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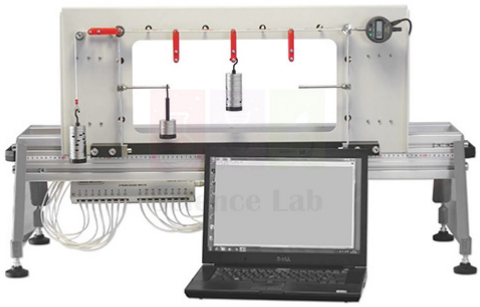
Product Name :

Bending Moments In A Portal Frame

Product Code :

SLE/EG/07



Description :

Bending Moments In A Portal Frame (Product Code: SLE/EG/07) is a strain-gauged portal frame that lets students measure bending moments around a real frame and draw its bending moment diagram from test data. The frame is held between two fixing blocks and can take vertical, horizontal or combined loads, plus loads on moment arms that mimic cantilevered floors. A precision indicator records sway. The module is manufactured by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, Ambala, whose range of vocational training and university lab equipment covers structures, fluids and materials.

Key Details

Parameter	Detail
Type	Portal frame bending moment experiment
Mounting	Portal frame held between two fixing blocks
Load cases	Vertical, horizontal or combined loads; additional loads on moment arms on the vertical members
Moment arms	Simulate the effect of internal and external cantilever floors of a structure
Bending moment measurement	Strain gauges at key points around the portal
Sway measurement	Precision indicator for horizontal deflection
Data connection	Strain gauges connect to a strain gauge amplifier, which connects to the USB interface hub of the Structures Platform
Included measuring tool	Vernier caliper for measuring the cross-section

Typical Use

Students first measure the frame section with the Vernier caliper and use textbook methods, such as moment distribution or the flexibility method, to predict bending moments at the gauge positions and the expected sway. They then apply the chosen load case and read the strains, converting each to a bending moment. Because the gauges sit at key points around the portal, the measured values can be joined up into a bending moment diagram and laid directly over the calculated one.

Running several load cases shows how the diagram changes shape: a vertical load on the beam, a horizontal load at eaves level, the two combined, and loads on the moment arms that represent floors projecting inside or outside the frame. Comparing sway with prediction completes the picture. This makes it a valuable piece of engineering educational equipment for building-frame analysis in civil and structural programmes.

Manufacturer

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