



THE AMERICAN ASSOCIATION FOR
LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

DENTON TECHNICAL CENTER

Troy, 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 October 2008.

A handwritten signature in cursive script, appearing to read "Peter Abney".

President

For the Accreditation Council

Certificate Number 2421.02

Valid to September 30, 2010

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

DENTON TECHNICAL CENTER
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MECHANICAL

Valid To: September 30, 2010

Certificate Number: 2421.02

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

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Hybrid III Family Head Drop Test		CFR 49 – Part 572
Acceleration	(0 to 300) g	Subpart E, N, O, P, R
Unimodal Oscillation	(0 to 17)%	
Temperature	(19 to 26) degrees C	SAE – User’s Manual 95 th HIII Test Dummy 2002 Engineering Aid (EA-26)
Humidity	(10 to 70)%	SAE – User’s Manual 10 YO HIII Test Dummy June 2002 Release
		SAE-User’s Manual CRABI-18MO Test Dummy (EA 27)
Hybrid III 5 th , 50 th – Hip Range of Motion, Left & Right Femur		CFR 49 – Part 572 Subpart E
Angle	(0 to 50) degrees	
Moment	(0 to 203) Nm	SAE – User’s Manual 5 th HIII Test Dummy (EA-25)
Angular Velocity	(5 to 10) degrees/sec	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Hybrid III Family – Knee Impact Test		CFR 49 – Part 572 Subpart E, N, O
Velocity	(2.07 to 2.13) m/s	
Force	(2.0 to 6.0) kN	SAE – User’s Manual 95 th HIII Test Dummy (EA-26)
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	SAE – User’s Manual 10 YO HIII Test Dummy (EA 34)

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Hybrid III Knee Slider Test		SAE – User’s Manual 50 th HIII Test Dummy (EA-23)
Velocity	(2.70 to 2.80) m/s	
Force	(1.26 to 3.10) kN	SAE – User’s Manual 5 th HIII Test Dummy (EA-25)
Displacement	(10 to 18.3) mm	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	SAE – User’s Manual 95 th HIII Test Dummy (EA-26)
Hybrid III Family – Neck Extension Test		CFR 49 – Part 572 Subpart E, N, O, P, R
Velocity	(0.80 to 6.22) m/s	
Acceleration	(0.0 to 22.0) g	SAE – User’s Manual 95 th HIII Test Dummy (EA-26)
Time	(0 to 174) ms	
Angle	(70.0 to 114.0) degrees	
Moment	(0 to 84) Nm	SAE – User’s Manual 10 YO HIII Test Dummy
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	
Hybrid III Family – Neck Flexion Test		CFR 49 – Part 572 Subpart E, N, O, P, R
Velocity	(1.20 to 7.13) m/s	
Acceleration	(0.0 to 29.0) g	SAE – User’s Manual 95 th HIII Test Dummy (EA-26)
Time	(34 to 128) ms	
Angle	(64 to 92) degrees	
Moment	(0 to 130) Nm	SAE – User’s Manual 10 YO HIII Test Dummy
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	
Hybrid III Family – Thorax Impact Test		CFR 49 – Part 572 Subpart E, N, O, P, R
Velocity	(4.90 to 6.83) m/s	
Force	(680 to 5900) N	SAE – User’s Manual 95 th HIII Test Dummy (EA-26)
Displacement	(12.5 to 76.0) mm	
Hysteresis	(65 to 85)%	
Temperature	(20.6 to 22.2) degrees C	SAE – User’s Manual 10 YO HIII Test Dummy
Humidity	(10 to 70)%	
		SAE – User’s Manual CRABI- 18MO Test Dummy (EA-27)

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Hybrid III Family – Torso Flexion Test		CFR 49 – Part 572 Subpart N, O, P
Angular Velocity	(0.5 to 1.5) degrees/sec	
Force	(130 to 550) N	SAE – User’s Manual 95 th HIII Test Dummy (EA-26)
Angle	(0.0 to 45.5) degrees	
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	SAE – User’s Manual 10 YO HIII Test Dummy
Hybrid II Family – Head Impact Test		CFR 49 – Part 572 Subpart B, C, I
Velocity	(2.10 to 2.16) m/s	
Acceleration	(5.0 to 260.0) g	
Unimodal Oscillation	(0 to 10)%	
Time	(0.9 to 2.0) ms	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Hybrid II Family – Neck Flexion Test		CFR 49 – Part 572 Subpart B, C, I
Velocity	(4.88 to 7.77) m/s	
Acceleration	(0.0 to 34.0) g	
Time	(0.0 to 134.8) ms	
Angle	(30.0 to 92.0) degrees	
Displacement	(0.0 to 168.0) mm	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Hybrid II Family – Thorax Impact Test		CFR 49 – Part 572 Subpart B, C, I
Velocity	(3.90 to 6.78) m/s	
Force	(0.0 to 10.01) Kn	
Displacement	(0.0 to 43.0) mm	
Acceleration	(0.0 to 70.0) g	
Hysterisis	(50 to 70)%	
Unimodal	(0 to 10)%	
Time	(2.50 to 6.0) ms	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Hybrid II Family – Knee Impact Test		CFR 49 – Part 572 Subpart B, I
Velocity	(2.08 to 2.16) m/s	
Force	(1.0 to 11.12) kN	
Time	(0.0 to 4.0) ms	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Side Impact Family – Head Drop Test		CFR 49 – Part 572 Subpart M, U, V
Acceleration	(0 to 275) g	
Unimodal Oscillation	(0 to 15)%	ECE Addendum 94: Regulation 95
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	User’s Manual – ES-2 50th Percentile Side Impact Crash Test Dummy 2002
		SAE User’s Manual – Biosid Side Impact Dummy (EA-24)
		ISO 15830-2:2005 WorldSID
Side Impact Family – Lateral Neck Bending Test		CFR 49 – Part 572 Subpart M, U, V
Velocity	1.96 to 7.64) m/s	
Acceleration	(0.0 to 37.0) g	E/ECE/329
Time	(0 to 88) ms	E/ECE/Trans/505
Angle	(0.0 to 82.0) degrees	Regulation 95
Moment	(0.0 to 88.0) Nm	
Temperature	(20.6 to 22.2) degrees C	User’s Manual – ES-2 50th Percentile Side Impact Crash Test Dummy
Humidity	(10 to 70)%	
		SAE User’s Manual – Biosid Side Impact Dummy (EA-24)
		ISO 15830-2:2005 WorldSID

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Side Impact Family – Pelvis Acetabulum Pelvic Iliac, Pelvis Impact Test		CFR 49 – Part 572 Subpart F, U, V
Velocity	(4.20 to 6.84) m/s	ECE Directive 96/27/EC
Acceleration	(15 to 66) g	
Force	(1.04 to 9.70) kN	User’s Manual – ES-2 50th Percentile Side Impact Crash Test Dummy
Time	(3.0 to 15.9) ms	
Unimodal Oscillation	(0 to 10)%	
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	SAE User’s Manual – Biosid Side Impact Dummy (EA-24)
		ISO 15830-2:2005 WorldSID
SID-Damper Impact test		CFR 49-Part572-Subpart F
Velocity	(3.02 to 6.16) m/s	
Force	(0.825 to 4.425) kN	
Displacement	(30.0 to 39.62) mm	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
SID – Thorax Impact Test		CFR 49 – Part 572 Subpart F, M, U
Velocity	(4.22 to 4.31) m/s	
Acceleration	(15.0 to 46.0) g	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Side Impact Family Shoulder Impact Test		ECE Directive 96/27/EC
Velocity	(4.20 to 4.59) m/s	CFR 49- Part 572 Subpart U, V
Acceleration	(7.5 to 10.50) g	
Force	(1.60 to 4.50) kN	User’s Manual – ES-2 50th Percentile Side Impact Crash Test Dummy
Displacement	(21.2 to 39.0) mm	
Temperature	(20.6 to 22.0) degrees C	
Humidity	(10 to 70)%	SAE User’s Manual – Biosid Side Impact Dummy (EA-24)
		ISO 15830-2:2005 WorldSID

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Side Impact Family - Lumbar Spine Bending Test		ECE Directive 96/27/EC
Velocity	(5.95 to 6.15) m/s	User's Manual – ES-2 50th
Acceleration	(0.0 to 34.1) g	Percentile Side Impact Crash
Time	(1.0 to 55.0) ms	Test Dummy
Angle	(27.0 to 55.0) degrees	
Temperature	(20.6 to 22.0) degrees C	CFR 49, Part 572- Subpart U
Humidity	(10 to 70)%	
Side Impact Family Abdomen Impact Test		ECE Directive 96/27/EC
Velocity	(3.90 to 6.40) m/s	User's Manual – ES-2 50th
Acceleration	(5.0 to 212.0) g	Percentile Side Impact Crash
Force	(1.30 to 11.10) kN	Test Dummy 2002
Time	(8.50 to 10.4) ms	
Displacement	(31.0 to 56.0) mm	SAE User's Manual – Biosid
Temperature	(20.6 to 22.0) degrees C	Side Impact Dummy (EA-24)
Humidity	(10 to 70)%	
		CFR 49, Part 572-Subpart U, V
		ISO 15830-2:2005 WorldSID
Side Impact Family –Thorax Impact Test (With Arm and Without Arm)		SAE User's Manual- Biosid side Impact Dummy (EA-24)
Velocity	(4.20 to 6.84) m/s	CFR 49-Part 572
Acceleration	(12.0 to 179.0) g	Subpart V
Force	(3.20 to 7. 60) kN	
Time	(8.50 to 10.4)ms	ISO 15830-2:2005 WorldSID
Displacement	(14.0 to 70.0)mm	
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	
Side Impact Family-Rib /Rib Module /Rib Damper Impact Test		ECE Directive 96/27/EC
Velocity	(1.0 To 10.0) m/s	User's Manual- ES-2 50 th
Displacement	(10.0 to 51.0) mm	Percentile Side Impact Crash
Temperature	(20.6 to 22.2) degrees C	Test Dummy
Humidity	(10 to 70)%	CFR 49, Part 572-Subpart U

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Biorid Mini Sled Test		IIWPG User's Manual
Pendulum Velocity	(4.70 to 4.80) m/s	
Sled Acceleration	(12.0 to 179.0) m/s ²	
Pendulum Force	(4.70 to 5.20) kN	
Time	(4.0 to 24.0) m/s	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Hybrid III 50 th –Thor LX Hybrid III Retrofit		Thor LX/Hybrid III Retrofit Version 3.2 (NHTSA 2004)
Ball of Foot		
Velocity	(4.90 to 5.10) m/s	Thor LX/Hybrid III Retrofit Version 3.2 (NHTSA 2001)
Force	(3058 to 3.738)kN; (2.956 to 3.613) kN	
Moment	(76.20 to 93.20) Nm, (77.10 to 94.20) Nm	Thor FLX/Hybrid III Retrofit Version 1.0(2004)
Angle	(32.7 to 39.9) degrees	
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	
Hybrid III 50 th –Thor LX Hybrid III Retrofit		Thor LX/Hybrid III Retrofit Version 3.2 (NHTSA 2004)
Heel Of Foot		
Velocity	(3.90 to 4.10) m/s	Thor LX/Hybrid III Retrofit Version 3.2 (NHTSA 2001)
Force	(2738 to 3346) N; (2956 to 3613) N	
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	Thor FLX/Hybrid III Retrofit Version 1.0 (2004)
Hybrid III 50 th –Thor LX Hybrid III Retrofit		Thor LX/Hybrid III Retrofit Version 3.2 (NHTSA 2004)
Dynamic Inversion/Eversion		
Velocity	(1.90 to 2.10) m/s	Thor LX/Hybrid III Retrofit Version 3.2 (NHTSA 2001)
Force	(552 to 675) N	
Moment	(36.3 to 44.4) Nm	
Angle	(30.3 to 37.0) degrees	Thor FLX/Hybrid III Retrofit Version 1.0 (2004)
Temperature	(20.6 to 22.2) degrees C	
Humidity	(10 to 70)%	

<u>Parameter/Equipment</u>	<u>Range</u>	<u>Methods/Standards</u>
Hybrid III 50 th - Eurofoot Lower Foot Heel Impact Test		ECE Addendum 93;Regulation 94
Velocity	(4.3 to 4.5) m/s	
Acceleration	(245 to 345) g	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Hybrid III 50 th –Eurofoot Upper Foot Toe Impact Test		ECE Addendum 93;Regulation 94
Velocity	(6.6 to 6.8) m/s	
Moment	(95 to 145) Nm	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	
Hybrid III 50 th –Eurofoot Heel Impact With Shoe Test		ECE Addendum 93;Regulation 94
Velocity	(6.6 to 6.8) m/s	
Force	(2.8 to 3.8) kN	
Temperature	(18.9 to 25.6) degrees C	
Humidity	(10 to 70)%	