COMBINED SHEAR FORCE & BENDING MOMENT

HFC31

Year 1
study

Features

- TWO experiments in ONE
- Bending and Shear in one Apparatus.
- Visually realistic, 'cut' beam.
- Unrestricted loading positons.
- Load position at 'cut' in beam.
- Experiment can be undertaken from both sides.
- Quickly and easily setup.
- Dedicated e-book supplied

Description

This compact bench top unit allows the observation and analysis of both Shear Force and Bending Moment within one unit. A rigid, aluminium beam is cut into two unequal lengths, creating a ‘cut’ section. Each beam is then simply supported on vertical supports. Each support can be moved along the beam section length creating varied support positions. At the ‘cut’ section, a deep groove ball bearing in one beam runs within a block in the other beam. This allows for both vertical movement (shear) and rotation (bending) to occur. The Shear Force is measured using a vertical analogue spring balance. A second analogue spring balance measures the direct load created in the beam ‘cut’ section and it’s associated mechanical moment lever arm set across the ‘cut’ section allows the bending moment to be calculated. Special Load hangers are provided that fit over the beams. The Load hangers can be positioned accurately along the beams length by using the graduated scales attached to the side of the beams. The smooth design of the beam sections allows a wide variety of unrestricted load positions to be used along the beam lengths, using the weights set provided.

Related Laws/Applications

- Shear Force.
- Bending Moment.
- Strain.
- Stress.
- Young's' Modulus.
- Shear Force Diagrams (SFD).
- Bending Moment Diagrams (BMD).
- Verification of Equilibrium of Vertical Forces and Moments.

Learning capabilities

- Visual demonstration of the Shear Force and Bending Moment at a 'cut' section in a beam
- Comparison of experimental results with theoretical values and bending moment diagrams
- Variation in bending moment for variations in load, load position and load arrangement

Technical Specification

- Beam lengths to create an experimental span of 900mm
- Beam cross section: 51 x 38mm
- 50mm graduations on beams
- Weights set: 3 x 2N, 3 x 5N, 3 x 10N
- 3 x Load hanger
- Spring Balance: 0…6kgf range, 0.1kgf resolution

What’s in the Box?

- 1 x Short Beam
- 1 x Long Beam
- 2 x Support Rods
- 3 x Hangers
- 3 x 2N, 3 x 5N, 3 x 10N weight
- 1 x Influence line section
- 2 x Spring balance
- 1 x Tape measure
- Instruction manual
- Packing list
- Test sheet

You might also like

- HST9
- HST10
- HST46

Weights & Dimensions

- Weight: 10 kg
- Length: 1000mm
- Width: 300mm
- Height: 400mm

Essential Services

- Sturdy Bench Top

Ordering information

To order this product, please call PA Hilton quoting the following code: HFC31