

Product Name :
Portal Frame Apparatus with Data Acquisition

Product Code :
NLAB-STURCLAB210011



Description :

Portal Frame Apparatus with Data Acquisition

Technical Specification :

An experimental apparatus to provide extended investigations into realistic structures including determining the points of failure of a loaded portal frame and also identifying the modes of failure.

The experiment hardware fits onto a Structures Test Frame. Students fix a specimen portal frame (two uprights with a cross-beam at the top) to the bottom crosspiece of a test frame. The test frame also holds horizontal and vertical screw mechanisms with electronic load cells for loading the portal frame. Students set the portal frame load conditions by arranging the load cell screw mechanisms to provide either single or combined loads. They then load the portal frame manually by adjusting the screw mechanisms. The electronic load cells connect to a Digital Force Display that shows the horizontal and vertical loads as the portal frame deforms. Two long-travel digital deflection indicators measure the portal frame deformation.

Students continue to load the portal frame until it is in the fully plastic condition, that is, it has undergone plastic collapse. They monitor the collapse load, deformations, and note where plastic hinges formed during collapse. Packs containing 12 extra specimen portal frames are available separately.

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Students should use the Plastic Bending of Beams experiment before progressing to Plastic Bending of Portals. The Plastic Bending of Beams experiment provides a basic understanding of underlying principles, such as plastic deformation and form factor.

The Operation Manual provides details of the equipment including sample experiment results. The Operation Manual describes how to use the equipment and gives experiment procedures.

For extra 'virtual' experiments, supply the optional Structures Software, for use on a suitable computer. The virtual experiments simulate the tests you can perform with the hardware. They also extend the choice of tests beyond that available using only the hardware, for example: higher loads, uniform loads or different test specimens. This extends the student's learning experience.

For automatic data acquisition of your experiment results, supply the optional Automatic Data Acquisition Unit. Supplied as standard with the Structures Software that displays and logs your experiment results and gives the extra virtual experiments.

Key features:

High-quality structures training module for students of mechanical, civil and structural engineering

Allows safe and practical experiments into plastic bending of portals

Realistic and verifiable experiment results

Optional Structures Software package for extra, 'virtual' experiments, that simulate and confirm the results from your hardware and allow extended experiments

Optional unit with Structures Software package for automatic data acquisition and virtual experiments.

Naugralabequipments

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