

# Deflection of Beams & Cantilevers Apparatus



## Model MT 074



### Features

- High-quality structures teaching module for students of mechanical, civil and structural engineering
- Allows safe and practical experiments into deflections of beams and cantilevers
- Realistic and verifiable experiment results
- Optional Structures Software package for extra 'virtual' experiments that simulate and confirm the results from your hardware and allow extended experiments
- Optional MOS Software package for automatic data acquisition **and** virtual experiments

**Sci-tech Deflection of Beams & Cantilevers Apparatus Model MT 074** consists of a backboard that fixes to the Structures Test Frame. Test beams fit onto the backboard using a rigid clamp and knife-edge supports. Students apply loads at any position using hangers holding various masses. Mounted on a trammel, a digital deflection indicator traverses the beam. The indicator measures beam deflection. Scales on the backboard show the position of the indicator, the loads and supports.

The 'Instruction Manual' provides details of the equipment including sample experiment results. The student guide describes how to use the equipment and gives experiment procedures.

For extra 'virtual' experiments, **Sci-tech** can supply the optional Software, for use on a suitable computer. The virtual experiments simulate the tests you can perform with the hardware. They also

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extend the choice of tests beyond that available using only the hardware, for example: higher loads, uniform loads or different test specimens. This extends the student's learning experience.

For automatic data acquisition of your experiment results, **Sci-tech** can supply the optional Automatic Data Acquisition Unit.

## Specifications

- 10 knife-edges with weight hangers and 150 x 10 g masses can set up to 500mm span length of test beam
- Test beams of approximately dimensions 25mm x 5mm x 1200mm:
  - 1 x aluminum
  - 1 x steel
  - 1 x brass
- Supplied with set of 1N, 2N and 50N slotted weight for experimental purpose.
- Total weight: Approximately 12 to 20 kg
- External frame equipped with approximately 1000mm stand
- External frame maximum load @ 5 kN
- External frame dimension: 1000mm x 1200mm

### *Deflection measurement:*

Digital deflection indicators with approximately 13mm range and 0.01mm resolution

### *Accessories:*

Rule and Vernier

## Optional:

Automatic Data Acquisition Unit for automatic data acquisition **and** virtual experiments

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## Experiments

Examination of:

- Beam deflections
- General bending formulae
- Beam end rotations
- Elastic moduli (Young's modulus) for various materials

*Typical conditions are:*

- Cantilever
- Propped cantilever
- Encastre beam
- Simply supported beam

## Operating Conditions

*Operating environment:*

Laboratory

*Storage temperature range:*

-25oC to +55oC (when packed for transport)

*Operating temperature range:*

+5oC to +40oC

*Operating relative humidity range:*

80% at temperatures < 31oC decreasing linearly to 50% at 40oC

*Specifications, Model Photos and design subject to changes without any notice*