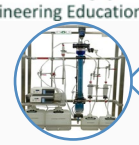
ESOLS
Engineering Education Equipment



Free and Forced Torsional Vibration System with Digital Interface (SMT-TM-45)

The Free and Damped Torsional Vibration Apparatus is designed to study torsional vibrations occurring about the shaft axis, allowing investigation of both free and damped torsional rotation of a shaft. It enables students to determine the natural frequency of a rotary oscillator and analyse the influence of torsional stiffness, mass, and damping on vibration behaviour. The unit includes torsion bars of different diameters, mass disks with a sliding chuck, and an oil damper for controlled damping. It helps demonstrate how excessive torsional vibrations can cause failures in mechanical components such as shafts, couplings, and gears, and how vibration dampers reduce these effects. This apparatus provides a practical understanding of torsional dynamics in mechanical systems, ideal for experiments in engineering mechanics and statics.

TECHNICAL SPECIFICATIONS

Specifications:

- Bars with different diameter and adjustable length
- Mass disks with chuck.
- Bearing block with ball bearing and chuck.
- Oil damper for damped vibration.
- Supplementary experiment to the universal vibration system
- 3 torsion bars, and 2 weight discs
- Adjustable ball-bearing chuck
- Open oil-filled damper

Technical Data:

- Torsional bars:
  - Qty: 3
  - Diameter: Ø3mm, Ø5mm, and Ø6mm
- Disc 1:
  - Diameter: 150mm
  - Mass: 2.8kg (Approx.)
- Disc 2:
  - Diameter: 230mm
  - Mass: 4.9kg (Approx.)
- Chuck:
  - Range: 0.5-12mm
- Dimensions and mass:
  - L x W x H: 1250 x 350 x 1200mm (Approx.)
  - 25kg (Approx.)

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Experiments:

- Natural frequency of torsional vibration of bars of different diameter at different lengths.
- Effect of torsional stiffness, rotating mass and damping on frequency of torsional vibration.
- Factor on the behavior of a rotary oscillator.

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