

FL 111

Forces in a simple bar structure



Learning objectives/experiments

- measurement of bar forces
- calculation of bar forces by the method of joints
- comparison: measuring result – calculation – graphical method

Specification

- [1] resolution of forces in a single plane, statically determinate system
- [2] 3 node disks, 2 of which serving as supports
- [3] 3 bars, each fitted with a leaf spring element and dial gauge
- [4] 2 fixed bar lengths, 1 variable bar length
- [5] 5 different angles adjustable between bars
- [6] storage system to house the components

Technical data

Bars

- fixed bar: L=440mm
- adjustable bar: L=440, 622, 762mm

Angle between bars

- 60°-60°-60°/45°-90°-45°
- 30°-120°-30°/30°-30°-120°

Dial gauge

- measuring range: 0...10mm
- graduation: 0,01mm

Weights

- 1x 1N (hanger)
- 1x 10N
- 2x 20N

Leaf spring element

- force measuring range: 0...50N

LxWxH: 900x200x600mm

Weight: approx. 15kg

LxWxH: 1170x480x178mm (storage system)

Scope of delivery

- 1 frame
- 3 bars
- 3 node disks
- 3 dial gauges
- 1 set of weights
- 1 storage system with foam inlay
- 1 set of instructional material

Description

■ resolution of forces in simple bar structures

FL 111 represents a simple bar structure. In the single plane system the bars are only subjected to compression and tension. Loads are applied only to the nodes.

The unit comprises three bars that are joined together using disks such that the joints are free to move. A longitudinally adjustable bar permits the bar structure to be constructed with different angles.

The bars engage in the disks by snaplocks. Two of the node disks also form the supports (fixed and movable) and are clamped to the sturdy aluminium section base frame. The external load is applied to the upper node disk by means of weights.

The bar forces occurring are measured by the deformation of leaf spring elements in the middle of the bar.

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Optional accessories

WP 300.09

Laboratory trolley