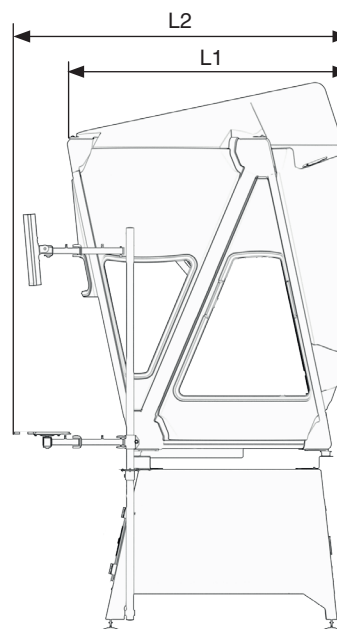
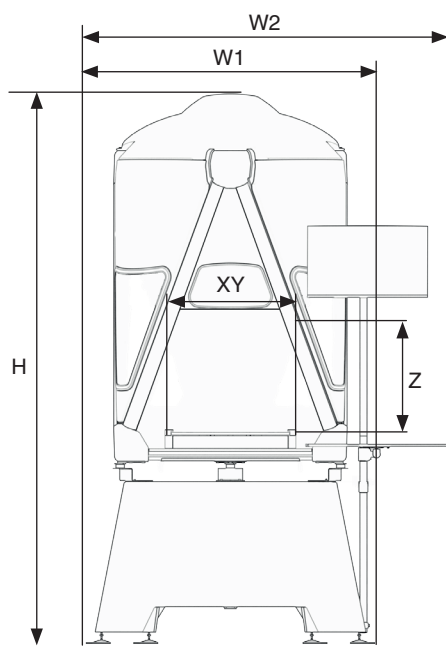


Equator-X™ 500



Dimensions (mm)

XY	Z	W1	W2	L1	L2	H
Ø 500	250	1188	1250	1228	1452	2390

Environmental specifications

Indoor use	Machine: IPX0 IEC 60529 (indoor use only) Base: IPx2* (sealed against liquid coming from parts on the transfer system)
Operating temperature	+5 °C to +50 °C
Storage temperature	-25 °C to +70 °C
Humidity	Maximum 80% RH at 40 °C, non-condensing

Specifications

Weight of machine	140 kg
Weight of base	50 kg
Fixture plate	510 mm × 510 mm
Maximum part weight including fixturing - MTS locked static or no MTS	100 kg
Maximum part weight including fixturing - with MTS operating	25 kg
Thread size	Bed inserts are M8 (M6 and 1/4" fixture plates are available)
Supported probe	SP25 with SM25-2 (scanning and touch points)
Stop circuit	Safety category: CAT 2-PL-b ISO 13849-1: B ISO 13850: 1 - controlled stop and power removed
Joystick	MCU lite-2
Control system	Equator motion controller (MC)
Position measurement	Renishaw RESOLUTE absolute optical encoder system

Absolute measurement performance

Criteria	Performance	Temperature range
Length measurement error E0 (1) & E60 (2) ISO 10360-2:2009	$\pm 2.1 \mu\text{m} + L/300 \text{ mm}^{(3)}$	18 - 22 °C
	$\pm 2.6 \mu\text{m} + L/180 \text{ mm}^{(3)}$	18 - 26 °C

Criteria	Performance	Details
Repeatability range of the length measurement error ISO 10360-2:2009	1.2 μm	Repeatability of E0 MPL (maximum limit)
Scanning Mode Test ISO 10360-5:2020	Form: 2.9 μm Size: 1.2 μm Time: 40 seconds ⁽⁴⁾	MPE(P[Form.Sph.Scan:NPP:Tact]) MPE(P[Size.Sph.Scan:NPP:Tact]) MPE(t[Sph.Scan:NPP:Tact])
Single Stylus Probing Test ISO 10360-5:2020	Form: 2.4 μm Size: 1.2 μm	MPE(P[Form.Sph.1x25:SS:Tact]) MPE(P[Size.Sph.1x25:SS:Tact])
Multi Stylus Test ISO 10360-5:2020	Form: 3.9 μm Size: 1.2 μm Location: 2.7 μm	MPE(P[Form.Sph.5x25:MS:Tact]) MPE(P[Size.Sph.5x25:MS:Tact]) MPE(L[Dia.5x25:MS:Tact])
Ring Gauge Scanning Form ⁽⁷⁾ ISO 10360-5:2020 Annex A.6	Up to 50 mm/s: 2.4 μm Up to 250 mm/s ⁽⁵⁾ : 5 μm	MPE(P[Form.Cir.Scan:NPP:0:Tact]) 50 mm/s – 250 mm/s ⁽⁵⁾ : 0.013v + 1.75 μm ⁽⁶⁾
Ring Gauge Scanning Size ⁽⁷⁾ ISO 10360-5:2020 Annex A.6	Up to 50 mm/s: 1.2 μm Up to 250 mm/s ⁽⁵⁾ : 2.16 μm	MPE(P[Size.Cir.Scan:NPP:0:Tact]) 50 mm/s – 250 mm/s ⁽⁵⁾ : 0.0048v + 0.96 μm ⁽⁶⁾

(1) - E0: Acceptance test with SM25-2 module; stylus length of 26 mm and stylus tip diameter of 8 mm

(2) - E60: Acceptance test with SM25-2 module; stylus length of 60 mm and stylus tip diameter of 8 mm

(3) - Where L is distance measured in mm

(4) - Completed at scan speed of 75 mm/s

(5) - Scan velocity limited to 250 mm/s or 1 rev/s, whichever is lower

(6) - Where v is the scan velocity in mm/s.

(7) - Using a 50 mm ring gauge, 50UPR filter, SM25-2 with 5x21 stylus, near to calibration location in the centre of the machine volume.

Specifications	
Travel speed (maximum)	750 mm/s vector velocity
Acceleration (maximum)	1500 mm/s ² vector acceleration
Scan speed (maximum)	250 mm/s or 1 rev/s - Max speed dependant on feature size
Warm up time	2 hr (until absolute specification applies)
Temperature gradient	2 °C per hour 8 °C per day
Temperature compensation	Compensation for steady state and varying temperature up to 2 °C/hour.

Comparator performance

Specifications	
Travel speed (maximum)	750 mm/s vector velocity
Acceleration (maximum)	1500 mm/s ² vector acceleration
Scan speed (maximum)	500 mm/s or 2 rev/s - Max speed dependant on feature size
Comparison uncertainty ⁽⁴⁾	$\pm 2 \mu\text{m}$

The process of comparator measurement on an Equator-X system involves defining a series of gauge points on the component surface. Periodic calibration of a master part either using the absolute measurement method on the Equator-X system or on a separate CMM establishes datum values for each gauge point. The same gauge points on the same master part are measured on the Equator-X system, – ‘mastering’ –, to establish a correlation with the certified accuracy of the Equator-X system or separate CMM. Subsequently, a regular ‘re-mastering’ process is used to account for changing environmental conditions. Size and position measurements made immediately following re-mastering will have a comparison uncertainty of $\pm 0.002 \text{ mm}$ relative to the certified measurements of the master part. This specification applies where each part is fixtured to within 1 mm relative to the master part.

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Part no.: H-6620-8560-01-A

Issued: 06.2025