Scope		**Determination of shear modulus of elasticity (torsion)**			
Group		Team No.		Date	
Team members					
Comments					

1. Principle

The exercise consists of loading a cantilever rod with a pair of forces that causes a torsional moment, and then measuring the angle of rotation of two cross-sections of the rod. Based on the increase in the angle of rotation along the length of the rod, the modulus of shear elasticity of the material from which the rod is made should be determined. The result should be compared with the theoretical value.

2. Test stand

A steel cantilever rod with a ring cross-section is loaded with a concentrated force F. This force is transferred to the cantilever rod in the form of a pair of forces that causes pure torsion of the rod (Figure 1). For a given force, the angles of rotation of the rod in cross-sections A and B should be measured using laser devices and rulers (Figure 2).

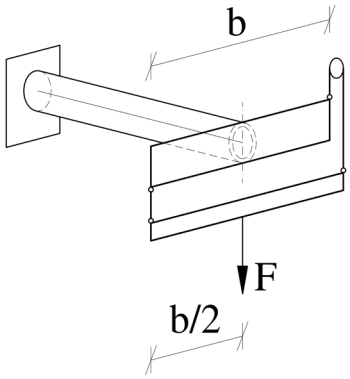
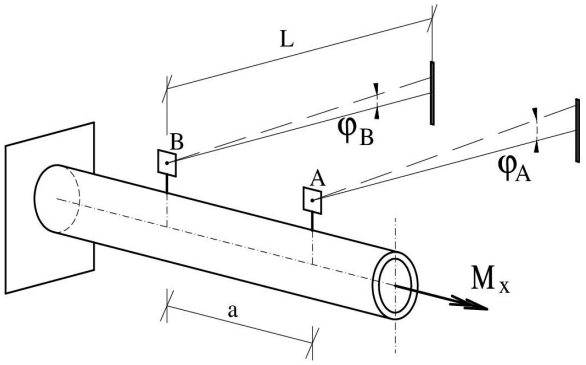


Fig. 1. Rod twisting



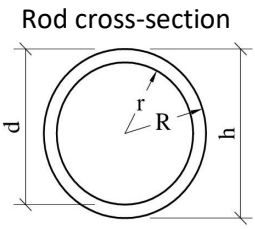


Fig. 2. Test stand, angle measurement and rod cross-section

3. Measurements, readings and calculations

Measurements:

L = ……. h = ……

a = ……..… d = ……

b = …….

Calculations:

r = ……..... I_0 = ……

R = ……..

Readings from laser devices:

Load [kG]	Force *F* [N]	Readings from the ruler - section A [mm]	Readings from the ruler - section B [mm]
0.0	0.0		

Note: the report should show how the calculations were performed (equation, data substitution, result, units).