THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

VEHICLE RESEARCH AND DEVELOPMENT, INC.

Almont, 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 18 June 2005*).

Presented this 10th day of August 2007.

President
For the Accreditation Council
Certificate Number 0928.01
Valid to August 31, 2009

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

VEHICLE RESEARCH AND DEVELOPMENT, INC.
3863 Van Dyke Avenue
Almont, MI 48003
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MECHANICAL

Valid until: August 31, 2009 Certificate Number: 0928.01

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

Powertrain Testing:

- Dynamometer Cells with Computerized Controls and Data Acquisition
- Gasoline, Diesel and Alternative Fueled Engine Durability and Development Testing
- Thermal Shock Testing
- Deep Thermal Shock Testing to -32°C (-25°F)
- Motoring Dynamometer Capabilities
- Validation Testing of Engine Components, Gaskets and Seals
- Engine Durability Testing to 1,500 ft/lb torque, 1,000 hp and 8,000 RPM
- Engine Development Testing to 1,500 ft/lb torque, 1,000 hp and 8,000 RPM
- Environmental Chamber Testing to -40°C (-40°F) to +82°C (+180°F)
- Front and Rear Wheel Drive Transmission, Axle and Shaft Durability Testing
- Production Engine Audit Testing

Physical Testing:

- Environmental Simulation
  - Temperature and Humidity
    - Full Vehicles -40°C (-40°F) to +93°C (+200°F) and above ambient Environment to 38°C (+100°F), 95%RH
    - Components -73°C (-100°F) to +190°C (+375°F) and above ambient Environment to 38°C (+100°F), 95%RH
    - Infrared Light Exposure to +176°C (+350°F)
  - Automated System and Component Durability with Environmental Simulation as listed above utilizing the following:
    - Linear Pneumatic Actuators to 4 kN (1,000 lbf)
    - Rotary Pneumatic Actuators to 24 N-m (18.0 lbf-ft)
    - Rotary Servo-Electric Actuators to 13 N-m (9.7 lbf-ft)
    - Linear Hydraulic Actuators in Tension to 66 kN (15,000 lbf)

on the following products: Automotive mechanical and electromechanical components/assemblies

Using test methods and standards from the following sources: Chrysler, Ford, GM, SAE, MIL-STD, ASTM, as listed below. Also using customer specifications directly related to the testing technologies listed above.

Powertrain Testing

GMPT-WEC Engine Durability Test Procedures:

1019	Powertrain Engine Thermal Cycle (PETC)
1020	New Engine Hot Scuff (NEHS)/Global Engine Hot Scuff (GEHS)
1021	Powertrain Cold Start Durability Dolly Test
1022	Powertrain Low Speed Durability (PLSD)
1023	High Speed Engine Durability (HSED)
1024	Powertrain Deep Thermal Cycle (PDTC)
1052	Cordwood Test
1054	Steady State Oil Economy – Engines HD Gasoline
1072	Programmed Oil Economy
1138	Marine Durability Test (300 hours)
1139	Powertrain Engine Durability Test (500 or 1000 hours)
1141	med Truck Engine Durability CD-8
1142	High Speed Cycling Engine Durability Test CD-9 (500-1000 hours)
1143	50,000 Mile Programmed Scheduled "U" Durability Test (1000 hours)
1147	EGR Plugging Test
1148	Road Load 10-Event Programmed Durability (1200 hours)
1149	Nitrogen Leak Check
1150	Deep Thermal Shock (300 cycles)
1151	Thermal Shock (50 hours)
1152	Steady State Detonation (50 hours)
1153	Valve Burning Durability (2500 hours)
1261	Exhaust Manifold Thermal Cycling Durability
1270	Run-in Prior to Durability Test
1271	Run-in of Cylinder Head
1272	Check Out of Engine Prior to Testing
2004	Transmission/Engine Dynamic Durability (TEDD)
3396	General Engine Durability (GED)
3707	Cranking Compression
3708	Cylinder Leakdown
3831	Blow By
8643	Global Engine Thermal Cycle (GETC)

VRD Engine Test Procedures:

Test Number	Test Description
VRD-DT-001	VRD/GM Audit Test

GM Engine Test Procedures (7th Ed.):

Test Number	Test Description
1T & 1SS	Net Power (1105, GM Test 1)
2	Gross Power
4	WOT Power with MBT Spark and LBT Air-Fuel Metering
5	Blowby
3 & 3S	WOT Power with MBT Spark and Fixed Stoichiometric Air –Fuel Metering
14A	Total Oil Consumption
14B	Continuous Oil Consumption
20	Potential Engine Power

Ford Engine Test Procedures:

Test Number	Test Description
AETP HB 3.01-171	Deep Thermal Shock Test
AETP HB 3.01-502	Exhaust Manifold Thermal Cycle
AETP HB 3.10-103	Piston and Gasket Evaluation
AETP HB 3.11-166	Piston Cold Scuff Test

Chrysler Engine Test Procedures:

Test Number	Test Description
ETP B0012.2	Engine Break-In Procedure
ETP B0014.2	Cylinder Head Gasket Thermal Shock Test
ETP B0018.0	Piston Hot Scuff Test
ETP B0024.0	Modified General Durability

Physical Testing

Test Number	Test Description
GMN 6518 TP	Door System – Check Load Rigidity Structural Test
GMN 6533 TP	Door Hinge System – Check Load & Hinge Cycle Durability
GMN 6514 TP	Door System – Freeze Performance Test
GM-CPC 6500	Door Window System – Durability
GM-CPC 6501	Door Window System – Performance Test
GMN 1846 TP	Horizontally Hinged Closure – Freeze Resistance
GMN 0652 TP	Hood System-Slam Durability and Effort Measurements
GMN 1517 TP	Horizontally Hinged, Rear Compartment Closure Panel Systems-Durability
GMN 1878 TP	Body Closure Panels-Operating Efforts
GMN 3794 TP	Horizontally Configured Exterior Body Panel-Sitting Test
GMN 3836 TP	Rear End Closure Panel Spoiler-Fore/Aft Loading
GMN 3837 TP	Rear End Closure Panel Spoiler-Upward, Vertical Load
GMN 5135 TP	Exterior System Solar Load Test
GM 7452 M	Performance Requirement for Exterior Plastic Parts
GM-GMTG 4027	Assist Step Durability Test
GM-GMTG 4028	Static Deflection of the Assist Step
GM-GMTG 4030	Impact Test on the Assist Step
GM-GMTG 4461	End-gate Slam Durability Test
GM-GMTG 4088	Lift-gate Slam Durability
GMN 9505 P	Automotive Environmental Cycles