



One of the main problems in the study of loads distribution on horizontal beams is related to vertical loads. Such loads, transverse to the beam direction, can generate bendings, with the consequent breaking risk. The greatest advantage of arched beams is that they are able to distribute these vertical loads between an horizontal and a vertical component, so that the total load in the vertical axis is reduced, and the breaking possibilities diminish.

This is applicable when big spans must be covered with only two support points. The arched beam has the advantage of supporting greater vertical loads than a straight beam, which can present, in this cases, great bending signs.

Tesca Two Pinned Arch Unit enables to determine experimentally the horizontal component of the abutment thrust of a two hinged arch beam.

The beam is supported on ball bearing rollers attached to each end of the beam and the horizontal movement of the free end is indicated by a dial gauge so that the beam can be returned to it's original unloaded span.

The horizontal thrust force is applied to the free end of the beam by means of masses or weights attached to a cord passing over the ball bearing pulleys.

Varying loads can be applied to the beam by means of load hangers and masses. A dial gauge enables to measure the vertical displacement.

Note: Specifications are subject to change.

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Specifications

- Bench-top unit with structure made in anodized aluminum and steel.
- Steel arch beam.
- 2 Dial gauges:
 - Range: 0-10 mm. (0 - 0.4 inches).
 - Accuracy: 0.01 mm. (0.0004 inches).
- Cord with a hook.
- In order to carry out some of the practices with Tesca Two Pinned Arch Unit, 1 set of weights "B type" is required. (See section "required accessories").
- Manuals: This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Security, Maintenance and Practices Manual.

Experiment Possibilities

- Demonstration of the characteristics of a two pinned arch.
- To examine the relationship between applied loads and horizontal thrust.
- Determination of the horizontal thrust in a support point of an arch beam subjected to a vertical load.
- Study of the horizontal force change with the magnitude of the applied load.
- To determine the experimental value of the horizontal component thrust at the abutment end of a two pinned arch beam subjected to a vertical load.

Required Accessories

Set of weights "B type" (set B):

- 6 weights of 200 gr.
- 6 weights of 100 gr.
- 2 weights of 50 gr. .
- 2 weights of 20 gr. .
- 2 weights of 10 gr. .
- 1 support hook of 100 gr. .