

PT 109

Dimensional metrology, hub



The illustration shows the device and the GUNT Media Center on a tablet (not included).

Description

- **10 hubs as test objects and various test equipment**
- **testing of: diameters, lengths, depths**
- **digital multimedia teaching material online in the GUNT Media Center: E-Learning course, drawings, worksheets**
- **part of the GUNT DigiSkills 2 learning project**

As the main element of quality inspection, dimensional metrology is an essential part of practical training for all metal-working professions. The GUNT DigiSkills 2 learning project offers different practice kits to teach basic to advanced skills in dimensional metrology.

The PT 109 practice kit is designed to teach the fundamentals of dimensional metrology in training. It focuses on testing internal diameters. The practice kit includes ten hubs as test objects, each of which differs in dimensions and each of which is individually marked. Selected dimensions of the hubs are tested by reference to the main drawing. Seven of the ten test objects show deviations, so that they are identified as rejects during the inspection.

Four different pieces of test equipment are included for testing: a calliper, a depth calliper, a three-point internal micrometer and a limit plug gauge.

The practice kit includes comprehensive didactic multimedia teaching material, which is available free of charge online in the GUNT Media Center. The E-Learning course presents fundamental knowledge and the test process in detail with appealing animations. The manual is also included as a digital version in the E-Learning course. Drawings are available as target specifications for editing the prepared digital worksheets. In this way, digital skills can be developed alongside traditional, specialist learning objectives.

All parts are clearly laid out and well protected in a stackable storage system with foam inlays.

Learning objectives/experiments

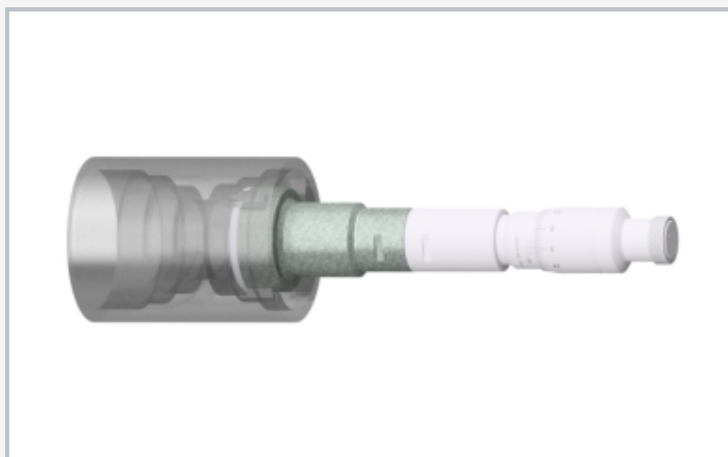
- fundamentals of metrology: testing/measuring/gauging
- familiarisation with basic test equipment
 - ▶ calliper
 - ▶ depth calliper
 - ▶ three-point internal micrometer
 - ▶ limit plug gauge
- measure specified lengths, depths and diameters
- test specified bore with limit plug gauge
- keep measuring log
- estimate/assess measurement deviations
- familiarisation with general tolerances according to ISO 2768-1
- recognise typical errors
 - ▶ systematic errors
 - ▶ random errors
- develop digital skills
 - ▶ research information in digital networks and obtain information from digital networks
 - ▶ use digital learning media, familiarisation with and use of web-based training (WBT)
 - ▶ use assistance, simulation, diagnosis or visualisation systems, e.g. QR codes, CAD viewer tool

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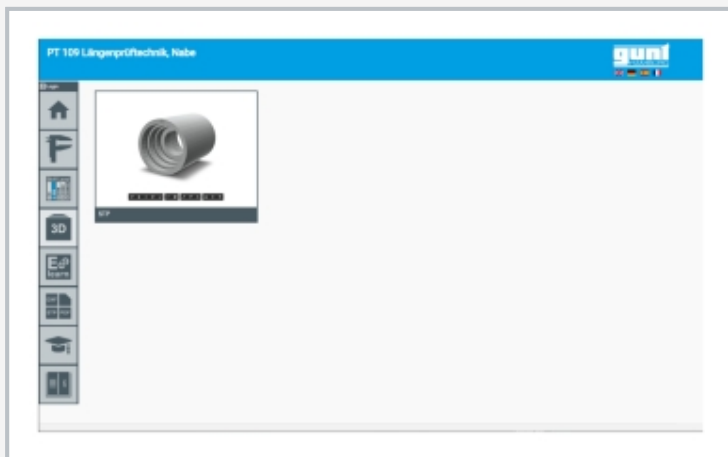
Dimensional metrology, hub



1 three-point internal micrometer, 2 limit plug gauge, 3 setting ring, 4 test object (hub), 5 depth calliper, 6 calliper



Testing an internal diameter with the three-point internal micrometer



Screenshot of the GUNT Media Center

Specification

- [1] practice kit with test objects and test equipment provides basic measurement exercises of dimensional metrology for metalworking professions
- [2] part of GUNT DigiSkills: vertical teaching of digital skills in complex learning projects
- [3] testing of diameters, lengths, depths
- [4] measurement exercises on 10 test objects: hubs each with individual dimensions
- [5] stainless steel test objects
- [6] sturdy storage system with labelled foam inlay
- [7] digital multimedia teaching material online in the GUNT Media Center: E-Learning course, drawings, worksheets – with solutions for teaching personnel
- [8] online access to the GUNT Media Center

Technical data

Test objects

- 10 hubs with individual dimensions
- testing of:
 - ▶ lengths
 - ▶ depths
 - ▶ diameters
- material: stainless steel

Test equipment

- calliper: 0...150mm
 - ▶ reading accuracy: 0,05mm
- depth calliper: 0...150mm
 - ▶ reading accuracy: 0,05mm
- three-point internal micrometer: 40...50mm
 - ▶ reading accuracy: 0,005mm
 - ▶ with setting ring acc. to DIN 2250 C, nominal diameter 45mm
- limit plug gauge
 - ▶ nominal diameter: 30mm
 - ▶ acc. to DIN 2245
 - ▶ tolerance field: ISO Fit H7

LxWxH: 600x400x185mm (storage system)

Weight: approx. 12kg

Required for operation

Web browser and Internet connection

Scope of delivery

- 10 test objects
- 1 set of test equipment
- 1 online access to the GUNT Media Center with didactic accompanying material