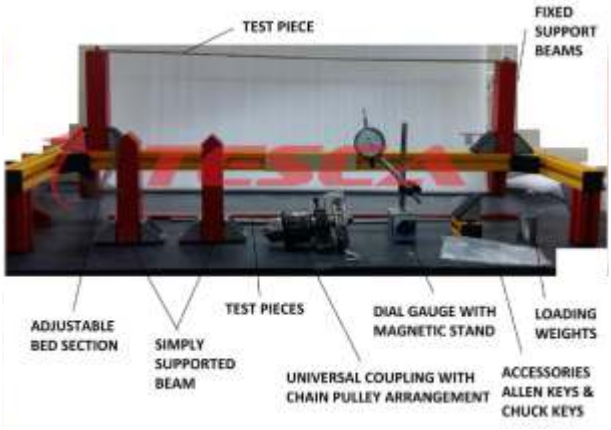

Features

Tesca Torsion and Deflection Testing Apparatus allows a variety of experiments to be undertaken to investigate test specimens under torsional loading and bending loading within their elastic limits.

The students cover topics involving bending moment equation, torsional rigidity, modulus of rigidity, angle of twist, and create graphs and compare actual measured values with theoretical values using formulae and theory provided.

An extruded base frame carries two solid vertical supports. Profiled grooves within the base frame, fasteners and quick release handles ensure quick and easy adjustment of the span between the vertical supports.

One vertical support carries a unique specimen chuck with a through hole. Another chuck is held stationary at one end of the base frame. The chucks have two functions; to secure the torsion specimens during testing and to transmit the torsional loading to the torsion specimen. The torsional load is transmitted using a pulley and cord arrangement, with the pulley being mounted to a shaft running in bearings. The bearings minimize the friction in the system. The chuck installed into the vertical support has a through hole to allow the length of the torsion specimen to be varied.

The twist of the torsion specimens is indicated on an angle indicator and pointer, which can be moved along the test specimen.

The remaining vertical support is used for bending tests. Each vertical support has a top clamp provided. This allows the end support arrangement for the bending specimens to be varied, i.e. clamped, simply supported on knife edges or on ground dowels. The supports can be moved along the base frame thus changing the beam span.

To measure the bending specimen deflection a dial gauge is fixed onto a movable stand and can be positioned anywhere within the beam span.

A set of torsion and bending specimens are supplied. A load hanger and set of calibrated weights create specimen loading.

A comprehensive instruction manual is included covering the apparatus, experimental procedure and example results. All necessary tools and accessories are supplied.

Specifications

- Apparatus to test elastic deformation under bending and torsion
- Compact, bench top, self contained unit
- Specimens to be tested under bending and torsion
- To have ability to change the end clamping arrangement for bending specimens
- Chucks to secure torsion specimens and to apply torsion via pulley and hanger
- Bending specimens to be supplied in a variety of cross section and materials
- Torsion test specimens to be supplied in a variety of material
- Apparatus to have adjustable beam span and torsion span
- Deflections to be measured using dial gauge on movable stand
- Torsion to be measured using movable protractor and pointer

Note: Specifications are subject to change.

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- Comprehensive technical manual for student and lecturer provided
- To be provided with a set of calibrated weights, load hangers and all necessary accessories

Technical Specifications

- Bending Specimens
  - Material: aluminum, steel and brass
  - 25.4mm x 3.175mm x 450mm
  - 4.76mm x 6.35mm x 450mm
  - 19.05mm x 3.175mm x 450mm
- Torsion specimens
  - Material: aluminum, steel and brass
  - Length with d=5mm: 450mm
- Dial gauge: 0...10mm, graduations: 0,01mm
- Tape measure, graduations: 0,01m
- Load
  - 1x 1N (hanger)
  - 1x 1N, 1x 4N, 1X 5N, 1x 9N

Components List

- One frame
- Two bearing blocks
- One device to generate the torque
- Bending specimens
- Torsion specimens
- One dial gauge with bracket and one tape measure
- One set of loads including hanger
- Two hexagon socket wrenches
- Two adjustable blocks with clamping chuck for torsion tests and supports for bending tests.
- Loads to generate the bending or torque
- Dial gauge with bracket
- Storage system to house the components

Experiment Possibilities

- Deflection of specimen as a function of loading force, material, Young's Modulus of Elasticity (E), cross section, support span
- Comparison of bending stiffness of varying specimen sections for the same cross sectional area
- Comparison of cantilever beams, simply supported beams
- Determination of Young's Modulus of Elasticity (E) in shear for the different material specimens
- Introducing Poissions Ratio
- Torsion angle and clamping length relationship
- Torsion angle and torsion moment relationship
- Torsion angle and specimen cross section
- Modulus of rigidity introduction

Note: Specifications are subject to change.

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