



# CERTIFICATE OF ACCREDITATION

## ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

**Washington Calibration, Inc.**

**1725 West 3<sup>rd</sup> Street**

**Tempe, AZ 85281**

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

**ISO/IEC 17025:2017**

while demonstrating technical competence in the fields of

**CALIBRATION**

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations and/or tests to which this accreditation applies.

L2152-1

Certificate Number

  
ANAB Approval

Certificate Valid: 11/15/2018-02/02/2021  
Version No. 002 Issued: 11/15/2018



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).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017**

**Washington Calibration, Inc.**

1725 West 3rd Street  
 Tempe, AZ 85281  
 Rey Feliz  
 480-820-0506

**CALIBRATION**

Valid to: **February 2, 2021**

Certificate Number: **L2152-1**

**Length – Dimensional Metrology**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Gage Blocks	(0.005 to 4) in	(4.0 + 1.1L) μin	Gage Blocks, Edmunds Gage Block Comparator
	(5 to 20) in	(7.9 + 1.5L) μin	
	(0.5 to 100) mm	(0.11 + 0.001L) μm	
Height Masters	(Up to 40) in	(37 + 1.2L) μin	Reference Bar Gage Blocks
Length Standards	(0.05 to 10) in	(26 + 1.7L) μin	Supermicrometer
	(11 to 60) in	(45 + 1.0L) μin	Gage Blocks, Height Transfer Standards
Feeler Gages (Leaf-Style)	(0.001 to 0.500) in	28 μin	Supermicrometer
Ring Gages	(0.04 to 11) in	(10 + 2.8L) μin	ID Comparator
Plain Plug & Pin Gages	(0 to 10) in	(18 + 2.2L) μin	Supermicrometer
Pin Gages Class Z & ZZ	0 to 0.9 in	57 μin	Laser Micrometer
Caliper Masters	Up to 48 in	(37 + 1.3L) μin	Gage Blocks Reference Bar
Surface Plates <sup>1</sup> Flatness	Up to 14 ft x 14 ft	(16 + 3.6X) μin	Autocollimator Repeat-Gage
Repeatability	± 0.001 in	31 μin	



Length – Dimensional Metrology

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Surface Roughness Standards	(15 to 130) μin	3.0 μin	Profilometer
2 Pt. Bore Gages	Up to 5 in	63 μin	Supermicrometer
3 Pt. Bore Gages (0.000 1 Resolution) (0.000 5 Resolution)	Up to 5.5 in	70 μin 290 μin	Ring Gages
Calipers (0.001 Resolution)	(0 to 120) in	(580 + 0.2L) μin	Gage Blocks
(0.0005 Resolution)	(0 to 60) in	(290 + 0.3L) μin	
Indicators (0.001 Resolution)	(0 to 4) in	580 μin	Supermicrometer
(0.000 5 Resolution)	(0 to 2) in	290 μin	
(0.000 1 Resolution)		63 μin	
(0.000 05 Resolution)		39 μin	
Supermicrometer <sup>1</sup> Linearity	(0 to 2) in	11 μin	Gage Blocks Force Gage Optical Flats
Micrometers, Outside (0.001 Resolution)	(0 to 40) in	580 μin	Gage Blocks Optical Flats
(0.000 1 Resolution)		(58 + 1L) μin	
(0.000 05 Resolution)		(29 + 1.9L) μin	
Micrometers, Inside (0.001 Resolution)	(0.5 to 120) in	(580 + 0.6L) μin	Gage Blocks
Micrometers, Depth (0.001 Resolution) (0.000 1 Resolution) (0.000 05 Resolution)	(0 to 12) in	580 μin (71 + 0.5L) μin (46 + 1.1L) μin	Gage Blocks
Height Gages (0.001 Resolution)	(0 to 40) in	(580 + 0.1L) μin	Reference Bar Gage Blocks
(0.0005 Resolution)		(290 + 0.3L) μin	
Profilometers	(0.1 μin Resolution)	2.1 μin	SRM Reference Patches
	(1 μin Resolution)	2.2 μin	



**Length – Dimensional Metrology**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Steel Rules	0 to 72 in	(270 + 3L) μin	Optical Comparator
Steel Rules	0 to 72 in	2 900 μin	Optical Loupe & Standard Rule
Tape Measures	0 to 40 ft	(2 900 + 0.5L) μin	Optical Loupe & Standard Rule
Optical Comparators <sup>1</sup> Magnification	10X, 20X 31.25X, 50X, 62.5X, 100X	160 μin	Precision Ball Standard Magnification Overlay
Linearity	(0 to 12) in	88 μin	Stage Micrometer
Angularity and Squareness	0° to 360°	0.01°	Steel Square

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Rockwell Hardness Testers	HRA		Indirect Verification Method per ASTM E18
	High	0.56 HRA	
	Middle	0.74 HRA	
	Low	0.65 HRA	
	HRBW		
	High	0.45 HRBW	
	Middle	0.48 HRBW	
	Low	0.7 HRBW	
	HRC		
	High	0.34 HRC	
	Middle	0.34 HRC	
	Low	0.34 HRC	
	HRE		
	High	0.27 HRE	
	Middle	0.99 HRE	
Low	1.26 HRE		
HRF			
High	0.54 HRF		
Middle	0.56 HRF		
Low	1.45 HRF		

**Mass and Mass Related**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
Rockwell Hardness Testers	HRH High Middle Low	0.76 HRH 0.49 HRH 0.98 HRH	Indirect Verification Method per ASTM E18
	HR15N High Middle Low	0.5 HR15N 0.19 HR15N 1 HR15N	
	HR30N High Middle Low	0.69 HR30N 0.78 HR30N 0.16 HR30N	
	HR45N High Middle Low	0.7 HR45N 0.58 HR45N 1.03 HR45N	
	HR15TW High Middle Low	0.27 HR15TW 0.22 HR15TW 1.1 HR15TW	
Rockwell Hardness Testers	HR30TW High Middle Low	0.7 HR30TW 0.63 HR30TW 0.26 HR30TW	Indirect Verification Method per ASTM E18
	HR15Y High Low	0.97 HR15Y 0.55 HR15Y	
Microhardness Testers Indirect Verification of Microhardness Testers Knoop	HK 300 grf	5.1 HK	Indirect Verification Method per ASTM E384
	HK 200 grf	9.1 HK	
	HK 100 grf	13.8 HK	
Vickers	HV 500 grf	14 HV	
	HV 200 grf	18.5 HV	
	HV 100 grf	8.7 HV	

**Mass and Mass Related**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
Class F Weights	25 kg	290 mg	Double Substitution Method – Tolerances per NIST Handbook 105-1
	10 kg	130 mg	
	5 kg	58 mg	
	3 kg	35 mg	
	2 kg	24 mg	
	1 kg	13 mg	
	500 g	8.2 mg	
	300 g	6.7 mg	
	200 g	2.3 mg	
	100 g	1.2 mg	
	50 g	0.69 mg	
	30 g	0.52 mg	
	20 g	0.40 mg	
	10 g	0.29 mg	
	5 g	0.21 mg	
	3 g	0.17 mg	
	2 g	0.15 mg	
	1 g	0.12 mg	
	500 mg	0.093 mg	
	300 mg	0.081 mg	
	200 mg	0.070 mg	
	100 mg	0.059 mg	
50 mg	0.050 mg		



Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Class F Weights	30 mg	0.045 mg	Double Substitution Method – Tolerances per NIST Handbook 105-1
	20 mg	0.041 mg	
	10 mg	0.035 mg	
	5 mg	0.033 mg	
	3 mg	0.029 mg	
	2 mg	0.029 mg	
	1 mg	0.029 mg	
	50 lb	529 $\mu$ lb	
	30 lb	287 $\mu$ lb	
	25 lb	287 $\mu$ lb	
	20 lb	287 $\mu$ lb	
	10 lb	128 $\mu$ lb	
	5 lb	53 $\mu$ lb	
	3 lb	29 $\mu$ lb	
	2 lb	29 $\mu$ lb	
	1 lb	18 $\mu$ lb	
	0.5 lb / 8 oz	5.1 $\mu$ lb	
	0.3 lb	2.6 $\mu$ lb	
	0.2 lb	2.6 $\mu$ lb	
	0.1 lb	1.5 $\mu$ lb	
0.05 lb	0.88 $\mu$ lb		
0.03 lb	0.64 $\mu$ lb		

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Class F Weights	0.02 lb	0.64 $\mu$ lb	Double Substitution Method – Tolerances per NIST Handbook 105-1
	0.01 lb	0.46 $\mu$ lb	
	0.005 lb	0.033 $\mu$ lb	
	0.003 lb	0.026 $\mu$ lb	
	0.002 lb	0.026 $\mu$ lb	
	0.001 lb	0.021 $\mu$ lb	
	4 oz	42 $\mu$ oz	
	2 oz	24 $\mu$ oz	
	1 oz	18 $\mu$ oz	
	0.5 oz	10 $\mu$ oz	
	0.3 oz	10 $\mu$ oz	
	0.25 oz	10 $\mu$ oz	
	0.2 oz	7 $\mu$ oz	
	0.125 oz	6 $\mu$ oz	
	0.1 oz	5 $\mu$ oz	
	0.0625 oz	5 $\mu$ oz	
	0.05 oz	4 $\mu$ oz	
	0.03125 oz	4 $\mu$ oz	
	0.03 oz	4 $\mu$ oz	
	0.015 oz	3 $\mu$ oz	
0.02 oz	3 $\mu$ oz		
0.01 oz	3 $\mu$ oz		





Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Wrenches	(4 to 50) ozf·in	0.2 ozf·in	Torque Calibration System
	(25 to 1 000) lbf·in	0.007 6 + 0.003 3 lbf·in / lbf·in	
	(25 to 1 000) lbf·ft	0.36 + 0.002 9 lbf·ft / lbf·ft	

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 or mm where applicable,  $X$  = length in feet
3. This scope is formatted as part of a single document including Certificate of Accreditation No. L2152-1.

  
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Vice President