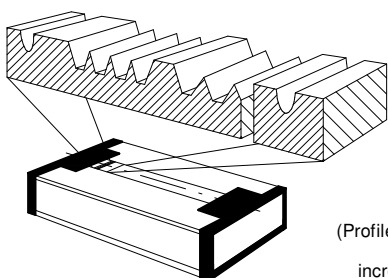
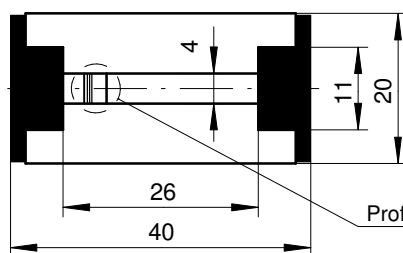


Stylus tip control standard, line of product KNT 4050/01

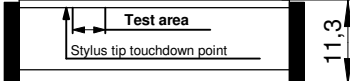
- Checking and measurement of stylus tips for damage, wear and tear and accuracy of the shape.
- Checking of the vertical (Z) and horizontal (X) scaling of tactile stylus instruments.
- Checking of the complete contact stylus instrument for correct reproduction of the dynamically recorded data.



(Profile geometries shown by an increased scale)



Side view



Profile geometries

Scale: 1:1

The body of the control standard is made of hardened stainless steel. The entire measuring surface area is 4 x 26 mm.

Special, high precision profiles are incorporated in the hard nickel-layer of the test area.

This standard is designed for all measurement systems (also two skid tracers).

The stylus tip need not be removed from the measuring system for checking under a microscope in its idle state.

The stylus tip control standard permits identification of the actual shape of the stylus tip according to its motion on the standard profile by this

The operation of the total measuring system is checked. The output data of the standard - graphical as numerical - are obtained from dynamical scanning! These data are adequate with respect to equipment data of interest for getting information about the specific device.

The total function of the contact stylus instrument is also checked by this procedure.

Handling: The stylus tip is placed on the standard at the marked area. The scanning is performed with a total evaluation length of 5.6 mm..

The recorded scanning curves are evaluated on a screen or on a printout of the profile (unfiltered) of the contact stylus instrument.

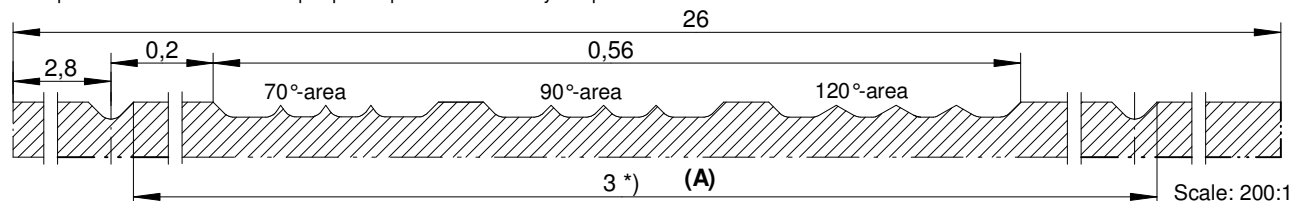
The printout is made by using a vertical scaling of 5 µm/cm or 10 µm/cm and a horizontal scaling of 1:1 or 2:1. (Detailed operation instructions are attached to the standard)

Simple evaluation: The printed or displayed scanning curves are stored and later compared with new records to detect possible changes in the shape of the stylus tips. Further the scanning curves indicate whether the stylus tip is placed in right angles to the scanning direction of the surface to be tested.

Metrological evaluation: Depending on the type of the contact stylus instrument and the software used it is possible to determine the radii of the stylus tips with an accuracy of $\pm 0,5 \mu\text{m}$. For comparison purposes transparencies will be provided with the standard showing scanning curves of faultless stylus tips with radii of 2 µm , 3 µm, 4 µm, 5 µm, 6 µm and 7 µm (see D). The accuracy of the horizontal scaling (X-axis) can be checked using the grooves of the standard incorporated at a distance of 3 mm (see A). The vertical scale (Z-axis) is checked by a precise 10 µm step (see B).

General survey of high precision profile geometries

Each profile area contains three equal profile peaks. Thus the stylus tip control standard includes self-control.



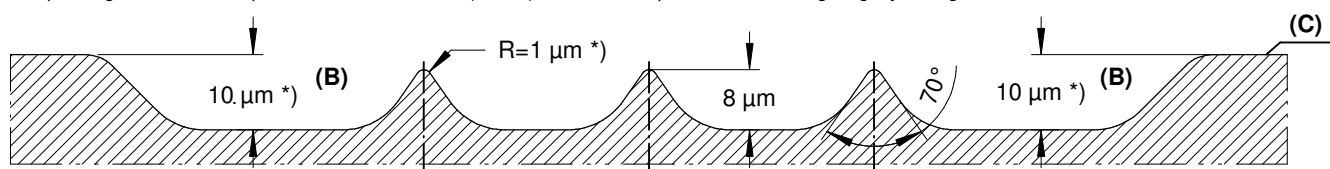
Scale: 200:1

Profile geometries, detailing (70°-area)

For stylus tips with 60° taper angle (the areas 90° and 120° analogues for stylus tips taper angles greater than 60°).

The profile geometries are 2 µm are under the surface (see: C) and therefore protected for damage e.g. by sliding skids.

Scale: 1000:1



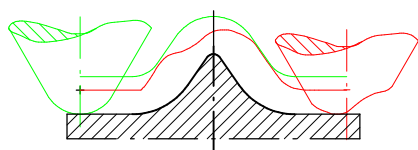
Scanning curve of stylus tips

with 60° taper angle

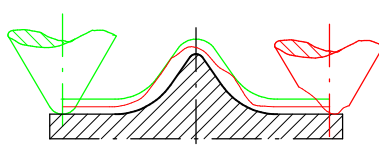
green: Stylus tips with perfect geometry

red: Changes in the shape of the stylus tips caused by wear and tear or damage

Scale: 1000:1



Stylus tip radius: 5 µm

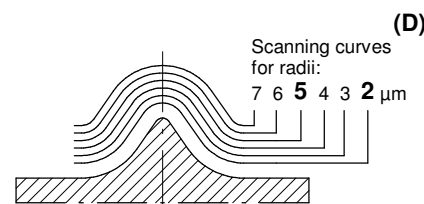


Stylus tip radius: 2 µm

Control-scanning curves

(Control curves on transparencies are attached to each control standard)

Scale: 1000:1



(D)

Scanning curves for radii:
7 6 5 4 3 2 µm