



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Thwing-Albert Instrument Co.
14 West Collings Ave, West Berlin, NJ 08091

(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 Mechanical, Dimensional,
Mass, Force, & Weighing and Time & Frequency Instruments***
(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

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

<i>Initial Accreditation Date:</i>	<i>Issue Date:</i>	<i>Expiration Date:</i>
August 21, 2014	December 27, 2020	January 31, 2023
<i>Revision Date:</i>	<i>Accreditation No.:</i>	<i>Certificate No.:</i>
December 2, 2021	73494	L20-796-R1

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

Thwing-Albert Instrument Co.

14 West Collings Ave, West Berlin, NJ 08091
 Contact Name: Denis Silva Phone: 856-767-1000

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
Thickness ^{FO} -Micrometer Head	0.01 in to 0.05 in	6.2 μ m	Class 2 Gage Blocks CP-021
	0.05 in to 0.5 in	(4.7 + 21T) μ m	
Crosshead Travel ^{FO} - Tensile/Compression Testers - Friction/Peel Testers	1 in to 10 in	(22 + 22L) μ m	Class 2 Gage Blocks CP-053

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
Force, Tension ^{FO} -Tensile Testers - Friction/Peel Testers	1 lbf to 10 lbf	(0.000 065 + 0.000 64F) lbf	Class 6 Weights Keithley 2001 DMM Power supply ASTM E4, CP-053, CP-062
	10 lbf to 100 lbf	(0.004 5 + 0.000 2F) lbf	
	100 lbf to 1 000 lbf	(0.008 9 + 0.000 25F) lbf	
Force, Compression ^{FO} - Compression Testers	100 lbf to 1 000 lbf	(0.01 + 0.000 85F) lbf	Non-standard weights. ISO 1974, TAPPI T414, ASTM, D1922, D1424, CP-016
Force, Pendulum ^{FO} -Tear Testers	Up to 12,800 gf	0.1 gf	

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 (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Nonclassified Nonstandard Weight Note: The tolerance of these non-classified weights is at least 3 times greater than the uncertainty of the class F ₁ weights used to calibrate them.	14.71 g	0.62 mg	Class F ₁ Single Pan Balance SOP-7
	24.48 g	0.65 mg	
	40 g	0.68 mg	
	63.58 g	0.74 mg	
	65.61 g	0.74 mg	
	131.22 g	0.99 mg	
	245.585 g	1.6 mg	
	262.44 g	1.7 mg	
	297.32 g	1.9 mg	
	400 g	2.5 mg	
	611.44 g	3.7 mg	
	730.97 g	4.3 mg	
	1 237 g	9.5 mg	
	1 718 g	12 mg	
	1 963 g	14 mg	
2 489 g	16 mg		
7 845 g	16 mg		



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Mass and Weighing Devices

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Calibration of ASTM Class 6 and NIST Class F Weights	1 g	0.59 mg	Class F ₁ and Single Pan Balance SOP-7
	2 g	0.59 mg	
	5 g	0.60 mg	
	10 g	0.61 mg	
	20 g	0.64 mg	
	25 g	0.65 mg	
	50 g	0.71 mg	
	100 g	0.82 mg	
	200 g	1.4 mg	
	500 g	3 mg	
	1000 g	5.8 mg	
	2000 g	14 mg	
	5000 g	30 mg	
	0.5 lb	0.003 lb	
	1 lb	0.006 lb	
	2 lb	0.01 lb	
5 lb	0.03 lb		
10 lb	0.06 lb		
20 lb	0.11 lb		
Precision Balances ^{FO}	1 g to 100 g	(0.59 + 0.002 32Wt) mg Note Wt is in g	Class F ₁ weights CP-BAL CP-SCALE
	100 g to 1 000 g	(0.26 + 0.005 56Wt) mg Note Wt is in g	
	1000 g to 10 000 g	(2.6 + 0.005 56Wt) mg Note Wt is in g	
	10 000 g to 18 000 g	(0.5 + 0.005 77Wt) mg Note Wt is in g	
Scales ^{FO}	1 g to 100 g	(2.2 + 0.115Wt) mg Note Wt is in g	Class 6 Weights CP-SCALE
	100 g to 1 000 g	(0.1 + 0.137Wt) mg Note Wt is in g	
	1 000 g to 10 000 g	(0.88 + 0.136Wt) mg Note Wt is in g	
	10 000 g to 18 000 g	(1.9 + 0.136Wt) mg Note Wt is in g	
	1 lb to 100 lb	(0.000035+0.000126Wt) lb Note Wt is in lb	



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

Time and Frequency

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
Crosshead Travel Time ^{FO} - Tensile/Compression Testers - Friction/Peel Testers	1 min to 60 min	$(0.55 + 0.0016T_m)$ s	Stopwatch CP-053
Rate of Rotation ^{FO} -Tensile/Compr. Tester Motors	10 rpm to 10 000 rpm	$(0.034 + 0.0008R)$ rpm	Tachometer CP-053

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 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.
4. 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.
5. The term T represents thickness in inches.
6. The term L represents length in inches.
7. The term F represents applied force in units appropriate to the uncertainty statement.
8. The term Wt represents weight in units specified in the scope entry.
9. The term Tm represents time interval in seconds.
10. The term R represents Rate of rotation in rpm.