PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

MetriCal Laboratories, LLC

1 Sinco Place, East Hampton, CT 06424

(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):

Calibration of Dimensional, Mechanical and Mass, Force, & Weighing Devices
(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

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
February 28, 2009	November 09, 2021	November 9, 2023

Accreditation No.:	*Certificate No.:*
62320	L21-691

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.pjlabs.com

Certificate of Accreditation: Supplement

MetriCal Laboratories, LLC
1 Sinco Place, East Hampton, CT 06424
Contact Name: Joe Christian Phone: 860-267-1109

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
Gage Blocks [F]	0.01 in to 4 in	(2.3 + 2.1L) µin	P&W Lab Master Universal Gage Blocks Grade 1 MCL CWI-0045
	4 in to 20 in	(7.7 + 2.1L) µin	Joint Industries DMS-680 Gage Blocks Grade 1 MCL CWI-0045
Cylindrical Plain OD Gages [F]	1 in to 9.5 in	(6.8 + 1.7L) µin	P&W Lab Master Universal Gage Blocks Grade 1 MCL CWI-0110
Cylindrical Pins, Plugs, and Thread Major Diameter [F]	0.01 in to 27 in	(14 + 0.65L) µin	Joint Instruments DMS-680 MCL CWI-0080
Cylindrical Ring Gages [F]	0.02 in to 0.04 in	22 µin	P&W Lab Master Universal Gage Blocks Grade 1 MCL CWI-0046
	0.04 in to 4 in	(22 + 0.45L) µin	
	4 in to 9.5 in	(19 + 1.3L) µin	
	0.04 in to 19 in	(21 + 0.96L) µin	Joint Instruments DMS-680 Gage Blocks Grade 1 MCL CWI-0046
Thread Wires [F]	80 TPI to 5 TPI	(22 + 39L) µin	Joint Instruments DMS-680 and Cylindrical Rolls MCL CWI-0085
Thread Plug Gages [F]	0.06 in to 4 in	(90 + 17L) µin	Joint Instruments DMS-680 and Thread Wires MCL CWI-0300
Micrometers [FO]	0.01 in to 4 in (Res = 0.000 05 in)	(31 + 0.78L) µin	Comparison to Gages Blocks MCL CWI-0227
	0.01 in to 4 in (Res = 0.000 1 in)	(61 + 0.36L) µin	
	0.01 in to 4 in (Res = 0.000 5 in)	(310 + 0.088L) µin	
	0.01 in to 4 in (Res = 0.001 in)	(570 + 0.041L) µin	
	4 in to 20 in (Res = 0.000 1 in)	(47 + 2.9L) µin	
	4 in to 20 in (Res = 0.001 in)	(570 + 0.23L) µin	
Indicators [FO]	0.000 05 in to 2 in (Res.= 0.000 05 in)	(31 + 0.37L) µin	Comparison to Gages Blocks MCL CWI-0171
	0.000 1 in to 4 in (Res= 0.000 1 in)	(61 + 0.38L) µin	
	0.000 5 in to 4 in (Res = 0.000 5 in)	(310 + 0.091L) µin	
	0.001 in to 4 in (Res = 0.001 in)	(610 + 0.045L) µin	

Certificate of Accreditation: Supplement

MetriCal Laboratories, LLC
1 Sinco Place, East Hampton, CT 06424
Contact Name: Joe Christian Phone: 860-267-1109

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
Height Gages [FO]	0.01 in to 36 in (Res = 0.000 1)	(66 + 2.5L) µin	Comparison to Gages Blocks Surface Plate MCL CWI-0160
	0.01 in to 40 in (Res = 0.001)	(610 + 0.24L) µin	
	0.01 in to 24 in (Res= 0.000 5)	(440 + 0.51L) µin	
Calipers [FO]	0.01 in to 60 in (Res= 0.000 5)	(310 + 0.7L) µin	Comparison to Gages Blocks MCL CWI-0060
	0.01 in to 72 in (Res= 0.001)	(610 + 0.36L) µin	
Surface Plates – Flatness [FO]	8 in to 461 in Diagonal	(56 µin + 0.6D) µin	Auto Collimator MCL CWI-0342
Surface Plates –Repeat Reading [FO]		52 µin	Repeat-o-meter w/indicator MCL CWI-0342

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
Torque Wrench/Driver [FO]	5 lbf·in to 50 lbf·in	1.1 % of Reading	Ametek Torque Tester MCL CWI-0315
	300 lbf·in to 3 000 lbf·in	0.27 % of Reading	Advanced Torque Products Torque Tester MCL CWI-0315
	25 lbf·ft to 250 lbf·ft	0.37 % of Reading	Advanced Torque Products Torque Tester MCL CWI-0315
Pressure Gages [FO]	10 psi to 100 psi	0.09 % of Reading	Ashcroft Master Pressure Gage MCL CWI-0231
	100 psi to 3 000 psi	0.07 % of Reading	3D Instruments Master Pressure Gage MCL CWI-0231
Vacuum Gages [FO]	1 psi to -14 psi	3 % of Reading	Master Vacuum Gage MCL CWI-0231

Certificate of Accreditation: Supplement

MetriCal Laboratories, LLC
1 Sinco Place, East Hampton, CT 06424
Contact Name: Joe Christian Phone: 860-267-1109

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

Mass, Force, 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
Bench/Floor scale	Up to 300 lb	0.71 lb	Master Weights - Class F MCL CWI-0246
Force Gauges– Compression and Tension [FO]	0.001 lbf to 50 lbf	0.2 % of Reading	Master Weights - Class F MCL-CWI-0340
	50 lbf to 2 250 lbf	0.2 % of Reading	Master Digital Load Cells MCL-CWI-0340
	400 lbf to 20 000 lbf	0.2 % of Reading	
Force Gauges– Compression [FO]	1 000 lbf to 60 000 lbf	0.2 % of Reading	Master Digital Load Cells MCL-CWI-0340
	6 202 lbf to 60 000 lbf	0.2 % of Reading	
	60 201 lbf to 500 000 lbf	0.4 % of Reading	

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represent the smallest measurement uncertainties attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is 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 term L represents length in inches or millimeters appropriate to the uncertainty statement.
4. 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.
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. L is the length of the Unit under test in inches; D is the numerical value of the nominal diameter of the device measured in inches. DL is the numerical value of the error in the length added to the base value uncertainty per inch travel.