SV SERIES

Strength of Materials

Continuous and Indeterminate Beams – SV500

The experiment continuous and indeterminate beams allows the experimental investigation of the deflection of beams and the resulting reaction forces at the supports for multiple different continuous and indeterminate setups.

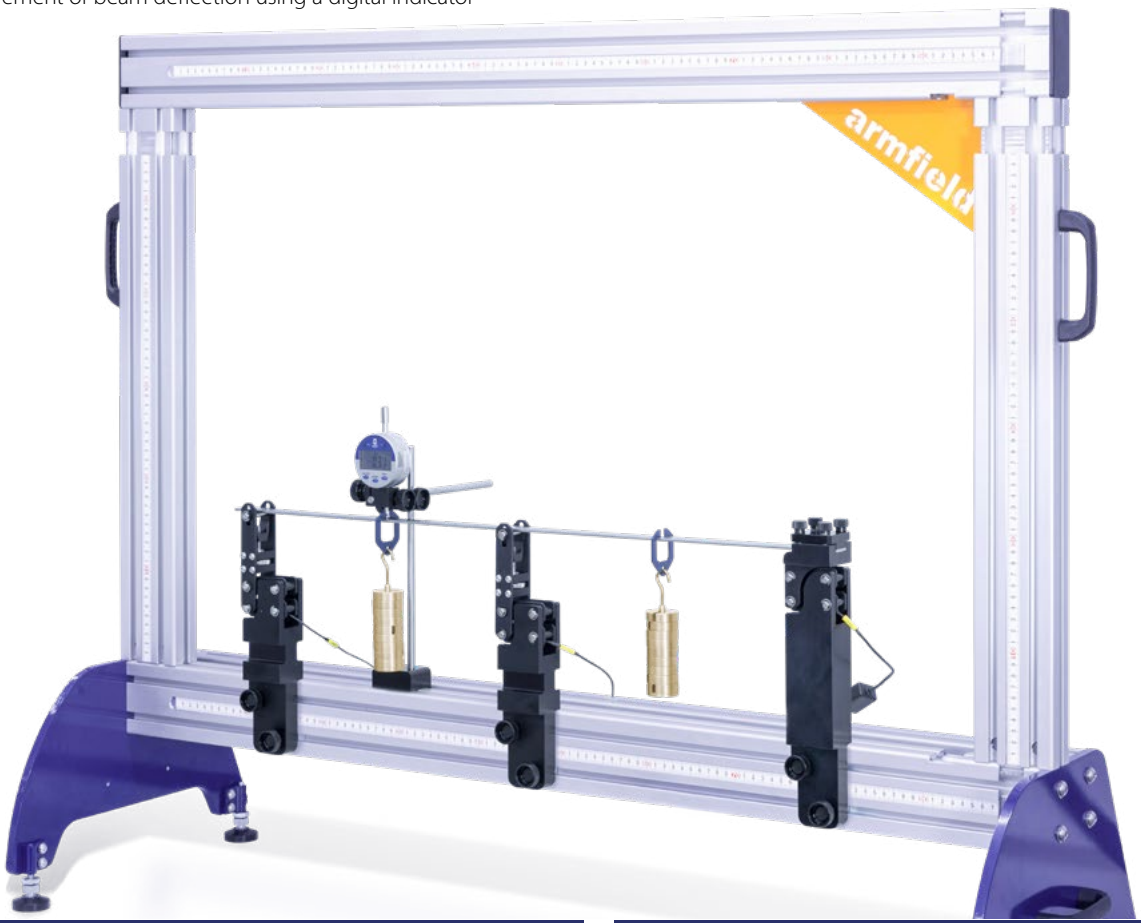
ALLOWS THE EXPERIMENTAL INVESTIGATION OF THE DEFLECTION OF BEAMS AND THE RESULTING REACTION FORCES AT THE SUPPORTS FOR MULTIPLE DIFFERENT CONTINUOUS AND INDETERMINATE SETUPS.

SOFTWARE INCLUDED AS STANDARD

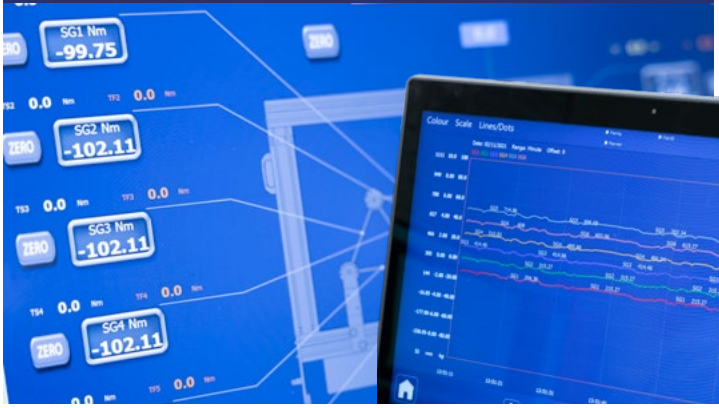
This experiment has the following properties:

- Assembly of multiple different beam experiments via two sinking and one fixed support capable of measuring reaction loads, a fixed support capable of measuring fixing moment, point load weight hangers and uniformly distributed loads (UDL) weight sleeves
- 3 different beam specimens of different section sizes and material
- Measurement of beam deflection using a digital indicator

SV100 Bench mounted frame (sold separately)



armBUS software



Adjustment of sinking support with thumb screw

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USA office - email: info@armfield.inc tel: +1 (609) 208-2800 (USA only)

Issue: 1
URL: http://www.armfield.co.uk/structures

Applications: ME CE IP

Description

The beam specimens are made from either aluminium or stainless steel and are 20mm wide with either a thickness of 3 or 5mm.

Three different types of support are supplied with the experiment. The first of which is a simple support that is capable of measuring the reaction force at the support as well as being able to act as a sinking support. The second support can be used in either a fixed configuration where a clamping plate holds the beam in place, simulating a fixed support or by removing the clamping plate, the support can be used to simulate a simple support. This support also has the capability to measure the reaction force acting at the support.

The final support is a support that is able to measure the fixing moment due to the fixed support.

Point loads are applied to the beam through either two point load hangers or a UDL sleeve in combination with the two 500g slotted weight hangers. The point load hangers can be moved along the length of the beam allowing many different loading conditions to be explored.

The slotted weights supplied and the weight hangers can be used inside the UDL sleeve to simulate a UDL load applied to the beam. The UDL sleeve has a central access point allowing the beam deflection to be accurately measured.

Requirements

Scale

Electrical supply: 110/120V, 60Hz **or** 220/240V, 50Hz

- **SV100:** Bench Mounted Frame
- **SV101:** Structures Interface Unit
- PC with a USB port, running Windows 7 or above

Technical specification

Beam Specimens

- 3 x Beam Specimen length: 720mm
- Beam sizes and material: 20 x 3mm (Stainless Steel & Aluminium), 20 x 5 mm (Aluminium)
- Young's Modulus of Aluminium Beam: 70 Gpa
- Young's Modulus of Stainless-Steel Beam: 193 Gpa

Appliable loads

- 2 x Slotted weight hanger total mass: 500g (1% tolerance)
- 2 x UDL Sleeve quantity
- Load Cell
- Force Range: 0 – 17.6N
- Fixing moment lever arm: 97mm
- Fixing moment range: 0 – 1.7Nm

Digital indicator

- Measurable range of the digital indicator: 12.7mm
- 2 x Resolution: 0.01mm

Overall dimensions

Length	1.176m
Width	0.392m
Height	0.922m
Packed and crated shipping specifications	
Volume	0.1m^3
Gross weight	25 kg

Experimental content

- Reactions of a continuous beam
- Reactions of a indeterminate beam
- Deflection of a continuous beam
- Deflection of a indeterminate beam
- Reactions and fixing moments of a continuous and indeterminate beam
- The principle of superposition
- Sinking supports
- Cantilevers and propped cantilever

Features / benefits

- Assembly of multiple different beam experiments via two sinking and one fixed support
- 3 different beam specimens of different section sizes and material
- Flexible setup arrangements including 2 supports allowing variety of test arrangement and structural theories to be demonstrated
- Supplied with Armfield structures software as standard

Related laws

- Principle of moments
- Reactions
- Deflection
- Theory of Bending
- Cantilevers
- Continuous Beams
- Indeterminate Beams

Essential accessories/equipment

- **SV100:** Bench Mounted Frame
- **SV101:** Structures Interface Unit

Related products

Strength of materials

- **SV501:** Plastic Bending of Beams
- **SV502:** Plastic bending of Portals
- **SV503:** Deflection of Curved Bars

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 codes

- **SV500:** Continuous and Indeterminate Beams
- **SV100:** Bench Mounted Frame **(Sold separately)**
- **SV101:** Structures Interface Unit **(Sold separately)**

Armfield standard warranty applies with this product

Knowledge base

> 28 years expertise in research & development technology
> 50 years providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company

CE Products CE certified

armfield.co.uk

Aftercare

Installation
Commissioning
Training
Service and maintenance
Support: armfieldassist.com