



HST45 – Buckling of Struts



Product Summary

- Euler theory for buckling and collapse of struts
- Metal struts compressively loaded and transverse deflection monitored
- Mounted into HST1 Universal Frame and Stand (sold separately)
- Screw jack loading mechanism to compress strut
- Different lengths struts supplied
- Varying end conditions
- Comprehensive technical manual includes example results for comparison
- All assembly and operational tools provided
- Connection cables for load cell and dial gauge supplied
- To be used with HDA200 Interface (sold separately)
- 2 year warranty

Tender Specification

- To demonstrate Eulers theory
- To have struts of differing length
- To have ability to change end fixing conditions of struts
- To measure transverse deflection of struts
- To be loaded axially by loading mechanism with integral load cell
- Extruded Back Support
- Must be used with HST1 universal Frame and Stand (sold separately)
- Must be used with HDA200 Interface (sold separately)
- Comprehensive instruction manual provided
- 2 year warranty

Description

This apparatus mounts inside the HST1 Universal Frame and Stand (sold separately) and allows the study of the collapse (buckling) loads of metal specimens of varying length and compares this with Eulers theory and equations.

Specimens are supported between two chucks; one in the top of the apparatus and one within the loading mechanism. The chucks have either a precision slot or 'V' groove to enable pinned/pinned, fixed/pinned or fixed/fixed end conditions to be created.



The struts are compressed using the loading mechanism. As the strut starts to deform, the amount of deflection is recorded using a dial gauge. The dial gauge can be moved up and down the strut length so that the deflection can be seen at various points along the specimen.

Both the load cell output and dial gauge output can be fed directly into the HDA200 Interface (sold separately). The HDA200 Interface can then display the applied force and deflection. The force is displayed with its engineering unit of Newton (N) and deflection in millimetres (mm).

To compliment the HST45 hardware, the HST45S experimental software is available giving the student an opportunity to simulate the experiment before undertaking it, compare actual experimental data alongside theoretical data and to capture, review, store and print actual and theoretical results. The HST45S 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 HST45 hardware, the HST45S is supplied as standard. Alternatively the HST45S can be purchased separately.

Experimental capabilities

- Eulers theory
- Varying end conditions against Eulers buckling load
- Varying strut length against Eulers buckling load

Specification

- Extruded back support: 840(L) x 120(W) x 40(H) mm
- Weight: 8kg
- Four (4) Spring Steel struts supplied
- Strut lengths: 350, 400, 450, 500mm
- Strut: 25mm wide x 1.70mm deep
- Dial gauge with 12.7mm travel, 0.01mm resolution
- 500N load cell capacity

Accessories and spares

- Full instruction manual which includes:
 - Operating instructions
 - Experimental set-up
 - Experiment procedure
 - Example set of results
- Load cell and dial gauge connection leads supplied

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