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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. 515/2023

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

for the Calibration 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, temperature and humidity 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

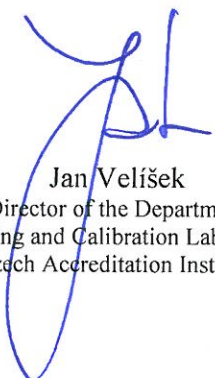
ČSN EN ISO/IEC 17025:2018

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

The Certificate of Accreditation is valid until: **2. 10. 2028**

Prague: 2. 10. 2023




Jan Velíšek
Director of the Department
of Testing and Calibration Laboratories
Czech Accreditation Institute

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

František Knížek
CAB number 2290, František Knížek - KALEX, Calibration Centre
A. 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 measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min. unit	max. unit					
1	Parallel gauge blocks	0.5 mm	to 100 mm		(2L + 0.2) μm (2.2L + 0.3) μm (2.2L + 0.3) μm	Comparison with parallel gauge blocks in vertical position on a comparator Comparison with parallel gauge blocks in horizontal position on a length gauge Comparison with parallel gauge blocks in horizontal position on a length gauge	KPA-1.01	1 1, 2 2
		500 mm	to 1,000 mm					
		0 mm	to 3,000 mm					
2*	Slide gauges, depth gauges, height gauges	0 mm	to 500 mm		(3L + 1) μm (3L + 1) μm (3L + 1) μm	Measurement using parallel gauge blocks	KPA-1.02	1
3	Micrometers for external measurement Micrometer calliper gauges Pasameters Micropasameters	0 mm	to 500 mm			Measurement using parallel gauge blocks	KPA-1.03	1
		0 mm	to 500 mm					
		0 mm	to 500 mm					
4	Micrometers for internal measurement Inside micrometer gauges Micrometer depth gauges Inside micrometers Micrometric heads	14 mm	to 500 mm		(3L + 1) μm (2L + 1.1) μm (2L + 1.1) μm (3L + 1) μm	Measurement using parallel gauge blocks	KPA-1.04	1
		14 mm	to 500 mm					
		14 mm	to 500 mm					
		0 mm	to 500 mm					



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



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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty 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	Measuring with a glass ruler	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 (longer side up to 5,000 mm) - flatness, straightness	0 m	to 10 m		3.8 μm	Measurement by an electronic level	KPA-1.13	1
12*	Length gauges	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.

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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 measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min. unit	max. unit					
1	Rigid angle gauges	0 ° to 0 °	180 °		32 µm/m 7''	Measurement on a coordinate measuring machine	KPA-1.11	1
			90 °					
	centre squares gauges for threads	0 ° to 0 °	90 °		32 µm/m 7''	Measurement on a small angle generator		
			90 °					
2	Angle gauges	0 ° to 0 °	360 °		1.8'	Measurement using angle gauges	KPA-1.12	1
3	Machinery levels – sensitivity measurement	-1 ° to -1 °	1 °	Nominal sensitivity up to 0.02 mm/m	5 µm/m	Measurement on a small angle generator	KPA-1.11	1

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CMC for the field of measured quantity: Mass

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min. unit	max. unit					
1*	Scales with non-automatic function, mechanical, digital	0 kg 2 kg 3 kg 45 kg 6,000 kg	to to to to to	2 kg 3 kg 45 kg 6,000 kg 30,000 kg	1.6·10 ⁻⁶ 5·10 ⁻⁶ 1.6·10 ⁻⁵ 5·10 ⁻⁵ 1.6·10 ⁻⁴	Loading using a reference weight class E2 class F1 class F2 class M1 class M1 with substitute load	KPA-2.01	1
2	Weights and other objects	1 g 0.5 kg 1 kg 2 kg 5 kg	to to to to to	500 g 1 kg 2 kg 5 kg 20 kg	8.2 mg 8.6 mg 10 mg 16 mg 59 mg	Comparison with a standard weight	KPA-2.01	1, 2

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CMC for the field of measured quantity: Force, torque

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min. unit	max. unit					
1*	Torque drivers Torque wrenches, screwdrivers, Moment of force meters	0.25 Nm	to 50 Nm		0.01	Measurement by a torque sensor	KPA-5.01	1
		0.25 Nm	to 0.5 Nm		0.01			
		0.5 Nm	to 200 Nm		0.005			
		200 Nm	to 500 Nm		0.005			
		500 Nm	to 2,000 Nm		0.005			
2*	Force meters, force measuring devices	0 N	to 500 N	Tension, Pressure	0.001	Measurement by a reference force meter	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

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty 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 / overpressure / Gases	0.26 kPa 0.58 kPa 2.1 kPa 6.9 kPa	Comparison with a standard manometer	KPA-4.01, KPA-4.02	1
		350 kPa	to 1,000 kPa					
		1 MPa	to 3.5 MPa					
		3.5 MPa	to 6 MPa					
		0 MPa	to 20 MPa	Liquids	35 kPa 87 kPa			
		20 MPa	to 50 MPa					

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CMC for the field of measured quantity: Temperature

Ord. number	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min. unit	max. unit					
1	Glass thermometers	-40 °C	to 200 °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	to 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 50 °C to 100 °C to 200 °C to 400 °C to 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 200 °C to 400 °C to 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	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min. unit	max. unit					
		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*	Measuring chain without a sensor						KPA-3.06	1
	Resistance sensors and measuring chains	-40 °C	to 200 °C		0.2 °C	Comparison with a standard thermometer in a liquid bath		
		200 °C	to 400 °C		0.5 °C	Comparison with a standard thermometer in a vertical furnace		
	Measuring chain without a sensor	-100 °C	to 400 °C		0.2 °C	Direct measurement on a calibrator		

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CMC for the field of measured quantity: Humidity

Ord. number	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work place
		min	unit	max					
1*	Instruments for measuring air humidity	10 % RH		to	90 % RH	0.01 + 1.6 % RH	Comparison with a reference hygrometer	KPA-6.01	1

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