

Centrum Prefabricated Screw Pile - CPSP

A prefabricated displacement pile with noiseless and vibration free installation



Centrum Prefabricated Screw Pile - CPSP

CPSP is an abbreviation of Centrum Precast Screw Pile. The screw pile is a prefabricated full displacement concrete foundation pile and is designed with an external thread along the entire length and a steel tip connected to the bottom.

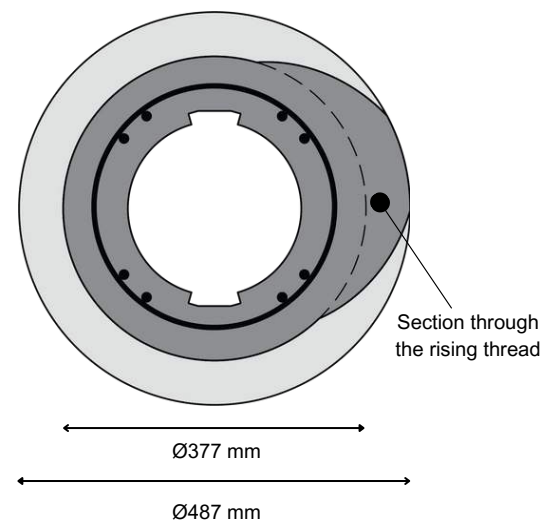
The pile can also be completely or partially unthreaded. It has a hollow core for installation with a custom-made drive rod mounted on a drilling rig. Installation of the screw pile is noiseless and vibration-free. However, minor vibrations may occur when maneuvering the machine and handling equipment.

Standard element length	8 meter
Standard element weight	1800 kg
Diameter of external thread	487 mm
Diameter of core, external	377 mm
Diameter of core, internal	216 mm
External thread pitch	250 mm
Nominal cover on the outside	35 mm
Nominal cover on the inside	25 mm
Cover tolerance	+/- 5 mm
Exposure classes, outside*	DK: XC4, XA2, XS2, XD1 DE: XC4, XA2
Exposure classes, inside*	DK: XC4, XA2 DE: XC4, XA2
Concrete strength classes	C50/60
Main reinforcement	8 Ø12 mm B500B
Spiral stirrups	Ø6 mm B500B / 70 mm

*DK: Exposure classes according to DS/EN 1992-1-1 DK NA and DS 206

*DE: Exposure classes according to DIN 1992-1-1 and DIN 1045-1

Pile cross-section

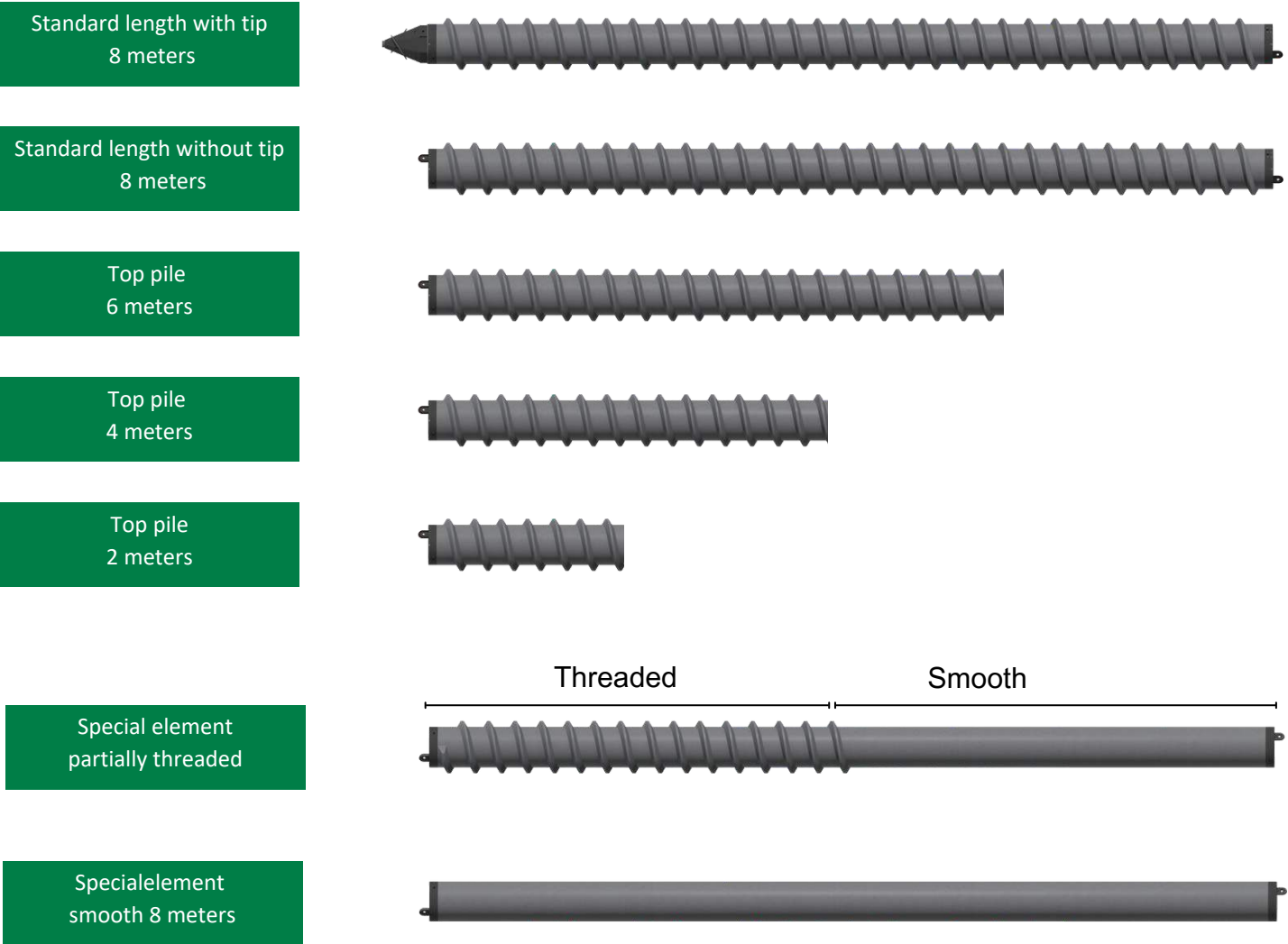


Pile cross-section



Pile lengths and standard range

Standard elements are manufactured in 8 meter segments, but can be adapted to specific project requirements. Special elements can also be produced entirely or partially with or without external threads. The pile segments are supplied with a steel tip.



Transportation of piles

The piles are cast with three flat spots on the thread to optimize stability during storage and transport.



Advantages of CPSP

Concrete screw piles have several significant advantages compared to commonly used foundation solutions.

For example, strict restrictions on noise and vibration levels are often a challenge when using pile foundations in densely populated areas. Concrete screw piles can meet these requirements with the well-known quality of prefabricated foundation solutions.

Like Centrum's other products, concrete screw piles are subject to high quality and value chain control.

Advantages of Centrum prefabricated screw piles

- Low noise level during installation
- No impulse noise
- No vibrations during installation
- No leaching to surrounding soil
- No excavation of soil and handling of spoils
- Well-defined cross-section
- Lower concrete consumption



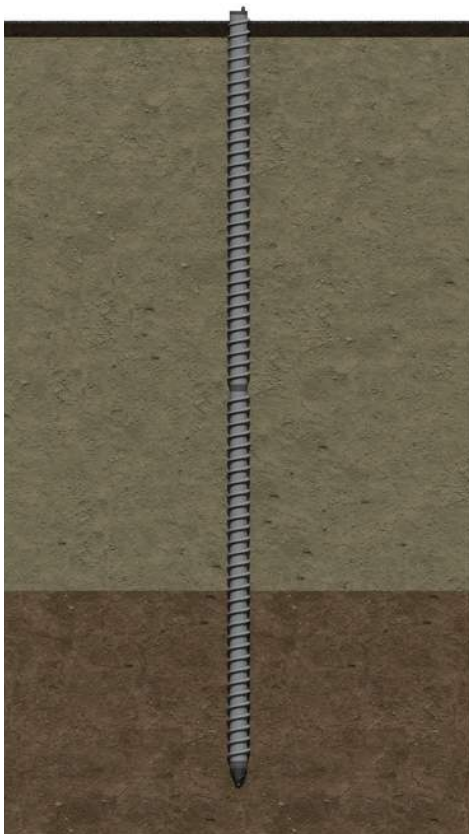
Scope of application and soil conditions

Installation of the concrete screw pile is normally done by screwing (full displacement), where the advancement per rotation corresponds to the thread pitch, 250 mm. In certain cases, the concrete screw pile can be installed in whole or partially with a lower advancement per rotation (partial displacement) through very firm or non-bearing soil layers, at the expense of a reduction in bearing capacity and modest soil handling.

The concrete screw pile is used as a typical pile foundation. For carrying compressive and tensile forces, load tests have shown that the internal bearing capacity (approx. 2.5 MN) can be dimensioning. To carry tensile forces, a threaded steel rod of the appropriate dimension is installed in the hollow core of the pile.

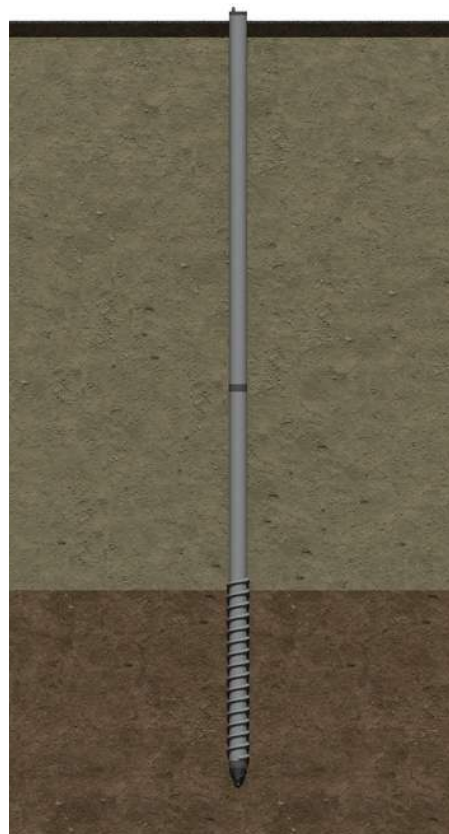
Standard application

The standard application is suitable for compression and moderate bending loads. External thread along the entire length.



Application partially unthreaded

Upper segment without threads, to reduce negative skin friction in fills and/or soft soils. A surface treatment can be applied.



It is recommended to verify the design with static and/or dynamic tests.

Execution

A special drive rod on a drilling rig is used to install CPSP. The maximum permissible torque on the drive rod is 280 kNm.

The CPSP elements are cast with a specially developed mechanical joint at both ends. A drill tip is connected at the bottom, and several pile segments can be connected at the top when a total pile length of more than 8 meters is required.

Furthermore, the upper joint acts as an attachment point by mounting a special lifting bracket.

Installation must be carried out in accordance with EN 12699.

Installation of bottom pile



Connection of drive rod and upper pile segment

CPSP

Pile joint principle

The CPSP pile joint solution is developed and patented by Centrum Pile.

The pile joint ensures tensile and compressive strength, as in equivalent piles without pile joints.

The installation process

In 4 simple steps

1 Insertion of drive rod.

The double key drive rod is installed through the entire length of the pile, resting at the steel tip.

2 The pile is screwed into the ground with the drive rod.

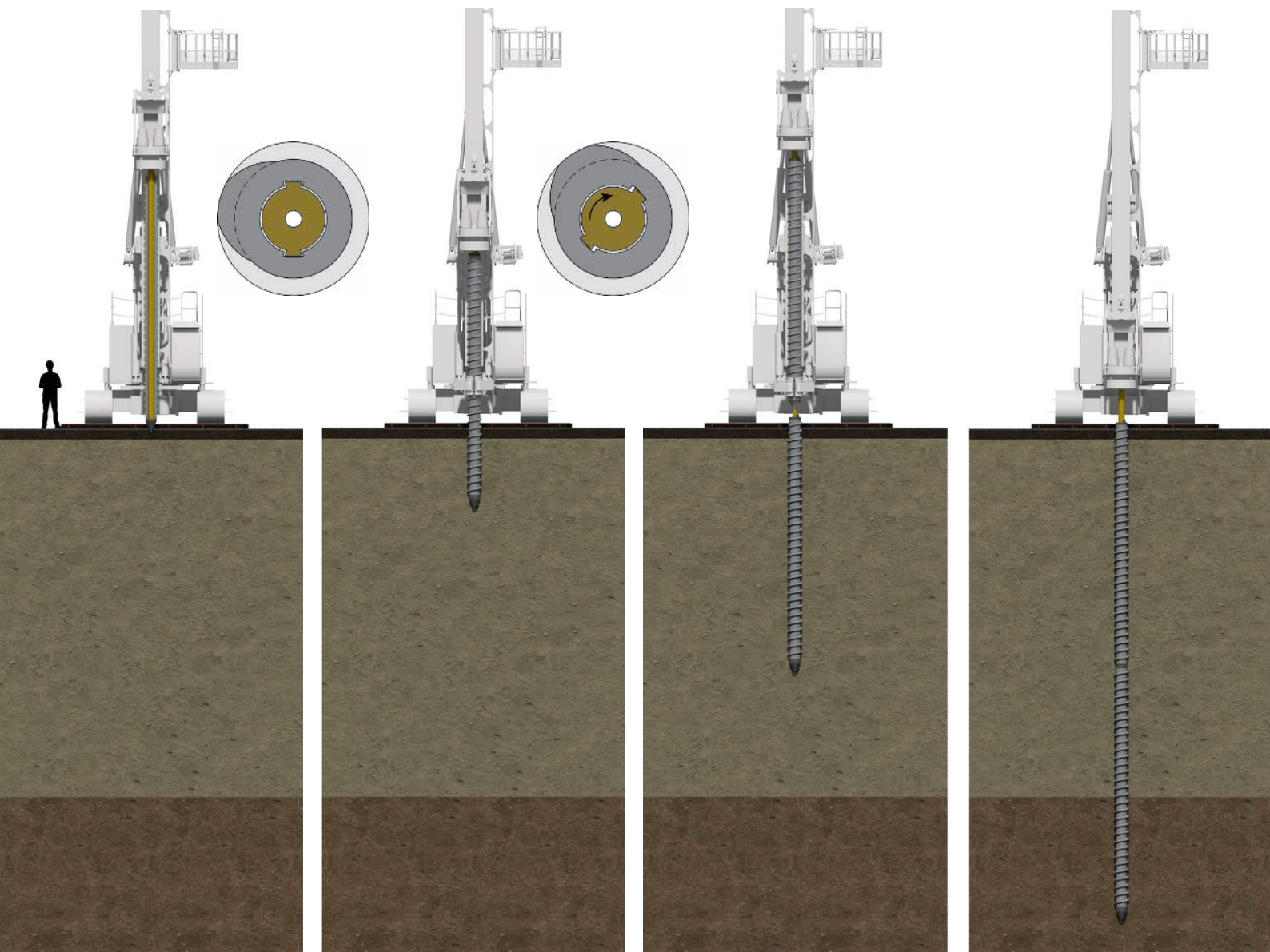
Above bearing ground level, installation pitch (advancement per rotation) less than 250 mm is allowed.

3 Connection of pile elements.

For a total pile length greater than 8 meters, multiple pile segments are used. The drive rod and pile are joined using a pile joint.

4 Installation continues to the specified depth.

Embedding below bearing ground level must be done with a pitch of 250 mm, corresponding to the pitch of the external thread.





Our team of experts are happy to advise on the suitability of the CSP concept and assess appropriate pile lengths for your project.

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