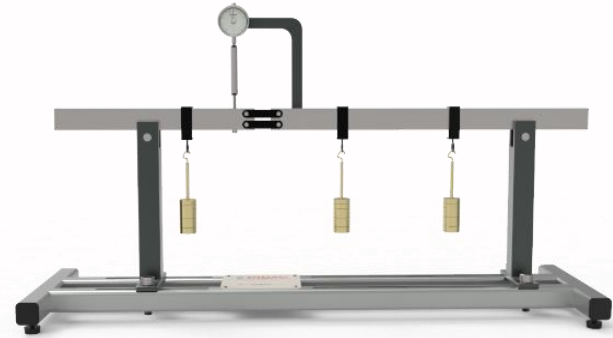


Equilibrium of Beam Module (EDC-EBM-403)

SPECIFICATIONS:

- Beam mounted on two supports and subjected to point loads.
- Low-friction hinge at a cut section of the beam with one degree of freedom to measure shear force.
- Force gauge included to indicate internal shear force at the hinge.
- Adjuster nut for horizontal alignment of the beam and to balance out deflection.
- Supports up to three point loads for various experiment configurations.
- Storage system with foam inlay to house all components safely.



DESCRIPTION:

The Shear Force Investigation Apparatus is designed for hands-on learning in structural analysis. It features a beam mounted on two supports, with point loads applied at various positions. The beam is cut at one location where a low-friction hinge with one degree of freedom is installed. This hinge enables the direct measurement of internal shear forces using a built-in force gauge. The adjuster nut on the gauge ensures the beam remains level and minimizes deflection effects. By applying one to three point loads, students can explore real-world applications of shear force analysis in beams.

This experiment allows students to calculate reactions using equilibrium conditions and apply the method of sections to determine internal forces. They can generate and compare shear force diagrams, analyzing both measured and theoretical values. The shear force measuring range is $\pm 50\text{N}$, providing precise and accurate results. The apparatus is compact and easy to use, with all components neatly organized in a dedicated storage system for efficient setup and safekeeping.



TECHNICAL DATA:

- **Specification & Technical data:**
 - Shear force investigation on a beam mounted on two supports.
 - Low-friction hinge with one degree of freedom for accurate force measurement.
 - Hinge positioned at 1/3 of the beam span.
 - Supports up to three point loads.
 - Force gauge included for measuring shear force.
 - Adjuster nut for horizontal beam alignment.
 - Storage system included for secure component organization.
- **Beam & Measurement Specifications:**
 - Total beam length: 1100 mm.
 - Effective span: 800 mm.
 - Shear force measuring range: $\pm 50\text{N}$.
- **Weights Included:**
 - Weight holder.
 - $3 \times 1\text{N}$ weights.
 - $3 \times 1\text{N}$ hangers.
 - $12 \times 1\text{N}$ weights.
 - $9 \times 5\text{N}$ weights.
 - Maximum weight per hanger and holder: 20N.
- **Dimensions & Weight:**
 - Storage system size: $1180 \times 490 \times 180 \text{ mm}$ (L \times W \times H).
 - Total weight: 40 kg.
- **Learning objectives/experiments:**
 - Calculation of the reactions arising from the static conditions of equilibrium
 - Application of the method of sections to calculate the internal forces, Under a point load, Under multiple point loads.
 - Calculation of the shear force diagram
 - Comparison of calculated and measured shear force values.
- **Items Included:**
 - 1 experimental unit.
 - 1 set of weights.
 - 1 set of accessories.
 - 1 storage system with foam inlay.
 - 1 set of instructional material