

CenterMax

Specifications



Universal coordinate measuring machine with Zeiss VAST Active Scanning probe head

- Economic
- Versatile
- User friendly
- Accurate

Description

- CNC-controlled shopfloor measuring center with dynamic probe head.
- Highest accuracy in direct production environment due to TRF technology.
- Reliable measuring results due to Zeiss Scanning technology.
- Solid construction due to massive polymer cast fundamental
- Unsentive against dirt due to fully protected machine axes.
- Highest variety due to flexible work holding fixture.

Application

- Universally applicable in direct production area and in measuring room.
- Integratable between production centers and process-control gauging systems.

Technical Features

TRF Equipment (Temperature Resistant Frame)

The combination of isolating polymer cast and Invar elements gives CenterMax a high resistance against temperature variations. The metal skeleton structure is decoupled from the polymer cast base. In connection with the ceramic guides and the temperature neutral ZERODUR scales, it forms a temperature stable unit

- Top-mounted measurement setups are positioned beyond the direct reach area of the operator.
- The fully protected measuring axes with four side air bearings offer highest precision and make them at the same time unsentive against dirt.

- The active, pneumatic anti-vibration system in connection with the positive features of polymer cast decouples floor vibrations and gives the machine its own foundation.
- Variable work holding fixtures (granite plate or palet systems) provide a accommodation to changing production conditions without restriction of the measuring range.
- Probe changer racks mounted outside the measuring range. Standard for 8 probes, optional for up to 24 probes. Up to 16 probes without reducing the measuring range.

Sensor Technology

Zeiss VAST universal probe head:

- VAST: Variable Accuracy and Speed Probing Technology.
- For scanning multi-point and single point measurements.
- Just the right one, if statements are required not only on dimension and position but also on form.

- Just the right one, if the probing technology is to be adapted to the measuring task – and not vice versa.

Control

- Ergonomic control panel, switchable to creep speed for manual control of CMM with joysticks with progressive characteristics.
- Variable speed control for the measuring speed to be reduced, e.g. when performing CNC runs for checking the collision hazard and error-free operation.
- Optional: Touch screen for optimized controlling on the shopfloor.

Software

The Zeiss measuring library

- links up all areas of product creation: development, design, construction, trial, production, quality control ...
- provides a solution for any measuring application
- is based on modern hardware platforms under Windows NT and Linux
- has networking, multi-user and multi-tasking capabilities
- supports process-oriented production

- automates the generation of complex measuring runs
- makes your processes reliable due to statistics functions and data feedback to your production department

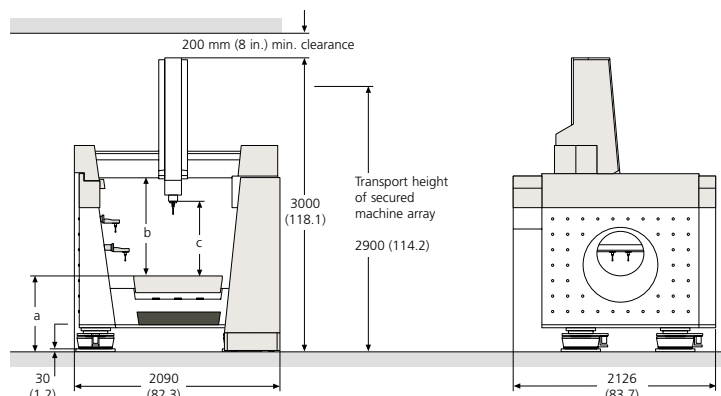
And last but not least:

- The Zeiss measuring software guides you through your metrology work using sophisticated menu prompting and programming logic.

Dimensions in mm (in.)

	Granite plate	Universal plate
a	771 (30.4)	660 (26.0)
b	914 (36.0)	1026 (40.4)
c	760 (29.9)	872 (34.3)

Our CenterMax CMM comply with CE regulations. The Carl Zeiss quality assurance system is certified in accordance with EN ISO 9001.



CenterMax Dimensions and Weights

Working range	X in mm (in.)	1100 (43.3)	
	Y in mm (in.)	1200 (47.2)	
	Z in mm (in.)	700 (27.6)	
Effective measuring range	X in mm (in.)	900 (35.4)	
	Y in mm (in.)	1200 (47.2)	
	Z in mm (in.)	700 (27.6)	
Overall CMM dimensions	width in mm (in.)	2090 (82.3)	
	length in mm (in.)	2126 (83.7)	
	height in mm (in.)	3000 (118.1)	
Table height			Granite plate Universal plate
	mm (in.)		771 (30.4) 660 (26.0)
Clearance under bridge	mm (in.)		914 (36.0) 1026 (40.4)
Clearance under probe head	mm (in.)		760 (29.9) 872 (34.3)
CMM weight (approx.)	kg (lb)	6000 (13 200)	
Maximum workpiece weight	Universal plate	kg (lb)	1000 (2 200)
	Granite plate	kg (lb)	750 (1 650)
	Rotary table	kg (lb)	250 (550)

CenterMax Accuracy ¹⁾

TVA (Temperature Variable Accuracy) ²⁾ $TVA_{U3/E} (\mu m) = 1.6 + (0.05 \cdot |\Delta\theta|) + L(300 - (7 \cdot |\Delta\theta|))$
 $TVA_{U3/E} (in.) = 0.000\ 063 + (0.000\ 001\ 9 \cdot |\Delta\theta|) + L(300 - (7 \cdot |\Delta\theta|))$
 $1.6 (0.000\ 063) + [0.05 (0.000\ 001\ 9) \cdot |\Delta\theta|] =$ measuring uncertainty in μm (in.) at probe
 $L(300 - (7 \cdot |\Delta\theta|)) =$ measuring uncertainty in μm (in.) at CMM
 $|\Delta\theta| =$ deviation in °K from +20 °C (68 °F)

Length (size) measuring error ²⁾

MPE acc. DIN EN ISO 10360-2 per VDI/VDE 2617 (Length measuring uncertainty)	for E	μm (in.)	1.6+L/300 (0.000 063 + L/300)
		u_1 in μm (in.)	1.3+L/350 (0.000 051 + L/350)
		u_3, u_{ij} in μm (in.)	same as MPE for E

Probing error

MPE acc. DIN EN ISO 10360-2 per VDI/VDE 2617 ³⁾ (probing uncertainty)	for P	in μm (in.)	1.7	(0.000 067)
		V_2	in μm (in.)	1.0

Scanning probing error

MPE acc. DIN EN ISO 10360-4 required measuring time	for THP	in μm (in.)	3.1	(0.000 122)
		τ	(sec)	72

Form measurement error

MPE for roundness ³⁾ per DIN EN ISO 12181 (VDI/VDE 2617 part 2.2)	RONt /MZCI	(μm)	1.7	(0.000 067)
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MPE according to EN ISO 10360 names the maximum permissible error for:

- E: length (size) measuring error
- P: probing error (prior: R)
- THP: scanning probing error

MPE for RONt (MZCI) according to ISO 12181 names the maximum permissible error for measurement of roundness at a 50 mm ring gauge

Length measuring system Zeiss glass ceramics; reflected light system, photoelectric; resolution 0.2 μm (0.0000080 in.)

CenterMax Dynamics

Travel speeds			axial	vectorial
	Set-up:	0 to 70 mm/s (0 to 2.8 ips)		
	Measuring operation:		up to 300 mm/s (12 ips)	up to 520 mm/s (20.5 ips)
	Creep speed:	0 to 5 mm/s (0 to 0.2 ips)		
	max. acceleration:		up to 1.4 m/s ² (54.9 ips ²)	up to 2.4 m/s ² (94.1 ips ²)

CenterMax Sensor Technology

Probe system	Zeiss VAST universal probe head
Measuring force during data acquisition	Variable, 50 to 1000 mN
Styli weight	Maximum 600 g (17 oz.) (including adapter plate)
Probe length	Maximum 450 mm (18 in.)
Probe changing system	Standard for 8 probes, optional for 24 probes

CenterMax Supply Data

Power supply	230/110 V (+10% -15%); 47-63 Hz; total power consumption max. 2000 VA
Air supply	Supply pressure 6 to 10 bar (87 to 145 psi), pre-filtered. Approx. consumption at 5.0 bar (72 psi) 10 l/h (0.4 cfm). Air quality according to ISO 8573 part 1, classification 4

Die CenterMax Temperature Reserves

Air humidity	40% to 70%	
Permissible ambient temperature	+8 °C to +40 °C (46 °F to 104 °F)	
Temperature ranges in which the specified maximum permissible errors are guaranteed	Ambient temperature	15 - 35 °C (59 - 95 °F)
	Thermal fluctuations	per hour (K/h) 2.0 (3.8 °F/h)
		per day (K/d) 8.0 (15.2 °F/d)
	Thermal gradient	spatial (K/m) 2.0 (1.0 °F/ft)

1) Stylus for acceptance test: VAST, length 60 mm (2.4 in.), stylus tip diameter 8 mm (0.32 in.)

2) L = measured length in mm (in.)

3) Used filter 50 W/U, scanning speed at V_2 and roundness: 5 mm/s (0.2 ips)

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