



Features

- Comparison of forces in statically determinate and over-determinate trusses
- Bars with strain gauge full bridges to measure bar force
- Optional Computerized evaluation of experiments

Over-determinate trusses are employed where over-dimensioning is purposely required because safety must be maintained in the event of failure of an element, such as in aircraft construction. With additionally inserted bars a statically determinate truss becomes internally statically indeterminate. In this case the truss is termed statically over-determinate.

Tesca Forces in Over-determinate Trusses experimental set-up permits investigation and comparison of statically determinate and statically indeterminate trusses. Using the bars and node discs, a statically determinate, single plane truss is first constructed. On installation of a surplus bar the truss becomes over-determinate. By way of a load application device, straight or inclined forces are applied to the truss, thereby simulating various load cases. The occurring tensile and compressive forces in the bars are recorded by means of strain gauges. Computerized evaluation can be optionally provided by measuring amplifier. The software is

used to manage the measurement data and provide graphical representation of the bar forces. The software features a comprehensive help function.

All the component elements of the experiment are clearly laid-out and housed securely in a storage system. The complete experimental set-up is arranged in the frame.

The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Specifications

- Investigation of bar forces in statically over-determinate trusses
- Surplus bar, longitudinally adjustable
- Straight and inclined loading possible
- Strain gauge to measure force on each bar
- Measuring amplifier
- Software (optional) to evaluate measurement data
- Storage system to house the components
- Experimental set-up in frame

Technical Specifications

- Bars: 8
 - 5 bars, fixed 300mm
 - 2 bars, fixed 424mm
 - 1 bar, adjustable 400...450mm
 - Angle between bars: 30°, 45°, 60°, 90°
 - Maximum bar force: 500N
 - Strain gauge on each bar
 - Height of truss max. 270mm
 - Length of truss max. 500mm
- Load application device
 - 500...+500N, graduations: 10N
- Dial gauge: measurement range: 0...20mm

Experiment Possibilities

- Measurement of the bar forces in a statically

Note: Specifications are subject to change.

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determinate and statically over-determinate,
single plane truss

- Distribution of forces in the single plane truss dependent on the use of a surplus bar
- Dependency of the bar forces on the external force
- Magnitude, direction, point of application
- Comparison of measurement results with mathematical methods
 - Method of joints
 - Ritter's method of sections
- Basic principle: measurement of forces using strain gauges

Scope of Delivery

- 1 set of bars
- 5 node discs
- 1 load application device
- 1 set of cables
- 1 software CD (optional)
- 1 storage system with foam inlay
- 1 set of instructional material

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