Reaction of Beam Support (EDC-RBSM-500)

SPECIFICATIONS:

- Bench-top beam apparatus for studying deflection and forces in various beam types under different loads and supports.
- Capable of demonstrating Young's modulus and verifying the bending equation.
- Manufactured in compliance with the latest European Union directives.
- Allows a wide range of experiments related to beam bending, flexural rigidity, and static equilibrium.
- Multiple support configurations, including simple, built-in, and sinking supports.
- Three load cells with digital readouts and adjustable hardened steel knife edges for precision.
- Locking pins available to convert load cells into rigid supports.
- Cantilever support pillar with a strong clamping system for built-in end conditions.
- Includes four weight hangers and a set of weights for applying static loads.

DESCRIPTION:

The Beam Apparatus is a versatile bench-top testing unit designed for the study of beam deflection and forces under various loading and support conditions. It allows students to experiment with different beam materials, thicknesses, and configurations to understand concepts such as bending, flexural rigidity, and static equilibrium. The apparatus includes three load cells with digital readouts to measure support reactions and three digital deflection indicators mounted on adjustable magnetic carriers. A graduated scale on the upper cross-member ensures precise and repeatable measurements and two lower members bolted to T-legs to form a rigid assembly.

The equipment supports simple, built-in, and sinking support configurations, making it ideal for comprehensive beam bending experiments. The cantilever support pillar features a robust clamping mechanism for fixed-end conditions. The unit is supplied with five standard test beams in steel, brass, and aluminum, along with ten additional test beams in various materials and shapes, including tapered and compound beams. The apparatus is fully compatible with the existing Versatile Data Acquisition System **(EDAQ)**, allowing real-time data analysis and enhanced learning outcomes.

TECHNICAL DATA:

- **Deflection Indicators:**
  - Digital indicators with sockets for connection to Versatile Data Acquisition System (EDAQ).
- **Test Beams Included:**
  - Standard Test Beams (5 total):
    - 3 Steel beams: 3.2 mm, 4.8 mm, and 6.4 mm thick.
    - 1 Brass beam: 6.4 mm thick.
    - 1 Aluminum beam: 6.4 mm thick.
  - All beams are nominally 19 mm wide × 1350 mm long.
- **Additional Test Beams (10 total):**
  - 4 Steel beams (including 1 tapered).
  - 1 Brass beam.
  - 1 Steel & brass compound beam.
  - 2 Aluminum beams (1 with a channel cross-section).
  - 1 Hardwood beam.
  - 1 Aluminum & wood compound beam.
- **Experimental Capabilities:**
  - Verification of the bending equation.
  - Determination of flexural rigidity and Young's modulus.
  - Static equilibrium verification.
  - Deflection of simply supported beams with point loads.
  - Reciprocal properties for loads and deflection;
  - Simple and propped cantilevers with any loading;
  - Continuous beams - statically indeterminate cases for simply supported beams and cantilevers on more than two supports with any loading (including measurement of unknown reactions);
  - Simply supported and cantilever beams with sinking supports;
  - The effects of material and section shape on flexural rigidity;
  - Bending characteristics of a brass/steel compound beam, with and without shearing connection between the two layers;
  - Equivalent sections - characteristics of a metal-faced wooden beam;
  - Deflections on a non-uniform (tapered) beam or Cantilever.