



# COMBINED SHEAR FORCE & BENDING MOMENT

## HST46



Year 1  
study

### Features

- Two experiments in one; Bending and Shear
- Visually realistic, 'cut' beam.
- Load cell output for Bending and Shear Force
- Unrestricted loading positions.
- Load position at 'cut' in beam.
- Experiment can be undertaken from both sides.
- Quickly and easily interchangeable with HST9 and HST10
- Optional Influence line section
- Optional HSTS Software
- Dedicated e-book supplied

### Description

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 beam spans. 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 load cell. A second underslung load cell measures the bending moment force in the beam 'cut' section via its moment lever arm set. The output from the load cells is fed into the essential extra HDA200 Interface (sold separately) for displaying of the forces. Load cell connection leads are supplied as standard.

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.

### Related laws

- 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 of 650 and 350mm
- Beam cross section: 51 x 38mm
- 50mm graduations on beams
- Weights set: 2 x 2N, 2 x 5N, 2 x 10N

### Essential Ancillaries

- HST1 (or HST100)
- HDA200

### Recommended Ancillaries

- HST46A
- HSTS

### What's in the Box?

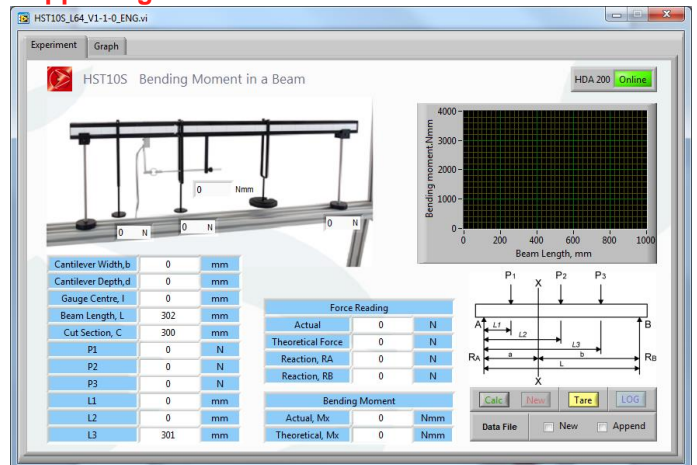
- 1 x Short Beam
- 1 x Long Beam
- 2 x Support Rods
- 3 x Hangers
- 2 x 2N, 2 x 5N, 2 x 10N weight
- 1 x Tape measure

- Accessories container
- Hex wrench
- Instruction manual
- E-book
- Packing list
- Test sheet

### You might also like

- HST9
- HST10
- HFC31

### Supporting Software



- HSTS Structures Experimental Software Package
- The HSTS software allows the student to see the differences between the theoretical and reality of the experimental set-up
- This software works both on and off line and can be used as part of a student lecture to help guide students through the learning process

### Minimum System Requirements

- See HSTS Specification

### Weights & Dimensions

- Weight: 10 kg
- Length: 1000mm
- Width: 100mm

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- Height: 400mm

#### **Essential Services**

- 110/120V, 60Hz or 220/240V, 50Hz, single phase, live neutral and earth for HDA200

#### **Operational Conditions**

- Storage temperature: -10°C to +70°C
- Operating temperature range: +10°C to +50°C
- Operating relative humidity range: 0 to 95%, non condensing

#### **Ordering information**

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

HST46

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