SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

J.A. KING & COMPANY, LLC
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CALIBRATION

Valid To: May 31, 2017 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	Up to 80 mm	0.0036 mm/0.0012 mm	Beta lasermike

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. Mechanical

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Balances[3]	Up to 5 g Up to 100 g Up to 200 g Up to 500 g Up to 1000 g Up to 2000 g Up to 4000 g	0.02 mg + 0.6*R* 0.16 mg + 0.6*R* 0.31 mg + 0.6*R* 0.76 mg + 0.6*R* 1.6 mg + 0.6*R* 3.2 mg + 0.6*R* 6.3 mg + 0.6*R*	Ultra class weights
Force[3]	Up to 12 kg	0.033 % of reading	Ultra class weights
Pressure Drop[3]	50 mm·H_2O 100 mm·H_2O 200 mm·H_2O 400 mm·H_2O 600 mm·H_2O 800 mm·H_2O 1000 mm·H_2O	0.7 mm·H_2O 1.3 mm·H_2O 2.5 mm·H_2O 5.6 mm·H_2O 8.3 mm·H_2O 11 mm·H_2O 14 mm·H_2O	Glass capillary rod standards, manometers and Brooks volumeter
Permeability[3]	Up to 20 000 ml/m	0.9 % of reading	Flow measured @ 4” WG pressure
Non-Contact RPM[3]	(5 to 20 000) RPM	0.024 % of reading	Tachometer

IV. 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	0.21 °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	
Simulation			
Type J	(0 to 400) °C	0.25 °C	
Type K	(0 to 400) °C	0.37 °C	

Parameter/Equipment	Range	CMC[2] (±)	Comments
RTD[3] –			
Measure	(0 to 400) °C	0.7 °C	Fluke 740 series
Simulation	(0 to 400) °C	0.3 °C	
Relative Humidity[3]	(0 to 80) % RH	1.2 % RH	Rotronic HP22-A w/ HC2-S probe

V. Time & Frequency

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

[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.

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 the requirements of ANSI/NCSLI Z540-1-1994 and any additional program requirements in the field of calibration. 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 20th day of May 2015.

Senior Director of Quality & Communication
For the Accreditation Council
Certificate Number 1741.07
Valid to May 31, 2017

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