



**LABORATORY
ACCREDITATION
BUREAU** a division of A-S-B

Certificate of Accreditation

ISO/IEC 17025:2005

Certificate Number L1050-1

The Tool & Gage House
Quality Services Division
538 E. Hebron Street
Charlotte NC 28273

has met the requirements set forth in L-A-B's policies and procedures, all requirements of ISO/IEC 17025:2005 "General Requirements for the competence of Testing and Calibration Laboratories".*

The accredited lab has demonstrated technical competence to a defined "Scope of Accreditation" and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Accreditation valid through: February 18, 2019

R. Douglas Leonard, Jr., President, COO
Laboratory Accreditation Bureau
Presented the 3rd of March 2016

*See the laboratory's Scope of Accreditation for details of accredited parameters

**Laboratory Accreditation Bureau is found to be in compliance with ISO/IEC 17011:2004 and recognized by ILAC (International Laboratory Accreditation Cooperation) and NACLA (National Cooperation for Laboratory Accreditation).
Form 28.1 - Rev 1 7/3/13

Scope of Accreditation For The Tool & Gage House Quality Services Division

538 E Hebron Street
Charlotte, NC 28273
Bobby Hedgpath
800-438-2266

In recognition of a successful assessment to ISO/IEC 17025:2005 to the following Calibration and Measurement Capabilities, accreditation has been granted to **The Tool & Gage House, Quality Services Division** for the following:

Accreditation Granted Through: **February 18, 2019**

Calibration

Electrical – Capacitance

Calibration Parameter/Equipment ³	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Fixed Capacitance @ 1 kHz	0.001 μ F	2.6 pF	Comparison to Standard Capacitors
	0.01 μ F	1 nF	
	0.1 μ F	1.1 nF	
	1 μ F	2.4 nF	
Capacitance Source ¹	(0.5 to 1) nF	(0.003 8 + 0.001 5C) nF	Comparisons performed with a Multifunction Calibrator
	(1 to 3.3) nF	(0 + 0.012C) nF	
	(3.3 to 11) nF	(0.02 + 0.001 6C) nF	
	(11 to 33) nF	(0 + 0.011C) nF	
	(33 to 110) nF	(0.12 + 0.002 1C) nF	
	(110 to 330) nF	(0 + 0.007 7C) nF	
	(0.33 to 1.1) μ F	(0.001 4 + 0.002 2C) μ F	

Electrical – Current

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
DC Current Source ¹	(0 to 330) μ A	0.001 2 μ A + 0.000 018 μ A/ μ A	Comparisons performed with a Multifunction Calibrator w/ each range locked
	(0 to 3.3) mA	0.12 μ A + 1.2 μ A/mA	
	(0 to 33) mA	0.46 μ A + 0.087 μ A/mA	

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
	(0 to 330) mA	3.1 μ A + 0.098 μ A/mA	Comparisons performed with a Multifunction Calibrator w/ each range locked
	(0 to 3) A	9.2 μ A + 440 μ A/A	
	(0 to 20) A	780 μ A + 2.8 mA/A	
AC Current Source ¹ (Sine Wave) (0.045 to 30) kHz	(29 to 330) μ A (45 to 50) Hz (50 to 2 000) Hz (2 to 30) kHz	0.079 μ A + 0.000 49 μ A/ μ A 0.071 μ A + 0.000 56 μ A/ μ A 0.096 μ A + 0.000 53 μ A/ μ A	Comparisons performed with a Multifunction Calibrator
	(0.33 to 3.3) mA (45 to 50) Hz (50 to 2 000) Hz (2 to 30) kHz	24 μ A + 0.038 μ A/mA 24 μ A + 0.038 μ A/mA 24 μ A + 0.038 μ A/mA	
	(3.3 to 33) mA (45 to 50) Hz (50 to 2 000) Hz (2 to 30) kHz	1.7 μ A + 0.6 μ A/mA 1.8 μ A + 0.57 μ A/mA 1.4 μ A + 0.64 μ A/mA	
	(33 to 330) mA (45 to 50) Hz (50 to 2 000) Hz (2 to 30) kHz	0.15 μ A + 0.12 μ A/mA 0.76 μ A + 0.23 μ A/mA 0.17 μ A + 0.91 μ A/mA	
	(0.33 to 3) A (45 to 60) Hz (60 to 5 000) Hz (5 to 10) kHz	25 μ A + 760 μ A/A 1.2 mA + 7.1 mA/A 5.9 mA + 30 mA/A	
	(3 to 20) A (45 to 60) Hz (60 to 2 000) Hz (2 to 5) kHz	29 μ A + 740 μ A/A 130 μ A + 730 μ A/A 360 μ A + 710 μ A/A	
AC Current Clamp-On Meter (50 HZ to 60 Hz)	(20 to 1 000) A	610 mA + 7.4 mA/A	Comparison to a Multifunction Calibrator and 50 Turn Coil
AC Current Clamp-On Meter (400 Hz)	(20 to 1 000) A	510 mA + 17 mA/A	
DC Current Clamp-On Meter	(20 to 1 000) A	170 mA + 3.1 mA/A	

Electrical – Inductance

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Fixed Inductance 1 kHz	100 μ H	0.64 μ H	Comparison to Standard Inductors
	1 mH	1.7 μ H	

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Fixed Inductance 1 kHz	10 mH	0.012 mH	Comparison to Standard Inductors
	100 mH	0.16 mH	

Electrical – Resistance

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Fixed Resistance	1 Ω	970 $\mu\Omega$	Comparison to Standard Resistors
	10 Ω	0.66 m Ω	
	100 Ω	1.6 m Ω	
	1 k Ω	1.6 m Ω	
	10 k Ω	0.48 Ω	
	100 k Ω	1.1 Ω	
Resistance Source ¹	(0 to 11) Ω	760 $\mu\Omega$ + 9.8 $\mu\Omega/\Omega$	Comparisons performed with a Multifunction Calibrator
	(11 to 33) Ω	710 $\mu\Omega$ + 61 $\mu\Omega/\Omega$	
	(33 to 110) Ω	1.7 m Ω + 1.4 $\mu\Omega/\Omega$	
	(0.11 to 1.1) k Ω	840 $\mu\Omega$ + 5.5 $\mu\Omega/\Omega$	
	(1.1 to 11) k Ω	1.4 m Ω + 8.6 $\mu\Omega/\Omega$	
	(11 to 110) k Ω	110 m Ω + 8.3 $\mu\Omega/\Omega$	
	(110 to 330) k Ω	18 m Ω + 18 $\mu\Omega/\Omega$	
	(0.33 to 1.1) M Ω	1.6 Ω + 9.2 m $\Omega/k\Omega$	
Resistance Source ¹	(1.1 to 3.3) M Ω	17 Ω + 28 m $\Omega/k\Omega$	Comparisons performed with a Multifunction Calibrator
	(3.3 to 11) M Ω	31 Ω + 22 $\Omega/M\Omega$	
	(11 to 33) M Ω	170 Ω + 82 $\Omega/M\Omega$	
	(33 to 110) M Ω	870 Ω + 9.6 $\Omega/M\Omega$	
	(110 to 330) M Ω	43 Ω + 380 $\Omega/M\Omega$	
Resistance Measure ¹	(0.33 to 1.1) G Ω	40 Ω + 1.7 k $\Omega/M\Omega$	Utilizing an 8½ DMM with High Stability Option
	(0 to 10) Ω	150 $\mu\Omega$ + 17 $\mu\Omega/\Omega$	
	(10 to 1 000) Ω	960 $\mu\Omega$ + 6.8 $\mu\Omega/\Omega$	
	(1 to 10) k Ω	8.1 $\mu\Omega$ + 7.7 $\mu\Omega/\Omega$	
	(10 to 100) k Ω	24 $\mu\Omega$ + 7.7 $\mu\Omega/\Omega$	
	(0.1 to 1) M Ω	120 m Ω + 9.8 $\mu\Omega/\Omega$	
	(1 to 10) M Ω	12 Ω + 19 $\mu\Omega/\Omega$	
	(10 to 100) M Ω	79 Ω + 260 $\mu\Omega/\Omega$	
(0.1 to 1) G Ω	2.6 k Ω + 190 $\mu\Omega/\Omega$		

Electrical – Voltage

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
DC Voltage Source ¹	(0.01 to 330) mV	4 mV + 0.11 μV/V	Comparisons performed with a Multifunction Calibrator
	(0.33 to 3.3) V	2.8 mV + 440 μV/V	
	(3.3 to 33) V	2.6 mV + 37 μV/V	
	(33 to 1 000) V	0.76 mV + 2.8 mV/V	
AC Volt Source ¹ (Sine Wave) (0.045 to 450) kHz	(0.001 to 33) mV	5.7 mV + 350 μV/mV	
	(33 to 330) mV	31 mV + 55 μV/V	
	(0.33 to 3) V	1.1 mV + 2.7 mV/V	
AC Volt Source ¹ (Sine Wave) (0.045 to 90) kHz	(3 to 30) V	2.3 mV + 1 mV/V	
AC Volt Source ¹ (Sine Wave) (0.045 to 10) kHz	(30 to 330) V	110 mV + 91 μV/V	
AC Volt Source ¹ (Sine Wave) (0.045 to 8) kHz	(330 to 1 000) V	120 mV + 280 μV/V	
DC Voltage Measure ¹	(0 to 100) mV	2.3 mV + 35 μV/V	Utilizing an 8½ DMM with High Stability Option
	(0.1 to 10) V	2.4 mV + 1.4 μV/V	
	(10 to 100) V	3.1 mV + 47 μV/V	
	(100 to 1 000) V	3.8 V + 0.92 nV/V	
	(1 000 to 20 000) V	9 V + 0.6 mV/V	Utilizing a High Voltage Meter
AC Voltage Measure ¹ (0.045 to 20) kHz	(1 000 to 20 000) V	38 V + 0.6 mV/V	Utilizing a High Voltage Meter
Thermocouple Simulation ¹			Multifunction Calibrator
Type J	(-200 to 1 200) °C	1.8 °C	
Type K	(-200 to 1 350) °C	1.8 °C	
Type R	(0 to 1 760) °C	2.8 °C	
Type S	(0 to 1 760) °C	2.7 °C	
Type T	(-250 to 400) °C	1.6 °C	

Length - Artifacts and Standards 1D

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Gage Blocks	(0.005 to 5) in	(4.2 + 2.5L) μ in	Gage Block Comparator and Master Gage Blocks
	(5 to 20) in	(9.9 + 1L) μ in	SIP 550 and Master Gage Blocks
Thickness Standards (Shims)	(0.000 2 to 1) in	(34 + 430L) μ in	SIP 550 ULM
Micrometer Length Standards	(0.1 to 20) in	(15 + 4L) μ in	SIP 550 ULM CMM utilized as a Reference Standard
	(20 to 46) in	(87 + 8.2L) μ in	
Outside Diameter (Spheres & Plug Gages)	(0.005 to 20) in	(14 + 2L) μ in	SIP 550 mm Measuring Center
Gear & Thread Wires	(0.005 to 1) in	16 μ in	SIP 550 mm Measuring Center
Cylindrical ID (Ring Gages)	(0.059 to 0.275) in	(18 + 3.2L) μ in	SIP 550 ULM
	(0.275 to 16) in	(14 + 3.9L) μ in	
Plain Snap Gages ¹	(0.05 to 6) in	(43 + 28L) μ in	Gage Blocks

Length - Artifacts and Standards 2D

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Cylinders - Roundness	Up to 280 mm	(0.13 + 0.002 5L) μ m	Mahr MMQ400 per ASME B89.3.1
Spheres - Roundness	Up to 4 in	4.4 μ in	
Cylinders - Cylindricity	Diameter: Up to 280 mm Height: Up to 400 mm	(0.19 + 0.006L) μ m	Mahr MMQ400 per ASME B89.3.1
Perpendicularity / Squareness	Width: Up to 280 mm Height: Up to 400 mm	(2.1 + 5.6L) μ in	MMQ400 Form Tracer
Surface Finish Standards	(0.05 to 100) μ m	0.2 μ m	Profilometer ASME B46.1
Thread Plugs –			
Major Diameter	Up to 16 in	(43 + 4.5L) μ in	SIP 550 ULM and Thread Measuring Wires
Pitch Diameter	(4 to 80) TPI	(48 + 7.9L) μ in	

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Thread Ring Gages – Pitch Diameter Measure PD Setting	(0.09 to 6) in (0.05 to 8) in	(50 + 26L) μ in 270 μ in	SIP 550 with: T-Probe Attachment Set Plugs
Taper Thread Plug – Pitch Diameter Standoff	(0.2 to 12) in +/- 0.02 in	(58 + 22L) μ in 240 μ in	SIP 550 ULM and Thread Wires SIP 550 ULM
Taper Thread Ring – Pitch Diameter Ring Thickness Standoff	(0.2 to 6) in (0.1 to 3) in +/- 0.02 in	(74 + 37L) μ in (46 + 96L) μ in 240 μ in	SIP 550 ULM with T- Probe attachment SIP 550 ULM SIP 550 ULM with T- Probe attachment
Thread Snap Gage ¹	(0.05 to 4) in	270 μ in	Set Plugs

Length – Artifacts and Standards 3D

Calibration Parameter/Equipment ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Fixtures and Gauging	X: (0 to 36) in Y: (0 to 47) in Z: (0 to 24) in	(87 + 8.2L) μ in	Coordinate Measuring Machine

Length - Hand Tools and Precision Gages 1D

Calibration Parameter/Equipment ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Dial and Digital Indicators ¹	(0 to 1) in	(18 + 47L) μ in	Indicator Calibrator
Indicators (Probes and LVDT's)	(0 to 4) in	(8.3 + 0.23L) μ in	SIP 550 ULM
Calipers (OD and ID) ¹	(0 to 80) in	(560 + 4.2L) μ in	Gage Blocks
Outside Micrometers ¹	(0 to 40) in	(38 + 14L) μ in	Gage Blocks
Inside Micrometers ¹ (2pt)	(0.04 to 80) in	(79 + 19L) μ in	Gage Blocks
Bore Gages ¹ (Indicator Type)	(0 to 1) in	(18 + 47L) μ in	Indicator Calibrator
Depth Micrometer ¹	(0 to 24) in	(130 + 8L) μ in	Gage Blocks

Calibration Parameter/Equipment ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Height and Depth Gages ¹	(0 to 48) in	(100 + 12L) μin	Gage Blocks
Single Axis Measuring Machine ¹	(0 to 20) in (20 to 60) in	(4.7 + 8.9L) μin (6.9 + 9.3L) μin	Comparison made with Gage Blocks

Length - Hand Tools and Precision Gages 2D

Calibration Parameter/Equipment ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Optical Comparators ¹ – Length	(0 to 12) in	(180 + 30L) μin	Glass Scale and Gage Balls
Optical Comparators ¹ – Magnification	10X	190 μin	Magnification Scale and Gage Balls
	20X	170 μin	
	31.25X	140 μin	
	50X	140 μin	
	62.5X	130 μin	
100X	110 μin		
Bore Micrometer (3pt)	(0.2 to 9) in	(31 + 18L) μin	Master Rings
Measuring Microscopes ¹	(0 to 12) in	(140 + 5.8L) μin	Glass Scale

Length - Hand Tools and Precision Gages 3D

Calibration Parameter/Equipment ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Video Measuring Machines ¹	X/Y: (0 to 12) in	(100 + 10L) μin	Glass Scales and Gage Blocks
	Z: (0 to 8) in	260 μin	
Coordinate Measuring Machines ¹ - X, Y, Z Axis Linear Error Volumetric/Spatial Error Squareness	(0 to 1) m	(6.9 + 9.3L) μin	DIN VDI/VDE 2617-1 1986, VDI/VDE 2617-3 1989: Gage Blocks
	(0 to 1.2) m	(26 + 9.3L) μin	Gage Blocks, Sphere
	(0 to 1.2) m	0.0079 °	Gage Block Reversal Method

Mass – Force

Calibration Parameter/Equipment ²	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Force (Tension)	Up to 50 lbf	0.1 lbf + 0.000 54 lbf/lbf	NIST Class F Weights & Hanger

Mass – Hardness

Calibration Parameter/Equipment ^{5,6}	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Rockwell Hardness Testers ¹	HRA		ASTM E-18 Indirect Verification with Test Blocks
	Low	0.9 HRA	
	Mid	0.84 HRA	
	High	0.52 HRA	
	HRBW		
	Low	1.1 HRBW	
	Mid	1.1 HRBW	
	High	1 HRBW	
	HRC		
Low	0.92 HRC		
Mid	0.88 HRC		
High	0.61 HRC		
Rockwell Superficial Hardness Testers ¹	HR15N		ASTM E-18 Indirect Verification with Test Blocks
	Low	1.4 HR15N	
	Mid	1.4 HR15N	
	High	1.1 HR15N	
	HR15TW		
	Low	1.5 HR15TW	
Mid	1.5 HR15TW		
High	1.4 HR15TW		
Rockwell Superficial Hardness Testers ¹	HR30N		ASTM E-18 Indirect Verification with Test Blocks
	Low	1.5 HR30N	
	Mid	1.4 HR30N	
High	1.1 HR30N		
Rockwell Superficial Hardness Testers ¹	HR30TW		ASTM E-18 Indirect Verification with Test Blocks
	Low	1.4 HR30TW	
	Mid	1.4 HR30TW	
	High	1.4 HR30TW	
	HR45N		
	Low	1.4 HR45N	
	Mid	1.4 HR45N	
	High	1.1 HR45N	
	HR45TW		
Low	1.4 HR45TW		
Mid	1.5 HR45TW		
High	1.4 HR45TW		
Brinell Hardness Testers ¹	Low	6.1 HBW	ASTM E-10 Indirect Verification with Test Blocks
	High	6.2 HBW	
Vickers Hardness Testers ¹	(240 to 600) HV	19 HV	ASTM E-384 Indirect Verification with Test Blocks
	Over 600 HV	32 HV	
Knoop Hardness Testers ¹	(250 to 650) HK	13 HK	ASTM E-384 Indirect Verification with Test Blocks
	Over 650 HK	23 HK	

Calibration Parameter/Equipment ^{5,6}	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Durometer –			ASTM D2240 except Orifice Size
Force	(0.1 to 45) N	0.002 3 N + 0.005 8 N/N	NIST Class F Weights
Indenter Angle	Up to 45°	0.1 °	Video Probe
Radius/Length/Width	Up to 0.5 in	(160 + 16.4L) μin	Video Probe

Mass – Pressure/Low Vacuum

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Pressure Source	(5 to 99) psig	0.6 psig + 0.000 4 psig/psig	Deadweight Tester
	(100 to 1 000) psig	0.1 psig + 0.000 4 psig/psig	
	(1 000 to 10 000) psig	3.1 psig + 0.000 22 psig/psig	
Pressure Measure ¹	(0 to 1 500) psig	0.1 psig + 0.002 38 psig/psig	Pressure Modules
	(0 to 5 000) psig	0.85 psig + 0.000 452 psig/psig	
Barometric Pressure	(400 to 1 050) mbar	5.9 mBar	Compared to a Barometer
Vacuum Source ¹	(-14 to 0) psig	0.013 psig	Pressure Module

Mass – Torque

Calibration Parameter/Equipment ²	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Torque Analyzers/Testers	(10 to 100) lbf·in	0.012 lbf.in + 0.000 23 lbf·in/ lbf·in	Torque Arms with Weights
	(0.4 to 1 500) lbf·ft	0.018 lbf.in + 0.000 76 lbf·ft/ lbf·ft	
Torque Wrenches, Watches ¹	(10 to 100) lbf·in	0.06 lbf.in + 0.003 lbf·in/ lbf·in	Norbar Transducers with Wrench Loader
	(8 to 250) lbf·ft	0.082 lbf·ft + 0.004 7 lbf·ft/ lbf·ft	
	(250 to 1 500) lbf·ft	0.093 lbf·ft + 0.005 6 lbf·ft/ lbf·ft	

Thermodynamic – Humidity

Calibration Parameter/Equipment ²	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Relative Humidity ¹ (Measurement)	(10 to 97.5) %RH	2 % RH	Humidity Probe
Relative Humidity ¹ (Source)	11.3 %RH	1.8 % RH	Aqueous Salt Solutions with Digital Temp/Humidity Probe
	33.1 %RH	1.8 % RH	
	75.5 %RH	2.2 % RH	
	97.5 %RH	2.9 % RH	

Thermodynamic – Infrared Temperature

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Temperature Measure	(25 to 500) °C	0.12 °C + 0.007 7 °C/°C	Black Body Standard w/PRT

Thermodynamic – Thermometers & Probes

Calibration Parameter/Equipment ⁴	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Temperature Measure	(-190 to 420) °C	(0.069 + 0.000 047t) °C	RTD Thermometer/Probe, Drywell

Time and Frequency – Frequency / Period

Calibration Parameter/Equipment ⁸	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Frequency Source ¹ (Leveled Sine-wave)	(50 to 999.999) kHz	(0.000 000 79 + 0.000 03f) kHz	Comparison to a Multifunction Calibrator and Monitored with a Frequency Counter
	(1 to 600) MHz	(0.000 000 18 + 0.000 03f) MHz	
Frequency & Time Measure ¹	1 Hz to 225 MHz	0.046 Hz	Comparison to a Universal Counter

Dimensional Measurement

Length - Dimensional Measurement 1D

Inspection Parameter ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Step Height	Up to 20 mm	$(1.3 + 0.012L) \mu\text{m}$	Form Tracer

Length - Dimensional Measurement 2D

Inspection Parameter ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Surface Finish/Texture	Up to 100 μm	0.2 μm	Profilometer
Dimensional Measurement (Mechanical Inspection and Testing)	X = (0 to 8) in	$(72 + 70L) \mu\text{in}$	Video probe utilized as Reference Standard for Dimensional Inspection
	Y = (0 to 4) in		

Length - Dimensional Measurement 3D

Inspection Parameter ⁵	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Dimensional Measurement (Mechanical Inspection and Testing)	X = (0 to 36) in Y = (0 to 47) in Z = (0 to 24) in	$(87 + 8.2L) \mu\text{in}$	Coordinate Measuring Machine utilized as Reference Standard for Dimensional Inspection
Dimensional Measurement (Mechanical Inspection and Testing)	X = (0 to 8) in Y = (0 to 4) in Z = (0 to 4) in	$(120 + 93L) \mu\text{in}$	

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and remarks. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

- 1) Laboratory offers calibration services at the laboratory's own facilities and at the client or other agreed upon facilities
- 2) F = reading in lbs (lbf·ft for torque) and (lbf for force)
- 3) C = reading in picoFarad
- 4) t = temperature in Celsius
- 5) L = length in inches or mm (as identified in range column)
- 6) F = force in Newtons
- 7) X = torque in Newton-Meters
- 8) f = frequency in kHz

Approved by: 
R. Douglas Leonard
Chief Technical Officer

Date: March 3, 2016

Re-Issued: 3/3/16