KSM-051

TWO PINNED ARCH UNIT

The **Two Pinned Arch Unit Model KSM-051** allows for the experimental determination of the horizontal component of the abutment thrust in a two-hinged arch beam. The beam is supported on ball bearing rollers at each end, with the horizontal movement of the free end monitored by a dial gauge, ensuring the beam can return to its original, unloaded span. The horizontal thrust force is applied to the free end via masses or weights connected to a cord that runs over ball bearing pulleys. Varying loads can be applied using load hangers and masses, while a dial gauge measures the vertical displacement.

Features

- Versatile bench-top system for studying torsional stiffness and torsional vibration
- Analysis of two and three-mass torsional vibrators
- Data acquisition software for seamless data collection

Specifications

- Experimental Unit: Designed to investigate torsional vibration and stiffness for demonstrations and student experiments
- Frame: Constructed from aluminum with rubber feet for stability
- Torsion Bar: Corrosion-resistant steel
- Mass Discs: 3 discs included
- Bearing Units: 4 ball bearing-mounted units with chucks and 3-hole flange, adjustable positioning
- Damper: Sealed oil damper
- Exciter: Drive crank for excitation with amplitudes of 1.4°, 1.8°, and 2.4°
- Sensors: 4 rotation angle sensors (0.03V/°)
- Exciter Control Unit: Electrical unit with digital frequency display, 10-turn potentiometer, and shaft encoder supply

Note: Specifications and Photos can be altered without prior notice in our constant efforts for improvement.

- Software: For data acquisition via USB, compatible with Windows Vista/7

Technical Specifications

- Torsion Test Bar:
  - Length: 1300mm
  - Diameter: 6mm
  - Material: Corrosion-resistant steel
  - Stiffness: Approx. 1.0 Nm/rad/m
- Mass Weights:
  - Diameter 150mm, Approx. 2.7kg
  - Diameter 228mm, Approx. 4.8kg
- Exciter Frequency Range: 1 to 20Hz
- Damping Coefficient: 0.25 to 3.5 Nm/rad/s

Experiment Possibilities

- Determine the torsional stiffness of a torsion bar
- Calculate the mass moment of inertia
- Study the decay behavior of torsional vibration
- Measure the damping in torsional vibration
- Forced torsional vibration and resonance analysis
- Experiment with multi-weight torsional vibration systems (two and three-mass vibrators)

Scope of Delivery

- 1 Frame
- 4 Bearing Units
- 1 Torsion Bar
- 3 Mass Discs
- 1 Exciter
- 1 Rotary Damper
- 1 Control Unit
- 1 Set of Cables
- 1 Hexagon Screwdriver (AF 4)
- 1 Software CD + USB Cable
- 1 Manual

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