terra infrastructure

safety: efficient and sustainable

TRENCH SHORING

TECHNICAL DATA

Trench shoring: Safety has the highest priority.
Every construction site has specific challenges that need to be mastered. However, the requirements of a shoring system are always strict in terms of providing safety, having a minimal impact on the soil outside the shoring, and allowing as much working space as possible.
For more than 75 years, our E+S and KRINGS brand shoring systems have provided cost-effective technical processing solutions with due regard to safety aspects for numerous civil engineering projects, both domestically and on overseas markets.

Unique expertise.
terra infrastructure is among the world's best-known providers of trench shoring. We offer a wide range of trench shoring equipment and supplementary products. Our portfolio also includes temporary construction site roads made of steel or plastic.
For many construction projects, it is more economical to hire the shoring system. Our extensive range of rental equipment means we can always provide our customers with a suitable system, even for large-scale projects.

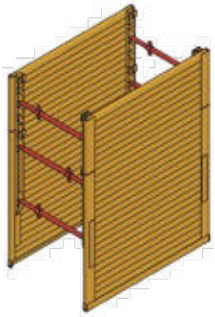
Contents

VERBAU KRINGS VERBAU

Original - Since 1949

System overview – Box systems

Recommended shoring depth: max. 3.50 m



KRINGS KVL
Rec. shoring depth: max. 3.50 m
Rec.: mobile excavator 9–13 t
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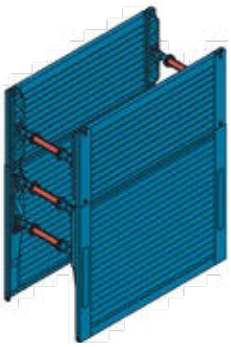

E+S LBR
Rec. shoring depth: max. 3.50 m
Rec.: mobile or crawler excavator
Base box only: 12–18 t
With top unit: 18–30 t
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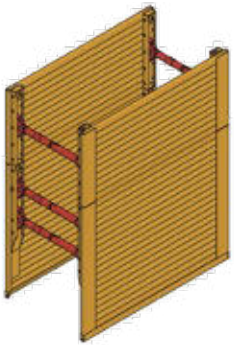

KRINGS KS 60
Rec. shoring depth: max. 3.50 m
Rec.: mobile or crawler excavator
Base box only: 12–18 t
With top unit: 18–30 t
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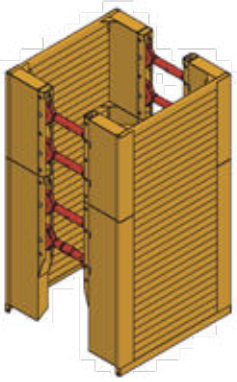

KRINGS KS 60 Manhole
Rec. shoring depth: max. 3.50 m
Rec.: mobile or crawler excavator
Base box only: 12–18 t
With top unit: 18–30 t
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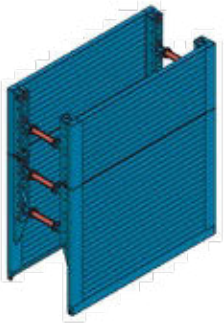
Recommended shoring depth: max. 4.00 m



E+S Medium
Rec. shoring depth: max. 5.00 m
Rec.: mobile or crawler excavator
Base box only: 12–18 t
With top unit: 18–30 t
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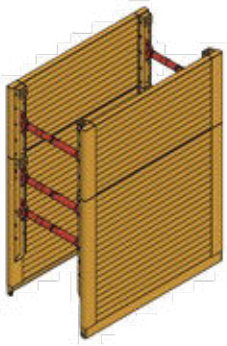

KRINGS KS 100
Rec. shoring depth: max. 4.00 m
Rec.: mobile or crawler excavator
Base box only: 12–18 t
With top unit: 18–30 t
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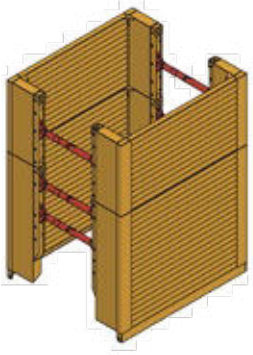

KRINGS KS 100 Manhole
Rec. shoring depth: max. 4.00 m
Rec.: mobile or crawler excavator
18–30 t
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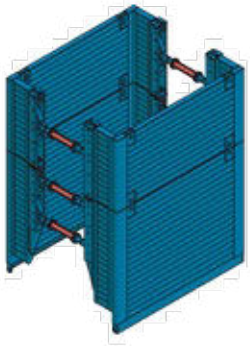

E+S Manhole
Rec. shoring depth: max. 4.00 m
Rec.: mobile or crawler excavator
18–30 t
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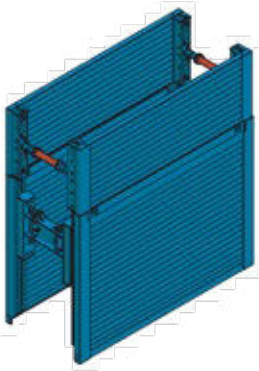
Recommended shoring depth: max. 6.00 m



E+S Linearbox
Rec. shoring depth: max. 5.00 m
Rec.: mobile or crawler excavator
18–30 t
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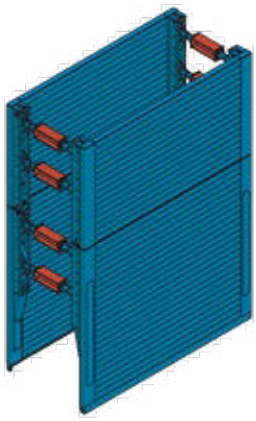

E+S Magnum
Rec. shoring depth: max. 6.00 m
Rec.: mobile or crawler excavator
18–30 t
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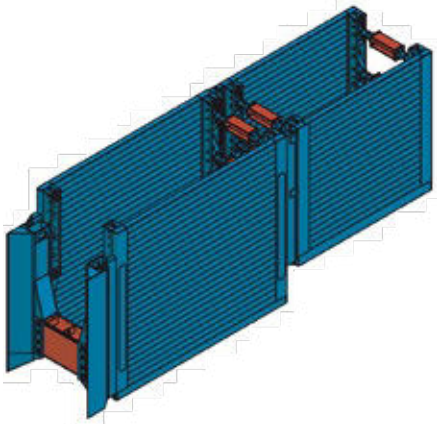

E+S Dragbox
Rec. shoring depth: max. 5.00 m
Rec.: crawler excavator
30–50 t
Page 26

Recommended shoring depth: variable

KRINGS BLU 2.41 m
Rec. shoring depth: max. 2.40 m
Rec.: mobile excavator 9–13 t
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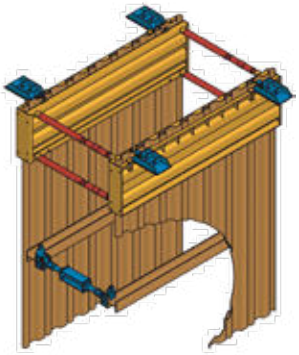

KRINGS DKU 2.27 m/3.00 m/3.81 m
Rec. shoring depth: variable
Rec.: mobile or crawler excavator
12–18 t
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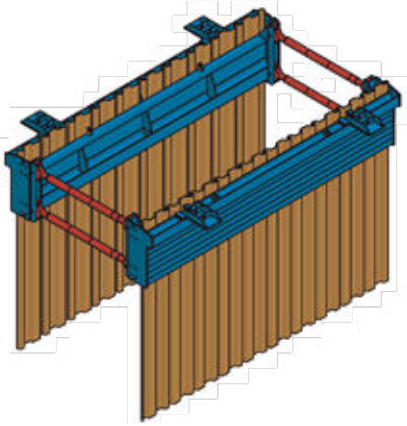

KRINGS DKU 4.55 m/5.80 m
Rec. shoring depth: variable
Rec.: mobile or crawler excavator
18–30 t
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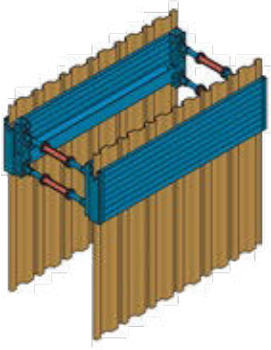

E+S DKE 3.63 m/4.03 m
Rec. shoring depth: variable
Rec.: mobile or crawler excavator
12–18 t
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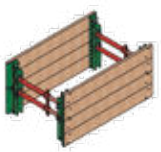
Recommended installation depth: max. 3.00 m



KRINGS Flex-shoring
Rec. shoring depth: max. 2.00 m
Rec.: mini excavator 3–9 t
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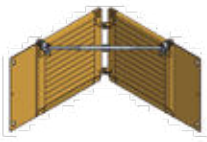
Alu-lightweight shoring
Rec. shoring depth: max. 3.00 m
Rec.: mini excavator 3–9 t
Page 36–39



KRINGS Corner shoring
Rec. shoring depth: max. 2.35 m
Rec.: mobile excavator 9–13 t
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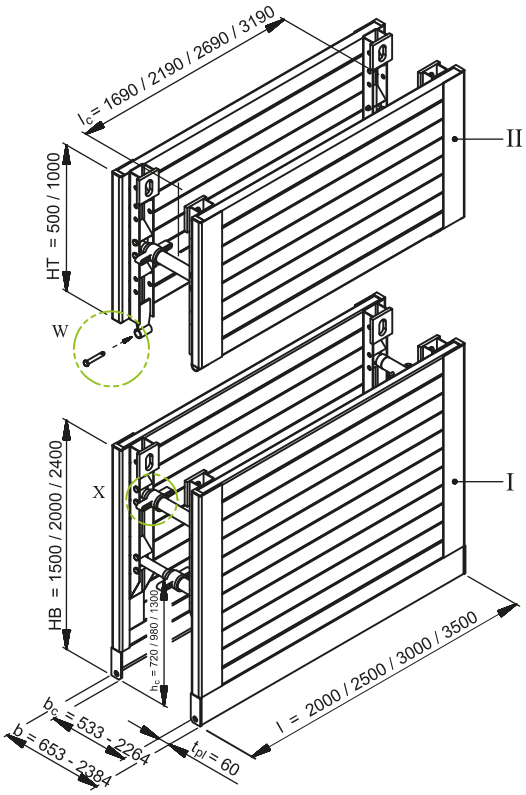
KRINGS KVL lightweight shoring

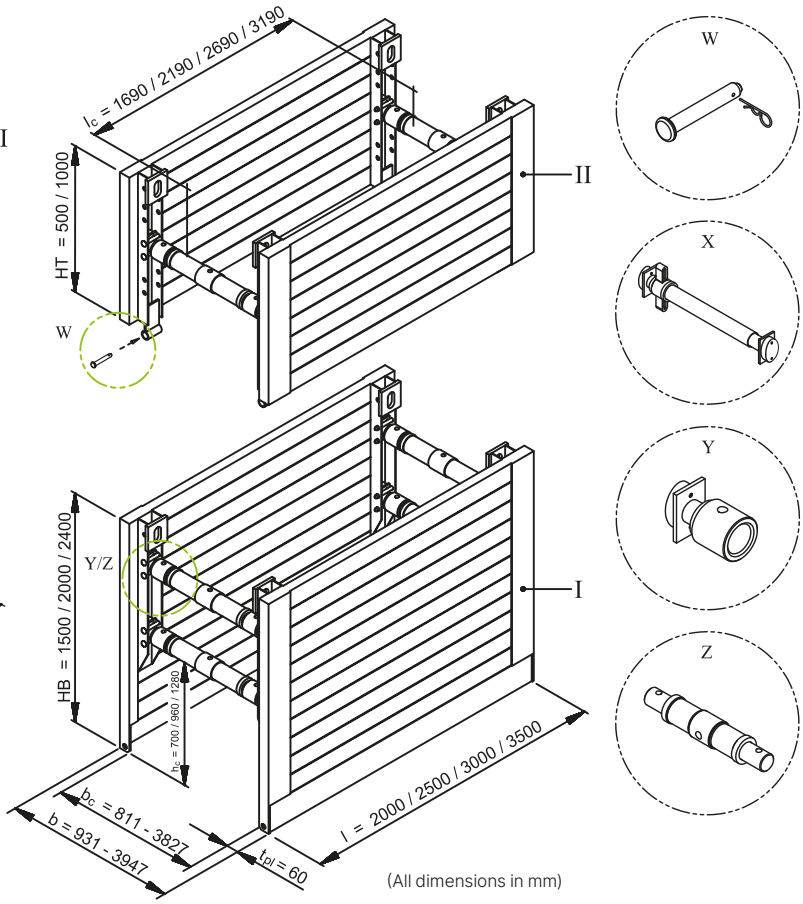
General data

Shoring length	2.00 m–3.50 m
Base unit height	1.50 m / 2.00 m / 2.40 m
Top unit height	0.50 m / 1.00 m
Pipe culvert height	0.72 m / 0.97 m / 1.30 m
Base box weight	527 kg–1,123 kg
Shoring width	variable
Rec.: mobile excavator	9–13 t

KVL spindle 70 × ...



KVL with spindle 98 × ... and adapter



(All dimensions in mm)

I	Base unit	l	Length	h_c	Pipe culvert height	X	KVL spindle
II	Top unit	l_c	Pipe culvert length	t_{pl}	Panel thickness	Y	Adapter
HB	Base unit height	b	Shoring/trench width	W	Bolt	Z	Spindle 98 × ...
HT	Top unit height	b_c	Clear width				

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
111 030	2.00	1.50	0.06	0.72	1.69	235.0	527.0 *	3.00	57.9
111 050	2.50	1.50	0.06	0.72	2.19	278.0	613.0 *	3.75	38.2
111 080	3.00	1.50	0.06	0.72	2.69	310.0	677.0 *	4.50	25.5
111085	3.50	1.50	0.06	0.72	3.19	349.0	755.0	5.25	18.3
111 040	2.00	2.00	0.06	0.98	1.69	295.0	647.0 *	4.00	32.2
111 060	2.50	2.00	0.06	0.98	2.19	350.0	757.0 *	5.00	25.7
111 090	3.00	2.00	0.06	0.98	2.69	400.0	857.0 *	6.00	21.4
111 092	3.50	2.00	0.06	0.98	3.19	465.0	987.0 *	7.00	18.3
111098	2.00	2.40	0.06	1.30	1.69	351.0	759.0	4.80	32.4
111088	2.50	2.40	0.06	1.30	2.19	407.0	871.0	6.00	25.9
111 091	3.00	2.40	0.06	1.30	2.69	470.0	997.0 *	7.20	21.6
111 093	3.50	2.40	0.06	1.30	3.19	533.0	1,123.0 *	8.40	18.3

Other sizes or custom-made products on request. * With spindle 70 × 650

Top units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
111 130	2.00	0.50	0.06	-	1.69	92.0	214.0 *	1.00	63.5
111 150	2.50	0.50	0.06	-	2.19	105.0	240.0 *	1.25	38.2
111 170	3.00	0.50	0.06	-	2.69	130.0	290.0 *	1.50	25.5
111 172	3.50	0.50	0.06	-	3.19	150.0	330.4 *	1.75	18.3
111 120	2.00	1.00	0.06	-	1.69	165.0	360.0 *	2.00	63.5
111 140	2.50	1.00	0.06	-	2.19	195.0	420.0 *	2.50	38.2
111 160	3.00	1.00	0.06	-	2.69	217.0	464.0 *	3.00	25.5
111 174	3.50	1.00	0.06	-	3.19	245.0	520.4 *	3.50	18.3

Other sizes or custom-made products on request. * With spindle 70 × 650

Shoring widths for spindle 70 × ...

Art. no.	Short description	Lift [m]	b_c [m]	b [m]	G [kg]
118 060	Spindle 70 × 650	0.09	0.53–0.63	0.65–0.75	12.2
118 070	Spindle 70 × 740	0.18	0.62–0.81	0.74–0.93	13.4
118 090	Spindle 70 × 920	0.36	0.81–1.17	0.93–1.29	15.8
118 020	Spindle 70 × 1280	0.73	1.16–1.89	1.28–2.01	20.5
118 100	Spindle 70 × 1470	0.92	1.35–2.26	1.47–2.38	24.0

Shoring widths for spindle 98 × 550 with adapter

Art. no. extension bar	l [m]	b_c [m]	b [m]
138 280 (spindle 98 × 550)	w/o	0.81–1.01	0.93–1.13
139 430	0.30	1.11–1.31	1.23–1.43
139 445	0.50	1.31–1.51	1.43–1.63
139 385	1.00	1.81–2.01	1.93–2.13
139 400	1.50	2.31–2.51	2.43–2.63
139 420	2.00	2.81–3.01	2.93–3.13
139 425	2.50	3.31–3.51	3.43–3.63

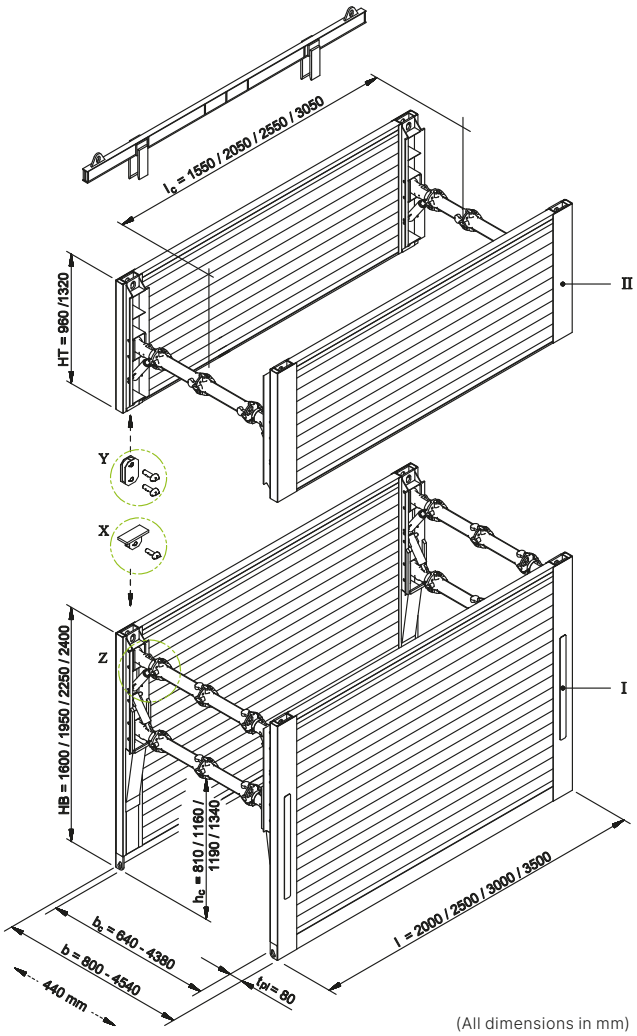
Shoring widths for spindle 98 × 700 with adapter

Art. no. extension bar	l [m]	b_c [m]	b [m]
138 290 (spindle 98 × 700)	w/o	0.99–1.33	1.11–1.45
139 430	0.30	1.29–1.63	1.41–1.75
139 445	0.50	1.49–1.83	1.61–1.95
139 385	1.00	1.99–2.33	2.11–2.45
139 400	1.50	2.49–2.83	2.61–2.95
139 420	2.00	2.99–3.33	3.11–3.45
139 425	2.50	3.49–3.83	3.61–3.95

l	Length	b_c	Clear width	t_{pl}	Panel thickness	G / VP	Weight / shoring panel
l_c	Pipe culvert length	h	Panel height	A	Surface	G / Box	Weight / shoring box
b	Trench width	h_c	Pipe culvert height	G	Weight	e_h	Admissible soil pressure

Accessories and spare parts, see p. 41–43

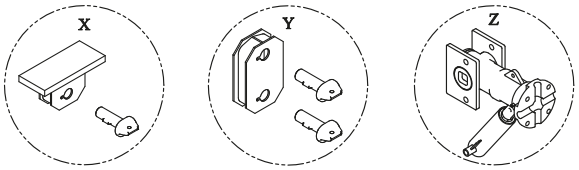
E+S LBR lightweight shoring



(All dimensions in mm)

General data

Shoring length		2.00 m–3.50 m
Base unit height		1.60 m / 1.95 m / 2.25 m / 2.40 m
Top unit height		0.96 m / 1.32 m
Pipe culvert height		0.81 m / 1.16 m / 1.19 m / 1.34 m
Base box weight		746 kg–1,540 kg
Shoring width		variable
Rec.: mobile or crawler excavator	Base box only: With top unit:	12–18 t 18–30 t



I	Base unit
II	Top unit
HB	Base unit height
HT	Top unit height
l	Length
l_c	Pipe culvert length
b	Shoring/trench width
b_c	Clear width
h_c	Pipe culvert height
t_{pl}	Panel thickness
X	Pressure plate with bolts
Y	Connector with bolts
Z	Strut with bearing plate and shock absorber

Base units (height 1.60 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
801 455	2.00	0.08	0.81	1.55	373.0	746.0	3.20	79.5
801 505	2.50	0.08	0.81	2.05	420.0	840.0	4.00	61.5
801 568	3.00	0.08	0.81	2.55	502.0	1,004.0	4.80	41.0
801 578	3.50	0.08	0.81	3.05	538.0	1,076.0	5.60	29.3

Base units (height 1.95 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
801 475	2.00	0.08	1.16	1.55	467.0	934.0	3.90	39.8
801 525	2.50	0.08	1.16	2.05	478.0	956.0	4.88	31.9
801 565	3.00	0.08	1.16	2.55	588.0	1,176.0	5.85	26.6
801 575	3.50	0.08	1.16	3.05	618.0	1,236.0	6.83	22.8

Base units (height 2.25 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
801 015	2.00	0.08	1.19	1.55	515.0	1,030.0	4.50	46.2
801 055	2.50	0.08	1.19	2.05	595.0	1,190.0	5.63	37.0
801 105	3.00	0.08	1.19	2.55	670.0	1,340.0	6.75	30.8
801 108	3.50	0.08	1.19	3.05	740.0	1,480.0	7.88	26.4

Base units (height 2.40 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
801 210	2.00	0.08	1.34	1.55	550.0	1,100.0	4.80	54.7
801 215	2.50	0.08	1.34	2.05	655.0	1,310.0	6.00	43.8
801 220	3.00	0.08	1.34	2.55	675.0	1,350.0	7.20	36.5
801 110	3.50	0.08	1.34	3.05	770.0	1,540.0	8.40	29.4

Top units (height 0.96 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
801 595	2.00	0.08	-	1.55	265.0	530.0	1.92	79.5
801 625	2.50	0.08	-	2.05	317.0	634.0	2.40	61.5
801 665	3.00	0.08	-	2.55	357.0	714.0	2.88	41.0
801 675	3.50	0.08	-	3.05	380.0	760.0	3.36	29.3

Top units (height 1.32 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
801 628	2.00	0.08	-	1.55	341.0	682.0	2.64	79.5
801 630	2.50	0.08	-	2.05	391.0	782.0	3.30	61.5
801 635	3.00	0.08	-	2.55	408.0	816.0	3.96	41.0
801 680	3.50	0.08	-	3.05	430.0	860.0	4.62	29.3

Extension bars

Art. no.	Short description	l [m]	G [kg]
850 091	Cast extension bar	0.250	11.2
850 100	Cast extension bar	0.550	18.7
850 112	HEB 180 extension bar	0.275	28.0
850 110	HEB 180 extension bar	0.550	43.0
850 124	HEB 180 extension bar	1.100	70.0
850 132	HEB 180 extension bar	1.650	100.0
850 135	HEB 180 extension bar	2.200	130.0

Shoring width (for cast pipe extension bars, l = 0.55 m)

Extension bars	l [m]	b_c [m]	b [m]
0	0.00	0.64–1.08	0.80–1.24
1	0.55	1.19–1.63	1.35–1.79
2	1.10	1.74–2.18	1.90–2.34
3	1.65	2.29–2.73	2.45–2.89
4	2.20	2.84–3.28	3.00–3.44
5	2.75	3.39–3.83	3.55–3.99
max. 6	3.30	3.94–4.38	4.10–4.54

Dimensions “from–to” depending on spindle stroke.
Different trench widths possible by combination of different extension bar lengths l = 0.25 m and l = 0.55 m.

l	Length	b_c	Clear width	A	Surface	G / Box	Weight / shoring box
l_c	Pipe culvert length	h_c	Pipe culvert height	G	Weight	e_h	Admissible soil pressure
b	Trench width	t_{pl}	Panel thickness	G / VP	Weight / shoring panel		

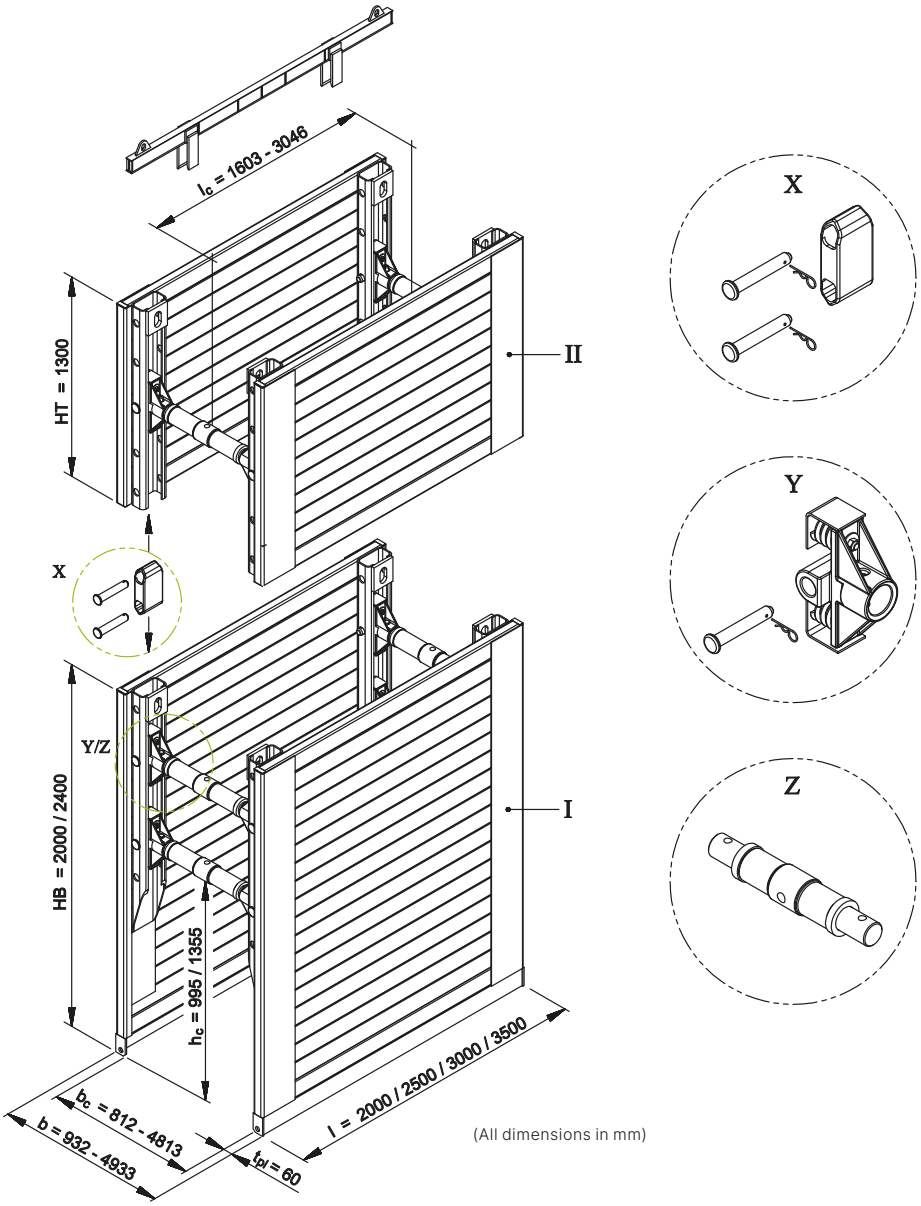
Other sizes or custom-made products on request.

Accessories and spare parts, see p. 41–43

KRINGS KS 60

General data

Shoring length		2.00 m–3.50 m
Base unit height		2.00 m / 2.40 m
Top unit height		1.30 m
Pipe culvert height		1.00 m / 1.36 m
Base box weight		980 kg–1,580 kg
Shoring width		variable
Rec.: mobile or crawler excavator	Base box only: With top unit:	12–18 t 18–30 t



(All dimensions in mm)

I	Base unit	l	Length	h_c	Pipe culvert height	Z	Spindle 98 × ...
II	Top unit	l_c	Pipe culvert length	t_{pl}	Panel thickness		
HB	Base unit height	b	Shoring/trench width	X	Connector with bolts		
HT	Top unit height	b_c	Clear width	Y	Spring socket with bolts		

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
131 030	2.00	2.00	0.06	1.00	1.61	350.0	980.0 *	4.00	59.5
131 035	2.50	2.00	0.06	1.00	2.11	420.0	1,120.0 *	5.00	39.7
131 060	3.00	2.00	0.06	1.00	2.61	460.0	1,200.0 *	6.00	26.3
131 080	3.50	2.00	0.06	1.00	3.05	560.0	1,400.0 *	7.00	26.6
131 040	2.00	2.40	0.06	1.36	1.61	394.0	1,068.0 *	4.80	39.1
131 050	2.50	2.40	0.06	1.36	2.11	460.0	1,200.0 *	6.00	31.3
131 070	3.00	2.40	0.06	1.36	2.61	515.0	1,310.0 *	7.20	26.1
131 090	3.50	2.40	0.06	1.36	3.05	650.0	1,580.0 *	8.40	22.3

Other sizes or custom-made products on request. * With spindle 98 × 700

Top units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
131 120	2.00	1.30	0.06	-	1.61	260.0	702.0 *	2.60	66.7
131 130	2.50	1.30	0.06	-	2.11	295.0	772.0 *	3.25	39.7
131 150	3.00	1.30	0.06	-	2.61	330.0	842.0 *	3.90	26.3
131 170	3.50	1.30	0.06	-	3.05	395.0	972.0 *	4.55	26.6

Other sizes or custom-made products on request. * With spindle 98 × 700

Shoring widths for spindle 98 × 550

Art. no. extension bar	l [m]	b_c [m]	b [m]
138 280 (spindle 98 × 550)	w/o	0.81–1.01	0.93–1.13
139 430	0.30	1.11–1.31	1.23–1.43
139 445	0.50	1.31–1.51	1.43–1.63
139 385	1.00	1.81–2.01	1.93–2.13
139 400	1.50	2.31–2.51	2.43–2.63
139 420	2.00	2.81–3.01	2.93–3.13
139 425	2.50	3.31–3.51	3.43–3.63

Shoring widths for spindle 98 × 700

Art. no. extension bar	l [m]	b_c [m]	b [m]
138 290 (spindle 98 × 700)	w/o	0.99–1.33	1.11–1.45
139 430	0.30	1.29–1.63	1.41–1.75
139 445	0.50	1.49–1.83	1.61–1.95
139 385	1.00	1.99–2.33	2.11–2.45
139 400	1.50	2.49–2.83	2.61–2.95
139 420	2.00	2.99–3.33	3.11–3.45
139 425	2.50	3.49–3.83	3.61–3.95

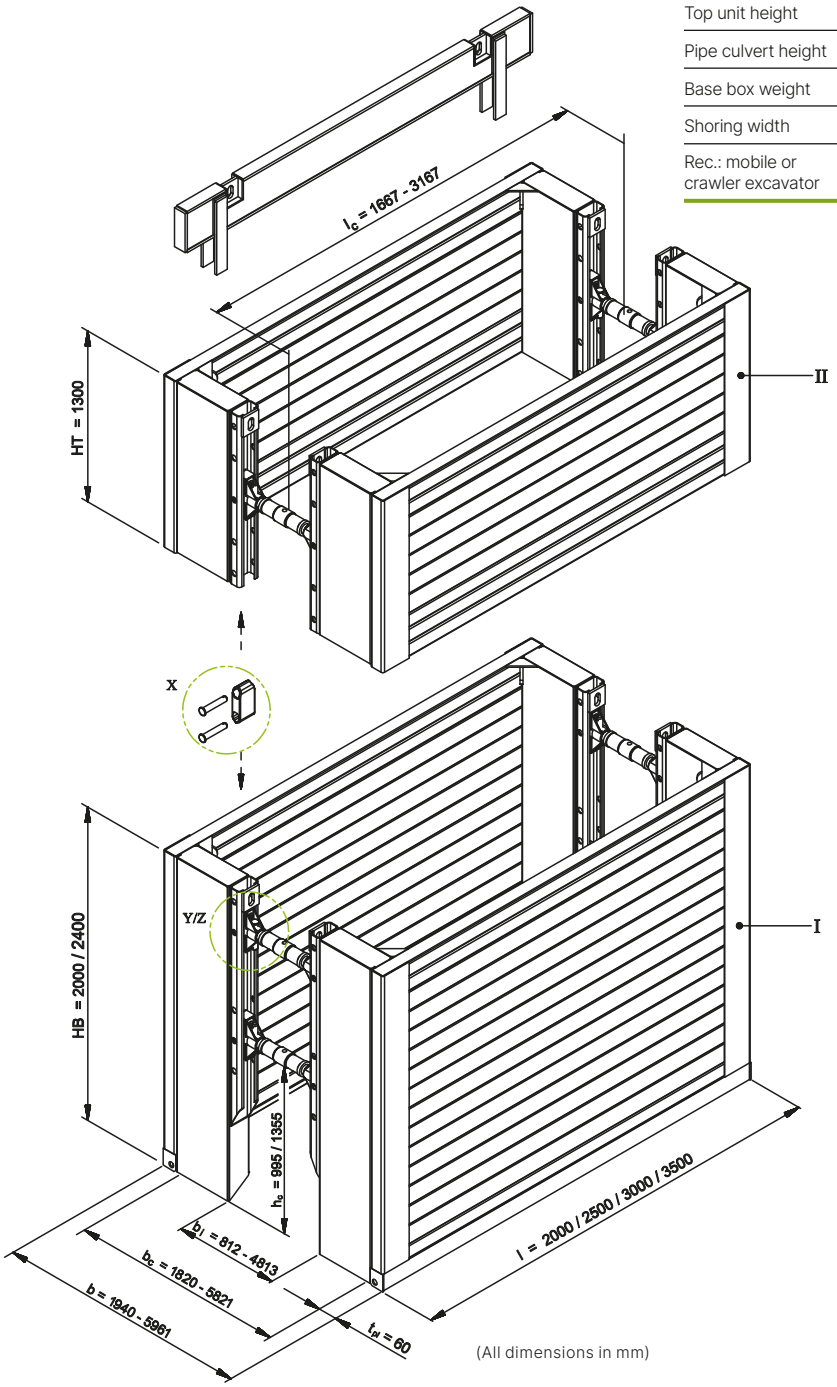
l	Length	b_c	Clear width	t_{pl}	Panel thickness	G / VP	Weight / shoring panel
l_c	Pipe culvert length	h	Panel height	A	Surface	G / Box	Weight / shoring box
b	Trench width	h_c	Pipe culvert height	G	Weight	e_h	Admissible soil pressure

Accessories and spare parts, see p. 41–43

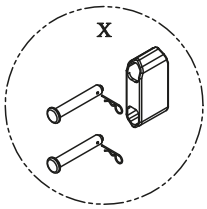
KRINGS KS 60 Manhole

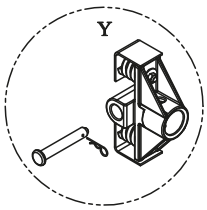
General data

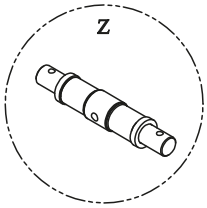
Shoring length		2.00 m–3.50 m
Base unit height		2.00 m / 2.40 m
Top unit height		1.30 m
Pipe culvert height		1.00 m / 1.36 m
Base box weight		1,380 kg–2,050 kg
Shoring width		variable
Rec.: mobile or crawler excavator	Base box only: With top unit:	12–18 t 18–30 t



(All dimensions in mm)







I	Base unit	l	Length	b_i	Clear passage width	X	Connector with bolts
II	Top unit	l_c	Pipe culvert length	h_c	Pipe culvert height	Y	Spring socket with bolts
HB	Base unit height	b	Shoring/trench width	t_{pl}	Panel thickness	Z	Spindle 98 × ...
HT	Top unit height	b_c	Clear width				

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
135 208	2.00	2.00	0.06	1.00	1.61	550.0	1,380.0 *	4.00	59.5
135 209	2.50	2.00	0.06	1.00	2.11	605.0	1,490.0 *	5.00	39.7
135 211	3.00	2.00	0.06	1.00	2.61	660.0	1,600.0 *	6.00	26.3
135 212	3.50	2.00	0.06	1.00	3.05	770.0	1,820.0 *	7.00	26.6
135 206	2.00	2.40	0.06	1.36	1.61	631.0	1,542.0 *	4.80	39.1
135 205	2.50	2.40	0.06	1.36	2.11	693.0	1,666.0 *	6.00	31.3
135 200	3.00	2.40	0.06	1.36	2.61	755.0	1,790.0 *	7.20	26.1
135 199	3.50	2.40	0.06	1.36	3.05	885.0	2,050.0 *	8.40	22.3

Other sizes or custom-made products on request. * With spindle 98 × 700

Top units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
135 285	2.00	1.30	0.06	-	1.61	430.0	1,043.0 *	2.60	66.7
135 286	2.50	1.30	0.06	-	2.11	470.0	1,122.0 *	3.25	39.7
135 290	3.00	1.30	0.06	-	2.61	505.0	1,192.0 *	3.90	26.3
135 291	3.50	1.30	0.06	-	3.05	580.0	1,342.0 *	4.55	26.6

Other sizes or custom-made products on request. * With spindle 98 × 700

Shoring widths for spindle 98 × 550

Art. no. extension bar	l [m]	b_i [m]	b_c [m]	b [m]
138 280 (spindle 98 × 550)	w/o	0.81–1.01	1.82–2.02	1.94–2.14
139 430	0.30	1.11–1.31	2.12–2.32	2.24–2.44
139 445	0.50	1.31–1.51	2.32–2.52	2.44–2.64
139 385	1.00	1.81–2.01	2.82–3.02	2.94–3.14
139 400	1.50	2.31–2.51	3.32–3.52	3.44–3.64
139 420	2.00	2.81–3.01	3.82–4.02	3.94–4.14
139 425	2.50	3.31–3.51	4.32–4.52	4.44–4.64

Shoring widths for spindle 98 × 700

Art. no. extension bar	l [m]	b_i [m]	b_c [m]	b [m]
138 290 (spindle 98 × 700)	w/o	0.99–1.33	2.00–2.34	2.12–2.46
139 430	0.30	1.29–1.63	2.30–2.64	2.42–2.76
139 445	0.50	1.49–1.83	2.50–2.84	2.62–2.96
139 385	1.00	1.99–2.33	3.00–3.34	3.12–3.46
139 400	1.50	2.49–2.83	3.50–3.84	3.62–3.96
139 420	2.00	2.99–3.33	4.00–4.34	4.12–4.46
139 425	2.50	3.49–3.83	4.50–4.84	4.62–4.96

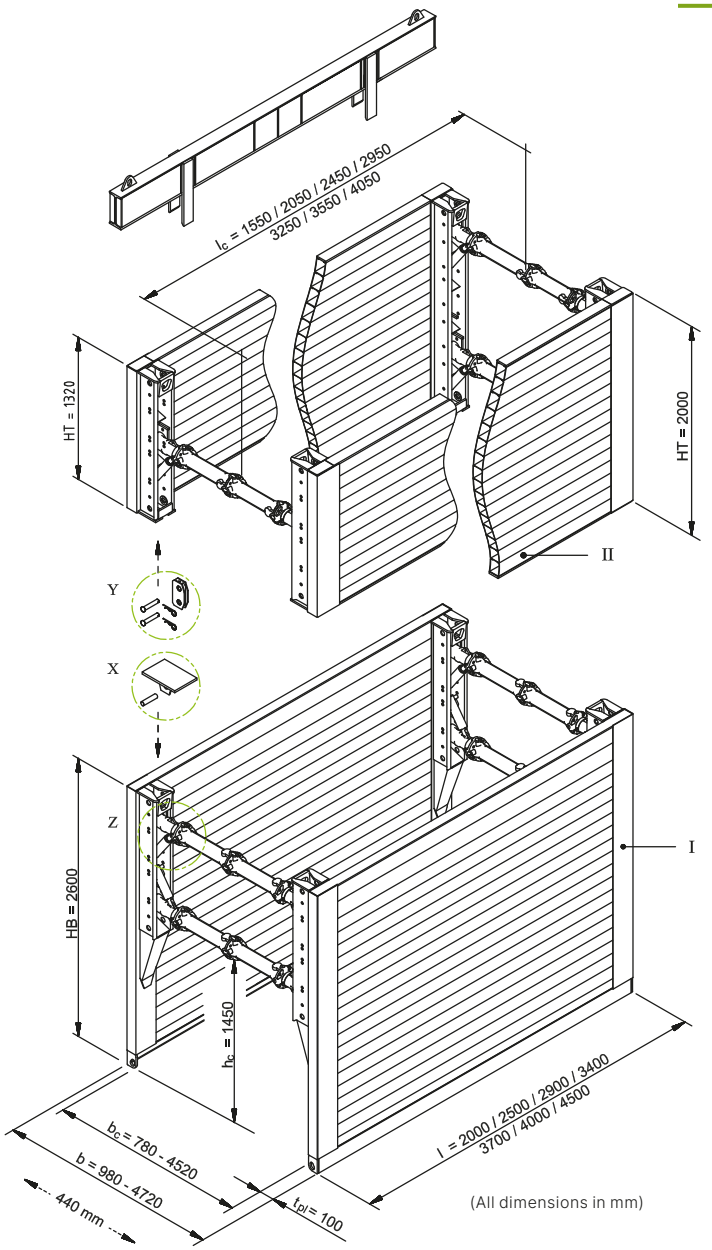
l	Length
l_c	Pipe culvert length
b	Trench width
b_c	Clear width
b_i	Clear passage width
h	Panel height
h_c	Pipe culvert height
t_{pl}	Panel thickness
A	Surface
G	Weight
G / VP	Weight / shoring panel
G / Box	Weight / shoring box
e_h	Admissible soil pressure

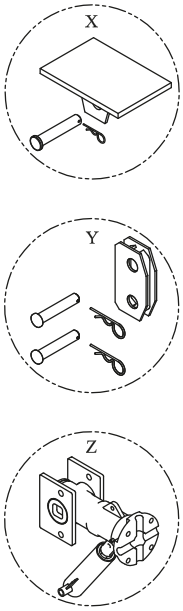
Accessories and spare parts, see p. 41–43

E+S Medium shoring

General data

Shoring length		2.00 m–4.50 m
Base unit height		2.60 m
Top unit height		1.32 m / 2.00 m
Pipe culvert height		1.45 m
Base box weight		1,460 kg–2,780 kg
Shoring width		variable
Rec.: mobile or crawler excavator	Base box only: With top unit:	12–18 t 18–30 t





I	Base unit	l	Length	h_c	Pipe culvert height	Z	Strut with bearing plate and shock absorber
II	Top unit	l_c	Pipe culvert length	t_{pl}	Panel thickness		
HB	Base unit height	b	Shoring/trench width	X	Pressure plate with bolts		
HT	Top unit height	b_c	Clear width	Y	Connector with bolts		

Base units (height 2.60 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
800 010	2.00	0.10	1.45	1.55	730.0	1,460.0	5.20	70.0
800 100	2.50	0.10	1.45	2.05	825.0	1,650.0	6.50	60.0
800 150	2.90	0.10	1.45	2.45	908.0	1,816.0	7.54	55.0
800 200	3.40	0.10	1.45	2.95	1,028.0	2,056.0	8.84	50.8
800 300	3.70	0.10	1.45	3.25	1,118.0	2,236.0	9.62	42.3
800 400	4.00	0.10	1.45	3.55	1,257.0	2,514.0	10.40	44.0
800 440	4.50	0.10	1.45	4.05	1,390.0	2,780.0	11.70	34.2

Top units (height 1.32 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
800 550	2.00	0.10	-	1.55	463.0	926.0	2.64	70.0
800 600	2.50	0.10	-	2.05	531.0	1,062.0	3.30	60.0
800 650	2.90	0.10	-	2.45	578.0	1,156.0	3.83	55.0
800 700	3.40	0.10	-	2.95	658.0	1,316.0	4.49	50.8
800 800	3.70	0.10	-	3.25	692.0	1,384.0	4.88	42.3
800 900	4.00	0.10	-	3.55	775.0	1,550.0	5.28	44.0
800 950	4.50	0.10	-	4.05	820.0	1,640.0	5.94	34.2

Top units (height 2.00 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 680	2.00	0.10	-	1.55	697.0	1,394.0	4.00	70.0
802 690	2.50	0.10	-	2.05	785.0	1,570.0	5.00	60.0
802 550	2.90	0.10	-	2.45	840.0	1,680.0	5.80	55.0
802 700	3.40	0.10	-	2.95	930.0	1,860.0	6.80	50.8
802 750	3.70	0.10	-	3.25	990.0	1,980.0	7.40	42.3
802 751	4.00	0.10	-	3.55	1,085.0	2,170.0	8.00	44.0
800 951	4.50	0.10	-	4.05	1,192.0	2,384.0	9.00	34.2

Extension bars

Art. no.	Short description	l [m]	G [kg]
850 091	Cast extension bar	0.250	11.2
850 100	Cast extension bar	0.550	18.7
850 112	HEB 180 extension bar	0.275	28.0
850 110	HEB 180 extension bar	0.550	43.0
850 124	HEB 180 extension bar	1.100	70.0
850 132	HEB 180 extension bar	1.650	100.0
850 135	HEB 180 extension bar	2.200	130.0

Shoring widths (for extension bars HEB 180)

Extension bar length [m]	b_c [m]	b [m]
0.000	0.78–1.22	0.98–1.42
0.275	1.06–1.50	1.26–1.70
0.550	1.33–1.77	1.53–1.97
1.100	1.88–2.32	2.08–2.52
1.650	2.43–2.87	2.63–3.07
2.200	2.98–3.42	3.18–3.62
2.200 + 1.100	4.08–4.52	4.28–4.72

Dimensions “from–to” depending on spindle stroke. Other trench widths possible by combination of different extension bar lengths.

Shoring widths (for cast pipe extension bars, l = 0.55 m)

Extension bars	l [m]	b_c [m]	b [m]
0	0.00	0.78–1.22	0.98–1.42
1	0.55	1.33–1.77	1.53–1.97
2	1.10	1.88–2.32	2.08–2.52
3	1.65	2.43–2.87	2.63–3.07
4	2.20	2.98–3.42	3.18–3.62
5	2.75	3.53–3.97	3.73–4.17
max. 6	3.30	4.08–4.52	4.28–4.72

Dimensions “from–to” depending on spindle stroke.
Other trench widths possible by combination of the two different intermediate trench lengths l = 0.25 m and l = 0.55 m.

l	Length	A	Surface
l_c	Pipe culvert length	G	Weight
b	Trench width	G / VP	Weight / shoring panel
b_c	Clear width	G / Box	Weight / shoring box
h_c	Pipe culvert height	e_h	Admissible soil pressure
t_{pl}	Panel thickness		

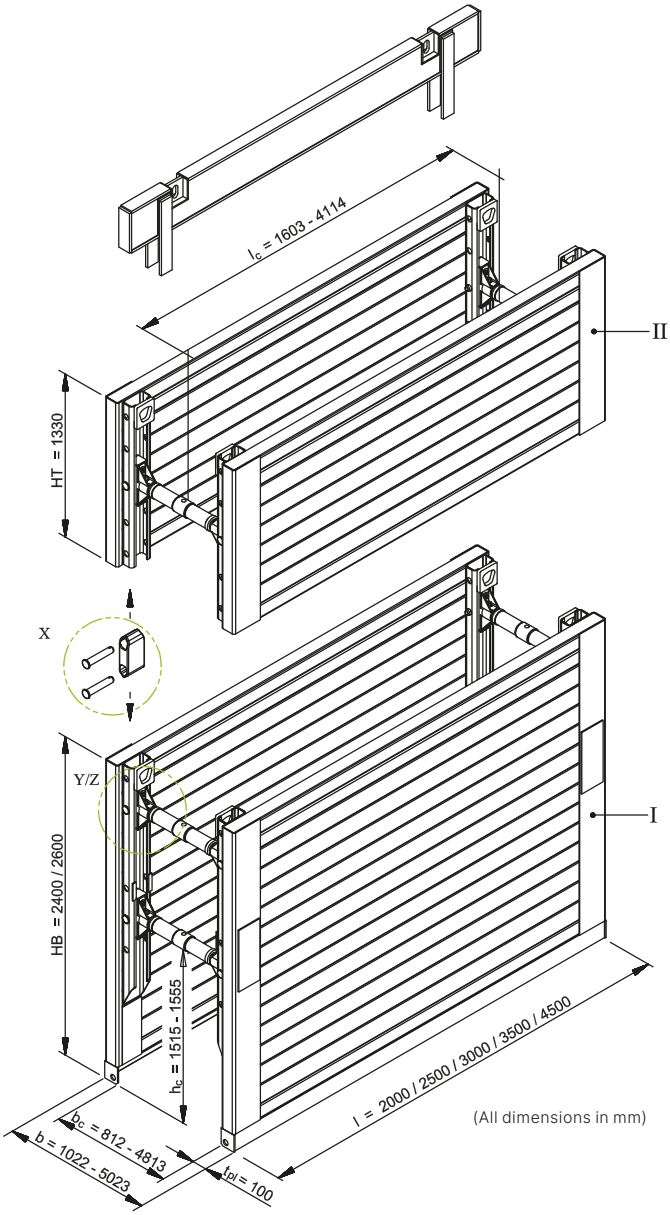
Other sizes or custom-made products on request.

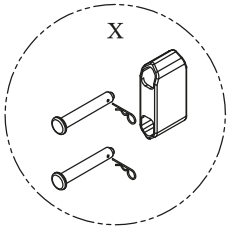
Accessories and spare parts, see p. 41–43

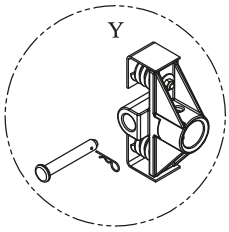
KRINGS KS 100

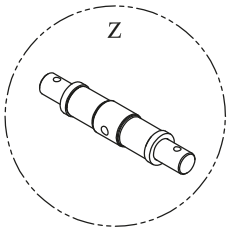
General data

Shoring length		2.00 m–4.50 m
Base unit height		2.40 m / 2.60 m
Top unit height		1.30 m
Pipe culvert height		1.52 m / 1.56 m
Base box weight		1,414 kg–2,730 kg
Shoring width		variable
Rec.: mobile or crawler excavator	Base box only: With top unit:	12–18 t 18–30 t









I	Base unit	l	Length	h_c	Pipe culvert height	Z	Spindle 98 × ...
II	Top unit	l_c	Pipe culvert length	t_{pl}	Panel thickness		
HB	Base unit height	b	Shoring/trench width	X	Connector with bolts		
HT	Top unit height	b_c	Clear width	Y	Spring socket with bolts		

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
132 030	2.00	2.40	0.10	1.52	1.61	567.0	1,414.0 *	4.80	60.0
132 050	2.50	2.40	0.10	1.52	2.11	675.0	1,630.0 *	6.00	57.0
132 070	3.00	2.40	0.10	1.52	2.61	761.0	1,802.0 *	7.20	48.0
132 090	3.50	2.40	0.10	1.52	3.11	830.0	1,940.0 *	8.40	44.0
132 140	4.00	2.40	0.10	1.52	3.61	1,000.0	2,280.0 *	9.60	40.0
132 156	4.50	2.40	0.10	1.52	4.11	1,120.0	2,520.0 *	10.80	31.8
132 040	2.00	2.60	0.10	1.56	1.61	612.0	1,504.0 *	5.20	55.0
132 060	2.50	2.60	0.10	1.56	2.11	711.0	1,702.0 *	6.50	52.0
132 080	3.00	2.60	0.10	1.56	2.61	813.0	1,906.0 *	7.80	44.0
132 100	3.50	2.60	0.10	1.56	3.11	905.0	2,090.0 *	9.10	44.0
132 150	4.00	2.60	0.10	1.56	3.61	1,090.0	2,460.0 *	10.40	40.0
132 121	4.50	2.60	0.10	1.56	4.11	1,225.0	2,730.0 *	11.70	31.8

Other sizes or custom-made products on request.

* With spindle 98 × 700

Top units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
132 190	2.00	1.30	0.10	-	1.61	370.0	922.0 *	2.60	60.0
132 200	2.50	1.30	0.10	-	2.11	430.0	1,042.0 *	3.25	57.0
132 210	3.00	1.30	0.10	-	2.61	486.0	1,154.0 *	3.90	48.0
132 220	3.50	1.30	0.10	-	3.11	570.0	1,322.0 *	4.55	44.0
132 260	4.00	1.30	0.10	-	3.61	660.0	1,502.0 *	5.20	40.0
132 261	4.50	1.30	0.10	-	4.11	730.0	1,642.0 *	5.85	31.8

Other sizes or custom-made products on request.

* With spindle 98 × 700

Shoring widths for spindle 98 × 550

Art. no. extension bar	l [m]	b_c [m]	b [m]
138 280 (spindle 98 × 550)	w/o	0.81–1.01	1.02–1.22
139 430	0.30	1.11–1.31	1.32–1.52
139 445	0.50	1.31–1.51	1.52–1.72
139 385	1.00	1.81–2.01	2.02–2.22
139 400	1.50	2.31–2.51	2.52–2.72
139 420	2.00	2.81–3.01	3.02–3.22
139 425	2.50	3.31–3.51	3.52–3.72

Shoring widths for spindle 98 × 700

Art. no. extension bar	l [m]	b_c [m]	b [m]
138 290 (spindle 98 × 700)	w/o	0.99–1.33	1.20–1.54
139 430	0.30	1.29–1.63	1.50–1.84
139 445	0.50	1.49–1.83	1.70–2.04
139 385	1.00	1.99–2.33	2.20–2.54
139 400	1.50	2.49–2.83	2.70–3.04
139 420	2.00	2.99–3.33	3.20–3.54
139 425	2.50	3.49–3.83	3.70–4.04

Shoring widths for spindle 98 × 817

Extension bars	l [m]	b_c [m]	b [m]
0	0.00	0.91–1.31	1.12–1.52
1	0.50	1.41–1.81	1.62–2.02
2	1.00	1.91–2.31	2.12–2.52
3	1.50	2.41–2.81	2.62–3.02
4	2.00	2.91–3.31	3.12–3.52
5	2.50	3.41–3.81	3.62–4.02
6	3.00	3.91–4.31	4.12–4.52
7	3.50	4.41–4.81	4.62–5.02

Depending on the shoring strut, up to 7 extension bars of 500 mm each may be used.

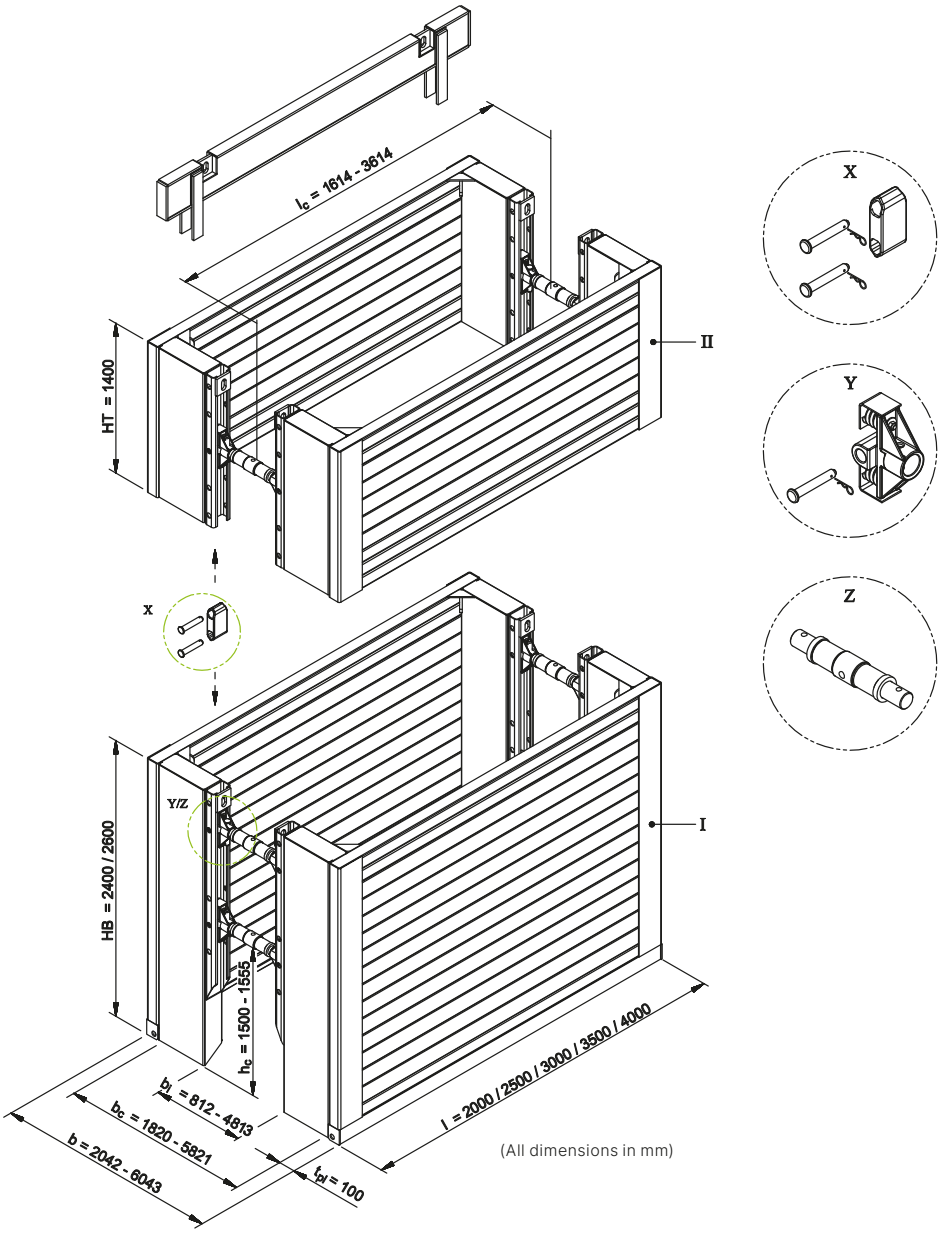
l	Length	t_{pl}	Panel thickness
l_c	Pipe culvert length	A	Surface
b	Trench width	G	Weight
b_c	Clear width	G / VP	Weight / shoring panel
h	Height	G / Box	Weight / shoring box
h_c	Pipe culvert height	e_h	Admissible soil pressure

Accessories and spare parts, see p. 41–43

KRINGS KS 100 Manhole

General data

Shoring length	2.00 m–4.00 m
Base unit height	2.40 m / 2.60 m
Top unit height	1.40 m
Pipe culvert height	1.50 m / 1.56 m
Base box weight	1,814 kg–2,960 kg
Shoring width	variable
Rec.: mobile or crawler excavator	18–30 t



(All dimensions in mm)

I	Base unit	l	Length	b_i	Clear passage width	X	Connector with bolts
II	Top unit	l_c	Pipe culvert length	h_c	Pipe culvert height	Y	Spring socket with bolts
HB	Base unit height	b	Shoring/trench width	t_{pl}	Panel thickness	Z	Spindle 98 × ...
HT	Top unit height	b_c	Clear width				

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
135 118	2.00	2.40	0.10	1.50	1.61	767.0	1,814.0 *	4.80	60.0
135 099	2.50	2.40	0.10	1.50	2.11	860.0	2,000.0 *	6.00	57.0
135 109	3.00	2.40	0.10	1.50	2.61	961.0	2,202.0 *	7.20	48.0
135 120	3.50	2.40	0.10	1.50	3.11	1,060.0	2,400.0 *	8.40	44.0
135 121	4.00	2.40	0.10	1.50	3.61	1,225.0	2,730.0 *	9.60	40.0
135 095	2.00	2.60	0.10	1.56	1.61	840.0	1,960.0 *	5.20	55.0
135 100	2.50	2.60	0.10	1.56	2.11	950.0	2,180.0 *	6.50	52.0
135 110	3.00	2.60	0.10	1.56	2.61	1,041.0	2,362.0 *	7.80	44.0
135 130	3.50	2.60	0.10	1.56	3.11	1,160.0	2,600.0 *	9.10	44.0
135 140	4.00	2.60	0.10	1.56	3.61	1,340.0	2,960.0 *	10.40	40.0

Other sizes or custom-made products on request. * With spindle 98 × 700

Top units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
135 239	2.00	1.40	0.10	-	1.61	590.0	1,362.0 *	2.80	60.0
135 240	2.50	1.40	0.10	-	2.11	655.0	1,492.0 *	3.50	61.6
135 250	3.00	1.40	0.10	-	2.61	720.0	1,622.0 *	4.20	51.3
135 260	3.50	1.40	0.10	-	3.11	831.0	1,844.0 *	4.90	44.1
135 270	4.00	1.40	0.10	-	3.61	940.0	2,062.0 *	5.60	33.0

Other sizes or custom-made products on request. * With spindle 98 × 700

Shoring widths for spindle 98 × 550

Art. no. extension bar	l [m]	b_i [m]	b_c [m]	b [m]
138 280 (spindle 98 × 550)	w/o	0.81–1.01	1.82–2.02	2.04–2.24
139 430	0.30	1.11–1.31	2.12–2.32	2.34–2.54
139 445	0.50	1.31–1.51	2.32–2.52	2.54–2.74
139 385	1.00	1.81–2.01	2.82–3.02	3.04–3.24
139 400	1.50	2.31–2.51	3.32–3.52	3.54–3.74
139 420	2.00	2.81–3.01	3.82–4.02	4.04–4.24
139 425	2.50	3.31–3.51	4.32–4.52	4.54–4.74

Shoring widths for spindle 98 × 700

Art. no. extension bar	l [m]	b_i [m]	b_c [m]	b [m]
138 290 (spindle 98 × 700)	w/o	0.99–1.33	2.00–2.34	2.22–2.56
139 430	0.30	1.29–1.63	2.30–2.64	2.52–2.86
139 445	0.50	1.49–1.83	2.50–2.84	2.72–3.06
139 385	1.00	1.99–2.33	3.00–3.34	3.22–3.56
139 400	1.50	2.49–2.83	3.50–3.84	3.72–4.06
139 420	2.00	2.99–3.33	4.00–4.34	4.22–4.56
139 425	2.50	3.49–3.83	4.50–4.84	4.72–5.06

Shoring widths for spindle 98 × 817

Extension bars	l [m]	b_i [m]	b_c [m]	b [m]
0	0.00	0.91–1.31	1.92–2.32	2.14–2.54
1	0.50	1.41–1.81	2.42–2.82	2.64–3.04
2	1.00	1.91–2.31	2.92–3.32	3.14–3.54
3	1.50	2.41–2.81	3.42–3.82	3.64–4.04
4	2.00	2.91–3.31	3.92–4.32	4.14–4.54
5	2.50	3.41–3.81	4.42–4.82	4.64–5.04
6	3.00	3.91–4.31	4.92–5.32	5.14–5.54
7	3.50	4.41–4.81	5.42–5.82	5.64–6.04

Depending on the shoring strut, up to 7 extension bars of 500 mm each may be used.

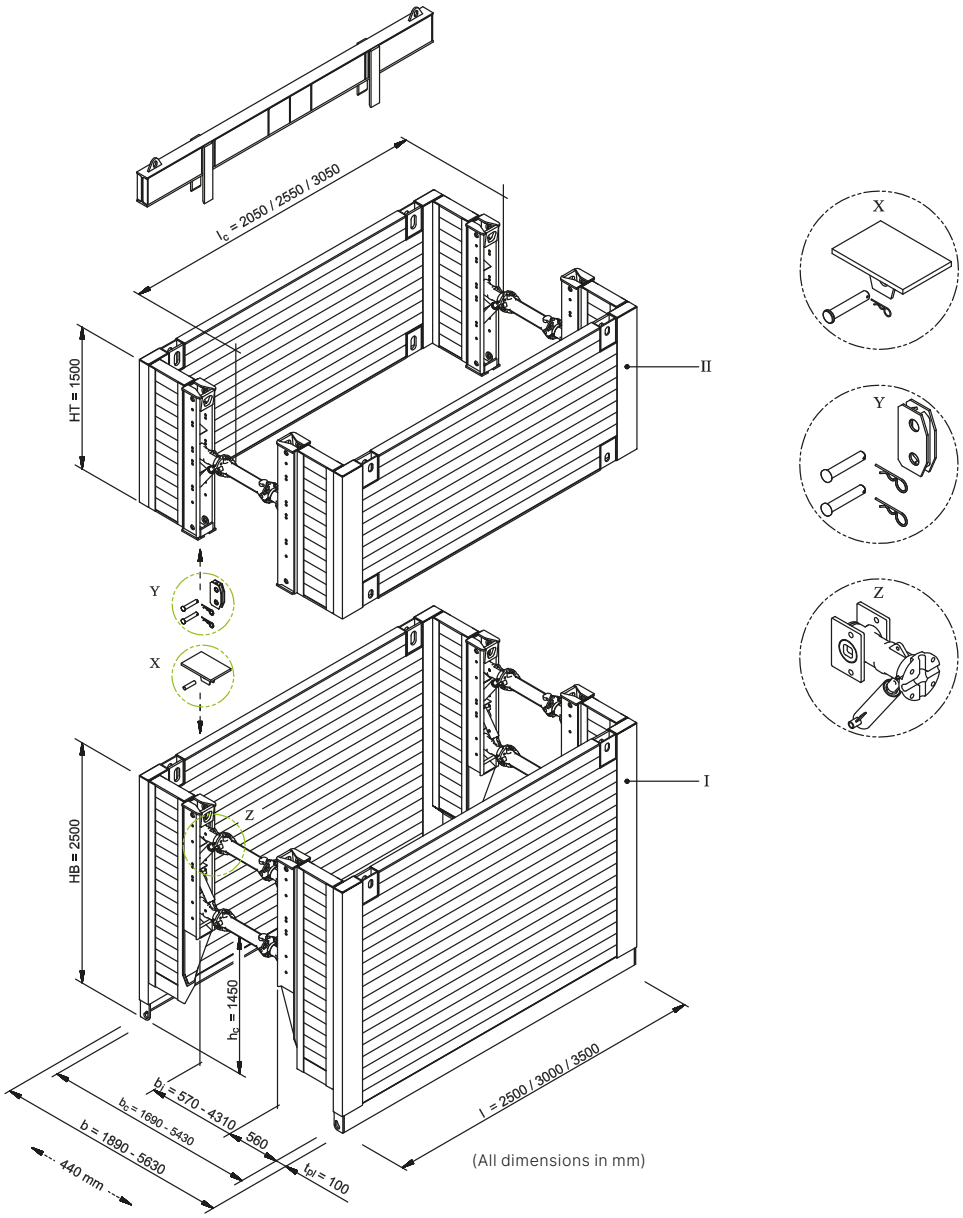
l	Length	h_c	Pipe culvert height
l_c	Pipe culvert length	t_{pl}	Panel thickness
b	Trench width	A	Surface
b_i	Clear passage width	G / VP	Weight / shoring panel
b_c	Clear width	G / Box	Weight / shoring box
h	Panel height	e_h	Admissible soil pressure

Accessories and spare parts, see p. 41–43

E+S Manhole

General data

Shoring length	2.50 m–3.50 m
Base unit height	2.50 m
Top unit height	1.50 m
Pipe culvert height	1.45 m
Base box weight	2,260 kg–2,710 kg
Shoring width	variable
Rec.: mobile or crawler excavator	18–30 t



I	Base unit	l	Length	b_i	Clear passage width	Y	Connector with bolts
II	Top unit	l_c	Pipe culvert length	h_c	Pipe culvert height	Z	Strut with bearing plate and shock absorber
HB	Base unit height	b	Shoring/trench width	t_{pl}	Panel thickness		
HT	Top unit height	b_c	Clear width	X	Pressure plate with bolts		

Base units (height 2.50 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
828 005	2.50	0.10	1.45	2.05	1,130.0	2,260.0	6.25	81.8
828 015	3.00	0.10	1.45	2.55	1,275.0	2,550.0	7.50	67.4
828 025	3.50	0.10	1.45	3.05	1,355.0	2,710.0	8.75	47.7

Top units (height 1.50 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
829 005	2.50	0.10	-	2.05	944.0	1,888.0	3.75	90.9
829 015	3.00	0.10	-	2.55	1,015.0	2,030.0	4.50	67.4
829 025	3.50	0.10	-	3.05	1,090.0	2,180.0	5.25	47.7

Extension bars

Art. no.	Short description	l [m]	G [kg]
850 091	Cast extension bar	0.250	11.2
850 100	Cast extension bar	0.550	18.7
850 112	HEB 180 extension bar	0.275	28.0
850 110	HEB 180 extension bar	0.550	43.0
850 124	HEB 180 extension bar	1.100	70.0
850 132	HEB 180 extension bar	1.650	100.0
850 135	HEB 180 extension bar	2.200	130.0

Shoring widths (for cast pipe extension bars, l = 0.55 m)

Extension bars	l [m]	b_i [m]	b_c [m]	b [m]
0	0.00	0.57–1.01	1.69–2.13	1.89–2.33
1	0.55	1.12–1.56	2.24–2.68	2.44–2.88
2	1.10	1.67–2.11	2.79–3.23	2.99–3.43
3	1.65	2.22–2.66	3.34–3.78	3.54–3.98
4	2.20	2.77–3.21	3.89–4.33	4.09–4.53
5	2.75	3.32–3.76	4.44–4.88	4.64–5.08
max. 6	3.30	3.87–4.31	4.99–5.43	5.19–5.63

Dimensions “from–to” depending on spindle stroke. Other trench widths possible by combination of the two different intermediate trench lengths l = 0.25 m and l = 0.55 m.

Shoring widths (for HEB 180 extension bars)

Extension bar length [m]	b_i [m]	b_c [m]	b [m]
0.000	0.57–1.01	1.69–2.13	1.89–2.33
0.275	0.85–1.29	1.97–2.45	2.17–2.61
0.550	1.12–1.56	2.24–2.68	2.44–2.88
1.100	1.67–2.11	2.79–3.23	2.99–3.43
1.650	2.22–2.66	3.34–3.78	3.54–3.98
2.200	2.77–3.21	3.89–4.33	4.90–4.53
2.200 + 1.100	3.87–4.31	4.99–5.43	5.19–5.63

Dimensions “from–to” depending on spindle stroke. Other trench widths possible by combination of different extension bar lengths.

l	Length	b_c	Clear width	t_{pl}	Panel thickness	G / VP	Weight / shoring panel
l_c	Pipe culvert length	b_i	Clear passage width	A	Surface	G / Box	Weight / shoring box
b	Trench width	h_c	Pipe culvert height	G	Weight	e_h	Admissible soil pressure

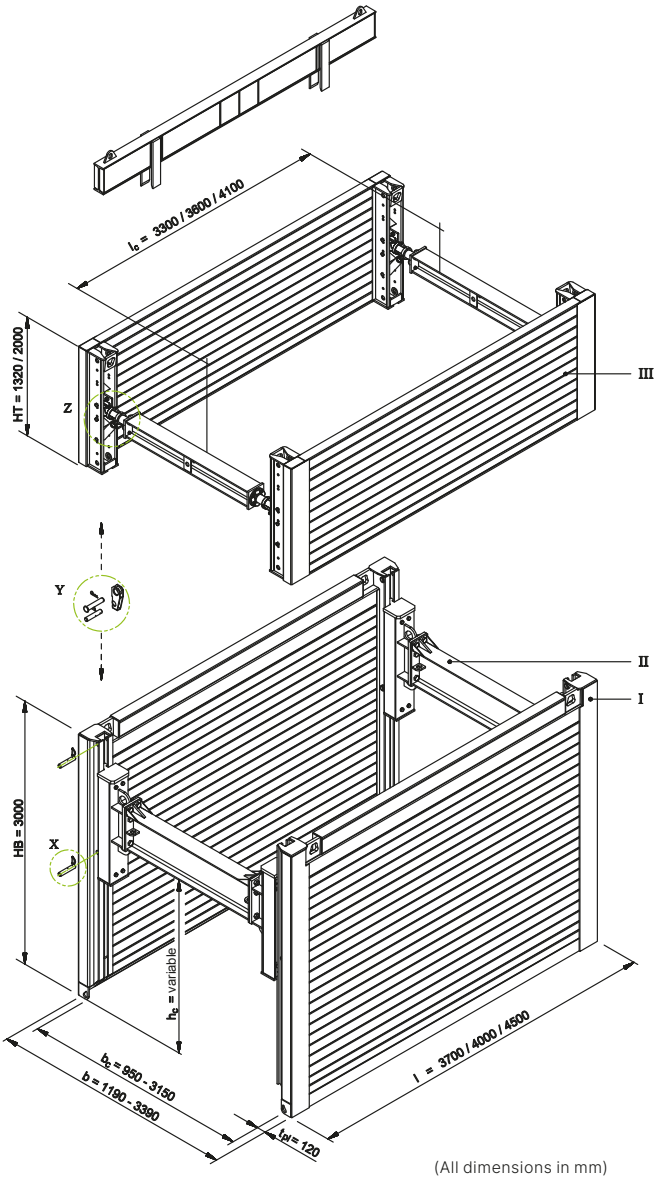
Other sizes or custom-made products on request.

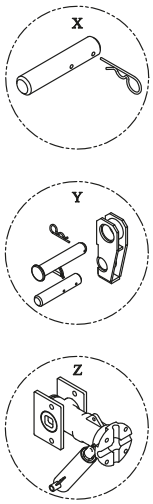
Accessories and spare parts, see p. 41–43

E+S Linear box

General data

Shoring length	3.70 m–4.50 m
Base unit height	3.00 m
Top unit height	1.32 m / 2.00 m
Pipe culvert height	variable
Base box weight	4,001 kg–4,525 kg
Shoring width	variable
Rec.: mobile or crawler excavator	18–30 t





(All dimensions in mm)

I	Base unit	HT	Top unit height	b_c	Clear width	Y	Connector with bolts
II	Linear box strut cart (base unit)	l	Length	h_c	Pipe culvert height	Z	Strut with bearing plate and shock absorber
III	Top unit, see Magnum/Medium	l_c	Pipe culvert length	t_{pl}	Panel thickness		
HB	Base unit height	b	Shoring/trench width	X	Positioning bolt		

Strut cart

Art. no.	Short description	l [m]	G [kg]
832 232	Linear box U-type strut cart, (base unit)	1.20	217.0

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 340	3.70	3.00	0.12	variable	3.30	1,553.0	4,001.0	11.1	66.0
802 337	4.00	3.00	0.12	variable	3.60	1,643.0	4,181.0	12.0	56.0
802 386	4.50	3.00	0.12	variable	4.10	1,815.0	4,525.0	13.5	44.0

Top units with struts

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
800 800	3.70	1.32	0.10	-	3.25	692.0	1,384.0	4.88	42.1
800 900	4.00	1.32	0.10	-	3.55	775.0	1,550.0	5.28	43.8
800 950	4.50	1.32	0.10	-	4.05	820.0	1,640.0	5.94	34.2
802 750	3.70	2.00	0.10	-	3.25	990.0	1,980.0	7.40	42.1
802 751	4.00	2.00	0.10	-	3.55	1,085.0	2,170.0	8.00	43.8
800 951	4.50	2.00	0.10	-	4.05	1,192.0	2,384.0	9.00	34.2

Extension bars

Art. no.	Short description	l [m]	G [kg]
831 028	IPE 400 extension bar	0.140	42.0
831 029	IPE 400 extension bar	0.200	49.0
831 030	IPE 400 extension bar	0.275	57.0
831 040	IPE 400 extension bar	0.550	75.0
831 050	IPE 400 extension bar	1.100	115.0
831 060	IPE 400 extension bar	1.650	155.0
831 070	IPE 400 extension bar	2.200	195.0

Shoring widths (for IPE 400 extension bars)

Extension bar length [m]	b_c [m]	b [m]
0.000	0.95	1.15
0.140	1.09	1.29
0.200	1.15	1.58
0.275	1.23	1.43
0.550	1.50	1.70
1.100	2.05	2.25
1.650	2.60	2.80
2.200	3.15	3.35

Other trench widths possible by combination of different extension bar lengths.

l	Length	b_c	Clear width	t_{pl}	Panel thickness	G / Box	Weight / shoring box
l_c	Pipe culvert length	h	Panel height	A	Surface	e_h	Admissible soil pressure
b	Trench width	h_c	Pipe culvert height	G / VP	Weight / shoring panel		

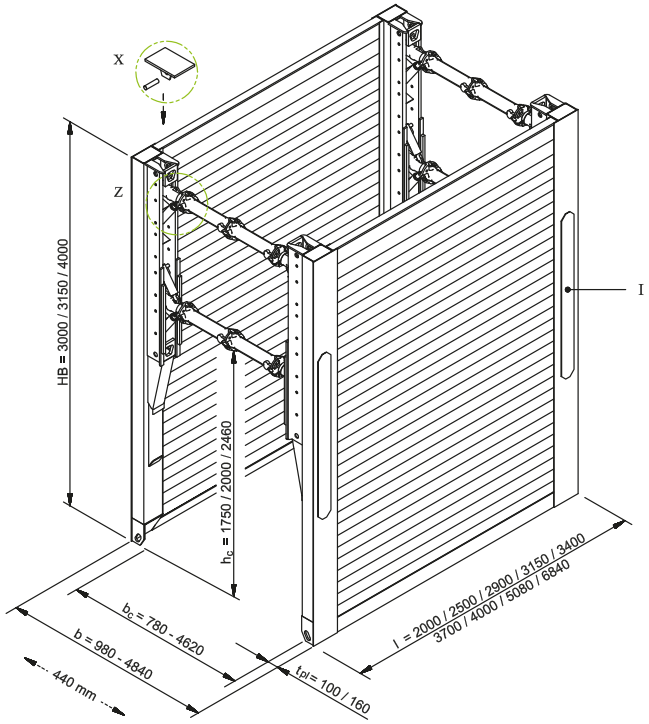
Other sizes or custom-made products on request.

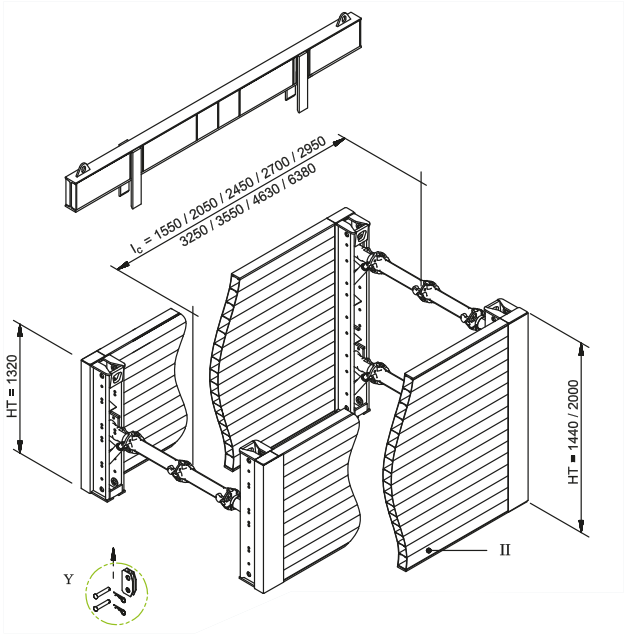
Accessories and spare parts, see p. 41–43

E+S Magnum shoring

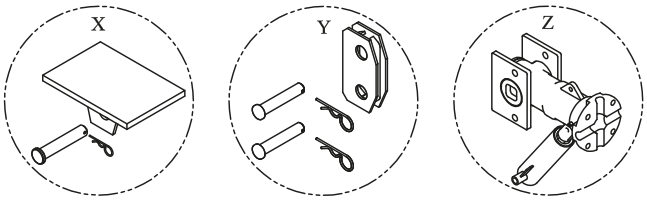
General data

Shoring length	2.00 m–6.84 m
Base unit height	3.00 m / 3.15 m / 4.00 m
Top unit height	1.32 m / 1.44 m / 2.00 m
Pipe culvert height	1.75 m / 2.01 m / 2.46 m
Base box weight	1,760 kg–7,130 kg
Shoring width	variable
Rec.: mobile or crawler excavator	18–30 t





(All dimensions in mm)



I	Base unit	l	Length	h_c	Pipe culvert height	Z	Strut with bearing plate and shock absorber
II	Top unit	l_c	Pipe culvert length	t_{pl}	Panel thickness		
HB	Base unit height	b	Shoring/trench width	X	Pressure plate with bolts		
HT	Top unit height	b_c	Clear width	Y	Connector with bolts		

Base units (height 3.00 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 035	2.00	0.10	2.01	1.55	880.0	1,760.0	6.00	69.5
802 042	2.50	0.10	2.01	2.05	990.0	1,980.0	7.50	55.7
802 045	2.90	0.10	2.01	2.45	1,080.0	2,160.0	8.70	48.0
802 120	3.40	0.10	2.01	2.95	1,185.0	2,370.0	10.20	41.0
802 205	3.70	0.10	2.01	3.25	1,255.0	2,510.0	11.10	37.7
802 285 A	4.00	0.10	2.01	3.55	1,410.0	2,820.0	12.00	35.8
802 400	5.08	0.12	2.01	4.63	1,868.0	3,736.0	15.24	28.6
802 450	6.84	0.16	1.75	6.38	3,465.0	6,930.0	20.52	25.8

Base units (height 3.15 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 036	2.00	0.10	2.01	1.55	930.0	1,860.0	6.00	73.1
802 040	2.50	0.10	2.01	2.05	1,042.0	2,084.0	7.50	58.5
802 050	2.90	0.10	2.01	2.45	1,138.0	2,276.0	8.70	50.4
802 175	3.40	0.10	2.01	2.95	1,260.0	2,520.0	10.20	43.0
802 210	3.70	0.10	2.01	3.25	1,428.0	2,856.0	11.10	39.5
802 300	4.00	0.10	2.01	3.55	1,579.0	3,158.0	12.00	36.6
802 425	5.08	0.12	2.01	4.63	1,918.0	3,836.0	15.24	28.6
802 460	6.84	0.16	1.75	6.38	3,565.0	7,130.0	21.55	25.8

Base units (height 4.00 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 100	3.15	0.08	2.46	2.70	1,405.0	2,810.0	12.60	45.0
802 197 A	3.40	0.09	2.46	2.95	1,740.0	3,480.0	13.60	39.0

Top units (height 1.32 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
800 550	2.00	0.10	-	1.55	463.0	926.0	2.64	165.0
800 600	2.50	0.10	-	2.05	531.0	1,062.0	3.30	99.3
800 650	2.90	0.10	-	2.45	578.0	1,156.0	3.83	71.5
802 560	3.15	0.08	-	2.70	670.0	1,340.0	4.16	58.5
800 700	3.40	0.10	-	2.95	658.0	1,316.0	4.49	50.5
800 800	3.70	0.10	-	3.25	692.0	1,384.0	4.88	42.1
800 900	4.00	0.10	-	3.55	775.0	1,550.0	5.28	43.8
802 814	5.08	0.12	-	4.63	1,118.0	2,236.0	6.71	28.6

Top units (height 1.44 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 815	6.84	0.16	-	6.38	1,505.0	3,010.0	9.85	25.8

l	Length	b_c	Clear width	A	Surface	G / Box	Weight / shoring box
l_c	Pipe culvert length	h_c	Pipe culvert height	G / VP	Weight / shoring panel	e_h	Admissible soil pressure
b	Trench width	t_{pl}	Panel thickness				

Other sizes or custom-made products on request.

Accessories and spare parts, see p. 41–43

Top units (height 2.00 m)

Art. no.	l [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 680	2.00	0.10	-	1.55	697.0	1,394.0	4.00	165.0
802 690	2.50	0.10	-	2.05	785.0	1,570.0	5.00	99.3
802 550	2.90	0.10	-	2.45	840.0	1,680.0	5.80	71.5
802 600	3.15	0.08	-	2.70	860.0	1,720.0	6.30	58.5
802 700	3.40	0.10	-	2.95	930.0	1,860.0	6.80	50.5
802 750	3.70	0.10	-	3.25	990.0	1,980.0	7.40	42.1
802 751	4.00	0.10	-	3.55	1,085.0	2,170.0	8.00	43.8

Extension bars

Art. no.	Short description	l [m]	G [kg]
850 091	Cast extension bar	0.250	11.2
850 100	Cast extension bar	0.550	18.7
850 112	HEB 180 extension bar	0.275	28.0
850 110	HEB 180 extension bar	0.550	43.0
850 124	HEB 180 extension bar	1.100	70.0
850 132	HEB 180 extension bar	1.650	100.0
850 135	HEB 180 extension bar	2.200	130.0

Shoring widths (for cast pipe extension bars, l = 0.55 m)

		for base unit h = 3.15 m				for base unit h = 4.00 m		
			l = 4.00 m	l = 5.08 m	l = 6.84 m		l = 3.15 m	l = 3.40 m
Extension bars	l [m]	b_c [m]	b [m]	b [m]	b [m]	b_c [m]	b [m]	b [m]
0	0.00	0.78–1.22	0.98–1.42	1.02–1.46	1.10–1.54	0.88–1.32	1.04–1.48	1.08–1.52
1	0.55	1.33–1.77	1.53–1.97	1.57–2.01	1.65–2.09	1.43–1.87	1.59–2.03	1.63–2.07
2	1.10	1.88–2.32	2.08–2.52	2.12–2.56	2.20–2.64	1.98–2.42	2.14–2.58	2.18–2.62
3	1.65	2.43–2.87	2.63–3.07	2.67–3.11	2.75–3.19	2.53–2.97	2.69–3.13	2.73–3.17
4	2.20	2.98–3.42	3.18–3.62	3.22–3.66	3.30–3.74	3.08–3.52	3.24–3.68	3.28–3.72
5	2.75	3.53–3.97	3.73–4.17	3.77–4.21	3.85–4.29	3.63–4.07	3.79–4.23	3.83–4.27
max. 6	3.30	4.08–4.52	4.28–4.72	4.32–4.76	4.40–4.84	4.18–4.62	4.34–4.78	4.38–4.82

Dimensions “from–to” depending on spindle stroke. Other trench widths possible by combination of the two different intermediate trench lengths l = 0.25 m and l = 0.55 m.

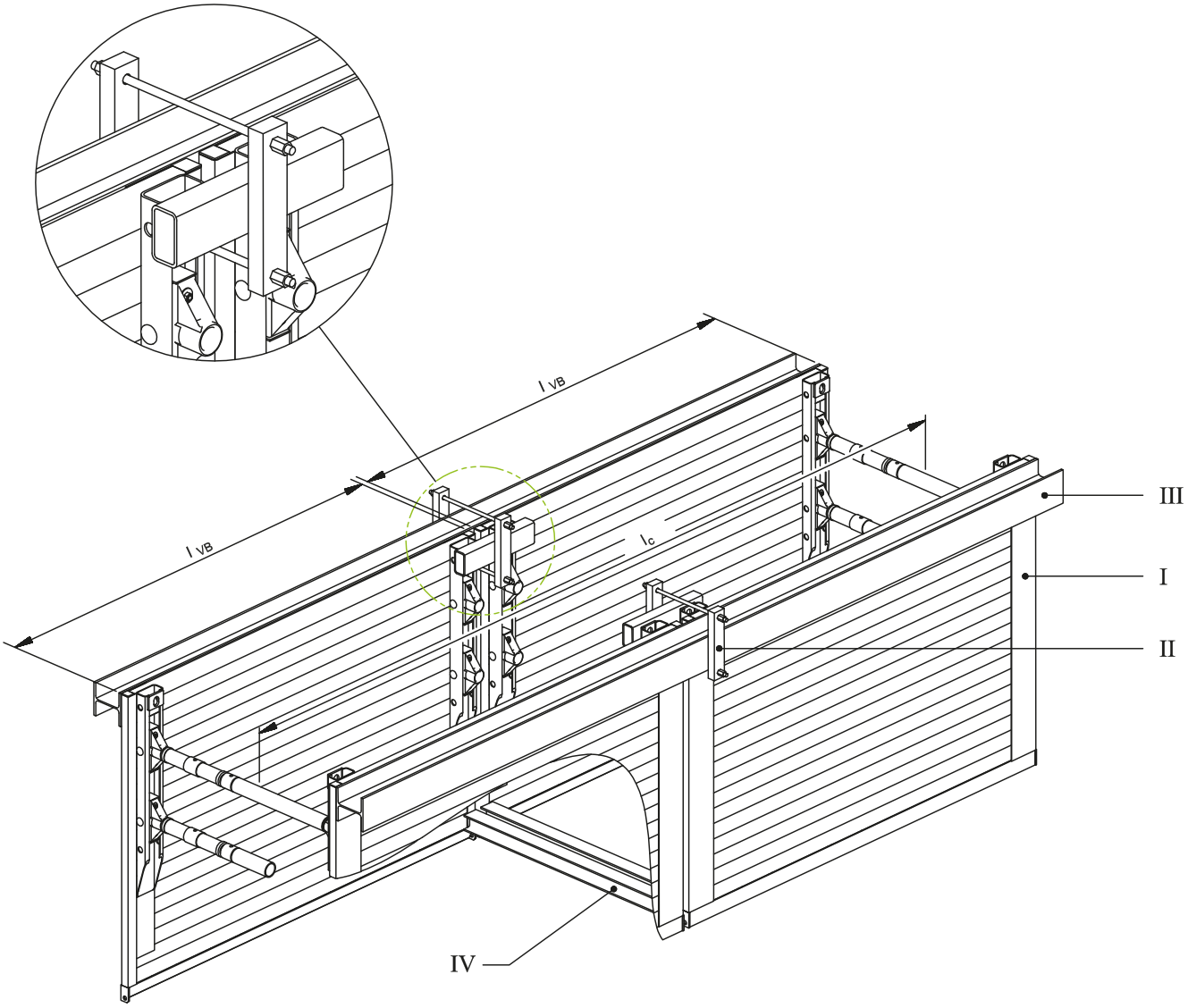
Shoring widths (for HEB 180 extension bars)

	for base unit h = 3.15 m				for base unit h = 4.00 m		
		l = 4.00 m	l = 5.08 m	l = 6.84 m		l = 3.15 m	l = 3.40 m
Extension bar length [m]	b_c [m]	b [m]	b [m]	b [m]	b_c [m]	b [m]	b [m]
0.000	0.78–1.22	0.98–1.42	1.02–1.46	1.10–1.54	0.88–1.32	1.04–1.48	1.08–1.52
0.275	1.06–1.50	1.26–1.70	1.30–1.74	1.38–1.82	1.16–1.60	1.32–1.76	1.36–1.80
0.550	1.33–1.77	1.53–1.97	1.57–2.01	1.65–2.09	1.43–1.87	1.59–2.03	1.63–2.07
1.100	1.88–2.32	2.08–2.52	2.12–2.56	2.20–2.64	1.98–2.42	2.14–2.58	2.18–2.62
1.650	2.43–2.87	2.63–3.07	2.67–3.11	2.75–3.19	2.53–2.97	2.69–3.13	2.73–3.17
2.200	2.98–3.42	3.18–3.62	3.22–3.66	3.30–3.74	3.08–3.52	3.24–3.68	3.28–3.72
2.200 + 1.100	4.08–4.52	4.28–4.72	4.32–4.76	4.40–4.84	4.18–4.62	4.34–4.78	4.38–4.82

Dimensions “from–to” depending on spindle stroke. Other trench widths possible by combination of different extension bar lengths.

l	Length	b_c	Clear width	A	Surface	G / Box	Weight / shoring box
l_c	Pipe culvert length	h_c	Pipe culvert height	G	Weight	e_h	Admissible soil pressure
b	Trench width	t_{pl}	Panel thickness	G / VP	Weight / shoring panel		

Box installation window



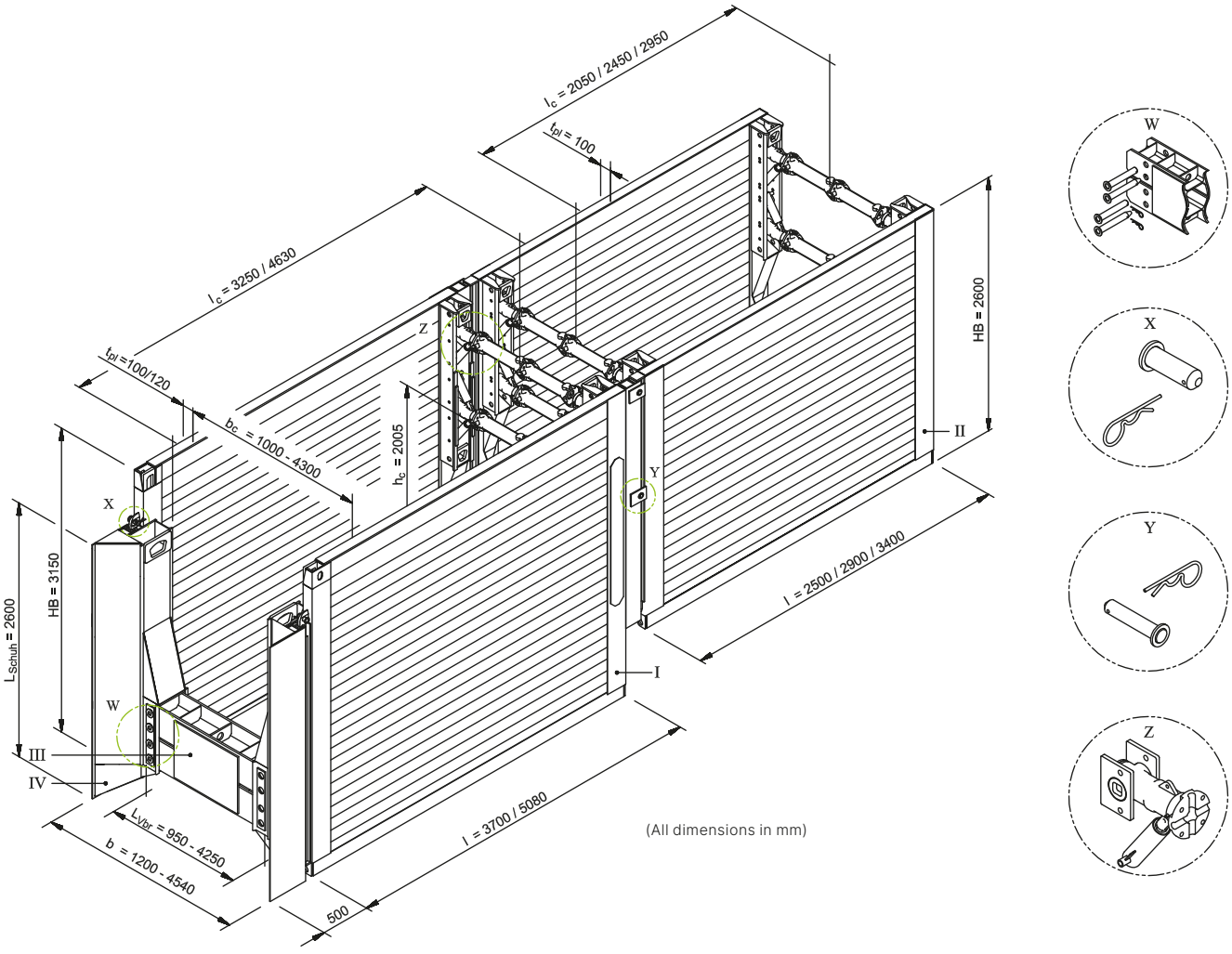
I	Shoring box	III	Waler soldier	l_{VB}	Box length
II	GEWI box waler soldier attachment	IV	Bottom end support	l_c	Pipe culvert length

Accessories and spare parts, see p. 41–43

E+S Dragbox

General data

Shoring length	3.70 m–5.08 m
Base unit height	3.00 m / 3.15 m
Pipe culvert height	1.88 m / 2.00 m
Base box weight	3,140 kg–4,170 kg
Shoring width	variable
Rec.: crawler excavator	30–50 t



(All dimensions in mm)

I	Dragbox base unit	L_{Vbr}	Connection bar length	b_c	Clear width	Y	Drag plate positioning bolt
II	Drag plate	L_{Schuh}	Cutting blade length	h_c	Pipe culvert height	Z	Strut with bearing plate and shock absorber
III	Connection bar	l	Length	t_{pl}	Panel thickness		
IV	Cutting blade	l_c	Pipe culvert length	W	Connection bar positioning bolt		
HB	Base unit height	b	Shoring/trench width	X	Cutting blade positioning bolts		

Base units

Art. no.	l [m]	h [m]	t_{pl} [m]	h_c [m]	l_c [m]	G / VP [kg]	G / Box [kg]	A [m²]	e_h [kN/m²]
802 269	3.70	3.15	0.10	2.00	3.25	1,570.00	3,140.00	11.66	39.5
802 411	5.08	3.00	0.12	1.88	4.63	2,085.00	4,170.00	15.24	28.6

Cutting blades

Art. no.	Short description	l [m]	G [kg]
847 100	Right cutting blade	0.65	580.0
847 150	Left cutting blade	0.65	580.0

Connection bars

Art. no.	Short description	l [m]	G [kg]
847 200	Connection bar	0.95	295.0
847 210	Connection bar	1.50	500.0
847 220	Connection bar	2.05	715.0
847 230	Connection bar	2.60	920.0
847 240	Connection bar	3.15	1,125.0
847 250	Connection bar	3.70	1,330.0
847 260	Connection bar	4.25	1,530.0

Bolts

Art. no.	Short description	l [m]	G [kg]	d [m]
847 300	Bolt (blunt)	0.385	10.0	0.06
847 301	Bolt (inclined)	0.445	11.0	0.06

Extension bars

Art. no.	Short description	l [m]	G [kg]
850 091	Cast extension bar	0.250	11.2
850 100	Cast extension bar	0.550	18.7
850 112	HEB 180 extension bar	0.275	28.0
850 110	HEB 180 extension bar	0.550	43.0
850 124	HEB 180 extension bar	1.100	70.0
850 132	HEB 180 extension bar	1.650	100.0
850 135	HEB 180 extension bar	2.200	130.0

Shoring widths (for cast pipe extension bars, l = 0.55 m and HEB 180)

Extension bar length [m]	Connection bar length [m]	b_c [m]	for base unit t_{pl} = 0.10 m b [m]	for base unit t_{pl} = 0.12 m b [m]
0.00	0.95	1.00	1.20	1.24
0.55	1.50	1.55	1.75	1.79
1.10	2.05	2.10	2.30	2.34
1.65	2.60	2.65	2.85	2.89
2.20	3.15	3.20	3.40	3.44
2.20 + 0.55	3.70	3.75	3.95	3.99
2.20 + 1.10	4.25	4.30	4.50	4.54

l	Length	h	Panel height	G	Weight	d	Diameter
l_c	Pipe culvert length	h_c	Pipe culvert height	G / VP	Weight / shoring panel		
b	Trench width	t_{pl}	Panel thickness	G / Box	Weight / shoring box		
b_c	Clear width	A	Surface	e_h	Admissible soil pressure		

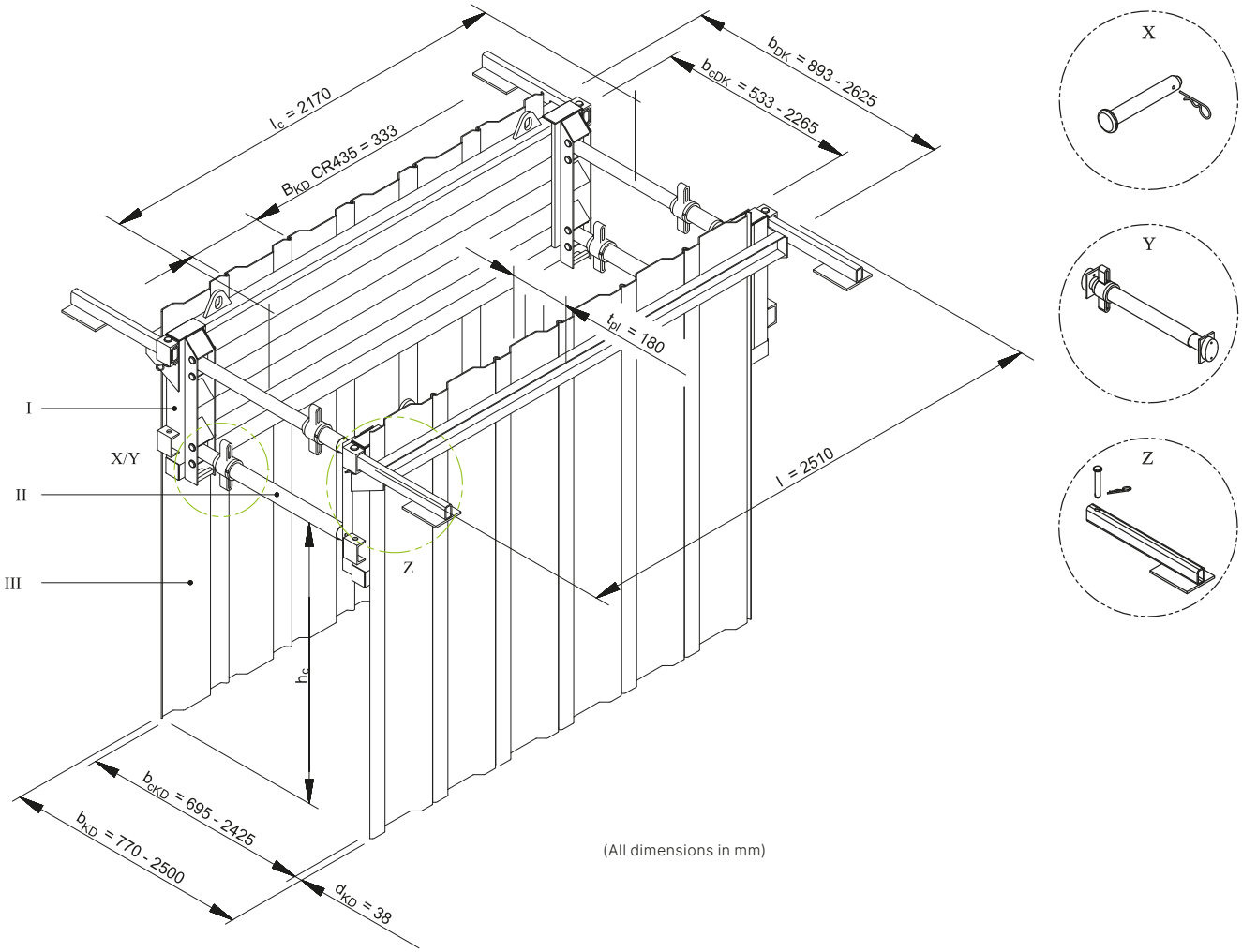
Other sizes or custom-made products on request.

Accessories and spare parts, see p. 41–43

KRINGS piling frame element BLU 2.41 m

General data

Shoring length	2.41 m
Piling frame element height	0.72 m
Pipe culvert length	2.17 m
Shoring depth	bis 2.40 m
Box weight	473 kg
Shoring width	variable
Rec.: mobile excavator	9–13 t



(All dimensions in mm)

I	BLU piling frame element	d_{KD}	Sheet pile thickness	h_c	Pipe culvert height	b_{DK}	Piling frame shoring width
II	Spindle 70 × ...	t_{pl}	Panel thickness	b_{cKD}	Sheet pile clear width	X	Positioning bolt
III	Sheet pile	l	Length	b_{KD}	Sheet pile shoring width	Y	KVL spindle
B_{KD}	Sheet pile width	l_c	Pipe culvert length	b_{cDK}	Piling frame clear width	Z	Support bracket with bolt

Piling frame element BLU (height 0.72 m)

Art. no.	Short description	l [m]	lc [m]	G / DKP [kg]	G / Box [kg]	KD / Box
842 703	Piling frame element BLU for sheet piles CR435	2.41	2.17	190.0	473.0 *	12
842 701	Piling frame element BLU for sheet piles KD IV	2.41	2.17	190.0	473.0 *	14

* With spindle 70 × 650

Spindle types

Art. no.	Short description	l [m]	G [kg]
118 060	Spindle 70 × 650	0.52–0.62	12.2
118 070	Spindle 70 × 740	0.61–0.80	13.4
118 090	Spindle 70 × 920	0.80–1.16	15.8
118 020	Spindle 70 × 1280	1.15–1.88	20.5
118 100	Spindle 70 × 1470	1.34–2.25	24.0

Shoring widths for CR435/KD IV piles

Art. no.	Short description	Lift [m]	bcKD [m]	bcDK [m]
118 060	Spindle 70 × 650	0.09	0.70–0.79	0.53–0.63
118 070	Spindle 70 × 740	0.18	0.78–0.97	0.62–0.81
118 090	Spindle 70 × 920	0.36	0.97–1.33	0.81–1.17
118 020	Spindle 70 × 1280	0.73	1.32–2.05	1.16–1.89
118 100	Spindle 70 × 1470	0.92	1.50–2.43	1.35–2.27

Shoring widths for CR435 piles	Shoring widths for KD IV piles
$b_{KD} = b_{cKD} + 0.08$ m	$b_{KD} = b_{cKD} + 0.10$ m
$b_{DK} = b_{cDK} + 0.36$ m	$b_{DK} = b_{cDK} + 0.38$ m

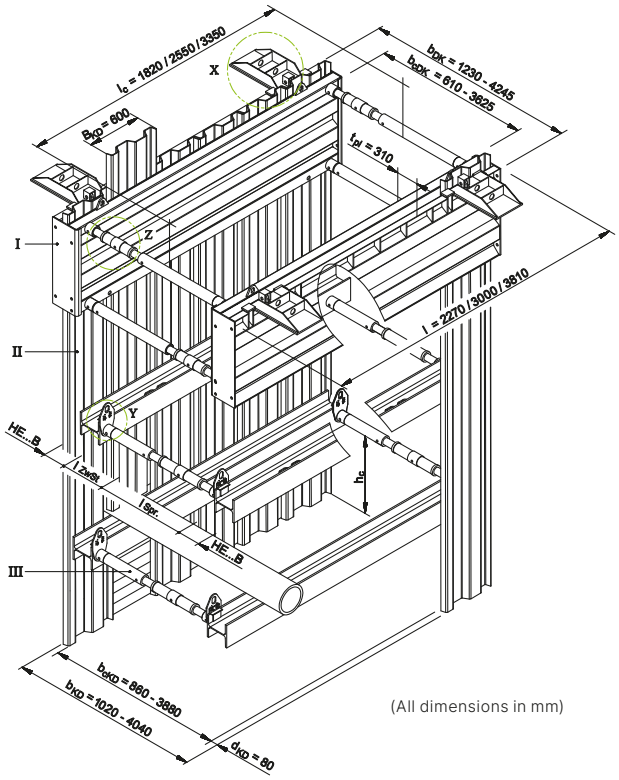
l	Length	G / Box	Weight / shoring box	b_{cKD}	Sheet pile clear width	b_{KD}	Sheet pile shoring width
l_c	Pipe culvert length	KD / Box	Sheet piles / shoring box	b_{cDK}	Piling frame clear width	b_{DK}	Piling frame shoring width
G / DKP	Weight / piling frame plate						

Accessories and spare parts, see p. 41–43

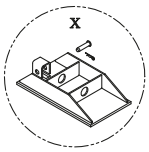
KRINGS piling frame element DKU 2.27 m / 3.00 m / 3.81 m

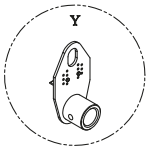
General data

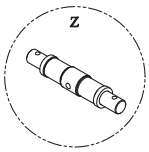
Shoring length	2.27 m / 3.00 m / 3.81 m
Piling frame element height	1.00 m
Pipe culvert length	1.82 m / 2.55 m / 3.35 m
Shoring depth	variable
Box weight	1,335 kg–1,885 kg
Shoring width	variable
Rec.: mobile or crawler excavator	12–18 t



(All dimensions in mm)

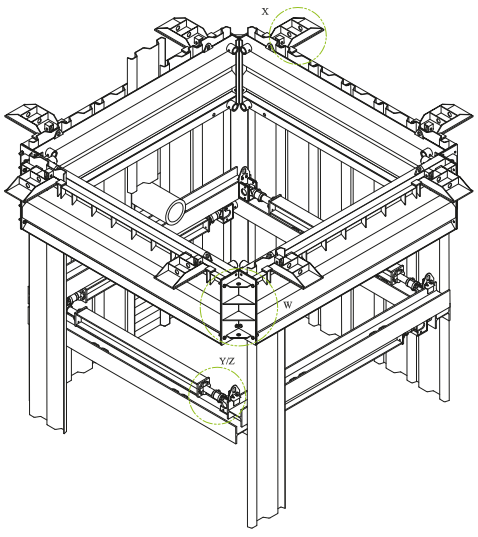


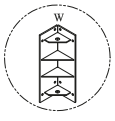


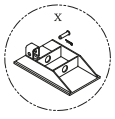


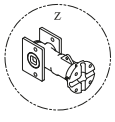
I	Piling frame element DKU
II	Sheet pile
III	Waler strut
B_{KD}	Sheet pile width
d_{KD}	Sheet pile thickness
t_{pl}	Panel thickness
l	Length
l_c	Pipe culvert length
h_c	Pipe culvert height
b_{cKD}	Sheet pile clear width
b_{KD}	Sheet pile shoring width
b_{cDK}	Piling frame clear width
b_{DK}	Piling frame shoring width
X	Support bracket
Y	Suspended bearing block
Z	Spindle 98 × ...

Example for additional technical solutions: Piling frame shoring with corner shoring adapter









All KRINGS DKUs can be flexibly combined with each other using corner shoring adapters.
Examples:
DKU corner shoring 2.27 m × 3.81 m or
DKU corner shoring 3.00 m × 4.55 m.

W	Corner adapter
X	Support bracket
Y	Suspended bearing block
Z	Strut with bearing plate

Piling frame element DKU (height 1.00 m)

Art. no.	Short description	l [m]	lc [m]	G / DKP [kg]	G / Box [kg]	KD / Box
842 671	Piling frame element DKU	2.27	1.82	510.0	1,335.0*	8
842 687	Piling frame element DKU	3.00	2.55	640.0	1,595.0*	10
842 674	Piling frame element DKU	3.81	3.35	785.0	1,885.0*	14

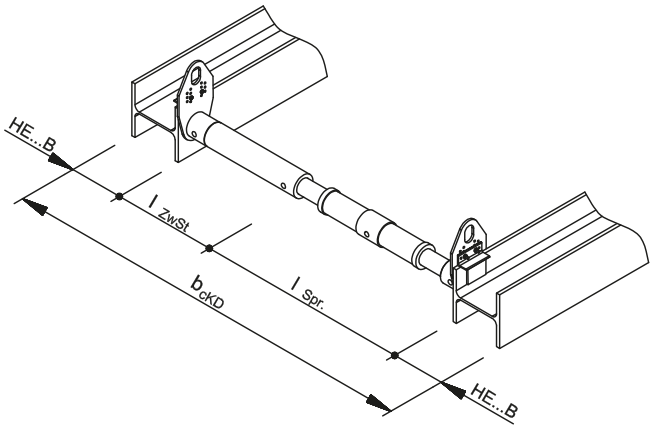
* With spindle 98 × 700

Shoring widths

		Spindle SP SB 98 × 550		Spindle SP SB 98 × 700	
Art. no. extension bar	l [m]	b_{cKD} [m]	b_{cDK} [m]	b_{cKD} [m]	b_{cDK} [m]
	0.00	0.86–1.06	0.61–0.81	1.04–1.38	0.79–1.13
139 430	0.30	1.16–1.36	0.91–1.11	1.34–1.68	1.09–1.43
139 445	0.50	1.36–1.56	1.11–1.31	1.54–1.88	1.29–1.63
139 385	1.00	1.86–2.06	1.61–1.81	2.04–2.38	1.79–2.13
139 400	1.50	2.36–2.56	2.11–2.31	2.54–2.88	2.29–2.63
139 420	2.00	2.86–3.06	2.61–2.81	3.04–3.38	2.79–3.13
139 425	2.50	3.36–3.56	3.11–3.31	3.54–3.88	3.29–3.63
		$b_{KD} = b_{cKD} + 0.16$ m	$b_{DK} = b_{cDK} + 0.62$ m	$b_{KD} = b_{cKD} + 0.16$ m	$b_{DK} = b_{cDK} + 0.62$ m

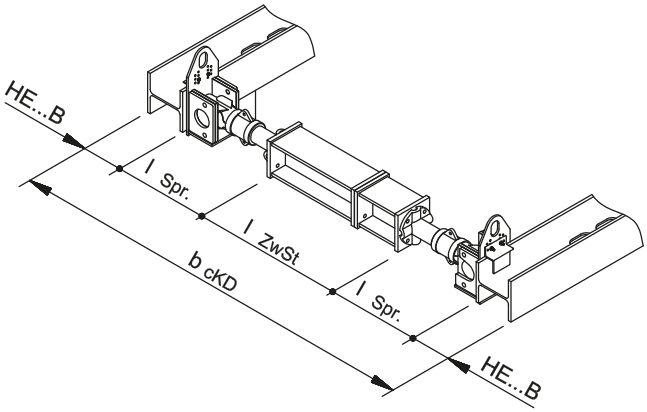
Waler struts

KRINGS Waler strut



$l_{Spr.}$ (SP SB 98 × 550) = 0.62 m – 0.82 m
$l_{Spr.}$ (SP SB 98 × 700) = 0.80 m – 1.14 m
$l_{ZwSt.} = b_{cKD} - 2 \times HE...B - l_{Spr.}$

E+S Waler strut



$l_{Spr.}$ = 0.42 m – 0.64 m
$l_{ZwSt.} = b_{cKD} - 2 \times HE...B - 2 \times l_{Spr.}$

Different trench widths possible by combination of different extension bar lengths.
For available extension bars, refer to accessories. (see p. 41–43)

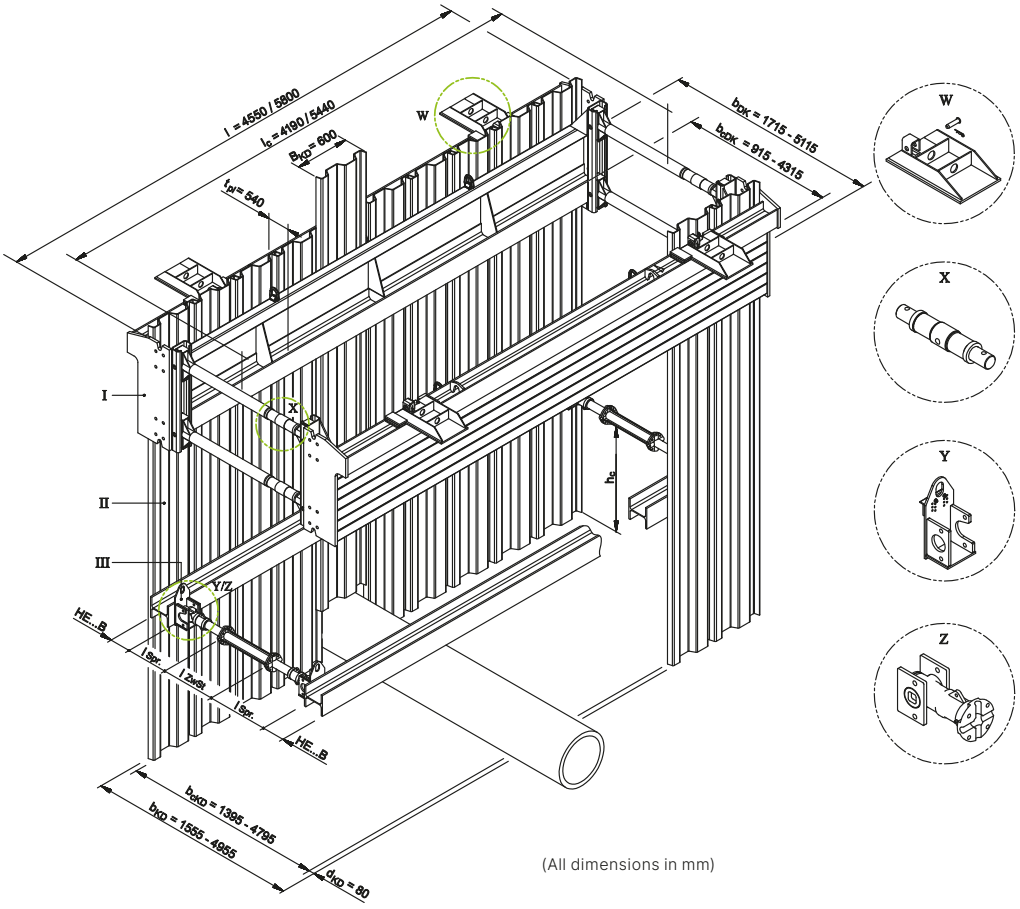
l	Length	$l_{ZwSt.}$	Extension bar length	KD / Box	Sheet piles / shoring box	b_{cDK}	Piling frame clear width
l_c	Pipe culvert length	G / DKP	Weight / piling frame plate	b_{cKD}	Sheet pile clear width	b_{DK}	Piling frame shoring width
$l_{Spr.}$	Strut length	G / Box	Weight / shoring box	b_{KD}	Sheet pile shoring width		

Accessories and spare parts, see p. 41–43

KRINGS piling frame element DKU 4.55 m / 5.80 m

General data

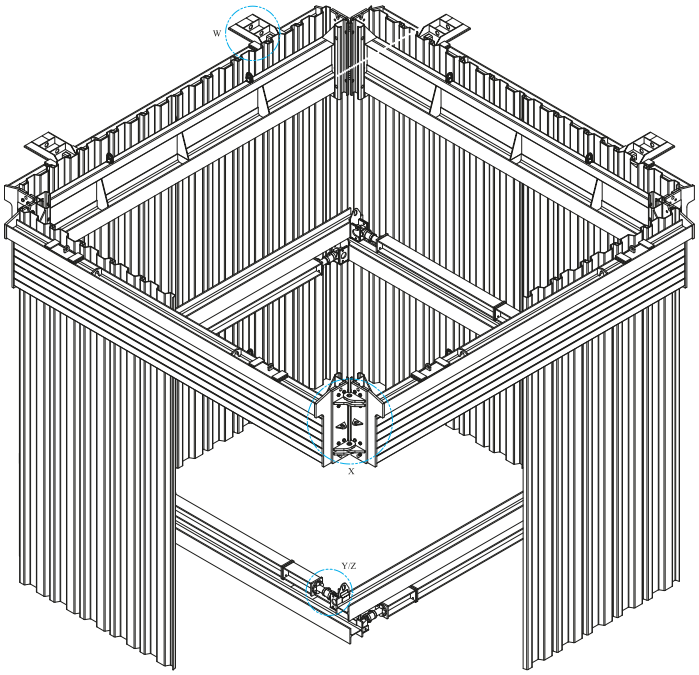
Shoring length	4.55 m / 5.80 m
Piling frame element height	1.10 m
Pipe culvert length	4.19 m / 5.44 m
Shoring depth	variable
Box weight	3,592 kg / 4,226 kg
Shoring width	variable
Rec.: mobile or crawler excavator	18–30 t

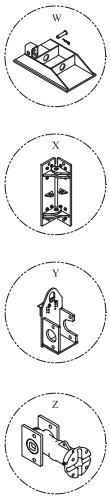


(All dimensions in mm)

I	Piling frame element DKU	d_{KD}	Sheet pile thickness	h_c	Pipe culvert height	b_{DK}	Piling frame shoring width	Z	Strut with bearing plate
II	Sheet pile	t_{pl}	Panel thickness	b_{cKD}	Sheet pile clear width	W	Support bracket		
III	Waler strut	l	Length	b_{KD}	Sheet pile shoring width	X	Spindle 98 × ...		
B_{KD}	Sheet pile width	l_c	Pipe culvert length	b_{cDK}	Piling frame clear width	Y	Suspended bearing block		

Example for additional technical solutions: Piling frame shoring with corner shoring adapter





All KRINGS DKUs can be flexibly combined with each other using corner shoring adapters.

Examples:
DKU corner shoring 2.27 m × 3.81 m or
DKU corner shoring 3.00 m × 4.55 m.

W	Support bracket
X	Corner adapter
Y	Suspended bearing block
Z	Strut with bearing plate

Piling frame elements DKU (height 1.10 m)

Art. no.	Short description	l [m]	l_c [m]	G / DKP [kg]	G / Box [kg]	KD / Box
842 696	Piling frame element DKU	4.55	4.19	1,563.0	3,592.0*	16
842 699	Piling frame element DKU	5.80	5.44	1,880.0	4,226.0*	20

* With spindle 98 × 817

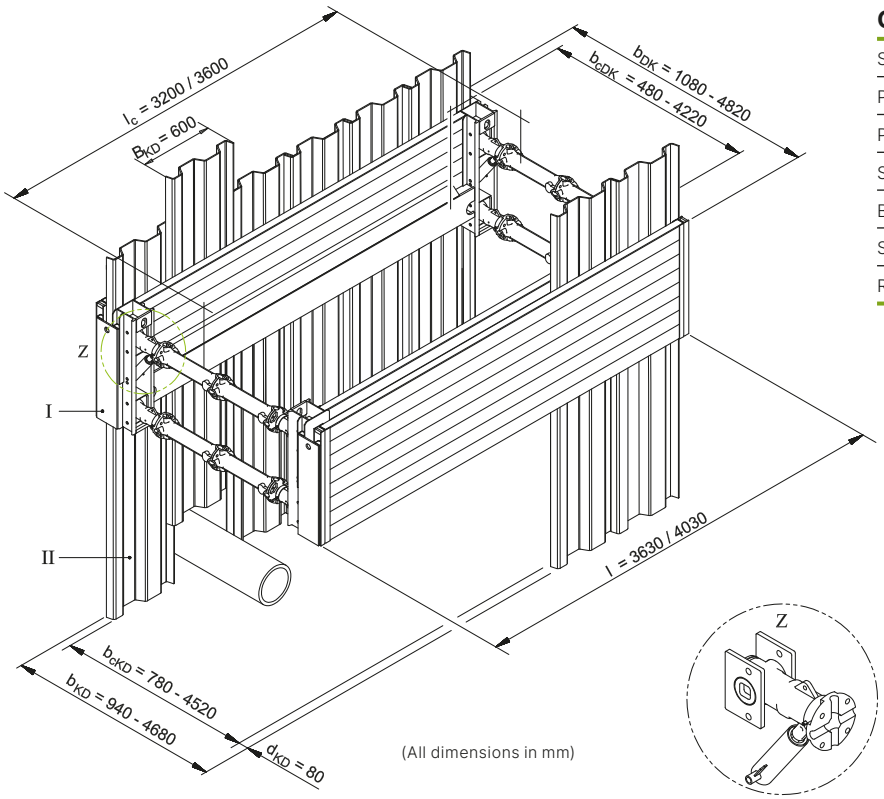
Shoring widths with spindle 98 × 817

Extension bars	l [m]	b_{cKD} [m]	b_{KD} [m]	b_{cDK} [m]	b_{DK} [m]
0	0.00	1.40–1.80	1.56–1.96	0.92–1.32	1.72–2.12
1	0.50	1.90–2.30	2.06–2.46	1.42–1.82	2.22–2.62
2	1.00	2.40–2.80	2.56–2.96	1.92–2.32	2.72–3.12
3	1.50	2.90–3.30	3.06–3.46	2.42–2.82	3.22–3.62
4	2.00	3.40–3.80	3.56–3.96	2.92–3.32	3.72–4.12
5	2.50	3.90–4.30	4.06–4.46	3.42–3.82	4.22–4.62
6	3.00	4.40–4.80	4.56–4.96	3.92–4.32	4.72–5.12

l	Length	G / DKP	Weight / piling frame plate	KD / Box	Sheet piles / shoring box	b_{KD}	Sheet pile shoring width	b_{DK}	Piling frame shoring width
l_c	Pipe culvert length	G / Box	Weight / shoring box	b_{cKD}	Sheet pile clear width	b_{cDK}	Piling frame clear width		

Accessories and spare parts, see p. 41–43

E+S piling frame element DKE 3.63 m / 4.03 m



General data

Shoring length	3.63 m / 4.03 m
Piling frame element height	1.00 m
Pipe culvert length	3.20 / 3.60 m
Shoring depth	variable
Box weight	1,884 kg / 1,980 kg
Shoring width	variable
Rec.: mobile or crawler excavator	12–18 t

I	Piling frame element DKE
II	Sheet pile
B_{KD}	Sheet pile width
d_{KD}	Sheet pile thickness
l	Length
l_c	Pipe culvert length
b_{cKD}	Sheet pile clear width
b_{KD}	Sheet pile shoring width
b_{cDK}	Piling frame clear width
b_{DK}	Piling frame shoring width
Z	Strut with bearing plate and shock absorber

Piling frame element DKE (height 1.00 m)

Art. no.	Short description	l [m]	l_c [m]	G / DKP [kg]	G / Box [kg]	KD / Box
842 540	Piling frame element DKE	3.63	3.20	942.0	1,884.0	12
842 580	Piling frame element DKE	4.03	3.60	990.0	1,980.0	14

Extension bars

Art. no.	Short description	l [m]	G [kg]
850 091	Cast extension bar	0.250	11.2
850 100	Cast extension bar	0.550	18.7
850 112	HEB 180 extension bar	0.275	28.0
850 110	HEB 180 extension bar	0.550	43.0
850 124	HEB 180 extension bar	1.100	70.0
850 132	HEB 180 extension bar	1.650	100.0
850 135	HEB 180 extension bar	2.200	130.0

Shoring widths (for extension bars l = 0.550 m)

Extension bars	b_{cKD} [m]	b_{KD} [m]	b_{cDK} [m]	b_{DK} [m]
0	0.78–1.22	0.94–1.38	0.48–0.92	1.08–1.52
1	1.33–1.77	1.49–1.93	1.03–1.47	1.67–2.11
2	1.88–2.32	2.04–2.48	1.58–2.02	2.22–2.66
3	2.43–2.87	2.59–3.03	2.13–2.57	2.77–3.21
4	2.98–3.42	3.14–3.58	2.68–3.12	3.32–3.76
5	3.53–3.97	3.69–4.13	3.23–3.67	3.87–4.31
6	4.08–4.52	4.24–4.68	3.78–4.22	4.42–4.82

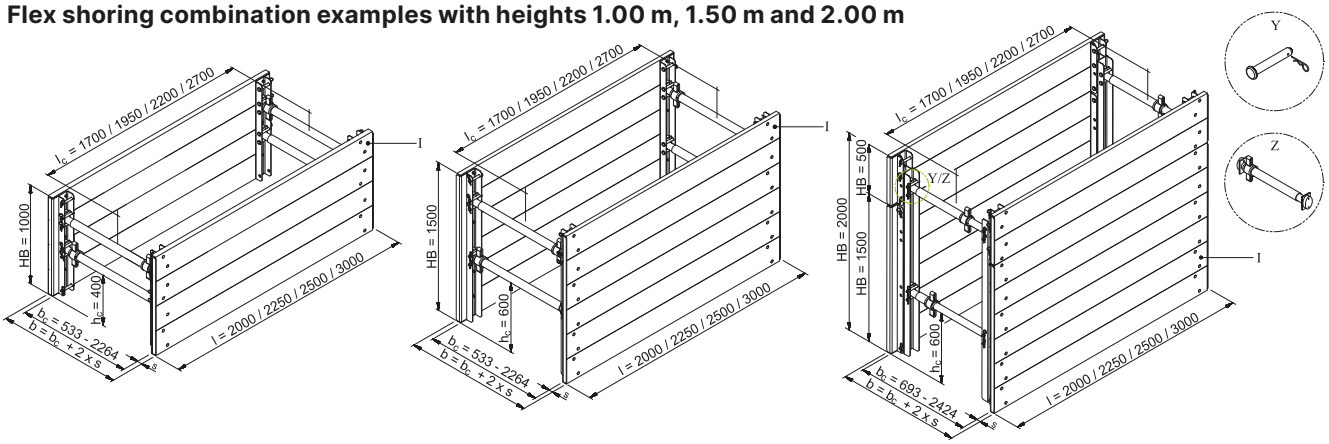
l	Length
l_c	Pipe culvert length
G	Weight
G / DKP	Weight / piling frame plate
G / Box	Weight / shoring box
KD / Box	Sheet piles / shoring box
b_{cKD}	Sheet pile clear width
b_{KD}	Sheet pile shoring width
b_{cDK}	Piling frame clear width
b_{DK}	Piling frame shoring width

KRINGS Flex shoring

General data

Shoring/panel length	2.00 m–3.00 m
Unit height	0.50 m–2.00 m
Pipe culvert height	0.22 m / 0.60 m
Pile thickness	5 cm / 6 cm / 7 cm
Shoring depth	max. 2.00 m
Shoring width	variable
Rec.: mini excavator	3–9 t

Flex shoring combination examples with heights 1.00 m, 1.50 m and 2.00 m



Wooden panels with a height of 0.25 m and lengths between 2.00 m and 3.00 m as well as M 10 round-head screws and M 10 nuts must be provided on site.

I	Flex shoring unit	b_c	Clear width	Y	Positioning bolt
l	Length	H_B	Unit height	Z	KVL spindle
l_c	Pipe culvert length	h_c	Pipe culvert height		
b	Shoring/trench width	s	Pile thickness		

Traverses and couplings

Art. no.	Short description	h [m]	h_c [m]	G [kg]
888 401	Basic/attachment traverse	0.50	0.22	7.6
888 410	Basic traverse	1.00	0.41	18.6
888 400	Basic traverse	1.50	0.60	25.7
888 406	Coupling	1.83	-	30.0

Shoring widths

Art. no.	Short description	Lift [m]	b_c [m]	b [m]	G [kg]
118 060	Spindle 70 × 650	0.09	0.53–0.63	0.55–0.64	12.2
118 070	Spindle 70 × 740	0.18	0.62–0.81	0.64–0.82	13.4
118 090	Spindle 70 × 920	0.36	0.81–1.17	0.82–1.19	15.8
118 020	Spindle 70 × 1280	0.73	1.16–1.89	1.18–1.90	20.5
118 100	Spindle 70 × 1470	0.92	1.35–2.26	1.36–2.28	24.0

Dimensional minimum system resistance [kN/m²] with wood panels

		for pile thickness s [cm]			
Shoring length	**Support width**	**4**	**5**	**6**	**7**
2.00 m	1.76 m	10.2	15.9	22.9	31.2
2.25 m	2.01 m	7.8	12.2	17.6	23.9
2.50 m	2.26 m	6.2	9.6	13.9	18.9
3.00 m	2.76 m	4.1	6.5	9.3	12.7
(EC5, NH S10, performance class 2)					

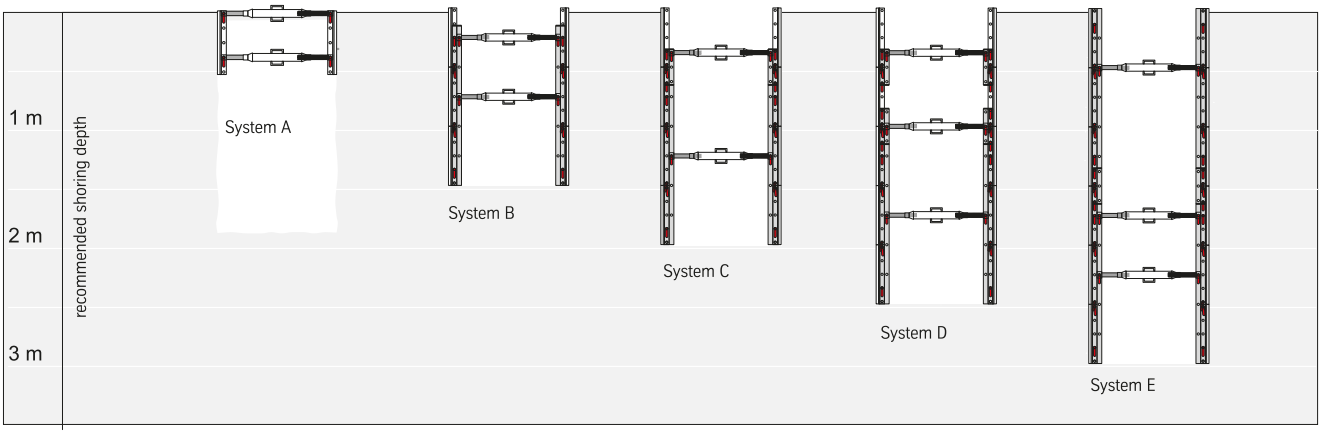
h	Panel height
h_c	Pipe culvert height
b	Trench width
b_c	Clear width
G	Weight

Accessories and spare parts, see p. 41–43

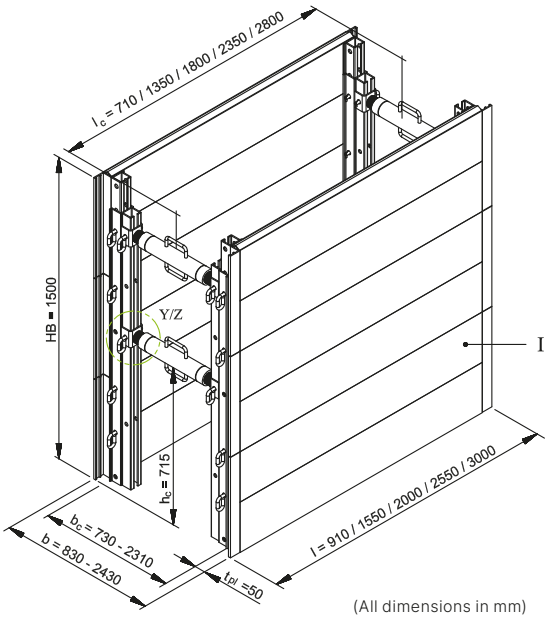
Aluminum lightweight shoring

General data

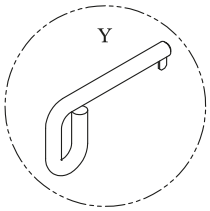
Shoring length	0.91 m–3.00 m
Base unit height	0.50 m
Installation depth	max. 4.00 m
Shoring width	max. 2.18 m
Weight	variable
Rec.: mini excavator	3–9 t

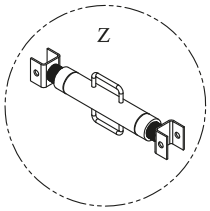


	System layout A	System layout B	System layout C	System layout D	System layout E
Installation area					
Shoring depth [m]	0.50	1.50	2.00	2.50	3.00
Shoring widths [m]	0.60–2.18	0.68–2.26	0.68–2.26	0.68–2.26	0.68–2.26
Max. pipe culvert height [m]	-	0.75	0.75	0.75	0.75
Maximum weight [kg] with Gi-A/129-218 trench struts					
Aluminum panels 1.55 m	93	213	268	346	411
Aluminum panels 2.00 m	103	242	307	394	469
Aluminum panels 2.55 m	119	292	374	478	569
Aluminum panels 3.00 m	130	325	417	532	635
Number of components					
Gi-A trench struts	4	4	4	6	6
Aluminum panels	2	6	8	10	12
Aluminum couplings 0.28 m	-	-	4	8	4
Aluminum couplings 1.35 m	-	4	4	4	8
Standard positioning bolt ø 13 mm	8	32	48	68	76



(All dimensions in mm)





I	Aluminum shoring panel
HB	Unit height
l	Length
l_c	Pipe culvert length
b	Shoring/trench width
b_c	Clear width
h_c	Pipe culvert height
t_{pl}	Panel thickness
Y	Positioning bolt
Z	Trench strut

Base units (aluminum shoring panel)

Art. no.	Short description	l [m]	h [m]	h_c [m]	G / VP [kg]
804 100	Aluminum panel	0.91	0.50	0.22	13.0
804 150	Aluminum panel	1.55	0.50	0.22	21.0
804 200	Aluminum panel	2.00	0.50	0.22	28.0
804 210	Aluminum panel	2.55	0.50	0.22	37.0
804 250	Aluminum panel	3.00	0.50	0.22	42.0

Aluminum couplings

Art. no.	Short description	l [m]	G [kg]
804 280	Aluminum coupling	0.28	2.0
804 300	Aluminum coupling	1.35	6.5
804 310	Aluminum coupling	1.85	9.0

Shoring widths for Gi-A trench struts

			w/o coupling		with coupling		
Art. no.	Short description	Lift [m]	b_c [m]	b [m]	b_c [m]	b [m]	G [kg]
804 400	GI-A60-81 cm trench struts incl. 2 bolts	0.21	0.50–0.71	0.60–0.81	0.58–0.79	0.68–0.89	5.5
804 500	GI-A80-121 cm trench struts incl. 2 bolts	0.41	0.70–1.11	0.80–1.21	0.78–1.19	0.88–1.29	7.3
804 550	GI-A 129-218 cm trench struts incl. 2 bolts	0.89	1.19–2.08	1.29–2.18	1.27–2.16	1.37–2.26	11.5

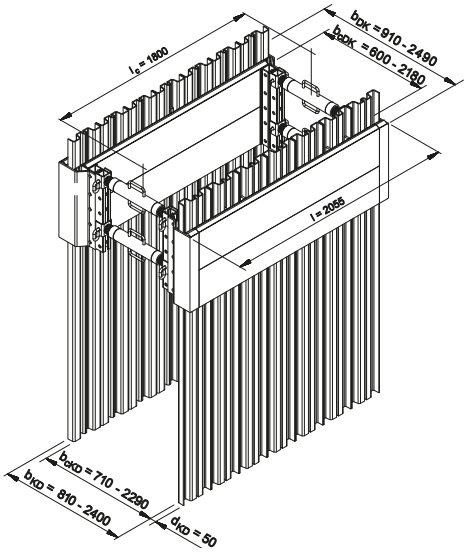
Accessories

Art. no.	Short description	G [kg]
804 350	Standard positioning bolt ø 13 mm	0.25 kg
804 671	Universal lifting eye	1.60 kg

l	Length
h	Panel height
h_c	Pipe culvert height
b	Trench width
b_c	Clear width
G	Weight
G/VP	Weight/shoring panel

Accessories and spare parts, see p. 41–43

Aluminum trench sheeting system



General data

Shoring length	2.00 m
Element height	0.50 m
Pipe culvert length	1.80 m
Shoring depth	max. 3.00 m
Shoring width	max. 2.18 m
Box weight	343–569 kg
Shoring width	0.91–2.49 m

Base units

Art. no.	Short description	l [m]	h [m]	G / VP [kg]
804 381	Aluminum-guide panel	2.00	0.50	37.0
804 200	Aluminum panel	2.00	0.50	28.0

Aluminum trench sheets

Art. no.	Short description	l [m]	G [kg]
804 377	Aluminum trench sheet	1.50	8.4
804 382	Aluminum trench sheet	2.50	14.0
804 383	Aluminum trench sheet	3.50	19.5

Shoring widths for Gi-A trench struts

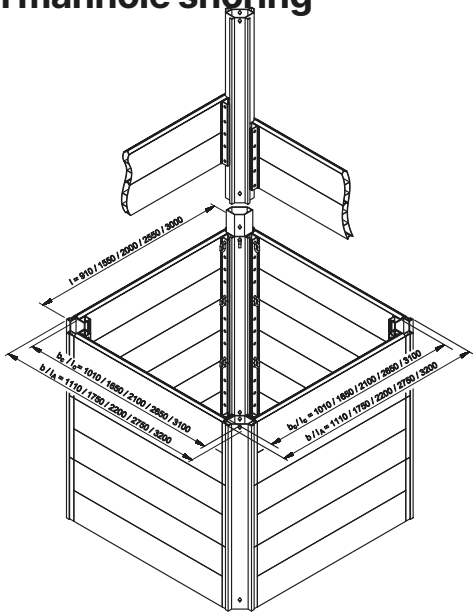
Art. no.	Short description	Lift [m]	b_{cDK} [m]	b_{DK} [m]	b_{cKD} [m]	b_{KD} [m]
804 400	Gi-A/60–81 cm trench struts incl. 2 bolts	0.21	0.60–0.81	0.91–1.12	0.71–0.92	0.81–1.02
804 500	Gi-A/80–121 cm trench struts incl. 2 bolts	0.41	0.80–1.21	1.11–1.52	0.91–1.32	1.01–1.42
804 550	Gi-A/129–218 cm trench struts incl. 2 bolts	0.89	1.29–2.18	1.60–2.49	1.40–2.29	1.50–2.39

Accessories

Art. no.	Short description	l [m]	d [m]	G / VP [kg]
804 350	Standard positioning bolt ø 13 mm		0.013	0.25
804 671	Universal lifting eye			1.60
804 384	Driving head for aluminum trench sheets			1.90
804 385	Lifting clamp			3.00
804 387	Post shore positioner 38			0.10

l	Length	h	Height	G / VP	Weight / shoring panel	b_{KD}	Sheet pile shoring width	b_{DK}	Piling frame shoring width
d	Diameter	G	Weight	b_{cKD}	Sheet pile clear width	b_{cDK}	Piling frame clear width		

Aluminum manhole shoring



General data

Shoring depth	max. 3.00 m
Shoring width	1.10–3.20 m

Base units (aluminum shoring panel)

Art. no.	Short description	l [m]	h [m]	G / VP [kg]
804 100	Aluminum panel	0.91	0.50	13.0
804 150	Aluminum panel	1.55	0.50	21.0
804 200	Aluminum panel	2.00	0.50	28.0
804 210	Aluminum panel	2.55	0.50	37.0
804 250	Aluminum panel	3.00	0.50	42.0

Aluminum manhole corner profiles

Art. no.	Short description	l [m]	G [kg]
804 580	Aluminum manhole corner profile	0.50	2.9
804 600	Aluminum manhole corner profile	1.50	10.9

Accessories

Art. no.	Short description	l [m]	d [m]	G / VP [kg]
804 320	Aluminum manhole corner connector	0.30		1.40
804 360	Connecting pin ø 13 mm		0.013	0.20
804 370	Connecting pin ø 20 mm		0.020	0.50
804 650	Lifting eye for manhole corner profile			1.00
804 671	Universal lifting eye			1.60

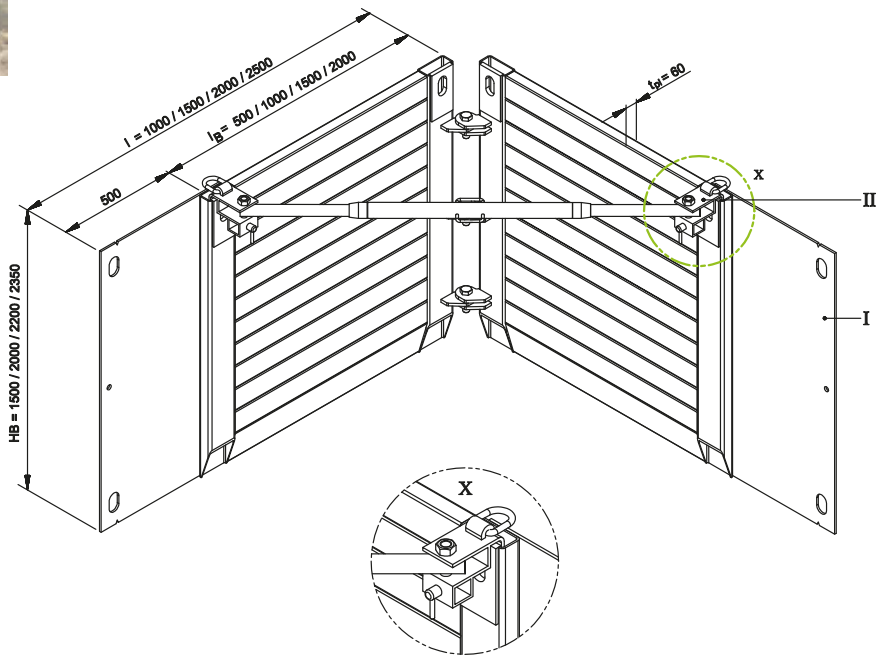
l	Length	l_A	Shoring width	h	Height	G / VP	Weight / shoring panel	b_c	Clear width
l_c	Pipe culvert length	d	Diameter	G	Weight	b	Trench width		

Accessories and spare parts, see p. 41–43

KRINGS corner shoring unit

General data

Suitable trench width	0.50–2.00 m
Element height	1.50 / 2.00 / 2.20 / 2.35 m
Box weight	400–1,310 kg
Rec.: mobile excavator	9–13 t



Units

Art. no.	Short description	l Base body [m]	h Base body [m]	l Compensation plate [m]	Suitable trench width [m]	G* / Box [kg]
805 599	Corner shoring unit 0.50 × 1.50 m	0.50	1.50	0.50	0.50–1.00	400
805 619	Corner shoring unit 0.50 × 2.00 m	0.50	2.00	0.50	0.50–1.00	530
805 632	Corner shoring unit 0.50 × 2.20 m	0.50	2.20	0.50	0.50–1.00	575
805 636	Corner shoring unit 0.50 × 2.35 m	0.50	2.35	0.50	0.50–1.00	610
805 600	Corner shoring unit 1.00 × 1.50 m	1.00	1.50	0.50	1.00–1.50	525
805 620	Corner shoring unit 1.00 × 2.00 m	1.00	2.00	0.50	1.00–1.50	730
805 633	Corner shoring unit 1.00 × 2.20 m	1.00	2.20	0.50	1.00–1.50	810
805 637	Corner shoring unit 1.00 × 2.35 m	1.00	2.35	0.50	1.00–1.50	850
805 610	Corner shoring unit 1.50 × 1.50 m	1.50	1.50	0.50	1.50–2.00	720
805 630	Corner shoring unit 1.50 × 2.00 m	1.50	2.00	0.50	1.50–2.00	950
805 634	Corner shoring unit 1.50 × 2.20 m	1.50	2.20	0.50	1.50–2.00	1,025
805 638	Corner shoring unit 1.50 × 2.35 m	1.50	2.35	0.50	1.50–2.00	1,110
805 611	Corner shoring unit 2.00 × 1.50 m	2.00	1.50	0.50	2.00–2.50	780
805 631	Corner shoring unit 2.00 × 2.00 m	2.00	2.00	0.50	2.00–2.50	1,110
805 635	Corner shoring unit 2.00 × 2.20 m	2.00	2.20	0.50	2.00–2.50	1,245
805 639	Corner shoring unit 2.00 × 2.35 m	2.00	2.35	0.50	2.00–2.50	1,310

* The weights refer to two panel halves (R/L) = one corner.

Installation aid

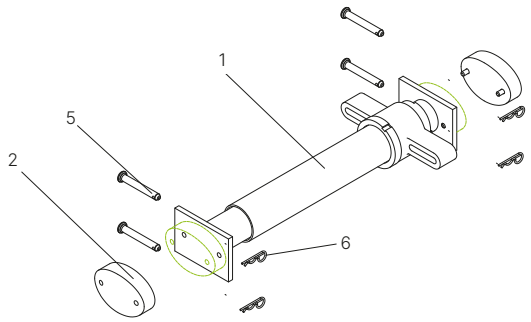
Art. no.	Short description	l [m]	G [kg]
805 640	Installation aid for corner shoring unit	0.50	17
805 645	Installation aid for corner shoring unit	1.00	23
805 650	Installation aid for corner shoring unit	2.00	28

I	Corner shoring unit
II	Installation aid
l	Length
h	Height
G	Weight
G* / Box	Weight / Box

Accessories and spare parts, see p. 41–43

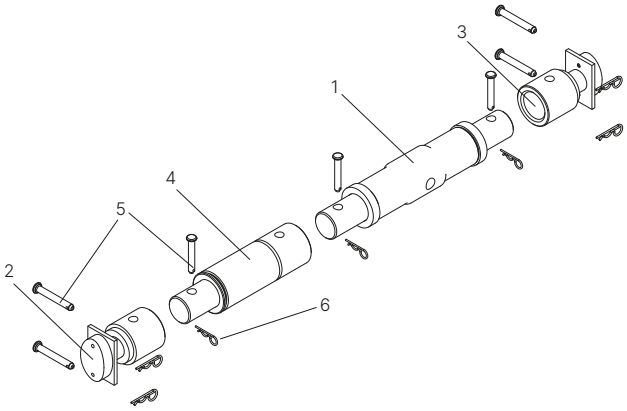
Accessories and spare parts

KVL spindle 70 × 650 / 740 / 920 / 1280 / 1470

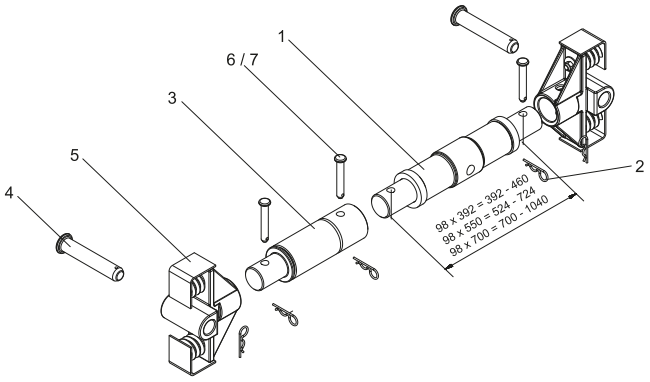


1	Spindle	3	Adapter	5	Bolt 125 × 20
2	Rubber buffer (ellipse)	4	Extension bar	6	Spring connector

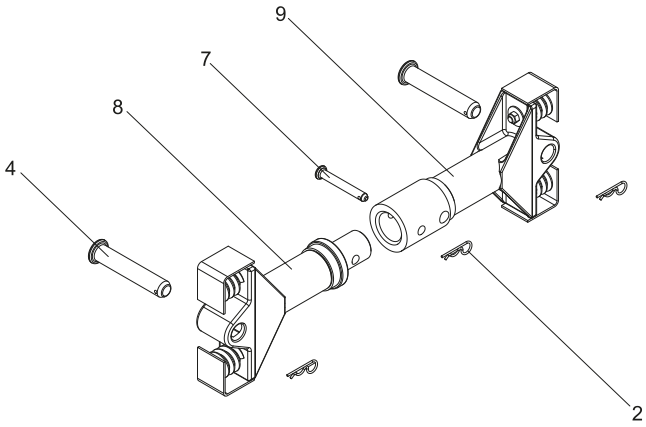
KS spindle with KVL adapter 98 × 550 / 700



Spindle 98 × 550 / 700

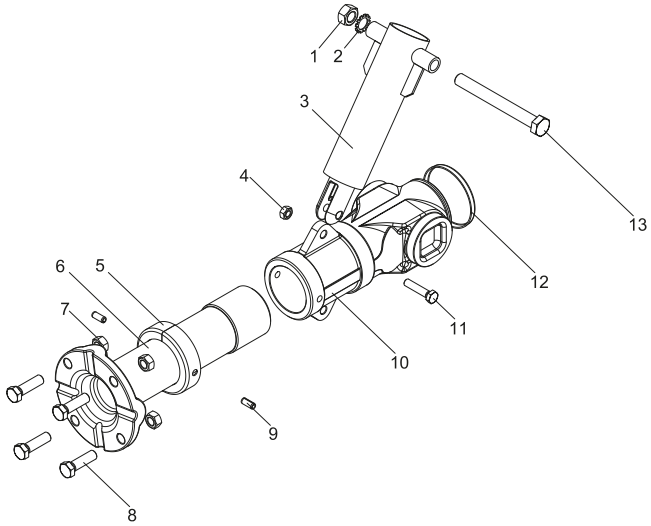


Spindle 98 × 817



1	Spindle	4	Bolt 212 × 43	7	Bolt 140 × 20
2	Spring connector	5	Spring socket	8	Spindle half, left
3	Extension bar, plug-in	6	Bolt 125 × 20	9	Spindle half, right

E+S Strut complete right/left with shock absorber



1	M 20 nut
2	A 20 toothed washer
3	Shock absorber
4	M 12 nut
5	Protective cover half for spindle
6	Spindle right/left
7	M 16 nut
8	Hex. screw M 16 × 55
9	Clamping sleeve 10 × 24 mm
10	Cast nut right/left
11	Hex. screw M 12 × 55
12	Protective cover
13	Hex. screw M 20 × 180

Accessories and spare parts

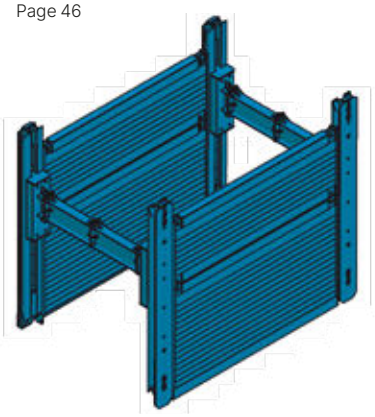
Art. no.	Short description	l [m]	d [m]	G [kg]
821 100	Chain 13/ 5,000 mm	5.00		25.7
850 614	Positioning bolt 200 × 40 mm (linear box strut cart)			1.9
138 030	Bolt 125 × 20 ((spindle 98 × 550 / 700, spindle KVL, adapter KVL, pressure plate KVL, spindle BLU)	0.125	0.02	0.4
138 040	Bolt 140 × 20 (spindle 98 × 817, extension bar 121 × ...)	0.14	0.02	0.4
138 070	Bolt 212 × 43 (spring socket, posts KS 60, KS 60 Manhole, KS 100, KS 100 Manhole, pressure plate KS 60 & KS 100)	0.212	0.043	2.5
843 343	Bolt ø 40 × 150 mm incl. spring connector (adapter Corner shoring for DKU 4.55 m / 5.80 m)			3.5
HE 0050 F	Safety clip 6.0 mm (E+S Boxes)		0.006	0.03
159 161	Pipe clip 60 × 6 (E+S Linear box)			0.10
138 200	Safety clip FS 92 × 5 (KRINGS Boxes)	0.092	0.005	0.1
IB 0215 F	Screw M 12 × 55–8.8 galv. (connection shock absorber-cast nut, E+S)			0.06
IB 0310 F	Screw M 16 × 55–8.8 galv. (extension bars, E+S)			0.11
IB 0420 F	Screw M 20 × 180–4.6 galv. (shock absorber E+S)			0.56
IB 0360 F	Screw M 20 × 45–8.8 galv. (bearing plate, E+S)			0.17
IB 0490 F	Screw M 24 × 80–8.8 galv. (adapter corner shoring for DKU 2.27 m / 3.00 m / 3.81 m)			0.37
IB 0515 F	Screw M 24 × 100–8.8 galv. (adapter corner shoring for DKU 4.55 m / 5.80 m)			0.42
IB 0545 F	Screw M 30 × 80–10.9 galv. (extension bars E+S Linear box)			0.6
IA 0095 F	Nut M 12–8.0 (connection shock absorber-cast nut, E+S)			0.01
IA 0120 F	Nut M 16–8.0 galv. (extension bars E+S)			0.03
IA 0130 F	Nut M 20–8.0 galv. (shock absorber, bearing plate, E+S)			0.03
IA 0140 F	Nut M 24–8.0 galv. (adapter corner shoring for DKU 2.27 m / 3.00 m / 3.81 m / 4.55 m / 5.80 m)			0.11
IA 0185 F	Nut M 30–10.0 galv. (extension bars E+S Linear box)			0.30
HD 0110 F	Cast nut lubrication nipple		0.01	0.01
138 170	FP 80 spring socket			13.0
850 510	Connector (lightweight shoring)			3.1
862 209	Connector (Linear box to Medium top unit)			8.0
850 500	Connector (Medium, Magnum)			6.7
139 100	Connector (KS 60, KS 60 Manhole, KS 100, KS 100 Manhole)			5.5
850 610	Connector bolt (lightweight shoring)	0.10	0.03	0.50
850 600	Connector bolt (Medium, Magnum, Linearbox)	0.20	0.04	1.8
118 060	Spindle 70 × 650 (KVL, BLU, Flex shoring)			12.2
118 070	Spindle 70 × 740 (KVL, BLU, Flex shoring)			13.4
118 090	Spindle 70 × 920 (KVL, BLU, Flex shoring)			15.8
118 020	Spindle 70 × 1280 (KVL, BLU, Flex shoring)			20.5
118 100	Spindle 70 × 1470 (KVL, BLU, Flex shoring)			24.0
138 280	Spindle 98 × 550 (KS 60, KS 60 Manhole, KS 100, KS 100 Manhole, DKU)			22.0
138 290	Spindle 98 × 700 (KS 60, KS 60 Manhole, KS 100, KS 100 Manhole, DKU)			34.0
138 300	Spindle 98 × 817 (KS 60, KS 60 Manhole, KS 100, KS 100 Manhole, DKU)			76.9
108 950	Spindle half, left 98 × 817			38.0
108 960	Spindle half, right 98 × 817			39.0
119 011	KVL adapter for spindles 98 × 550 / 98 × 700			7.6
301 000	Struts, left, hollow spindle			19.5
301 010	Struts, left, full spindle			27.1
300 000	Struts, right, hollow spindle			19.5
300 010	Struts, right, full spindle			27.1
300 100	Shock absorber	0.14		4.5
861 076	Pressure beam (Medium, Magnum, KS 100/Manhole, Manhole, Linearbox, Dragbox)	1.60		176.0
861 074	Pressure beam (Medium, Magnum, KS 100/Manhole, Manhole, Linearbox, Dragbox)	2.35		236.0
861 070	Pressure beam (Medium, Magnum, KS 100/Manhole, Manhole, Linearbox, Dragbox)	2.80		271.0

Art. no.	Short description	l [m]	d [m]	G [kg]
861 075	Pressure beam (Magnum 5.08 m)	4.60		425.0
861 090	Pressure beam (Magnum 6.84 m)	2.20		483.0
861 077	Pressure beam (lightweight shoring, KVL, KS 60, KS 60 Manhole)	1.80		80.0
861 078	Pressure beam (lightweight shoring, KVL, KS 60, KS 60 Manhole)	2.30		95.0
861 079	Pressure beam (lightweight shoring, KVL, KS 60, KS 60 Manhole)	2.80		110.0
861 080	Pressure beam (lightweight shoring, KVL, KS 60, KS 60 Manhole)	3.30		125.0
851 010	Pressure plate (lightweight shoring)			7.0
851 005	Pressure plate (Medium, Magnum, Manhole, Linearbox)			19.0
300 076	Pressure plate (KVL)			9.20
300 075	Pressure plate (KS 60, KS 100)			15.10
842 753	Adapter for DKU corner shoring 2.27 m / 3.00 m / 3.81 m, H = 1.00 m			94.0
843 345	Adapter for DKU corner shoring 4.55 m / 5.80 m, H = 1.10 m			230.0
843 346	Adapter for DKU corner shoring 2.27 m / 3.00 m / 3.81 m auf DKU 4.55 m / 5.80 m			153.0
842 702	Support brackets for BLU			9.0
336 960	Support brackets for DKU			40.0
859 981	Suspended bearing block, E+S			25.6
859 982	Suspended bearing block, variable, KRINGS			12.0
850 699	Rotary bar for spindle, E+S/KRINGS	0.70	0.02	2.5
302 125	Bearing plate (lightweight shoring, Medium, Magnum, Manhole, Dragbox)			4.2
888 406	Flex shoring coupling	1.83		30.0
850 091	Cast pipe extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	0.25		11.2
850 100	Cast pipe extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	0.55		18.7
850 112	HEB 180 extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	0.275		28.0
850 110	HEB 180 extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	0.55		43.0
850 124	HEB 180 extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	1.10		70.0
850 132	HEB 180 extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	1.65		100.0
850 135	HEB 180 extension bar (lightweight shoring, Medium, Manhole, Magnum, DKE)	2.20		130.0
831 028	IPE 400 extension bar (Linear box)	0.140		42.0
831 029	IPE 400 extension bar (Linear box)	0.200		49.0
831 030	IPE 400 extension bar (Linear box)	0.275		57.0
831 040	IPE 400 extension bar (Linear box)	0.55		75.0
831 050	IPE 400 extension bar (Linear box)	1.10		115.0
831 060	IPE 400 extension bar (Linear box)	1.65		155.0
831 070	IPE 400 extension bar (Linear box)	2.20		195.0
139 430	Extension bar 108 × 300 mm (spindle 98 × 550 / 98 × 700)	0.30		13.8
139 445	Extension bar 108 × 500 mm (spindle 98 × 550 / 98 × 700)	0.50		17.7
139 385	Extension bar 108 × 1,000 mm (spindle 98 × 550 / 98 × 700)	1.00		28.0
139 400	Extension bar 108 × 1,500 mm (spindle 98 × 550 / 98 × 700)	1.50		37.4
139 420	Extension bar 108 × 2,000 mm (spindle 98 × 550 / 98 × 700)	2.00		47.3
139 425	Extension bar 108 × 2,500 mm (spindle 98 × 550 / 98 × 700)	2.50		60.0
139 510	Extension bar 121 × 500 mm (spindle 98 × 817)	0.50		25.1
139 470	Extension bar 121 × 1,000 mm (spindle 98 × 817)	1.00		36.3

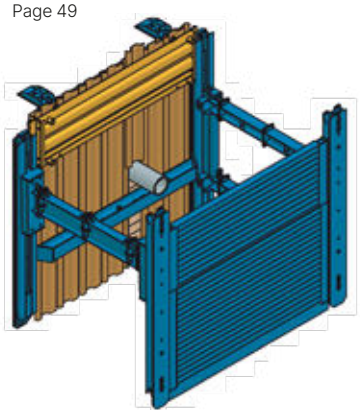
Slide-rail systems, E+S linear shoring

Recommended shoring depth: max. 4.00 m

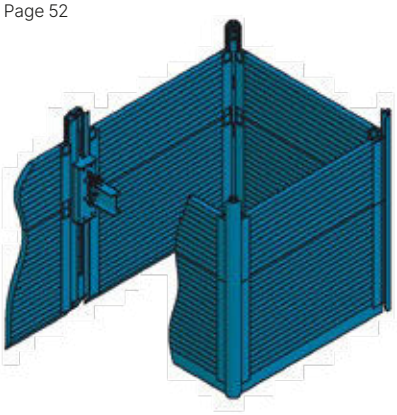
Single slide rail linear shoring
Rec. shoring depth: 4.00 m
Rec.: mobile or crawler excavator 18–30 t
Page 46



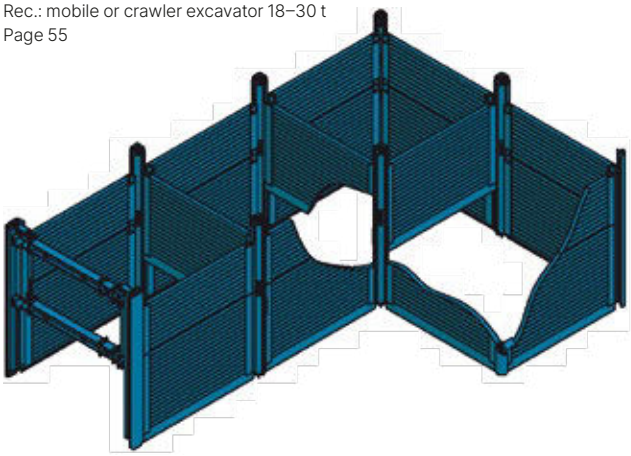
Single slide rail inner-city linear shoring
Rec. shoring depth: 4.00 m
Rec.: mobile or crawler excavator 18–30 t
Page 49



Single slide rail corner shoring
Rec. shoring depth: 4.00 m
Rec.: mobile or crawler excavator 18–30 t
Page 52

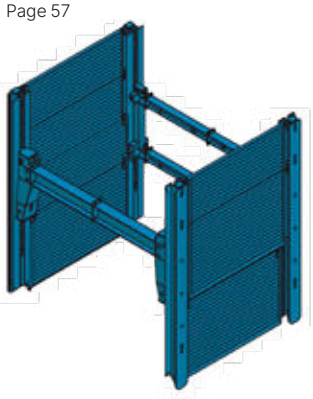


Single slide rail linear shoring – X-rail
Rec. shoring depth: 4.00 m
Rec.: mobile or crawler excavator 18–30 t
Page 55

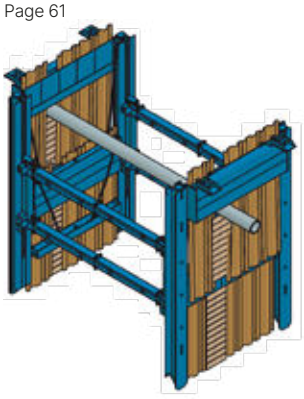


Recommended shoring depth: 5.00 m–9.00 m

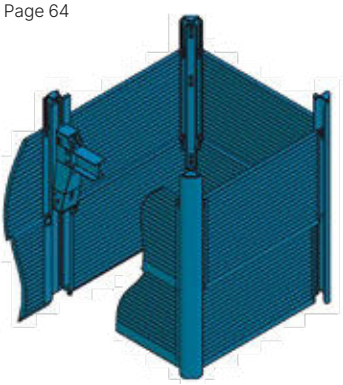
Double slide rail linear shoring
Rec. shoring depth: 5.00 m–9.00 m
Rec.: crawler excavator
max. 6.0 m: 24–31 t, over 6.0 m: 30–50 t
Page 57



Double slide rail inner-city linear shoring
Rec. shoring depth: 5.00 m–9.00 m
Rec.: crawler excavator
max. 6.0 m: 24–31 t, over 6.0 m: 30–50 t
Page 61



Double slide rail corner shoring
Rec. installation depth 5.00 m-6.00 m
Rec.: crawler excavator 24–31 t
Page 64

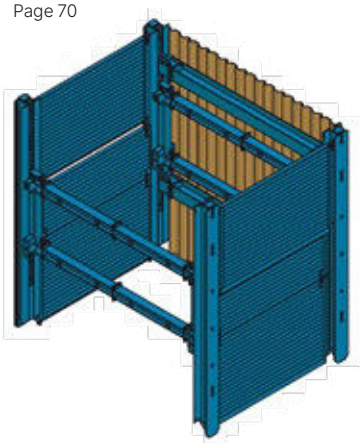


Recommended shoring depth: max. 12.00 m

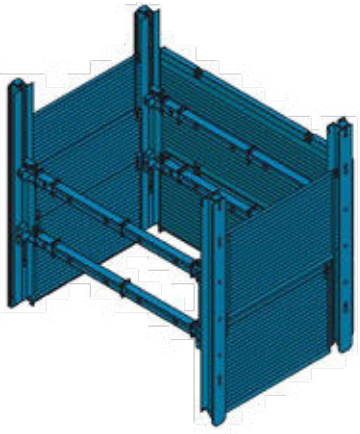
Deep linear shoring
Rec. shoring depth: max. 12.00 m
Rec.: crawler excavator 50 t
Page 67

More shoring options

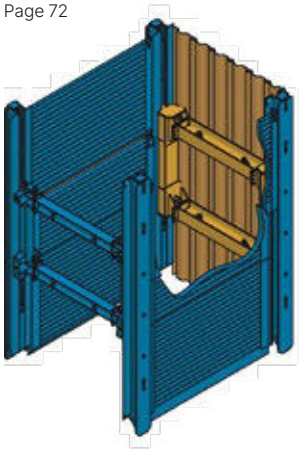
Head end shoring with head end shoring adapter and sheet piles
Rec. installation depth: variable
Page 70



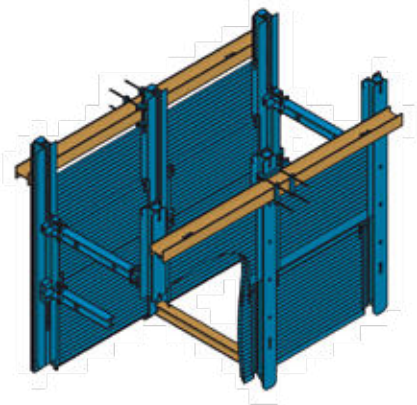
Head end shoring with slide-rail panels
Rec. installation depth: variable
Page 71



Head end shoring with head end shoring strut cart and sheet piles
Rec. installation depth: variable;
Page 72



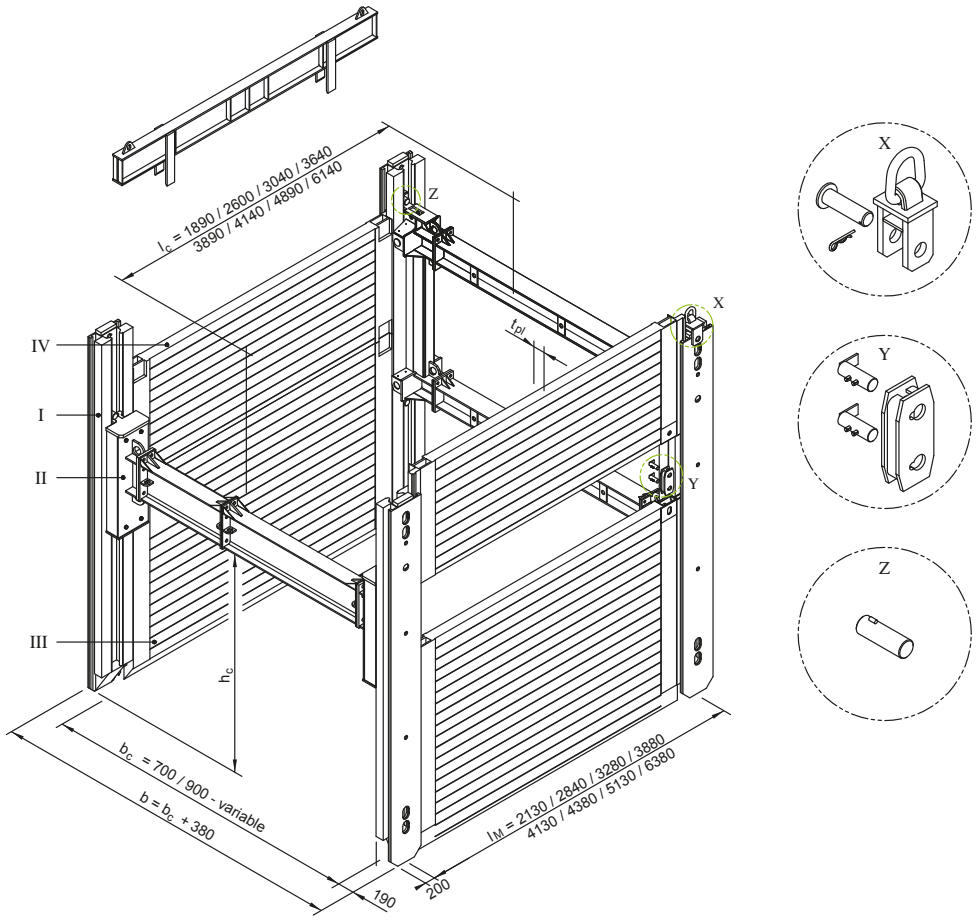
Outside waler attachment
Page 73



E+S Single slide rail linear shoring

General data

Module length	2.13 m–6.38 m
Slide-rail length	4.13 m
Panel height	1.32 m / 2.32 m
Pipe culvert height	variable
Shoring width	variable
Rec.: mobile or crawler excavator	18–30 t



(All dimensions in mm. The data on pipe opening length l_c refer to the rectangular strut cart.)

I	Linear shoring support	l_M	Module length	h_c	Pipe culvert height	Z	Positioning bolt
II	Linear shoring strut cart	l_c	Pipe culvert length	t_{pl}	Panel thickness		
III	Base panel	b	Shoring/trench width	X	Pull adapter with bolt		
IV	Top panel	b_c	Clear width	Y	Connector with bolts		

Linear shoring support

Art. no.	Short description	l [m]	G [kg]
820 935	Linear shoring support	4.13	710.0

Linear shoring strut carts

Art. no.	Short description	l [m]	G [kg]
832 200	Rectangular strut cart	2.00	420.0
832 205	U-type strut cart	2.00	618.0
832 197	U-type strut cart 1.20 m	1.20	340.0

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 120	1.89	2.13	0.11	1.89	510.0	4.38	176.0
821 160	2.60	2.84	0.11	2.60	650.0	6.03	90.0
821 250	3.04	3.28	0.11	3.04	730.0	7.05	65.5
821 610	3.64	3.88	0.11	3.64	845.0	8.44	45.2
821 850	3.89	4.13	0.11	3.89	970.0	9.02	39.4
821 855	4.14	4.38	0.15	4.14	1,300.0	9.58	81.0
821 860	4.89	5.13	0.15	4.89	1,500.0	11.34	58.1
821 861	6.13	6.38	0.15	6.13	1,880.0	14.22	36.6

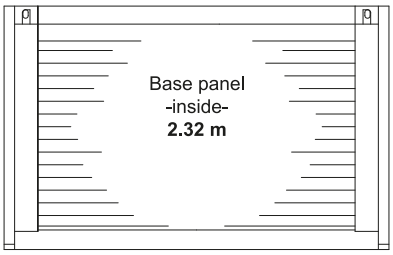
Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 060	1.89	2.13	0.11	1.89	355.0	2.49	176.0
821 180	2.60	2.84	0.11	2.60	440.0	3.43	90.0
822 120	3.04	3.28	0.11	3.04	500.0	4.01	65.5
822 620	3.64	3.88	0.11	3.64	620.0	4.80	45.2
822 760	3.89	4.13	0.11	3.89	649.0	5.13	39.4
822 783	4.14	4.38	0.15	4.14	870.0	5.45	81.0
822 800	4.89	5.13	0.15	4.89	1,100.0	6.45	58.1
822 801	6.13	6.38	0.15	6.13	1,370.0	8.09	36.6

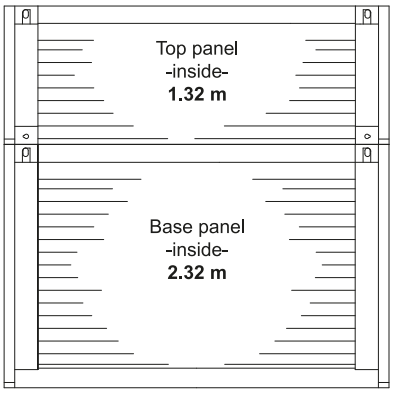
Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 065	1.89	2.13	0.11	1.89	530.0	4.35	176.0
822 155	2.60	2.84	0.11	2.60	660.0	5.98	90.0
822 180	3.04	3.28	0.11	3.04	740.0	6.99	65.5
822 680	3.64	3.88	0.11	3.64	850.0	8.37	45.2
822 780	3.89	4.13	0.11	3.89	980.0	8.95	39.4
822 785	4.14	4.38	0.15	4.14	1,435.0	9.50	81.0

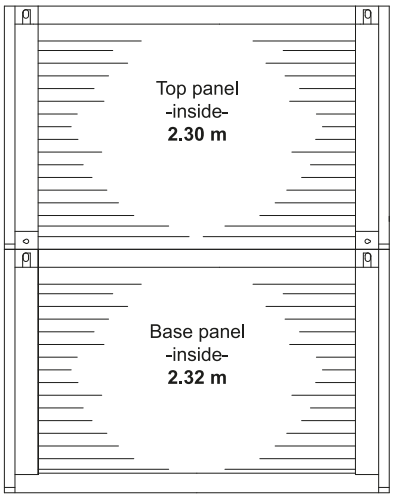
Possible height combinations



Trench depth approx. 2.32 m



Trench depth approx. 3.60 m



Trench depth approx. 4.60 m

Extension bars for rectangular strut cart

Art. no.	Short description	l [m]	G [kg]
830 005	HEB 220 extension bar	0.140	42.0
830 010	HEB 220 extension bar	0.275	50.0
830 011	HEB 220 extension bar	0.350	55.0
830 012	HEB 220 extension bar	0.375	62.0
830 015	HEB 220 extension bar	0.412	65.0
830 020	HEB 220 extension bar	0.550	70.0
830 030	HEB 220 extension bar	1.100	110.0
830 075	HEB 220 extension bar	1.650	145.0
830 125	HEB 220 extension bar	2.200	192.0

Extension bars for U-type strut cart

Art. no.	Short description	l [m]	G [kg]
831 503	HEA 450 extension bar	0.140	77.0
831 500	HEA 450 extension bar	0.275	107.0
831 507	HEA 450 extension bar	0.375	115.0
831 510	HEA 450 extension bar	0.550	140.0
831 520	HEA 450 extension bar	1.100	220.0
831 530	HEA 450 extension bar	1.650	300.0
831 540	HEA 450 extension bar	2.200	375.0

Extension bars for U-type strut cart (1.20 m)

Art. no.	Short description	l [m]	G [kg]
831 028	IPE 400 extension bar	0.140	42.0
831 029	IPE 400 extension bar	0.200	49.0
831 030	IPE 400 extension bar	0.275	57.0
831 040	IPE 400 extension bar	0.550	75.0
831 050	IPE 400 extension bar	1.100	115.0
831 060	IPE 400 extension bar	1.650	155.0
831 070	IPE 400 extension bar	2.200	195.0

Shoring widths for rectangular and U-type strut cart

Extension bar length [m]	b_c [m]	b [m]
without extension bar	0.90	1.28
0.140	1.04	1.42
0.275	1.18	1.56
0.350	1.25	1.63
0.375	1.28	1.66
0.412	1.31	1.69
0.550	1.45	1.83
1.100	2.00	2.38
1.650	2.55	2.93
2.200	3.10	3.48

Other trench widths possible by combination of different extension bar lengths.

Shoring widths for U-type strut cart (1.20 m)

Extension bar length [m]	b_c [m]	b [m]
without extension bar	0.70	1.08
0.140	0.84	1.22
0.200	0.90	1.28
0.275	0.98	1.36
0.550	1.25	1.63
1.100	1.80	2.18
1.650	2.35	2.73
2.200	2.90	3.28

l	Length	A	Surface
l_M	Module length	G	Weight
l_c	Pipe culvert length	G / VP	Weight / shoring panel
t_{pl}	Panel thickness	e_h	Admissible soil pressure
b	Shoring width	b_c	Clear width
d	Diameter		

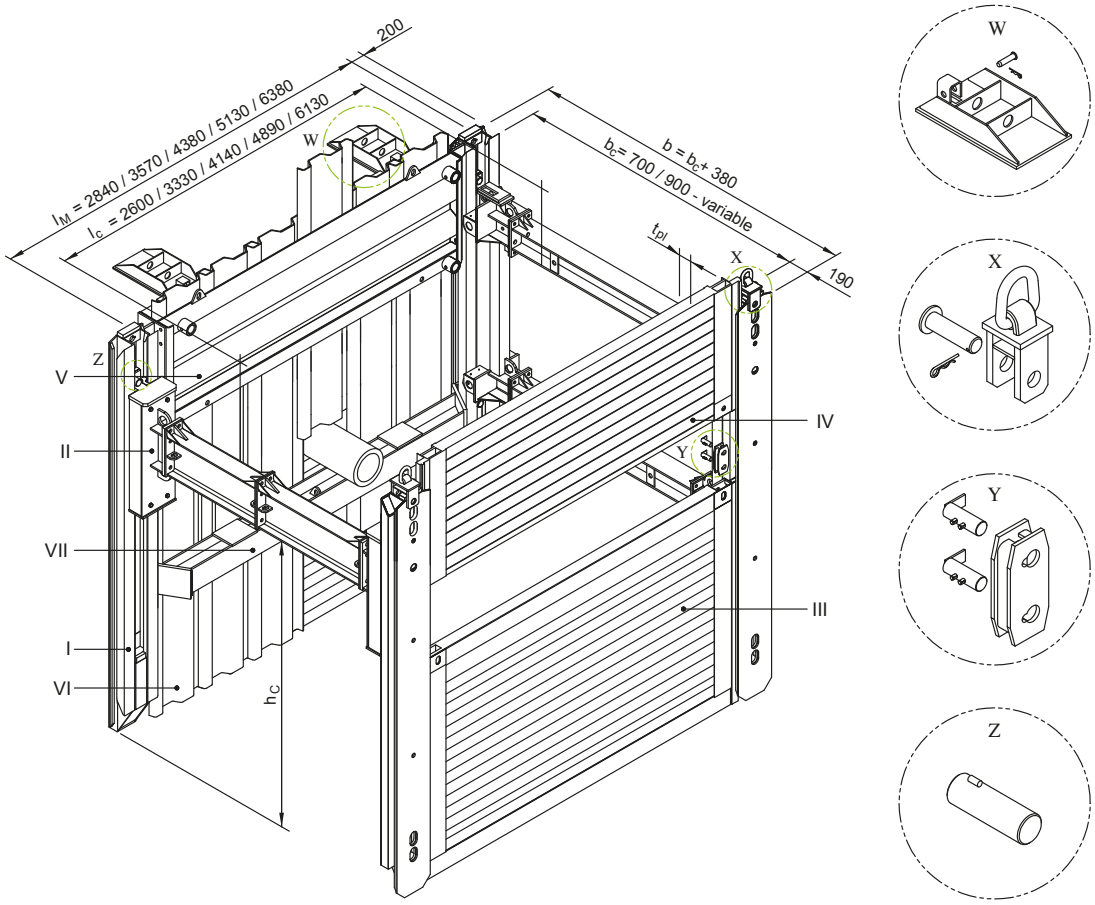
Accessories / spare parts

Art. no.	Short description	l [m]	d [m]	G [kg]
850 720	Linear shoring positioning bolts	0.15	0.050	2.50
861 076	Pressure beam	1.60		176.00
861 074	Pressure beam	2.35		236.00
861 070	Pressure beam	2.80		271.00
861 071	Pressure beam	3.40		318.00
861 075	Pressure beam	4.60		425.00
861 085	Pressure beam	5.80		525.00
834 015	Pressure plate, rectangular strut cart			12.40
832 230	Bolt for pressure plate, rectangular strut cart	0.15	0.035	1.40
HE 0050 F	Safety clip 6.0 mm		0.006	0.03
IA 0150 F	Nut M 24–10.9 galv. (rectangular strut cart)			0.10
IA 0185 F	Nut M 30–10.9 galv. (U-type strut cart 1.20 m)			0.30
IA 0210 F	Nut M 36–10.9 galv. (U-type strut cart)			0.40
862 200	Connector			5.50
862 100	Connector bolts	0.11	0.035	1.00
IB 0470 F	Screw M 24 × 80–10.9 galv. (rectangular strut cart)			0.40
IB 0545 F	Screw M 30 × 80–10.9 galv. (U-type strut cart 1.20 m)			0.64
IB 0614 F	Screw M 36 × 80–10.9 galv. (U-type strut cart)			1.00
834 057	Pull adapter with bolt			33.00
834 116	Covering base plate for in-situ concrete	1.47		13.50
834 117	Covering top plate for in-situ concrete	1.00		9.50

E+S Single slide rail inner-city linear shoring

General data

Module length	2.84 m / 4.38 m / 5.13 m / 6.38 m
Slide-rail length	4.13 m
Piling frame element height	1.00 m / 1.10 m
Pipe culvert height	variable
Shoring width	variable
Sheet pile length (KD VI/8)	variable
Rec.: mobile or crawler excavator	18–30 t



(All dimensions in mm. The data on pipe opening length l_c refer to the rectangular strut cart.)

I	Linear shoring support	VI	KD VI/8 sheet piles	b_c	Clear width	Y	Connector with bolts
II	Linear shoring strut cart	VII	Waler support	h_c	Pipe culvert height	Z	Positioning bolt
III	Base panel	l_M	Module length	t_{pl}	Panel thickness		
IV	Top panel	l_c	Pipe culvert length	W	Support bracket		
V	DKU piling frame element	b	Shoring/trench width	X	Pull adapter with bolt		

Linear shoring support

Art. no.	Short description	l [m]	G [kg]
820 935	Linear shoring support	4.13	710.0

Linear shoring strut carts

Art. no.	Short description	l [m]	G [kg]
832 200	Rectangular strut cart	2.00	420.0
832 205	U-type strut cart	2.00	618.0
832 197	U-type strut cart 1.20 m	1.20	340.0

Piling frame elements

Art. no.	Short description	l [m]	l_M [m]	h [m]	t_{pl} [m]	l_c [m]	G/DKP [kg]	KD/DKP
842 671	Piling frame element DKU, KD VI	2.27	2.84	1.00	0.31	2.60	510.0	4
842 687	Piling frame element DKU, KD VI	3.00	3.57	1.00	0.31	3.33	640.0	5
842 674	Piling frame element DKU, KD VI	3.81	4.38	1.00	0.31	4.14	785.0	7
842 696	Piling frame element DKU, KD VI	4.55	5.13	1.10	0.40	4.89	1,563.0	8
842 699	Piling frame element DKU, KD VI	5.80	6.38	1.10	0.40	6.13	1,880.0	10

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 160	2.60	2.84	0.11	2.60	650.0	6.03	90.0
821 855	4.14	4.38	0.15	4.14	1,300.0	9.58	81.0
821 860	4.89	5.13	0.15	4.89	1,500.0	11.34	58.1
821 861	6.13	6.38	0.15	6.13	1,880.0	14.22	36.6

Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 180	2.60	2.84	0.11	2.60	440.0	3.43	90.0
822 783	4.14	4.38	0.15	4.14	870.0	5.45	81.0
822 800	4.89	5.13	0.15	4.89	1,100.0	6.45	58.1
822 801	6.13	6.38	0.15	6.13	1,370.0	8.09	36.6

Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 155	2.60	2.84	0.11	2.60	660.0	5.98	90.0
822 785	4.14	4.38	0.15	4.14	1,409.0	9.50	81.0

Walers, inner-city linear shoring

Art. no.	Short description	l [m]	l_M [m]	G/VP [kg]
842 704	Waler for piling frame element DKU, module length 2.84 m	2.60	2.84	300.0
GV000560	Waler for piling frame element DKU, module length 3.57 m	3.30	3.57	358.0
842 711	Waler for piling frame element DKU, module length 4.38 m	4.14	4.38	445.0
843 365	Waler for piling frame element DKU, module length 5.13 m	4.86	5.13	854.0
843 359	Waler for piling frame element DKU, module length 6.38 m	6.11	6.38	1,035.0

Extension bars for rectangular strut cart

Art. no.	Short description	l [m]	G [kg]
830 005	HEB 220 extension bar	0.140	42.0
830 010	HEB 220 extension bar	0.275	50.0
830 011	HEB 220 extension bar	0.350	55.0
830 012	HEB 220 extension bar	0.375	62.0
830 015	HEB 220 extension bar	0.412	65.0
830 020	HEB 220 extension bar	0.550	70.0
830 030	HEB 220 extension bar	1.100	110.0
830 075	HEB 220 extension bar	1.650	145.0
830 125	HEB 220 extension bar	2.200	192.0

Extension bars for U-type strut cart

Art. no.	Short description	l [m]	G [kg]
831 503	HEA 450 extension bar	0.140	77.0
831 500	HEA 450 extension bar	0.275	107.0
831 507	HEA 450 extension bar	0.375	115.0
831 510	HEA 450 extension bar	0.550	140.0
831 520	HEA 450 extension bar	1.100	220.0
831 530	HEA 450 extension bar	1.650	300.0
831 540	HEA 450 extension bar	2.200	375.0

Shoring widths for rectangular and U-type strut cart

Extension bar length [m]	b_c [m]	b [m]
without extension bar	0.90	1.28
0.140	1.04	1.42
0.275	1.18	1.56
0.350	1.25	1.63
0.375	1.28	1.66
0.412	1.31	1.69
0.550	1.45	1.83
1.100	2.00	2.38
1.650	2.55	2.93
2.200	3.10	3.48

Other trench widths possible by combination of different extension bar lengths.

Extension bars for U-type strut cart (1.20 m)

Art. no.	Short description	l [m]	G [kg]
831 028	IPE 400 extension bar	0.140	42.0
831 029	IPE 400 extension bar	0.200	49.0
831 030	IPE 400 extension bar	0.275	57.0
831 040	IPE 400 extension bar	0.550	75.0
831 050	IPE 400 extension bar	1.100	115.0
831 060	IPE 400 extension bar	1.650	155.0
831 070	IPE 400 extension bar	2.200	195.0

Shoring widths for U-type strut cart (1.20 m)

Extension bar length [m]	b_c [m]	b [m]
without extension bar	0.70	1.08
0.140	0.84	1.22
0.200	0.90	1.28
0.275	0.98	1.36
0.550	1.25	1.63
1.100	1.80	2.18
1.650	2.35	2.73
2.200	2.90	3.28

Accessories/spare parts

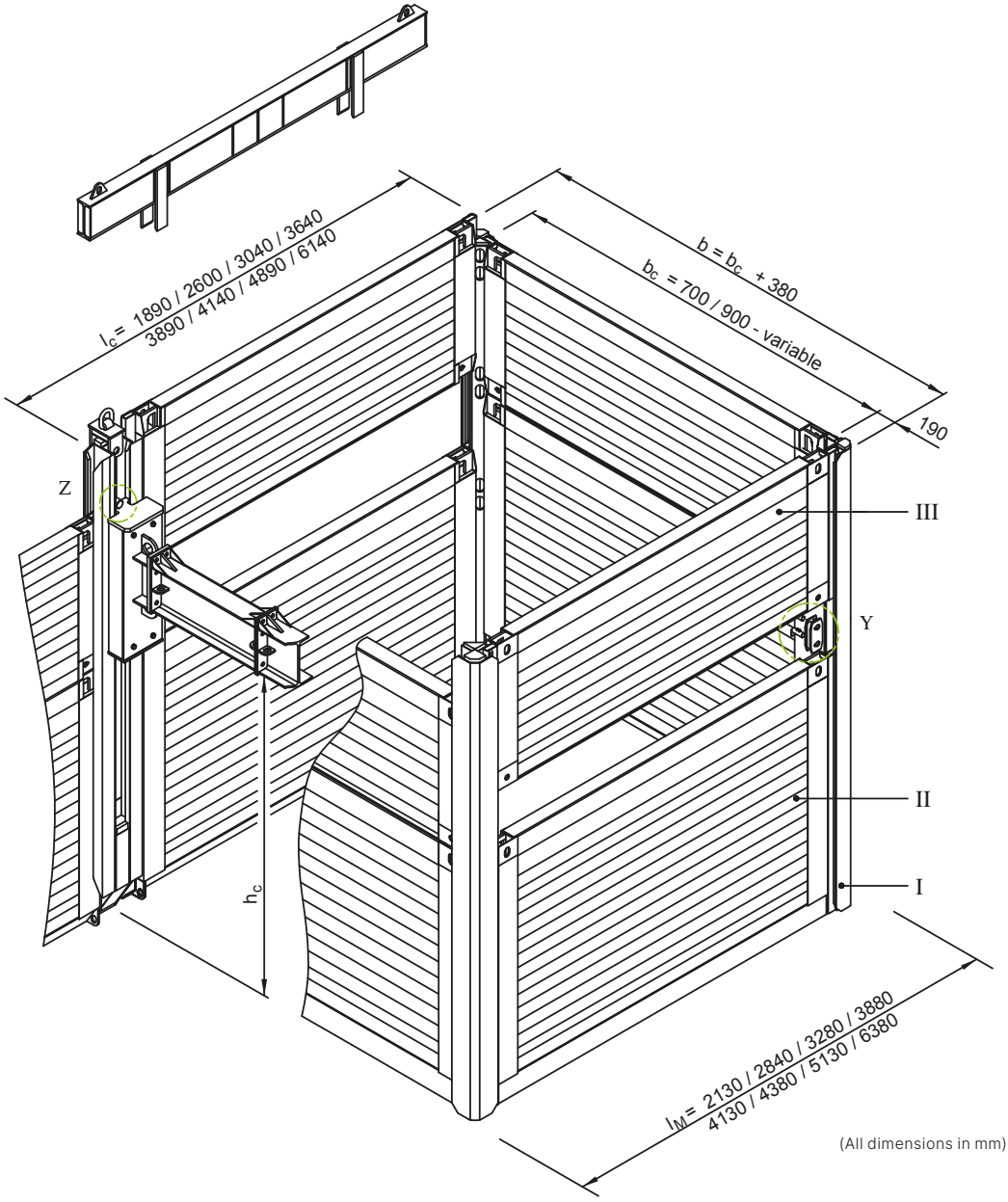
Art. no.	Short description	l [m]	d [m]	G [kg]
821 100	Chain 13/ 5,000 mm	5.00		25.7
850 720	Linear shoring positioning bolts	0.15	0.05	2.5
842 751	Adapter for DKU piling frame element, H = 1.00 m KD VI			75.5
843 350	Adapter for DKU piling frame element, H = 1.10 m KD VI			115.0
834 116	Covering base plate for in-situ concrete	1.47		13.50
834 117	Covering top plate for in-situ concrete	1.00		9.50
336 960	Support brackets for DKU piling frame element incl. bolts and safety clip			40.0
861 076	Pressure beam	1.60		176.0
861 074	Pressure beam	2.35		236.0
861 070	Pressure beam	2.80		271.0
861 071	Pressure beam	3.40		318.0
861 075	Pressure beam	4.60		425.0
861 085	Pressure beam	5.80		525.0
834 015	Pressure plate, rectangular strut cart			12.4
832 230	Bolt for pressure plate, rectangular strut cart	0.15	0.035	1.4
HE 0050 F	Safety clip 6.0 mm		0.006	0.03
IA 0140 F	Nut M 24–8.0 galv. (adapter for DKU piling frame element, H = 1.00 m & 1.10 m)			0.10
IA 0150 F	Nut M 24–10.9 galv. (rectangular strut cart)			0.10
IA 0185 F	Nut M 30–10.9 galv. (U-type strut cart 1.20 m)			0.30
IA 0210 F	Nut M 36–10.9 galv. (U-type strut cart)			0.40
862 200	Connector			5.5
862 100	Connector bolts	0.11	0.035	1.0
IB 0490 F	Screw M 24 × 80–8.8 galv. (adapter for DKU piling frame element, H = 1.00 m)			0.40
IB 0515 F	Screw M 24 × 100–8.8 galv. (adapter for DKU piling frame element, H = 1.10 m)			0.42
IB 0470 F	Screw M 24 × 80–10.9 galv. (rectangular strut cart)			0.40
IB 0545 F	Screw M 30 × 80–10.9 galv. (U-type strut cart 1.20 m)			0.64
IB 0614 F	Screw M 36 × 80–10.9 galv. (U-type strut cart)			1.0
834 057	Pull adapter with bolt			33.0

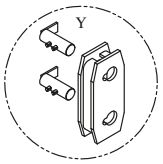
l	Length	t_{pl}	Panel thickness	A	Surface	e_h	Admissible soil pressure
l_M	Module length	b	Shoring width	G	Weight	b_c	Clear width
l_c	Pipe culvert length	d	Diameter	G / VP	Weight / shoring panel	G / DKP	Weight / piling frame element
h	Height	KD / DKP	Sheet piles / piling frame element				

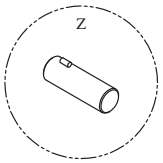
E+S Single slide rail corner shoring

General data

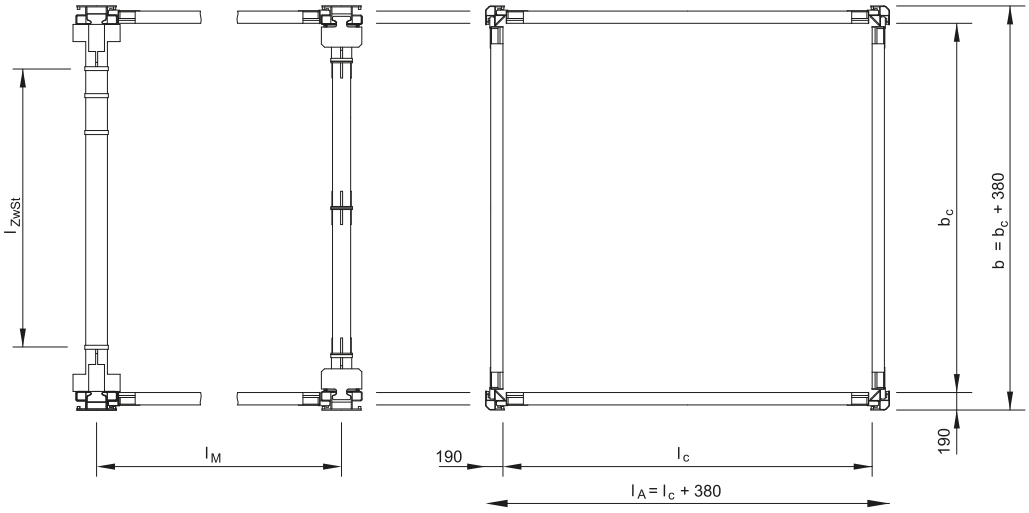
Module length	2.13 m–6.38 m
Slide-rail length	2.30 m / 4.13 m
Panel height	1.32 m / 2.32 m
Shoring width	1.75 m–6.00 m
Rec.: mobile or crawler excavator	18–30 t







I	Corner shoring support	l_M	Module length	b_c	Clear width	Y	Connector with bolts
II	Base panel	l_c	Pipe culvert length	h_c	Pipe culvert height	Z	Positioning bolt
III	Top panel	b	Shoring/trench width	$l_{ZwSt.}$	Extension bar length	l_A	Shoring width



Linear shoring supports

Art. no.	Short description	l [m]	G [kg]
835 129	Corner shoring support	2.30	170.0
835 130	Corner shoring support	4.13	325.0

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 120	1.89	2.13	0.11	1.89	510.0	4.38	176.0
821 160	2.60	2.84	0.11	2.60	650.0	6.03	90.0
821 250	3.04	3.28	0.11	3.04	730.0	7.05	65.5
821 610	3.64	3.88	0.11	3.64	845.0	8.44	45.2
821 850	3.89	4.13	0.11	3.89	970.0	9.02	39.4
821 855	4.14	4.38	0.15	4.14	1,300.0	9.58	81.0
821 860	4.89	5.13	0.15	4.89	1,500.0	11.34	58.1
821 861	6.13	6.38	0.15	6.13	1,880.0	14.22	36.6

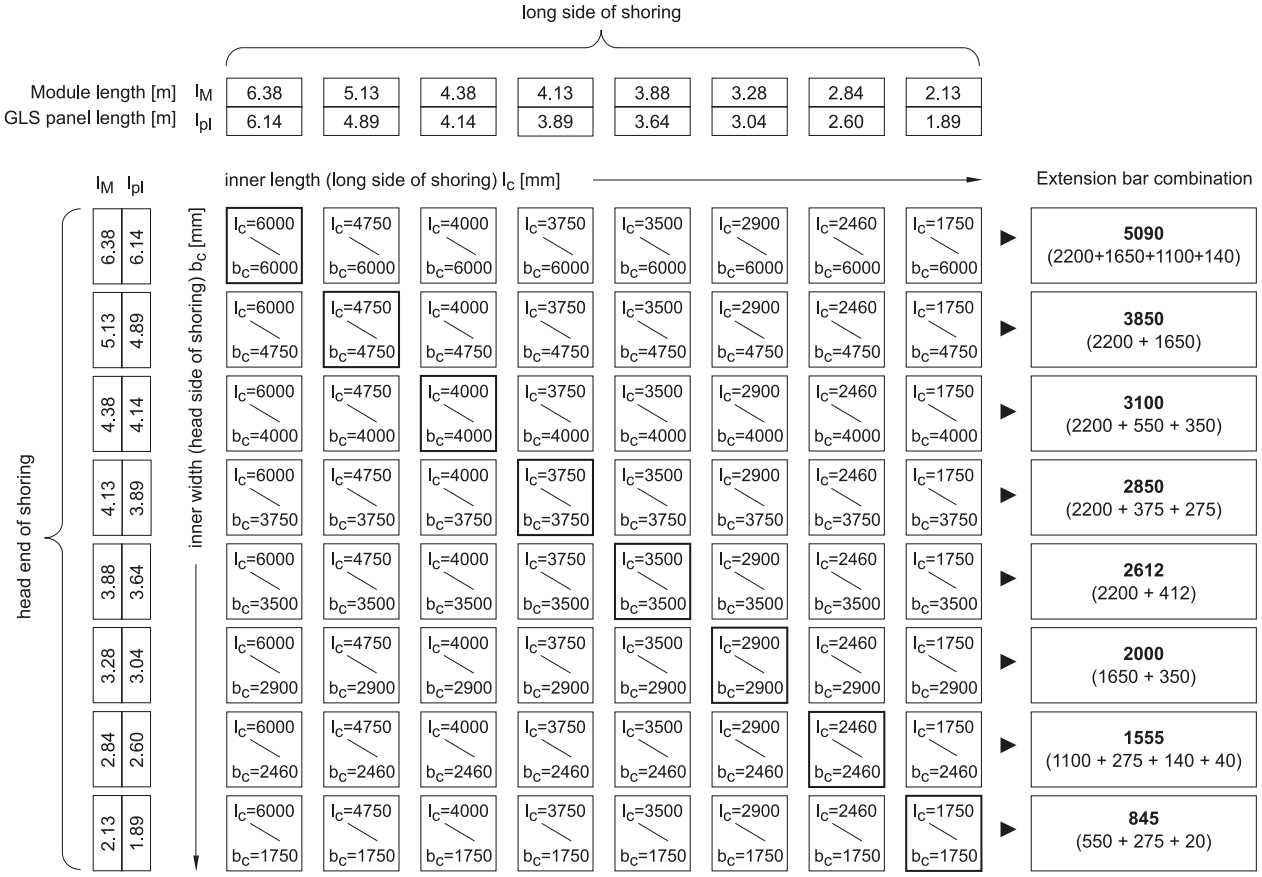
Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 060	1.89	2.13	0.11	1.89	355.0	2.49	176.0
821 180	2.60	2.84	0.11	2.60	440.0	3.43	90.0
822 120	3.04	3.28	0.11	3.04	500.0	4.01	65.5
822 620	3.64	3.88	0.11	3.64	620.0	4.80	45.2
822 760	3.89	4.13	0.11	3.89	649.0	5.13	39.4
822 783	4.14	4.38	0.15	4.14	870.0	5.45	81.0
822 800	4.89	5.13	0.15	4.89	1,100.0	6.45	58.1
822 801	6.13	6.38	0.15	6.13	1,370.0	8.09	36.6

Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 065	1.89	2.13	0.11	1.89	530.0	4.35	176.0
822 155	2.60	2.84	0.11	2.60	660.0	5.98	90.0
822 180	3.04	3.28	0.11	3.04	740.0	6.99	65.5
822 680	3.64	3.88	0.11	3.64	850.0	8.37	45.2
822 780	3.89	4.13	0.11	3.89	980.0	8.95	39.4
822 785	4.14	4.38	0.15	4.14	1,435.0	9.50	81.0

Installation options in combination with rectangular strut cart



Example:
Head end shoring module length l_M = 3.28 m
Required extension bar combination for strut cart in linear shoring field: 2,000 mm

Accessories/spare parts

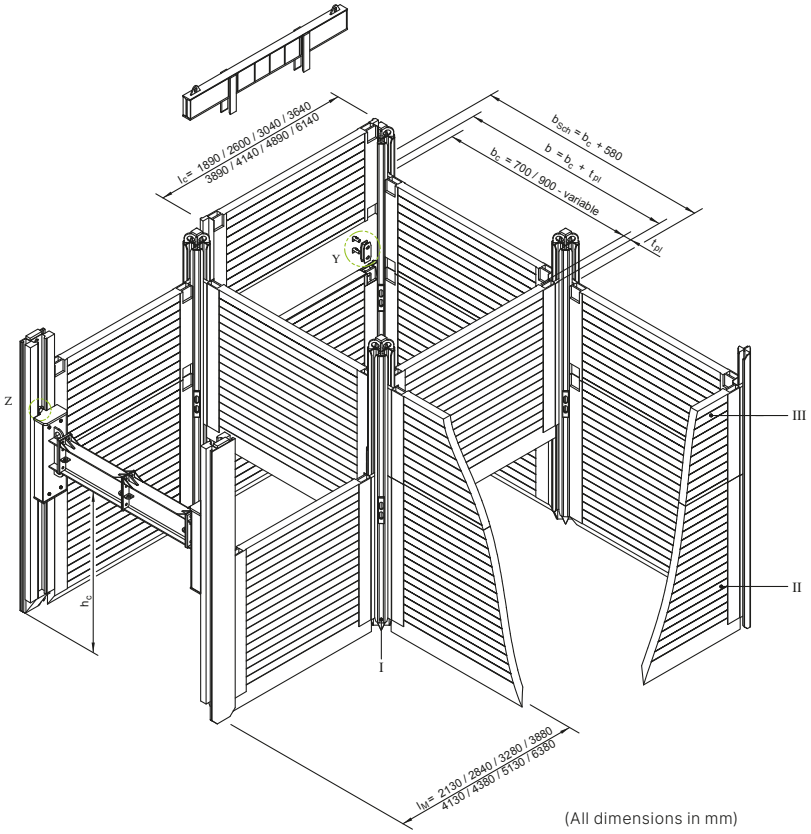
Art. no.	Short description	l [m]	d [m]	G [kg]
861 076	Pressure beam	1.60		176.00
861 074	Pressure beam	2.35		236.00
861 070	Pressure beam	2.80		271.00
861 071	Pressure beam	3.40		318.00
861 075	Pressure beam	4.60		425.00
861 085	Pressure beam	5.80		525.00
862 200	Connector			5.50
862 100	Connector bolts	0.11	0.035	1.00

l	Length	A	Surface	t_{pl}	Panel thickness	e_h	Admissible soil pressure
l_M	Module length	G	Weight	b	Shoring width	b_c	Clear width
l_c	Pipe culvert length	G / VP	Weight / shoring panel	d	Diameter	l_{pl}	Panel length

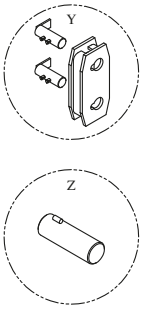
E+S Single slide rail linear shoring – X-rail

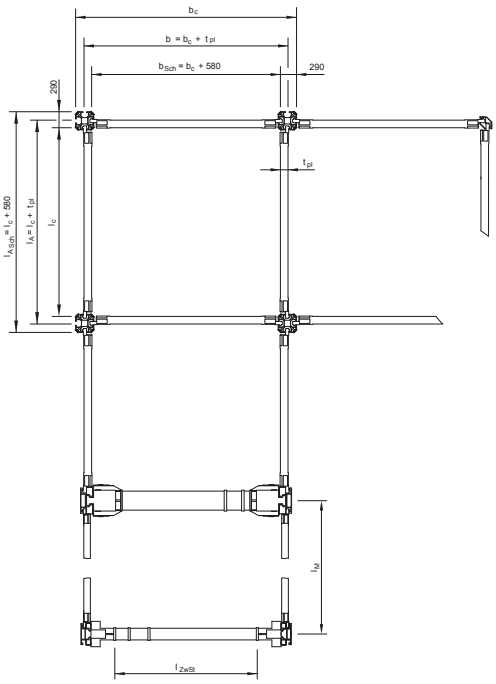
General data

Module length	2.13 m–6.38 m
X-rail length	4.13 m
Panel height	1.32 m / 2.32 m
Shoring width	1.75 m–6.00 m
Rec.: mobile or crawler excavator	18–30 t



(All dimensions in mm)





I	X-rail	l_c	Pipe culvert length	b_{Sch}	Rail outer width	t_{pl}	Panel thickness
II	Base panel	b	Shoring/trench width	l_A	Shoring/trench length	Y	Connector with bolts
III	Top panel	b_c	Clear width	l_{ASch}	Rail outer length	Z	Positioning bolt
l_M	Module length	h_c	Pipe culvert height	$l_{ZwSt.}$	Extension bar length		

Linear shoring support

Art. no.	Short description	l [m]	G [kg]
835 160	X-rail	4.13	700.0

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 120	1.89	2.13	0.11	1.89	510.0	4.38	176.0
821 160	2.60	2.84	0.11	2.60	650.0	6.03	90.0
821 250	3.04	3.28	0.11	3.04	730.0	7.05	65.5
821 610	3.64	3.88	0.11	3.64	845.0	8.44	45.2
821 850	3.89	4.13	0.11	3.89	970.0	9.02	39.4
821 855	4.14	4.38	0.15	4.14	1,300.0	9.58	81.0
821 860	4.89	5.13	0.15	4.89	1,500.0	11.34	58.1
821 861	6.13	6.38	0.15	6.13	1,880.0	14.22	36.6

Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 060	1.89	2.13	0.11	1.89	355.0	2.49	176.0
821 180	2.60	2.84	0.11	2.60	440.0	3.43	90.0
822 120	3.04	3.28	0.11	3.04	500.0	4.01	65.5
822 620	3.64	3.88	0.11	3.64	620.0	4.80	45.2
822 760	3.89	4.13	0.11	3.89	649.0	5.13	39.4
822 783	4.14	4.38	0.15	4.14	870.0	5.45	81.0
822 800	4.89	5.13	0.15	4.89	1,100.0	6.45	58.1
822 801	6.13	6.38	0.15	6.13	1,370.0	8.09	36.6

Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 065	1.89	2.13	0.11	1.89	530.0	4.35	176.0
822 155	2.60	2.84	0.11	2.60	660.0	5.98	90.0
822 180	3.04	3.28	0.11	3.04	740.0	6.99	65.5
822 680	3.64	3.88	0.11	3.64	850.0	8.37	45.2
822 780	3.89	4.13	0.11	3.89	980.0	8.95	39.4
822 785	4.14	4.38	0.15	4.14	1,435.0	9.50	81.0

Accessories/spare parts

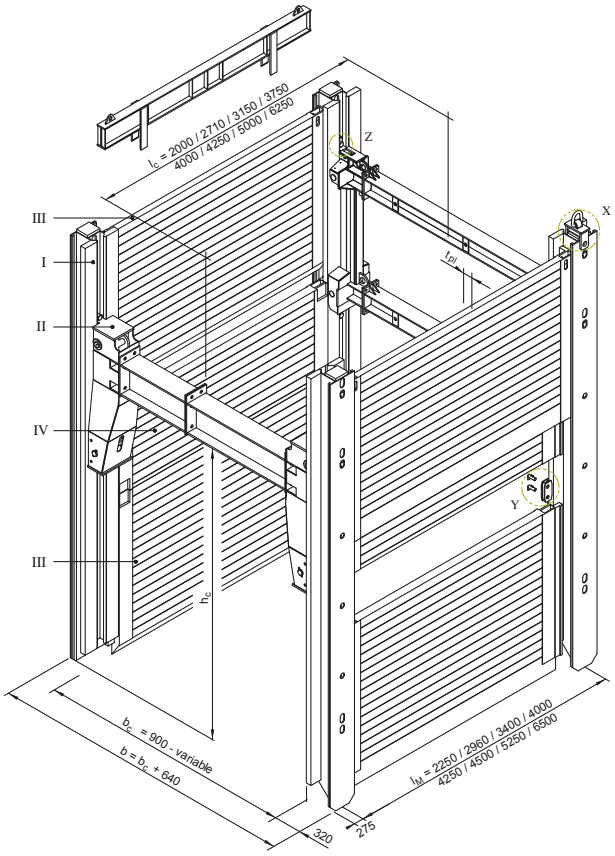
Art. no.	Short description	l [m]	d [m]	G [kg]
861 076	Pressure beam	1.60		176.00
861 074	Pressure beam	2.35		236.00
861 070	Pressure beam	2.80		271.00
861 071	Pressure beam	3.40		318.00
861 075	Pressure beam	4.60		425.00
861 085	Pressure beam	5.80		525.00
862 200	Connector			5.50
862 100	Connector bolts	0.11	0.035	1.00

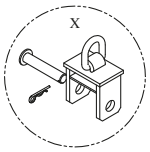
l	Length	A	Surface	G / VP	Weight / shoring panel	d	Diameter
l_M	Module length	G	Weight	t_{pl}	Panel thickness	e_h	Admissible soil pressure
l_c	Pipe culvert length						

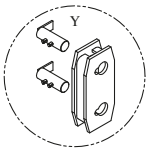
E+S Double slide rail linear shoring

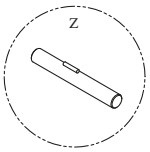
General data

Module length		2.25 m–6.50 m
Slide-rail length		5.13 m / 6.13 m / 7.13 m / 8.13 m / 9.13 m
Panel height		1.32 m / 2.32 m
Pipe culvert height		variable
Shoring width		variable
Rec.: crawler excavator	max. 6.0 m: over 6.0 m:	24–31 t 30–50 t



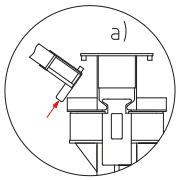


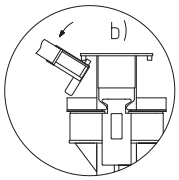


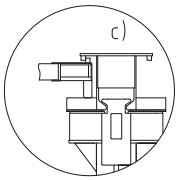


I	Linear shoring support
II	Linear shoring strut cart
III	Base panel
IV	Top panel
l_M	Module length
l_c	Pipe culvert length
b	Shoring/trench width
b_c	Clear width
h_c	Pipe culvert height
t_{pl}	Panel thickness
X	Pull adapter with bolt
Y	Connector with bolts
Z	Positioning bolt

Swiveling-in of shoring panels







(All dimensions in mm. The data on pipe opening length l_c refer to the rectangular strut cart.)

Linear shoring supports

Art. no.	Short description	l [m]	G [kg]
820 912	Linear shoring support	5.13	1,002.0
820 915	Linear shoring support	6.13	1,192.0
820 920	Linear shoring support	7.13	1,404.0
820 924	Linear shoring support	8.13	1,859.0
820 971	Linear shoring support	9.13	2,325.0

Linear shoring strut carts

Art. no.	Short description	l [m]	G [kg]
832 200	Rectangular strut cart	2.00	420.0
832 215	Rectangular strut cart with self-aligning roller, bottom	2.20	490.0
832 205	U-type strut cart	2.00	618.0
832 220	Strut cart 0.85 m (half rectangular strut cart)	0.85	181.0

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 120	1.89	2.25	0.11	2.00	510.0	4.38	176.0
821 160	2.60	2.96	0.11	2.71	650.0	6.03	90.0
821 250	3.04	3.40	0.11	3.15	730.0	7.05	65.5
821 610	3.64	4.00	0.11	3.75	845.0	8.44	45.2
821 850	3.89	4.25	0.11	4.00	970.0	9.02	39.4
821 855	4.14	4.50	0.15	4.25	1,300.0	9.58	81.0
821 860	4.89	5.25	0.15	5.00	1,500.0	11.34	58.1
821 861	6.13	6.50	0.15	6.25	1,880.0	14.22	36.6

Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 060	1.89	2.25	0.11	2.00	355.0	2.49	176.0
821 180	2.60	2.96	0.11	2.71	440.0	3.43	90.0
822 120	3.04	3.40	0.11	3.15	500.0	4.01	65.5
822 620	3.64	4.00	0.11	3.75	620.0	4.80	45.2
822 760	3.89	4.25	0.11	4.00	649.0	5.13	39.4
822 783	4.14	4.50	0.15	4.25	870.0	5.45	81.0
822 800	4.89	5.25	0.15	5.00	1,100.0	6.45	58.1
822 801	6.13	6.50	0.15	6.25	1,370.0	8.09	36.6

Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 065	1.89	2.25	0.11	2.00	530.0	4.35	176.0
822 155	2.60	2.96	0.11	2.71	660.0	5.98	90.0
822 180	3.04	3.40	0.11	3.15	740.0	6.99	65.5
822 680	3.64	4.00	0.11	3.75	850.0	8.37	45.2
822 780	3.89	4.25	0.11	4.00	980.0	8.95	39.4
822 785	4.14	4.50	0.15	4.25	1,435.0	9.50	81.0

Base panels -inside- reinforced (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 249	3.04	3.40	0.15	3.15	985.0	7.05	154.4
821 248	3.64	4.00	0.15	3.75	1,165.0	8.44	106.5

Top panels -inside- reinforced (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 181	3.04	3.40	0.15	3.15	1,080.0	6.99	154.4
822 182	3.64	4.00	0.15	3.75	1,260.0	8.37	106.5

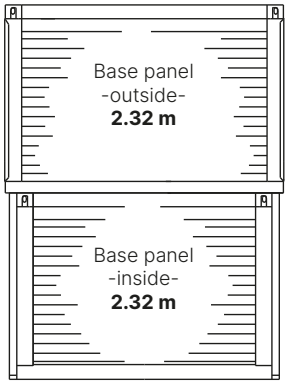
Base panels -outside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 150	2.00	2.25	0.11	2.00	542.0	4.64	149.0
821 170	2.71	2.96	0.11	2.71	675.0	6.29	80.0
821 310	3.15	3.40	0.11	3.15	755.0	7.31	59.0
821 770	3.75	4.00	0.11	3.75	865.0	8.70	41.4
821 910	4.00	4.25	0.11	4.00	990.0	9.28	36.3
821 913	4.25	4.50	0.15	4.25	1,313.0	9.86	75.0
821 912	5.00	5.25	0.15	5.00	1,545.0	11.60	54.5
821 916	6.25	6.50	0.15	6.25	1,910.0	14.50	34.7

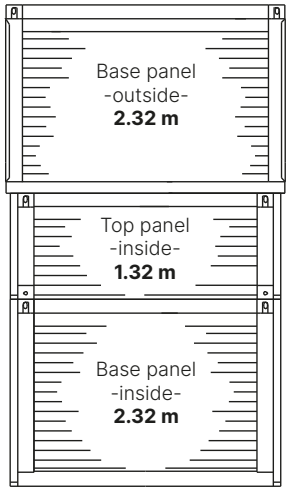
Top panels -outside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 075	2.00	2.25	0.11	2.00	365.0	2.64	149.0
821 190	2.71	2.96	0.11	2.71	455.0	3.58	80.0
822 310	3.15	3.40	0.11	3.15	510.0	4.16	59.0
822 710	3.75	4.00	0.11	3.75	585.0	4.95	41.4
822 810	4.00	4.25	0.11	4.00	647.0	5.28	36.3
822 813	4.25	4.50	0.15	4.25	900.0	5.61	75.0
822 815	5.00	5.25	0.15	5.00	1,115.0	6.60	54.5
822 830	6.25	6.50	0.15	6.25	1,400.0	8.25	34.7

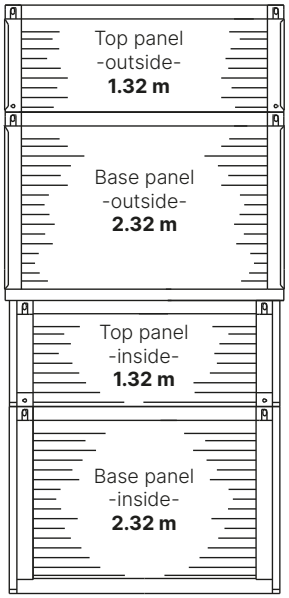
Possible height combinations



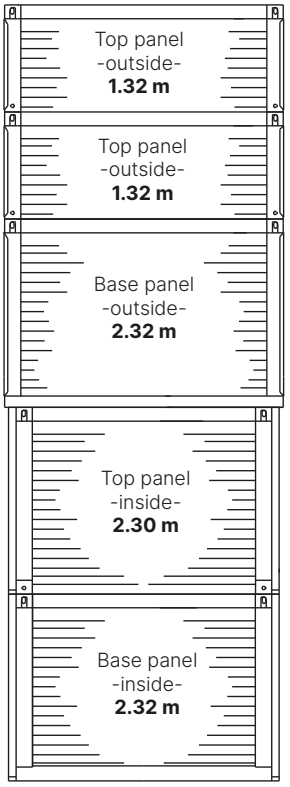
Shoring wall height
approx. 4.60 m



Shoring wall height
approx. 6.00 m



Shoring wall height
approx. 7.30 m



Shoring wall height
approx. 9.60 m

Extension bars for rectangular strut cart

Art. no.	Short description	l [m]	G [kg]
830 005	HEB 220 extension bar	0.140	42.0
830 010	HEB 220 extension bar	0.275	50.0
830 011	HEB 220 extension bar	0.350	55.0
830 012	HEB 220 extension bar	0.375	62.0
830 015	HEB 220 extension bar	0.412	65.0
830 020	HEB 220 extension bar	0.550	70.0
830 030	HEB 220 extension bar	1.100	110.0
830 075	HEB 220 extension bar	1.650	145.0
830 125	HEB 220 extension bar	2.200	192.0

Extension bars for U-type strut cart

Art. no.	Short description	l [m]	G [kg]
831 503	HEA 450 extension bar	0.140	77.0
831 500	HEA 450 extension bar	0.275	107.0
831 507	HEA 450 extension bar	0.375	115.0
831 510	HEA 450 extension bar	0.550	140.0
831 520	HEA 450 extension bar	1.100	220.0
831 530	HEA 450 extension bar	1.650	300.0
831 540	HEA 450 extension bar	2.200	375.0

Shoring widths for rectangular and U-type strut cart

Extension bar length [m]	b_c [m]	b [m]
without extension bar	0.90	1.54
0.140	1.04	1.68
0.275	1.18	1.82
0.350	1.25	1.89
0.375	1.28	1.92
0.412	1.31	1.95
0.550	1.45	2.08
1.100	2.00	2.64
1.650	2.55	3.19
2.200	3.10	3.74

Other trench widths possible by combination of different extension bar lengths.

Accessories/spare parts

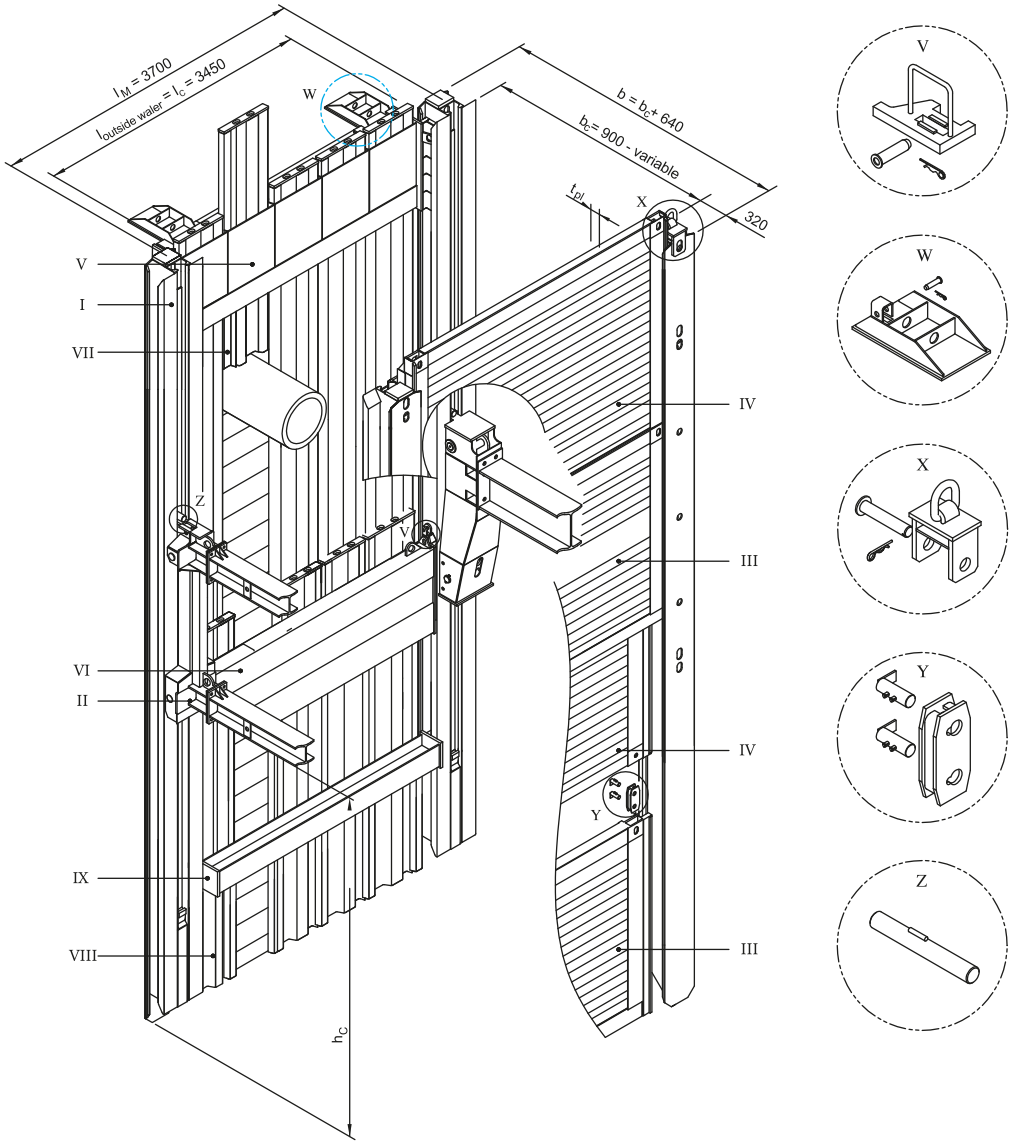
Art. no.	Short description	l [m]	d [m]	G [kg]
834 110	Covering top plate for in-situ concrete	1.00		9.9
834 100	Covering base plate for in-situ concrete	0.75		7.9
832 245	Linear shoring positioning bolts	0.30	0.040	4.0
832 240	Linear shoring positioning bolts (9.13 m support)	0.39	0.065	11.0 kg
861 076	Pressure beam	1.60		176.0
861 074	Pressure beam	2.35		236.0
861 070	Pressure beam	2.80		271.0
861 071	Pressure beam	3.40		318.0
861 075	Pressure beam	4.60		425.0
861 085	Pressure beam	5.80		525.0
834 015	Pressure plate, rectangular strut cart			12.4
832 230	Bolt for pressure plate, rectangular strut cart	0.15	0.035	1.4
834 040	Distance plate for rectangular strut cart t = 6 mm		0.006	4.3
834 050	Distance plate for rectangular strut cart t = 8 mm		0.008	5.7
DF 0170 F	Distance plate for rectangular strut cart t = 20 mm		0.020	13.6
HE 0050 F	Safety clip 6.0 mm		0.006	0.03
IA 0150 F	Nut M 24–10.9 galv. (rectangular strut cart)			0.10
IA 0210 F	Nut M 36–10.9 galv. (U-type strut cart)			0.40
862 200	Connector			5.5
862 100	Connector bolts	0.11	0.035	1.0
IB 0470 F	Screw M 24 × 80–10.9 galv. (rectangular strut cart)			0.40
IB 0614 F	Screw M 36 × 80–10.9 galv. (U-type strut cart)			1.0
834 060	Pull adapter with bolts			43.6

l	Length	A	Surface	t_{pl}	Panel thickness	e_h	Admissible soil pressure
l_M	Module length	G	Weight	b	Shoring width	b_c	Clear width
l_c	Pipe culvert length	G / VP	Weight / shoring panel	d	Diameter		

E+S Double slide rail inner-city linear shoring

General data

Module length		2.96 m / 3.70 m / 4.50 m / 5.25 m / 6.50 m
Slide-rail length		5.13 m / 6.13 m / 7.13 m / 8.13 m / 9.13 m
Piling frame element height		1.00 m / 1.10 m
Pipe culvert height		variable
Sheet pile length (KD VI/8)		variable
Shoring width		variable
Rec.: crawler excavator	max. 6.0 m: over 6.0 m:	24–31 t 30–50 t



(All dimensions in mm. The data on pipe opening length l_c refer to the rectangular strut cart.)

I	Linear shoring support	VI	Piling frame element (inside waler)	l_c	Pipe culvert length	V	Inside waler anchoring
II	Linear shoring strut cart	VII	Sheet piles (outside waler)	b	Shoring/trench width	W	Support bracket
III	Base panel	VIII	Sheet piles (inside waler)	b_c	Clear width	X	Pull adapter with bolts
IV	Top panel	IX	Waler support (inside waler)	h_c	Pipe culvert height	Y	Connector with bolts
V	Piling frame element (outside waler)	l_M	Module length	t_{pl}	Panel thickness	Z	Positioning bolt

Linear shoring supports

Art. no.	Short description	l [m]	G [kg]
820 912	Linear shoring support	5.13	1,002.0
820 915	Linear shoring support	6.13	1,192.0
820 920	Linear shoring support	7.13	1,404.0
820 924	Linear shoring support	8.13	1,859.0
820 971	Linear shoring support	9.13	2,325.0

Linear shoring strut carts

Art. no.	Short description	l [m]	G [kg]
832 200	Rectangular strut cart	2.00	420.0
832 215	Rectangular strut cart with self-aligning roller, bottom	2.20	490.0
832 220	Strut cart 0.85 m (half rectangular strut cart)	0.85	181.0
832 205	U-type strut cart	2.00	618.0

Piling frame elements

Art. no.	Short description	l [m]	l_M [m]	h [m]	t_{pl} [m]	l_c [m]	G/DKP [kg]	KD/DKP
820 980	Piling frame element (outside waler)	3.45	3.70	1.00	0.30	3.45	1,330.0	5
821 000	Piling frame element (inside waler)	3.34	3.70	1.00	0.30	3.45	1,217.0	5
842 671	Piling frame element DKU, KD VI	2.27	2.96	1.00	0.31	2.71	510.0	4
842 687	Piling frame element DKU, KD VI	3.00	3.69	1.00	0.31	3.44	640.0	5
842 674	Piling frame element DKU, KD VI	3.81	4.50	1.00	0.31	4.25	785.0	7
842 696	Piling frame element DKU, KD VI	4.55	5.25	1.10	0.40	5.00	1,563.0	8
842 699	Piling frame element DKU, KD VI	5.80	6.50	1.10	0.40	6.25	1,880.0	10

Base panels -outside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 170	2.71	2.96	0.11	2.71	675.0	6.29	80.0
821 320	3.45	3.70	0.11	3.45	815.0	8.00	49.0
821 913	4.25	4.50	0.15	4.25	1,313.0	9.86	75.0
821 912	5.00	5.25	0.15	5.00	1,545.0	11.60	54.5
821 916	6.25	6.50	0.15	6.25	1,910.0	14.50	34.7

Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 190	2.71	2.96	0.11	2.71	455.0	3.58	80.0
822 410	3.45	3.70	0.11	3.45	550.0	4.55	49.0
822 813	4.25	4.50	0.15	4.25	900.0	5.61	75.0
822 815	5.00	5.25	0.15	5.00	1,115.0	6.60	54.5
822 830	6.25	6.50	0.15	6.25	1,400.0	8.25	34.7

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 160	2.60	2.96	0.11	2.71	650.0	6.03	90.0
821 255	3.34	3.70	0.11	3.45	803.0	7.75	54.0
821 855	4.14	4.50	0.15	4.25	1,300.0	9.58	81.0
821 860	4.89	5.13	0.15	4.89	1,500.0	11.34	58.1
821 861	6.13	6.38	0.15	6.13	1,880.0	14.22	36.6

Top panels -inside- (height 1.32 m & 2.30 m)

Art. no.	l [m]	l_M [m]	h [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 180	2.60	2.96	1.32	0.11	2.71	440.0	3.43	90.0
822 140	3.34	3.70	1.32	0.11	3.45	570.0	4.41	54.0
822 783	4.14	4.50	1.32	0.15	4.25	870.0	5.45	81.0
822 800	4.89	5.25	1.32	0.15	5.00	1,100.0	6.45	58.1
822 801	6.13	6.50	1.32	0.15	6.25	1,370.0	8.09	36.6
822 155	2.60	2.96	2.30	0.11	2.71	660.0	5.98	90.0
822 145	3.34	3.70	2.30	0.11	3.45	840.0	7.68	54.0
822 785	4.14	4.50	2.30	0.15	4.25	1,435.0	9.50	81.0

Walers, inner-city linear shoring

Art. no.	Short description	l [m]	l_M [m]	G/VP [kg]
821 003	Waler for outside waler	3.46	3.70	374.0
821 002	Waler for inside waler	3.30	3.70	310.0
842 704	Waler for piling frame element DKU	2.60	2.96	300.0
GV000560	Waler for piling frame element DKU	3.30	3.69	358.0
842 711	Waler for piling frame element DKU	4.14	4.50	445.0
843 366	Waler for piling frame element DKU	4.99	5.25	920.0
843 360	Waler for piling frame element DKU	6.24	6.50	1,097.0

Extension bars for U-type strut cart

Art. no.	Short description	l [m]	G [kg]
831 503	HEA 450 extension bar	0.140	77.0
831 500	HEA 450 extension bar	0.275	107.0
831 507	HEA 450 extension bar	0.375	115.0
831 510	HEA 450 extension bar	0.550	140.0
831 520	HEA 450 extension bar	1.100	220.0
831 530	HEA 450 extension bar	1.650	300.0
831 540	HEA 450 extension bar	2.200	375.0

Extension bars for rectangular strut cart

Art. no.	Short description	l [m]	G [kg]
830 005	HEB 220 extension bar	0.140	42.0
830 010	HEB 220 extension bar	0.275	50.0
830 011	HEB 220 extension bar	0.350	55.0
830 012	HEB 220 extension bar	0.375	62.0
830 015	HEB 220 extension bar	0.410	65.0
830 020	HEB 220 extension bar	0.550	70.0
830 030	HEB 220 extension bar	1.100	110.0
830 075	HEB 220 extension bar	1.650	145.0
830 125	HEB 220 extension bar	2.200	192.0

Shoring widths for rectangular and U-type strut cart

Extension bar length [m]	b_c [m]	b [m]
without extension bar	0.90	1.54
0.140	1.04	1.68
0.275	1.18	1.82
0.350	1.25	1.89
0.375	1.28	1.92
0.412	1.31	1.95
0.550	1.45	2.09
1.100	2.00	2.64
1.650	2.55	3.19
2.200	3.10	3.74

Other trench widths possible by combination of different extension bar lengths.

Accessories/spare parts

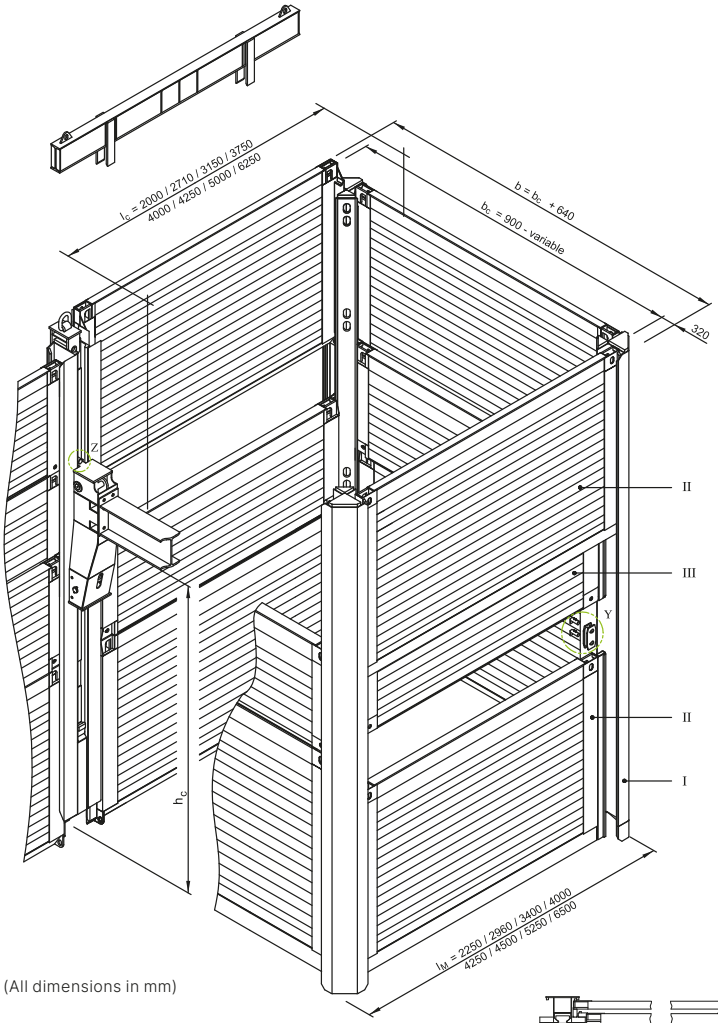
Art. no.	Short description	l [m]	d [m]	G [kg]
821 100	Chain 13/ 5,000 mm	5.00		25.7
834 110	Covering top plate for in-situ concrete	1.00		9.9
834 100	Covering base plate for in-situ concrete	0.75		7.9
834 040	Distance plate for rectangular strut cart t = 6mm		0.006	4.3
834 050	Distance plate for rectangular strut cart t = 8mm		0.008	5.7
DF 0170 F	Distance plate for rectangular strut cart t = 20mm		0.020	13.6
842 761	Adapter for DKU piling frame element, H = 1.00 m KD VI			75.0
843 355	Adapter for DKU piling frame element, H = 1.10 m KD VI			150.0
832 245	Linear shoring positioning bolts	0.30	0.040	4.0
832 240	Linear shoring positioning bolts (9.13 m support)	0.39	0.065	11.0 kg
861 076	Pressure beam	1.60		176.0
861 074	Pressure beam	2.35		236.0
861 070	Pressure beam	2.80		271.0
861 071	Pressure beam	3.40		318.0
861 075	Pressure beam	4.60		425.0
861 085	Pressure beam	5.80		525.0
834 015	Pressure plate, rectangular strut cart			12.4
832 230	Bolt for pressure plate, rectangular strut cart	0.15	0.035	1.4
HE 0050 F	Safety clip 6.0 mm		0.006	0.03
336 920	Inside waler anchoring R/L + DK LV bolt			6.00
336 960	Support brackets for piling frame element incl. bolts and safety clip			40.0
IA 0150 F	Nut M 24–10.9 galv. (rectangular strut cart)			0.10
IA 0140 F	Nut M 24–8.0 galv. (adapter piling frame element DKU, H = 1.00 m & 1.10 m)			0.10
IA 0210 F	Nut M 36–10.9 galv. (U-type strut cart)			0.40
862 200	Connector			5.5
862 100	Connector bolts	0.11	0.035	1.0
IB 0490 F	Screw M 24 × 80–8.8 galv. (adapter piling frame element DKU, H = 1.00 m)			0.40
IB 0515 F	Screw M 24 × 100–8.8 galv. (adapter piling frame element DKU, H = 1.10 m)			0.42
IB 0470 F	Screw M 24 × 80–10.9 galv. (rectangular strut cart)			0.40
IB 0614 F	Screw M 36 × 80–10.9 galv. (U-type strut cart)			1.0
834 060	Pull adapter with bolts			43.6

l	Length	A	Surface	t_{pl}	Panel thickness	e_h	Admissible soil pressure
l_M	Module length	G	Weight	b	Shoring width	b_c	Clear width
l_c	Pipe culvert length	G / VP	Weight / shoring panel	d	Diameter	G / DKP	Weight / piling frame element
h	Panel height	KD / DKP	Sheet piles / piling frame element				

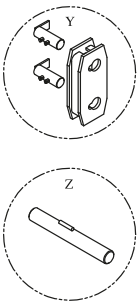
E+S Double slide rail corner shoring

General data

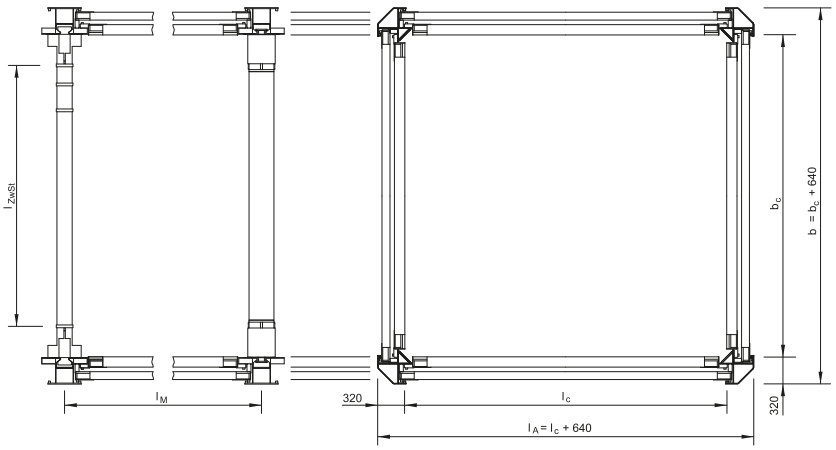
Module length	2.25 m–6.50 m
Slide-rail length	5.13 m / 6.13 m
Panel height	1.32 m / 2.32 m
Shoring width	1.75 m–6.00 m
Rec.: crawler excavator	24–31 t



(All dimensions in mm)



I	Corner shoring support
II	Base panel
III	Top panel
l_M	Module length
l_c	Pipe culvert length
b	Shoring/trench width
b_c	Clear width
h_c	Pipe culvert height
$l_{ZwSt.}$	Extension bar length
l_A	Trench width
Y	Connector with bolts
Z	Positioning bolt



Linear shoring supports

Art. no.	Short description	l [m]	G [kg]
835 100	Corner shoring support	5.13	740.0
835 120	Corner shoring support	6.13	900.0

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 120	1.89	2.25	0.11	2.00	510.0	4.38	176.0
821 160	2.60	2.96	0.11	2.71	650.0	6.03	90.0
821 250	3.04	3.40	0.11	3.15	730.0	7.05	65.5
821 610	3.64	4.00	0.11	3.75	845.0	8.44	45.2
821 850	3.89	4.25	0.11	4.00	970.0	9.02	39.4
821 855	4.14	4.50	0.15	4.25	1,300.0	9.58	81.0
821 860	4.89	5.25	0.15	5.00	1,500.0	11.34	58.1
821 861	6.13	6.50	0.15	6.25	1,880.0	14.22	36.6

Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 060	1.89	2.25	0.11	2.00	355.0	2.49	176.0
821 180	2.60	2.96	0.11	2.71	440.0	3.43	90.0
822 120	3.04	3.40	0.11	3.15	500.0	4.01	65.5
822 620	3.64	4.00	0.11	3.75	620.0	4.80	45.2
822 760	3.89	4.25	0.11	4.00	649.0	5.13	39.4
822 783	4.14	4.50	0.15	4.25	870.0	5.45	81.0
822 800	4.89	5.25	0.15	5.00	1,100.0	6.45	58.1
822 801	6.13	6.50	0.15	6.25	1,370.0	8.09	36.6

Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 065	1.89	2.25	0.11	2.00	530.0	4.35	176.0
822 155	2.60	2.96	0.11	2.71	660.0	5.98	90.0
822 180	3.04	3.40	0.11	3.15	740.0	6.99	65.5
822 680	3.64	4.00	0.11	3.75	850.0	8.37	45.2
822 780	3.89	4.25	0.11	4.00	980.0	8.95	39.4
822 785	4.14	4.50	0.15	4.25	1,435.0	9.50	81.0

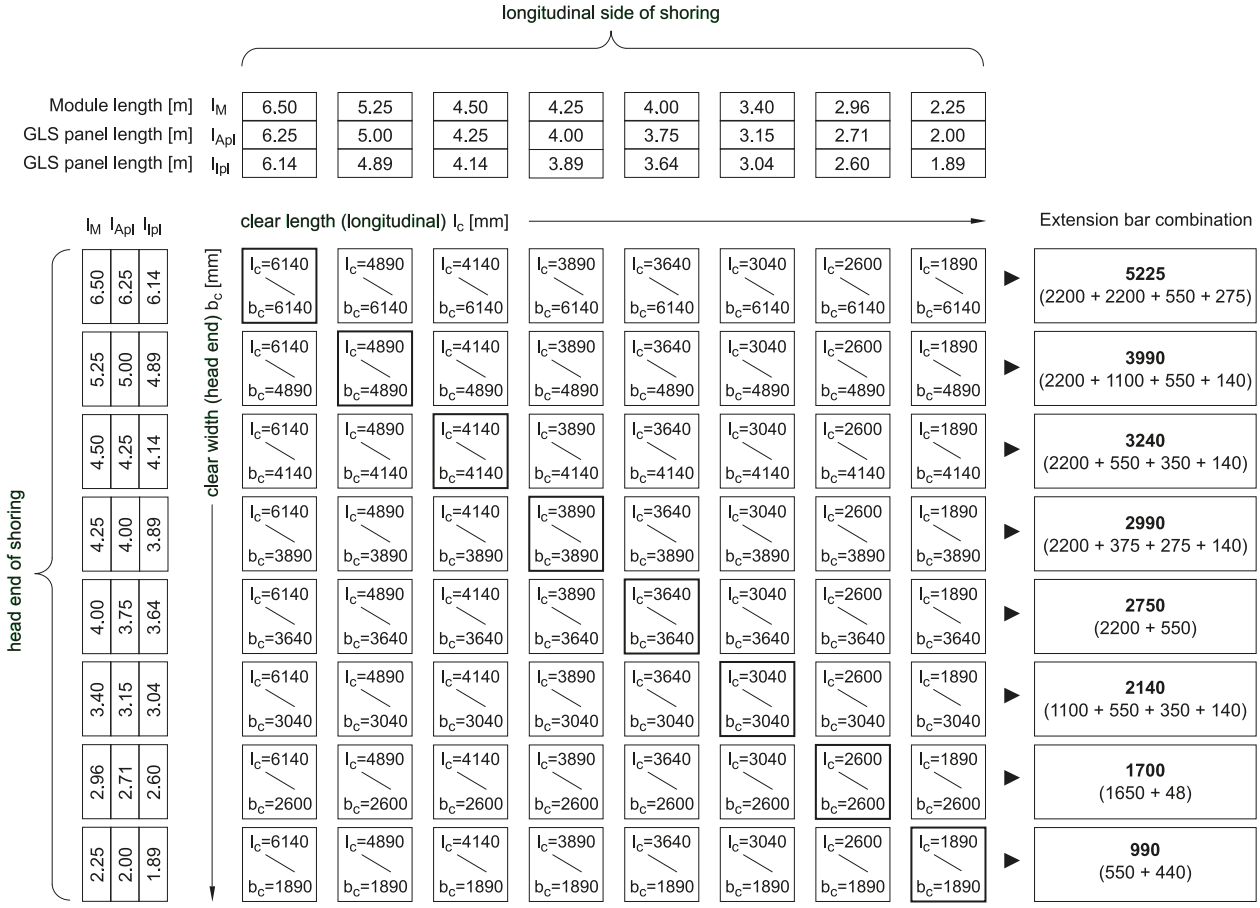
Base panels -outside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 150	2.00	2.25	0.11	2.00	542.0	4.64	149.0
821 170	2.71	2.96	0.11	2.71	675.0	6.29	80.0
821 310	3.15	3.40	0.11	3.15	755.0	7.31	59.0
821 770	3.75	4.00	0.11	3.75	865.0	8.70	41.4
821 910	4.00	4.25	0.11	4.00	990.0	9.28	36.3
821 913	4.25	4.50	0.15	4.25	1,313.0	9.86	75.0
821 912	5.00	5.25	0.15	5.00	1,545.0	11.60	54.5
821 916	6.25	6.50	0.15	6.25	1,910.0	14.50	34.7

Top panels -outside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 075	2.00	2.25	0.11	2.00	365.0	2.64	149.0
821 190	2.71	2.96	0.11	2.71	455.0	3.58	80.0
822 310	3.15	3.40	0.11	3.15	510.0	4.16	59.0
822 710	3.75	4.00	0.11	3.75	585.0	4.95	41.4
822 810	4.00	4.25	0.11	4.00	647.0	5.28	36.3
822 813	4.25	4.50	0.15	4.25	900.0	5.61	75.0
822 815	5.00	5.25	0.15	5.00	1,115.0	6.60	54.5
822 830	6.25	6.50	0.15	6.25	1,400.0	8.25	34.7

Installation options in combination with rectangular strut cart



Example: Top end shoring module length lM = 3.40 m
Required extension bar combinations for strut cart in linear shoring field: 2,140 mm

Accessories/spare parts

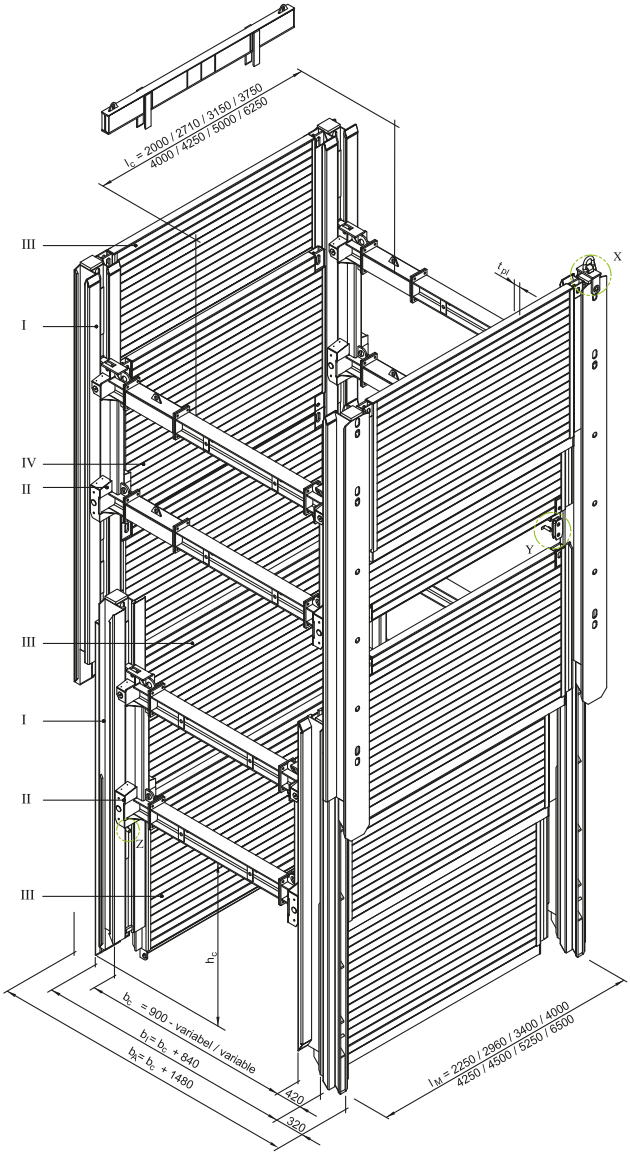
Art. no.	Short description	l [m]	d [m]	G [kg]
861 076	Pressure beam	1.60		176.0
861 074	Pressure beam	2.35		236.0
861 070	Pressure beam	2.80		271.0
861 071	Pressure beam	3.40		318.0
861 075	Pressure beam	4.60		425.0
861 085	Pressure beam	5.80		525.0
862 200	Connector			5.5
862 100	Connector bolts	0.11	0.035	1.0

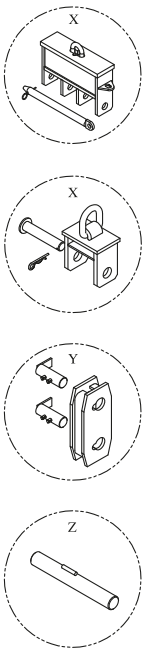
l	Length	l_{API}	Outside panel length	G	Weight	d	Diameter
l_M	Module length	l_{IPI}	Inside panel length	G / VP	Weight / shoring panel	e_h	Admissible soil pressure
l_c	Pipe culvert length	A	Surface	t_{pl}	Panel thickness		

E+S Deep linear shoring

General data

Module length	2.25 m–6.50 m
Slide-rail length	variable
Panel height	1.32 m / 2.32 m
Pipe culvert height	variable
Shoring width	variable
Rec.: crawler excavator	50 t





I	Linear shoring support
II	Linear shoring strut cart
III	Base panel
IV	Top panel
l_M	Module length
l_c	Pipe culvert length
b_A	Shoring/trench width (outside rail)
b_I	Shoring/trench width (inside rail)
b_c	Clear width
h_c	Pipe culvert height
t_{pl}	Panel thickness
X	Pull adapter with bolts
Y	Connector with bolts
Z	Positioning bolt

(All dimensions in mm. The data on pipe opening length l_c refer to the rectangular strut cart.)

Linear shoring supports

Art. no.	Short description	l [m]	G [kg]
820 952	Linear shoring support -inside-	5.13	1,189.0
820 947	Linear shoring support -outside-	6.13	1,260.0
820 948	Linear shoring support -inside-	6.13	1,409.0
820 953	Linear shoring support -outside-	7.13	1,470.0

Linear shoring strut cart

Art. no.	Short description	l [m]	G [kg]
832 215	Rectangular strut cart with self-aligning roller, bottom	2.20	490.0

Base panels -inside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 120	1.89	2.25	0.11	2.00	510.0	4.38	176.0
821 160	2.60	2.96	0.11	2.71	650.0	6.03	90.0
821 250	3.04	3.40	0.11	3.15	730.0	7.05	65.5
821 610	3.64	4.00	0.11	3.75	845.0	8.44	45.2
821 850	3.89	4.25	0.11	4.00	970.0	9.02	39.4
821 855	4.14	4.50	0.15	4.25	1,300.0	9.58	81.0
821 860	4.89	5.25	0.15	5.00	1,500.0	11.34	58.1
821 861	6.13	6.50	0.15	6.25	1,880.0	14.22	36.6

Top panels -inside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 060	1.89	2.25	0.11	2.00	355.0	2.49	176.0
821 180	2.60	2.96	0.11	2.71	440.0	3.43	90.0
822 120	3.04	3.40	0.11	3.15	500.0	4.01	65.5
822 620	3.64	4.00	0.11	3.75	620.0	4.80	45.2
822 760	3.89	4.25	0.11	4.00	649.0	5.13	39.4
822 783	4.14	4.50	0.15	4.25	870.0	5.45	81.0
822 800	4.89	5.25	0.15	5.00	1,100.0	6.45	58.1
822 801	6.13	6.50	0.15	6.25	1,370.0	8.09	36.6

Top panels -inside- (height 2.30 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 065	1.89	2.25	0.11	2.00	530.0	4.35	176.0
822 155	2.60	2.96	0.11	2.71	660.0	5.98	90.0
822 180	3.04	3.40	0.11	3.15	740.0	6.99	65.5
822 680	3.64	4.00	0.11	3.75	850.0	8.37	45.2
822 780	3.89	4.25	0.11	4.00	980.0	8.95	39.4
822 785	4.14	4.50	0.15	4.25	1,435.0	9.50	81.0

Base panels -outside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 150	2.00	2.25	0.11	2.00	542.0	4.64	149.0
821 170	2.71	2.96	0.11	2.71	675.0	6.29	80.0
821 310	3.15	3.40	0.11	3.15	755.0	7.31	59.0
821 770	3.75	4.00	0.11	3.75	865.0	8.70	41.4
821 910	4.00	4.25	0.11	4.00	990.0	9.28	36.3
821 913	4.25	4.50	0.15	4.25	1,313.0	9.86	75.0
821 912	5.00	5.25	0.15	5.00	1,545.0	11.60	54.5
821 916	6.25	6.50	0.15	6.25	1,910.0	14.50	34.7

Top panels -outside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 075	2.00	2.25	0.11	2.00	365.0	2.64	149.0
821 190	2.71	2.96	0.11	2.71	455.0	3.58	80.0
822 310	3.15	3.40	0.11	3.15	510.0	4.16	59.0
822 710	3.75	4.00	0.11	3.75	585.0	4.95	41.4
822 810	4.00	4.25	0.11	4.00	647.0	5.28	36.3
822 813	4.25	4.50	0.15	4.25	900.0	5.61	75.0
822 815	5.00	5.25	0.15	5.00	1,115.0	6.60	54.5
822 830	6.25	6.50	0.15	6.25	1,400.0	8.25	34.7

Extension bars for rectangular strut cart

Art. no.	Short description	l [m]	G [kg]
830 010	HEB 220 extension bar	0.275	50.0
830 020	HEB 220 extension bar	0.550	70.0
830 027	HEB 220 extension bar (upper shoring field)	0.840	134.0
830 030	HEB 220 extension bar	1.100	110.0
830 075	HEB 220 extension bar	1.650	145.0
830 125	HEB 220 extension bar	2.200	192.0

Shoring widths, deep linear shoring

Extension bar length [m]	b_c [m]	b_I [m]	b_A [m]
without extension bar		0.90	1.28
0.275	1.18	2.02	2.66
0.550	1.45	2.29	2.93
1.100	2.00	2.84	3.48
1.650	2.55	3.39	4.03
2.200	3.10	3.94	4.58

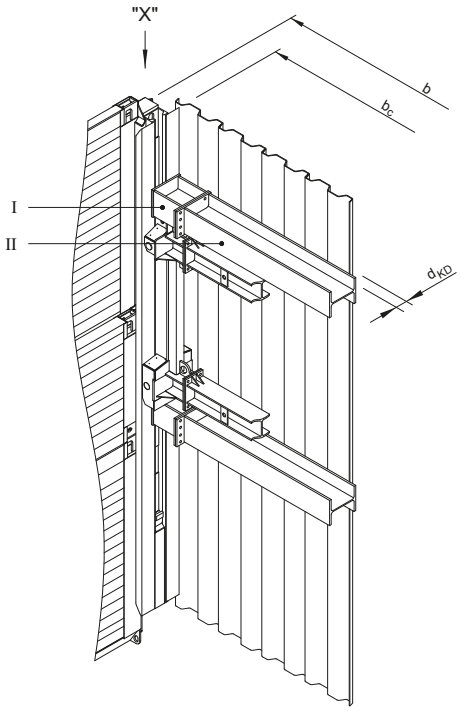
Other trench widths possible by combination of different extension bar lengths.

Accessories/spare parts

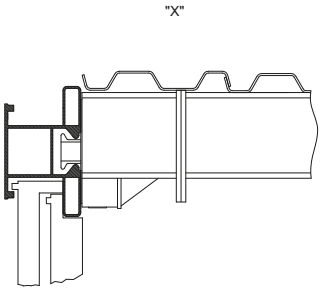
Art. no.	Short description	l [m]	d [m]	G [kg]
832 245	Linear shoring positioning bolts	0.30	0.040	3.2
832 230	Bolt for pressure plate, rectangular strut cart	0.15	0.035	1.4
861 076	Pressure beam	1.60		176.0
861 074	Pressure beam	2.35		236.0
861 070	Pressure beam	2.80		271.0
861 071	Pressure beam	3.40		318.0
861 075	Pressure beam	4.60		425.0
861 085	Pressure beam	5.80		525.0
834 015	Strut cart pressure plate (single, double slide rail)			12.4
HE 0050 F	Safety clip 6.0 mm		0.006	0.03
IA 0150 F	Nut M 24–10.9 galv. (rectangular strut cart)			0.10
862 200	Connector			5.5
862 100	Connector bolts	0.11	0.035	1.0
IB 0470 F	Screw M 24 × 80–10.9 galv. (rectangular strut cart)			0.40
834 060	Pull adapter with bolts			43.6
832 261	TLV pressure adapter with bolts			180.0

l	Length	b	Shoring width	A	Surface	e_h	Admissible soil pressure
l_M	Module length	d	Diameter	G	Weight	b_c	Clear width
l_c	Pipe culvert length	b_I	Shoring/trench width (inside rail)	G / VP	Weight / shoring panel	b_A	Shoring/trench width (outside rail)
t_{pl}	Panel thickness						

E+S head end shoring with head shoring adapter and sheet piles



I	Adapter for head end shoring
II	Extension bars
b	Shoring/trench width
b_c	Clear width
d_{KD}	Sheet pile thickness



Head end shoring adapter with sheet piles

Art. no.	Short description	l [m]	G [kg]
899 994	Head end shoring adapter	0.45	132.0

Extension bars for head end shoring

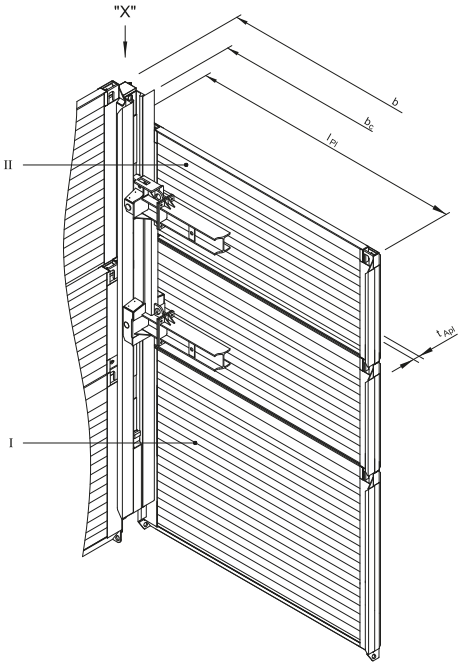
Art. no.	Short description	l [m]	b_c [m]	G [kg]
836 087	HEB 360 extension bar	0.140	1.040	86.5
836 090	HEB 360 extension bar	0.275	1.175	105.0
836 092	HEB 360 extension bar	0.375	1.275	115.0
836 091	HEB 360 extension bar	0.412	1.312	127.5
836 093	HEB 360 extension bar	0.550	1.450	150.0
836 095	HEB 360 extension bar	1.100	2.000	230.0
836 097	HEB 360 extension bar	1.650	2.550	310.0
836 100	HEB 360 extension bar	2.200	3.100	385.0
836 105	HEB 360 extension bar	3.300	4.200	543.0
836 112	HEB 360 extension bar	4.400	5.300	700.0
836 115	HEB 360 extension bar	4.950	5.850	774.0
836 120	HEB 360 extension bar	5.500	6.400	853.0
836 122	HEB 360 extension bar	6.050	6.950	937.0

Accessories/spare parts

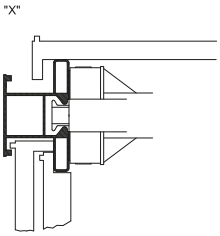
Art. no.	Short description	l [m]	d [m]	G [kg]
IB 0512 F	Screw M 24 × 80–10.9 galv.			0.50
IA 0150F	Nut M 24–10.0			0.10
821 100	Chain 13/ 5,000 mm	5.00		25.7

l Length G Weight b_c Clear width d Diameter

E+S Head end shoring with slide-rail panels



I	Base panel
II	Top panel
l_{pl}	Panel length
b	Shoring/trench width
b_c	Clear width
t_{Apl}	Outside panel thickness



Base panels -outside- (height 2.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
821 150	2.00	2.25	0.11	2.00	542.0	4.64	149.0
821 170	2.71	2.96	0.11	2.71	675.0	6.29	80.0
821 310	3.15	3.40	0.11	3.15	755.0	7.31	59.0
821 770	3.75	4.00	0.11	3.75	865.0	8.70	41.4
821 910	4.00	4.25	0.11	4.00	990.0	9.28	36.3
821 913	4.25	4.50	0.15	4.25	1,313.0	9.86	75.0
821 912	5.00	5.25	0.15	5.00	1,545.0	11.60	54.5
821 916	6.25	6.50	0.15	6.25	1,910.0	14.50	34.7

Top panels -outside- (height 1.32 m)

Art. no.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	e_h [kN/m²]
822 075	2.00	2.25	0.11	2.00	365.0	2.64	149.0
821 190	2.71	2.96	0.11	2.71	455.0	3.58	80.0
822 310	3.15	3.40	0.11	3.15	510.0	4.16	59.0
822 710	3.75	4.00	0.11	3.75	585.0	4.95	41.4
822 810	4.00	4.25	0.11	4.00	647.0	5.28	36.3
822 813	4.25	4.50	0.15	4.25	900.0	5.61	75.0
822 815	5.00	5.25	0.15	5.00	1,115.0	6.60	54.5
822 830	6.25	6.50	0.15	6.25	1,400.0	8.25	34.7

Shoring widths

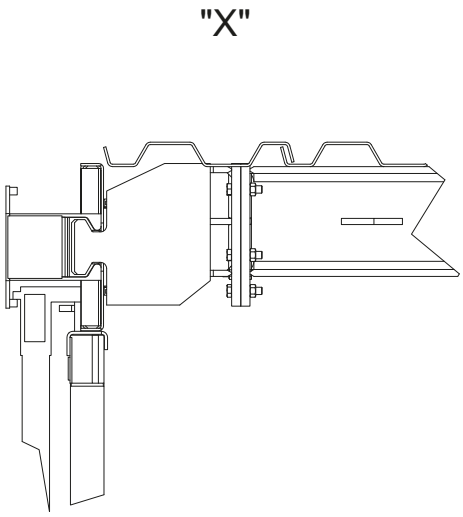
Art. no.	l_{pl} [m]	l_M [m]	min. b_c [m]	Extension bar combination min. b_c [mm]	max. b_c [m]	Extension bar combination max. b_c [mm]
821 150	2.00	2.25	1.49	2 × 20 / 550	1.73	275 / 550
821 170	2.71	2.96	2.18	2 × 20 / 140 / 1,100	2.41	412 / 1,100
821 310	3.15	3.40	2.69	140 / 1,650	2.83	275 / 1,650
821 770	3.75	4.00	3.24	140 / 2,200	3.48	375 / 2,200
821 910	4.00	4.25	3.48	375 / 2,200	3.75	275 / 375 / 2,200
821 913	4.25	4.50	3.79	140 / 550 / 2,200	3.93	275 / 550 / 2,200
821 912	5.00	5.25	4.48	275 / 1,100 / 2,200	4.61	412 / 1,100 / 2,200
821 916	6.25	6.50	5.75	2 × 20 / 414 / 2,200 / 2,200	5.95	275 / 375 / 2,200 / 2,200

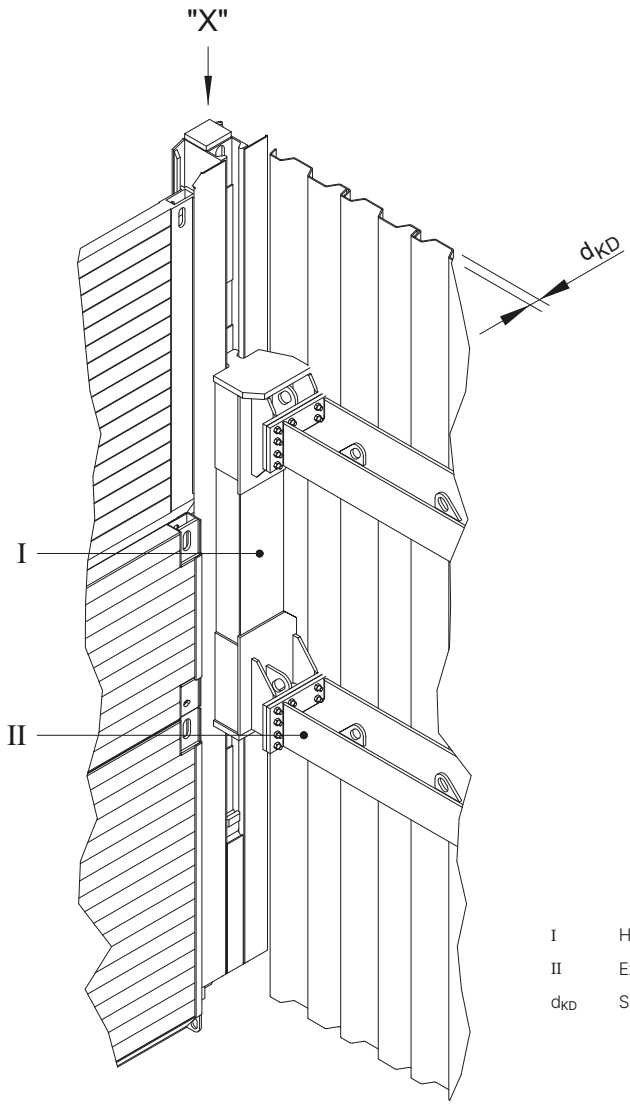
Accessories/spare parts

Art. no.	Short description	l [m]	d [m]	G [kg]
862 200	Connector			5.5
862 100	Connector bolts	0.11	0.035	1.0

l	Length	G	Weight
l_M	Module length	G / VP	Weight / shoring panel
l_c	Pipe culvert length	e_h	Admissible soil pressure
t_{pl}	Panel thickness	b_c	Clear width
d	Diameter	l_{pl}	Panel length
A	Surface		

E+S Head end shoring with head end shoring strut cart and sheet piles





I	Head end shoring strut cart
II	Extension bars
d_{KD}	Sheet pile thickness

Head end shoring strut cart

Art. no.	Short description	l [m]	G [kg]
832 199	Head end shoring strut cart, E+S R/L	2.50	820.0

Extension bars, head end shoring strut cart

Art. no.	Short description	l [m]	b_c [m]	G [kg]
836 087	HEB 360 extension bar	0.140	1.040	86.5
836 090	HEB 360 extension bar	0.275	1.175	105.0
836 092	HEB 360 extension bar	0.375	1.275	115.0
836 091	HEB 360 extension bar	0.412	1.312	127.5
836 093	HEB 360 extension bar	0.550	1.450	150.0
836 095	HEB 360 extension bar	1.100	2.000	230.0
836 097	HEB 360 extension bar	1.650	2.550	310.0
836 100	HEB 360 extension bar	2.200	3.100	385.0
836 105	HEB 360 extension bar	3.300	4.200	543.0
836 112	HEB 360 extension bar	4.400	5.300	700.0
836 115	HEB 360 extension bar	4.950	5.850	774.0
836 120	HEB 360 extension bar	5.500	6.400	853.0
836 122	HEB 360 extension bar	6.050	6.950	937.0

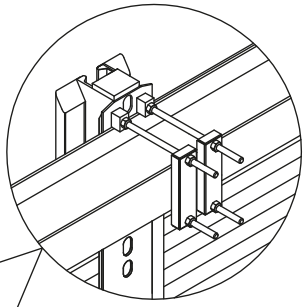
Accessories/spare parts

Art. no.	Short description	G [kg]
IB 0512F	Screw M24×100-10.9 galv.	0.50
IA 0150F	Nut M24-10.0 galv	0.10

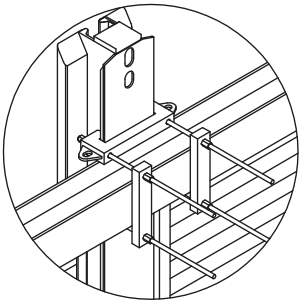
l	Length	G	Weight
b_c	Clear width		

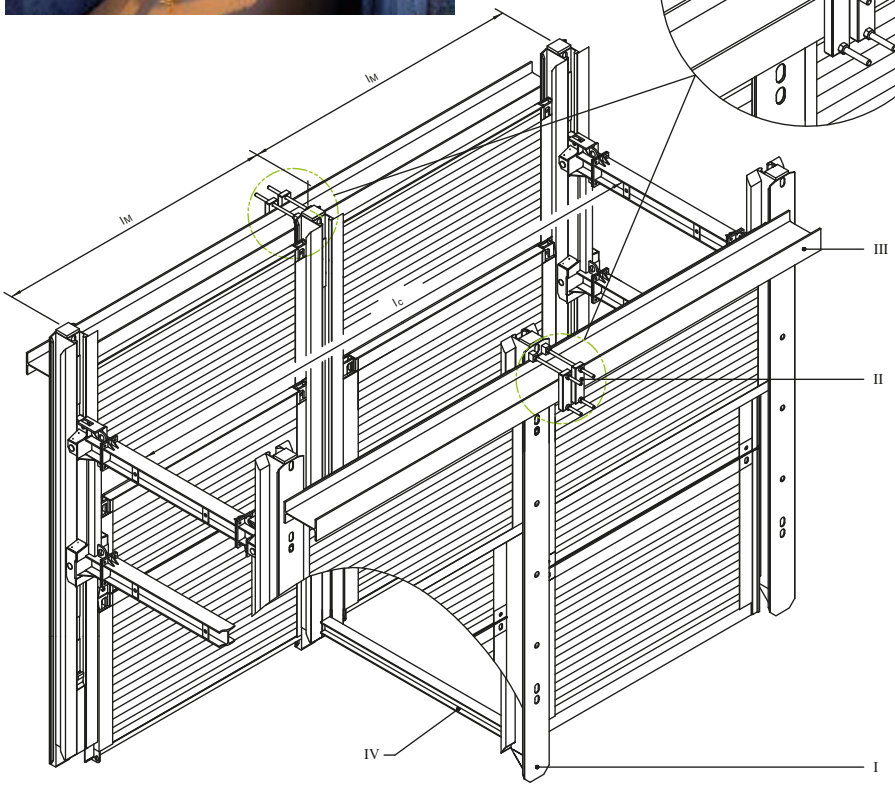
E+S Outside waler attachment

A: M36 outside waler attachment
Fixed position



B: GEWI outside waler attachment
Vertically adjustable position





I	Linear shoring support	l_M	Module length	A	M 36 outside waler attachment, fixed position, for linear shoring
II	Outside waler attachment	l_c	Pipe culvert length	B	GEWI outside waler attachment for linear and parallel shoring, vertically adjustable position, for linear shoring
III	Waler support	G	Weight	DGLV	Double slide rail, linear shoring
IV	Bottom end support			EGLV	Single slide rail, linear shoring

M36 outer waler attachment

Art. no.	Short description	G [kg]
855 836	M36 waler attachment for HEB brackets up to HEB 600	80.0
855 846	M36 waler attachment for HEB brackets from HEB 650 to HEB 800	86.5

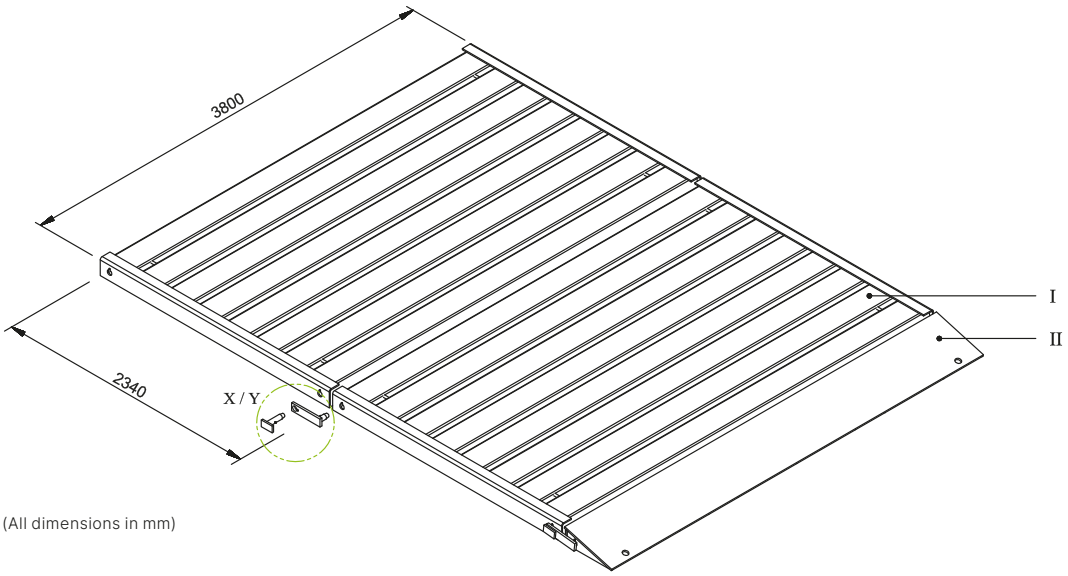
GEWI outside waler attachment

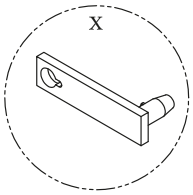
Art. no.	Short description	G [kg]
855 838	GEWI waler attachment for HEB brackets up to HEB 600/DGLV	162.0
855 841	GEWI waler attachment for HEB brackets up to HEB 1000/DGLV	169.0
855 839	GEWI waler attachment for linear shoring support/DGLV	195.0
855 881	GEWI waler attachment for HEB brackets up to HEB 600/EGLV	170.0
855 882	GEWI waler attachment for HEB brackets up to HEB 1000/EGLV	175.0
855 880	GEWI waler attachment for linear shoring support/EGLV	200.0

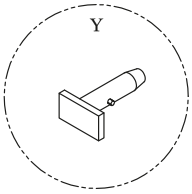
Steel site road

General data

Length	2.34 m
Width	3.80 m
Height	0.16 m
Weight	869 kg
Surface	8.9 m²
Load	12 t axle load







(All dimensions in mm)

I	Steel site road
II	Access ramp
X	Connector
Y	Bolt

Accessories/spare parts

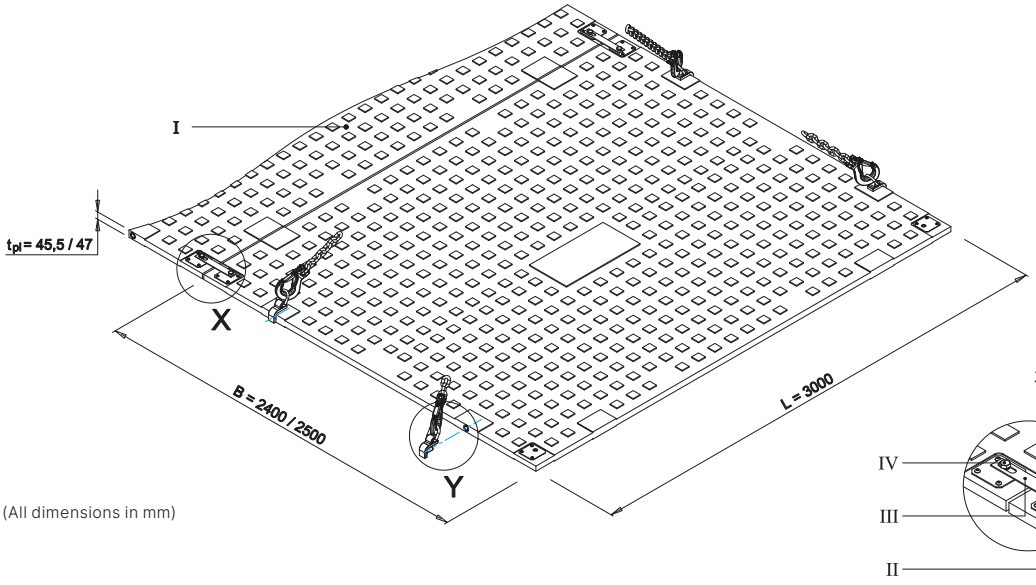
Art. no.	Short description	l [m]	b [m]	A [m²]	G [kg]
880 100	Steel site road	2.34	3.80	8.89	869.0
880 150	Connector				4.8
880 200	Access ramp	0.48	3.80	1.82	334.0
880 152	Bolt				3.4

l	Length	A	Surface	b_c	Clear width	G	Weight

Plastic site road

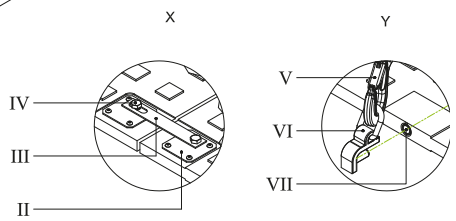
General data

Material	Polyethylene with high density
Dimensions	3.00 m × 2.50 m × 0.05 m
Weight	295 kg / panel
Dimensions	3.00 m × 2.40 m × 0.05 m
Weight	285 kg / panel
Surface	Profile on both sides
Load capacity	approx. 160 t/m² (depending on sub-surface)
Transport	75 panels / truck



(All dimensions in mm)

I Plastic site road
II Connector corner
III Plastic site road connector
IV Screw M 16
V Four-strand chain
VI Plastic site road lifting gear
VII Lifting socket



Panels

Art. no.	Short description	l [m]	b [m]	t_{pl} [m]	A [m²]	G [kg]
880 227 ST	Plastic site road 3.00 × 2.40 m	3.00	2.40	0.046	7.20	285.0
880 224	Plastic site road 3.00 × 2.40 m	3.00	2.40	0.046	7.20	285.0
880 225 TK	Plastic site road 3.00 × 2.50 m	3.00	2.50	0.047	7.50	295.0

Accessories/spare parts

Art. no.	Short description	l [m]	b [m]	d [m]	G [kg]
880 236	2-way plastic site road connector, metal	0.26	0.04	0.005	0.58
IB 0260F	Screw M 16 × 30–8.8 galv.	0.03		0.016	0.15
880 250	Plastic site road lifting gear				1.15
300 077	Connector corner, upper part incl. threaded sleeve for articles 880 224 & 880 225 TK				0.31
GV000483	Connector corner, upper part incl. threaded sleeve for article 880 227 ST				0.80
CC 1188 E	Connector corner, lower part for articles 880 224 & 880 225 TK				0.24
GV000482	Connector corner, lower part for article 880 227 ST				0.22
IA 0035 F	M 8 × 20 sleeve nut				-
IC 0111 F	M 8 × 30 fillister head screw				-
IA 0036 F	Stop sleeve				-

l Length
b Breite
d Diameter
A Surface
t_{pl} Panel thickness
G Weight

Pipe puller

General data

Traction	100 kN (note friction forces)
Pulling length	35 m / 50 m
Working travel (lift)	500 mm
Engine	1.3 kW–2,400 U/min–12 V
Pipe diameter	800 mm–2,400 mm
Cable	35 m / 50 m
Power supply (battery)	12 V / 170 Ah
Working pressure	160 bar

Accessories/spare parts

Art. no.	Short description	l [m]	d [m]	G [kg]
GV000520	SZ 10-M pipe puller			380.0
284 970	Pull beam for pipe ø 800 to 1,000 mm	0.80		20.0
284 940	Pull beam for pipe ø 1,000 to 1,300 mm	1.00		32.0
284 950	Pull beam for pipe ø 1,300 to 1,800 mm	1.30		40.0
284 960	Pull beam for pipe ø 1,800 to 2,400 mm	1.80		42.0
139 380	Extension bar ZW SB–108 × 100 mm	0.10		5.5
139 415	Extension bar ZW SB–108 × 200 mm	0.20		10.0
139 430	Extension bar ZW SB–108 × 300 mm	0.30		13.8
139 445	Extension bar ZW SB–108 × 500 mm	0.50		17.7
139 385	Extension bar ZW SB–108 × 1,000 mm	1.00		28.0
139 400	Extension bar ZW SB–108 × 1,500 mm	1.50		37.5
138 030	Bolt 125 × 20	0.125	0.020	0.4
138 200	Safety clip FS 92 × 5	0.092	0.005	0.1
284 830	Cable 35 m, ø 18 mm	35.00	0.018	67.0
284 850	Cable 50 m, ø 18 mm	50.00	0.018	89.0
853 090	Two-strand chain 16/1500 mm			35.0
GV000156	Remote control for SZ 10-M			0.25
GV000559	Charger for SZ 10-M			1.90
284 025	Transport box for SZ 10-M			166.0
281 475	Sleeve tension for standard pipe profile			75.0
281 477	Socket tension for egg-shaped pipe profile			96.0
281 480	Sleeve tension for rectangular pipe profile			76.0

l Length d Diameter G Weight

Pipe gripper RG 2500/RG 5000

Gripper heads

Art. no.	Short description	G [kg]	Load-bearing capacity [kg]
282 150	Gripper head for RK I / 2.5 t	106.0	2,500.0
282 160	Gripper head for RK II / 5.0 t	222.0	5,000.0

Gripper arms

Art. no.	Short description	Outside pipe diameter [mm]	G [kg]	Load-bearing capacity [kg]
282 120	Gripper arm type 50 (RK I/2.5 t)	275–640	30.0	2,500.0
282 130	Gripper arm type 80 (RK I/2.5 t)	590–960	34.0	2,500.0
282 140	Gripper arm type 90 (RK II/5.0 t)	700–1,090	42.0	5,000.0
282 100	Gripper arm type 125 (RK II/5.0 t)	1,090–1,390	72.0	5,000.0
282 110	Gripper arm type 150 (RK II/5.0 t)	1,300–1,740	80.0	5,000.0

Fall protection (rail guard)

Components

Art. no.	Short description	G [kg]	l [m]
880 800	Railing post, fall protection	4.6	1.00
880 900	Attachment for shoring, fall protection	7.0	
880 801	Railing post extension	2.6	0.50

l Length

G Weight

Fall protection (steel barrier)

Components

Art. no.	Short description	G [kg]	l [m]
GV000216	Steel barrier 2.60 × 1.18 m	19.0	2.60
GV000213	Clamp 150	4.8	
GV000214	Post 1500	3.5	1.50
GV000558	Transport box 25	60.0	
GV000217	Transport box 60	98.0	

Shoring ladder

Components

Art. no.	Short description	G [kg]	l [m]
GV000210	Shoring ladder – Access	134.0	0.9
GV000211	Shoring ladder – Exit	92.0	2.1
GV000212	Shoring ladder – extension unit	39.0	1.0

MÜLLER sheet pile clamp

Components

Art. no.	Short description	G [kg]	Permissible sheet pile weight
GV000957	Sheet pile clamp MÜLLER MS-SSZ 3BL	19.0	30 kN (3 to)

Trench struts

TITAN terra trench strut
acc. to DIN 4124

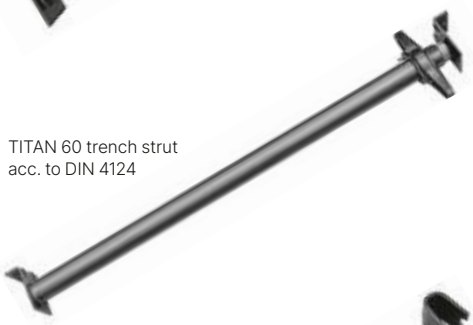
TITAN terra trench strut for wood shoring *

Ordering code	Adjustment range approx. [cm]	Admissible load [kN]	Weight approx. [kg]
terra spindle	30	–	2,1
terra Gr. 1	50–80	38–30	3,6
terra Gr. 1a	60–90	36–29	4,0
terra Gr. 2	80–110	34–29	4,6
terra Gr. 3	110–140	29–23	5,5
terra Gr. 4	140–170	26–22	6,5

TITAN 48 trench strut
acc. to DIN 4124

TITAN 48 trench strut for wood shoring *

Ordering code	Adjustment range approx. [cm]	Admissible load [kN]	Weight approx. [kg]
Ti 48/120	70–117	63–48	8,0
Ti 48/150	90–150	61–45	10,0
Ti 48/210	120–210	60–38	13,0



TITAN 60 trench strut
acc. to DIN 4124

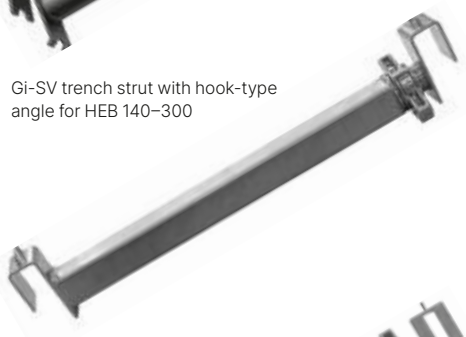
TITAN 60 trench strut for wood shoring *

Ordering code	Adjustment range approx. [cm]	Admissible load [kN]	Weight approx. [kg]
Ti 60 spindle	60	–	10.0
Ti 60/150	90–150	113–99	17.0
Ti 60/200	140–200	100–93	20.0
Ti 60/250	190–250	95–84	23.0
Ti 60/300	240–300	85–72	26.0

Gigant S with hook-type
angle for HEB 140–240

Gi-S trench strut for steel (HEB) waler

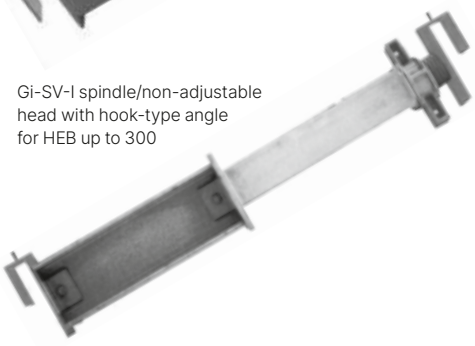
Type inspection number	Designation	Adjustment range approx. [cm]	Admissible load [kN]	Weight approx. [kg]
Gigant S TBG 3-Gi-S trench strut	Gi-S-120	70–120	210–177	26.0
	Gi-S-170	105–170	210–177	32.0
	Gi-S-210	140–210	184–156	36.0
	Gi-S-260	190–260	176–140	40.0
	Gi-S-310	240–310	157–138	45.0



Gi-SV trench strut with hook-type
angle for HEB 140–300

Gi-SV trench strut for steel (HEB) waler

Type inspection number	Designation	Adjustment range approx. [cm]	Admissible load [kN]	Weight approx. [kg]
Gigant SV TBG 3-Gi-SV trench strut	Gi-SV-210	140–210	548–290	69.0
	Gi-SV-260	190–260	471–260	81.0
	Gi-SV-310	240–310	424–260	92.0
	Gi-SV-380	310–380	310–380	107.0
	Gi-SV-450	380–450	380–450	122.0



Gi-SV-I spindle/non-adjustable
head with hook-type angle
for HEB up to 300

Gi-SV-I spindle/non-adjustable head for steel (HEB) waler

Type inspection number	Designation	Adjustment range approx. [cm]	Admissible load [kN]	Weight approx. [kg]
TBG 3-Gi-SV-I spindle/non-adjustable head	Gi-SV-I	72–97	448–393	50.0
	Gi-SV-I/F	–	448–393	5.0

* for sale only

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