

Roundness/Cylindricity Measurement **ROUNDTEST RA-2200 Series**

Bulletin No. 2009



Roundness/Cylindricity measuring system offering highest precision level in its class, exceptional ease-of-use, and multifunction analysis capability

Mitutoyo

ROUNDTTEST RA-2200AS/DS/AH/DH

All models are equipped with a highly accurate turntable that enables simple and accurate centering and leveling of the workpiece, which account for the majority of the essential setup work for measuring roundness/cylindricity.

Wide variety of models available to suit any application

- RA-2200AS/AH models are supplied as standard with an automatic centering and leveling turntable^{*1}, freeing the operator from the centering and leveling task.
- RA-2200DS/DH models are supplied as standard with a navigation function^{*1} that quickly and simply guides the operator through the centering and leveling task, as though the task were being performed by an expert.
- RA-2200AS/DS models have a column drive height of 11.8" (300mm), and are available with a column drive height of 19.7" (500mm) (RA-2200AH/DH) for handling taller workpieces.
- All models can be combined with the basic, side-table system vibration-damping platform or the monitor-arm system vibration-damping platform^{*3}.

Space-saving design

Integrating the system vibration-damping platform has reduced the installation space by approximately 20-40% compared to Mitutoyo's earlier installation platforms. Additionally, a design with increased layout freedom greatly improves the measurement room utilization rate and measurement efficiency.

Sliding detector-unit holder provided as a standard feature

The detector-unit holder is equipped with a sliding mechanism, enabling one-touch measurement of a workpiece with a deep hole having a thick wall, which has been difficult with the conventional standard arm.

Sliding distance: 4.4" (112 mm)



The detector-unit holder can be stopped at a position sufficiently higher than the workpiece along the Z-axis, and then lowered and positioned to make measurements. Furthermore, internal/external diameters can be easily measured with the continuous internal/external diameter measurement function^{*2}.

Safety mechanism provided as a standard feature



A safety mechanism is incorporated into the detector unit area. A collision-sensing function has been added to the detector unit (when it is in the vertical orientation) to prevent collision in the Z-axis direction. Additionally, an accidental collision prevention function, which stops the system when the detector unit displacement exceeds its range, has been added. When an accidental touch is detected, the dedicated analysis software (ROUNDPAK) senses the error and automatically stops the system.



The photo shows RA-2200AS + vibration isolator with monitor arm.^{*3}



The photo shows RA-2200AS + vibration isolator with side table.

^{*1}: See page 3 for details about the turntable.

^{*2}: See page 3 for details about the continuous ID and OD measuring function.

^{*3}: Printer table is a special Accessory.

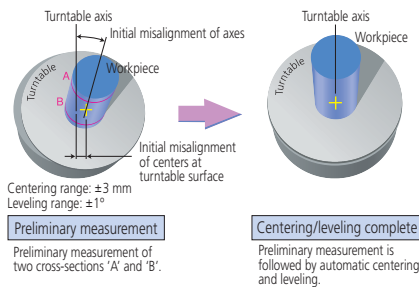
Equipped with a highly accurate turntable that enables simple and accurate centering and leveling of the workpiece

The table provides high rotational accuracy (radial $0.02+3.5H/10000 \mu\text{m}$; axial $0.02+3.5X/10000 \mu\text{m}$), enabling the system to measure flatness and other characteristics, in addition to roundness/cylindricity, at a level that suits any application.

For centering and leveling support, you can select either the A.A.T. (Automatic Adjustment Table) or D.A.T. (Digimatic Adjustment Table).

A.A.T. (Automatic Adjustment Table)

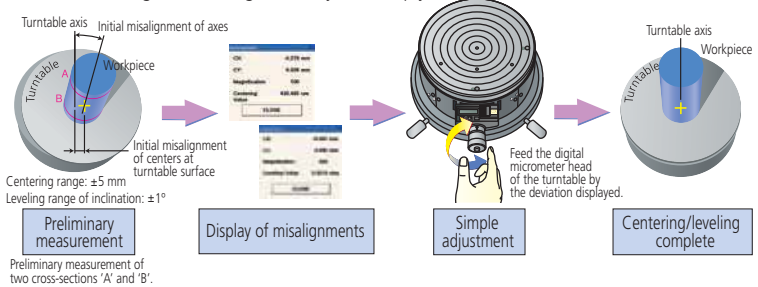
Incorporating an Automatic Adjustment Table (A.A.T.), the top-of-the-line RA-2200AS/AH models relieve the operator of workpiece centering and leveling.



D.A.T. (Digimatic Adjustment Table)

A guidance system (D.A.T.) is incorporated into the turntables on the RA-2200DS/DH models to help the operator perform manual centering and leveling smoothly and simply.

Patent registered in Japan, USA
Patent pending in Germany



High accuracy even at high positioning speeds

Continual development has resulted in the highest drive speed within the class.

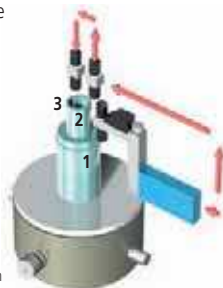
- Vertical direction (Z-axis column): Max. 50 mm/s
- Radial direction: Max. 30 mm/s

Continuous OD/ID measurement function

Patent registered in Japan, USA, Germany, UK, France

Continuous internal/external diameter measurement is possible without changing the detector position.

- 1), 2) : External diameter measurement
3) : Internal diameter measurement
→ : Displacement
3) = inner diameter: Up to $\phi 50 \text{ mm}$

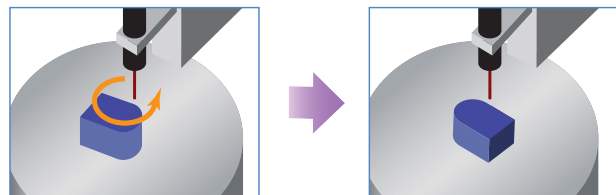


Highly accurate repeat measurements

Mitutoyo's linear scales are incorporated into the X-axis positioning sensor, directly sensing the displacement of the drive unit to achieve highly accurate positioning, which is essential for repeat measurements.

Partial circle measurement function

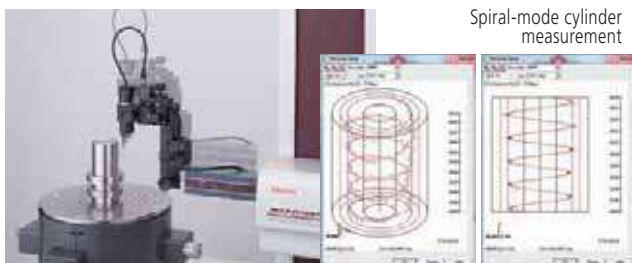
Even if a workpiece cannot be measured by physically rotating it by a full turn due to some obstruction (projection), segments of the circumference can be measured.



Spiral Measurement/Analysis

The spiral-mode measurement function combines table rotation and rectilinear action allowing cylindricity, coaxiality, and other data to be loaded as a continuous data set.

Spiral-mode cylinder measurement



Measurement through X-axis tracking

Measurement while tracing is possible through a built-in linear scale in the X-axis. This type of measurement is useful when displacement due to form variation exceeds the measuring range of the sensor, and X-axis motion is necessary to maintain contact with the workpiece surface.

