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Products
Products range
Units
7.-Mechanics & Materials

DESCRIPTION

The MTB unit has been designed by EDIBON to study the elastic torsion characteristics of circular bars. The unit allows us to test the properties of torsion of circular bars at different lengths, from 0 to 300 mm.

Torsion is a type of stress created within a bar which is subjected to a torque or pair of forces. The different cross sections of the bar undergo a rotational slip about an axis normal to the plane because of which the analog tangential efforts are developed to the simple shear efforts.

The study of the torsion has a crucial importance because in the industry every machine shaft which turns and transmits energy is subject to torsion forces.

The MTB unit allows the student to test the fundamentals of torsion and carry out experiments to demonstrate:

- 1.- Testing of the elastic torsion equation for circular bars.
- 2.- The experimental determination of Modulus of Rigidity for different materials.

The torque or pair of forces is applied via a dynamometer attached to an arm. The deformation from the applied torque is measured by means of a dial gauge mounted in the middle of the arm. Through a simple trigonometric relationship we obtain the deformation angle which is an important didactic characteristic of the unit.

Bars of steel, brass and aluminium are supplied to carry out the experiments. Additionally, bars of other materials can be used.



ISO 9000: Quality Management
(for Design, Manufacturing,
Commercialization and After-sales service)



European Union Certificate
(total safety)



**Certificates ISO 14000 and
ECO-Management and Audit Scheme**
(environmental management)



Worlddidac Quality Charter
Certificate
(Worlddidac Member)

SPECIFICATIONS

The unit is mounted on an anodized aluminum structure with epoxy-painted steel plates.

The main structure is supported on aluminium blocks. The two guide bars are made in stainless steel, the rest of the components are aluminium.

The two guides of the unit are for sliding the mobile clamp on it, testing bars with different length.

Mobile clamp located at one end that has a crank in the bottom to adjust the test bar to the desired length. It is made in stainless steel.

Fixed clamp, consists of two bearings which allow it to turn. It has an arm on which the force is applied. It has a notch which is placed at 60 mm from the longitudinal axis of the test bar, to carry out the measurements. The dial gauge should be placed on this notch to properly measure the deformation. The clamp is made in stainless steel.

Test bars: standard supply of 3 test bars: steel, brass and aluminium. They are 8 mm of diameter and 350 mm of length. They have marks every 50 mm, which allow the student to measure different lengths of the bars easily.

A Dynamometer up to 10 Kg, with a 50 g accuracy, to apply the forces on the test bar.

A Dial gauge of 0- 10 mm, with 0.01 mm accuracy, to measure the deformation of the test bar subjected to the force.

All the necessary tools to carry out the experiments are provided. One Allen key of 3 mm is supplied to adjust the dial gauge and one Allen key of 4 mm supplied to tighten the clamps.

Manuals:

This unit is **supplied with the following manuals**: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

- 1.- Verification of the elastic torsion equation of circular bars.
- 2.- Experimental determination of the relationship between the torsion moment and the shaft angular deformation.
- 3.- Experimental determination of the relationship between the test bar length and the shaft turn angle for a same torsional force.
- 4.- Experimental determination of the value of the Modulus of Rigidity for steel, brass and aluminium.

DIMENSIONS & WEIGHTS

- Dimensions: 600 x 400 x 600 mm. approx.

- Weight: 15 Kg. approx.

* Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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Issue: ED03/10
Date: September/2010

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