



NÁRODNÍ AKREDITAČNÍ ORGÁN

EA MLA Signatory
Český institut pro akreditaci, o.p.s.
Olšanská 54/3, 130 00 Praha 3

issues

according to section 16 of Act No. 22/1997 Coll., on technical requirements for products, as amended

CERTIFICATE OF ACCREDITATION

No. 230/2020

František Knížek
with registered office A. Dvořáka 609, 533 41 Lázně Bohdaneč, Company Registration
No. 46494111

to the Testing Laboratory No. 2290
František Knížek - KALEX, Calibration Centre

Scope of accreditation:

Calibration of meters in the field of length, plane angle, mass, force and torque, pressure and temperature to the extent as specified in the appendix to this Certificate.

This Certificate of Accreditation is a proof of Accreditation issued on the basis of assessment of fulfillment of the accreditation criteria in accordance with

ČSN EN ISO/IEC 17025:2018

In its activities performed within the scope and for the period of validity of this Certificate, the Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Body meets the specified accreditation requirements in accordance with the relevant regulations applicable to the activity of an accredited Conformity Assessment Body.

This Certificate of Accreditation replaces, to the full extent, Certificate No.: 514/2018 of 1. 10. 2018, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **1. 10. 2023**

Prague: 8. 4. 2020



Jiří Růžička
Director
Czech Accreditation Institute
Public Service Company

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

František Knížek
František Knížek - KALEX, Calibration Centre
Antonína Dvořáka 719, 533 41 Lázně Bohdaneč

Calibration laboratory locations:

1. **Workplace Lázně Bohdaneč** A. Dvořáka 719, 533 41 Lázně Bohdaneč
2. **Workplace Vlčí Habřina** Vlčí Habřina 122, 533 41 Lázně Bohdaneč

CMC for the field of measured quantity: Length

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Workplace
		min.	unit	max.	unit					
1	Parallel gauge blocks	0.5 mm	to	100 mm			(2L + 0.2) µm	Comparison with parallel gauge blocks	KPA-1.01	1
		125 mm	to	500 mm			(2.2L + 0.3) µm			1, 2
		500 mm	to	1,000 mm			(2.2L + 0.3) µm			2
2*	Slide gauges, depth gauges, height gauges	0 mm	to	3,000 mm			(8.7L + 11) µm	Comparison with parallel gauge blocks	KPA-1.02	1
3	Micrometers for external measurement							Comparison with parallel gauge blocks	KPA-1.03	1
	Micrometer calliper gauges	0 mm	to	500 mm			(3L + 1) µm			
	Pasameters	0 mm	to	500 mm			(3L + 1) µm			
	Micropasameters	0 mm	to	500 mm			(3L + 1) µm			
4	Micrometers for internal measurement							Comparison with parallel gauge blocks	KPA-1.04	1
	Inside micrometer gauges	14 mm	to	500 mm			(3L + 1) µm			
	Micrometer depth gauges	14 mm	to	500 mm			(2L + 1.1) µm			
	Inside micrometers	14 mm	to	500 mm			(2L + 1.1) µm			
	Micrometric heads	0 mm	to	500 mm			(3L + 1) µm			

The Appendix is an integral part of
Certificate of Accreditation No. 230/2020 of 08/04/2020

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

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Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work- place
		min.	unit	max.	unit					
5	Deviation meters Dial gauges Pupitasts Somcators Internal gauges	0 mm	to	100 mm			0.88 µm 1.2 µm 1.2 µm 1.2 µm	Measurement on a calibration instrument	KPA-1.05	1
6	Limit gauges for external measurement Micrometer calliper gauges Plain rings Threaded rings	1 mm	to	500 mm			(3L + 1) µm (3.6L + 1.2) µm (7.4L + 2.1) µm	Measurement on a length gauge	KPA-1.06	1
7	Limit gauges for internal measurement cylinder, flat Thread gauges Feeler gauges Measuring wires Gauges for radius Gauges for threads Gauges for paint thickness	0.05 mm	to	500 mm			(5.3L + 0.75) µm (2.8L + 2.8) µm 3.6 µm 0.54 µm 4.0 µm 4.0 µm 1.4 µm	Measurement on a length gauge	KPA-1.07	1
8*	Rules Steel rules Measuring magnifier Steel tape measures Tapes	0 mm	to	10,000 mm			(4.6L + 4.7) µm (4.6L + 4.7) µm (3.8L + 140) µm (0.06L + 0.3) mm	Measurement on a coordinate measuring machine Comparison with a steel gauge	KPA-1.08	1, 2

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work-place
		min.	unit	max.	unit					
9*	Two-coordinate measuring machines, Measuring microscopes, Profile projectors	0 mm		to	1,000 mm		3.2 µm	Comparison with a glass rule	KPA-1.09	1
10	Atypical length gauges	0 mm		to	250 mm		4.0 µm	Measurement on a coordinate measuring machine	KPA-1.10	1
11*	Surface plates, blocks, plates	0 m		to	5 m		3.8 µm	Measurement by an electronic level	KPA-1.13	1
12*	Length measuring instrument	0 mm		to	1,000 mm		(2L + 0.25) µm	Comparison with parallel gauge blocks	KPA-1.14	1

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02, part of CMC, and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the value measured. If the calibration is carried out outside the laboratory premises, the measurement uncertainty may be affected.

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L . Nominal length in metres

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CMC for the field of measured quantity: Plane angle

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work-place
		min.	unit	max	unit					
1	Rigid angle gauges							Measurement on a coordinate measuring machine	KPA-1.11	1
	Check squares	0 °		90 °			32µm/m			
	Taper gauges	0 °		90 °			7''			
	Accuracy of levels	0 °		90 °			5µm/m	Measurement on a level gauge		
	Centre square	0 °		90 °			32µm/m			
	Gauges for threads	0 °		90 °			7''			
2	Angle gauges								KPA-1.12	1
	mechanical, digital, optical,	0 °		360 °			1.8'	Comparison with angle gauges		
	with a dial indicator arc-shape	0 °		180 °			0.7°			

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CMC for the field of measured quantity: Mass

Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identificati on ³	Work- place
		min.	unit	max.	unit					
1*	Scales with non-automatic function, mechanical, digital	0 kg	to	2 kg			$1.6 \cdot 10^{-6}$	Loading using a reference weight	KPA-2.01	1
		2 kg	to	3 kg			$5 \cdot 10^{-6}$	class E2		
		3 kg	to	45 kg			$1.6 \cdot 10^{-5}$	class F1		
		45 kg	to	6,000 kg			$5 \cdot 10^{-5}$	class F2		
		6,000 kg	to	30,000 kg			$1.6 \cdot 10^{-4}$	class M1		
2	Weights and other objects	1 g	to	500 g			8.2 mg	Comparison with a standard weight	KPA-2.01	2
		0.5 kg	to	1 kg			8.6 mg			
		1 kg	to	2 kg			10 mg			
		2 kg	to	5 kg			16 mg			
		5 kg	to	20 kg			59 mg			

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CMC for the field of measured quantity: Force, mechanical tests

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work-place
		min.	unit	max.	unit					
1*	Torque drivers	0.25 Nm		50 Nm			0.01	Comparison with a standard torque device	KPA-5.01	1
	Torque wrenches, screwdrivers, Moment of force meters	0.25 Nm	to	0.5 Nm			0.01			
		0.5 Nm	to	200 Nm			0.005			
		200 Nm	to	500 Nm			0.005			1, 2
		500 Nm	to	2,000 Nm			0.005			2
2*	Dynamometers, force measuring devices	0 N	to	500 N		Tension, Pressure	0.001	Comparison with a standard force-proving instrument	KPA-5.02	1
		500 N	to	10,000 N			0.003			
		10,000 N	to	100,000 N			0.005			

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CMC for the field of measured quantity: Pressure, mechanical stress

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work-place
		min.	unit	max	unit					
1*	Deformation manometers, Digital manometers, Pressure measuring chains, Pressure transducers with electrical output	-95 kPa		to	350 kPa	Underpressure/o verpressure Gases	0.26 kPa	Comparison with a standard manometer	KPA-4.01, KPA-4.02	1
		350 kPa		to	1,000 kPa		0.58 kPa			
		1 MPa		to	3.5 MPa		2.1 kPa			
		3.5 MPa		to	6 MPa		6.9 kPa			
		0 MPa		to	20 MPa	Liquids	35 kPa			
		20 MPa		to	50 MPa		87 kPa			

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CMC for the field of measured quantity: Temperature

Ord. number 1	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work- place
		min.	unit	max.	unit					
1	Glass thermometers	- 40 °C	to	200 °C	0 °C		0.07 °C 0.05 °C	Comparison with a standard thermometer in a liquid bath	KPA-3.01	2
2*	Direct indicating thermometers, temperature controllers	-40 °C 200 °C 400 °C 650 °C 900 °C	to to to to to	200 °C 400 °C 650 °C 900 °C 1,200 °C			0.08 °C 0.44 °C 1.5 °C 1.8 °C 2.4 °C	Comparison with a standard thermometer in a liquid bath Comparison with a standard thermometer in a vertical furnace	KPA-3.02	1
3*	Infrared thermometers	50 °C	to	500 °C			3.2 °C	Comparison with a standard (black body)	KPA-3.03	1
4*	Contact thermometers	0 °C 50 °C 100 °C 200 °C 400 °C	to to to to to	50 °C 100 °C 200 °C 400 °C 600 °C			1.7 °C 1.9 °C 2.3 °C 2.6 °C 3.5 °C	Comparison with a standard thermometer	KPA-3.04	1
5*	Thermoelectric sensors and measuring chains Thermocouple sensors	-40 °C 200 °C 400 °C	to to to	200 °C 400 °C 650 °C		K, J, N	0.4 °C 0.6 °C 1.6 °C	Comparison with a standard thermometer in a liquid bath Comparison with a standard thermometer in a vertical furnace	KPA-3.05	1

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Ord. number 1	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work- place
		min.	unit	max.	unit					
	Measuring chain without a sensor	650 °C	to	900 °C			2.3 °C			
		900 °C	to	1,100 °C			2.6 °C			
		-100 °C	to	1,100 °C			0.3 °C	Direct measurement on a calibrator		
6*	Resistance sensors and measuring chains								KPA-3.06	1
	Resistance sensors	-40 °C		200 °C			0.2 °C	Comparison with a standard thermometer in a liquid bath		
			to							
		200 °C		400 °C			0.5 °C	Comparison with a standard thermometer in a vertical furnace		
			to							
	Measuring chain without a sensor	-100 °C	to	400 °C			0.2 °C	Direct measurement on a calibrator		

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