



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

DIMENSIONAL

NVLAP Code: 20/D03

Gage Blocks, Steel and Chrome Only

<i>Range</i>	<i>Best Uncertainty</i> (\pm) ^{note 1}	<i>Remarks</i>
0.010 in to 0.090 in	3.6 μ m	Mechanical Comparison
> 0.090 in to 1.000 in	3.0 μ m	Mechanical Comparison
> 1.0 in to 4.0 in	(2.7 + 0.31L) μ m ^{note 3}	Mechanical Comparison
0.30 mm to 2.5 mm	0.09 μ m	Mechanical Comparison
> 2.50 mm to 25 mm	0.08 μ m	Mechanical Comparison
> 25 mm to 100 mm	(0.07 + 0.31L) μ m ^{note 4}	Mechanical Comparison

NVLAP Code: 20/D05

Length

<i>Range in m</i>	<i>Best Uncertainty</i> (\pm) ^{notes 1, 4}	<i>Remarks</i>
0 to 0.8	(0.32 + 0.37L) μ m	Moore M32 CMM
0 to 1.2	(0.32 + 0.46L) μ m	Moore M48 CMM

NVLAP Code: 20/D06

Line Standards

<i>Range in mm</i>	<i>Best Uncertainty</i> (\pm) ^{notes 1, 4}	<i>Remarks</i>
0 to 150	(0.32 + 0.20L) μ m	CMM (optical)
>150 to 600	(0.16 + 1.6L) μ m	CMM (optical)

2009-04-01 through 2010-03-31

Effective dates

Sally S. Bruce

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

NVLAP Code: 20/D08
Optical Grid Plates/Reference Planes

Range Field of view ^{note 5}	Best Uncertainty (\pm) ^{notes 1, 4} 0.2 μm	Remarks CMM (optical), Measurements taken within camera field of view
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Range in mm 0 to 848	Best Uncertainty (\pm) ^{notes 1, 4} (0.54 + 0.40L) μm	Remarks CMM (optical), maximum length and width (600 x 600) mm
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NVLAP Code: 20/D09
Roundness

Range to 6 inches Diameter and 4 inches Height	Best Uncertainty (\pm) ^{note 1} 0.1 μm	Remarks Roundness Instrument
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NVLAP Code: 20/D12
Surface Texture

Range 41 μin to 120 μin (1.04 μm to 3.05 μm) 13 μin to 40 μin (0.33 μm to 1.02 μm) 12 μin (0.31 μm)	Best Uncertainty (\pm) ^{note 1} 5.03 μin (0.13 μm) 1.74 μin (0.044 μm) 0.85 μin (0.021 μm)	Remarks Ra (Roughness Average) Ra (Roughness Average) Ra (Roughness Average)
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NVLAP Code: 20/D15
Two Dimensional Gages

Range in m 0 to 0.9 Diagonal 0 to 1.3 Diagonal	Best Uncertainty (\pm) ^{notes 1, 4} (0.45 + 0.52L) μm (0.45 + 0.66L) μm	Remarks Moore M32 CMM Moore M48 CMM
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NVLAP Code: 20/D16
Coordinate Measuring Machines

Range in m	Best Uncertainty (\pm) ^{notes 1, 4}	Remarks
0 to 1.0 Diagonal	(0.55 + 0.64L) μm	Spatial Moore M32 CMM
0 to 1.4 Diagonal	(0.55 + 0.80L) μm	Spatial Moore M48 CMM

NVLAP Code: 20/D18
Gears

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
to 14 inches Diameter	0.9 μm	CMM for Involute Profile
to 6 inches Diameter and Infinite Lead	0.8 μm	CMM for Helix
to 6 inches Diameter and 99 inches Lead	0.9 μm	CMM for Helix
to 6 inches Diameter and 32 inches Lead	1.1 μm	CMM for Helix
to 6 inches Diameter and 16 inches Lead	1.2 μm	CMM for Helix
to 6 inches Diameter and 11 inches Lead	1.3 μm	CMM for Helix
to 6 inches Diameter (pin offset)	0.7 μm	CMM for Pin Master
to 6 inches Diameter (pin diameter)	0.5 μm	CMM for Pin Master
to 6 inches Diameter (pin roundness)	0.3 μm	Federal Formscan for Pin Master
to 24 inches Diameter	1.6 arcseconds	CMM for Index and Runout

TIME AND FREQUENCY

NVLAP Code: 20/F01
Frequency Dissemination

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
1 MHz, 5 MHz, 10 MHz	8.8×10^{-12}	NIST FMAS

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

MECHANICAL

NVLAP Code: 20/M08

Mass

<i>Range</i>	<i>Best Uncertainty (±)</i> ^{note 1}	<i>Remarks</i>
30 kg	22 mg	Echelon II
25 kg	21 mg	Echelon II
20 kg	14 mg	Echelon II
10 kg	14 mg	Echelon II
5 kg	2.6 mg	Echelon II
3 kg	1.9 mg	Echelon II
2 kg	1.9 mg	Echelon II
1 kg	0.13 mg	Echelon II

THERMODYNAMIC

NVLAP Code: 20/T05

Pressure

<i>Range</i>	<i>Best Uncertainty (±) ppm</i> ^{note 1}	<i>Remarks</i>
Pneumatic Deadweight Piston Gauge (absolute Mode) - Direct Pressure Comparison		
1.2 psia to 23.6 psia (8.3 kPa to 162.7 kPa)	500	Nitrogen
5.7 psia to 95.6 psia (39.3 kPa to 659.1 kPa)	101	Nitrogen
41.9 psia to 1001.6 psia (288.9 kPa to 6905.8 kPa)	45	Nitrogen
Pneumatic Deadweight Piston Gauge (Gauge Mode) - Direct Pressure Comparison		
1.2 psig to 23.6 psig (8.3 kPa to 162.7 kPa)	26	Nitrogen
5.7 psig to 95.6 psig (39.3 kPa to 659.1 kPa)	22	Nitrogen
41.9 psig to 1001.6 psig (288.9 kPa to 6905.8 kPa)	43	Nitrogen
Hydraulic Deadweight Piston Gauge (Gauge Mode) - Direct Comparison		
203 psig to 3771 psig (1.4 MPa to 26 MPa)	60	Oil
2031 psig to 19 870 psig (14 MPa to 137 MPa)	70	Oil

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4061 psig to 39 595 psig (28 MPa to 273 MPa)

70

Oil

NVLAP Code: 20/T07

Resistance Temperature Devices

Range in °C

0.01 to 29.7646

Best Uncertainty (\pm)^{note 1}

0.0027 °C

Remarks

Comparison

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1. Represents an expanded uncertainty using a coverage factor, $k = 2$, at an approximate level of confidence of 95 %.
 2. Realizable uncertainty depends on frequency being measured, customer requirements, and suitability of customer's equipment.
 3. L is length in inches.
 4. L is length in meters.
 5. Glass Reticles, Stage Micrometers, Glass Magnification Scales, Orthogonality Standards, and Calibration Charts.

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