



# **ZEISS O-INSPECT**

## **Specifications**

Status: May 2016



## System description

Operating mode	Motorized/ CNC
Sensor mounts	Fixed
Sensors	ZEISS VAST XXT (contact)/ ZEISS Discovery.V12 (optical)
Software	ZEISS CALYPSO, ZEISS GEAR PRO (option)

## Dynamics

				322	543	863
Travel speed	Motorized	in mm/s	Axes	0 to 100	0 to 100	0 to 100
		CNC	in mm/s	X, Y, Z axes	300/300/100	300/300/100
			in mm/s	Vector	435	435
Acceleration		in mm/s <sup>2</sup>	X, Y, Z axes	500/500/500	500/500/500	500/200/500
		in mm/s <sup>2</sup>	Vector	866	866	735

## Sensors and permissible measuring errors

### ZEISS VAST XXT <sup>1)</sup>



Scanning and single-point sensor. Measuring speed up to max. 2.5 seconds per point and 200 points/sec during scanning. Axial stylus length 30-150 mm; radial stylus length up to 65 mm (star stylus); maximum stylus weight = 15 g; max. stylus speed = 5 mm/s

				322	543	863
Length measurement error <sup>2)</sup> MPE complies with ISO 10360-2:2009	E0 X/Y/Z (1D)	in µm	at 20±2°C	1.6 + L/200	1.6 + L/250	1.9 + L/150
	E0 XY (2D)	in µm	at 20±2°C	1.9 + L/150	1.7 + L/250	2.0 + L/150
	E0 (3D)	in µm	at 20±2°C	2.4 + L/150	1.9 + L/250	2.2 + L/150
	TVA	in µm	at 18-26°C	2.7 + L/150	2.2 + L/100	2.5 + L/100
	TVA	in µm	at 18-30°C	2.9 + L/150	2.4 + L/80	2.7 + L/80
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	at 20±2°C	2.7	2.7	3.8
Required measuring time MPT	τ	in s	at 20±2°C	55	55	68
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	at 20±2°C	2.4	1.9	2.2
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM <sup>3)</sup>	in µm	at 20±2°C	4.8	4.8	4.8
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM <sup>3)</sup>	in µm	at 20±2°C	1.2	1.2	1.2
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM <sup>3)</sup>	in µm	at 20±2°C	3.8	3.8	3.8

### ZEISS Discovery.V12 <sup>4)</sup>




Optical 2D camera sensor with image processing functionality and autofocus, 12x zoom, 10 fixed zoom levels, CCD measuring camera chip, measuring speed up to 30 frames/s, max. probing speed 10 mm/s (Z axis), working distance 87 mm, laser pointer. Illumination: 8-segment ring light (blue and red), mini ring light (blue and red), coaxial light (blue and red), transmitted light.


				322	543	863
Length measurement error <sup>2)</sup> MPE complies with ISO 10360-7:2011	EB X/Y (1D) <sup>5)</sup>	in µm	at 20±2°C	1.6 + L/200	1.6 + L/250	1.9 + L/150
	EB XY (2D) <sup>5)</sup>	in µm	at 20±2°C	1.9 + L/150	1.7 + L/250	2.0 + L/150
Probing error MPE complies with ISO 10360-7:2011	PF2D <sup>5)</sup>	in µm	at 20±2°C	1.9	1.7	2.0
Probing error of the image processing system MPE complies with ISO 10360-7:2011	PFV2D <sup>5)</sup>	in µm	at 20±2°C	1.2	1.2	1.2
Repeatability range (of EUZ L = 0 mm= MPL complies with ISO 10360-7:2011	RUZ <sup>5)</sup>	in µm	at 20±2°C	4	4	4

- 1) ZEISS VAST XXT: acceptance test with TL3 module; axial stylus length of 30-150 mm, radial stylus length of 0-65 mm and stylus tip diameter of 0.3-8 mm
- 2) Measuring length L in mm with acceptance testing plate from ZEISS.
- 3) Measuring location near the calibration position to document sensor properties.
- 4) Laser class 1: EN (IEC) 60825-1:2002
- 5) 6.3x magnification


### Optical confocal white light distance sensor<sup>1)</sup> for ZEISS O-INSPECT 322, 543, 863

Measuring range 2 mm 	Working distance 61 mm, resolution 0.07 µm, measurable surface inclination to beaming direction 90°±20 <sup>2)</sup> , measuring spot diameter 12.5 µm			
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Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] Z axis	in µm	at 20±2°C	1.9 + L/250
Total dimension probing error MPE complies with ISO 10360-8:2013	P[Size.Sph.All:Tr:ODS] Z axis	in µm	at 20±2°C	5

Measuring range 3 mm 	Working distance 22.5 mm, resolution 0.1 µm, measurable surface inclination to beaming direction 90°±30 <sup>2)</sup> , measuring spot diameter 12 µm			
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Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] Z axis	in µm	at 20±2°C	2.2 + L/250
Total dimension probing error MPE complies with ISO 10360-8:2013	P[Size.Sph.All:Tr:ODS] Z axis	in µm	at 20±2°C	5

Measuring range 10 mm 	70 mm working distance, 0.3 µm resolution Measurable surface inclination to beaming direction 90° ±20 <sup>2)</sup> Measuring spot diameter 24 µm			
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Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] Z axis	in µm	at 20±2°C	3.9 + L/250
Total dimension probing error MPE complies with ISO 10360-8:2013	P[Size.Sph.All:Tr:ODS] Z axis	in µm	at 20±2°C	5

### Rotary table<sup>1)</sup> for O-INSPECT 543, 863

Overview				
Rotary table weight		in kg	at 20±2°C	approx. 7
Measuring system	Resolution	in "	at 20±2°C	0.15
Dynamics				
Max. angular velocity		in °/s	at 20±2°C	50
Rotation speed		in min <sup>-1</sup>	at 20±2°C	8.3
Load/moment				
Moment of tilt	Mx/My <sup>3)</sup>	in Nm	at 20±2°C	2
Tilt rigidity		in Nm/°	at 20±2°C	1
Available torque	Mx/My <sup>3)</sup>	in Nm	at 20±2°C	3
Max. distance of the load	to the CZ jaw chuck	in mm	at 20±2°C	100 at approx. 1.5 kg
Max. clamping diameter		in mm	at 20±2°C	approx. 100
Accuracy				
Angular position repeatability		in "	at 20±2°C	±0.75
Axial runout MPE complies with ISO 10360-3:2000	FA	in µm	at 20±2°C	6
Radial runout MPE complies with ISO 10360-3:2000	FR	in µm	at 20±2°C	6
Wobble MPE complies with ISO 10360-3:2000	FT	in µm	at 20±2°C	6

- 1) Optionally available.
- 2) Depending on the reflection behavior of the surface.
- 3) Depending on installation position.

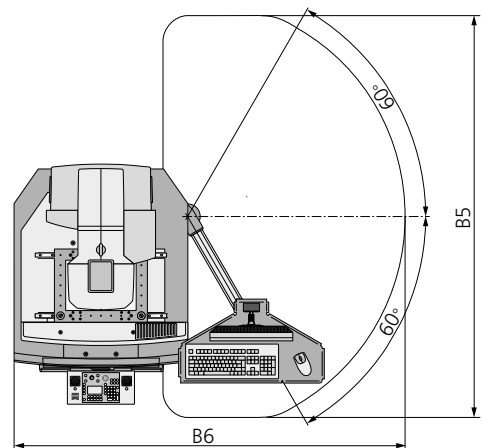
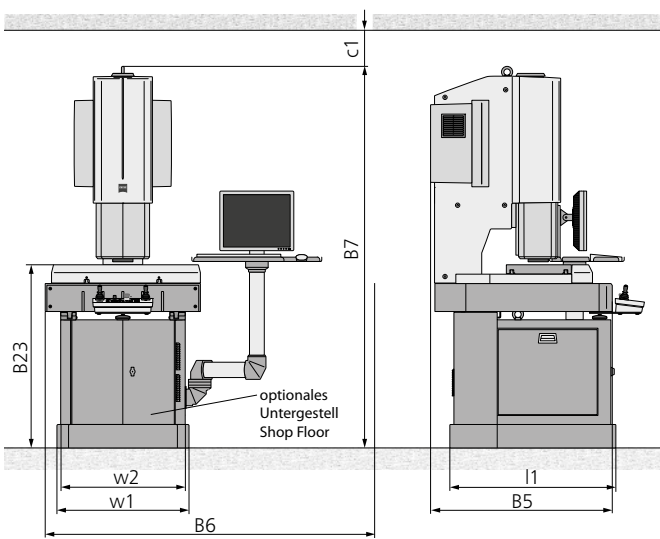
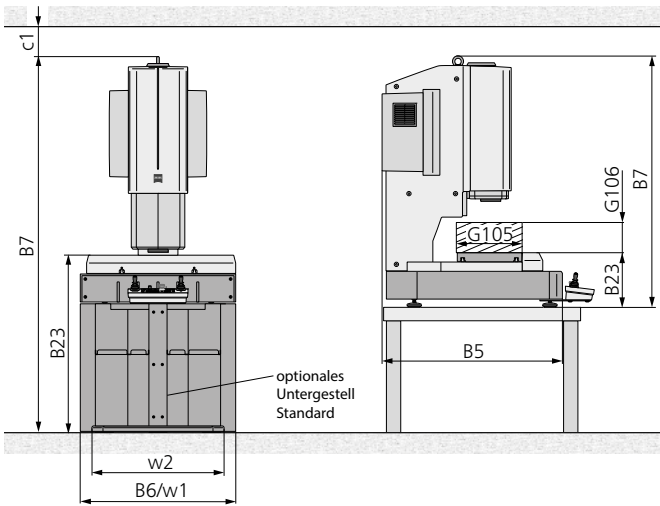
**ZEISS O-INSPECT 322**

Dimensions in mm

	Measuring range			Stylus data geometry			Overall machine dimensions			Working range (Max. workpiece size)			
	X axis	Y axis	Z axis	ZEISS VAST XXT		ZEISS Discovery V12	White light distance sensor		Width	Length	Height	Width	
	G104	G105	G106	X	Y	X	Y	X	Y	B6	B5	B7	B17
Basic model	300	200	200	0	0	74.0	-1.0	170.5	61.5	865 <sup>1)</sup>	1000 <sup>2)</sup>	1405	∞
With standard base	300	200	200	0	0	74.0	-1.0	170.5	61.5	865 <sup>1)</sup>	1000 <sup>2)</sup>	2080	∞
With shopfloor base	300	200	200	0	0	74.0	-1.0	170.5	61.5	approx. 1935	1960 <sup>2)</sup>	2115	∞

Dimensions in mm

	Footprint			Table height	Assembly clearance	Weight in kg	
	Width		Length	B23	c1	Max. workpiece	Measuring machine
	w1	w2 <sup>3)</sup>	l1				
Basic model	865	765	1000	305	≥200	20	325
with standard base	865	740	991	980	≥200	20	440
With shopfloor base	732	-	920	1015	≥200	20	490



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.

- 1) plus 2 x 500 mm assembly clearance.
- 2) plus 240 mm for control panel storage and 500 mm assembly clearance.
- 3) With disassembly of the cover parts during installation.

**ZEISS O-INSPECT 543**

Dimensions in mm												
Measuring range			Stylus data geometry						Overall machine dimensions			Working range (Max. workpiece size)
X axis	Y axis	Z axis	ZEISS VAST XXT		ZEISS Discovery.V12		White light distance sensor		Width	Length	Height	Width
G104	G105	G106	X	Y	X	Y	X	Y	B6	B5	B7	B17
500	400	300	0	0	74.0	-1.0	170.5	61.5	1090 <sup>1)</sup>	1653 <sup>2)</sup>	2025	700

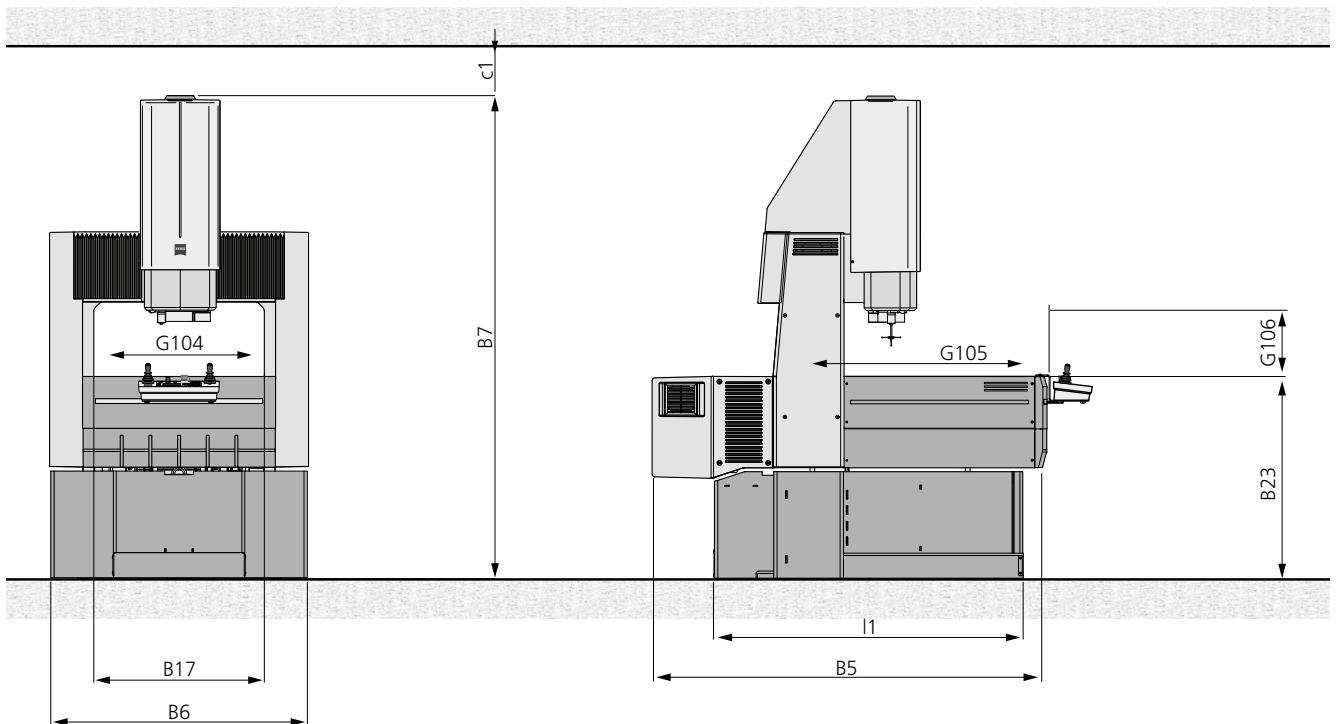
Dimensions in mm				Weight in kg		
Footprint		Table height	Assembly clearance	Max. workpiece	Measuring machine	Base
Width	Length					
B6	l1	B23	c1			
1090	1295	850	≥200	25	600	150

**ZEISS O-INSPECT 863**

Dimensions in mm												
Measuring range			Stylus data geometry						Overall machine dimensions			Working range (Max. workpiece size)
X axis	Y axis	Z axis	ZEISS VAST XXT		ZEISS Discovery.V12		White light distance sensor		Width	Length	Height	Width
G104	G105	G106	X	Y	X	Y	X	Y	B6	B5	B7	B17
800	600	300	0	0	74.0	-1.0	170.5	61.5	1440 <sup>1)</sup>	2144 <sup>2)</sup>	2030	1060

Dimensions in mm				Weight in kg		
Footprint		Table height	Assembly clearance	Max. workpiece	Measuring machine	Base
Width	Length					
B6	l1	B23	c1			
1440	1591	850	≥200	100	1000	200



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.

- 1) plus 2 x 500 mm assembly clearance.
- 2) plus 200 mm for control panel storage and 500 mm assembly clearance.

## Requirements for operational readiness

Relative humidity	40-70% (without condensation)		
Environmental temperature	+17°C to +35°C		
Electrical power rating	322	543	863
	1/N/PE 100 - 240V~(+10%); 50-60 Hz max. power consumption 600 VA Typical power consumption (thermal load): 170 W	1/N/PE 100 - 240V~(+10%); 50-60 Hz max. power consumption 600 VA Typical power consumption (thermal load): 170 W	1/N/PE 100 - 240V~(+10%); 50-60 Hz max. power consumption 600 VA Typical power consumption (thermal load): 170 W

## Recommended environmental conditions for permissible measuring error

	322	543	863
Permissible humidity (without condensation)	40% to 70%	40% to 70%	40% to 70%
Environmental temperature	+20°C ±2K	+20°C ±2K	+20°C ±2K
Temperature fluctuations	per day per hour spatial	2.0 K/d 1.0 K/h 1.0 K/m	2.0 K/d 1.0 K/h 1.0 K/m
Floor vibrations	ZEISS O-INSPECT is equipped with an integrated vibration damping system and is therefore highly resistant to vibrations.		

## Technical features

	322	543	863
Length measurement system	Optical scales; reflected light system, photoelectric, resolution 0.2 µm	Optical scales; reflected light system, photoelectric, resolution 0.2 µm	Optical scales; reflected light system, photoelectric, resolution 0.2 µm
Controller	Type Protection type	based on ZEISS C99L IP53	based on ZEISS C99L IP53
Data technology	Delivered with a fully equipped workstation.		
Accessories (optional)	Star stylus kit, part clamping set, pallet frame, optical confocal white light distance sensor, workpiece temperature sensor, measuring lab illumination, standard base, ShopFloor base	Star stylus kit, part clamping set, pallet frame, rotary table, optical confocal white light distance sensor, workpiece temperature sensor, measuring lab illumination	Star stylus kit, part clamping set, pallet frame, rotary table, optical confocal white light distance sensor, workpiece temperature sensor, measuring lab illumination

## Approvals

Regulations ZEISS O-INSPECT complies with EC machinery directive 2006/42/EC and EMC directive 2014/30/EU.



Disposal ZEISS products and packaging returned to us are disposed of in accordance with applicable legal provisions.

## Certification/accreditation

Quality management system	ISO 9001:2008; VDA 6, Parts 4, 2. Issue 2005
Environmental management system	ISO 14001:2004
Occupational health & safety management systems	BS OHSAS 18001:2007
Accredited	ISO/IEC 17025:2005

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