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## **PRILOGA K AKREDITACIJSKI LISTINI Annex to Accreditation Certificate**

**LK-004**

PREGLJEDANO:  
12.8.2020

### **1 AKREDITIRANI ORGAN / Accredited body**

SIJ RAVNE SYSTEMS d.o.o.  
Koroška cesta 14, 2390 Ravne na Koroškem

### **2 ZAHTEVE ZA USPOSOBLJENOST / Competence Requirements**

SIST EN ISO/IEC 17025:2017

### **3 OBSEG AKREDITACIJE / Scope of accreditation**

V okviru te akreditacijske listine Slovenska akreditacija priznava akreditiranemu organu usposobljenost za opravljanje naslednjih dejavnosti: / SA hereby recognizes the accredited body as being competent to perform the following activities:

#### **3.1 Skrajšan opis obsega akreditacije / Brief description of the scope**

Kalibriranje na naslednjih področjih in naštetih pod-področjih / Calibration in the following fields and the specified sub-fields:

- DIMENZIONALNE VELIČINE / DIMENSIONAL QUANTITIES:
  - Dolžina / Length:
    - Merila dolžine / Length gauges
    - Črna merila / Line scales
    - Instrumenti za merjenje dolžine / Length measuring instruments
    - Premer / Diameter



- Odstopek oblike / *Form error*
- Hrapavost / *Roughness*
- Navojne veličine / *Tread quantities*
- Koordinatne merilne naprave / *Co-ordinate measuring machines*
- Etaloni za velikost delcev / *Standards for particle size*
- Kot / *Angle*:
  - Merila kota / *Angle gauges*
  - Merilniki nagiba / *Clinometers*
- ELEKTRIKA / *Electricity*
  - Električne veličine in visokofrekvenčne (VF) veličine / *Electric quantities and High Frequency (HF) Quantities*
- ČAS IN FREKVENCA / *Time and Frequency*
  - Čas / *Time*
    - Ultrazvočni aparati za preiskavo materiala / *Ultrasonic instruments for material examination*
  - Frekvenca / *Frequency*
    - Ultrazvočni aparati za preiskavo materiala / *Ultrasonic instruments for material examination*
- MEHANSKE VELIČINE / *MECHANICAL QUANTITIES*:
  - Sila / *Force*:
    - Merilni sistemi za silo, pretvorniki sile (natezno, tlačno) / *Force measuring systems, Force transducers (tension and compression forces)*
  - Merilniki trdote / *Hardness testing machines*:
    - Brinell, Vickers, Rockwell, Shore;
  - Masa / *Mass*
    - Masa ostalih poljubnih predmetov / *Mass of any other objects*
  - Tehnice / *Weighing instruments*
    - Neavtomatske tehnice / *Non-automatic weighing instruments*
  - Tlak / *Pressure*
    - Manometri za industrijsko uporabo / *Manometers for industrial application*
  - Moment sile / *Torque*
    - Pretvorniki momenta / *Torque transducers*
    - Momentni ključiči / *Torque wrenches*
    - Naprave za preverjanje momentnih ključev / *Device for testing torque wrenches*
  - Mehanska energija / *Mechanical energy*:
    - Merilniki udarne žilavosti / *Pendulum impact-testing machines*
- FLUIDNE VELIČINE / *Fluid quantities*:
  - Prostornina tekočin / *Volume of Liquids*
    - Porozimetri / *Porosimeters*
- TEMPERATURA, VLAGA IN TERMOFIZIKALNE LASTNOSTI / *Temperature, humidity and thermo-physical properties*:
  - Tekočinski termometri / *Liquid in-glass thermometers*;
  - Indikacijski termometri / *Thermometers with indicators*;
- MAGNETNE VELIČINE / *Magnetic quantities*
  - Jakost magnetnega polja / *Magnetic field strength*
- OPTIČNE VELIČINE / *Optical quantities*
  - Fotometrične veličine / *Photometric quantities*
  - Radiometrične veličine / *Radiometric quantities*

## 3.2 Podroben opis obsega akreditacije / Detailed scope of accreditation

### 3.2.1 Kalibracijski laboratorij, Koroška cesta 14 2390, Ravne na Koroškem

Tabela / Table 1 – Kalibracije v laboratoriju / In-lab calibrations

| Št. No.  | Merjena veličina, (pod)področje, oz. merilni instrumenti in/ali območje (merjene veličine).<br><i>Measured quantity, (sub-)field, and/or instruments, and/or range (of measured quantity).</i> | Območje (merjene veličine) ali Omejitve, pogoji, vplivne veličine.***<br><i>Range (of measured quantity) or Limitations, conditions, influence quantity.***</i> | Kalibracijska in merilna zmogljivost (CMC) izražena kot razširjena negotovost.*<br><i>Calibration and measurement Capability (CMC) Expressed as an Expanded Uncertainty.*</i> | - Tip kalibracijske metode (opcija)<br>- Kalibracijski postopek<br>- Merilni instrumenti (opcija)**<br>- Opombe<br>- Type of calibration method (option),<br>- Internal calibration procedure<br>- Measuring instruments (option)**<br>- Remarks      |
|--|--|---|---|---|
| <b>DIMENZIONALNE VELIČINE / Dimensional Quantities</b> |  |   |   |   |
|  | <b>Dolžina</b><br><i>Length (L)</i>  |   |   | <i>L = merjena dolžina / length of the gauge block</i>  |
|  | <b>Merila dolžine</b><br><i>Length gauges</i>  |   |   |   |
|  | Mejna vzporedna dolžinska merila - merilne kladice<br><i>Gauge blocks</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL103, QNCL13   |
| 1.   |  | (0,5 do/to 100) mm  | $0,05 \mu\text{m} + 2,0 \cdot 10^{-6} \cdot L$  | - jeklene merilne kladice<br>- <i>steel gauge blocks</i>  |
| 2.   |  | (0,5 do/to 100) mm  | $0,06 \mu\text{m} + 2,0 \cdot 10^{-6} \cdot L$  | - keramične merilne kladice, merilne kladice iz karbidne trdine<br>- <i>ceramic gauge blocks, tungsten carbide gauge blocks</i>   |
| 3.   | Naprave za kalibracijo mejnih vzporednih dolžinskih meril<br><i>Gauge block comparators</i>  | (0 do/to 100) mm  | $0,035 \mu\text{m} + 0,002 \cdot D$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL124<br><i>D = razlika med etaloni v &lt;math&gt;\mu\text{m}&gt;<br/><i>D = measured difference in &lt;math&gt;\mu\text{m}&gt;</i></i> |
|  | Mejna vzporedna merila – merilne kladice in palice<br><i>Gauge blocks and gauge bars (steel)</i>   |   |   |   |
| 4.   |  | (0 do/to 600) mm  | $0,4 \mu\text{m} + 2,0 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL104   |
| 5.   |  | (0 do/to 1200) mm   | $0,6 \mu\text{m} + 2,0 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i>  |
| 6.   |  | (1200 do/to 3000) mm  | $0,8 \mu\text{m} + 3,0 \cdot 10^{-6} \cdot L$   | - interni postopek / <i>internal procedure</i> :<br>QNCL104a  |
| 7.   | Stopničasta merila<br><i>Step gauges</i>   | (0 do/to 750) mm  | $2,0 \mu\text{m} + 4,0 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL127   |
|  | Merilne urice<br><i>Dial gauges</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL126   |
| 8.   |  | (0 do/to 100) mm  | $3,0 \mu\text{m} + 3,0 \cdot 10^{-6} \cdot L$   | - ločljivost 0,01 mm / <i>resolution 0,01 mm</i>  |
| 9.   |  | (0 do/to 100) mm  | $0,5 \mu\text{m} + 3,0 \cdot 10^{-6} \cdot L$   | - ločljivost 1 $\mu\text{m}$ / <i>resolution 1 <math>\mu\text{m}</math></i>   |
| 10.  | Vzvodne merilne urice za zunanje in notranje utore ter luknje.<br><i>Dial gauges for outside and inside measurement.</i>   | (0 do/to 100) mm  | $7,0 \mu\text{m} + 5 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL166   |



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|---------|---|---|---|--|
| 11.     | Naprave za kalibracijo merilnih uric<br><i>Dial gauge testers</i>   | (0 do/to 100) mm  | $0,1 \mu\text{m} + 2,5 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL122, QNCL122a  |
|         | Induktivna in inkrementalna tipala<br><i>Inductive and incremental probes</i>   |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL131  |
| 12.     |   | (0 do/to 2) mm  | 0,15 $\mu\text{m}$  |  |
| 13.     |   | (2 do/to 100) mm  | $0,3 \mu\text{m} + 4,0 \cdot 10^{-6} \cdot L$   |  |
|         | Debelinska merila<br><i>Thickness gauges</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL138  |
| 14.     |   | (0 do/to 100) mm  | $1 \mu\text{m} + 8 \cdot 10^{-6} \cdot L$   |  |
| 15.     |   | (100 do/to 1000) mm   | $2 \mu\text{m} + 10^{-5} \cdot L$   |  |
| 16.     | Merilniki profila pnevmatik<br><i>Tyre profile depth gauge</i>  | (0 do/to 100) mm  | $0,025 \text{ mm} + 8 \cdot 10^{-6} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL139  |
| 17.     | Volanski kotomeri<br><i>Steering wheel protractor</i>   | (30 do/to 180) °  | 0,3 °   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL137  |
| 18.     | Merilniki debeline<br><i>Thickness gauges</i>   | (0 do/to 100) mm  | $2,0 \mu\text{m} + 3 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL151  |
|         | Merilniki debeline nanosa<br><i>Coating thickness gauges</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL156  |
| 19.     |   | (0 do/to 0,5) mm  | 1,5 $\mu\text{m}$   |  |
| 20.     |   | (0,5 do/to 2) mm  | 4,5 $\mu\text{m}$   |  |
| 21.     | Ultrazvočni merilniki debeline<br><i>Ultrasonic thickness gauges</i>  | (0 do/to 100) mm  | $20 \mu\text{m} + 1,5 \cdot 10^{-5} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL165  |
|         | <b>Črtna merila</b><br><i>Ruler displacement</i>  |   |   |  |
|         | Toga črtna merila<br><i>Rulers</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL130, QNCL130a  |
| 22.     |   | (0 do/to 250) mm  | $0,6 \mu\text{m} + 2,5 \cdot 10^{-6} \cdot L$   |  |
| 23.     |   | (250 do/to 3000) mm   | $20 \mu\text{m} + 6 \cdot 10^{-6} \cdot L$  |  |
| 24.     | Tračna merila<br><i>Tape measures</i>   | (0 do/to 100) m   | $20 \mu\text{m} + 2 \cdot 10^{-5} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL114  |
| 25.     | Teleskopski metri<br><i>Telescopic measuring rods</i>   | (0 do/to 10000) mm  | $0,3 \text{ mm} + 2,5 \cdot 10^{-5} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL167  |
|         | <b>Instrumenti za merjenje dolžine</b><br><i>Length measuring instruments</i>   |   |   |  |
|         | Železniška merila - merila za širino in naddvižek tira<br><i>Railway length gauges - track and cant gauge</i>   |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL136  |



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|---------|--|---|---|--|
| 26.     | Širina<br><i>Width</i>   | (0 do/to 1435) mm   | 0,2 mm  |  |
| 27.     | Naddvižek tira<br><i>Track and cant</i>  | (-30 do/to 200) mm  | 0,5 mm  |  |
| 28.     | Ravnost<br><i>Flatness</i>   |   | 0,1 mm  |  |
| 29.     | Dvotočkovni mikrometri (zunanji)<br><i>2 point micrometers (external)</i>  | (0 do/to 1000) mm   | $1,6 \mu\text{m} + 5 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL110  |
| 30.     | Dvotočkovni mikrometri (notranji)<br><i>2 point micrometers (internal)</i>   | (25 do/to 2000) mm  | $1,6 \mu\text{m} + 8 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL110  |
|         | Pomična merila<br><i>Vernier calliper gauges</i>   |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL109  |
| 31.     |  | (0 do/to 1000) mm   | $10 \mu\text{m} + 1 \cdot 10^{-5} \cdot L$  |  |
| 32.     |  | (1000 do/to 2000) mm  | $25 \mu\text{m} + 1 \cdot 10^{-5} \cdot L$  |  |
| 33.     | Merilne naprave za merjenje dolžin pri strojih za merjenje mehanskih lastnosti materialov<br><i>Extensometers in uniaxial testing</i>  | (0 do/to 100) mm  | $0,5 \mu\text{m} + 1,5 \cdot 10^{-5} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL145  |
| 34.     | Merilna kolesa s števcem<br><i>Measuring wheels with counter</i>   | (0 do/to 1000) m  | $8 \text{ mm} + 1,5 \cdot 10^{-3} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL158  |
|         | Laserski merilniki razdalje<br><i>Laser distance meters</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL159  |
| 35.     |  | (0 do/to 10) m  | $0,15 \text{ mm} + 3 \cdot 10^{-5} \cdot L$   | - ločljivost / <i>resolution</i> 0,1 mm  |
| 36.     | Višinska merila<br><i>Height gauge</i>   | (0 do/to 1000) mm   | $0,6 \mu\text{m} + 1,7 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL109a   |
|         | <b>Premer</b><br><i>Diameter</i>   |   |   |  |
| 37.     | Trni, gladki<br><i>Plain plug gauges</i>   | (0 do/to 200) mm  | $0,6 \mu\text{m} + 5,0 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL106  |
|         | Obroči, gladki<br><i>Plain plug gauges</i>   |   |   |  |
| 38.     |  | (2 do/to 10) mm   | $0,7 \mu\text{m} + 5 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL105a   |
| 39.     |  | (10 do/to 300) mm   | $0,6 \mu\text{m} + 5,0 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL105  |
| 40.     | Tritočkovni mikrometri<br><i>3 point micrometers</i>   | (2 do/to 300) mm  | $1,6 \mu\text{m} + 7 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL110  |
|         | <b>Odstopek oblike</b><br><i>Form error</i>  |   |   |  |



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|--|---|--|---|--|
|  | Merilne plošče<br>Surface plates  |  |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL116   |
| 41.  |   | 4 m x 4 m  | $1,8 \mu\text{m} + 1 \cdot 10^{-6} \cdot L$   |  |
| 42.  |   | 500 x 500 mm<br>Premera / diameter   | 2,8 $\mu\text{m}$   |  |
| 43.  | Lasasta ravnila<br>Knife edge straight edges  | (0 do/to 600) mm   | 1,5 $\mu\text{m}$   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL152   |
| 44.  | Ploska ravnila<br>Straight edges  | (0 do/to 2000) mm  | 5,4 $\mu\text{m}$   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL154   |
| 45.  | Obroči in trni (okroglost)<br>Ring and plug gauges<br>(roundness)   | (5 do/to 200) mm   | 0,15 $\mu\text{m}$  | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL161   |
| 46.  | Merilniki okroglosti<br>Roundness measuring machine   | (0 do/to 275) mm   | 0,08 $\mu\text{m}$  | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL162   |
| <b>Hrapavost</b><br>Roughness                |   |  |   |  |
| 47.  | Vzorci hrapavosti<br>Roughness specimen   | (0,1 do/to 3) $\mu\text{m}$ ( $R_a$ )<br>(0,3 do/to 10) $\mu\text{m}$ ( $R_z$ )<br>(0,3 do/to 10) $\mu\text{m}$ ( $R_y$ )                                | 0,01 $\mu\text{m} + 3 \cdot 10^{-2} \cdot R_a$<br>0,01 $\mu\text{m} + 5 \cdot 10^{-2} \cdot R_z$<br>0,01 $\mu\text{m} + 5 \cdot 10^{-2} \cdot R_y$  | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL128<br>- parametri $R_a$ , $R_z$ , $R_{max}$ ( $R_y$ )  |
| 48.  | Tipalni instrumenti za merjenje hrapavosti<br>Stylus instruments for roughness measurements   | (0,1 do/to 3) $\mu\text{m}$ ( $R_a$ )<br>(0,3 do/to 10) $\mu\text{m}$ ( $R_z$ )<br>(0,3 do/to 10) $\mu\text{m}$ ( $R_y$ )                                | 0,01 $\mu\text{m} + 3 \cdot 10^{-2} \cdot R_a$<br>0,01 $\mu\text{m} + 4 \cdot 10^{-2} \cdot R_z$<br>0,01 $\mu\text{m} + 4 \cdot 10^{-2} \cdot R_y$  | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL129<br>- parametri / parameters $R_a$ , $R_z$ , $R_{max}$ ( $R_y$ )   |
| <b>Navojne veličine</b><br>Thread quantities |   |  |   |  |
|  | Navojni kalibrski trni<br>Screw plug gauges   |  |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL108<br>- merila: valjasti<br>- measures: Cylindrical  |
| 49.  | Korak<br>Pitch  | (0,25 do/to 6,5) mm  | 0,8 $\mu\text{m}$   |  |
| 50.  | Bočni kot<br>Thread angle   | (30 do/to 60) °  |   | $\alpha$ =Bočni kot (po EA-10/10, metoda 1a)<br>$\alpha$ =thread angle, (according to EA-10/10, method 1a)   |
| 51.  | Srednji premer<br>Simple pitch diameter   | (1 do/to 200) mm   | $\alpha = 30^\circ : 6,0 \mu\text{m} + 4 \cdot 10^{-6} \cdot L$<br>$\alpha = 55^\circ : 3,5 \mu\text{m} + 4 \cdot 10^{-6} \cdot L$<br>$\alpha = 60^\circ : 3,5 \mu\text{m} + 4 \cdot 10^{-6} \cdot L$ |  |
|  | Navojni kalibrski obroči<br>Screw ring gauges   |  |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL107, QNCL107a   |
| 52.  | Korak<br>Pitch  | (0,25 do/to 6,5) mm  | 0,8 $\mu\text{m}$   |  |
| 53.  | Bočni kot<br>Thread angle   | (55 do/to 60) °  |   | $\alpha$ =Bočni kot (po EA-10/10, metoda 1a) /<br>$\alpha$ =thread angle, according to EA-10/10, method 1a   |
| 54.  | Srednji premer<br>Simple pitch diameter   | (3 do/to 100) mm   | $\alpha = 55^\circ : 3,5 \mu\text{m} + 4 \cdot 10^{-6} \cdot L$<br>$\alpha = 60^\circ : 3,5 \mu\text{m} + 4 \cdot 10^{-6} \cdot L$  |  |



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|---|---|---|---|--|
| <b>Koordinatne merilne naprave</b><br><i>Co-ordinate measuring machines</i> |   |   |   |  |
|   | 1D merilne naprave<br><i>1D measuring machines</i>  | <b>Območje / Range</b><br>(po osi / per axis)   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL118, QNCL120, QNCL121  |
| 55.   |   | (0 do/to 100) mm  | 0,3 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$   |  |
| 56.   |   | (100 do/to 1200) mm   | 0,5 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$   |  |
|   | 2D merilne naprave<br><i>2D measuring machines</i>  | <b>Območje / Range</b><br>(po osi / per axis)   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL117, QNCL119   |
| 57.   |   | (0 do/to 300) mm  | 1,1 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$<br><br>Pravokotnost<br><i>Squareness: 3 "</i>   |  |
| 58.   | Merilni sistemi za merjenje točnosti linearnega pozicioniranja in ponovljivosti osi na obdelovalnih in merilnih strojih<br><i>Measuring systems for measuring linear positioning accuracy and repeatability of axes in machine tools and measuring machines</i> | (0 do/to 40) m  | 3 $\mu\text{m} + 1,5 \cdot 10^{-5} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 160   |
| <b>Etaloni za velikost delcev</b><br><i>Standards for particle size</i>     |   |   |   |  |
| 59.   | Preskusna sita<br><i>Test sieves</i>  | (0 do/to 400) mm  | 3,2 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 146   |
| <b>Kot</b><br><i>Angle</i>  |   |   |   |  |
| <b>Merila kota</b><br><i>Angle gauges</i>                                   |   |   |   |  |
| 60.   | Kotniki 90 °<br><i>Squares 90°</i>  | (0 do/to 600) mm  | 3,0 $\mu\text{m}$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 111   |
| 61.   | Kotomeri<br><i>Protractors</i>  | (0 do/to 360) °   | 2,5 '   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 140   |
| 62.   | Cilindrični kotniki 90 °<br><i>Cylindrical squares 90°</i>  | (0 do/to 1000) mm   | 3,0 $\mu\text{m}$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 112   |
| 63.   | Sinusna ravnila<br><i>Sine bars</i>   | (0 do/to 700) mm  | Dolžina / <i>Length</i> :<br>4,0 $\mu\text{m}$<br>Ravnost / <i>Flatness</i> :<br>1,0 $\mu\text{m}$<br>Vzporednost / <i>Parallelism</i> :<br>3,0 $\mu\text{m}$                 | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 113   |
| <b>Merilniki nagiba</b><br><i>Clinometers</i>                               |   |   |   |  |
| 64.   |   | (0 do/to 1000) mm   | 5 $\mu\text{m/m}$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 115   |



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|---|--|---|---|--|
| <b>ELEKTRIKA / Electricity</b>  |  |   |   |  |
| <b>Električne veličine in visokofrekvenčne (VF) veličine</b><br><i>Electric quantities and High Frequency (HF) Quantities</i> |  |   |   |  |
|   | Ultrazvočni aparati za preiskavo materiala<br><i>Ultrasonic instruments for material examination</i>   | <b>Območje / Range</b>  |   | - interni postopek / internal procedure:<br>QNCL170, ki temelji na / which is based on SIST EN 12668-1:2011 – točki 8.8.2 in 9 / paragraph 8.8.2 and 9   |
| 65.   |  | Stabilnost po času ogrevanja / <i>Stability after warm up time:</i><br>(0 do/to 100) % amplitude signala / <i>% of signal's amplitude</i><br>(0 do/to 100) % položaja signala / <i>of signal's position</i>                             | 1 % celotne vertikalne skale / <i>of full vertical scale</i><br>0,1 % celotne horizontalne skale / <i>of full horizontal scale</i>  |  |
| 66.   |  | Trepetanje prikaza / <i>Display jitter:</i><br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i><br>(0 do/to 100) % položaja signala / <i>of signal's position</i>   | 1 % celotne vertikalne skale / <i>of full vertical scale</i><br>0,1 % celotne horizontalne skale / <i>of full horizontal scale</i>  |  |
| 67.   |  | Stabilnost pri spreminjanju napajalne napetosti / <i>Stability while changing feeder voltage:</i><br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i><br>(0 do/to 100) % položaja signala / <i>of signal's position</i> | 1 % celotne vertikalne skale / <i>of full vertical scale</i><br>0,1 % celotne horizontalne skale / <i>of full horizontal scale</i>  |  |
| 68.   |  | Oddajni impulz -napetost / <i>Transmit pulse – voltage</i><br>$V_{50}$ :<br>(-1000 do/to 1000) V  | 4 %   | - glede na izmerjeno vrednost<br>- depending on measured value<br>- enosmerna napetost<br>- DC voltage   |
| 69.   |  | Ekvivalentni vhodni šum / <i>Equivalent noise input <math>N_{in}</math>:</i><br>(0 do/to 1) V/√Hz   | 10 %  | - glede na izračunano vrednost<br>- depending on measured value  |
| 70.   |  | Iznihavanje oddajnega impulza / <i>Damping of transmitted pulse</i><br>$V_r$ :<br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i>  | 1 % celotne vertikalne skale / <i>of full vertical scale</i>  |  |
| 71.   |  | Nastavitev slabljenja / <i>Attenuation setting:</i><br>(0 do/to 110) dB   | 0,3 dB  | - glede na izmerjeno vrednost<br>- depending on measured value   |
| 72.   |  | Linearnost vertikalne skale / <i>Linearity of vertical scale:</i><br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i>   | 1 % celotne vertikalne skale / <i>of full vertical scale</i>  |  |



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|---|---|--|--|--|
| 73.   |   | Linearnost časovne baze /<br><i>Linearity of time base:</i><br>(0 do/to 100) % položaja<br>signala / <i>of signal's<br/>position</i>   | 0,1 % celotne horizontalne<br>skale /<br><i>of full horizontal scale</i>   |  |
| <b>ČAS IN FREKVENCA / Time and Frequency</b>                |   |  |  |  |
| <b>Čas</b><br>Time  |   |  |  |  |
|   | Ultrazvočni aparati za<br>preiskavo materiala<br><i>Ultrasonic instruments for<br/>material examination</i>   | <b>Območje / Range</b>   |  | - interni postopek / <i>internal procedure:</i><br>QNCL170, ki temelji na / <i>which is based<br/>on SIST EN 12668-1:2011 – točki 8.8.2 in<br/>9 / paragraph 8.8.2 and 9</i>   |
| 74.   |   | Oddajni impulz - meritev<br>časa vzpona impulza /<br><i>Transmitted pulse –<br/>measuring the time of<br/>pulse rising</i><br>$t_r$ :<br>(0,003 do/to 10) $\mu$ s                    | 9 % $\cdot t_{dut}$  | $t_{dut}$ – izračunana vrednost dejanskega<br>dvižnega časa / <i>calculated value of actual<br/>rise time</i>  |
| 75.   |   | Oddajni impulz - meritev<br>časa trajanja impulza /<br><i>Transmitted pulse –<br/>measuring the time of<br/>pulse duration</i><br>$t_d$ :<br>(0,02 do/to 10) $\mu$ s                 | 3 %  | - glede na izmerjeno vrednost<br>- <i>depending on measured value</i>  |
| <b>Frekvenca</b><br>Frequency                               |   |  |  |  |
|   | Ultrazvočni aparati za<br>preiskavo materiala<br><i>Ultrasonic instruments for<br/>material examination</i>   | <b>Območje / Range</b>   |  | - interni postopek / <i>internal procedure:</i><br>QNCL170, ki temelji na / <i>which is based<br/>on SIST EN 12668-1:2011 – točki 8.8.2 in<br/>9 / paragraph 8.8.2 and 9</i>   |
| 76.   |   | Sprejemnik – meritev<br>frekvenčnega območja /<br><i>Receiver – measuring the<br/>frequency range:</i><br>(0 do/to 100) MHz  | 4,0 %  | - glede na izračunano vrednost<br>- <i>depending on calculated value</i>   |
| <b>MEHANSKE VELIČINE</b><br><i>Mechanical Quantities</i>    |   |  |  |  |
| <b>Sila</b><br>Force  |   |  |  |  |
|   | Pretvorniki sile (natezno,<br>tlačno)<br><i>Force transducers (tension<br/>and compression forces)</i>  |  |  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure:</i><br>QNCL 147, 147a  |
| 77.   |   | (10 do/to 1000) N  | 0,2 %  | - z referenčnimi utežmi<br>- <i>with reference weights</i>   |
| 78.   |   | (0,001 do/to 100) kN   | 0,2 %  | - z referenčnimi električnimi pretvorniki sile<br>- <i>with reference force transducers</i>  |
| <b>Merilniki trdote</b><br><i>Hardness testing machines</i> |   |  |  |  |



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|---------|--|---|---|---|
| 79.     | <b>Merilnik trdote kovin po Brinellu</b><br><i>Brinell hardness testing machine</i>  | 60-500 HB   | 1,5 %   | - Posredna in neposredna kalibracija (kalibracija vtiskala ni vključena)<br>- Indirect and direct calibration (calibration of indenter not included)<br>- interni postopek / internal procedure: QNCL148, QNCL148a, ki temelji na / which is based on SIST EN ISO 6506-2:2019 |
|         | <b>Merilnik trdote kovin po Vickersu</b><br><i>Vickers hardness testing machine</i>  |   |   | - Posredna in neposredna kalibracija (kalibracija vtiskala ni vključena)<br>- Indirect and direct calibration (calibration of indenter not included)<br>- interni postopek / internal procedure: QNCL150, QNCL150a, ki temelji na / which is based on SIST EN ISO 6507-2:2018 |
| 80.     |  | Skala / scale HV0,05  | 10 % HV   |   |
| 81.     |  | Skale / scales HV0,2 do / to HV0,3  | 6 % HV  |   |
| 82.     |  | Skale / scales HV0,5 do / to HV1  | 3 % HV  |   |
| 83.     |  | Skale / scales HV2 do / to HV3  | 1,5 % HV  |   |
| 84.     |  | Skale / scales HV5 do / to HV10   | 1,2 % HV  |   |
| 85.     |  | Skale / scales HV20 do / to HV100   | 1 % HV  |   |
|         | <b>Merilnik trdote kovin po Rockwellu</b><br><i>Rockwell hardness testing machine</i>  |   |   | - Posredna in neposredna kalibracija (kalibracija vtiskala ni vključena)<br>- Indirect and direct calibration (calibration of indenter not included)<br>- interni postopek / internal procedure: QNCL149, QNCL149a, ki temelji na / which is based on SIST EN ISO 6508-2:2015 |
| 86.     |  | 20-95 HRA   | 0,5 HRC   |   |
| 87.     |  | 10-100 HRBW   | 1,0 HRBW  |   |
| 88.     |  | 20-70 HRC   | 0,5 HRC   |   |
| 89.     |  | 40-77 HRD   | 0,5 HRD   |   |
| 90.     |  | 70-100 HREW   | 1,0 HREW  |   |
| 91.     |  | 60-100 HRFW   | 1,0 HRFW  |   |
| 92.     |  | 30-94 HRGW  | 1,0 HRGW  |   |
| 93.     |  | 80-100 HRHW   | 1,0 HRHW  |   |
| 94.     |  | 40-100 HRKW   | 1,0 HRKW  |   |
| 95.     |  | 40-90 HRN   | 0,6 HRN   |   |
| 96.     |  | 10-90 HRTW  | 1,5 HRTW  |   |
| 97.     | <b>Merilnik trdote po Shore</b><br><i>Shore hardness testing machine</i>   | 10 Shore do/to 100 Shore  | 0,6 Shore (Shore A in Shore D)  | - interni postopek / internal procedure: QNCL157 ki temelji na / which is based on ISO 18898:2012   |
|         | <b>Masa</b><br><i>Mass</i>   |   |   | $m = \text{masa} / \text{mass}$   |

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|------------|---|--|--|--|
|            | <b>Masa ostalih poljubnih<br/>predmetov</b><br><i>Mass of any other objects</i>   | <b>Območje / Range</b>   |  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure:</i><br>QNCL174   |
| 98.        |   | $10\text{ g} \leq m \leq 5\text{ kg}$  | 1 g  |  |
| 99.        |   | $5\text{ kg} < m \leq 36\text{ kg}$  | 4,5 g  |  |
|            | <b>Tehnice</b><br><i>Weighing instruments</i>   |  |  |  |
|            | <b>Neavtomatske tehtnice</b><br><i>Non-automatic weighing<br/>instruments</i>   |  |  | - interni postopek / <i>internal procedure:</i><br>QNCL144, ki temelji na / <i>which is based</i><br>on EURAMET / cg-18 / v4.0 /   |
| 100.       |   | $m \leq 1\text{ g}$  | 0,05 mg  |  |
| 101.       |   | $1\text{ g} < m \leq 2\text{ g}$   | 0,07 mg  |  |
| 102.       |   | $2\text{ g} < m \leq 3\text{ g}$   | 0,12 mg  |  |
| 103.       |   | $3\text{ g} < m \leq 4\text{ g}$   | 0,14 mg  |  |
| 104.       |   | $4\text{ g} < m \leq 5\text{ g}$   | 0,20 mg  |  |
| 105.       |   | $5\text{ g} < m \leq 10\text{ g}$  | 0,17 mg  |  |
| 106.       |   | $10\text{ g} < m \leq 20\text{ g}$   | 0,15 mg  |  |
| 107.       |   | $20\text{ g} < m \leq 50\text{ g}$   | 0,17 mg  |  |
| 108.       |   | $50\text{ g} < m \leq 100\text{ g}$  | 0,28 mg  |  |
| 109.       |   | $100\text{ g} < m \leq 150\text{ g}$   | 0,45 mg  |  |
| 110.       |   | $150\text{ g} < m \leq 200\text{ g}$   | 0,50 mg  |  |
| 111.       |   | $200\text{ g} < m \leq 220\text{ g}$   | 0,65 mg  |  |
| 112.       |   | $220\text{ g} < m \leq 250\text{ g}$   | 0,67 mg  |  |
| 113.       |   | $250\text{ g} < m \leq 300\text{ g}$   | 0,78 mg  |  |
| 114.       |   | $300\text{ g} < m \leq 400\text{ g}$   | 1,00 mg  |  |
| 115.       |   | $400\text{ g} < m \leq 500\text{ g}$   | 1,50 mg  |  |
| 116.       |   | $500\text{ g} < m \leq 600\text{ g}$   | 1,75 mg  |  |
| 117.       |   | $600\text{ g} < m \leq 1000\text{ g}$  | 2,70 mg  |  |
| 118.       |   | $1\text{ kg} < m \leq 2\text{ kg}$   | 5,50 mg  |  |
| 119.       |   | $2\text{ kg} < m \leq 200\text{ kg}$   | $10^{-4} \cdot m$  |  |
|            | <b>Tlak</b><br><i>Pressure</i>  |  |  |  |
|            | <b>Manometri za industrijsko<br/>uporabo</b><br><i>Manometers for industrial<br/>application</i>  |  |  | - interni postopek / <i>internal procedure:</i><br>QNCL135, ki temelji na / <i>which is based</i><br>on EURAMET / cg-17 / v4.0 /<br>- merilni instrumenti: mehanski, elektronski<br>- <i>measuring instruments: mechanical,<br/>electronical</i> |
| 120.       |   | (-1 do/to 30) bar  | 0,16 %;<br>ne manj kot 1 mbar<br><i>not less than 1 mbar</i>   | - medij: plin<br>- <i>medium: gas</i>  |
| 121.       |   | (0 do/to 600) bar  | 0,16 %;<br>ne manj kot 1 mbar<br><i>not less than 1 mbar</i>   | - medij: tekočina<br>- <i>medium: fluid</i>  |
| 122.       |   | (600 do/to 1000) bar   | 0,60 %   |  |
|            | <b>Moment sile</b><br><i>Torque</i>   |  |  |  |



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|--|--|---|---|--|
|  | <b>Pretvorniki momenta</b><br><i>Torque transducers</i>  |   |   | - interni postopek / internal procedure: QNCL132, ki temelji na / which is based on EURAMET / cg-14 / v2.0 /<br>- opombe: desno / levo<br>- remarks: Clockwise / anticlockwise.  |
| 123.   |  | (20 do/to 1000) Nm  | 0,20 %  |  |
|  | <b>Momentni ključi</b><br><i>Torque wrenches</i>   |   |   | - interni postopek / internal procedure: QNCL133, ki temelji na / which is based on SIST EN ISO 6789:2017<br>- opombe: desno / levo<br>- remarks: clockwise / anticlockwise  |
| 124.   |  | (0,04 do/to 5) Nm   | 1,5 %   |  |
| 125.   |  | (5 do/to 1500) Nm   | 0,8 %   |  |
|  | <b>Naprava za preverjanje momentnih ključev</b><br><i>Device for testing torque wrenches</i>   |   |   | - interni postopek / internal procedure: QNCL164, ki temelji na / which is based on EURAMET/cg-14/v.02<br>- opombe: levo / desno<br>- remarks: clockwise / anticlockwise   |
| 126.   |  | (0,04 do/to 0,4) Nm   | 1,5 %   |  |
| 127.   |  | (0,4 do/to 1000) Nm   | 0,8 %   |  |
| <b>FLUIDNE VELIČINE / Fluid Quantities</b>   |  |   |   |  |
|  | <b>Prostornina tekočin</b><br><i>Volume of Liquids</i>   |   |   |  |
| 128.   | Porozimetri<br><i>Porosimeters</i>   | (0 do/to 10) l  | 0,1 %   | - interni postopek / internal procedure: QNCL 153, ki temelji na / which is based on ASTM C231/C231M-10, Annex A1 točka/item A1.9,<br>- opombe: samo porozimetri tipa B<br>- remarks: B type porosimeters only                                   |
| <b>TEMPERATURA, VLAGA IN TERMOFIZIKALNE LASTNOSTI / Temperature, humidity and thermo-physical properties</b> |  |   |   |  |
|  | <b>Tekočinski termometri</b><br><i>Liquid-in-glass thermometers</i>  |   |   | - primerjalna meritev<br>- calibration by comparison<br>- interni postopek / internal procedure: QNCL143   |
| 129.   |  | (-20 do/to 140) °C  | 0,08 °C   |  |
|  | <b>Indikacijski termometri</b><br><i>Thermometers with indicators</i>  |   |   | - primerjalna meritev<br>- calibration by comparison<br>- interni postopek / internal procedure: QNCL143   |
| 130.   |  | (-20 do/to 140) °C  | 0,08 °C   |  |
| <b>MAGNETNE VELIČINE / Magnetic quantities</b>   |  |   |   |  |
|  | <b>Jakost magnetnega polja</b><br><i>Magnetic field strength</i>   |   |   |  |
|  | Merilniki magnetnega polja<br><i>Magnetic field meter</i>  |   |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure: QNCL 169   |
| 131.   |  | DC: (1 ≤ H < 4) A/cm  | 7,5 % · H   | H = izmerjena jakost magnetnega polja / measured magnetic field strength<br>DC = enosmerni el. tok / direct current<br>AC = izmenični el. tok / alternating current<br>50 Hz   |
| 132.   |  | DC: (4 ≤ H < 10) A/cm   | 2,5 % · H   |  |
| 133.   |  | DC: (10 ≤ H ≤ 120) A/cm   | 2,0 % · H   |  |
| 134.   |  | AC: (1 ≤ H < 4) A/cm  | 7,5 % · H   |  |
| 135.   |  | AC: (4 ≤ H < 10) A/cm   | 3,0 % · H   |  |



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|--|--|---|---|--|
| 136.   |  | AC: (10 ≤ H ≤ 120) A/cm   | 2,5 % · H   |  |
| <b>OPTIČNE VELIČINE / Optical quantities</b>   |  |   |   |  |
| <b>Fotometrične veličine</b><br><i>Photometric quantities</i>                              |  |   |   |  |
| Merilniki osvetljenosti bele svetlobe – luxmetri<br><i>Illuminance meters – lux meters</i> |  |   |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 171  |
| 137.   |  | (60 do/to 3000) lux   | 5,0 % · E <sub>vm</sub>   | E <sub>vm</sub> = izmerjena vrednost osvetljenosti / measured value of illuminance   |
| <b>Radiometrične veličine</b><br><i>Radiometric quantities</i>                             |  |   |   |  |
| Merilniki obsevanosti UV-A svetlobe<br><i>UV-A irradiance meters</i>                       |  |   |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 172  |
| 138.   |  | (0,5 do/to 5) mW/cm <sup>2</sup>  | 12,0 % · E <sub>e</sub>   | E <sub>e</sub> = izmerjena vrednost obsevanosti / measured value of irradiance   |

Tabela / Table 2 – Kalibracije na terenu / On-site calibrations

| Št. No.  | Merjena veličina, (pod)področje, oz. merilni instrumenti in/ali območje (merjene veličine).<br><i>Measured quantity, (sub-)field, and/or instruments, and/or range (of measured quantity).</i> | Območje (merjene veličine) ali Omejitve, pogoji, vplivne veličine.***<br><i>Range (of measured quantity) or Limitations, conditions, influence quantity.***</i> | Kalibracijska in merilna zmogljivost (CMC) izražena kot razširjena negotovost.*<br><i>Calibration and measurement Capability (CMC) Expressed as an Expanded Uncertainty.*</i> | - Tip kalibracijske metode (opcija)<br>- Kalibracijski postopek<br>- Merilni instrumenti (opcija)**<br>- Opombe<br>- Type of calibration method (option),<br>- Internal calibration procedure<br>- Measuring instruments (option)**<br>- Remarks |
|--|--|---|---|--|
| <b>DIMENZIONALNE VELIČINE / Dimensional Quantities</b> |  |   |   |  |
| <b>Dolžina</b><br><i>Length (L)</i>                    |  |   |   |  |
| <b>Merila dolžine</b><br><i>Length gauges</i>          |  |   |   |  |
| 139.   | Naprave za kalibracijo mejnih vzporednih dolžinskih meril<br><i>Gauge block comparators</i>  | (0 do/to 100) mm  | 0,035 μm + 0,002 · D  | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 124<br>D = razlika med etaloni v <μm><br>D = measured difference in <μm>   |
|  | Merilne urice<br><i>Dial gauges</i>  |   |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 126  |
| 140.   |  | (0 do/to 100) mm  | 3,0 μm + 3,0 · 10 <sup>-6</sup> · L   | - ločljivost / resolution 0,01 mm  |
| 141.   |  | (0 do/to 100) mm  | 0,5 μm + 3,0 · 10 <sup>-6</sup> · L   | - ločljivost / resolution 1 μm   |
| 142.   | Vzvodne merilne urice za zunanje in notranje utore ter luknje.<br><i>Dial gauges for outside and inside measurement.</i>   | (0 do/to 100) mm  | 7,0 μm + 5 · 10 <sup>-6</sup> · L   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 166  |



| Št. No.   | Merjena veličina, (pod)področje, oz. merilni instrumenti in/ali območje (merjene veličine).<br><i>Measured quantity, (sub-)field, and/or instruments, and/or range (of measured quantity).</i> | Območje (merjene veličine) ali Omejitve, pogoji, vplivne veličine.***<br><i>Range (of measured quantity) or Limitations, conditions, influence quantity.***</i> | Kalibracijska in merilna zmogljivost (CMC) izražena kot razširjena negotovost.*<br><i>Calibration and measurement Capability (CMC) Expressed as an Expanded Uncertainty.*</i> | - Tip kalibracijske metode (opcija)<br>- Kalibracijski postopek<br>- Merilni instrumenti (opcija)**<br>- Opombe<br>- Type of calibration method (option),<br>- Internal calibration procedure<br>- Measuring instruments (option)**<br>- Remarks |
|---|--|---|---|--|
| 143.  | Naprave za kalibracijo merilnih uric<br><i>Dial gauge testers</i>  | (0 do/to 100) mm  | $0,1 \mu\text{m} + 2,5 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 122, QNCL 122a  |
|   | Induktivna in inkrementalna tipala<br><i>Inductive and incremental probes</i>  |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 131   |
| 144.  |  | (0 do/to 2) mm  | 0,15 $\mu\text{m}$  |  |
| 145.  |  | (2 do/to 100) mm  | $0,3 \mu\text{m} + 4,0 \cdot 10^{-6} \cdot L$   |  |
|   | Debelinska merila<br><i>Thickness gauges</i>   |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 138   |
| 146.  |  | (0 do/to 100) mm  | $1 \mu\text{m} + 8 \cdot 10^{-6} \cdot L$   |  |
| 147.  |  | (100 do/to 1000) mm   | $2 \mu\text{m} + 10^{-5} \cdot L$   |  |
| 148.  | Merilniki profila pnevmatik<br><i>Tyre profile depth gauge</i>   | (0 do/to 100) mm  | $0,025 \text{ mm} + 8 \cdot 10^{-6} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 139   |
| 149.  | Merilniki debeline<br><i>Thickness gauges</i>  | (0 do/to 100) mm  | $2,0 \mu\text{m} + 3 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 151   |
| 150.  | Ultrazvočni merilniki debeline<br><i>Ultrasonic thickness gauges</i>   | (0 do/to 100) mm  | $20 \mu\text{m} + 1,5 \cdot 10^{-5} \cdot L$  | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 165   |
| <b>Instrumenti za merjenje dolžine</b><br><i>Length measuring instruments</i> |  |   |   |  |
| 151.  | Dvotočkovni mikrometri (zunanji)<br><i>2 point micrometers (external)</i>  | (0 do/to 1000) mm   | $1,6 \mu\text{m} + 5 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 110   |
| 152.  | Dvotočkovni mikrometri (notranji)<br><i>2 point micrometers (internal)</i>   | (25 do/to 2000) mm  | $1,6 \mu\text{m} + 8 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 110   |
|   | Pomična merila<br><i>Vernier calliper gauges</i>   |   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 109   |
| 153.  |  | (0 do/to 1000) mm   | $10 \mu\text{m} + 1 \cdot 10^{-5} \cdot L$  |  |
| 154.  |  | (1000 do/to 2000) mm  | $25 \mu\text{m} + 1 \cdot 10^{-5} \cdot L$  |  |
| 155.  | Merilne naprave za merjenje dolžin pri strojih za merjenje mehanskih lastnosti materialov<br><i>Extensometers in uniaxial testing</i>  | (0 do/to 100) mm  | $0,5 \mu\text{m} + 1,5 \cdot 10^{-5} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 145   |
| 156.  | Višinska merila<br><i>Height gauge</i>   | (0 do/to 1000) mm   | $0,6 \mu\text{m} + 1,7 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 109a  |



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|---------|--|---|---|--|
|         | <b>Merilne naprave za merjenje dolžin pri strojih za merjenje trdote po Vickersu</b><br><i>Length measuring devices of Vickers hardness testing machine</i>                                    |   |   | - Kalibracija po postopku skladnem s SIST EN ISO 6507-2:2018<br>- Calibration according to procedure compliant with SIST EN ISO 6507-2:2018  |
| 157.    |  | (0 do/to 5) mm  | $0,3 \mu\text{m} + 1,0 \cdot 10^{-3} \cdot L$   | - neposredna kalibracija merilnika trdote z objekt mikrometrom<br>- Direct calibration with a stage micrometer   |
|         | <b>Merilne naprave za merjenje dolžin pri strojih za merjenje trdote po Rockwell</b><br><i>Length measuring devices of Rockwell hardness testing machine</i>                                   |   |   | - Kalibracija po postopku skladnem s SIST EN ISO 6508-2:2015<br>- Calibration according to procedure compliant with SIST EN ISO 6508-2:2015  |
| 158.    |  | (0 do/to 2) mm  | 0,4 $\mu\text{m}$   | - neposredna kalibracija merilnika trdote z induktivno sondo<br>- Direct calibration with inductive probe  |
|         | <b>Merilne naprave za merjenje dolžin pri strojih za merjenje trdote po Brinellu</b><br><i>Length measuring devices of Brinell hardness testing machine</i>                                    |   |   | - Kalibracija po postopku skladnem s SIST EN ISO 6506-2:2019<br>- Calibration according to procedure compliant with SIST EN ISO 6506-2:2019  |
| 159.    |  | (0 do/to 5) mm  | $0,3 \mu\text{m} + 1,0 \cdot 10^{-3} \cdot L$   | - Neposredna kalibracija merilnika trdote z objekt mikrometrom<br>- Direct calibration with a stage micrometer   |
|         | <b>Premer</b><br><i>Diameter</i>   |   |   |  |
| 160.    | Tritočkovni mikrometri<br><i>3 point micrometers</i>   | (2 do/to 300) mm  | $1,6 \mu\text{m} + 7 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 110  |
|         | <b>Odstopek oblike</b><br><i>Form error</i>  |   |   |  |
| 161.    | Merilne plošče<br><i>Surface plates</i>  | 4 m x 4 m   | $1,8 \mu\text{m} + 1 \cdot 10^{-6} \cdot L$   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 116  |
| 162.    | Lasasta ravnila<br><i>Knife edge straight edges</i>  | (0 do/to 600) mm  | 1,5 $\mu\text{m}$   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 152  |
| 163.    | Ploska ravnila<br><i>Straight edges</i>  | (0 do/to 2000) mm   | 5,4 $\mu\text{m}$   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 154  |
| 164.    | Merilniki okroglosti<br><i>Roundness measuring machine</i>   | (0 do/to 275) mm  | 0,08 $\mu\text{m}$  | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 162  |
|         | <b>Hrapavost</b><br><i>Roughness</i>   |   |   |  |
| 165.    | Tipalni instrumenti za merjenje hrapavosti<br><i>Stylus instruments for roughness measurements</i>   | (0,1 do/to 3) $\mu\text{m}$ ( $R_a$ )<br>(0,3 do/to 10) $\mu\text{m}$ ( $R_z$ )<br>(0,3 do/to 10) $\mu\text{m}$ ( $R_y$ )                                       | 0,01 $\mu\text{m} + 3 \cdot 10^{-2} \cdot R_a$<br>0,01 $\mu\text{m} + 4 \cdot 10^{-2} \cdot R_z$<br>0,01 $\mu\text{m} + 4 \cdot 10^{-2} \cdot R_y$                            | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 129<br>- parametri / parameters: $R_a$ , $R_z$ , $R_{max}$ ( $R_y$ )   |



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|---|---|--|---|--|
| <b>Koordinatne merilne naprave</b><br><i>Co-ordinate measuring machines</i>   |   |  |   |  |
|   | 1D merilne naprave<br><i>1D measuring machines</i>  | <b>Območje / Range</b><br>(po osi/ per axis)   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 118, QNCL 120, QNCL 121,  |
| 166.  |   | (0 do/to 100) mm   | 0,3 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$   |  |
| 167.  |   | (100 do/to 1200) mm  | 0,5 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$   |  |
|   | 2D merilne naprave<br><i>2D measuring machines</i>  | <b>Območje / Range</b><br>(po osi/ per axis)   |   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 117, QNCL 119   |
| 168.  |   | (0 do/to 300) mm   | 1,1 $\mu\text{m} + 4 \cdot 10^{-6} \cdot L$<br><br>Pravokotnost<br><i>Squareness: 3 "</i>   |  |
| 169.  | Merilni sistemi za merjenje točnosti linearnega pozicioniranja in ponovljivosti osi na obdelovalnih in merilnih strojih<br><i>Measuring systems for measuring linear positioning accuracy and repeatability of axes in machine tools and measuring machines</i> | (0 do/to 40) m   | 3 $\mu\text{m} + 1,5 \cdot 10^{-5} \cdot L$   | - neposredna kalibracija / <i>direct calibration</i><br>- interni postopek / <i>internal procedure</i> :<br>QNCL 160   |
| <b>ELEKTRIKA / Electricity</b>  |   |  |   |  |
| <b>Električne veličine in visokofrekvenčne (VF) veličine</b><br><i>Electric quantities and High Frequency (HF) Quantities</i> |   |  |   |  |
|   | Ultrazvočni aparati za preiskavo materiala<br><i>Ultrasonic instruments for material examination</i>  | <b>Območje / Range</b>   |   | - interni postopek / <i>internal procedure</i> :<br>QNCL170, ki temelji na / <i>which is based on</i> SIST EN 12668-1:2011 – točki / <i>paragraphs</i> 8.8.2 in/and 9  |
| 170.  |   | Stabilnost po času ogrevanja / <i>Stability after warm up time</i> :<br>(0 do/to 100) % amplitude signala / <i>% of signal's amplitude</i><br>(0 do/to 100) % položaja signala / <i>% of signal's position</i> | 1 % celotne vertikalne skale / <i>of full vertical scale</i><br>0,1 % celotne horizontalne skale / <i>of full horizontal scale</i>  |  |
| 171.  |   | Trepetanje prikaza / <i>Display jitter</i> :<br>(0 do/to 100) % amplitude signala / <i>% of signal's amplitude</i><br>(0 do/to 100) % položaja signala / <i>% of signal's position</i>                         | 1 % celotne vertikalne skale / <i>of full vertical scale</i><br>0,1 % celotne horizontalne skale / <i>of full horizontal scale</i>  |  |





| Št. No.                                      | Merjena veličina, (pod)področje, oz. merilni instrumenti in/ali območje (merjene veličine).<br><i>Measured quantity, (sub-)field, and/or instruments, and/or range (of measured quantity).</i> | Območje (merjene veličine) ali Omejitve, pogoji, vplivne veličine.***<br><i>Range (of measured quantity) or Limitations, conditions, influence quantity.***</i>  | Kalibracijska in merilna zmogljivost (CMC) izražena kot razširjena negotovost.*<br><i>Calibration and measurement Capability (CMC) Expressed as an Expanded Uncertainty.*</i> | - Tip kalibracijske metode (opcija)<br>- Kalibracijski postopek<br>- Merilni instrumenti (opcija)**<br>- Opombe<br>- Type of calibration method (option),<br>- Internal calibration procedure<br>- Measuring instruments (option)**<br>- Remarks |
|--|--|--|---|--|
| 172.   |  | Stabilnost pri spreminjanju napajalne napetosti /<br><i>Stability while changing feeder voltage:</i><br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i><br>(0 do/to 100) % položaja signala / <i>of signal's position</i> | 1 % celotne vertikalne skale /<br><i>of full vertical scale</i><br>0,1 % celotne horizontalne skale /<br><i>of full horizontal scale</i>                                      |  |
| 173.   |  | Oddajni impulz -napetost /<br><i>Transmit pulse – voltage</i><br>$V_{50}$ :<br>(-1000 do/to 1000) V  | 4 %   | - glede na izmerjeno vrednost<br>- <i>depending on measured value</i><br>- enosmerna napetost<br>- <i>DC voltage</i>   |
| 174.   |  | Ekvivalentni vhodni šum /<br><i>Equivalent noise input <math>N_{in}</math>:</i><br>(0 do/to 1) V/ $\sqrt{\text{Hz}}$   | 10 %  | - glede na izračunano vrednost<br>- <i>depending on measured value</i>   |
| 175.   |  | Iznihavanje oddajnega impulza /<br><i>Damping of transmitted pulse</i><br>$V_r$ :<br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i>  | 1 % celotne vertikalne skale /<br><i>of full vertical scale</i>   |  |
| 176.   |  | Nastavitev slabljenja /<br><i>Attenuation setting:</i><br>(0 do/to 110) dB   | 0,3 dB  | - glede na izmerjeno vrednost<br>- <i>depending on measured value</i>  |
| 177.   |  | Linearnost vertikalne skale /<br><i>Linearity of vertical scale:</i><br>(0 do/to 100) % amplitude signala / <i>of signal's amplitude</i>   | 1 % celotne vertikalne skale /<br><i>of full vertical scale</i>   |  |
| 178.   |  | Linearnost časovne baze /<br><i>Linearity of time base:</i><br>(0 do/to 100) % položaja signala / <i>of signal's position</i>  | 0,1 % celotne horizontalne skale /<br><i>of full horizontal scale</i>   |  |
| <b>ČAS IN FREKVENCA / Time and Frequency</b> |  |  |   |  |
| <b>Čas / Time</b>                            |  |  |   |  |
|  | Ultrazvočni aparati za preiskavo materiala<br><i>Ultrasonic instruments for material examination</i>   |  |   | - interni postopek / <i>internal procedure:</i><br>QNCL170, ki temelji na / <i>which is based on</i> SIST EN 12668-1:2011 –<br>točki/paragraphs 8.8.2 in/and 9   |
| 179.   |  | Oddajni impulz - meritev časa vzpona impulza /<br><i>Transmitted pulse – measuring the time of pulse rising</i><br>$t_r$ :<br>(0,003 do/to 10) $\mu\text{s}$   | 9 %   | - glede na izmerjeno vrednost<br>- <i>depending on measured value</i>  |



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|---|--|---|---|---|
| 180.  |  | Oddajni impulz - meritev časa trajanja impulza /<br><i>Transmitted pulse – measuring the time of pulse duration</i><br>$t_d$ :<br>(0,02 do/to 10) $\mu$ s       | 3 %   | - glede na izmerjeno vrednost<br>- depending on measured value  |
| <b>Frekvenca / Frequency</b>                                |  |   |   |   |
|   | Ultrazvočni aparati za preiskavo materiala<br><i>Ultrasonic instruments for material examination</i>   | <b>Območje / Range</b>  |   | - interni postopek / internal procedure:<br>QNCL170, ki temelji na / which is based on SIST EN 12668-1:2011 – točki/paragraphs 8.8.2 in/and 9   |
| 181.  |  | Sprejemnik – meritev frekvenčnega območja /<br><i>Receiver – measuring the frequency range:</i><br>(0 do/to 100) MHz  | 4,0 %   | - glede na izračunano vrednost  |
| <b>MEHANSKE VELIČINE / Mechanical Quantities</b>            |  |   |   |   |
| <b>Sila</b><br><i>Force</i>                                 |  |   |   |   |
|   | <b>Merilni sistemi za silo</b><br><i>Force measuring systems</i>   |   |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 134<br>- kovinski material po / metallic materials according ISO 7500-1:2016;<br><br>- neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 155<br>- betonske stiskalnice po / testing machine for concrete according EN 12390-4:2000 skupaj z / together with ISO 7500-1:2016 |
| 182.  |  | 10 N do/to 500 kN   | 0,2 %   |   |
| 183.  |  | (0,5 do/to 5) MN  | 0,75 %  |   |
|   | <b>Pretvorniki sile (natezno, tlačno)</b><br><i>Force transducers (tension and compression forces)</i>   |   |   | - neposredna kalibracija / direct calibration<br>- interni postopek / internal procedure:<br>QNCL 147, QNCL 147a  |
| 184.  |  | (10 do/to 1000) N   | 0,2 %   | - z referenčnimi utežmi<br>- with reference weights   |
| <b>Merilniki trdote</b><br><i>Hardness testing machines</i> |  |   |   |   |
| 185.  | <b>Merilnik trdote kovin po Brinellu</b><br><i>Brinell hardness testing machine</i>  | 60-500 HB   | 1,5 %   | - Posredna in neposredna kalibracija (kalibracija vtiskala ni vključena)<br>- Indirect and direct calibration (calibration of indenter not included)<br>- interni postopek / internal procedure:<br>QNCL148, QNCL148a, ki temelji na / which is based on SIST EN ISO 6506-2:2019  |



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|---------|--|---|---|---|
|         | <b>Merilnik trdote kovin po Vickersu</b><br><i>Vickers hardness testing machine</i>  |   |   | - Posredna in neposredna kalibracija (kalibracija vtiskala ni vključena)<br>- Indirect and direct calibration (calibration of indenter not included)<br>- interni postopek / internal procedure: QNCL150, QNCL150a, ki temelji na / which is based on SIST EN ISO 6507-2:2018 |
| 186.    |  | Skala / scale HV0,05  | 10 % HV   |   |
| 187.    |  | Skale / scales HV0,2 do / to HV0,3  | 6 % HV  |   |
| 188.    |  | Skale / scales HV0,5 do / to HV1  | 3 % HV  |   |
| 189.    |  | Skale / scales HV2 do / to HV3  | 1,5 % HV  |   |
| 190.    |  | Skale / scales HV5 do / to HV10   | 1,2 % HV  |   |
| 191.    |  | Skale / scales HV20 do / to HV100   | 1 % HV  |   |
|         | <b>Merilnik trdote kovin po Rockwellu</b><br><i>Rockwell hardness testing machine</i>  |   |   | - Posredna in neposredna kalibracija (kalibracija vtiskala ni vključena)<br>- Indirect and direct calibration (calibration of indenter not included)<br>- interni postopek / internal procedure: QNCL149, QNCL149a, ki temelji na / which is based on SIST EN ISO 6508-2:2015 |
| 192.    |  | 20-95 HRA   | 0,5 HRC   |   |
| 193.    |  | 10-100 HRBW   | 1,0 HRBW  |   |
| 194.    |  | 20-70 HRC   | 0,5 HRC   |   |
| 195.    |  | 40-77 HRD   | 0,5 HRD   |   |
| 196.    |  | 70-100 HREW   | 1,0 HREW  |   |
| 197.    |  | 60-100 HRFW   | 1,0 HRFW  |   |
| 198.    |  | 30-94 HRGW  | 1,0 HRGW  |   |
| 199.    |  | 80-100 HRHW   | 1,0 HRHW  |   |
| 200.    |  | 40-100 HRKW   | 1,0 HRKW  |   |
| 201.    |  | 40-90 HRN   | 0,6 HRN   |   |
| 202.    |  | 10-90 HRTW  | 1,5 HRTW  |   |
| 203.    | <b>Merilnik trdote po Shore</b><br><i>Shore hardness testing machine</i>   | 10 Shore do/to 100 Shore  | 0,6 Shore (Shore A in Shore D)  | - interni postopek / internal procedure: QNCL157, ki temelji na / which is based on ISO 18898:2012  |
|         | <b>Tehtnice</b><br><i>Weighing instruments</i>   |   |   |   |
|         | <b>Neavtomatske tehtnice</b><br><i>Non-automatic weighing instruments</i>  |   |   | - interni postopek / internal procedure: QNCL144, ki temelji na / which is based on EURAMET/cg-18/v4.0  |
| 204.    |  | $m \leq 1 \text{ g}$  | 0,05 mg   |   |
| 205.    |  | $1 \text{ g} < m \leq 2 \text{ g}$  | 0,07 mg   |   |
| 206.    |  | $2 \text{ g} < m \leq 3 \text{ g}$  | 0,12 mg   |   |
| 207.    |  | $3 \text{ g} < m \leq 4 \text{ g}$  | 0,14 mg   |   |



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|---------|--|---|---|--|
| 208.    |  | 4 g < m ≤ 5 g   | 0,20 mg   |  |
| 209.    |  | 5 g < m ≤ 10 g  | 0,17 mg   |  |
| 210.    |  | 10 g < m ≤ 20 g   | 0,15 mg   |  |
| 211.    |  | 20 g < m ≤ 50 g   | 0,17 mg   |  |
| 212.    |  | 50 g < m ≤ 100 g  | 0,28 mg   |  |
| 213.    |  | 100 g < m ≤ 150 g   | 0,45 mg   |  |
| 214.    |  | 150 g < m ≤ 200 g   | 0,50 mg   |  |
| 215.    |  | 200 g < m ≤ 220 g   | 0,65 mg   |  |
| 216.    |  | 220 g < m ≤ 250 g   | 0,67 mg   |  |
| 217.    |  | 250 g < m ≤ 300 g   | 0,78 mg   |  |
| 218.    |  | 300 g < m ≤ 400 g   | 1,00 mg   |  |
| 219.    |  | 400 g < m ≤ 500 g   | 1,50 mg   |  |
| 220.    |  | 500 g < m ≤ 600 g   | 1,75 mg   |  |
| 221.    |  | 600 g < m ≤ 1000 g  | 2,70 mg   |  |
| 222.    |  | 1 kg < m ≤ 2 kg   | 5,50 mg   |  |
| 223.    |  | 2 kg < m ≤ 200 kg   | 10 <sup>-4</sup> · m  |  |
|         | <b>Tlak</b><br><i>Pressure</i>   |   |   |  |
|         | <b>Manometri za industrijsko uporabo</b><br><i>Manometers for industrial application</i>   |   |   | - interni postopek / internal procedure: QNCL135, ki temelji na / which is based on EURAMET/cg-17/v4.0<br>- merilni instrumenti: mehanski, elektronski<br>- measuring instruments: mechanical, electronical                                      |
| 224.    |  | (-1 do/to 30) bar   | 0,16 %;<br>ne manj kot 1 mbar   | - medij: plin.<br>- medium: gas.   |
| 225.    |  | (0 do/to 600) bar   | 0,16 %;<br>ne manj kot 1 mbar   | - medij: tekočina<br>- medium: fluid   |
| 226.    |  | (600 do/to 1000) bar  | 0,60 %  |  |
|         | <b>Moment sile</b><br><i>Torque</i>  |   |   |  |
|         | <b>Momentni ključ</b><br><i>Torque wrenches</i>  |   |   | - interni postopek / internal procedure: QNCL133, ki temelji na / which is based on SIST EN ISO 6789:2017<br>- opombe: desno / levo,<br>- remarks: Clockwise / anticlockwise.  |
| 227.    |  | (0,04 do/to 5) Nm   | 1,5 %   |  |
| 228.    |  | (5 do/to 1500) Nm   | 0,8 %   |  |
|         | <b>Naprava za preverjanje momentnih ključev</b><br><i>Device for testing torque wrenches</i>   |   |   | - interni postopek / internal procedure: QNCL164, ki temelji na / which is based on EURAMET/cg-14/v.02<br>- opombe: levo / desno<br>- remarks: clockwise / anticlockwise.  |
| 229.    |  | (0,04 do/to 0,4) Nm   | 1,5 %   |  |
| 230.    |  | (0,4 do/to 1000) Nm   | 0,8 %   |  |
|         | <b>Mehanska energija</b><br><i>Mechanical energy</i>   |   |   |  |



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|--|--|---|---|--|
|  | <b>Merilniki udarne žilavosti</b><br><i>Pendulum impact-testing machines</i>   | <b>Območje / Range</b>  |   | - posredna in neposredna kalibracija<br>- indirect and direct calibration<br>- interni postopek / internal procedure:<br>QNCL163, ki temelji na / which is based on SIST EN ISO 148-2:2017 in/and SIST EN ISO 13802:2015 ali/ or ASTM E23        |
| 231.   |  | (0,2 do/to 750) J   | Sila / Force: 0,25 %<br>Dolžina / Length: 0,3 mm<br>Kot / Angle: 0,1 °<br>Čas / Time: 0,1 s<br>Energija / Energy: 4 %   |  |
| <b>FLUIDNE VELIČINE / Fluid Quantities</b>   |  |   |   |  |
|  | <b>Prostornina tekočin</b><br><i>Volume of Liquids</i>   |   |   |  |
| 232.   | Porozimetri<br><i>Porosimeters</i>   | (0 do/to 10) l  | 0,1 %   | - interni postopek / internal procedure:<br>QNCL 153, ki temelji na / which is based on ASTM C231/C231M-10, Annex A1 točka/item A1.9<br>Opombe: samo porozimetri tipa B,<br>Remarks: B type porosimeters only.                                   |
| <b>TEMPERATURA, VLAGA IN TERMOFIZIKALNE LASTNOSTI / Temperature, humidity and thermo-physical properties</b> |  |   |   |  |
|  | <b>Tekočinski termometri</b><br><i>Liquid-in-glass thermometers</i>  |   |   | - primerjalna meritev / calibration by comparison<br>- interni postopek / internal procedure:<br>QNCL143   |
| 233.   |  | (-20 do/to 140) °C  | 0,08 °C   |  |
|  | <b>Indikacijski termometri</b><br><i>Thermometers with indicators</i>  |   |   | - primerjalna meritev / calibration by comparison<br>- interni postopek / internal procedure:<br>QNCL143   |
| 234.   |  | (-20 do/to 140) °C  | 0,08 °C   |  |

**Opombe / Notes:**

\* CMC opomba / CMC Note

Razširjena negotovost je podana kot kombinirana standardna negotovost pomnožena s takšnim faktorjem pokritja  $k$ , da določa interval zaupanja približno 95 %. / Expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$  such that the coverage probability corresponds to approximately 95 %.

\*\* Navedba informacije o merilnih instrumentih se v tej koloni uporabi le v tistih primerih, kjer to ne izhaja že iz opredelitve veličine, opisa (pod)področja in instrumentov v drugi koloni tabele. / Information on measuring instruments are specified in this column only if it is not clear from the description of quantity, (sub-) field, and/or instruments in the second column of this table.

\*\*\* Kadar je za enoumno razumevanje zmogljivosti potreben opis robnih pogojev, vplivnih veličin ali drugih omejitev, se ti navajajo v tej koloni (z enoumno oznako kolone), območje merjene veličine pa je v takem primeru določeno že v drugi koloni te tabele. / When a description of the boundary conditions, influence quantity or other limits is required for an unequivocal understanding of capabilities it is specified in this column (clearly indicated), providing that the range of measured quantity is defined in the second column of this table.

Datum / Date: 27. julij 2020

Direktor / Director  
Dr. Boštjan Godec

