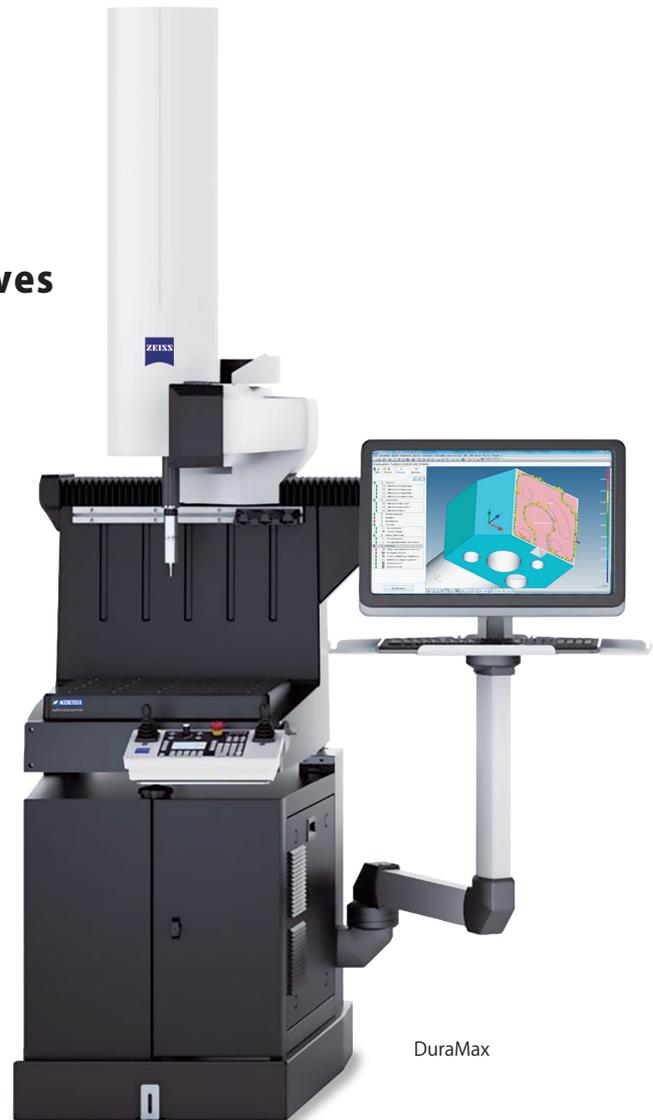


ZEISS DuraMax®

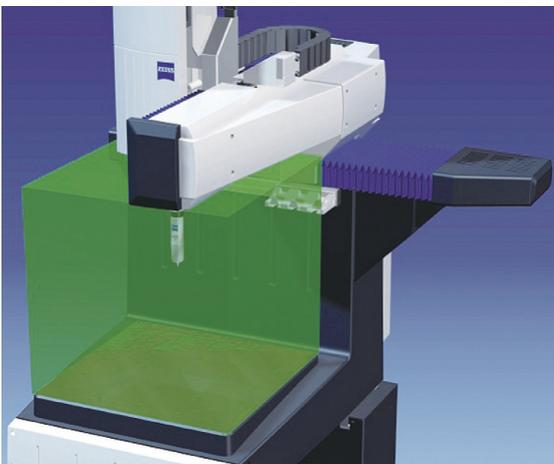
Dedicated catalog is available.

This new measurement style breaks with conventional wisdom and achieves easy installation and transfer to the processing site.

Durability



ZEISS technology concentrated in compact body Slim and space-saving coordinate measuring machine for on-site measurement



DuraMax is a scanning coordinate measuring machine developed by concentrating ZEISS technology in a compact body.

It is equipped with a high-accuracy scanning measurement function as a standard feature and uses a body structure suppressing the impact of temperature changes to achieve high accuracy, high efficiency and high environmental resistance.

- **Small footprint of W670 x L870 mm**

It is no longer necessary to change the factory layout only for installing a coordinate measuring machine.

- **Cantilever-type slim design**

Use of cantilever structure realized a generous measuring range of X500 x Y500 x Z500 mm, which was previously impossible for a coordinate measuring machine of this size.

- **Design for ultimate usability**

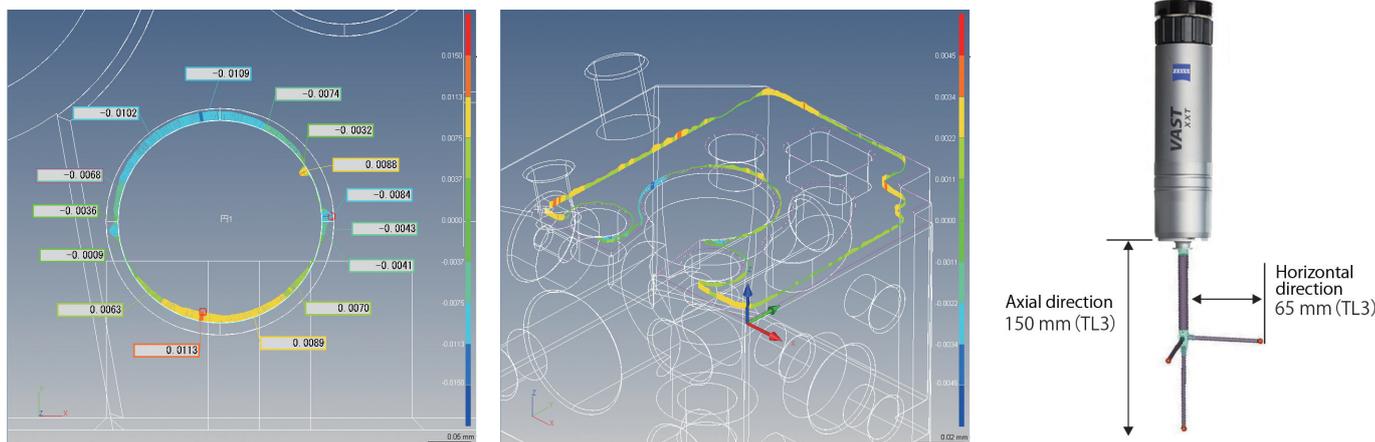
Workpieces can be loaded in four directions, securing a wide space for operations.

Equipped with scanning probe VAST XXT (TL3) as standard feature Enabling reliable profile measurement

DuraMax is equipped with scanning probe VAST XXT as a standard feature, enabling high-accuracy scanning measurement. Capturing a large amount of measurement data in a short time ensures acquisition of stable measurement data and reduces measurement errors caused by operators.

Moreover, general-purpose measurement program CALYPSO has a filter complying with the roundness standard as a standard feature, enabling analysis in the same method as with roundness measuring machines.

Analysis of a large amount of data captured by scanning measurement makes DuraMax a powerful machine for evaluation of geometric tolerance and geometric deviation for roundness, flatness, etc.



Always ready for measurement only with one power source ! Measurement by installing at necessary place.

DuraMax realizes a completely new style of measurement: measurement by installing the machine wherever necessary. As long as a 100 V power source and an area of 0.85 m² are available, it can be installed anywhere for measurement.

- Use of linear guide and linear drive mechanisms makes air supply, which is required for a typical coordinate measuring machine, unnecessary
- Accuracy guarantee temperature range as wide as 18 to 30°C enables installation with no temperature constraints
- Combination with optional movable base makes it easy to change the installation location

Replacement of dedicated jigs and tools with a coordinate measuring machine

If dedicated jigs and tools are used, measurement errors caused by operators may occur, and the jigs and tools have to be fabricated whenever a new workpiece is measured, which results in high costs. On the other hand, with a coordinate measuring machine, measurement errors caused by operators can be reduced, and program creation or modification can deal with the change of workpieces to be measured. As such, the cost of re-measurement and jigs and tools can be reduced.



The first energy conservation-oriented coordinate measuring machine in industry

DuraMax contributes to reduction of CO₂ emissions. CO₂ emission reduction resulting from reduction of power consumption by the machine and elimination of compressor for air supply amounts to about 2.8 t *1 per year (compared with previous models). This is almost the same as the amount of CO₂ absorbed by 195 trees *2 *3 per year.

Also, as it is not necessary to prepare a measuring lab, costs of measuring lab equipment and compressor for air supply are unnecessary and the running cost of air conditioners, etc. is significantly reduced. Energy-saving, environment-friendly and enabling cost reduction, DuraMax is the first energy conservation-oriented coordinate measuring machine in industry.

Our previous model+air supply compressor

- CO₂ emissions per year about 3.9 t *2
- Amount of CO₂ absorbed by about 279 trees per year *3



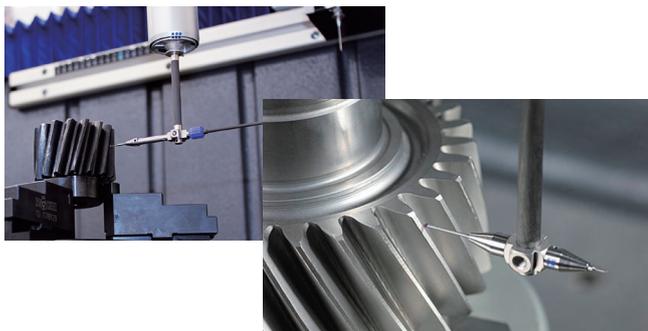
DuraMax

- CO₂ emissions per year about 1.1 t *2
- Amount of CO₂ absorbed by about 84 trees per year *3

*1 *1 Comparison with the amount of CO₂ emitted when this machine operates for 8 hours per day on 240 days per year and an air compressor suitable for our previous model is used under the same condition *2 *2 CO₂ emissions based on 0.555 kg-CO₂/kWh (Article 3, Enforcement Order of Act on Promotion of Global Warming Countermeasures)
*3 *3 Based on the Forestry Agency's assumption that a 50-year-old cedar tree in an artificial forest absorbs 14kg of CO₂

Option for DuraMax

● Rotary table optimal for measurement of intricately-shaped workpieces such as gears and turbine blades (optional*)



< Standard accessories of the rotary table option >

- Rotary table for DuraMax
- Double vise set for clamping workpieces
(Vise range: outside diameter ϕ 1 to 139 mm, inside diameter ϕ 25 to 160 mm)
- Temperature sensor unit (2 temperature sensors)
- Table protective plate



Double vise set for clamping workpieces

As an optional feature, DuraMax supports measurement using a rotary table*.

Rotating the workpiece instead of the probe for measurement can reduce the time and effort for setting to change the probe posture, changing the stylus system and calibration.

Enabling efficient measurement for intricately-shaped workpieces and workpieces in the shape of solid of revolution, such as gear measurement, lead measurement and measurement of impellers and turbine blades.

*Not applicable for DuraMax HTG

■ Representative applications and recommended software options

Gear

Involute gear: GEAR PRO involute

Bevel gear: GEAR PRO bevel

Worm gear: GEAR PRO worm

Impellers, Turbine blades, Blades

Free Form Evaluation: CALYPSO FreeForm / HOLOS

Cross Section Profile Evaluation: CALYPSO Curve

Blade Evaluation: BLADE PRO

<Rotary table specification>

Items		Rotary table
Max. work weight *1 (kg)	(kg)	9
Rotation accuracy *2	Maximum Permissible Rotation Axis Axial-Direction Error MPEFA (μm)	6
	Maximum Permissible Rotation Axis Radial-Direction Error MPEFR (μm)	6
	Maximum Permissible Rotation Axis Connecting-Direction Error (μm)	7
External dimensions/equipment weight	Rotary table diameter (mm)	ϕ 130
	Width (mm)	230
	Depth (mm)	270
	Height (mm)	82
	Weight (kg)	8

*1 Includes the weight of vise, a standard accessory of optional rotary table (about 2.4 to 2.5 kg)

*2 Accuracy guaranteed at 18 to 22°C

● Automatic stylus change magazine for significant improvement of measurement efficiency (one magazine as standard accessory, two magazines may be optionally added)

Workpieces of multiple kinds or with many measurement locations may be measured while changing styluses of different length, shapes or tip diameters instead of using only one stylus.

DuraMax is equipped with a stylus storage with three slots for stocking stylus-loaded adapter plates as a standard feature. This makes it possible to automatically change the stylus with the adapter plate and significantly improves measurement efficiency.

Both DuraMax and DuraMax HTG come with a stylus storage as a standard accessory. Two more stylus storage may be optionally added to increase the number of slots up to nine.



Stylus storage for VAST XXT fitted to the frame behind the table



Addition of a stylus storage for VAST XXT

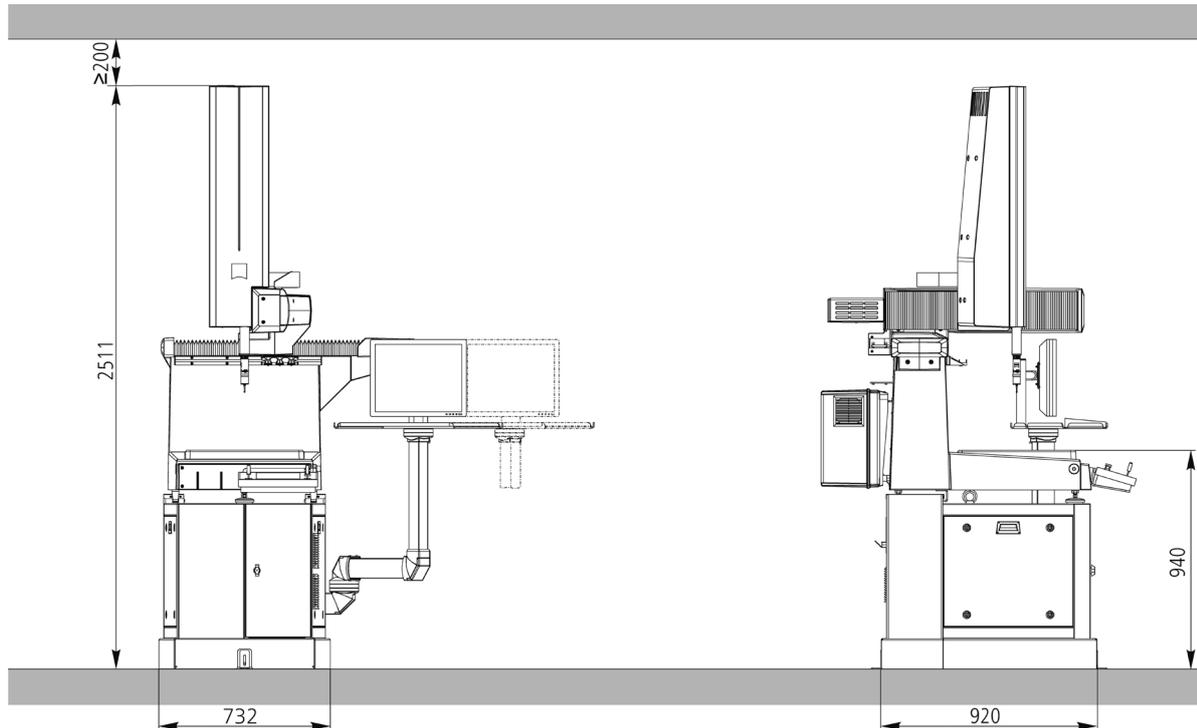
Specification

Model			ZEISS DuraMax®	ZEISS DuraMax® HTG	
Measuring range		X (mm)	500	500	
		Y (mm)	500	500	
		Z (mm)	500	500	
Measuring accuracy ^{*1}	VAST XXT (TL3)	Max. permissible error of length measurement	$E_0, MPE, E_{40, MPE}$ (μm)	2.4 + L/300 (18 ~ 22°C)	2.2 + L/300 (18 ~ 22°C)
				2.7 + L/250 (18 ~ 26°C)	2.5 + L/250 (18 ~ 26°C)
				2.9 + L/200 (18 ~ 30°C)	2.7 + L/200 (18 ~ 30°C)
		Max. permissible limit of the repeatability range	R_0, MPL (μm)	1.7	1.7
		Max. permissible single-stylus form error	$P_{FTU, MPE}$ (μm)	2.4	2.4
		Max. permissible scanning probing error	$MPETHP$ (μm)	2.9	2.9
Measuring length scale			Glass ceramic scale		
Resolution (μm)			0.2		
Table	Material		Cast iron		
	Usable width (mm)		500	500	
	Usable depth (mm)		500	480	
	Height from rack upper surface to table surface (mm)		230		
	Height from floor to table surface (mm)		Depending on the rack to install	940	
Workpiece	Max. height (mm)		500	500	
	Max. loading weight (kg)		100	100	
Guide system			Special linear guide		
Driving speed	Joystick mode (mm/sec)		0 to 100		
	CNC mode	Each axis direction (mm/sec)	Max. 300		
		Vector direction (mm/sec)	Max. 520		
Driving acceleration	Each axis direction (mm/sec ²)		Max. 1000		
	Vector direction (mm/sec ²)		Max. 1700		
Accuracy guarantee environmental temperature conditions	Environment temperature (°C)		18 to 30	15 to 40	
	Temperature change (°C/day)		5.0	5.0	
	Temperature gradient (°C/m)		2.0	2.0	
Power supply	Supply voltage (V/%)		AC100 ± 10		
	Frequency (Hz/%)		50/60 ± 3.5		
	Consumption (VA)		600	600	
Dimensions / Weight ^{*2}	External dimension	Width (mm)	1080	1870 (Including monitor arm swing width)	
		Depth (mm)	1360	1360 2000 (Including monitor arm swing width)	
		Height (mm)	1803	2511	
	Measuring part weight (kg)		350	545	

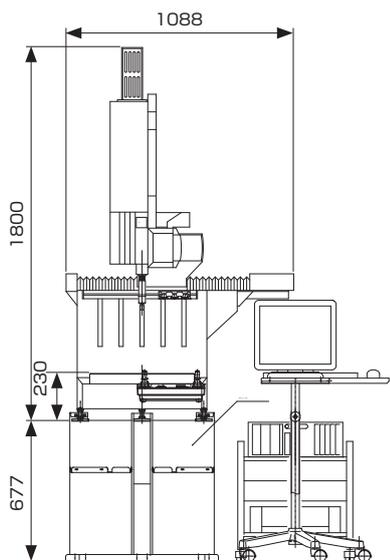
*1 The testing and evaluation methods for $E_0, MPE, E_{40, MPE}$ and R_0, MPL conform to JIS B 7440-2: 2013 (ISO 10360-2: 2009).
 The testing and evaluation methods for $P_{FTU, MPE}$ conform to JIS B 7440-5: 2013 (ISO 10360-5: 2010).
 The testing and evaluation methods for $MPETHP$ conform to JIS B 7440-4: 2003 (ISO 10360-4: 2000).
 The above accuracy is the numerical value when used the following stylus. L (mm) represents an arbitrary measuring length.
 VAST XXT ... ($E_0, MPE, E_{40, MPE}, P_{FTU, MPE}$) Tip diameter 8 mm, length 71 mm (including extension 50 mm)
 ($MPETHP$) Tip diameter 3 mm, length 50 mm

*2 Value of DuraMax excludes selectable base. Also, value of DuraMax HTG includes the shop floor base which is provided as standard accessory.

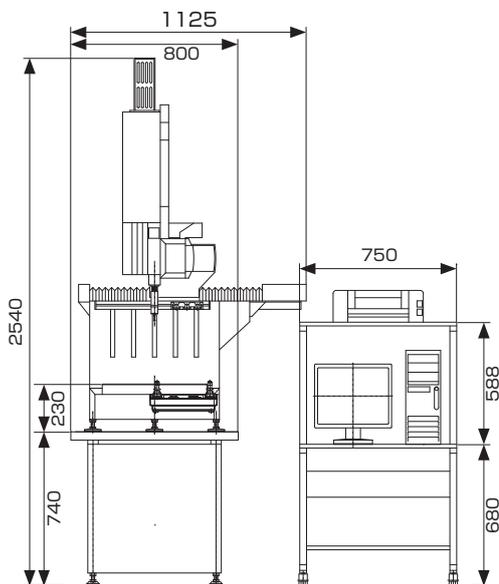
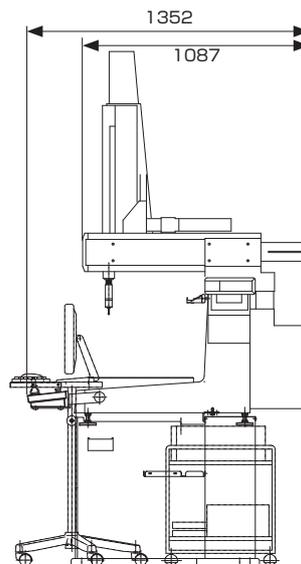
DuraMax HTG External View



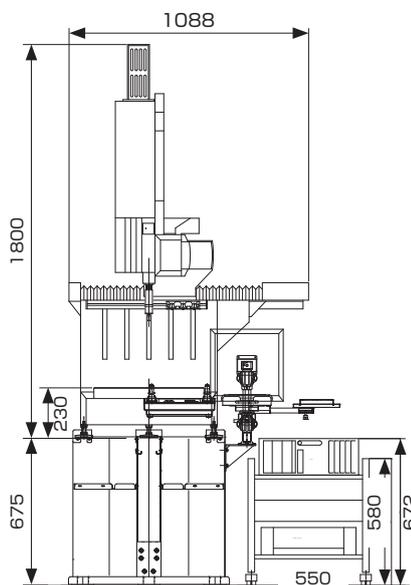
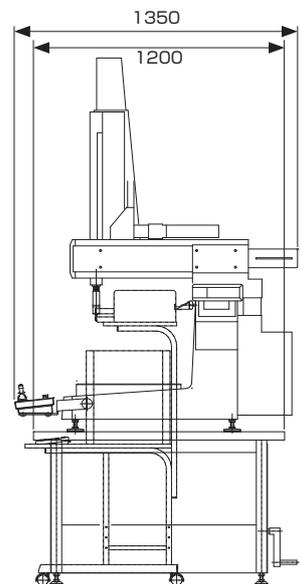
DuraMax External View



Example of combination with base by ZEISS and LCD monitor stand, wagon for data processor and printer



Example of combination with elevating type movable base and data processor rack



Example of combination with base integrated with LCD monitor arm and wagon for data processor and printer

