



# PERRY JOHNSON LABORATORY ACCREDITATION, INC.

## Certificate of Accreditation

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

### **Weedon Engineering**

**5105 Buffalo Avenue, Jacksonville, FL 32206**

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

### **ISO/IEC 17025:2005**

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):

***Chemical, Dimensional, Electrical, Mass, Force, and Weighing,  
Mechanical and Thermodynamic 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:

*Initial Accreditation Date:*

December 9, 2011

*Issue Date:*

August 23, 2018

*Expiration Date:*

October 31, 2020

*Accreditation No.:*

69815

*Certificate No.:*

L18-393

Tracy Szerszen  
President/Operations Manager

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

*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.pjllabs.com](http://www.pjllabs.com)*



# Certificate of Accreditation: Supplement

## Weedon Engineering

5105 Buffalo Avenue, Jacksonville, FL 32206  
 Contact Name: Greg Weedon Phone: 904-355-8411

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

### 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 Detectors <sup>F</sup>			
Carbon Monoxide <sup>F</sup>	80 ppm to 120 ppm	1.2 % of reading	Gas Mixtures
Hydrogen Sulfide <sup>F</sup>	25 ppm to 35 ppm	1.2 % of reading	
Oxygen <sup>F</sup>	15 % to 21 %	1.3 % of reading	
Methane <sup>F</sup>	2 % Volume to 3% Volume	1.3 % of reading	Gas Mixtures with Correction Factors for Hydrogen Propane N-Butane N-Pentane N-Hexane N-Octane Methanol Ethanol Isopropyl Alcohol Acetone Ammonia Toluene Gasoline

### 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
Indicators <sup>FO</sup>	0.01 in to 1 in	83 $\mu$ in	Gage Blocks
Micrometer <sup>FO</sup>	0.01 in to 12 in	78 $\mu$ in	
Calipers <sup>FO</sup>	0.01 in to 12 in	138 $\mu$ in	
Thickness Gages <sup>FO</sup>	13.5 mL	5.2 mL	Polystyrene Blocks
	79.25 mL	3.4 mL	
	183.25 mL	7.1 mL	
	203.4 mL	7.1 mL	
Coating Thickness Gages Nonferrous and Ferrous <sup>FO</sup>	3.09 mL	0.2 mL	Coated Metal Plates
	10.05 mL	1.4 mL	
	50.30 mL	1.9 mL	



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### Electrical

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Equipment to Output DC Voltage <sup>FO</sup>	0.01 mV to 100 mV	0.058 mV + 0.07 % of reading	Fluke 8845A
	0.1 V to 1 V	0.058 V + 0.01 % of reading	
	1 V to 10 V	0.058 V + 0.01 % of reading	
	10 V to 100 V	0.058 V + 0.03 % of reading	
	100 V to 1 000 V	0.056 V + 0.23 % of reading	
Equipment to Measure DC Voltage <sup>FO</sup>	0.1 mV to 202 mV	4.44 $\mu$ V + 0.001 7 % of reading	Transmille 25PPM Multi-Product Calibrator
	0.2 V to 2.02 V	15.31 $\mu$ V + 0.001 3 % of reading	
	20 V to 202 V	8.04 mV + 0.001 9 % of reading	
	200 V to 1 025 V	10.6 mV + 0.003 % of reading	
Equipment to Measure DC Current <sup>FO</sup>	3 $\mu$ A to 202 $\mu$ A	34.82 nA + 0.006 % of reading	
	0.2 mA to 2.02 mA	137.07 nA + 0.002 2 % of reading	
	2 mA to 20.2 mA	444.62 nA + 0.002 5 % of reading	
	20 mA to 202 mA	21.27 $\mu$ A + 0.12 % of reading	
	0.2 A to 2.02 A	99.63 $\mu$ A + 0.006 % of reading	
	2 A to 30 A	1.44 mA + 0.001 8 % of reading	
Equipment to Output AC Voltage At the Listed Frequencies <sup>FO</sup>			Fluke 8845A
5 Hz to 10 Hz	0.01 mV to 100 mV	0.033 mV + 0.37 % of reading	
10 Hz to 20 kHz	0.01 mV to 100 mV	0.046 mV + 0.069 % of reading	
20 kHz to 50 kHz	0.01 mV to 100 mV	0.058 mV + 0.13 % of reading	
50 kHz to 100 kHz	0.01 mV to 100 mV	0.092 mV + 0.069 % of reading	
100 kHz to 300 kHz	0.01 mV to 100 mV	0.58 mV + 4.61 % of reading	
Equipment to Output AC Voltage At the Listed Frequencies <sup>FO</sup>			
3 Hz to 10 Hz	0.1 V to 1 V	0.21 V + 0.071 % of reading	
10 Hz to 20 kHz	0.1 V to 1 V	0.035 V + 0.069 % of reading	
20 kHz to 50 kHz	0.1 V to 1 V	0.081 V + 0.099 % of reading	
50 kHz to 100 kHz	0.1 V to 1 V	0.49 V + 0.13 % of reading	
100 kHz to 300 kHz	0.1 V to 1 V	0.058 V + 0.46 % of reading	



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Equipment to Output AC Voltage At the Listed Frequencies <sup>FO</sup>			Fluke 8845A
5 Hz to 10 Hz	1 V to 10 V	0.003 5 V + 0.4 % of reading	
10 Hz to 20 kHz	1 V to 10 V	0.035 V + 0.069 % of reading	
20 kHz to 50 kHz	1 V to 10 V	0.058 V + 0.13 % of reading	
50 kHz to 100 kHz	1 V to 10 V	0.092 V + 0.69 % of reading	
100 kHz to 300 kHz	1 V to 10 V	0.58 V + 4.61 % of reading	
Equipment to Output AC Voltage At the Listed Frequencies <sup>FO</sup>			
10 Hz to 20 kHz	10 V to 100 V	0.035 V + 0.069 % of reading	
20 kHz to 50 kHz	10 V to 100 V	0.058 V + 0.13 % of reading	
Equipment to Output AC Voltage At the Listed Frequencies <sup>FO</sup>			
10 Hz to 20 kHz	100 V to 750 V	0.035 V + 0.069 % of reading	
20 kHz to 50 kHz	100 V to 750 V	0.058 V + 0.13 % of reading	
Equipment to Measure AC Voltage At the Listed Frequencies <sup>FO</sup>			Transmille 25PPM Multi-Product Calibrator
10 Hz to 44 Hz	0.1 mV to 202 mV	65.28 $\mu$ V + 0.11 % of reading	
44 Hz to 999 Hz	0.1 mV to 202 mV	33.03 $\mu$ V + 0.02 % of reading	
1 kHz to 19.999 kHz	0.1 mV to 202 mV	47.78 $\mu$ V + 0.049 % of reading	
20 kHz to 99.999 kHz	0.1 mV to 202 mV	90.98 $\mu$ V + 0.17 % of reading	
100 kHz to 500 kHz	0.1 mV to 202 mV	564.67 $\mu$ V + 0.42 % of reading	
Equipment to Measure AC Voltage At the Listed Frequencies <sup>FO</sup>			
10 Hz to 44 Hz	0.2 V to 2.02 V	1 183.63 $\mu$ V + 0.077 % of reading	
44 Hz to 999 Hz	0.2 V to 2.02 V	281.83 $\mu$ V + 0.015 % of reading	
1 kHz to 19.999 kHz	0.2 V to 2.02 V	535.58 $\mu$ V + 0.034 % of reading	
20 kHz to 99.999 kHz	0.2 V to 2.02 V	3 277.49 $\mu$ V + 0.1 % of reading	
100 kHz to 500 kHz	0.2 V to 2.02 V	6.56 mV + 0.17 % of reading	



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Equipment to Measure AC Voltage At the Listed Frequencies <sup>FO</sup>			Transmille 25PPM Multi-Product Calibrator
10 Hz to 44 Hz	2 V to 20.2 V	6.55 mV + 0.1 % of reading	
44 Hz to 999 Hz	2 V to 20.2 V	1.93 mV + 0.016 % of reading	
1 Hz to 19.999 kHz	2 V to 20.2 V	3.2 mV + 0.033 % of reading	
20 kHz to 100 kHz	2 V to 20.2 V	45.92 mV + 0.1 % of reading	
Equipment to Measure AC Voltage At the Listed Frequencies <sup>FO</sup>			
30 Hz to 44Hz	20 V to 202 V	13.46 mV + 0.028 % of reading	
45 Hz to 999 Hz	20 V to 202 V	12 mV + 0.018 % of reading	
1 kHz to 20 kHz	20 V to 202 V	23.56 mV + 0.041 % of reading	
Equipment to Measure AC Voltage At the Listed Frequencies <sup>FO</sup>			
30 Hz to 44 Hz	200 V to 1 020 V	133.14 mV + 0.059 % of reading	
45 Hz to 999 Hz	200 V to 1 020 V	159.68 mV + 0.035 % of reading	
1 kHz to 10 kHz	200 V to 1 020 V	70.04 mV + 0.17 % of reading	
Equipment to Measure AC Current At the Listed Frequencies <sup>FO</sup>			
10 Hz to 44 Hz	20 $\mu$ A to 202 $\mu$ A	0.35 $\mu$ A + 0.000 09 % of reading	
45 Hz to 999 Hz	20 $\mu$ A to 202 $\mu$ A	0.33 $\mu$ A + 0.000 032 % of reading	
1 kHz to 10 kHz	20 $\mu$ A to 202 $\mu$ A	0.44 $\mu$ A + 0.000 39 % of reading	
Equipment to Measure AC Current At the Listed Frequencies <sup>FO</sup>			
10 Hz to 44Hz	0.2 mA to 2.02 mA	1.95 $\mu$ A + 0.064 % of reading	
45 Hz to 999 Hz	0.2 mA to 2.02 mA	1.35 $\mu$ A + 0.015 % of reading	
1 kHz to 10 kHz	0.2 mA to 2.02 mA	3.75 $\mu$ A + 0.26 % of reading	
Equipment to Measure AC Current At the Listed Frequencies <sup>FO</sup>			
10 Hz to 44 Hz	2 mA to 20.2 mA	8.97 $\mu$ A + 0.1 % of reading	
45 Hz to 999 Hz	2 mA to 20.2 mA	5.85 $\mu$ A + 0.029 % of reading	
1 Hz to 10 Hz	2 mA to 20.2 mA	17.56 $\mu$ A + 0.24 % of reading	



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Equipment to Measure AC Current At the Listed Frequencies <sup>F0</sup>			Transmille 25PPM Multi-Product Calibrator	
10 Hz to 44 Hz	20 mA to 202 mA	89.68 $\mu$ A + 0.1 % of reading		
45 Hz to 999 Hz	20 mA to 202 mA	58.53 $\mu$ A + 0.029 % of reading		
1 kHz to 10 kHz	20 mA to 202 mA	188.61 $\mu$ A + 0.3 % of reading		
Equipment to Measure AC Current At the Listed Frequencies <sup>F0</sup>				
10 Hz to 44 Hz	0.2 A to 2.02 A	1.37 mA + 0.077 % of reading		
45 kHz to 2 kHz	0.2 A to 2.02 A	0.84 mA + 0.034 % of reading		
Equipment to Measure AC Current At the Listed Frequencies <sup>F0</sup>				
30 Hz to 44 Hz	2 A to 30 A	10.89 mA + 0.009 % of reading		
45 Hz to 99 Hz	2 A to 30 A	4.64 mA + 0.004 1 % of reading		
100 kHz to 1 kHz	2 A to 30 A	131.14 mA + 0.16 % of reading		
Equipment to Measure Frequency <sup>F0</sup>	0.1 Hz to 5 Hz	0.25 mHz + 0.000 28 % of reading	Fluke 8845A	
	5 Hz to 50 Hz	1.44 mHz + 0.000 26 % of reading		
	50 Hz to 500 Hz	11.83 mHz + 0.000 25 % of reading		
	0.5 kHz to 5 kHz	0.27 Hz + 0.000 29 % of reading		
	5 kHz to 50 kHz	1.44 Hz + 0.000 26 % of reading		
	50 kHz to 500 kHz	12.68 Hz + 0.000 26 % of reading		
Equipment to Output Resistance <sup>F0</sup>	0.01 $\Omega$ to 100 $\Omega$	0.89 $\Omega$ + 0.000 1 % of reading		
	100 k $\Omega$ to 1 k $\Omega$	0.001 6 k $\Omega$ + 0.011 % of reading		
	1 k $\Omega$ to 10 k $\Omega$	0.08 k $\Omega$ + 0.000 3 % of reading		
	10 k $\Omega$ to 100 k $\Omega$	0.064 $\Omega$ + 0.001 3 % of reading		
	0.1 M $\Omega$ to 1 M $\Omega$	0.001 2 M $\Omega$ + 0.011 % of reading		
	1 M $\Omega$ to 10 M $\Omega$	0.001 2 M $\Omega$ + 0.011 % of reading		
Equipment to Measure Resistance <sup>F0</sup> (4 Wire Simulated)	0 $\Omega$ to 1 $\Omega$	6 m $\Omega$		Transmille 25PPM Multi-Product Calibrator
	1 $\Omega$ to 10 $\Omega$	5.89 m $\Omega$ + 0.001 1 % of reading		
	10 $\Omega$ to 100 $\Omega$	5.89 m $\Omega$ + 0.005 7 % of reading		
	0.1 k $\Omega$ to 1 k $\Omega$	47.63 m $\Omega$ + 0.004 6 % of reading		
	1 k $\Omega$ to 10 k $\Omega$	0.48 $\Omega$ + 0.004 5 % of reading		
	10 k $\Omega$ to 100 k $\Omega$	4.82 $\Omega$ + 0.004 5 % of reading		



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Equipment to Measure Resistance <sup>FO</sup> (2 Wire Simulated)	0 $\Omega$ to 1 $\Omega$	6 $\Omega$	Transmille 25PPM Multi-Product Calibrator
	1 $\Omega$ to 10 $\Omega$	2.4 m $\Omega$ + 0.002 3 % of reading	
	10 $\Omega$ to 100 $\Omega$	6 m $\Omega$ + 0.005 7 % of reading	
	0.1 k $\Omega$ to 1 k $\Omega$	13.37 m $\Omega$ + 0.000 54 % of reading	
	1 k $\Omega$ to 10 k $\Omega$	475.81 m $\Omega$ + 0.004 6 % of reading	
	10 k $\Omega$ to 100 k $\Omega$	1 310.63 m $\Omega$ + 0.000 025 % of reading	
	0.1 M $\Omega$ to 1 M $\Omega$	49.10 $\Omega$ + 0.011 % of reading	
	1 M $\Omega$ to 10 M $\Omega$	189.29 $\Omega$ + 0.000 6 % of reading	
	10 M $\Omega$ to 100 M $\Omega$	3.04 k $\Omega$ + 0.35 % of reading	
0.1 G $\Omega$ to 1 G $\Omega$	108.5 k $\Omega$ + 1.15 % of reading		
Equipment to Measure Capacitance <sup>FO</sup> (at fixed point)	10.071 nF	1.2 nF	
	19.973 nF	1.2 nF	
	50.61 nF	1.2 nF	
	99.24 nF	1.2 nF	
	0.991 2 $\mu$ F	4.8 nF	
	9.864 $\mu$ F	74 nF	
Equipment to Measure Type K Thermocouple <sup>FO</sup>	-140 $^{\circ}$ C to 200 $^{\circ}$ C	0.19 $^{\circ}$ C	
	200 $^{\circ}$ C to 1 340 $^{\circ}$ C	0.48 $^{\circ}$ C	
Equipment to Output DC Current <sup>FO</sup>	0.1 mA to 100 mA	0.029 $\mu$ A + 0.057 % of reading	Fluke 8845A
	0.1 mA to 1 mA	0.006 mA + 0.053 % of reading	
	1 mA to 10 mA	0.023 mA + 0.057 % of reading	
	10 mA to 400 mA	0.007 mA + 0.057 % of reading	
	0.4 A to 1 A	0.006 A + 0.057 % of reading	
	1 A to 3 A	0.023 A + 0.11 % of reading	
	3A to 10 A	0.009 A + 0.17 % of reading	
Equipment to Output AC Current At the Listed Frequencies <sup>FO</sup>			
5 Hz to 10 Hz	0.01 mA to 10 mA	0.069 mA + 0.4 % of reading	
10 kHz to 5 kHz	0.01 mA to 10 mA	0.069 mA + 0.17 % of reading	
5 kHz to 10 kHz	0.01 mA to 10 mA	0.081 mA + 0.4 % of reading	



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Equipment to Output AC Current At the Listed Frequencies <sup>FO</sup>			Fluke 8845A
5 Hz to 10 Hz	10 mA to 100 mA	0.046 mA + 0.35 % of reading	
10 kHz to 5 kHz	10 mA to 100 mA	0.047 mA + 0.12 % of reading	
5 kHz to 10 kHz	10 mA to 100 mA	0.29 mA + 0.23 % of reading	
Equipment to Output AC Current At the Listed Frequencies <sup>FO</sup>			
5 Hz to 10 Hz	100 mA to 400 mA	0.12 mA + 0.35 % of reading	
10 Hz to 1 kHz	100 mA to 400 mA	0.12 mA + 0.12 % of reading	
1 kHz to 10 kHz	100 mA to 400 mA	0.81 mA + 0.23 % of reading	
Equipment to Output AC Current At the Listed Frequencies <sup>FO</sup>			
5 Hz to 10 Hz	0.4 A to 1A	0.056 A + 0.29 % of reading	
10 Hz to 5 kHz	0.4 A to 1A	0.047 A + 0.11 % of reading	
5 kHz to 10 kHz	0.4 A to 1A	0.81 A + 0.4 % of reading	
Equipment to Output AC Current At the Listed Frequencies <sup>FO</sup>			
5 Hz to 10 Hz	1 A to 3A	0.069 A + 0.4 % of reading	
10 Hz to 5kHz	1 A to 3A	0.069 A + 0.17 % of reading	
5 kHz to 10 kHz	1 A to 3A	0.81 A + 0.4 % of reading	
Equipment to Output AC Current At the Listed Frequencies <sup>FO</sup>			
5 Hz to 10 Hz	3 A to 10A	0.069 A + 0.4 % of reading	
10 Hz to 5 kHz	3 A to 10A	0.07 A + 0.17 % of reading	
Photo Tachometers Rate of Rotation Electrical Simulation <sup>FO</sup>	240 rpm to 60 000 rpm	0.34 rpm + 0.022 % of reading	Transmille 25PPM Multi-Product Calibrator with Workstation EA015
Equipment to measure DC Current Coils <sup>FO</sup>	0.1 A to 4 A 2 Turn	0.13 A	
	4 A to 60 A 2 Turn	0.38 A	
	0.1 A to 40 A 10 Turn	0.46 A	
	40 A to 300 A 10 Turn	1.7 A	
	0.1 A to 200 A 50 Turn	1.7 A	
	200 A to 1 500 A 50 Turn	5.5 A	





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Equipment to measure AC Current Coils <sup>FO</sup>	0.1 A to 4 A 2 Turn	0.13 A	Transmille 25PPM Multi-Product Calibrator with Workstation EA015
	4 A to 60 A 2 Turn	0.38 A	
	0.1 A to 40 A 10 Turn	0.46 A	
	40 A to 300 A 10 Turn	1.7 A	
	0.1 A to 200 A 50 Turn	1.7 A	
	200 A to 1 500 A 50 Turn	5.5 A	

### Mass, Force and Weighing Devices

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Small Capacity Scales & Balances <sup>FO</sup>	1 lb to 120 lb	0.12 lb	Class F Weights

### 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
Equipment to Output Torque <sup>FO</sup>	0.5 lbf•in to 750 lbf•ft	0.35 lbf•ft + 0.55 % of reading	Torque Transducer Norbar Smart Cell
	0.5 lbf•in to 50 lbf•in	0.54 lbf•in + 0.23 % of reading	Torque Analyzer Mountz TTL
	50 lbf•in to 1 000 lbf•in	0.37 lbf•in + 0.54 % of reading	Torque Analyzer AWS TT30100-ER
Equipment to Measure Pressure <sup>FO</sup>	5 psi to 10 000 psig	0.075 % + 0.072 psig of reading	Dead Weight Tester Ashcroft 1305D-100
Calipers <sup>FO</sup>	0.01 in to 12 inches	138 $\mu$ in	Gauge Blocks
Micrometer <sup>FO</sup>	0.01 in to 12 inches	78 $\mu$ in	



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### Thermodynamic

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Equipment to Measure Humidity <sup>FO</sup> (at fixed point)	33 % RH	1.1 % RH	Saturated Salts Magnesium Chloride, Sodium Chloride with a Digital Hygrometer
	75 % RH	1.1 % RH	
Equipment to Generate Temperature <sup>FO</sup>	-20 °C to 260 °C	0.27 °C	PRT Omega PRTF-10-2-100-1/4-6-E
Equipment to Measure Temperature <sup>FO</sup>	50 °C to 650 °C	1.17 °C + 0.067 % of reading	PRT Omega PRTF-10-2-100-1/4-6-E with Dry well Fluke 9141EZT

- 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.
- 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.
- The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer<sup>F</sup> would mean that the laboratory performs this calibration at its fixed location.
- 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<sup>FO</sup> would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
- 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.
- The term L represents length in inches or millimeters as appropriate to the uncertainty statement.