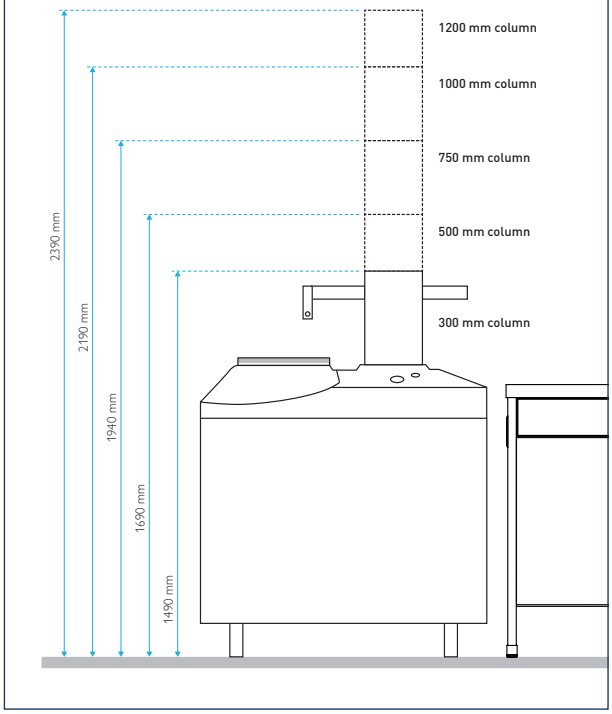
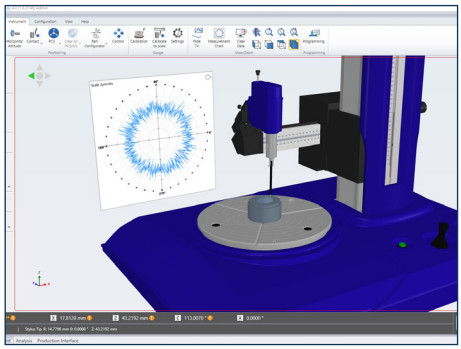
TAYLOR HOBSON®

AMETEK®
ULTRA PRECISION TECHNOLOGIES

TALYROND®
565/585 PRO

System specification





powered by Metrology 4.0®
SMART SOFTWARE

System specification - Talyrond® 565H / 585H PRO

Analysis capability

Standard software			
Roundness	Cylindricity	Parallellism	Departure from True Plane (DFTP)
Squareness	Total run-out	Vertical straightness	Departure from True Circle (DFTC)
Concentricity	Flatness	Partial arc flatness	Radial straightness (RSU)
Coaxiality	Eccentricity	Partial arc roundness	Multiplane flatness (RSU)
Slope	Run-out	Cylindrical mapping	Multiplane roundness

Optional software		Filters	
Disk thickness variation	Contour Software	Roundness - Gaussian, Robust Gaussian, 2CR Phase corrected	Surface - Gaussian, Robust Gaussian, Double Gaussian, Spline, Analogic, 2CR Phase correct
Velocity analysis	3D analysis Software		
Wall thickness variation	Circumferential Surface finish analysis		
Advanced harmonics	Surface finish analysis		
Harmonics	Twist analysis		

Measurement capability

Column axis	300 mm column	500 mm column	750 mm column	1000 mm column	1200 mm column
Straightness over column length	0.3 µm / 300 mm (11.8 µin / 11.8 in)	0.3 µm / 500 mm (11.8 µin / 19.7 in)	0.5 µm / 750 mm (12.7 µin / 29.5 in)	0.75 µm / 1000 mm (29.5 µin / 39.4 in)	1 µm / 1200 mm (39.4 µin / 47.2 in)
Straightness over any 100 mm (3.94 in)	0.15 µm / 100 mm (5.9 µin / 3.94 in)	0.15 µm / 100 mm (5.9 µin / 3.94 in)	0.25 µm / 100 mm (6.35 µin / 3.94 in)	0.3 µm / 100 mm (11.8 µin / 3.94 in)	0.3 µm / 100 mm (11.8 µin / 3.94 in)
Vertical axis to spindle axis parallelism	0.5 µm / 300 mm (20 µin / 11.8 in)	0.75 µm / 500 mm (29.5 µin / 19.7 in)	0.75 µm / 750 mm (29.5 µin / 29.5 in)	1 µm / 1000 mm (39.4 µin / 39.4 in)	1.5 µm / 1200 mm (59 µin / 47.2 in)
Column noise †	<30 nm	<30 nm	<30 nm	TBA	TBA

Spindle axis	
Radial limit of error (at table height)	± 0.01 µm (1-15 upr) or ± 0.015 µm (1-50 upr)
Axial limit of error (at table center)	± 0.01 µm (1-15 upr) or ± 0.015 µm (1-50 upr)
Coning Error (height above table)	± 0.00025 µm/mm
Coning Error (radius from centre)	± 0.00025 µm/mm

Gauge	Range / Resolution
High range	±2 mm / 0.016 µm (0.078 in / 0.6 µin)
Normal range	±1 mm / 0.008 µm (0.039 in / 0.3 µin)
Mid range	±0.2 mm / 0.0016 µm (0.0078 in / 0.06 µin)
Low range	±0.04 mm / 0.0003 µm (0.003 in / 0.012 µin)

Horizontal arm axis	Radial straightness unit	Motorized radial arm
Straightness over full length of travel	0.25 µm / 200 mm (10 µin / 7.9 in)	N/A
Straightness over any 50 mm	0.125 µm + 0.000625 µm/mm (5 µin + 0.025 µin/in)	N/A
Squareness to spindle axis	1 µm / 200 mm (39.4 µin / 7.9 in)	N/A
Radius measurement*	(0.1 µm/mm + 1.5 µm)	
Arm noise †	<30 nm Rq	N/A

Component capacity

Measuring capacity	300 mm column	500 mm column	750 mm column	1000 mm column	1200 mm column
Maximum component height	300 mm (11.82 in)	500 mm (19.7 in)	750 mm (29.5 in)	1000 mm (39.4 in)	1200 mm (47.2 in)
Maximum component diameter	Ø 400 mm (15.7 in) [extendable to 485 mm (19.1 in)]				
Maximum bore measuring depth**	565H 160 mm (6.3 in) or 585H 155mm (6.1 in)				
Maximum measuring diameter	Ø 350 mm (13.8 in) [extendable to 435 mm (17.1 in)]				
Maximum worktable loading	85 kg (187 lb)				
Maximum worktable moment loading	Auto C&L: 1250 kg/mm (108 lb/in) within a central 80 mm (3.15 in) equilateral triangle				

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).

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.

The above quoted technical data is for measurements taken with good metrology practice in a draft free, controlled environment isolated from low frequency floor borne vibration (i.e., metrology laboratory or Taylor Hobson supplied environmental enclosure).

Taylor Hobson pursues a policy of continual improvements due to technical developments. We therefore reserve the right to deviate from catalogue specifications.

Technical

Column axis	300 mm column	500 mm column	750 mm column	1000 mm column	1200 mm column
Column construction	Precision machined cast iron				
Movement range	300 mm (11.8 in)	500 mm (19.7 in)	750 mm (29.5 in)	1000 mm (39.4 in)	1200 mm (47.2 in)
Speed of traverse - moving	0.1-105 mm/sec (0.004 - 4.33 in/sec) stepped				
- measuring	0.1-20 mm/sec (0.004 - 0.8 in/sec) stepped				
- contacting	0.5-5 mm/sec (0.02 - 0.2 in/sec) stepped				
Positional control	4 µm				
Length measurement	(0.03 µm/mm + 1.5 µm)				
Positional resolution	0.25 µm (0.98 µin)				
Number of data points (selectable)	200,000				

Horizontal arm axis	Radial straightness unit	Motorized radial arm	
Arm construction	Lapped ceramic datum	Extruded aluminum datum	
Movement range	200 mm (7.9 in)	200 mm (7.9 in)	300 mm (11.8 in)
Speed of traverse - moving	0.25 - 15 mm/s (0.01 - 0.6 in/s) stepped		
- measuring	0.25 - 15 mm/s (0.01 - 0.6 in/s) stepped	N/A	
- contacting	0.5 - 5 mm/s (0.02 - 0.2 in/s) stepped		
Over-center travel	25 mm (0.98 in) in standard column position		
Positional control	5 µm (200 µin)		
Positional resolution	0.25 µm (0.98 µin)		
Minimum movement	0.05 mm (0.002 in)		
Number of data points (selectable)	200,000		

Spindle axis	
Spindle construction	Precision air bearing
Speed of rotation	0.3, 0.6, 1, 2, 6, 10 rpm, bi-directional
Positional control	± 0.2°
Positional resolution	0.02° (optional ± 0.005°)
Number of data points (selectable)	3600 and 18,000 (optional 72,000)

Centering and leveling table	Automatic
Achievable accuracy of auto centering	<0.8 µm (32 µin)
Achievable accuracy of auto leveling	<0.8 arc secs
Construction	Patented 3 point kinematic support
Center and leveling table control	Automatic with continuous spindle rotation
Follow mode center and leveling	Yes
Centering range	± 5 mm (0.2 in)
Leveling range	± 0.5°
Worktable diameter	300 mm (11.8 in)

Gauge	
Gauge type	Talymin 6 single bias inductive transducer
Stylus tip force	0 to 4 g adjustable
Crutch angle	Adjustable (optional fixed)
Cresting (Talyrond® 585H)	Dual cresting facility (horizontal & vertical)

Gauge attitude/orientation	Talyrond® 565H	Talyrond® 585H
Control	Manual	Automatic
Attitude	Horizontal and Vertical	
Attitude Vertical	Internal / External	
Attitude Horizontal	Up / Down or Extend / Retract	
Orientation	Rotation in steps of 30°	Rotation in steps of 1°

Electrical (alternating supply, single phase with earth, 3-wire)	
Instrument & computer voltage	90 V - 130 V or 200 V - 260 V (switch selectable)
Frequency	47 Hz to 63 Hz
Power consumption	500 VA maximum
Safety	BS EN 61010-1, BS EN 349, BS EN 13850, BS EN 983, BS EN 60204 Machinery Directive standards
EMC	BS EN 61000-6-1, BS EN 61000-6-3

Air supply	
Air pressure	4.5 to 10 bar (65 to 145psi, 0.45 to 1MPA)
Regulator (pre-set)	3.5 bar (51psi, 0.35 MPa)
Max. particle size	5 micron (0.0002 in)
Moisture content – dew point	+3°C (37°F)
Flow rate at operating pressure	150 litres/minute (Min.) 5.3 ft^3 /min
Max oil content	25 mg/m^3 (0.01 grains/ft^3)
Solid particle content	5 mg/m^3 (0.002 grains/ft^3)

Environment	
Temperature (general operation)	5°C to 35°C (41°F to 95°F)
Humidity (general operation) ***	30% to 80% relative humidity, non-condensing
Temperature (storage)	-10°C to 70°C (14°F to 158°F)
Humidity (storage)	10% to 90% relative humidity, non-condensing
Temperature Gradient	<2°C / hour (<3.6°F / hour)
Free air Flow rate (Steady)	1.0 m/sec (39.4 in/sec) maximum
Maximum RMS vertical	0.05 mm/s (0.002 in/s) at < 50 Hz
Floor vibration	0.10 mm/s (0.004 in/s) at > 50 Hz

† 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.

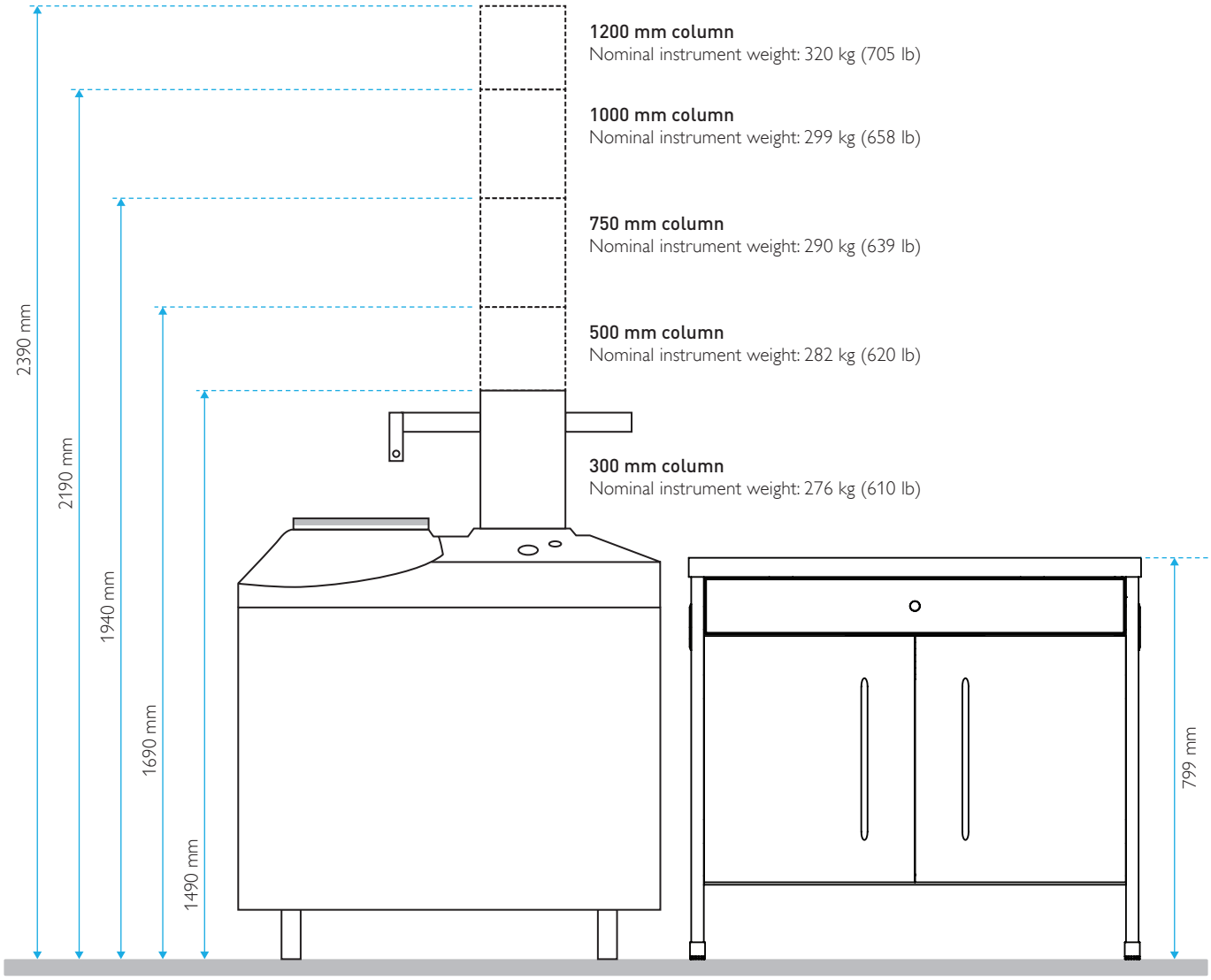
* Based on measurements made within 2 mm radius of a calibrated ring or plug gauge

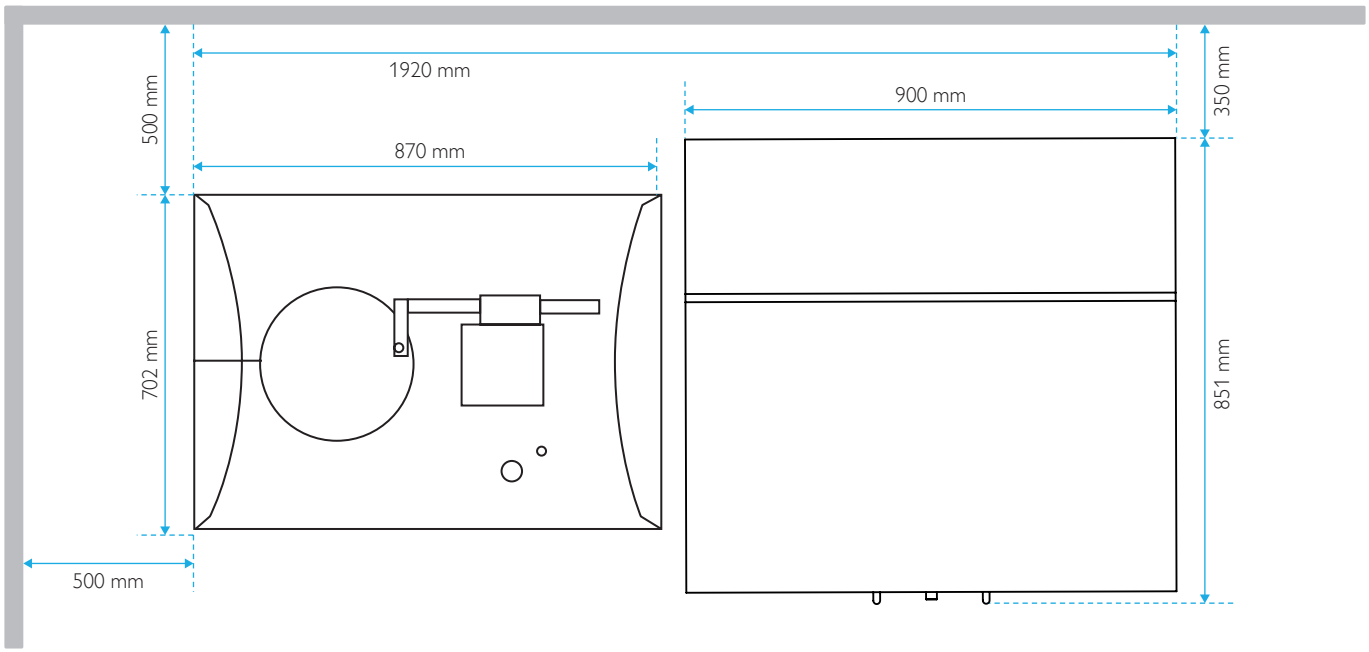
** With standard length stylus

*** Between 31°C and 40°C the humidity should decrease linearly from 80% down to 50%.

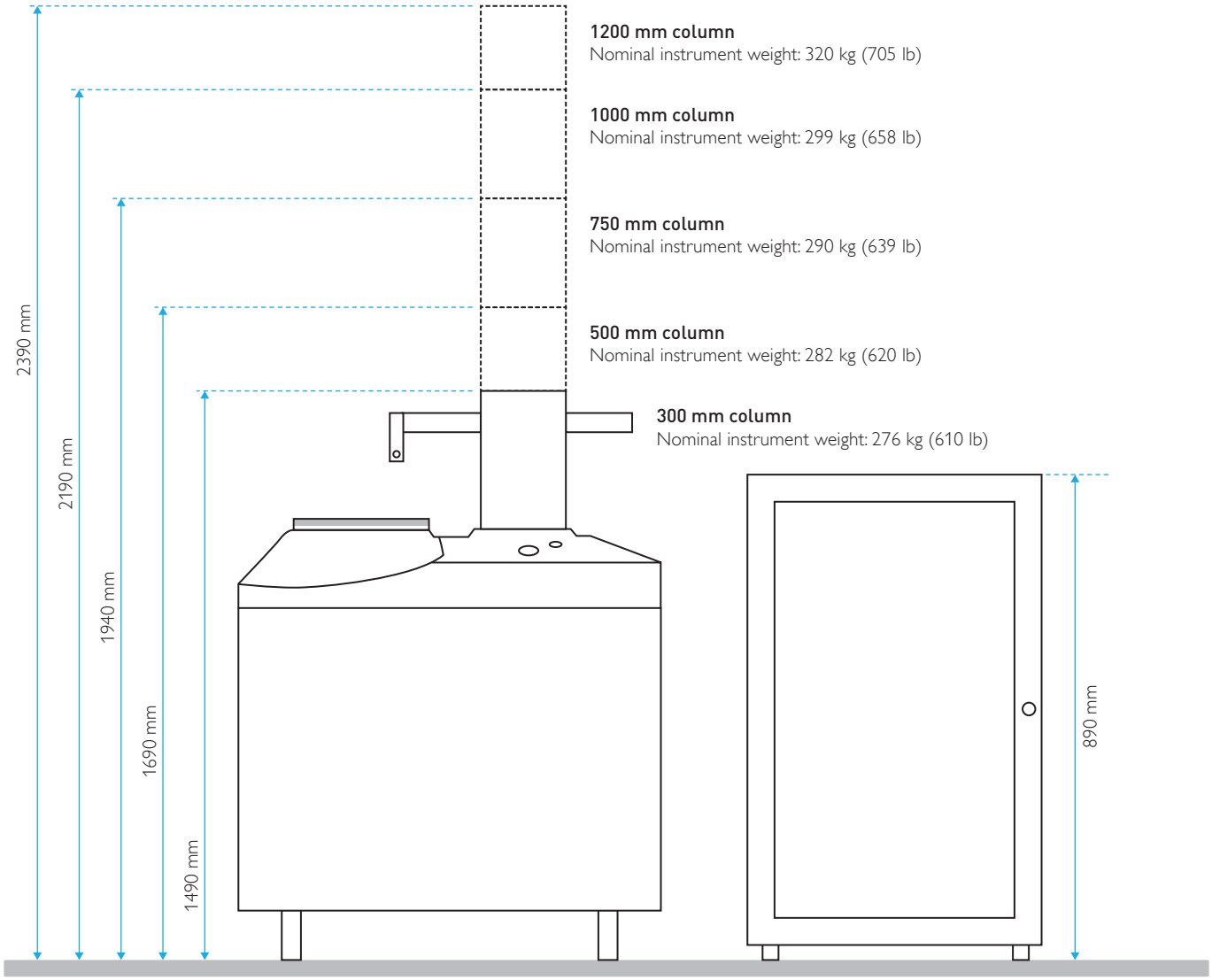
System floor plan

Talyrond® 565H / 585H PRO with desk





Talyrond® 565H / 585H PRO with ECU Cabinet



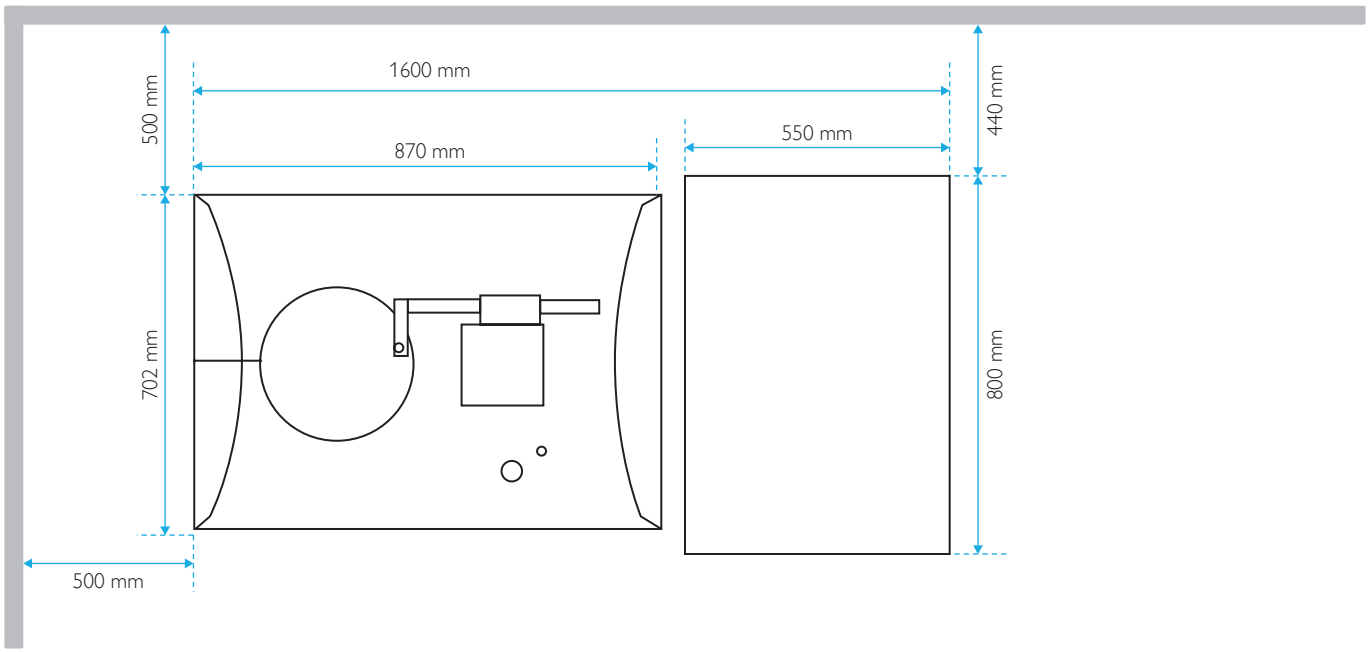
1200 mm column
Nominal instrument weight: 320 kg (705 lb)

1000 mm column
Nominal instrument weight: 299 kg (658 lb)

750 mm column
Nominal instrument weight: 290 kg (639 lb)

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

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



World-Class Global Support

We know that the performance of your instrument is important to you. It is important to us as well. Taylor Hobson AMECARE agreements are designed to reduce down time and ensure your instrument maintains optimum performance

A full suite of support services delivered by uniquely qualified engineers

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- Trained to resolve instrument issues that can affect operation

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Your instrument is only as good as the operator using it, we provide on-site/online training to give you the confidence you need in your measurement results.

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- Global calibration service

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We provide local specialised operator and metrology training:

- Individual, personalised and hands-on
- Improve operator productivity
- Improve metrology understanding

TAYLOR HOBSON®

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ULTRA PRECISION TECHNOLOGIES

The Metrology Experts

Established in 1886, Taylor Hobson is the world leader in surface and form metrology and developed the first roundness and surface finish measuring instruments.

www.taylor-hobson.com

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- **Design engineering** – special purpose, dedicated metrology systems for demanding applications.
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