CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Northern Gauge, Inc.
#400 – 280 Portage Close
Sherwood Park, Alberta, Canada T8H 2R6

Fulfills the requirements of

ISO/IEC 17025:2017

In the fields of

CALIBRATION & DIMENSIONAL MEASUREMENT

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 25 March 2027

Certificate Number: L2350

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 Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Northern Gauge, Inc.
#400 – 280 Portage Close
Sherwood Park, Alberta, Canada T8H 2R6
Peter Laurensse
780-628-0844

CALIBRATION AND DIMENSIONAL MEASUREMENT

CALIBRATION

Valid to: **March 25, 2027** Certificate Number: **L2350**

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Gauge Blocks: Central Length	(0.05 to 4) in	(8.3 + 13*L*) µin	ISO 3650/ASME B89.1.9 Octagon Precision Gauge Block Comparator & Master Gauge Blocks
Plain Plug Gauges	(0.1 to 7) in (0.20 to 7) in	(34 + 3.4*D*) µin (33 + 7.7*D*) µin	ANSI/ASME B89.1.5: Trimos Horizon Premium Micura CMM
Plain Ring Gauges	(0.25 to 7) in (0.20 to 7) in	(51 + 3.2*D*) µin (33 + 7.7*D*) µin	ANSI/ASME B89.1.6: Trimos Horizon Premium Micura CMM
Thread Plug Gauges: (4-80 TPI) Pitch Diameter Major Diameter	Diameter: (0.1 to 7) in	(110 + 2.2*D*) µin (34 + 4.2*D*) µin	ANSI/ASME B1.1-B1.2, ANSI/ASME B1.5-B1.8 Trimos Horizon Premium and Thread Wires
Thread Ring Gauges: (4-80 TPI) Pitch Diameter Minor Diameter	Diameter: (0.25 to 7) in	(51 + 12*D*) µin (51 + 7.5*D*) µin	ANSI/ASME B1.1-B1.2, ANSI/ASME B1.5-B1.8 Trimos Horizon Premium and Thread Wires
NPT/NPTF Tapered Threads: Standoff	(0.062 5 to 6) in	0.000 6 in	ASME B1.20.1:2013 MAHR Digimar 816CL
API 5B/7-2 Tapered Threads: Standoff	(1 to 10.75) in	0.000 7 in	API 5B/API 7-2 MAHR Digimar 816CL

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Rod Length Standards	(0.1 to 20) in	(40 + 8.3*L*) µin	Measurement using Trimos Horizon Premium
Calipers - OD, ID and Depth	(0.5 to 48) in	(290 + 13*L*) µin	Comparison to Master gauge blocks
	(0.5 to 25.5) in	(370 + 4.9*L*) µin	Comparison to Caliper Checker
Micrometers	(0.05 to 59) in	(30 + 13*L*) µin	Comparison to Master gauge blocks
Dial/Digital Indicators	(0 to 3) in	(30 + 14*L*) µin	Comparison to Master gauge blocks
	(0 to 3) in	(45 + 11*L*) µin	Comparison to Trimos Horizon Premium
Height Gauges	(0 to 24) in	(15 + 12*L*) µin	Comparison to Master gauge blocks
Lead Gauge / Ring Groove Setting Standards	(0 to 18) in	(47 + 4.6*L*) µin	API 5B & API 6A using CMM Micura
Universal Length Measuring Machines (ULM's) [1]	(0 to 20) in	(10 + 2.2*L*) µin	Comparison to Renishaw XL-80 Laser Interferometer
Steel Tape Measures & Ruler[3]	Up to 300 in	(9 000 + 1.4*L*) + 12N µin	JIS B 7512 and NIST HB 44 section 5.52 using Octagon Tape and Scale Measuring Machine
Profile Projectors[1]: Length Measurement (X and Y axes) Magnification Angle	X = Up to 6 in Y = Up to 3 in 10x, 20x & 50x Up to 90°	(150 + 1.2*L*) µin (130 + 4.5*L*) µin 0.17 % 0.05°	JIS B 7184:2021 using Master Glass Scale Angle Gauge Blocks
Thread Profile Gauge	(2 to 20) pitch	300 µin	API 7-2 / API 5B ANSI B1.5, B1.8, B1.9 using Thread Profile Overlays and Optical Comparator

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Granite Surface Plates[1]: Flatness Overall Flatness on Local Area	Length/Width/Diameter: Up to 48 in Any (250 mm x 250 mm)	 88 µin 50 µin	ISO 8512-2 using: Electronic Level System

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Hydraulic Gauge Pressure - Pressure Gages	(0 to 5 000) psig (0 to 20 000) psig (0 to 40 000) psig	1.8 psi 15 psi 47 psi	API 6D/ISO 14313:10.2.3 using ADDITEL Intelligent Pressure Transducers
Hydraulic Gauge Pressure - Pressure Transducers	(0 to 5 000) psig (0 to 20 000) psig (0 to 40 000) psig	2.2 psi 16 psi 50 psi	Calibration Procedure Consistent with EURAMET CG-17 using Additel Process Calibrator Additel Pressure Transducers
Torque Wrenches	(20 to 100) lbf·in	1.5 % of reading	ISO 6789:2003 using Torque Transducers and Readout, or Torque Analyzer
	(20 to 100) lbf·ft	1.7 % of reading	
	(100 to 200) lbf·ft	1.5 % of reading	
	(200 to 1 000) lbf·ft	1.2 % of reading	

Electrical – DC / Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(0 to 0.33) V (0.33 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1 000) V	0.004 6 % of reading + 3 µV 0.004 3 % of reading + 5 µV 0.004 % of reading + 50 µV 0.004 % of reading + 500 µV 0.004 % of reading + 1.5 mV	Calibration Procedure Consistent with EURAMET cg-15 Ver. 3 Fluke 5500A Multifunction Calibrator

Electrical – DC / Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current - Source	(0 to 3.3) mA (3.3 to 33) mA (33 to 330) mA (0.33 to 2.2) A (2.2 to 11) A	0.009 9 % of reading + 0.05 µA 0.007 6 % of reading + 0.25 µA 0.007 8 % of reading + 3.3 µA 0.023 % of reading + 40 µA 0.046 % of reading + 330 µA	EURAMET cg-15 Ver. 3 Fluke 5500A Multifunction Calibrator
Resistance – Source	(0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (330 to 1 100) Ω (1.1 to 3.3) kΩ (3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ (330 to 1 100) kΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 50) MΩ	0.055 % of reading + 1.0 mΩ 0.041 % of reading + 1.0 mΩ 0.004 % of reading + 15 mΩ 0.006 % of reading + 15 mΩ 0.006 % of reading + 60 mΩ 0.007 % of reading + 60 mΩ 0.005 8 % of reading + 0.6 Ω 0.006 6 % of reading + 0.6 Ω 0.007 3 % of reading + 6.0 Ω 0.008 9 % of reading + 6.0 Ω 0.010 5 % of reading + 55 Ω 0.011 4 % of reading + 55 Ω 0.045 % of reading + 550 Ω 0.077 % of reading + 550 Ω 0.39 % of reading + 5.5 kΩ	Calibration Procedure Consistent with EURAMET cg-15 Ver. 3 Fluke 5500A Multifunction Calibrator
DC Voltage – Measure	(0 to 10) V (10 to 500) V (500 to 1 000) V	0.30 % of reading + 0.2 V 0.24 % of reading + 5.3 V 0.23 % of reading + 10 V	Calibration Procedure Consistent with EURAMET cg-15 Ver. 3 Fluke 376 FC Clamp Meter
DC Current - Measure	(0 to 10) A (10 to 100) A (100 to 250) A (250 to 500) A	0.01 % of reading + 0.4 A 0.30 % of reading + 2.3 A 0.01 % of reading + 5.3 A 0.03 % of reading + 10 A	Calibration Procedure Consistent with EURAMET cg-15 Ver. 3 Fluke 376 FC Clamp Meter
Welding Machines[1]	(0 to 400) A DC (0 to 90) V DC (100 to 750) IPM[4]	2.3 % of reading A 1.3 % of reading V 3.1 IPM	IEC 60974-14 Fluke 376 FC Clamp Meter Contact Tachometer

Thermodynamics

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Analog/Digital Thermometers	(20 to 30) °C	0.3 °C	Comparison to VAISALA Temperature Data Logger
Temperature – Mechanical and Digital Thermometers	(-20 to 150) °C (20 to 650) °C	0.6 °C 1.3 °C	Comparison to ADDITEL 875 Dry Well Calibrator TECHNE Tecal Dry Block Calibrator
Infrared Thermometer	(50 to 99) °C (100 to 299) °C (300 to 500) °C	1.2 °C 3.8 °C 4.6 °C	Comparison to Thermoworks Blackbody Source (Flat Plate) $\varepsilon = 0.95$

DIMENSIONAL MEASUREMENT

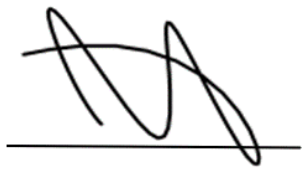
3 Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Dimensional Measurement 3D	X = Up to 18 in Y = Up to 18 in Z= Up to 18 in	(33 + 8.4*L*) µin	Measurement using CMM as reference standard for dimensional measurement
Geometric Form: Flatness Roundness Straightness	 Up to 18 in Up to 18 in Up to 18 in	 69 µin 68 µin 56 µin	Measurement using CMM as reference standard for form measurement

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. *L* = length in inches, *D* = Diameter in inches.
3. N = number of resets of the 6 inch reference standard
4. IPM = feed rate, inches per minute
5. This scope is formatted as part of a single document including Certificate of Accreditation No. L2350.



Jason Stine, Vice President