

The experiment Forces in a Truss/Redundant Truss is intended for use with the Armfield Universal Frame and enables the experimental investigation of deflection of trusses under load.

This then allows Castigliano theorems to be proven.

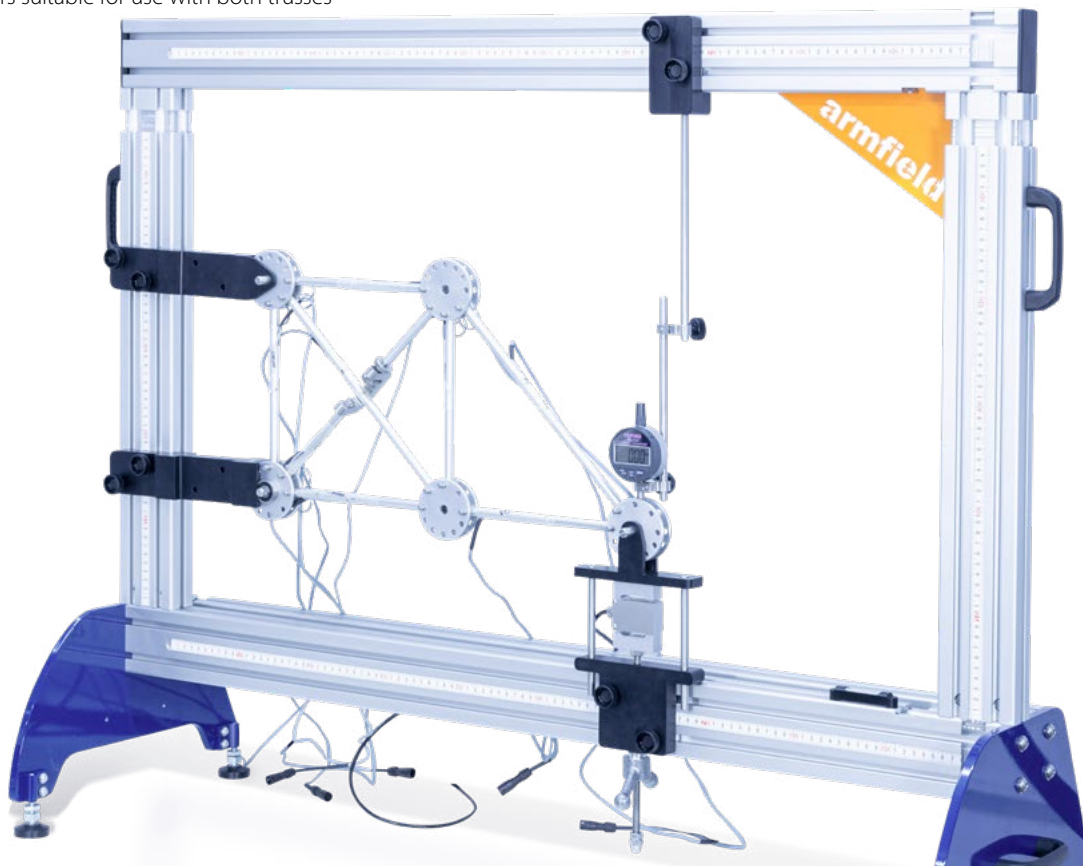
This exercise module has the following properties:

- ▶ Assembly of both a Determinate and Indeterminate Truss Framework via various length members, detent pins and joint hubs
- ▶ Quick and easy assembly of members via special detent pins and joint hubs
- ▶ Up to 10 members possible in one joint hub
- ▶ Loading unit with spindle drive and universal load cell for force measurement
- ▶ Members suitable for use with both trusses

ALLOWS THE EXPERIMENTAL INVESTIGATION OF DETERMINATE AND INDETERMINATE STRUCTURES

SOFTWARE INCLUDED AS STANDARD

SV100 Bench mounted frame (sold separately)



armBUS software



Redundant member easily adjusted for length



Description

All members are clearance-drilled at each end to allow the detent pins to engage freely in the joint hub.

The machined joint hubs are drilled with a circular pattern of holes for the detent pin connections. In each joint hub there are 10 holes so that scale divisions of 30° and 45° are possible.

The smallest angle spacing between two members is 30°. This enables up to 10 members to engage on one truss hub.

One member on each truss hub must be rigidly located in the joint hub via a drilled location hole. This is necessary in order to obtain a rigid, statically certain truss. Without this, the joint hub would itself become an additional member of the truss.

The external stresses are applied to the truss via the load cell assembly. The experiment frame deforms under the force and the deflection of the frame can be measured.

The load cell assembly can be attached to the frame at any truss hub, it enables tensile and pressure forces of up to 400N to be applied and measured.

Requirements

Scale



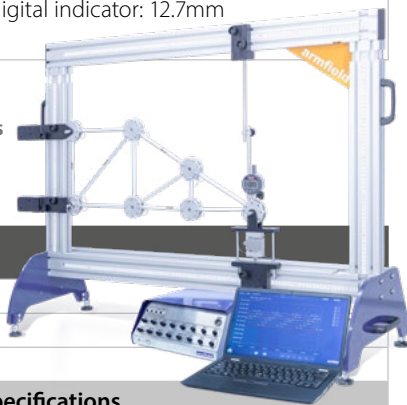
Electrical supply: 110/120V, 60Hz or 220/240V, 50Hz

- ▶ SV100: Bench Mounted Frame
- ▶ SV101: Structures Interface Unit
- ▶ SV103: Frame Mounting Kit
- ▶ PC with a USB port, running Windows 7 or above

Technical specification

- ▶ 5 x Truss Joint Hub
- ▶ Truss Hub Angle graduations 30°, 45°, 60°, 90°
- ▶ 1 x 116mm Member
- ▶ 1 x 134mm Member
- ▶ 1 x 198mm Member
- ▶ 4 x 207.5mm Member
- ▶ 2 x 295.34mm Member
- ▶ Aluminium tube: Ø 10 x 1.0mm
- ▶ Material: 6060 T6 - BS EN 755-2:2016
- ▶ Cross-sectional area: $28.274 \times 10^{-6} \text{m}^2$
- ▶ 2 x Sealed Bearing 10mm x 26mm x 8mm
- ▶ 14 x 6mm Detent Pin
- ▶ Load Cell Assembly Force range: 0–400N
- ▶ Measurable range of the digital indicator: 12.7mm
- ▶ 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	25 kg

Experimental content

- ▶ Study of strains in a statically determinate structure
- ▶ Study of strains in a statically indeterminate structure
- ▶ Study of stress in a statically determinate structure
- ▶ Study of stress in a statically indeterminate structure
- ▶ Study of forces in a statically determinate structure
- ▶ Study of forces in a statically indeterminate structure
- ▶ Study of deflections in a statically determinate structure
- ▶ Study of deflections in a statically indeterminate structure

Features / benefits

- ▶ Allows construction as a basic Determinate and Indeterminate Truss Framework
- ▶ Simplified versions of realistic structures
- ▶ Load can be applied at different joints
- ▶ Redundant member easily adjusted for length
- ▶ Software included as standard

Related laws

- ▶ Castiglianos' Theorem
- ▶ Determinate and Indeterminate Structure
- ▶ Bow's Notation
- ▶ Stress
- ▶ Strain
- ▶ Reactions

Essential accessories/equipment

- ▶ SV100: Bench Mounted Frame
- ▶ SV101: Structures Interface Unit
- ▶ SV103: Frame Mounting Kit

Related products

Forces in a truss

- ▶ SV200: Pin-Jointed frameworks (Roof and Warren truss)
- ▶ SV202: Deflection of Trusses

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

- ▶ SV201: Forces in a Truss and Redundant Truss
- ▶ SV100: Bench Mounted Frame (Sold separately)
- ▶ SV101: Structures Interface Unit (Sold separately)
- ▶ SV103: Frame Mounting Kit (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



armfield.co.uk

Aftercare

Installation
Commissioning
Training
Service and maintenance
Support: armfieldassist.com