



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994

RICE LAKE WEIGHING SYSTEMS (FORMERLY HEUSSER NEWEIGH)
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CALIBRATION

Valid To: September 30, 2024

Certificate Number: 1823.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1, 11}:

I. Chemical⁹

Parameter/Equipment	Range	CMC ² (±)	Comments
pH Meters ³ –	(4, 7, 10) pH units	0.012 pH units	Standard buffer solutions
Temperature	(-10 to 110) °C	0.15 °C	Fluke 743B
Conductivity Meters ³ –	(1 to 10) µS/cm (> 10 to 100) µS/cm (> 100 to 1000) µS/cm (> 1000 to 10 000) µS/cm (> 10 000 to 200 000) µS/cm	0.64 µS/cm 2.7 µS/cm 17 µS/cm 170 µS/cm 750 µS/cm	Standard conductivity solutions
Temperature	(-10 to 110) °C	0.15 °C	Fluke 743B

II. Dimensional⁹

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
Gage Blocks	Up to 4 in Up to 3 mm (> 3 to 100) mm	(1.4 + 1.1L) μ in (0.031 + 0.0029L) μ m (0.012 + 0.0062L) μ m	Tesa comparison to master gage blocks
Pin Gages, Diameter/ Length Standards	Up to 4 in (> 4 to 12 in)	28 μ in 38 μ in	Gage blocks Supermicrometer™ comparison to master gage blocks
Calipers – Outside, Inside & Depth Outside	Up to 24 in (> 24 to 60) in	0.000 29 in 0.000 30 in	Gage blocks & surface plate
Height Gages & Height Masters	Up to 24 in	71 μ in	Gage blocks & surface plate
Micrometers	Up to 12 in (> 12 to 24) in	(29 + 0.37L) μ in (54 + 0.71L) μ in	Gage blocks & surface plate
Indicators – Digital & Dial	Up to 1 in (> 1 to 2) in (> 2 to 4) in	(1.3 + 1.2L) μ in 12 μ in 0.000 48 in	Gage blocks & surface plate
Rulers/Length Standards	Up to 72 in	0.016 in (1/64 th in)	Reference ruler & reference optical reticle at 50 μ in
Firearm Length Standard (Hott Rod™)	Up to 48 in	0.016 in (1/64 th in)	Reference ruler

Parameter/Equipment	Range	CMC ^{2, 10} (±)	Comments
Length, Dimension – Measure	Up to 4 in	20 μin	Gage block comparator
	(> 4 to 12) in	77 μin	Supermicrometer™
	Up to 60 in	0.000 67 in	Digital indicator, micrometer, caliper

III. Electrical – DC/Low Frequency⁹

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouple Indicators & Indicating Systems ³ – Measure			
Type E	(-250 to -200) °C	1.5 °C	Fluke 743B
	(-200 to -100) °C	0.60 °C	
	(-100 to 600) °C	0.59 °C	
	(600 to 1000) °C	0.49 °C	
Type J	(-210 to -100) °C	0.71 °C	
	(-100 to 800) °C	0.39 °C	
	(800 to 1200) °C	0.60 °C	
Type K	(-200 to -100) °C	0.83 °C	
	(-100 to 400) °C	0.62 °C	
	(400 to 1200) °C	0.60 °C	
	(1200 to 1372) °C	0.82 °C	
Type T	(-250 to -200) °C	2.0 °C	
	(-200 to 0) °C	0.71 °C	
	(0 to 400) °C	0.37 °C	

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouple Indicators & Indicating Systems ³ – Simulation			
Type E	(-250 to -200) °C (-200 to -100) °C (-100 to 600) °C (600 to 1000) °C	0.71 °C 0.39 °C 0.37 °C 0.29 °C	Fluke 743B
Type J	(-210 to -100) °C (-100 to 800) °C (800 to 1200) °C	0.39 °C 0.29 °C 0.29 °C	
Type K	(-200 to -100) °C (-100 to 400) °C (400 to 1200) °C (1200 to 1372) °C	0.49 °C 0.37 °C 0.39 °C 0.38 °C	
Type T	(-250 to -200) °C (-200 to 0) °C (0 to 400) °C	1.1 °C 0.49 °C 0.37 °C	

IV. Mechanical⁹

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets			ASTM Class 000, 00, 0, & 1, OIML Class E1 & E2, NIST HB 105-1 (v2019)
Metric, Fixed Points	600 kg	0.76 g	Mettler XPE604KMC
	575 kg	0.76 g	
	550 kg	0.76 g	
	525 kg	0.75 g	
	500 kg	0.75 g	
	475 kg	0.75 g	
	450 kg	0.75 g	
	425 kg	0.75 g	
	400 kg	0.75 g	
	375 kg	0.75 g	
	350 kg	0.75 g	
	325 kg	0.75 g	
	300 kg	0.75 g	
	275 kg	0.75 g	
	250 kg	0.75 g	
	225 kg	0.75 g	
	200 kg	0.75 g	
	175 kg	0.75 g	
	150 kg	0.75 g	
	125 kg	0.75 g	
	100 kg	0.75 g	
	60 kg	13 mg	Mettler XP64003L
	50 kg	13 mg	
	45 kg	12 mg	
	30 kg	6.0 mg	Mettler AX32004
	25 kg	5.6 mg	
	20 kg	4.9 mg	
	10 kg	1.4 mg	
	5 kg	0.68 mg	Mettler AT10005
	4 kg	0.52 mg	
	3 kg	0.32 mg	
	2 kg	0.27 mg	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 000, 00, 0, & 1, OIML Class E1 & E2, NIST HB 105-1 (v2019)
Metric, Fixed Points	1 kg	85 µg	Mettler AX1006
	500 g	30 µg	
	400 g	39 µg	
	300 g	36 µg	
	200 g	20 µg	
	150 g	24 µg	
	100 g	17 µg	Mettler A107
	50 g	8.8 µg	Mettler AT106H
	40 g	11 µg	
	30 g	11 µg	
	20 g	5.5 µg	
	10 g	6.0 µg	
	5 g	3.1 µg	Mettler A5
	3 g	2.3 µg	
	2 g	1.4 µg	
	1 g	1.0 µg	
	500 mg	0.94 µg	
	400 mg	1.6 µg	
	300 mg	0.88 µg	
	200 mg	0.82 µg	
	150 mg	1.9 µg	
	100 mg	0.95 µg	
	50 mg	1.0 µg	
	30 mg	0.98 µg	
	20 mg	0.95 µg	
	10 mg	1.1 µg	
	5 mg	0.86 µg	
	3 mg	0.78 µg	
	2 mg	0.70 µg	
	1 mg	0.80 µg	
	0.5 mg	0.48 µg	

Parameter/Equipment	Range	CMC ^{2, 7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 2 & 3, OIML Class F1 & F2, NIST HB 105-1 (v2019)
Metric, Fixed Points	600 kg	0.76 g	Mettler XPE604KMC
	575 kg	0.76 g	
	550 kg	0.76 g	
	525 kg	0.75 g	
	500 kg	0.75 g	
	475 kg	0.75 g	
	450 kg	0.75 g	
	425 kg	0.75 g	
	400 kg	0.75 g	
	375 kg	0.75 g	
	350 kg	0.75 g	
	325 kg	0.75 g	
	300 kg	0.75 g	
	275 kg	0.75 g	
	250 kg	0.75 g	
	225 kg	0.75 g	
	200 kg	0.75 g	
	175 kg	0.75 g	
	150 kg	0.75 g	
	125 kg	0.75 g	
	100 kg	0.75 g	
	60 kg	13 mg	Mettler XP64003L
	50 kg	13 mg	
	45 kg	12 mg	
	30 kg	6.0 mg	Mettler AX32004
	25 kg	5.6 mg	
	20 kg	4.9 mg	
	10 kg	1.4 mg	
	5 kg	0.68 mg	Mettler AT10005
	4 kg	0.52 mg	
	3 kg	0.32 mg	
	2 kg	0.27 mg	
	1 kg	85 µg	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 2 & 3, OIML Class F1 & F2, NIST HB 105-1 (v2019)
Metric, Fixed Points	500 g	30 µg	Mettler AX1006
	400 g	39 µg	
	300 g	36 µg	
	200 g	20 µg	
	150 g	24 µg	
	100 g	17 µg	Mettler A107
	50 g	8.8 µg	Mettler AT106H
	40 g	11 µg	
	30 g	12 µg	
	20 g	5.5 µg	
	10 g	6.0 µg	
	5 g	3.1 µg	Mettler A5
	3 g	2.3 µg	
	2 g	1.4 µg	
	1 g	1.0 µg	
	500 mg	0.95 µg	
	400 mg	1.6 µg	
	300 mg	0.89 µg	
	200 mg	0.83 µg	
	150 mg	1.9 µg	
	100 mg	0.96 µg	
	50 mg	1.0 µg	
	30 mg	0.99 µg	
	20 mg	0.96 µg	
	10 mg	1.1 µg	
	5 mg	0.87 µg	
	3 mg	0.79 µg	
	2 mg	0.71 µg	
	1 mg	0.81 µg	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 4 - 7, OIML Class M1 - M3, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F
Metric, Fixed Points	1500 kg 1200 kg 1000 kg	7.6 g 6.4 g 6.1 g	NIST Echelon III (legal metrology)
	600 kg 575 kg 550 kg 525 kg 500 kg 475 kg 450 kg 425 kg 400 kg 375 kg 350 kg 325 kg 300 kg 275 kg 250 kg 225 kg 200 kg 175 kg 150 kg 125 kg 100 kg	0.75 g 0.75 g 0.75 g 0.75 g 0.75 g 0.75 g 0.75 g 0.75 g 0.75 g 0.75 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g 0.74 g	Mettler XPE604KMC
	60 kg 50 kg 45 kg 30 kg 25 kg 20 kg	14 mg 13 mg 12 mg 8.6 mg 8.3 mg 7.8 mg	Mettler XP64003L

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 4 - 7, OIML Class M1 - M3, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F
Metric, Fixed Points	10 kg	2.1 mg	Mettler XP64003L
	5 kg	2.0 mg	
	4 kg	1.9 mg	
	3 kg	1.9 mg	
	2 kg	1.9 mg	
	1 kg	1.0 mg	Mettler PR10003
	500 g	0.99 mg	
	400 g	1.0 mg	
	300 g	1.0 mg	
	200 g	0.12 mg	AND MC-1000
	150 g	0.12 mg	
	100 g	0.12 mg	
	50 g	0.12 mg	
	40 g	0.12 mg	
	30 g	0.12 mg	
	20 g	10 µg	Mettler AT201
	10 g	10 µg	
	5 g	9.1 µg	
	3 g	8.9 µg	
	2 g	8.7 µg	
	1 g	8.7 µg	
	500 mg	8.7 µg	
	400 mg	8.8 µg	Mettler AT21
	300 mg	8.7 µg	
	200 mg	8.7 µg	
	150 mg	8.8 µg	
	100 mg	8.7 µg	
	50 mg	8.7 µg	
	30 mg	8.7 µg	
	20 mg	8.7 µg	
	10 mg	8.7 µg	
	5 mg	8.7 µg	
	3 mg	8.7 µg	
	2 mg	8.7 µg	
	1 mg	8.7 µg	

Parameter/Equipment	Range	CMC ^{2, 7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 000, 00, 0, & 1, OIML Class E1 & E2, NIST HB 105-1 (v2019)
Avoirdupois, Fixed Points	1000 lb	1.5 g	Mettler XPE604KMC
	500 lb	0.76 g	
	250 lb	0.75 g	
	200 lb	0.75 g	
	100 lb	25 mg	Mettler XP64003L
	50 lb	12 mg	Mettler AX32004
	30 lb	2.9 mg	
	25 lb	2.5 mg	
	20 lb	2.1 mg	
	10 lb	0.95 mg	Mettler AT10005
	5 lb	0.49 mg	
	4 lb	0.40 mg	
	3 lb	0.35 mg	
	2 lb	0.13 mg	Mettler AX1006
	1 lb	54 µg	
	0.5 lb	31 µg	
	0.3 lb	24 µg	
0.2 lb	21 µg	Mettler A107 Mettler AT106H	
0.1 lb	24 µg		
0.05 lb	13 µg		
0.03 lb	8.3 µg		
0.02 lb	6.2 µg		

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 000, 00, 0, & 1, OIML Class E1 & E2, NIST HB 105-1 (v2019)
Avoirdupois, Fixed Points	0.01 lb	4.9 µg	Mettler A5
	0.005 lb	2.5 µg	
	0.003 lb	1.5 µg	
	0.002 lb	1.2 µg	
	0.001 lb	0.88 µg	
	0.0005 lb	0.88 µg	
	0.0003 lb	0.85 µg	
	0.0002 lb	0.84 µg	
	0.0001 lb	0.83 µg	
	0.000 05 lb	0.83 µg	
	0.000 03 lb	0.82 µg	
	0.000 02 lb	0.83 µg	
	0.000 01 lb	0.82 µg	
	0.000 005 lb	0.87 µg	
	0.000 003 lb	0.82 µg	
	0.000 002 lb	0.83 µg	
	0.000 001 lb	0.83 µg	
	4 oz	33 µg	Mettler AX1006
	2 oz	20 µg	Mettler A107
	1 oz	15 µg	Mettler AT106H
	0.5 oz	11 µg	
	0.25 oz	5.9 µg	
	0.2 oz	6.5 µg	
	0.125 oz	3.4 µg	Mettler A5
	0.1 oz	3.3 µg	
	0.0625 oz	3.0 µg	
	0.05 oz	1.9 µg	
	0.031 25 oz	1.9 µg	
	0.015 625 oz	1.9 µg	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 2 & 3, OIML Class F1 & F2, NIST HB 105-1 (v2019)
Avoirdupois, Fixed Points	1000 lb	1.5 g	Mettler XPE604KMC
	500 lb	0.76 g	
	250 lb	0.75 g	
	200 lb	0.75 g	
	100 lb	25 mg	Mettler XP64003L
	50 lb	12 mg	Mettler AX32004
	30 lb	2.9 mg	
	25 lb	2.5 mg	
	20 lb	2.1 mg	
	10 lb	0.95 mg	Mettler AT10005
	5 lb	0.49 mg	
	4 lb	0.40 mg	
	3 lb	0.35 mg	
	2 lb	0.13 mg	Mettler AX1006
	1 lb	54 µg	
	0.5 lb	31 µg	
	0.3 lb	24 µg	
	0.2 lb	21 µg	Mettler A107
	0.1 lb	24 µg	Mettler AT106H
	0.05 lb	13 µg	
	0.03 lb	8.3 µg	
	0.02 lb	6.2 µg	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 2 & 3, OIML Class F1 & F2, NIST HB 105-1 (v2019)
Avoirdupois, Fixed Points	0.01 lb	4.9 µg	Mettler A5
	0.005 lb	2.5 µg	
	0.003 lb	1.5 µg	
	0.002 lb	1.2 µg	
	0.001 lb	0.88 µg	
	0.0005 lb	0.88 µg	
	0.0003 lb	0.85 µg	
	0.0002 lb	0.84 µg	
	0.0001 lb	0.83 µg	
	0.000 05 lb	0.83 µg	
	0.000 03 lb	0.82 µg	
	0.000 02 lb	0.83 µg	
	0.000 01 lb	0.82 µg	
	0.000 005 lb	0.87 µg	
	0.000 003 lb	0.82 µg	
	0.000 002 lb	0.83 µg	
	0.000 001 lb	0.83 µg	
	4 oz	33 µg	Mettler AX1006
	2 oz	20 µg	Mettler A107
	1 oz	15 µg	Mettler AT106H
	0.5 oz	11 µg	
	0.25 oz	5.9 µg	
	0.2 oz	6.2 µg	
	0.125 oz	3.4 µg	Mettler A5
	0.1 oz	5.4 µg	
	0.0625 oz	3.0 µg	
	0.05 oz	3.6 µg	
	0.031 25 oz	1.9 µg	
	0.015 625 oz	1.9 µg	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments	
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 4 - 7, OIML Class M1 - M3, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F	
Avoirdupois, Fixed Points	3200 lb	7.7 g	NIST Echelon III (legal metrology)	
	3000 lb	7.3 g		
	2000 lb	6.7 g		
	1800 lb	6.6 g		
	1500 lb	6.4 g		
	1300 lb	1.7 g		
	1200 lb	1.7 g		
	1000 lb	1.2 g		Mettler XPE604KMC
	500 lb	0.76 g		
	250 lb	0.75 g		
	200 lb	0.75 g		
	100 lb	25 mg		
	50 lb	13 mg		Mettler XP64003L
	30 lb	6.7 mg		
	25 lb	6.6 mg		
	20 lb	2.6 mg		
	10 lb	2.1 mg	Mettler PR10003	
	5 lb	1.9 mg		
	4 lb	1.9 mg		
	3 lb	1.9 mg		
	2 lb	1.0 mg	AND MC-1000	
	1 lb	1.0 mg		
	0.5 lb	1.0 mg		
	0.3 lb	0.12 mg	Mettler AT201	
	0.2 lb	0.12 mg		
	0.1 lb	0.12 mg		
	0.05 lb	0.12 mg		
0.03 lb	14 µg	Mettler AT21		
0.02 lb	10 µg			
0.01 lb	9.9 µg			
0.005 lb	9.0 µg			
0.003 lb	9.1 µg			
0.002 lb	8.8 µg			
0.001 lb	8.8 µg			
0.0005 lb	8.8 µg			
0.0002 lb	8.8 µg			
0.0001 lb	8.8 µg			

Parameter/Equipment	Range	CMC ^{2, 4, 7} (±)	Comments
Mass ⁶ – Mass Standards, Weights & Weight Sets (cont)			ASTM Class 4 - 7, OIML Class M1 - M3, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F
Avoirdupois, Fixed Points	0.000 05 lb 0.000 02 lb 0.000 01 lb 0.000 005 lb 0.000 002 lb 0.000 001 lb	8.8 µg 8.8 µg 8.8 µg 8.8 µg 8.8 µg 8.8 µg	Mettler AT21
	4 oz 2 oz 1 oz	0.12 mg 0.12 mg 0.12 mg	Mettler AT201
	0.5 oz 0.25 oz 0.2 oz 0.125 oz 0.1 oz 0.0625 oz 0.05 oz 0.031 25 oz 0.015 625 oz	14 µg 10 µg 9.2 µg 9.2 µg 9.3 µg 9.1 µg 8.9 µg 8.9 µg 8.8 µg	Mettler AT21
Balances & Scales ³ –	0.0001 mg to 1000 kg	0.41R	Using ASTM Class 000-7, OIML E1-M3, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F mass standards.
Minimum Balance Load ³	0.0001 mg to 1000 kg	820R	ASTM 898-20 NIST Handbook 44 Euramet cg-18
Minimum Sample Quantity ³	0.0001 mg to 1000 kg	820R	ASTM 898-20 Euramet cg-18 USP 41

Parameter/Equipment	Range	CMC ^{2, 4, 7} (±)	Comments
Moisture Analyzer, Moisture Balance ³ –			
Mass	0.1 mg to 500 g	0.41R	Using ASTM class 0-7, OIML E1-M3, or NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F mass standards.
Temperature	(20 to 400) °C	0.73 °C	Fluke 743B
Timer	60 s to 24 hr	1.3 s	Stopwatch
Force – Tension & Compression Including: Force Gauge, Load Cell, Dynamometer, & Proving Ring	Up to 300 lbf	0.62R	ASTM Class 7, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F mass standards
	(50 to 1000) lbf (> 1000 to 10 000) lbf (> 10 000 to 25 000) lbf	0.080 lbf 0.28 lbf 0.70 lbf	ASTM E74-18 (Including bison container weighing systems using load cell direct comparison methods) ³
Firearm Trigger-Pull & Firearm Trigger-Pull Gauges (Lyman TM , Brownells TM ...)	Up to 50 lbf	0.62R	ASTM Class 7, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990) Class F mass standards

Parameter/Equipment	Range	CMC ^{2, 4, 10} (\pm)	Comments
Pressure ^{3, 8} – Measure	(-15 to 30) psi	0.040 % FS	Fluke 743B w/ Fluke 700PD5
	(30 to 300) psi	0.040 % FS	Fluke 700P27
	(300 to 5000) psi	0.042 % FS	Fluke 700P30
	(5000 to 10 000) psi	0.043 % FS	Fluke 700P31
Centrifuge ³ – Measure	Rotation	(30 to 7200) rpm (> 7200 to 50 000) rpm (> 50 000 to 500 000) rpm	0.035 rpm 0.16 rpm 3.7 rpm Stroboscope
	Temperature	(-30 to 150) °C	0.73 °C Fluke 743B
	Timer	60 s to 24 hrs	1.3 s Stopwatch
Rotational Speed ³ – Measure	(30 to 7200) rpm (> 7200 to 50 000) rpm (> 50 000 to 500 000) rpm	0.035 rpm 0.16 rpm 3.7 rpm	Stroboscope

Parameter/Equipment	Range	CMC ^{2, 5, 10} (±)	Comments
POVA (Piston/Plunger Operated Volumetric Apparatus, Fixed & Variable) ⁸ – Including: Pipettes, Syringes, Dilutors, Titrators, Piston/Displacement Burettes (Burets), Dispensers, Re-Pipettors, Liquid Handlers, Bottle-Top Dispensers ³	0.1 µL 0.2 µL 0.5 µL 1 µL 2 µL 5 µL 10 µL 20 µL 25 µL 30 µL 50 µL 100 µL 200 µL 250 µL 300 µL 500 µL 1000 µL 2000 µL 5000 µL 10 mL 20 mL 25 mL 30 mL 50 mL 100 mL	4.8 nL 4.8 nL 4.9 nL 5.3 nL 6.6 nL 12 nL 24 nL 46 nL 58 nL 69 nL 0.12 µL 0.23 µL 0.23 µL 0.29 µL 0.35 µL 0.58 µL 1.2 µL 2.3 µL 5.8 µL 12 µL 23 µL 29 µL 35 µL 58 µL 120 µL	Gravimetric, ASTM E1154 ISO 8655
Volumetric Glassware & Volumetric Apparatus ⁸ – Including: Flasks, Burets (Burettes), Volumetric Dispensers, Cylinders, Graduated Cylinders, Beakers, Vials, Containers, Centrifuge Tubes, & Glass Pipette ⁹	(10 to 500) µL (1 to 5) mL 10 mL (20 to 50) mL 100 mL 200 mL (250 to 500) mL 1 L 2 L 5 L 10 L	0.51 µL 0.51 µL 1.2 µL 3.2 µL 4.7 µL 25 µL 37 µL 57 µL 81 µL 160 µL 250 µL	Gravimetric methods

Parameter/Equipment	Range	CMC ^{2, 5, 10} (±)	Comments
Torque Devices – Measuring Equipment Wrenches, Drivers, Tools (Electronic, Mechanical, Digital, Dial)	(5 to 50) ozf·in (4 to 50) lbf·in (30 to 400) lbf·in (80 to 1000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft	2.8 % 2.8 % 1.0 % 0.46 % 0.48 % 0.30 %	Torque system
Torque Calibrators – Measuring Equipment, Transducers & Sensors	5 ozf·in to 600 lbf·ft	0.030 %	ASTM Class 7, NIST HB 105-1 (v2019) or NIST HB 105-1 (v1990), Class F mass standards

V. Thermodynamics⁹

Parameter/Equipment	Range	CMC ^{2, 10} (±)	Comments
Thermometry – Liquid-in-Glass	(-80 to -30) °C (-30 to 150) °C (150 to 400) °C (400 to 660) °C	0.26 °C 0.037 °C 0.041 °C 0.27 °C	PRT
PRT, Digital Thermometer	(-80 to -30) °C (-30 to 400) °C (> 400 to 660) °C	0.021 °C 0.025 °C 0.092 °C	PRT
Thermocouple	(-80 to 660) °C	0.50 °C	PRT
Infrared	(-15 to 120) °C (>120 to 500) °C	0.62 °C 1.2 °C	Hart 4180, 4081 precision infrared calibrators
Data Loggers & Chart Recorders, Environmental Data Recorders	(-80 to 660) °C	0.38 °C	PRT
Temperature Probes	(-25 to 180) °C	0.73 °C	PRT

Parameter/Equipment	Range	CMC ² (±)	Comments
Hygrometers & Humidity Instruments Including Data Loggers, Chart Recorders, Environmental Data Recorders	(20 to 90) % RH (90 to 98) % RH	0.81 % RH 1.1 % RH	Humidity Generator with Vaisala HMP 77
Environmental Chamber ³ (Temperature & Relative Humidity Mapping) – Including: Oven, Incubator, Refrigerator, Freezer, Humidity Generator	(-25 to 180) °C (> 180 to 660) °C (10 to 90) % RH > 90 % RH	0.73 °C 0.60 °C 1.0 % RH 1.7 % RH	Fluke 743B w/ PRT probe Vaisala HMP 77
Field Temperature Indicators & Measurements ³	(-80 to 600) °C	0.29 °C	Fluke 743B plus K-Type TC probe
Field Relative Humidity Indicators & Measurements ³	(10 to 90) % RH > 90 % RH	1.0 % RH 1.7 % RH	Vaisala HMP77

VI. Time & Frequency⁹

Parameter/Equipment	Range	CMC ² (±)	Comments
Timer, Stopwatch, Timing Devices ³	24 hrs	13 ms	Timometer
Timing Devices ³	60 s to 24 hrs	600 ms	Stopwatch

¹ This laboratory offers commercial calibration and field calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs 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 calibration 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 calibration.

- ³ Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g., resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.
- ⁴ In the statement of CMC, R is the numerical value of the resolution of the device, L is the numerical value of the nominal length of the device measured in inches, and FS represents "full scale".
- ⁵ In the statement of CMC, percentages represent the percent of reading unless otherwise noted.
- ⁶ The Calibration and Measurement Capability Uncertainty (CMC) applies for nearly ideal Weights and Weight Sets only. "Nearly ideal" means that the CMC is not dependent on the characteristics of the weights to be calibrated. Inherent in the concept of being nearly ideal is that there is no significant contribution to the uncertainty of measurement attributable to physical effects that can be ascribed to the characteristics of the weights to be calibrated. The laboratory is required to state a larger uncertainty than the CMC whenever it is established that the physical characteristics of the Weight and Weight Sets adds to the uncertainty of measurement.
- ⁷ In some cases, above and below the 1 kilogram starting restraint, the Mass CMC claim is smaller than that of the expanded uncertainty claim for The National Institute of Standards and Technology (NIST) as listed in the BIPM Key Comparison Database. A2LA has evaluated the laboratory's CMC claim and has verified this information to be correct and appropriate.
- ⁸ The stated CMCs do not include UUT contributions.
- ⁹ Calibration/testing of nominal values intermediate to those shown on the Scope of Accreditation, nominal values with units of measure derived from SI units, and nominal values converted from SI units, are permissible and may have CMCs larger than the linear interpolation of a CMC displayed on this Scope of Accreditation.
- ¹⁰ The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.
- ¹¹ This scope meets A2LA's *P112 Flexible Scope Policy*.



Accredited Laboratory

A2LA has accredited

RICE LAKE WEIGHING SYSTEMS (FORMERLY HEUSSER NEWEIGH)

Concord, CA

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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*).



Presented this 8th day of December 2022.

A blue ink signature of a person, likely a representative of the accreditation council.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1823.01
Valid to September 30, 2024

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