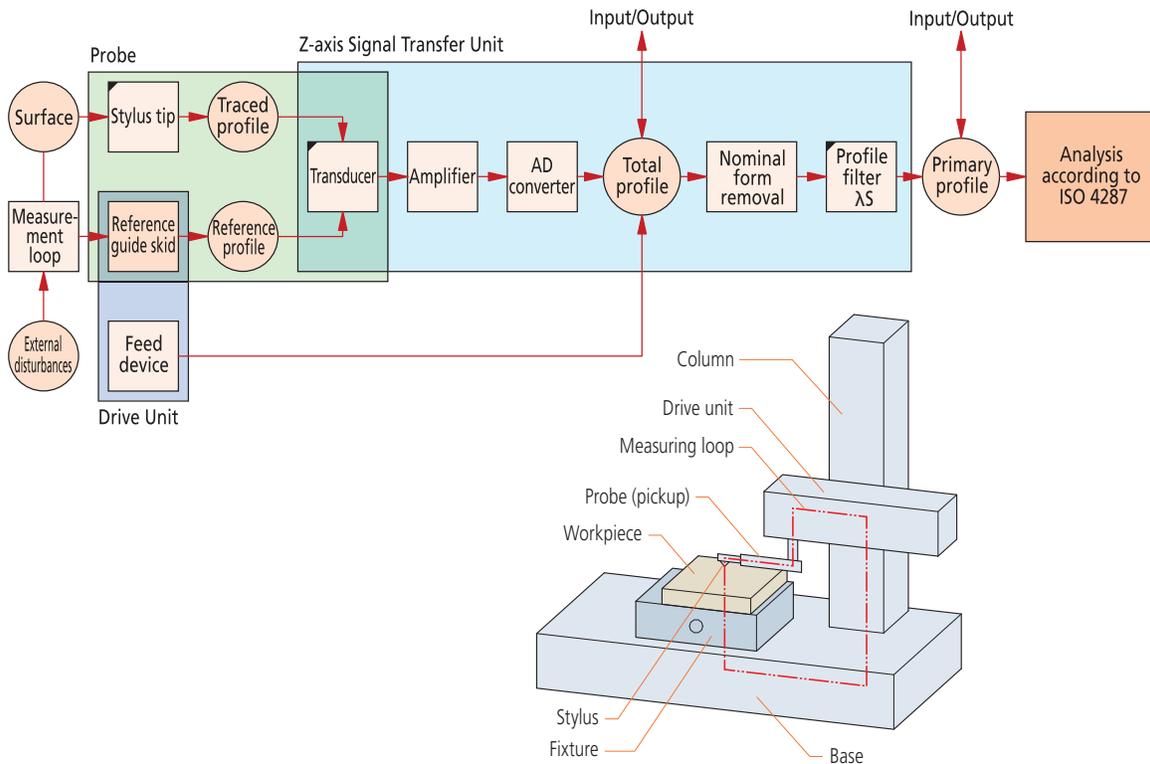


Surftest (Surface Roughness Testers)

ISO 4287: 1997 Geometrical Product Specifications (GPS) –Surface Texture: Profile method– Terms, definitions, and surface texture parameters
 ISO 11562: 1996 Geometrical Product Specifications (GPS) –Surface Texture: Profile method– Metrological characteristics of phase-correct filters
 ISO 4288: 1996 Geometrical Product Specifications (GPS) –Surface Texture: Profile method– Rules and procedures for the assessment of surface texture
 ISO 3274: 1996 Geometrical Product Specifications (GPS) –Surface Texture: Profile method– Nominal characteristics of contact (stylus) instruments

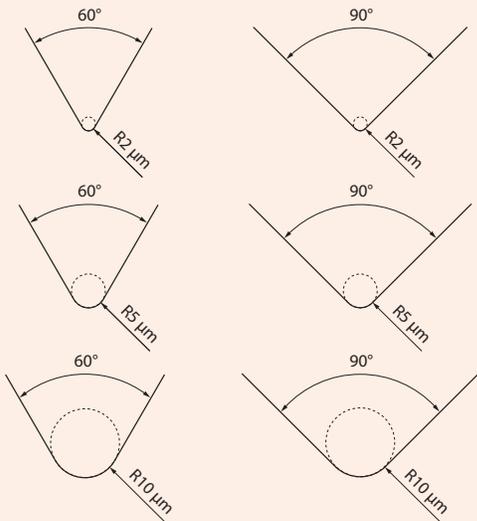
Nominal Characteristics of Contact (Stylus) Instruments

Nominal Characteristics of Contact (Stylus) Instruments



Stylus Shape

A typical shape for a stylus end is conical with a spherical tip.
 Tip radius: $r_{tip} = 2 \mu\text{m}$, $5 \mu\text{m}$ or $10 \mu\text{m}$
 Cone angle: 60° , 90°
 In typical surface roughness testers, the taper angle of the stylus end is 60° unless otherwise specified.



Static Measuring Force (JISB0651)

Nominal radius of curvature of stylus tip: μm	Static measuring force at the mean position of stylus: mN	Tolerance on static measuring force variations: mN/ μm
2	0.75	0.035
5	0.75 (4.0) ^{Note 1}	0.2
10		

Note 1: The maximum value of static measuring force at the average position of a stylus is to be 4.0mN for a special structured probe including a replaceable stylus.

Relationship between Cutoff Value and Stylus Tip Radius

The following table lists the relationship between the roughness profile cutoff value l_c , stylus tip radius r_{tip} , and cutoff ratio l_c/l_s .

λ_c mm	λ_s μm	λ_c/λ_s	Maximum r_{tip} μm	Maximum sampling length μm
0.08	2.5	30	2	0.5
0.25	2.5	100	2	0.5
0.8	2.5	300	2 ^{Note 1}	0.5
2.5	8	300	5 ^{Note 2}	1.5
8	25	300	10 ^{Note 2}	5

Note 1: For a surface with $R_a > 0.5 \mu\text{m}$ or $R_z > 3 \mu\text{m}$, a significant error will not usually occur in a measurement even if $r_{tip} = 5 \mu\text{m}$.

Note 2: If a cutoff value l_s is $2.5 \mu\text{m}$ or $8 \mu\text{m}$, attenuation of the signal due to the mechanical filtering effect of a stylus with the recommended tip radius appears outside the roughness profile pass band. Therefore, a small error in stylus tip radius or shape does not affect parameter values calculated from measurements.

If a specific cutoff ratio is required, the ratio must be defined.