



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Horiba Instruments Incorporated – Contract Testing Services

2890 John R. Road

Troy MI 48083

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the fields of

CALIBRATION AND TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations and/or tests to which this accreditation applies.

ACT-1312

Certificate Number

ANAB Approval

Certificate Valid: 02/22/2018-02/24/2020
Version No. 006 Issued: 02/22/2018



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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 17025:2005

Horiba Instruments Incorporated – Contract Testing Services

2890 John R. Rd. Troy, MI 48083

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CALIBRATION AND TESTING

Valid to: **February 24, 2020**

Certificate Number: **ACT-1312**

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Radial Loading (force / strain) Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Hydraulic Actuator up to 100 000 pounds-force / 2 500 $\mu\epsilon$ (micro-strain)
Axial Loading (force / strain) Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Hydraulic Actuator up to 100 000 pounds-force / 2 500 $\mu\epsilon$ (micro-strain)
Torsional Loading Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Rotary Hydraulic Actuation up to 5 000 pound-feet; Dynamometer up to 5 000 pound-feet
Dynamic Loading (Force/Acceleration/ Strain) Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Hydraulic Actuator up to 100 G's/measure up to 500 G's / 2 500 $\mu\epsilon$ (micro-strain)
Dynamic Torsional Loading Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Rotary Hydraulic Actuator up to 2 500 pound-feet; Dynamometer up to 5 000 pound-feet
Static Pressure Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Hydraulic Pressure up to 20 000 psi
Dynamic Pressure Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Hydraulic Pressure up to 10 000 psi



Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Rotational Speed Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Dynamometers/Motors up to 18,000 RPM

Dimensional Inspection / Measurement

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Linear Displacement Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Hydraulic Actuator – up to 20 in / measure –up to 20 in
Angular/Rotary Displacement Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Encoder: +/- 2 880 ° Inclinometer: +/- 90 ° (Digital Gage)

Thermodynamic / Environmental

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Temperature Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Thermal Chambers (- 100 to 250) °F Natural Gas Burners up to 2 000 °F
(Static and Dynamic) Fatigue and/or durability	Customer Supplied and/or F12-LMS-Test-Acceptance-Document	Customer Supplied	Thermal Chamber Humidifier/Steam Generator (25 to 95) %RH



Mechanical Calibration

Calibration Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Remarks
Flow ²	Up to 30 slm (Standard Liters/Minute)	22 mL/min	Gas Divider-Checker (GDC) WI-QM-B-009 WI-QM-B-019
Flow ²	Up to 30 slm (Standard Liters/Minute)	0.006 mL/min	Span Gas Divider (SGD) WI-QM-B-010 WI-QM-B-020
Flow ²	Up to 30 slm (Standard Liters/Minute)	0.17%	Gas Divider-Checker (GDC ONE) WI-QM-B-023
Flow ²	Up to 10 slm (Standard Liters/Minute)	26 mL/min	CFO Kit WI-QM-B-015

Note:

1. This scope is formatted as part of a single document including Certificate of Accreditation No. ACT-1312.
2. Flow calibration is only available at the laboratory's satellite site located at 5900 Hines Drive, Ann Arbor, MI 48108
3. Calibration and Measurement Uncertainties (Expanded Uncertainty) are based on approximately a 95% confidence interval, using a coverage of k=2



Vice President