ABI Hydro-Press-System

Method description

Vibration free and low noise

What is the Hydro-Press-System?

Hydro-Press-System is an attachment for the ABI MOBILRAM-System. It can push or pull steel sheet pile without vibration and almost silently.

Steel sheet pile walls are needed for a lot of civil works for example shoring and foundation works. Building authorities, civil engineers and contractors had required a vibration free and efficient shoring method by pushing and pulling steel sheet piles. For this reason ABI has developed the Hydro-Press-System. The HPS-System complements the MOBILRAM-System with its well known vibrators and auger drives and is full filling to vibration free requirements in civil engineering.

Advantages

- **Vibration free** – HPS can be used near hospitals, laboratories, residential areas, historic buildings, computer facilities in short everywhere vibrations may disturb
- **Low noise** – the noise exposure is reduced to the noise level of the carrier.
- **Efficient** – three or four sheet piles can be pushed or pulled as panel in one go.
- **Saving resources** – after pulling the sheet piles, can be re-used again.
- **Users comfort** – due to the portable and easy to handle remote control

Soils

HPS-System works well in cohesive and displaceable soils as clays, silts and sands. Very good performance could be also achieved in equal granular soils with embedded cohesive particles. Even in hard soils the system can be considered in conjunction with pre-boring prior to pile pushing.

Typical application

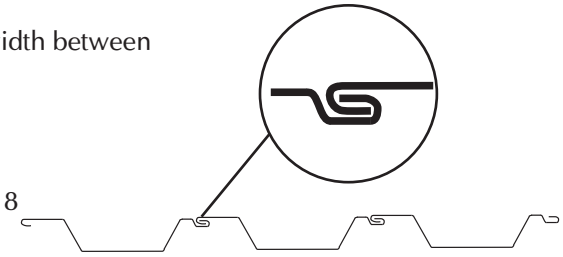
- shoring , retaining walls
- storm water tanks
- cut-off walls
- trench shoring

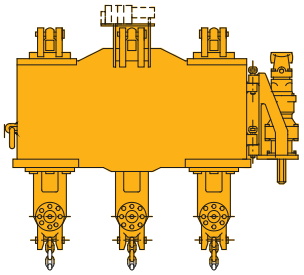
HPS procedure

ABI offers three different types of Hydro-Press-System for various sheet pile types:

- **HPS** is suitable for cold rolled interlock sheet piles in U-shape with a system width between 600 and 800 mm. Three piles are pushed or pulled at the same time. HPS has an auger drive for ground release augering attached.

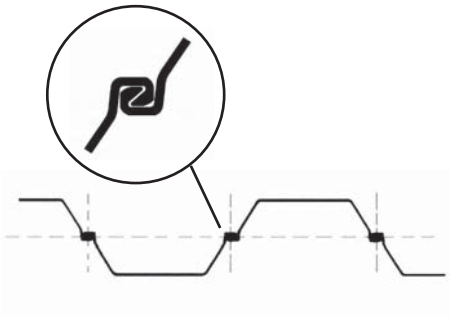
Suitable sheet piles:
Cold rolled with system width between 600 and 800 mm
- PAU 2770, 2780
- KL 3/6, KL 3/8
- HL 3/6, KL 3/8
- LP 88/8, OMEGA 8
- HP 150, 290

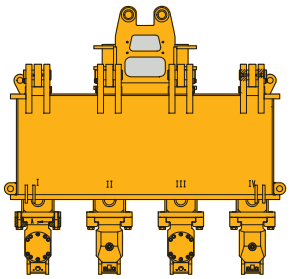




- **HPU** is suitable for hot rolled U-shaped interlocking steel sheet piles with a system width of 600 mm. HPU can push or pull four sheets at the same time.

Suitable sheet piles
Hot rolled with system width 600 mm
- PU 6, 8, 12, 16, 20
- L 602, 603, 604
- LX 8, 12, 16, 20



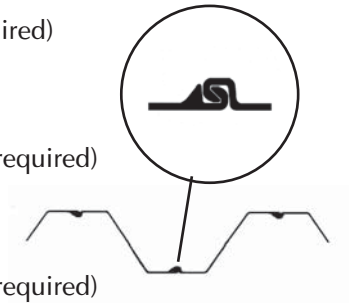


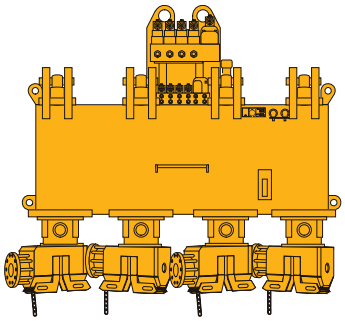
- **HPZ** is suitable for hot rolled Z-shaped interlocking steel sheet piles with system width of 575 mm, 630 mm or 675 mm. HPZ can also push or pull four piles.

Suitable sheet piles:
Hot rolled with system width 630 mm
- AZ 18, 26, 36, AZ 13 (adapter required)
- PCZ 18, PC 22 (adapter required)

Hot rolled with system width 575 mm
- H 1200, 1700
- H 2500 (special clamp assemblies required)
- AZ 18, 26(adapter required)

Hot rolled with system width 675 mm
- H 1300, 1800, 2600, 3600
- H 4800 (special clamp assemblies required)



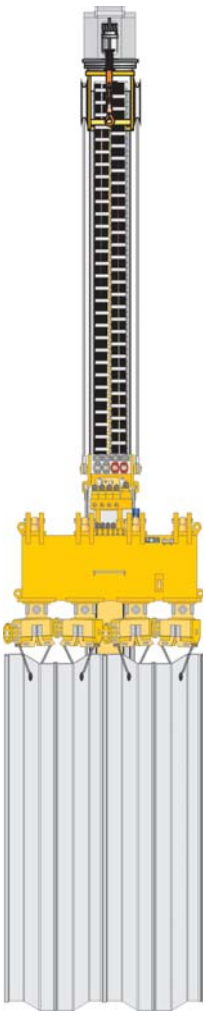


Hot rolled steel sheet piles provide an interlock for a waterproof shoring or retaining wall installation.

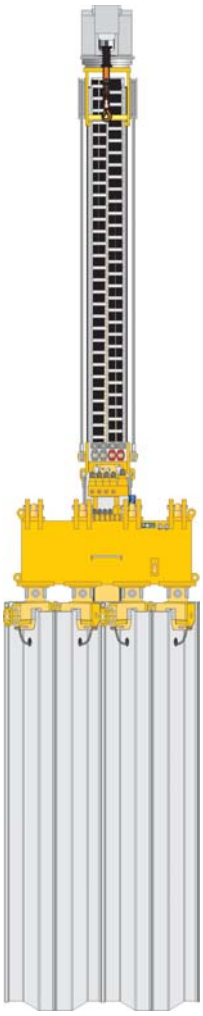
HPS procedure

The concept

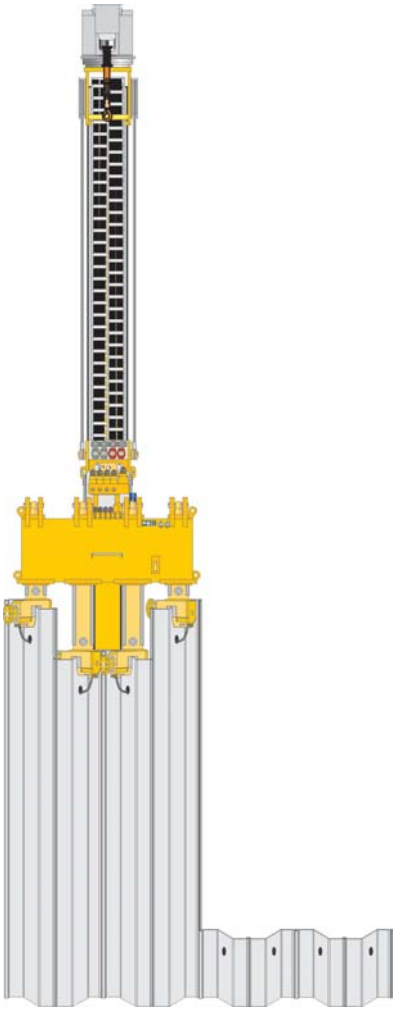
The Hydro-Press-System is attached to the hydraulic rapid changing device of the ABI MOBILRAM-System and is controled by the hydraulic system of the carrier. The carrier must be suitable for the selected Press and the intended work. For adequate stability a base machine with telescopic under-carriage is required, or additional counter weight has to be installed.



Pitching sheet piles panel with the pitching chain.



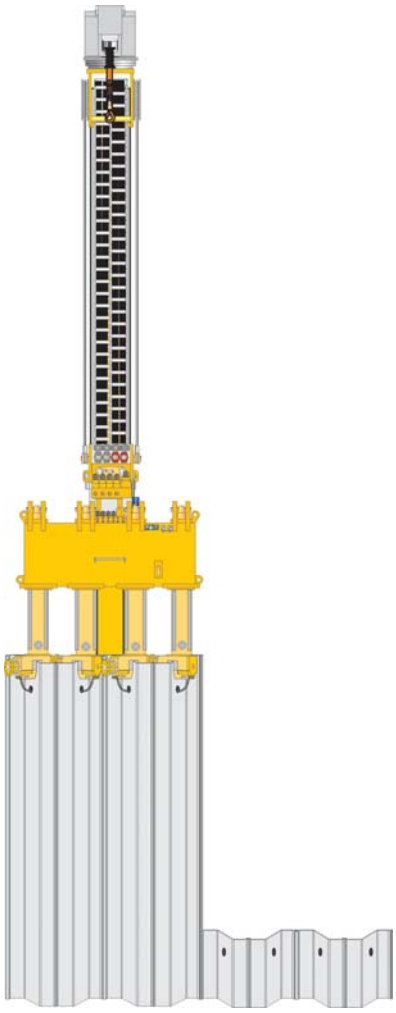
The sheet piles are clamped into the clamp assemblies and aligned. Lifted sheet piles are going to be threaded in the privious pressed sheet piles interlock.



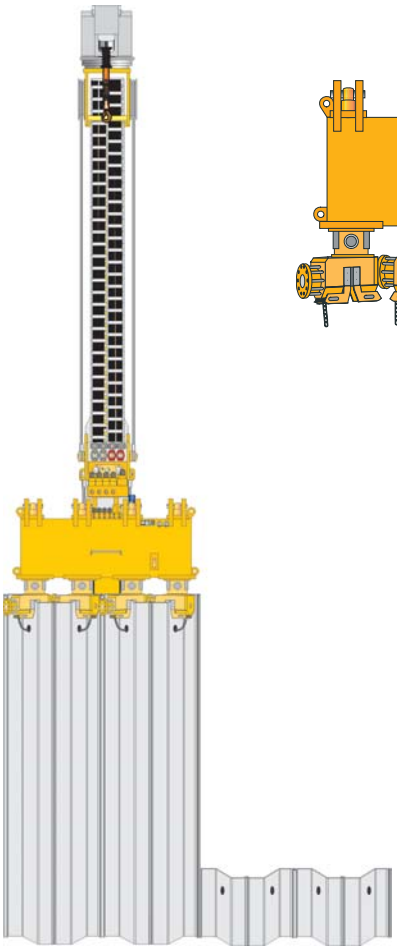
Pressing operation
The piles in the middle are pressed individually first, then followed by the outer piles.

HPS procedure

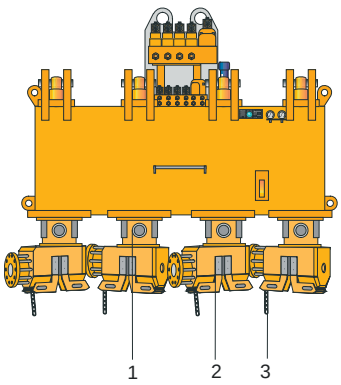
The pushing and pulling units (1) can be operated together in one step or separately from each other. Three or four clamp assemblies (2) with pitching chains (3) are mounted at the bottom of the Hydro-Press-System. Clamp assemblies are activated separately or together. In one movement the sheet piles are pitched, aligned and pressed as a pannel driven/pushed into the soil.



All piles pressed individually to the same level. The stroke on each pressing unit is 450 mm.



The Hydro-Press-System is moved down, till the pushing units are completely retracted. The sequence is repeated till the sheet piles achieve the required depth.



For an optimal work flow the Hydro-Press-System can be operated by radio or cable remote control.

The adjustment for different piles width adapters are used to compensate the off set.

HPS procedure

Job site examples

Water retaining basin and discharging channel in the old port of Hanau

At the „Altes Hafenamt in Hanau“ a new water retaining basin and discharge channel was built. At the end of June 2004 began the securing work of the excavation. The Hoesch steel sheet piles 1200/1700 were pressed with the Pressing-System HPZ. The hot-rolled Z-profiles were needed in lengths from 6,5 to 12.2 m. After securing the excavation the ground-water level was lowered, so that further works were possible. The total length of the sheet pile wall amounted approx. 200 m. A vibration free shoring was required, because the sheet pile wall run in some places with distance less than one meter along existing buildings.

Reconstruction of the Frauenkirche in Dresden

The Dresden s Frauenkirche (church) was destroyed during the 2nd world war in February 1945. The restoration works began 50 years later. A horseshoe-shaped cellar up to 6 m deep was constructed around the building. At the beginning approx. 1400 square meter light profiles HP 150/8 with lengths from 7 to 9.5 m were pressed into the soil.

To prevent damages by percussions or vibrations on the remains of the church and the adjacent historical buildings vibration free method was required. The pressing works were prepared by ground release drillings. Up to three ABI MOBILRAM-Systems were used at the same time.

HPS procedure

Press works on closest area

The Hydro-Press-System is used also in city centres under difficult conditions between buildings and in narrow streets. Only with the vibration free procedure such kind of construction measures became possible. The noise is reduced to the emissions of the carrier.

Pre-drilling as a soil improvement procedure

Pre-drilling improves the pressing ability of the soil. The soil structure will be thereby loosened and the profiles can be pressed or pulled easily. At the Hydro-Press-System HPS an auger drive is already installed. By the other Hydro-Press-Systems (HPU and HPZ) fast and trouble-free change of the tools is also possible with the rapid change device of the ABI MOBILRAM-System.

Braving the water

Sheet pile walls from hot-rolled profiles are provided with an interlock, so that a waterproof sheeting is possible. In Holland at the Meppelerdiep channel a bank stabilization with a length of approx. 1.5 km was installed. The special profiles in S-form in lengths from 8 to 10 m were pressed with a Hydro-Press-System HPZ.

ABI Gruppe

ABI · BANUT · DELMAG

For further information please contact your ABI sales assistant. Or you visit us on the Internet at www.abi-gmbh.de. Design subject to modifications. The details in this leaflet have to be regarded as approximate. The illustrations also can contain special outfits which are not part of the standard scope of supply. Not represented equipment variants can lead to modifications of the technical data.
The reproduction and utilization of this document, even in form of excerpts, without express authorization is prohibited. Offenders will be held liable for the payment of damages.

ABI Maschinenfabrik
und Vertriebsgesellschaft mbH
Am Knückel 4
D-63843 Niedernberg
Germany

Telefon: +49 (0) 6028 123-101, -102
Telefax: +49 (0) 6028 123-109
eMail: info@abi-gmbh.de

© ABI GmbH, Niedernberg/Deutschland.

www.abi-group.com