# SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

NATIONAL FORCE CALIBRATIONS PLUS LLC
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## CALIBRATION

Valid To: September 30, 2013 Certificate Number: 2621.01

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

I. Dimensional

| Parameter/Equipment | Range | CMC[2, 4] (±) | Comments |
|---|---|---|---|
| Calipers[3] | Up to 6 in | 0.0002 in + 0.6*R* | Caliper fixture, gage blocks |

II. Mechanical

| Parameter/Equipment | Range | CMC[2, 5] (±) | Comments |
|---|---|---|---|
| Force Transducers[3] – | | | ASTM E4, ISO 7500-1, ISO 5893 |
| Tension and/or Compression | (50 to 500 000) N | 0.1 % | Load cells with HBM MGC plus or DMP40 |
| Compression | 50 N to 3000 kN | 0.05 % | Load cells with HBM MGC plus or DMP40 |
| | (0.01 to 700) N | 0.05 % | Dead weights |


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| Parameter/Equipment | Range | CMC[2, 4, 5] (±) | Comments |
|---|---|---|---|
| Speed of Materials Testing Instruments[3] | | | ISO 5893, E2658-11 |
| | (0.05 to 25) mm/min | 0.25 % | Heidenhain gages stopwatch |
| | (25 to 2500) mm/min | 0.2 % | Miniature measurement transducer |
| Extensometers[3] – | | | ASTM E83 |
| Gage Length | (10 to 100) mm | 0.03 mm | Digital caliper |
| Travel | (0.05 to 30) mm | 0.15 % | Heidenhain glass scale |
| Displacement[3] | | | ASTM E 2309, ISO 5893 |
| | (0.0005 to 30) mm | 0.15 % | Heidenhain length gages |
| | (20 to 1050) mm | 0.25 % | Miniature measurement transducer |
| Scales[3] | 5 mg to 63 kg | 0.01 % + 0.6*R* | NIST Handbook 44 ASTM E4-2007 |
| Impact Calibration[3] | (5.5 to 750) J | 0.24 % | ISO 13802 and/or ASTM E-23, digital protractor, load cells, Heidenhaain length gages, level |
| Pressure | (0 to 100) psi<br>(100 to 5000) psi | 0.2 psi<br>1 % of range | Pressure transducers DMP40 /HBM |

III. Thermodynamics

| Parameter/Equipment | Range | CMC[2] (±) | Comments |
|---|---|---|---|
| Temperature[3] | -100 ºC to 1292 ºC | 0.73 ºC | Elements of ASTM E145 |

[1] This laboratory offers commercial and field calibration service.

[2] Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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] $R$ is the resolution of the unit under test.

[5] In the statement of CMC, a percent is defined as the percentage of indicated value unless otherwise noted.

The American Association for Laboratory Accreditation

World Class Accreditation

# Accredited Laboratory

A2LA has accredited

## NATIONAL FORCE CALIBRATIONS PLUS LLC

*Fuquay Varina, 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 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 7th day of October 2011.

President & CEO
For the Accreditation Council
Certificate Number 2621.01
Valid to September 30, 2013

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