Lightweight dynamic penetrometer

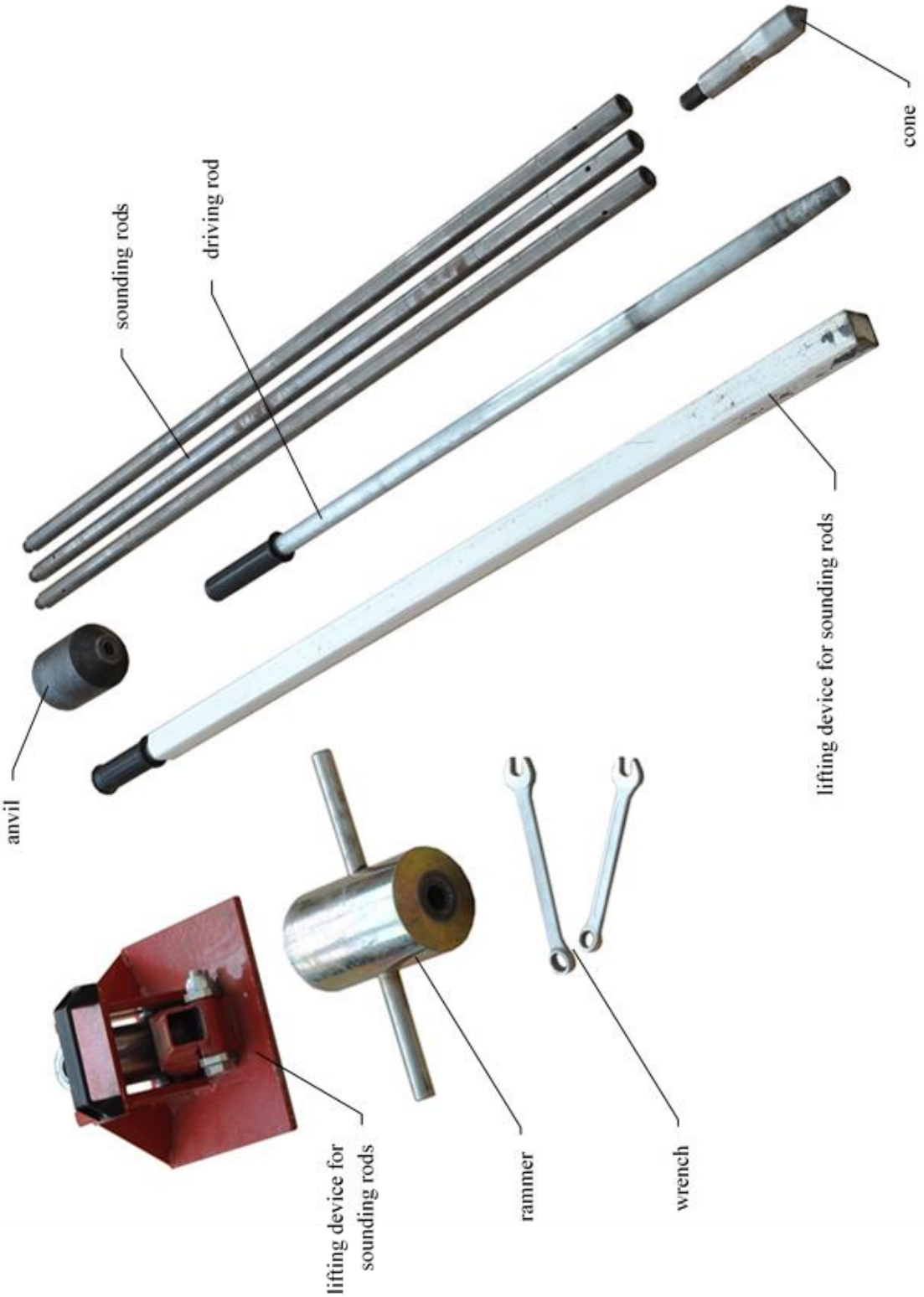
DIN 4094-1 Subsoil - Field investigations - Part 1: Cone penetration tests

ASTM D3441 - 16. Standard Test Method for Mechanical Cone Penetration Testing of Soils.

Penetrometers are used to establish the thickness of different stratifications when investigating the suitability of a site for bridge, road or other construction works. In general, if the ground is not too compact, penetration tests with this apparatus can be carried out to depths of about 8 to 12 m.

The objective of dynamic penetration tests is to determine the resistance of soil and semi-rock in-situ against the penetration of the cone. A "constant force" is applied to the cone by a ram of known weight and a constant height of fall. The penetration resistance is then defined as the number of strokes required to kick the cone at a specified depth. Dynamic penetration tests are indirect and serve as a complement to direct geotechnical exploration, most often as a complement to geological boreholes. From the results of the penetration tests in comparison with another source of information (e.g. geological drilling), the following conclusions can be drawn:

- determination of interfaces of individual geological layers to a depth of about 10 m,
- strength and deformation properties of soils,
- density index (non-cohesive soil)
- consistency index (cohesive soil),
- location of very stiff layers of the subsoil
- finding critical positions of soils with weakened strength,
- localization of sites affected by internal erosion,
- control of compaction.


cone
sounding rods
driving rod
lifting device for sounding rods
anvil
lifting device for sounding rods
rammer
wrench

Record – Lightweight dynamic penetrometer

Site name:

Location (x, y, z; GPS):

Date:

Type of dynamic penetrometer test:

Sketch (scale 1: / without scale) with a direct geotechnical survey:							

Notes:

Lightweight dynamic penetrometer

Lightweight dynamic penetrometer n.:

date:

Type: DPL

Location (x, y, z; GPS):

Depth	N_{10}	Depth	N_{10}	Depth	N_{10}	Depth	N_{10}	Depth	N_{10}
0,1		2,1		4,1		6,1		8,1	
0,2		2,2		4,2		6,2		8,2	
0,3		2,3		4,3		6,3		8,3	
0,4		2,4		4,4		6,4		8,4	
0,5		2,5		4,5		6,5		8,5	
0,6		2,6		4,6		6,6		8,6	
0,7		2,7		4,7		6,7		8,7	
0,8		2,8		4,8		6,8		8,8	
0,9		2,9		4,9		6,9		8,9	
1,0		3,0		5,0		7,0		9,0	
M [Nm]		M [Nm]		M [Nm]		M [Nm]		M [Nm]	
1,1		3,1		5,1		7,1		9,1	
1,2		3,2		5,2		7,2		9,2	
1,3		3,3		5,3		7,3		9,3	
1,4		3,4		5,4		7,4		9,4	
1,5		3,5		5,5		7,5		9,5	
1,6		3,6		5,6		7,6		9,6	
1,7		3,7		5,7		7,7		9,7	
1,8		3,8		5,8		7,8		9,8	
1,9		3,9		5,9		7,9		9,9	
2,0		4,0		6,0		8,0		10,0	
M [Nm]		M [Nm]		M [Nm]		M [Nm]		M [Nm]	

Notes:

GWL: