

# Centrum Prefabricated Screw Pile - CPSP

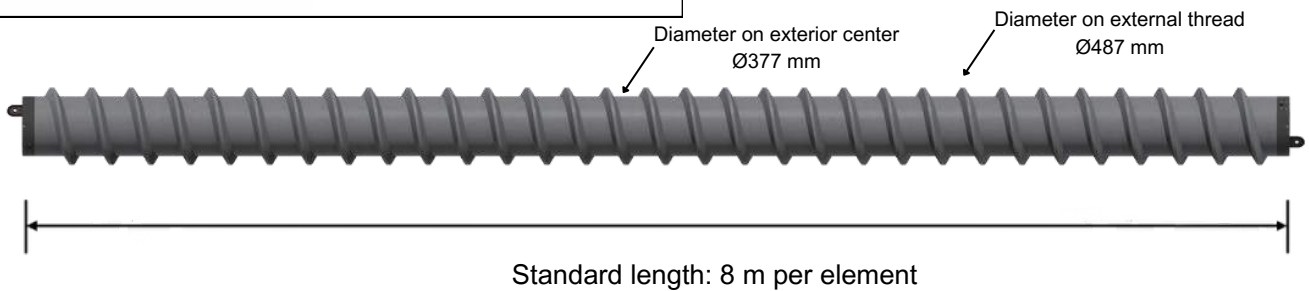
A prefabricated displacement pile with noiseless and vibration free installation in the ground



# 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 m
Diameter on external thread	487 mm
Diameter on exterior center	377 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 on the outside	XC4, XA2, XS2, XD1
Exposure classes on the inside	XC4, XA2, XS2, XD1
Concrete strength	C50/60



# Advantages of CPSP

The screw pile has several advantages, depending on whether it is compared to in-situ or impact driven prefabricated piles.

The restrictions on noise and vibration levels for the realization of pile foundations in densely populated areas increase. Therefore, the Centrum screw pile is now being introduced in Northern Europe.

In addition to the many advantages of prefabricated piles enabled by modern industrial manufacturing, with a high level of quality and value chain control, stringent environmental considerations during installation can now also be accommodated.



## Advantages of Centrum prefabricated screw piles

- Low noise during installation without noise peaks
- No vibrations during installation
- No leaching to surrounding soil
- No excavation of soil and handling of spoils
- Well-defined cross-section
- Lower concrete consumption





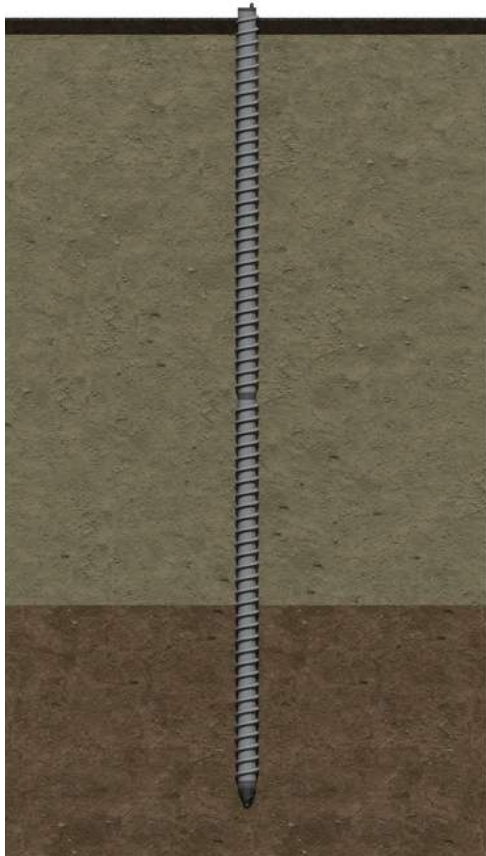
# Scope of Application

CPSP is particularly suitable as a pile foundation element in cohesive soil types with shear strengths up to 300-400 kN/m<sup>2</sup> and in non-cohesive soils with CPT cone penetration test  $q_c$  values up to 15-20 MPa.

In addition to the applications listed below, screw piles can also be used with a cast-in threaded rod. When higher tensile strength is required, the pile can be reinforced with a steel threaded rod in the hollow core.

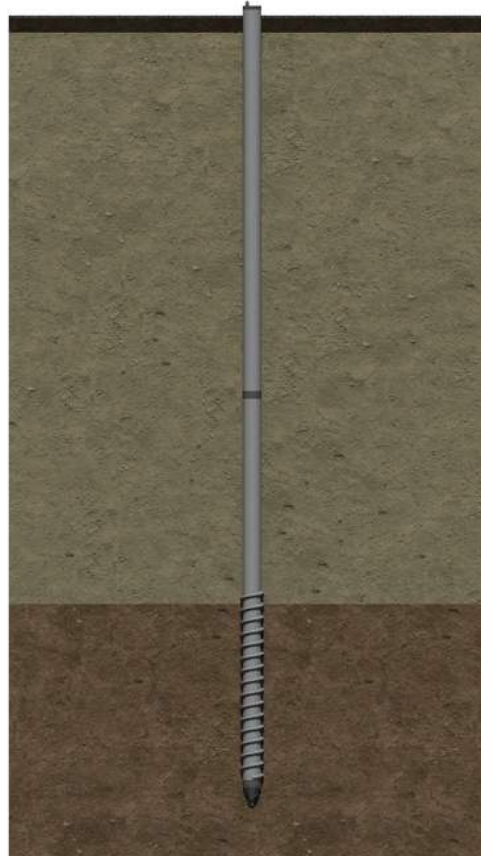
## Standard application with external thread

The standard application is suitable for compression and moderate bending loads. Pile elements can be coupled using pile joints. 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. Pile elements can be coupled using pile joints. Element of smooth upper pile and lower pile element with external thread.



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

# Installation

For the installation of CPSP, a special driving rod and drilling rig is used with a “torque capacity” of 280kNm.

By means of a specially developed pile joint solution, the CPSP elements are fitted with a drilling point at the bottom and, at the top, connected to the next pile element if pile lengths exceeding 8 m are required.

Furthermore, the top pile joint serves as a lifting point during the installation when connected to a special lifting bracket.



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 tip is mounted to the pile using the pile joint.



# 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.

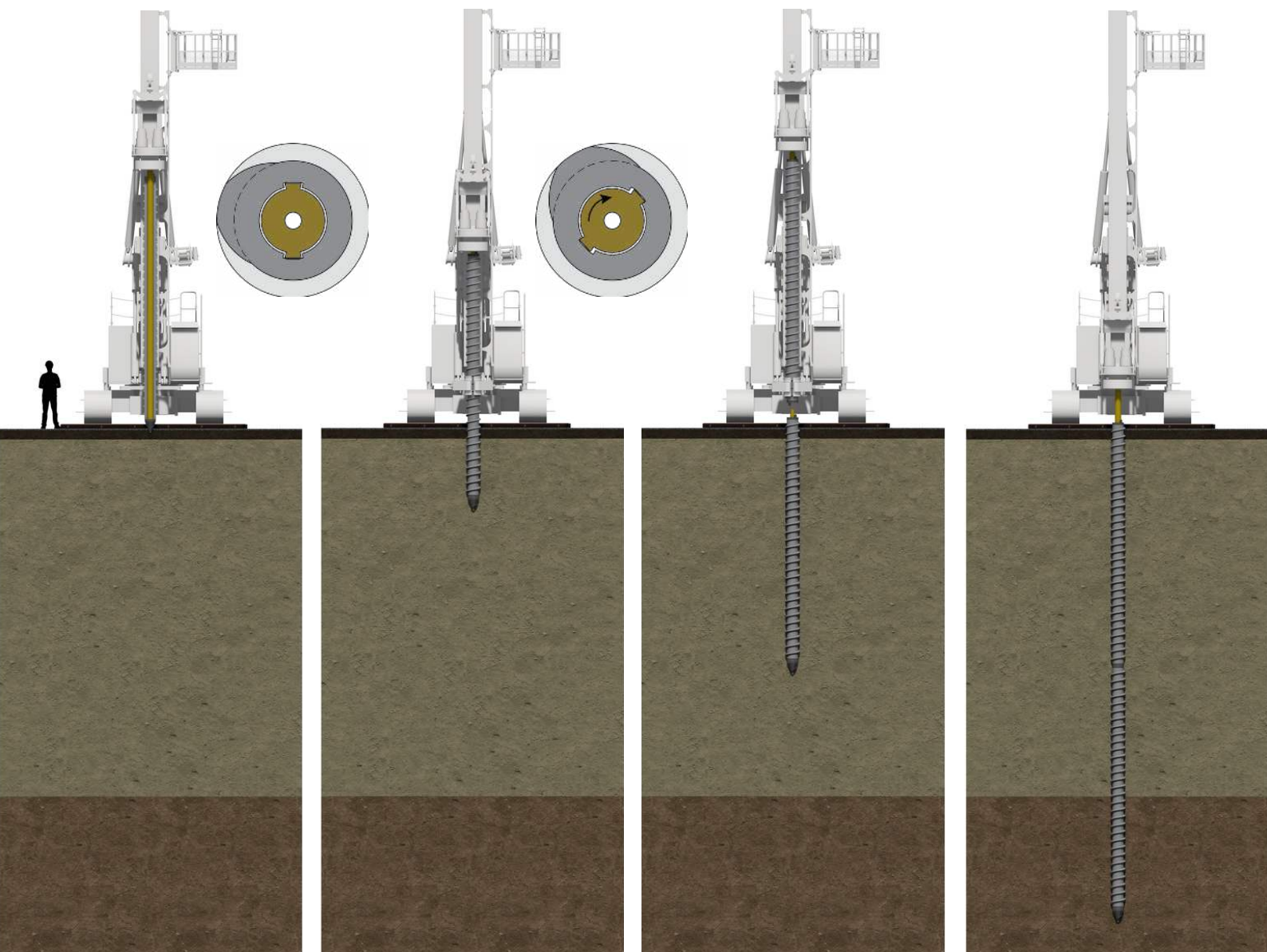
Above bearing ground level, installation pitch (advancement per rotation) less than 250 mm is allowed.

## 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 (advancement per rotation) 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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