Surface, Contour and Form Measuring Machines

Product line

ZEISS


The moment special jobs become routine.
This is the moment we work for.
// PRECISION
MADE BY ZEISS

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The Collaboration between ZEISS and ACCRETECH

Maximum precision is our world

ZEISS works with the Japanese measuring machine manufacturer ACCRETECH, the leading provider in the field of surface, contour and form measuring machines. Form and surface machines are seamlessly integrated into the industrial measuring technology system or line from ZEISS.
This partnership ensures the highest quality, innovative solutions and a global service network for our customers.

ZEISS has a history of producing optical components and precision instruments that dates back more than 165 years. In addition to industrial measuring technology, Carl Zeiss AG is also a global leader in semiconductor manufacturing technology, microscopy, medical technology, consumer eyeglass lenses and consumer optics.

The world of nanometers is the world of ACCRETECH (Tokyo Seimitsu). Founded in 1949, the Tokyo-based company has two primary fields of business: the manufacture of systems for semiconductor production and measuring machine technology.

The RONDCOM NEX form tester

Form, size, position and roughness inspection in one run and one report.

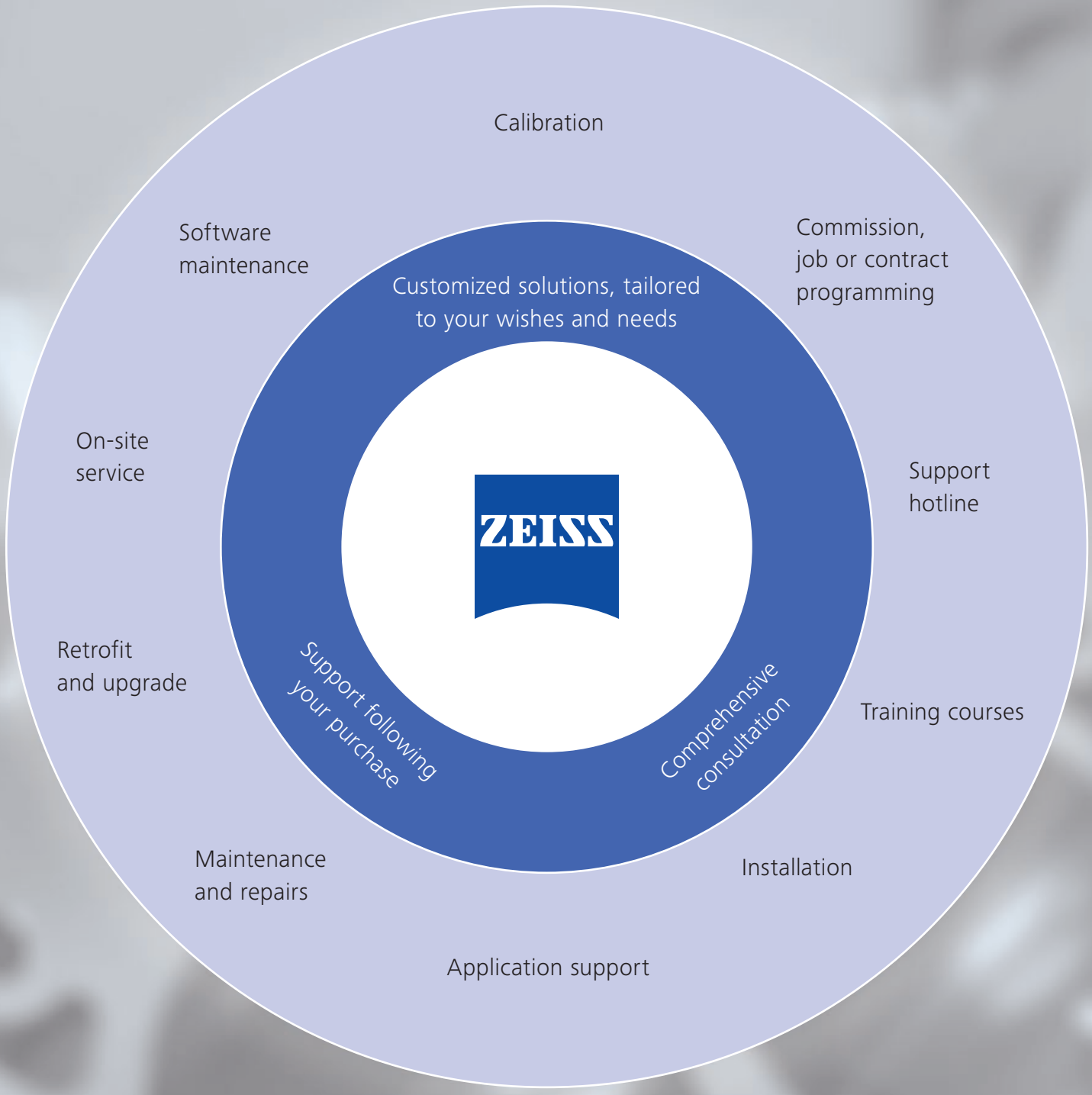
ZEISS: the systems provider
The form and surface measuring instruments developed together with ACCRETECH expand the range of industrial measuring technology from ZEISS by adding excellent products. Check different features of a workpiece with the coordinate measuring machine, form tester and surface measuring machine. The software from ZEISS enables you to evaluate all data together and merge it in one report.

The complete solutions package
ZEISS provides you with a range of products and services that meet all your needs. This includes styli, customized clamping equipment, measurement standards, automation solutions, enclosures and many useful accessory packages. We offer training, seminars and application support on-site or at one of our local measuring houses. Measuring and calibration services round off our product offering (see p. 6).

Consultation and service around the globe
The collaboration between ZEISS and ACCRETECH means both partners utilize their expertise as leading manufacturers of industrial measuring technology. Four joint product management teams from ZEISS and ACCRETECH in Germany, the USA and India learn about customer needs and together turn them into innovative solutions and products. Our global presence, featuring a closely-knit service and sales network, ensures that our customers receive optimal support worldwide.

Services

Comprehensive support – even after purchase

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ACCTee PRO Measuring and Evaluation Software

Software for surface, contour and form

For surface, contour and form measurements, there is one software that covers all of these: ACCTee PRO. A menu-guided user interface, automatic functions, wizards and help functions make it particularly easy for beginners and experts to use ACCTee PRO. Re-evaluation at the push of a button expedites data analysis.

One software, one report
ACCTee PRO software features a number of software tools for checking surface parameters, contours and form features. All data for a workpiece are entered into the same document: measurement data, measuring conditions, analysis conditions, the CNC measuring program and the report layout. This makes it possible to export all relevant measurement data and graphics, e.g. roughness and contour data, in one report.

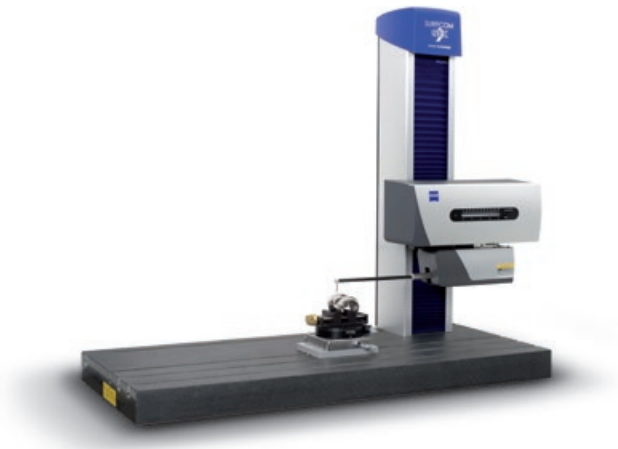
Easy Mode
In Easy Mode, the software guides the user step-by-step through all the main steps of a measurement: from selecting measuring conditions and stylus calibration all the way through the measurement.

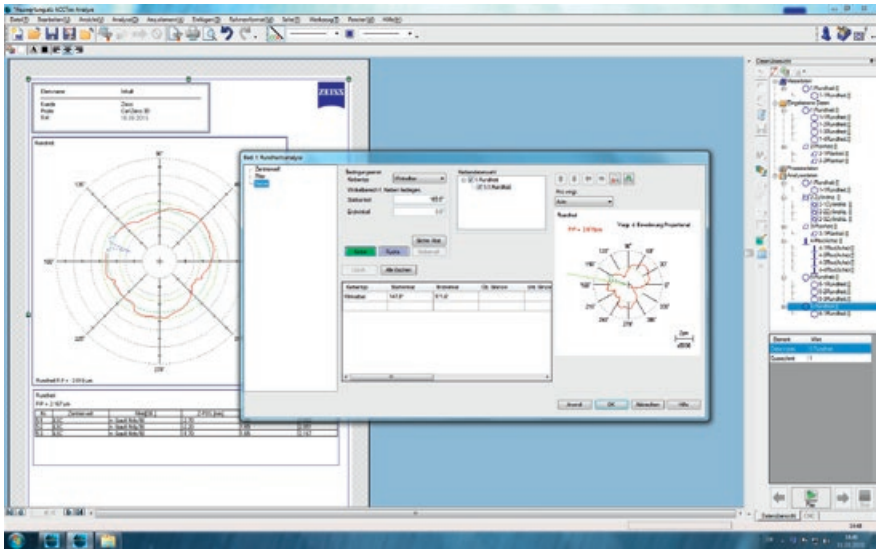
Expert Mode – offline programming
The Expert Mode allows users to generate CNC programs away from the machine. This increases machine capacity considerably.

Automatic feature evaluation (AI function)
ACCTee PRO automatically recognizes basic features – point, line and circle. Depending on the selected feature, the program also shows a pre-selection of appropriate analysis functions.

Help functions
ACCTee PRO also contains an integrated help function that offers both context-based explanations as well as an index and key word search. Furthermore, the software features mouse-over help with short explanations.

Self-diagnosis
In the event of an error, the software immediately provides the user with possible causes using images and short texts.





The ACCTee PRO software interface

Playback function – CNC repeat measurement at the push of a button

ACCTee Pro offers time benefits of up to 40 % during the analysis because a repeat measurement can be initiated at the push of a button via the repeat function.

Simple re-evaluation

Re-evaluate without re-measuring: changes to the analysis settings and their impact are immediately visible (patented).

Easy plan/actual comparison

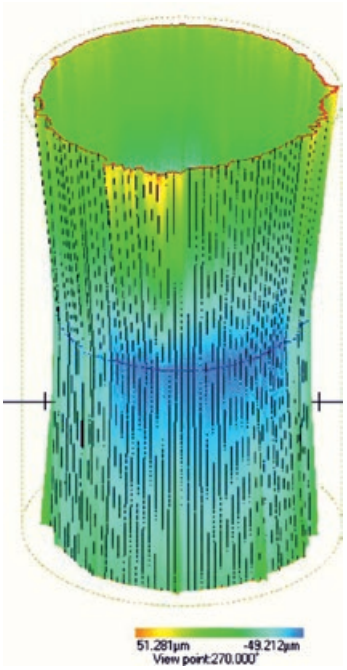
Measurement data and nominal profile (IGES and DXF) can be quickly compared using ACCTee PRO. The actual data are optimally aligned using the best fit set-up. An aspherical analysis function is available.

Patented edge function

Even when large part deviations in a serial measuring operation occur, the part is measured in the CNC operation. The real contour/edge is found and the real values are exported. False measurements, which occur with conventional methods, are not possible.

Tolerance analysis

ACCTee Pro can perform a tolerance analysis for individually selectable parameters. The results are shown as an OK/Not OK symbol in the report.



False color display of cylindricity

Export formats for statistical evaluation

Serial measurements can be exported and evaluated via the qs-STAT option or via Excel and CSV. ZEISS PiWeb offers comprehensive evaluation possibilities.

Standard functions

- Thread analysis function: fast slope calculation at the push of a button
- Fourier analysis
- Result exported in Excel format
- Configurable calibration alarms for greater reliability
- Higher accuracy through patented calibration of the stylus tip geometry

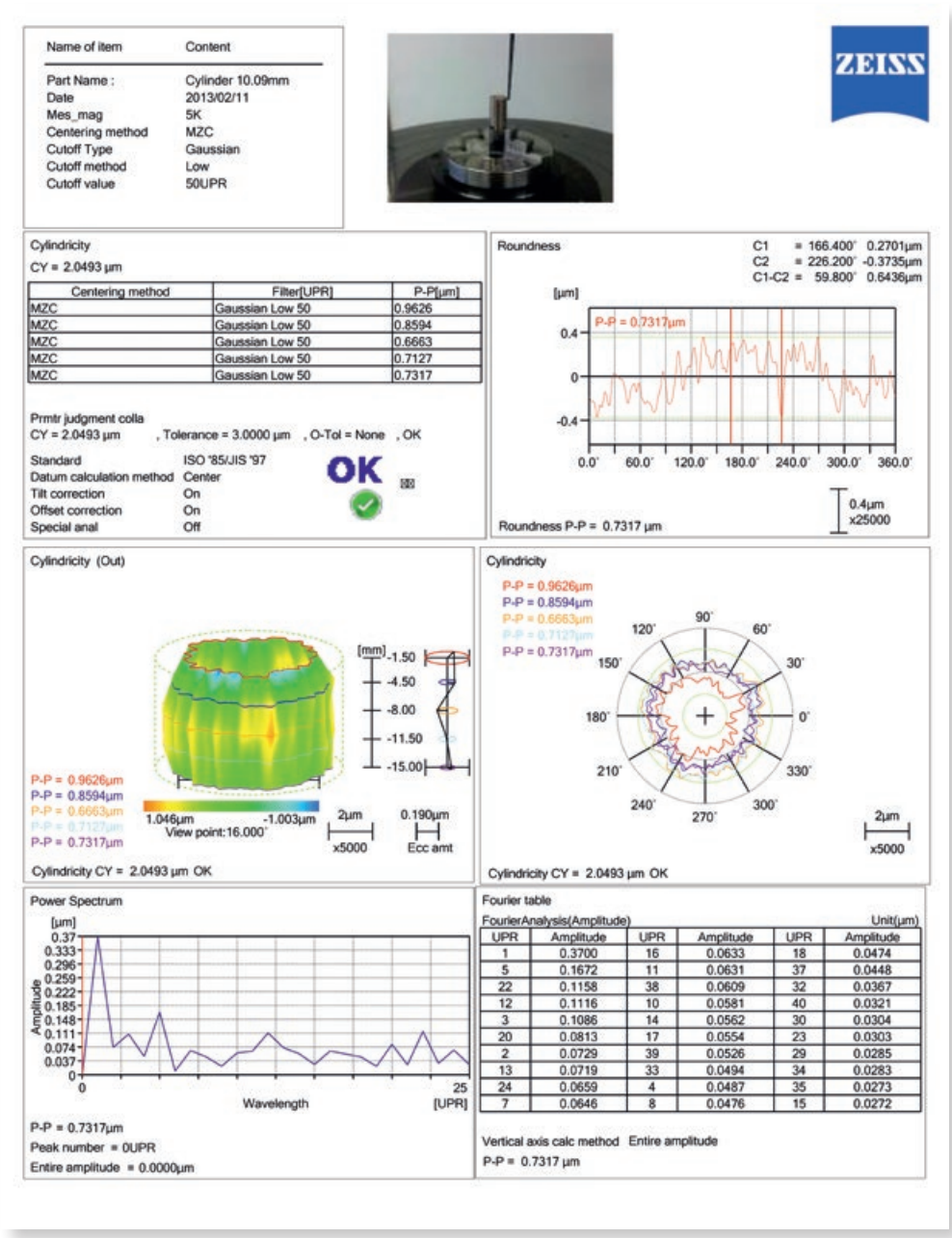
Extension options

- Dominant waviness
- Lead twist measurement
- Measuring recirculating ball screw
- Topography evaluation
- Patented automatic roundness evaluation on gear wheels
- Piston analysis
- Asphere measurement
- Thickness measurement

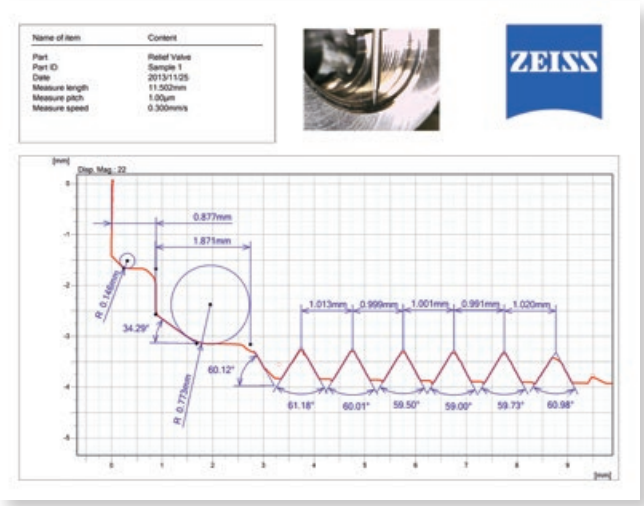
ACCTee PRO

Graphic evaluation and documentation

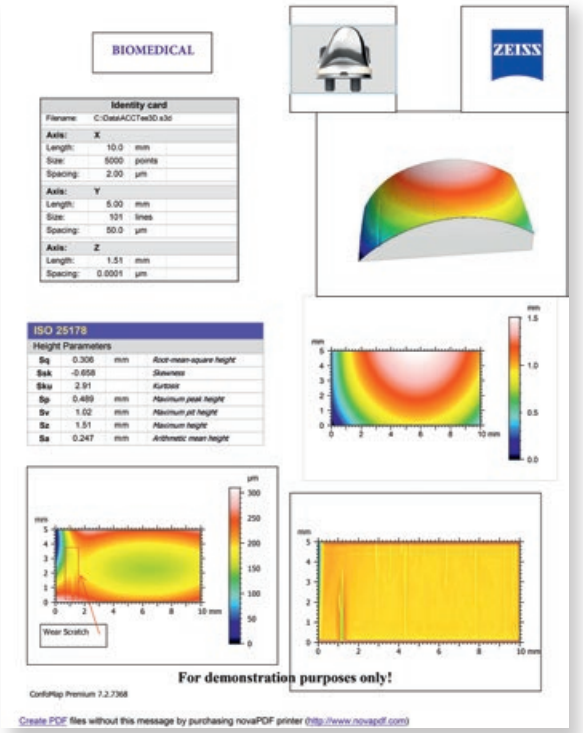
Get a customized report quickly
With just a few clicks, you can generate a report in ACCTee PRO that meets your needs. Graphic and numerical displays can be combined meaningfully. Change the filter and analysis settings without re-measuring: the new report is immediately generated automatically. Furthermore, photos of parts and company logos can be easily added to the report.



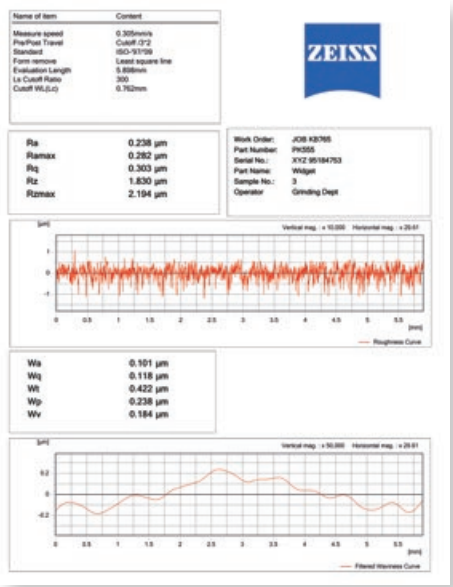
Form measurement



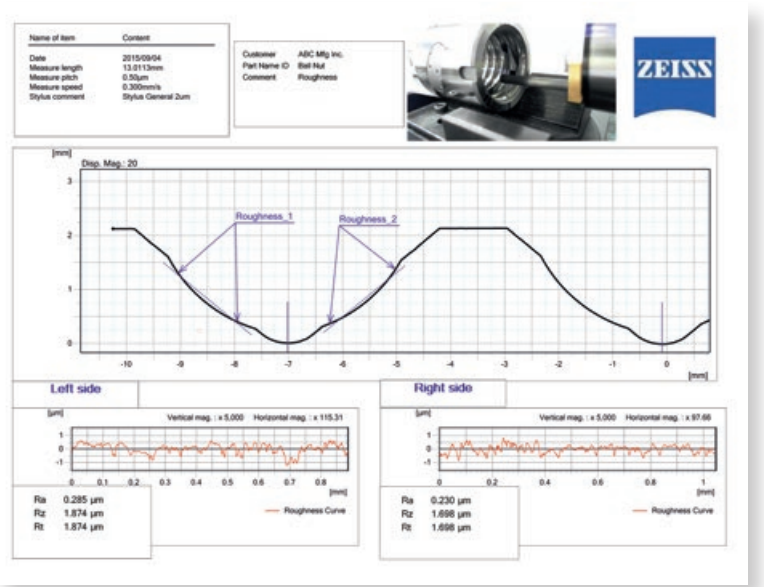
Contour and roughness measurement



Surface topography measurement



Roughness evaluation for a spindle measurement



Contour evaluation for a spindle measurement

Mobile Surface Measurement

HANDYSURF

SURFCOM 130

SURFCOM FLEX

HANDYSURF

Mobile surface measuring instrument

The simple, handy solution for measuring, evaluating and documenting surface roughness. Be it incoming goods, production or final inspection: with HANDYSURF, quality assurance becomes mobile – the measuring instrument goes to the workpiece and not vice versa.

Measuring in different positions
HANDYSURF not only allows measurements on flat surfaces, but also on vertical and overhead surfaces. Furthermore, it is possible to separate the tracing driver for greater flexibility when using the display unit or optional holding devices.

Freedom of motion
In order to work without cables, the mobile system is powered by rechargeable batteries. A charger is included.

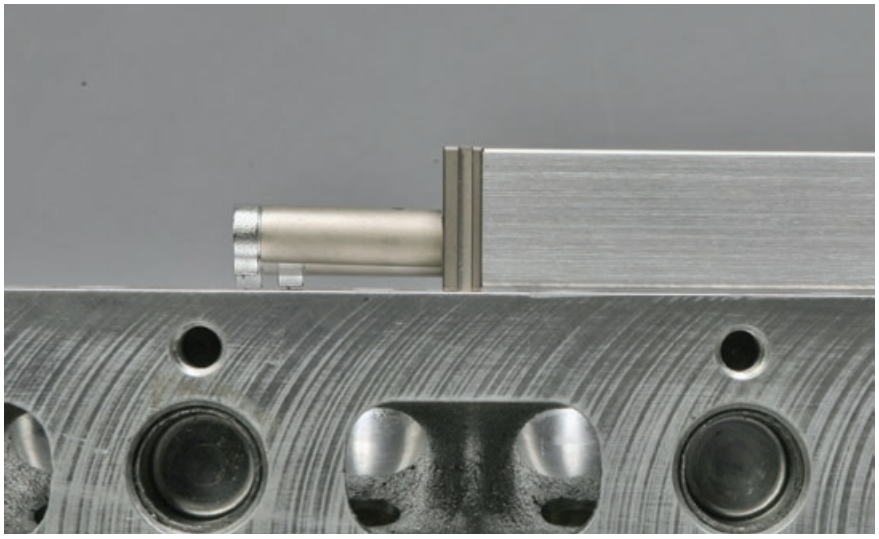
Automatic function
The measuring range, overall measuring length, cut-off and display magnification are automatically configured based on the surface quality.

Data storage
Ten complete data sets can be stored on the internal memory and accessed at any time.

PC interface
USB and RS 232C interfaces make it possible to transfer the measured values as well as parameters and profile points directly to a PC. CALYPSO software allows users to merge roughness, form and position in one report.

All common interface standards
ISO, DIN, CNOMO, JIS and ASME standards are fulfilled. Users can switch between seven languages: German, English, French, Italian, Spanish, Portuguese and Japanese.

Measuring range (Z axis)	±160 µm
Resolution (Z axis)	0.01 µm at ±20 µm/0.08 at ±160 µm

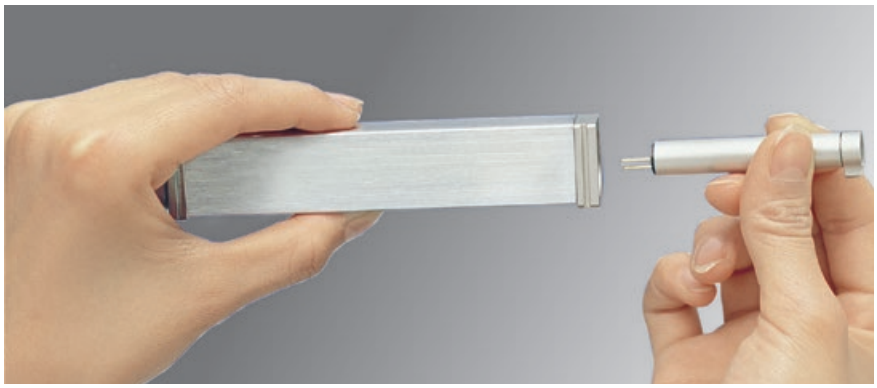


Flexible in mobile operations: the tracing driver can be used separately from the display unit

Standard model
E-35B tracing driver

With retraction unit
E-40A tracing driver
To minimize the risk of damage to the stylus, the detector is retracted into the housing when not in use.

With horizontal driver
E-45A tracing driver
Enables measurements in the axial direction in tight spaces, e. g. to measure crankshaft pins.



Exchangeable styli
Various styli can be used and easily exchanged as needed to fit the application. (see p. 63)

Probing force:	0.7 mN/4 mN
Stylus tip:	Diamond 2 µm/60° or 5 µm/90°
Skid:	Sapphire

Type	E-DT-SM10A	E-DT-SM11A	E-DT-SM12A	E-DT-SM13A
Application	Standard stylus	dia. from 6 mm	dia. from 3 mm	Grooves max. 7 mm deep

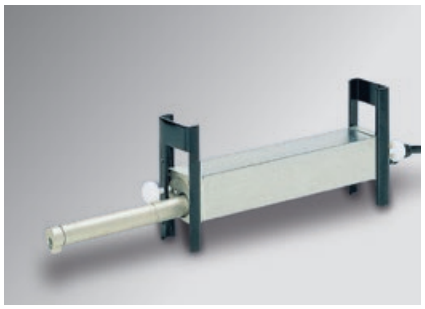
HANDYSURF
Accessories

High-speed thermal printer
with high resolution

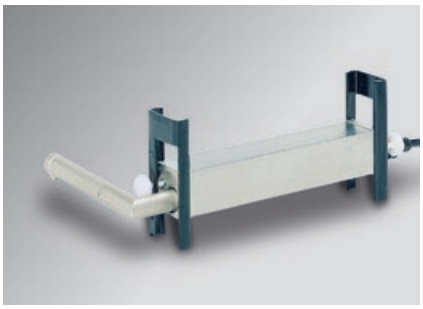
Column with granite base
Stable column with massive granite base plate (see also image to the right)

SURFCOM FLEX
Compact control and analysis unit with integrated printer and Excel-based evaluation software

Magnetic column with ball joints
Flexible magnetic columns with two ball joints and one swivel joint

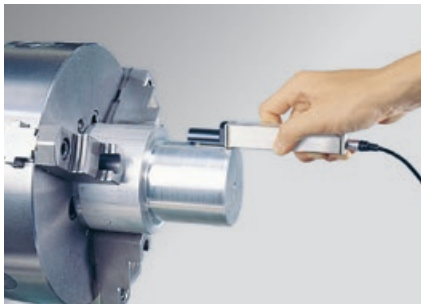


DT57506 extension
Extension of the sensing arm by 50 mm, e. g. for measuring deep boreholes

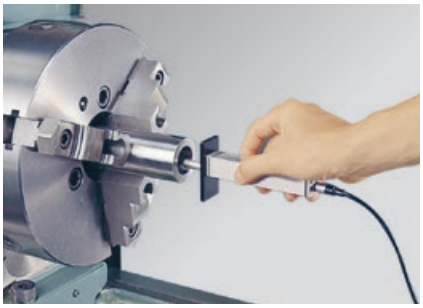


DT57707 extension adapter
The 90° offset extension enables lateral probing

E-WJ-S88A surface attachment
Attachment for manual measurement of flat surfaces



E-WJ-S85A shaft attachment
Attachment for manual measurement of shafts and cylinders



E-WJ-S86A orthogonal attachment
Alignment aid for reliable alignment at right angles to the bearing surface

SURFCOM 130

Mobile surface measuring instrument

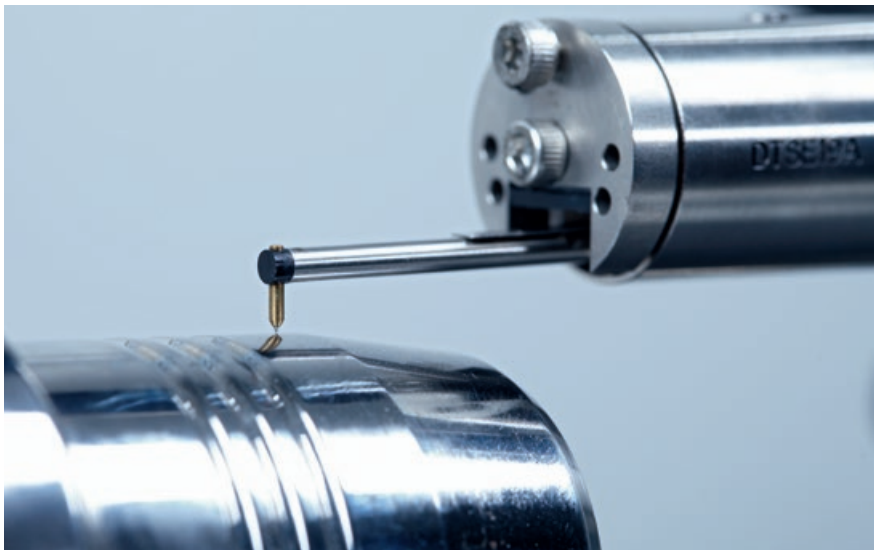
The SURFCOM 130 is designed for mobile use in production. The separate control and analysis unit features a touchscreen display and a printer. An interface enables external data storage and professional analysis with ACCTee PRO on a computer.

Compact tracing driver

- Highly accurate free stylus-and-arm system
- 50 mm traversing length for measuring waviness
- Large deflection range of up to 1.6 mm for measuring roughness on radii
- Easy to exchange the sensing arm

International analysis parameters

Select the required standard: ISO, CNOMO; ASME, JIS



Straightness accuracy	0.3 µm/50 mm
Traversing length	50 mm

Touchscreen control unit with integrated printer

The user-friendly touchscreen display is available in color. Thanks to the integrated printer, reports, graphics and notes can be printed easily.

Virtual notepad

The touch pen allows you to record notes and drawings on the display.

Configurable user interface

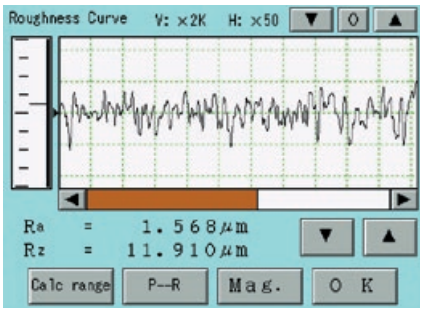
Create a customized menu that only contains the functions you use most.

User guidance
Helps measuring technicians configure all measuring conditions.

Automatic function
The measuring range, overall measuring length, cut-off and display magnification are automatically configured based on the surface quality.

Extensive analysis functions
- Evaluate all roughness values as per the standards: Ra, Rz, Rt, Rsm, etc.
- All waviness parameters
- Various filters, profile types and characteristics

Tilt correction
Six tilt correction methods for profile analysis: line, curve (ARC), first half, second half, beginning / end, spline.



Profile display and parameter results

User-defined main menu

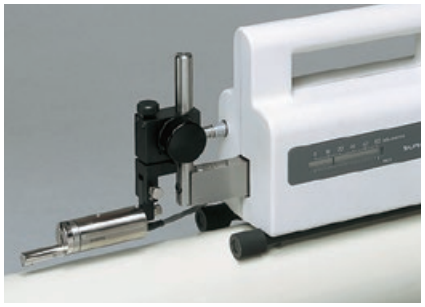
Special evaluations
Each parameter can be recalculated for selected profile areas. The corresponding area is easily configured via the cursor in the profile.

Memory card slot
A PCMCIA slot for saving and managing profiles, results, measuring programs and special programs.

PC interface
RS-232C for professional evaluation with ACCTee PRO roughness software

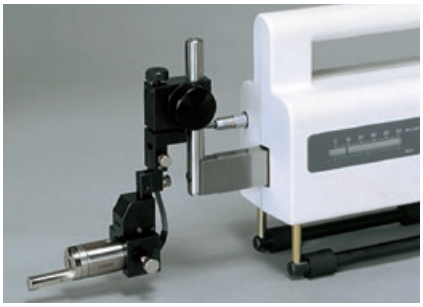
Language selection
German, English, French, Spanish, Portuguese and Japanese

SURFCOM 130
Accessories

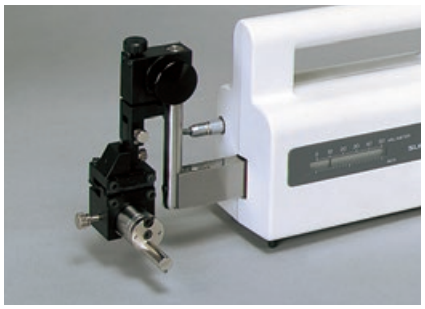


Roll foot, flat
E-MA-S62A
Attachment for easy positioning on shafts. For measurable exterior diameters of 60 mm and more

Roll foot, raised
E-MA-S63A
Raised attachment for easy positioning on shafts. For measurable exterior diameters of 60 mm and more



Universal stylus mount
E-DH-S107A
Stylus mount for measurements on non-flat surfaces
Z = –50 mm



Perpendicular stylus mount
E-DH-S17A
For lateral tracing in the feed direction

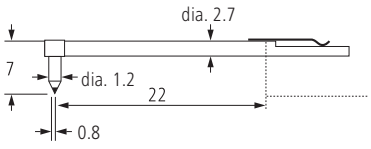
Battery set
E-MA-S65A
AC adapter, battery, charger

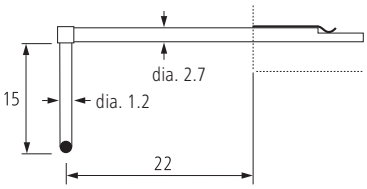
PCMCIA memory cards up to 1 GB
E-MU-S50C
Memory card for up to 7000 measuring conditions and measurement data

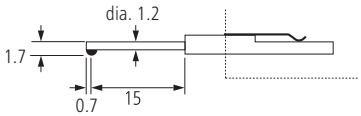
Measuring columns
Measuring columns for quickly and accurately adjusting the height and tilt of the tracing driver
Base plate (granite): 400 x 240 x 50 mm
Max. height (Z): 300 mm

SURFCOM FLEX
Compact control and analysis unit
(see p. 22)

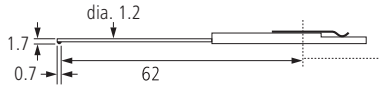
Sensing arms
Excerpt from our stylus catalog

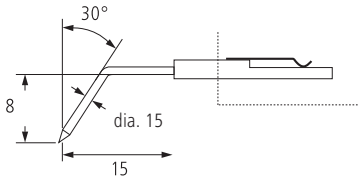


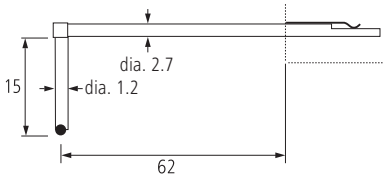




Cat. no.	1059-167	1079-358	1079-356
Length of sensing arm	22 mm	22 mm	15 mm
For boreholes larger than	dia. 7.5 mm	-	dia. 2 mm
For groove depths	<4 mm	<15 mm	-
Measuring range	± 400 µm	± 400 µm	± 400 µm
Stylus tip	2 µm/60°, diamond	2 µm/60°, diamond	2 µm/60°, diamond







Cat. no.	1084-495	1128-388	1054-833
Length of sensing arm	62 mm	15 mm	62 mm
For boreholes larger than	dia. 2 mm	-	-
For groove depths	-	-	<15 mm
Measuring range	± 800 µm	± 400 µm	± 800 µm
Stylus tip	2 µm/60°, diamond	2 µm/60°, diamond	2 µm/60°, diamond

SURFCOM FLEX

Mobile control and evaluation unit

The SURFCOM FLEX is an easy-to-use control and evaluation unit with an integrated printer. It can be used in combination with the HANDYSURF and SURFCOM 130 tracing drivers. Thanks to its ease of use and robustness, the SURFCOM FLEX is at home in the workshop.

The SURFCOM FLEX with optional clamping device for the E-35B or E-40B tracing driver

Small, lightweight and flexible

Thanks to its compact size and robust design, the SURFCOM FLEX controller can be easily transported and used anywhere. The small device also houses a printer. The 8.9 cm color display is very easy to read. Measuring results can be displayed numerically and graphically. They can also be printed using the report printer.

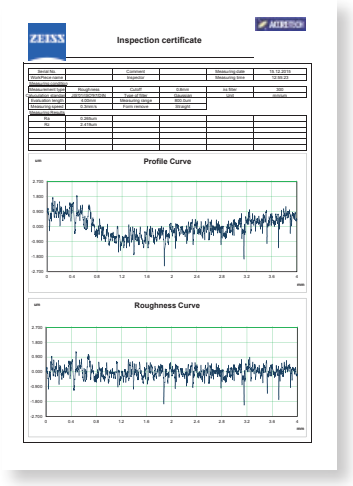
The SURFCOM FLEX can also be operated using a battery. A power supply unit is also included.

Memory and interfaces

Measuring conditions and results can be stored on the internal memory or on the enclosed 8 GB memory card (standard USB). A mini USB interface enables data evaluation on a computer. Excel-based evaluation software is included.

Options

- Holder for the E-35 or E-40 tracing driver
- Data transmission to CALYPSO coordinate measuring machine software for roughness, size, form and position in one report

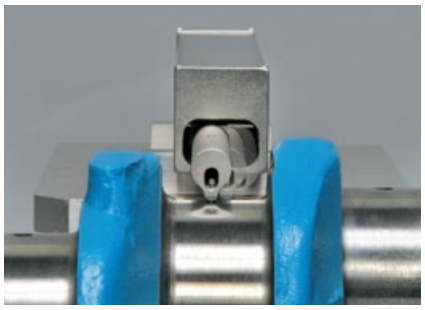


SURFCOM FLEX report

System combination

SURFCOM FLEX 35/40

For surface measurements on all flat surfaces – even vertically and overhead.



SURFCOM FLEX 45

For surface measurements in the axial direction in tight spaces, e.g. to measure crankshaft pins.

SURFCOM FLEX 50

Surface measurements with the SURFCOM 130 tracing driver. To capture roughness, profile and waviness parameters.


SURFCOM FLEX
POWER
MEMORY
COM
MEAS
GRAPH
PARAM
FUNCTION
CONDITION
PRINT
BACK
FEED
MENU
RETURN
ENTER
SLEEP
CHARGE

SURFCOM NEX

One system, every possibility: surface, contour or both?

All SURFCOM NEX machines in the 001 to 141 series use the same base column. Only the sensors are different. By purchasing a sensor, you can turn your surface measuring instrument into a contour measuring system – or vice versa. Furthermore, additional sensors can be retrofitted, e.g. a hybrid sensor or a white light sensor.

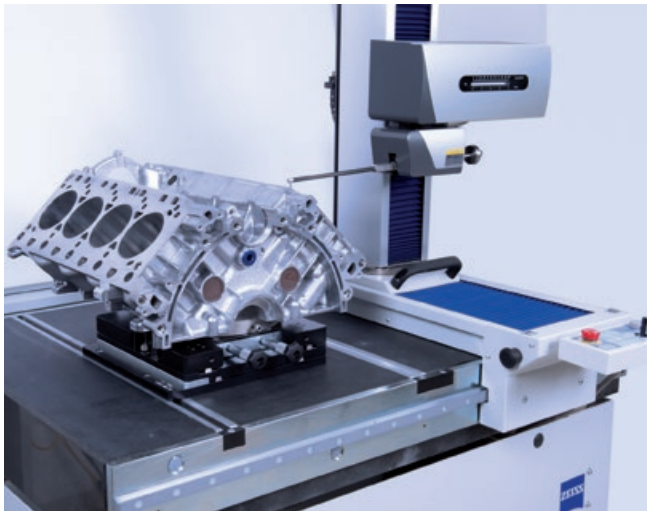
Benefits

- Future-proof modular system, can be upgraded on site
- Considerably faster, less maintenance and fewer vibrations than standard system designs thanks to the patented non-contact linear drive in the X axis
- Topography measurements up to seven times faster than systems with a spindle drive
- Can be used with numerous sensors: surface, contour, hybrid or white light sensors
- Topography function or lead twist measurement function can be quickly upgraded on site
- Optional rotation tracing driver for standards-compliant effective surface measurement on rotationally symmetric features
- Optional hand wheel to turn the tracing driver ±15°
- Can be upgraded through a combined CNC modular system: Y table, horizontal rotary table, vertical rotary table (see p. 32)
- Various furniture solutions for SD versions and fully enclosed DX versions or compact FX versions with integrated active vibration damping and a minimal footprint

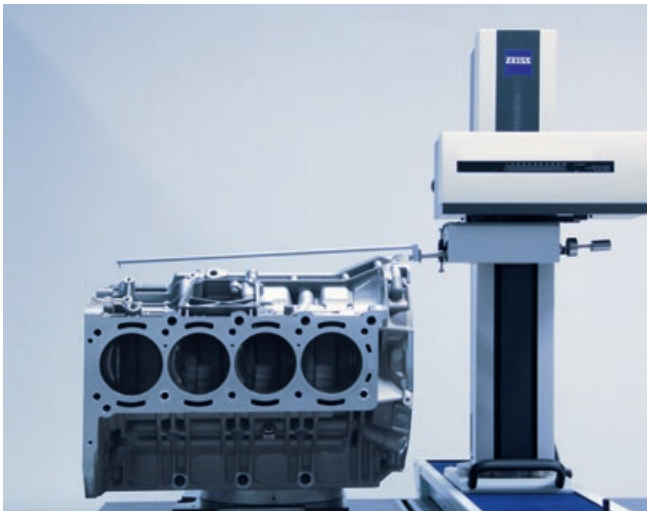
FX version: a compact and active vibration-damping base

DX version: measuring machine, including fully enclosed, active vibration-damping furniture

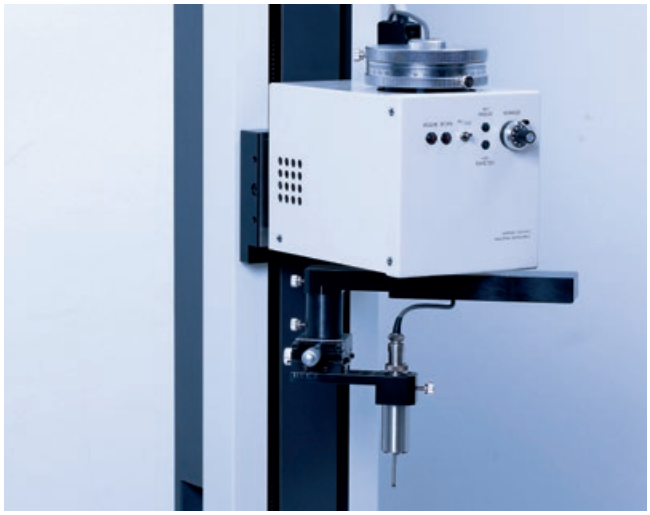
SD version: various furniture solutions available upon request



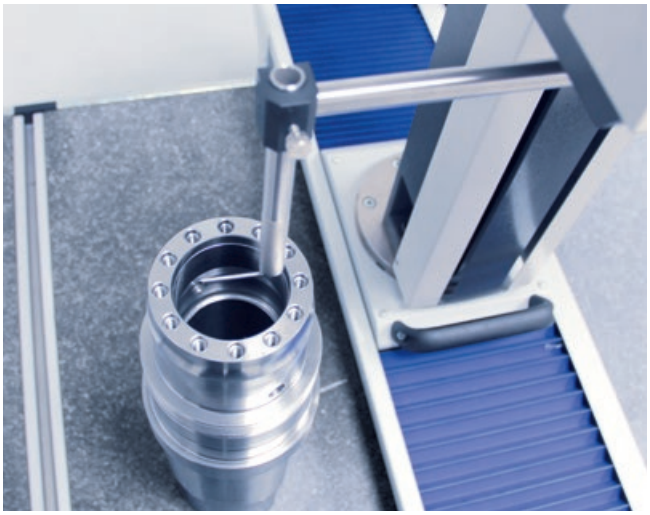
Tailored solutions, such as the XY positioning table, available upon request



Long standard styli (529 mm) for simple contour measurements on deep features



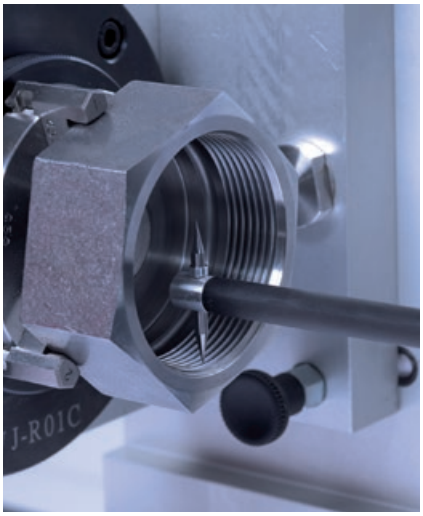
Optional rotating tracing driver for standards-compliant inspection of rotationally symmetrical workpieces



Surface measurements on plane surfaces, even with very deep features

Optional: hand wheel for turning the tracing driver up to ±15°

Magnet fixture for precise positioning and quickly changing the sensing arm



Optional T stylus for simple diameter and wall thickness measurements

Size variations

Sizes	
X tracing driver	100 or 200 mm
Measuring height	250, 450 or 650 mm
Base plate	600 x 450 mm or 1,000 x 450 mm

Size nomenclature

1_ X tracing driver 100 mm
2_ X tracing driver 200 mm
_**2** Z measuring height: 250 mm, Base plate: 600 x 450 mm
_**3** Z measuring height: 450 mm, Base plate: 600 x 450 mm
_**4** Z measuring height: 450 mm, Base plate: 1,000 x 450 mm
_**5** Z measuring height: 650 mm, Base plate: 1,000 x 450 mm

e. g. SURFCOM NEX 001-SD-**23**:
200 mm X tracing driver, 450 mm measuring height, 600 x 450 mm base plate

SURFCOM NEX modular system

The measuring task determines the sensor

In order to be able to optimally meet your particular needs, the SURFCOM NEX system offers different sensors which can be combined with each other.

Roughness

SURFCOM NEX 001

Roughness

White light sensor

Contour

SURFCOM NEX 040

Contour

SURFCOM NEX 030

Roughness and contour

SURFCOM NEX 100

Sensor nomenclature

_ _1 Surface
1_ _ Hybrid
_3_ Contour
_4_ Contour with increased precision and automatic probing force

An overview of the SURFCOM NEX system

Optional for all systems

- Expandable sensors: surface, hybrid, contour
- Topography and lead twist measurement function can be quickly upgraded on site
- Optional rotating tracing driver
- Hand wheel for turning the tracing driver (up to ±15°)
- CNC module for automation
- Different furniture solutions

White light sensor
Quick optical surface measurement

Sensors

- Chromatic interferometric surface sensor

Technical data summary

Resolution
10 µm

Measuring accuracy
0.1 µm

Working distance
4.5 mm

Measurement angle to object surface
90° ± 30°

Measuring spot diameter
5 µm

SURFCOM NEX 001
Convenient measuring station for surface measurements

Sensors

- Surface sensor

Technical data summary

Resolution
0.1 nm at 6.4 µm range
20 nm at 1,000 µm range

Straightness error
0.15 µm with 100 mm measuring path

Traversing length/resolution
0.016 µm

Measuring speed
up to 20 mm/s

Positioning speed
up to 60 mm/s

SURFCOM NEX 100

Measure contours and roughness quickly and precisely in one measuring run

Sensors

- Highly accurate, wide-range dual probe for contour and surface measurements
- Measuring range up to 15 mm

Technical data summary
Resolution
1 nm with 0.05 mm measuring path 100 nm with 5 mm measuring path
Straightness error
0.15 µm with 100 mm measuring path
Z axis measuring error
±(1.0 + 2H/100) µm
Traversing length/resolution
0.1 µm
Stylus deflection
5/10/15 mm
Measuring speed
up to 20 mm/s
Positioning speed
up to 60 mm/s

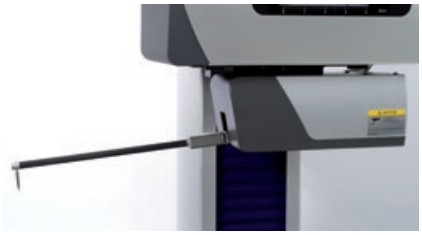
SURFCOM NEX 030

A flexible CNC measuring station for easy contour measuring, collision protection comes standard

Sensors

- Contour sensor
- Easy to change sensing arms by using a magnetic change-out interface
- Manual probing force configuration

Technical data summary
Resolution
0.04 µm
Straightness error
1 µm with 100 mm measuring path 2 µm with 200 mm measuring path
Z axis measuring error
±(1.5 + 2H/100) µm
Traversing length/resolution
0.016 µm
Stylus deflection
60.00 mm
Measuring speed
up to 20 mm/s
Positioning speed
up to 60 mm/s



SURFCOM NEX 040

Flexible CNC measuring station for easy contour measurements with increased precision and automatic probing force configuration and collision protection comes standard.

Sensors

- Contour sensor
- Easy to change sensing arms by using a magnetic change-out interface
- Automatic probing force configuration in the range of 2 to 30 mN

Technical data summary
Resolution
0.02 µm
Straightness error
1 µm with 100 mm measuring path 2 µm with 200 mm measuring path
Z axis measuring error
±(0.8 + 2H/100) µm
Traversing length/resolution
0.016 µm
Stylus deflection
60.00 mm
Measuring speed
up to 20 mm/s
Positioning speed
up to 60 mm/s

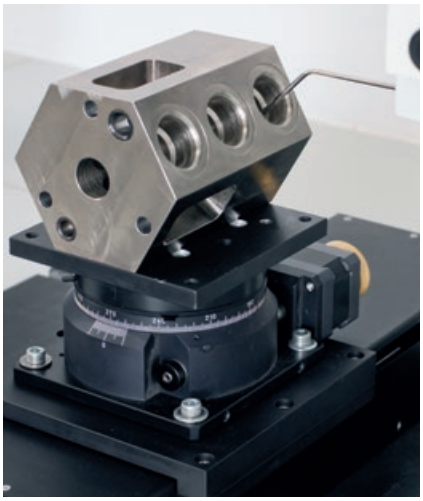
Automation with the CNC modular system

Three combinable modules

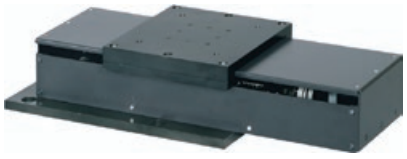
The CNC modular system enables the automation of measuring runs on SURFCOM NEX systems. It is comprised of three modules: a positioning table in the Y direction, a horizontally arranged rotary table and a vertically arranged rotary table. All modules can be combined and can be operated with two- or four-axis control as needed.

Benefits

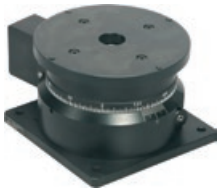
- Upgradeable and adaptable
- No special instruments required
- Programmable using Teach-in with the system software
- Customized measuring equipment for automation upon request



Combination of Y positioning table and rotary table



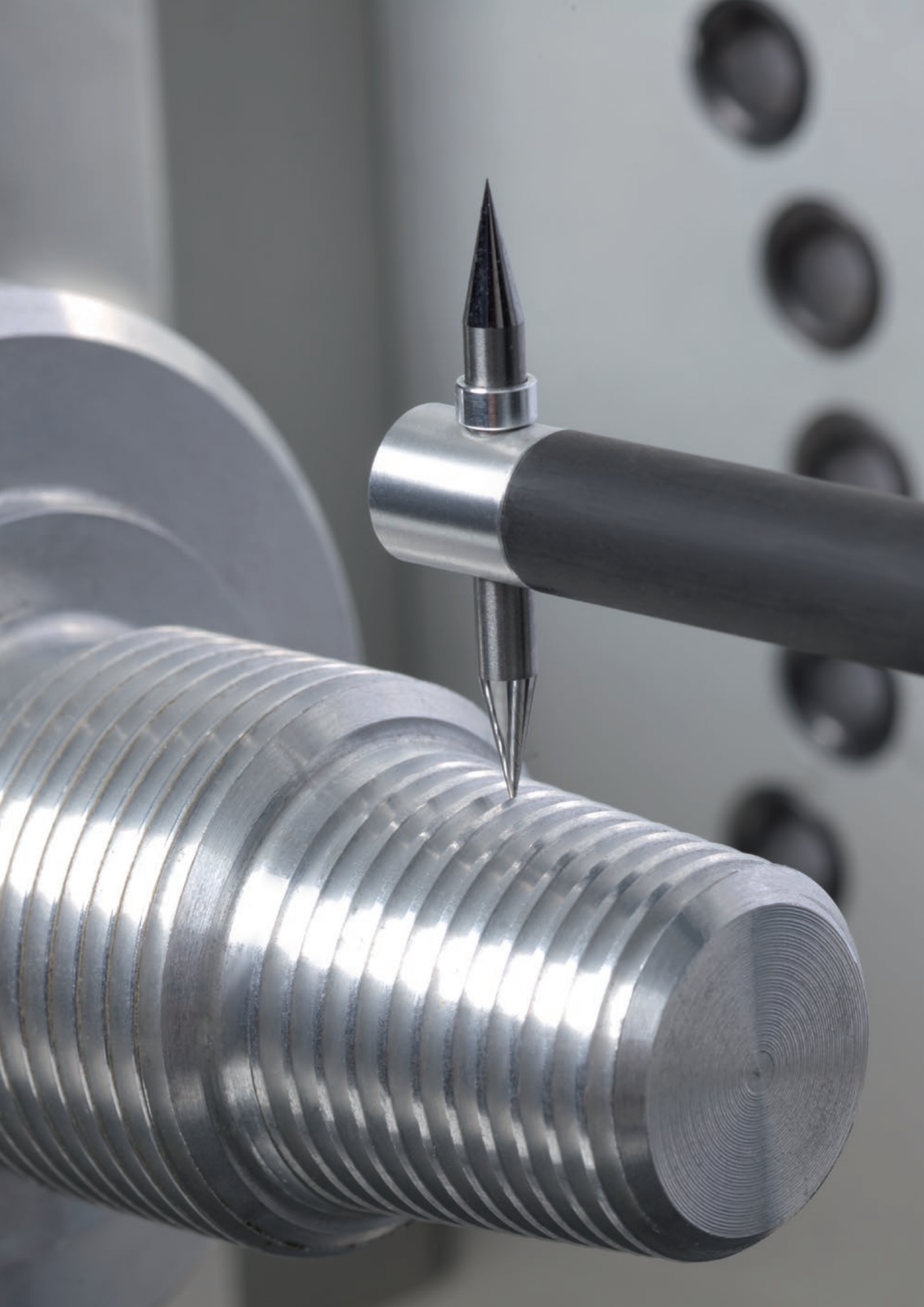
Positioning table in Y direction



Horizontal rotary table

Vertical rotary table

	Y table	Horizontal rotary table	Vertical rotary table
Cat. no.	E-AT-S105A (E-AT-S106A)	E-AT-S107A (E-AT-A144A)	E-AT-S108A
Traversing length	100 mm (200 mm)	360°	360°
Travel speed	50 mm/s	20°/s	20°/s
Positioning accuracy	20 µm	0.03°	0.03°
Max. load	30 kg	15 kg (30 kg)	5 kg
Weight approx.	19 kg (22 kg)	2.5 kg (10 kg)	3.2 kg



Patented linear drive for maximum measuring productivity

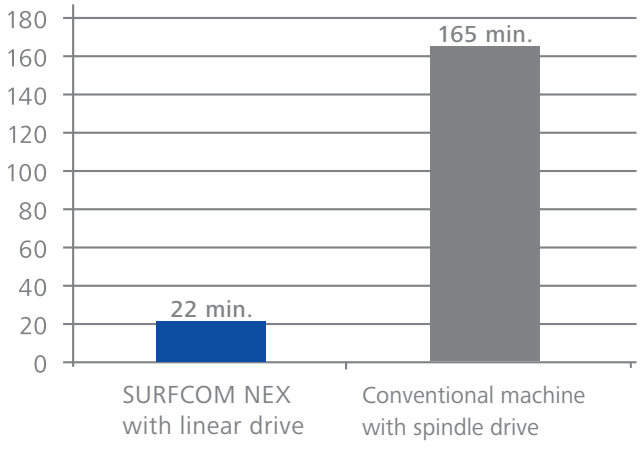
The contour and surface measuring instruments from ZEISS feature a linear drive in the X axis. Compared to the standard spindle drive, significantly higher travel speeds are possible with this magnetic linear drive. Noise from the spindle or spindle eccentricity are avoided. The scale of the X axis is equipped with temperature compensation.

Seven times faster than spindle drives
The patented linear drive enables maximum measuring speeds from 0.02 – 60 mm/s. For topography measurements, SURFCOM NEX completes the measuring job up to seven times faster than a system with a spindle drive.

Friction-free measurements
The linear drive works without any vibrations: it hovers over a magnetic field without contact or friction.

Temperature compensation in the tracing driver
The integrated temperature compensation in the tracing driver at 20 °C ± 5 °C ensures accuracy.

Measuring time comparison for topography measurement



20x20 mm measuring surface, 1,000 measuring lines

3-D topography measurement

The accessories and software from ZEISS enable you to transform your SURFCOM NEX surface measuring instrument into a topography measuring station. The patented linear drives on SURFCOM NEX systems provide the ideal conditions for this.

Y tracing driver
for the SURFCOM NEX 001 through the NEX 041

The patented Y tracing driver moves the sensor line-by-line in the Y direction during topography measurements. Since the part does not have to be moved, the Y tracing driver can also be used to measure very heavy components.

Measuring path	13 mm
Measuring increments	1 µm
Straightness accuracy	1 µm/13 mm

Y sliding table
for the SURFCOM NEX 001 through the NEX 041

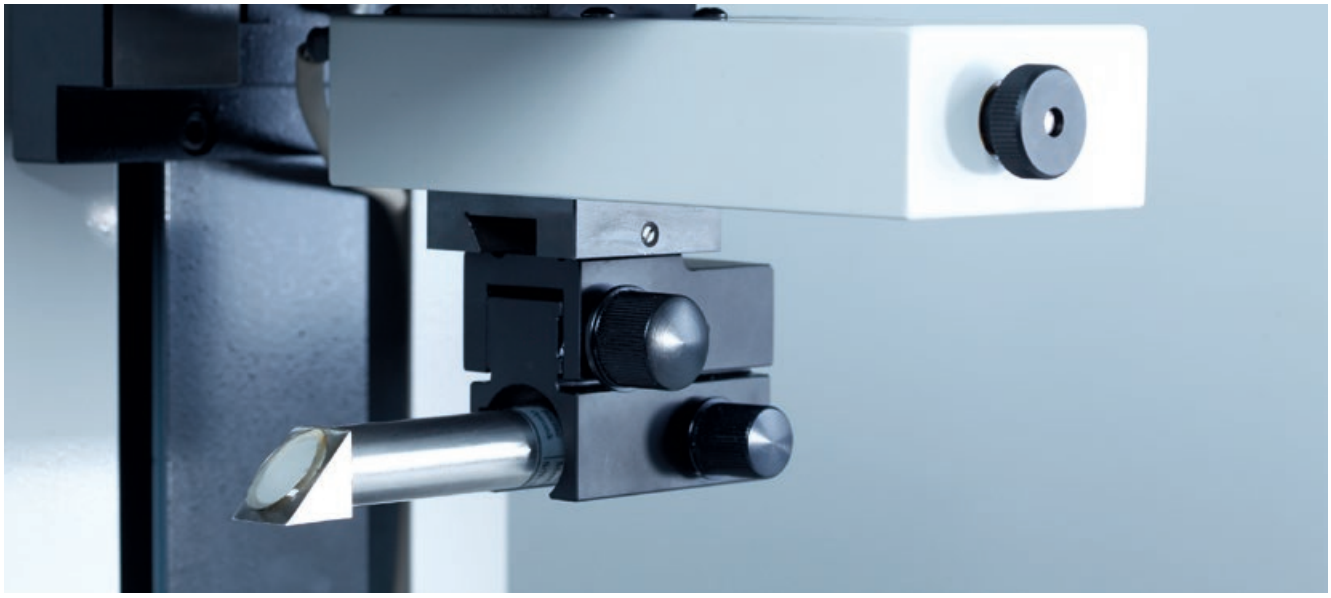
The Y sliding table is a precise positioning table to move the component in the Y direction line-by-line during a topography measurement. Heavy-load configuration upon request.

Measuring path	50 mm
Measuring increments	1 µm
Straightness accuracy	0.05 + 3L/1,000 µm
Component weight	5 kg

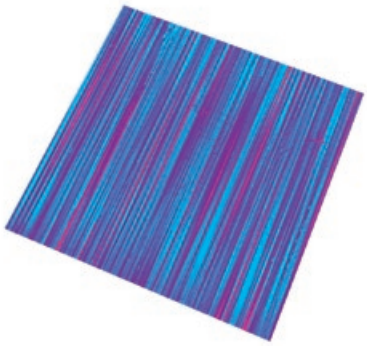
Y sliding table
for the SURFCOM CREST

The Y sliding table is a precise positioning table to move the component in the Y direction line-by-line during a topography measurement. Heavy-load configuration upon request.

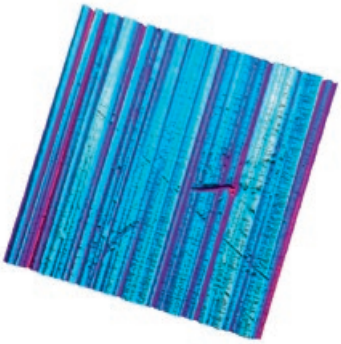
Measuring path	100/150/200 mm
Measuring increments	1 µm
Straightness accuracy	0.05 + 3L/1,000 µm
Component weight	10 kg



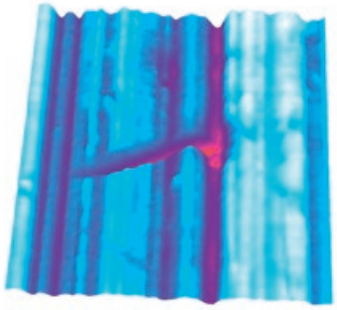
Y tracing driver with white light sensor for topography measurements



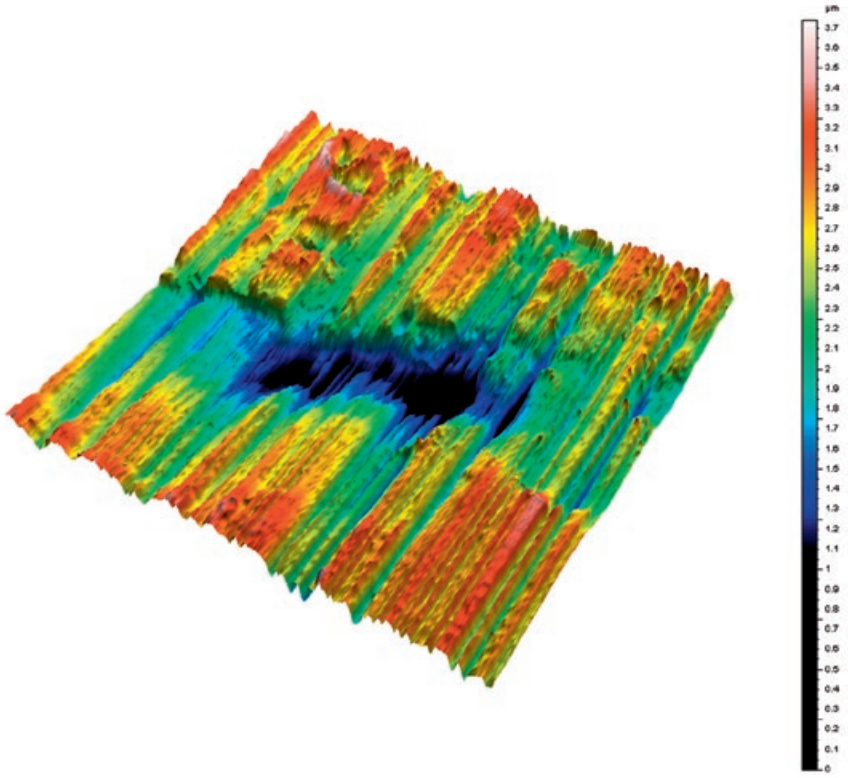
1st magnification level



2nd magnification level



3rd magnification level

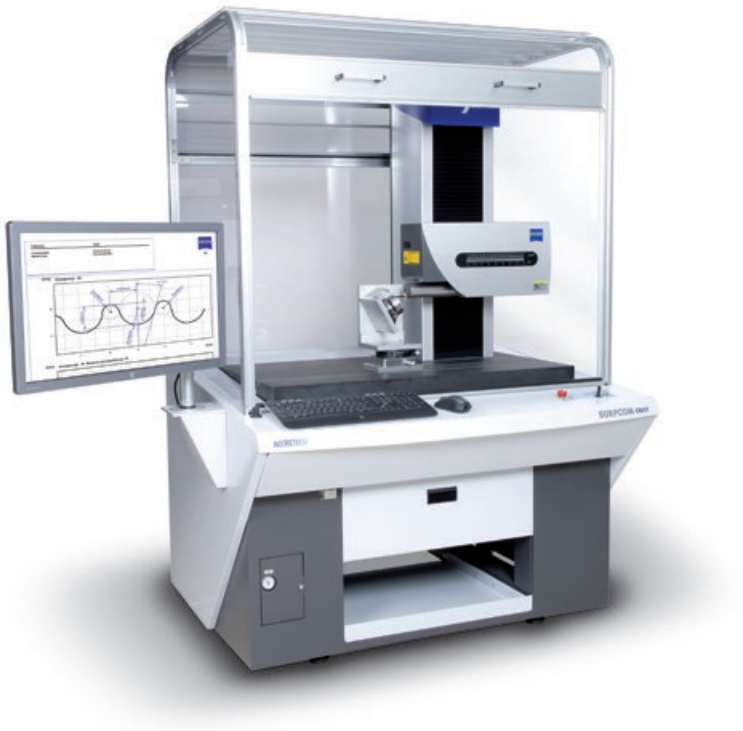


SURFCOM MAP software

- 3D display and analysis of topographical measuring data
- Wide range of evaluation possibilities
- Distance and angle measurements with freely selectable profile points
- Fast generation of measuring reports
- Tolerance input with automatic inspection of the measuring results
- Different distribution options: SPC, qs-STAT, PiWeb

SURFCOM CREST

CNC measuring station for combined contour and surface measurement



SURFCOM CREST

Precise, universal and dynamic – the SURFCOM CREST is the flagship for contour and surface measuring technology from ZEISS and is the benchmark for accuracy and speed. The SURFCOM CREST measures surface parameters and contours in one step, considerably increasing measuring productivity compared to conventional systems.

The SURFCOM CREST flexes its muscles where precision and throughput are vital: in the automotive, mechanical engineering and medical technology industries. For example, it is ideal for lenses, precise bearings, drive spindles, as well as accurate milled, ground, honed and lapped parts.

Advantages

- Extremely stable and highly accurate measuring results ensured by a resolution of 0.31 nanometers. The resolution of the SURFCOM CREST is higher than conventional systems by a factor of five
- Laser interferometer as a measuring system for maximum accuracy. Measuring error in the X direction: ± (0.2 + L/1,000) µm
- Extremely good ratio of measuring range to resolution period. The slightest surface roughness and contours over a very large measuring range can be measured in one run.
- More throughput thanks to extensive automation possibilities
- Higher flexibility for slanted features through CNC swivel tracing driver, ± 45° swivel range and 200 mm tracing driver
- Long penetration depth for measurement of deep features
- Easy automatic measurement thanks to cylindrical stylus-and-arm system
- Easy diameter or wall thickness measurement with T stylus
- More accurate and universal thanks to the outstanding ratio of the measuring range to resolution: 42 million to 1

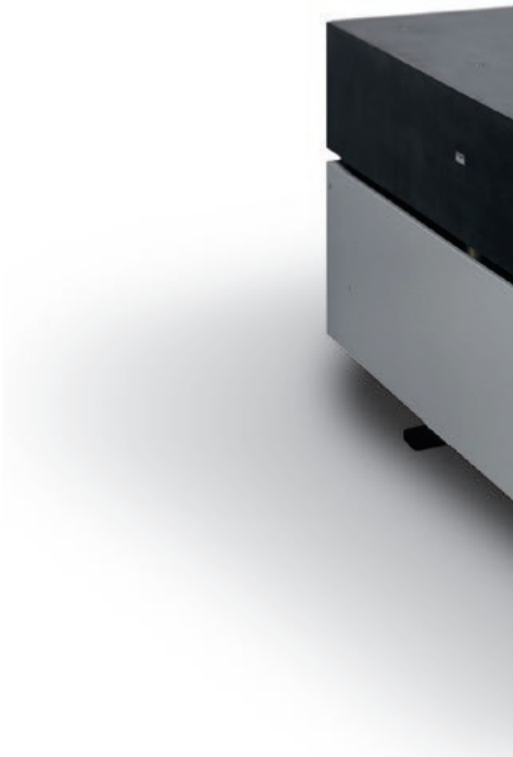
Technical data summary	
Resolution	0.31 nm (50 mm stylus)
X axis straightness error	0.11 µm with 200 mm measuring path
X axis measuring error	± 0.4 µm with 200 mm measuring path
Traversing length/resolution:	200 mm/0.54 nm
Stylus-and-arm deflection:	13 mm (50 mm stylus) 26 mm (100 mm stylus)
Measuring speed	0.03 mm/s – 20 mm/s
Positioning speed	up to 200 mm/s

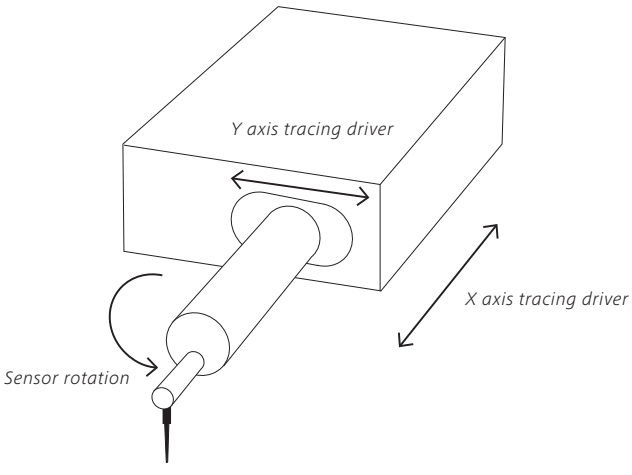
SURFCOM C5

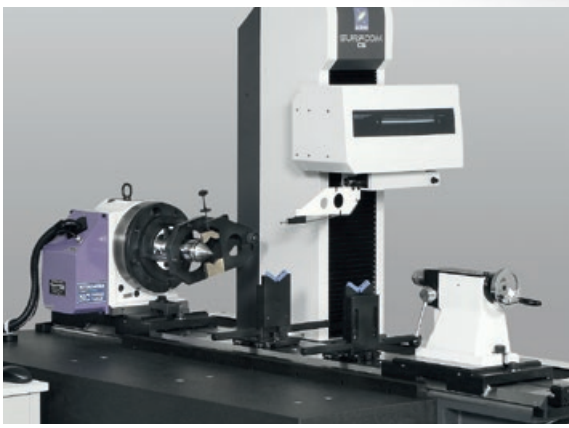
Fully automatic roughness measuring on motor components and shafts

SURFCOM C5

- Ideal for the automated surface measurement of engine components such as cylinder blocks and cylinder heads
- Designed for quality assurance in volume production
- Increased productivity through fully automatic shop floor surface measurement
- Highly flexible: the instrument's design is perfect for connections with component-specific equipment
- Faster, more reliable and more economical thanks to fully automated surface measurement
- Best reachability of the measuring site through 5 CNC axes
- Short setup times through integrated patented Y tracing driver in the X axis
- Measurements in all directions using the integrated rotation sensor
- Considerably faster, less maintenance and fewer vibrations than standard systems thanks to its patented non-contact linear drive (X axis)
- High positioning speeds of 100 mm/s for high measuring efficiency, even on large components
- Extensive patented safety concept – for maximum operator and machine safety







The SURFCOM C5 Type S: with additional rotary axis for measuring crankshafts and cam shafts

Technical data summary	
Measuring range/resolution (Z axis)	500 mm/0.1 µm
Measuring range/resolution (X axis)	200 mm/0.1 µm
Measuring range/resolution (Y axis)	800 mm/0.1 µm
Measuring range/resolution (Y transverse tracing driver)	30 mm/0.1 µm
Positioning speed	100 mm/s
Measuring speed	0.03–20 mm/s

Additional instrument configurations upon request

RONDCOM Form Testers

Rotary table instruments and spindle form testers

RONDCOM TOUCH

RONDCOM 31, RONDCOM 41

RONDCOM NEX

RONDCOM Grande

RONDCOM NEX Rs

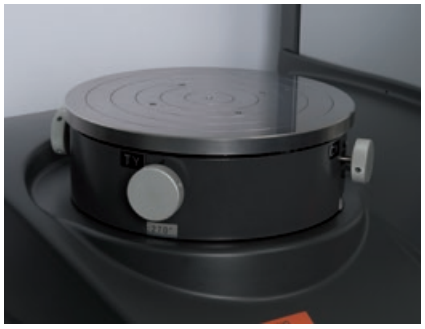
RONDCOM 60 A, RONDCOM 60 AS

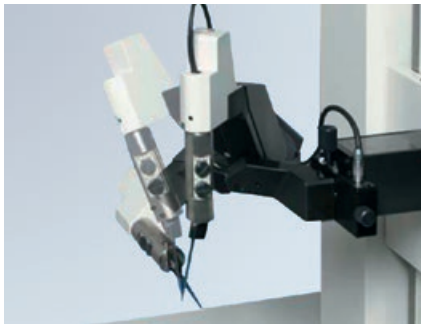
RONDCOM 65 B

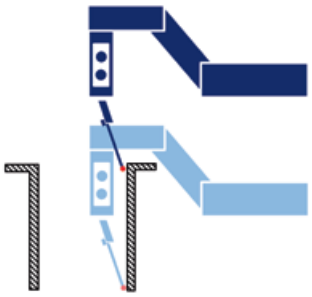
RONDCOM 73 A

RONDCOM 76 A

RONDCOM
Technological benefits



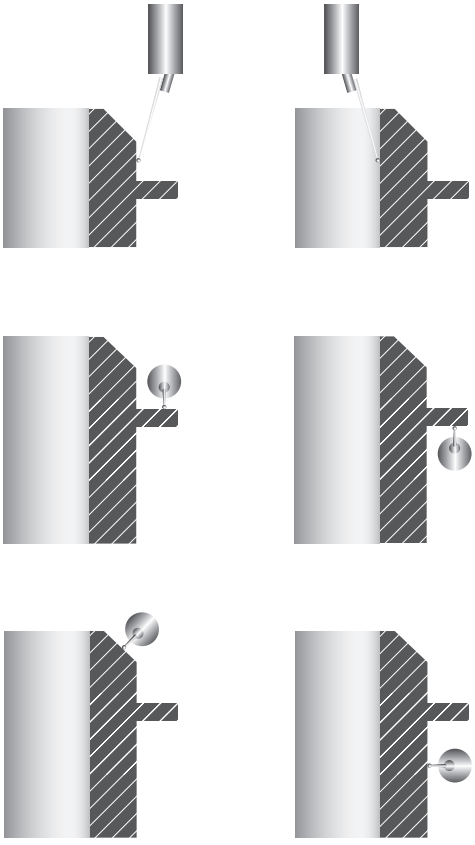




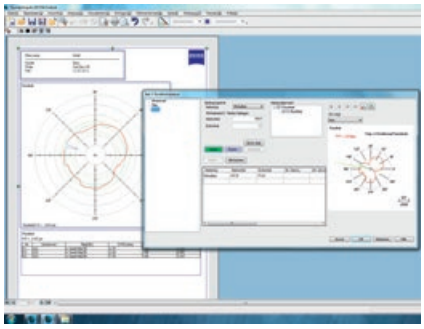
Air bearing technology
The heart of every RONDCOM form tester is the rotary table on air bearings. The benefits of air bearings compared to a rotary table with mechanical bearings are:

- High rigidity and long-term stability
- Non-contact travel, therefore drive vibrations do not affect the results
- No wear and tear
- No lubrication required
- High measuring speeds
- Maximum possible rotation accuracies of up to 10 nanometers

CNC offset probe mount
The patented CNC offset probe mount can be tilted and pivoted under CNC control to align a feature and is fully automated. The intelligent design makes it possible to reach deep measuring sites with short, accurate and specified styli. For example: using the 53 mm long standard stylus specified, it is possible to insert the stylus to a depth of 150 mm in an interior cylinder and perform a highly precise measurement. Thanks to the tilting and pivoting capabilities, measuring positions perpendicular to each other can be adjusted with virtually no movement of the R axis. This prevents measuring errors.



Different measuring positions can be quickly reached with the CNC offset probe mount – without compromising accuracy.

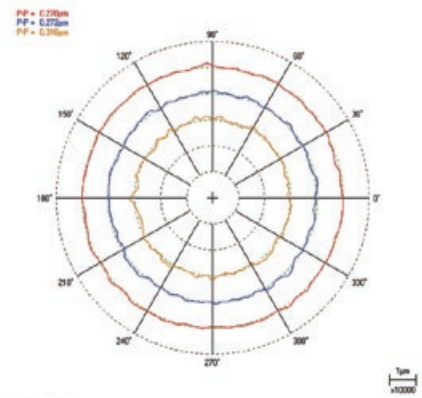


Dynamic calibration
The patented dynamic calibration of the probe reduces calibration time. Calibration is further simplified through the use of a special magnification standard. The calibration method is equal to a flatness measurement.

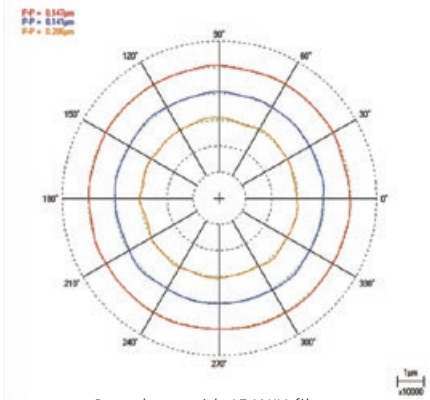
The high-resolution IMR probe
The IMR probe provides resolution of two nanometers over a wide range of ±1,000 µm. This high resolution enables the realization of an alignment routine in less than one minute.

ACCTee PRO Software
All RONDCOM systems are programmed using the intuitive ACCTee PRO software. The configurable interface can be quickly adapted to individual requirements. The repeat measurement at the push of a button is unique to ACCTee PRO. Changes in evaluation such as filter, centering method and nick cut out functions can be performed without a repeat measurement. The impact on the measuring results is displayed immediately. Inspection results can be displayed numerically and graphically. The display can be customized with just a few clicks of the mouse.

Stricter acceptance conditions
The accuracy that is achieved during the acceptance of a form tester depends on the filter and size of the stylus tip used for acceptance. Stronger filters and larger tips enable you to smooth over the results because fine irregularities are smoothed. Unlike many of our competitors, ZEISS uses a weak filter with 50 W/U and small stylus tips for acceptance. Roundness errors, which are more strongly filtered (15 W/U), are generally 40 % smaller.



Roundness with 50 W/U filter



Roundness with 15 W/U filter

	50 W/U filter	15 W/U filter
Roundness section 1 red	0.27 µm	0.147 µm
Roundness section 2 blue	0.272 µm	0.141 µm
Roundness section 3 yellow	0.316 µm	0.206 µm

RONDCOM TOUCH

A highly-compact form tester with a movable X axis

RONDCOM TOUCH with tablet

RONDCOM TOUCH
was developed to enable uncomplicated measuring during the manufacturing process. The size of the system is only 320 x 410 x 553 mm.

Compact design
Compared with previous systems in its class, the footprint and height of the RONDCOM TOUCH have been significantly reduced – sometimes by almost 50%.

Light-weight
Weighing just 26 kg, the RONDCOM TOUCH is one of the lightest systems in its category.

Horizontally movable column
The column of the RONDCOM TOUCH can be moved on the X axis, ensuring that the probe reaches the workpiece from all sides without any problem.

Options
- In addition to the standard desktop PC, the RONDCOM TOUCH can also be operated using a tablet with a touchscreen.
- The RONDCOM TOUCH can be connected to a tablet or printer via Bluetooth.
  Connection via a USB cable is also possible.

Advantages
- ACCTee PRO software with a graphic control unit for particularly fast and unproblematic alignment
- Measure the roundness of gears by including the tip circle

Technical data summary	
Roundness error[1]	0.02 + 0.0003* (50 W/U filter)
Measurable diameter	150 mm
Max. workpiece diameter	240 mm
Z axis straightness	–
Max. workpiece weight	15 kg
Z axis measuring range	160 mm

[1] µm + µm/mm measuring height

**Deviation from reference circle*

RONDCOM 31, RONDCOM 41

A solid form tester with high-quality functions

RONDCOM 41, with measuring Z axis

RONDCOM 31, without measuring Z axis

RONDCOM 41

Compact form tester with precision rotary table on air bearings and analysis functions from the high-class machines, such as fourier analysis

- Precise rotary table on air bearings for top radial runout properties and excellent measurement of narrow tolerances
- Patented software support with graphic user guidance for particularly easy and fast alignment
- High-quality measuring axis – for additional measurements of parameters such as cylinder form, parallelism, straightness, perpendicularity
- More effective through the use of semi-automatic measuring functions at a specified height
- Full-fledged, intuitive ACCTee PRO evaluation software (see p. 8)

Options

- 500 mm Z column for large parts

RONDCOM 31

- Like the RONDCOM 41 but with a shorter, non-measuring Z axis

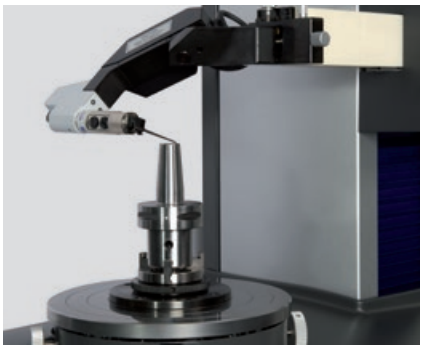
Technical data summary	
Roundness error[1]	0.02 + 0.0003* (50 W/U filter)
Measurable diameters	up to 250 mm
Max. workpiece diameter	400 mm
Z axis straightness (with RONDCOM 41)	0.5 µm (100 mm)
Max. workpiece weight	25 kg
Z axis measuring range	RONDCOM 41: 300 mm (500 mm) RONDCOM 31: 200 mm

[1] *µm + µm/mm measuring height*

**Deviation from reference circle*

RONDCOM NEX

Greatest accuracy in its class



CNC offset stylus mount

RONDCOM NEX

Highly-accurate form tester with the highest accuracy in its class and a wide range of applications

- Highly-accurate, wear-free rotary table on air bearings. Accuracy: 20 nanometers
- Higher throughput through fast, automatic alignment
- Large deflection range and high resolution of the detector and stylus system for higher throughput – pre-centering is not necessary for serial measurements
- Linear scale for highly accurate measurements in the R axis direction
- More accurate measurement via a CNC pivot around the measuring sphere
- Able to measure narrow tolerances
- Available as a SD version with different bases and tables, or as a space-saving DX version with active vibration-insulated measuring table and integrated computer as well as a compact FX version

Modular design

The RONDCOM NEX is available with a different range of functions as the RONDCOM NEX 100 (manual machine), the RONDCOM NEX 200 (automatic component alignment) and the RONDCOM NEX 300 (full CNC). The RONDCOM NEX 100 can be upgraded on-site at any time.

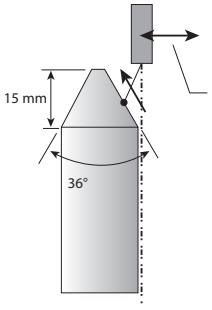
Onboard R axis ceramic

The RONDCOM NEX has a new R axis ceramic with higher rigidity and reduced weight. Thanks to the improved design, the RONDCOM NEX is even more stable against air circulation. The RONDCOM NEX has an expanded centration zone of ± 5 mm.

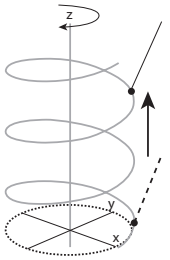
Technical data summary	
Roundness error[1]	0.01 + 0.00016* (50 W/U filter)
Measurable diameter	300 mm
Max. workpiece diameter	580 mm
Z axis straightness	0.1 µm (100 mm)
Max. workpiece weight	30 kg
Z axis measuring range	300 mm/500 mm

[1] *µm + µm/mm measuring height*

**Deviation from reference circle.*



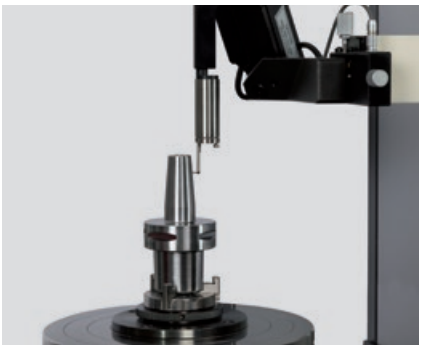
Improved angle measurement



Helix measurement

RONDCOM NEX Rs

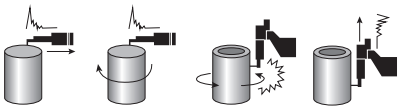
Highly-accurate measuring of forms and surfaces



CNC offset stylus mount

The RONDCOM NEX Rs
is a highly-accurate form measuring machine with a special rotary table for precisely measuring roughness and roundness on the R, T and Z axies.

- The ACCTee PRO integrated evaluation software has a simple user interface.
- Measure workpieces without interfering by using the test arm
- Easy to switch between the outer diameter and flatness
- Available as a comprehensive SD version, a space-saving DX version or a compact FX version

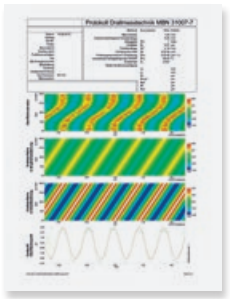


Possibilities of roughness measuring

Image of two measurement grids from axial profile cuts covering the area of the workpiece

36° Grid
- *72 profile cuts*
- *Distance 0.5°*
- *DG movement ≥ 15*

360° Grid
- *72 profile cuts*
- *Distance 5°*
- *DG movement < 15*



Example of a twist measurement

Modular design
The RONDCOM NEX Rs is available with a different range of functions as the RONDCOM NEX Rs 200 (automatic component alignment) and the RONDCOM NEX Rs 300 (full CNC).

Optional
- Measurement of shaft structures
- Twist measurement

Technical data summary	
Roundness error	0.01+0.00016* (50 W/U filter)
Measurable diameter	300 mm
Max. workpiece diameter	580 mm
Z axis straightness	0.1 µm (100 mm)
Max. workpiece weight	30 kg
Z axis measuring range	300 mm/500 mm
Radial roughness measurement	0.02 µm/4 mm Rt 0.2 µm/4 mm
Linear roughness measurement	0.02 µm/4 mm Rt 0.2 µm/4 mm

[1] µm + µm/mm measuring height

**Deviation from reference circle.*

RONDCOM 60 A, RONDCOM 60 AS

Highly-accurate form tester from the reference class

RONDCOM 60 A

Highly-accurate form tester from the reference class for excellent measurement of the tightest tolerances

- Ultra-accurate, wear-free rotary table on air bearings. Accuracy of 20 nanometers with a load capacity of 60 or 100 kg
- Extreme long-term stability through the quality design and heavy granite axes
- Maximum precision through R, Z and rotary axes on air bearings
- Incremental glass scale in the R axis direction
- Higher throughput thanks to fast, automatic alignment in less than one minute
- Large deflection range and high resolution of the detector and stylus system for higher throughput – centering is not necessary for serial measurements

Patented CNC offset stylus mount

For CNC-guided rotating and pivoting of the stylus

- Measurement below the R axis
- Deep penetration with the standard stylus

Options

- Customized R axis length for over-large component diameters
- Z measuring range available in 500, 800 and 1,000 mm

RONDCOM 60 AS

- Like the RONDCOM 60 A, but with even greater accuracy
- Nanometer accuracy for excellent measurement of even narrower tolerances thanks to optimized acceptance and correction methods
- Ultra-accurate, wear-free rotary table on air bearings. Accuracy: 10 nanometers; load: 60 kg

Technical data summary	RONDCOM 60 A	RONDCOM 60 AS
Roundness error[1]	0.010 + 0.0003* (50 W/U filter)	0.005 + 0.0003* (50 W/U filter)
Measurable diameter	420 mm (larger optional)	420 mm (larger optional)
Max. workpiece diameter	680 mm (larger optional)	680 mm (larger optional)
Z axis straightness	0.10 µm (100 mm)	0.05 µm (100 mm)
Max. workpiece weight	60 kg (100 kg optional)	60 kg

[1] *µm + µm/mm measuring height*

**Deviation from reference circle*

RONDCOM 65 B

Form tester in the ultra class

RONDCOM 65 B

- Ultra-accurate, wear-free rotary table on air bearings, 10 nanometer rotational error
- Extreme long-term stability through the quality design and heavy granite axes
- Ultra precision with R, Z and rotary axes on air bearings
- Thermally insulated, active vibration-insulated table
- Incremental scale in the R axis direction
- Higher throughput thanks to fast, automatic alignment in less than one minute

Optional:

Patented CNC offset stylus mount

For CNC-guided rotating and pivoting of the stylus

- Measurement below the R axis
- Deep penetration with the standard stylus

Options

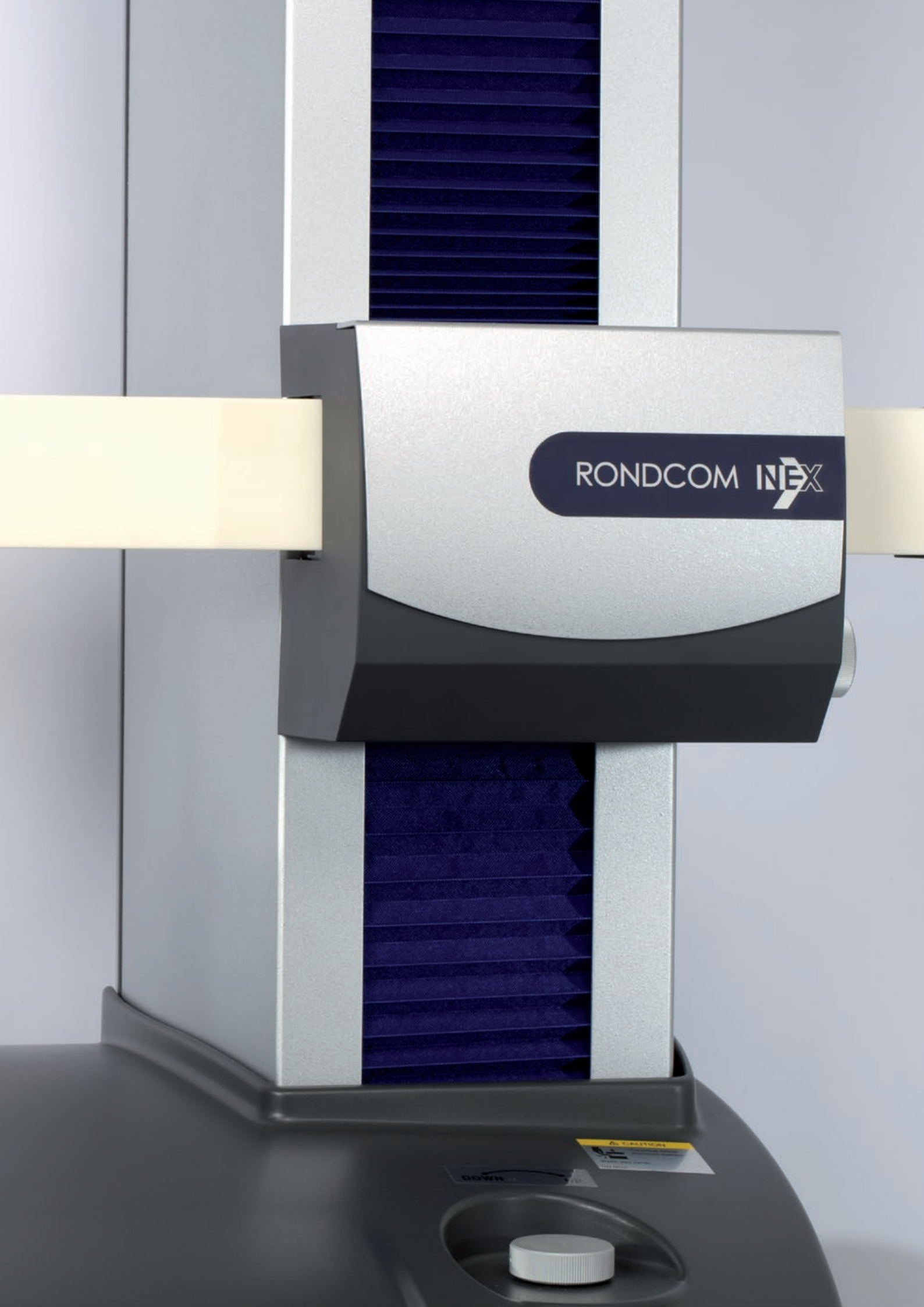
- 800 or 900 mm Z axis
- Optical white light sensor

Technical data summary	
Roundness error[1]	0.005 + 0.0002* (15 W/U filter)
Measurable diameter	420 mm
Max. workpiece diameter	680 mm
Z axis straightness	0.05 µm (100 mm)
Z axis parallelism	1.5 µm (500 mm)
R axis parallelism	0.5 µm (200 mm)
Max. workpiece weight	60 kg

[1] µm + µm/mm measuring height

**Deviation from reference circle*


CAUTION
Make calibration after
retracting detector
TY
TY
180°
270°

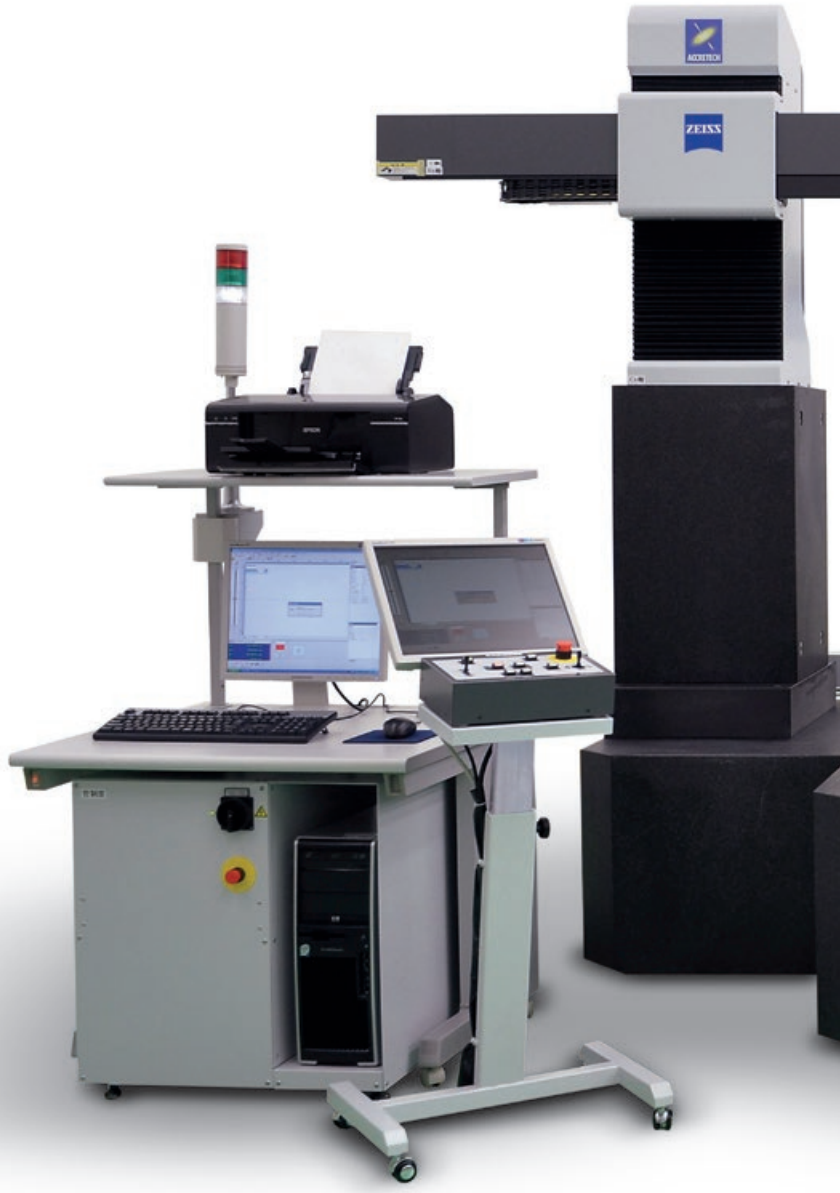

RONDCOM NEX

RONDCOM Grande

3-in-1 form, contour and surface measurement with one setup

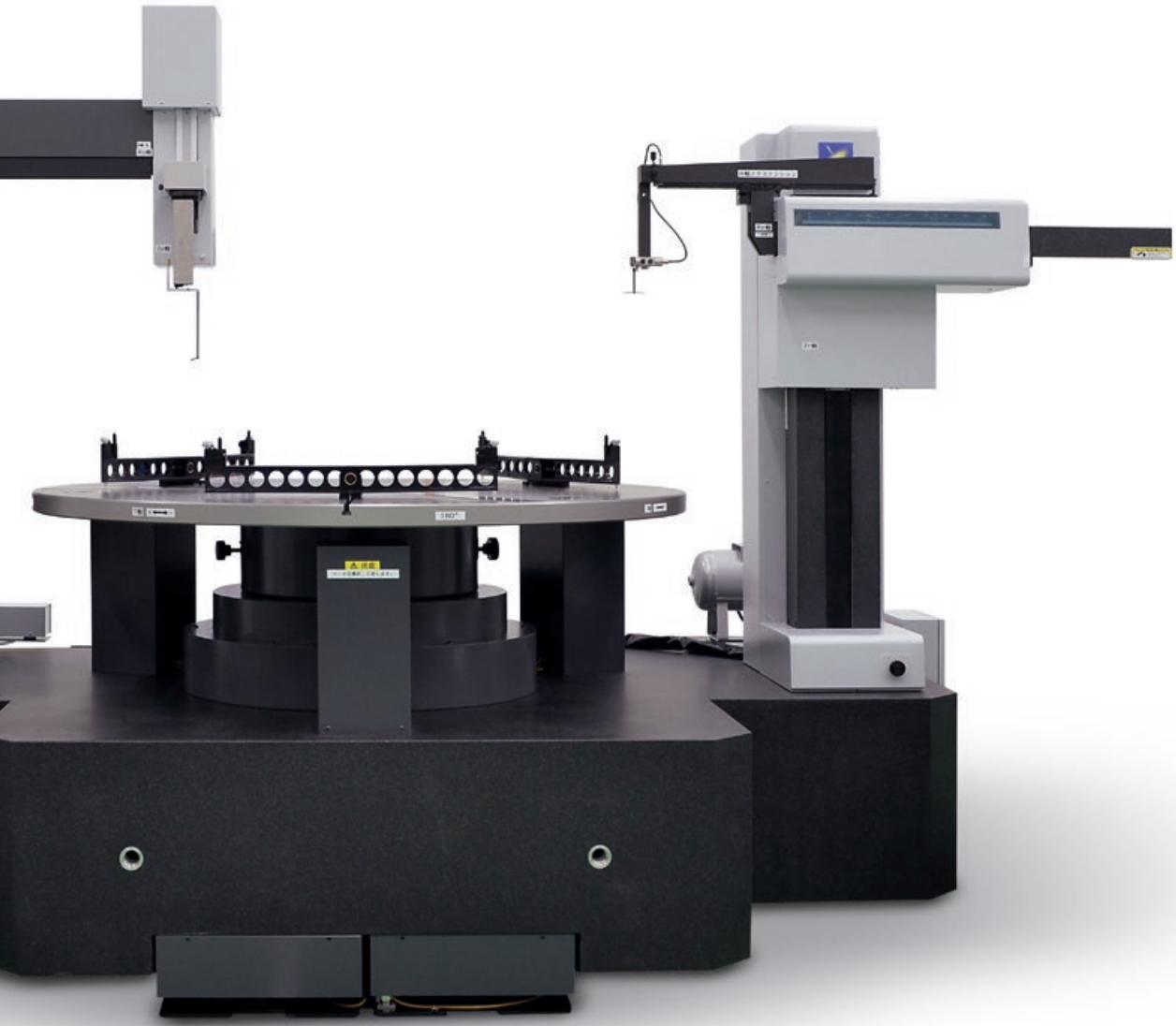
RONDCOM Grande

- For large, precision components for the wind, power and bearing industries
- Precision rotary table on air bearings with 80 nanometer rotation accuracy
- Form tester, contour measuring instrument and roughness measuring system in one
- Time saver: components are automatically measured in one setting
- New, highly precise air bearings for extremely reliable results
- Contour measurements with a large deflection range of ±26 mm at a resolution of 1.24 nanometers
- Roughness measurements with a large deflection range of ±2 mm at a resolution of 0.62 nanometers



Technical data summary	Form measurement
Measurable diameter	1,650 mm
Max. workpiece diameter	2,100 mm
Measuring height	500 mm
Roundness error[1]	0.08 + 0.001 (50 W/U filter)
Z straightness	0.15 µm (100 mm)
Max. workpiece weight	500 kg

[1] µm + µm/mm measuring height



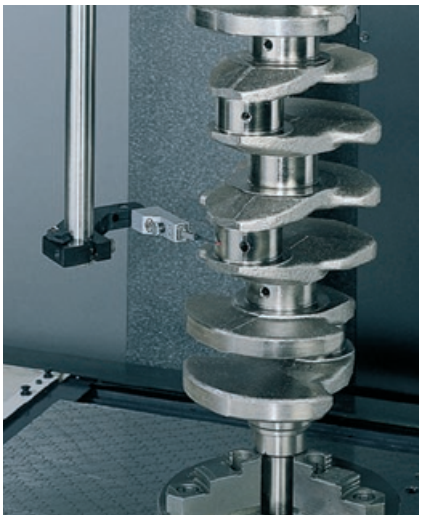
	Surface and contour measurements
Measurable diameters	150 - 1,700 mm
Max. workpiece diameter	2,100 mm
Measuring range height	40–540 mm
Roughness measuring range	± 13 mm
Roughness resolution	0.62 nm
Contour measuring range	± 26 mm
Contour resolution	1.24 nm

RONDCOM 73 A

Spindle form tester with large measuring range for heavy workpieces

RONDCOM 73 A
Universal spindle form tester with a large measuring range for heavy workpieces.

- More throughput thanks to automatic alignment and automatic CNC measuring runs
- More tolerance flexibility for production through high measuring accuracy
- Long-term stability through highly rigid machine design
- Easy to use thanks to modular ACCTee PRO software
- Fast CNC inspection plans via teach-in or offline programming
- Flexible thanks to extensive accessories and individually configurable equipment concept
- Ideal for applications such as cylinder heads, engine blocks, crankshafts and cam shafts, and for highly-accurate measurements on oversized workpieces



Crankshafts are among the main applications for spindle form testers from ZEISS

Technical data summary	
Roundness error	0.06 µm (50 W/U filter)
Z axis measuring path	1,000 mm
Z axis travel speed	up to 30 mm/s
R axis traversing length	50 mm
Max. measurable diameter	450 mm
Max. workpiece weight	200 kg

RONDCOM 76 A

The highest efficiency and accuracy in its class

RONDCOM 76 A

Spindle form tester featuring the highest efficiency and accuracy in its class for heavy workpieces.

- Reduced measuring times thanks to high travel speeds of 100 mm/s on all axes
- More throughput thanks to automatic alignment and automatic CNC measuring runs
- Fully automatic control of all 7 axes
- More tolerance flexibility for production through high measuring accuracy
- Machine bed and Z axis made of non-warping hard stone for long-term stability
- Integrated anti-vibration table with active damping
- Highly precise air bearings in X, Y, Z and rotation axes – low maintenance and durable
- Reliable thanks to extensive collision protection and its design
- Parallelism measurements via highly accurate and specified axes
- Informative multi-flatness evaluation in the R axis
- Exact diameter measurement
- Easy to use thanks to modular ACCTee PRO software
- Fast CNC inspection plans via teach-in or offline programming
- Flexible thanks to extensive accessories and individually configurable equipment concept
- Ideal for applications such as cylinder heads, engine blocks, crankshafts and cam shafts, and for highly-accurate measurements on oversized workpieces

Technical data summary	
Roundness error[1]	0.04 + 0.0003 (50 W/U filter)
Z axis measuring path	1,000 mm (optional 1,500 mm/2,000 mm)
Z axis travel path	700 mm (optional 1,500 mm)
Y axis travel path	200 mm
R axis traversing length	290 mm
Travel speed	100 mm/s
Max. measurable diameter	500 mm
Max. workpiece weight	200 kg (optional 1,000 kg)

[1] *µm + µm/mm measuring height*

Robot loading

Automatic serial measurements

In the production of serial componets with narrow tolerances like radii, contours and roughness, the robot loading of the SURFCOM NEX and the RONDCOM NEX work most efficiently – workpieces are loaded automatically.

RONDCOM NEX robot loading

RONDCOM NEX robot loading

Greater measuring productivity

Robot loading enables fully automated and unmanned measurement of entire component pallets. The components and the loading can be fully automated with our solutions.

We offer one-stop automation, measuring programs, workpiece clamping, workpiece pallets as well as stylus and enclosures.

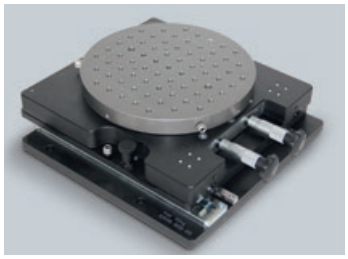
Advantages

- Safer and more cost-efficient: measure more components efficiently using an automated process
- Measure on the shop floor: an enormous reduction in transportation and handling times
- Automated pallet measuring for a greater measurement throughput
- Combine CNC-rotation and sliding modules – for the complete automated measurement of components
- Automated robot loading is possible
- All CNC-modules can be upgraded later
- Easy programming with Teach-In
- Enjoy the benefits of our long-time project and experience with automation

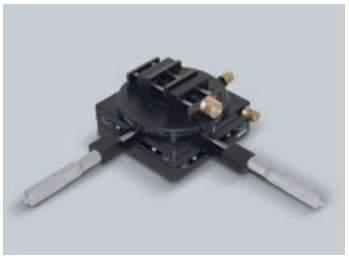
Accessories

Excerpt from our complete product catalog

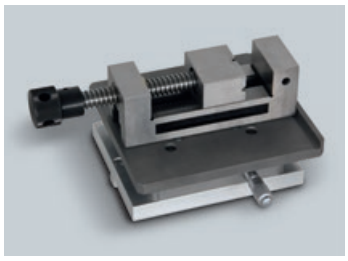
SURFCOM NEX



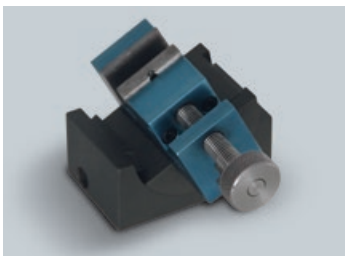
Large Y positioning and rotary table
200 mm linear guideways, precision configuration via a micrometer screw
Cat. no.
626108-9050-010



XY precision positioning table
With centering vise, precision configuration via a micrometer screw
Cat. no.
625006-3085-000

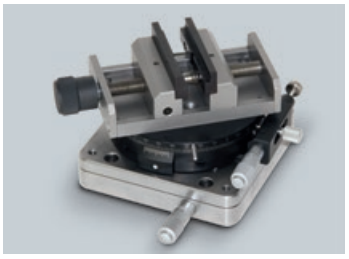


Precision vise
With sliding unit (Y) and stop plate for fast alignment
Cat. no.
626108-9021-050



Small angle vise
For small components
Cat. no.
625004-0034-000

Precision angle vise
Tip range ± 70°, rotation range°, ideally suited for the precision positioning table
Cat. no.
626108-9010-000



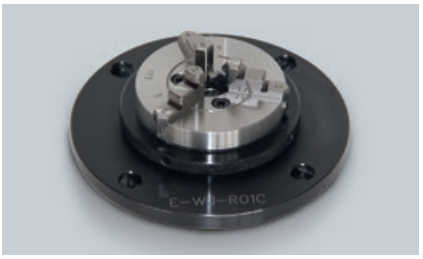
Sliding unit (Y), rotary unit and centering vise
Modular combinable assembly

Name	Cat. no.
Sliding unit (Y axis)	626108-9070-000
Rotary unit	626108-9080-000
Centering vise	626108-9021-125

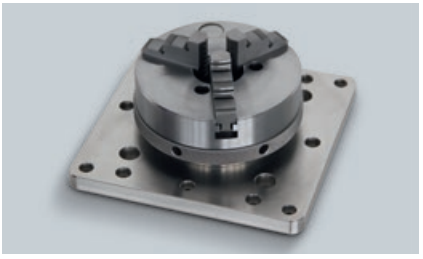
Special solutions
Customized, customer-specific and flexible special solutions such as this angular apparatus are available upon request.

RONDCOM

RONDCOM stylus kit
Kit for flexible stylus assembly.
Content: stylus, extensions, stylus tips, assembly tools.
Cat. no. 626108-9060-000



Precision crane chuck
Very flat for low assembly, smooth motion and rotatable brackets
Cat. no. 625007-3029-000

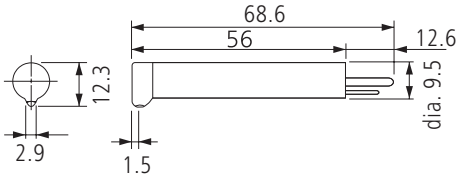
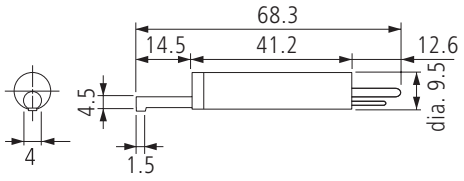


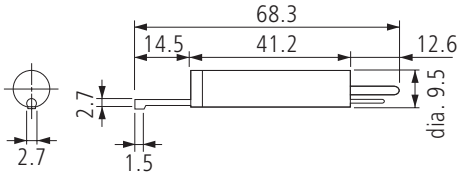
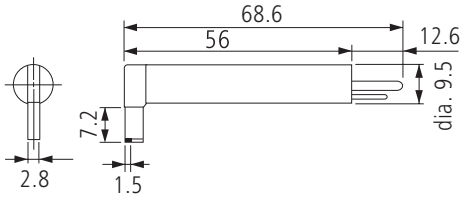
Crane chuck
With adapter plate, ideal for the RONDCOM NEX and the SURFCOM NEX, different sizes available
Cat. no. 626108-9031-125

Small crane chuck
Suitable for SURFCOM NEX CNC modules and the RONDCOM NEX rotary table, different sizes
Cat. no. 626108-9031-050
Image with adapter plate
Cat. no. 626108-9090-000

Technical Data
HANDYSURF

	HANDYSURF E35B/40A	HANDYSURF E45A
Tracing driver		
Traversing length	12.5 mm	4 mm
Measuring speed	0.6 mm/s	
Retraction speed	1 mm/s	
Variable measured length	0.4 to 12.5 mm in 0.1 mm increments	
Graduated measured length	5 λc (0.4/1.25/4/12.5 mm)	λc (0.08/0.25/0.8 mm)
Probing system		
Measuring range	± 160 µm	
Resolution	0.01 µm at ±20 µm/0.08 at ±160 µm	
Measuring force	4 mN	
Stylus tip material	Diamond	
Stylus tip radius	5 µm (optional 2 µm, measuring force 0.7 mN)	
Skid	Sapphire, radius 32 mm	
Data processing		
Data storage	10 data sets, profile curves, parameters, measuring conditions	
Filter type	Gaussian DIN 4777 and 2RC	
Critical wavelength λc	0.08/0.25/0.8/2.5 mm	
Standard	ISO/DIN/JIS/CNOMO/ASME	
Roughness parameters	Ra, Rz, RSm, Rq, Rp, Rt, R3z, Pc, Pt, Rmr, PK, Rpk, Rvk, Mr1, Mr2, Vo, K, Rzmax	
Display unit		
Output values	LCD, 16 characters x 2 lines	
Units	Measuring conditions, parameters and tolerance comparison	
Data interface	PC interface	
Languages	German, English, French, Italian, Spanish, Portuguese and Japanese	
Miscellaneous		
Power supply	Integrated rechargeable battery with charger 100, 120, 127, 220, 240 V, 50–60 Hz	
Power consumption	Approx. 0.5 VA (battery suitable for approx. 7 hours continuous operation)	
Dimensions, weight	Width = 186 mm, length = 68 mm, height = 54 mm, weight = 0.6 kg	
Standard accessories	Calibration and stylus feature for tracing driver, stand for tracing driver, extension cable and transport box	
Printer (optional)		
Name	Compact printer	
Printing method	Thermal	
Recording curves	Section profile curve, roughness curve, capacity curve, roughness motif curve, waviness motif curve, waviness trend curve	
Recording magnification V	100, 200, 500, 1 K, 2 K, 5 K, 10 K, Auto	
Recording magnification H	1, 2, 5, 10, 20, 50, 100, 200, Auto	
Accessories	Printer paper, connection cable	

Stylus specifications	E-DT-SM10A (5 µmR) E-DT-SM39A for HANDYSURF E-45A (5 µmR) E-DT-SM49A (2 µmR)	E-DT-SM11A (5 µmR) E-DT-SM40A for HANDYSURF E-45A (5 µmR) E-DT-SM50A (2 µmR)
Application	Standard stylus	Stylus for dia. larger than 6 mm
Measuring force	4 mN/0.7 mN	4 mN/0.7 mN
Stylus tip	Diamond, 90° cone, 5 µmR Diamond, 60° cone, 2 µmR	Diamond, 90° cone, 5 µmR Diamond, 60° cone, 2 µmR
Skid	Sapphire, 32 mmR (track guidance)	Sapphire, 32 mmR (track guidance)
Drawing and dimensions		

Stylus specifications	E-DT-SM12A (5 µmR) E-DT-SM41A for HANDYSURF E-45A (5 µmR) E-DT-SM51A (2 µmR)	E-DT-SM13A (5 µmR) E-DT-SM 42A for HANDYSURF E-45-A (5 µmR) E-DT-SM52A (2 µmR)
Application	Stylus for 3 mm dia.	Stylus for grooves with max. 7 mm depth
Measuring force	4 mN/0.7 mN	4 mN/0.7 mN
Stylus tip	Diamond, 90° cone, 5 µmR Diamond, 60° cone, 2 µmR	Diamond, 90° cone, 5 µmR Diamond, 60° cone, 2 µmR
Skid	Sapphire, 32 mmR (track guidance)	Sapphire, 32 mmR (track guidance)
Drawing and dimensions		

Technical Data
SURFCOM 130

	SURFCOM 130
Tracing driver	
Traversing length	50 mm
Straightness accuracy	0.3 µm/50 mm (bandwidth)
Measuring speed	0.3/0.6/1.5/3.0 mm/s
Retraction speed	0.15-3.0 mm/s
Adjustment range in probing direction	50 mm manual
Leveling range	±1.5°
Measured distance	Max. 48 mm in 0.1 mm increments
Number of single measured distances	1 to 150 (selectable)
Number of measured points	max. 32,767
Probing system	
Measuring range	8, 80, 800 µm (standard)
Resolution	1/64,000 of measuring range
Measuring principle	Differential transformer
Measuring force	0.75 mN with interchangeable stylus (optional 4 mN)
Stylus tip radius	2 µm (optional 5, 10, 250, 800 µm R)
Data processing	
Profile display	R, P, W, Wc, Wec and DIN 4776
Filter type	Gauss, 2RC (phase-corrected and not phase-corrected)
Critical wavelength λc of the roughness filter	0.08/0.25/0.8/2.5/8 mm
Critical wavelength ripple λf	0.08/0.25/0.8/2.5/8 mm
Magnification	Horizontal 1; 2; 5; 10; 20; 50; 100; 200; 500; 1,000; 2,000; 5,000, automatic Vertical 50; 100; 200; 500; 1,000; 2,000; 5,000; 10,000; 20,000; 50,000; 100,000 automatic
Tilt correction methods	Compensating line (first half, second half, beginning/end), compensating curve, spline
Roughness parameters	Ra, Rq, Rp, Rv, Rc, R3z, RzISO, Rt, RmaxDIN, Pc, S, RΔa, RΔq, Rλa, Rλq, Ir, RsK, Rku, tp, tp2, Rmr, Rδc, Rk, Rpk, Rvk, Mr1, Mr2, Vo, K, CNOMO parameters, JIS-2001, JIS-1994, JIS-1982, ISO-1997, DIN-1990, ASME-1995 …
Profile parameters	Pt, TILT A, step height, AVH, Hmax, Hmin, AREA …
Waviness parameters	Wt, Wa, WSm, Wsk, Wku, Wmr, Wdc …
Average of parameters	Up to 100 bits of data possible
Tolerance comparison	Possible
Profile analysis	Actual profile, Abbott curve, amplitude density, Fourier analysis
Measurement of interrupted surfaces	Possible
Units	µm, µinch (selectable)
Display unit	16.5 cm color graphic LCD, touchscreen
Data output	60 mm thermal printer
Print width	50 mm
Data interface	RS-232C
IC memory card (option)	128 MB memory card for up to 7000 measuring conditions and measurement data
Miscellaneous	
Power supply	100, 110, 120, 127, 220, 240 V (± 10%, 50/60 Hz) optional: battery powered
Power consumption	30 VA
Dimensions, weight	Width = 700 mm, depth = 300 mm, height = 150 mm, weight = 8 kg
Standard accessories	Calibration and stylus test standards, tool

SURFCOM FLEX

	SURFCOM FLEX 35B/40A	SURFCOM FLEX 45A	SURFCOM FLEX 50A
Tracing driver			
Traversing length	17.5 mm	5.6 mm	50 mm
Straightness accuracy	-	-	0.3 µm/50 mm
Measuring speed	0.6 mm/s	0.6 mm/s	0.15/0.3/0.6/1.5 mm/s
Retraction speed	1.0 mm/s	1.0 mm/s	0.15/0.3/0.6/1.5/3.0 mm/s
Adjustment range in probing direction	-	-	50 mm manual
Leveling range	-	-	±1.5°
Measured distance	Interval: 0.4 mm to 12.5 mm; 0.1 mm increments	Interval: 0.4 mm to 4.0 mm; 0.1 mm increments	Interval: 0.1 mm to 50 mm; 0.1 mm increments
Probing system			
Z axis measuring range	± 20 µm to ± 160 µm	± 20 µm to ± 160 µm	± 4 µm/± 40 µm/± 400 µm (standard stylus); ± 8 µm/± 80 µm/ ± 800 µm (doubled stylus length)
X axis measuring range	12.5 mm	4.0 mm	50 mm
Z axis resolution	0.01 µm/± 20 µm 0.08 µm/± 160 µm	0.01 µm/± 20 µm 0.08 µm/± 160 µm	0.00016 µm/± 4 µm 0.0016µm/± 40 µm 0.016 µm/± 400 µm
Measuring principle	Differential inductance	Differential inductance	Differential transformer
Measuring force	0.75 mN/4 mN	0.75 mN/4 mN	0.75 mN/4 mN
Stylus tip radius	5 µm R (diamond) (optional: 2 µm R diamond)	5 µm R (diamond) (optional: 2 µm R diamond)	2 µm R (diamond) (optional: 5 µm R diamond)
Measuring method	Skid, sapphire 32 mm radius	Skid, sapphire 32 mm radius	Free tactile/skid
Data processing			
Profile display	Profile section curve, roughness curve, ISO 13565 special curve, roughness motif curve, waviness motif curve, waviness trend curve	Profile section curve, roughness curve, ISO 13565 special curve, roughness motif curve, waviness motif curve, waviness trend curve	Profile section curve, roughness curve, ISO 13565 special curve, roughness motif curve, waviness motif curve, waviness trend curve, filtered waviness curve, waviness curve
Filter type	Gauss, 2RC (phase-corrected and not phase-corrected)		
Critical wavelength λc of the roughness filter	0.08/0.25/0.8/2.5 mm	0.08/0.25/0.8 mm	0.08/0.25/0.8/2.5/8/25 mm
Critical wavelength ripple λf	-	-	0.08/0.25/0.8/2.5/8 mm
Tilt correction methods	-	-	Compensating line (first half, second half, beginning/end), compensating curve, spline
Roughness parameters	Ra, Rz, Rzmax, RSm, Rq, Rp, Rt, R3z, Pc, Rmr, Rk, Rpk, Rvk, Mr1, Mr2, Vo, K		
Profile parameters	Pa, Pq, Pt, Rz.J, AVH, Hmax, Hmin, Pmr		
Waviness parameters	-	-	W-a, W-q, W-t, W-p, W-v, W-Sm, Wa, Wq, Wt, Wp, Wv, WSm, Wz, Wmr
Motif parameters (CNOMO)	R, Rx, AR, W, Wx, AW, Wte, Mr, Rke, Rpke, Rvke, Mr1, Mr2, Vo, K		
Units	µm, µinch (selectable)		
Data interface	Mini USB		
Languages	Japanese, English, Chinese, German, French, Italian, Spanish, Portuguese		
Miscellaneous			
Power supply	Integrated rechargeable battery; AC power supply unit input		
Power consumption	approx. 30 VA		
Dimensions (evaluation unit)	Width = 132 mm; depth = 58 mm; height = 214 mm		
Weight	approx. 1 kg	approx. 1 kg	approx. 3 kg (incl. tracing driver)
Standard accessories	Normals, tools		

Technical Data

SURFCOM NEX and SURFCOM CREST

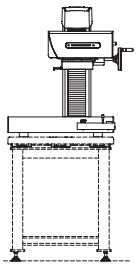
	SURFCOM NEX 001	**SURFCOM NEX 100**	**SURFCOM NEX 030**
Sensor	**Surface**	**Contour and surface**	**Contour**
Probing system			
Measuring range	1,000 µm standard sensing arm	5 mm with standard sensing arm 10 mm at doubled length	60 mm
Measuring principle	Inductive	Inductive and diffraction scale	Diffraction scale
Measuring error	±2% with 20 µm groove	±(1.0 + [2H]/100) µm	±(1.5 + [2H]/100) µm
Resolution	0.1 nm/6.4 µm range 20 nm/1,000 µm range	1 nm/0.05 mm range 100 nm/5 mm range	0.04 µm/60 mm range
X tracing driver			
Traversing length	100 mm (200 mm)	100 mm (200 mm)	100 mm (200 mm)
Straightness error	0.05 + (L/1,000) µm	0.05 + (L/1,000) µm	1 µm/100 mm
Measuring speed	0.03–3 mm/s roughness 0.03–20 mm/s waviness	0.03–3 mm/s roughness 0.03–20 mm/s waviness + contour	0.03-20 mm/s
Travel speed	0.03-60 mm/s	0.03-60 mm/s	0.03-60 mm/s
Measuring principle	Linear motor with glass scale	Linear motor with glass scale	Linear motor with glass scale
Measuring error	-	±(1 + L/100) µm	±(1 + L/100) µm
Resolution	0.016 µm	0.016 µm	0.016 µm
Max. number of measuring points	32,000 (without λs filter) 300,000 (with λs filter)	300,000 (max. 10 profiles)	300,000 (max. 10 profiles)
Sensing arm			
Measuring force	0.75 mN	0.75 mN	max. 30 mN
Stylus tip radius	Standard 2 µm/60°	Standard 2 µm/60°	25 µm (250 µm, 500 µm)
Stylus tip material	Diamond	Diamond	Hard metal (ruby)
Lifting of the sensing arm	-	Automatic function	Automatic function
Weight counterbalance	Automatic	Automatic	Manual
Z column			
Z column height	450 mm (250 mm, 650 mm)	450 mm (250 mm, 650 mm)	450 mm (250 mm, 650 mm)
Travel speed	max. 10 mm/s	max. 10 mm/s	max. 10 mm/s
Other information			
Dimension of the standard base plate	600 mm x 450 mm (small table) 1,000 mm x 450 mm (large table)	600 mm x 450 mm (small table) 1,000 mm x 450 mm (large table)	600 mm x 450 mm (small table) 1,000 mm x 450 mm (large table)
Material for standard base plate	Granite	Granite	Granite
Max. base plate load	50 kg (small table) 100 kg (large table)	50 kg (small table) 100 kg (large table)	50 kg (small table) 100 kg (large table)
Total weight	125 kg (small table) 250 kg (large table)	125 kg (small table) 250 kg (large table)	125 kg (small table) 250 kg (large table)
Power supply	240 (110) V AC, 50/60 Hz	240 (110) V AC, 50/60 Hz	240 (110) V AC, 50/60 Hz
Power consumption	505 VA	505 VA	505 VA
Compressed air supply (DX version)	Air >4 MPa	Air >4 MPa	Air >4 MPa
Compressed air supply (FX version)	Air >6 MPa	Air >6 MPa	Air >6 MPa
Accuracy	20°C ± 2 °C	20°C ± 2 °C	20°C ± 2 °C
Operating temperature	10°C – 30°C	10°C – 30°C	10°C – 30°C
Permissible relative humidity (without condensation)	40-80 %	40-80 %	40-80 %

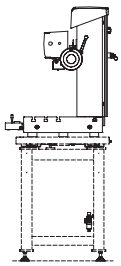
SURFCOM NEX 040 **Contour**	**SURFCOM CREST** **Contour and surface**
60 mm	13 mm with 50 mm sensing arm 26 mm with 100 mm sensing arm
Diffraction scale	Laser interferometer:
±(0.8 + (2H)/100) µm	±(0.2 + H/1,000) µm
0.02 µm/60 mm range	0.31 nm/13 mm range
100 mm (200 mm)	200 mm
1 µm/100 mm	0.05 + (3L/10,000) µm 0.11 µm/200 mm
0.03-20 mm/s	0.03 – 3 mm/s roughness 0.03 – 20mm/s contour
0.03-60 mm/s	0.03-60 mm/s
Linear motor with glass scale	Linear motor
±(1 + L/100) µm	±(0.2 + L/1,000) µm ±0.4 µm at L=200 mm
0.016 µm	0.54 nm
300,000 (max. 10 profiles)	300,000
max. 30 mN	0.75 mN
25 µm (250 µm, 500 µm)	Standard 2 µm/60°
Hard metal (ruby)	Diamond
Automatic function	Automatic function
Automatic	Automatic
450 mm (250 mm, 650 mm)	500 mm
max. 10 mm/s	max. 200 mm/s
600 mm x 450 mm (small table) 1,000 mm x 450 mm (large table)	1,000 mm x 480 mm
Granite	Granite
50 kg (small table) 100 kg (large table)	100 kg
125 kg (small table) 250 kg (large table)	SD version: 390 kg DX version: 710 kg
240 (110) V AC, 50/60 Hz	240 (110) V AC, 50/60 Hz
505 VA	505 VA
Air >4 MPa	Air >4 MPa
Air >6 MPa	Air >6 MPa
20°C ± 2 °C	20 °C ± 0.5 °C <0-5°C/h
10°C – 30°C	10°C – 35°C
40-80 %	40-80 %

The technical data for the SURFCOM C5 are available upon request

Exterior dimensions: SD versions

SURFCOM NEX



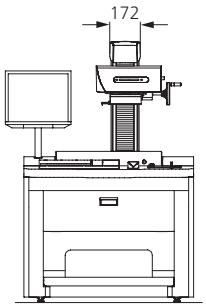


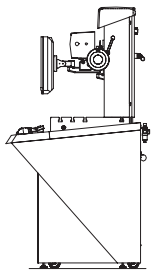
Height of Z columns	250 mm (-12, -22) 450 mm (-13, -23) 650 mm (-15, -25)
Small table:	600 x 450 mm
Large table:	1,000 x 450 mm
Design:	SD 12, SD 13, SD 14, SD 22, SD 23, SD 24

The exterior dimensions of the FX version of the SURFCOM NEX are available upon request.

Exterior dimensions: DX versions

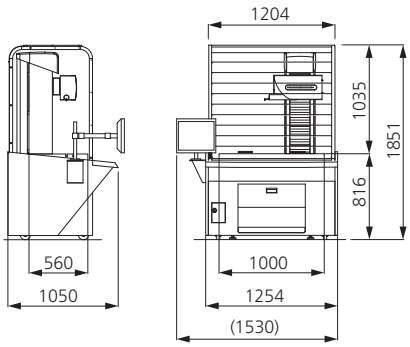
SURFCOM NEX





Height of Z columns	250 mm (-12, -22) 450 mm (-13, -23) 650 mm (-15, -25)
Small table:	600 x 450 mm
Large table:	1,000 x 450 mm
Design:	DX 12, DX 13, DX 14, DX 22, DX 23, DX 24

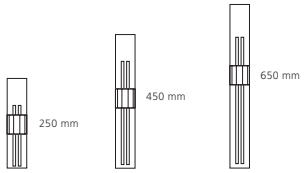
SURFCOM CREST



Height of Z columns	500 mm
Table:	1,000 x 550 mm

Sizes

X tracing driver: 100 mm or 200 mm



Z measuring height: 250 mm, 450 mm or 650 mm

Base plate 600 x 450 mm or 1,000 x 450 mm

Nomenclature: model number sizes

1_ X tracing driver 100 mm
2_ X tracing driver 200 mm
_**2** Z measuring height: 250 mm, Base plate: 600 x 450 mm
_**3** Z measuring height: 450 mm, Base plate: 600 x 450 mm
_**4** Z measuring height: 450 mm, Base plate: 1,000 x 450 mm
_**5** Z measuring height: 650 mm, Base plate: 1,000 x 450 mm

e.g. SURFCOM NEX 001-SD-**23**: 200 mm X tracing driver, 450 mm Z measuring height, 600 x 450 mm base plate

Technical Data

RONDCOM Rotary Table Machines

	RONDCOM TOUCH	RONDCOM 31/41
Measuring range		
Max. measurable diameter	150 mm	250 mm
Max. workpiece diameter	240 mm	400 mm
Max. load	15 kg	25 kg
Rotary axis (C axis)		
Faceplate diameter	148 mm	–
Roundness error[1]	0.04 + 0.0006	0.040 + 0.0006
Roundness error[1.2]	0.02 + 0.0003	0.020 + 0.0003
Axial runout error[1]	–	–
Measuring speed	6 rpm	6 rpm
Centering range	± 2 mm	± 2 mm
Leveling range	± 1°	± 1°
Automatic alignment (CNC)	No	No
Automatic alignment speed	–	–
Resolution	–	0.1°
Vertical axis (Z-axis)		
Measuring height	160 mm	300 mm
Straightness error	–	0.5 µm/100 mm 1.5 µm/300 mm
Parallelism error C-Z	–	3 µm/300 mm
Measuring speed	–	0.6–6 mm/s
Travel speed	–	max. 15 mm/s
Horizontal axis (R axis)		
Measuring path	± 80 mm	125 mm
Straightness error	–	–
Linear scale	No	No
Perpendicularity C-R	–	–
Measuring speed	–	–
Travel speed	–	5 mm/s
Accuracy of the linear scale	–	–
Probing system	Probe 1*	Probe 2*
Offset stylus mount	No	No
Other information		
Power supply	240 (110) V AC, 50/60 Hz	240 (110) V AC, 50/60 Hz
Power consumption	max. 50 VA with a PC or tablet	approx. 600 VA
Air pressure /supply pressure	0.3-0.7 MPa, 30 l/min	0.3-0.7 MPa, 30 l/min
Total weight	26 kg	approx. 120 kg

RONDCOM NEX 100/200/300
300 mm
580 mm
30 kg
235 mm
0.02 + 0.00032
0.01 + 0.00016
0.02 + 0.00028
1 – 10 rpm
± 5 mm
± 1°
No (RONDCOM NEX 100) Yes (RONDCOM NEX 200/300)
2/4/6/10/20 rpm
0.025°
300 mm/500 mm
0.1 µm/100 mm 0.15 µm/300 mm 0.23 µm/500 mm
0.7 µm/300 mm 1.0 µm/500 mm
0.5-10 mm/s
max. 60 mm/s
180 mm
0.7 µm/180 mm
Yes
1.0 µm/150 mm
0.5-10 mm/s
max. 30 mm/s
(0.5+L/180+T/100) µm[4]
Probe 2*
Yes
240 (110) V AC, 50/60Hz
530 VA
0.35-0.7 MPa, 30 l/min
180 kg

Acceptance requirements

RONDCOM 41/31, RONDCOM NEX

Standard stylus with 1.6 mm stylus tip diameter, MZCi, 50 W/U filter, 6 rpm or 6 mm/s and cutoff 8 mm LSLi/20 °C
± 1 °C, vibration-neutral environment

[1] µm + µm/mm measuring height
[2] Deviation from reference cirlce
[3] µm + µm/mm measuring radius
[4] T= current temperature difference to the reference temperature 20 °C
** You'll find information about the probes on page 72*

	The RONDCOM NEX Rs	RONDCOM 60 A
Measuring range		
Max. measurable diameter	300 mm	420 mm
Max. workpiece diameter	580 mm	680 mm
Max. load	30 kg	60 kg (optional 100 kg)
Rotary axis (C axis)		
Faceplate diameter	235 mm	290 mm
Roundness error[1]	0.02 + 0.00032	0.02 + 0.0006
Roundness error[1.2]	0.02 + 0.00016	0.01 + 0.0003
Axial runout error[1]	0.02 + 0.00028	0.02 + 0.0004
Measuring speed	1-10 rpm (roundness) 0.01-1 rpm (roughness)	2-10 rpm
Centering range	± 5 mm	± 5 mm
Leveling range	± 1°	± 1°
Automatic alignment (CNC)	Yes	Yes
Automatic alignment speed	2/4/6/10/20 rpm	6/10/20 rpm
Resolution	0.00001°	0.1°
Vertical axis (Z-axis)		
Measuring height	300 mm/500 mm	500 mm (800 mm, 1000 mm)
Straightness error	0.1 µm/100 mm 0.15 µm/300 mm 0.23 µm/500 mm	0.1 µm/100 mm 0.25 µm/500 mm
Parallelism error C-Z	0.7 µm/300 mm 1.0 µm/500 mm	1.5 µm/500 mm
Measuring speed	0.5-10 mm/s (straightness) 0.1-1.5 mm/s (roughness)	0.6–6 mm/s
Travel speed	max. 60 mm/s	max. 30 mm/s
Horizontal axis (R axis)		
Measuring path	180 mm	220 mm
Straightness error	0.7 µm/180 mm	0.5 µm/200 mm
Linear scale	Yes	Yes
Perpendicularity C-R	1.0 µm/150 mm	0.5 µm/200 mm
Measuring speed	0.5-10 mm/s (straightness) 0.1-1.5 mm/s (roughness)	0.6–6 mm/s
Travel speed	30 mm/s	max. 20 mm/s
Accuracy of the linear scale	(0.5+L/180+T/100) µm[4]	2+(L/220) µm
Probing system	Probe 2*/Probe 3*	Probe 2*
Offset stylus mount	Yes	opt.
Other information		
Power supply	240 (110) V AC, 50/60 Hz	240 (110) V AC, 50/60 Hz
Power consumption	630 VA	approx. 800 VA
Air pressure / supply pressure	0.35-0.7 MPa, 30 l/min	0.5-0.7 MPa, 50 l/min
Total weight	180 kg	approx. 600 kg

***Probes**	**Probe 1**	**Probe 2**
Name	E-DT-R272A	E-DT-R120A
Measuring force	70 mN (fixed)	30–100 mN (adjustable)
Collision protection	mechanical	mechanical/electric
Measuring range	± 400 µm, ± 100 µm	± 1,000 µm, ± 200 µm
Resolution	0.002 µm	Max. ±0.001 µm
Standard sensing arm	L = 22 mm dia. 1.6 mm	L = 59.50 mm dia. 1.6 mm

RONDCOM 60 AS	RONDCOM 65 B
420 mm	420 mm
680 mm	680 mm
60 kg	60 kg
290 mm	290 mm
0.01 + 0.0004	0.01 + 0.0004
0.005 + 0.0003	0.005 + 0.0002
0.02 + 0.00037	0.02 + 0.00037
1-10 rpm	1-10 rpm
± 5 mm	± 5 mm
± 1°	± 1°
Yes	Yes
2/4/6/10/20 rpm	2/4/6/10/20 rpm
0.025° or 0.1°	0.025° or 0.1°
500 mm (800 mm, 900 mm)	500 mm (800 mm, 900 mm)
0.05 µm/100 mm 0.2 µm/500 mm	0.05 µm/100 mm 0.2 µm/500 mm
1.5 µm/500 mm	1.5 µm/500 mm
0.6–6 mm/s	0.6–6 mm/s
max. 30 mm/s	max. 30 mm/s
220 mm	220 mm
0.5 µm/200 mm	0.5 µm/200 mm
Yes	Yes
0.5 µm/200 mm	0.5 µm/200 mm
0.6–6 mm/s	0.6–6 mm/s
max. 20 mm/s	max. 20 mm/s
2+(L/200) µm	2+(L/200) µm
Probe 2*	Probe 2*
opt.	opt.
240 (110) V AC, 50/60 Hz	240 (110) V AC, 50/60 Hz
approx. 800 VA	approx. 800 VA
0.5-0.7 MPa, 50 l/min	0.5-0.7 MPa, 50 l/min
approx. 600 kg	approx. 790 kg

Probe 3
E-DT-R168B
4 mN (adjustable)
–
± 400 µm
L = 40 mm dia. 1.6 mm/diamond 5 µm, 90°

Acceptance requirements

RONDCOM 60 A, 60 AS, RONDCOM 65 B

Standard stylus with 1.6 mm stylus tip diameter, MZCi, 15 W/U filter, 4 rpm or 6 mm/s and cutoff 8 mm LSLi/20 °C
± 1 °C, vibration-neutral environment

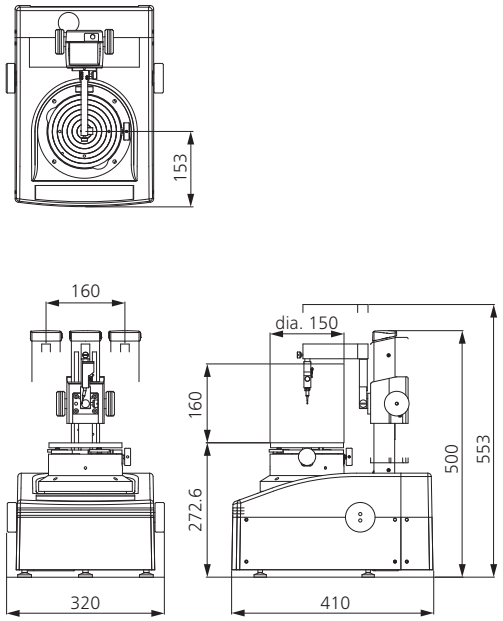
[1] µm + µm/mm measuring height
[2] Deviation from reference cirlce
[3] µm + µm/mm measuring radius
[4] T= current temperature difference to the reference temperature 20 °C

The technical data for the RONDCOM Grande are available upon request

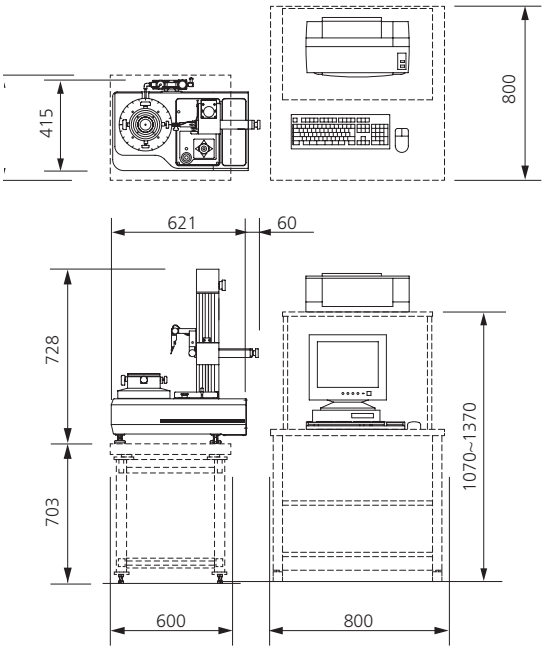
Technical Data

RONDCOM Rotary Table Machines – Selection

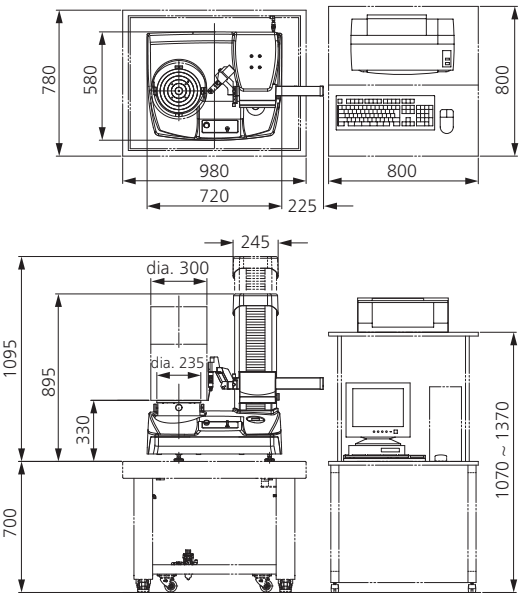
RONDCOM TOUCH



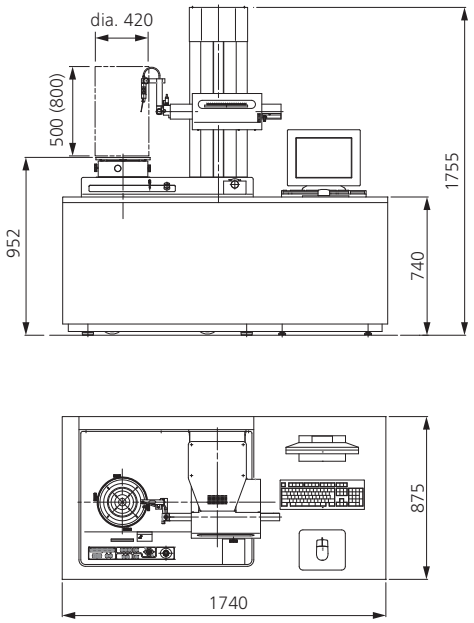
RONDCOM 31/41



RONDCOM NEX



RONDCOM 65 B



Additional information can be found in the "Setup notes" document and upon request.

RONDCOM Spindle Form Testers

	RONDCOM 73 A
Measuring range	
Max. measurable diameter	2–450 mm
Max. workpiece weight	X=1,235 mm Y=1,455 mm Z=2,500 mm
Max. load	200 kg
Measuring range (X axis)	600 mm (± 300 mm)
Measuring range (Y axis)	120 mm (± 60 mm)
Measuring range (Z axis)	1,000 mm
Specifications (excerpt)	
Roundness error [1]	0.06 µm (with a standard probe)
Axial runout error[2]	0.2 µm (with a standard probe)
Straightness deviation (Z-axis)	0.9 µm/200 mm (with a standard probe)
Parallelism tolerance	0.9 µm/100 mm
Positioning accuracy	±50 µm
Speed	
Rotation speed	1–6 rpm (measuring) max. 10 rpm (aligning)
Measuring speed	0.6–6 mm/s
Travel speed	max. 30 mm/s
Probing system	
Stylus tip	Standard D = 0.5 mm sapphire
Stylus length	Type A: L = 76 mm (1:1) Type B: L = 201 mm (2:1)
Measuring force	Type A: 130 mN Type B: 65 mN
Power supply	240 (100) V AC ±10%, 50/60 Hz
Power consumption	1,000 VA (excluding printer)
Air pressure	0.3 MPa
Total weight	1,600 kg
Accuracy	20°C ±2°C <0.5 C/h
Operating temperature	10–30 °C
Relative humidity	40-80 %
Acceptance requirements	
	Standard stylus with 1.0 mm probe-tip diameter, MZC, 50 W/U filter, 4 rpm or 5 mm/s and 10 mm/s and 8 mm cutoff

	RONDCOM 76 A
Measuring range	
Max. measurable diameter	2-500 mm
Max. workpiece weight	X = 800 mm Y = 680 mm Z = 760 mm
Max. load	200 kg (1,000 kg)
X measuring range	700 mm (1,200 mm)
Y measuring range	200 mm
Z measuring range	1,000 mm (1,500 mm/2,000 mm)
Specifications (excerpt)	
Roundness error [1]	0.04 + 0.0003
Axial runout error[2]	0.1 + 0.0008
Straightness deviation (Z axis)	[(0.2 + 8L/10,000) x (1 + S/1,000)] µm
Parallelism tolerance	0.8 µm/200 mm
Positioning accuracy	±50 µm
Speed	
Rotation speed	2–4 rpm (measuring) max. 10 rpm (aligning)
Measuring speed	max. 10 mm/s
Travel speed	max. 100 mm/s
Probing system	
Stylus tip	Standard D = 0.5 mm sapphire
Stylus length	Type A: L = 76 mm (1:1) Type B: L = 201 mm (2:1)
Measuring force	Type A: 130 mN Type B: 65 mN
Power supply	220 (110) V AC ±10%, 50/60 Hz
Power consumption	1,000 VA
Air pressure	0.5–0.7 MPa
Total weight	Approx. 6,700 kg
Accuracy	20°C ±2°C <0.5 C/h
Operating temperature	10–30 °C
Relative humidity	40-80 %
Acceptance requirements	
	Standard stylus with 1.0 mm probe-tip diameter, MZC, 50 W/U filter, 4 rpm or 5 mm/s and 10 mm/s and 8 mm cutoff

[1] *µm + µm/mm measuring height*

[2] *µm + µm/mm measuring radius*

Complete technical data for the RONDCOM 73 A and the RONDCOM 76 A available upon request.

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