KSM-075 **UNSYMMETRICAL BENDING AND SHEAR CENTRE APPARATUS**

Unsymmetrical Bending and Shear Centre Apparatus – Model KSM-075 the apparatus is designed to investigate the behavior of different sectioned beams when loading is applied outside the plane of a principal axis. The set includes cantilever beams with 'U' section, 'L' section, and rectangular section profiles.

Each beam specimen is horizontally supported within a precision rotating clamp, mounted on a robust frame fixed to the main Frame and Stand. The rotating clamp allows the loading and deflection planes to be set relative to the cross-sectional axes. A protractor scale, mounted on the clamp block, works with a pointer on the specimen to ensure accurate angular positioning.

At the free end of the cantilever, a boss supports two dial gauges positioned at right angles, with full positional adjustment for accurate measurement of deflection in two directions. The flat anvils of the dial gauges ensure consistent contact during deflection. Vertical loading is applied via a load hanger and a set of calibrated weights.

For shear Centre experiments, additional loading bars are supplied for attachment to the specimen ends, enabling accurate reference for the dial gauges.

The apparatus is supplied with a comprehensive instruction manual for both lecturers and students, detailing assembly, operation, and example results. All necessary tools for assembly and operation are included.

Features

- High-quality structures teaching module for mechanical, civil, and structural engineering students
- Enables safe and practical experiments on deflections of beams and cantilevers
- Produces realistic and verifiable experimental results
- Optional *Structures Software* package for additional "virtual" experiments that simulate and confirm hardware results, with extended experiment capabilities

Note: Specifications and Photos can be altered without prior notice in our constant efforts for improvement.

- Optional *MOS Software* package for automatic data acquisition and virtual experiments

Specifications

- Cantilevered Specimens: ‘U’, ‘L’, and rectangular profiles
- Variable Orientation: Angle of principal axes can be adjusted
- Cantilever Test Length: 600 mm
- Deflection Measurement: Dial gauges to measure free-end deflection during loading
- Protractor: Attached for angular measurement
- Shear Centre Analysis: Available for ‘U’ section only
- Loading Method: Load applied through hanger and calibrated test weights
- Mounting Requirement: Designed for use with a universal frame and stand

Experiments

- Study horizontal and vertical deflection of asymmetrical cantilevers when the loading plane does not coincide with a principal axis
- Investigate horizontal deflection of asymmetrical cantilevers under various loading conditions
- Verify the theory of unsymmetrical bending
- Determine the neutral axis in an angle section
- Determine the shear centre in a ‘U’ channel section (only)

Operating Conditions

- Environment: Laboratory use
- Storage Temperature: –25 °C to +55 °C (when packed for transport)
- Operating Temperature: +5 °C to +40 °C
- Relative Humidity: 80% at temperatures <31 °C, decreasing linearly to 50% at 40 °C