SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

J.A. KING & COMPANY, LLC
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CALIBRATION

Valid To: July 31, 2019 Certificate Number: 1741.07

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations and dimensional inspections[1]:

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Hand Tools[3] – Calipers & Micrometers	Up to 8 in	$(3.0 + 9.2L) + 0.6R$ µin	Gage blocks
Circumference/Diameter[3]	Up to 80 mm	0.0022 mm/0.000 70 mm	Beta Lasermike, size standard

II. Dimensional Testing/Calibration[1]

Parameter/Equipment	Range	CMC[2] (±)	Comments
One Dimensional[3, 5] – Length	Up to 8 in	0.0013 in (0.033 mm)	Digital calipers

III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Electrical Calibration of Thermocouples[3] –			
Type J	(0 to 400) °C	0.25 °C	Fluke 740 series
Type K	(0 to 400) °C	0.37 °C	
Electrical Calibration of RTDs[3] –	(0 to 400) °C	0.3 °C	Fluke 740 series

IV. Mechanical

Parameter/Equipment	Range	CMC[2, 4, 6] (±)	Comments
Scales and Balances[3]	Up to 500 mg	0.0062 mg + 0.6*R*	Ultra class weights
	Up to 5 g	0.021 mg + 0.6*R*	
	Up to 10 g	0.031 mg + 0.6*R*	
	Up to 20 g	0.046 mg + 0.6*R*	
	Up to 50 g	0.074 mg + 0.6*R*	
	Up to 100 g	0.16 mg + 0.6*R*	
	Up to 200 g	0.31 mg + 0.6*R*	
	Up to 500 g	0.74 mg + 0.6*R*	
	Up to 1000 g	1.6 mg + 0.6*R*	
	Up to 2000 g	3.1 mg + 0.6*R*	
	Up to 4000 g	6.1 mg + 0.6*R*	
	Up to 5000 g	7.4 mg + 0.6*R*	
Force[3]	Up to 12 kg	0.033 %	Ultra class weights
Pressure Drop[3]	50 mm·H_2O	0.7 mm·H_2O	Glass capillary rod standards, manometers and Brooks volumeter
	100 mm·H_2O	1.3 mm·H_2O	
	200 mm·H_2O	2.5 mm·H_2O	
	400 mm·H_2O	5.6 mm·H_2O	
	600 mm·H_2O	8.4 mm·H_2O	
	800 mm·H_2O	11 mm·H_2O	
	1000 mm·H_2O	15 mm·H_2O	

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Permeability[3]	Up to 20 000 ml/m	0.93 %	Flow measured @ 4″ WG pressure
Non-Contact RPM[3]	(5 to 20 000) RPM	0.022 %	Tachometer

V. Thermodynamic

Parameter/Equipment	Range	CMC[2] (±)	Comments
Temperature[3] – Measure	(-200 to 500) °C	0.28 °C	Fluke 1523 w/ 6518B
Direct Method	(-40 to 140) °C	0.17 °C	ISOTECH dry block/ liquid bath w/ probe
Thermocouples[3] – Measure			
Type J	(0 to 400) °C	0.46 °C	Fluke 740 series
Type K	(0 to 400) °C	0.46 °C	
RTD[3] – Measure	(0 to 400) °C	0.7 °C	Fluke 740 series
Relative Humidity[3]	(0 to 80) % RH	1.2 % RH	Rotronic HP22-A w/ HC2-S probe

VI. Time & Frequency

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Time[3] –	Up to 1 hr	0.25 %	Stopwatch
Fixed Points	2 s	0.02 s	Fluke 105B
	30 s	0.05 s	
	60 s	0.085 s	

[1] This laboratory is available for commercial and field dimensional testing/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 and this laboratory meets A2LA *R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. 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, L is the numerical value of the nominal length of the device measured in inches and R is the numerical value of the resolution of the device.

[5] This laboratory meets R205 – *Specific Requirements: Calibration Laboratory Accreditation Program* for the types of dimensional tests listed above and is considered equivalent to that of a calibration certificate.

[6] In the statement of CMC, percentages are percentage of reading, unless otherwise indicated.

Accredited Laboratory

A2LA has accredited

J.A. KING & COMPANY, LLC

Winston-Salem, NC

for technical competence in the field of

Calibration

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 laboratory also meets 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 8 January 2009*).

Presented this 26th day of April 2017.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1741.07
Valid to July 31, 2019
Revised on May 17, 2019

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