



OPERATING MANUAL
SINGLE SLIDE RAIL RS Series 790



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All previous editions are no longer valid!



- **Improper installation, use or removal can cause parts to shift or cause cave-in or collapse – leading to worker injury or death!**
- **Read the operation manual before installation or removal!**
- **NEVER allow a gap between panel and ground! Always refill and compact!**
- **NEVER allow anyone inside the excavation during installation or removal!**
- **NEVER allow anyone to be under a suspended load!**
- **Non-compliance with the operation manual can cause severe injury and/or death!**



Preliminary Remarks – Safety Warning

Prior to any use, this operation manual must be read carefully, must be fully understood and strictly followed in each individual step by anyone involved in the assembly, handling, installation and/or removal of the shoring. The SBH dealer has the obligation to ensure that this operation manual is forwarded, read and understood by anyone using the equipment whether in assembly, handling, installation and/or removal.

Using the shoring in a way different to that described in the operation manual may cause severe injury and/or death!

Any kind of installation and/or removal which is not described in this operation manual requires specific instructions, a trench safety plan, site specific engineering and a competent supervisor trained and qualified by the authorized SBH dealer. Until these are obtained, no work on site may be started. This also applies to any installation and/or removal with one or more of the following conditions:

- Plate length > 5.00 m (16.40 ft)
- Trench depth > 3.80 m (12.47 ft)
- Trench width > 6.24 m (20.47 ft)
- Slide rail > 3.50 m (11.48 ft)
- Pipe clearance hight < 1.0 m (3.28 ft)
- Pipe clearance hight > 2.4 m (7.87 ft)
- Any other condition which is not described or included in this operation manual

No component may be used which is not produced by SBH. In case of doubt, contact your authorized SBH dealer or SBH in Germany.



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General instructions

The single slide rail RS series 790 is strictly and exclusively authorised for the dig and push method (also known as cut and lower method).

The shoring must be without gap and close to the ground. Gaps are NOT permitted behind the plates!

The limiting values for the max. loads are to be observed strictly. Single shoring sections (boxes) may only be used if the front and rear faces are properly secured.

The following rules and regulations are to be applied in their respective valid version:

1. Regulations of the BG-Fachausschuss Tiefbau (Technical Committee Civil Engineering)
2. DIN 4124 Baugruben und Gräben (Excavation pits and trenches) [Not available in English]
3. DIN EN 13331 Part 1 & 2 Trench lining systems (Part 1: Product specifications; Part 2: Assessment by calculation or test)
4. Regeln für Sicherheit und Gesundheit bei der Arbeit (German rules for safety and health at work)
5. Unfallverhütungsvorschriften / Arbeitsschutzvorschriften (German accident prevention regulations / Health and safety at work regulations)
6. Local rules and regulations in their valid version, e.g. OSHA regulations for US market

Our shoring components carry the ET-Sign "Certified Safety".

For assembly, installation and removal, the instructions of this operation manual are to be followed.

Lifting & Transporting

7. The shoring may only be attached at the designated eyes and openings and/or lifting accessories.
8. The lifting accessories must be adjusted to the weight which is to be transported.
9. For safety reasons, load hooks with hook safety must be used exclusively.
10. The permitted tensile forces are to be observed without exception.
11. The transporting is to be carried out as close as possible to the ground and unnecessary pendulum movements are to be avoided.
12. It is forbidden to enter the swivel range of the lifting device and to stay under suspended loads.
13. Attention is to be paid to overhead electrical lines.
14. Eye contact is to be maintained between machine operator and banksman.

Measures to reduce hazards

15. The construction site is to be secured and signed adequately.
16. Neighbouring traffic flow is to be ensured, if necessary through additional security personnel.
17. All personnel are to wear protective clothing (helmet / safety shoes / gloves).
18. Possible instabilities as a result of wind loads during assembly and installation, are to be taken into account.
19. Store shoring components as far as possible horizontal on firm ground.
20. In the case of slopes particular attention is to be paid to the stable storage of pre-assembled components.



Maintenance & Repair

21. As a matter of principle, the operability of all shoring components must be checked before use. Prior to use, ensure a thorough visual inspection of all components by a competent person. In case of doubt, contact your authorized SBH dealer.
22. Defective or deformed components may not be employed.
23. Repairs are to be carried out by your authorized SBH dealer or by SBH Germany only. Own repairs are not permitted.
24. Use only original spare parts from SBH.
25. Depending on the intensity of use, components should be painted with anti-corrosive paint every 2 years.

Technical Description

- **end-supported, slide rail guided shoring**
- **for trench depths up to 3.80 m (12.47 ft)**
- **in plate lengths up to 5.00 m (16.40 ft)**
- **in plate heights of 2.40 m (7.87 ft)**
- **in top plate heights of 1.40 m (4.59 ft)**
- **for working widths up to 6.24 m (20.47 ft)**



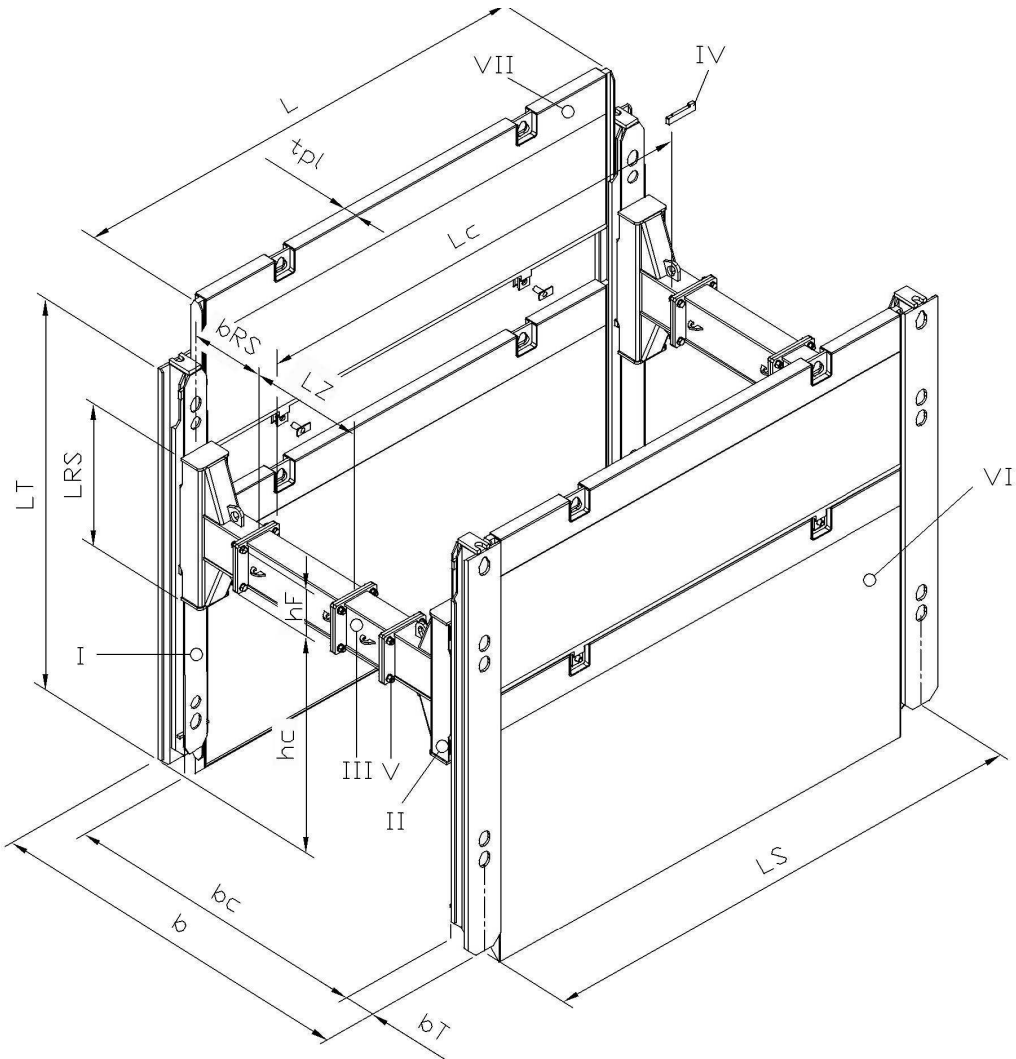
The great advantages of this system:

- **Easy installation and removal,**
since plates, rails and rolling struts can be positioned individually
- **Continuously variable adjustment of strut clearance heights**
- **Robust distance pieces in 0.25 m (0.82 ft) / 0.50 m (1.64 ft) / 0.75 m (2.46 ft) / 1.00 m (3.28 ft) / 2.00 m (6.56 ft) & 3.00 m (9.84 ft)**
Upon request we would be happy also to manufacture special dimensions.
- **easy flange-mounting of the distance pieces using M30 bolts of quality 10.9**

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System drawing



- I RS-slide rail
- II Rolling Strut (RS)
- III Distance piece
- IV Limit pin
- V Bolting M30
- VI Base plate
- VII Top plate

- b Trench width
- b_C Working width
- b_{RS} Rolling Strut width
- b_T Slide rail height = type
- h_C Strut clearance height
- h_F Flange height

- L Plate length
- L_S System length
- L_C Pipe clearance height
- L_{RS} Rolling Strut length
- L_T Slide rail length
- L_Z Distance piece length

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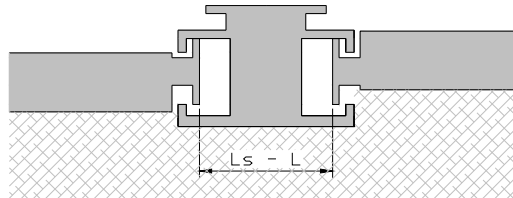


Technical parameters

Shoring plates – plate guide

Standard

Rails and plates are flush outside
Inner city shoring allows a straight blacktop cut



in-situ concrete

Rails and plates are flush inside
For use with in-situ ducts
Rails and plates are nearly in one level and build the formwork - protected by plastic plates or films

$$\text{Plate distance} = L_s - L = 270 \text{ mm (10.6 inch)}$$

Plate thickness = 107 mm (4.2 inch)

allowed plate moment = 79.1 kNm/m (17782 lbf-ft / ft)

plate length L [m] ([ft])	plate height H [m] ([ft])	pipe clearance L _c [m] ([ft])	system length L _s [m] ([ft])	allowed earth pressure [kN / m ²] ([psf])	weight [kg] ([lb])
2.00 m (6.56 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	1.80 m (5.91 ft)	2.27 m (7.45 ft)	158.2 kN/m ² 3304 psf	550 kg (1213 lb) 355 kg (783 lb)
2.50 m (8.20 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	2.30 m (7.55 ft)	2.77 m (9.09 ft)	101.2 kN/m ² 2114 psf	650 kg (1433 lb) 420 kg (926 lb)
3.00 m (9.84 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	2.80 m (9.19 ft)	3.27 m (10.73 ft)	70.3 kN/m ² 1468 psf	770 kg (1698 lb) 495 kg (1091 lb)
3.50 m (11.48 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	3.30 m (10.83 ft)	3.77 m (12.37 ft)	51.6 kN/m ² 1078 psf	900 kg (1984 lb) 580 kg (1279 lb)
4.00 m (13.12 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	3.80 m (12.47 ft)	4.27 m (14.01 ft)	39.5 kN/m ² 825 psf	1010 kg (2227 lb) 650 kg (1433 lb)

Plate thickness = 127 mm (5.0 inch)

allowed plate moment = 100.2 kNm/m (22526 lbf-ft / ft)

plate length L [m] ([ft])	plate height H [m] ([ft])	pipe clearance L _c [m] ([ft])	system length L _s [m] ([ft])	allowed earth pressure [kN / m ²] ([psf])	weight [kg] ([lb])
4.00 m (13.12 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	3.80 m (12.47 ft)	4.27 m (14.01 ft)	50.1 kN/m ² 1046 psf	1120 kg (2469 lb) 766 kg (1689 lb)
4.50 m (14.76 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	4.30 m (14.11 ft)	4.77 m (15.65 ft)	39.6 kN/m ² 827 psf	1250 kg (2756 lb) 857kg (1889 lb)
5.00 m (16.40 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	4.80 m (15.75 ft)	5.27 m (17.29 ft)	32.1 kN/m ² 670 psf	1380 kg (3042 lb) 936 kg (2064 lb)

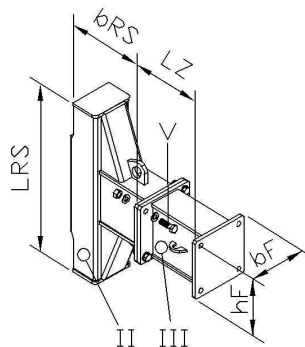
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Plate thickness = 130 mm (5.1 inch)

allowed plate moment = 164.3 kNm/m (36936 lbf-ft / ft)

plate length L [m] ([ft])	plate height H [m] ([ft])	pipe clearance Lc [m] ([ft])	system length Ls [m] ([ft])	allowed earth pressure [kN / m ²] ([psf])	weight [kg] ([lb])
4.00 m (13.12 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	3.80 m (12.47 ft)	4.27 m (14.01 ft)	82.1 kN/m ² 1715 psf	1370 kg (3020 lb) 880 kg (1940 lb)
4.50 m (14.76 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	4.30 m (14.11 ft)	4.77 m (15.65 ft)	64.9 kN/m ² 1355 psf	1530 kg (3373 lb) 980 kg (2161 lb)
5.00 m (16.40 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	4.80 m (15.75 ft)	5.27 m (17.29 ft)	52.6 kN/m ² 1099 psf	1690 kg (3726 lb) 1070 kg (2359 lb)
5.50 m (18.04 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	5.30 m (17.39 ft)	5.77 m (18.93 ft)	43.4 kN/m ² 906 psf	1850 kg (4079 lb) 1170 kg (2579 lb)
6.00 m (19.69 ft)	2.40 m (7.87 ft) 1.40 m (4.59 ft)	5.80 m (19.03 ft)	6.27 m (20.57 ft)	36.5 kN/m ² 762 psf	2210 kg (4872 lb) 1370 kg (3020 lb)



- II Rolling Strut (RS)
- III Distance piece
- V Bolting M30

Rolling Strut (RS)

description	RS-length	RS-width	min. working width	flange dimension	allowed forces	weight per RS-pair
	LRS [m] ([ft])	bRS [m] ([ft])	bc [m] ([ft])	b _F * h _F [mm] ([inch])		
Rolling Strut	1.24 m (4.07 ft)	0.62 m (2,03 ft)	1.24 m (4,07 ft)	405 * 420 mm (15.9 * 16.5 inch)	-100 to 639 kN (-22481 to 143654 lbf)	620 kg (1367 lb)

Distance piece

flange 405 * 420 mm (15,9 * 16,5 inch)

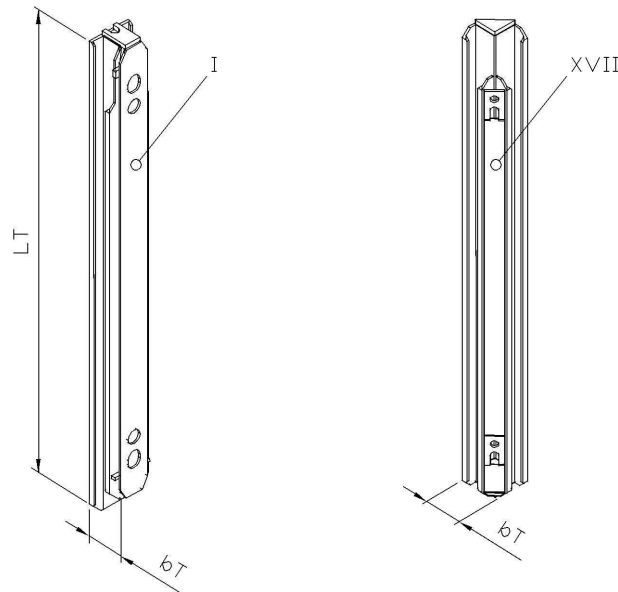
Length - Lz [m] ([ft])	Weight [kg] ([lb])	Length- Lz [m] ([ft])	Weight [kg] ([lb])
0.25 m (0.82 ft)	99 kg (218 lb)	1,00 m (3,28 ft)	185 kg (408 lb)
0.50 m (1.64 ft)	128 kg (282 lb)	2,00 m (6,56 ft)	303 kg (668 lb)
0.75 m (2,46 ft)	157 kg (346 lb)	3,00 m (9,84 ft)	421 kg (928 lb)

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RS-Slide Rail

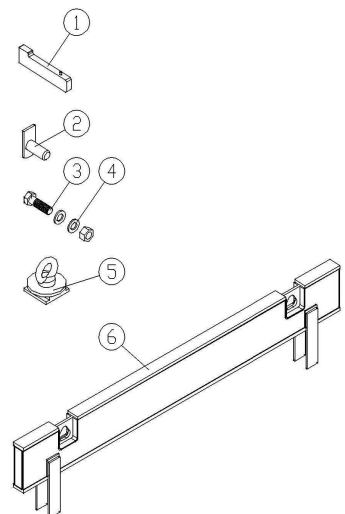
description	rail length L_T [m] ([ft])	weight each rail [kg] ([lb])	rail height $b_T = \text{Type}$ [mm] ([inch])	allowed bending moment [kNm] ([lbf-ft])
RS – slide rail	3.50 m (11.48 ft)	540 kg (1191 lb)	220 mm (8,7 inch)	307 kNm (226432 lbf-ft)
corner rail	3.50 m (11.48 ft)	390 kg (860 lb)	275 mm (10,8 inch)	132 kNm (97358 lbf-ft)



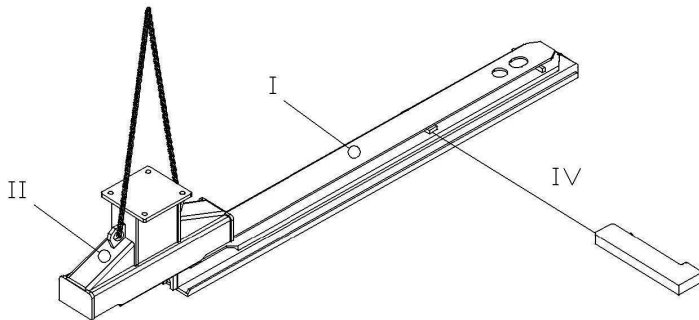
I RS-slide rail
XVII corner rail

Accessories

no.	description	use for	for component height	dimension [mm] ([inch])	weight [kg] ([lb])
1	limit pin	RS – locking	220 mm (8.7 inch)	25*70*260 mm (1.0*2.8*10.2 inch)	3.0 kg (6.6 lb)
2	pin	top plate	up to 130 mm (5.1 inch)	Ø 40 * 100 mm (Ø 1.6 * 3.9 inch)	1.5 kg (3.3 lb)
3	6sq. bolt	flange	t = 25 mm (t = 1.0 inch)	M 30 * 90 mm (M 30 * 3.5 inch)	0.96 kg (2.1 lb)
4	washer	flange		A33	0.1 kg (0.2 lb)
5	assembly help	rail			5.6 kg (12.3 lb)
6	protection rail	shoring plates	100 mm (3.9 inch)	L = 1800 mm (l = 70.9 inch) L = 2240 mm (l = 88.2 inch) L = 2730 mm (l = 107.5 inch) L = 3300 mm (l = 129.9 inch) L = 3800 mm (l = 149.6 inch)	220 kg (485.0 lb) 264 kg (582.0 lb) 321 kg (707.7 lb) 379 kg (835.6 lb) 430 kg (948.0 lb)
			130 mm (5.1 inch)	L = 3810 mm (l = 150.0 inch) L = 4310 mm (l = 169.7 inch) L = 4810 mm (l = 189.4 inch) L = 5310 mm (l = 209.1 inch) L = 5810 mm (l = 228.7 inch)	467 kg (1029.6 lb) 524 kg (1155.0 lb) 581 kg (1280.9 lb) 638 kg (1406.6 lb) 695 kg (1532.2 lb)



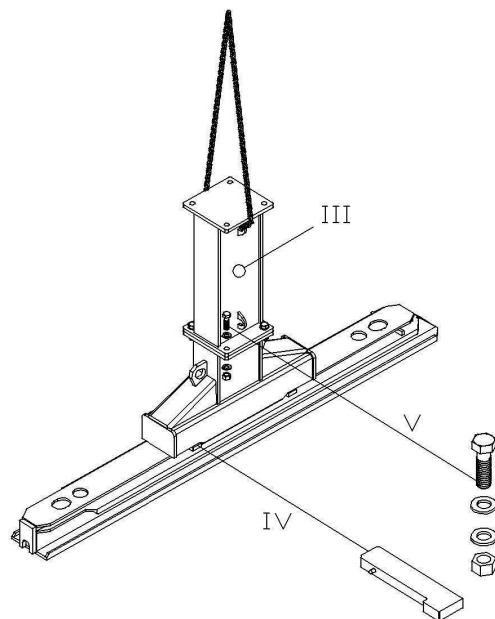
Assembly instructions



Place the rail with the guiding profile upwards on flat and firm ground. Position the lower limit pin, with the locking pin downwards (away from the rolling strut).

In order to ensure the A-position, install the rolling strut (RS) with the arrow upwards according to the drawing.

Place the lower castor of the rolling strut on the guiding profile of the rail and slide carefully towards the top of the rail, until it reaches the lower limit pin. Ensure that the rolling strut is securely and firmly connected to the rail!



A further limit pin is positioned above the RS, with the locking pin upwards (away from the rolling strut). Now the rolling strut is locked in the middle of the rail and can no longer be displaced. The assembly of the further rolling struts is effected analogously.

Important: The locking pin of the limit pin must always be turned away from the rolling strut.

When using distance pieces (DP), attach these to the eyes intended for this purpose, place them from above onto the flange plate of the rolling strut and join using M30 bolts of quality 10.9.

If several distance pieces are needed to achieve the required working width, they are assembled on the ground in advance and afterwards flanged to the rolling strut as described above.

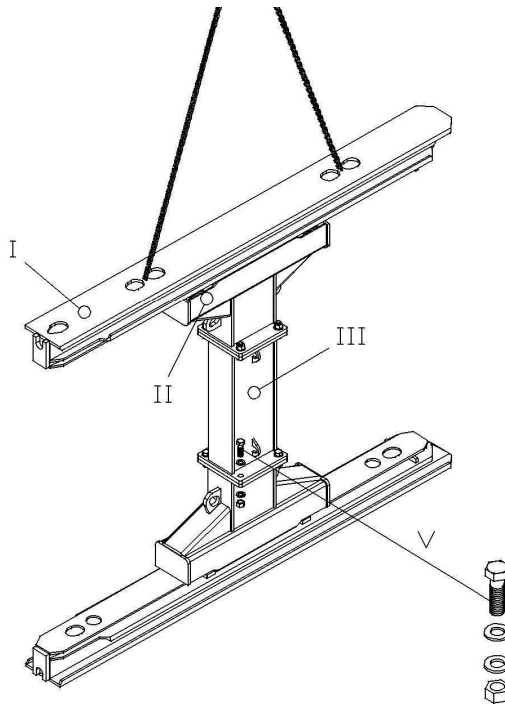
Put one washer under the bolt head and one washer under the nut.

Tighten the bolts crosswise with a torque of 1350 Nm (996 lbf ft).

During the assembly, the DP remains in its hooked-in position

- I RS-slide rail
- II rolling strut (RS)
- III distance piece (DP)
- IV limit pin
- V bolting M30

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The slide rail, pre-assembled with distance pieces, can now be laid on its side. After hooking the chain into the assembly openings at the back of the rail, the slide rail with the flanged distance pieces is lifted and moved over the flange plate of the rail on the ground, which is pre-assembled with the rolling strut.

The alignment of the flange plates can be effected without difficulty, since the slide rail remains hooked in during assembly.

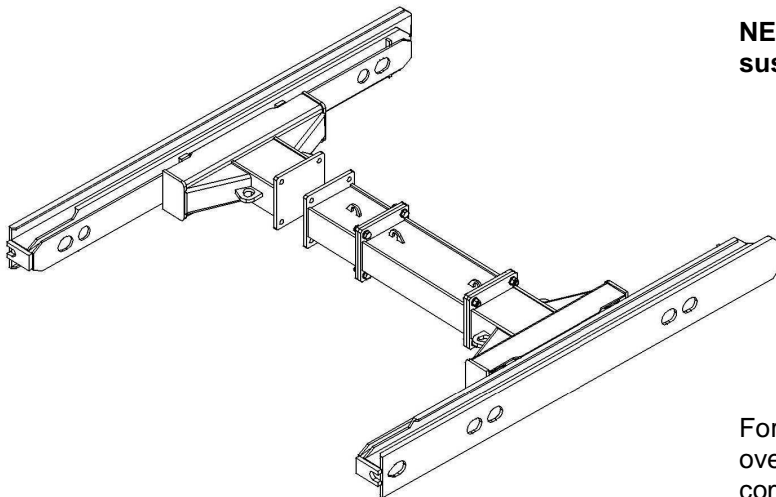
The components are bolted together as described above.

The resultant slide rail frame is laid on its side.

The assembly of the further frames is effected analogously.

Warning: Slings and lifting accessories must be appropriate for the weights concerned and must be thoroughly checked prior to use.

NEVER allow anyone under a suspended load!



For safety reasons, with working widths over 2.00 m (6.56 ft), the assembly of a complete slide rail frame has to be effected on the ground.

Thereby, the slide rails, pre-assembled with rolling struts and distance pieces, are laid on their sides oppositely, aligned and bolted.

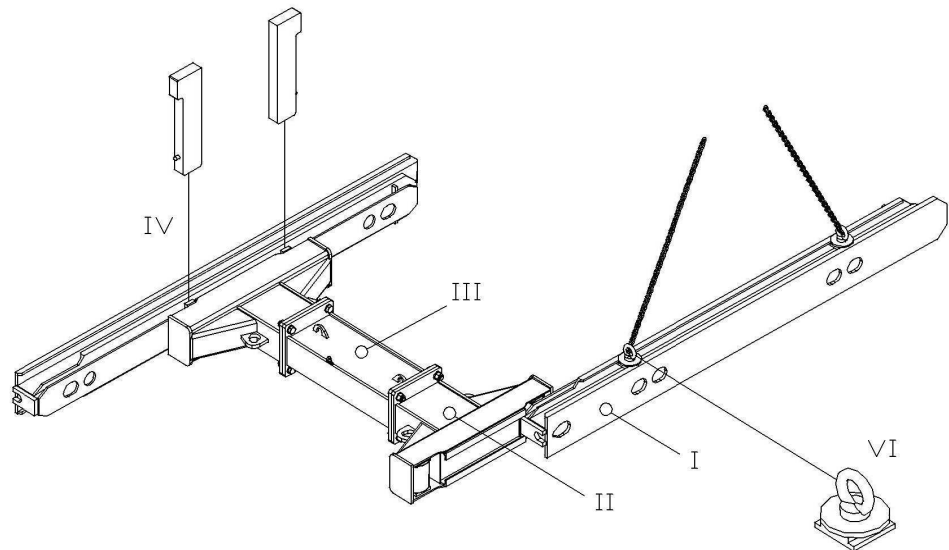
Another possibility for assembly is the use of assembly helps.

- I slide rail
- II rolling strut (RS)
- III distance piece (DP)
- V bolting M30

Assembly helps

- *with slide rails laid on their side*
- *with assembly of frames when laid down*

- I slide rail
- II rolling strut (RS)
- III distance piece (DP)
- IV limit pin
- VI assembly help



When loading or storing slide rails, it can happen that they have been laid on their side on the ground and there is no possibility to hook into the openings. For this purpose, assembly helps have been designed, which engage in the guideways of the slide rails. After positioning and tightening of the assembly helps, the chains can be attached here.

Furthermore, the assembly helps can be used, if the slide rail frame is to be assembled lying on the ground. First, the rolling strut is pre-assembled with distance pieces and subsequently the slide rail, which is hooked in at the assembly openings, is pushed into the rolling strut laterally positioned on the ground.

Installation instructions

Warning:

NEVER allow anyone to be inside excavations during installation!
NEVER allow anyone under a suspended load!
Non-compliance can cause severe injury and/or death!

Permitted tensile forces

At the individual attachment points the following tensile forces can be kept:

slide rail

per lifting eye = 196 kN (44063 lbf)
 per guiding profile opening = 164 kN (36869 lbf)

plates

per lifting eye = 196 kN (44063 lbf)
 per eye at cutting edge = 49 kN (11016 lbf)

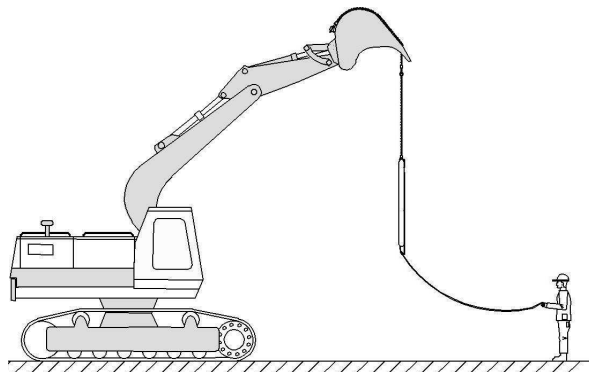
rolling strut

per lifting eye = 164 kN (36869 lbf)

distance piece

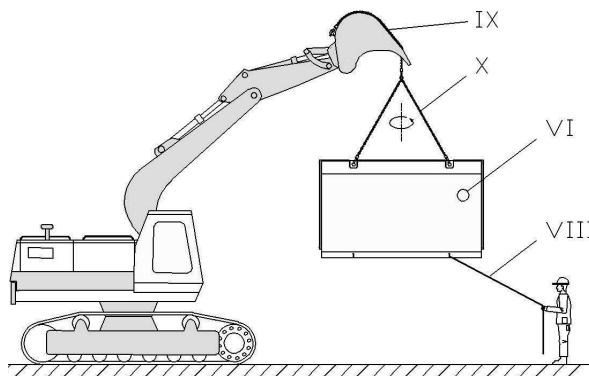
per hook-in eye = 49 kN (11016 lbf)

Alignment of the initial shoring bay



Advance excavation max. 1.25 m (4.10 ft) deep and not more than one shoring section length.

Attention: As a general rule, the advance excavation is dependent on the stability and type of soil on site and must comply with the local valid safety regulations (e.g. OSHA for US market). The advance excavation must never exceed a depth of 1.25 m (4.10 ft)



Handling of slide rails plates

For the transportation of slide rail plates, the use of a single strand and a double strand chain is recommended. The single strand chain is fixed to an appropriate attachment point on the excavator shovel. The length of the chain is to be so selected, that the acceptance ring of the double strand chain is located below the shovel in any position of the shovel. This allows an easy and safe turning of the shoring plate into the required direction without the expectation of jerky movements of the plate. When turning the plate, the excavator may not be moved.

VI shoring plate
 VIII rope

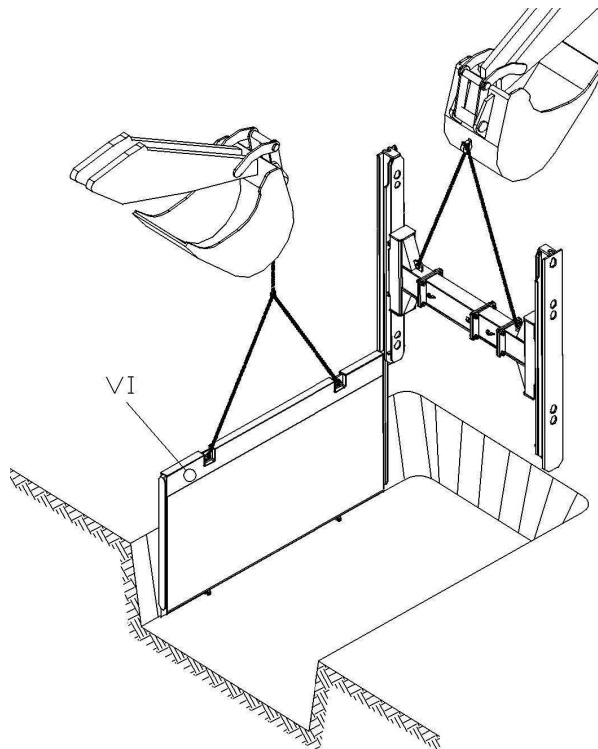
IX 1-strand chain
 X 2-strand chain

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Attention: The single slide rail RS series 790 is strictly and exclusively authorised for the dig and push method (also known as cut and lower method).

Place the base plate in the advance excavation, push in and secure using the boom of the first excavator.

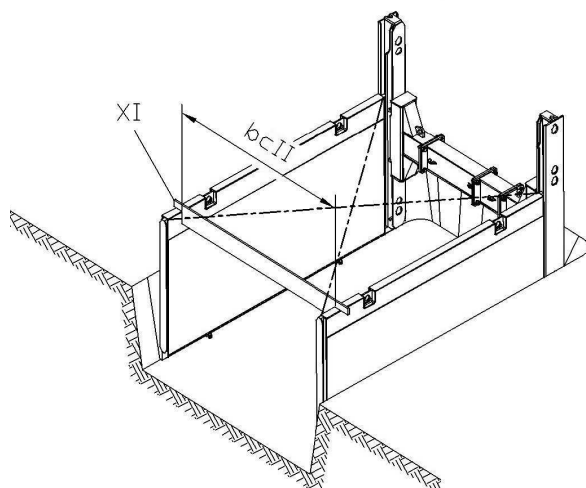


Attention: As a general rule, the advance excavation is dependent on the stability and type of soil on site and must comply with the local valid safety regulations (e.g. OSHA for US market). The advance excavation must not exceed a depth of 1.25 m (4.10 ft)

Pick up the pre-assembled slide rail with the second excavator, which must have an appropriate lifting height, swing over the shoring plate in the pre-excavated trench, thread into the outer rail guideway and push down.

The trench may not be entered in this phase.

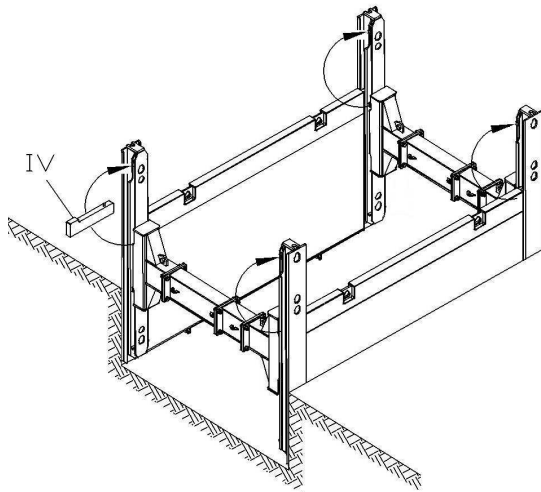
Thread the second shoring plate into the outer rail guideway and lower down to the trench bottom.



Align parallel and over the diagonal rectangular the two shoring plates by means of spacers / assembly helps.

- VI base plate
- XI assembly help
- bcII plate distance

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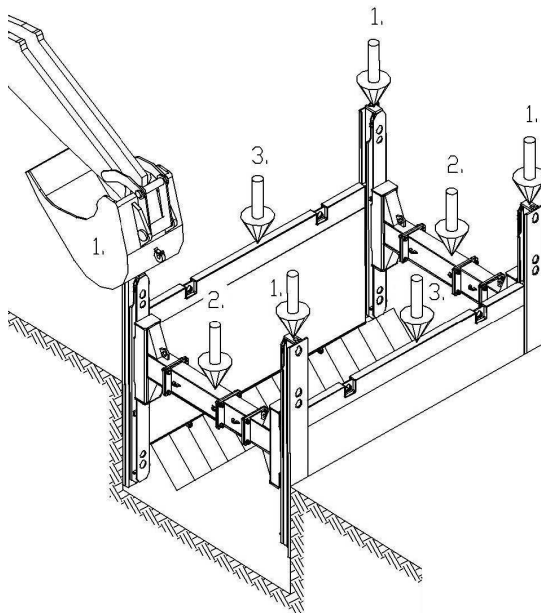


Now the second pre-assembled slide rail frame is steered via two plate guideways and pushed into the soil. Push in slide rails and plates and align if required. **Fill in and compact the excavation between shoring and soil!**

Attention: The shoring must be without gaps and close to the ground. No gaps between panel and ground are permitted!

The upper limit pins must now be repositioned – as illustrated – one after the other. Never reposition more than 1 limit pin at the same time! Ensure that each slide rail has the upper limit pin with correctly positioned locking pins. Only by positioning the limit pin into the upper hole, is an unintentional slipping of the rolling strut avoided during the lowering of the shoring. The rolling strut pair can now be moved on the slide rails and thus allows the function of the rolling strut shoring.

IV limit pin



Excavate about another 50 cm (1.64 ft) (depending on local soil conditions but never more than 50 cm (1.64 ft)) and push in, alternately, slide rails, rolling struts and shoring plates. Attention is to be paid that the plates do not project below the slide rails, that all components are pushed in by about the same travel and that the rolling strut is positioned as far as possible in the middle of the slide rail frame.

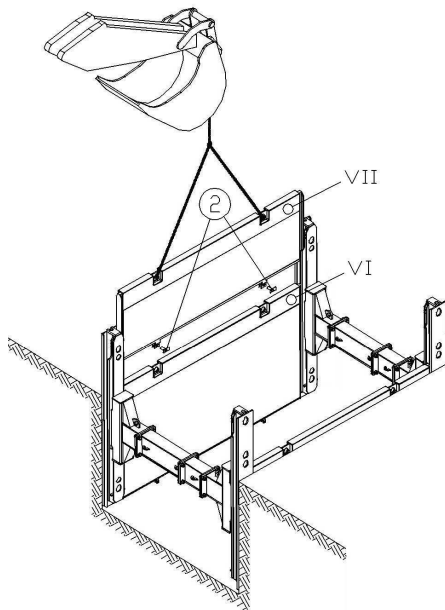
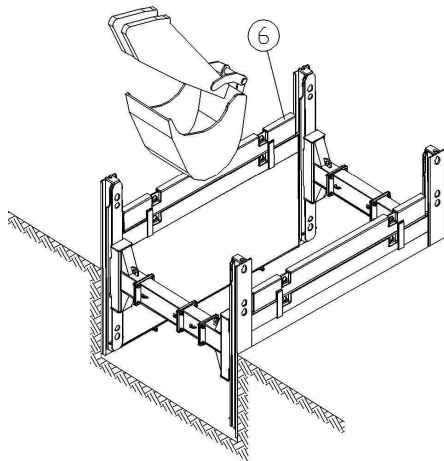
Attention: Should circumstances arise which do not permit the installation process as described here (e.g. obstacles in the soil, sticking, misalignment etc.), remove the shoring completely. While removing, the trench must be refilled and compacted layer by layer when deeper than 1.25 m (4.10 ft). Remove the obstacles, make sure the shoring is perfectly aligned and try again. If this does not work, stop the process and contact your authorized SBH dealer.

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Highest and lowest position of rolling strut during installation and final phase and corresponding min. and max. pipe clearance heights

Shoring Plate 5.0 m (16.40 ft), Slide Rail 3.5 m (11.48 ft), RS for SSR, WW 6,24 m (20.47 ft)			
Trench depth [m] ([ft])	Permitted earth pressure for the given pipe clearances (equally distributed) [kN/m ²] ([psf])	Minimum pipe clearance height below the RS flanges [m] ([ft])	Maximum pipe clearance height below the RS flanges [m] ([ft])
2.40 m (7.87 ft) (1x base plate)	15.0 kN/m ² (313 psf)	0.50 m (1.64 ft)	2.00 m (6.56 ft)
3.80 m (12.47 ft) (1x base + 1x top plate)	22.0 kN/m ² (459 psf)	1.00 m (3.28 ft)	2.40 m (7.87 ft)



VI base plate
VII top plate

2 pin top plate
6 protection rail

To protect the shoring plates and ensure a long service life we recommend the use of protection rails. The individual shoring components are to be inserted through pushing and not by hammering.

When the top edge of the base plate reaches the terrain surface, the system can be extended if required by using a top plate.

When using top plates it has to be ensured that they are connected with the base plates by means of pins

Lower the plate down to the excavation bottom.

The step-by-step lowering, with which slide rails, rolling struts and plates are pushed down, is repeated until the final trench bottom is reached.

If a plate becomes stuck during the lowering process, remove it completely. While removing, the trench must be refilled and compacted layer by layer when deeper than 1.25 m (4.10 ft). Ensure the shoring is perfectly aligned and try again. If this does not work, immediately stop the procedure and contact your authorized SBH dealer or SBH in Germany.

The top edge of the shoring must overtop the surrounding terrain by at least 10 cm (0.32 ft)!

Only now is the rolling strut positioned to the required strut clearance height. An inadvertent sliding of the rolling strut during the pipe laying is avoided by resetting the lower limit pin.

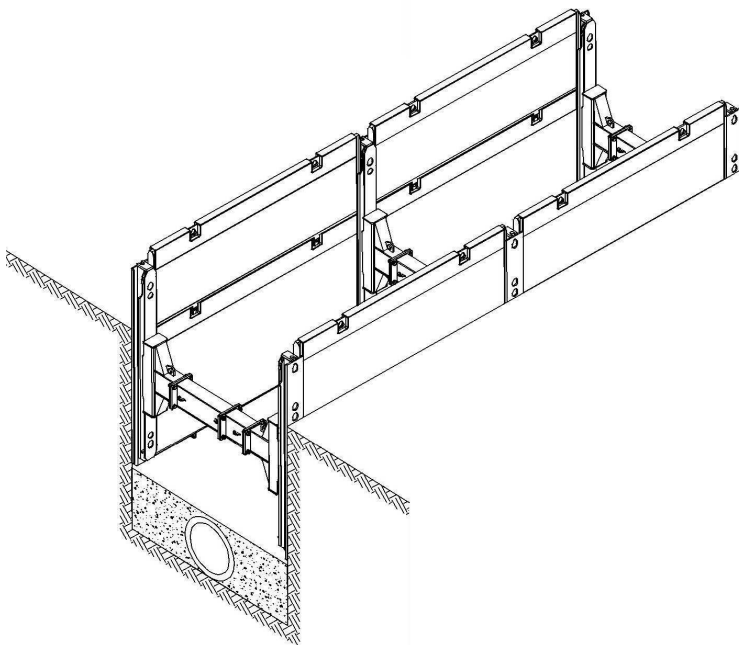
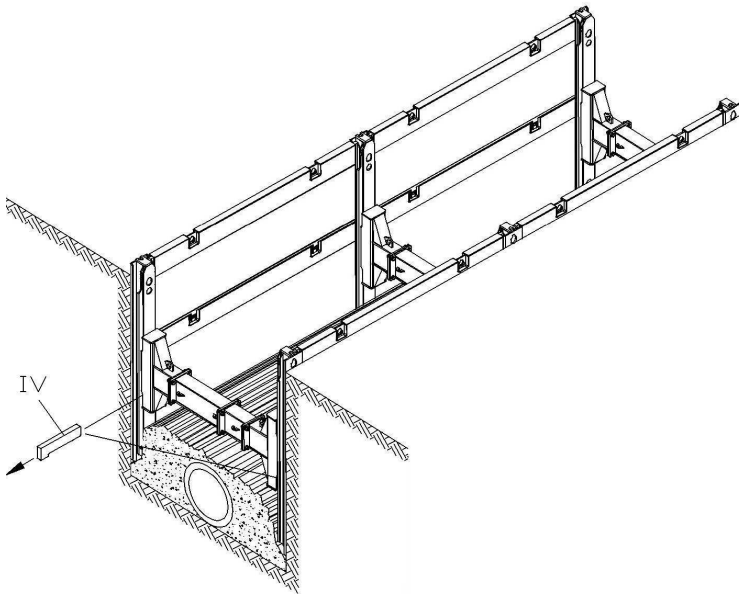
The installation of further shoring bays is carried out as described above with the installation of the shoring plates in the rail guideways.

The plate spacing is to be checked with every new shoring bay.

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Removal



IV limit pin

Warning:

NEVER allow anyone to be inside excavations during installation!

NEVER allow anyone under a suspended load!

Non-compliance can cause severe injury and/or death!

At the beginning of the removal, remove the lower limit pins on the rolling strut. Depending on the compacting capabilities, fill in with max. 50 cm (1.64 ft) backfill.

Ensure that there is no gap between shoring and soil! No gaps between panel and ground are permitted! If present all gaps behind the plates must be filled and compacted.

Warning: Slings and lifting accessories must be appropriate for the weights and loads concerned and must be thoroughly checked prior to use.

NEVER allow anyone under a suspended load!

Lift the shoring components (in the following order: plates, rolling struts and slide rails) to the filled height. Attention: Do not exceed a maximum of 50 cm (1.64 ft)! Lift the shoring plates side by side, never lift plates on opposite sides of the trench at the same time!

Finally compact the backfill.

Attention: Repeat this procedure as described until the shoring depth is less than 1.25 m (4.10 ft). Then the shoring can be lifted out of the trench taking into account the safety instructions. Ensure that the shoring components are never lifted by more than 50 cm (1.64 ft)! Use the designated lifting eyes only for lifting the shoring components.

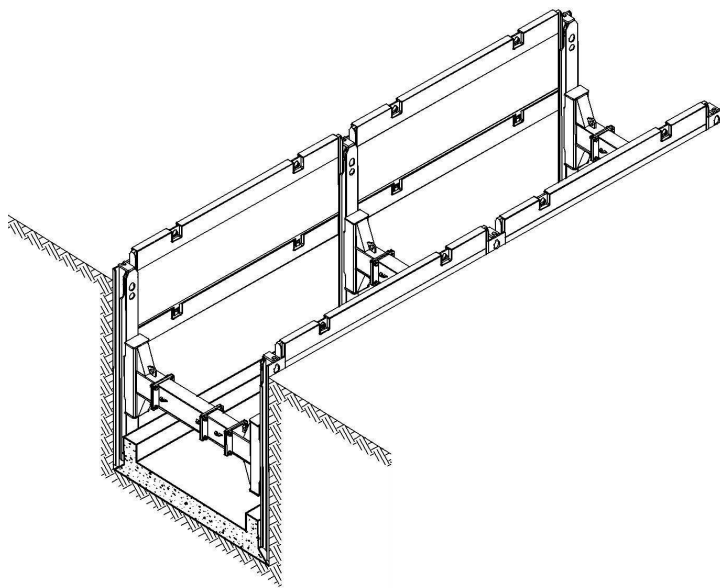
We explicitly advise that it is not permitted to enter the danger area during both installation and removal.

Never allow anyone inside the trench during removal. It may cause severe injury and/or death!

Warning: If a shoring component gets stuck during the removal process, immediately stop the procedure and contact your authorized SBH dealer. Do not enter the trench! Entering the trench during removal may cause severe injury and/or death!

Bottom support

Warning: Bottom support requires specific instructions, a trench safety plan, site specific engineering and a competent supervisor trained and qualified by the authorized SBH dealer!



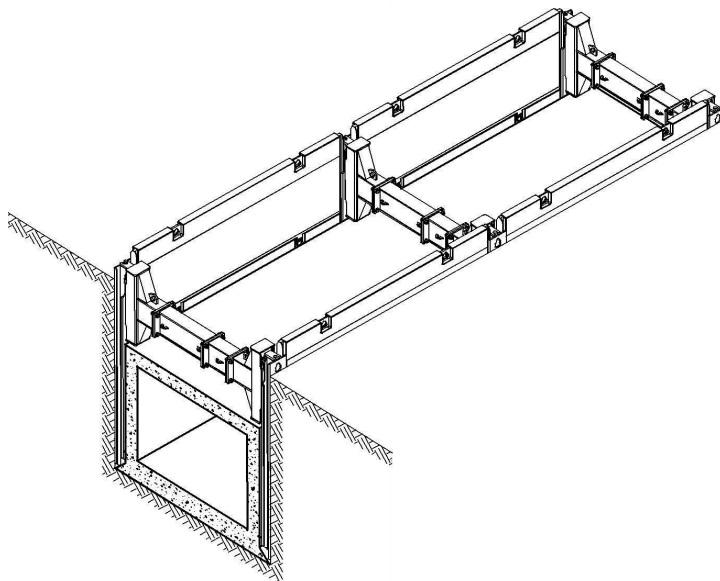
With large strut clearance heights and/or in-situ concrete projects it is often necessary for static reasons to brace the slide rail frame in the trench bottom.

For this purpose, the shoring is first installed down to the trench bottom according to the installation guidelines.

In this phase the rolling strut should be positioned as far as possible centrally.

According to the static requirements, a steel beam or a reinforced concrete slab is then placed in the trench bottom.

Here attention is to be paid that the steel beam lies flat on the ground between the guideways of the slide rail frame. Ensure that the steel beam's position is immovable.



After placing the bottom support and/or the setting of the concrete slab, the rolling strut can be lifted up to the highest limit pin in the slide rail frame and pinned below the RS.

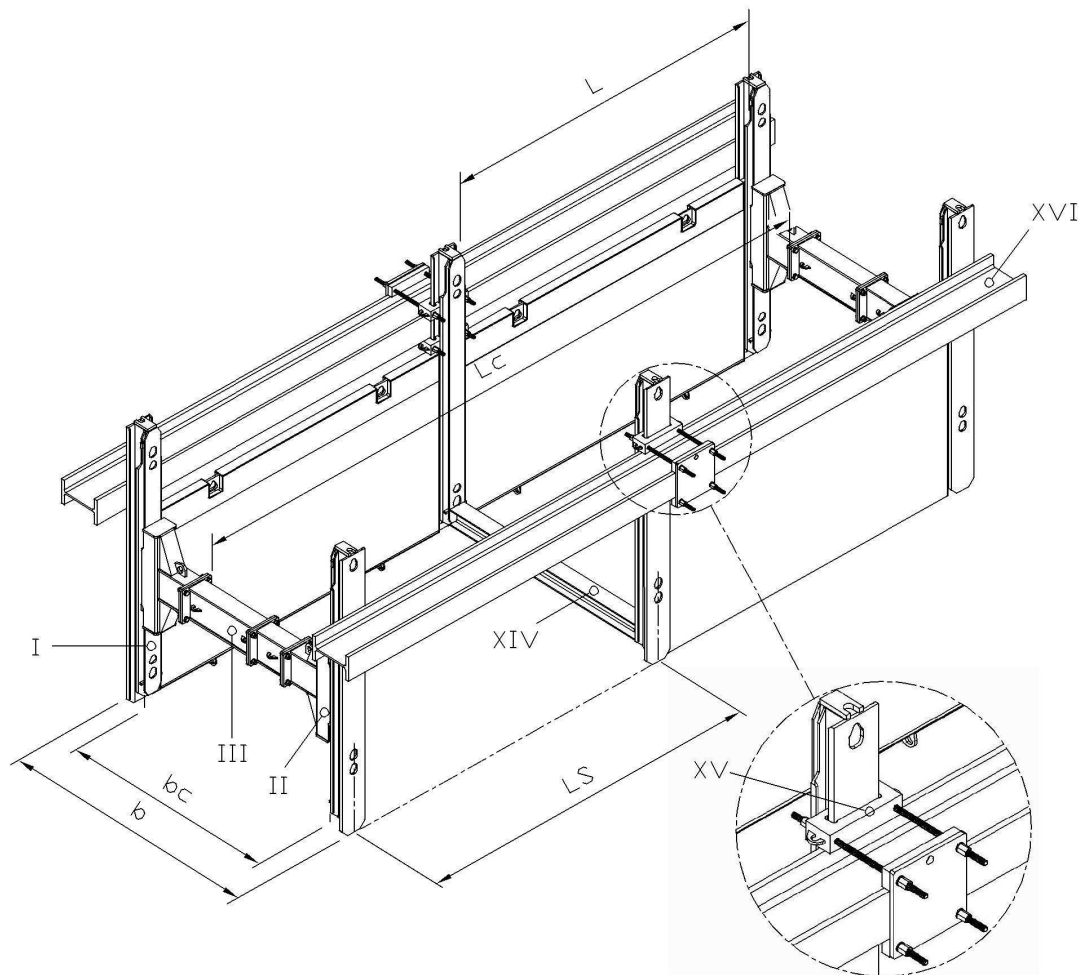
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Adjustable clamping device

System drawing

Warning: The use of the adjustable clamping device requires specific instructions, a trench safety plan, site specific engineering and a competent supervisor trained and qualified by the SBH dealer. Ask your authorized SBH dealer or contact SBH in Germany.



I slide rail
II rolling strut (RS)
III distane piece (DP)
XIV bottom support

XV clamping device
XVI upper water line
b trench width
bc working width

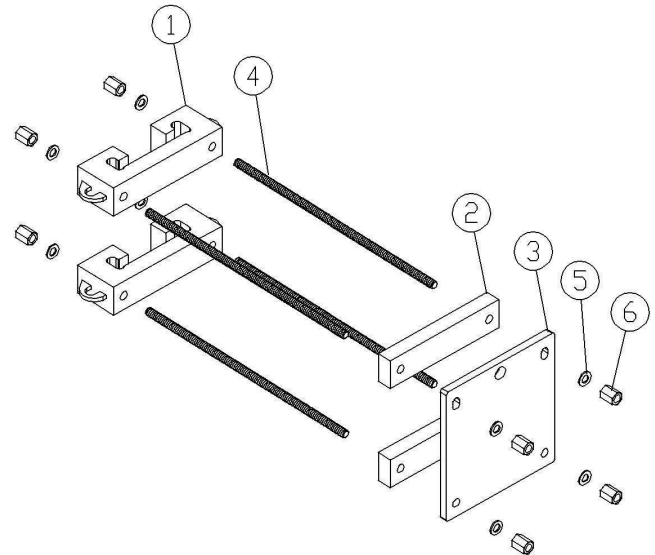
L plate length
L_s system length
L_c strut clearance length

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Technical parameters

no.	description	dimensions [mm] ([inch])	weight [kg] ([lb])
1	socket	120*180*520 mm (4.7*7.1*20.5 inch)	61.3 kg (135 lb)
2	lug	60*120*520 mm (2.4*4.7*20.5 inch)	29.4 kg (65 lb)
3	flange plate	30*555*520 mm (1.2*21.9*20.5 inch)	68.0 kg (150 lb)
4	threaded rod	Ø 26,5 * 1000 mm (Ø 1.0 * 39.4 inch)	4.50kg (10 lb)
5	washer	Di = 31 mm (di = 1.2 inch)	0.05kg (0.1 lb)
6	6-squared nut	26,5 mm (1.0 inch)	0.54 kg (1.2 lb)



Strut-free pits, e.g. for the laying of long pipes, for building a structure or for the placing of a press drilling machine can be achieved using the adjustable clamping device and bottom support.

After assembling the clamping device, one or several rolling struts can be removed. The slide rail frames, which have to be subsequently strut-free, must be about 1.35 m (4.43 ft) longer than the required trench depth. This clearance is required for the bottom support at the slide rail end and for the attachment of the clamping device above the trench.

The clamping device engages behind the rail guideway and clamps the outside horizontal upper waler line. The upper forces, transferred by the slide rail, are passed on via the outer waler line to the corner slide rails.

Installation instructions

After installing the rolling strut shoring and bracing the slide rail frames in the trench bottom (bottom support), the clamping device can be assembled above the trench.

For this the lower rail socket which is pre-assembled with threaded rods, is moved over the rail guideways and placed down on the terrain surface. The lower lug keeps the two threaded rods apart and serves also as lining of the upper waler line. More linings, distributed over the length of the waler line, can for example be made up of square-shaped timber.

The dimensioning of the waler line is determined by static requirements, whereby 2 waler line rails can also be placed consecutively. For the re-installation of the rolling strut during removal it may be necessary to fix filler plates at the support points of the waler line depending on the expected deflection.

The waling is placed on the rail socket and lug behind the slide rail. The upper socket, pre-assembled with threaded rods, is also moved over the slide rail guideway, is fitted with the lugs and placed on the waling. Push the flange plate over the four threaded rods and tighten using washers and nuts.

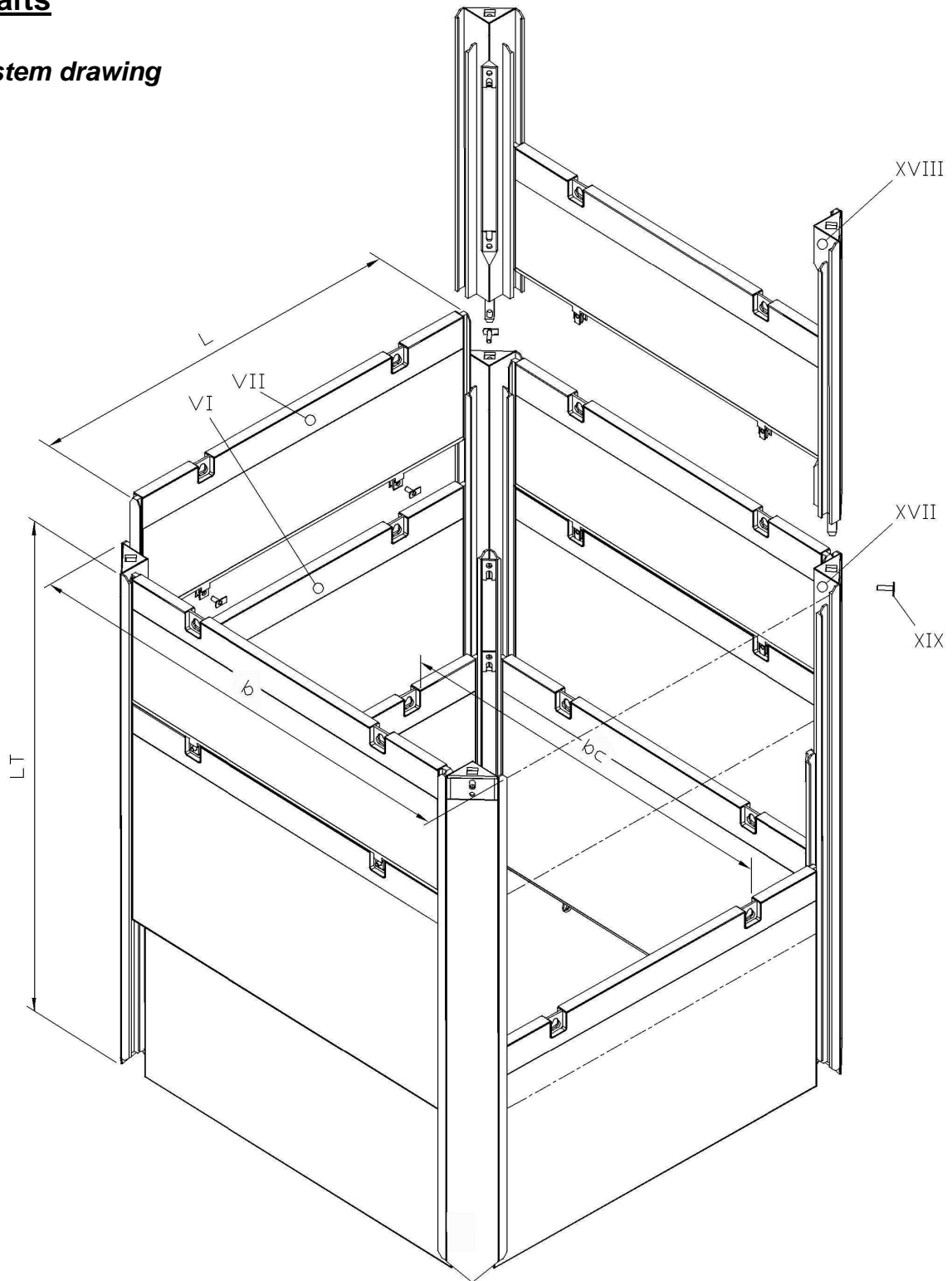
Now the upper limit pins in the slide rail frames can be removed and the rolling struts can be dismantled.

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Shafts

System drawing



XVII corner rail
VI base plate
VII top plate

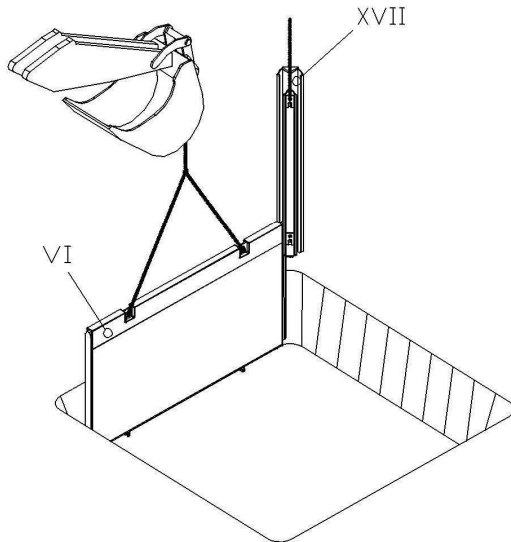
b trench width
b_C working width

L plate length
L_T slide rail length

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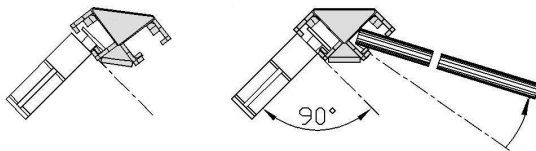
Installation instructions



Advance excavation of max. 1.25 m (4.10 ft) and approx. 10 cm (0.33 ft) wider than the pit is to be.

Attention: As a general rule, the advance excavation is dependent on the stability and type of soil on site and must comply with the local valid safety regulations (e.g. OSHA for US market). The advance excavation must never exceed a depth of 1.25 m (4.10 ft).

Place the base plate in the pre-excavated shaft, push in and secure against falling over.

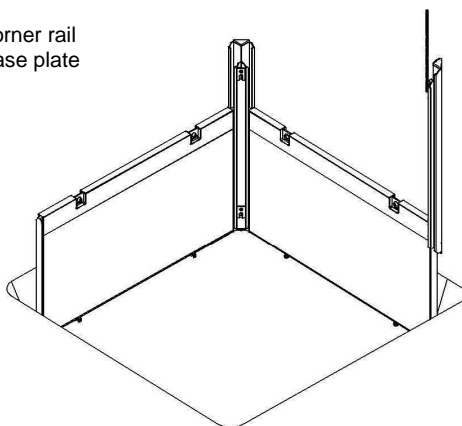


The first corner slide rail is picked up by the excavator, which must have an appropriate lift, then swung over the plate, threaded into the outer guideway (ground side) and lowered.

In this phase the trench may not be entered.

Align the corner slide rail and push in.

XVII corner rail
VI base plate



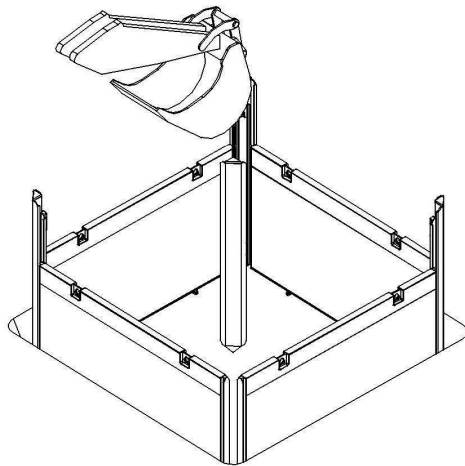
Warning: Never allow anyone to be inside the trench during installation. It may cause severe injury and/or death!

Mount the second plate in the free guideway of the rail and align rectangularly.

Now the second corner slide rail is moved over the plate guideway, aligned and pushed into the soil.

Further installation is carried out as described above.

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After installing the fourth plate, the free guideways of the first and the last plate have to be so aligned that the last corner slide rail can be threaded into both plate guideways.

The ideal distance between the guideways (a_{pl}) is 35 cm (1.15 ft).

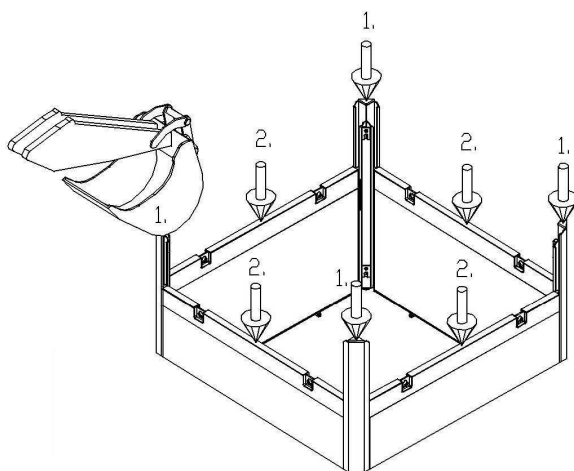
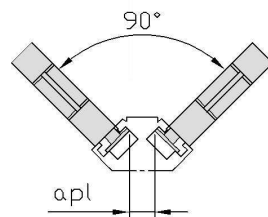
The shaft is now completely assembled with the plates and if required can be aligned diagonally.

Pre-excavate about another 50 cm (1.64 ft) (depending on local soil conditions but never more than 50 cm (1.64 ft)) and push in rails and plates in turn.

Here attention is to be paid that the plates do not project under the slide rails by more than 50 cm (1.64 ft).

Fill in and compact the hollow space between shoring and soil!

Attention: The shoring must be without gaps and close to the ground. No gaps between panel and ground are permitted! If present, gaps must be filled and compacted!



Attention: Should circumstances arise which do not allow the installation process described here (e.g. obstacles in the soil, sticking, misalignment etc.), remove the shoring completely. While removing, the trench must be refilled and compacted layer by layer when deeper than 1.25 m (4.10 ft). Remove the obstacles, ensure the shoring is perfectly aligned and try again. If this does not work, stop the process and contact your authorized SBH dealer.

To protect the shoring plates and to ensure a long service life we recommend the use of protection rails. The individual shoring components are to be pushed in and not hammered in!

If the top edge of the plate reaches the terrain surface, the system can be extended if required by using a top plate.

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When using top plates it is to be ensured that these will be connected with the base plates by means of pins.

The plate is lowered down to the excavation bottom.

The step-by-step lowering, whereby slide rails, rolling struts and inner plates are pushed down, is repeated until the final trench bottom is reached.

The top edge of the shoring must overtop the surrounding terrain by at least 10 cm (0.33 ft)!

When removing a pit carry this out as described under "Removal". Ensure that the shoring components are never lifted by more than 50 cm (1.64 ft). NEVER remove only one side of the shaft completely!

By using corner rails in combination with slide rail frames a large variety of pit dimensions can be achieved.

