RONDCOM CREST
Ultra-high accuracy form measuring instrument
RONDCOM CREST NEW
Pursuing the »best« roundness and cylindrical profile measuring instrument
→ Ultra-high accuracy, to the world's highest level
→ Newly developed driving and guiding mechanism
→ Higher accuracy of diameter measurement by automatic crowning function
→ Diverse measurement functions ranging from high accuracy diameter measurement to roughness measurement
→ Innovative and functional design
World class capabilities and software features

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**Automatic measurement in various postures**
Switching easily between inner and outer diameter measurement, or upper and lower surface measurement by offset-type CNC detector holder

**High repeatability of diameter measurement**
“Automatic crowning function” has greatly enhanced the repeatability of the opposed diameter measurement

**Newly developed driving and guiding mechanism**
Low vibration by linear motor drives, contactless guides supported by air bearings, and a unique positioning mechanism achieve the high precision of Z and R axis, extremely precise positioning, and guarantee high accuracy over time by wear-less guides.

**Windshield cover**
Minimization of effects of disturbance, such as air-conditioners, on precision

**Automatic switching between roundness measurement and roughness measurement (optional)**

**Automatic changing of measuring force and measuring direction**
Realized automatic switching between roundness measurement and roughness measurement with optional T-shape stylus

**Ultra-high accuracy to the world’s highest level**
Radial direction rotation accuracy \((0.01+3H/10000) \mu m\)
Axis direction rotation accuracy \((0.02+3R/10000) \mu m\)
Excellent usability provided by Operation Panel
Integrating various kinds of operational functions in the front panel

Installation layout can be selected from either “L-shaped” or “I-shaped”
Selectable according to the available space and operator’s preference

ACCTee – Integrated Analysis Software
Measurement and analysis with leading-edge operability

Lead twist measurement (optional)
Visualization of the periodic and fine twist structure, which influences the sealing between shafts and seal rings

Standardly equipped with air anti-vibration
Reducing the transmission of vibration from the floor

Emergency stop button
Override dial to adjust moving speed
Jog dial to move manually R-axis and Z-axis per min. 1 μm
6 function buttons that can be assigned single or multiple CNC commands for actions such as measurement posture change and all measurement procedures of specific workpiece

LCD panel that shows the position of each axis, contacting condition of the stylus and the measurement posture
Ultra-high accuracy to the world’s highest level achieved by newly developed drive and guide systems

RONDCOM CREST is featured with newly developed mechanisms mounted on the Z axis of the column and the R axis of the drive unit.

For the drive system, a new system combining the non-contact and low-vibration linear motor drive technology, which has an established reputation on our roughness and contour measuring machines, and a newly developed original positioning mechanism is adopted. The guide system, which was also newly developed, inherits the air-bearing-based non-contact support technology, which was cultivated in coordinate measuring machines and expanded to RONDCOM 60 series, with the air bearings upgraded to meet the low vibration specifications dedicated to RONDCOM CREST.

Combination of these drive and guide systems significantly improved the rotation accuracy as well as the positioning accuracy and straightness of each axis, realizing the ultra-high accuracy for the world’s highest level accuracy, which makes it worthy of a reference machine.
Equipped with newly developed measuring force control detector realizing automatic switching between roundness measurement and roughness measurement

Newly developed measuring force control detector is equipped to RONDCOM CREST. The previous detector required manual adjustment of measuring directions, measuring forces and front/over travel by using front panel controls, but the measuring force control detector enables automatic adjustment of these in the software.

The automatic adjustment function of measuring directions and measuring forces coupled with the roughness measurement option and T stylus realized automatic switching between roundness measurement and roughness measurement. Unlike the previous models, the new model saves the trouble of changing the detector and the stylus for workpieces requiring to evaluate both the roundness and the roughness.

Also, if the workpiece is notched, by specifying the front travel (limiting the fall of the stylus) to prevent the stylus from colliding against the notch, it is possible to perform the measurement without damaging the stylus or the detector.

Moreover, the stylus tip position can be controlled within the measurement range of ±1 mm (by retraction).
Measure at the 0 degree position
Move from the 0 degree to the 180 degree position
Measure at the 180 degree position

Automatic crowning function

RONDCOM CREST demonstrates ultra-high accuracy not only in the measurement of roundness and cylindricity. Equipped with the opposed diameter measurement function with a proven track record on RONDCOM NEX series, it can perform highly accurate diameter measurement by cancelling the errors caused by temperature variation or generatrix deviation.

Moreover, newly developed “Automatic crowning function” is mounted on it to significantly enhance the effectiveness of opposed diameter measurement. After alignment, the workpiece is measured in the longitudinal direction (direction of the generatrix adjustment axis) to detect the generatrix position. Then, the stylus tip automatically moves to the detected position.

As diameter measurement can be performed at a more accurate generatrix position, effectiveness of the generatrix deviation error cancellation by the opposed diameter measurement function can be improved to achieve an extremely high accuracy in diameter measurement.

Ultra-high accuracy diameter measurement enabled only by RONDCOM CREST. Surpassing the previous machines by the repeatability of 0.3 μm
### Measuring range

- **Max. measuring diameter (Φ420, Outer diameter), Φ480 (Inner diameter)**
- **Radial feed range (R-axis) (mm)**: 250
- **Up/down feed range (Z-axis) (mm)**: 520
- **Max. loading diameter (Φ490)**
- **Max. measuring height (mm)**: 500
- **Max. measuring depth (height of bosom) (mm)**: 150 *1

### Accuracy

**Rotation accuracy** *2:
- Radial direction (µm) (0.01 + 3H/10000)
- Axis direction (µm) (0.02 + 3H/10000)

**Straightness accuracy**:
- Up/down direction (Z-axis) (µm/mm): 0.05/100
- Radial direction (R-axis) (µm/mm): 0.13/150

**Parallelism accuracy** (2-axis/3-axis) (µm/mm): 0.5/350

**Squaresness accuracy** (R-axis/F-axis) (µm/mm): 0.5/200

**Scale indication accuracy** (µm):
- Z-axis: 0.5 + L/1000
- R-axis: 0.3 + L/1000

### Speed

**Measuring speed**:
- Rotation speed (T-axis) (r/min): 1 to 10 (rotation measuring), 0.01 to 1 (roughness measuring)
- Up/down speed (Z-axis) (mm/s): 0.5 to 10 (linear motion measuring), 0.03 to 1.5 (roughness measuring)
- Radial direction speed (R-axis) (mm/s): 0.5 to 10 (linear motion measuring), 0.03 to 1.5 (roughness measuring)

**Movement speed**:
- Rotation speed (T-axis) (r/min): max. 20
- Up/down speed (Z-axis) (mm/s): 70 (automatic movement), 5 to 50 (operation)
- Radial direction speed (R-axis) (mm/s): 50 (automatic movement), 5 to 50 (operation)

### Table

- **Table diameter (mm)**: Φ340
- **Centering range (mm)**: ±5
- **Tilting range (°)**: ±1
- **Max. loading mass (kg)**: 65

### Number of sampling

- **(point)**: 72000

### Cutoff value

**Rotational direction (Y-axis)**:
- Low-pass: 15, 50, 150, 1500, 5000 UPR (undulation per revolution)
- Band-pass: 1 to 5000 UPR (undulation per revolution)

**Linear direction (Z-axis)**:
- Low-pass: 0.025, 0.05, 0.25, 0.5, 2, 8 mm

### Centering method

- MZC (Min. zone circle), LSC (least square circle), MIC (Max. inscribed circle), MCC (Min. circumscribed circle)

### Measuring items

#### Rotational direction
- Roundness, Flatness, Flatness (compound), Parallelism, Concentricity, Coaxiality, Cylinder, Square, Runout, Uniformity in wall thickness, Radial deviation, Partial circle

#### Linear direction
- Straightness (Z), Straightness (R), Axis center squareness, Radial deviation, Cylindricity, Squareness, Parallelism

### Roughness analysis items

#### Calculation standard

#### Parameter
- Ra, Rq, Ry, Rz, Rtotal, Rz, Rmax, Rzmax, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13

#### Evaluation curve
- Profile curve, Roughness curve, Filtered waviness curve, Rolling circle waviness curve, Rolling circle center line waviness curve, ISO13565-1 profile curve, ISO13565-1 roughness curve

### Characteristic graph

- Bearing area curve, Amplitude distribution graph, Power spectrum curve

### Analysis processing functions

- Notch function (level, angle, curvature), combination of roundness evaluation methods, nominal value calibration, cylinder 3D profile display (line drawing, shading, contour line), real-time display, profile characteristic graph display (bearing area curve, amplitude distribution function, power spectrum), CNC automatic measuring function, automatic centering/tilting/adjustment function

### Display items

- Measuring conditions, measuring parameters, comments, printer output conditions, profile graphics (expansion plan, 3D plan), error messages, etc.

### Installation dimensions

- **Width** (L-shaped layout) (mm): 2240
- **Depth** (L-shaped layout) (mm): 2750
- **Height** (I-shaped layout) (mm): 1250

### Weight

- **Measurement unit (kg)**: 1350
- **Data processing unit (kg)**: 100

### Power supply

- **Voltage, frequency (V, Hz)**: AC100 to 120 or AC200 to 240, 50/60 (grounding required)
- **Max. power consumption (VA)**: Approx. 820

### Air supply

- **Supply pressure (MPa)**: 0.45 to 0.7
- **Working pressure (MPa)**: 0.4
- **Air consumption (NL/min)**: 54
- **Air supply connecting nipple (main unit)**: One touch pipe joint for outer diameter Φ8 hose

### Operation environment

- **Operating temperature (°C)**: 10 to 30
- **Guaranteed accuracy temperature range (°C)**: 20 ± 1

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*1 Please contact our sale personnel as there may be limitations due to the measurement diameter, and the combination of detector and stylus.

*2 JIS B 7451-1997 compliant. H is the height of the measurement point from the upper surface of the table in mm, and R is the distance from the rotational center of the table in mm.
External view

### L-shaped layout

![L-shaped layout diagram](image)

- Air Input
- Φ 8 Tube
- Data processor
- Power supply

### I-shaped layout

![I-shaped layout diagram](image)

- Air Input
- Φ 8 Tube
- Data processor
- Power supply

### Measurements

- Maximum height of measurement: 2750 mm
- Maximum diameter of measurement: 1640 mm

### Dimensions

- L-shaped layout:
  - (2240) x (300) x (300) mm
  - (300) x (950) x (760) mm
- I-shaped layout:
  - (2240) x (300) x (300) mm
  - (300) x (950) x (760) mm

### Notes

- Air Input:
  - Φ 8
- Tube:
  - Φ 8

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*Please refer to the images for a clear view of the layout.*
Together with our partners, we are able to offer you a Europe-wide sales and service network. Through the regional proximity, a service technician can reach your premises without any prolonged wait and travel times. If you have any questions, please contact us directly from all European countries through our centralized metrology phone number or email address:

**+49(0)89 54 67 688 - 0**
**Mon – Fri from 8:30 a.m. to 5:00 p.m.**

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