



## CURVED BAR APPARATUS HSM10



Year 2  
study

### Features

- Bench top apparatus
- Very visual experiment
- Circular, semi-circular, quadrant specimens supplied
- Three dial gauges measure deflection
- Full set of weights and hanger supplied

### Description

The theoretical deflections of curved shapes are most easily found by applying strain energy ideas, such as Castigliano's first theorem. The shapes chosen in this apparatus provide a relatively easy introduction to the use of such techniques. A bench mounted base supports a variety of curved bars in the form of a ring, semi-circle or quadrant/davit. Loads are applied by specially designed weight hangers so that the specimen bends. Horizontal and vertical deflections are measured by dial gauges rigidly attached to the base and surrounding pillars. The bars can be readily changed and the position of the dial gauges relocated to measure the deflections of the new configuration. All specimens, weight hangers and a set of calibrated weights are supplied.

### Related Laws/Applications

- Castigliano's first theorem
- Strain Energy
- Structural Engineering
- Bridge Arch
- Simpson's Rule

### Learning capabilities

- To experimentally determine the vertical and horizontal deflections of various curved bars whose cross sectional dimensions are small compared with the bar radius.
- To compare with theoretical estimates using strain energy theories such as Castigliano's first theorem or Simpson's Rule.

#### Technical Specification

- Base plate with levelling feet
- Three test specimens:
  - - Solid ring Ø300mm outside diameter
  - - Semi-circle Ø150mm radius to centreline of material
  - - Quadrant Ø150mm radius to centreline of material
- Specimen material: 25mm wide x 1.5mm thick (nominal); steel
- Analogue dial gauges; 3 off, 0...10mm travel, 0.01mm resolution

#### What's in the Box?

- 1 x HSM10
- 3 x Dial gauge
- 3 x Specimens
- 1 x special hanger
- 1 x Hex wrench set
- 5 x 0.1N; 5 x 0.2N; 7 x 1N; 1 x 2N; 7 x 5N
- Instruction manual
- Packing list
- Test sheet

#### You might also like

- HST12

#### Weights & Dimensions

- Weight: 13 kg
- Length: 360mm
- Width: 330mm
- Height: 430mm

#### Essential Services

- Sturdy Bench top

#### Ordering information

To order this product, please call PA Hilton quoting the following code:  
HSM10

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