



Description

Experiment module supplied with the Structures platform, this product helps students to understand how loads affect the horizontal reaction forces in a three pinned arch. Students apply loads to hangers suspended from the arch, held between two supports. One support allows rotational movement only, acting as a pinned support. The other support allows translational movement, acting as a roller support. A load cell prevents the translation, while measuring the horizontal reaction due to the load. Each support includes pointers that work with the scale on the platform for accurate positioning. A third set of bearings at the crown of the arch forms a third pinned joint. Students use textbook equations to predict the reaction forces due to the load, comparing them with measured results, and learn how to create the influence line and bending moment diagrams. This helps confirm the reliability of the textbook equations and the accuracy of the experiment results. This product includes additional masses so students may apply a uniformly distributed load (UDL) across the span of the arch for comparison of results with a single point load. The load cell connects to the USB interface hub of the Structures platform for computer display and data acquisition.

Items included

- Two arch supports, holding an arch of 0.5 m span x 0.1 m height
- Cable
- Nine mass hangers(made of PVC)
- 50 x 20 g masses(made of Brass)
- Storage tray

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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- Comprehensive user guide

Learning objectives/experiments

- Horizontal reaction due to a varying single point load on a statically determinate structure
- Horizontal reaction due to a moving single point load on a statically determinate structure
- Horizontal reactions due to a uniformly distributed load on a statically determinate structure
- Influence lines and superposition
- Lines of thrust in an arch
- Graphical construction of a bending moment diagram for point loads
- Maximum bending moments due to a load on an arch

Structure Platform

The structure platform is made from precision, 6 slotted 100mm x 50mm anodised aluminium extrusions(2 No. arranged parallelly to each other) and steel end-plates with adjustable feet. Easy-to-read scales on each side of the platform.

The platform includes the use interface plug and play 'Hub' to simplify connections. The hub converts signals from the sensors on experiment module to USB data format for computer display and data acquisition.

Software

Data acquisition applications(LabView based) for experiment module.

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