

Bromhead ring shear apparatus



TORSHEAR

- ◆ Microprocessor controlled drive system
- ◆ Speed range adjustable from 0.001 to 180°/min
- ◆ Rapid approach without any limit of rotation
- ◆ Serial port RS 232 for PC remote control
- ◆ Two measurement options: mechanical with load rings and dial gauge, and electronic with Data acquisition, with load cells, displacement transducer and Geodatalog Data acquisition system

This is just one of more than 4,000 products manufactured by CONTROLS, the global leader Testing Equipment for the construction industry in three business areas:

- Concrete and cements;
- Asphalt and bituminous mixtures;
- Soil and rocks.

Standards ASTM D6467 | BS 1377:7

The Torshear machine is dedicated to the determination of the residual shear strength.

The residual shear strength of soils is sometimes also termed the ultimate shear strength. This is the strength of soil when it is sheared to large displacements, for example along the failure plane of a landslide or in a fault zone. A remoulded specimen is used to determine the residual shear properties of the soil. A slip surface is formed in the test specimen as part of the test procedure. It can also be useful to know what sort of value the residual shear strength of an intact soil can have, because this (when taken in conjunction with the peak shear strength of the same soil) indicates its brittleness or susceptibility to progressive failure. Soils with high brittleness need to be used with caution in engineering works such as embankments (or treated with caution if they cannot be removed, for example in a natural slope). In the unfortunate event of a slope failure occurring, the general scale of displacement will depend on the magnitude of the brittleness.

The TORSHEAR apparatus tests the residual shear strength of remoulded soil samples. The main advantage of this method compared to direct shear test consists in the continuous shear with a constant area during all

the test long. This method allows us to recreate in the laboratory exactly the the field conditions, giving very accurate residual shear strength values. The sample is loaded vertically between two porous stones by means of a counter balance 10:1 ratio lever loading system. A rotation is imparted to the base plate and lower platen by means of a variable speed motor. The settlement of the upper platen during consolidation or shear can be monitored by means of a sensitive dial gauge or linear transducer bearing on the top of the load hanger. Torque transmitted to the sample is reacted by a pair of matched load measuring rings or load cells. Linear transducer and strain gauge load cells can be connected to the 30-WF6016 GEODATALOG for data acquisition and processing. See accessories. Using the waterproof membrane keyboard and the LCD display with 4 rows and 20 characters, it is possible to set the speed in deg/min, using also the fast approach for sample positioning. The test can be stopped using the keyboard or setting a limit of rotation or time. This apparatus is known as Bromhead Apparatus. Dr. Bromhead of Kingston University designed the Ring shear apparatus to overcome certain disadvantages of a conventional shearbox. Dial gauge or linear transducers, load ring or cells and weights are not included and have to be ordered separately. See accessories.

BROCHURE

Technical specification

- Speed range: 0.001 to 180°/min
- Maximum shear stress: 500 kPa
- Maximum vertical stress: 1000kPa (lever ratio 10:1)
- Specimen dimensions: 40 cm² (internal dia. 70 mm, external dia. 100 mm, thickness 5 mm)
- Power rating: 570 W
- Overall dimensions (lxdxh): 770x400x750 mm (excluding lever)
- Weight approx.: 72,5 kg

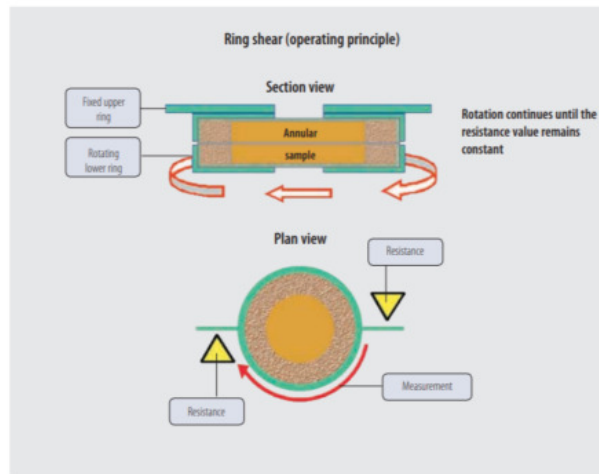
Ordering information

27-WF2202

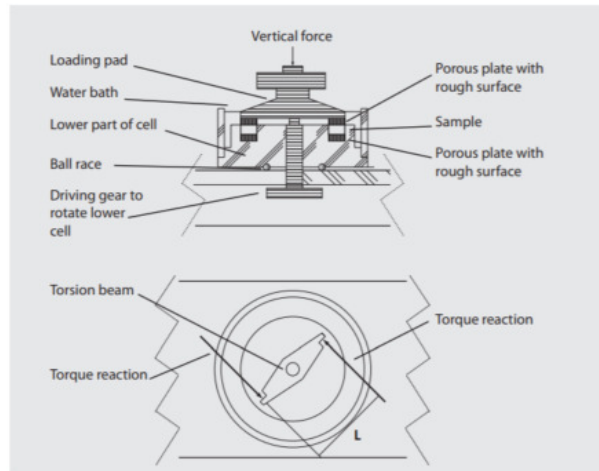
TORSHEAR, Bromhead ring shear apparatus. 110-240 V, 50-60 Hz, 1 ph



30-WF6207 Linear potentiometric transducer



Ring shear (operating principles)



Typical arrangement of ring shear apparatus

Accessories

Electronic measurement option

27-WF2202/3

Pair of load cells 1 kN cap. with adapters

30-WF6207

Linear potentiometric transducer, 10 mm travel, complete with mounting block

30-WF6016/T3

Ring shear Geo-Analysis template.

Data acquisition system

(see the link products below)

Mechanical (manual) measurement option

27-WF2202/1

Pair of matched load rings, 1 kN capacity

30-WF6401

Dial gauge 10x0.002 mm

Weights for vertical load

27-WF2202/2

Set of slotted steel weights, total 50 kg

Stand (optional)

27-WF2202/4

Metal stand for 27-WF2202 apparatus

Spares

27-WF2202/5

Pair of porous stones