



Government  
of Canada

Gouvernement  
du Canada

[Canada.ca](#) > [National Research Council Canada](#)

- > [Certifications, evaluations and standards](#)
- > [Calibration laboratory assessment service](#)
- > [Directory of accredited calibration laboratories](#)

## CLAS Certificate Number 2003-05

<b>Company name</b>	<b>Mitutoyo Canada Inc. Calibration Laboratory</b>
<b>Company address</b>	2121 Meadowvale Mississauga, Ontario L5N 5N1
<b>Contact</b>	<b>Gary Mueller</b> <b>Telephone:</b> 905-821-1261 <b>Fax:</b> 905-821-4968 <b>Email:</b> <a href="mailto:gary.mueller@mitutoyo.ca">gary.mueller@mitutoyo.ca</a>
<b>Clients served</b>	<ul style="list-style-type: none"><li>• All interested parties</li><li>• On-site calibration services are available for the capabilities for which it is indicated in the remarks column.</li></ul>

<b>Fields of calibration</b>	<ul style="list-style-type: none"> <li>• Dimensional</li> <li>• Mechanical</li> </ul>
<b>SCC accreditation (ISO/IEC 17025)</b>	<ul style="list-style-type: none"> <li>• SCC file number: 15587</li> <li>• First issued 2003-10-07</li> <li>• Issue 8.3e 2023-05-02</li> </ul>

**i** This CLAS Certificate is published by the CLAS program of the National Research Council of Canada (NRC) in cooperation with the laboratory accreditation program of the Standards Council of Canada (SCC), Canada's accreditation body for calibration and testing laboratories. The SCC accredits the capability of the named laboratory for being able to perform calibrations as per the listed Calibration and Measurement Capabilities with metrological traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. See [supplementary notes](#).

Measured Quantity & Range or Instrument	Expanded Measurement Uncertainty	Type of Service	Remarks
<b>Gauge block CLTM-7</b> <b>See note <sup>1</sup></b>			
<b>Steel, length</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 4 inches</b>	$( 1.6 + 0.8 L ) \mu\text{inch}$ (L in inches) or $2 \mu\text{inch}$ , whichever greater	I	Using automatic comparator
<b>Metric, up to 100 mm</b>	$( 0.041 + 0.0008 L ) \mu\text{m}$ (L in mm) or $0.05 \mu\text{m}$ , whichever greater		Using automatic comparator
<b>Inch, up to 1 inch</b>	$( 4 + 0.7 L ) \mu\text{inch}$ (L in inches)		Using manual comparator; direct comparison
<b>Metric, up to 25 mm</b>	$( 0.11 + 0.0007 L ) \mu\text{m}$ (L in mm)		Using manual comparator; direct comparison

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 1 inch</b>	$( 7 + 0.7 L ) \mu\text{inch}$ (L in inches)		Using manual comparator; wide-range
<b>Metric, up to 25 mm</b>	$( 0.18 + 0.0007 L ) \mu\text{m}$ (L in mm)		Using manual comparator; wide-range
<b>Inch, 1 inch to 10 inches</b>	$( 5 + 5.5 L ) \mu\text{inch}$ (L in inches)		Using manual comparator; direct comparison
<b>Metric, 25 mm to 250 mm</b>	$( 0.13 + 0.0055 L ) \mu\text{m}$ (L in mm)		Using manual comparator; direct comparison
<b>Inch, 12 inches to 20 inches</b>	47 $\mu\text{inch}$		Using CMM

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Metric, 300 mm to 500 mm</b>	1.2 $\mu\text{m}$		Using CMM
<b>Ceramic, length</b> <b>See note <sup>1</sup></b>			
<b>Inch, up to 4 inches</b>	( 1.6+ 0.7 L ) $\mu\text{inch}$ (L in inches) or 2 $\mu\text{inch}$ , whichever greater	I	Using automatic comparator
<b>Metric, up to 100 mm</b>	( 0.04+ 0.0007 L ) $\mu\text{m}$ (L in mm) or 0.05 $\mu\text{m}$ , whichever greater		Using automatic comparator
<b>Gauge Block</b> <b>See note <sup>2</sup></b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Variation in length (parallelism)</b>	1 $\mu$ inch or 0.025 $\mu$ m	I	Using automatic comparator
<b>Height gauge</b>			
<b>Inch, up to 40 inches</b>	( 51+ 2.0 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Metric, up to 1000 mm</b>	( 1.3+ 0.002 L ) $\mu$ m (L in mm)		
<b>Micrometer</b>			
<b>Head</b>			
<b>Inch, up to 2 inches</b>	30 $\mu$ inch	II	See note <sup>3</sup>
<b>Metric, up to 50 mm</b>	0.6 $\mu$ m		
<b>Outside</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 6 inches</b>	( 45 + 2 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Inch, &gt; 6 inches to 20 inches</b>	( 50 + 4.2 L ) $\mu$ inch (L in inches)		
<b>Metric, up to 500 mm</b>	( 1.0 + 0.0042 L ) $\mu$ m (L in mm)		
<b>Depth</b>			
<b>Inch, up to 6 inches</b>	( 45 + 2.2 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Inch, &gt; 6 inches to 12 inches</b>	( 55 + 3.8 L ) $\mu$ inch (L in inches)		
<b>Metric, up to 300 mm</b>	( 1.1 + 0.0036 L ) $\mu$ m (L in mm)		
<b>Tubular inside</b>			



<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 2 inches</b>	( 50 + 0.8 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Inch, &gt; 2 inches to 24 inches</b>	( 60 + 4.4 L ) $\mu$ inch (L in inches)		
<b>Metric, up to 600 mm</b>	( 1.0 + 0.005 L ) $\mu$ m (L in mm)		
<b>Three point internal</b>			
<b>Inch, up to 7 inches</b>	( 75 + 1.6 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Metric, up to 175 mm</b>	( 1.3 + 0.0032 L ) $\mu$ m (L in mm)		
<b>Indicator tester</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 1 inch</b>	30 $\mu$ inch	II	See note <sup>3</sup>
<b>Metric, up to 25 mm</b>	0.6 $\mu$ m		
<b>Bore gauge (2 points)</b>			
<b>Inch, up to 4 inches</b>	( 50 + 0.3 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Metric, up to 100 mm</b>	( 1.1 + 0.0006 L ) $\mu$ m (L in mm)		
<b>Indicator</b>			
<b>Dial</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, 0.00005 inch graduations</b>	14 $\mu$ inch	II	Up to 4 inch travel
<b>Inch, 0.0001 inch graduations</b>	20 $\mu$ inch		
<b>Metric, 0.001 mm graduations</b>	0.3 $\mu$ m		Up to 100 mm travel
<b>Metric, 0.002 mm graduations</b>	0.4 $\mu$ m		
<b>Metric, 0.02 mm graduations</b>	3.0 $\mu$ m		
<b>Digital</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, 0.00005 inch resolution</b>	30 μinch	II	Up to 4 inch travel
<b>Metric, 0.0005 mm resolution</b>	0.4 μm		Up to 100 mm travel
<b>Metric, 0.001 mm resolution</b>	0.7 μm		
<b>Metric, 0.01 mm resolution</b>	5.8 μm		
<b>Caliper</b>			
<b>Outside, Inside and Depth</b>			
<b>Inch</b>			
<b>up to 24 inches</b>	( 290 + 1.6 L ) μinch (L in inches)	II	See note <sup>1</sup>
<b>&gt; 24 inches to 40 inches</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>0.0005 inch resolution</b>	( 400 + 14 L ) $\mu$ inch (L in inches)	II	See note <sup>1</sup>
<b>0.001 inch resolution</b>	( 1000 + 10 L ) $\mu$ inch (L in inches)		
<b>Metric</b>			
<b>up to 600 mm</b>	( 5.8 + 0.002 L ) $\mu$ m (L in mm)	II	See note <sup>1</sup>
<b>&gt; 600 mm to 1000 mm</b>			
<b>0.01 mm resolution</b>	( 7.5 + 0.014 L ) $\mu$ m (L in mm)	II	See note <sup>1</sup>
<b>0.02 mm resolution</b>	( 20 + 0.010 L ) $\mu$ m (L in mm)		
<b>Depth gauge</b>			
<b>Dial Caliper Type</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 12 inches</b>	0.0024 inch	II	See note <sup>3</sup>
<b>Metric, up to 300 mm</b>	60 $\mu\text{m}$		
<b>Dial Indicator Type</b>			
<b>Inch, up to 12 inches</b>	580 $\mu\text{inch}$	II	See note <sup>3</sup>
<b>Metric, up to 300 mm</b>	12 $\mu\text{m}$		
<b>Digital Caliper Type</b>			
<b>Inch, up to 12 inches</b>	290 $\mu\text{inch}$	II	See note <sup>3</sup>
<b>Metric, up to 300 mm</b>	6 $\mu\text{m}$		
<b>Digital Indicator Type</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 12 inches</b>	( 30 + 2 L ) $\mu$ inch (L in inches)	II	See note <sup>3</sup>
<b>Metric, up to 300 mm</b>	( 0.6 + 0.0025 L ) $\mu$ m (L in mm)		
<b>Vernier Caliper Type</b>			
<b>Inch, up to 12 inches</b>	1200 $\mu$ inch	II	See note <sup>3</sup>
<b>Metric, up to 300 mm</b>	24 $\mu$ m		
<b>External caliper gauge</b>			
<b>Inch, up to 4 inches</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>0.0002 inch resolution</b>	120 $\mu$ inch	II	See note <sup>1</sup>
<b>0.0005 inch resolution</b>	290 $\mu$ inch		
<b>0.001 inch resolution</b>	580 $\mu$ inch		
<b>0.002 inch resolution</b>	1200 $\mu$ inch		
<b>0.005 inch resolution</b>	2900 $\mu$ inch		
<b>Metric, up to 100 mm</b>			



<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>0.005 mm resolution</b>	2.9 $\mu\text{m}$	II	See note <sup>1</sup>
<b>0.01 mm resolution</b>	5.8 $\mu\text{m}$		
<b>0.02 mm resolution</b>	12 $\mu\text{m}$		
<b>0.05 mm resolution</b>	29 $\mu\text{m}$		
<b>0.1 mm resolution</b>	58 $\mu\text{m}$		
<b>Internal caliper gauge</b>			
<b>Inch, up to 4 inches</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>0.0002 inch resolution</b>	120 $\mu$ inch	II	See note <sup>1</sup>
<b>0.0005 inch resolution</b>	290 $\mu$ inch		
<b>0.001 inch resolution</b>	580 $\mu$ inch		
<b>Metric, up to 100 mm</b>			
<b>0.005 mm resolution</b>	2.9 $\mu$ m	II	See note <sup>1</sup>
<b>0.01 mm resolution</b>	5.8 $\mu$ m		
<b>0.02 mm resolution</b>	12 $\mu$ m		
<b>Thickness gauge</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Inch, up to 1 inch</b>	290 $\mu$ inch	II	See note <sup>3</sup>
<b>Metric, up to 25 mm</b>	5.8 $\mu$ m		
<b>Profile projector</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Linearity of movement: Digital readout type</b>	( 1.6 + 0.021 L ) $\mu\text{m}$ (L in mm)	III	See note <sup>3</sup> On-site calibration available.
<b>Linearity of movement: Micrometer head type</b>	( 1.6 + 0.017 L ) $\mu\text{m}$ (L in mm)		
<b>Magnification error</b>	( 13+0.017 L ) $\mu\text{m}$ (L in mm)		
<b>Squareness of stage</b>	0.7 $\mu\text{m}$		
<b>Eccentricity of screen rotation</b>	1.6 $\mu\text{m}$		
<b>Parallelism of stage</b>	1.7 $\mu\text{m}$		

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Accuracy of edge finder</b>	1.0 $\mu\text{m}$		
<b>I-Checker</b>			
<b>0 mm to 100 mm</b>	( 0.13 + . 0027 L ) $\mu\text{m}$ , L is in mm	II	See note <sup>1</sup>
<b>0 inches to 4 inches</b>	( 5.1 + 2.7 L ) $\mu\text{inch}$ , L is in inch		
<b>Mu-checker: Graduation</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>0.1 μm</b>	0.3 μm	II	See note <sup>1</sup>
<b>0.5 μm</b>	0.3 μm		
<b>1 μm</b>	0.4 μm		
<b>5 μm</b>	1.5 μm		
<b>10 μm</b>	2.9 μm		
<b>50 μm</b>	15 μm		
<b>0.000005 inch</b>	10 μinch		
<b>0.00001 inch</b>	10 μinch		
<b>0.00005 inch</b>	17 μinch		
<b>0.0001 inch</b>	30 μinch		
<b>0.0005 inch</b>	150 μinch		
<b>0.001 inch</b>	290 μinch		
<b>Riser block</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>150 mm to 600 mm</b>	$( 0.4 + 0.002 L ) \mu\text{m}$ , L is in mm	II	See note <sup>1</sup>
<b>6 inches to 24 inches</b>	$( 16 + 2 L ) \mu\text{inch}$ , L is in inch		
<b>Height masters</b>			
<b>Up to 300 mm</b>	$( 0.5 + 0.002 L ) \mu\text{m}$ , L is in mm	II	See note <sup>1</sup>
<b>Up to 12 inches</b>	$( 20 + 2 L ) \mu\text{inch}$ , L is in inch		
<b>Step gauge (checkmaster)</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Up to 1010 mm</b>	$( 0.39 + 0.0014 L ) \mu\text{m}$ where L is the length in mm	II	See note <u>13</u>
<b>&gt; 1010 mm to 1710 mm</b>	$( 0.61 + 0.0018 L ) \mu\text{m}$ where L is the length in mm		
<b>Up to 40 inch</b>	$( 15.4 + 1.4 L ) \mu\text{inch}$ where L is the length in inches		
<b>&gt; 40 Inch up to 70 Inch</b>	$( 24 + 1.8 L ) \mu\text{inch}$ where L is the length in inches		
<b>Micrometer standard</b>			



<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>5 mm to 500 mm</b>	( 0.32 + 0.002 L ) $\mu\text{m}$ where L is the length in mm	II	See note <u>13</u>
<b>&gt; 500 mm to 1000 mm</b>	( 0.69 + 0.004 L ) $\mu\text{m}$ where L is the length in mm		
<b>0.2 inches to 20 inches</b>	( 12.6 + 2 L ) $\mu\text{inch}$ where L is the length in inches		
<b>&gt; 20 inches to 40 inches</b>	( 27.2 + 4 L ) $\mu\text{inch}$ where L is the length in inches		
<b>Flatness for granite or steel surfaces requiring an accuracy of greater than 0.4 <math>\mu\text{m}</math></b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>1 mm x 1 mm to 900 mm x 1000 mm</b>	$( 0.34 + 0.002 L ) \mu\text{m}$ where L is the maximum length in mm	II	See note <u>15</u>
<b>0.04 inches x 0.04 inches to 35 inches x 40 inches</b>	$( 13 + 2 L ) \mu\text{inch}$ where L is the maximum length in inches		
<b>Cylindrical ring gauge: Diameter</b>			
<b>3 mm to 500 mm</b>	$( 0.46 + 0.002D ) \mu\text{m}$ where D is the diameter in mm	II	See note <u>13</u>
<b>0.12 inches to 20 inches</b>	$( 18.1 + 2.0D ) \mu\text{inch}$ where D is the diameter in inches		
<b>Cylindrical plug gauges: Diameter</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>3 mm to 500 mm</b>	( 0.30 + 0.002D ) $\mu\text{m}$ where D is the diameter in mm	II	See note <u>13</u>
<b>0.12 inches to 20 inches</b>	( 11.8 + 2.0D ) $\mu\text{inch}$ where D is the diameter in inches		
<b>Test spheres</b>			
<b>Diameter</b>			
<b>8 mm to 50 mm</b>	0.4 $\mu\text{m}$	II	See note <u>13</u>
<b>0.3 inches to 2 inches</b>	16 $\mu\text{inch}$		
<b>Form</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>8 mm to 50 mm</b>	( 0.05 + 0.007R ) $\mu\text{m}$ where R is the measured roundness in $\mu\text{m}$	II	See note <u>14</u>
<b>0.3 inches to 2 inches</b>	( 2.0 + 0.007R ) $\mu\text{inch}$ where R is the measured roundness in $\mu\text{inch}$		
<b>Roundness</b>			
<b>Diameter of 2 mm to 200 mm</b>	( 0.05 + 0.007R ) $\mu\text{m}$ where R is the measured roundness in $\mu\text{m}$	II	See note <u>14</u>
<b>Diameter of 0.8 inches to 8 inches</b>	( 2.0 + 0.007R ) $\mu\text{inch}$ where R is the measured roundness in $\mu\text{inch}$		

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Precision squares</b>			
<b>50 mm to 800 mm</b>	( 0.3 + 0.003 L ) $\mu\text{m}$ where L is the length in mm	II	See note <sup>15</sup>
<b>2 inches to 32 inches</b>	( 12 + 3 L ) $\mu\text{inch}$ where L is the length in inches		
<b>Parallels: Granite or steel</b>			
<b>5 mm to 1000 mm</b>			
<b>Parallelism</b>	( 0.33 + 0.002 L ) $\mu\text{m}$ where L is the length in mm	II	See note <sup>13</sup>
<b>Width</b>	( 0.83 + 0.001 L ) $\mu\text{m}$ where L is the length in mm		
<b>0.2 inches to 40 inches</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Parallelism</b>	( 13.0 + 2 L ) μinch where L is the length in inches	II	See note <u>13</u>
<b>Width</b>	( 32.7 + 1.0 L ) μinch where L is the length in inches		
<b>Mitutoyo contracer and form tracers</b>			
<b>Up to 200 mm Horizontal Axis:</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Measurement of Stylus Radius</b>	( 1.21 + 0.004D ) $\mu\text{m}$ where D is measured Radius length in mm	III	On-site services as per FSTM-11
<b>Detector Accuracy</b>	( 0.33 + 0.0007L ) $\mu\text{m}$ where L is the length in mm		
<b>X and Y Axis</b>	( 0.63 + 0.004L ) $\mu\text{m}$ where L is measurement length in mm		
<b>Straightness</b>	0.09 $\mu\text{m}$		
<b>Surface roughness</b>	0.07 $\mu\text{m}$		
<b>Coordinate measuring machines (CMM)</b>			

Measured Quantity & Range or Instrument	Expanded Measurement Uncertainty	Type of Service	Remarks
<b>Acceptance and reverification tests for CMM - CMMs used for measuring size</b>			On-site services as per ISO 10360-2 2009 edition and 2001 edition.  See note <sup>9</sup>
<b>Error of Indication</b>			
<b>0 m to 1.5 m</b>	$( 0.12 + 0.00004 L ) \mu\text{m}$ where L is the length in mm	III	See note <sup>10</sup>
<b>0 m to 40 m</b>	$( 0.16 + 0.0006 L ) \mu\text{m}$ where L is the length in mm		See note <sup>11</sup>
<b>Probing Error</b>			
<b>10 mm to 50 mm in sphere diameter</b>	0.14 $\mu\text{m}$	III	See note <sup>12</sup>



Measured Quantity & Range or Instrument	Expanded Measurement Uncertainty	Type of Service	Remarks
<b>Mitutoyo optic coordinate measuring machines</b>			
<b>Up to 600 mm</b>			
<b>Length Measurement Error: <math>E_{UXY}</math></b>	$(0.25 + 0.39 \times L/1000)$ $\mu\text{m}$ at $k=2$ where L is measured Length in mm	III	On-site services according to ISO 10360-7: 2011 and FSTM-8 See note <u>17</u> See note <u>18</u>
<b>Length Measurement Error: <math>E_{UZ}</math></b>	$(0.27 + 0.60 \times L/1000)$ $\mu\text{m}$ at $k=2$ where L is measured Length in mm		
<b>Squareness Error: <math>E_{SQ}</math></b>	$(1.79 + 0.003L)$ $\mu\text{m}$ at $k=2$ where L is measured Length in mm		
<b>Probing Error: <math>P_{F2D}</math></b>	0.13 $\mu\text{m}$		
<b>Probing Error: <math>P_{FV2D}</math></b>	0.13 $\mu\text{m}$		

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Surface roughness</b>			
<b>R<sub>a</sub> up to 4.1 μm</b>			
<b>R<sub>a</sub></b>	0.07 μm	II	See note <sup>16</sup>
<b>R<sub>max</sub>, R<sub>y</sub></b>	0.29 μm		
<b>R<sub>a</sub> up to 160 μinches</b>			
<b>R<sub>a</sub></b>	3 μinches	II	See note <sup>16</sup>
<b>R<sub>max</sub>, R<sub>y</sub></b>	11 μinches		
<b>Precision Glass Scales</b>			
<b>0 mm to 400 mm</b>	(1.4 + 0.011L ) μm, where L is Length in mm	II	See note <sup>19</sup>
<b>0 inches to 15.7 inches</b>	(55.2 + 11L) μinches, where L is Length in inches		
<b>Precision Rulers</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>0 mm to 400 mm</b>	$(4.3 + 0.012L) \mu\text{m}$ , where L is Length in mm	II	See note <sup>19</sup>
<b>0 inches to 15.7 inches</b>	$(169 + 12L) \mu\text{inches}$ , where L is Length in inches		
<b>Hardness</b>			
<b>Indirect verification of Rockwell hardness testers</b>			
<b>HRA</b>	Governed by the uncertainty of the standardized test block used to perform the indirect verification	III	ASTM E18 Standardized Test Blocks per ASTM E18 See notes <sup>4</sup> , <sup>7</sup> and <sup>8</sup> . On-site calibration available.
<b>HRB</b>			
<b>HRC</b>			
<b>HRD</b>			
<b>HRE</b>			
<b>Indirect verification of Rockwell Superficial hardness testers</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>HR15T</b>	Governed by the uncertainty of the standardized test block used to perform the indirect verification	III	ASTM E18 Standardized Test Blocks per ASTM E18 See notes <u>4</u> , <u>7</u> and <u>8</u> . On-site calibration available.
<b>HR30T</b>			
<b>HR15N</b>			
<b>HR30N</b>			
<b>Indirect verification of Vickers and Knoop micro indentation hardness testers</b>			

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>HV</b>	Governed by the uncertainty of the standardized test block used to perform the indirect verification	III	ASTM E384 Standardized Test Blocks per ASTM E384 See notes <u>5</u> , <u>7</u> and <u>8</u> . On-site calibration available.
<b>HK</b>			<b>Indirect verification of Vickers hardness testers</b>
<b>HV</b>	Governed by the uncertainty of the standardized test block used to perform the indirect verification	III	ASTM E92 Standardized Test Blocks per ASTM E92 See notes <u>6</u> , <u>7</u> and <u>8</u> . On-site calibration available.

<b>Measured Quantity &amp; Range or Instrument</b>	<b>Expanded Measurement Uncertainty</b>	<b>Type of Service</b>	<b>Remarks</b>
<b>Indirect verification of Rockwell and Vickers portable hardness testers</b>			
<b>HRC</b>	Governed by the uncertainty of the standardized test block used to perform the indirect verification	III	ASTM E18 and E92 Standardized Test Blocks per ASTM E18 & E92
<b>HV</b>			See notes <u>4</u> , <u>6</u> , <u>7</u> and <u>8</u> . On-site calibration available.

- 
- 1 The Calibration Measurement Capability (CMC) listed can be achieved only if the standards being calibrated are suitable for such a measurement. The uncertainty stated on a calibration report will reflect the uncertainty contribution of the standards that were calibrated.
  - 2 This measured quantity is commonly known as parallelism of gauge blocks.
  - 3 The Calibration Measurement Capability listed is based on the calibration of an instrument with a resolution of 0.001 mm. The uncertainty stated on the calibration report will reflect the uncertainty contribution of the specific instrument that was calibrated.
  - 4 The Indirect Verification of Rockwell Hardness Testers and Rockwell Superficial Hardness Testers is performed according to the requirements of ASTM E18.
  - 5 The Indirect Verification of Knoop and Vickers Micro Hardness Testers is performed according to the requirements of ASTM E384.
  - 6 The Indirect Verification of Vickers Hardness Testers is performed according to the requirements of ASTM E92.
  - 7 ASTM E18, E384 and E92 are published by the ASTM International (ASTM).
  - 8 The uncertainty of the hardness tester being calibrated is calculated for each specific test point and is dependant on the uncertainty of the specific hardness test block used and on the performance characteristics of the hardness tester itself.

- 9 The conformance to specification of the CMM is made in accordance with ISO 14253-1 taking into account all test measurement uncertainties.
- 10 This CMC is obtained using a low expansion artefact being at least 66% of the longest spatial diagonal of the measuring volume of the CMM, and the shortest size being less than 30 mm, over a temperature ranging from 19.5 to 20.5°C.
- 11 This CMC is obtained using a laser interferometer measuring technique, over a temperature ranging from 19.5 to 20.5°C.
- 12 The reference sphere supplied with the CMM will not be used for this test.
- 13 Calibrated in comparison with traceable standards using a Legex CMM.
- 14 Calibrated in comparison with traceable standards using a roundness tester.
- 15 Calibrated using a Legex CMM.
- 16 ASME B46.1
- 17 For imaging probe CMM capable of 3D and 2D measurements, using the component approach.



18 Limited to unidirectional measurements.

19 Calibrated in comparison with a master glass scale

**From:** National Research Council Canada

**Date modified:**

2023-04-18

**Standards Council of Canada**  
Conseil canadien des normes

**National Research Council Canada**  
Conseil national de recherches Canada

Program for Accreditation of Laboratories – Canada  
Programme d'accréditation des laboratoires – Canada

Calibration Laboratory Assessment Service  
Service d'évaluation de laboratoires d'étalonnage

**CERTIFICATE OF ACCREDITATION**      **CERTIFICAT D'ACCREDITATION**

**Mitutoyo Canada Inc.**  
**Calibration Laboratory**  
2121 Meadowvale Boulevard, Mississauga, ON L5N 5N1

having been assessed by the National Research Council of Canada (NRC), under the authority of the Standards Council of Canada (SCC), and found to conform with the requirements of ISO/IEC 17025:2017 and conditions established by SCC, and the NRC Calibration Laboratory Assessment Service (CLAS), and having demonstrated the capability of calibrating measurement instruments and standards and providing verified traceability to the national measurement standards of Canada, in specified fields and specified uncertainty limits, is hereby recognized as an

ayant fait l'objet d'une évaluation par le Conseil national de recherches du Canada (CNRC), sous l'autorité du Conseil canadien des normes (CCN) et ayant été trouvé conforme aux exigences d'ISO/IEC 17025:2017, ainsi qu'aux conditions établies par le CCN et le Service d'évaluation de laboratoires d'étalonnage (CLAS) du CNRC, et ayant prouvé ses compétences en matière d'étalonnage des instruments de mesure et des étalons, et de raccordement aux étalons nationaux du Canada, dans des domaines précis et des limites établies d'incertitude, est de ce fait reconnu comme étant un

**ACCREDITED CALIBRATION LABORATORY**  
For specific measurement capabilities which are hereby CERTIFIED by CLAS

**LABORATOIRE D'ÉTALONNAGE ACCRÉDITÉ**  
CERTIFIÉ par le CLAS pour des capacités précises de mesure

as listed in the Directory of the Canadian Calibration Network maintained by NRC and approved by SCC. The national measurement standards of Canada are realized, maintained and disseminated by NRC under the authority of the National Research Council Act and the Weights and Measurements Act. Bilateral agreements recognizing the equivalence of national measurement standards exist between NRC and other national metrology institutes. Copies of these agreements are available from NRC.

indiqués dans le Répertoire du réseau canadien d'étalonnage établi par le CNRC et approuvé par le CCN. Les étalons nationaux du Canada sont établis, maintenus et émis par le CNRC en vertu de la Loi sur le Conseil national de recherches et de la Loi sur les poids et mesures. Il existe entre le CNRC et d'autres instituts nationaux de métrologie des accords bilatéraux qui reconnaissent l'équivalence des étalons nationaux de mesure. Le CNRC tient à la disposition du public des exemplaires de ces accords.

Accredited laboratory number: / Numéro de laboratoire accrédité : 503  
SCC file number: / Dossier du CCN n° : 15587  
NRC CLAS Certificate No. / Numéro du certificat CNRC CLAS : 2003-05  
Initial accreditation date: / Date de la première accréditation : 2003-10-07

Chief Metrologist (NRC) / Métrologue en chef (CNRC)

Vice-President – Accreditation Services / Vice-président – Services d'accréditation

Issued on: / Délivré le : 2020-04-05

The validity of this certificate, including the date of next re-accreditation and its expiry can be confirmed by the accompanying Scope of Accreditation document in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

Plus vérifier la validité du présent certificat, y compris la date de la dernière réaccréditation et la date d'expiration du certificat, consulter la portée d'accréditation qui se trouve dans le répertoire des laboratoires accrédités dans le site Web du CCN au www.ccn.ca.

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. The accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-APF communication dated April 2017).

Ce laboratoire est accrédité conformément à la Norme internationale reconnue ISO/IEC 17025:2017. Cette accréditation démontre la compétence technique d'un organisme pour une portée définie enregistrement d'un système de management de la qualité de laboratoire (cf. communication conjoint ISO-ILAC-APF date de avril 2017).

This certificate is the property of the Standards Council of Canada (SCC) and must be returned on request; reproduction is prohibited except on written approval of SCC.  
Ce certificat est la propriété du Conseil canadien des normes (CCN) et doit lui être remis sur demande; toute reproduction est interdite sans l'autorisation écrite du CCN.

Canada

**Travaux publics et Services gouvernementaux Canada**      **Public Works and Government Services Canada**

**Programme des marchandises contrôlées**      **Controlled Goods Program**

**Certificat**      **Certificate**  
d'inscription accordé à      of Registration issued to

**Mitutoyo Canada Inc.**

Exercent ses activités sous le nom / Carrying on business as

Le présent certificat confirme votre inscription au Programme des marchandises contrôlées. Votre inscription est assujettie à des conditions réglementaires et aux conditions énoncées par le ministre dans le document "Conditions de l'inscription".

This certificate confirms your registration with the Controlled Goods Program subject to conditions prescribed by regulations and any other conditions set out by the Minister in the "Conditions of Registration" document.

N° de certificat / Certificate No. 29978

Émise par le ministre en vertu de la Loi sur la production de défense  
Issued by the Minister pursuant to the Defence Production Act

Entrée en vigueur / Issued 2021/11/24  
2021-11-24

Date d'expiration / Expires 2023/11/24  
2023-11-24

Joelle Elchak

Gestionnaires / Manager

Canada