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. **514/2018**

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

to 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 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.: 427/2017 of 18. 7. 2017, or any administrative acts building upon it.

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

Prague: 1. 10. 2018

Český institut pro akreditaci, o.p.s.
NÁRODNÍ AKREDITAČNÍ ORGÁN
-1-

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 | Steel parallels | 0.5 mm | up to | 100 mm | | | | 0.2+2L µm | Comparison with the standard | KPA-1.01 | 1 |
| | | 125 mm | up to | 500 mm | | | | 0.3+2.2L µm | | | 1, 2 |
| | | 500 mm | up to | 1,000 mm | | | | 0.3+2.2L µm | | | 2 |
| 2* | Slide gauges, depth gauges, height gauges | 0 mm | up to | 3,000 mm | | | | 11+8.7L µm | Comparison with the standard | KPA-1.02 | 1 |
| 3 | Micrometers for external measurement | | | | | | | | Comparison with the standard | KPA-1.03 | 1 |
| | Micrometer calliper gauges | 0 mm | up to | 500 mm | | | | 1+3L µm | | | |
| | Pasameters | 0 mm | up to | 500 mm | | | | 1+3L µm | | | |
| | Micropasameters | 0 mm | up to | 500 mm | | | | 1+3L µm | | | |
| 4 | Micrometers for internal measurement | | | | | | | | Comparison with the standard | KPA-1.04 | 1 |
| | Inside micrometer gauges | 14 mm | up to | 500 mm | | | | 1+3L µm | | | |
| | Micrometer depth gauges | 14 mm | up to | 500 mm | | | | 1.1+2L µm | | | |
| | Inside micrometers | 14 mm | up to | 500 mm | | | | 1.1+2L µm | | | |
| | Micrometric heads | 0 mm | up to | 500 mm | | | | 1+3L µm | | | |
| 5 | Deviation meters | | | | | | | | Direct measurement | KPA-1.05 | 1 |
| | Dial gauges | 0 mm | up to | 100 mm | | | | 0.88 µm | | | |
| | Pupitasts | 0 mm | up to | 100 mm | | | | 1.2 µm | | | |
| | Somcators | 0 mm | up to | 100 mm | | | | 1.2 µm | | | |
| | Internal gauges | 0 mm | up to | 100 mm | | | | 1.2 µm | | | |

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

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

| 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 | | | | | | |
| 6 | Limit gauges for external measurement | | | | | | | | Direct measurement | KPA-1.06 | 1 |
| | Micrometer calliper gauges | 1 | mm up to | 500 | mm | | | 1+3L µm | | | |
| | Plain rings | 1 | mm up to | 500 | mm | | | 1.2+3.6L µm | | | |
| | Threaded rings | 1 | mm up to | 500 | mm | | | 2.1+7.4L µm | | | |
| 7 | Limit gauges for internal measurement | | | | | | | | Direct measurement | KPA-1.07 | 1 |
| | cylinder, flat | 0.05 | mm up to | 500 | mm | | | 0.75+5.3L µm | | | |
| | Thread gauges | 0.05 | mm up to | 500 | mm | | | 2.8+2.8L µm | | | |
| | Feeler gauges | 0.05 | mm up to | 500 | mm | | | 3.6 µm | | | |
| | Measuring wires | 0.05 | mm up to | 500 | mm | | | 0.54 µm | | | |
| | Gauges for radius | 0.05 | mm up to | 500 | mm | | | 4.0 µm | | | |
| | Gauges for threads | 0.05 | mm up to | 500 | mm | | | 4.0 µm | | | |
| | Gauges for paint thickness | 0.05 | mm up to | 500 | mm | | | 1.4 µm | | | |
| 8* | Rules | | | | | | | | Comparison with the standard | KPA-1.08 | 1, 2 |
| | Steel rules | 0 | mm up to | 10,000 | mm | | | 4.7+4.6L µm | | | |
| | Measuring magnifier | 0 | mm up to | 100 | mm | | | 4.7+4.6L µm | | | |
| | Steel tape measures | 0 | mm up to | 10,000 | mm | | | 140+3.8L µm | | | |
| | Tapes | 0 | m up to | 100 | m | | | 0.3+0.06L µm | | | |
| 9* | Two-coordinate measuring machines, Measuring microscopes, Profile projectors | 0 | mm up to | 1,000 | mm | | | 3.2 µm | Comparison with the standard | KPA-1.09 | 1 |
| 10 | Atypical length gauges | 0 | mm up to | 250 | mm | | | 4.0 µm | Measurement on a coordinate measuring machine | KPA-1.10 | 1 |
| 11* | Surface plates, blocks, plates | 0 | m up to | 5 | m | | | 3.8 µm | Direct measurement | KPA-1.13 | 1 |
| 12* | Length measuring instrument | 0 | mm up to | 1,000 | mm | | | 0.25+2L µm | Comparison with the standard | KPA-1.14 | 1 |

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

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

[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.

[3] If the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes).

L.. Nominal length in metres

Český institut pro akreditaci, o.p.s.
NÁRODNÍ AKREDITAČNÍ ORGÁN
-1-

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

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

## 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] | Workplace |
|---|---|---|---|---|---|---|---|---|---|---|
| | | min. | unit | max. | unit | | | | | |
| 1 | Rigid angle gauges | | | | | | | Direct measurement | KPA-1.11 * | 1 |
| | Check squares | 0 | ° up to | 90 | ° | | 32 µm/m | | | |
| | Taper gauges | 0 | ° up to | 90 | ° | | 7 ´´ | | | |
| | Accuracy of levels | 0 | ° up to | 90 | ° | | 5 µm/m | | | |
| | Centre square | 0 | ° up to | 90 | ° | | 32 µm/m | | | |
| | Gauges for threads | 0 | ° up to | 90 | ° | | 7 ´´ | | | |
| 2 | Angle gauges | | | | | | | Comparison with the standard | KPA-1.12 | 1 |
| | mechanical, digital, optical, with a dial indicator | 0 | ° up to | 90 | ° | | 1.8 ´ | | | |
| | arc-shape | 0 | ° up to | 90 | ° | | 0.7 ° | | | |

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.

3 If the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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

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

## CMC for the field of measured quantity: Mass

| Ord. number[1] | Calibrated quantity / Subject of calibration | Nominal range min. | unit | | max. | unit | Parameter(s) of the meas. quantity | | Lowest expanded measurement uncertainty specified[2] | Calibration principle | Calibration procedure identification[3] | Workplace |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | Scales with non-automatic function, mechanical, digital | | | | | | | | | Comparison with the standard | KPA-2.01 | 1 |
| | | 0 kg | up to | | 2 kg | | | | $5 \cdot 10^{-6}$ | class E2 | | |
| | | 2 kg | up to | | 3 kg | | | | $1.6 \cdot 10^{-5}$ | class F1 | | |
| | | 3 kg | up to | | 45 kg | | | | $1.6 \cdot 10^{-5}$ | class F2 | | |
| | | 45 kg | up to | | 6,000 kg | | | | $5 \cdot 10^{-5}$ | class M1 | | |
| | | 6,000 kg | up to | | 30,000 kg | | | | $1.6 \cdot 10^{-4}$ | class M1 with substitute load | | |
| 2 | Weights and other objects | 1 g | up to | | 500 g | | | | 8.2 mg | Comparison with the standard | KPA-2.01 | 2 |
| | | 0.5 kg | up to | | 1 kg | | | | 8.6 mg | | | |
| | | 1 kg | up to | | 2 kg | | | | 10 mg | | | |
| | | 2 kg | up to | | 5 kg | | | | 16 mg | | | |
| | | 5 kg | up to | | 20 kg | | | | 59 mg | | | |

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.

3 If the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes).

Český institut pro akreditaci, o.p.s.
-1-

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

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

**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] | Workplace |
|---|---|---|---|---|---|---|---|---|---|---|
| | | min. | unit | max. | unit | | | | | |
| 1* | Torque wrenches, screwdrivers, Moment of force meters | 0.25 Nm | up to | 0.5 Nm | | | 0.01 | Comparison with the standard | KPA-5.01 | 1, 2 |
| | | 0.5 Nm | up to | 200 Nm | | | 0.005 | | | |
| | | 200 Nm | up to | 2,000 Nm | | | 0.005 | | | |
| 2* | Dynamometers, force measuring devices | 0 N | up to | 500 N | | Tension, Pressure | 0.001 | Comparison with the standard | KPA-5.02 | 1 |
| | | 500 N | up to | 10,000 N | | | 0.003 | | | |

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.

3 If the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes).

Český institut pro akreditaci, o.p.s.
-1-

**The Appendix is an integral part of**
**Certificate of Accreditation No. 514/2018 of 01/10/2018**

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

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

**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] | Workplace |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | min. | unit | max. | unit | | | | | | |
| 1* | Deformation manometers, Digital manometers, Pressure measuring chains, Pressure transducers with electrical output | -95 kPa | up to | 350 kPa | | Underpressure/overpressure | Gases | 0.26 kPa | Comparison with the standard | KPA-4.01, KPA-4.02 | 1 |
| | | 350 kPa | up to | 1,000 kPa | | | | 0.58 kPa | | | |
| | | 1 MPa | up to | 3.5 MPa | | | | 2.1 kPa | | | |
| | | 3.5 MPa | up to | 6 MPa | | | | 6.9 kPa | | | |
| | | 0 MPa | up to | 20 MPa | | | Liquids | 35 kPa | | | |
| | | 20 MPa | up to | 50 MPa | | | | 87 kPa | | | |

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.

3 If the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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

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

## 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] | Workplace |
|---|---|---|---|---|---|---|---|---|---|---|
| | | min. | unit | max. | unit | | | | | |
| 1 | Glass thermometers | - 40 °C | up to | 200 °C | | | 0.07 °C | Comparison with the standard | KPA-3.01 | 2 |
| | | | | 0 °C | | | 0.05 °C | | | |
| 2* | Direct indicating thermometers, temperature controller | -40 °C | up to | 200 °C | | | 0.08 °C | Comparison with the standard | KPA-3.02 | 1 |
| | | 200 °C | up to | 400 °C | | | 0.44 °C | | | |
| | | 400 °C | up to | 650 °C | | | 1.5 °C | | | |
| | | 650 °C | up to | 900 °C | | | 1.8 °C | | | |
| | | 900 °C | up to | 1200 °C | | | 2.4 °C | | | |
| 3* | Infrared thermometers | 50 °C | up to | 500 °C | | | 3.2 °C | Comparison with the standard | KPA-3.03 | 1 |
| 4* | Contact thermometers | 0 °C | up to | 50 °C | | | 1.7 °C | Comparison with the standard | KPA-3.04 | 1 |
| | | 50 °C | up to | 100 °C | | | 1.9 °C | | | |
| | | 100 °C | up to | 200 °C | | | 2.3 °C | | | |
| | | 200 °C | up to | 400 °C | | | 2.6 °C | | | |
| | | 400 °C | up to | 600 °C | | | 3.5 °C | | | |
| 5* | Thermoelectric sensors and measuring chains | | | | | K, J, N | | Comparison with the standard | KPA-3.05 | 1 |
| | Thermocouple sensors | -40 °C | up to | 200 °C | | | 0.4 °C | | | |
| | | 200 °C | up to | 400 °C | | | 0.6 °C | | | |
| | | 400 °C | up to | 650 °C | | | 1.6 °C | | | |
| | | 650 °C | up to | 900 °C | | | 2.3 °C | | | |
| | | 900 °C | up to | 1,100 °C | | | 2.6 °C | | | |
| | Measuring chain without a sensor | -100 °C | up to | 1,100 °C | | | 0.3 °C | | | |
| 6* | Resistance sensors and measuring chains | | | | | | | Comparison with the standard | KPA-3.06 | 1 |
| | Resistance sensors | -40 °C | up to | 200 °C | | | 0.2 °C | | | |
| | | 200 °C | up to | 400 °C | | | 0.5 °C | | | |
| | Measuring chain without a sensor | -100 °C | up to | 400 °C | | | 0.2 °C | | | |

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

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

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.

3 If the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest edition of the specified procedure is used (including any changes).