FINAL REPORT NUMBER 202a-MGA-10-004

SAFETY COMPLIANCE TESTING FOR FMVSS 202a
"Head Restraints"

VOLVO CAR COMPANY
2010 VOLVO XC60 MPV
NHTSA No. CA5902

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083

Test Dates: September 28-30, 2010
Report Date: January 27, 2011

FINAL REPORT

Prepared For:

U.S DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance (Rm W45-304)
1200 New Jersey Avenue, SE
Washington, DC 20590

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P. Michael Miller II, Vice President

Approval Date: March 1, 2011

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Date: 2011.03.01 08:31:24 -05'00'

Acceptance Date:

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 202a-MGA-10-004	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 202a Compliance Testing of a 2010 Volvo XC60 MPV NHTSA No. CA5902		5. Report Dates September 28-30, 2010 6. Performing Organization Code MGA	
7. Author(s) Helen A. Kaleto, Laboratory Manager Alisshia Woods, Project Engineer David Maier, Test Personnel		8. Performing Organization Report No. 202a-MGA-10-004	
9. Performing Organization Name and Address MGA Research Corporation 446 Executive Drive Troy, Michigan 48083		10. Work Unit No. 11. Contract or Grant No. DTNH22-06-C-00030/0008	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (Rm W45-304) 1200 New Jersey Avenue, SE Washington, DC 20590		13. Type of Report and Period Covered Final Test Report 14. Sponsoring Agency Code NVS-220	
15. Supplementary Notes			
16. Abstract A compliance test was conducted on the subject 2010 Volvo XC60 MPV, NHTSA No. CA0212, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-202aS-00S-00 for the determination of FMVSS 202a compliance. The test was conducted at MGA Research Corporation in Troy, Michigan on September 28-30, 2010. Test failures identified were as follows: NONE The data recorded indicates that the 2010 Volvo XC60 MPV tested appears to meet the requirements of FMVSS 202a.			
17. Key Words Compliance Testing Safety Engineering FMVSS 202a 2010 Volvo XC60 MPV		18. Distribution Statement Copies of this report are available From: NHTSA Technical Reference Technical Information Services Division, NPO-411 1200 New Jersey Avenue, SE (Rm E12-100) Washington, D.C. 20590 Telephone No. (202) 366-4946	
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1.0 PURPOSE AND PROCEDURE

Purpose: The purpose of this testing was to determine whether head restraints equipped in vehicles supplied by the National Highway Traffic Safety Administration meet the requirements of Federal Motor Vehicle Safety Standard Number 202a, entitled "Head Restraints".

Test Procedures: The "MGA Research Corporation Testing Procedures for FMVSS 202a," submitted to and approved by the National Highway Traffic Safety Administration, contains the specific procedures used to conduct the testing.

This procedure shall not be interpreted to conflict with any portion of NHTSA TP-202aS-00, FMVSS 202a nor any amendment thereof within the applicable contract.

2.0 DATA SUMMARY

Summary data is provided below. Data for the configuration and the location of each seating position tested is provided in Section 5.0. Photographs can be found in Section 6.0 and test plots can be found in Section 7.0. The data recorded indicates that the 2010 Volvo XC60 MPV tested appears to meet the requirements of FMVSS 202a.

Table 1. Summary Data

MGA Test #	Test Type	Seat Description
E10878	Dimensional Measurements	Front LH 8-Way Power (Leather)
E10879	Dimensional Measurements	Front RH 8-Way Power (Leather)
E10890	Backset Retention, Displacement, and Strength	Front LH 8-Way Power (Leather)
E10891	Height Retention	Front RH 8-Way Power (Leather)
D10292	Energy Absorption	Front RH 8-Way Power (Leather)

3.0 TEST VEHICLE INFORMATION

Table 2. General Test and Vehicle Parameter Data

VEH. MOD YR/MAKE/MODEL/BODY	2010 Volvo XC60 MPV
VEH. NHTSA NO.	CA5902
VIN	YV4982DL2A2104332
COLOR	Grey Metallic
VEH. BUILD DATE	January, 2010
TEST DATES	September 28-30, 2010
TEST LABORATORY	MGA Research Corporation
OBSERVERS	Alisshia Woods, Helen Kaleto, Dave Maier

GENERAL INFORMATION:

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Volvo Car Corporation

Date of Manufacture: 02/10 VIN: YV4982DL2A2104332

GVWR: 5,200 lb GAWR FRONT: 2,740 lb

GAWR REAR: 2,545 lb

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 240 kpa REAR: 240 kpa

Recommended Tire Size: P235/65R17

Recommended Cold Tire Pressure:

FRONT: 240 kpa REAR: 240 kpa

Size of Tire on Test Vehicle: P235/65R17

Size of Spare Tire: T125/80R17

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench ____; Bucket X; Split Bench___

Number of Occupants: Front 2 ; Rear 3 TOTAL 5 .

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

MGA Research Corporation 446 Executive Drive Troy, Michigan 48083	
Test Equipment Used for Testing	**Calibration Due Date**
MGA Hydraulic Test Frame (202a)	N/A
Hydraulic Pump	N/A
MGA Data Acquisition System (202a)	1/25/2011
Inclinometer (Digital) - MGA0000823	1/27/2011
Accelerometer – P57862, P58043	11/17/2010
LVDT's - H1, H3, T1	12/15/2010
Load Cells - 500 lbs, 1000lbs – 143138, 143538, 145489	3/22/2011

5.0 DATA

All data summarized below appears to meet the requirements of FMVSS 202a.

Table 3. S5.2.1-5.2.4 Dimensional Measurement

MGA Test #	Average H-Point (Reference Point: Seat Back Pivot)			S4.2.1 – Average Height (mm) (Req't>800 at 1 adj. / No adjustments below 750)	S4.2.3-Average Backset (mm) Req't<55	S4.2.2-Width (mm) Req't>170	S4.2.4- Gaps Measured with a steel ruler (mm) Req't <60
	X (mm)	Z (mm)	T/A (mm)	H1	H1		
E10878 (LH Power)	-207	75.8	24.9	824	26	185	28
E10879 (RH Power)	-210	77.3	25.0	824	34	195	25

Table 4. S5.2.5 Energy Absorption

MGA Test #	Impact Angle (θ_h)	Impact Velocity (kph)	Accel 1 (g's)		Accel 2 (g's)		Post-Test Comments
			Peak	3msec Clip Req't<80	Peak	3msec Clip Req't<80	
D10292 (RH Power)	0.0	24.1	46.1	25.8	45.7	25.5	- No damage evident.

Table 5. S5.2.6 Height Retention

MGA Test #	Initial Displacement at 50 N (mm) Req't < 25	Max. Load (N) Req't=500 N (Hold 5 Sec.)	Height Retention (mm) Req't < 13	Post-Test Comments
E10891 (RH Power)	6.6	502	2.4	• The sample met the FMVSS 202a S4.2.6 requirements.

Table 6. S5.2.7 Backset Retention, Displacement and Strength

MGA Test #	H/R Type	H/R Test Position	Displaced Torso Angle (deg)	Initial Headform Disp. at 37 Nm (mm) Req't<25	Headform Disp. at 373 Nm (mm) Req't<102	Backset Retention (mm) Req't<13	Max Load Applied through Headform (N) Req't>890	Headform Loading Axis Distance (mm)
E10890 (LH Power)	Fixed	H1 (824)	29.5	9.7	-33.7	4.6	896	762

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DATA SHEET 1

SUMMARY OF RESULTS

VEH. MOD YR/MAKE/MODEL/BODY STYLE: Volvo XC60 MPV

VEH. NHTSA NO.: CA5902 ; VIN: YV4982DL2A2104332

VEH. BUILD DATE: 2/2010 ; TEST DATE: 9/28/10 - 9/30/10

TEST LABORATORY: MGA

OBSERVERS: Alisshia Woods, David Maier, Helen Kuleto

A. VISUAL INSPECTION OF TEST VEHICLE

Upon receipt for completeness, function, and discrepancies or damage which might influence the testing.

RESULTS: NONE

B.	**DIMENSIONAL REQUIREMENTS**	**PASS**	**FAIL**	
	Driver's Side	X	____	
	Passenger's Side	X	____	
	Rear Designated Seating Positions	NA	NA	
C.	**OWNER'S MANUAL**	**(PASS)**	**FAIL**	
D.	**REMOVABILITY**	**PASS**	**FAIL**	**(N/A)**
	Driver's Side	____	____	
	Passenger's Side	____	____	
	Rear Designated Seating Positions	NA	NA	
E.	**NON-USE POSITION**	**PASS**	**FAIL**	**(N/A)**
	Rear Designated Seating Positions	NA	NA	
F.	**ENERGY ABSORPTION TEST**	**PASS**	**FAIL**	
	Driver's Side	NA	____	
	Passenger's Side	X	____	

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	Rear Designated Seating Positions	NA	NA
G.	**HEIGHT RETENTION TEST**	**PASS**	**FAIL**
	Driver's Side	NA	
	Passenger's Side	X	
	Rear Designated Seating Positions	NA	NA
H.	**BACKSET RETENTION TEST**	**PASS**	**FAIL**
	Driver's Side	X	
	Passenger's Side	NA	
	Rear Designated Seating Positions	NA	NA

RECORDED BY: Alisha Wood DATE: 9/30/10

APPROVED BY: Dee Kitto

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DATA SHEET 2

DIMENSIONAL REQUIREMENTS FOR FIXED HEAD RESTRAINTS

VEH. NHTSA NO.: CA5902 TEST DATE: 9/28/10

Seat Location: Driver 8-way Power (Leather)

Height Measurement

SAE J826 three-dimensional manikin torso angle: 25

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Height, H (mm): 824 x **PASS** **FAIL**

H > or = 800 mm for front seats.
H > or = 750 mm for rear seats with head restraints.

If the head restraint is less than the required height, check for passage of the 25 mm diameter sphere.

Width Measurement

If the manikin is moved between the Height measurement and the Width measurement, re-record the torso angle, striker to H-Point distance and angle.

Width is measured 65 mm below the measured Height, H.

Height, Hw (= H – 65): 759 mm

Width, W (mm): 185 x **PASS** **FAIL**

Width must be greater than of equal to 170 mm. If a vehicle has a front center designated seating position the front outboard head restraints must be greater than or equal to 254 mm.

Backset Measurement (Front Head Restraints Only)

Position the HRMD and record the following measurements.

HRMD torso angle: 25

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Backset, B (mm): 26 x **PASS** **FAIL**

Backset must be less than or equal to 55 mm.

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Gap Measurement

Number of gaps within the gap measurement zone:

Least dimension of each gap (measured with a steel tape): 28 mm

Size of each gap (measured with the spherical head form): NA

Gap Size X **PASS** **FAIL**

Gaps must be less than or equal to 60 mm.

RECORDED BY: Alesha Woods DATE: 9/28/10

APPROVED BY: Hale Kelsto

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DATA SHEET 2

DIMENSIONAL REQUIREMENTS FOR FIXED HEAD RESTRAINTS

VEH. NHTSA NO.: CA5902 TEST DATE: 9/28/10

Seat Location: Passenger 8-way Power (Leather)

Height Measurement

SAE J826 three-dimensional manikin torso angle: 25

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Height, H (mm): 824 X **PASS** **FAIL**

H > or = 800 mm for front seats.
H > or = 750 mm for rear seats with head restraints.

If the head restraint is less than the required height, check for passage of the 25 mm diameter sphere.

Width Measurement

If the manikin is moved between the Height measurement and the Width measurement, re-record the torso angle, striker to H-Point distance and angle.

Width is measured 65 mm below the measured Height, H.

Height, Hw (= H – 65): 759 mm

Width, W (mm): 195 X **PASS** **FAIL**

Width must be greater than of equal to 170 mm. If a vehicle has a front center designated seating position the front outboard head restraints must be greater than or equal to 254 mm.

Backset Measurement (Front Head Restraints Only)

Position the HRMD and record the following measurements.

HRMD torso angle: 25

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Backset, B (mm): 34 X **PASS** **FAIL**

Backset must be less than or equal to 55 mm.

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Gap Measurement

Number of gaps within the gap measurement zone:

Least dimension of each gap (measured with a steel tape): 25 mm

Size of each gap (measured with the spherical head form): NA

Gap Size X **PASS** **FAIL**

Gaps must be less than or equal to 60 mm.

RECORDED BY: Alisha Woody DATE: 9/28/10

APPROVED BY: Hel Kelch

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DATA SHEET 3

OWNER'S MANUAL

VEH. NHTSA NO.: CA5902 TEST DATE: 9/28/2010

Emphasize that all occupants should place their head restraint in a proper position prior to operating the vehicle in order to prevent the risk of serious injury.

(PASS) FAIL

Description of the head restraint system and identification of which seats are equipped.

(PASS) FAIL

If the head restraint is removable, instructions on how to properly remove and reinstall using a deliberate action distinct from any act necessary for adjustment.

PASS FAIL (N/A)

Warning that all head restraints must be reinstalled properly to protect occupants.

(PASS) FAIL

Describe the adjustment of the head restraints and/or seat back to achieve proper head restraint position relative the head. The description must include the following:

1) a presentation and explanation of the main components of the vehicle's head restraints

2) the basic requirements for proper head restraint operation, including an explanation of the actions that may affect the proper functioning of the head restraints.

3) the basic requirements for proper positioning of a head restraint in relation to an occupant's head position, including information regarding the proper positioning of the center of gravity of an occupant's head in relation to the head restraint.

(PASS) FAIL

Include copies of relevant pages from the owner's manual in the final report.

REMARKS: Owner's Manual applicable to rear seats only (Front seats are fixed)

RECORDED BY: Alisha Wood DATE: 9/28/10

APPROVED BY: Neil Kelch

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DATA SHEET 4

REMOVABILITY

VEH. NHTSA NO.: CA5902 TEST DATE: 9/28/2010

Are the head restraints removable? **YES** (NO)

If removable, does removal REQUIRE an action distinct from actions to adjust the head restraint? **YES (PASS)** **NO (FAIL)**

Description of action(s) for head restraint adjustment:

Description of distinct action for removal:

REMARKS: Front seats only

RECORDED BY: Alisha Woods DATE: 9/28/10

APPROVED BY: Heidi Keleta

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DATA SHEET 6

ENERGY ABSORPTION TEST

VEH. NHTSA NO.: CA5902 TEST DATE: 9/30/10

Seat Location: Passenger Buddy Rear (Leather) Type of head restraint: Fixed

635 mm Height Measurement for lower boundary of the impact zone

SAE J826 three-dimensional manikin torso angle: 25

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Description of equipment or method used to rigidly fix the seat back: NA

Accelerometer identification: PS7862 PS8043 Accelerometer type/brand: Endevco

Last calibration date: 5/17/2010

Head form vertical angle (-2° - +2°):

Distance between head form and target location (> or = 25 mm): 310 mm

Impact velocity (23.6 kph ± 0.5 kph): 24.1

Impact location: 635 mm above the H-point and within 70 mm of vertical centerline

Maximum deceleration (< or = 785 m/s² (80 g)): 25.8 X **PASS** **FAIL**

REMARKS:

RECORDED BY: Alisha Woods DATE: 9/30/10

APPROVED BY: Hale Alcala

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DATA SHEET 7

HEIGHT RETENTION TEST
(ADJUSTABLE HEAD RESTRAINTS ONLY)

VEH. NHTSA NO.: CA 5902 TEST DATE: 9/30/10

Seat Location: Passenger 8-way Power (Leather)

Pre-test measurements

SAE J826 Manikin torso angle: 25 Top of Head Restraint Height (mm): 824

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Description of height retention lock: Fixed H/R

Test measurements

Initial load (50 N ± 1 N): 50 Initial Displacement, D1 (mm): 6.6

Initial Displacement (D1) < 25 mm X **PASS** **FAIL**

Maximum load (495 N ± 5 N): 502 Maximum Displacement, D2 (mm):

Return load (50 N ± 1 N): 50 Return Displacement, D3 (mm): 9

Total displacement (D3-D1) < 13 mm: 2.4 X **PASS** **FAIL**

REMARKS: The H/R was fixed

RECORDED BY: Alesha Woods DATE: 9/30/10

APPROVED BY: Hale Kelly

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DATA SHEET 8

BACKSET RETENTION TEST

VEH. NHTSA NO.: CA5902 TEST DATE: 9/30/10

Seat Location: Driver 8-way Power (leather) Type of head restraint: Fixed

Pre-test measurements

SAE J826 Manikin torso angle: 25 Top of Head Restraint Height (mm): 824

Striker to H-Point (mm): NA Striker to H-Point angle: NA

Displacement torso reference line

Test device back pan angle: 29.5

Distance from the H-point to the initial location of the load (0.290 ± 0.013 m): 0.285

Initial load (N): 1310 Initial moment (373 ± 7.5 Nm): 373

Backset retention and strength

Distance from the H-point to the head form tangency point (m): 0.762

Initial load (N): 49.1 Initial moment (37 ± 0.7 Nm): 37

Initial head form displacement, D1 (< or = 25 mm): 9.7 X **PASS** **FAIL**

Load range to generate a 373 ± 7.5 Nm rearward moment (N): 490

Actual load applied (N): 490 Resultant moment (Nm): 373

Maximum Head form displacement, D2 (< or = 102 mm): 33.7 X **PASS** **FAIL**

Final head form displacement, D3 (mm): 14.3
measured at (37 ± 0.7 Nm)

Total displacement (D3-D1) < 13 mm : 4.6 X **PASS** **FAIL**

Maximum applied load (> or equal to 885 N): 896 X **PASS** **FAIL**

REMARKS:

RECORDED BY: Alisha Woods DATE: 9/30/10

APPROVED BY: Neal Kelly

PHOTOGRAPHS

6.1 Front view

6.2 Front left view

6.3 Rear right view

6.4 Left view

6.5 Test vehicle's certification label

6.5.1 Certification label photo #1

6.5.2 Tire information label photo #1

6.6 S5.2.1-5.2.4 Dimensional Measurements

6.6.1 Driver Test Photo #1

6.6.2 Driver Test Photo #2

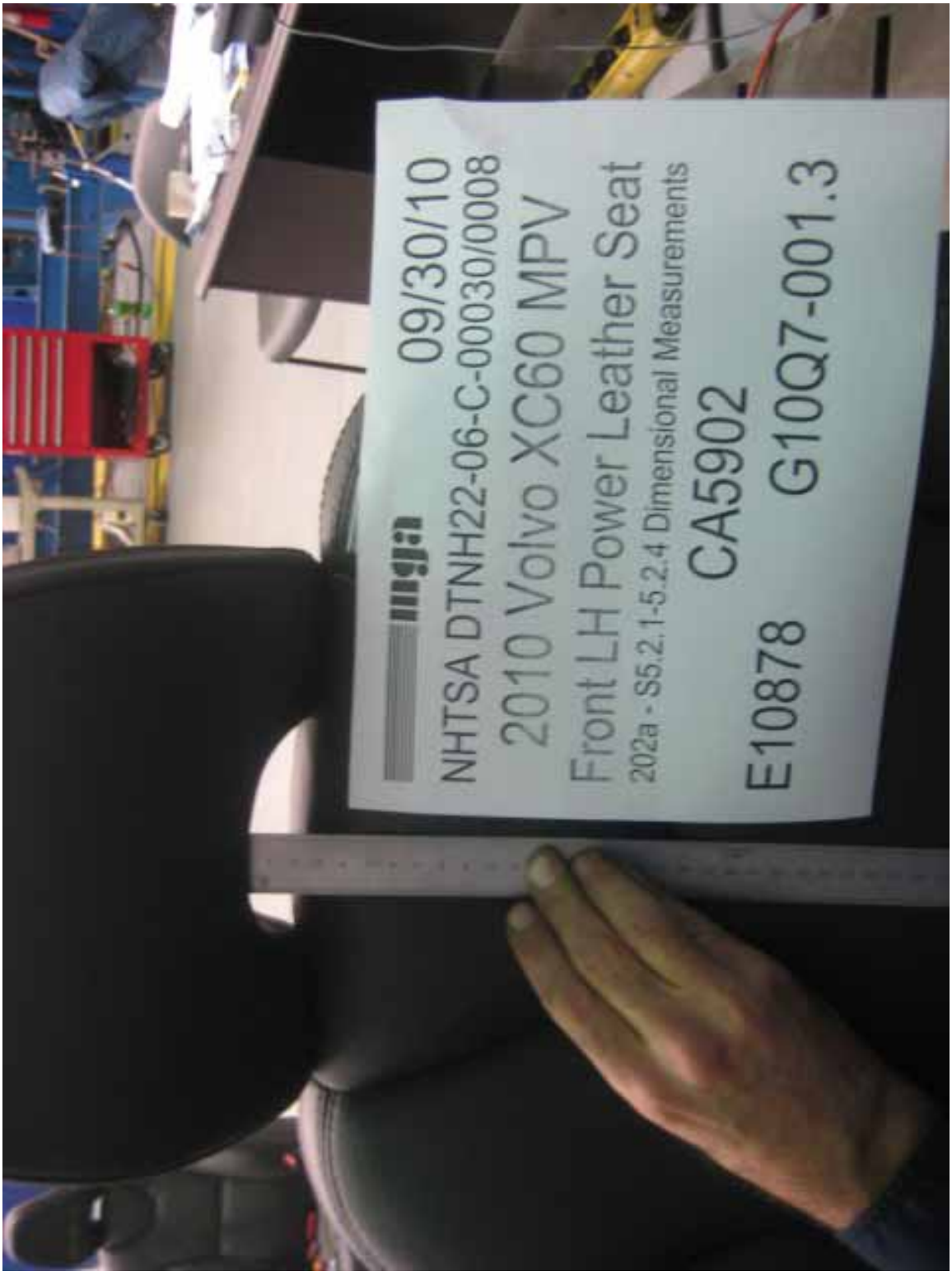
6.6.3 Driver Test Photo #3

6.6.4 Driver Test Photo #4

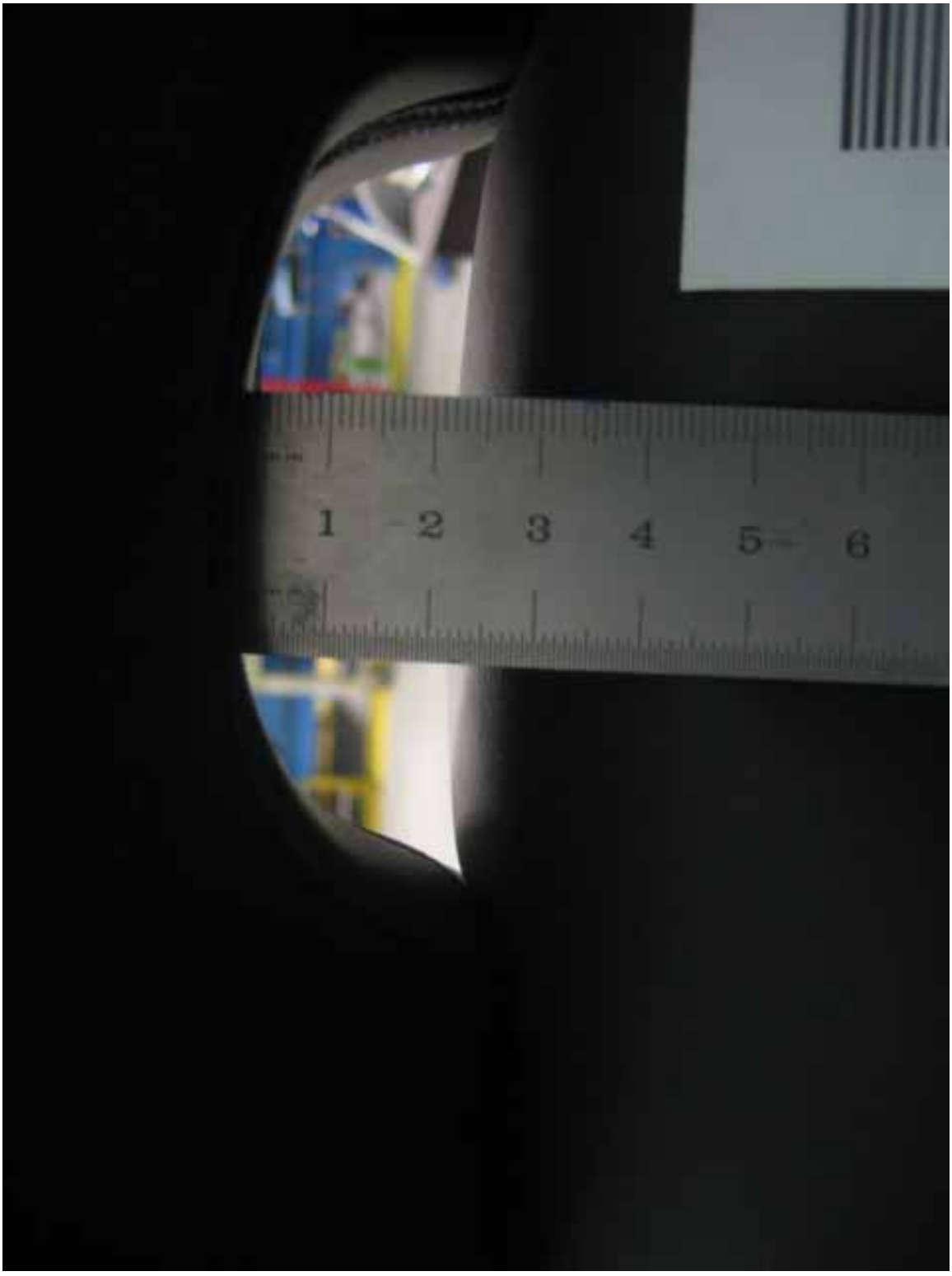
6.6.5 Driver Test Photo #5

6.6.6 Driver Test Photo #6

6.6.7 Driver Test Photo #7



6.6.8 Driver Test Photo #8



6.6.9 Passenger Test Photo #9

6.6.10 Passenger Test Photo #10

6.6.11 Passenger Test Photo #11

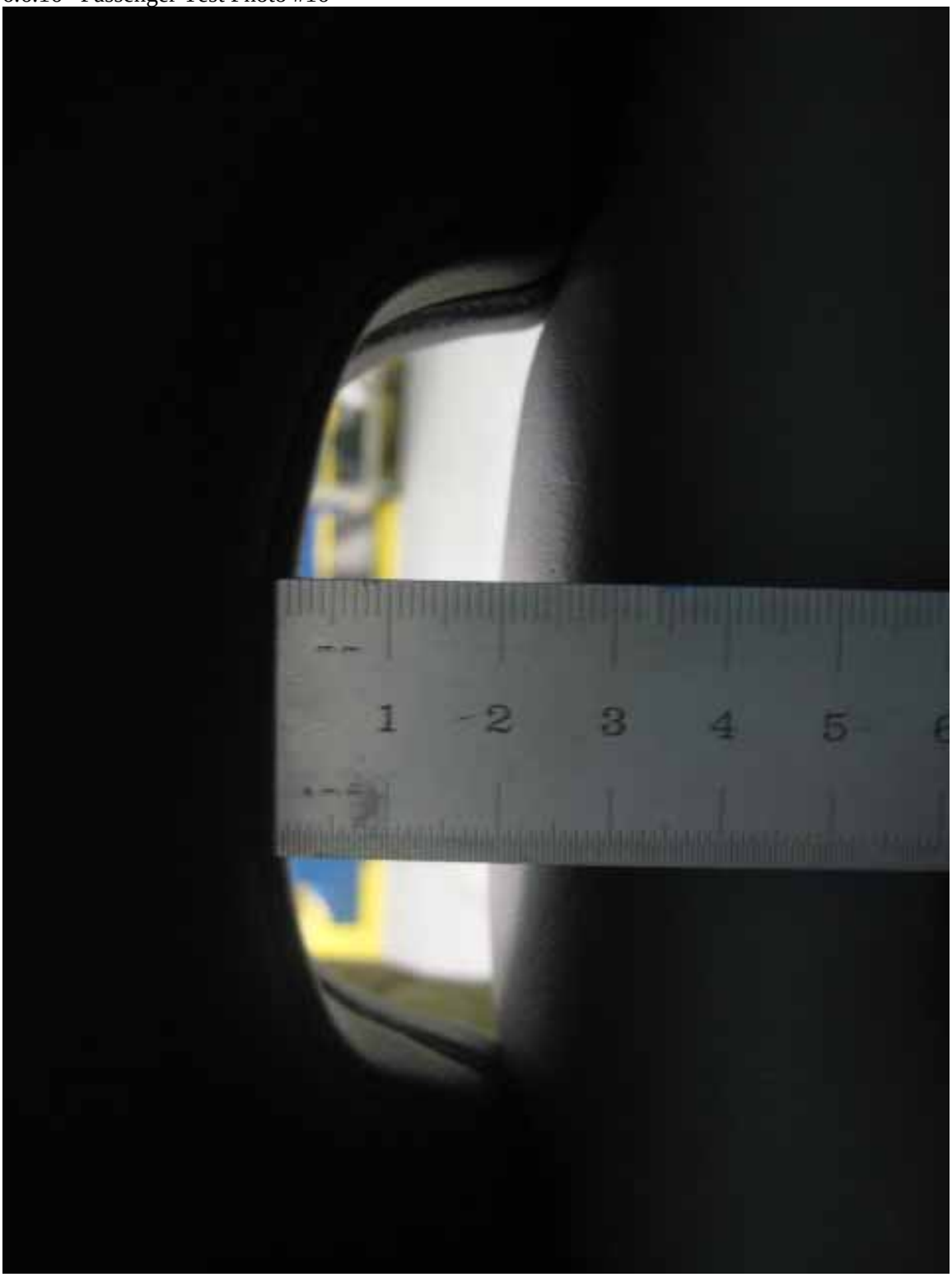
6.6.12 Passenger Test Photo #12

6.6.13 Passenger Test Photo #13

6.6.14 Passenger Test Photo #14

6.6.15 Passenger Test Photo #15

6.6.16 Passenger Test Photo #16



6.7 S5.2.5 Energy Absorption

6.7.1 Passenger Pre-Test Photo #1

6.7.2 Passenger Pre-Test Photo #2

6.7.3 Passenger Post-Test Photo #1

6.7.4 Passenger Post-Test Photo #2

6.8 S5.2.6 Height Retention

6.8.1 Passenger Test Photo #1

6.8.2 Passenger Test Photo #2

6.8.3 Passenger Test Photo #3

6.8.4 Passenger Test Photo #4

6.8.5 Passenger Test Photo #5

6.8.6 Passenger Test Photo #6

6.8.7 Passenger Test Photo #7

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6.9 S5.2.7 Backset Retention, Displacement and Strength

6.9.1 Driver Test Photo #1

6.9.2 Driver Test Photo #2

6.9.3 Driver Test Photo #3

6.9.4 Driver Test Photo #4

6.9.5 Driver Test Photo #5

6.9.6 Driver Test Photo #6

6.9.7 Driver Test Photo #7

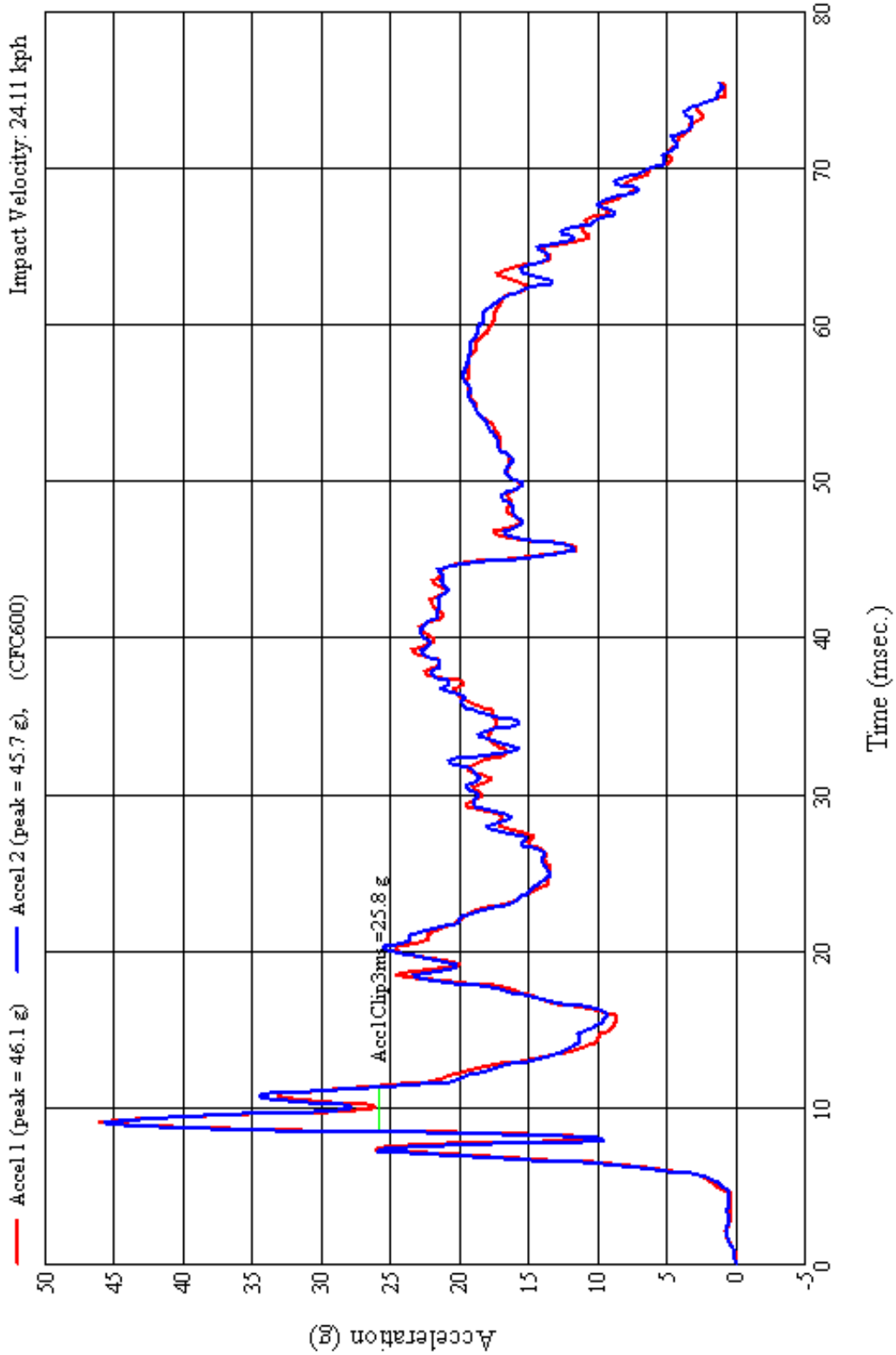
6.9.8 Driver Test Photo #8

6.9.9 Driver Test Photo #9

6.9.10 Driver Test Photo #10

7.0 PLOTS

7.1.1 S5.2.5 Energy Absorption



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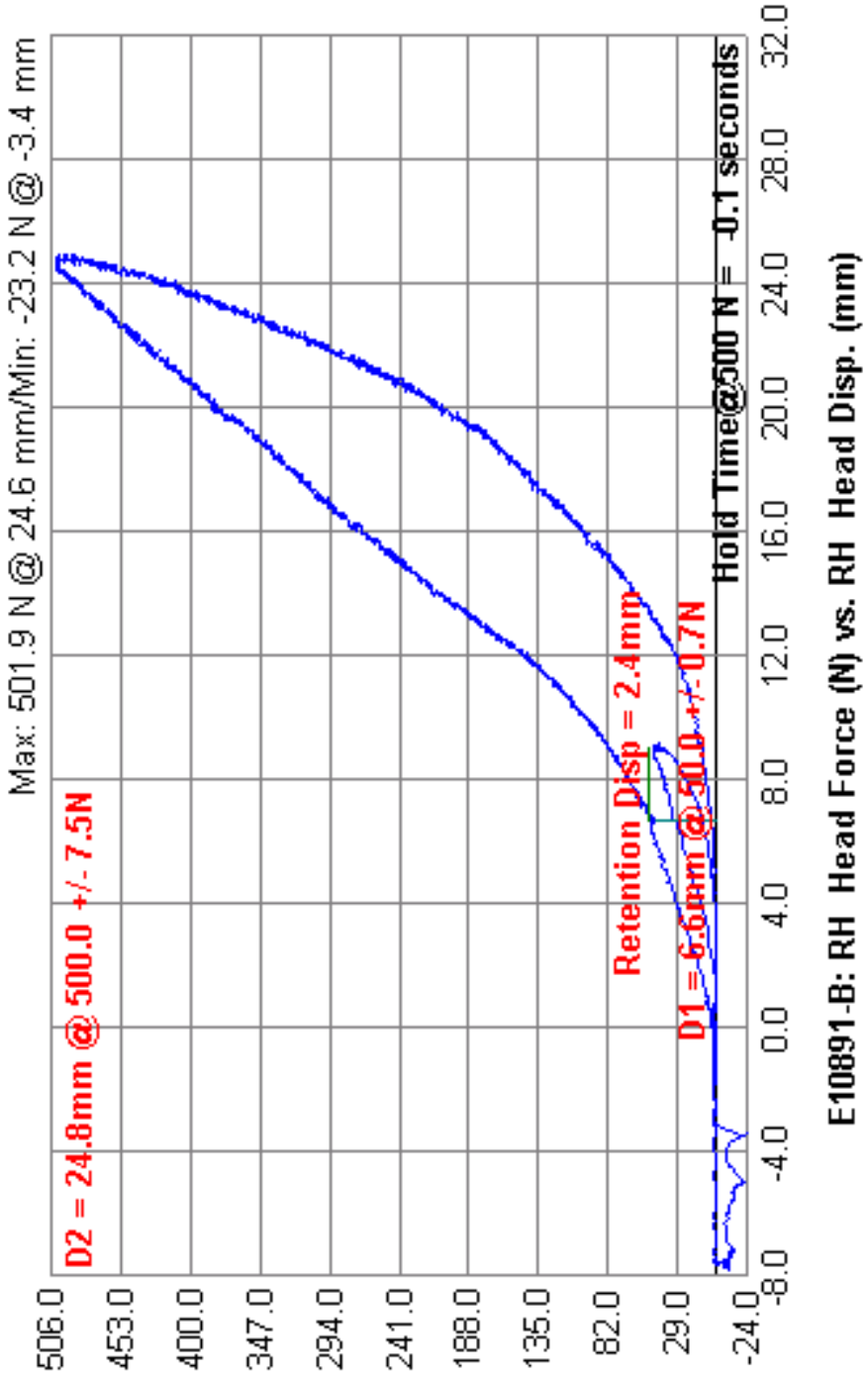

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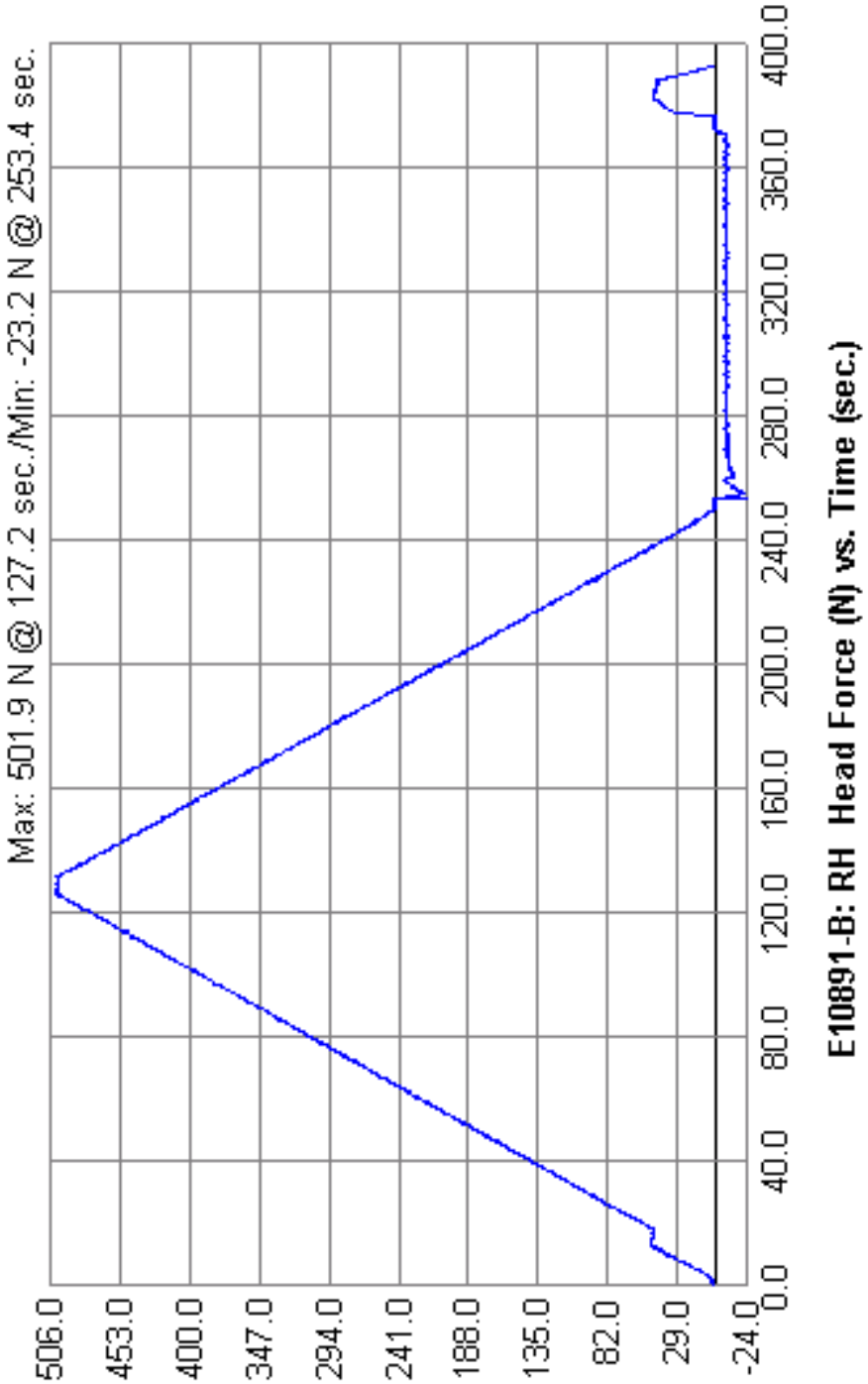

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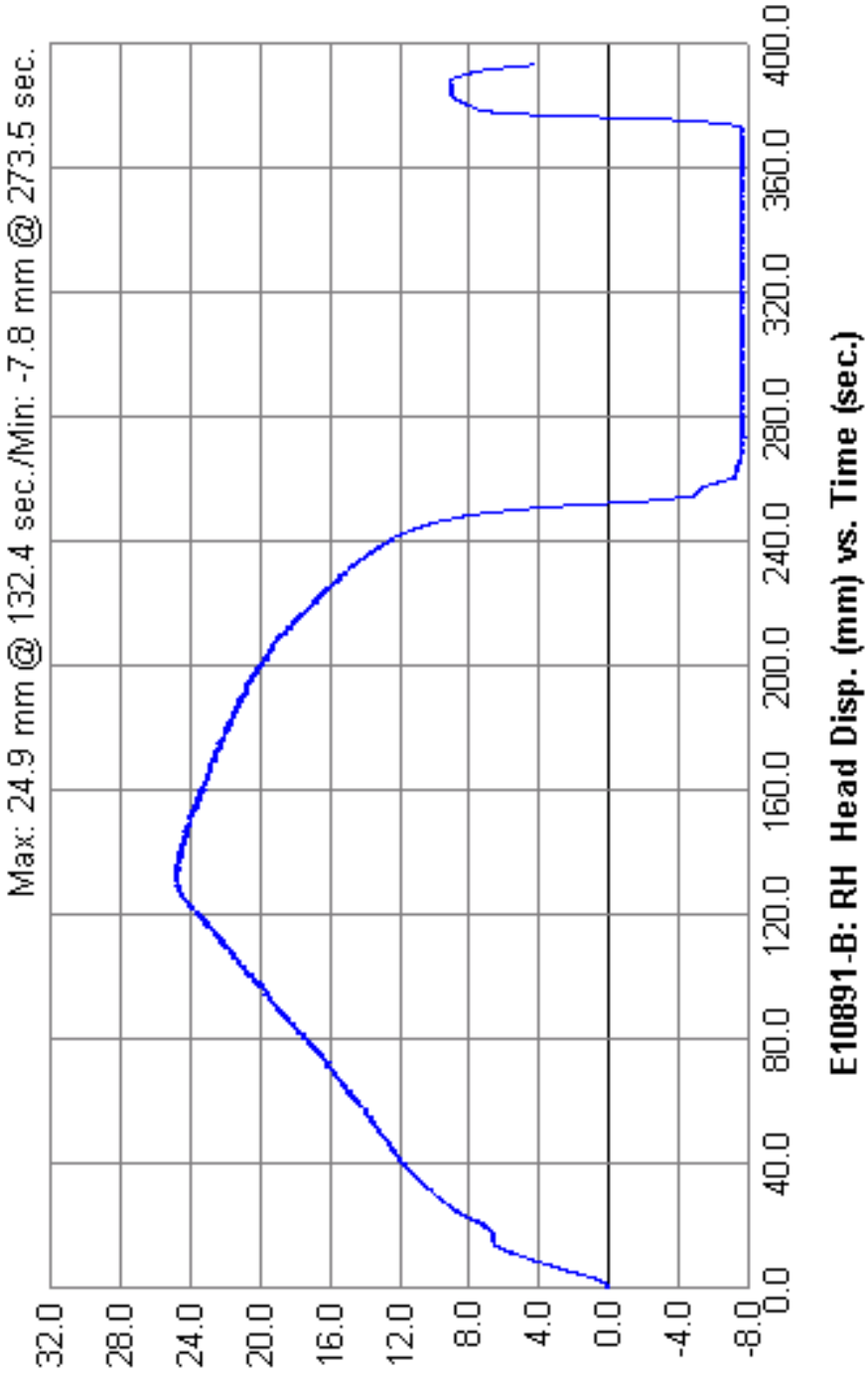
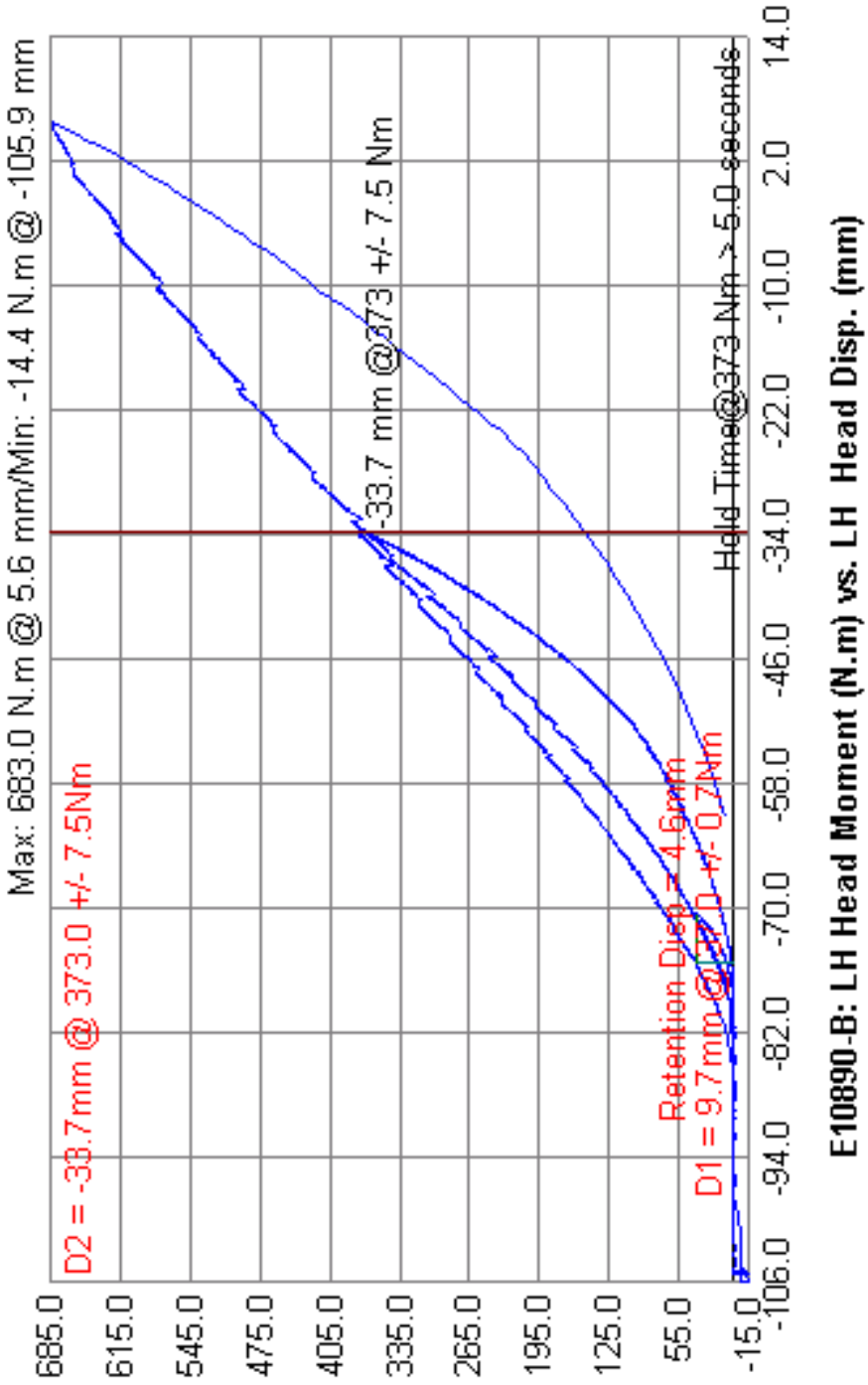


7.3.1 S5.2.7 Backset Retention, Displacement and Strength



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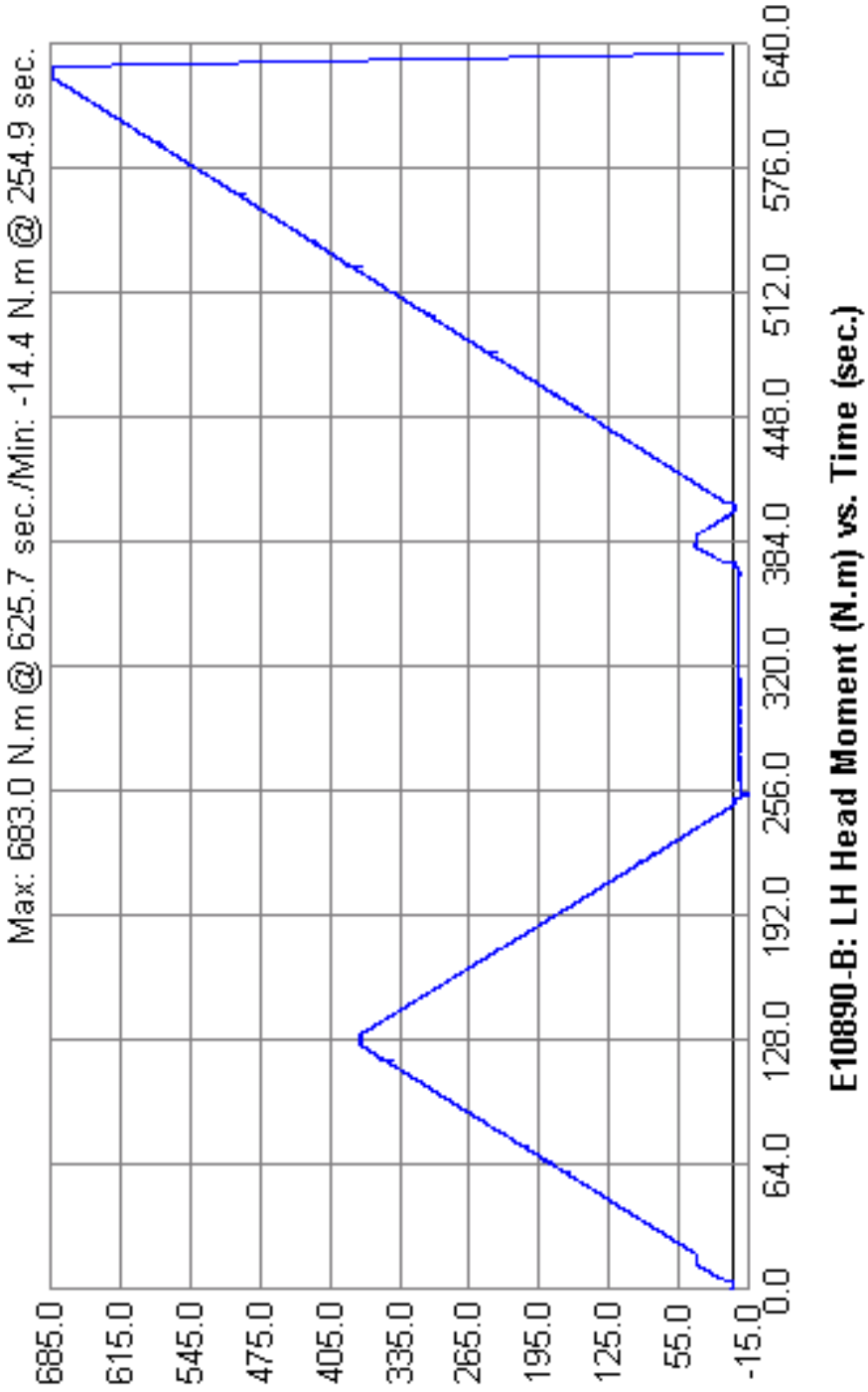
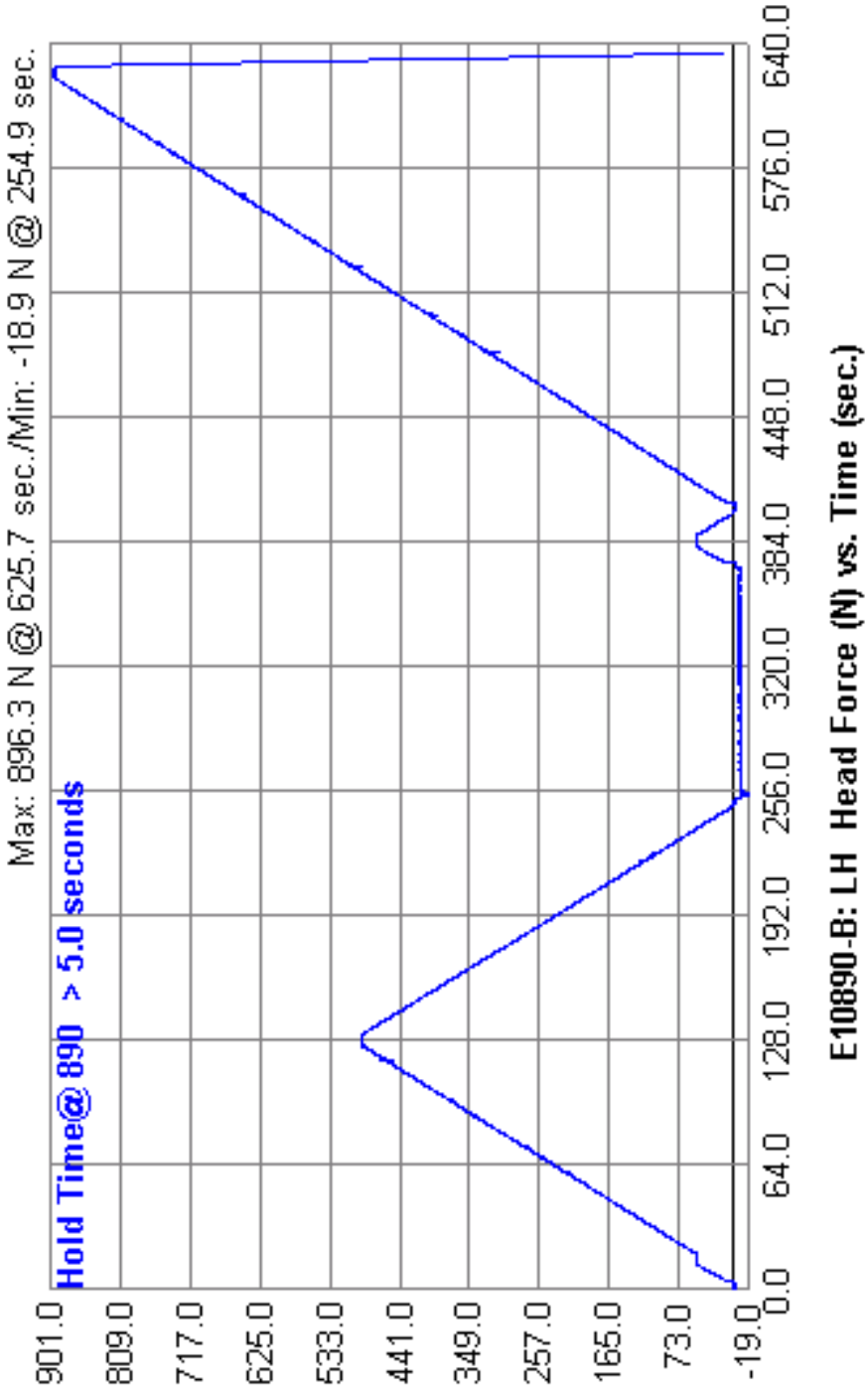
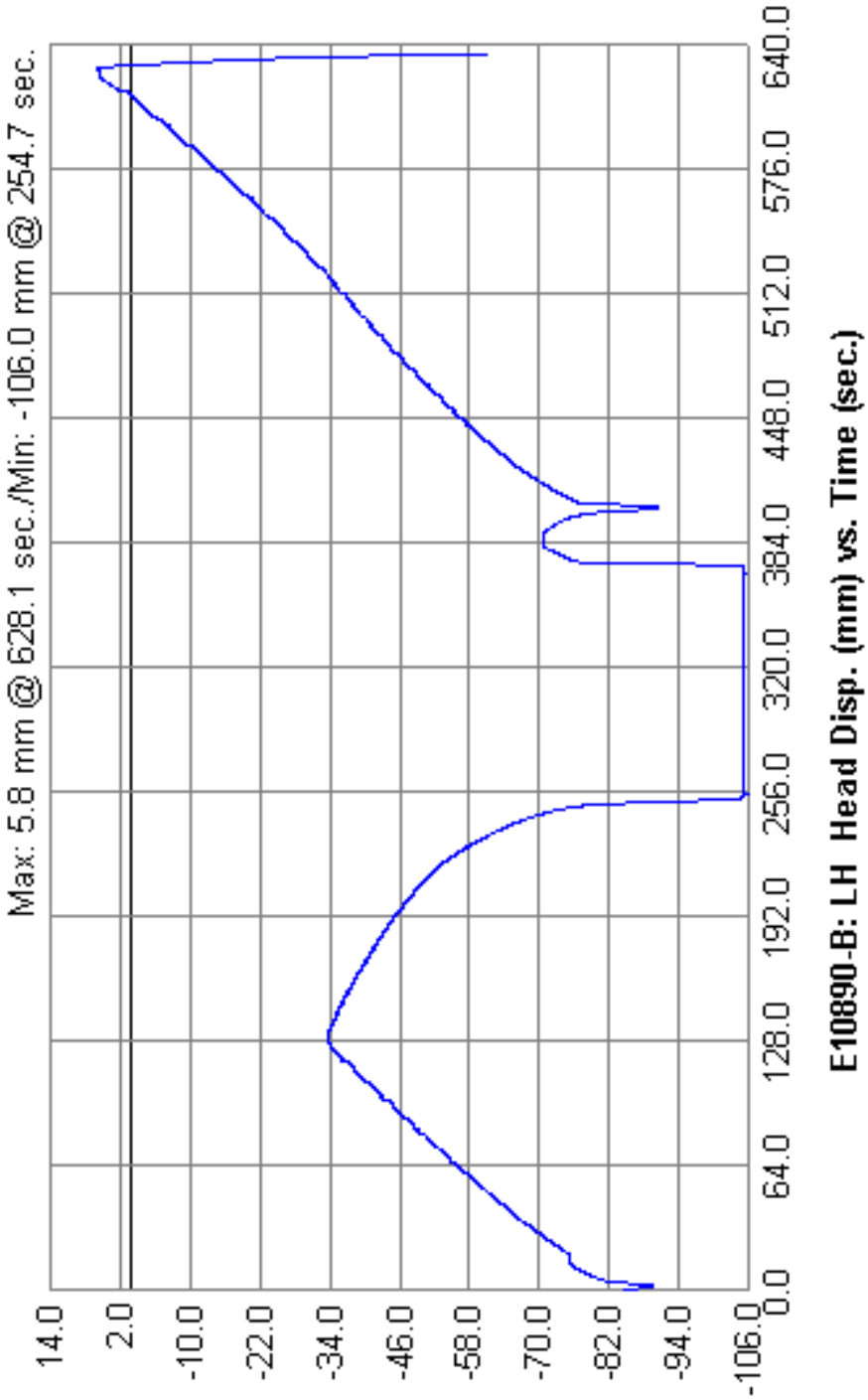


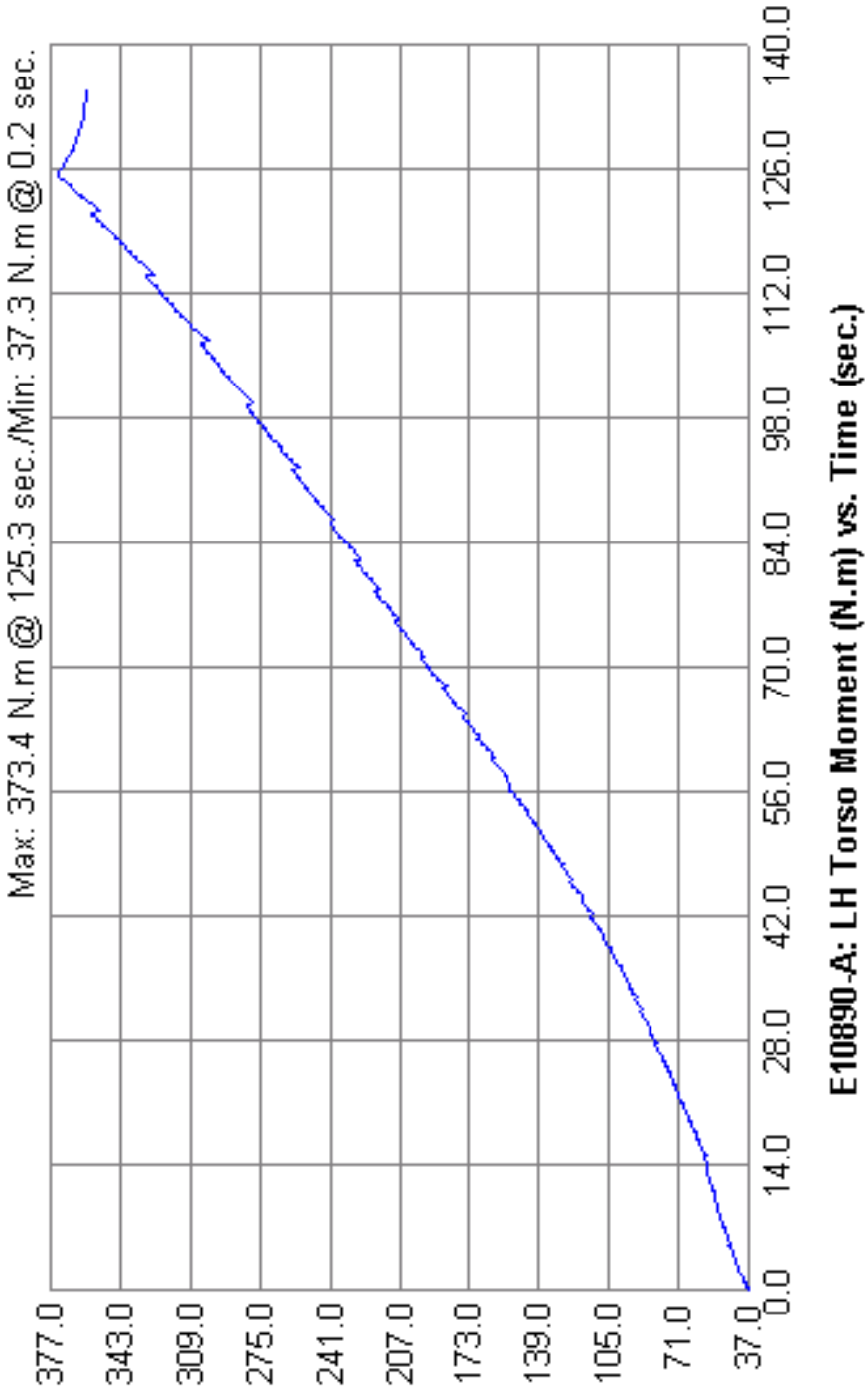
7.3.3 S5.2.7 Backset Retention, Displacement and Strength



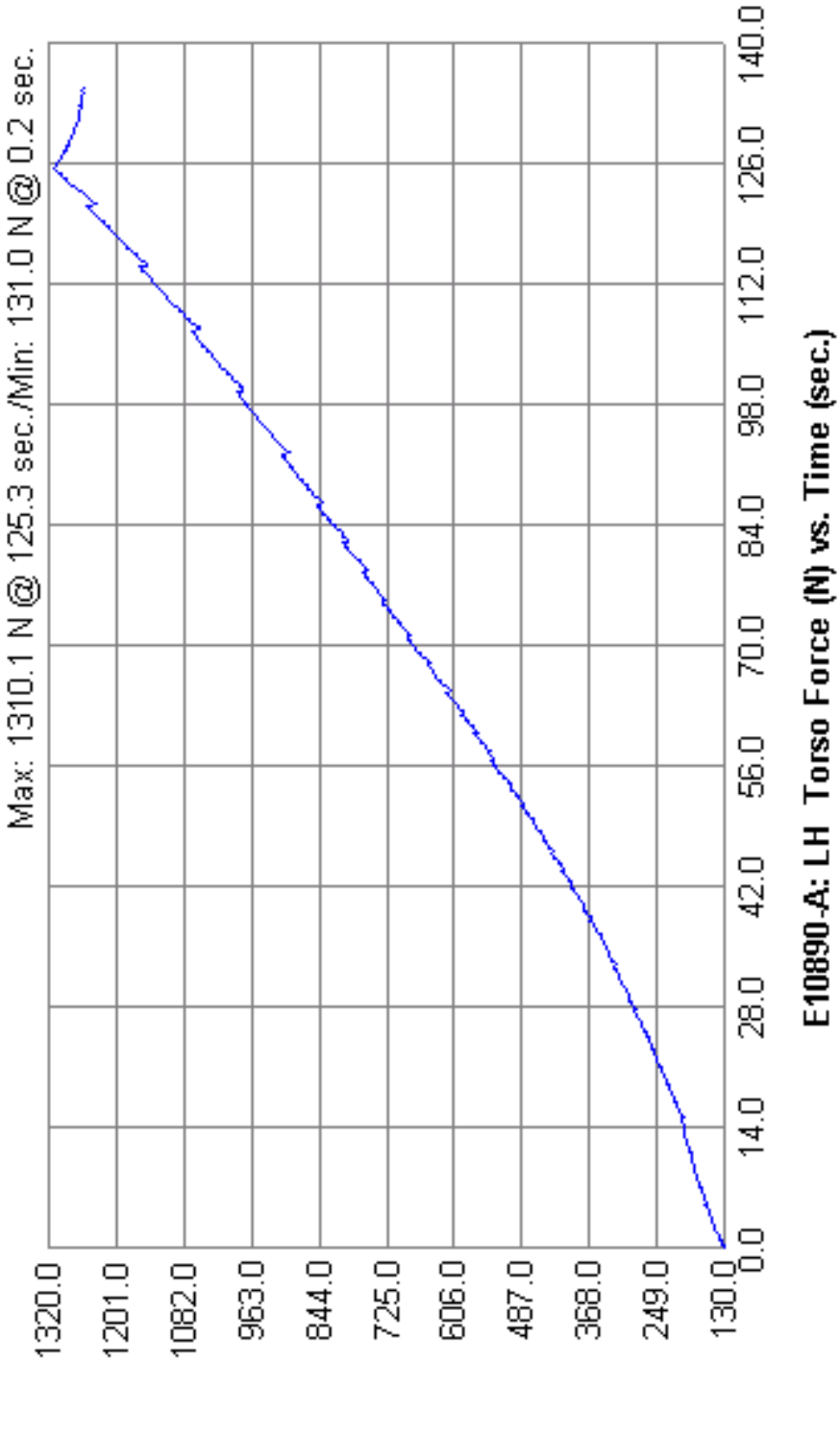
7.3.4 S5.2.7 Backset Retention, Displacement and Strength



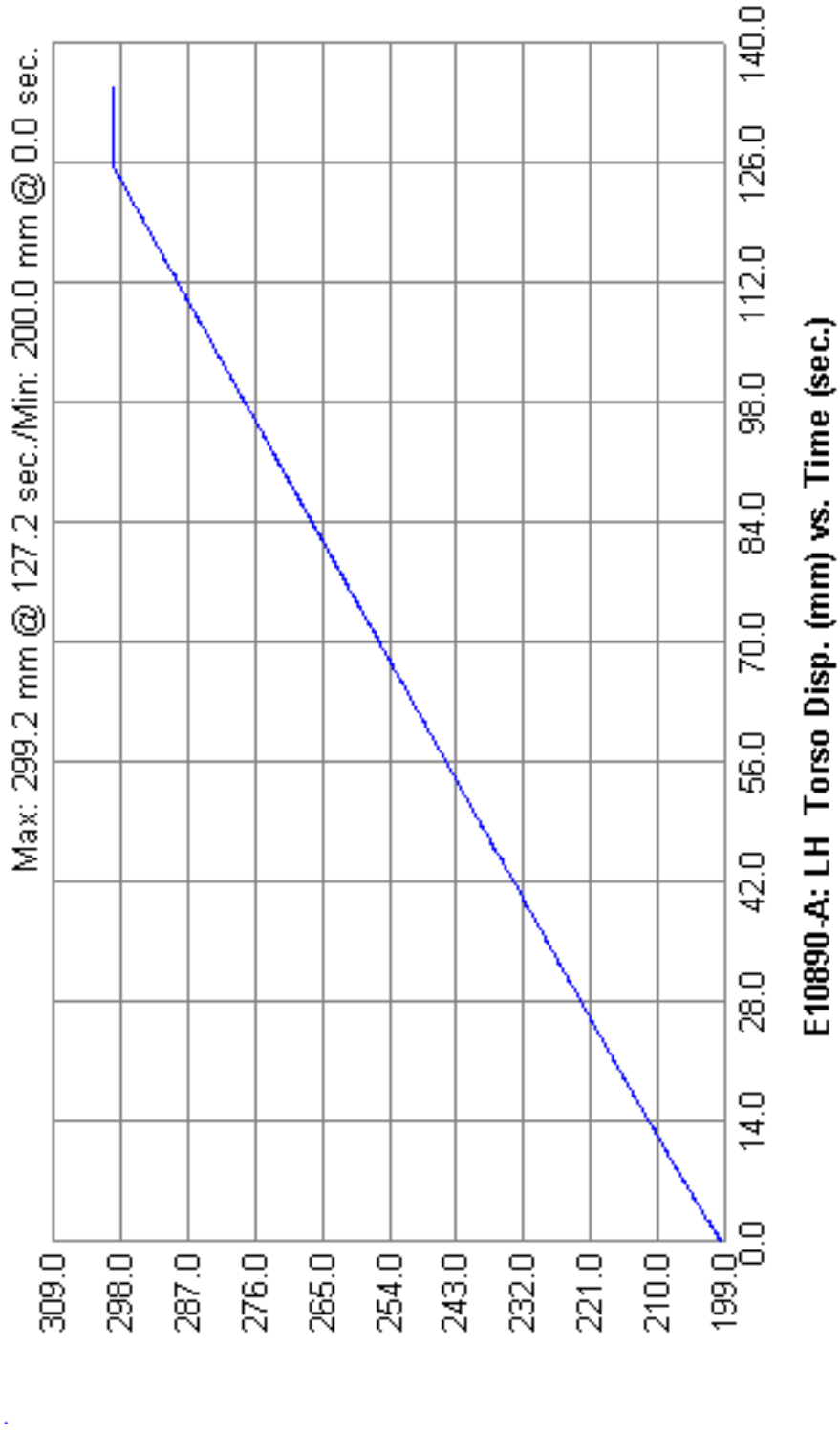
7.3.5 S5.2.7 Backset Retention, Displacement and Strength



7.3.6 S5.2.7 Backset Retention, Displacement and Strength



7.3.7 S5.2.7 Backset Retention, Displacement and Strength



8.0 REPORT OF VEHICLE CONDITION

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING
CONTRACT No.: DTNH22-06-C-00030/0008 DATE: September 28-30, 2010

From: MGA Research Corporation, 446 Executive Drive, Troy, MI 48083

To: NHTSA, OVSC, NVS-220

The following vehicle has been subjected to compliance testing for FMVSS No. 201U & 202a

The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager (NAD0-30), with a copy to the OVSC COTR. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

VEH. MOD YR/MAKE/MODEL/BODY: 2010 Volvo XC60 MPV

VEH. NHTSA NO.: CA5902 VIN: YV4982DL2A2104332

COLOR: Grey Metallic

ODOMETER READINGS: ARRIVAL 8 miles Date: March 17, 2010

COMPLETION 8 miles Date: September 30, 2010

PURCHASE PRICE: $36,565 DEALER'S NAME: Motor Cars Volvo

ENGINE DATA: 6 Cylinders 3.2 Liters ___ Cubic Inches

TRANSMISSION DATA: X Automatic ___ Manual ___ No. of Speeds

FINAL DRIVE DATA: ___ Rear Drive ___ Front Drive ___ 4 Wheel Drive

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPMENT:

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Alisshia Woods and Dave Maier

X	Air Conditioning	X	Traction Control	X	Clock
N/A	Tinted Glass	N/A	All Wheel Drive	X	Roof Rack
X	Power Steering	X	Speed Control	X	Console
X	Power Windows	X	Rear Window Defroster	X	Driver Air Bag
X	Power Door Locks	X	Sun Roof or T-Top	X	Passenger Air Bag
X	Power Seat(s)	X	Tachometer	X	Front Disc Brakes
X	Power Brakes	X	Tilt Steering Wheel	X	Rear Disc Brakes
X	Antilock Brake System	X	AM/FM/Compact Disc	X	Other

REMARKS:

Salvage only.

Equipment that is no longer on the test vehicle as noted on previous pages:

All equipment inventoried and placed in vehicle.

Explanation for equipment removal:

Roof removed and vehicle cut to accommodate test equipment.

Test Vehicle Condition:

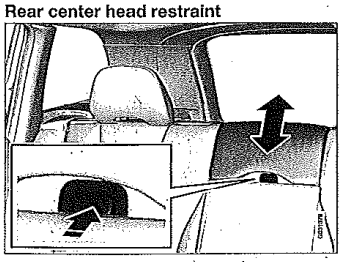
Salvage only. Vehicle cut in half to complete testing.

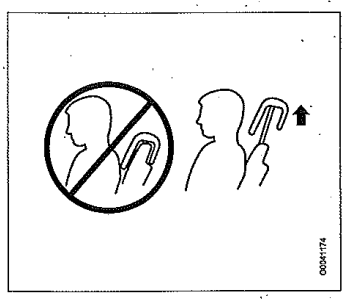
RECORDED BY: Alisshia Woods and David Maier DATE: September 30, 2010

APPROVED BY: Helen Kaleto

APPENDIX A
OWNERS MANUAL HEAD RESTRAINTS

Rear center head restraint





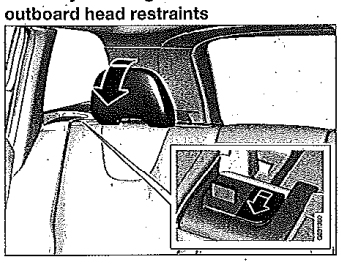
The center head restraint should be adjusted according to the passenger's height. The restraint should be carefully adjusted to support the occupant's head.

- Pull the head restraint up as required.
- To lower, press and hold the button (located at the center, between the backrest and the head restraint) while pressing the head restrain down.

⚠ WARNING

The center rear seat head restraint should only be in its lowest position when this seat is NOT occupied. When the center position is occupied, the head restraint should be correctly adjusted to the passenger's height. The upper edge of the head restraint should be at least on a level with the uppermost point of the seat occupant's ear.

Manually lowering the rear seat's outboard head restraints



- Pull the handle closest to the head restraint to fold it down.
- To return the head restraint to the upright position, push it up until it clicks into place.

NOTE

- The head restraint must be returned to the upright position manually.
- The outboard head restraints cannot be folded down on models that are not equipped with this button.

Seats

WARNING

For safety reasons, no one should be allowed to sit in the outboard rear seat positions if the head restraints are folded down. If these positions are occupied, the head restraints should be in the upright (fixed) position.

APPENDIX B
MANUFACTURER'S DATA (OVSC FORM-SRP)

FORM - SRP XC60.docpdf OA-201-20091019P

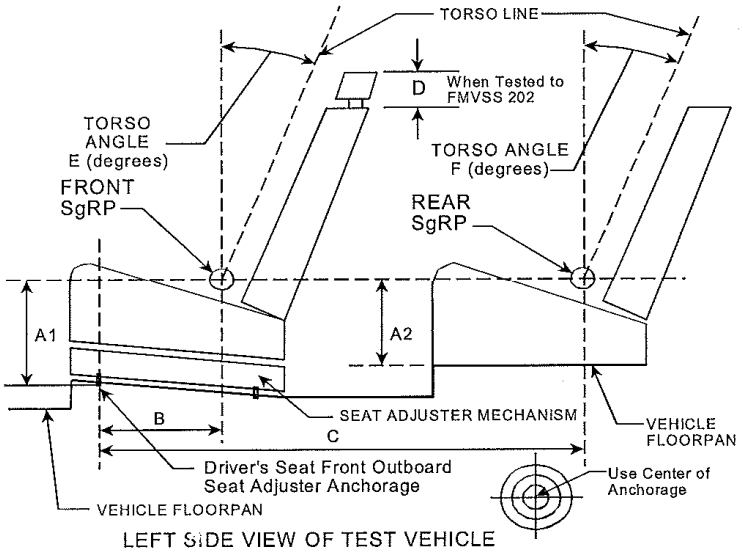
FORM – SRP
Rev. 10/10/08

SEAT REFERENCE POINT (SRP) AND TORSO ANGLE DATA

FMVSS No. 201, 202, 203, 207, 210 & 216
(All dimensions in inches)

Model Year: ___MY09_/ Make: _____VOLVO_____/ Model: ___XC60_____

Body Style: __SUV_____/ Seat Style: _Electrical power seat_____



LEFT SIDE VIEW OF TEST VEHICLE

DIMENSION	FRONT, A1	REAR, A2
A	9.92"	14.17"
B	15.2"	
C	47.9"	
D	n/a	
E	_____25 deg___ E	
F	_____n/a_____ E	

Page 1 of 6

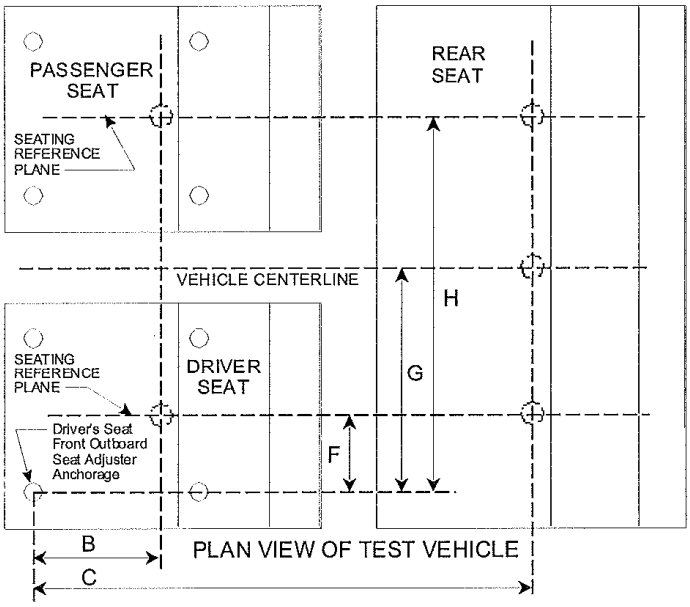
FORM - SRP XC60.docpdf OA-201-20091019P

SEATING REFERENCE POINT (SRP) AND TORSO ANGLE DATA

FMVSS No. 201, 202, 203, 207 & 210
(All dimensions in inches)

Model Year: __MY09___/ Make: __VOLVO_____/ Model: ___XC60_____

Body Style: ___SUV_____/ Seat Style: ___Electrical power seat_____



B	15.2"
C	47.9"
F*	7.13"
G	22.28"
H*	37.4"

* Provide all dimensions needed to locate SRP.

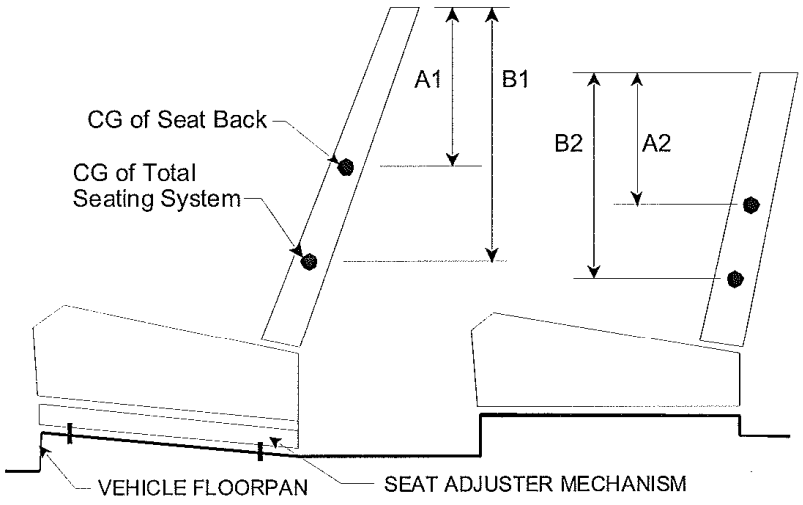
FORM - SRP XC60.docpdf OA-201-20091019P

TEST VEHICLE SEAT INFORMATION

FMVSS No. 201, 202, 203, 207 & 210
(All dimensions in inches)

Model Year: _MY09_____/ Make: __VOLVO_____/ Model: _XC60_____

Body Style: __SUV_____/ Seat Style: __Electrical power seat_____



			FRONT	BACK
A1				
B1		Weight of Hinged or Folding portion of seat	12.9 kg	n/a
A2		Weight of Total Seat System	31.3 kg	n/a
B2		Angle of Seat Back	25 deg*	n/a

* torso line angle

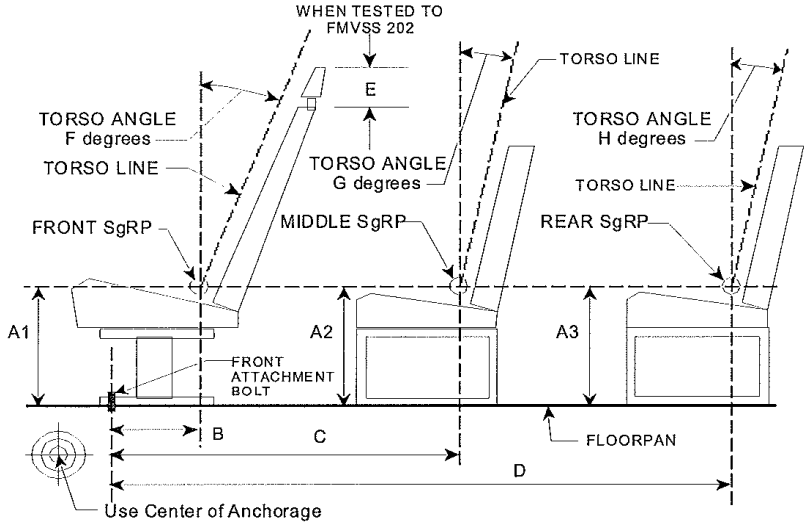
FORM - SRP XC60.docpdf OA-201-20091019P

SEATING REFERENCE POINT (SRP) AND TORSO ANGLE DATA

FMVSS No. 201, 202, 203, 207 & 210
(All dimensions in inches)

Model Year: __MY09__/ Make: ___VOLVO_____/ Model:__XC60_____

Body Style: __SUV_____/ Seat Style: __Electrical power seat_____



LEFT SIDE VIEW OF TEST VEHICLE

DIMENSION	FRONT, A1	MIDDLE, A2	REAR, A3
A	9.92"	14.17"	n/a
B	15.2"		
C	47.9"		
D	n/a		
E	n/a		
F	25 deg		
G	n/a		
H	n/a		

Page 4 of 6 FORM – SRP

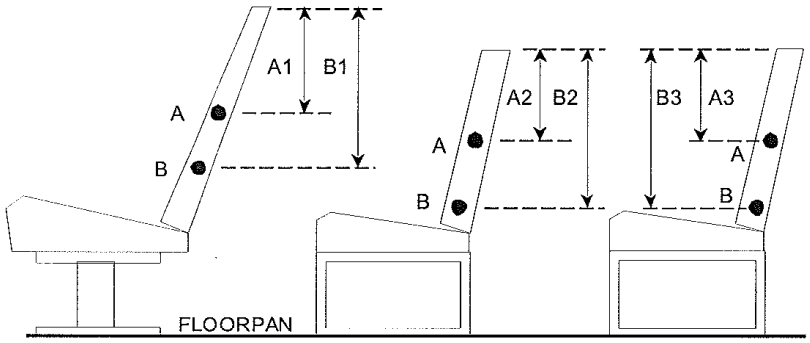
FORM - SRP XC60.docpdf OA-201-20091019P

TEST VEHICLE SEAT INFORMATION

FMVSS No. 201, 202, 203, 207 & 210
(All dimensions in inches)

Model Year: _MY09__/ Make: _VOLVO_____/ Model: __XC60_____

Body Style: __SUV_____/ Seat Style: _Electrical power seat_____



LEFT SIDE VIEW OF VEHICLE

Note: A: CG of Seat Back
B: CG of total seating system

A1		N/A	FRONT	BACK
B1		Weight of Hinged or Folding portion of seat		
A2		Weight of Total Seat System		
B2		Angle of Seat Back		
A3		REMARKS:		
B3				

Page 6 of 6 FORM – SRP