



**FREDRICH**  
SPEZIALTIEFBAU

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**Displacement screw/bored pile**  
Fredrich System, conforming to DIN EN 1536





### AT A GLANCE

The displacement screw/bored pile is particularly suitable for use on inner city sites, where vibration-free fabrication with very low noise levels is required. In contrast with full displacement bored piles, the ground is not completely displaced sideways but is partly conveyed via the helix on the exterior of the steel pipe. This method is therefore used in difficult ground conditions. It enables larger pile cross-sections and lengths to be achieved for deep foundations. We use it for pile lengths of up to 40 metres, diameters of up to 85 centimetres and inclination of up to 4:1. For this purpose, we use special displacement screw/bored piles with a smaller helix, which gives the pile greater bearing capacity, while less spoil has to be conveyed.

### METHOD OF FABRICATION

The auger, a thick-walled steel pipe with an external helix for conveying the soil, is closed at the bottom end with a watertight steel baseplate and seal. This pipe is inserted into the ground with a hydraulic boring drive. By doing so it displaces some of the soil sideways and conveys the rest upwards. When the required bored depth is reached, the reinforcement cage is installed and the pipe is filled with concrete, after which the auger is removed.

### DIMENSIONING AND QUALITY ASSURANCE

The displacement screw/bored pile with permanent steel baseplate is dimensioned and fabricated in compliance with DIN EN 1536. Our great wealth of empirical data for this type of pile from numerous completed projects and test loadings enable us to design optimised, stable foundations. The bored depth of the piles can be defined based on our know-how and in collaboration with the ground engineer or by means of test loading either on site or in comparable ground. Our displacement screw/bored pile is fabricated with augers with a large interior so as to displace as much soil as possible. The ratio of interior to exterior diameter of the pile is at least 0.55.

### COST-EFFICIENCY

The displacement action of part of the pile cross-section has the effect of compacting the ground. This displacement permits higher bearing capacities in the area of skin friction and end-bearing pressure. We adapt the pile length according to the strata profile of the load-bearing ground, as determined by the ground investigation. Thus only the technically required length has to be fabricated, which enables material to be saved in the layers with better bearing capacities.

### PROJECT EXAMPLE

For the Airbus Cabin Equipment Center in Hamburg, we installed around 570 displacement screw/bored piles. We were able to doubly verify the pre-calculated bearing capacities of 2500 kN on the basis of test loadings. The piles, measuring 55 to 75 centimetres in diameter and up to 23 metres in length, were implemented economically and with perfect technical results using our KH 180 and CX 700 boring units and our 45 Tm boring motor.

Pile shaft diameter in cm	45 cm	55 cm	65 cm	75 cm	85 cm
admissible pile load up to	1.350 kN	1.750 kN	2.200 kN	2.900 kN	3.300 kN

