LAB ENGINEERING

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Product Name : Shearing Force Apparatus	**Product Code :** ELABBFA002

Description :

Shearing Force Apparatus

Technical Specification :

Shearing Force Apparatus Features Low cost, effective teaching Self-contained Bench mounted Direct measurement of Shear Force Loads and supports can be placed in any position Visual practical verification of the concept of Shear Force Allows investigation of stability and influence lines Reinforces concept of equilibrium of vertical forces & moments Three year warranty Range of Experiments To comprehend the action of shear in a beam To measure the shearing force at a section of a loaded beam, and to compare with a theoretical estimate To study the definition of an influence line for shear force Description A length of material supported horizontally and carrying vertical loads is called a beam. The loading causes bending and transverse shearing. The loads and reactions are the 'external' forces acting on the beam. They must be in equilibrium. However, the strength of the beam depends on 'internal' forces. This experiment demonstrates the nature of these internal forces and their dependence on the external system of forces. The experimental beam is in two parts, joined by a pair of ball bearing rollers running in flat vertical tracks. To develop the internal beam forces at the section an underslung tension spring is used to resist the bending moment, while an overhung spring balance provides the vertical shearing force. Due to the mechanical arrangement, there must always be a net downward load on the longer side of the split beam. The beam is simply supported on end bearings and several weight hangers can be attached at any position on either side of the joint. A hinged metal strip is available to simulate the loading pattern of a panelled girder for a more advanced experiment on influence lines. This equipment is part of a range designed to both demonstrate and experimentally confirm basic engineering principles. Great care has been given to each item so as to provide wide experimental scope without unduly complicating or compromising the design. Each piece of apparatus is self-contained and compact. Setting up time is minimal, and all measurements are made with the simplest possible instrumentation, so that the student involvement is purely

with the engineering principles being taught. A complete instruction manual is provided describing the apparatus, its application, experimental procedure and typical test results.