Talyrond® 565/585H

A revolutionary concept in automated roundness inspection
The Talyrond 500H
A new concept in roundness measurement

Reproducible measurement results
Decades of experience, ultra precision machining expertise and FEA optimized design combine to provide low noise and near flawless mechanical execution of the measuring axes. Further enhancement via the use of traceable standards and exclusive algorithms effectively eliminates instrument influence from the measurement results.

High precision emulation of your manufacturing process
The all-new Talyrond 500 roundness instruments use rotary, vertical and horizontal measuring datums to duplicate your machine tool’s movement and exactly reproduce the workpiece shape. This ultra high precision simulation of the cutting tool path enables precise control of your manufacturing process.

Monitoring manufacturing

<table>
<thead>
<tr>
<th>Gauge</th>
<th>Roundness</th>
<th>Roughness</th>
<th>Contour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Radial Accuracy</td>
<td>Noise</td>
<td>LS Arc measurement</td>
</tr>
<tr>
<td></td>
<td>± 0.01µm</td>
<td>0.5 µm</td>
<td>5 µm</td>
</tr>
<tr>
<td>Gauge Range</td>
<td>Up to 4 mm</td>
<td>Less than 30nm Rq all axes</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>Down to 0.3 nm</td>
<td>Ra values</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than 0.1µm</td>
<td></td>
</tr>
</tbody>
</table>

The Talyrond 500H series is unsurpassed in speed and position control making it the ideal system for high volume precision components.
Unparalleled measurement capability
Five measurements in one
Emulating the manufacturing process with a higher degree of precision allows all features to be measured on one instrument.

1. **Roughness**
   High resolution gauge and low axis noise enables linear or circumferential surface roughness measurement.

2. **Roundness**
   Frictionless air bearing spindle and precision column for roundness, cylindricity and straightness measurements.

3. **Contour**
   Our patented calibration technique enables measurement of radius, angle, height, length, distance and more.

4. **Cylindrical mapping**
   Precision control and low noise in all axes allows in depth analysis of cylindrical components including wear scars and material volume.

5. **Cams and pistons**
   A precision encoder and linear scales in all axes enables measurement of non round parts such as cams and pistons.
Powerful software tools help improve your process

Advanced harmonics – identify the cause of bad parts

Ordinary inspection might detect bad components but Talyrond 500H can help you fix the production issues that are causing them. Deviation in form on a workpiece can be broken down into irregularities that have both frequency and amplitude. Harmonic analysis identifies these imperfections allowing you to pinpoint and correct their cause, reducing the need for ever tighter tolerances on size.

- Full histogram view with tolerance bands
- Pass/Fail and warning messages
- Ranking system according to wave depth or harmonic amplitude
- Comparison to CSV or GKD files
- Up to 5000 upr
- Wave depth or harmonic amplitude format

Precision harmonic standard

A precision machined standard with the following undulations in 360 degrees:

<table>
<thead>
<tr>
<th>Frequency (upr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>150</td>
</tr>
<tr>
<td>500</td>
</tr>
<tr>
<td>1500</td>
</tr>
</tbody>
</table>

“Giving confidence in your instrument.”

3D cylindrical mapping

For production issues beyond the scope of traditional 2D inspection techniques

With high accuracy and high resolution in all axes, Talyrond 500H allows you to measure in 3 dimensions for more thorough examination of flaws, defects and cutting tool geometry effects that influence performance or lead to component malfunction.

- Twist or lead detection
- Machining defects
- Wear scar analysis
- Leak detection and more
Q-Link Production Interface
A simplified interface designed specifically for production environments

• Q-DAS accredited
• Compatible with all instruments
• Simple operation
• User levels
• Traceable fields
• Simple tolerancing
• Automatic summary reports
• Automatic statistical studies
Applications

Inner bearing races
- Harmonic analysis
- Form & radius analysis
- Roundness

Roller bearings
- Roundness
- Tilt and form error to axis of rotation

Fuel injectors
- Angle and distance
- Roundness
- Parallelism
- Surface finish

Crankshafts
- Parallelism
- Cylindricity

Turbo chargers
- Surface finish
- Parallelism
- Cylindricity
Ultra precision bearings are produced to the highest standards available. They are used in industries with a necessity for critical tolerances, high speeds and reliable performance under demanding operating conditions. Ultra precision bearings are also used in safety-critical and harsh environment applications.

**Industries and applications:**
- Automotive
- Aerospace
- Bearings
- Hydraulics
- Optics
- Dental and medical
- Industrial plants

"Having the responsibility to ensure 1.5 million bearings each year are manufactured to the highest quality, means controlling our components at all stages of manufacturing. We have 15 Taylor Hobson roundness measuring instruments that help us maintain high throughput and the accuracies we require to ensure every one of our bearings is of the highest quality."

Measurement Q/A Coordinator – Leading global bearings manufacturer
Reproducing the part
Taylor Hobson’s core competencies are in cylindrical grinding, surface grinding and diamond turning. All of these disciplines coupled with knowledge in drive mechanisms go towards constructing an instrument with low noise and high geometric accuracy, ensuring reproducibility of the component.

Frictionless air bearing spindle
The instrument’s spindle axis, like any spindle based machine tool, is paramount in ensuring integrity of measurement. Utilising Taylor Hobson’s own diamond turning lathe we are able to create a reference datum unsurpassed in accuracy and reliability.

Instrument base
Using finite element analysis software, the cast iron base provides a solid foundation for both the high precision air bearing spindle and vertical straightness datum, ensuring movement and weight do not affect results. A choice of passive or active isolation mounts are available, which have been designed for either inspection laboratories or production environments.

Straightness datums
The vertical column is machined for straightness, waviness and roughness to an exacting standard, using traceable standards and techniques developed by Taylor Hobson. The straightness datums are further enhanced to ensure reproducibility of the part with little or no instrument influence.

Important features of a roundness system
1. Parallelism of column to spindle axis
2. Column and arm straightness
3. Low vertical and radial arm noise
4. Squareness of arm to spindle axis
5. Radial run-out of spindle
6. Low spindle noise
7. Minimized coning error of spindle
8. Accurate glass scales in all axes

“World-beating noise floor”
Industry specific software

Velocity analysis allows bearing manufacturers to evaluate harmonics with respect to amplitude and predict function with respect to speed.

Traceability

Traceability
All calibration standards can be provided with traceability to international standards using Taylor Hobson’s own UKAS laboratory.

Roundness
Using a precision polished glass hemisphere calibrated to an uncertainty of less than 5nm Taylor Hobson can guarantee your spindle is within specification and maintain quality of results.

Straightness, squareness and parallelism
To ensure the column and radial straightness unit conform to specification we can provide standards that are either cylindrical or flat. These standards provide certainty of the measurement axes. These artefacts are combined with special software routines to enhance all axes for correct geometrical form.

Surface finish
A unique standard is available that provides measurement traceability for roughness in both a vertical and circumferential direction.

Arcuate correction (contour option)
Taylor Hobson’s patented calibration routine and calibration ball corrects for the arcuate motion of the stylus allowing dimensional measurement. This routine is critical to measurement of radius and angled parts when normal calibration routines will not suffice.

Gain correction
The TR500 series has a unique automated gain calibration for the instrument’s gauge; the routine is automated and takes a matter of seconds to set. Alternatively a set of calibrated slip blocks traceable to primary standards are also supplied.

Axis calibration
Automated or manual routines can be supplied allowing the user to set coordinates to the part or instrument axes. The optional fully automated routine calibrates the arm, column and spindle.
All the accessories you need to begin using Taylor Hobson roundness measuring systems are supplied as standard. However, for more demanding requirements or improved measurement throughput, we have a range of accessories which may be ordered separately.

1. Environmental cabinet and active AV mounts
   Recommended for use in production or non controlled environments

   Environmental cabinet
   The environmental cabinet forms part of the instrument structure and protects against airflow, dust and external influence. code 112/4276

   Active anti-vibration mounts
   The active AV mounts protect the system from external vibration by use of piezo actuated mounts. code 112/4277

   Active AV mounts with environmental cabinet
   Provides isolation from airflow, dust and external vibration. code number 112/4278

2. Talyrond ball calibration standard
   Required for use with contour or form software, this calibration standard corrects for gain, tip and arcuate motion of the stylus.

   Talyrond ball standard rad 7.5mm (Not recommended for 4 mm range) code 112-4305UC
   Talyrond ball standard rad 12.5mm (Not recommended for 4 mm range) code 112-4319UC
   Talyrond ball standard rad 22.5mm code 112-4092UC

3. Calibration standard for vertical and circumferential roughness code 112/4341 UCR

4. Six jaw component chuck
   A 6 jaw precision scroll chuck.
   Capacity - Inside diameter 20 mm - 95 mm [0.78 in - 3.74 in].
   Capacity - Outside diameter 2 mm - 32 mm [0.08 in - 1.26 in]. code 112/1859 optional

5. Standard stylus arms
   Ruby ball x 100 mm [3.9 in]
   1 mm [0.039 in], code 112/3245
   2 mm [0.078 in], code 112/3244
   4 mm [0.157 in], code 112/3243

6. Precision collet chuck - removable three ball type location (for use with manual or automated tables)
   Note: Collet required – see list below.
   code 112/3662

   code 112/3554-1.0 1 mm Collet
   code 112/3554-1.5 1.5 mm Collet
   code 112/3554-2.0 2 mm Collet
   code 112/3554-2.5 2.5 mm Collet
   code 112/3554-3.0 3 mm Collet
   code 112/3554-3.5 3.5 mm Collet
   code 112/3554-4.0 4 mm Collet
   code 112/3554-4.5 4.5 mm Collet
   code 112/3554-5.0 5 mm Collet
   code 112/3554-5.5 5.5 mm Collet
   code 112/3554-6.0 6 mm Collet
   code 112/3554-6.5 6.5 mm Collet
   code 112/3554-7.0 7 mm Collet
   code 112/3554-7.5 7.5 mm Collet
   code 112/3554-8.0 8 mm Collet

   code 112/3555 Adjustable End Stop
   Recommended for use with 112/3549 or 112/3662; may require modification to suit the component under test.

   Bar stylus
   A 100mm [3.9 in] stylus for measuring small diameter components. code 112/3489 optional

   Diamond styli
   Conisphere stylus with 90º included angle; required for cylindrical mapping or surface finish applications.
   code 112/3806 optional 5 µm Rad
   code 112/3807 optional 10 µm Rad

   Kinematic dowel support set
   For stable workpiece mounting.
   code 112/1861 standard

   Reservoir assembly kit
   If the air supply is unreliable or of poor quality then the reservoir assembly is recommended to provide an even flow of air to the spindle.
   code 112/2869 optional
Force setting gauge
Recommended with diamond styli and where specific stylus forces are required.
code 112/3808 optional

7 High precision glass hemisphere
For checking total system performance; UKAS calibration certificate is optional.
Roundness < 0.02 µm (0.8 µ")
code 112/2324 optional

Glass hemisphere
For checking total system performance; UKAS calibration certificate is optional.
Roundness < 0.05 µm (2 µ")
code 112/436 optional

8 High precision test cylinder
For verification of the instrument’s vertical straightness accuracy and parallelism of the vertical axis to the spindle axis. UKAS calibration certificate is optional.
code 112/3670-01 optional

Precision test cylinder
For checking the instrument’s vertical straightness accuracy and parallelism of the vertical axis to the spindle axis. UKAS calibration certificate is optional.

300 mm (11.8") cylinder
Roundness < 0.25 µm (10 µ")
Straightness < 0.5 µm (20 µ")*
code 112/1888 optional

500 mm (19.7") cylinder
Roundness < 0.25 µm (10 µ")
Straightness < 0.5 µm (20 µ")*
code 112/1997 optional

1000 mm (39.4") cylinder
Roundness < 0.75 µm (30 µ")
Straightness < 3 µm (120 µ")*
code 112/3604 optional

* Straightness over central 90% of test cylinder length

9 Cresting standard
For checking the vertical and horizontal alignment of the gauge head.
code 112/1876 optional

10 Flick standard
For rapid calibration of the gauge head; alternative to the standard gauge calibration set.
20 µm (0.8 µ") range
code 112/2308 Optional
300 µm (0.012") range
code 112/2233 optional

11 Calibration set
For calibrating the gauge head. The set comprises a circular glass flat and four gauge blocks. UKAS calibration certificate is optional.
code 112/2889 standard

Glass flat 250 mm (10") diameter
For checking the straightness and alignment of the horizontal arm with respect to the spindle axis.
code 112/1998 optional

Instrument cover
To protect the instrument when not in use.
code 112/1393 optional

ECU Fuse kit
code 112/4234 optional

Pre-filter element
code 112/3351 optional

Accessory case
A useful case for carrying standard and optional accessories.
code 48/453 optional

Set of hexagonal wrench keys
To assist with minor adjustments on the instrument.
code 630/412 optional

Coalescing filter element
Secondary filter to be changed every 3 months to maintain a clear air supply, (1 included with the instrument).
code 112/3378 optional

Customised solutions for special applications
Our strategy for success is simple, instead of just selling products, we provide solutions. If our standard instruments and accessories do not satisfy your needs, we can customise a solution to exactly match your application. This may include such things as work holding devices or special styli for applications such as small bores, shoulders or undercuts.

Specifications are subject to change without notice.
Talyrond 500H specification

Analysis capability

<table>
<thead>
<tr>
<th>Metric</th>
<th>Standard software</th>
<th>Optional software</th>
<th>Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roundness</td>
<td>Parallelism</td>
<td>Piston measurement</td>
<td>Roundness</td>
</tr>
<tr>
<td>Squareness</td>
<td>Vertical straightness</td>
<td>Commutator analysis</td>
<td>• Gaussian</td>
</tr>
<tr>
<td>Concentricity</td>
<td>Partial arc flatness</td>
<td>Disk thickness variation</td>
<td>• 2 CR Phase corrected</td>
</tr>
<tr>
<td>Coaxiality</td>
<td>Partial arc roundness</td>
<td>Velocity analysis</td>
<td>Surface</td>
</tr>
<tr>
<td>Slope</td>
<td>Cylindrical mapping</td>
<td>Advanced harmonics</td>
<td>• Gaussian</td>
</tr>
<tr>
<td>Cylindricity</td>
<td>Departure from True Plane</td>
<td>Groove analysis</td>
<td>• Robust Gaussian</td>
</tr>
<tr>
<td>Total run-out</td>
<td>Departure from True Circle</td>
<td>TalyMap Contour Software</td>
<td>• 2 CR Phase corrected</td>
</tr>
<tr>
<td>Flatness</td>
<td>Radial straightness (RSU)</td>
<td>TalyMap 3D analysis Software</td>
<td>• 2 CR</td>
</tr>
<tr>
<td>Eccentricity</td>
<td>Multiplane flatness (RSU)</td>
<td>Circumferential Surface finish analysis</td>
<td></td>
</tr>
<tr>
<td>Run-out</td>
<td>Multiplane roundness</td>
<td>Surface finish analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Twist analysis</td>
<td></td>
</tr>
</tbody>
</table>

Measurement capability

<table>
<thead>
<tr>
<th>Metric</th>
<th>300 mm column</th>
<th>500 mm column</th>
<th>1000 mm column</th>
<th>1200 mm column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straightness over column length</td>
<td>0.3 µm / 300 mm (11.8 µm / 11.8 in)</td>
<td>0.3 µm / 500 mm (11.8 µm / 19.7 in)</td>
<td>0.75 µm / 1000 mm (29.5 µm / 39.4 in)</td>
<td>1 µm / 1200 mm (39.4 µm / 47.2 in)</td>
</tr>
<tr>
<td>Straightness over any 100mm (3.94in)</td>
<td>0.15 µm / 100 mm (5.9 µm / 3.94 in)</td>
<td>0.15 µm / 100 mm (5.9 µm / 3.94 in)</td>
<td>0.3 µm / 100 mm (11.8 µm / 3.94 in)</td>
<td>0.3 µm / 100 mm (11.8 µm / 3.94 in)</td>
</tr>
<tr>
<td>Vertical axis to spindle axis parallelism</td>
<td>0.5 µm / 300 mm (20 µm / 11.8 in)</td>
<td>0.75 µm / 500 mm (29.5 µm / 19.7 in)</td>
<td>1 µm / 1000 mm (39.4 µm / 39.4 in)</td>
<td>1.5 µm / 1200 mm (59 µm / 47.2 in)</td>
</tr>
<tr>
<td>Column noise †</td>
<td>&lt;30 nm</td>
<td>&lt;30 nm</td>
<td>TBA</td>
<td>TBA</td>
</tr>
</tbody>
</table>

Spindle axis

<table>
<thead>
<tr>
<th>Metric</th>
<th>Radial straightness unit</th>
<th>Motorized radial arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radial limit of error (at table height)</td>
<td>± 0.01 µm (1-15 upr) or ± 0.015 µm (1-50 upr)</td>
<td>N/A</td>
</tr>
<tr>
<td>Axial limit of error (at table center)</td>
<td>± 0.01 µm (1-15 upr) or ± 0.015 µm (1-50 upr)</td>
<td>N/A</td>
</tr>
<tr>
<td>Coning Error (height above table)</td>
<td>± 0.00025 µm/mm</td>
<td>N/A</td>
</tr>
<tr>
<td>Coning Error (radius from centre)</td>
<td>± 0.00025 µm/mm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Horizontal arm axis

<table>
<thead>
<tr>
<th>Metric</th>
<th>Radial straightness unit</th>
<th>Motorized radial arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straightness over full length of travel</td>
<td>0.25 µm / 200 mm (10 µm / 7.9 in)</td>
<td>N/A</td>
</tr>
<tr>
<td>Straightness over any 50 mm</td>
<td>0.125 µm + 0.000625 µm/µmm (5 µm + 0.025 µm/in)</td>
<td>N/A</td>
</tr>
<tr>
<td>Squareness to spindle axis</td>
<td>1 µm / 200 mm (39.4 µm / 7.9 in)</td>
<td>N/A</td>
</tr>
<tr>
<td>Radius measurement *</td>
<td>(0.1 µm/µm + 1.5 µm)</td>
<td>N/A</td>
</tr>
<tr>
<td>Arm noise †</td>
<td>&lt;30 nm Rq</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Gauge

<table>
<thead>
<tr>
<th>Range/resolution</th>
<th>High range</th>
<th>Normal range</th>
<th>Mid range</th>
<th>Low range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± 2 mm, .0016 µm resolution (0.0078 in range, 0.6 µm resolution)</td>
<td>+/− 1 mm range, 0.008 µm resolution (0.039 in range, 0.3 µm resolution)</td>
<td>+/− 0.2 mm range, 0.0016 µm resolution (0.0078 in range, 0.06 µm resolution)</td>
<td>+/− 0.04 mm range, 0.0003 µm resolution (0.003 in range, 0.012 µm resolution)</td>
</tr>
</tbody>
</table>

Component capacity

<table>
<thead>
<tr>
<th>Metric</th>
<th>300 mm column</th>
<th>500 mm column</th>
<th>1000 mm column</th>
<th>1200 mm column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring capacity</td>
<td>300 mm (11.82 in)</td>
<td>500 mm (19.7 in)</td>
<td>1000 mm (39.4 in)</td>
<td>1200 mm (47.2 in)</td>
</tr>
<tr>
<td>Maximum component height</td>
<td>300 mm (320.82 in)</td>
<td>500 mm (19.7 in)</td>
<td>1000 mm (39.4 in)</td>
<td>1200 mm (47.2 in)</td>
</tr>
<tr>
<td>Maximum component diameter</td>
<td>Ø 400 mm (15.7 in) [extendable to 485 mm (19.1 in)]</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum bore measuring depth (with standard length stylus)</td>
<td>565H 160 mm (6.3 in) or 585H 155mm (6.1 in)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum measuring diameter</td>
<td>Ø 350 mm (13.8 in) [extendable to 435 mm (17.1 in)]</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum worktable loading</td>
<td>75kg (165 lb)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum worktable moment loading</td>
<td>Auto C&amp;L: 1250 kg/m (108 lb/in) within a central 80 mm (3.15 in) equilateral triangle</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

† Vertical traverse measured with a 10 Kg load at 200 mm height; horizontal traverse measured with a 20 Kg load at 400 mm height. All measurements based on a nominally leveled glass flat using the specified stylus; analyzed using a Gaussian filter; 0.8 mm cut off, 300:1 bandwidth and parameter Rq. * Based on measurements made within 2 mm radius of a calibrated ring or plug gauge.
### Technical Specifications

#### Column axis

<table>
<thead>
<tr>
<th>Dimension</th>
<th>300 mm column</th>
<th>500 mm column</th>
<th>1000 mm column</th>
<th>1200 mm column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column construction</td>
<td>Precision machined cast iron</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Movement range</td>
<td>300 mm (11.8 in)</td>
<td>500 mm (19.7 in)</td>
<td>1000 mm (39.4 in)</td>
<td>1200 mm (47.2 in)</td>
</tr>
<tr>
<td>Speed of traverse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- moving</td>
<td>0.1-105 mm/v/sec (0.004 - 4.33 in/sec) stepped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- measuring</td>
<td>0.1-20 mm/v/sec (0.004 - 0.8 in/sec) stepped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- contacting</td>
<td>0.5-5 mm/v/sec (0.02 - 0.2 in/sec) stepped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positional control</td>
<td>± 0.2°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length measurement</td>
<td></td>
<td></td>
<td></td>
<td>(0.03 µm/mm + 1.5 µm)</td>
</tr>
<tr>
<td>Positional resolution</td>
<td>0.25 µm (0.98 µin)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of data points (selectable)</td>
<td>200,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Horizontal arm axis

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Radial straightness unit</th>
<th>Motorized radial arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm construction</td>
<td>Lapped ceramic datum</td>
<td>Extruded aluminum datum</td>
</tr>
<tr>
<td>Movement range</td>
<td>200 mm (7.9 in)</td>
<td>200 mm (7.9 in)</td>
</tr>
<tr>
<td>Speed of traverse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- moving</td>
<td>0.25 - 15 mm/v (0.01 - 0.6 in/v) stepped</td>
<td></td>
</tr>
<tr>
<td>- measuring</td>
<td>0.25 - 15 mm/v (0.01 - 0.6 in/v) stepped</td>
<td></td>
</tr>
<tr>
<td>- contacting</td>
<td>0.5 - 5 mm/v (0.02 - 0.2 in/v) stepped</td>
<td></td>
</tr>
<tr>
<td>Over-center travel</td>
<td>25 mm (0.98 in) in standard column position</td>
<td></td>
</tr>
<tr>
<td>Positional control</td>
<td>5 µm (200 µin)</td>
<td></td>
</tr>
<tr>
<td>Positional resolution</td>
<td>0.25 µm (0.98 µin)</td>
<td></td>
</tr>
<tr>
<td>Minimum movement</td>
<td>0.05 mm (0.002 in)</td>
<td></td>
</tr>
<tr>
<td>Number of data points (selectable)</td>
<td>200,000</td>
<td></td>
</tr>
</tbody>
</table>

#### Spindle axis

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle construction</td>
<td>Precision air bearing</td>
</tr>
<tr>
<td>Speed of rotation</td>
<td>0.3 - 10 rpm</td>
</tr>
<tr>
<td>Positional control</td>
<td>± 0.2°</td>
</tr>
<tr>
<td>Positional resolution</td>
<td>0.02° (optional ± 0.005°)</td>
</tr>
<tr>
<td>Number of data points (selectable)</td>
<td>3600 and 18,000 (optional 72,000)</td>
</tr>
</tbody>
</table>

#### Centering and leveling table

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievable accuracy of auto centering</td>
<td>&lt;0.8 µm (32 µin)</td>
</tr>
<tr>
<td>Achievable accuracy of auto leveling</td>
<td>&lt;0.8 arc secs</td>
</tr>
<tr>
<td>Construction</td>
<td>Patented 3 point kinematic support</td>
</tr>
<tr>
<td>Center and leveling table control</td>
<td>Automatic with continuous spindle rotation</td>
</tr>
<tr>
<td>Follow mode center and leveling</td>
<td>Yes</td>
</tr>
<tr>
<td>Centering range</td>
<td>+/- 5 mm (0.2 in)</td>
</tr>
<tr>
<td>Leveling range</td>
<td>+/- 0.5°</td>
</tr>
<tr>
<td>Worktable diameter</td>
<td>300 mm (11.8 in)</td>
</tr>
</tbody>
</table>

#### Gauge

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge type</td>
<td>Talymin 6 single bias inductive transducer</td>
</tr>
<tr>
<td>Stylus tip force</td>
<td>0 to 4 g adjustable</td>
</tr>
<tr>
<td>Crutch angle</td>
<td>Adjustable (optional fixed)</td>
</tr>
<tr>
<td>Cresting (TR585)</td>
<td>Dual cresting facility (horizontal &amp; vertical)</td>
</tr>
</tbody>
</table>

#### Electrical

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument &amp; computer voltage</td>
<td>90 V - 130 V or 200 V - 260 V (switch selectable)</td>
</tr>
<tr>
<td>Frequency</td>
<td>47 Hz to 63 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>500 VA maximum</td>
</tr>
<tr>
<td>Safety</td>
<td>BS EN 61010-1, BS EN 349, BS EN 13850, BS EN 983, BS EN 60204 Machinery Directive standards</td>
</tr>
<tr>
<td>EMC</td>
<td>BS EN 61000-6-1, BS EN 61000-6-3</td>
</tr>
</tbody>
</table>

#### Environment

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>10 °C to 35 °C (50 °F to 95 °F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-10 °C to 50 °C (14 °F to 122 °F)</td>
</tr>
<tr>
<td>Temperature gradient</td>
<td>&lt; 2 °C / hour (&lt; 3.6 °F / hour)</td>
</tr>
<tr>
<td>Operating humidity</td>
<td>30 % to 80 % relative humidity non condensing</td>
</tr>
<tr>
<td>Storage humidity</td>
<td>10 % to 90 % relative humidity non condensing</td>
</tr>
<tr>
<td>Maximum RMS vertical</td>
<td>0.05 mm/v (0.0002 in/s) at &lt; 50 Hz</td>
</tr>
<tr>
<td>Floor vibration</td>
<td>0.10 mm/v (0.0004 in/s) at &gt; 50 Hz</td>
</tr>
</tbody>
</table>

All measurements are taken using a standard 100 mm-length stylus with 2 mm-diameter ball tip. All measurements of roundness and flatness are quoted using the gauge horizontal orientation. All measurements of roundness are relative to the calibrated form of a glass hemisphere. Calibration error of glass hemisphere is ± 5nm. All accuracies are quoted at 20°C ± 1°C (68°F ± 1.8°F). All roundness and flatness results are quoted as the departure from the Least Squares Circle (LSC) at 1 - 50 UPR, Gaussian filter, 6 RPM, clockwise rotation (unless otherwise specified). All errors are quoted as maximum permissible errors (MPE). All straightness / parallelism results are quoted with an 8 mm cut-off, low pass filter,5mm/s measuring speed, Minimum Zone (MZ) reference. Quoted uncertainties are at 95% confidence in accordance with recommendations in the ISO Guide to the Expression of Uncertainty in Measurement (GUM:1993).
Talyrond 500H floor plan

Talyrond 500H with desk

Talyrond 500H with cabinet

Talyrond 500H with desk

Optional cabinet

900 mm column
Nominal instrument weight: 299kg (658lb)

500 mm column
Nominal instrument weight: 282kg (620lb)

300 mm column
Nominal instrument weight: 276kg (610lb)
## Parameters

<table>
<thead>
<tr>
<th>Type of analysis</th>
<th>Measurement mode</th>
<th>Evaluation diagram</th>
<th>Talyrond 500H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roundness</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Parallelism</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Cylindricity</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Straightness</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Flatness</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Coaxiality</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Concentricity</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Eccentricity</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Radial Runout</td>
<td>Axial</td>
<td>Runout, Datum axis</td>
<td>✓</td>
</tr>
<tr>
<td>Squareness</td>
<td></td>
<td>R, Datum axis</td>
<td>✓</td>
</tr>
<tr>
<td>Parallelism</td>
<td></td>
<td>z2 - z1</td>
<td>✓</td>
</tr>
<tr>
<td>Measure Interrupted Surface</td>
<td></td>
<td>OR</td>
<td>✓</td>
</tr>
<tr>
<td>Harmonic Analysis</td>
<td>Radial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness Variation</td>
<td>Axial</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

✓ = Included – ● = Optional  ❌ = Not available
(Customer specific analysis available on request)
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