CERTIFICATE OF ACCREDITATION

ANSI National Accreditation Board

11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

Quality Engineering Service of the Chippewa Valley, Inc.
345 Frenette Drive, Suite 1
Chippewa Falls, WI 54729

has been assessed by ANAB and meets the requirements of international standard

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

while demonstrating technical competence in the field of

TESTING, DIMENSIONAL MEASUREMENT & CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of activities to which this accreditation applies

ACT-1189
Certificate Number

ANAB Approval

Certificate Valid Through: 09/22/2020
Version No. 007 Issued: 09/11/2019

This laboratory 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 (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

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SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017 AND ANSI/NCSL Z540-1-1994 (R2002)

Quality Engineering Service of the Chippewa Valley, Inc.

345 Frenette Drive, Suite 1
Chippewa Falls, WI 54729
Timothy A. Tozer
715-861-7723

TESTING, DIMENSIONAL MEASUREMENT AND CALIBRATION

Valid to: **September 22, 2020** Certificate Number: **ACT-1189**

TESTING

Mechanical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Tensile, Shear	CUP-T1001-A	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Up to 1 000 lb Lloyd Type B
Tensile, Shear	CUP-T1002-A	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Up to 1 000 lb Lloyd Type B
Tensile, Shear, Elongation, Breaks	CUP-T1002-A	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Up to 1 000 lb Lloyd Type B
Tensile, Pluck, Elongation, Breaks	CUP-T1004-A	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Up to 1 000 lb Lloyd Type B
Shear, Elongation, Breaks, Adhesion Strength	CUP-T1003-A	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Up to 1 000 lb Lloyd Type B
Shear, Elongation, Breaks, Adhesion Strength	CUP-D1002-A	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Up to 1 000 lb Lloyd Type B
Strip Torque, Drive Torque, Torsional Strength	CUP-F.I.P 1000-A	Screws, Grommets, Bolts	Up to 300 in-lb Torque Wrench, Type B Tolerance ± 2 % of Reading
Ductility Testing	CUP-F.I.P 1000-A	Screws & Bolts	Empirical Observation for Pass / Fail
Drive Test	Screws & Bolts	CUP-F.I.P 1000-A	Empirical Observation for Pass / Fail

Mechanical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Part Weights	3-D objects within equipment operational range	RFM-0025-1	Up to 310 g ± .0025 g

DIMENSIONAL MEASUREMENT

1 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Dimensional Measurement 1D	Up to 6 in (6 to 60) in	730 µin 910 µin	Caliper
	Up to 16 in	740 µin	Height Gage
	Up to 6 in	730 µin	Length Gage
	Up to 2 in	96 µin	Micrometer
	Up to 6 in	130 µin	Depth Micrometer
	Up to 1 in (1 to 2) in	93 µin 95 µin	Drop Indicator
	Up to 0.003 in	77 µin	Test Indicator
	(0.011 to 0.625 5) in	580 µin	Pin Gages
	Up to 14 in	130 µin	Gage Blocks
	(0.01 to 0.5) in (0.5 to 13) mm	2 900 µin 73 µm	Radius Gages
	Up to 0.5 in Radius: Up to 0.5 in Angular: 90 °	2 900 µin 0.036 inches 1.6 °	Handheld Microscope (7x)
Dimensional Visual Comparison	Pitches UNC (4 to 84)	Nearest 2 teeth per Inch	Screw Pitch Gage

2 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Dimensional Measurement 2D	Up to 14 in Dia. & Radius: Calculated Angular: 360 °	460 µin 0.19 °	Optical Comparator (10x)
	Up to 10 in x 6 in & Radius: Calculated Angular: 360 °	290 µin 0.08 °	Profile Projector (5x, 10x, 20x)
	Up to 1 in	43 µin	Laser Micrometer

3 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Dimensional Measurement 3D	X & Y = Up to 12 in Z = Up to 6 in Volumetric: Calculated Angular: 360 °	230 µin 220 µin 0.017 °	Video Measuring System – Vertex 420
	X & Y = Up to 6 in Z = Up to 6 in Volumetric: Calculated Angular: 360 °	210 µin 190 µin 0.016 °	Video Measuring System – Sol161
	<u>Vision</u> X & Y = Up to 12 in Z = Up to 9.8 in Volumetric: Calculated Angular: 360 ° <u>Touch Trigger Probe</u> X & Y = Up to 12 in Z = Up to 9.8 in Volumetric: Calculated Angular: 360 °	 220 µin 240 µin 0.017 ° 110 µin 110 µin 0.065 °	Video Measuring System – Vertex 312 with Renishaw Touch Probe
	X & Y = Up to 40 in Z = Up to 24 in Volumetric: Calculated Angular: 360 °	45 µin 45 µin 0.000 42 °	Coordinate Measuring Machine – Zeiss Contura G2 Scanning

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CALIBRATION

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Calipers	Up to 60 in	(590 + 25*L*) µin	Caliper Calibration Set Gage Blocks Cal-001
Height Gages	Up to 20 in	(600 + 9.3*L*) µin	Gage Blocks Cal-001
Length Gages	Up to 20 in	(590 + 25*L*) µin	Gage Blocks Cal-001
Micrometers (ID, OD, Depth)	Up to 12 in	(91 + 3.1*L*) µin	Gage Blocks Cal-002, Cal-017, Cal-020
Drop or Dial Indicators	(0.000 1 to 6) in	(91 + 1.6*L*) µin	Gage Blocks Cal-003
Test Indicators	(0.000 1 to 0.1) in	77 µin	Gage Blocks Cal-004
Radius Gages	Up to 10 in	230 µin	Video Measurement System Cal-013
Protractors	Up to 180 °	0.017 °	Angle Blocks Cal-015
Pin Gages	(0.010 to 1) in	(43 + 0.8*L*) µin	Laser Micrometer Cal-018
Thickness Gages & Other Fixed Gages Report of Values Only	Up to 2 in Up to 12 in Up to 360 ° Up to 20 in / Up to 360 ° Up to 40 in Up to 360 °	96 µin 230 µin 0.017 ° 260 µin 0.065 ° (21 + 1.3*L*) µin 0.000 42 °	High Accuracy Digital Indicator Video Measurement System Cal-014, Cal-019 Coordinate Measuring Machine – Manual Brown & Sharp Cal-012 & Cal-014 Coordinate Measuring Machine – Zeiss Contura G2 Cal-012, Cal-014

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Gage Blocks	Up to 40 in	(21 + 1.3*L*) µin	Coordinate Measuring Machine – Zeiss Contura G2 Gage Block Comparison Indicator Cal-012
Steel Rules	Up to 36 in	2 900 µin	Microscope Handheld / Master Steel Rule Cal-016
Coordinate Measuring Machines	Up to 48 in	45 µin	CMM Calibration Gage Blocks Spherical Ball Bar Cal-022 ASME B89.4.1-1997

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Scales & Balances	Up to 600 g	0.002 5 g	Calibration Weight Set Cal-021

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. L = Length in inches.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. ACT-1189.