

Measurement Uncertainty Estimation Form														
Measurement:		Barrel Length Measurement												
Range of measurement values:		0" to 36"												
Procedure name and revision:		Barrel Length												
Estimation prepared by:		Paul Slocum						Date Prepared:		5/5/2026				
Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %					
1	Standard Deviation	0.02025232	Inches	Normal	A	1.00	1	0.02148086	87					
2	Measurement Calibration	0.00500000	inches	Rectangular	B	1.73	1	0.002886751	12					
3	Aldinger Calibration	0.00000000	inches	Normal	A	1.00	1	0	0					
4	Thermal Expansion	0.00068000	inches	Rectangular	B	1.73	1	0.000393064	2					
5		0.00000000				1.00		0	0					
6		0.00000000				1.00		0	0					
7		0.00000000				1.00		0	0					
8		0.00000000				1.00		0	0					
9		0.00000000				1.00		0	0					
10		0.00000000				1.00		0	0					
Combined Standard Unc		u_c						0.021677527	100					
Expanded Unc		$U (k=2)$						0.043355054						
Expanded Unc		$U (k=3)$						0.065032581						
Reported Uncertainty:		0.043	$k=2$											
Reported Uncertainty:		0.065	$k=3$											
NOTE: Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations														
The basis for the data above:														
1	10 measurements each conducted by P. Slocum, L. Peterson and S. Siu													
2	Scale error provided on GEI Certificate of Calibration													
3	Aldinger Calibration Certificate													
4	Thermal Expansion of Stainless Steel 304													
5														
6														
7														
8														
9														
10														
Revision:														