

# PT 102

## Dimensional metrology, spacer plate



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

### Description

- **10 spacer plates as test objects and various test equipment**
- **digital calliper with Bluetooth data transfer function**
- **testing of lengths and 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 102 practice kit is designed to teach the fundamentals of dimensional metrology in training. It focuses on testing lengths and depths. The practice kit includes ten spacer plates as test objects, each of which differs in dimensions and each of which is individually marked. All the dimensions of the spacer plate 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 test.

Four different pieces of test equipment are included for taking measurements: a digital and an analog calliper, a depth calliper and a depth micrometer.

The practice kit includes comprehensive didactic multimedia instructional 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. Measured values can be transferred directly to the worksheet at the touch of a button by means of the digital calliper. A Bluetooth USB adapter for the PC is included to allow data transfer via Bluetooth. In this way, digital skills can be developed alongside traditional, specialist learning objectives.

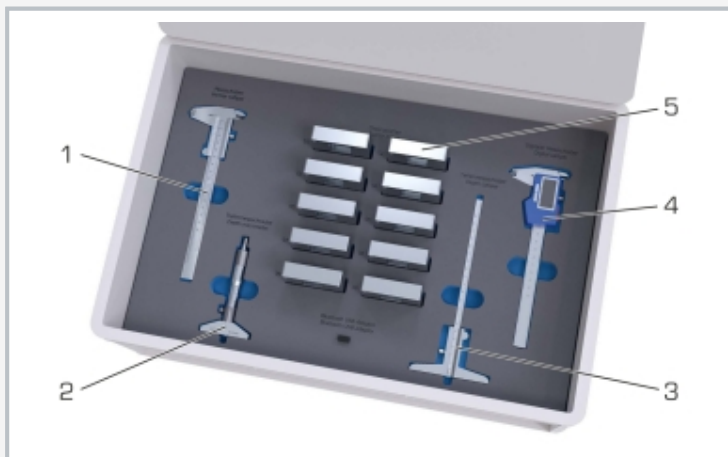
All parts are clearly laid out and well protected in a stackable storage system with foam inlays.

### Learning objectives/experiments

- fundamentals of metrology: testing/measuring/gauging
- familiarisation with basic test equipment
  - ▶ calliper
  - ▶ digital calliper with Bluetooth data transfer function
  - ▶ depth calliper
  - ▶ depth micrometer
- measure specified lengths and depths
- 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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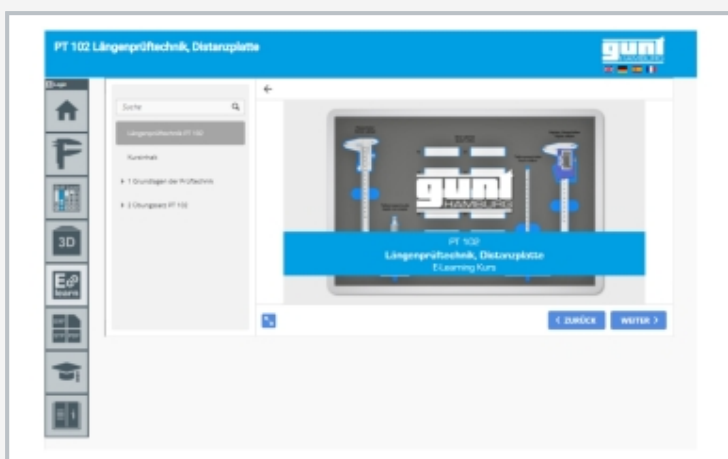
## Dimensional metrology, spacer plate



1 calliper, 2 depth micrometer, 3 depth calliper, 4 digital calliper, 5 test object (spacer plate)



Digital calliper with Bluetooth interface enables direct transfer of measured values e.g. to the worksheets



Screenshot of GUNT E-Learning course in 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 lengths and depths
- [4] measurement exercises on 10 test objects: spacer plates each with individual dimensions
- [5] stainless steel test objects
- [6] digital calliper: transfer measured values at the touch of a button via Bluetooth
- [7] Bluetooth USB adapter for PC
- [8] sturdy storage system with labelled foam inlay
- [9] digital multimedia teaching material online in the GUNT Media Center: E-Learning course, drawings, worksheets – with solutions for teaching personnel
- [10] online access to the GUNT Media Center

### Technical data

#### Test objects

- 10 spacer plates with individual dimensions
- testing of:
  - ▶ lengths
  - ▶ depths
- material: stainless steel

#### Test equipment

- digital calliper: 0...150mm
  - ▶ resolution: 0,01mm
  - ▶ data transfer via Bluetooth
- calliper: 0...150mm
  - ▶ reading accuracy: 0,05mm
- depth calliper: 0...150mm
  - ▶ reading accuracy: 0,05mm
- depth micrometer: 0...25mm
  - ▶ reading accuracy: 0,01mm

LxWxH: 600x400x185mm (storage system)

Weight: approx. 12,5kg

### Required for operation

Web browser and Internet connection;  
PC with Windows recommended

### Scope of delivery

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