



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

NATIONAL TECHNICAL SYSTEMS (NTS)
12601 Southfield Road
Detroit, MI 48223
Eric Loucks Phone: 313 659 2852 and 870 574 0031

MECHANICAL

Valid To: December 31, 2019

Certificate Number: 0214.08

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following mechanical tests:

<u>Test Type¹</u>	<u>Test Capabilities¹</u>	<u>Test Methods²</u>
Hydraulic		
Linear Actuation Rotary Actuation	Up to 35,000 pounds, Up to 12 in Up to 100,000 in/lbs +/- 45°	DET OPS 012 (Linear Actuation Rotary Actuation)
Burst	(0 to 20,000) psi	DET OPS 012
Proof Pressure	(0 to 20,000) psi	DET OPS 012
Impulse Cycling	(0 to 8,000) psi	SAE ARP 1383B (Impulse Cycling)
Flow	(0.1 to 300) lpm	DET OPS 014 (Flow)
Dynamometer		
Driveline: Performance, Fatigue, Durability	Up to 600 HP, Torque Up to 6,000 ft/lbs, Speed Up to 14,000 RPM	GMW15788
Tire/Wheel Spin	Up to 150 MPH	DET OPS 15 (Tire/Wheel Spin)
Hybrid/Electric: Performance, Fatigue	Hot and Cold Fluid Flow	DET OPS 14 (Flow)
Hybrid/Electric: Durability and Efficiency	600V, 600A, 14,000 RPM	IEC 60349-2 (<i>except noise measurements and limits</i>)
Environmental Simulation		
Temperature (High and Low)	(-55 to 150) °C	GMW 3172, MIL-STD-202 (F, G) Method 106; MIL-STD-810 Method 501 and 502(C, D, E, F, G); RTCA/DO-160 (F & G) Section 5; SAE J1455 (All SAE Revisions)

<u>Test Type¹</u>	<u>Test Capabilities¹</u>	<u>Test Methods²</u>
Environmental Simulation (cont'd)		
Temperature and Humidity	Temperature: (20 to 150) °C RH: (5 to 98) %RH Temperature at 95 °C: 95 %RH	GMW 3172 MIL-STD-202 (F, G) Method 102; MIL-STD-810 Method 507 (C, D, E, F, G); RTCA/DO-160 (F & G) Section 6; SAE J1455 (All SAE Revisions)
Altitude	Up to 50,000 feet	MIL-STD-810 Method 506 (C, D, E, F, G); RTCA/DO-160 (F & G) Section 4; SAE J1455 (All SAE Revisions)
Thermal Shock	(-55 to 150) °C	GMW 3172; MIL-STD-202 Method 107 (F, G); MIL-STD-810 Method 503 (C, D, E, F, G)
IP Protection/Dust	1 cubic meter	GMW 3172; IEC 60529
Handling Drop	1 meter drop	GMW3172
Resistance to Chemicals	Military, Aerospace, Commercially Available Fluids	CS11982
Gravel Bombardment		SAE J400; DIN/ISO EN 20567-1
IP Protection Water		
High Pressure Spray Immersion	Up to 3,500 psi @ 93 °C	IEC 60529; DIN 400 50; ISO 20653; SAE J1455; GMW 3172
Highly Accelerated Stress Test (HAST)	Temp 105 to 160 °C	JESD: 22-A110B-HAST; 22-A110C-HAST

On the following products or types of products:

Automotive, Aerospace, Medical, Military, and Electrical/Electronic/Mechanical Components & Assemblies

¹Also using customer-specified methods directly related to the parameters and types of tests listed above.

²When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*.



Accredited Laboratory

A2LA has accredited

NATIONAL TECHNICAL SYSTEMS (NTS)

Detroit, MI

for technical competence in the field of

Mechanical Testing

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 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 19th day of January 2018.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0214.08
Valid to December 31, 2019

For the types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.