

FORM MEASUREMENT

INDIVIDUAL SOLUTIONS, MATURE TECHNOLOGIES, CONVINCING CONCEPTIONS: FORM MEASURING INSTRUMENTS BY MITUTOYO.



You define the task...

Measuring technology in top form. For the perfect testing of rotationally symmetric workpieces.

For the production line, quality control room or laboratory, Mitutoyo's wide choice of product offers effective, efficient solutions for all your roundform measurement needs. From the particularly easy-to-handle, compact instrument with dedicated processor and built-in printer up to the high-precision, PC-controlled reference model, there is a Mitutoyo measurement solution for rotationally symmetric workpieces to suit practically every application.

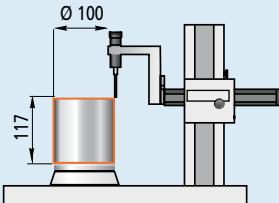
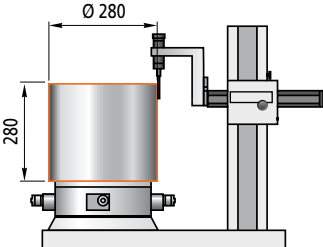
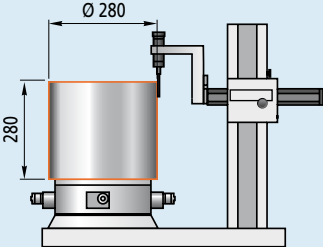
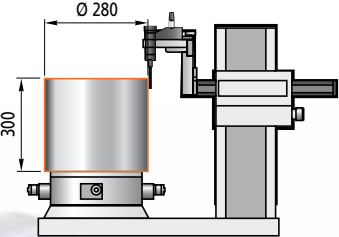
This brochure presents an overview of Mitutoyo's range of roundform measurement instruments to help you choose the system that best meets your individual measuring tasks. It shows instrument specifications, configurations, additional equipment options and premium software solutions. Individual product brochures are also available to provide detailed information on the measurement instrument of your choice.

Whichever model you choose, with a roundform measuring machine from Mitutoyo you can trust in the experience, competence and high performance of a world leader in measurement technology and be assured of first-class, customer-oriented service.

FORM MEASUREMENT



... we devise the perfect solution.

	Model	Description	Measuring range (mm)
Manual	ROUNDTEST RA-10	The entry-level solution for simple form measuring tasks in a production environment. With large, clear display for performing operations and displaying the measurement results.	
	ROUNDTEST RA-120	The compact solution for precise, effective and easy form measurement in a production environment. With large, easily readable display for clear presentation of measurement results.	
	ROUNDTEST RA-120P	A compact device that is easy to operate, equipped with the same features as ROUNDTEST RA-120, for use in production. With added PC connectability and high-performance ROUNDPAK measuring and analysis software.	
Semi-automatic	ROUNDTEST RA-1600	Compact table-top instrument designed for high standards of measuring accuracy. Provides an ample measurement range suited to middle-sized compact and complex workpieces.	

Specific device features

- Supports the most commonly used form analyses
- Integrated printer
- Extensive range of optional accessories
- Stand-alone machine with built-in processor and display
- Large coloured LCD
- EN ISO conform



ROUNDTTEST RA-10

- Simple manual alignment of the workpiece
- Large centering range
- Integrated printer
- Extensive range of optional accessories
- Stand-alone machine with built-in processor and display
- Large coloured LCD
- EN ISO conform
- Support of 16 languages



ROUNDTTEST RA-120

- Measuring and analysis software ROUNDPAK
- Simple manual alignment of the workpiece
- Large centering range
- Extensive range of optional accessories
- PC control versatility



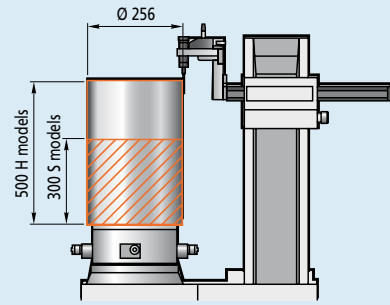
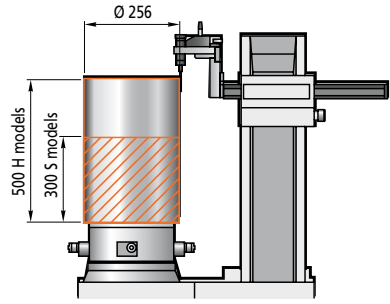
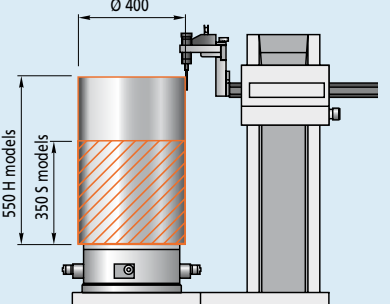
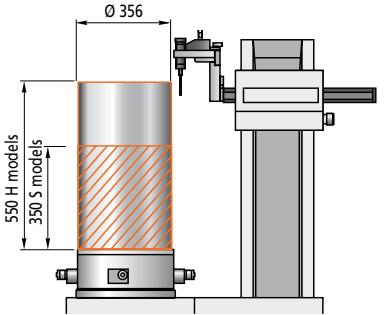
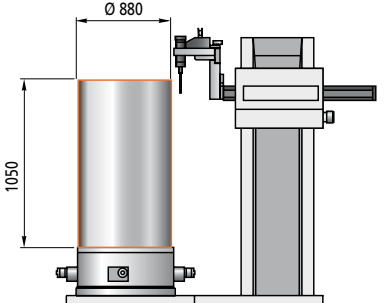
ROUNDTTEST RA-120P

- Measuring and analysis software ROUNDPAK
- Large centering range
- Extensive range of optional accessories
- Spiral-mode measurement function
- Z- and X-axis scales



ROUNDTTEST RA-1600

User-oriented form measuring technology offering the highest levels of accuracy.

Semi-automatic	<p>ROUNDTEST RA-2200</p> <p>ROUNDTEST RA-2200 DS ROUNDTEST RA-2200 DH</p>	<p>Table-top models for demanding, highly precise form measurement. Rapid manual centering and leveling of the workpiece on the digital adjustment table (DAT).</p>	
	<p>ROUNDTEST RA-2200 AS ROUNDTEST RA-2200 AH</p>	<p>Table-top devices designed specially for automatic serial control, offering an impressive range of features. Automatic centering and leveling of the workpiece.</p>	
CNC	<p>ROUNDTEST RA-2200 CNC</p> <p>ROUNDTEST RA-2200S CNC ROUNDTEST RA-2200H CNC</p>	<p>Automatic, highly precise measurement of complex individual workpieces and serial measurement. Automatic, freely definable angle adjustment of the probe system.</p>	
Semi-automatic	<p>ROUNDTEST RA-H5200</p> <p>ROUNDTEST RA-H5200 AS ROUNDTEST RA-H5200 AH</p>	<p>Top-of-the-range stand-alone model with extremely fast and accurate automatic centering and leveling of the workpiece. Especially suited for larger workpieces and controlling largeseries.</p>	
CNC	<p>ROUNDTEST RA-H5200 CNC</p> <p>ROUNDTEST RA-H5200S CNC ROUNDTEST RA-H5200H CNC</p>	<p>Meets the highest standards in terms of positioning speed, fastest automatic centering and leveling, utmost precision, measuring volume and workpiece weight-handling capability. Automatically positionable, freely definable angle adjustment of the probe system.</p>	
	<p>ROUNDTEST RA-6000 CNC</p>	<p>Fully automatic CNC form measuring instrument for heavy and accurate workpieces with a maximum loading capacity of 350kg. Provides fast and accurate processing.</p>	

Convenient, powerful and economical.

- Measuring and analysis software ROUNDPAK
- Large centering range
- Extensive range of optional accessories
- Z- and X-axis scales
- Optionally available with surface roughness analysis



ROUNDTEST RA-2200

- Measuring and analysis software ROUNDPAK
- Large centering range
- Extensive range of optional accessories
- Z- and X-axis scales
- Fully automatically rotating and swiveling probe system
- Optionally available with surface roughness analysis



ROUNDTEST RA-2200 CNC

- Measuring and analysis software ROUNDPAK
- Large centering range
- Extensive range of optional accessories
- Z- and X-axis scales
- Optionally available with surface roughness analysis
- Active vibration damper
- FEM design for utmost stability



ROUNDTEST RA-H5200

- Measuring and analysis software ROUNDPAK
- Large centering range
- Extensive range of optional accessories
- Z- and X-axis scales
- Fully automatically rotating and swiveling probe system
- Optionally available with surface roughness analysis
- Active vibration damper
- FEM design for utmost stability



ROUNDTEST RA-H5200 CNC



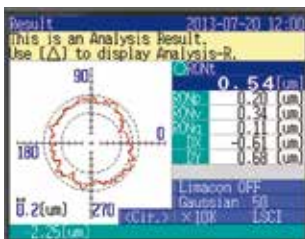
Roundtest RA-6000CNC

- Measuring and analysis software Roundpak
- Huge measuring range of 1050mm in height
- Huge loading capacity of 350kg
- Fully automatic rotating and swiveling probe system
- Highly precise automatic centering and leveling turntable A.A.T.

ROUNDTEST RA-10

Entry-level class

RA-10



RA-10

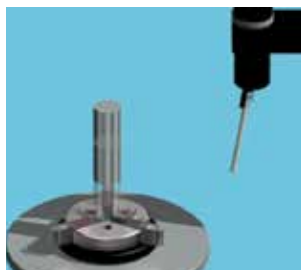
Entry-level solution for simple form measuring tasks

- Designed for use in production or space-restricted locations
- Large coloured LCD panel
- Supports 5 important form analyses
- Handles workpieces up to 10 kg
- Measurable workpiece height up to 117 mm
- Measurable outer diameter up to 100 mm
- Large probe system measuring range of $\pm 1000 \mu\text{m}$
- 3600 measuring points/rotation
- Turntable with precision air bearing
- One key calling function
- Well designed, clearly structured user interface
- Optional centering and leveling table
- Support of 16 languages
- USB Communication Program to import results and create inspection certificates on PC as free download available

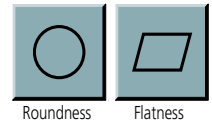
Rotational accuracy
 $(0.04 + 0.0006H) \mu\text{m}$

Analysis options

- Roundness
- Flatness
- Coaxiality
- Concentricity
- Runout radial
- Discontinuous work pieces



Compact table-top device for performing measurements right in the workshop or production. With large display and integrated printer.



ROUNDTTEST RA-120

Simple, practical

The

RA-120



RA-120

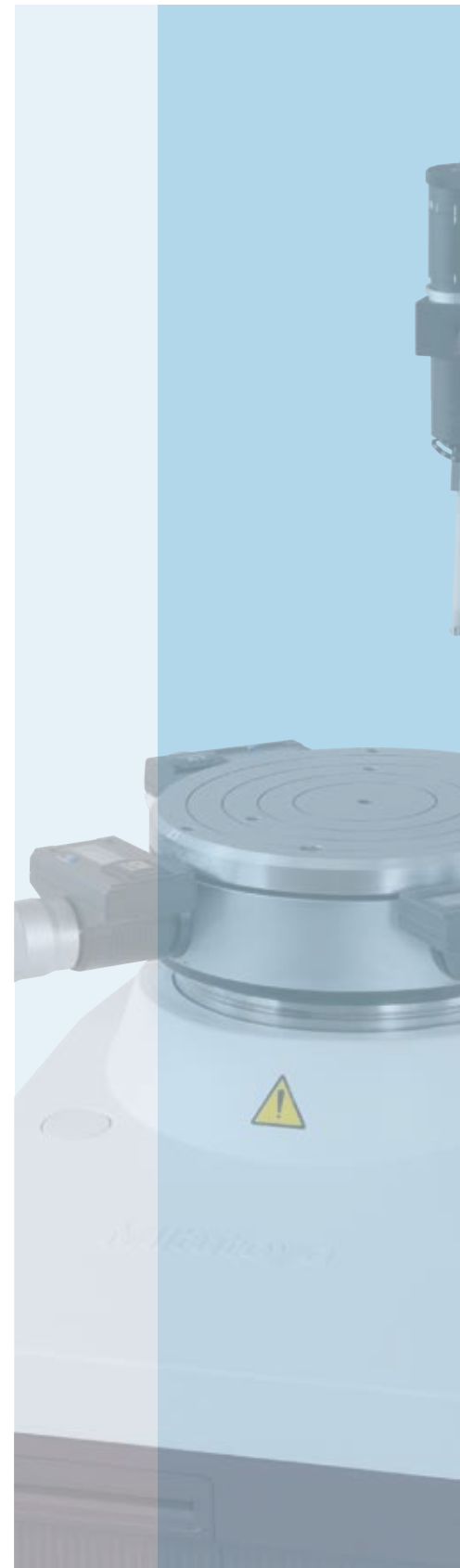
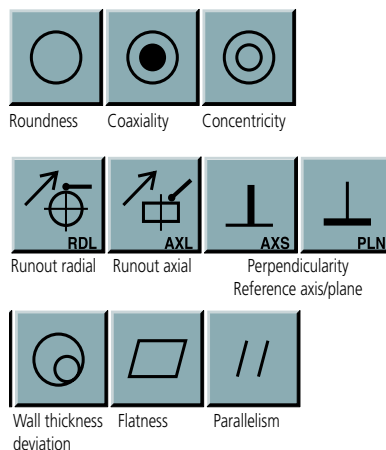
Suitable for the workshop environment and eager to perform.
Easy-to-use and cost effective.

- For use in production environments
- Complies with EN ISO standard like 12181 and 12781
- Large coloured LCD panel
- Supports 10 important form analyses
- Measures workpieces up to 25 kg
- Measurable workpiece height up to 280 mm (depending on the measuring task, up to 480 mm)
- Measurable outer diameter up to 280 mm (depending on the measuring task, up to 380 mm)
- Large probe system measuring range of $\pm 1000 \mu\text{m}$
- Turntable with precision air bearing
- Centering, leveling table with 4 Digimatic micrometer heads
- ABS scale on the Z axis
- Convenient fine adjustment positioning
- One-key operation
- Well designed, clearly structured user interface
- Rotary knob for accurate menu operation
- Support of 16 languages
- USB Communication Program to import results and create inspection certificates on PC as free download available

Rotational accuracy
(0.04 + 0.0006H) μm

10 analysis options

- Roundness
- Coaxiality
- Concentricity
- Runout radial
- Runout axial
- Perpendicularity
- Wall thickness deviation
- Flatness
- Parallelism
- Discontinuous workpieces



Compact table-top device for performing measurements right in the workshop or production. With large display and integrated printer.



ROUNDTEST RA-120P

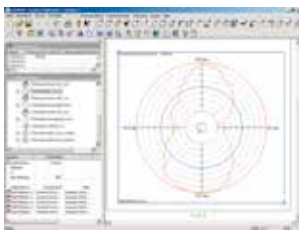
The PC version

The

RA-120P

Rotational accuracy
(0.04 + 0.0006H) μm

RA-120P:
PC connection for added versatility.
Top-flight software for easy of use.



Result screen: Concentricity

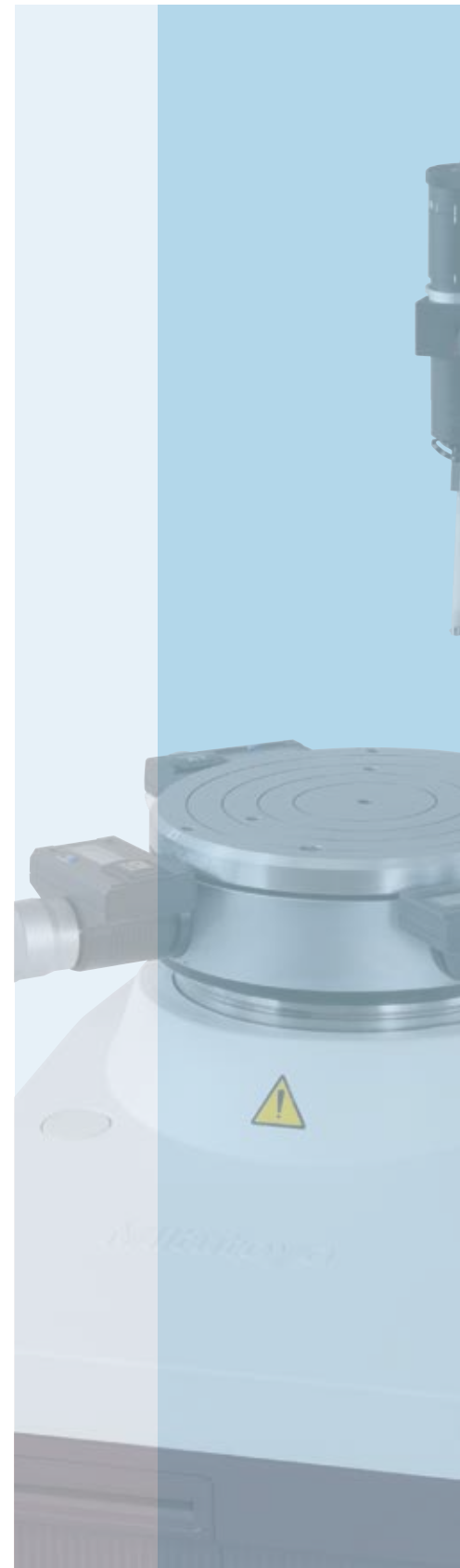


Result screen: Roundness

- The PC version with high-performing ROUNDPAK software
- For use in production environments and measuring rooms
- Supports 12 form analyses
- Measures workpieces up to 25 kg
- Measurable workpiece height up to 280 mm (depending on the measuring task, up to 480 mm)
- Measurable outer diameter up to 280 mm (depending on the measuring task, up to 380 mm)
- Large probe system measuring range of ±1000 μm
- Turntable with precision air bearing
- 3600 measuring points/rotation
- Centering, leveling table with 4 Digimatic screws
- ABS scale on the Z axis
- Convenient fine adjustment positioning
- Fine positioning of the probe system with automatic zero point adjustment using ROUNDPAK software
- SOFTWARE ROUNDPAK user interface for rapid individual measurements, writing measurement programs, documentation and archiving of the results
- User-defined request to adjust the Digimatic centering-leveling micrometer heads
- SPC, USB interface

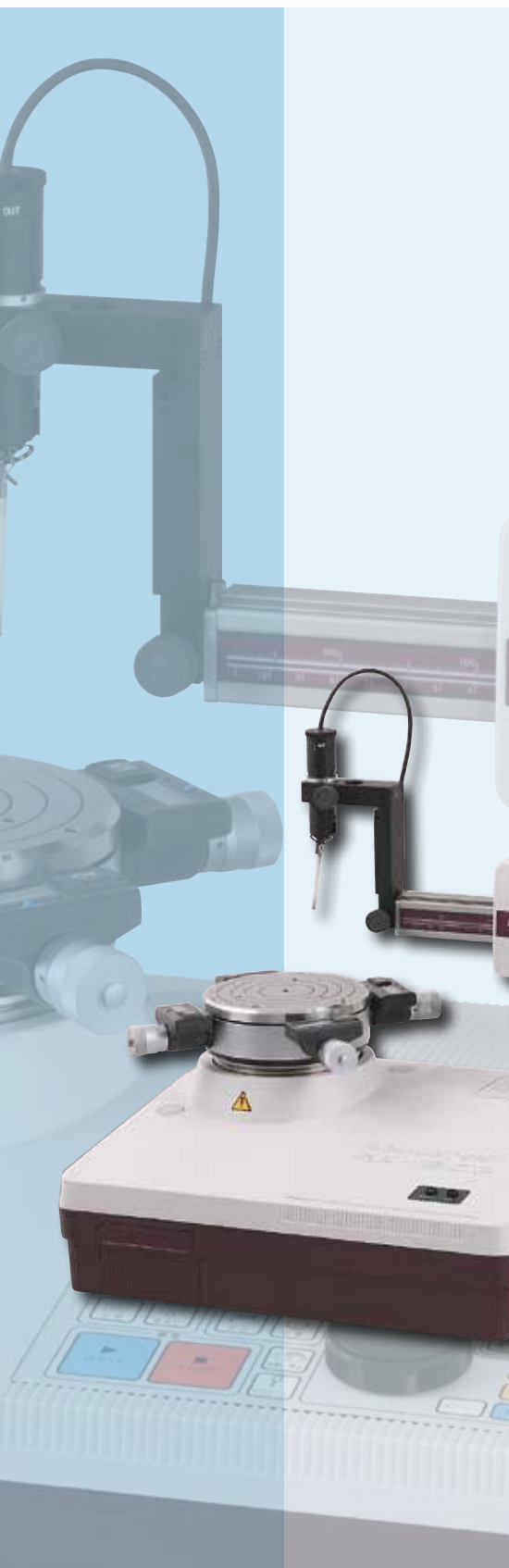
12 analysis options

- Roundness
- Coaxiality
- Concentricity
- Runout radial
- Runout axial
- Perpendicularity
- Wall thickness deviation
- Flatness
- Parallelism
- Discontinuous workpieces
- Power spectrum
- Harmonic analysis



Compact table-top device for performing measurements in production environments

PC version



ROUNDTEST RA-1600.

Servo-powered axes for added convenience

Co

RA-1600

Rotational accuracy
(0.02 + 0.0006H) μm
 Straightness of precision column
 (Z axis): **0.2 μm/100 mm**

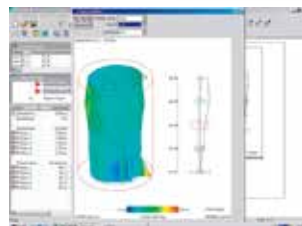
RA-1600

Easy manual centering and leveling of the workpiece. Turntable with air bearing for extremely precise, non-wearing rotation.

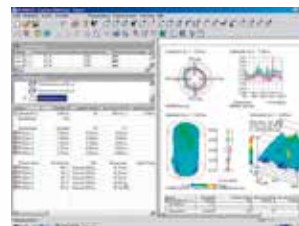
- The PC version with high-performing ROUNDPAK software
- Supports a wide range of form analyses
- Z- and X-axis scales
- Measures workpieces up to 25 kg
- Measurable probing height up to 300 mm
- Measurable outer diameter up to 280 mm
- Max. workpiece diameter 560 mm
- Large probe system measuring range of ±400 μm
- Adjustable measuring force
- Turntable with precision air bearing
- Max. 14400 measuring points/rotation
- Centering and leveling using digital adjustment table (DAT) supported by 4 Digimatic micrometer heads
- Large centering range ±3 mm
- Large leveling range ±1°
- Servo-powered Z axis
- Servo-powered X axis
- X-axis moving distance of 165 mm
- Software ROUNDPAK user interface for rapid individual measurements, writing measurement programs, documentation and archiving of the results
- User-defined request to adjust the DAT
- SPC, USB interface
- Large range of probe tips available

Analysis options

Cylindricity
 Roundness
 Concentricity
 Coaxiality
 Runout radial
 Runout axial
 Perpendicularity
 Flatness
 Parallelism
 Discontinuous surfaces
 Measurement across spiral line
 Total Runout radial
 Total Runout axial
 Inclination
 Taper Ratio
 Power spectrum
 Harmonic analysis



Result screen: Cylindricity, 3D view



Result screen: Cylindricity, view from above



Roundness measurement, external, vertical

Compact table-top model for demanding tasks, with
cylindricity testing.

comfortable



Roundness measurement, internal
left: Flatness measurement

Cylindricity measurement across spiral line

ROUNDTEST RA-2200

The allrounder

The a

RA-2200 DS/DH

Rotational accuracy
(0.02 + 0.00035H) μm
 Straightness of precision column
 (Z axis):
0.1 μm / 100 mm

RA-2200 DS and RA-2200 DH
Digital adjustment table (DAT) for rapid, simple and accurate manual workpiece alignment. The very best technology for demanding applications.



Digital micrometers for manual workpiece alignment (DAT)

- Simple, accurate operation
- Easy, quick measurements, assessment and printout of measuring results
- Complete with PC
- High-performance ROUNDPAK measuring and analysis software
- Turntable with air bearing for highly accurate, non-wearing rotations
- Rapid, precise manual centering and leveling of the workpiece on the digital adjustment table (DAT)
- Ceramic guideways
- Large centering range ±5 mm
- Large leveling range ±1°
- For workpieces up to 580 mm in diameter and 30 kg
- Measurable diameter 300 mm
- Measuring probe with adjustable measuring force
- Measuring probe adjustment ±45°
- Probe system/Measuring range ±400 μm
- Measuring height 300 mm (DS) resp. 500 mm (DH)
- X axis moving distance 175 mm
- Auto follow function
- Wide range of optional accessories
- Optional probe system for surface roughness measurement. (Skidless system)



Cylindricity measurement across spiral line



Flatness measurement across spiral line



Table-top models offering an impressively wide range of features. Optionally available with manual or automatic centering and leveling of the workpiece.

RA-2200 AS/AH

RA-2200 AS und RA-2200 AH
Pre-programmed success – reliable and rapid automatic centering and leveling of the workpiece. Ideal for demanding measurement tasks and automatic serial control.
(AAT: Automatic Adjustment Table)

- Same range of features as RA-2200 DS and DH, but including:
- Convincingly fast, precise and automatic centering and leveling of the work piece
- Centering range ± 3 mm

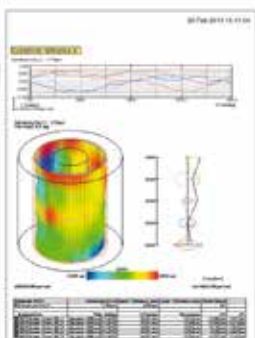
Rotational accuracy
(0.02 + 0.00035H) μm
 Straightness of precision column:
 (Z axis)
0.1 μm / 100 mm



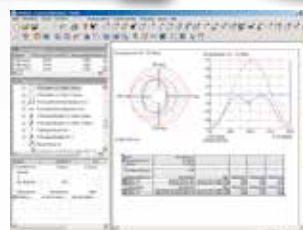
Automatic work piece alignment using servo-powered micrometers (AAT)



Optional: Roughness measurement



Result screen: 3-D display



Result screen: Total Runout

Analysis options (selection)

- | | |
|--------------------------|--------------------------------------|
| Cylindricity | Discontinuous work pieces |
| Roundness | Measurement across spiral line |
| Concentricity | Total Runout radial and axial |
| Coaxiality | Horizontal and vertical straightness |
| Runout radial | Inclination |
| Runout axial | Radius deviation |
| Perpendicularity | Taper Ratio |
| Wall thickness deviation | Power spectrum |
| Flatness | Harmonic analysis |
| Parallelism | |

ROUNDTEST RA-2200 CNC

Versatile, Automatic

The v

RA-2200 S/H CNC

Rotation accuracy:
 $(0.02 + 0.00035H) \mu\text{m}$
 Straightness of precision column:
 (Z axis)
 $0.1 \mu\text{m} / 100 \text{mm}$

RA-2200 S CNC and RA-2200 H CNC:
Servo-powered table adjustment for rapid and precise work piece alignment. The very best technology for demanding users.

- High-performance ROUNDPAK measuring and analysis software
- Complete with PC
- Turntable with air bearing for highly accurate, non-wearing rotations
- Rapid, precise automatic centering and leveling of the work piece on the automatic adjustment table (AAT)
- Ceramic axes
- Large centering range $\pm 3 \text{mm}$
- Large leveling range $\pm 1^\circ$
- For work pieces up to 580 mm in diameter and 30 kg in weight
- Measurable diameter 256 mm
- Servo-powered swiveling probe system
- Probe system measuring range of $\pm 400 \mu\text{m}$
- Auto follow function
- Fully automatic calibration
- Wide range of optional accessories
- Optional probe system for roughness measurement (Reference plane system)



Probe system positionable in 1° increments

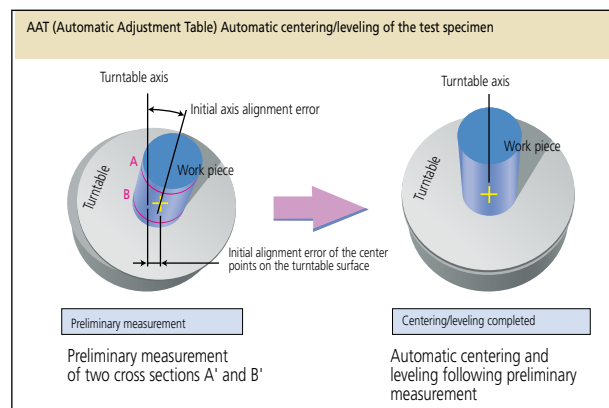
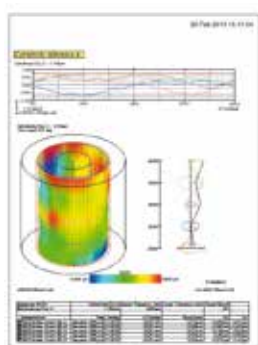
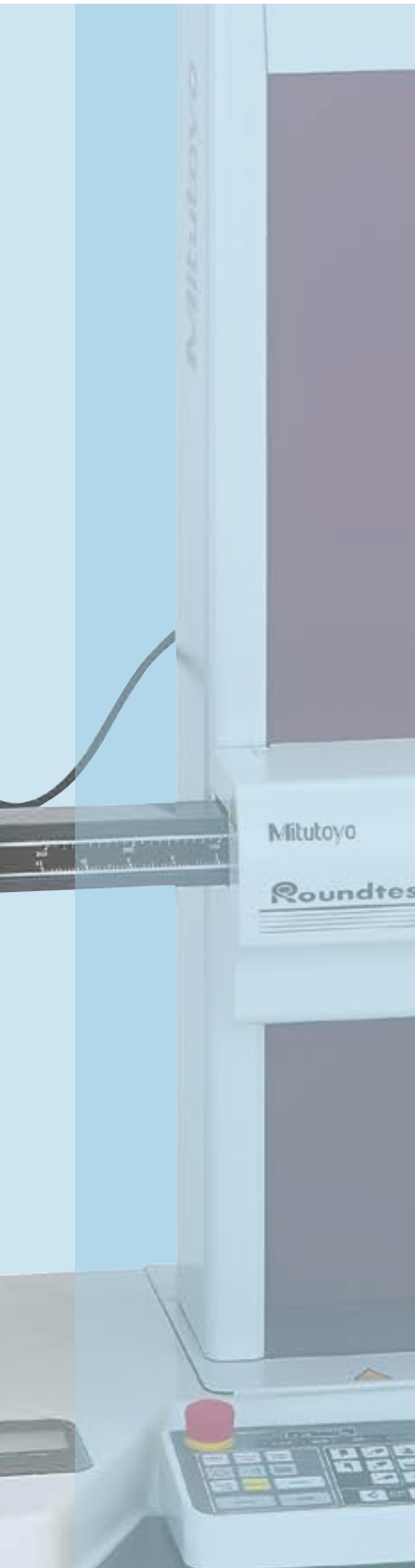


Table-top models offering a convincingly diverse range of features. Standard design with automatic centering and leveling of the work piece.



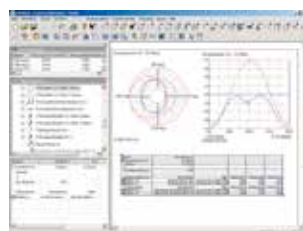
Result screen: 3-D display



Automatic work piece alignment using servo-powered micrometers (AAT)



Optional: Roughness measurement

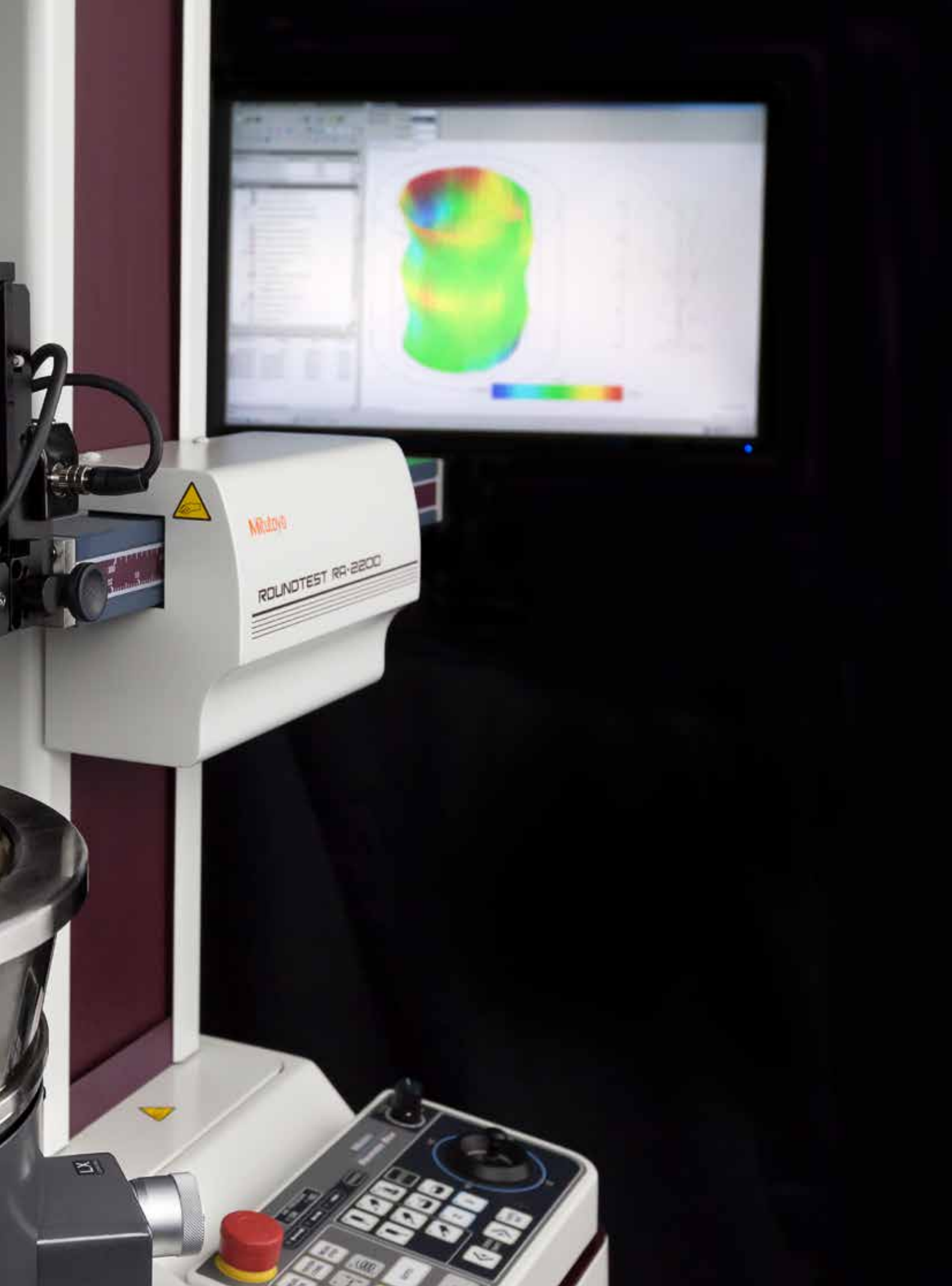


Result screen: Total Runout

Analysis options (selection)

- | | |
|--------------------------|--------------------------------------|
| Cylindricity | Discontinuous work pieces |
| Roundness | Measurement across spiral line |
| Concentricity | Total Runout radial and axial |
| Coaxiality | Horizontal and vertical straightness |
| Runout radial | Inclination |
| Runout axial | Radius deviation |
| Perpendicularity | Taper Ratio |
| Wall thickness deviation | Power spectrum |
| Flatness | Harmonic analysis |
| Parallelism | |





ROUNDTEST RA-H5200

Perfect in form

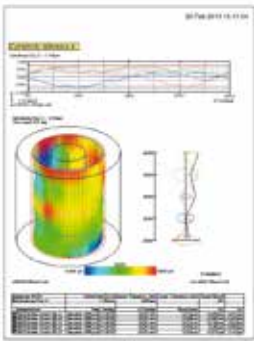
Perfect

RA-H5200

Rotation accuracy:
(0.02 + 0.00035H) μm

Straightness of precision column:
(Z axis)

0.05 μm / 100 mm



Result screen: Cylindricity, 3D view

Analysis options
(selection)

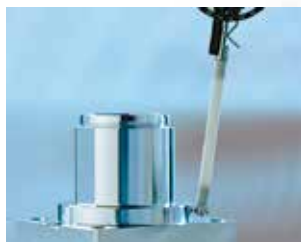
- Cylindricity
- Roundness
- Concentricity
- Coaxiality
- Runout radial
- Runout axial
- Perpendicularity
- Wall thickness deviation
- Flatness
- Parallelism
- Discontinuous work pieces
- Measurement across spiral line
- Total Runout radial
- Total Runout axial
- Horizontal and vertical straightness
- Inclination
- Radius deviation
- Taper Ratio
- Power spectrum
- Harmonic analysis

RA-H5200 AS and RA-H5200 AH:

This series is top in everything - technology, precision, measuring speed, positioning speed – and it can handle the heaviest work pieces.

With ROUNDPAK software support for form analyses that meet the highest standards.

- High-performance ROUNDPAK measuring and analysis software
- Turntable with air bearing for highly accurate, non-wearing rotations
- AAT precision table for convincingly fast, precise and automatic centering and leveling of the work piece
- FEM design with ceramic components for utmost stability
- Standard equipment includes active vibration damper
- Large centering range ± 5 mm
- Large leveling range ± 1°
- For work pieces up to 680 mm in diameter and 65 kg in weight
- Measurable diameter 400 mm
- Probe system with adjustable measuring force
- Probe system adjustment ± 45°
- Probe system measuring range ±400 μm
- Auto follow function
- Measuring height 350 mm (AS) resp. 550 mm (AH)
- Wide range of optional accessories
- Optional probe system for roughness measurement (Reference plane system)



Roundness measurement, external, vertical



Roundness measurement, external, horizontal



Flatness measurement

Best-in-class highly accurate equipment for perfect precision measurement all round.

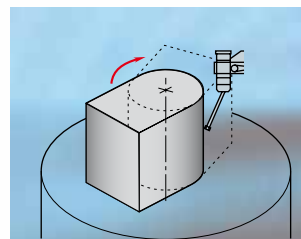
t in form



Cylindricity measurement across spiral line



Flatness measurement across spiral line



Partial circle measurement using precise control of the round table

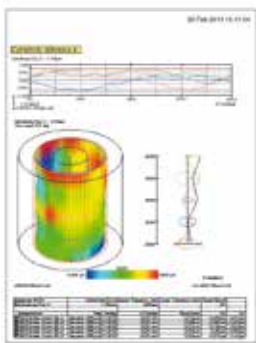
ROUNDTEST RA-H5200 CNC

Perfect in form

Perfect

RA-H5200 S/H CNC

$(0.02 + 0.00035H) \mu\text{m}$
 $0.05 \mu\text{m} / 100 \text{ mm}$



Result screen: Cylindricity, 3D view

RA-H5200 S and RA-H5200 H CNC:

Full range of features for CNC form measurement. This series offers top technology, superb precision, highest measuring and positioning speeds, full flexibility for fully automatic positioning of the probe system, and can handle the heaviest work pieces. Controlled by high-performing ROUNDPAK form analysis software to solve complex measuring tasks to the highest standards.

- High-performance ROUNDPAK measuring and analysis software
- Complete with PC
- Turntable with air bearing for highly accurate, non-wearing rotations
- AAT precision table for convincingly fast, precise and automatic centering and leveling of the work piece
- FEM design with ceramic components for utmost stability
- Large centering range $\pm 5 \text{ mm}$
- Large leveling range $\pm 1^\circ$
- For work pieces up to 680 mm in diameter and 65 kg in weight
- Measurable outer diameter 356 mm
- Servo-powered positioning of the probe in 1° increments
- Probe system measuring range of $\pm 400 \mu\text{m}$
- Auto follow function
- Fully automatic calibration
- Wide range of optional accessories
- Optional probe system for surface roughness (reference plane)
- Standard equipment includes active vibration damper

Analysis options (selection)

- Cylindricity
- Roundness
- Concentricity
- Coaxiality
- Runout radial
- Runout axial
- Perpendicularity
- Wall thickness deviation
- Flatness
- Parallelism
- Discontinuous work pieces
- Measurement across spiral line
- Total Runout radial
- Total Runout axial
- Horizontal and vertical straightness
- Inclination
- Radius deviation
- Taper Ratio
- Power spectrum
- Harmonic analysis



Best-in-class models that meet the highest standards of flexibility and precision for perfect measuring results



Automatic work piece alignment using servo-powered micrometers (AAT)



Probe system positionable in 1° increments

ROUNDTEST RA-6000 CNC

Large size measurement

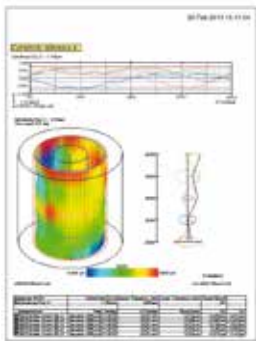
Large

RA-6000 CNC

(0.05 + 0.0006H)μm
1.5 μm / 1050mm

RA-6000CNC

Fully automatic CNC form measuring instrument for heavy and accurate workpieces.



Result screen: Cylindricity, 3D view

- Huge measuring range of 1050mm in height for long workpieces
- Wide probing range enables measurements of form parameters of huge-diameter workpieces
- Maximum loading capacity of 350kg for heavy and big size workpieces
- Highly-accurate measurements of large workpieces
- Fully automatic measurement provides fast and accurate processing
- ROUNDPAK software also comprises easy-to use part programming and single measurement functions
- A highly accurate automatic centering and leveling turntable A.A.T. (Automatic Adjustment Table) is supplied as standard, rendering centering and leveling redundant

Analysis options (selection)

- Cylindricity
- Roundness
- Concentricity
- Coaxiality
- Runout radial
- Runout axial
- Perpendicularity
- Wall thickness deviation
- Flatness
- Parallelism
- Discontinuous work pieces
- Measurement across spiral line
- Total Runout radial
- Total Runout axial
- Horizontal and vertical straightness
- Inclination
- Radius deviation
- Taper Ratio
- Power spectrum
- Harmonic analysis



Maximum accuracy and flexibility – for highly precise, large and heavy workpieces

size measurement



Automatic work piece alignment using servo-powered micrometers (AAT)



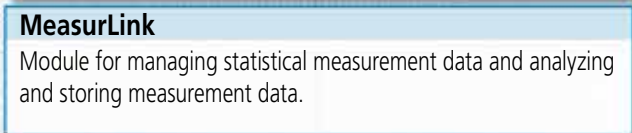
Probe system positionable in 1° increments

MiCAT

Mitutoyo Intelligent Computer Aided Technology

the standard in world metrology software

FORM



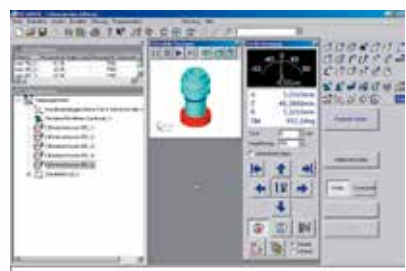
With ROUNDPAK you can easily set your specific measuring program, visualize the entire measuring process and document the results in impressive and clearly arranged diagrams and 3-D charts.

Storing and cataloging the measuring and evaluation conditions allows you to create a well sorted library of your work pieces. Several measurements can be incorporated into the measuring and evaluation conditions which, when linked to each other, considerably streamline any further measuring processes.

ROUNDPAK can:

- control all servo-powered axes
- center and level the turntable
- create part programs
- analyze deviations in form and position
- offer a wide range of graphic presentation options
- recalculate analyses
- analyze clashes
- create and store test reports

Complete with peak performance, flexibility and versatility:
 RA-2200CNC, RA-H5200CNC and RA-6000CNC form measuring devices already come complete with PC and Mitutoyo's excellent new ROUNDPAK software. Based on MS-Windows, it allows you to take full advantage of the options available for your individual application. For even more flexibility, accuracy and measuring speed.



Measuring screen



Result screen



Accessories

Reference hemisphere
for checking the round table



Centering chuck (optional)
for quick clamping work pieces



Calibration standard
for dynamic probe calibration



Surface roughness (optional)

A probe system for surface roughness measurement can be adapted, instead of using the form measurement probe system. (RA-2200, RA-H5200 and RA-6000CNC series)



Monitor arm

Examples of probe tips for manual and semi-automatic systems

Application/Type	Standard (included in the scope of delivery)	Surfaces	Deep groove	Corner
Probe tip	ø 1.6 mm Carbide	ø 3 mm Wolfram carbide	ø 0.25 mm Radius Sapphire	ø 0.25 mm Radius Sapphire
Dimensions (mm)				
Application/Type	Blade	Small hole	Small hole	Small hole
Probe tip	15 mm Radius Carbide	ø 0.8 mm Carbide	ø 1 mm Carbide	ø 1.6 mm Carbide
Dimensions (mm)				

Examples of probe tips for the CNC range

Application/Type	Grooves	Even surface	Universal probe tip	Grooves
Probe tip	ø 1.6 mm Carbide	ø 1.6 mm Carbide	ø 1.6 mm Carbide	ø 1.6 mm Carbide
Dimensions (mm)				
Application/Type	ø 1.6 mm Ball	ø 0.8 mm Ball	ø 0.5 mm Ball	Deep groove
Probe tip	ø 1.6 mm Carbide	ø 0.8 mm Carbide	ø 0.5 mm Carbide	ø 1.6 mm Carbide
Dimensions (mm)				

Analysis overview

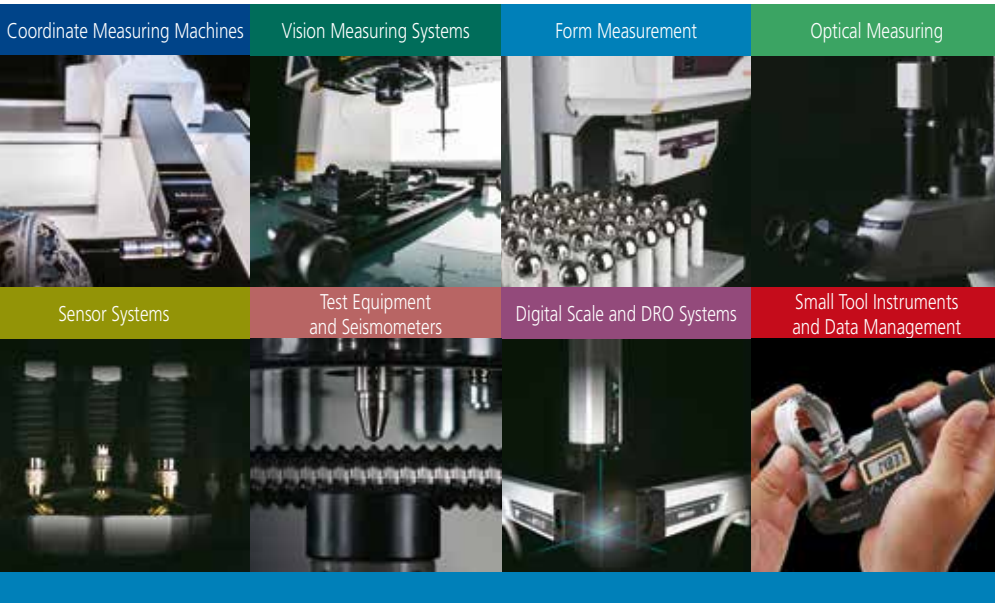
Analysis	Application	Result	RA-10	RA-120	RA-120P	RA-1600	RA-2200	RA-H5200	RA-6000CNC
Analyses during turntable rotation									
Roundness			●	●	●	●	●	●	●
Flatness (1 element)			●	●	●	●	●	●	●
Flatness (n elements)			—	—	—	●	●	●	●
Perpendicularity (axis reference)			—	●	●	●	●	●	●
Perpendicularity (surface reference)			—	●	●	●	●	●	●
Concentricity			●	●	●	●	●	●	●
Coaxiality (axis - element)			●	●	●	●	●	●	●
Coaxiality (axis - axis)			—	—	●	●	●	●	●
Parallelism (2 elements)			—	●	●	●	●	●	●
Parallelism (n elements)			—	—	—	●	●	●	●
Wall thickness deviation (radial)			—	●	●	●	●	●	●
Wall thickness deviation (axial)			—	—	—	●	●	●	●
Cylindricity			—	—	—	●	●	●	●
Taper Ratio			—	—	—	●	●	●	●
Runout radial			●	●	●	●	●	●	●
Runout axial			—	●	●	●	●	●	●
Total Runout radial			—	—	—	●	●	●	●
Total Runout axial			—	—	—	●	●	●	●
Diameter measurement			—	—	—	●	●	●	●

● available

Analysis

Analysis	Application	Result	RA-10	RA-120	RA-120P	RA-1600	RA-2200	RA-H5200	RA-6000CNC
Straight measurement analyses									
Straightness (vertical)			—	—	—	●	●	●	●
Straightness (horizontal)			—	—	—	●	●	●	●
Taper ratio (vertical)			—	—	—	●	●	●	●
Taper ratio (horizontal)			—	—	—	●	●	●	●
Inclination (vertical)			—	—	—	●	●	●	●
Inclination (horizontal)			—	—	—	●	●	●	●
Cylindricity			—	—	—	●	●	●	●
Perpendicularity			—	—	—	●	●	●	●
Coaxiality			—	—	—	●	●	●	●
Parallelism (vertical)			—	—	—	●	●	●	●
Parallelism (horizontal)			—	—	—	●	●	●	●
Spiral-shaped measurement analyses									
Cylindricity			—	—	—	●	●	●	●
Flatness			—	—	—	—	●	●	●
Coaxiality			—	—	—	●	●	●	●
Perpendicularity (axis reference)			—	—	—	—	●	●	●
Perpendicularity (surface reference)			—	—	—	—	●	●	●
Total Runout radial			—	—	—	●	●	●	●
Total Runout axial			—	—	—	—	●	●	●

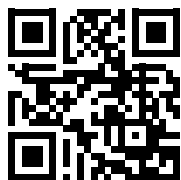
● available



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Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver bespoke measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.



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