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HI-TECH EDUCATION

PRODUCT DATA SHEET

HST2 – Simple Suspension Bridge

Product Summary

- Enables study of cable tension resulting from uniformly distributed, point and rolling loads on a rigid deck
- Compares measured values with theoretical values
- Rigid bridge deck suspended from twin cables
- Parabolic cable and stiffened deck
- Uniformly distributed loads applied using calibrated test beams (N/m)
- Point loads applied using calibrated mass (N)
- Reaction loads measured using integral load cells
- Load cells to be connected to HDA200 Interface (sold separately)
- Overhead pulleys reduce friction and allow movement in suspension system during loading
- To be built into the HST1 Universal Frame and Stand (sold separately)
- Comprehensive technical manual for student and lecturer, includes example results for comparison
- All necessary tools supplied for assembly and operation
- 2 year warranty

Tender Specification

- To study the cable tension resulting from uniformly distributed, point and rolling loads on a rigid deck
- To compare the measured and theoretical values
- To consist of twin stranded steel cables with hangers; rigid bridge deck; load cells
- A means of applying a uniformly distributed load of up to 100N/m, a point load of 20N
- Cables to follow parabolic curves of 1metre span and 0.2metre dip
- Multiple load positions achievable
- Cable tensions measured using load cells
- Load cells connected to HDA200 Interface (sold separately)
- Experimental software available
- To be used with HST1 Universal Frame and Stand (sold separately)
- Comprehensive technical manual for student and lecturer and 230 page text book provided
- 2 year warranty

The policy of P.A.Hilton Limited is one of continual improvement and they reserve the right to revise this specification without notice.

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Description

A rigid bridge deck is suspended from twin steel cables by pairs of tie rods, which when fully assembled create cables of a parabolic form with 1 metre span and 0.2metre dip.

The ends of each cable pass over pulleys and then terminate in load cells which record the cable tension when connected to the HDA200 Interface (sold separately).

The bridge loading is applied via a number of calibrated test bars, each having a known N/m value. Point loads can also be applied by means of a calibrated mass, which can be position quickly and easily on the bridge deck.

The smooth design of the bridge deck allows a wide variety of unrestricted load positions to be used along the beam lengths.

Supplied with a comprehensive instruction manual for lecturer and student, giving full details on apparatus assembly and operation as well as example results.

The experiment requires mounting in the HST1 Universal Frame and Stand (Sold separately). Supplied with this experiment are a comprehensive instruction manual, all necessary tools and accessories and a 2-year warranty.

To compliment the HST2 hardware, the HST2S Experimental Software is available giving the student an opportunity to simulate the experiment, varying a broader range of experiment parameters and to compare actual results with theoretical results when the experiment is run with the software. When the HST2 hardware is purchased with a dedicated HDA200 Interface as an essential extra the experiment software, HST2S, is supplied as standard.

Experimental capabilities

- Comparison of simplified theory with experimental results for a uniformly distributed load, point load and rolling load.
- Cable tension obtained for loads at varying positions and magnitude along the bridge deck

Specification

- Rigid, 1 metre bridge deck
- Calibrated test bars supplied; 12.5N/m each
- 20N single weight
- Load cell range; 0…500N

Accessories and spares

- Full instruction manual which includes:
  - Operating instructions
  - Experimental set-up
  - Experiment procedure
  - Example set of results

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

Essential Extras

- HST1 Universal Frame and Stand
- HDA200 Interface

Non-Essential Extras

- HST2S Experiment Software

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