



"World Class Accreditation"

The American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

SHAMROCK LABORATORY
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MECHANICAL

Valid To: January 31, 2013

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)	ASTM E384
Hydrogen Embrittlement	ASME B18.6.4
Surface Finish	ASME B46.1
Metallographic Evaluation	
Case Depth	SAE J423, J933
Salt Spray	ASTM B117; Whirlpool T23
Environmental Simulation	
Humidity	ASTM D2247; Whirlpool T22, A380 (Section 7.2.5.2)

I. Dimensional Testing¹

<u>Parameter</u>	<u>Range</u>	<u>CMC² (±)</u>	<u>Technique</u>	<u>Standards</u>
Radius ³	(0.005 to 0.50) in	0.005 in	Optical comparator	MIL-STD-120
Angle ³	0° to 180°	2°	Optical comparator	MIL-STD-120
Threads: Internal/External -	(0 to 0.750) in	0.0006 in (Opt) 0.0003 in (Mic)	Optical comparator Micrometer	ASME B1.2, B1.3M
Pitch Diameter ³		0.0002"	System 22, Tri Roll	
Major Diameter ³		0.0006" 0.0003"	Optical comparator Micrometer	
Minor Diameter ³		0.0006"	Optical comparator	
Functional Threads ³	(0 to 0.750) in	N/A	Go/No-Go thread gages	ASME B1.2, B1.3M
Length ³	(0.001 to 6) in (0.001 to 12) in (0.001 to 2) in (0.001 to 6) in	0.0003 in 0.0009 in 0.0006 in 0.0006 in	Micrometer Caliper Length gage Optical comparator	MIL-STD-120
Concentricity ³	(0.001 to 0.200) in	0.0005 in	TIR/Concentricity gage	ASME B18.2.1
Perpendicularity ³	(0.001 to 1) in	0.001 in	Vision system	ASME B18.2.1
Head Height ³	(0 to 6) in	0.0006 in	Optical comparator	ASME B18.6.4
Drive Torque Test ³	(0 to 300) in-lbs (0 to 250) ft-lbs	8 in-lbs 8 ft-lbs	Torque wrench	ASME B18.6.4



I. Dimensional Testing¹(continued)

<u>Parameter</u>	<u>Range</u>	<u>CMC² (±)</u>	<u>Technique</u>	<u>Standards</u>
Torsional Test ³	(0 to 300) in-lbs (0 to 250) ft-lbs	8 in-lbs 8 ft-lbs	Torque wrench	ASME B18.6.4
Wobble Test ³	(12 max.) degrees	1.0 degree	Indicator and Fixtures	ASME B18.6.4
Recess Penetration ³	(0 to 0.200) in	0.0006 in	Indicator and Fixtures	ASME B18.6.4

¹ This laboratory offers commercial dimensional testing service only.

² Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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.

³ These tests are not equivalent to that of a calibration.

