



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Certified Calibration Svc.
917 Industry Drive, Tukwila, WA 98188

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

**ISO/IEC 17025:2017
& Meets the Requirements of
ANSI/NCSL Z540.1-1994 and ANSI/NCSL Z540.3-2006**

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Dimensional, Electrical, Mass, Force, and Weighing Devices, Mechanical, Thermodynamic, and Time & Frequency Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President/Operations Manager

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:

July 31, 2012

Issue Date:

August 01, 2022

Expiration Date:

September 30, 2024

Accreditation No.:

71484

Certificate No.:

L22-520

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com



Certificate of Accreditation: Supplement

Certified Calibration Svc.

917 Industry Drive, Tukwila, WA 98188
 Contact Name: Ineke Wolff Phone: 425-255-1485

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Bore Gages and Bore Micrometers ^F	Up to 14 in	(6.7 + 1.8D) μ in	P & W Labmaster TM ULM175 w\ GageCal control, Ring Gage; CCS-0029-CAL P&W D10554010
		(20 + 10L) μ in	Gage Blocks, Master Ring Gages; CCS-0029-CAL P&W D10554010
Calipers ^{FO}	Up to 12 in	(102 + 2L) μ in	Gage Blocks, Plain Ring Gage; CCS-0008-CAL
	12 in to 80 in	(127 + 4L) μ in	
Thickness Gages ^F (Feeler Type)	0.001 to 0.05 in	45 μ in	Mitutoyo MDH-1-M NAVAIR 17-20MD-15
Countersink Gages ^F	0.020 in to 0.250 in (60 to 120 Degrees)	500 μ in	Gage Blocks, Ring Gage; CCS-0068-CAL
Chamfer Gages ^F	0.020 in to 3.0 in (90 to 127 Degrees)	540 μ in	T.O.33K6-4-2732-1
Height Gage ^F	Up to 24 in	210 μ in	Gage Blocks; CCS-0010-CAL
Height Master ^F	Up to 24 in	(4.6 + 2L) μ in	Comparison to master gage blocks; CCS-0010-CAL
Linear Gage with Counter/ Reader ^F	Up to 2 in long	15 μ in	
Linear Indicators Dial and Test ^F	0.05 in to 6 in	(0.6 + 10L) μ in	Gage Blocks; CCS-0012-CAL
	Up to 12 in	(6.7 + 1.8L) μ in	P & W Labmaster TM ULM175 w\ GageCal control, Gage Blocks; CCS-0012-CAL P&W D10554010
Outside Micrometers ^F	Up to 1 in	4.2 μ in	Gage Blocks and Optical Flat; CCS-0009-CAL P&W D10554010
	0.05 in to 40 in	(6.6 + 2.0L) μ in	
Inside Micrometers ^F	Up to 40 in	(15 + 2.0L) μ in	Gage Blocks and Master Ping Gages; CCS-0009-CAL CCS-0011-CAL CCS-0012-CAL CCS-0063-CAL P&W D10554010
Depth Micrometers ^F	Up to 12 in	(12 + 2.0L) μ in	
V-Anvil Micrometers ^F	Up to 2 in	(31 + 18L) μ in	
Pitch Micrometers ^F	1 in to 6 in	(53 + 8L) μ in	
Micrometer Heads ^F	Up to 2 in	32L μ in	P & W Labmaster TM ULM175 w\ GageCal control; CCS-0009-CAL P&W D10554010 T.O.33K6-4-15-1



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Diameter External ^F	0.05 in to 10 in	(20 + 11L) μ in	Gage Blocks Mitutoyo MDH-1-M, Micrometers Master Ring Gages Electronic Gaging and Amp P&W D10554010 CCS-0027-CAL CCS-0028-CAL CCS-0060-CAL
Diameter Internal ^F	0.05 in to 12 in	(20 + 11L) μ in	
Major Diameter Thread Plugs ^F	0.04 in to 7 in	(7 + 1.8D) μ in	P & W Labmaster TM ULM175 w\ GageCal control and Thread Wires P&W D10554010 NAVAIR 17-20MD-141
Pitch Diameter Thread Plugs ^F		(98 + 0.25D) μ in	
Thread Ring Pitch Diameter ^F	0.125 in to 14 in	(7 + 1.8D) μ in	P & W Labmaster TM ULM175 w\ GageCal control and Thread Wires; P&W D10554010 NAVAIR 17-20MD-141 NAVAIR 17-20MD-149
Rules-Scale ^F	0.05 in to 144 in	340 μ in	Master Glass Precision Rule w\ Reticle Master Rule, Gage Blocks; CCS-0010- CAL CCS-0055- CAL
Tape Measure ^F	0.05 in to 540 in	0.006 1 in	
Mu-Checker with Linear or Lever Head Gage ^F	0.5 in	8.5 μ in	Gage Blocks; CCS-0071-CAL
Gage Blocks ^F	0.05 in to 4 in	(4.5 + 1.5L) μ in	P&W Labmaster TM ULM175 w\ GageCal control, Master Gage Blocks; CCS-0060-CAL P&W D10554010 ASME B89.7.3.1 (R2019)
	4.1 in to 12 in	(6.7 + 1.5L) μ in	
	12.1 in to 20 in	(8.1 + 1.5L) μ in	
Cylindrical Measure Rings Gages ^F	0.125 in to 14 in	(6.7 + 1.8D) μ in	P&W Labmaster TM ULM175 w\ GageCal control, Master Gage Blocks, Master Rings Gages; CCS-0027-CAL CCS-0028-CAL P&W D10554010
Cylindrical Plugs, Pins, Wires, Disks Gages ^F Class XX, X, Z & ZZ	0.04 to 1 in	18.8 μ in	Mitutoyo MDH-1-M CCS-0027-CAL Master Gage Blocks



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Electrical

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Temperature Calibrators Thermometers Indication and Control Equipment used with Thermocouple Type E ^{FO}	-270 °C to -245 °C	1.1 °C	ECTRON 1140A CCS-0005-CAL CCS-0037-CAL
	-245 °C to -195 °C	0.16 °C	
	-195 °C to -155 °C	0.09 °C	
	-155 °C to -90 °C	0.07 °C	
	-90 °C to 15 °C	0.06 °C	
	15 °C to 890 °C	0.06 °C	
	890 °C to 1 000 °C	0.06 °C	
Temperature Calibrators Thermometers Indication and Control Equipment used with Thermocouple Type J ^{FO}	-219 °C to -180 °C	0.1 °C	
	-180 °C to -120 °C	0.09 °C	
	-120 °C to -50 °C	0.07 °C	
	-50 °C to 990 °C	0.06 °C	
	990 °C to 1 200 °C	0.07 °C	
Temperature Calibrators Thermometers Indication and Control Equipment used with Thermocouple Type K ^{FO}	270 °C to -255 °C	1.9 °C	
	-255 °C to -195 °C	0.4 °C	
	-195 °C to -115 °C	0.11 °C	
	-115 °C to -55 °C	0.08 °C	
	-55 °C to 1 000 °C	0.07 °C	
	1 000 °C to 1 372 °C	0.08 °C	
Temperature Calibrators Thermometers Indication and Control Equipment used with Thermocouple Type R ^{FO}	-50 °C to -30 °C	0.58 °C	
	-30 °C to 45 °C	0.48 °C	
	45 °C to 160 °C	0.32 °C	
	160 °C to 380 °C	0.26 °C	
	380 °C to 775 °C	0.21 °C	
	775 °C to 1 768.1 °C	0.18 °C	
Temperature Calibrators Thermometers Indication and Control Equipment used with Thermocouple Type S ^{FO}	-50 °C to -30 °C	0.53 °C	
	-30 °C to 45 °C	0.47 °C	
	45 °C to 105 °C	0.34 °C	
	105 °C to 310 °C	0.3 °C	
	310 °C to 615 °C	0.25 °C	
	615 °C to 1 768.1 °C	0.22 °C	



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Temperature Calibrators Thermometers Indication and Control Equipment used with Thermocouple Type T ^{FO}	-270 °C to -255 °C	1.6 °C	ECTRON 1140A CCS-0005-CAL CCS-0037-CAL
	-255 °C to -240 °C	0.35 °C	
	-240 °C to -210 °C	0.24 °C	
	-210 °C to -150 °C	0.15 °C	
	-150 °C to -40 °C	0.1 °C	
	-40 °C to 100 °C	0.07 °C	
	100 °C to 400 °C	0.06 °C	
Temperature Indication and Control Equipment used with RTD 100 Ω ^{FO}	-200 °C to 800 °C	0.4 °C	Fluke 712 CCS-0005-CAL CCS-0057-CAL
Temperature Indication and Control Equipment used with RTD 1 000 Ω ^{FO}	-200 °C to 630 °C	0.4 °C	
Temperature Indication and Control Equipment used with Thermocouple Type J ^{FO}	-120 °C to 0 °C	0.6 °C	Fluke 714 Calibrator CCS-0005-CAL CCS-0037-CAL CCS-0057-CAL
	0 °C to 800 °C	0.4 °C	
	800 °C to 1 200 °C	0.5 °C	
Temperature Indication and Control Equipment used with Thermocouple Type K ^{FO}	-200 °C to 0 °C	0.8 °C	
	0 °C to 1 000 °C	0.5 °C	
	1 000 °C to 1 372 °C	0.7 °C	
Temperature Indication and Control Equipment used with Thermocouple Type T ^{FO}	-250 °C to 0 °C	0.8 °C	
	0 °C to 400 °C	0.4 °C	
Resistance and Pt 385/Pt 392 Measure ^F	0 Ω to 300 Ω	0.002 7 Ω	PREMA 5017 DMM CCS-0005-CAL CCS-0057-CAL
	300 Ω to 3 k Ω	0.000 018 Ω	
	30 k Ω	0.000 26 Ω	
Equipment to Output DC Voltage ^F	0 mV to 300 mV	0.000 094 mV	PREMA 5017 DMM CCS-0002-CAL CCS-0005-CAL CCS-0014-CAL CCS-0057-CAL
	300 mV to 3 V	0.000 003 8 mV	
	3 V to 30 V	0.000 12 mV	
Equipment to Output DC Current ^F	200 μ A	0.016 μ A	
	2 mA	0.000 13 mA	
	20 mA	0.000 12 mA	
	200 mA	0.016 mA	
	2 A	0.000 15 A	



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Accreditation is granted to the facility to perform the following calibrations:

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Analytical and Precision Balance/Scale ^{FO}	1 mg	0.016 mg	Direct comparison with; ASTM E617, Class 1; CCS-0024-CAL CCS-0055-CAL
	2 mg	0.015 mg	
	5 mg	0.013 mg	
	10 mg	0.016 mg	
	20 mg	0.017 mg	
	30 mg	0.012 mg	
	50 mg	0.013 mg	
	100 mg	0.014 mg	
	200 mg	0.012 mg	
	500 mg	0.013 mg	
	1 g	0.015 mg	
	2 g	0.017 mg	
Analytical and Precision Balance/ Scale ^{FO}	5 g	0.015 mg	Direct comparison with; ASTM E617, Class 1 CCS-0024-CAL CCS-0055-CAL
	10 g	0.022 mg	
	20 g	0.039 mg	
	50 g	0.32 mg	
	100 g	0.13 mg	
	200 g	0.13 mg	
	500 g	0.12 g	
	1 000 g	0.12 g	
	2 000 g	0.13 g	
	5 000 g	0.17 g	
	10 000 g	0.27 g	
	20 000 g	0.3 g	



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Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Balances/ Scales ^{FO}	1 g	0.86 mg	Direct comparison with; ASTM E617, Class F; CCS-0024-CAL
	2 g	0.84 mg	
	5 g	0.91 mg	
	10 g	1.3 mg	
	20 g	2.3 mg	
	50 g	6.2 mg	
	100 g	12 mg	
	200 g	16.4 mg	
	500 g	21 mg	
	1 kg	30.3 mg	
	2 kg	67.5 mg	
	5 kg	0.14 g	
	10 kg	0.56 g	
	20 kg	0.49 g	
50 kg	0.58 g		



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Accreditation is granted to the facility to perform the following calibrations:

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Pressure Gages ^{FO}	- 14.5 psig to - 4 psig	0.001 6 psig	AMETEK - Crystal XP2i AMETEK – Crystal FastCalXP; CCS-0003-CAL CCS-0004-CAL CCS-0013-CAL T.O.33K6-4-278-1
	- 4 psig to 0.03 psig	0.004 3 psig	
	0.03 psig to 120 psig	0.019 psig	
	120 psig to 200 psig	0.03 psig	
	200 psig to 300 psig	0.038 psig	
	300 psig to 500 psig	0.054 psig	
	500 psig to 600 psig	0.072 psig	
	600 psig to 800 psig	0.097 psig	
	800 psig to 1 000 psig	0.16 psig	
	1 000 psig to 1 500 psig	0.18 psig	
	1 500 psig to 2 100 psig	0.25 psig	
	2 100 psig to 2 500 psig	0.3 psig	
	2 500 psig to 3 000 psig	0.36 psig	
	3 000 psig to 4 000 psig	0.48 psig	
	4 000 psig to 5 000 psig	0.6 psig	
	5 000 psig to 6 000 psig	0.72 psig	
6 000 psig to 7 000 psig	0.84 psig		
7 000 psig to 8 000 psig	0.96 psig		
8 000 psig to 10 000 psig	1.3 psig		
Pressure Gages ^{FO}	-14 psig to 0 psig	0.013 psig	Fluke 717-300G Pressure Calibrator; CCS-0003-CAL CCS-0004-CAL CCS-0013-CAL T.O.33K6-4-278-1
	Up to 60 psig	0.016 psig	
	60 psig to 180 psig	0.022 psig	
	180 psig to 240 psig	0.023 psig	
	240 psig to 300 psig	0.047 psig	
Durometers ^{FO} Spring Calibration (Force Only) Type A & D Type M	Up to 100 Duro	0.43 Duros	Note: this is a limited calibration of ASTM D-2240 Balance; CCS-0026-CAL ASTM Class 1 Weights ASTM D 2240-03
	Up to 1 000 Duro	1.9 Duros	



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Mechanical

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Torque Wrenches, Screwdrivers ^F	15 in•oz to 200 in•oz	0.33 % of reading	CDI Torque Loader, Monitor and Transducers; CCS-0025-CAL CCS-0030-CAL CCS-0059-CAL 20-2100-CDI
	4 in•lb to 50 in•lb	0.33 % of reading	
	30 in•lb to 400 in•lb	0.33 % of reading	
	80 in•lb to 1 000 in•lb	0.33 % of reading	
	20 ft•lb to 250 ft•lb	0.34 % of reading	
	60 ft•lb to 600 ft•lb	0.34 % of reading	
Torque Wrenches Screwdriver ^F	5 in•lbf to 50 in•lbf	0.3 % of reading	CLECO P-5 Digital Analyzer; CCS-0025-CAL
Torque Tester, Torque Transducers ^F	15 in•oz to 200 in•oz	0.6 % of reading	Calibration Arms and Wheels; ASTM E 617 Weights CCS-0059-CAL 20-2100-CDI
	4 in•lb to 50 in•lb	0.12 % of reading	
	30 in•lb to 400 in•lb	0.12 % of reading	
	80 in•lb to 1 000 in•lb	0.12 % of reading	
	20 ft•lb to 250 ft•lb	0.12 % of reading	
	60 ft•lb to 600 ft•lb	0.15 % of reading	

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Measurement Thermocouple ^F	-95 °C to 232 °C	0.08 °C	Fluke MET/TEMP II Fluke 1524 w/ Fluke 5609-20 PRT and Fluke 1529 Fluke 1529 w/ Rosemount 162CE SPRT Kaye IRTD-400 Liquid Baths, Ultra Cool Dry-Blocks and High-Temp Dry-Blocks; CCS-0005-CAL CCS-0006-CAL CCS-0007-CAL CCS-0057-CAL
	>232 °C to 660 °C	0.11 °C	
Temperature Measurement Thermocouple Type T ^{FO}	-200 °C	0.76 °C	Fluke 1586A Super DAQ Fluke 1586-2588 DAQ-STAQ Multiplexer; CCS-0005-CAL CCS-0006-CAL CCS-0007-CAL CCS-0057-CAL
	0 °C	0.3 °C	
	200 °C	0.23 °C	
	400 °C	0.2 °C	
Temperature Measurement Thermocouple Type E ^{FO}	-200 °C	0.64 °C	CCS-0007-CAL CCS-0057-CAL
	0 °C	0.27 °C	
	300 °C	0.21 °C	



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Thermodynamic

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Temperature Measurement Thermocouple Type J ^{FO}	0 °C to 260 °C	0.21 °C	Fluke 1586A Super DAQ; Fluke 1586-5688 High-Capacity Modules Fluke 1524 w\ 1509-20 PRT, Fluke 1524 w\ S Probe, Kaye-Masy IRTD-400 Reference Ovens, TQAero Software; CCS-0057-CAL
Temperature Measurement Thermocouple Type K ^{FO}	400 °C to 1 000 °C	1.4 °C	
Temperature Measurement PRT/RTD 100 Ω 2 - 3 ^{FO}	-200 °C to 660 °C	0.1 °C	Fluke 1586A Super DAQ Fluke 1586-2588 DAQ-STAQ Multiplexer; CCS-0005-CAL CCS-0057-CAL
Temperature Measurement PRT/RTD 100 Ω 4 Wire ^{FO}	-200 °C to 660 °C	0.072 5 °C	
Temperature Measurement Spot-Check Application, Environmental Chambers, Field Calibrations ^{FO}	-196 °C	0.002 7 °C	Fluke 1524 w/ Fluke 5609 PRT; CCS-0005-CAL CCS-0007-CAL CCS-0054-CAL CCS-0057-CAL
	-39 °C	0.002 6 °C	
	0 °C	0.001 7 °C	
	232 °C	0.004 5 °C	
	420 °C	0.006 °C	
	660 °C	0.014 °C	
Temperature and Relative Humidity Measurement Environmental Chambers ^{FO}	0 °C to 30 °C	0.1 °C	Rotronic HC2A-S and HW4 Temperature/Humidity Generator/Chamber; CCS- 0001-CAL
	5 % RH to 35 % RH	1.2 % RH at 23 \pm 2 °C	
	50 % RH to 95 % RH	1.3 % RH at 23 \pm 2 °C	
	-40 °C to 85 °C	0.2 °C	Vaisala HM70 and HMP77; CCS-0001-CAL CCS-0054-CAL CCS-0065-CAL, Vaisala M210566EN-G
	10 % RH to 90 % RH	1.5 % RH at 23 \pm 2 °C	
	>90 % RH to 100 % RH	2.0 % RH at 23 \pm 2 °C	
	23 °C	0.1 °C	
	0 %RH to 40 %RH	0.5 %RH at 23 °C	
	>40 %RH to 95 %RH	0.8 %RH at 23 °C	
Temperature Measurement ^F RTD/PRT/Thermistor ^F Verification by Comparison Digital and Dial Thermometers ^F	-196 °C	0.0046 °C	Kaye/MASY IRTD-400 Fluke 1524 w/ Fluke 5609-20 PRT Baths and Reference Ovens; CCS-0005-CAL CCS-0006-CAL CCS-0007-CAL CCS-0057-CAL
	-39 °C	0.0029 °C	
	0 °C	0.0021 °C	
	232 °C	0.0051 °C	
	420 °C	0.007 2 °C	
	660 °C	0.014 °C	



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Time & Frequency

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Stopwatches, Timers, Counters ^{FO}	10 s to 86 400 s	0.49 s per 24 hr	NIST Time Frequency ; CCS-0002-CAL NIST Time SOP 2281

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^F would mean that the laboratory performs this calibration at its fixed location.
4. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
6. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
7. The term D represents diameter in inches or millimeters as appropriate to the uncertainty statement.