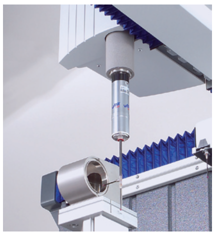
DuraMax™

Specifications and Performance Features

Universal CNC coordinate measuring machine with VAST XXT scanning probe from ZEISS. For shopfloor use as universal measuring machine and flexible gage.



DuraMax

The ideal start in 3D metrology:

- Accurate
- Technology from Carl Zeiss
- Single-point probing and scanning
- Robust design
- Fully equipped CMM

Version: 2008-04

We make it visible.

DuraMax.
Scanning in a compact form.

DuraMax: The measuring machine that brings scanning technology to small and mid-sized enterprises. DuraMax replaces your existing inline measuring equipment. With its accuracy, robustness and long maintenance cycles, DuraMax quickly pays for itself. DuraMax is a full-fledged measuring machine from Carl Zeiss. More than 30 years of experience from the innovation and technology leader has been integrated into this sturdy measuring machine. It features patented VAST scanning technology and accuracy over a large temperature range that is tops in this class. It is also comes with CALYPSO – the proven measuring software from ZEISS.

Key features

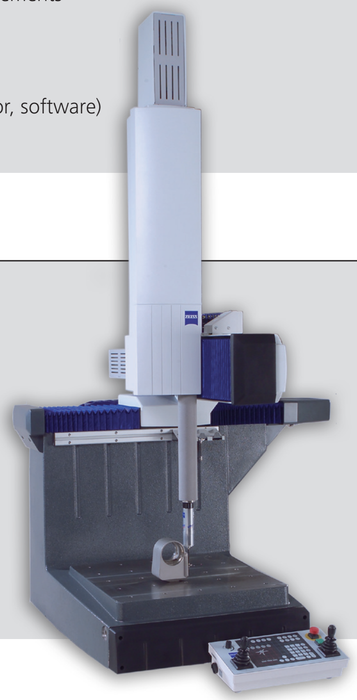
Robust design for rough production environments:
- full-fledged, scanning CNC CMM
- resistant to temperature fluctuations up to +30 °C
- fast and simple installation

Ergonomically optimized design:
- easy operation
- compact design with minimum space requirements
- stylus changer rack included
- optional base frame

One-stop shop:
- system solution from ZEISS (controller, sensor, software)
- worldwide support from ZEISS

Sensor system

VAST XXT scanning probe::
- probe for single-point probing and scanning
- adapter for CNC-controlled change of stylus system; adapter plate for maximum reproducibility
- large deflection range: ±3 mm
- minimum measuring forces for a wide range of workpieces



Machine technology

Ideal for measuring near production:
- completely covered guideways
- integrated damping system

Technology from the market leader:
- ZEISS C99 controller technology
- ZEISS VAST XXT scanning probe
- ZEISS CALYPSO measuring software

Easy installation
- completely assembled at delivery
- installation and acceptance test in shortest time

Operation

Simple and self-explanatory:
- standard control panel for motorized control
- control panel tray
- overdrive for speed control during CNC operation
- easy operation and quick supply of workpieces
- metrology evaluation in the CALYPSO software environment

Precision / Use

- As the first manufacturer, Carl Zeiss defined the innovative Temperature Variable Accuracy(TVA) specification: With an ambient temperature between 18-30°C (64.4-86°F), you can rely on the results from DuraMax (TVA).

Wide range of use:
- mechanical engineering, plastics industry, automotive engineering, ...
- perfect for small and mid-sized enterprises
- replaces all standard measuring equipment

Software

CALYPSO – Simply measure:
- proven measuring software from Carl Zeiss
- 3D, CAD-based measuring software
- object-oriented programming
- graphic protocol layout and statistics
- simple user guidance
- automatic stylus calibration
- flexible adjustment of the measuring run
- fast manual measurements (when needed)
- fully automated CNC run
- fully automatic CNC measuring runs with automation interface

Performance Features

DuraMax System Description

operating mode	motorized/CNC
sensor carrier	fixed
probing system	VAST XXT
software	ZEISS CALYPSO Basic measuring software

DuraMax Measuring Range and Workpiece Weight

Max. measuring range in mm (in.)	X axis:	500	(19.69)
	Y axis:	500	(19.69)
	Z axis:	500	(19.69)
Rated max. workpiece weight in kg (lb.)		100	(220.46)

DuraMax Sensor

VAST XXT	Scanning and single-point probe. Measuring speed is up to 500 points/s with scanning. Axial stylus length with TL1 module = 30-125 mm, radial stylus length up to 40 mm and maximum weight = 10 g

DuraMax Accuracy

VAST XXT [1] **Linear measuring tolerance TVA** [2] (Temperature Variable Accuracy)

TVA MPE following to EN ISO 10360-2:2001	for E in µm	at 18-22°C:	2.4 + L/300
	(in./1000)	at 64.4-71.6°F:	(0.095 + L/300)
		at 18-26°C:	2.7 + L/250
		at 64.4-78.8°F:	(0.106 + L/250
		at 18-30°C:	2.9 + L/200
		at 64.4-86°F:	(0.114 + L/200)
Probing tolerance			
MPE acc. to EN ISO 10360-2:2001	for P in µm (in.)		2.4 (0.095/1000)
Scanning probing tolerance			
MPE acc. EN ISO 10360-4:2001	for THP in µm (in.)		3.8 (0.146/1000)
required measuring time MPT	τ (s)		68

DuraMax Dynamic

Move speed	motorized:	axes:	0 bis 100 mm/s	(0 to 3.94 ips)
	CNC:	axes: max.	300 mm/s	(11.81 ips)
		vector max.	520 mm/s	(20.47 ips)
Acceleration		axes: max.	1000 mm/s^2	(39.37 ips^2)
		spatial: max.	1700 mm/s^2	(66.93 ips^2)

DuraMax Rated Conditions

Ambient relative humidity	40% to 70%	
Ambient temperature	+18°C to +30°C (+64.4°F to 86°F)	
Ambient temperature fluctuations	per day:	5.0 K/d
	per hour:	2.0 K/h
	spatial:	1.0 K/m
Floor vibrations	DuraMax is equipped with a passive vibration damping system.	

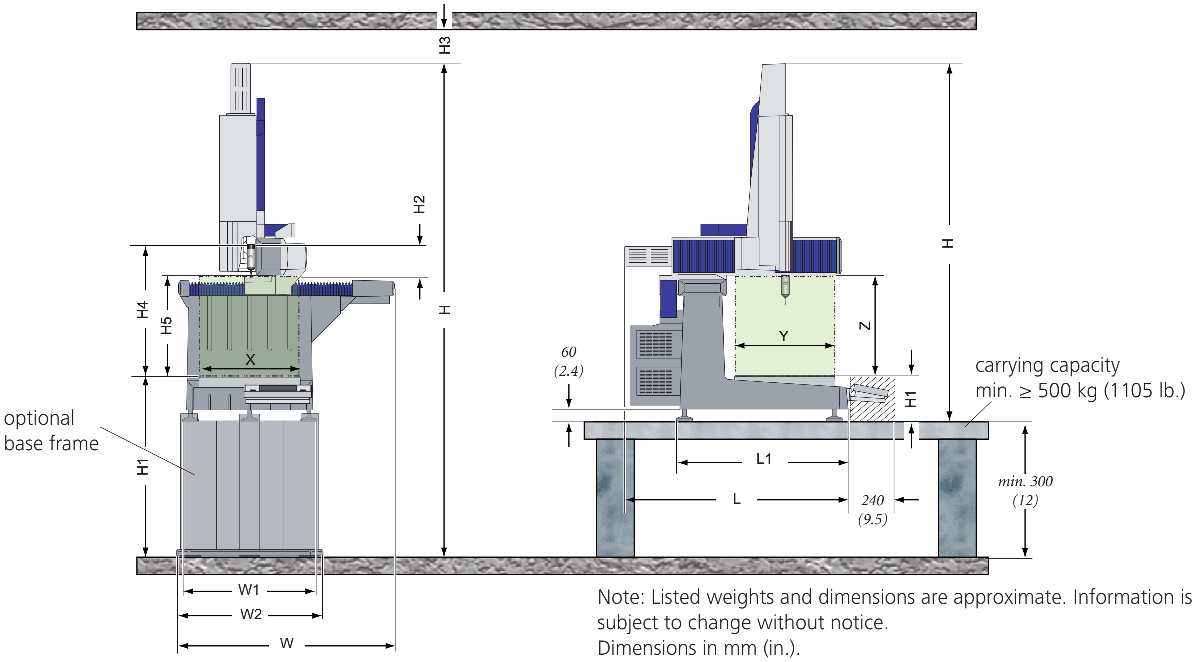
DuraMax Technical Characteristics

Clamping device	material:	gray cast iron
	part locking:	thread M10, borehole spacing 100 mm (3.94 in.)
	flatness	in accordance with DIN 876 Part 3
Length measuring system	glass ceramics, reflected light system, photoelectric, 0.2 µm resolution	
Accessories (included)	stylus changer rack, including 3 stylus storage locations, portable temperature measuring instrument	
Accessories (optional)	base frame, max. additional 2 stylus changer racks	

1) VAST XXT TL1: acceptance with 50 mm stylus length and 3 mm tip diameter.
2) Measured lenghth L in mm (in).

Specifications

DuraMax Dimensions and Weights			without base frame		with base	
Machine weight in kg (lb.)		approx.	350	(772)	430	(948)
Dimension in mm (in.)	machine:	lenght **L:**	1130	(44.5)	1140	(44.9)
		width **W:**	1080	(42.5)	1090	(43)
		height **H:**	1810	(71.3)	2480	(97.7)
	clearance:	height **H1**:	230	(9.1)	905	(35.6)
		to measuring area **H2**:	160 (6.3)			
		to VAST XXT **H4**:	660 (25.98)			
		to arm **H5**:	503 (19.8)			
	footprint:	width **W1**:	670	(26.38)	-	
		width **W2**:	-		740	(29.2)
		length **L1**:	870	(34.3)	910	(35.8)
Assembly clearance in mm (in.)		height **H3**:	200 (7.9)			
Resolution of scale read out in µm (in.)			0.2 (0.008)			



Note: Listed weights and dimensions are approximate. Information is subject to change without notice.
Dimensions in mm (in.).

DuraMax Limiting Conditions

Ambient temperature	+15°C to +40°C (+59°F to 104°F)
Electrical supply	1/N/PE 100/110/120/125/230/240 V~ (±10%); 50-60 Hz. total power consumption: max. 700 VA.

DuraMax Safety

Regulations

DuraMax complies with EC machine directive 98/37/EC, including low-voltage directive 2006/95/EC and EMC directive 2004/108/EC.

CE **DIN EN ISO 9001**

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