



# PERRY JOHNSON LABORATORY ACCREDITATION, INC.

## *Certificate of Accreditation*

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

### ***Laboratorios de Precisión, S.A. de C.V.***

*Horizonte 28 entre Astro Rey Sur y Nuevo Amanecer,  
Matamoros, Tamaulipas. México C.P 87314*

*(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 January 2009):

### ***Dimensional, Mechanical, Electrical, Thermodynamic, Acoustic, Optical, Time and Frequency and Mass, Force and Weighing Devices 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

*Initial Accreditation Date:*

October 31, 2003

*Issue Date:*

October 11, 2016

*Expiration Date:*

November 30, 2018

*Accreditation No.:*

40937

*Certificate No.:*

L16-420

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



# Certificate of Accreditation: Supplement

## Laboratorios de Precisión, S.A. de C.V.

Horizonte 28 entre Astro Rey Sur y Amanecer,  
Matamoros, Tamaulipas, México C.P. 87314  
Contact Name: Carlos Lucio Phone: 868-810-1140

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 Check <sup>F</sup>	0.001 mm to 600 mm	(0.004 1 + 1.7 x 10 <sup>-4</sup> L) mm	Master Blocks & CMM Micro Ball
Calipers <sup>FO</sup>	0.01 mm to 1 000 mm	(27.4 + 0.11L) $\mu$ m	Block Gauge, Caliper Check
CMM-Linearity <sup>O</sup>	750 mm to 2 250 mm	(0.035 + 0.002 25L) mm	Block Gauge, Caliper Check, Square, Ball Bar Per AME B89.4.1
Depth Micrometer <sup>FO</sup>	0.01 mm to 500 mm	(0.022 + 2.1 x 10 <sup>-4</sup> L) mm	Block Gauge
Dial/Digital Thickness Gage <sup>FO</sup>	0.001 mm to 500 mm	(0.008 1 + 8.3 x 10 <sup>-5</sup> L) mm	Dial Gage Tester, Block Gauge
Gage Blocks <sup>FO</sup>	0 .5 mm to 100 mm	(0.028 + 2.7 x 10 <sup>-4</sup> L) mm	CMM, Blocks Comparator, Micrometer, Block Gauge
	100 mm to 500 mm	(0.46 + 3.5 x 10 <sup>-4</sup> L) mm	
Glass Ruler <sup>F</sup>	50 mm to 500 mm	(0.004 2 + 4.8 x 10 <sup>-3</sup> L) mm	Optical Comparator
Height Gage <sup>FO</sup>	0.01 mm to 600 mm	(0.003 + 3 x 10 <sup>-4</sup> L) mm	Block Gauge, Caliper Check
Master Height Gage <sup>F</sup>	0.001 mm to 600 mm	(0.002 + 1.4 x 10 <sup>-4</sup> L) mm	CMM
Micrometer Outside <sup>FO</sup>	0.001 mm to 500 mm	(0.005 6 + 1.7 x 10 <sup>-4</sup> L) mm	Block Gauge
Microscope-Reticule <sup>O</sup>	0.001 mm to 600 mm	(0.002 4 + 3.7 x 10 <sup>-4</sup> L) mm	Glass Ruler and Palatine
Microscope-Magnification <sup>O</sup>	200 X only	2.4 % of reading	
Optical Comparator – Linear <sup>O</sup>	150 mm to 600 mm	(0.002 4 + 3.7 x 10 <sup>-4</sup> L) mm	
Optical Comparator – Angle <sup>O</sup>	0° to 360°	2°	Glass Ruler, Block Gauge, Angle Gauge
Optical Comparator – Magnification <sup>O</sup>	200 X only	2.4 % of reading	
Parallels <sup>F</sup>	25 mm to 600 mm	(0.002 2 + 0.001 4L) mm	Optical Comparator, Touch Probe
Pin Gages <sup>F</sup>	0.5 mm to 100 mm	(0.046 + 3.5 x 10 <sup>-4</sup> D) mm	Micrometer
Surface Plate Repeat Measurement Only <sup>O</sup>	150 mm to 2 250 mm Diagonal	1.7 $\mu$ m	Repeat Reading Gage Starrett G8181S with Electronic Indicator
Thickness Sensor (Electronic, Ultrasonic, & Magnetic) <sup>F</sup>	25 $\mu$ m to 2 000 $\mu$ m	(0.005 8 + 9.8 x 10 <sup>-3</sup> L) mm	Coatings Thickness Plates, Block Gages & Master Gage Plates
Pitch Diameter Thread Gage <sup>F</sup>	(M1 1.6 x 0.35 to M39 x 4)	(0.07 + 0.011D) mm	Thread Wire, Super Micrometer
Rules <sup>F</sup>	150 mm to 5 000 mm	(0.005 8 + 0.009 8L) mm	Steel Ruler, Flex Meter, & Vision Meter
Angle Blocks <sup>F</sup>	0° to 90°	0.18°	Protractor & CMM and Optical Comparator



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Angle Meter - Protractor <sup>F</sup>	0° to 180°	0.18°	Angle Gauge, CMM
Inside Micrometer <sup>FO</sup>	20 mm to 300 mm	(5.3 + 4.05 x 10 <sup>-2</sup> L) $\mu$ m	Caliper Check
Measurement Tape Error of Indication <sup>F</sup>	1 m to 5.5 m	(0.058 + 1.29 x 10 <sup>-4</sup> L) mm	Flex meter Steel Ruler
Radius Gages <sup>F</sup>	0.5 mm to 100 mm	(0.053+ 9.7 x 10 <sup>-4</sup> L) mm	CMM Optical Comparator
Ring Gages <sup>F</sup>	5 mm to 100 mm	(0.048 + 1.02 x 10 <sup>-3</sup> L) mm	CMM Optical Comparator
Roughness Block - Ra <sup>F</sup>	1.68 $\mu$ m to 6.3 $\mu$ m	0.56 $\mu$ m	Surface Roughness Tester
Roughness Block - Rz <sup>F</sup>	2.76 $\mu$ m to 25 $\mu$ m	0.92 $\mu$ m	Surface Roughness Tester
Roughness Tester - Ra <sup>F</sup>	0.49 $\mu$ m to 5.82 $\mu$ m	(1.12 x 10 <sup>-1</sup> + 7.69 x 10 <sup>-2</sup> L) $\mu$ m	Roughness Master Block Set
Roughness Tester - Rz <sup>F</sup>	0.5 $\mu$ m to 11.4 $\mu$ m	(0.14 + 0.006 2L) $\mu$ m	Roughness Master Block Set
Roughness Tester - Rz <sup>F</sup>	11.4 $\mu$ m to 23.6 $\mu$ m	(0.77 + 0.006 6L) $\mu$ m	Roughness Master Block Set
Sphere Gages <sup>F</sup>	1 mm to 100 mm	(0.052 + 9.8 x 10 <sup>-4</sup> L) mm	CMM

### 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
Capacitance Meter <sup>FO</sup>	1 nF	0.2 pF	General Radio Standard Capacitor Model 1409-F-0.001 $\mu$ F Model 1409-Y -1 $\mu$ F Decade Condenser 219-M 10 $\mu$ F to 10 000 $\mu$ F
	1 $\mu$ F	0.2 nF	
	10 $\mu$ F to 10 000 $\mu$ F	0.05 % of reading	
Resistors & Resistance Generator <sup>FO</sup>	1 $\Omega$ to 100 $\Omega$	(0.02 % of reading + 0.004 % of range)	HP 34401A- Measuring
	100 $\Omega$ to 1 k $\Omega$	(0.02 % of reading + 0.001 % of range)	
	1 k $\Omega$ to 10 k $\Omega$	(0.02 % of reading + 0.001 % of range)	
Resistors & Resistance Generator <sup>FO</sup>	10 k $\Omega$ to 100 k $\Omega$	(0.02 % of reading + 0.001 % of range)	
	100 k $\Omega$ to 1 M $\Omega$	(0.02 % of reading + 0.001 % of range)	
	1 M $\Omega$ to 10 M $\Omega$	(0.08 % of reading + 0.001 % of range)	
	10 M $\Omega$ to 100 M $\Omega$	(1 % of reading + 0.01 % of range)	
Equipment to Output DC Voltage <sup>FO</sup>	Up to 100mV	(0.009 % of reading + 0.003 5 % of range)	
	100 mV to 1V	(0.008 % of reading + 0.000 7 % of range)	



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Equipment to Output DC Voltage <sup>FO</sup>	1 V to 10 V	(0.007 5 % of reading + 0.000 5 % of range)	HP 34401A - Measuring	
	10 V to 100 V	(0.008 5 % of reading + 0.000 6 % of range)		
	100 V to 1 000 V	(0.008 5 % of reading + 0.001 % of range)		
Equipment to Output DC Current <sup>FO</sup>	0 mA to 10 mA	(0.09 % of reading + 0.02 % of range)		
	10 mA to 100 mA	(0.09 % of reading + 0.005 % of range)		
	100 mA to 1 A	(0.2 % of reading + 0.01 % of range)		
	1 A to 3 A	(0.22 % of reading + 0.02 % of range)		
Equipment to Output AC Voltage At the listed frequencies <sup>FO</sup>				
3 Hz to 5 Hz	1 mV to 100 mV	(2 % of reading + 0.04 % of range)		
5 Hz to 10 Hz	1 mV to 100 mV	(0.75 % of reading + 0.04 % of range)		
10 Hz to 20 kHz	1 mV to 100 mV	(0.09 % of reading + 0.04 % of range)		
20 kHz to 50 kHz	1 mV to 100 mV	(0.22 % of reading + 0.05 % of range)		
50 kHz to 100 kHz	1 mV to 100 mV	(0.9 % of reading + 0.08 % of range)		
Equipment to Output AC Voltage At the listed frequencies <sup>FO</sup>				
3 Hz to 5 Hz	0.06 V to 750 V	(2 % of reading + 0.03 % of range)		
5 Hz to 10 Hz	0.06 V to 750 V	(0.75 % of reading + 0.03 % of range)		
10 Hz to 20 kHz	0.06 V to 750 V	(0.09 % of reading + 0.03 % of range)		
20 kHz to 50 kHz	0.06 V to 750 V	(0.22 % of reading + 0.05 % of range)		
50 kHz to 100 kHz	0.06 V to 750 V	(0.9 % of reading + 0.08 % of range)		
100 kHz to 300 kHz	0.06 V to 750 V	(6 % of reading + 0.5 % of range)		
Equipment to Output AC Current At the listed frequencies <sup>FO</sup>				
3 Hz to 5 Hz	1 mA to 1 A	(2.1 % of reading + 0.04 % of range)		
5 Hz to 10 Hz	1 mA to 1 A	(0.6 % of reading + 0.04 % of range)		
10 Hz to 5 kHz	1 mA to 1 A	(0.2 % of reading + 0.04 % of range)		
Equipment to Output AC Current At the listed frequencies <sup>FO</sup>				
3 Hz to 5 Hz	1 A to 3 A	(2 % of reading + 0.06 % of range)		
5 Hz to 10 Hz	1 A to 3 A	(0.75 % of reading + 0.06 % of range)		
10 Hz to 5 kHz	1 A to 3 A	(0.25 % of reading + 0.06 % of range)		



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### Electrical

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Equipment to Output Frequency Generators <sup>FO</sup>	3 Hz to 5 Hz	0.2 % of reading	HP 34401A - Measuring
	5 Hz to 10 Hz	0.1 % of reading	
	10 Hz to 40 Hz	0.06 % of reading	
	40 Hz to 300 kHz	0.02 % of reading	
Equipment to Output DC Voltage Meter <sup>FO</sup>	20 mV to 199.999 mV	(0.008 % of reading + 0.001 % of range + 5 $\mu$ V)	Fluke 5100 – Source
	0.2 V to 1.999 99 V	(0.008 % of reading + 0.001 % of range + 5 $\mu$ V)	
Equipment to Output DC Voltage Meter <sup>FO</sup>	2 V to 19.999 9 V	(0.008 % of reading + 0.001 % of range + 5 $\mu$ V)	
Equipment to Output DC Voltage Meter <sup>FO</sup>	20 V to 199.999 V	(0.008 % of reading + 0.001 % of range + 5 $\mu$ V)	
	200 V to 1 100 V	(0.008 % of reading + 0.001 % of range + 5 $\mu$ V)	
Equipment to Output DC Current Meter <sup>FO</sup>	10 $\mu$ A to 199.999 $\mu$ A	0.025 % of output + 0.002 % of range + 0.02 $\mu$ A)	
	0.2 mA to 1.999 99 mA	0.025 % of output + 0.002 % of range + 0.02 $\mu$ A)	
	2 mA to 19.999 9 mA	0.025 % of output + 0.002 % of range + 0.02 $\mu$ A)	
	20 mA to 199.999 mA	0.025 % of output + 0.002 % of range + 0.02 $\mu$ A)	
	0.2 A to 1.999 99 A	0.025 % of output + 0.002 % of range + 0.02 $\mu$ A)	
Equipment to Output AC Voltage Meter At the listed frequencies <sup>FO</sup>			
50 Hz to 10 kHz	20 mV to 199.999 mV	(0.065 % of reading + 0.005 % of range + 50 $\mu$ V)	
50 Hz to 10 kHz	0.2 V to 1.999 99 V	(0.065 % of reading + 0.005 % of range + 50 $\mu$ V)	
50 Hz to 10 kHz	2 V to 19.999 V	(0.065 % of reading + 0.005 % of range + 50 $\mu$ V)	
50 Hz to 10 kHz	20 V to 199.999 V	(0.065 % of reading + 0.005 % of range + 50 $\mu$ V)	
50 Hz to 10 kHz	200 V to 1 100 V	(0.065 % of reading + 0.005 % of range + 50 $\mu$ V)	
Equipment to Output AC Voltage Meter At The Listed Frequencies <sup>FO</sup>			
10 kHz to 50 kHz	20 mV to 199.999 mV	(0.09 % of reading + 0.008 % of range + 50 $\mu$ V)	
10 kHz to 50 kHz	0.2 V to 1.999 9 V	(0.09 % of reading + 0.008 % of range + 50 $\mu$ V)	
10 kHz to 50 kHz	2 V to 19.999 V	(0.09 % of reading + 0.008 % of range + 50 $\mu$ V)	
10 kHz to 50 kHz	20 V to 199.999 V	(0.09 % of reading + 0.008 % of range + 50 $\mu$ V)	
Equipment to Output AC Voltage Meter At the listed frequencies <sup>FO</sup>			
10 kHz to 50 kHz	200 V to 1 100 V	(0.09 % of reading + 0.008 % of range + 50 $\mu$ V)	



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Equipment to Output AC Current Meter At the Listed Frequencies <sup>FO</sup>			Fluke 5100 – Source
50 Hz to 1 kHz	10 $\mu$ A to 199.999 $\mu$ A	(0.09 % of reading + 0.005 % of range + 0.02 $\mu$ A)	
50 Hz to 1 kHz	0.2 mA to 1.999 mA	(0.09 % of reading + 0.005 % of range + 0.02 $\mu$ A)	
Equipment to Output AC Current Meter At the listed frequencies <sup>FO</sup>			Fluke 5100 – Source
50 Hz to 1 kHz	2 mA to 19.999 mA	(0.09 % of reading + 0.005 % of range + 0.02 $\mu$ A)	
50 Hz to 1 kHz	20 mA to 199.999 mA	(0.09 % of reading + 0.005 % of range + 0.02 $\mu$ A)	
50 Hz to 1 kHz	0.2 A to 1.999 A	(0.09 % of reading + 0.005 % of range + 0.02 $\mu$ A)	
Equipment to Output Resistance Meters <sup>FO</sup>	0 $\Omega$ to 1 $\Omega$	0.025 % reading	
	1 $\Omega$ to 10 $\Omega$	0.02 % reading	
	10 $\Omega$ to 100 $\Omega$	0.006 % reading	
	100 $\Omega$ to 1k $\Omega$	0.006 % reading	
	1k $\Omega$ to 10 k $\Omega$	0.006 % reading	
	10 k $\Omega$ to 100 k $\Omega$	0.006 % reading	
	100 k $\Omega$ to 1M $\Omega$	0.02 % reading	
Equipment to Output Frequency Meters <sup>FO</sup>	1 M $\Omega$ to 10 M $\Omega$	0.06 % reading	
	10 Hz to 30 Hz	0.6 % of reading	
	30 Hz to 1 MHz	0.45 % of reading	
	1M Hz to 5 MHz	0.9 % of reading	
Equipment to Output DC High Voltage (DC HI-POT) <sup>FO</sup>	5 MHz to 10 MHz	0.9 % of reading	
	0 kV to 20 kV	3 % of reading	
	20 kV to 40 kV		Brandenburg 139 P, HP/ Agilent
Equipment to Output AC High Voltage (AC HI-POT) <sup>FO</sup>	0 kV to 40 kV	5 % of reading	HP 34401A Fluke 80K-40



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Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type B <sup>FO</sup>	600 °C to 800 °C	2.2 °C	Electric Simulation of Thermocouple Output Fluke 5100 Agilent 34970A - TC Type J/K
	800 °C to 1 760 °C	2.2 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type E <sup>FO</sup>	-200 °C to 0 °C	0.75 °C	
	0 °C to 1 000 °C	0.71 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type J <sup>FO</sup>	-210 °C to 0 °C	0.52 °C	
	0 °C to 760 °C	0.52 °C	
	760 °C to 1 200 °C	0.52 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type K <sup>FO</sup>	-200 °C to 0 °C	0.62 °C	
	0 °C to 500 °C	0.62 °C	
	500 °C to 1 372 °C	0.62 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type N Calibration <sup>FO</sup>	-200 °C to 0 °C	0.61 °C	
	0 °C to 600 °C	0.61 °C	
	600 °C to 1 300 °C	0.61 °C	

### Time and Frequency

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Clock <sup>FO</sup>	9 h: 59 min: 59 s	7 s	Digital Stopwatch
Chronometer <sup>FO</sup>	23 h: 59 min: 59 s	7 s	
Timers (Time Devices) <sup>FO</sup>	23 h: 59 min: 59 s	7 s	
Tachometers <sup>FO</sup>	1.047 rad/s to 10 471.9 rad/s	0.1 % of reading + 1 dig	Tachometer Master

### Acoustic

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Sound Meters Devices <sup>FO</sup>	10 dB to 140 dB	0.76 dB + 0.032 % of reading	Sound Calibrator, Multi dB Generator & Multimeter
Sound Chambers (Generator) <sup>O</sup>	20 dB to 140 dB	2 dB	Sound Calibrator, Sound Meter & Frequency - meter



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### Mass, Force and Weighing Devices

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Weighing Devices	1 mg to 0.05 kg (Res.= 1 mg)	(0.103 + 0.28Wt) mg	Class F Weights and Weight Set Handbook 44
	0.05 kg to 1 kg (Res.= 1 g)	(11.252 + 0.702Wt) mg	
	1 kg to 50 kg (Res.= 5 g)	(0.832 + 0.513Wt) g	
	50 kg to 500 kg (Res.= 0.1 kg)	(0.091 + 0.07Wt) kg	
	500 kg to 5 000 kg (Res.= 2 kg)	(0.434 + 0.871Wt) kg	
	5 000 kg to 10 000 kg (Res.= 5 kg)	(10.45 + 0.009Wt) kg	
Mass Weight Class M1, M2 & M3 <sup>FO</sup>	2 mg	0.045 mg	Double Substitution with Air Buoyancy correction. Class F mass set and analytic balance
	5 mg	0.045 mg	
	10 mg	0.045 mg	
	20 mg	0.074 mg	
	50 mg	0.11 mg	
	100 mg	0.12 mg	
	200 mg	0.16 mg	
	500 mg	0.24 mg	
	1 g	0.28 mg	
2 g	0.32 mg		
Mass Weight Class M1, M2 & M3 <sup>FO</sup>	5 g	0.32 mg	Double Substitution with Air Buoyancy correction. Class F Mass Set and Analytic Balance
	10 g	0.57 mg	
	20 g	0.57 mg	
	50 g	0.75 mg	
	100 g	1.2 mg	
	500 g	6.3 mg	
	1 kg	13 mg	
	2 kg	29 mg	
	5 kg	200 mg	OIML Class F2 Mass Set Weight Scale
	10 Kg	200 mg	
20 Kg	29 mg		
Tension - Compression & Dynamometer Force Devices <sup>FO</sup>	1 N to 10 N	0.2 % of reading	Class F Weights & Force Gage
	10 N to 100 N	0.2 % of reading	





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Tension - Compression & Dynamometer Force Devices <sup>FO</sup>	100 N to 10 000 N	0.7 % of reading	Class F Weights & Force Gage
	1 kN to 100 kN	0.4 % of reading	

### Thermodynamic

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Glass Thermometers & Bimetallic Thermometers <sup>FO</sup>	-30 °C to 150 °C	1 °C	Temperature Bath & Agilent 34970A - TC type J/K
	150 °C to 400 °C	1 °C	
Thermal Chambers <sup>O</sup>	-40 °C to 200 °C	1 °C	Agilent 34970A - TC type J/K
Thermal Oven <sup>O</sup>	50 °C to 400 °C	1 °C	
Thermal Controllers <sup>O</sup>	40 °C to 1 760 °C	2 °C	Fluke 5100 & Agilent 34970A - TC type J/K
Hygrometers <sup>FO</sup>	10 % RH to 90 % RH	2 % RH	Temperature and Humidity Recorder & humidity chamber generator ASTM E104
Humidity Tester <sup>FO</sup>	10 % RH to 90 % RH	2 % RH	
Humidity Chamber <sup>O</sup>	10 % RH to 90 % RH	2 % RH	

### Optical

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
Photometers & Luminance Devices <sup>FO</sup>	10 Lux to 400 000 Lux	7 % of reading	Luxmeter and Light chamber

### 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
Conductivity Device Fixed Point <sup>FO</sup>	84 $\mu$ S	3 % of reading	Standard Solutions. NIST-NISTIR-6191-1998
	1 413 $\mu$ S	3 % of reading	
	12 880 $\mu$ S	3 % of reading	
pH Meter <sup>FO</sup>	4 pH units	0.01 pH units	pH Buffer Solution ( 4, 7 & 10 pH units)
	7 pH units	0.01 pH units	
	10 pH units	0.01 pH units	



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Horizonte 28 entre Astro Rey Sur y Amanecer,  
Matamoros, Tamaulipas, México C.P. 87314  
Contact Name: Carlos Lucio Phone: 868-810-1140

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
Durometer Hardness (Direct Verification Scale: A, B, E, O) Extension at Zero readings  Diameter of the Base of the Frustum Diameter of the Top of the Frustum Cone Angle Tip Radius Indenter Thickness Indenter Thickness <sup>FO</sup>	2.46 mm to 2.54 mm	8.1 $\mu$ m  5 $\mu$ m 5 $\mu$ m 0.03° 5 $\mu$ m 5 $\mu$ m 5 $\mu$ m	Load Cell, Force gauge & Balance & Gage Block The dimensional characteristics of the indenters are verified by optical projection ASTM D2240
Verification Durometer Spring <sup>FO</sup>	0.55 N to 8.05 N	62 mN	The Durometer Spring is Verified with Dead Weights
Leak Standards (Air Flow Devices) <sup>FO</sup>	0.1 cm <sup>3</sup> /s to 500 cm <sup>3</sup> /s	0.4 % of reading	Air Mass Flow Meter Aalborg GFM 17 NIST-SP250-38-1992
Pressure Devices <sup>FO</sup>	1 k Pa to 700 kPa	0.62 kPa + 0.026 % of reading	Pressure Pump and Digital Pressure Gauge
	700 kPa to 67 000 kPa	4.2 kPa + 0.026 % of reading	
Vacuum Devices <sup>FO</sup>	-100 kPa to 0.1 kPa	0.015 kPa + 0.012 % of reading	Vacuum Pump and Gauge
Volume Containers <sup>FO</sup>	1 mL to 1 000 mL	0.1 mL	Analytical Balance
Volume Measurement Devices <sup>FO</sup>	0.1 L to 10 L	20 mL	Analytical Balance & Flow Meter / Master Containers
	10 L to 40 L	0.1 L	
	40 L to 200 L	0.5 L	
Viscosity Meters & Cups Ford <sup>FO</sup>	10 Centistokes 35 Centistokes 60 Centistokes	2 % of reading	Viscosity Solutions, Stop Watch and Master Container
	20 Centistokes 60 Centistokes 100 Centistokes		
Torque Force Devices <sup>FO</sup>	1.0 N·m to 10 N·m	0.7 % of reading	Digital Torque Analyzer
	33.8 N·m to 100 N·m	1.2 % of reading	Electronic Torque Tester
	101 N·m to 338 N·m	1.2 % of reading	



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### Mechanical

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Indirect Verification of Rockwell Hardness Tester HRA <sup>FO</sup>	20 HRA to 40 HRA	0.7 HRA	Indirect Method - Block Master Rockwell A, B, C
	45 HRA to 75 HRA	0.71 HRA	
	80 HRA to 88 HRA	0.6 HRA	
Indirect Verification of Rockwell Hardness Tester HRB <sup>FO</sup>	20 HRB to 50 HRB	0.95 HRB	Block Master Rockwell B
	60 HRB to 80 HRB	0.95 HRB	
	85 HRB to 100 HRB	0.95 HRB	
Indirect Verification of Rockwell Hardness Tester HRC <sup>FO</sup>	20 HRC to 30 HRC	0.42 HRC	Indirect Method - Block Master Rockwell A, B, C
	35 HRC to 55 HRC	0.41 HRC	
	60 HRC to 70 HRC	0.37 HRC	

- 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 O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer<sup>O</sup> would mean that the laboratory performs this calibration onsite at the customer's 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.



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

7. The term D represents diameter in inches or millimeters as appropriate to the uncertainty statement.
8. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
9. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.

