PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

3Dimensional Laboratorios S. de R.L. de C.V.

Plaza España No 7320, Fraccionamiento Roma Poniente,
Ciudad Juarez Chihuahua. C.P. 32695

(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, Force, Mass and Weighing Devices, Mechanical, Thermodynamic, Chemical 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

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
September 12, 2016	September 12, 2016	October 31, 2018

Accreditation No.:	*Certificate No.:*
84633	L16-370

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

3Dimensional Laboratorios S. de R.L. de C.V.
Plaza España No 7320, Fraccionamiento Roma Poniente,
Ciudad Juarez Chihuahua. C.P. 32695
Contact Name Víctor Manuel Martínez Sastré. Phone: 656-315-27 74

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 (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Micrometers[FO]	0.5 mm to 500 mm	(1.3 + 0.03L) µm	Gage Blocks
Calipers[FO]	0.5 mm to 500 mm	(5.77 + 0.001L) µm	
Indicators[FO]	0.001 mm to 60 mm	(2.2 + 0.6L) µm	
Protractor[F]	05 mm to 1 000 mm	0.014°	Angle Blocks
Thread Plug Gages[FO]	0-80 & 4-20 TPI	60 µin	Thread Wires & Bench Micrometer
Optical Comparator[O] X axis Y axis	 1 mm to 500 mm 1 mm to 500 mm	(3.86 + 0.025 4L) µm	Master Glass Scale, Angle Blocks
Optical Comparator[O] Angulatory	0° to 180°	0.03°	
Optical Comparator[O] Magnification	10X	0.05 % Magnification	
	20X	0.05 % Magnification	
	50X	0.05 % Magnification	

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Indirect Verification of Machine Hardness Tester HRB[O]	40 HRB to 59 HRB	0.9 HRB	Hardness Standard Blocks ASTM E18
	60 HRB to79 HRB	0.7 HRB	
	80 HRB to 100 HRB	0.5 HRB	
Indirect Verification of Machine Hardness Tester HRC[O]	25 HRC to 39 HRC	0.6 HRC	
	40 HRC to 59 HRC	1 HRC	
	60 HRC to 70 HRC	0.5 HRC	
Torque Wrenches[F]	1 lbf·in to 50 lbf·in	0.7 % of reading	CDI Torque Tester
	60 lbf·in to 600 lbf·in	0.7 % of reading	
Pressure - Pneumatic Gage[O]	12.5 psi to 10 000 psi	20 psi	Additel Hydraulic Press Test Pump & Digital Pressure

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
IR Thermometers[FO]	10 °C to 400 °C (20 °F to 752 °F)	1.4°C (2.5°F)	Omega Infrared Calibrator

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

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Output DC Voltage[FO]	3.299 mV to 329.999 9 mV	60 µV/V + 3 µV	Fluke 5500A
	0.032 9 V to 3.299 999 V	50 µV/V + 5 µV	
	0.329 V to 32.999 99 V	50 µV/V + 50 µV	
	30 V to 329.999 9 V	55 µV/V + 500 µV	
	100 V to 1 020 V	55 µV/V + 1500 µV	
	0.032 9 mA to 3.299 99 mA	130 µA/A + 0.05 µA	
	0.329 9 mA to 32.999 9 mA	100 µA/A + 0.25 µA	
	3.29 mA to 329.999 mA	100 µA/A + 3.3 µA	
	0.021 9 A to 2.199 99 A	300 µA/A + 44 µA	
	0.11 A to 11 A	600 µA/A + 330 µA	
Equipment to Output Resistance[FO]	0.109 9 Ω to 10.99 Ω	120 µΩ/Ω + 0.008	
	11 Ω to 32.999 Ω	120 µΩ/Ω + 0.015	
	33 Ω to 109.999 Ω	90 µΩ/Ω + 0.015 Ω	
	110 Ω to 329.999 Ω	90 µΩ/Ω + 0.015 Ω	
	330 Ω to 1.099 99 kΩ	90 µΩ/Ω + 0.06 Ω	
	1.1 kΩ to 3.299 99 kΩ	90 µΩ/Ω + 0.06 Ω	
	3.3 kΩ to 10.999 9 kΩ	90 µΩ/Ω + 0.6 Ω	
	11 kΩ to 32.999 9 kΩ	90 µΩ/Ω + 0.6 Ω	
	33 kΩ to 109.999 kΩ	110 µΩ/Ω + 6 Ω	
	110 kΩ to 329.999 kΩ	120 µΩ/Ω + 6 Ω	
	330 kΩ to 1.099 99 MΩ	150 µΩ/Ω + 55 Ω	
	1.1 MΩ to 3.299 99 MΩ	150 µΩ/Ω + 55 Ω	
	3.3 MΩ to 10.999 9 MΩ	600 µΩ/Ω + 55 Ω	
	11 MΩ to 32.999 9 MΩ	1 000 µΩ/Ω + 55 Ω	
	33 MΩ to 109.999 MΩ	5 000 µΩ/Ω + 5.5 kΩ	
	110 MΩ to 330 MΩ	5 000 µΩ/Ω + 16.5 kΩ	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E[FO]	-250 °C to -100 °C	0.5 °C	Fluke 5500A Electrical Simulation of Thermocouple Output
	-100 °C to -25 °C	0.16 °C	
	-25 °C to 350 °C	0.14 °C	
	350 °C to 650 °C	0.16 °C	
	650 °C to 1 000 °C	0.21 °C	

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

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J[FO]	-210 °C to -100 °C	0.27 °C	Fluke 5500A Electrical Simulation of Thermocouple Output
	-100 °C to -30 °C	0.16 °C	
	-30 °C to 150 °C	0.14 °C	
	150 °C to 760 °C	0.17 °C	
	760 °C to 1 200 °C	0.23 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K[FO]	-200 °C to -100 °C	0.33 °C	
	-100 °C to -25 °C	0.18 °C	
	-25 °C to 120 °C	0.16 °C	
	120 °C to 1 000 °C	0.26 °C	
	1 000 °C to 1372 °C	0.4 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type R[FO]	0.1 °C to 250 °C	0.57 °C	
	250 °C to 400 °C	0.35 °C	
	400 °C to 1 000 °C	0.33 °C	
	1 000 °C to 1 767 °C	0.4 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type S[FO]	0.1 °C to 250 °C	0.47 °C	
	250 °C to 1 000 °C	0.36 °C	
	1 000 °C to 1 400 °C	0.37 °C	
	1 400 °C to 1 767 °C	0.46 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T[FO]	-250 °C to -150 °C	0.63 °C	
	-150 °C to 0 °C	0.24 °C	
	0.1 °C to 120 °C	0.16 °C	
	120 °C to 400 °C	0.14 °C	
Temperature Calibration, Indication and Control Equipment used with RTD Source Type Pt 385, 100Ω[FO]	200 °C to -80 °C	0.05 °C	
	-80 °C to 0 °C	0.05 °C	
	0.1 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
	630 °C to 800 °C	0.23 °C	
Equipment to Output Capacitance At the listed frequencies[FO]			Fluke 5500A
50 Hz to 1 kHz	0.33 nF to 0.499 9 nF	5 pF/nF + 0.01 nF	
50 Hz to 1 kHz	0.5 nF to 1.099 9 nF	5 pF/nF + 0.01 nF	

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Electrical

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Equipment to Output Capacitance At the listed frequencies[FO]			Fluke 5500A
50 Hz to 1 kHz	1.1 nF to 3.299 9 nF	5 pF/nF + 0.01 nF	
50 Hz to 1 kHz	3.3 nF to 10.999 nF	5 pF/nF + 0.01 nF	
50 Hz to 1 kHz	11 nF to 32.999 nF	2.5 pF/nF + 0.1 nF	
50 Hz to 1 kHz	33 nF to 109.99 nF	2.5 pF/nF + 0.1 nF	
50 Hz to 1 kHz	110 nF to 329.99 nF	2.5 pF/nF + 0.3 nF	
50 Hz to 1 kHz	0.33 µF to 1.099 9 µF	2.5 nF/µF + 1 nF	
50 Hz to 1 kHz	1.1 µF to 3.299 9 µF	3.5 nF/µF + 3 nF	
Equipment to Output Capacitance at the listed frequencies[FO]			
50 Hz to 400 Hz	3.3 µF to 10.999 µF	3.5 nF/µF + 10 nF	
50 Hz to 400 Hz	11 µF to 32.999 µF	4 nF/µF + 30 nF	
50 Hz to 200 Hz	33 µF to 109.99 µF	5 nF/µF + 100 nF	
50 Hz to 100 Hz	110 µF to 329.99 µF	7 nF/µF + 300 nF	
50 Hz to 100 Hz	330 µF to 1.1 mF	10 µF/mF + 300 nF	
Equipment to Output AC Current at the listed frequencies[FO]			
10 Hz to 20 Hz	0.029 mA to 0.329 99 mA	2.5 mA/A + 0.15 µA	
20 Hz to 45 Hz	0.029 mA to 0.329 99 mA	1.25 mA/A + 0.15 µA	
45 Hz to 1 kHz	0.029 mA to 0.329 99 mA	1.25 mA/A + 0.25 µA	
1 kHz to 5 kHz	0.029 mA to 0.329 99 mA	4 mA/A + 0.15 µA	
5 kHz to 10 kHz	0.029 mA to 0.329 99 mA	12.5 mA/A + 0.15 µA	
Equipment to Measure DC/AC High Voltage[FO]	0.4 kV to 40 kV	0.02 kV	Fluke 80K-40

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

Chemical

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pH Meters[FO]	4 pH	0.013 pH	pH Buffer Solutions
	7 pH	0.013 pH	
	10 pH	0.013 pH	
Conductivity Meters[FO]	9.35 µS/cm	0.28 µS/cm	Conductivity Solutions
	100 µS/cm	0.29 µS/cm	
	999 µS/cm	3 µS/cm	
	9 985 µS/cm	30 µS/cm	

Force, Mass and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Force –Compression and Tension- Source and Measure[FO]	1.1 N to 2.5 N	0.24 % of reading	Test Weight Set F Class
	2.6 N to 10 N	0.24 % of reading	
	10.1 N to 50 N	0.24 % of reading	
	51 N to 100 N	0.24 % of reading	
Force –Compression and Tension- Source and Measure[FO]	101 N to 250 N	0.24 % of reading	Test Weight Set F Class
	251 N to 500 N	0.24 % of reading	
	501 N to 1 000 N	0.24 % of reading	
	1 001 N to 5 000 N	0.24 % of reading	
Scales and Balances Class III[O]	1lb to 10 lb (Res.= 0.000 5 lb)	$(1 \times 10^{-4} + 1.8 \times 10^{-4}\text{Wt})$ lb	Test Weights Set F Class
	1lb to 20 lb (Res.= 0.000 1 lb)	$(1 \times 10^{-4} + 2.34 \times 10^{-4}\text{Wt})$ lb	
	1lb to 50 lb (Res.= 0.000 2 lb)	$(2 \times 10^{-4} + 1.12 \times 10^{-4}\text{Wt})$ lb	
	1lb to 100 lb (Res. = 0.001 lb)	$(1.10 \times 10^{-3} + 1.08 \times 10^{-4}\text{Wt})$ lb	
	50 lb to 500 lb (Res. = 0.05 lb)	$(5.54 \times 10^{-2} + 5.25 \times 10^{-5}\text{Wt})$ lb	
	500 lb to 5 000 lb (Res. = 1 lb)	$(1.14 + 3 \text{ X } 10^{-5}\text{Wt})$ lb	

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

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 O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer^{O} would mean that the laboratory performs this calibration onsite at the customer's location.
5. 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.
6. 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
7. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
8. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.