THREE HINGED ARCH
HST4

Year 3
study

Features

- Visual reality of Three Hinged Arch.
- Unrestricted loading positions along arch span.
- High quality, sturdy and robust sections.
- Symmetrical & Unsymmetrical arches supplied.
- Two point loads, can be joined to form rolling load.
- Uniformly Distributed Load (UDL) bars supplied.
- Dedicated e-book supplied

Description

A 1.0 metre flat bridge deck is formed using two symmetrical arches. The arches have springing's (hinges) at their outer most ends and at the crown (centre), thus creating the three hinges. The left hand springing is held in position whilst allowing rotational movement of the arch section. The right hand springing allows the arch section to rotate and move horizontally against a load cell on a track plate. The load cell measures the horizontal thrust created when a Uniformly Distributed Load (UDL) or tandem load is applied to the arch bridge deck. The horizontal thrust from the load cell is measured using the HDA200 Interface (sold separately). The tandem load simulates a rolling vehicle, and can be dismantled to produce two point loads of different magnitude. Two arch arrangements are supplied. One being a symmetrical arch and the other being an unsymmetrical arch. Both being easily interchangeable. The arch bridge deck allows for unrestricted positioning of the loads along the arch span.

Related Laws/Applications

- Influence Lines.
- Horizontal reaction.
- Tandem Loads
- Uniformly Distributed Loads

Learning capabilities

- Relationship between horizontal thrust at arch springing for varying applied loads
- Understand characteristics of symmetrical & unsymmetrical three pinned arch
- Simulation of vehicle passing over arch using tandem rolling load
- Comparison of theory with experimental results
- Influence line for horizontal thrust
- Use of influence line for a tandem rolling load

Technical Specification

- Symmetrical Arch: Rise = 200mm, span 1000mm
- Unsymmetrical Arch: Rise = 250mm, span =750mm
- Eight calibrated load bars supplied: 12.5N/m each
- Load cell measures horizontal thrust, range; 0…500N
- Rolling loads of 10N and 25N with joining link

Essential Ancillaries

- HST1 (or HST100)
- HDA200

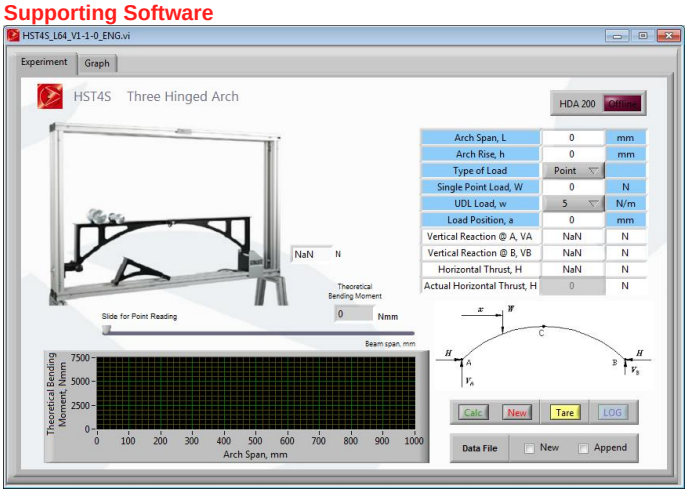
What's in the Box?

- 1 x Left hand arch section
- 1 x Right hand arch section
- 1 x Unsymmetrical Arch section
- 1 x Load Cell Assembly
- 8 x UDL Bars
- 1 x 10N Rolling Load
- 1 x 25N Rolling Load
- 1 x Rolling Load link
- 1 x Level
- 1 x Tape measure
- Accessories container
- Hex wrench
- Instruction manual
- Software
- E-book
- Packing list
- Test sheet

You might also like

- HST2
- HST5
- HST18

Supporting Software



- HST4S

Minimum System Requirements

- Computer or Laptop running WIN7 or above

Weights & Dimensions

- Weight: 18 kg
- Length: 530mm
- Width: 240mm
- Height: 140mm

Essential Services

- 110/120V, 60Hz or 220/240V, 50Hz, single phase, live neutral and earth for HDA200

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 information

To order this product, please call PA Hilton quoting the following code: HST4

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