



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005¹

SHANNON PRECISION FASTENER ¹
 31600 Stephenson Highway
 Madison Heights, MI 48071
 Phil Menzies Phone: 248 589 9670
 pmenzies@shannonpf.com

MECHANICAL

Valid To: December 31, 2017

Certificate Number: 3234.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory and to the satellite laboratories below to perform the following tests on male threaded fasteners using the following methods:

<u>Test:</u>	<u>Test Method:</u>
Tensile	
Axial/Wedge	ASTM A370, E8, F606, F606M; FMVSS 571.209; ISO 898-1; SAE J429
Proof Load (Hardness Method)	ASTM F606, F606M ; ISO 898-1; SAE J429
Rockwell Hardness (C, 15N)	ISO 6508-1; ASTM E18, A370; SAE J429
Vickers Hardness (300gf)	ISO 6507-1; ASTM E384
Grain Flow	SAE USCAR 8
Carburization/Decarburization/Case	SAE J121, J423, J1102; ISO 898-1; ASTM E1077
Surface Discontinuities	ISO 6157; ISO 6157-3; PF 5188; ASTM F788;
Sample Plans	Customer Specifications; Shannon Precision Fastener Control Plan; ASTM F1470

I. Dimensional Testing²

Parameter	Range	CMC ³ (±)	Technique/Method
Length ⁴ - 1D	Up to 305 mm Up to 25 mm Up to 280 mm Up to 100 mm Up to 300 mm	0.04 mm 0.012 mm 0.01 mm 0.05 mm 0.034 mm	Calipers Micrometers Optical comparator Contour tracer Optical CMM
Angle ⁴	Up to 180° Up to 180° Up to 180°	49' 34' 22'	Optical comparator Contour tracer Optical CMM
Radius ⁴	Up to 280 mm Up to 100 mm Up to 50 mm	0.006 mm 0.02 mm 0.028 mm	Optical comparator Contour tracer Optical CMM
Concentricity/Runout ⁴	Up to 25 mm	0.001 mm	Concentricity gage
Thread Pitch Diameter ⁴	M5 to M22 (¼ to ¾) in	0.008 mm 0.003 in	Single Tri-Rolls
Thread Functional Diameter ³	M5 to M22 (¼ to ¾) in M5 to M22 (¼ to ¾) in	0.008 mm 0.003 in Go/No Go	Johnson gage, Segmented gages Thread ring gage

² Commercial dimensional testing service is sometimes offered by this laboratory.

³ 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.

⁴ This test is not equivalent to that of a calibration.

¹This accreditation covers testing performed at the main laboratory listed above, and the following satellite laboratories listed below:



SHANNON PRECISION FASTENER
 4425 Purks Road
 Auburn Hills, MI 48326
 Phil Menzies Phone: 248 409 9676
 pmenzies@shannonpf.com

<u>Test:</u>	<u>Test Method:</u>
Tensile	
Axial/Wedge	FMVSS 571.209; ASTM A370, E8, F606, F606M; ISO 898-1; SAE J429
Proof Load (Hardness method)	ISO 898-1; SAE J429; ASTM F606, F606M
Rockwell Hardness (C, 15N)	ISO 6508-1; ASTM E18, A370; SAE J429
Vickers Hardness (300gf)	ISO 6507-1; ASTM E384
Carburization/Decarburization/Case	SAE J121, J423, J1102; ISO 898-1; ASTM E1077
Surface Discontinuities	ISO 6157; ISO 6157-3; PF 5188; ASTM F788;
Sample Plans	Customer Specifications; Shannon Precision Fastener Control Plan; ASTM F1470

II. Dimensional Testing²

Parameter	Range	CMC ³ (±)	Technique/Method
Length ⁴ - 1D	Up to 305 mm Up to 25 mm Up to 280 mm Up to 100 mm	0.04 mm 0.012 mm 0.01 mm 0.05 mm	Calipers Micrometers Optical comparator Contour tracer
Angle ⁴	Up to 180° Up to 180°	49' 34'	Optical comparator Contour tracer
Radius ⁴	Up to 280 mm Up to 100 mm	0.006 mm 0.02 mm	Optical comparator Contour tracer



Runout ⁴	Up to 25 mm	0.001 mm	Concentricity gage
Thread Pitch Diameter ⁴	M5 to M22 (¼ to ¾) in	0.008 mm 0.003 in	Single Tri-Rolls
Thread Functional Diameter ³	M5 to M22 (¼ to ¾) in M5 to M22 (¼ to ¾) in	0.008 mm 0.003 in Go/No Go	Johnson gage, Segmented gages Thread ring gage

²Commercial dimensional testing service is sometimes offered by this laboratory.

³Calibration 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.

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Shannon Precision Fastener
 800 East 14 Mile Road
 Madison Heights, MI 48071
 Phil Menzies Phone : 248 658 3015
 pmenzies@shannonpf.com

<u>Test:</u>	<u>Test Method:</u>
Torque Tension	ISO 16047; SAE USCAR 10, 11; WZ 100, 101
Prevailing Torque (Room temperature aging)	
Chrysler	MS-CC-76; PF-6166
GM	GMW14657
Ford	WX 200; WA 970; WD 950
Tensile Testing	
Axial/Wedge	ASTM A370, E8, F606, F606M; ISO 898-1; SAE J429
Fatigue Testing	ISO 3800
Rockwell Hardness (B, C, 15N)	ISO 6508-1; ASTM E18, A370; SAE J429
Hydrogen Embrittlement (Torque Method)	PS-9500; SAE/USCAR 7; GM6202M
Coating Thickness	ASTM E376
Sample Plans	Customer Specifications; Shannon Precision Fastener Control Plan; ASTM F1470

III. Dimensional Testing²:

Parameter	Range	CMC ³ (±)	Technique/Method
Length ⁴ - 1D	Up to 305 mm Up to 25 mm	0.04 mm 0.012 mm	Calipers Micrometers
Thread Functional Diameter ⁴	M5 to M22 (1/4 to 3/4) in	Go/No Go	Thread ring gage



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Accredited Laboratory

A2LA has accredited

SHANNON PRECISION FASTENER, LLC

Madison Heights, MI

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *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 8 January 2009).



Presented this 28th day of December 2015.

A handwritten signature in black ink, reading "Peter Abney".

President & CEO
For the Accreditation Council
Certificate Number 3234.01
Valid to December 31, 2017

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