

The experiment deflection of frames allows the experimental investigation of the horizontal thrust and deflection observed when loads are applied to different shaped frames. The measurements taken can then also be used to validate calculated values for the horizontal thrust and deflections found using Castigliano's Theorem.

**EXPERIMENT FOR STUDYING A RECTANGULAR PORTAL AND A 'S' SHAPED FRAME WHEN SUBJECTED TO A LOAD
SOFTWARE INCLUDED AS STANDARD**

This experiment has the following properties:

- ▶ Two different shaped frame specimens
- ▶ Up to 1kg of weight hangers to apply loads to the specimens
- ▶ Digital indicators to measure deflection at different points on the frames
- ▶ Pivoting support capable of measuring horizontal thrust



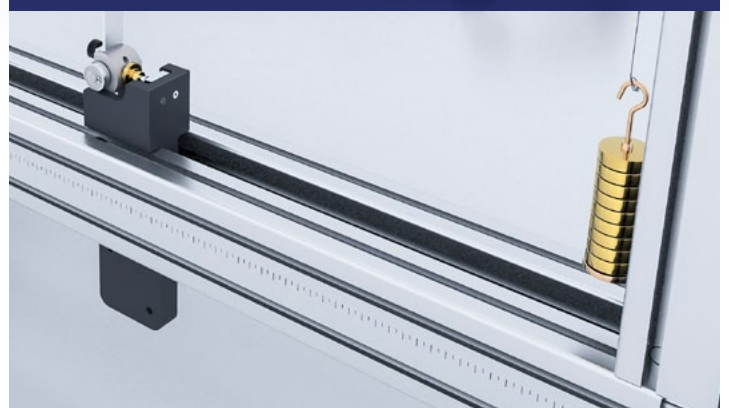
SV100 Adjustable foot

SV100 Bench mounted frame (sold separately)

armBUS software



Load cell



Description

Two frame specimens are supplied with the kit, a portal frame and a 'S' shaped frame.

Both horizontal and vertical loads can be applied to each specimen using a point load hanger and the open clamp bracket along with the sliding pulley bracket and adjustable cord.

The specimens use the same material and have the same cross-sectional area.

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

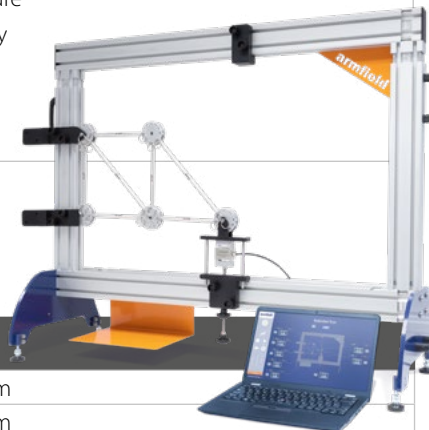
Essential accessories/equipment

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

Technical specification

- ▶ 1 x Portal Frame
- ▶ 1 x 'S' Frame
- ▶ Specimen Material: Aluminium (BS EN 755-2 EN AW-6082 T6)
- ▶ Young's Modulus: 70 GPa
- ▶ Specimen Section Size: 20 x 3mm
- ▶ 2 x 500g Weight Hangers
- ▶ 1 x Point Load Hanger
- ▶ 1 x Open Clamp Bracket and Eye Screw
- ▶ Measurable range of the digital indicator: 12.7mm
- ▶ Universal Frame Mounting Hardware
- ▶ Load Cell Force Range: 0–17.6N
- ▶ 1 x Sliding Pulley Bracket
- ▶ 1 x 600mm Adjustable Cord
- ▶ DTI Connecting Hardware
- ▶ 1 x DTI Holder Assembly
- ▶ 1 x DTI Extension Bar
- ▶ 1 x Digital Indicator
- ▶ Resolution: 0.01mm

SV series is supplied with Armfield structures software as standard



Overall dimensions

Length	1.176m
Width	0.392m
Height	0.922m

Packed and crated shipping specifications

Volume	0.1m ³
Gross weight	25kg

Experimental content

- ▶ Comparison of experimental results with theoretical values derived using Castigliano's theorem and numerical analysis by Simpson's rule
- ▶ Study the load, horizontal thrust, deflections and sway in portal frames
- ▶ Bending Moment Diagrams (BMD)
- ▶ Horizontal Reaction Force
- ▶ Side Sway
- ▶ Simpson's Rule
- ▶ Castigliano's Theorem

Features / benefits

- ▶ Allows both horizontal and vertical loads to be applied to each specimen
- ▶ Supplied with both a Portal Frame and a 'S' Shaped Frame
- ▶ Both frames are constructed of the same material and cross sectional area for ease of comparison
- ▶ Digital Indicators to ensure deflection at different points on the frame
- ▶ Supplied with Armfield structures software as standard

Related laws

- ▶ Castiglianos' Theorem
- ▶ Bending Moment Diagrams (BMD)
- ▶ Side Sway
- ▶ Unit Load Method

Graphing detail



Related products

Bridges, Beams, Arches, Cables

- ▶ SV400 Simple Suspension Bridge
- ▶ SV402 Suspended Centre Span Bridge
- ▶ SV403 Three-Pinned Arch
- ▶ SV404 Two-Pinned Arch
- ▶ SV405 Semi-Circular Arch

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

- ▶ **SV401:** Deflection of a Frame
- ▶ **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



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Aftercare

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