SV SERIES

Bridges, Beams, Arches, Cables

Simple Suspension Bridge – SV400

The experiment simple suspension bridge allows the experimental investigation of the tension in the main cable of a suspension bridge under different load conditions.

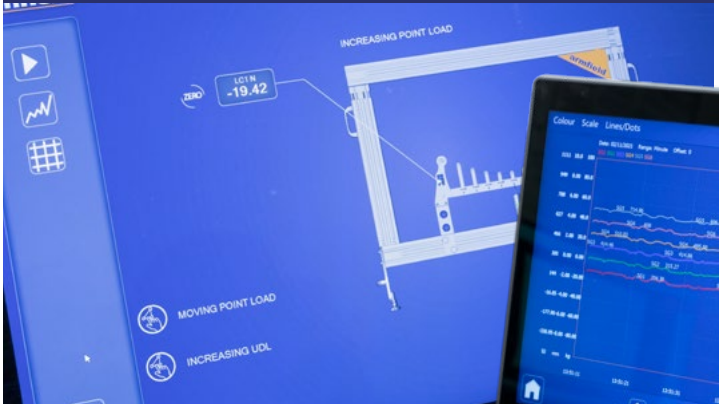
EXPERIMENT ALLOWING THE TENSION OF THE SUPPORTS IN THE MAIN CABLE OF A SUSPENSION BRIDGE UNDER VARYING LOADS TO BE MEASURED, ALLOWING COMPARISONS TO BE MADE WITH CALCULATED VALUES.
SOFTWARE INCLUDED AS STANDARD

This experiment has the following properties:

- Suspension bridge hung between 2 pulley supports with a rigid bridge deck
- Up to 1.35kg of additional weight to simulate uniformly distributed loads (UDL) and point loads
- Load cell to measure tension in the main cable at the support

SV100 Bench mounted frame (sold separately)

armBUS software



Cable tensioner adjusted using thumb screws

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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 suspension bridge is constructed with a single main cable with nine suspenders distributed along its length. The suspenders support the rigid bridge deck which has the capacity for additional weights to be hung along its length simulating both UDLs and point loads.

The main cable is hung between pulley supports and restrained by two cable tensioners, allowing the correct amount of cable sag to be set.

Two pulley supports, one with a fixed connection and the other with a load cell connection for the main cable, are used as the towers of the suspension bridge. The main cable runs over a pulley at the top of the supports allowing the cable to move freely.

The cable tensioner at one of the supports connects to a load cell which allows the tension in the main cable at that support to be measured.

Requirements

Scale

1Ph	SV 100	SV 101

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

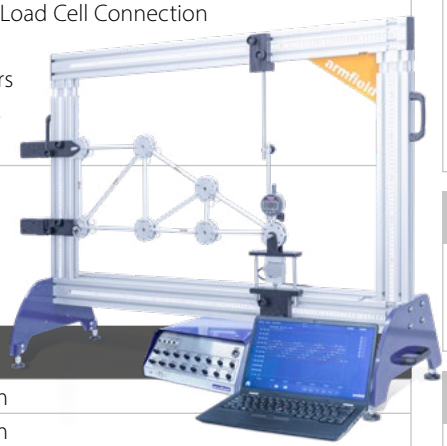
Essential accessories/equipment

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

Technical specification

- Suspension Bridge
- Universal Frame Mounting Hardware
- Load Cell: Force Range 0 – 17.6N
- Bridge Span: 500mm
- Cable Sag: 100mm
- Bridge Deck Weight: 625g
- 1 x Bridge Deck 500mm Long
- 1 x Main Cable with Suspenders
- 1 x Pulley Support with Fixed Connection
- 1 x Pulley Support with Load Cell Connection
- 2 x Cable Tensioners
- 2 x 500g Weight Hangers
- 7 x 50g Weight Hangers
- 9 x Detent Pins

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	0.1m³
Gross weight	25kg

Experimental content

- Introduction to the suspended beam (or Gerber) bridge
- Support reactions for an increasing point load and a uniformly distributed load (UDL)
- Relationship between applied load and tension in a cable
- Comparison of theory with actual results for a uniformly distributed load
- How loads affect bridge support reactions and internal reactions between the cantilever and suspended sections

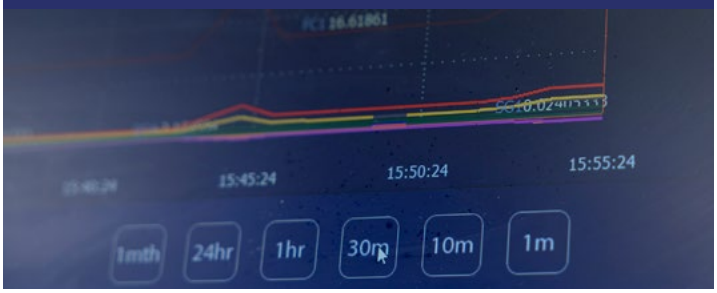
Features / benefits

- The tension in the main cable at the support is measured using a load cell attached to one end of the cable
- Includes multiple load combinations that can be applied to the bridge including UDLs, point load and moving loads
- The initial amount of dip/sag in the main cable is adjusted through tensioners secured to each end of the cable
- Supplied with Armfield structures software as standard

Related laws

- Tension
- Uniformly Distributed Load (UDL)
- Parabolic Arch
- Cable
- Suspension Bridge

Graphing detail



Related products

Bridges, Beams, Arches, Cables

- SV401 Deflection of a Frame
- 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

- **SV400:** Simple Suspension Bridge
- **SV100:** Bench Mounted Frame **(Sold separately)**
- **SV101:** Structures Interface Unit **(Sold separately)**

Armfield standard warranty applies with this product