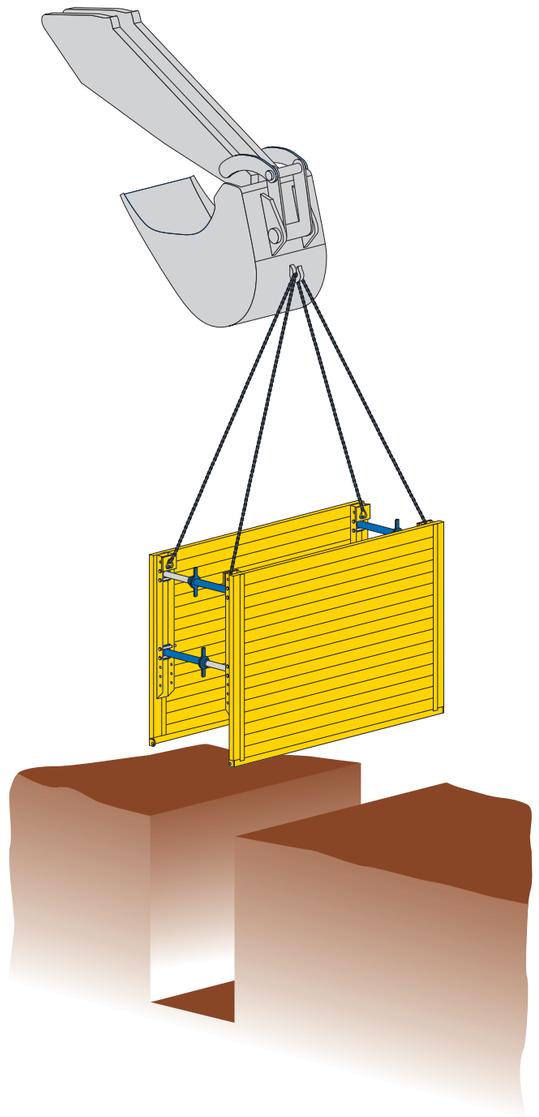
none	mini excavators	mobile excavators	mobile excavator excavator	mobile excavator excavator	mobile excavator excavator	excavator	mobile excavator excavator	excavator	mobile excavator	mobile excavator excavator		
	3 - 9 t	9 - 13 t	base box only 12 - 18 t with top box 18 - 30 t	18 - 30 t	18 - 30 t	30 - 50 t	18 - 30 t	T ≤ 6.2 m 24 - 31 t T > 6.2 m 30 - 50 t	9 - 13 t	18 - 30 t + 80 t crane for installation and removal		

SHORING SYSTEMS USING THE PLACE AND ADJUST METHOD

The place and adjust method is only permissible if the following requirements have been met:

- temporarily stable ground
- outside the area of influence of any buildings or structures
- outside the area of influence of any roads or pipes which could be at risk
- settlements are acceptable

The ground is deemed to be temporarily stable if no significant cave-ins occur during the period from the time the excavations start to the time the shoring has been installed.



The Shoring Box is placed in a trench which has been pre-excavated to its final depth.

When the place and adjust method is used, the base and the top box must be pre-assembled outside the trench and then lowered down into the trench as a single unit if the depth of the trench is greater than the height of the base plate.

The base and top box are connected via box connectors and/or pins. Certified chains are attached to specially designed lifting eyes on the posts.

Place the completely assembled box comprising the base and top box into the trench which has been pre-excavated to its final depth.

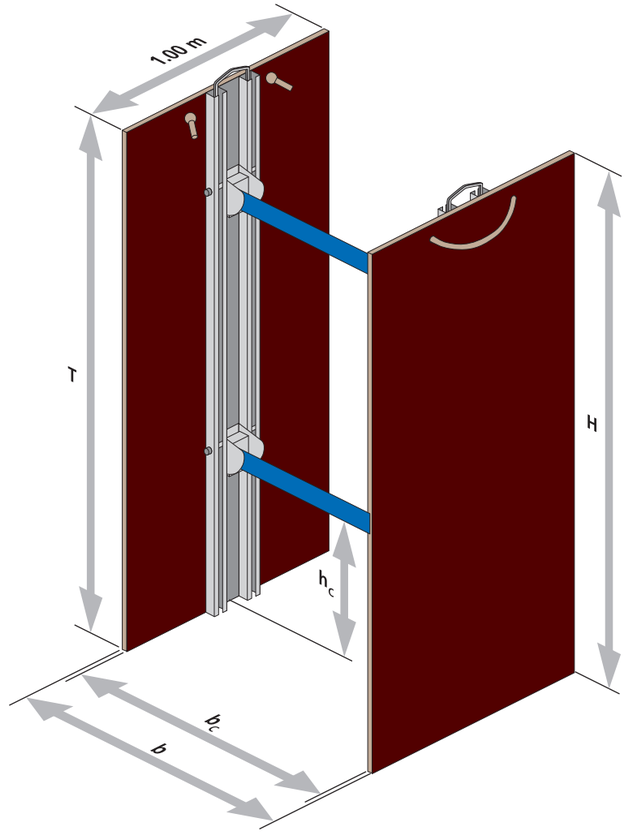
The length of the excavation should not exceed the length of one box.

The cavity between the shoring and the surrounding soil must be filled in and compacted!

The top of the shoring must extend at least 5 cm above the immediate surrounding terrain.

QUICKSHORE

Series 260



Aluminium corner post

Post Length [m]	max. trench depth T [m]	pipe clearance height h_c [m]	max. perm. boom bracing load [kN/m]	Weight per frame [kg]
1.50	1.50	0.56	23.5	33
2.10	2.00	0.56	23.5	40

Panel

Panel Width [m]	Panel Height H [m]	max. perm. earth pressure [kN/m²]	Weight per plate [kg]
1.00	1.50	12.0	21
1.00	2.10	12.0	30

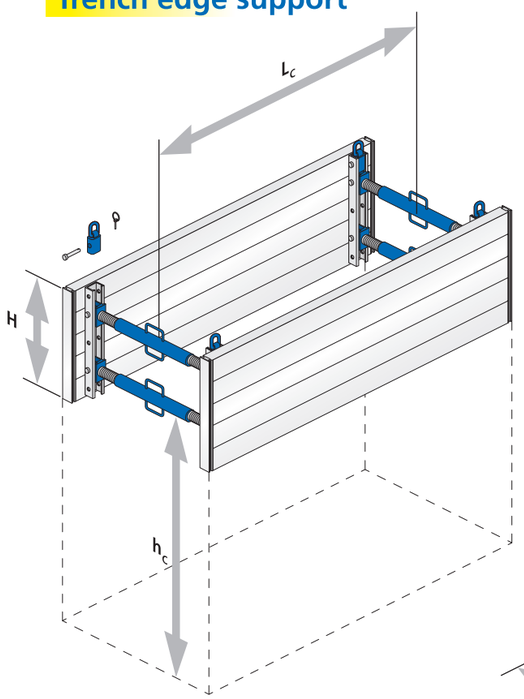
Hydraulic strut

Type	Working width b_c [m]		Trench width b [m]		max. perm. compressive force [kN]
	min.	max.	min.	max.	
1	0.45	0.68	0.49	0.72	53
2	0.55	0.88	0.59	0.92	53
3	0.65	1.08	0.69	1.12	53
4	1.00	1.60	1.04	1.64	53

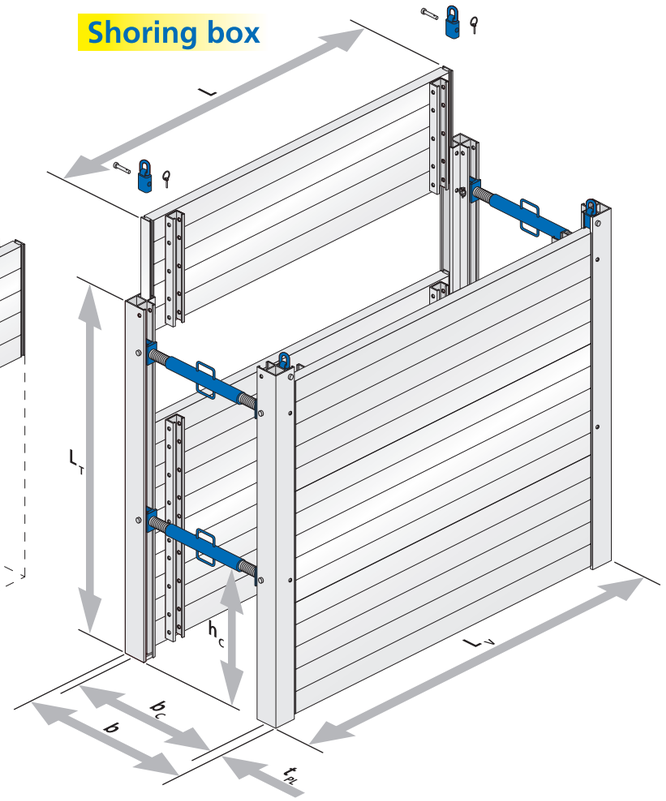
ALUMINIUM SHORING

Series 250

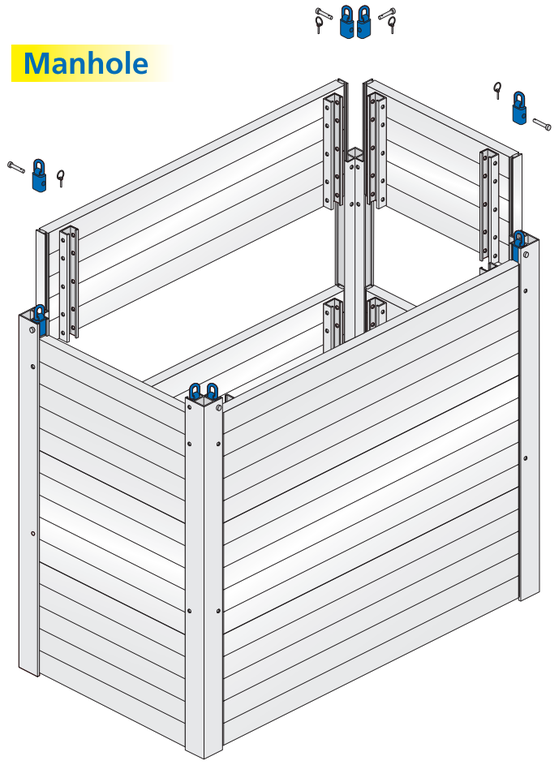
Trench edge support



Shoring box



Manhole

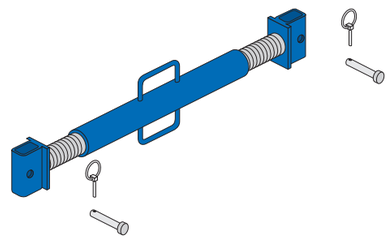


Aluminium plates t_{PL} = 60mm

Plate length L [m]	System length L_V [m]	Shoring height H [m]	Pipe clearance length L_C [m]	Pipe clearance height h_C [m]	max. perm. earth pressure [kN/m²]	Weight with strut B [kg/box]	Weight manhole [kg/manhole]
1.50	1.50	0.60	1.18	1.32	32.6	95	130
	1.72	1.20 1.80 2.40	1.58	0.71		185 250 320	250 370 485
2.00	2.00	0.60	1.68	1.32	26.5	110	160
	2.22	1.20 1.80 2.40	2.08	0.71		215 295 380	305 450 600
2.50	2.50	0.60	2.18	1.32	21.6	120	185
	2.72	1.20 1.80 2.40	2.58	0.71		240 340 435	360 535 710
3.00	3.00	0.60	2.68	1.32	17.5	135	215
	3.22	1.20 1.80 2.40	3.08	0.71		270 380 490	420 620 825

Aluminium posts

Post length L_T [m]	Weight [kg]
0.70	5.4
1.30	10.0
1.90	14.6
2.50	19.2



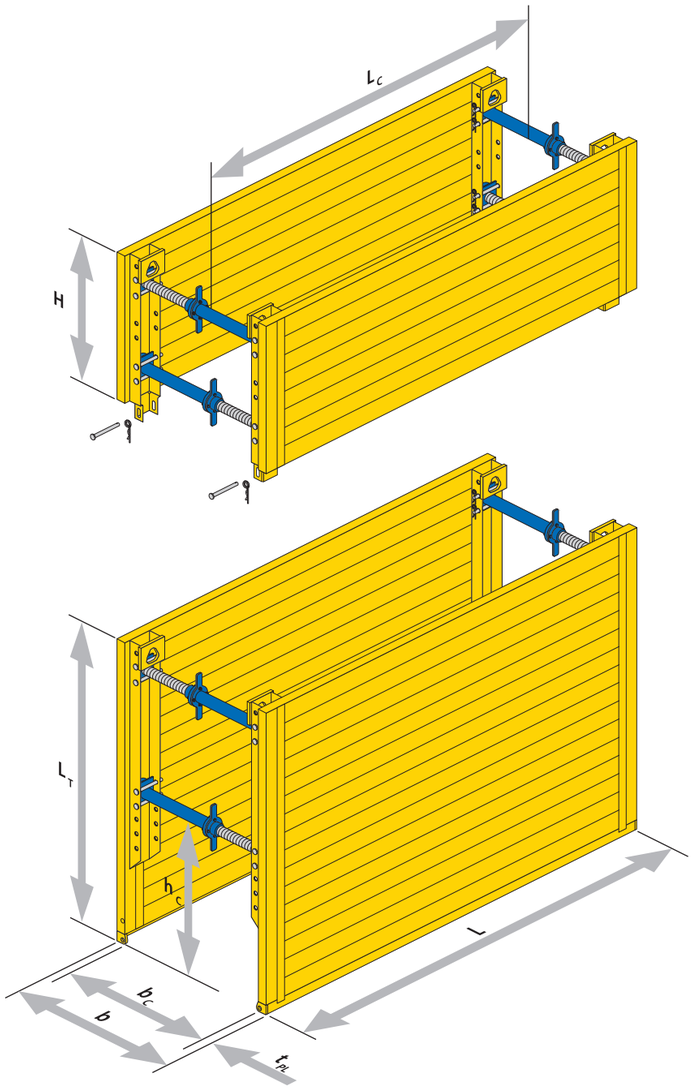
Aluminium struts

Strut type	Working width b_C [m]		Trench width b [m]		max. perm. compressive force [kN]	Weight [kg]
	min.	max.	min.	max.		
A	0.63	0.85	0.78	1.00	109	7.3
B	0.85	1.31	1.00	1.46	92	9.4
C	1.32	2.23	1.47	2.38	62	13.6

PLACE AND ADJUST METHOD

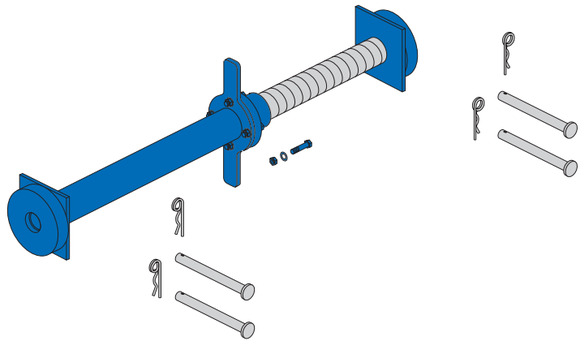
LIGHTWEIGHT SHORING

Series 100



Plates t_{PL} = 60 mm

Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight with strut B [kg/box]
2.00	1.60 2.00 2.40 2.60	1.60	0.94	27.7	570 670 770 830
	0.60 1.00				275 415
2.50	1.60 2.00 2.40 2.60	2.10	0.94	22.1	655 770 890 965
	0.60 1.00				315 470
3.00	1.60 2.00 2.40 2.60	2.60	0.94	18.5	745 875 1010 1095
	0.60 1.00				355 525
3.50	1.60 2.00 2.40 2.60	3.10	0.94	15.3	830 980 1130 1230
	0.60 1.00				395 585

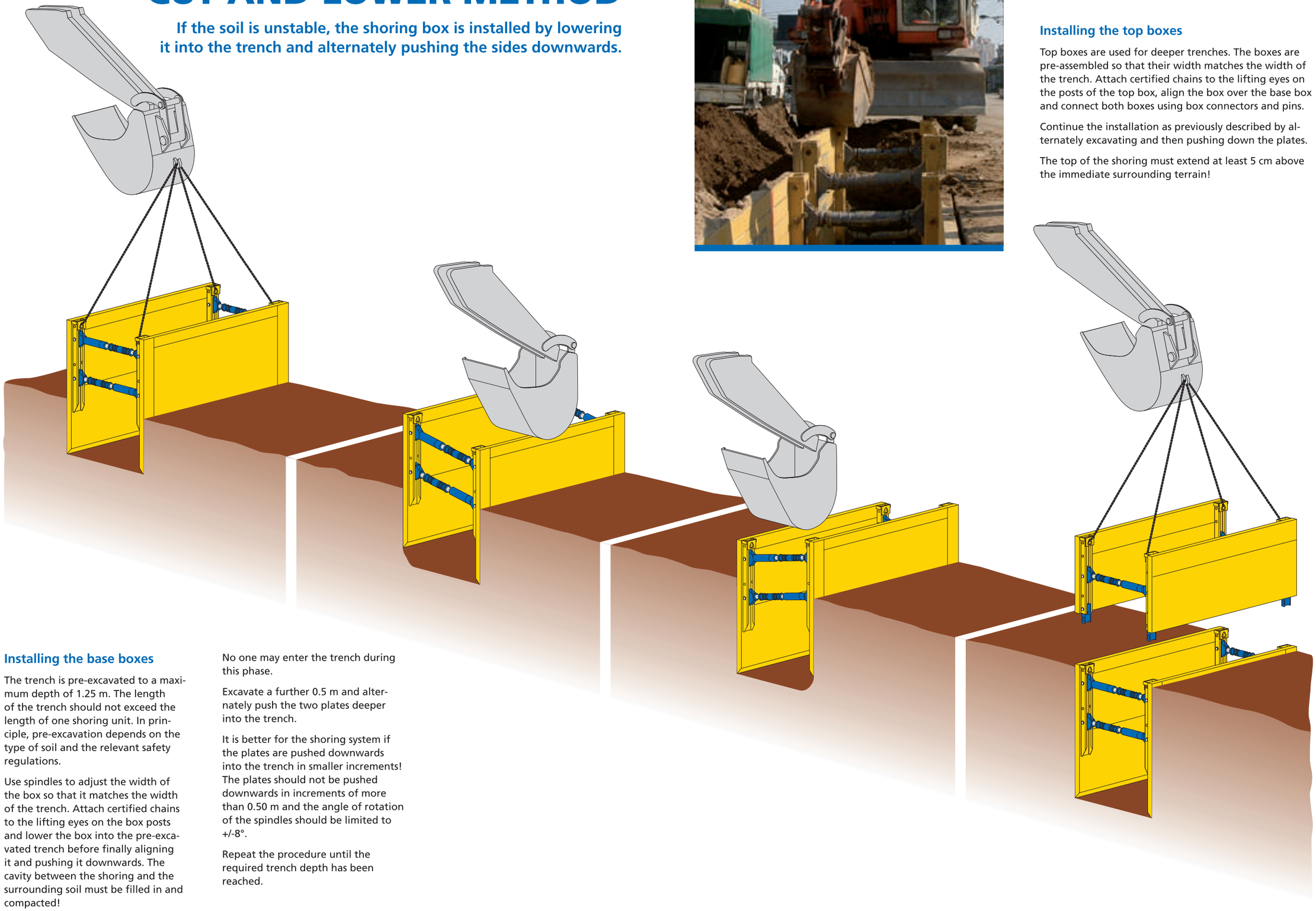


Lightweight strut

Strut type	Working width b_c [m] min.	Working width b_c [m] max.	Trench width b [m] min.	Trench width b [m] max.	max. perm. compressive force [kN]	Weight [kg]
A	0.53	0.73	0.66	0.86	160	14.2
B	0.71	1.07	0.84	1.20	147	16.9
C	1.05	1.65	1.18	1.78	124	20.9
D	1.50	2.10	1.63	2.23	107	23.6
E	1.88	2.48	2.01	2.61	92	25.8
F	2.48	3.08	2.61	3.21	69	29.3

SHORING SYSTEMS USING THE CUT AND LOWER METHOD

If the soil is unstable, the shoring box is installed by lowering it into the trench and alternately pushing the sides downwards.



Installing the base boxes

The trench is pre-excavated to a maximum depth of 1.25 m. The length of the trench should not exceed the length of one shoring unit. In principle, pre-excavation depends on the type of soil and the relevant safety regulations.

Use spindles to adjust the width of the box so that it matches the width of the trench. Attach certified chains to the lifting eyes on the box posts and lower the box into the pre-excavated trench before finally aligning it and pushing it downwards. The cavity between the shoring and the surrounding soil must be filled in and compacted!

No one may enter the trench during this phase.

Excavate a further 0.5 m and alternately push the two plates deeper into the trench.

It is better for the shoring system if the plates are pushed downwards into the trench in smaller increments! The plates should not be pushed downwards in increments of more than 0.50 m and the angle of rotation of the spindles should be limited to +/-8°.

Repeat the procedure until the required trench depth has been reached.

Installing the top boxes

Top boxes are used for deeper trenches. The boxes are pre-assembled so that their width matches the width of the trench. Attach certified chains to the lifting eyes on the posts of the top box, align the box over the base box and connect both boxes using box connectors and pins.

Continue the installation as previously described by alternately excavating and then pushing down the plates.

The top of the shoring must extend at least 5 cm above the immediate surrounding terrain!

SBH SPINDLES

with slot together extension pipes for different trench widths

SBH spindles and slot together extension pipes can be used to adjust the width of the shoring box so that it matches the width of the trench. As many as 6 extension pipes, each with a length of 0.50 m, or a combination of spindles and pipes up to a total length of 3 m, can be easily slotted together. The extension pipes are available in lengths between 0.30 and 2.00 m and can be combined individually to match the required trench width.

Other systems use extension pipes or connecting pieces which have to be laboriously screwed together. This not only costs time but also requires a large amount of screws. The system used by SBH is different.

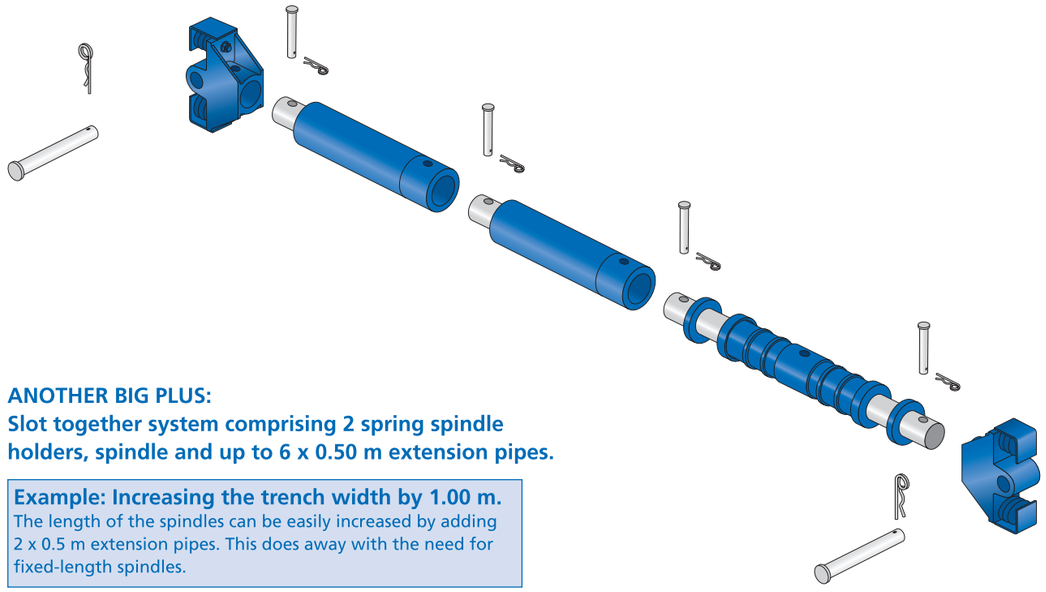
The pipes are simply slotted together and secured with a single spindle pin and an R-clip.
The plates and the spindles are connected via a joint-mounted spring spindle holder. This allows the plates to be pushed alternately into the trench when the cut and lower method is used.

Spindles for extremely high loads

The spindles and extension pipes are extremely strong and designed to withstand very high loads. The pressure forces specified below have been backed up by rigorous and extensive testing and practical trials.

Spindle type 031/085 blue

Number of extension pipes a 0,50m	Spindle length/ Working width b_c [m]	Trench width b [m]	Trench width b [m]	Trench width b [m]	Trench width b [m]	max. perm. compression force F [kN]	Weight G [kg]
		Light box	Extra box	Standard box	Manhole box		
0	0.98 – 1.26	1.11 – 1.39	1.15 – 1.43	1.20 – 1.48	2.00 – 2.28	468	65.0
1	1.48 – 1.76	1.61 – 1.89	1.65 – 1.93	1.70 – 1.98	2.50 – 2.78	403	84.8
2	1.98 – 2.26	2.11 – 2.39	2.15 – 2.43	2.20 – 2.48	3.00 – 3.28	348	104.6
3	2.48 – 2.76	2.61 – 2.89	2.65 – 2.93	2.70 – 2.98	3.50 – 3.78	299	124.4
4	2.98 – 3.26	3.11 – 3.39	3.15 – 3.43	3.20 – 3.48	4.00 – 4.28	254	144.2
5	3.48 – 3.76	3.61 – 3.89	3.65 – 3.93	3.70 – 3.98	4.50 – 4.78	210	164.0
6	3.98 – 4.26	4.11 – 4.39	4.15 – 4.43	4.20 – 4.48	5.00 – 5.28	165	183.8



ANOTHER BIG PLUS:
Slot together system comprising 2 spring spindle holders, spindle and up to 6 x 0.50 m extension pipes.

Example: Increasing the trench width by 1.00 m.
The length of the spindles can be easily increased by adding 2 x 0.5 m extension pipes. This does away with the need for fixed-length spindles.

Cleaning and maintenance

SBH spindles consist of a cast iron body and threaded components made of solid materials so that they are able to withstand extremely high forces. Flange rings centre the connection between the spindle and extension pipes.

Simply pull the seal ring upwards…

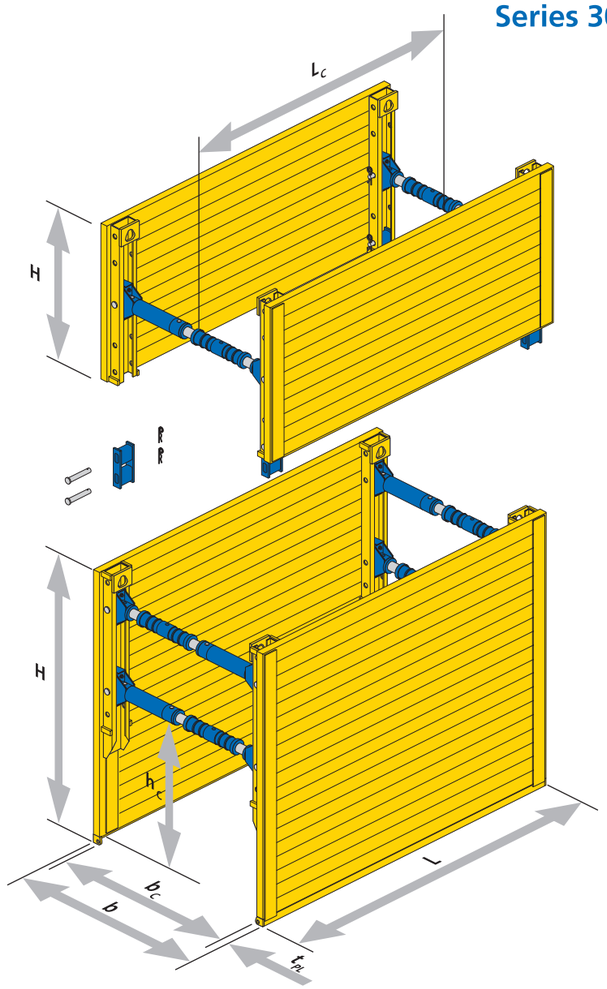
… unscrew the locking pin …

… and remove the threaded component.

If the spindles are cleaned and lubricated at least once a year, they can still be easily turned after years of use in the field.

LIGHT BOX

Series 300

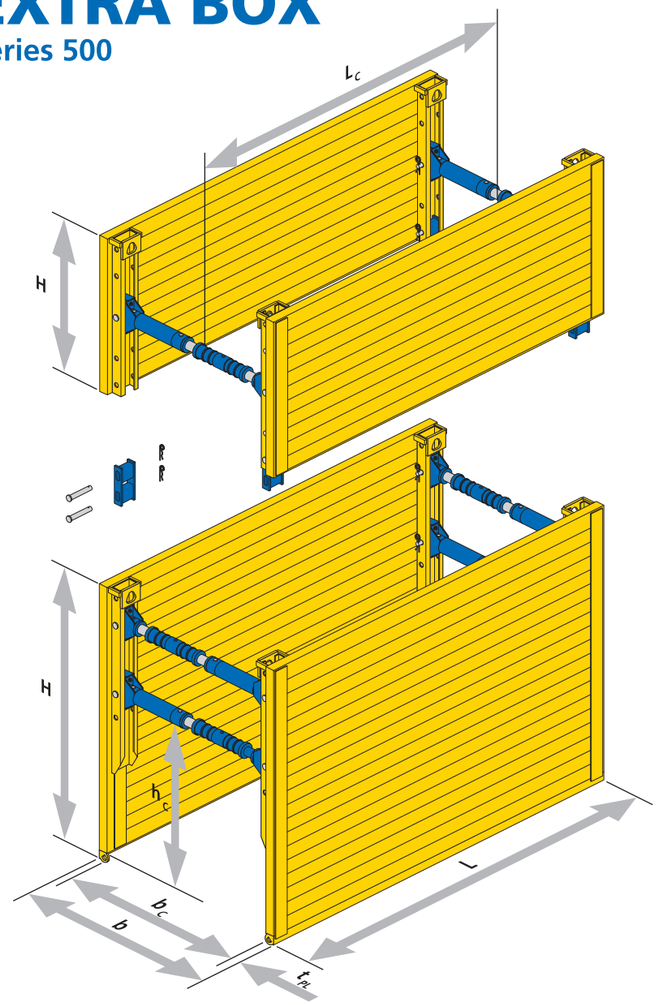


Plates t_{PL} = 60 mm

Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight per box [kg]
2.00	2.00	1.60	1.12	50.4	920
	2.40		1.27	38.5	1030
	2.60		1.27	38.2	1105
	1.40			50.4	640
2.50	2.00	2.10	1.12	32.7	1025
	2.40		1.27	30.8	1150
	2.60		1.27	30.6	1240
	1.40			32.7	720
3.00	2.00	2.60	1.12	31.8	1385
	2.40		1.27	26.0	1575
	2.60		1.27	25.8	1700
	1.40			31.8	960
3.50	2.00	3.10	1.12	22.7	1535
	2.40		1.27	22.3	1750
	2.60		1.27	22.1	1890
	1.40			22.7	1070

EXTRA BOX

Series 500

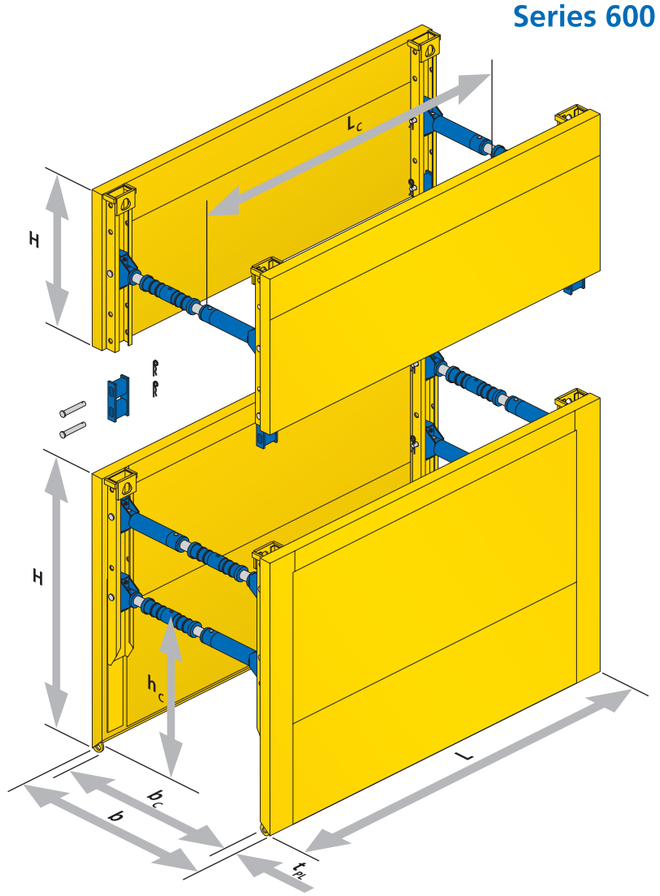


Plates t_{PL} = 80 mm

Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight per box [kg]
2.00	2.00	1.60	1.14	92.7	1220
	2.40		1.39	61.8	1385
	2.60		1.39	61.0	1495
	1.40			92.7	870
2.50	2.00	2.10	1.14	68.7	1395
	2.40		1.39	49.5	1585
	2.60		1.39	48.8	1710
	1.40			68.7	1000
3.00	2.00	2.60	1.14	45.8	1595
	2.40		1.39	41.2	1810
	2.60		1.39	40.6	1960
	1.40			45.8	1125
3.50	2.00	3.10	1.14	32.7	1775
	2.40		1.39	32.7	2015
	2.60		1.39	32.7	2180
	1.40			32.7	1255

STANDARD BOX

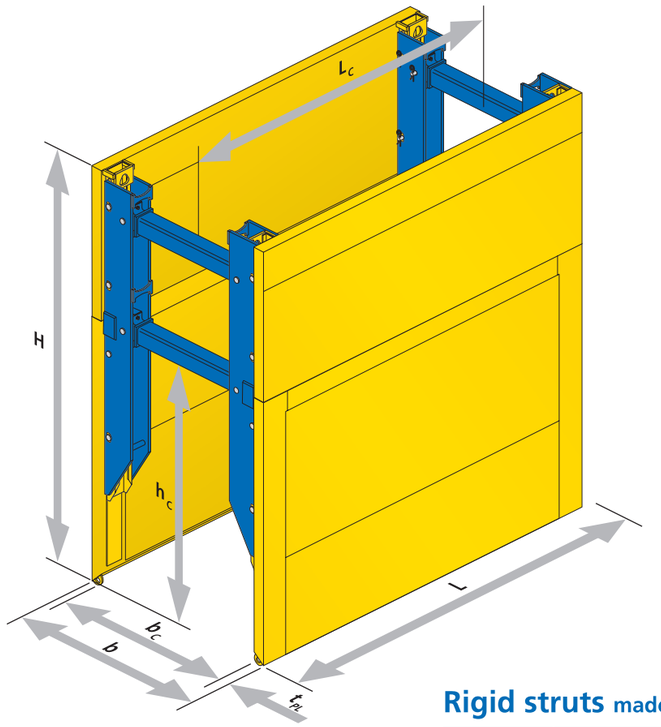
Series 600

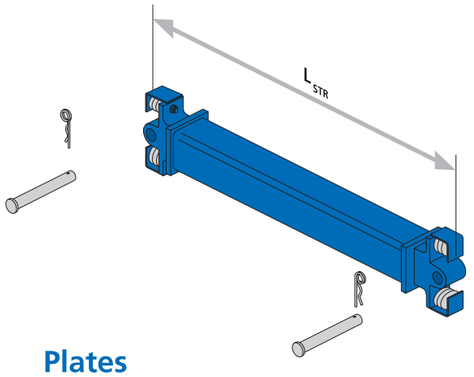


Plates

Plate length L [m]	Plate height H [m]	Thickness t_{PL} [m]	Pipe clearance length L_C [m]	Pipe clearance height h_C [m]	max. perm. earth pressure [kN/m²]	Weight per box [kg]
3.00	2.40 2.60 1.40	107	2.60	1.50	47.5	1950 2075 1205
3.50	2.40 2.60 1.40		3.10	1.50	40.7	2180 2320 1350
3.70	2.40 2.60 1.40		3.30	1.50	38.5	2270 2445 1410
4.00	2.40 2.60 1.40		3.60	1.50	35.6	2400 2560 1495
4.50	2.40 2.60 1.40	127	4.10	1.50	33.7	2910 3090 1880
5.00	2.40 2.60 1.40		4.60	1.50	30.3	3160 3360 2050
5.50	2.40 2.60 1.40		5.10	1.50	27.6	3415 3635 2220
6.00	2.40 2.60 1.40		5.60	1.50	24.5	3670 3910 2390

with transformation profile





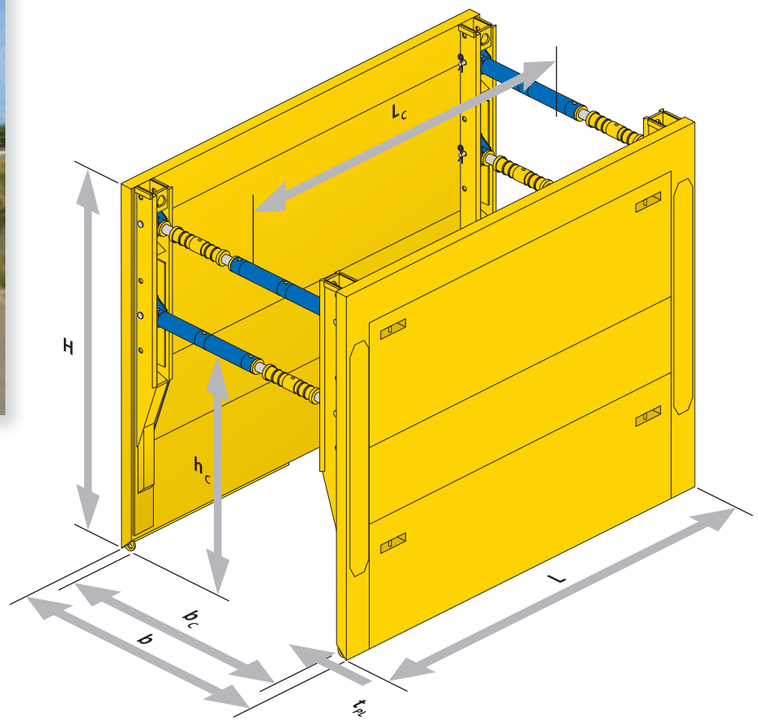
Rigid struts made of pipe 150 x 150

Strut length L_{STR} [m]	Working width in between plates [m]	Working width in between transf.-profiles [m]	max. perm. compressive force [kN]	Weight [kg]
2.00	2.33	1.72	600	129
2.50	2.83	2.22	600	153
3.00	3.33	2.72	600	176
3.50	3.83	3.22	550	200
4.00	4.33	3.72	500	223
4.50	4.83	4.22	450	247
5.00	5.33	4.72	400	270
5.50	5.83	5.22	350	294
6.00	6.33	5.72	300	317

Plates

Plate length L [m]	Plate height H [m]	Thickness t_{PL} [m]	Pipe clearance length L_C [m]	Pipe clearance height h_C [m]	max. perm. earth pressure [kN/m²]	Weight b_C = 2,33m [kg/box]
3.00	2.4 + 1.4 2.6 + 1.4	107	2.60	2.30 2.51	57.0 47.6	5220 5350
3.50	2.4 + 1.4 2.6 + 1.4		3.10	2.30 2.51	48.9 40.8	5590 5730
4.00	2.4 + 1.4 2.6 + 1.4		3.60	2.30 2.51	42.8 35.7	5960 6120
4.50	2.4 + 1.4 2.6 + 1.4	127	4.10	2.30 2.51	38.0 31.8	6850 7040
5.00	2.4 + 1.4 2.6 + 1.4		4.60	2.30 2.51	34.2 28.6	7280 7480
5.50	2.4 + 1.4 2.6 + 1.4		5.10	2.30 2.51	29.4 26.0	7700 7920
6.00	2.4 + 1.4 2.6 + 1.4		5.60	2.30 2.51	24.5 23.8	8120 8360

MAXI BOX
Series 630

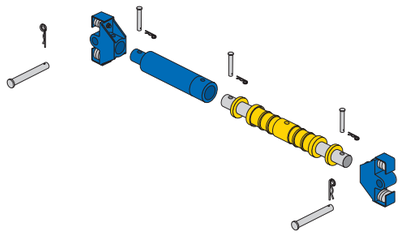


Plates t_{PL} = 107 mm

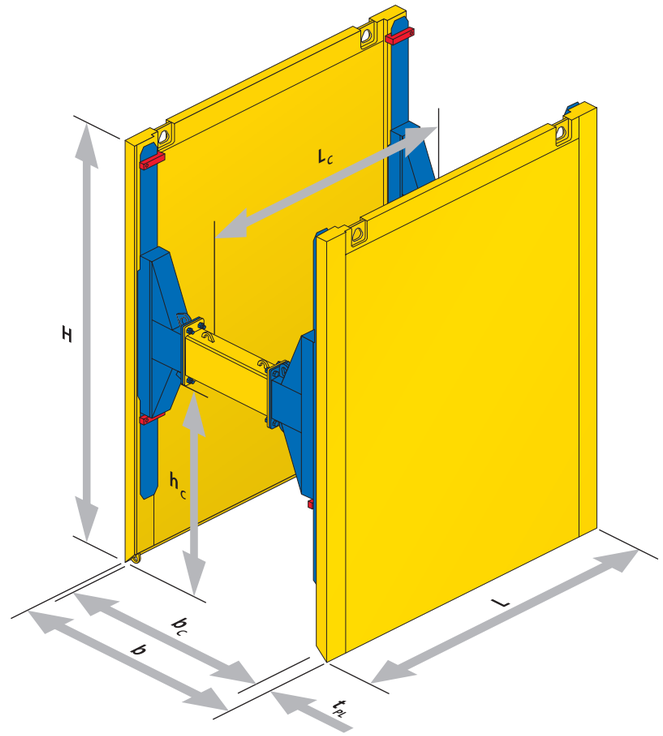
Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight per box [kg]
3.15	3.93	2.75	1.69 1.99 2.29	76.5 76.5 63.2	3700
4.00	3.15	3.60	1.69 1.99 2.29	45.6 45.6 21.8	3595

Spindle type 031/135 yellow

Number of extension pipes a 0,50 m	Working width b_c [m]	Trench width b_c [m]	Permissible compressive force [kN]	Weight [kg]
0	0.98 – 1.16	1.20 – 1.38	510	65.0
1	1.48 – 1.66	1.70 - 1.88	445	84.8
2	1.98 – 2.16	2.20 – 2.38	394	104.6
3	2.48 – 2.66	2.70 – 2.88	354	124.4
4	2.98 – 3.16	3.20 – 3.38	321	144.2
5	3.48 – 3.66	3.70 – 3.88	292	164.0
6	3.98 – 4.16	4.20 - 4.38	263	183.8



ROLLING STRUT BOX
Series 780



Plates t_{PL} = 86 mm

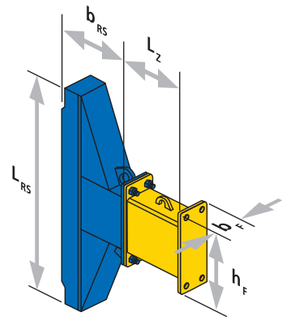
Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight per box [kg]
3.15	4.00	2.70	2.78	33.9	3735
4.00	3.15	3.55	1.93	33.1	3535

Rolling strut (RS)

RS length L_{RS} [m]	RS width b_{RS} [m]	min. working width b_c [m]		min. trench width b [m]	Flange dimensions b_F x h_F [mm]	max. perm. forces [kN]	Weight per RS pair [kg]
		Plates	Posts				
1.50	0.50	1.17	1.00	1.37	220 x 560	-112 to 242	360

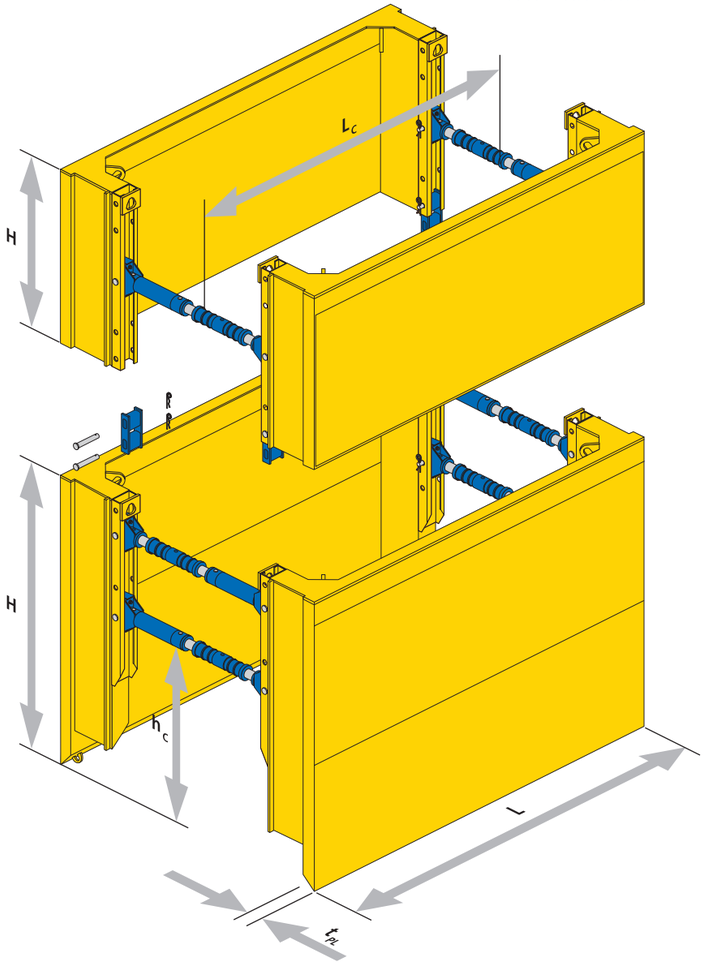
Distance piece

Length L_z [m]	Weight [kg]
0.25 0.50 0.75	62 84 105
1.00 1.50 2.00	126 168 211



MANHOLE BOX

Series 600

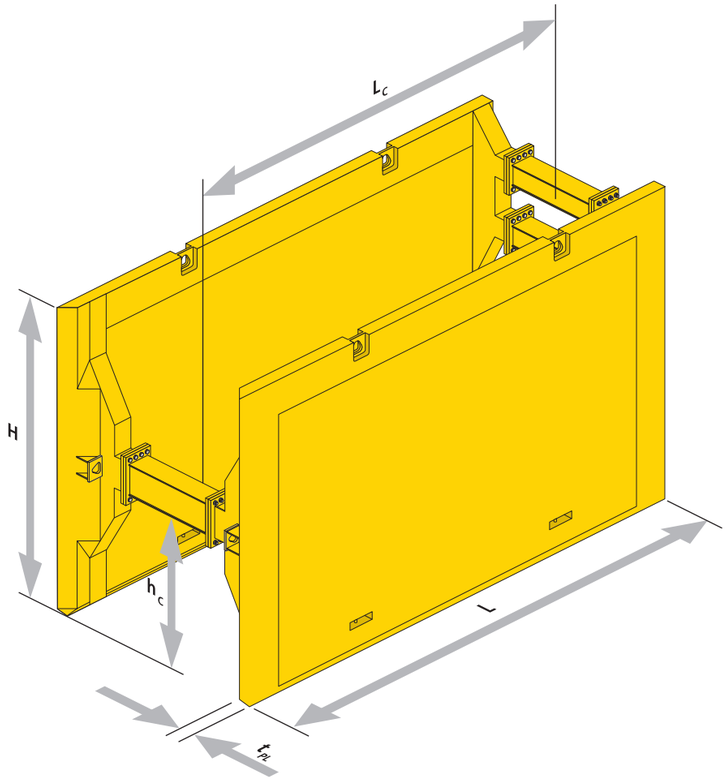


Plates t_{PL} = 107 mm

Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight per box [kg]
2.50	2.50	2.10	1.69	50.1	2350
	1.50				1620
3.00	2.50	2.60	1.69	41.8	2590
	1.50				1780
3.50	2.50	3.10	1.69	35.8	2825
	1.50				1940
4.00	2.50	3.60	1.69	31.3	3060
	1.50				2095

DRAG BOX

Series 650

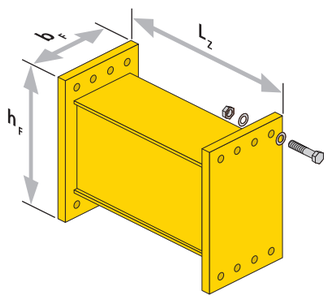


Plates t_{PL} = 127 mm

Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	max. perm. earth pressure [kN/m²]	Weight w/o distance piece [kg/box]
4.00	3.00	3.22	1.82	32.5	3430
4.50	3.00	3.72	1.82	28.9	3740
5.00	3.00	4.22	1.82	26.0	4030
5.50	3.00	4.72	1.82	23.7	4360

Distance piece

Length L_z [m]	Weight Flange 290 x 360mm (2x rear) [kg]	Weight Flange 290 x 460mm (1x front) [kg]
0.25	68	86
0.50	83	105
0.75	100	127
1.00	116	147

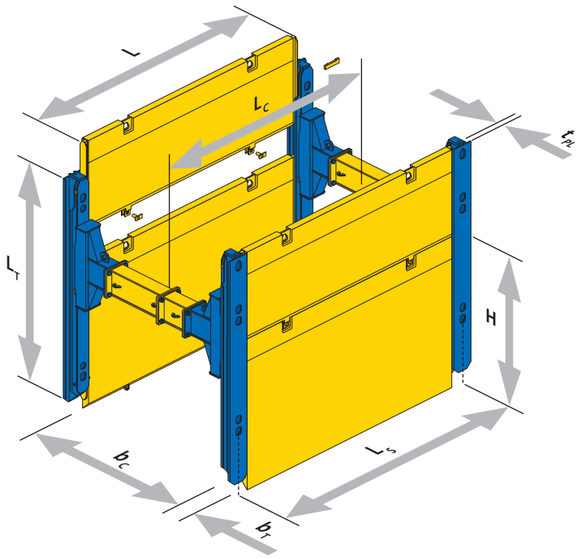


We are happy to provide other plate sizes on request.

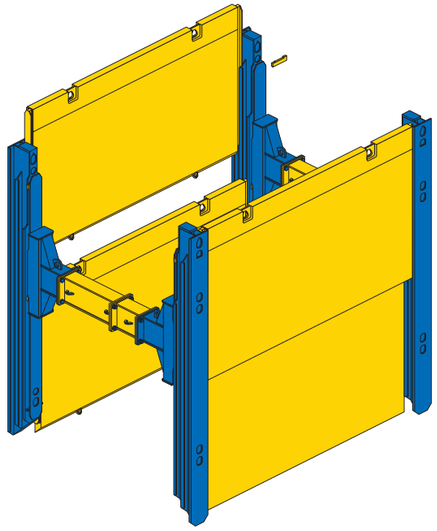
ROLLING STRUT SHORING

Series 750/790

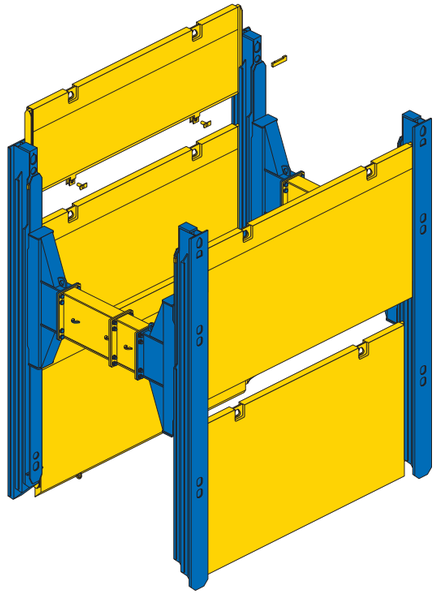
Single slide rail
Series 790



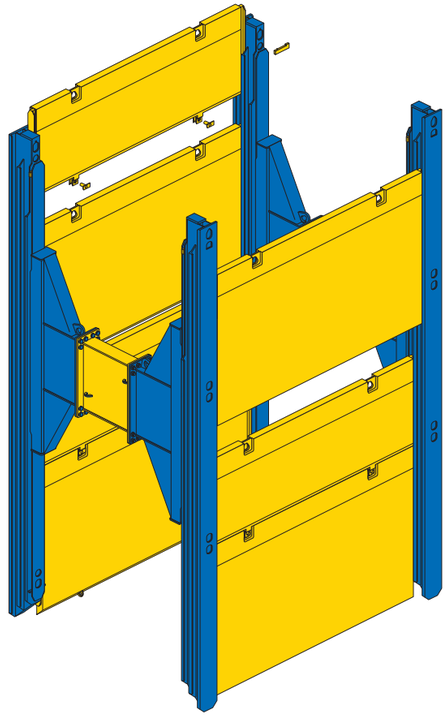
Mini double slide rail
Series 750/790



Standard double slide rail
Series 750



Mega double slide rail
Series 750



RS rail

Designation	Rail length L_T [m]	Weight per rail [kg]	Rail height b_T [mm]	max. perm. bending force [kNm]
Single – Series 790	3.50	540	220	307
Standard – Series 750	4.50	960	375	672
Standard – Series 750	5.50	1170		
Top rail – Series 750	3.00	650		
Mega – Series 750	6.50	1710	405	927
Mega – Series 750	7.50	2000		
Top rail Mega – Series 750	3.00	760		

Corner slide rail

Designation	Rail length L_T [m]	Weight per rail [kg]	Rail height b_T [mm]	max. perm. bending force [kNm]
Single – Series 790	3.50	390	275	132
Standard – Series 750	4.50	810	430	328
Standard – Series 750	5.50	950		
Standard – Series 750	6.50	1130		
Standard – Series 750	7.50	1305		
Corner top rail – Series 750	3.00	530		

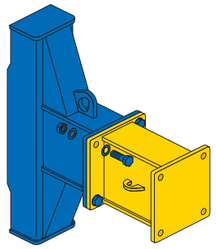
Slide rail plates

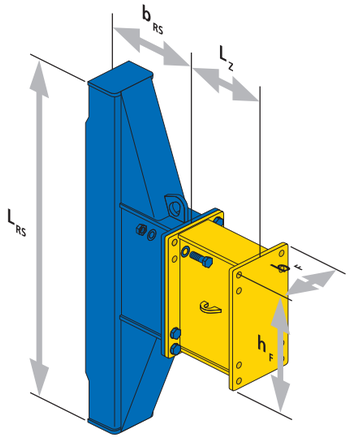
Plate length L [m]	Plate height H [m]	Thickness t_{PL} [m]	Pipe clearance length L_C [m]	System length L_C [m]	max. perm. earth pressure [kN/m²]	Weight [kg]
2.00	2.40	107	1.80	2.27	158.2	550
	1.40					355
2.50	2.40		2.30	2.77	101.2	650
	1.40					420
3.00	2.40		2.80	3.27	70.3	770
	1.40					495
3.50	2.40		3.30	3.77	51.6	900
	1.40					580
4.00	2.40		3.80	4.27	39.5	1010
	1.40					650
4.00	2.40	130	3.80	4.27	82.1	1370
	1.40					880
4.50	2.40		4.30	4.77	64.9	1530
	1.40					980
5.00	2.40		4.80	5.27	52.6	1690
	1.40					1070
5.50	2.40		5.30	5.77	43.4	1850
	1.40					1170
6.00	2.40		5.80	6.27	36.5	2210
	1.40					1370

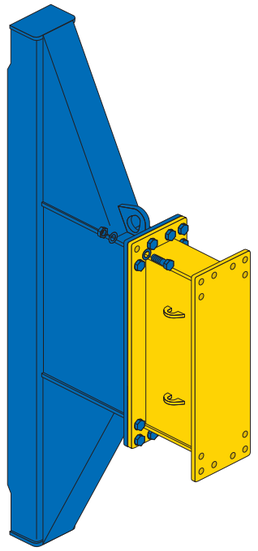
ROLLING STRUT SHORING

Series 750/790

Rolling strut frame







Rolling strut (RS)

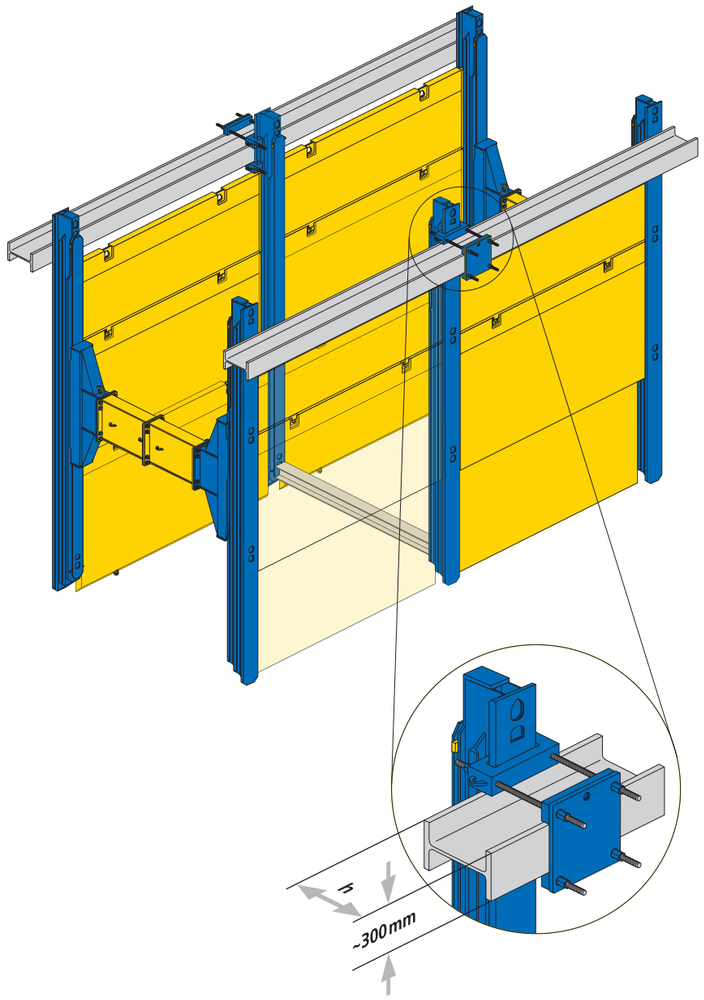
Designation	RS length L_{RS} [m]	RS width b_{RS} [m]	min. working width b_C [m]	Flange b_F x h_F [mm]	max. perm. forces [kN]	Weight per RS pair [kg]
Mini RS	1.24	0.62	1.24	405 x 420	-100 to 639	620
Standard RS	2.04	0.62	1.00 / 1.24	405 x 720	-200 to 780	980
Mega RS	3.04	0.92	1.83	405 x 1220	-374 to 973	1700
RS for top rail & SSR	1.24	0.62	1.00 / 1.24	405 x 420	-100 to 639	620

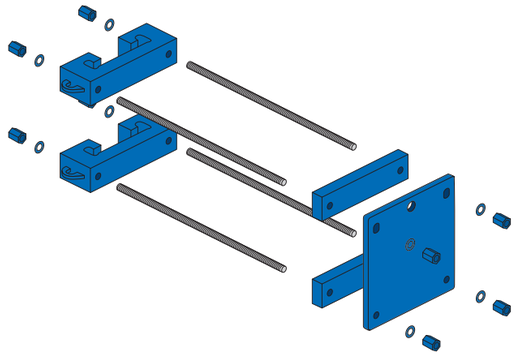
Distance piece

Length L_z [m]	RS mini / Top / SSR		Standard RS		Mega RS	
	Flange [mm]	Weight [kg]	Flange [mm]	Weight [kg]	Flange [mm]	Weight [kg]
0.25		99		163		306
0.50	405 x 420	128	405 x 720	201	405 x 1220	363
0.75		157		239		418
1.00		185		277		474
2.00	405 x 420	303	405 x 720	437	405 x 1220	714
3.00		421		597		960

ROLLING STRUT SHORING
Series 750/790

Adjustable clamping device

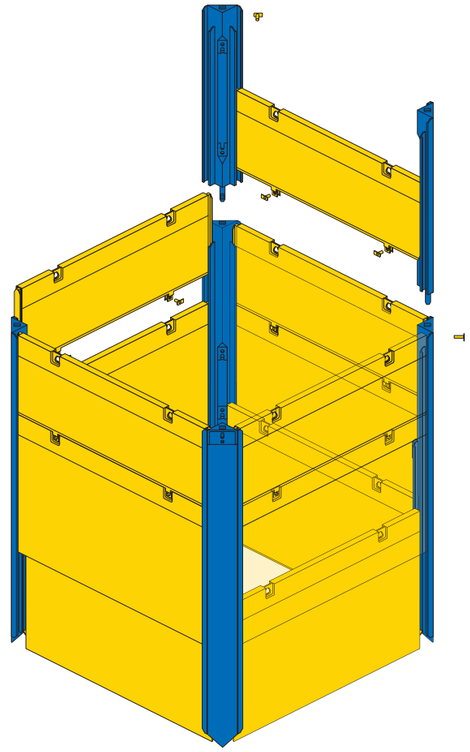




Technical parameters

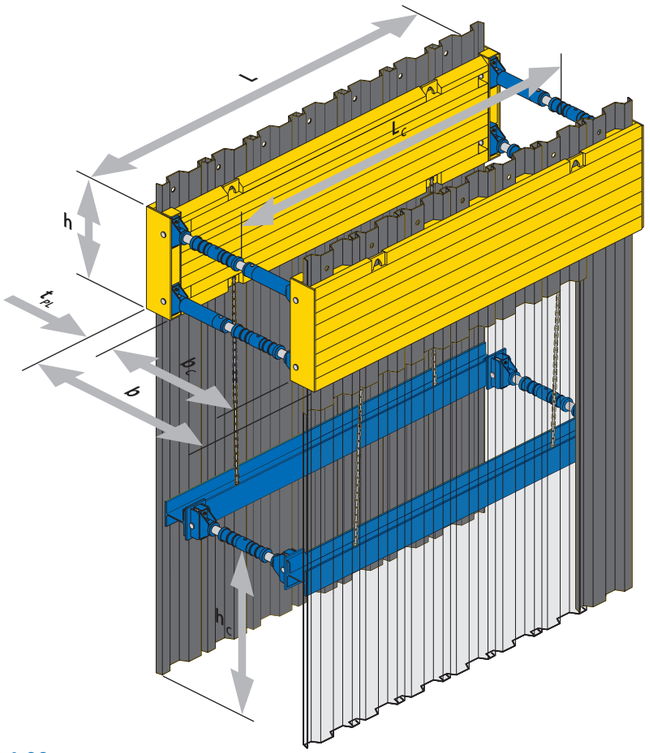
Designation	Dimensions [mm]	Weight [kg]
Adjustable clamping device for waling beam width – 300 mm, height adjustable	550 x 520 x h	275

Shafts



PILE CHAMBER SHORING

Series 400



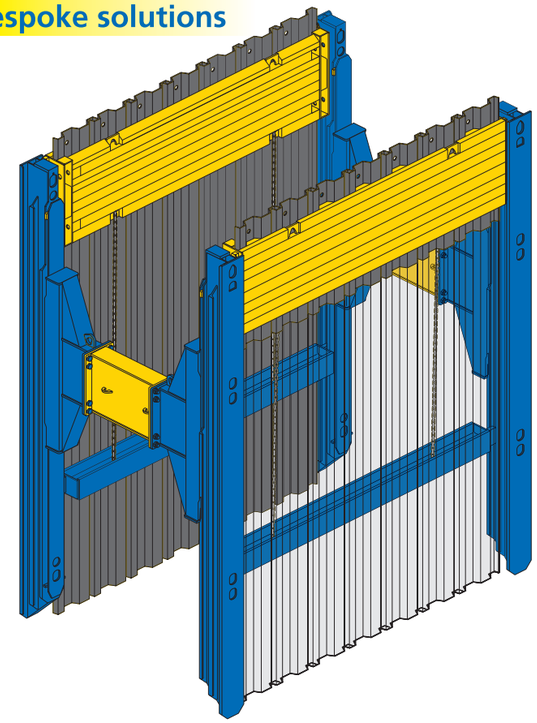
Pile chamber plates h = 1.00 m

Plate length L_{DKE} [m]	Plate length L with guide [m]	Pipe cl. length L_C [m]	Number of KD 6/8 sheets	Thickness inner plates t_{PI} [mm]	max. perm. beam load q [kN/m]	Weight per panel without/with guide [kg]
1.90	2.00	1.62	3	120	261.2	470 / 505
2.34	2.44	2.06	4		171.6	560 / 595
2.84	2.94	2.56	5		116.6	660 / 695
3.42	3.52	3.14	6		80.4	775 / 810
3.92	4.02	3.64	7		61.2	875 / 910
4.42	4.52	4.14	7	170	116.8	1325 / 1360
4.92	5.02	4.64	8		94.3	1470 / 1505
5.42	5.52	5.14	9		77.7	1605 / 1640
5.92	6.02	5.64	10		65.2	1750 / 1785

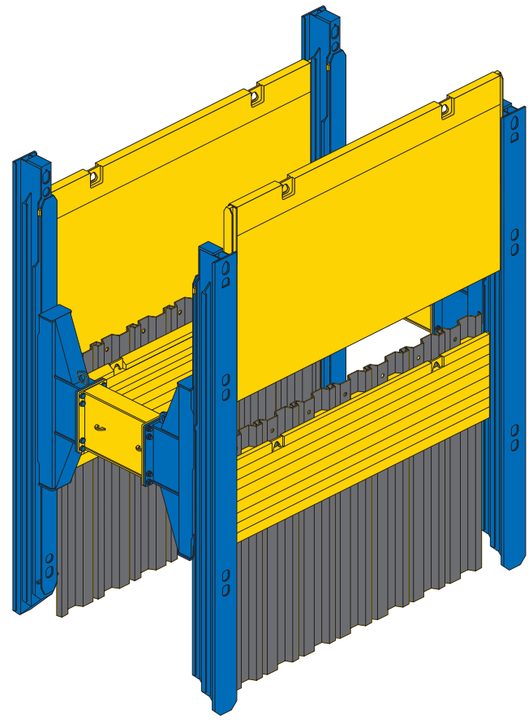
Spindles type 031/085 blue

Number of ext. pipes [0.50 m]	Working width b_C in between Sheets [m]	inner plates [m]	reinforced inner pl. [m]	Trench width b [m]	max. perm. compressive force F [kN]	Weight [kg]
0	1.00 – 1.28	0.76 – 1.04	0.66 – 0.94	1.30 – 1.58	468	65.0
1	1.50 – 1.78	1.26 – 1.54	1.16 – 1.44	1.80 – 2.08	403	84.8
2	2.00 – 2.28	1.76 – 2.04	1.66 – 1.94	2.30 – 2.58	348	104.6
3	2.50 – 2.78	2.26 – 2.54	2.16 – 2.44	2.80 – 3.08	299	124.4
4	3.00 – 3.28	2.76 – 3.04	2.66 – 2.94	3.30 – 3.58	254	144.2
5	3.50 – 3.78	3.26 – 3.54	3.16 – 3.44	3.80 – 4.08	210	164.0
6	4.00 – 4.28	3.76 – 4.04	3.66 – 3.94	4.30 – 4.58	165	183.8

Bespoke solutions



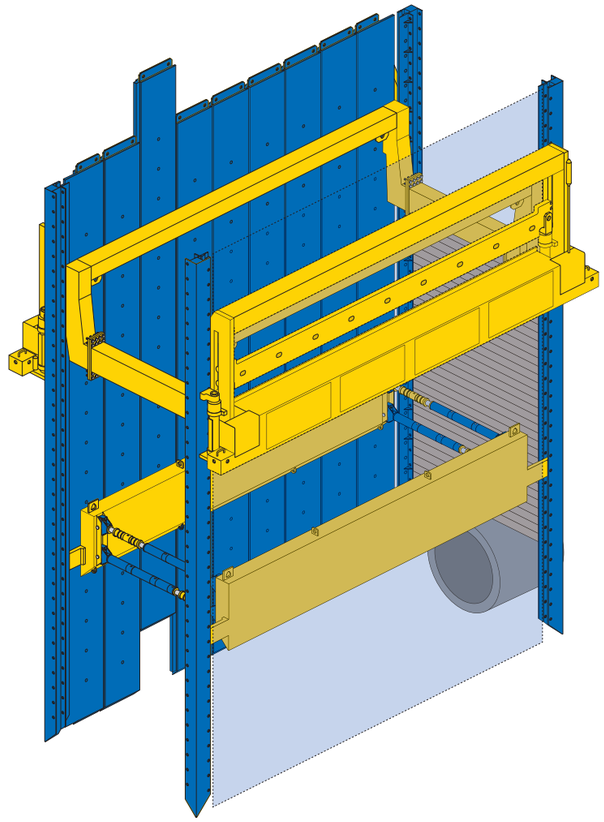
Installation in rolling strut shoring in the outer guides with beam

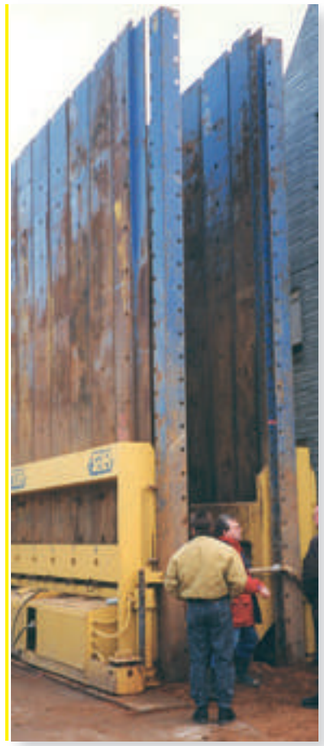


in the inner guides without beam

HYDRAULIC PRESSBOX

Series 800





Pressbox

Outer measurements L [m]	H [m]	W [m]	Shoring length between trench ends L_V [m]	Number of box profiles total	UB thickness t_{OG} [m]	Permissible beam load q_{OG} [kN/m]	Machine weight w/o accessories [kg]
7.78	2.38	2.36	7.00	18	0.30	80	21 100

Machine lower beam

Outer measurements L [m]	H [m]	t_{UG} [m]	Pipe clearance length in the lower beam L_C [m]	Number of lower beams total	Permissible beam load q_{OG} [kN/m]	Weight w/o accessories [kg]
7.19	1.07	0.27	5.75	2	218	7700

Side slide rail

Outer measurements L [m]	H [m]	$t_{Rtr.}$ [m]	Quantity total	Permissible bending moment $M_{Rtr.}$ [kNm]	Weight w/o accessories [kg/Stück]
7.30	0.36	0.22	4	185	930
9.30	0.36	0.22	4	185	1180

Box profiles

Position	Outer measurements L [m]	B [m]	$t_{Kpr.}$ [m]	Number of box profiles per side	max. perm. bending moment $M_{Kpr.}$ [kNm/m]	Weight w/o accessories [kg/unit]
right - groove	7.30	0.79	0.10	1	384	1430
centre		0.79		7		1500
left - tongue		0.82		1		1400
right - groove	9.30	0.79	0.10	1	384	1760
centre		0.79		7		1800
left - tongue		0.82		1		1735

Support

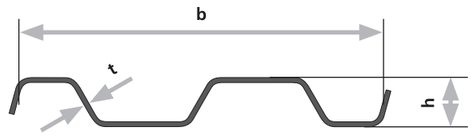
Widths	between profiles b_C [m]	between the upper beams b_{OG} [m]	between the lower beams b_{UG} [m]	Length of distance piece [m]	Trenches outside [m]	Machine outside [m]
min.	1.52	0.92	0.98	0.46	1.73	2.84
max.	4.70	4.10	4.16	3.64	4.91	6.02

TRENCH SHEETS

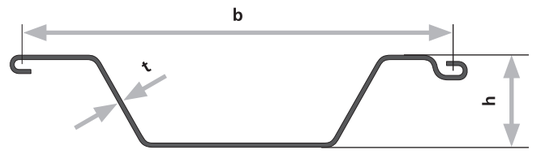
We are able to roll trench sheets and interlocking profiles in a variety of different shapes and sizes on our cold rolling mill at our plant in Heinsberg. The standard manufactured trench sheets that make up our range are specially designed to suit a wide variety of different construction projects. All interlocking profiles can be supplied as sealed profiles on request. This involves the use of a special sealant. The profiles can also be formed as corner profiles to suit your needs.

SBH Profile	Width b [mm]	Height h [mm]	Thickness t [mm]	Moment of inertia I [cm⁴/m]	Moment of resistance W [cm³/m]	Weight per m [kg/m]	Weight per m² [kg/m²]	max. perm. bending moment S235JRC [kNm/m]	max. perm. bending moment S275JRC [kNm/m]
KD 6/8	600	80	8	968	242	50.0	83.2		51.5
LP 76/7	700	150	7	3585	478	53.3	76		88.0
LP 88/8	700	151	8	4133	552	61.6	88		101.6
OMEGA 7	750	277	7	12 778	1.065	68.0	90		195
OMEGA 8	750	278	8	14 294	1.237	76.8	103		233
OMEGA 9	750	279	9	16 083	1.393	86.3	115		287
ZN 31/6	825	305	6	11 499	755	50.9	62	121	
ZN 31/7	825	306	7	13 416	880	58.1	70	141	

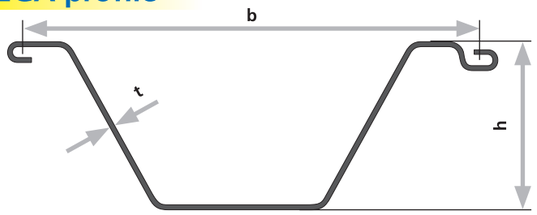
KD6/8 trench sheets



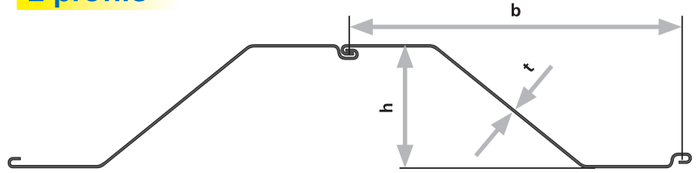
LP type interlocking profile



OMEGA profile



Z profile



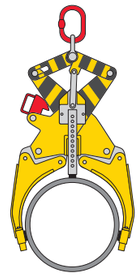
PIPE GRAB

SBH pipe grabs are designed exclusively for transporting concrete pipes. The weight of the pipe causes the grab's arms to close and lock, whereby the closing and opening movements are controlled by a step switch mechanism.

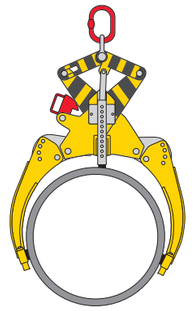
The arms of the grab are adjusted to match the diameter of the pipe. The grab is then placed on the pipe that needs to be transported.

Type I / RK-2,5

with pipe grab 50
for pipes 275 – 650mm



with pipe grab 80
for pipes 580 – 1000mm

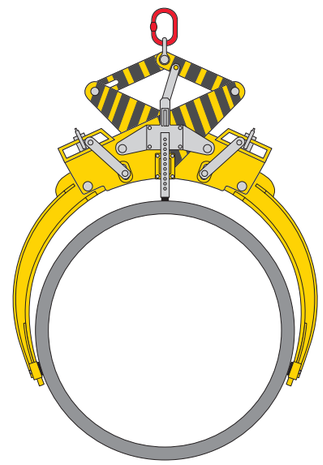


Type II / RK-5,0

with pipe grab 90
for pipes 720 – 1100mm

with pipe grab 125
for pipes 1050 – 1480mm

with pipe grab 150
for pipes 1300 – 1760mm



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