

Forces on a Suspension Bridge (EDC-MM-132)

EXPERIMENTAL DATA:

- Study of a suspension bridge:
 - Under dead-weight, additional weight, evenly distributed load, unevenly distributed point loads.
- Calculation of the supporting cable force.
- Assessment between calculated and measured values of the supporting cable force.
- Reflection of the effect of internal moments in the roadway under uneven load:
 - For a rigid roadway and an elastic roadway.
- Purpose of the catenary of a free-hanging cable.

DESCRIPTION:

A suspension bridge is a type of bridge in which the deck is hung below suspension cables on vertical suspenders. The basic structural components of a suspension bridge system include stiffening girders/trusses, the main suspension cables, main towers, and the anchorages for the cables at each end of the bridge. The main cables are suspended between towers and are finally connected to the anchorage or the bridge itself, and vertical suspenders carry the weight of the deck and the traffic load on it. Like other cable supported bridges, the superstructure of suspension bridges is constructed without false work as the cable erection method is used.

The apparatus defined the complete model and experimentation of suspension bridge with different loads.

SPECIFICATIONS:

- 2 selectable roadways: rigid roadway (two-section with central hinge) and elastic roadway.
- Experimental setup “hanging cable”: supporting cables without roadway, loaded with point loads.
- 4 hangers to measure the cable force in both supporting cables.
- Study of a suspension bridge in various load cases.
- Suspension bridge, consisting of 2 supporting cables, roadway and 2 deflection pulleys as pylons.
- Supporting cables.
- Hangers (vertical supporting cables) in the form of U-shaped shackles in graduated lengths.
- Roadway (distributed load) can be loaded by additional weights.



TECHNICAL DATA:

- Suspension bridge:
 - Span: approx. 1050mm.
 - Supporting cable sag: approx. 325mm.
 - Number of supporting cables: 2.
 - Shackles: 12, graduated lengths.
- Rigid roadway, two-section with hinge, wood:
 - LXWXH: 1000x70x10mm.
 - Dead-weight of roadway: 5.5N.
- Elastic roadway, PVC:
 - LXWXH: 1000x70x3mm.
 - Dead-weight of roadway: 3N.
- Weights:
 - 16x 1N (hanger).
 - 12x 1N (shackle).
 - 24x 1N.
 - 28x 5N.

DIMENSIONS AND WEIGHT:

- L x W x H (mm): 1200 X 250 X 650 approx.
- Weight: 37 kg approx.

SCOPE OF DELIVERY:

- 1 x EDC-MM-132.
- 1 x Instructional Manual.

