

Shear strength test apparatus

For measuring soil shear strength



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The shear test apparatus measures the shear stress of an undisturbed soil sample. During shearing at a constant shear velocity and under 1) consolidated drained (CD), 2) unconsolidated, undrained (UU) or 3) unconsolidated drained (UD) conditions the matric potential and shear forces at a given vertical stress are measured simultaneously. The apparatus operates under computer control using multifunctional software for executing measurement protocols and visualised data presentation.

This equipment measures the soil shear stress in accordance to EN17892-10 and ASTM D3080-98 considering the following restrictions:

- The maximum specimen load is 600 kPa for a 100 mm sample ring
- Tests are conducted in non water immersed condition
- Please consult instrument specification for detailed information in case of accreditation

Applications

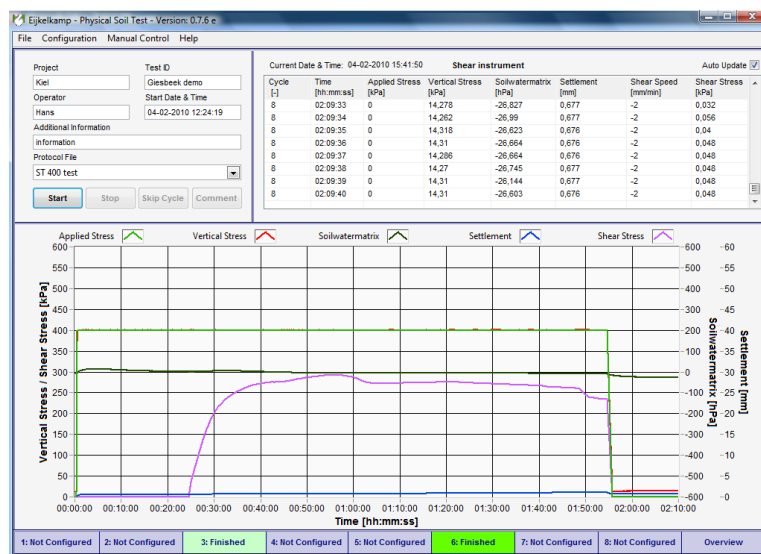
- Soil science
- Soil mechanics
- Soil erosion
- Environmental research
- Basic material research

User groups

- Laboratories
- Research institutes
- Educational institutes
- Universities

Features

- User-friendly and easy operation
- Accurate measurement principles
- All in one shear and compression measurements
- Sample diameter 100 mm, height 30 mm
- Software-controlled measurement protocols
- Simultaneously operation of up to 8 instruments
- Graphical instrument overview and data zoom functions
- Calibration functions
- Data file export i.e. Excel
- Upgradable for dynamic multistep operation with advanced sensor based experiment control
- Excellent price-quality-functionality ratio
- Developed in cooperation with Christian Albrechts University zu Kiel



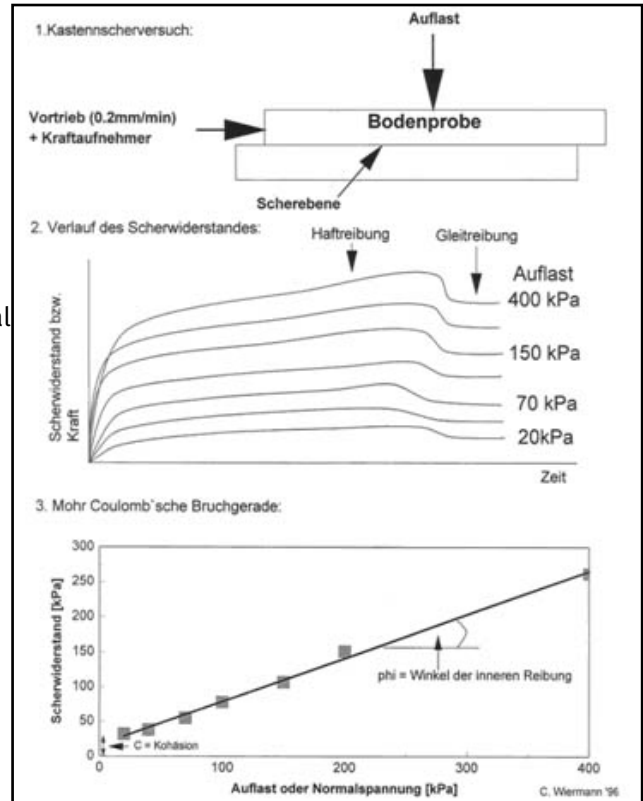
Technical specifications

Item	Range	Resolution	Accuracy
Stress vertical	0-600 kPa	0.1 kPa	2 kPa
Response speed	10 sec. @1% end value (adaptable by PID controller parameters)		
Stress horizontal	0-400 kPa	0.1 kPa	2 kPa
Shear speed	0-2 mm/min	0.01 mm/min	0.1 mm/min
Shear stroke	20 mm		
Matric potential	-1000...+1000 hPa	0.1 hPa	2 hPa
Compression	0-30 mm	0.001 mm	0.1 mm
Sample log rate	0.1...60 sec.		
Soil sample diam.	100 mm		
Pressure-in max.	0.7 Mpa / 7 bar		
Force max.	5 kN		
Stress out max.	600 kPa		
Mains supply	100-250 volts AC		
Mains frequency	47-63 Hz		
Power consumption	0.8 W		
Environmental conditions:			
Temperature	15-35 °C		
Humidity	20-80% RH (non condensing)		
Dimensions	45 x 75 x 125 cm		
Software language	English		
P.C. connection	USB		

All of the information in this brochure is provisional. We reserve the right to alter equipment, procedures and specifications.

Result evaluation by Mohr - Coulomb

To determine the Mohr-Coulomb failure line at least 4-5 samples need to be tested each with a different normal stress. The maximum shear resistance is determined from a shear stress-displacement curve and plotted as a function of the corresponding normal stress. Plotting all pairs gives the Mohr-Coulomb failure line in which the slope and intercept are the angle of internal friction and cohesion, respectively. The boundary conditions can be defined very flexible according to the posed experimental question.



Instrument layout

