

µsurf cylinder



NanoFocus µsurf cylinder is an optical 3D surface measurement system for non-contact cylinder bore measurements.

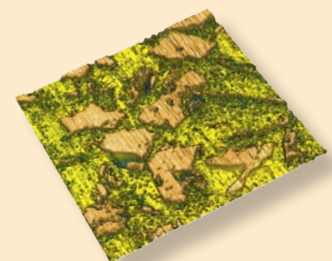
The µsurf cylinder includes an angled optical insertion system matched to the geometry of the cylinder, thus allowing measurement in cylinder bores from 70 mm diameter up to an insertion depth of 165 mm. The system is fully motorized and can be joystick driven to any measurement point (radial, axial) within the cylinder bore.

Besides evaluating ISO roughness values, extensive software tools are available to determine tribologically relevant 3D surface structures. The

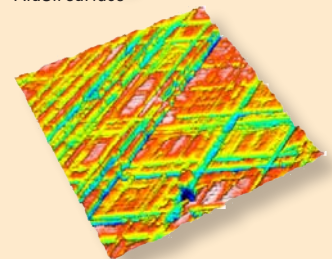
precision of the measuring head is in the nanometer range, and measurement results show absolute agreement with tactile methods. Because of its non-destructible measurement method, the µsurf cylinder is ideal for all wear examinations.

Due to its high spatial resolution and excellent reproduction of steep edges, the instrument can be applied in addition to and/or in substitution of scanning electron microscopy (SEM).

- ▶ **Robust and reliable**
- ▶ **Non-destructive**
- ▶ **High optical resolution**
- ▶ **Measurement within seconds**
- ▶ **Real 3D data**



AluSil surface



Honed surface

Applications

R&D – Process Control – Quality Assurance:

- ▶ measurement of 3D structure parameters e.g. depth of silicon crystal plateaus and distribution of silicon crystals
- ▶ texture analysis
- ▶ roughness parameter calculation compliant with DIN EN ISO
- ▶ calculation of 3D roughness parameters
- ▶ wear analysis
- ▶ defect detection
- ▶ volume parameters

NanoFocus AG

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With its adapter plate, the NanoFocus μ surf cylinder can accommodate every crankcase, and the automated operation ensures maximum user-friendliness. Optional software solutions offer remote interfaces to external monitoring and evaluation programs, creating a completely integrated process control solution for cylinder manufacturing.

Measuring Head

Bildaufnahmemodul BM 512	Digital Camera with progressive scan technology, up to 58 fps, 12 bit, Firewire optical
Lichtquelle	High efficiency LED ($\lambda = 505 \text{ nm}$), MTBF: 50,000 h

Scan modules

Vertical positioning module	Motorized adjustment unit, insertion depth up to 165 mm
x,y-positioning module	Motorized adjustment unit, for cylinder bores from 70 up to 165 mm
Rotation module	Mechanical rotation module for precise positioning in the cylinder, max. rotation 355°
z-axis module	Fast precision scanning unit (piezo), measuring range 250 μm
Measurement adapter	Special adapter to mount μ surf cylinder on the crankcase
System controller	Industrial PC with latest specs, DVD burner, network card, Windows XP Professional

Software

μsoft control	NanoFocus control and evaluation software, profile and topography representation, roughness calculation compliant with DIN EN ISO
μsoft analysis	Software to analyze 3D measurement data, layout function, templates for series of measurement and analysis

Optic module¹⁾

	1600 S	800 S/XS	320 S
Magnification	10x	20x	50x
Measuring field (μm^2)	1100x1100	550x550	220x220
Numerical aperture	0,3	0,45/0,6	0,8
Working distance (mm)	10,1	3,1/0,9	1
Resolution in z-direction (nm)	20	<10	<2
Resolution in x,y-direction (μm)	1,9	0,95	0,38

1) L: long working distance, S: normal working distance, XS: short working distance, 2) noise level

General

Dimensions	Height 490 mm, diameter special adapter ring 280 mm
Weight	11 kg
Transport cabinet	Stable container for system controller and electronics modules, 540x710x795 (lxwxh in mm)
Options	Universal measuring stand (e.g. for pistons) and Linewalking System (automation)

Are you interested in other NanoFocus Technology?
Please call us +49 208 62 000 -0 or write an email to sales@nanofocus.de.

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