



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

SHAMROCK LABORATORY
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MECHANICAL

Valid To: January 31, 2021

Certificate Number: 2748.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on metals and fasteners:

<u>Test</u>	<u>Test Methods</u>
Mechanical Testing	
Hardness	
Rockwell (HRB, HRC)	ASTM A370, E18
Microhardness	
Knoop (500HK)	ASTM E384
Hydrogen Embrittlement	ASME B18.6.4 (Superseded 2005) ¹ , B18.6.3
Surface Finish	ASME B46.1
Drive Torque Test	ASME B18.6.4 (Superseded 2005) ¹ , B18.6.3
Torsional Test	ASME B18.6.4 (Superseded 2005) ¹ , B18.6.3
Metallographic Evaluation	
Case Depth	SAE J423, J933
Environment Simulation	
Salt Spray	ASTM B117; Whirlpool T23
Humidity	ASTM D2247, A380/A380M (Section 7.2.5.2); Whirlpool T22

I. Dimensional Testing²

Parameter/Equipment	Range	CMC ³ (±)	Technique / Method ¹
Radius	(0.005 to 0.50) in	0.005 in	Optical comparator/MIL-STD-120 (Canceled 1996)
Angle	Up to 360°	2°	Optical comparator/MIL-STD-120 (Canceled 1996)
Threads: Dia./Length Internal/External -	Up to 0.750 in	0.0006 in 0.0003 in	Optical comparator/ASME B1.2, B1.3M (Superseded in 1994), B1.3 Micrometer/ASME B1.2, B1.3M (Superseded in 1994), B1.3
Pitch Diameter (External)	Up to 0.750 in	0.0002 in	System 22, Tri Roll/ASME B1.2, B1.3M (Superseded in 1994), B1.3
Major Diameter	Up to 0.750 in	0.0006 in 0.0003 in	Optical comparator/ASME B1.2, B1.3M (Superseded in 1994), B1.3 Micrometer/ASME B1.2, B1.3M (Superseded in 1994), B1.3
Minor Diameter	Up to 0.750 in	0.0006 in	Optical comparator/ASME B1.2, B1.3M (Superseded in 1994), B1.3
Functional Thread	Up to 0.750 in	N/A	Go/No-Go thread gages/ASME B1.2, B1.3M (Superseded in 1994), B1.3)
Length (1D)	(0.001 to 6) in (0.001 to 12) in (0.001 to 2) in	0.0003 in 0.0009 in 0.0006 in	Caliper/MIL-STD-120 (Canceled 1996) Caliper/MIL-STD-120 (Canceled 1996) Length gage/MIL-STD-120 (Canceled 1996)
	(0.001 to 6) in	0.0006 in	Optical comparator/MIL-STD-120 (Canceled 1996)

Parameter/Equipment	Range	CMC ³ (±)	Technique / Method ¹
Concentricity	(0.001 to 0.200) in	0.0005 in	TIR/Concentricity gage/ASME B18.2.1
Perpendicularity	(0.001 to 1) in	0.001 in	Vision system/ASME B18.2.1
Head Height	Up to 6 in	0.0006 in	Optical comparator/ASME B18.6.4 (Superseded 2005) ¹ B18.6.3
Wobble Test	(12 max.)°	1.0°	Indicator and Fixtures/ASME B18.6.4 (Superseded 2005) ¹ B18.6.3
Recess Penetration	Up to 0.200 in	0.0006 in	Indicator and Fixtures/ASME B18.6.4 (Superseded 2005) ¹ B18.6.3

¹ This laboratory's scope contains withdrawn or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn.

² This laboratory does not offer commercial dimensional testing services. These tests are not equivalent to that of a calibration.

³ Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine measurements of nearly ideal measurement standards or nearly ideal measuring equipment. CMC's represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific measurement performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific measurement.



Accredited Laboratory

A2LA has accredited

SHAMROCK LABORATORY

Itasca, IL

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 25th day of March 2019.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2748.01
Valid to January 31, 2021

For the types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.