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## **5.0 Special services**

## 5.1.1

### Special services

#### Project planning, sale/hire, service, project supervision from a single source

Our customers have high expectations. And rightly so, because anyone who invests today doesn't want to have regrets tomorrow. Our experienced specialists provide cooperation without complications. With 16 branches in Germany alone, our regional network is so tightly meshed that we can serve all our customers efficiently.

In addition, we can provide reliable after-sales service worldwide through our global sales structure.

"Off-the-peg" solutions rarely satisfy. We therefore go a step further by offering customized solutions with system packages tailored to actual needs. The inevitable result is complete single-source service from design through to execution.

#### Technical office

- Project management, static load calculations, pricing
- Special solutions and detail solutions

#### Hire park

- Machines from our own production, developed and adapted to customer projects
- Hire
- Lease purchase
- Hiring out components as a system supplier

#### Logistics

- Sheet piling/anchor equipment
- Machinery
- Just-in-time delivery worldwide

#### Consultancy/after-sales service

- Product demos and instruction
- Field service supervision
- Parts service
- Fitter assignments
- Machine maintenance

#### Piles

- Sheet piles
- Driving piles
- Peiner PST sections
- Peiner PSp sheet piles
- Trench sheeting
- Lightweight sections

#### Driving and extraction equipment

- Vibrators
- Percussion driving equipment

- Pressing equipment
- Excavator-mounted vibrators
- Drilling equipment
- Leader and carrier systems
- Drive units

#### Anchor equipment

- Injection anchors, injection piles
- Drill rigs, hammer drills, injection pumps
- Anchors and anchor bored piles

#### Trench shoring equipment

- Aluminum lightweight trench shoring
- Struts
- Panel trench shoring
- Piling frame panel trench shoring
- Sliding rail trench shoring
- Vertical trench shoring with sheeting and lightweight sections
- Pipe-laying trains, hydraulic hammers, hydraulic cutters, demolition shears

#### Flood protection

- Steel sheet piling
- Height-extensible structures
- Temporary systems

#### Preparatory work

- Interlock sealing system: HOESCH interlock sealing system, SIRO 88 filler
- Corner sections
- Welding
- Coating and hot-dip galvanizing
- Knife-edge bearings
- Signal transmitter
- Dolphins
- UNION steel piles

### Design and evaluation of bids, consultancy

By taking early advantage of the offer of applicational or design advice from our Technical Office or our consultant close to you (see "Branches/sales structure"), you ensure the trouble-free use of our sheet piling products and of products in our other sales fields: Trench shoring, anchor equipment, and driving and extraction equipment.

#### We support you with the design, calculation and production of sheet piling structures with:

- Driving plans, layouts
- Structural drawings
- Static load calculations, stability analyses
- Preparation of designs and bills of materials
- Residual wall thickness measurements
- Durability studies

We advise you on the execution of construction work and particularly on pile driving at the planning stage and on site.

Your contacts in our commercial department make sure that everything proceeds smoothly from the bid through to the just-in-time delivery of sheet piles straight to the site.



## 5.2

# Special services

### Quality assurance

Throughout production, a comprehensive quality assurance system conforming to DIN EN ISO 9001 ensures a high standard of quality from preliminary work through to the finished sheet piling.

High standards are demanded in production to ensure excellent material characteristics and the reliable compliance with product quality standards.

In addition, the chemical and mechanical/technological properties are monitored in accordance with DIN EN 10 248 and DIN EN 10 249 and other specifications.

Special non-destructive material and weld seam tests are also part of our quality assurance system.

And to answer order-specific quality questions, our technical advisers are at your disposal with the entire array of equipment for quality inspection and testing.

### Approvals

Current approvals can be requested from the plant.

- Ü-symbol of the “Bauregelliste” (list of relevant standards and specifications), Part 1
- Italy: Homologation
- Poland: SIMPTEST

Conforming to works specifications, higher-strength weldable sheet piling steels with a minimum yield point of 500 N/mm<sup>2</sup> can be supplied.



Walking beam furnace



Sheet pile in the rolling process



Straightening machine



Sheet pile store

### Interlock sealing

Because of the play necessary in the interlock gap, sheet piling interlocks can only achieve a limited intrinsic seal. If the degree of tightness has to satisfy special requirements, artificial interlock sealing is necessary. See R 117 of the “Recommendations of the Committee for Waterfront Structures” on this subject.

#### HOESCH interlock sealing system

The HOESCH interlock sealing system has been developed for permanent sheet piling structures designed for a tight seal.

With this sealing system, a profiled seal (lip seal) is applied to the site threading interlock; and, in the case of multiple piles, a permanently elastic polyurethane seal adhering firmly to the surface and adapted to the interlock gap is applied to the prefabricated interlock.

Before driving, the lubricant HSP GM must be applied to the seal lips. Further details, particularly on the driving of sealed sheet piles, can be found in our Sealing Systems brochure.

If desired, guarantees can be given for the durability of the sealing material or for the degree of tightness.



LARSEN interlocks with the HOESCH interlock sealing system



PEINE locking bar with the HOESCH interlock sealing system

## 5.3

### Special services

#### **Interlock filling**

A threading interlock is factory-filled with a durable, sufficiently malleable bitumen compound.

In the case of multiple piles, the gaps of the prefabricated interlocks are sealed with polyurethane.

The filled threading interlock must be inserted first in the direction of driving; it should be closed on site from below with a rivet or the like.

The filling materials are environment-friendly and do not release any water pollutants.

For percussion driving, a bituminous putty is recommended. This is a cold bitumen reinforced with fibers. It should be injected in the factory.

For vibration driving, SIRO 88 is recommended. This is a hot bitumen that has strong adhesion and can also be injected on site.

#### **Weld sealing**

Prefabricated interlocks can be weld-sealed in the factory. To prevent rupture of the weld during the driving process, additional counter-welds are applied.

The sealing seams must be placed on the side to which the base slab of the later structure is joined.

## Corrosion protection

### Coating

The most commonly used form of corrosion protection for steel sheet piles is coating. On the basis of experience to date, it can delay the onset of corrosion by over 20 years.

To prevent harm to the environment due to blasting dust and overspray, steel components should be given the necessary corrosion protection in conformity with current regulations and recommendations if possible before installation. Since it is known that, given careful treatment, only minor damage occurs during transport and assembly, we recommend complete coating in the factory.

The choice of coating system depends on the anticipated stressing and the desired service life (see DIN EN ISO 12944). We supply sheet piles with all conventional coating systems and give advice on the choice of system.

Because of the severe stressing to which sheet piling structures are exposed, epoxy resin or polyurethane coatings are usually applied. For the sake of the environment, only tar-substitute products and tar-free systems should be used.

### Hot-dip galvanizing

Corrosion protection by hot-dip galvanizing is one of the widely used methods in steel construction. Combined with an additional coating (duplex system), synergies are created.

For the galvanizing of steel sheet piles a special steel analysis is necessary and compliance with regulations governing interlock tolerances. Surface quality and product identification must be taken into account. Notice should therefore be given of the intention to have the piles hot-dip galvanized before the start of rolling. For the requirements and tests/inspections, see DIN EN ISO 1461.



Factory coating of sheet piling

## 5.5

### Special services

#### Welded structures

Our workshops have been producing welded structures from steel piles for over 6 decades. All sheet piling steel grades are suitable for arc welding, subject to general welding regulations.

Foundation piles, dolphins with accessories, HOESCH and LARSEN box piles, structural piles such as corner and junction piles, piles with shock plates, piles with weld-sealed interlocks and special piles for specific requirements are all manufactured to proven quality standards.

Our workshops fully comply with standards for modern welding operations and are qualified in accordance with DIN 18800, part 7.

The general and special tasks of quality assurance, e.g. non-destructive weld seam testing, are carried out by an independent quality body to German or, if necessary, international regulations.



Welded structures



Dolphins with welded-on snubbing posts



Submerged-arc welding

### Anchors and accessories

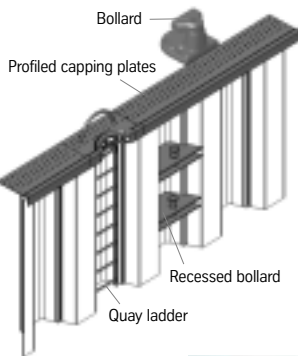
By also supplying anchor elements and accessories for sections and piles, we can provide complete, ready-to-install packages of sheet piling from a single source.

#### The range includes:

- Anchors and anchor parts
- Anchor connecting elements
- Waling and waling fastenings
- Sheet pile beams
- Recesses, ladders and handrails
- Snubbing posts
- Special components

Single-source supplies are reliable and cost-effective for the customer.

They also include a whole range of services, such as advice on applications and design, the preparation of drafts, calculation of static loads, preparation of pile-driving plans, installation plans and structural drawings, and on-site consultations.



Profiled capping plates are on the top of construction



Waling for back anchoring

**Knife-edge bearings on steel sheet piles**

Using the HOESCH method of knife-edge bearing on steel pile sections, static and dynamic vertical loads can be discharged direct, i.e. without any intermediate structures, from the reinforced concrete bearing into the steel section of HOESCH steel sheet piles.

**This renders the following tasks superfluous:**

- Welding structural elements into the steel sheet piles to increase the bearing surface
- Slitting the steel sheet piles in the connection zone or drilling holes for reinforcement bars
- Welding reinforcement bars onto the steel sheet piles in order to discharge the tensile forces from the reinforced concrete into the sheet piles.

Approval notices from the Berlin Institute for Construction Technology as well as explanations and examples of applications of the HOESCH knife-edge bearing system on steel sheet piles can be requested from us.



Work in progress showing binders and other reinforcement to prevent tensile splitting.

### Testing interlock tightness with signal transmitters during the installation of LARSEN and HOESCH sections

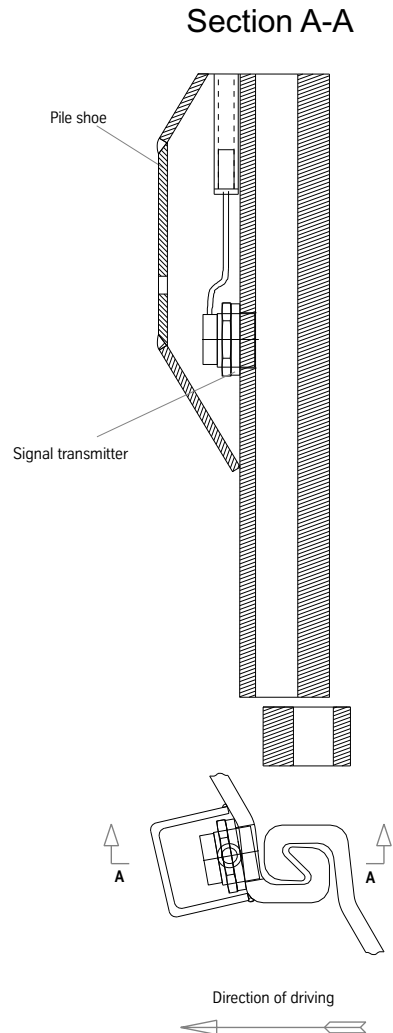
If a sheet piling structure requires an especially high level of tightness (e.g. for the encapsulation of polluted soil or for the sealing of landfills) and/or if driving is expected to be difficult and cause damage to the interlock, the signal transmitter described in the following can be used to test the integrity of the sheet piling. The HOESCH signal transmitter is attached to the foot of the pile to be threaded and tests the interlocks continuously from top to bottom of the sheet piling.

The HOESCH signal transmitter does not of course impair driving.

The HOESCH signal transmitter consists of an inductive proximity switch which, protected by a pile shoe, is fitted at the foot of the pile in the interlock. The measurement cable from the signal transmitter is carried to the head of the pile in a tube fastened to the pile web and connected to the control box.

Controlled by the control box, a high-frequency alternating magnetic field is created at the proximity switch. Changes in the alternating field are indicated by a visual signal at the control box. The alternating field changes for the first time when the pile is threaded and remains unchanged throughout the driving process if driving proceeds smoothly. If a breach of the interlock occurs, the magnetic field changes and the change is indicated at the control box.

Thanks to the low sensing distance of 10 mm, any breach of the interlock is immediately indicated, allowing the necessary action to be taken in good time.





LARSEN double pile with integrated signal transmitter.

### Ways of installing the signal transmitter on HOESCH and LARSEN piles

Figure	Section <sup>1)</sup>	Remarks
	H 1105    H 1755	<p>If the HOESCH sealing system is used, the recommended direction of driving is “finger first”. Continuous monitoring is possible.</p> <p>If SIRO 88 or Eurolan is used, the socket should be driven first, and monitoring is only possible at the ends.</p>
	H 1205    H 1805	
	H 1205 K    H 2305	
	H 1255    H 2405	
	H 1605    H 2505	
	H 1655    H 2555 K	
	H 1705    H 2555	
	H 1705 K    H 2605	
	L 22 10/10    L 603    L 755	<p>Continuous monitoring depends on the sealing system employed.</p>
	L 23    L 604 n	
	L 24    L 605 n	
	L 24/12    L 606 n	
	L 25    L 628	
	L 600    L 607 n	
	L 601    L 703	
	L 602    L 704	

<sup>1)</sup> Also applies to section variants of the same name.

### Driving caps

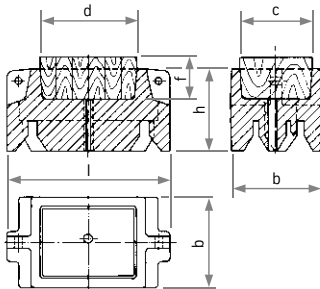
for HOESCH and LARSSEN sections/piles and UP piles

**Available are single, double, triple and quadruple driving caps.**

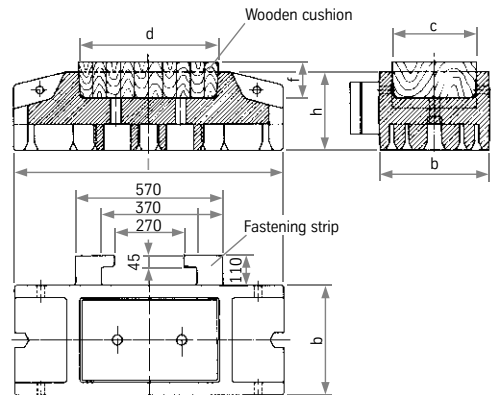
Driving caps with wooden cushions or, if specially requested, with overlapping steel/plastic linings (chapter 5.10.2).

For driving with leader guidance, caps with integrally cast fastening strips are available.

#### Single driving cap



#### Double driving cap

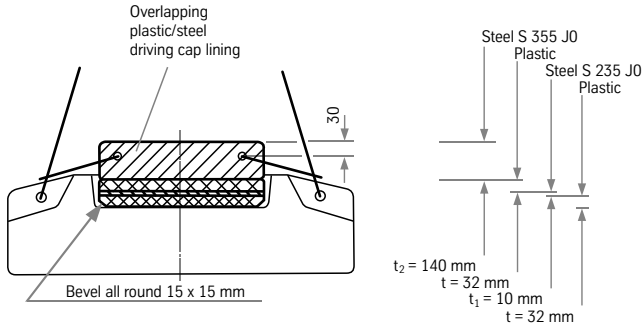


## 5.8

### Special services

#### Plastic/steel driving cap lining

Delivery periods can be quoted on request.



#### Lining for HOESCH section double driving caps (finger-and-socket interlock)

Cap No.	Section	Laminated fabric board (Class F, type 2082/HGW)				Steel plates						Complete lining G
		t	b	L	G	t <sub>1</sub>	t <sub>2</sub>	b	L	G <sub>1</sub>	G <sub>2</sub>	
		mm	mm	mm	kg/2 St.	mm	mm	mm	mm	kg	kg	kg
1205	<b>1205</b>	32	265	525	13	10	140	265	525	11	151	175
1207	<b>1705</b> <b>2505</b>	32	420	525	22	10	140	420	525	17	242	281
1208												
1209												

## Driving caps for LARSEN sections

### Single driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips	
			Approx. kg	Cap			Lining			
				h	b	l	c	d		f
2101 <sup>1)</sup>	<b>22 10/10, 23, 24, 25</b>	190	270	300	540	240	320	140	with	
2109	<b>43</b>	135	270	246	530	196	340	140	with	
2118	<b>600</b>	490	320	540	550	380	420	140	with	
2113	<b>601, 602</b>	250	270	300	600	224	300	140	without	
2111-1	<b>603</b>	300	280	320	600	260	380	140	without	
2112	<b>603, 605</b>	480	280	600	600	420 Ø		140	with	
2115	<b>604 n</b>	400	300	320	600	280	380	140	with	
2114 <sup>2)</sup>	<b>606 n, 628, 607 n</b>	425	320	390	600	300	380	140	without	
2117	<b>606 n, 628, 607 n</b>	590	340	600	550	380	480	140	with	
2116	<b>703</b>	630	300	540	640	390	440	140	with	
2119	<b>704</b>	710	360	580	640	480	380	140	with	
2120	<b>755</b>	960	360	580	680	480	380	140	with	

<sup>1)</sup> This driving cap must be turned through 180° from one section to the next.

<sup>2)</sup> Discontinued model.

## 5.9

### Special services

#### Driving caps for LARSEN sections

##### Double driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Approx. kg	Cap			Lining		
			h	b	l	c	d	f	
2201-1	<b>22 10/10</b>	850	350	430	1040	326	540	140	with
2204	<b>23, 24</b>	1040	350	540	1040	436	540	140	with
2214	<b>24,25</b>	1040	380	540	940	436	540	140	with
2214-1	<b>25</b>	1500	500	540	940	436	540	140	with
2210	<b>43</b>	895	340	585	1250	485	640	140	with
2211 <sup>1)</sup>	<b>430</b>	750	300	800	780	470	710	140	without
2217 <sup>2)</sup>	<b>601, 602</b>	750	370	410	1150	300 Ø		140	with
2218	<b>601, 602</b>	685	320	410	1150	310	500	140	with
2215 <sup>2)</sup>	<b>600, 603</b>	650	300	400	1140	300	500	140	with
2215-1	<b>600, 603</b>	850	390	400	1140	300	500	140	with
2220	<b>603</b>	980	350	490	1240	400 Ø		140	with
2221	<b>604 n</b>	1100	360	540	1240	450 Ø		140	with
2216	<b>605</b>	1140	400	600	1240	504 Ø		200	with
2219	<b>606 n, 628, 607 n</b>	1300	420	600	1240	504 Ø		200	with
2222	<b>703</b>	1280	380	540	1350	436	540	140	with
2223	<b>704</b>	1140	380	600	1350	436	540	140	with
2224	<b>755</b>	1500	380	580	1440	476	600	140	with

<sup>1)</sup> Driving cap solely for LARSEN 430.

<sup>2)</sup> Discontinued model.

## Driving caps for LARSEN sections

### Triple driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Cap			Lining			
		Approx. kg	h	b	l	c	d	f	
2302	<b>22 10/10</b>	1120	350	450	1440	346	540	140	with
2302-1	<b>22 10/10</b>	1430	400	450	1440	346	540	140	with
2302-2	<b>22 10/10</b>	1780	500	450	1140	346	540	140	with
2306	<b>23, 24, 25</b>	1490	390	600	1440	520 Ø		200	with
2306-1	<b>23, 24, 25</b>	1945	450	580	1440	476	600	140	with
2307	<b>605</b>	2000	430	590	1760	504 Ø		200	with
2309	<b>606 n, 628, 607 n</b>	2000	430	590	1740	504 Ø		200	with

### Quadruple driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Cap			Lining			
		Approx. kg	h	b	l	c	d	f	
2401	<b>430</b>	1960	470	877	1360	760	880	140	with <sup>2)</sup>
2402	<b>430</b>	2700	710	880	1360	800 Ø			with <sup>2)</sup>

<sup>2)</sup> Fastening strips have special dimensions.

## 5.9

### Special services

#### Driving caps for HOESCH sections

##### Single driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Cap			Lining			
		Approx. kg	h	b	l	c	d	f	
1105	<b>1205</b>	215	280	370	570	280	320	140	without
1107	<b>1705</b>	365	300	540	460	460	390	140	with
1108	<b>2505</b>	345	300	540	460	460	390	140	with

##### Double driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Cap			Lining			
		Approx. kg	h	b	l	c	d	f	
1205	<b>1205</b>	510	300	370	1040	280	540	140	with
1207	<b>1705</b>	850	320	540	1040	436	540	140	with
1208	<b>2505</b>	900	320	540	1040	436	540	140	with

##### Triple driving caps

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Cap			Lining			
		Approx. kg	h	b	l	c	d	f	
1304	<b>1205</b>	925	350	370	1604	280	540	140	with

## Driving caps for HOESCH and LARSEN steel piles

No.	Section	Total weight	Dimensions in mm						Fastening strips
			Approx. kg	Cap			Lining		
			h	b	l	c	d	f	
2502	<b>LP 22 10/10, 23, 24</b>	265	280	500	570	360	400	140	without
2502-1	<b>LP 25</b>	265	280	500	570	360	400	140	without
2502-2	<b>LP 601, 602, 603, 605</b>	280	280	500	570	360	400	140	without
2513	<b>LP 604 n</b>	490	320	540	550	380	420	140	with
2503	<b>LP 703</b>	630	300	540	640	390	440	140	with
2504	<b>LP 606 n, 628, 607 n</b>	590	340	600	550	380	480	140	with
2506	<b>LD + LV 22 10/10 23, 24, 25</b>	730	320	600	1080	480	600	140	without
2511	<b>LS 22 10/10, 23, 24, 25</b>	1400	340	800	1300	580	840	160	without
2512	<b>LS 22 10/10, 23, 24, 25</b>	2430	400	850	1700	580	840	160	without
2508	<b>LK</b>	780	330	560	1050	440	600	140	without
2509	<b>LF</b>	1400	340	800	1300	580	840	160	without
	<b>LS</b>								
	<b>HP</b>								
	<b>HK</b>								
2509-1	<b>LK</b>	1400	340	800	1300	580	840	160	without

Pile driving caps not listed are only manufactured on request.

Plenty of advance notice is absolutely essential.

## 5.9

### Special services

#### Driving caps for UP steel piles

No.	Section	Total weight Approx. kg	Dimensions in mm						Fastening strips
			Cap			Lining			
			h	b	l	c	d	f	
6501	<b>UP 103, 133, 163, UP 104, 134, 164</b>	270	280	500	500	380	380	140	without
6502	<b>UP 103, 133, 163, UP 104, 134, 164, UP 105, 135, 165, UP 106, 136, 166</b>	625	300	750	750	440	460	140	without
6503	<b>UP 106, 136, 166, UP 108, 138, 168</b>	1030	320	970	970	555	555	140	with