

**ES4****Deflection of Beams and Cantilevers Kit**

***Shows the deflection of beams of different material and dimensions, held on different supports***



- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe ‘hands-on’ experiments – allowing better understanding
- Contains all parts needed for experiments showing the deflection of beams with different supports, including cantilevers

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- An ISO 9001 certified company

# ES4

# Deflection of Beams and Cantilevers Kit

## Description



This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes different beams and fixing blocks. The fixing blocks work as clamps or knife-edge supports. They hold the beams in different ways, such as a cantilever, simply supported, fixed (encastre) and a propped cantilever.

Students set up a beam on the supports and add weights to deflect the beams. An accurate dial indicator measures the deflection at the point of loading.

The choice of different beams allow extra experiments, showing the relationships between beam deflection and 'I' (second moment of area) value. They also allow comparisons of different beam material and how it affects deflection, introducing Young's Modulus.

Students also use the cantilever for easy experiments showing the relationship between beam length and deflection.

TecEquipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

**Note:** the kit is for use with the ES1 Work Panel (supplied separately).

## Standard Features

- Five-year warranty
- Manufactured in accordance with the latest European Union directives

## Experiments

- Beam length and deflection
- Beam material and deflection (Young's Modulus)
- Beam 'I' value and deflection
- Beam supports (cantilever, propped cantilever, fixed beam and simply supported) and deflection

## Operating Conditions

*For use in:*

Well lit classroom or laboratory

*Storage temperature range:*

-25°C to +55°C (when packed for transport)

*Operating temperature range:*

+5°C to +40°C

*Operating relative humidity range:*

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

## Essential Services

A level bench or desktop of at least 500 mm wide x 500 mm front to back.

## Essential Base Unit

Work Panel (ES1)

## Specifications

*Storage tray (with clip-on lid):*

450 mm x 320 mm x 85 mm

*Nett weight:*

3.6 kg

*Packed volume and weight:*

Approximately 0.015 m<sup>3</sup> and 4.1 kg

*Main parts:*

- Choice of beams
- Dial indicator
- Dial caliper
- Fixing blocks
- Rule
- Weight hanger and weights
- Hexagon tool

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