



### Features

- Demonstration of fundamental aspects of mechanical vibration
- Damping and resonance with forced vibrations
- Two different principles of exciting vibration
- Versatile bench-top experiment system on torsional stiffness and torsional vibration
- Behavior of two and three masses torsional vibrators
- Data Acquisition software for data acquisition

Tesca Torsional Vibration Apparatus is experimental unit used to explain torsion and torsional vibration in experiments. Demonstrations and student experiments are both foreseen in equal measures. The core of the experiment is a metal torsion bar. With the aid of chucks, mass discs of varying inertia can be attached to the bar. In this way it is possible to assemble torsional vibrator systems with up to three masses. Vibrations can be induced on the system using an electrical exciter supplied from the control unit. An adjustable damper can be used to influence the vibrations. Shaft encoders on the chucks provide the amplitude of vibration as an electrical signal. The control unit conditions these signals and makes them available, e.g., for display on the software for data acquisition or on an oscilloscope (which must be provided).

### Specifications

- Experimental unit for investigating torsional vibration and torsional stiffness in demonstrations and student experiments
- Frame made of aluminum with rubber feet
- Steel torsion bar, corrosion-resistant

Note: Specifications are subject to change.

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- 3 mass discs
- 4 ball bearing mounted bearing units with chucks and 3 hole flange, the bearing units can be positioned as required
- Sealed oil damper
- Exciter with drive crank, excitation amplitudes 1.4°, 1.8°, 2.4°
- 4 angle of rotation sensors, 0.03V/°
- Electrical exciter control unit with digital frequency display, 10-turn potentiometer and supply for the shaft encoders
- Software for data acquisition via USB under Windows Vista or Windows 7

### Technical Specifications

- Torsion test bar
  - 1300mm
  - D=6mm
- Corrosion-resistant steel
- Stiffness: approx. 1,0Nm/rad/m
- Weights
  - D=150mm, approx. 2,7kg
  - D=228mm, approx. 4,8kg
- Exciter frequency: 1...20Hz
- Damping coefficient: 0,25...3,5 Nm/rad/s

### Experiment Possibilities

- Determination of the torsional stiffness of a torsion bar
- Determination of the mass moment of inertia
- Decay behavior of torsional vibration
- Determination of the damping of torsional vibration
- Forced torsional vibration, resonance
- Torsional vibration systems with several weights, two mass torsional vibrator, three mass torsional vibrator

### 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 screw driver, AF 4
- 1 Software CD + USB cable
- 1 manual