

# TM 320

## Screw connections testing



### Description

- correlation between tightening torque and tension force on standardised bolts
- breakaway torque of a bolt joint

The main element of the unit is a slotted, elastically deformable steel block. By tightening the bolt joint, the slotted area is deformed, thereby generating an axial tension force in the bolt. The resulting deformation is recorded by a mechanical dial gauge, and is directly related to the bolt tension force generated.

The bolt joint is tightened and slackened using a special torque wrench, which can be set sensitively with the aid of a threaded spindle. By using an axial bearing, the head friction of the bolt can be largely excluded, so that only the friction of the threaded joint is measured.

### Learning objectives/experiments

- axial tension force in a bolt joint dependent on the tightening torque or the elastic deformation of a slotted block
- measurement of the breakaway torque, including for different fitting situations of the bolt joint
- measurement of thread friction and overall friction

### Specification

- [1] experiment on the correlation between the tension force and tightening torque of bolts
- [2] bolt size M8x100, wrench jaw size 13mm
- [3] elastic deformation of a slotted block by the bolt
- [4] determining the tightening and breakaway torque with a mechanical torque measuring device
- [5] 2 dial gauges
- [6] sensitive torque setting by hand wheel

### Technical data

Tension force

- max. 40kN

Force/travel constant

- 20kN/mm (on slotted block)

Max. tightening torque

- 40Nm

Torque/travel constant

- 10Nm/mm (on torque measuring device)

Dial gauge

- 0...10mm
- graduation: 0,01mm

LxWxH: 450x400x260mm

Weight: approx. 27kg

### Scope of delivery

- 1 experimental unit
- 1 set of bolts in transparent container
- 1 set of instructional material

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Optional accessories

WP 300.09      Laboratory trolley