

TORSION of RODS and TUBES

HST22



Year 2
study

Features

- Low profile apparatus
- Five specimens provided; solid, tube, 'slit'
- Torque output using Load cell
- Chucks allow customer specific specimens.
- Angle of twist measured at two additional points along specimen.
- Fine angular twist adjustment.
- Dedicated e-book supplied

Description

The apparatus comprises of a torsion head at one end and a fixed tailstock at the other, between which are held a variety of torsion specimens in three (3) jaw chucks. Fine rotational movement, in each direction, allows accurate alignment of the torsion specimens. Each torsion specimen has profiled ends to match the clamping pattern of the chucks. The torsion head chuck is mounted onto a bearing shaft, which is rotated using a thumbwheel and fine worm/wheel gearing mechanism integral to the torsion head. The thumbwheel and gearing applies known torque to the torsion specimen, whilst an integral load cell records the torque force being applied. An angular position sensor is also mounted at the torsion head end to monitor the angular 'twist' of the torsion specimens. The signals from the load cell and angular position sensor is fed directly into the HDA200 Interface (sold separately). Test specimens are provided, including tube, solid rod, square section tube and a tube with a thin slit down its length. The materials of the specimens are aluminium and acrylic.

Related Laws/Applications

- Modulus of Rigidity.
- Shear Modulus.
- Torsion Constant.
- Polar Moment of Inertia.
- Angle of Twist.
- Gauge Length.

Learning capabilities

- Verification of the classical theory of torsion in circular section rods and tubes
- Comparison of a tube and a similar tube with a 1mm slit along the length
- Comparison of the extended theory of torsion for a hollow square section member with experimental values
- Shear modulus
- Modulus of Rigidity, G
- Polar moment of inertia

Technical Specification

- Ø9.5 x 432(L) mm Solid specimen
- Ø9.5 x Ø6.3 x 432(L) mm Tube specimen
- Ø9.5 x Ø6.3 x 1mm slit x 432(L) mm slit specimen
- Ø10 x 432(L) mm Acrylic specimen
- 12.7 x 12.7 x 1.5 x 432(L) mm Square Specimen
- Load cell: 0...500N
- 300° Angle Sensor
- Protractor; 180° x 1° resolution

Essential Ancillaries

- HST1 (or HST100)
- HDA200

What's in the Box?

- 1 x Torsion Head
- 1 x Torque Arm
- 1 x Load Cell assembly
- 5 x specimens
- 1 x Cable Assembly
- 2 x Protractors
- 2 x Pointer Assembly
- 1 x Tape measure
- Accessories container
- 3 x Hex wrench
- Instruction manual
- E-book
- Packing list
- Test sheet

You might also like

- HSM2
- HSM31

Weights & Dimensions

- Weight: 15 kg
- Length: 700mm
- Width: 600mm
- Height: 200mm

Essential Services

- 110/120V, 60Hz or 220/240V, 50Hz, single phase, live neutral and earth for optional HDA200

Operational Conditions

- Storage temperature: -10°C to +70°C
- Operating temperature range: +10°C to +50°C
- Operating relative humidity range: 0 to 95%, non condensing

Ordering information

To order this product, please call PA Hilton quoting the following code: HST22

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COUNTRY OF ORIGIN - UK WARRANTY PERIOD - 5 YEARS