**United States Department of Commerce**
**National Institute of Standards and Technology**

# Certificate of Accreditation to ISO/IEC 17025:2017

**NVLAP LAB CODE: 600259-0**

## Morehouse Instrument Company

York, PA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:*

## Calibration Laboratories

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2022-02-10 through 2022-12-31

*Effective Dates*

*For the National Voluntary Laboratory Accreditation Program*

# National Voluntary Laboratory Accreditation Program

**CALIBRATION LABORATORIES** **NVLAP LAB CODE 600259-0**

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

| **Morehouse Instrument Company** | **Fields(s) of Calibration** |
|---|---|
| 1742 Sixth Avenue<br>York, PA 17403<br>Mr. Brian Davis<br>Phone: 717-843-0081 FAX: 717-846-4193<br>E-Mail: quality@mhforce.com<br>URL: http://mhforce.com | Electromagnetics – DC/Low Frequency<br>Mechanical<br><br>This laboratory is compliant to ANSI/NCSL Z540-1-1994; Part 1. (20/A01) |

**CALIBRATION AND MEASUREMENT CAPABILITIES (CMC)** Notes 1,2

| **Measured Parameter or Device Calibrated** | **Range** | **Uncertainty ($k$=2)** Notes 3,5 | **Remarks** |
|---|---|---|---|
| **ELECTROMAGNETICS – DC/LOW FREQUENCY** | | | |
| **DC VOLTAGE (20/E06)** | | | |
| DC Voltage – Measure | 0 Vdc to 30 Vdc | 0.001 % of applied | Fluke 8508 |
| DC Voltage – Generate Electrical Calibration of Load Indicators | 0 mV/V to 4.4 mV/V | 0.000 05 mV/V | Load cell simulator |
| **MECHANICAL** | | | |
| **FORCE (20/M06)** | | | |
| Force – Measuring Equipment Note 7 | | | Force calibration including ASTM E74, Class A and AA; ISO 376 Class 00, 0.5, 1 and 2 |
| Dead Weight Primary | 5 gf to 105 gf | 0.003 % | |
| Standards: Tension and Compression | 0.1 lbf to 10 lbf (0.44 N to 44 N) | 0.0025 % | |
| | 10 lbf to 100 lbf (44 N to 444 N) | 0.0016 % | |
| | 100 lbf to 12 000 lbf (444 N to 53 379 N) | 0.0016 % | |

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**CALIBRATION AND MEASUREMENT CAPABILITIES (CMC)** Notes 1,2

| Measured Parameter or Device Calibrated | Range | Uncertainty ($k$=2) Notes 3,5 | Remarks |
|---|---|---|---|
| Force/Force Transducers Notes 7,8 | 12 000 lbf to 120 000 lbf (53 379 N to 533 786 N ) | 0.0016 % | |
| Tension and Compression | 20 000 lbf to 1 000 000 lbf (88.96 kN to 4.448 MN) | 1.21922E-05 x $F$ + 13.6 lbf or, 15 lbf through 26 lbf (67 N through 120 N) | Force Calibration including ASTM E74 Class A, ISO 376 Class 0, 0.5, 1 and 2 |
| Compression | 150 000 lbf to 2 200 000 lbf (667.2 kN to 9786 MN) | 3.98543E-05 x $F$ + 35.78 lbf, or 76 lbf through 120 lbf (0.34 kN through 0.53 kN) | |
| Tension | 1 000 000 lbf to 1 125 000 lbf (4.448 MN to 5.004 MN) | 3.98543E-05 x $F$ + 35.78 lbf 76 lbf through 84 lbf (0.34 kN through 37 kN) | |
| Aircraft Scales/Truck Scales (Portable) Note 9 | 0 lbf to 60 000 lbf | 0.0016 % | Force |
| **TORQUE (20/M15)** | | | |
| Torque – Measuring Equipment | | | Primary torque standard, ASTM E2428 and other methods |
| Dead Weight Primary Standards | 0.37 lbf·ft to 73.75 lbf·ft (0.5 N·m to 100 N·m) | 0.005 % | |
| Clockwise & Counter-clockwise | 14.75 lbf·ft to 1475 lbf·ft (20 N·m to 2000 N·m) | 0.003 % | |
| **END** | | | |

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| Notes |
|---|

**Note 1:** A Calibration and Measurement Capability (CMC) is a description of the best result of a calibration or measurement (result with the smallest uncertainty of measurement) that is available to the laboratory's customers under normal conditions, when performing more or less routine calibrations of nearly ideal measurement standards or instruments. The CMC is described in the laboratory's scope of accreditation by: the measurement parameter/device being calibrated, the measurement range, the uncertainty associated with that range (see note 3), and remarks on additional parameters, if applicable.

**Note 2:** Calibration and Measurement Capabilities are traceable to the national measurement standards of the U.S. or to the national measurement standards of other countries and are thus traceable to the internationally accepted representation of the appropriate SI (Système International) unit.

**Note 3:** The uncertainty associated with a measurement in a CMC is an expanded uncertainty using a coverage factor, $k = 2$, with a level of confidence of approximately 95 %. Units for the measurand and its uncertainty are to match. Exceptions to this occur when marketplace practice employs mixed units, such as when the artifact to be measured is labeled in non-SI units and the uncertainty is given in SI units (Example: 5 lb weight with uncertainty given in mg).

**Note 3a:** The uncertainty of a specific calibration by the laboratory may be greater than the uncertainty in the CMC due to the condition and behavior of the customer's device and specific circumstances of the calibration. The uncertainties quoted do not include possible effects on the calibrated device of transportation, long term stability, or intended use.

**Note 3b:** As the CMC represents the best measurement results achievable under normal conditions, the accredited calibration laboratory shall not report smaller uncertainty of measurement than that given in a CMC for calibrations or measurements covered by that CMC.

**Note 3c:** As described in Note 1, CMCs cover calibrations and measurements that are available to the laboratory's customers under *normal conditions.* However, the laboratory may have the capability to offer special tests, employing special conditions, which yield calibration or measurement results with lower uncertainties. Such special tests are not covered by the CMCs and are outside the laboratory's scope of accreditation. In this case, NVLAP requirements for the labeling, on calibration reports, of results outside the laboratory's scope of accreditation apply. These requirements are set out in Annex A.5. of NIST Handbook 150, Procedures and General Requirements.

**Note 4:** Uncertainties associated with field service calibration may be greater as they incorporate on-site environmental contributions, transportation effects, or other factors that affect the measurements. (This note applies only if marked in the body of the scope.)

**Note 5:** Values listed with percent (%) are percent of reading or generated value unless otherwise noted.

**Note 6:** NVLAP accreditation is the formal recognition of specific calibration capabilities. Neither NVLAP nor NIST guarantee the accuracy of individual calibrations made by accredited laboratories.

**Note 7:** In the statement of CMC, $F$ = applied force in lbf.
**Note 8:** Incremental and decremental forces (for hysteresis) can be achieved at any force range except above 1,000,000 lbf (4448 kN) where only discrete (incremental) forces can be applied.
**Note 9:** The uncertainty for this capability does not include contributions from the characteristics of the "best existing device" such as resolution Actual reported uncertainty for device under test therefore will always be greater due to contributions from that device.

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