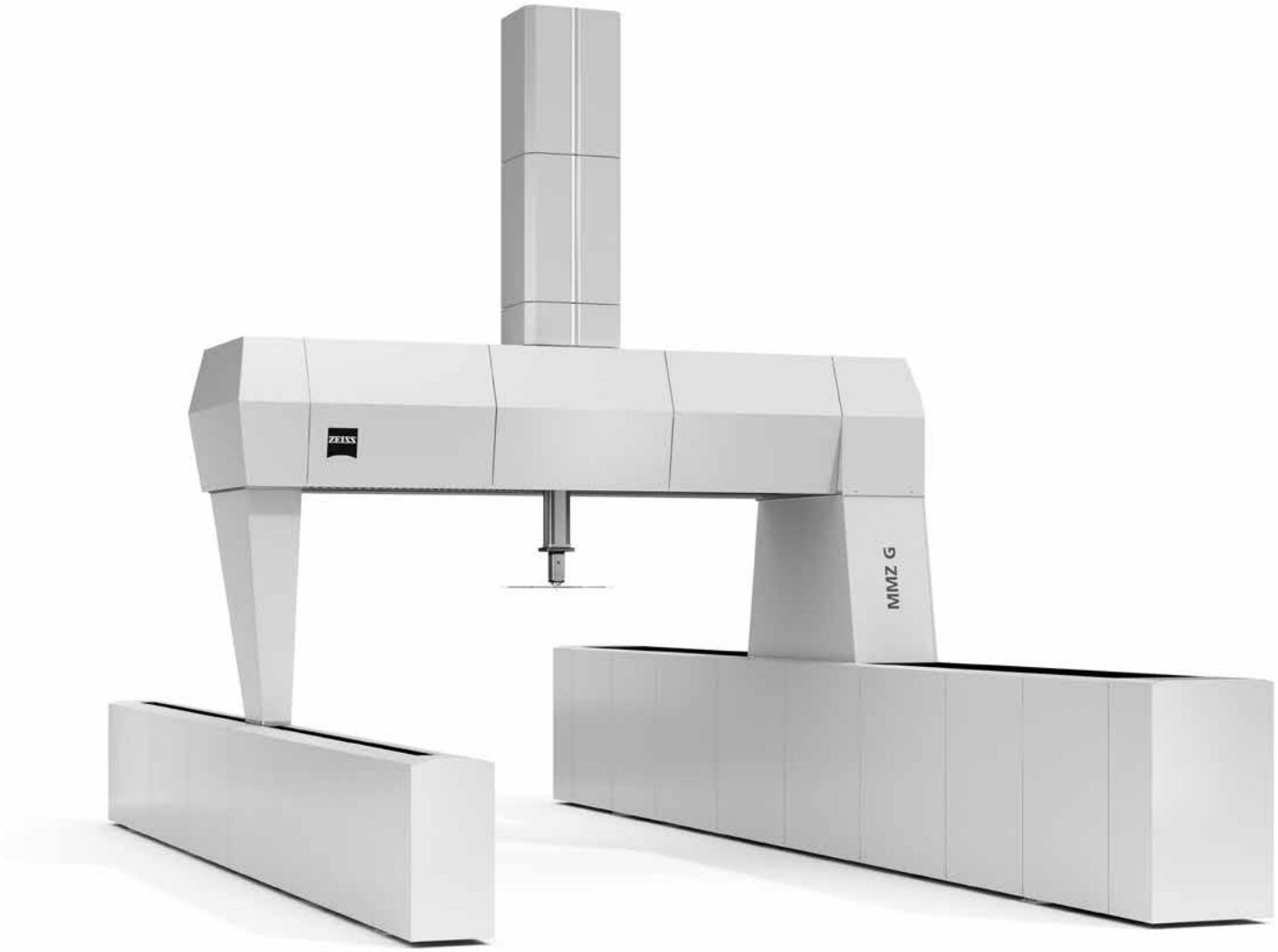


ZEISS MMZ G

Specifications

ZEISS

Seeing beyond

Stand: 2020-11

System description

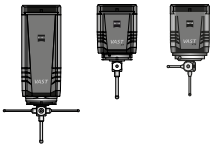
Type according to ISO 10360-1:2000	Moving bridge CMM			
Operating mode	motorized / CNC			
Sensor mounts	Fixed installation of ZEISS VAST gold / articulating sensor holder ZEISS RDS			
Software	ZEISS CALYPSO, ZEISS GEAR PRO, ZEISS HOLOS NT			
Travel speed	Set-up mode	in mm/s	Axes	0 to 100
	Batch measurement mode	in mm/s	Axes	max. 200
		in mm/s	Vector	max. 320
Acceleration		in mm/s^2	Axes	max. 200
		in mm/s^2	Vector	max. 350
Scanning speed		in mm/s		max. 200

Sensors and accuracy (the following accuracies apply to a temperature range of 18 °C - 22 °C)

The functionality of the device and its specifications are only achievable when using original accessories by ZEISS. The specified parameters are observed in the application of the internal test instructions for acceptance testing and in the use of the released standards in accordance with the ISO 10360 series.

ZEISS VAST gold [1]
ZEISS VAST XT gold [1]
ZEISS VAST XTR gold [1]

Scanning and single-point sensor.
Active scanning and multipoint sensor.
Variable measuring force (50-1000 mN) for data acquisition.
Scanning measuring rate up to 500 points/s.



ZEISS VAST gold: stylus: max. length = 800 mm, max. weight = 800 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.
ZEISS VAST XT gold: stylus: max. length = 500 mm, max. weight = 500 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.
ZEISS VAST XTR gold: stylus: max. length = 350 mm, max. weight = 500 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.

			X=5000 Z=1200	**X=3000 Z=2000**	**X=3000 Z=2500**	**X=4000 Z=2500**	**X=3000 Z=3000**	**X=3500 Z=3000**	**X=4000 Z=3000**
Length measurement error [2] MPE complies with ISO 10360-2:2009	E0/E150	in µm	3.4 + L/350	3.2 + L/400	3.6 + L/375	4.0 + L/350	3.9 + L/350	4.1 + L/325	4.3 + L/325
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	2.0	1.8	2.1	2.3	2.2	2.4	2.4
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	3.5	3.3	3.7	4.1	4	4.2	4.4
Required measuring time MPT	τ	in s	64	68	72	72	72	72	72
Form measurement error MPE fir roundness [3] as per DIN ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in µm	3.1	2.9	3.3	3.7	3.6	3.8	3.9
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	2.6	2.4	2.7	3	2.9	3.1	3.2
			X=4000 Z=2000	**X=5000 Z=1600**	**X=5000 Z=2500**	**X=5000 Z=3000**	**X=6000 Z=1600**	**X=6000 Z=2500**	**X=6000 Z=3000**
Length measurement error [2] MPE complies with ISO 10360-2:2009	E0/E150	in µm	3,6+L/375	3,8+L/350	4,4+L/325	4,7+L/300	4,6+L/325	5,2+L/300	5,5+L/275
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	2,1	2,2	2,5	2,7	2,7	3	3,1
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	3,7	3,9	4,5	4,8	4,7	5,3	5,6
Required measuring time MPT	τ	in s	68	689	75	72	65	72	72
Form measurement error MPE fir roundness [3] as per DIN ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in µm	3,3	3,5	4	4,3	4,2	4,8	5
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	2,7	2,9	3,3	3,5	3,5	3,9	4,1

1) Acceptance test with stylus length of 75 mm and tip diameter of 12 mm.
2) Measuring length L in mm.
3) Filter used: 50 W/U; scanning speed for roundness: 5 mm/s.
4) Acceptance test with TL3 module; stylus length of 50 mm and stylus tip diameter of 8 mm.

ZEISS RDS

Dynamic ZEISS RDS articulating unit for optical and contact sensors.
Lateral swivel axis provides more advantages over articulating joints with front-to-back and lateral tilt axis:
Front-to-back and lateral tilt range of ±145°, large measuring range, rotation increments of 2.5°, CAA correction for automatic calibration for measuring multi-point sensors of all 20,736 angular positions.

ZEISS VAST XXT [4]

Scanning and single-point sensor. Scanning measuring rate up to 500 points/s.
Stylus length with module: TL3 = 30-150 mm; maximum sensor extension = 100 mm, maximum stylus weight = 15 g, minimum stylus tip diameter = 0.3 mm

			X=5000 Z=1200	**X=3000 Z=2000**	**X=3000 Z=2500**	**X=4000 Z=2500**	**X=3000 Z=3000**	**X=3500 Z=3000**	**X=4000 Z=3000**
Linear measuring tolerance [2] MPE complies with ISO 10360-2:2009	E0/E150	in µm	4.0 + L/300	3.8 + L/350	4.2 + L/325	4.6 + L/300	4.5 + L/300	4.7 + L/275	4.9 + L/275
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	2.4	2.2	2.4	2.7	2.6	2.7	2.8
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	4.2	4.0	4.4	4.8	4.7	4.9	5.1
Required measuring time MPT	τ	in s	68	72	76	76	76	76	76
Form measurement error MPE for roundness [3] as per DIN ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in µm	3.8	3.6	4.0	4.4	4.3	4.5	4.6
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	3.1	2.9	3.2	3.5	3.4	3.6	3.7
			X=4000 Z=2000	**X=5000 Z=1600**	**X=5000 Z=2500**	**X=5000 Z=3000**	**X=6000 Z=1600**	**X=6000 Z=2500**	**X=6000 Z=3000**
Linear measuring tolerance [2] MPE complies with ISO 10360-2:2009	E0/E150	in µm	4,2+L/325	4,4+L/300	5,0+L/275	5,3+L/250	5,2+L/275	5,8+L/250	6,1+L/225
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	2,4	2,6	2,9	3	3	3,3	3,5
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	4,4	4,6	5,2	5,5	5,4	6	6,3
Required measuring time MPT	τ	in s	72	72	76	76	72	76	76
Form measurement error MPE for roundness [3] as per DIN ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in µm	4	4,2	4,7	5	4,9	5,5	5,7
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	3,2	3,4	3,8	4	4	4,4	4,6

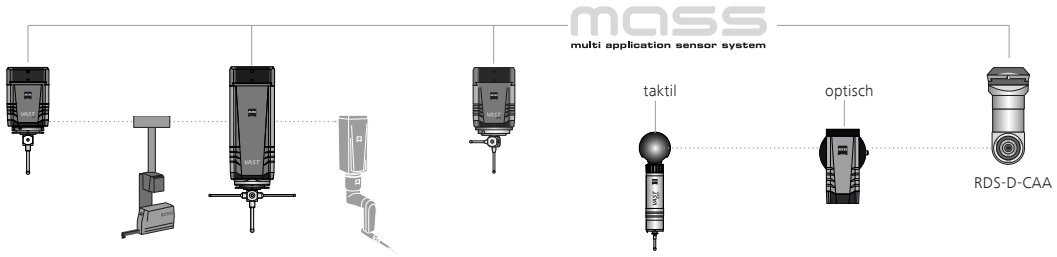
1) Acceptance test with stylus length of 75 mm and tip diameter of 12 mm.
2) Measuring length L in mm. Measured with RDS angle position A=0° and B=0°
3) Filter used: 50 W/U; scanning speed for roundness: 5 mm/s.
4) Acceptance test with TL3 module; stylus length of 50 mm and stylus tip diameter of 8 mm.

ZEISS LineScan [3) 4)]

Optical laser triangulation scanner on ZEISS RDS-D.

			X=5000 Z=1200	X=3000 Z=2000	X=5000 Z=1600	X=3000 Z=2500	X=3500 Z=3000	X=4000 Z=2500	X=3000 Z=3000	X=4000 Z=3000
				X=4000 Z=2000	X=6000 Z=1600	X=5000 Z=2500		X=6000 Z=2500	X=5000 Z=3000	X=6000 Z=3000
25 mm working range 63 mm working distance										
Probing dispersion [5)] MPE complies with ISO 10360-8	PF (OT)	in µm	12	12	12	12	12	12	12	12
Dispersion on sphere	1 Sigma	in µm	4	4	4	4	4	4	4	4
50 mm working range 94 mm working distance										
Probing dispersion [5)] MPE complies with ISO 10360-8	PF (OT)	in µm	20	20	20	20	20	20	20	20
Dispersion on sphere	1 Sigma	in µm	5	5	5	5	5	5	5	5
100 mm working range. 220 mm working distance.										
Probing dispersion [5)] MPE complies with ISO 10360-8	PF (OT)	in µm	50	50	50	50	50	50	50	50
Dispersion on sphere	1 Sigma	in µm	12	12	12	12	12	12	12	12

Sensors



	VAST XT gold	ROTOS light	VAST gold	ROTOS	VAST XTR gold	VAST XXT	LineScan
Multi-point	■		■		■	■	
Passive Scanning						■	
Active Scanning	■		■		■		
Optical Scanning							■
Roughness measurement		■		■			
Rotatable / tiltable		■		■		■	■
Max. stylus length [1]	500 mm		800 mm [2] [3]		350 mm	250 mm	
Max. stylus weight [1]	500 g		800 g [2]		500 g	15 g	
VAST navigator / VAST performance	■		■		■		

1) Depending on the application, limiting the parameters for a stylus system may be useful.
2) To ensure specified accuracies.
3) Special lengths (e.g. 1200 mm) are available upon request when ZEISS ThermoFit XL styli are used.

Technical features

Length measuring system	Steel scales and online temperature compensation, resolution 0.1 µm	
Controller	Type	ZEISS C99
	Protection type	IP54
	Cooling system	Fan, optional climate side wall for Rittal controller cabinet
Collision protection	Standard for ram (optical), as well as the ZEISS VAST gold probe and the ZEISS RDS articulating probe holder	
Accessories (optional)	Rotary table, multi-sensor rack for storage of stylus systems, movable control panel tray, air conditioner, and palletizing and loading systems, Optional: control cabinet in UL version (USA)	

Environmental requirements [2]

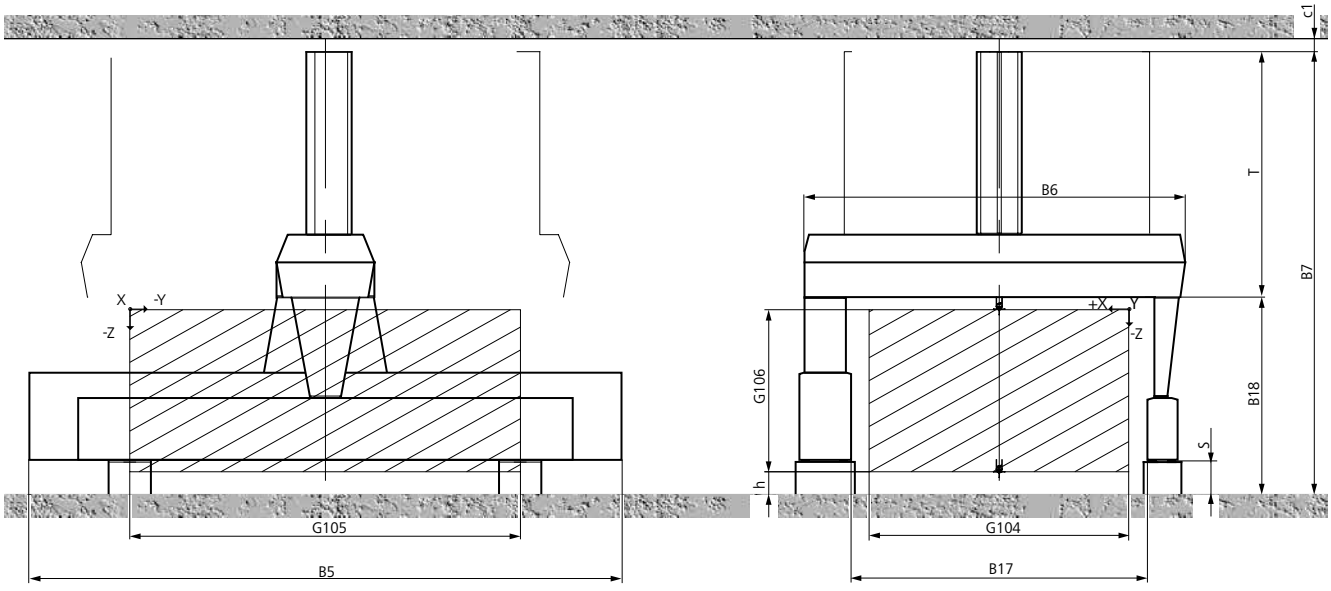
Relative humidity	40 % - 70 % (without condensation)		
Ambient temperature	18 °C - 22 °C		
Measuring reference temperature			18 °C - 22 °C
	per day	in K/d	2.0
	per hour	in K/h	1.0
	spatial	in K/m	0.5

Occupational health & safety management systems	BS OHSAS 18001:2007
Accredited	ISO/IEC 17025:2005

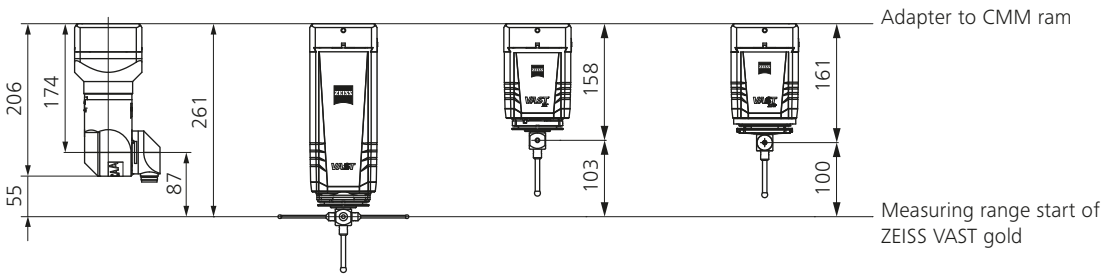
Requirements for operational readiness	
Relative humidity	Max. 70 % (non-condensing)
Ambient temperature	10 °C - 35 °C
Electrical power rating	3/N/PE 400/230VAC ~ (±10%); 47-63Hz, Power consumption: max. 4500 VA, Typical power consumption: 760W Amount of heat generated: max. 16200 kJ/h
Compressed air supply	The ZEISS MMZ G requires compressed air only when ZEISS RDS is used or when a foundation is insulated through air bearings. Supply pressure 6-10 bar (87-145 psi), pre-cleaned. Air quality complies with ISO 8573 part 1: Class 4 When ZEISS RDS is used, max. consumption is 18 l/min. Air consumption when a foundation is insulated on air bearings depends on the project-specific requirements.

ZEISS MMZ G sizes	Dimensions in mm												Weight in kg
	Measuring range			Overall CMM dimensions			Working range (Max. workpiece size)			Base height	Assembly space	Transport height [1]	Measuring machine weight
	X axis	Y axis	Z axis	Width	Length	Height	Width	Height	Height	Height	Height	Height	
	G104	G105	G106	B6	B5	B7	B17	B18	h	S	c1	T	
20/40/20	2000	4000	2000	3929	6700	5807	2555	2535	310	0	200	3272	15500
20/70/16	2000	7000	1600	3929	10100	5007	2555	2135	310	200	200	2872	15100
25/40/25	2500	4000	2500	4429	6700	6807	3055	3035	310	500	200	3772	16500
25/50/25	2500	5000	2500	4429	7700	6807	3055	3035	310	500	200	3772	17800
30/40/20	3000	4000	2000	4929	6700	5807	3555	2535	310	0	200	3272	16100
30/40/30	3000	4000	3000	4929	6700	7807	3555	3535	310	1000	200	4272	13090
30/50/20	3000	5000	2000	4929	8100	5807	3555	2535	310	0	200	3272	14100
30/50/25	3000	5000	2500	4929	7700	6807	3555	3035	310	500	200	3772	14140
30/60/20	3000	6000	2000	4929	9100	5807	3555	2535	310	0	200	3272	15700
30/60/25	3000	6000	2500	4929	9100	6807	3555	3035	310	500	200	3772	15750
30/60/30	3000	6000	3000	4929	9100	7807	3555	3535	310	1000	200	4272	15800
30/70/20	3000	7000	2000	4929	10100	5807	3555	2535	310	0	200	3272	17000
30/80/20	3000	8000	2000	4929	11200	5707	3555	2535	310	0	200	3272	22700
30/80/25	3000	8000	2500	4929	11200	6807	3555	3035	310	0	200	3772	23240
35/40/30	3500	4000	3000	5429	6700	7807	4055	3535	310	1000	200	4272	18500
35/50/25	3500	5000	2500	5429	7700	6807	4055	3035	310	500	200	3772	17200
40/50/20	4000	5000	2000	5929	8100	5807	4555	2535	310	0	200	3272	15500
40/50/25	4000	5000	2500	5929	8100	6807	4555	3035	310	500	200	3772	15550
40/60/25	4000	6000	2500	5929	9100	6807	4555	3035	310	500	200	3772	16510
40/60/30	4000	6000	3000	5929	9100	7807	4555	3535	310	1000	200	4272	16900
40/70/25	4000	7000	2500	5929	10100	6807	4555	3035	310	500	200	3772	18200
40/70/30	4000	7000	3000	5929	10100	7807	4555	3535	310	1000	200	4272	18250
40/80/30	4000	8000	3000	5929	11200	7807	4555	3535	310	500	200	4272	24400
40/100/25	4000	10000	2500	5929	13200	6807	4555	3035	310	0	200	3772	28710
45/50/12	4500	5000	1200	6429	7700	4407	5055	1935	510	0	200	2472	15200
50/50/16	5000	5000	1600	6933	8100	5007	5555	2135	310	200	200	2872	16100
50/60/12	5000	6000	1200	6933	9100	4407	5555	1935	510	0	200	2472	16970
50/60/20	5000	6000	2000	6933	9100	5807	5555	2535	310	0	200	3272	17830
50/70/25	5000	7000	2500	6933	10100	6807	5555	3035	310	500	200	3772	19200
50/70/35	5000	7000	3500	6933	10100	8807	5555	4035	310	1500	200	4772	23200
50/80/30	5000	8000	3000	6933	11200	7807	5555	3535	310	500	200	4272	25500
50/100/25	5000	10000	2500	6933	13200	6807	5555	3035	310	0	200	3772	29800
60/60/12	6000	6000	1200	7933	9100	4407	6555	1935	510	0	200	2472	18000
60/60/16	6000	6000	1600	7933	9100	5007	6555	2135	310	200	200	2872	18400
60/70/30	6000	7000	3000	7933	10100	7807	6555	3535	310	1000	200	4272	20300
60/80/30	6000	8000	3000	7933	11200	7807	6555	3535	310	500	200	4272	26500
60/100/25	6000	10000	2500	7933	13200	6807	6555	3035	310	0	200	3772	30900

A selection of sizes is shown. Currently available measuring ranges: X 2000-6000 mm, Y 3000-11000 mm and Z 1200-3500 mm. Additional sizes upon request.
Maximum workpiece depends on thickness of foundation



ZEISS RDS D ZEISS VAST gold ZEISS VAST XT gold ZEISS VAST XTR gold



1) Actual dimensions following project-specific clarification

Note: The given dimensions and weights are approximate values. Subject to change. Actual appearance of specific sizes may vary from illustration. Dimensioning based on DIN 4000-167:2009.

Approvals	
Regulations	The ZEISS MMZ G complies with EC machine directive 2006/42/EG and EMC directive 2014/30/EU.
Disposal	ZEISS products and packaging returned to us are disposed of in accordance with applicable legal provisions.

Certifications / accreditations	
Quality management system	ISO 9001:2015 VDA 6, Parts 4, 3. Version 2017
Environmental management system	ISO 14001:2015
Occupational health & safety management systems	BS OHSAS 18001:2007
Accredited	ISO/IEC 17025:2005

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