



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Servicios Metrológicos Mundiales S.A. de C.V
Islas Vírgenes # 2117, Colonia Jardines de la Cruz
Guadalajara, Jalisco, México. CP. 44950

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

ISO/IEC 17025:2017

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, Mechanical, Acoustic, Time and Frequency, Mass, Force and Weighting Devices, Chemical, Thermodynamic and Electrical 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

<i>Initial Accreditation Date:</i>	<i>Issue Date:</i>	<i>Expiration Date:</i>
January 31, 2017	March 05, 2019	April 30, 2021
<i>Revision date:</i>	<i>Accreditation No.:</i>	<i>Certificate No.:</i>
March 30, 2020	88795	L19-120-R1

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.pjilabs.com



Certificate of Accreditation: Supplement

Servicios Metrológicos Mundiales S.A. de C.V

Islas Vírgenes # 2117 Colonia Jardines de la Cruz
Guadalajara, Jalisco, México. CP. 44950

Contact Name: Miguel Felipe Ordaz Higareda Phone: 333 983-6308

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
Caliper ^{FO}	0.5 mm to 600 mm	$(12.1 + 3.5 \times 10^{-3}L) \mu\text{m}$	NMX-CH-002 Block Set Gage, Grade 0 or 1 and Step Master
Outside Micrometer ^{FO}	0.5 mm to 300 mm	$(7.18 \times 10^{-1} + 8.94 \times 10^{-3}L) \mu\text{m}$	NMX-CH-036- Set Block, Gage Grade 0 or 1
Height Gage ^{FO}	0.5 mm to 600 mm	$(13.6 + 5 \times 10^{-3}L) \mu\text{m}$	NMX-CH-141 Master Block 0 or 1 Height Master Mitutoyo
Indicator ^{FO}	0.5 mm to 50 mm	$(7.9 + 1.04 \times 10^{-3}L) \mu\text{m}$	NMX-CH-036- Set Block Gage Grade 0 or 1
Angle Calibration ^{FO}	0° to 90° (4 quadrants)	0.12°	Anglemeter Pittsburg VDI/VDE 2648-1 Part1
Surfaces Plate ^{FO} (flatness)	0.003 in (0.0762 mm)	0.00013 in (0.003 mm)	Electronic Gage Starret \\ DIN 876
	0.000 3 in (0.00762 mm)	0.000 019 in (0.000 48 mm)	
Thickness Gauge ^{FO}	20 μm to 1 450 μm	0.049 μm	Galga of Calibration Elcometer ASTM D7091-13 ASTM E376-17

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 Gauges ^{FO}	20 psi to 200 psi (0.14 MPa to 1.38 MPa)	0.32 psi (2.21 kPa)	Hathaway Pressure Calibrator Mod. Beta Gauge II NMX-CH-003-SCFI-Valid
	600 psi to 3 000 psi (4.14 MPa to 20.68 MPa)	4.8 psi (33.09 kPa)	Digital Manometer KOBOLD
	3 000 psi to 5 400 psi (20.68 MPa to 37.23 MPa)	6.5 psi (44.82 kPa)	Mod. DSD-5600 NMX-CH-003-SCFI-Valid
	1 000 psi to 5 000 psi (6.90 MPa to 34.47 MPa)	6.2 psi (42.75 kPa)	Digital Manometer KELLER
	5 000 psi to 9 000 psi (34.47 to 62.05 MPa)	9.7 psi (66.88 kPa)	Mod. LEO 1 NMX-CH-003-SCFI-Valid



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Pressure Gauges ^{FO}	-12 psi to -1.2 psi (-0.1 MPa to 0 MPa)	0.009 psi (0.062 kPa)	Hathaway Pressure Calibrator Mod. Beta Gauge II NMX-CH-003-SCFI-Valid
	15 psi to 150 psi (0.1 MPa to 1.03 MPa)	0.088 psi (0.061 kPa)	
	30 psi to 300 psi (0.21 MPa to 2.07 MPa)	0.089 psi (0.061 kPa)	
	3 bar to 30 bar (0.3 MPa to 3 MPa)	0.09 bar (9 kPa)	Digital Manometer KELLER Mod. LEO 2 NMX-CH-003-SCFI-Valid
Pressure Cell ^O	1 psi to 9 psi (6.90 kPa to 62.053 kPa)	0.02 psi (0.14 kPa)	Hathaway Pressure Calibrator Mod. Beta Gauge II NMX-CH-003-SCFI-Valid
Differential Pressure ^O	-20 inH ₂ O to 20 inH ₂ O (-4.98 kPa to 4.98 kPa)	0.22 inH ₂ O (0.005 kPa)	Digital Pressure Differential Extech Mod. HD700 NMX-CH-003- SCFI-Valid
Torque Meter ^{FO}	50 lbf·in to 150 lbf·in (5.65 N·m to 16.95 Nm)	1.3 lb·in (0.15 Nm)	Torque Meter Urrea Mod.6205 ASME B107.300 (CW & CCW)
	150 lbf·in to 240 lbf·in (16.95 Nm to 27.12 N·m)	1.9 lb·in (0.22 Nm)	
Equipment to Measure Torque ^O	40 lbf·in to 200 lbf·in (4.52 N·m to 22.6 N·m)	3.6 lb·in (0.41 Nm)	Torsional Torque Calibrator Snap-on Mod. 16 ASME B107.300-Valid (CW & CCW)
	35 lbf·ft to 90 lbf·ft (47.45 N·m to 122.02 N·m)	0.66 lb·ft (0.9 Nm)	Torque Pair Transducer Power Built Mod.940962 ASME B107.300-Valid (CW & CCW)
	90 lbf·ft to 140 lbf·ft (122.02 N·m to 189.82 Nm)	0.96 lbf·ft (1.3 lbf·ft)	
	39.9 N·m to 119.7 N·m (29.43 lbf·ft to 88.29 lbf·ft)	0.49 N·m (0.36 lbf·ft)	Torque Pair Analyzer Tohnichi Mod.LC200N ASME B107.300-Valid (CW)
	119.7 Nm to 199.5 Nm (88.29 lbf·ft to 147.144 lbf·ft)	0.78 N·m (0.58 lbf·ft)	
	25 N·m to 250 N·m (18.44 lbf·ft to 184.39 lbf·ft)	0.37 N·m (0.27 lb·ft)	Torsional Torque Calibrator Saltus Mod.PRG-T250 ASME B107.300-Valid
	148 lbf·ft to 295 lbf·ft (200.66 N·m to 399.97 N·m)	2.3 lbf·ft (3.12 Nm)	Torque Pair transducer American Mod.RJ-11043N ASME B107.300-Valid
	295 lbf·ft to 443 lbf·ft (399.97 Nm to 600.63 Nm)	3.4 lbf·ft (4.6 Nm)	



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Equipment to Measure Torque ^O	443 lbf-ft to 590 lbf-ft (600.63 Nm to 799.94 Nm)	4.5 lbf-ft (6.1 Nm)	Torque pair transducer American Mod.RJ-11043N ASME B107.300-Valid
	590 lbf-ft to 738 lbf-ft (799.94 Nm to 1 000.59 Nm)	5.6 lbf-ft (7.6 Nm)	
Kinematic Viscosity Ford, Zahn, DIN, ISO and Shell Cups @ 25 °C ^O	121.7 mm ² /s	0.5 mm ² /s	Viscosity Reference Standard Standard Stopwatch Master Blocks Grade 0 ASTM D2162 - 17
Multi Drive Testing ^O	Force: Up to 6 kN	5 % of reading	-Class M1 weights -Tachometer & Velocity Meter Extech Optical Tachometer Adapter Transmille EA003 -Force Calibration a Load Cell and Universal Testing Machine (ISO 7500-1 and ISO 376.
	Velocity: Up to 200 km/hr	1.5 % of reading	
Automotive Multi Aiming Station ^O	Distance: Up to 10 000 mm	0.92 mm	Distance Meter Extech Angle Meter Extech Guidelines for Calibration of Dynamometers CENAM
	Angle: 0° x 4 quad to 90° x 4 quad	0.12°	
Frame Non-Contact Wheel Alignment Tester ^O	Distance: Up to 3 000 mm	0.92 mm	
	Angle: 0° x 4 quad to 90° x 4 quad	0.12°	
Safety Valve ^F	Up to 400 psi (Up to 28 kg/cm ²)	0.14 psi (0.01 kg/cm ²)	Hathaway Pressure Calibrator Mod.: Beta Gauge II NOM-093-SCFI

Acoustic

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
Sound Level Meter ^{FO}	94 dB and 114 dB	1.2 dB	Sound Level Calibrator ND9B @ 1 kHz IEC 60942:2017



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

Time and Frequency

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Stopwatch and Timers ^{FO}	0.01 s to 36 000 s	7.4 s/day	Stopwatch Control Company Mod. 300 Memory DRAFT SOP 24-NIST
Tachometer ^{FO}	240 rpm to 1000 rpm (10.47 rad/s to 104.72 rad/s)	0.17 rpm (0.018 rad/s)	Optical Tachometer Adapter Transmille EA003 Tachometer Calibration Guide by I.N.M. (Institute National of Metrology of Colombia)
	1 000 rpm to 60 000 rpm (104.72 rad/s to 6 283.19 rad/s)	1.8 rpm (0.181 rad/s)	

Mass, Force and Weighting 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
Weights Class F2 ^F	10 kg	53 mg	Class F1 OIMLR 111 Weight Set Double Substitution
	5 kg	27 mg	
	2 kg	10 mg	
	1 kg	5.3 mg	
	500 g	2.7 mg	
	200 g	1 mg	
	100 g	0.53 mg	
	50 g	0.33 mg	
	20 g	0.27 mg	
	10 g	0.2 mg	
	5 g	0.17 mg	
	2 g	0.13 mg	
	1 mg	0.1 mg	
	500 mg	0.083 mg	
	200 mg	0.067 mg	
	100 mg	0.053 mg	
50 mg	0.04 mg		
20 mg	0.033 mg		
10 mg	0.027 mg		



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Weights Class M1 ^F	10 kg	170 mg	Class F1 OIML R111 Weights Set Double Substitution
	5 kg	83 mg	
	2 kg	33 mg	
	1 kg	17 mg	
	500 g	8.3 mg	
	200 g	3.3 m	
	100 g	1.7 mg	
	50 g	1 mg	
	20 g	0.83 mg	
	10 g	0.67 mg	
	5 g	0.53 mg	
	2 g	0.4 mg	
	1 g	0.33 mg	
	500 mg	0.27 mg	
	200 mg	0.2 mg	
	100 mg	0.17 mg	
50 mg	0.13 mg		
20 mg	0.1 mg		
10 mg	0.083 mg		
Weights Class M2 ^F	20 kg	1 000 mg	Class M1 OIML R111 Weights Set Double Sustitution
	10 kg	550 mg	
	5 kg	270 mg	
	2 kg	100 mg	
	1 kg	53 mg	
	500 g	27 mg	
	200 g	10 mg	
	100 g	5.3 mg	
	50 g	3.3 mg	
	20 g	2.5 mg	
10 g	2 mg		



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Weights Class M2 ^F	20 kg	3 300 mg	Class M1 OIML R111 Weights Set Double Substitution
	10 kg	1 600 mg	
	5 kg	800 mg	
	2 kg	300 mg	
	1 kg	167 mg	
	500 g	84 mg	
	200 g	34 mg	
	100 g	17 mg	
	50 g	10 mg	
	20 g	8.4 mg	
	10 g	3.4 mg	
Mechanical and Electronic Top Loader Balance ^O	0.001 g to 200 g (Res.= 0.000 5 g)	$(4.3 \times 10^{-5} + 3.79 \times 10^{-6}Wt)$ g	Master Weights Class F1 OIML R111
Scales ^O	100 g to 500 g (Res.= 0.005 g)	$(7.45 \times 10^{-4} + 4.59 \times 10^{-5}Wt)$ g	Master Weights Class M1 OIML R111
	500 g to 1 000 g (Res.= 0.02 g)	$(9.35 \times 10^{-3} + 2.87 \times 10^{-5}Wt)$ g	
	1 000 g to 10 000 g (Res.= 0.02 g)	$(3.8 \times 10^{-5}Wt)$ g	
	10 000 g to 20 000 g (Res.= 0.2 g)	$(6 \times 10^{-2} + 3.2 \times 10^{-5}Wt)$ g	
	20 000 g to 800 000 g (Res= 1 g)	$(1.44 \times 10^{-2} + 3.43 \times 10^{-5}Wt)$ g	

Chemical

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
Gas Detector Oxygen (O ₂) ^{FO}	5 100 mol/mol to 6 120 mol/mol	2 % of reading	Reference Material Oxygen 15 % Oxygen 18% IEC-60079-29-2 NOM-SECRE-007



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Chemical

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Gas Detector Carbon Monoxide (CO) ^{FO}	60 μ mol/mol to 100 μ mol/mol	2 % of reading	Reference Material CO ₂ 60 ppm and CO ₂ 100 ppm Master Gas RKI Instruments IEC-60079-29-2 NOM-SECRE-007
Gas Detector Hydrogen Sulfide (H ₂ S) ^{FO}	10 μ mol/mol to 25 μ mol/mol	2 % of reading	Reference Material H ₂ S 10 ppm and H ₂ S 25 ppm Master Gas RKI Instruments IEC-60079-29-2 NOM-SECRE-007
Gas Detector Methane (% LEL) ^{FO}	0.1 μ mol/mol to 2.5 μ mol/mol	2 % of reading	Reference Material Methane 10 %, 20 % and 50 % LEL IEC-60079-29-2 NOM-SECRE-007
Conductivity Meter ^{sFO}	10 mS/cm	0.26 mS/cm	Conductivity Standard ASTM D1125-95
	100 mS/cm	0.49 mS/cm	
	1 000 mS/cm	4.3 mS/cm	
Dissolved Oxygen Meter and Oxygen Meters ^O	Up to 15 000 ppm	0.1 % of reading	Zero Oxygen Standard Solution 15 ppm O ₂ to 1500 ppm O ₂ Solution 150 ppm O ₂ to 15 000 ppm O ₂ Hanna Instruments NMX-AA-012-SCFI

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
Direct reading Temperature ^{FO}	30 °C to 149 °C	0.11 °C	Jofra Dry Well NMX-CH-070
	150 °C to 199 °C	0.12 °C	
	200 °C to 300 °C	0.14 °C	
Temperature Measure Thermocouple Type B ^{FO}	600 °C to 1 820 °C	0.56 °C	Multifunction Calibration Transmille Model EA001A EURAMET cg-11
Temperature Measure Thermocouple Type C ^{FO}	10 °C to 2 316 °C	5.2 °C	
Temperature Measure Thermocouple Type E ^{FO}	-240 °C to 1 000 °C	1.2 °C	



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Thermodynamic

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Temperature Measure Thermocouple Type J ^{FO}	-200 °C to 1 200 °C	1.3 °C	Multifunction Calibration Transmille Model EA001A Euramet-cg-11
Temperature Measure Thermocouple Type K ^{FO}	-190 °C to 1 370 °C	4.6 °C	
Temperature Measure Thermocouple Type L ^{FO}	-200 °C to 900 °C	1.7 °C	
Temperature Measure Thermocouple Type N ^{FO}	-190 °C to 1 300 °C	1.3 °C	
Temperature Measure Thermocouple Type R ^{FO}	0 °C to 1 760 °C	1.3 °C	
Temperature Measure Thermocouple Type S ^{FO}	0 °C to 1 760 °C	0.91 °C	
Temperature Measure Thermocouple Type T ^{FO}	-240 °C to 400 °C	0.74 °C	
Temperature Measure Thermocouple Type U ^{FO}	-200 °C to 600 °C	1.2 °C	

Electrical

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
Equipment to Measure DC Voltage ^{FO}	200 mV to 2 V	8.3 μ V/V + 3.5 μ V	Multifunction Calibration Transmille Model 3050A Euramet-cg-15
	2 V to 220 V	8.3 μ V/V + 80 μ V	
	220 V to 1 kV	8.8 μ V/V + 0.5 mV	
Equipment to Measure AC Voltage	200 mV to 2 V	72 μ V/V + 0.6 μ V	
	2 V to 220 V	72 μ V/V + 2 μ V	
	220 V to 1 kV	77 μ V/V + 140 mV	
Equipment to Measure DC Current ^{FO}	200 μ A to 22 A	3.7 mA/A	
Equipment to Measure AC Current ^{FO}	200 μ A to 22 A	23 mA	
Equipment to Measure Frequency ^{FO}	10 kHz to 100 kHz	0.000 1 % of reading	
	100 Hz to 10 MHz	0.000 02 % of reading	
Equipment to Measure Resistance ^{FO}	0 M Ω to 100 M Ω	0.1 m Ω / Ω	
Equipment to Measure Capacitance ^{FO}	10 nF to 1 μ F	5.1 % of reading	



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Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type B ^F	600 °C to 1 820 °C	0.45 °C	Electrical Simulation of Thermocouple Output Multifunction Calibration Transmille Model EA001A 2011 Euramet-cg-11
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type C ^F	10 °C to 2 316 °C	0.35 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type E ^F	-250 °C to 1 000 °C	0.3 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type J ^F	-210 °C to 1 200 °C	0.2 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type K ^F	-200 °C to 1 370 °C	0.2 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type L ^F	-200 °C to 900 °C	0.1 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type N ^F	-200 °C to 1 300 °C	0.3 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type R ^F	0 °C to 1 760 °C	0.55 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type S ^F	0 °C to 1 760 °C	0.55 °C	
Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type T ^F	-250 °C to 400 °C	0.4 °C	



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Temperature Calibration, Indication, and Control. Equipment used with Thermocouple Type U ^F	-200 °C to 600 °C	0.15 °C	Electrical Simulation of Thermocouple Multifunction Calibration Transmille Model EA001A Euramet- cg-11

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.