



## HST 17 Forces in a Truss



### Product Summary

- Frame mounted apparatus for measuring the strain (hence forces) within a simple truss using the method of resolution of joints
- Verifies theory using truly pin joints
- 45°, two bay plane frame
- Each truss member strain gauged
- Member strains fed directly into HDA200 Interface (sold separately)
- Truss loading using fine screw jack mechanism with integral load cell and cable
- All component parts attached to HST1 Universal Frame and Stand (sold separately)
- Experimental software available
- Comprehensive instruction manual for student and lecturer supplied
- All necessary accessories supplied
- 2 year warranty

### Tender Specification

- To measure the axial strain and hence force in each member of a pin-jointed truss for comparison with calculated theoretical values
- To be constructed of a wall mounted 45° plane frame with six pin-jointed members to form a stable cantilevered truss
- The frame is built from single and twinned members of acrylic
- To have each truss member truly pin-jointed and with integral strain gauges for connection to HDA200 Interface (sold separately)
- Truss loading through screw jack mechanism with integral load cell
- Experimental software available
- Comprehensive technical manual for student and lecturer
- Text book provided
- Must be used in conjunction with HST1 Universal Frame and Stand (sold separately)
- 2 year warranty



**Description**

Students measure the axial strain and hence force in this realistic cantilevered truss with true pin joints. Allows comparison of experimental results with the member forces calculated by resolution at a joint. A two bay, 45° cantilevered truss is suspended from the inside vertical edge of the HST1 Universal Frame and Stand (sold separately). At the far end of the truss a fine threaded screw jack mechanism with integral load cell applies the truss loading.

Each truss member is joined at its end by means of pins, which make up the true pin jointed assembly. The strain and hence force exerted in each member is measured using strain gauge technology applied to each truss member. The outputs from the member strain gauges and screw jack load cell are fed into the HDA200 Interface (sold separately). From the HDA200 Interface all forces applied and strains measured can be viewed.

To compliment the HST17 hardware, the HST17S experimental software is available giving the student an opportunity to simulate the experiment before undertaking it, compare actual experimental data along side theoretical data and to capture, review, store and print actual and theoretical results. The HST17S has a graphical front end with actual experiment hardware images to create continuity and has all key experiment parameters being recorded. When the HDA200 Interface is purchased as an essential accessory with the HST17 Hardware, the HST17S is supplied as standard. Alternatively the HST17S can be purchased separately.

Supplied with this experiment is a comprehensive instruction manual, all necessary tools and accessories and a 2-year warranty. The HST17 must be fitted into the HST1 Universal Frame and Stand (sold separately).

**Experimental capabilities**

- To compare experimental results with the member forces calculated by resolution of the forces at joints
- Measure strains exerted on each truss member
- To view compressive and tensile forces/strains
- Assemble true pin jointed truss
- Strain gauging technology

**Specification**

- Truss dimensions: 800(L) x 100(W) x 400(H)mm
- Weight: 4kg
- 500N load cell with fine screw jack mechanism
- 120Ω Strain gauging, ½ bridge arrangement
- All truss members 10mm wide in single and double spacing arrangement

**Accessories and spares**

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

**Essential Extras**

- HST1 Universal Frame and Stand
- HST100 Bench Mounted Frame
- HDA200 Interface Unit

**Recommended Extras**

- HST17S available separately

**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