



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Made to Measure, LLC
302 East Main Street, East Dundee, IL 60118

(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):

Dimensional, Mechanical and Mass, Force, and Weighing Device
(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:

July 31, 2014

Issue Date:

June 14, 2023

Expiration Date:

September 30, 2025

Revision Date:

August 10, 2024

Accreditation No.:

59334

Certificate No.:

L23-460-R1

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



Certificate of Accreditation: Supplement

Made to Measure, LLC

302 East Main Street, East Dundee, IL 60118
 Contact Name: Jacek Macias Phone: 847-851-1160

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

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Radius Gages (Leaf) ^F	0.005 in to 1 in	380 μ in	Optical vision measuring machine (VMM)	M2M 6e22
	0.125 mm to 25.4 mm	9.7 μ m		
	Angle Gages (Leaf) ^F	Up to 90°		
Thread Pitch Gages (Leaf) ^F	2 TPI to 120 TPI	310 μ in	Optical vision measuring machine (VMM), Master Gage Blocks, Sine Bar	M2M 6e31 M2M 6e28
	0.2 mm to 10.0 mm Pitch	7.9 μ m		
Protractors ^F (Mechanical)	Up to 90°	0.066°/4.0 arc min	1D Measuring Machine	M2M 6e34
Protractors ^F (Digital)	Up to 90°	0.006°/0.4 arc min		
Feeler Gages ^{FO}	0.001 in to 0.25 in	16 μ in	Master Ring Gages	M2M 6e23
	0.025 mm to 6.3 mm	0.4 μ m		
Tri Point Bore Gages/ Holtest ^{FO}	0.125 in to 4.0 in	(40 + 4D) μ in	1D Measuring Machine, Master Gage Blocks	M2M 6e18
	3.0 mm to 101.6 mm	(1 + 4D) μ m		
Pin & Plug Gages ^F	0.005 in in to 4.0 in	(7.8 + 3.8D) μ in	Laser Scan Micrometer, Master Pins	M2M 6e17
	0.125 mm to 101.6 mm	(0.2 + 3.8D) μ m		
Pin & Plug Gages ^F	0.005 in to 1 in	28 μ in	Master Pins	M2M 6e39
	0.125 mm to 25.4 mm	0.71 μ m		
Laser Scan Micrometer ^F	0.005 in to 1.0 in	(13 + 1.05D) μ in	1D Measuring Machine, Master Ring Gages, Master Gage Blocks	M2M 6e19
	0.125 mm to 25.4 mm	(0.33 + 1.05D) μ m		
Cylindrical Ring Gages ^F	0.06 in to 0.5 in	12 μ in		
	1.5 mm to 12.7 mm	0.3 μ m		
	0.5 in to 4.0 in	(10.1 + 3.5D) μ in		
	12.7 mm to 101.6 mm	(0.26 + 3.5D) μ m		
	4.0 in to 8 in	(10 + 3.75D) μ in		
	101.6 mm to 203.6 mm	(0.25 + 3.75D) μ m		
	8.0 in to 12 in	(8 + 4D) μ in		
203.6 mm to 305 mm	(0.2 + 4D) μ m			
Balls & Spheres ^F	0.005 in to 4.0 in (0.125 to 101.6 mm)	(8.5 + 3.7D) μ in (0.22 + 3.7D) μ m	1D Measuring Machine, Master Gage Blocks	M2M 6e20



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Thread Plug Gages ^F <ul style="list-style-type: none"> Major Diameter Pitch Diameter 	0-80 to 4-10 in/	(9.2 + 3.45D) μ m	1D Measuring Machine, Thread Wires	M2M 6e35
	M 1.6 mm to M 100 mm	(0.66 + 2.55) μ m		
Adjustable Thread Ring Gages ^{FO}	0-80 to 4-10 in/	(30 + 5.4D) μ m	Master Setting Thread Plugs	M2M 6e32
	M 1.6 mm to M 100 mm	(0.76 + 5.4D) μ m		
Thread Measuring Wires ^F	2 TPI to 120 TPI	11 μ m	1D Measuring Machine	M2M 6e24
	0.2 to 10.0 mm Pitch	0.28 μ m		
Surface Roughness Specimens ^F	1 to Ra 40 μ m	2.1 μ m	Master Surface Tester	M2M 6e26
	0.025 to Ra 1 μ m	0.053 μ m		
	Ra 40 to Ra 125 μ m	3.1 μ m		
	Ra 1 to 3.18 μ m	0.078 μ m		
	Ra 125 to Ra 500 μ m	13 μ m		
Surface Finish Measuring Instruments ^F	1 to Ra 40 μ m	2.1 μ m	Master Surface Specimen	M2M 6e27
	0.025 to Ra 1 μ m	0.053 μ m		
	Ra 40 to 125 μ m	4.6 μ m		
	Ra 1 to 3.18 μ m	0.12 μ m		
Optical Flat/Optical Parallel/Anvils/Flat Surfaces ^F <ul style="list-style-type: none"> Flatness Thickness Parallelism 	Up to 3 in (Up to 76.2 mm)	2.5 μ m (0.6 μ m)	Master Optical Flat, 1D Measuring Machine	M2M 6e25
	Up to 1 in (Up to 25.4 mm)	7.2 μ m (0.18 μ m)		
	Up to 1 in (Up to 25.4 mm)	6.2 μ m (0.16 μ m)		
Fixed Length Gages ^F (Step Gages, Step Height, Mike Master, Depth Master, Caliper Checker)	0.375 in to 40 in	(17.1 + 3.85L) μ m/	Master Gage Blocks, Amplifier Probe	M2M 6e41
	10 mm to 101.6 mm	(0.43 + 3.85) μ m		
Gage Blocks ^F	0.05 in. to 4.0 in	(3.8 + 3.6L) μ m	1D Measuring Machine, Master Gage Blocks	M2M 6e38
	1.5 mm to 100 mm	(0.1 + 3.6L) μ m		
	4.0 in. to 20.0 in	(0.33 + 4L) μ m		
	100 mm to 500 mm	(0.008 + 4L) μ m		



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Optical Comparator/ Profile Projector ^{FO} <ul style="list-style-type: none"> Linearity Squareness Magnification 	Up to 300 mm	$(2.4 + 8.7L) \mu\text{m}$	Glass Scales, Master Square	M2M 6e21
	Up to 200 mm	$(1.8 + 5.5L) \mu\text{m}$		
	10X to 50X	0.02%		
3D Optical Portable Scanner ^{FO} Probing Size Error Sphere Spacing Error	Dia: 50.8 mm	$3 \mu\text{m}$	Ball Bar standard and Reference Sphere	Performance verification per VDI/VDE 2634 Part 3; Sections 4.1 and 4.2
	Up to 635 mm	$7.8 \mu\text{m}$		
Plastic Films ^F	Up to 0.25 in	$13 \mu\text{in}$ $(0.33 \mu\text{m})$	1D Measuring Machine	M2M 6e30
Vision Machines ^{FO} Measuring Stage (X & Y) Z Axis Squareness	(600 X 600 X 300) mm	$(1.7 + 8.6L) \mu\text{m}$	Glass Scales, Gage Blocks, Square	M2M 6e42
	Up to 300 mm	$(0.75 + 7.8L) \mu\text{m}$		
	Up to 200 mm	$(0.67 + 6.2L) \mu\text{m}$		
Amplifier with Probe ^F	0.000 025 in to 0.008 in	$4.6 \mu\text{in}$ $(0.12 \mu\text{m})$	Master Gage Blocks	M2M 6e40
Sine Bars ^F	5 in (127 mm)	$33 \mu\text{in}$ $(0.84 \mu\text{m})$	Master Gage Blocks, Amplifier Probe	M2M 6e29
	10 in (254 mm)	$54 \mu\text{in}$ $(1.4 \mu\text{m})$		
Calipers ^{FO}	Up to 40 inches (Up to 1016 mm)	$(510 + 10.5L) \mu\text{in}$ $((12.95 + 10.5L) \mu\text{m})$	Gage Blocks	M2M 6e13
Micrometers ^{FO} (Outside)	Up to 40 inches (Up to 1016 mm)	$(51 + 8.8L) \mu\text{in}$ $((1.3 + 8.8L) \mu\text{m})$		M2M 6e7
Micrometers ^{FO} (Depth)	Up to 12 inches (Up to 304.8 mm)	$(70 + 11.7L) \mu\text{in}$ $((1.78 + 11.7L) \mu\text{m})$		M2M 6e8
Micrometers ^{FO} (Blade)	Up to 4 inches (Up to 101.6 mm)	$(51 + 10L) \mu\text{in}$ $((1.3 + 10L) \mu\text{m})$		M2M 6e9
Micrometers ^{FO} (Disc)	Up to 4 inches (Up to 101.6 mm)	$(56 + 7.75L) \mu\text{in}$ $((1.42 + 7.75L) \mu\text{m})$		M2M 6e10
Micrometers ^{FO} (Vee)	Up to 1 inch (Up to 25.4 mm)	$71 \mu\text{in}$ $(1.8 \mu\text{m})$	Pin Gages	M2M 6e11
Micrometers ^{FO} (Point)	Up to 4 inches (101.6 mm)	$(56 + 6L) \mu\text{in}$ $((1.42 + 6L) \mu\text{m})$	Gage Blocks	M2M 6e12



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Dial Indicators ^{FO}	Up to 1 inch (Up to 25.4 mm)	310 μ m (7.88 μ m)	Indicator Tester	M2M 6e14
Digital Indicators ^{FO}	Up to 2 inches (Up to 50.8 mm)	45 μ m (1.2 μ m)	Gage Blocks	M2M 6e15
Height Gages ^F	Up to 40 inches (Up to 1 016 mm)	(510 + 12.25L) μ m ((12.95 + 12.25L) μ m)		M2M 6e16
Coordinate Measuring Machine with Optical Distance Sensor Linear Displacement Error ^{FO}	Up to 635 mm	(3.9 + 1.12L) μ m	Ball Gage	ISO 10360-8
Probe Performance ^{FO} (Form)	(10 to 51) mm	1.5 μ m		
Probe Performance ^{FO} (Size)	(10 to 51) mm	1.5 μ m		
Coordinate Measuring Machines ^{FO}			Step Gage	ISO 10360-2
Linear Displacement Error	Up to 1 510 mm	(0.37 + 1.24L) μ m		
Linear Displacement Error	Up to 10 m	(0.75 + 1.13L) μ m	Laser Interferometer	
Probe Performance ^{FO}			Master Sphere	ISO 10360-5
Form	(10 to 51) mm	0.11 μ m		
Size	(10 to 51) mm	0.29 μ m		
Scanning Probe Performance ^{FO}				
Form	(24.9 to 25.4) mm	0.11 μ m		
Size	(24.9 to 25.4) mm	0.29 μ m		

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Torque Testing Tools ^{FO}	Up to 100 in.lb.	0.69 % of reading	Torque Tester	M2M 6e36
	25 to 250 ft.lb	1.2 % of reading		



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Mass, Force, and Weighing Device

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Force – Tension & Compression Measuring Gages ^F	1 lbf to 200 lbf.	0.002 9 %	Deadweight using Class 5 & F Weights	M2M 6e42
Scales ^{FO}	1 lb. to 10 lb.	3 g	Weights Class 5 & F	M2M 6e37
	10 lb. to 100 lb.	6.3 g		
	100 lb. to 200 lb.	11 g		

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.
4. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations.
5. The term L represents length in inches or meters as appropriate to the uncertainty statement.
6. The term D represents diameter in inches or meters as appropriate to the uncertainty statement.
7. 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`