

Product Name :
Cable Under Dead Weight

Product Code :
ALABS-A104-262



Description :

Cable Under Dead Weight

Free-hanging cables and ropes are often used to support a structure, such as stay cables. On suspension bridges they are the load-bearing element of the structure. In many calculations the influence of the dead-weight of the cable can be ignored, because it is low compared to the other loads. In the case of overhead power lines, however, the dead-weight of the cable is relevant to the design of the pylons. In a free-hanging cable under the influence of its own dead-weight is investigated. A roller chain serves as the cable, and is mounted on two ball bearing supported chain wheels. The chain wheel units are fixed to a cross-arm. The spacing between the chain wheel axles can be adjusted horizontally and vertically. Weights can be attached to both ends of the chain. The maximum sag is measured using scaled rules, and can be compared with calculated values. The sag is the distance between the connecting line of the bearings and the catenary (see also illustration: "Actual applied cable forces" on the next page).

The various 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.

Specification:

1. Determination of the centenary of a free-hanging cable
2. Symmetrical and unsymmetrical experimental set-up possible
3. Roller chain as cable with 2 ball bearing-mounted chain wheels
4. Adjustable chain wheel axle spacing
5. Height of a chain wheel adjustable for unsymmetrical experimental set-up
6. Cross-arm with scale to hold chain wheels and rule to measure vertical sag of chain
7. 2 graduated weight sets
8. Storage system to house the components
9. Experimental set-up in frame.

Technical Data:

Roller chain

- length: 2400mm
- weight: 0,95kg/m

Chain wheel, number of teeth: 17

Cross-arm

- axle base: 600...1000mm
- groove spacing: 50mm

Holder

- adjustable height of chain wheel: 0...300mm
- hole spacing: 50mm

Measuring ranges

- horizontal: 0...1000mm
- vertical: 0...850mm
- graduations: 1mm

Set of weights

- 2x 1N (hangers)

- 8x 1N

- 6x 5N



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