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Product Name :

Unsymmetrical Bending and Shear Centre

Product Code :

SLE/EG/14



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Description :

Unsymmetrical Bending and Shear Centre (Product Code: SLE/EG/14) is a two-part cantilever experiment on how beams behave when a load does not act along a principal axis. In one set-up a chuck clamps a ‘U’ section beam and a plate at its free end takes offset loads that twist the section, so students can locate its shear centre; in the other, a beam is held so it can rotate on its own axis and loads are applied at various angles. It is manufactured by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, Ambala, for advanced strength of materials teaching in engineering colleges.

Key Details

Parameter	Detail
Type	Shear centre and symmetrical / non-symmetrical bending experiment
Shear centre set-up	Chuck clamps a ‘U’ section beam; a plate clamped to the free end allows various offset loads to twist the beam
Bending set-up	Chuck clamps a beam while allowing rotation on its axis, so loads can be applied at various angles
Deflection measurement	A pair of precision indicators measures the deflections produced by loads at the free end
Indicator display	Indicators have their own displays and can also connect to the USB interface hub of the Structures Platform for computer display and data acquisition
Included tool	Vernier caliper for accurate measurement of the beam cross-sections
Analysis	Comparison with arbitrary section axes and textbook beam equations; Mohr’s circle to find the experimental principal second moments of area and the position of the principal axes

Typical Use

For the shear centre test, students hang loads at a series of offsets on the end plate of the ‘U’ section and watch the two indicators. The offset at which the section deflects without twisting marks the shear centre — a point that lies outside the channel itself, which explains why channel sections used as purlins or rails tend to twist unless they are loaded through it.

In the unsymmetrical bending tests the beam is turned in its chuck so the same load acts at a range of angles to the section. The deflections read by the indicators are compared with those expected for the arbitrary section axes and with values from textbook beam equations, and students plot their results on a Mohr’s circle to find the experimental principal second moments of area and the orientation of the principal axes. Dimensions taken with the included Vernier caliper feed every calculation. It is a demanding final-year practical and a worthwhile addition to engineering lab equipment in India for structural design courses.

Manufacturer

Jain S
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