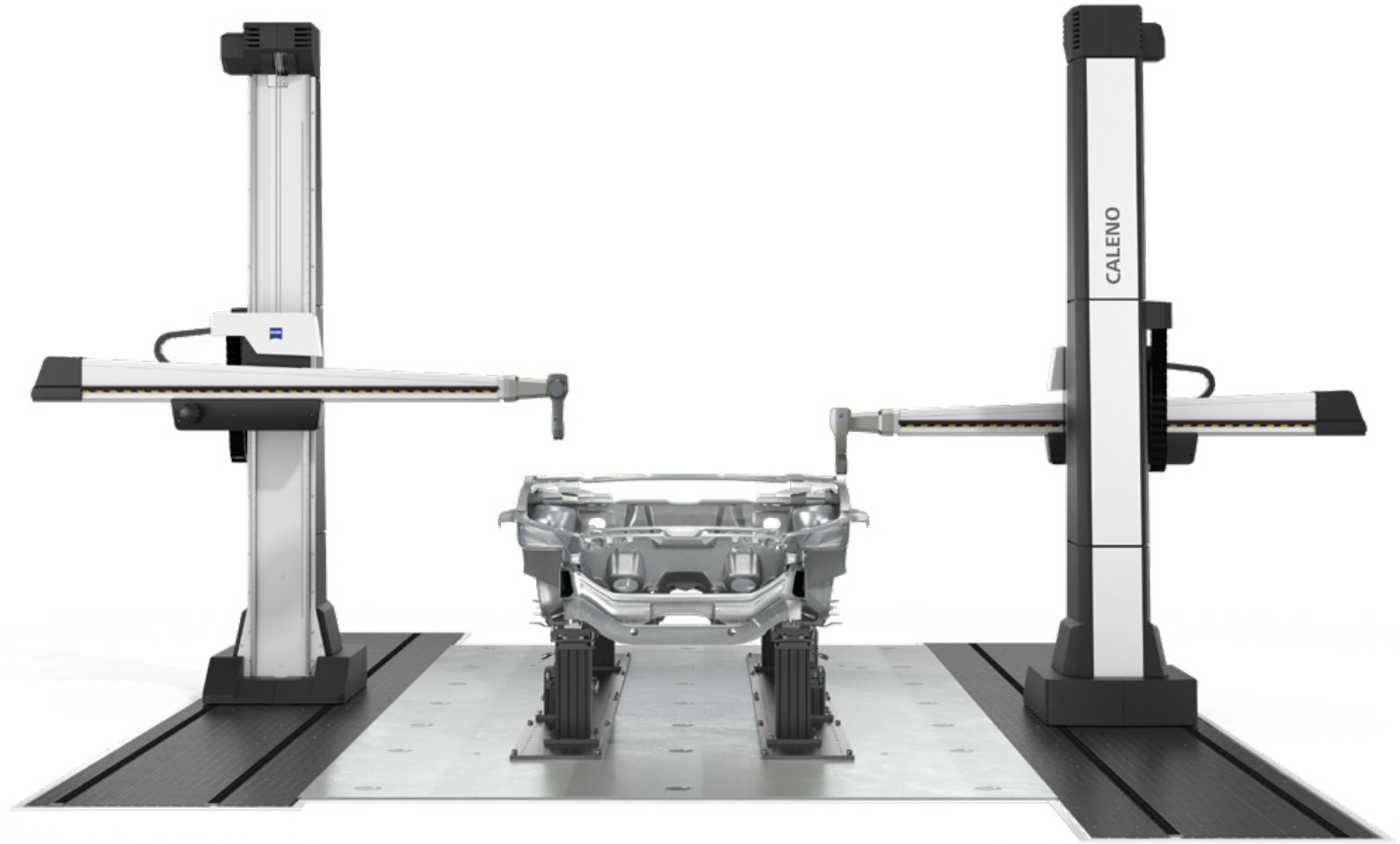


ZEISS CALENO / ZEISS CALENO T

Specifications

Version: 2022-08

Seeing beyond

System description					
Type according to ISO 10360-1:2000	Moving ram horizontal-arm CMM				
Models	Single or duplex				
Operating mode	Motorized / CNC				
Sensor mounts	ZEISS RDS-C6-CAA, ZEISS DSC				
Software	ZEISS CALIGO, ZEISS HOLOS, I++				
Travel speed			Standard	With Option Performance	
	Set-up mode with collision protection for sensor carrier (optional)	Axes	150 mm/s	150 mm/s	
	CNC in batch measurement mode with full collision protection for the user	X axis	150 mm/s	150 mm/s	
		Y axis			
		Z axis			
		Vector	260 mm/s	260 mm/s	
	CNC in batch measurement mode with optional safety light barrier	X axis	-	500 mm/s	
		Y axis			
		Z axis			
		Vector	-	866 mm/s	
Acceleration		Axes	max. 800 mm/s²	max. 1000 mm/s²	
		Vector	max. 1000 mm/s²	max. 1500 mm/s²	

Accuracy and measuring performance [3) 5)]

The CMM specifications are only valid when using original accesories 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.

		16/25	**16/30**	**18/21, 18/25**	**18/30**
Length measurement error MPE complies with ISO 10360-2:2009	E in µm at 16°C– 24°C for single arm	27 + L/80 ≤70	40 + L/65 ≤105	37 + L/80 ≤90	55 + L/65 ≤125
Length measurement error MPE complies with ISO 10360-2:2009	EM in µm at 16°C– 24°C for dual arm	40 + L/60 ≤95	60 + L/45 ≤145	60 + L/60 ≤135	83 + L/45 ≤190
Probing error [6)] MPE complies with ISO 10360-2:2010	PFTU in µm at 16°C– 24°C for single arm	25	30	30	35

Accuracy and measuring performance with HG option [4)]

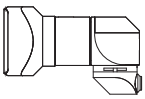
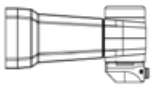
		16/21 [1)]**, 16/25**	**16/30** [2)]	**18/21, 18/25**	**18/30**
Length measurement error MPE complies with ISO 10360-2:2009	E in µm at 18°C– 22°C for single arm	18 + L/125 ≤50	25 + L/100 ≤70	30 + L/125 ≤70	35 + L/100 ≤80
Length measurement error MPE complies with ISO 10360-2:2009	EM in µm at 18°C– 22°C for dual arm	30 + L/80 ≤75	40 + L/65 ≤110	40 + L/80 ≤105	55 + L/65 ≤120
Probing error [6)] MPE complies with ISO 10360-2:2010	PFTU in µm at 18°C– 22°C for single arm	20	25	25	30

Accuracy and measuring performance with HG option [3)]

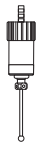
		16/21 [1)]**, 16/25**	**16/30** [2)]	**18/21, 18/25**	**18/30**
Length measurement error MPE complies with ISO 10360-2:2009	E in µm at 16°C– 24°C for single arm	25 + L/100 ≤60	35 + L/80 ≤90	35 + L/100 ≤80	45 + L/80 ≤110
Length measurement error MPE complies with ISO 10360-2:2009	EM in µm at 16°C– 24°C for dual arm	40 + L/70 ≤90	50 + L/55 ≤130	55 + L/70 ≤120	68 + L/55 ≤165
Probing error [6)] MPE complies with ISO 10360-2:2010	PFTU in µm at 16°C– 24°C for single arm	20	25	25	30

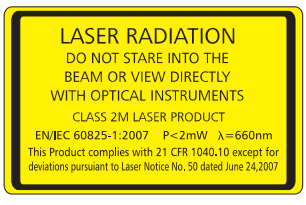
1) Only CALENO T
2) Only CALENO
3) L = measuring length in mm. This data applies to the maximum length measuring error based on a length of no more than 6000 mm.
4) Temperature range T0
5) Temperature range T1
6) P[Form.Sph.1x25:SS:Tact] according to the new ISO 10360-5: 2020

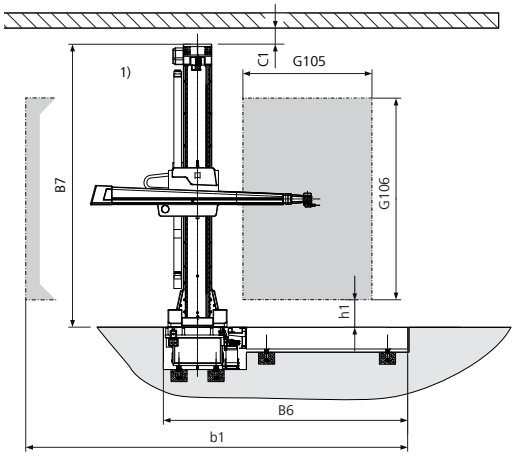
Sensor mounts

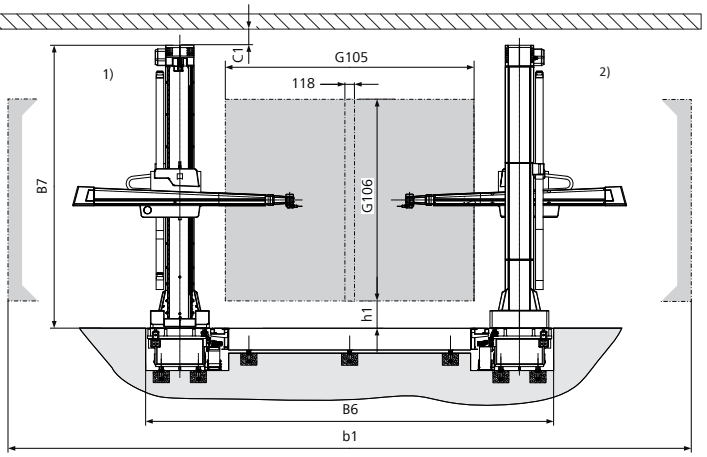
ZEISS RDS-C6 CAA 	Dynamic ZEISS RDS-C6 CAA articulating unit for contact sensors. The lateral tilting axis provides more advantages over articulating units with front-to-back and lateral tilting axis: tilting range of ±180 , large measuring range. With CAA correction for automatic calibration of all available angular settings. With collision protected probe plate.	
	Step width	2.5°
	Angular velocity	up to 90°/s
	Reproducibility of the position	±1"
	Maximum torque	50 Ncm
	Max. extension	350 mm with ZEISS RST-P
		350 mm (PECF) with Renishaw TP6
		350 mm (PECF) with Renishaw TP20
ZEISS DSC 	Dynamic ZEISS DSC continuous articulating unit for contact and optical sensors. High torque for the use of optical sensors and long extensions. This reduces the calibration times to a minimum.	
	Rotation axis A	n x 360°
	Swivel axis B	±137,5°
	Resolution	0.324" (continuous)
	Angular velocity	up to 180°/s
	Reproducibility of the position	<2"
	Maximum torque	3.0 Nm
	Max. Extension	800 mm

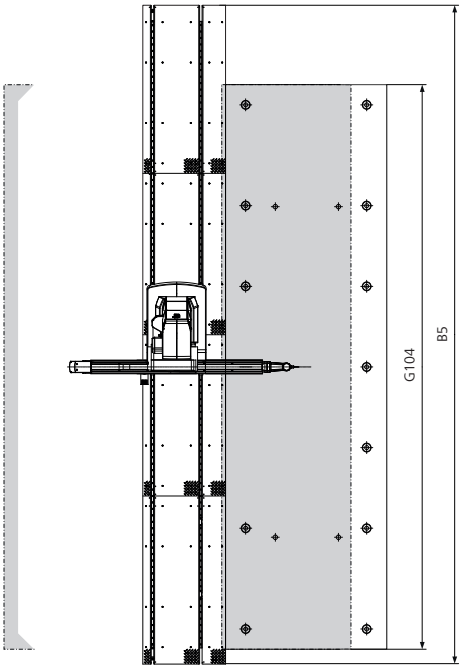
Sensors

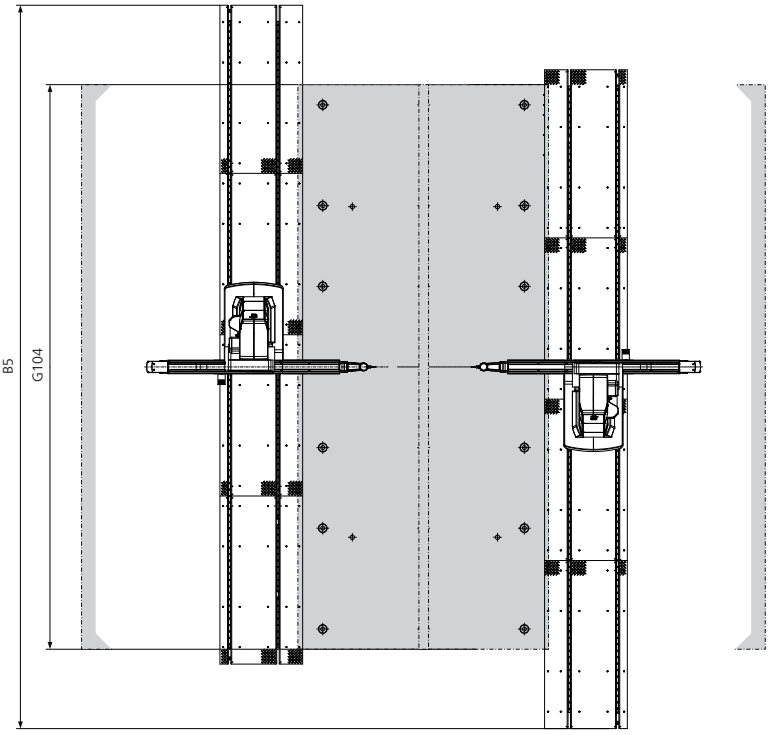
Renishaw TP6 	3D touch-trigger probe, manufactured by Renishaw	
	Length	41 mm
	Diameter	25 mm
	Measuring force	0.11 - 0.30 N
	Stylus length	max. 50 mm
	Stylus weight	max. 5 g
Renishaw TP20 	3D touch-trigger probe, manufactured by Renishaw	
	Length	38 mm
	Diameter	13.2 mm
	Measuring force (with stylus length of 10 mm)	0.08 N; 0.25 N; 0.4 N
	Stylus length	max. 50 mm
	Stylus weight	max. 5 g
ZEISS RST-P 	Directional-independent touch-trigger sensor	
	Length	65 mm
	Diameter	24 mm
	Measuring force at data acquisition	<0.01 N
	Stylus length	max. 90 mm
	Stylus weight	max. 10 g
ZEISS EagleEye 	Optional for ZEISS CALENO with DSC	
	Laser line triangulation sensor with 6th axis.	Rotatable by n x 360°
	Measuring range	100 mm
	Line width	68 mm
	Middle working distance	90 mm
	Maximum error during sphere center test	70 µm* * Sphere center test on PRO 16/25. 29 angular positions of A-/B- and C-axis
	The following features can be measured with ZEISS EagleEye directly as a feature or as a link: Elongated hole, point, square hole, cylinder/threaded rods, sphere, edge, gap and alignment, double sheet metal, point cloud.	









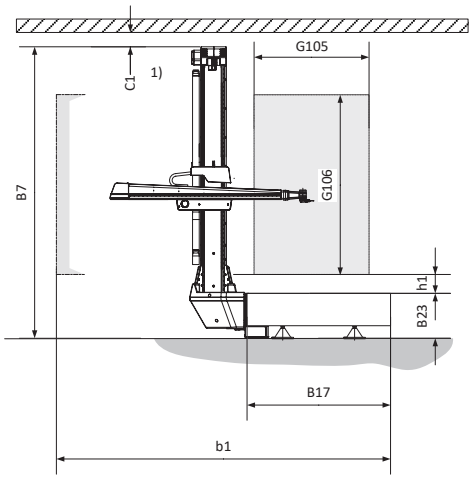


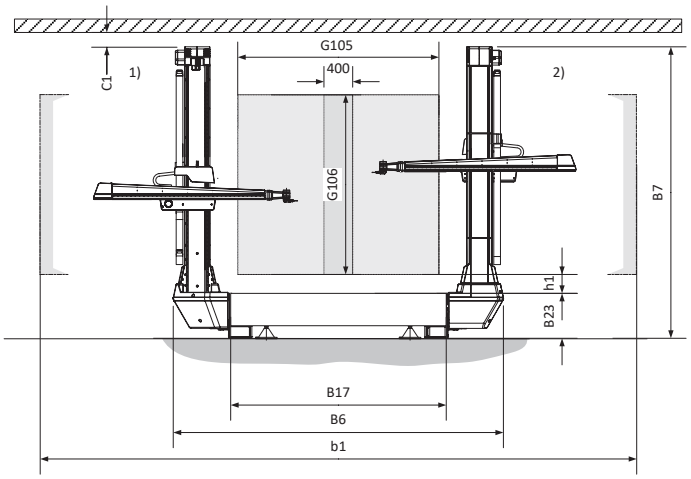
Note: the given dimensions and weights are approximate values. Subject to change. Actual appearance of specific sizes may vary from illustration. Dimensioning based on DIN 4000-167:2009.

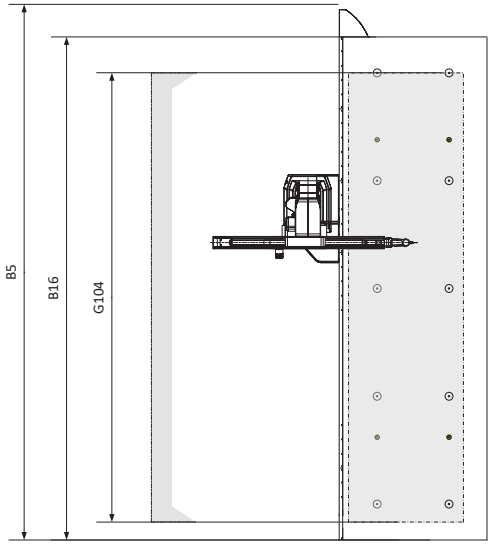
ZEISS CALENO Single Arm	Dimensions in mm									Weight in kg	
Sizes	Measuring range			Overall machine dimensions					Assembly space	Measuring-machine	Measuringbeams X-axis
	X-axis	Y-Axis	Z-Axis	Lenght	Single Arm width		Height		Height		
	G104	G105	G106	B5	B6	b1	B7	h1	c1		
50/16/25	5000	1600	2500	6230	3023	4727	3510	340	≥200	541	3200
60/16/25	6000	1600	2500	7230	3026	4727	3510	340	≥200	541	3700
70/16/25	7000	1600	2500	8230	3026	4727	3510	340	≥200	541	4200
50/16/30	5000	1600	3000	6230	3026	4727	4010	340	≥200	573	3200
60/16/30	6000	1600	3000	7230	3026	4727	4010	340	≥200	573	3700
70/16/30	7000	1600	3000	8230	3026	4727	4010	340	≥200	573	4200
50/18/25	5000	1800	2500	6230	3026	4927	3510	340	≥200	544	3200
60/18/25	6000	1800	2500	7230	3026	4927	3510	340	≥200	544	3700
70/18/25	7000	1800	2500	8230	3026	4927	3510	340	≥200	544	4200
50/18/30	5000	1800	3000	6230	3026	4927	4010	340	≥200	576	3200
60/18/30	6000	1800	3000	7230	3026	4927	4010	340	≥200	576	3700
70/18/30	7000	1800	3000	8230	3026	4927	4010	340	≥200	576	4200

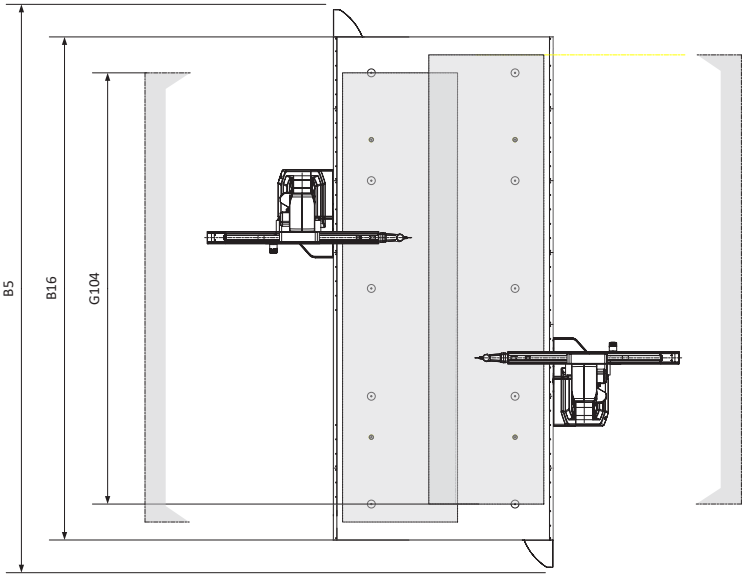
ZEISS CALENO Dual arm	Dimensions in mm									Weight in kg	
Sizes	Measuring range			Overall machine dimensions					Assembly space	Measuring-machine	Measuringbeams X-axis
	X-axis	Y-Axis	Z-Axis	Lenght	Dual arm width		Height		Height		
	G104	G105	G106	B5	B6	b1	B7	h1	c1		
50/30/25	5000	3086	2500	7030	5056	8454	3510	340	≥200	541	3200
60/30/25	6000	3086	2500	8030	5056	8454	3510	340	≥200	541	3700
70/30/25	7000	3086	2500	9030	5056	8454	3510	340	≥200	541	4200
50/30/30	5000	3086	3000	7030	5056	8454	4010	340	≥200	573	3200
60/30/30	6000	3086	3000	8030	5056	8454	4010	340	≥200	573	3700
70/30/30	7000	3086	3000	9030	5056	8454	4010	340	≥200	573	4200
50/30/25	5000	3086	2500	7030	5056	8854	3510	340	≥200	544	3200
60/30/25	6000	3086	2500	8030	5056	8854	3510	340	≥200	544	3700
70/30/25	7000	3086	2500	9030	5056	8854	3510	340	≥200	544	4200
50/30/30	5000	3086	3000	7030	5056	8854	4010	340	≥200	576	3200
60/30/30	6000	3086	3000	8030	5056	8854	4010	340	≥200	576	3700
70/30/30	7000	3086	3000	9030	5056	8854	4010	340	≥200	576	4200

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.









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.

ZEISS CALENO T Einzelarm	Dimensions in mm												Weight in kg	
Sizes	Measuring range			Overall machine dimensions								Assembly space	Measuring-machine	Messplatte
	X-Axis	Y-Axis	Z-Axis	Lenght	Lenght	Single Arm width			Height			Height		
	G104	G105	G106	B5	B16	B17	B6	b1	B7	B23	h1	c1		
30/16/21	3250	1600	2100	4455	4000	2000	2957	4650	3656	625	263	≥ 200	610	8000
40/16/21	4250	1600	2100	5455	5000	2000	2957	4650	3656	625	263	≥ 200	610	10000
50/16/21	5250	1600	2100	6455	6000	2000	2957	4650	3656	625	263	≥ 200	610	12000
60/16/21	6250	1600	2100	7455	7000	2000	2957	4650	3656	625	263	≥ 200	610	14000
70/16/21	7250	1600	2100	8455	8000	2000	2957	4650	3656	625	263	≥ 200	610	16000
30/16/25	3250	1600	2500	4455	4000	2000	2957	4650	4056	625	263	≥ 200	635	8000
40/16/25	4250	1600	2500	5455	5000	2000	2957	4650	4056	625	263	≥ 200	635	10000
50/16/25	5250	1600	2500	6455	6000	2000	2957	4650	4056	625	263	≥ 200	635	12000
60/16/25	6250	1600	2500	7455	7000	2000	2957	4650	4056	625	263	≥ 200	635	14000
70/16/25	7250	1600	2500	8455	8000	2000	2957	4650	4056	625	263	≥200	635	16000
30/18/21	3250	1800	2100	4455	4000	2000	2957	4850	3656	625	263	≥ 200	615	8000
40/18/21	4250	1800	2100	5455	5000	2000	2957	4850	3656	625	263	≥ 200	615	10000
50/18/21	5250	1800	2100	6455	6000	2000	2957	4850	3656	625	263	≥ 200	615	12000
60/18/21	6250	1800	2100	7455	7000	2000	2957	4850	3656	625	263	≥ 200	615	14000
70/18/21	7250	1800	2100	8455	8000	2000	2957	4850	3656	625	263	≥ 200	615	16000
30/18/25	3250	1800	2500	4455	4000	2000	2957	4850	4056	625	263	≥ 200	640	8000
40/18/25	4250	1800	2500	5455	5000	2000	2957	4850	4056	625	263	≥ 200	640	10000
50/18/25	5250	1800	2500	6455	6000	2000	2957	4850	4056	625	263	≥ 200	640	12000
60/18/25	6250	1800	2500	7455	7000	2000	2957	4850	4056	625	263	≥ 200	640	14000
70/18/25	7250	1800	2500	8455	8000	2000	2957	4850	4056	625	263	≥ 200	640	16000

ZEISS CALENO T Doppelarm	Dimensions in mm												Weight in kg	
Sizes	Measuring range			Overall machine dimensions								Assembly space	Measuring-machine	Messplatte
	X-Axis	Y-Axis	Z-Axis	Lenght	Lenght	Dual arm width			Height			Height		
	G104	G105	G106	B5	B16	B17	B6	b1	B7	B23	h1	c1		
30/28/21	3000	2800	2100	4910	4000	3000	4914	8300	3656	625	263	≥ 200	610	12000
40/28/21	4000	2800	2100	5910	5000	3000	4914	8300	3656	625	263	≥ 200	610	15000
50/28/21	5000	2800	2100	6910	6000	3000	4914	8300	3656	625	263	≥ 200	610	18000
60/28/21	6000	2800	2100	7910	7000	3000	4914	8300	3656	625	263	≥ 200	610	21000
70/28/21	7000	2800	2100	8910	8000	3000	4914	8300	3656	625	263	≥ 200	610	24000
30/28/25	3000	2800	2500	4910	4000	3000	4914	8300	4056	625	263	≥ 200	635	12000
40/28/25	4000	2800	2500	5910	5000	3000	4914	8300	4056	625	263	≥ 200	635	15000
50/28/25	5000	2800	2500	6910	6000	3000	4914	8300	4056	625	263	≥ 200	635	18000
60/28/25	6000	2800	2500	7910	7000	3000	4914	8300	4056	625	263	≥ 200	635	21000
70/28/25	7000	2800	2500	8910	8000	3000	4914	8300	4056	625	263	≥200	635	24000
30/28/21	3000	2800	2100	4910	4000	3000	4914	8700	3656	625	263	≥ 200	615	12000
40/28/21	4000	2800	2100	5910	5000	3000	4914	8700	3656	625	263	≥ 200	615	15000
50/28/21	5000	2800	2100	6910	6000	3000	4914	8700	3656	625	263	≥ 200	615	18000
60/28/21	6000	2800	2100	7910	7000	3000	4914	8700	3656	625	263	≥ 200	615	21000
70/28/21	7000	2800	2100	8910	8000	3000	4914	8700	3656	625	263	≥ 200	615	24000
30/28/25	3000	2800	2500	4910	4000	3000	4914	8700	4056	625	263	≥ 200	640	12000
40/28/25	4000	2800	2500	5910	5000	3000	4914	8700	4056	625	263	≥ 200	640	15000
50/28/25	5000	2800	2500	6910	6000	3000	4914	8700	4056	625	263	≥ 200	640	18000
60/28/25	6000	2800	2500	7910	7000	3000	4914	8700	4056	625	263	≥ 200	640	21000
70/28/25	7000	2800	2500	8910	8000	3000	4914	8700	4056	625	263	≥ 200	640	24000

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.

Technical features				
Length measuring system	Electro-optical reflected light system; resolution 1 µm			
Controller	Type	ZEISS C99		
	Protection type	IP54		
	Cooling system	Fan/ optional air conditioner		
Accessories (optional)	Safety technology for high travel speed, CNC sensor rack, column lock, safety position (crane lock), kink protection for articulating joints, automatic temperature capture of CMM and workpiece, various control panels			

Environmental requirements [2]				
Ambient temperature			T1	T0
			16 °C - 24 °C	18 °C - 22 °C
	Temperature fluctuations	Per hour	1.5 K/h	0.5 K/h
		per day	3.0 K/d	2.0 K/d
	Temperature gradient	Spatial	1.0 K/m	0.5 K/m
Relative humidity			30 % - 80 %	40 % - 70 %
Acoustic pressure	max. 80dbA			

Requirements for operational readiness	
Relative humidity	80 % maximum without condensation
Ambient temperature	15 °C - 35°C
Electrical power rating	1/N/PE 100/110/115/120/125/230/240 V~, (+/-10%), 50/60 Hz (+/-3.5%) Max. power consumption when fully upgraded 2500 VA
Compressed air supply (for RDS-C6 only)	Supply pressure 6-10 bar, pre-cleaned, use approx. 0,8 Nl/min operating pressure Air quality complies with ISO 8573 part 1: class 4

Approvals	
Regulations	ZEISS CALENO complies with EC machine 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 9001:2015; 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

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