REPORT NUMBER 202a-GTL-10-003

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 202aS HEAD RESTRAINTS – STATIC REQUIREMENTS

AUDI AG
2010 AUDI A5 COUPE, PASSENGER CAR
NHTSA NO. CA5800

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

August 5, 2010

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE., SE
WASHINGTON, D.C. 20590

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: Digitally signed by Debbie Messick
DN: cn=Debbie Messick, c=US, o=GTL, email=gtl@general-testing.com

Approved By: Digitally signed by Grant Farrand
DN: cn=Grant Farrand, c=US, o=GTL, email=gtl@general-testing.com

Approval Date: 08/05/10

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: Edward E. Chan
Digitally signed by Edward E. Chan
DN: cn=Edward E. Chan, o=National Highway Traffic Safety Administration, ou=Office of Vehicle Safety Compliance, email=ed.chan@dot.gov, c=US
Date: 2010.08.04 11:01:24 -04'00'

Acceptance Date: _____

1. Report No. 202a-GTL-10-003	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A
4. Title and Subtitle Final Report of FMVSS 202a Compliance Testing of a 2010 AUDI A5 COUPE, PASSENGER CAR NHTSA No. CA5800		5. Report Date August 5, 2010 6. Performing Organ. Code GTL
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager		8. Performing Organ. Rep# GTL-DOT-10-202a-003
9. Performing Organization Name and Address General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443		10. Work Unit No. (TRAIS) N/A 11. Contract or Grant No. DTNH22-06-C-00032
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Admin. Enforcement Office of Vehicle Safety Compliance (NVS-220) 1200 New Jersey Ave., S.E., Washington, DC 20590		13. Type of Report and Period Covered Final Test Report June 29 - July 21, 2010 14. Sponsoring Agency Code NVS-221
15. Supplementary Notes		
16. Abstract Compliance tests were conducted on the subject, 2010 Audi A5 Coupe 2-door Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-202aS-00 for the determination of FMVSS 202a compliance. Test failures identified were as follows: NONE		
17. Key Words Compliance Testing Safety Engineering FMVSS 202aS	18. Distribution Statement Copies of this report are available from NHTSA Technical Information Services (TIS) Room W45-212 (NPO-411) 1200 New Jersey Ave., S.E. Washington, DC 20590 Telephone No. (202) 366-4947	
19. Security Classif. (of this report) UNCLASSIFIED	21. No. of Pages 78	22. Price
20. Security Classif. (of this page) UNCLASSIFIED		

Form DOT F 1700.7 (8-72)

TABLE OF CONTENTS

SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2010 Audi A5 Coupe was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 202a testing to determine if the vehicle was in compliance with the requirements of the standard. The purpose of this standard is to establish requirements for head restraints to reduce the frequency and severity of neck injury in rear end and other collisions.

1.1 The test vehicle was a 2010 Audi A5 Coupe Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: WAU3FAFR4AA027203

B. NHTSA No.: CA5800

C. Manufacturer: AUDI AG

D. Manufacture Date: 10/09

E. Color: Black

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 202a testing during the time period June 29 through July 21, 2010.

SECTION 2

COMPLIANCE TEST RESULTS

2.0 TEST RESULTS

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, TP-202aS-00 dated 22 December 2004.

Based on the test performed, the 2010 Audi A5 Coupe Passenger Car appeared to meet the requirements of FMVSS 202a testing.

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST DATA

The following data sheets document the results of testing on the 2010 Audi A5 Coupe Passenger Car.

DATA SHEET 1 (1 of 2)
SUMMARY OF RESULTS

VEH. MOD YR/MAKE/MODEL/BODY STYLE: 2010 AUDI A5 COUPE PASSENGER CAR

VEH. NHTSA NO.: CA5800 ; VIN: WAU3FAFR4AA027203

VEH. BUILD DATE: 10/09 ; TEST DATE:

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: G. FARRAND, J. LATANE

A. VISUAL INSPECTION OF TEST VEHICLE

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

RESULTS: OK for testing. Due to manufacture date of vehicle, rear DSP's are not required to meet 202a requirements.

B. DIMENSIONAL REQUIREMENTS	**PASS**	**FAIL**	**N/A**
Driver's Side	X		
Passenger's Side	X		
Rear Designated Seating Positions	X		

C. OWNER'S MANUAL	**PASS**	**FAIL**
	X	

D. REMOVABILITY	**PASS**	**FAIL**	**N/A**
Driver's Side			X
Passenger's Side			X
Rear Designated Seating Positions	X		

E. NON-USE POSITION	**PASS**	**FAIL**	**N/A**
Rear Designated Seating Positions			X

DATA SHEET 1 (2 of 2)
SUMMARY OF RESULTS

F.	**ENERGY ABSORPTION TEST**	**PASS**	**FAIL**	**N/A**
	Driver's Side			
	Passenger's Side			
	Rear Designated Seating Positions	X		
G.	**HEIGHT RETENTION TEST**	**PASS**	**FAIL**	**N/A**
	Driver's Side	X		
	Passenger's Side			
	Rear Designated Seating Positions			
H.	**BACKSET RETENTION TEST**	**PASS**	**FAIL**	**N/A**
	Driver's Side			
	Passenger's Side	X		
	Rear Designated Seating Positions			

RECORDED BY: G. FARRAND DATE: 07/21/10

APPROVED BY: D. MESSICK

DATA SHEET 2a (1 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

VEH. NHTSA NO.: CA5800 TEST DATE: 06/29/10

Seat Location: FRONT DRIVER

Height Measurement

SAE J826 three-dimensional manikin torso angle: 25°

Striker to H-Point (mm): 337 mm Striker to H-Point angle: Down

Position the head restraint in the highest position of vertical adjustment.
Height, Hh (mm): 845 mm X **PASS** **FAIL**

Hh > or = 800 mm for front seats.

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

Position the head restraint in the lowest position of vertical adjustment.
Height, Hl (mm): 800 mm X **PASS** **FAIL**

Hl > or = 750 mm for front seats and rear seats with head restraints.

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

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.

Position the head restraint in the highest position of vertical adjustment.

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

Height, Hw (= Hh – 65): 735 mm

Width, W (mm): 214 mm X **PASS** **FAIL**

Width must be greater than or 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. N/A

DATA SHEET 2a (2 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

Backset Measurement (Front Head Restraints Only)

Position the HRMD and record the following measurements.

HRMD torso angle: 25°

Striker to H-Point (mm): 337 mm Striker to H-Point angle: Down

Position the head restraint at a height greater than or equal to 750 mm and less than or equal to 800 mm for front head restraints. Exception: head restraint with lowest position higher than 800 mm, adjust to lowest position.

Backset, B (mm): 43 mm X PASS FAIL

Backset must be less than or equal to 55 mm.

Gap Measurement

Position the head restraint in the lowest position of vertical adjustment.

Number of gaps within the gap measurement zone: None

Least dimension of each gap (measured with a steel tape): N/A

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

Gap Size N/A X PASS FAIL

Gaps must be less than or equal to 60 mm.

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/29/10

APPROVED BY: D. MESSICK

DATA SHEET 2a(1 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

VEH. NHTSA NO.: CA5800 TEST DATE: 06/29/10

Seat Location: FRONT PASSENGER

Height Measurement

SAE J826 three-dimensional manikin torso angle: 25°

Striker to H-Point (mm): 331 mm (Ahead) Striker to H-Point angle: Down

Position the head restraint in the highest position of vertical adjustment.
Height, Hh (mm): 850 mm X **PASS** **FAIL**

Hh > or = 800 mm for front seats.

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

Position the head restraint in the lowest position of vertical adjustment.
Height, Hl (mm): 808 mm X **PASS** **FAIL**

Hl > or = 750 mm for front seats and rear seats with head restraints.

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

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.

Position the head restraint in the highest position of vertical adjustment.

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

Height, Hw (= Hh – 65): 743 mm

Width, W (mm): 214 mm X **PASS** **FAIL**

Width must be greater than or 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. N/A

DATA SHEET 2a (2 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

Backset Measurement (Front Head Restraints Only)

Position the HRMD and record the following measurements.

HRMD torso angle: 25°

Striker to H-Point (mm): 331 mm Striker to H-Point angle: Down

Position the head restraint at a height greater than or equal to 750 mm and less than or equal to 800 mm for front head restraints. Exception: head restraint with lowest position higher than 800 mm, adjust to lowest position.

Backset, B (mm): 43 mm X PASS FAIL

Backset must be less than or equal to 55 mm.

Gap Measurement

Position the head restraint in the lowest position of vertical adjustment.

Number of gaps within the gap measurement zone: None

Least dimension of each gap (measured with a steel tape): N/A

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

Gap Size N/A X PASS FAIL

Gaps must be less than or equal to 60 mm.

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/29/10

APPROVED BY: D. MESSICK

DATA SHEET 2a (1 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

VEH. NHTSA NO.: CA5800 TEST DATE: 06/29/10

Seat Location: REAR DRIVER

Height Measurement

SAE J826 three-dimensional manikin torso angle: 26°

Striker to H-Point (mm): 433 mm Striker to H-Point angle: Down

Position the head restraint in the highest position of vertical adjustment.
Height, Hh (mm): 800 mm X **PASS** **FAIL**

Hh > or = 800 mm for front seats.

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

Position the head restraint in the lowest position of vertical adjustment.
Height, Hl (mm): 750 mm X **PASS** **FAIL**

Hl > or = 750 mm for front seats and rear seats with head restraints.

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

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.

Position the head restraint in the highest position of vertical adjustment.

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

Height, Hw (= Hh – 65): 735 mm

Width, W (mm): 225 mm X **PASS** **FAIL**

Width must be greater than or 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. N/A

DATA SHEET 2a (2 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

Backset Measurement (Front Head Restraints Only)

Position the HRMD and record the following measurements.

HRMD torso angle:_____

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

Position the head restraint at a height greater than or equal to 750 mm and less than or equal to 800 mm for front head restraints. Exception: head restraint with lowest position higher than 800 mm, adjust to lowest position.

Backset, B (mm):_____ _____PASS _____FAIL

Backset must be less than or equal to 55 mm.

Gap Measurement

Position the head restraint in the lowest position of vertical adjustment.

Number of gaps within the gap measurement zone: None

Least dimension of each gap (measured with a steel tape): N/A

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

Gap Size_____N/A_____ _____X____PASS _____FAIL

Gaps must be less than or equal to 60 mm.

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/29/10

APPROVED BY: D. MESSICK

DATA SHEET 2a(1 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

VEH. NHTSA NO.: CA5800 TEST DATE: 06/29/10

Seat Location: REAR PASSENGER

Height Measurement

SAE J826 three-dimensional manikin torso angle: 26°

Striker to H-Point (mm): 435 mm (Ahead) Striker to H-Point angle: Down

Position the head restraint in the highest position of vertical adjustment.
Height, Hh (mm): 805 mm X **PASS** **FAIL**

Hh > or = 800 mm for front seats.

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

Position the head restraint in the lowest position of vertical adjustment.
Height, Hl (mm): 754 mm X **PASS** **FAIL**

Hl > or = 750 mm for front seats and rear seats with head restraints.

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

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.

Position the head restraint in the highest position of vertical adjustment.

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

Height, Hw (= Hh – 65): 740 mm

Width, W (mm): 225 mm X **PASS** **FAIL**

Width must be greater than or 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. N/A

DATA SHEET 2a (2 of 2)
DIMENSIONAL REQUIREMENTS FOR ADJUSTABLE HEAD RESTRAINTS

Backset Measurement (Front Head Restraints Only)

Position the HRMD and record the following measurements.

HRMD torso angle:_____

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

Position the head restraint at a height greater than or equal to 750 mm and less than or equal to 800 mm for front head restraints. Exception: head restraint with lowest position higher than 800 mm, adjust to lowest position.

Backset, B (mm):_____ _____PASS _____FAIL

Backset must be less than or equal to 55 mm.

Gap Measurement

Position the head restraint in the lowest position of vertical adjustment.

Number of gaps within the gap measurement zone: None

Least dimension of each gap (measured with a steel tape): N/A

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

Gap Size_____N/A_____ _____X____PASS _____FAIL

Gaps must be less than or equal to 60 mm.

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/29/10

APPROVED BY: D. MESSICK

DATA SHEET 3
OWNER'S MANUAL

VEH. NHTSA NO.: CA5800 TEST DATE: 06/29/10

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 X FAIL

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

PASS X 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 X

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

PASS X 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 X FAIL

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

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/29/10

APPROVED BY: D. MESSICK

DATA SHEET 4
REMOVABILITY

VEH. NHTSA NO.: CA5800 TEST DATE: 06/29/10

Are the head restraints removable? **YES** X **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:

Front head restraints are adjusted electrically by pushing the adjustment button up or down.

Rear head restraints are adjusted by pushing in the release button and pulling up or pushing down on the head restraint.

Description of distinct action for removal:

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/29/10

APPROVED BY: D. MESSICK

DATA SHEET 5
ENERGY ABSORPTION TEST

VEH. NHTSA NO.: CA5800 TEST DATE: 07/21/10

Seat Location: REAR DRIVER Type of head restraint: ADJUSTABLE

Test Number: 6775

635 mm Height Measurement for lower boundary of the impact zone

SAE J826 three-dimensional manikin torso angle: 26°

Striker to H-Point (mm): 433 mm Striker to H-Point angle: Down

Accelerometer identification: FZ03 Accelerometer type/brand: ENDEVCO

Last calibration date: 07/10

Head form vertical angle (-2° - +2°): 0.0

Distance between head form and target location (> or = 25 mm): 50 mm

Impact velocity (23.6 kph ± 0.5 kph): 23.42 KpH

Impact location: Centerline of head restraint, 760 mm up from “H” point.

Maximum deceleration (< or = 785 m/s² (80 g)): 40.7 **PASS** X **FAIL**

REMARKS:

RECORDED BY: G. FARRAND DATE: 07/21/10

APPROVED BY: D. MESSICK

DATA SHEET 6
HEIGHT RETENTION TEST
(ADJUSTABLE HEAD RESTRAINTS ONLY)

VEH. NHTSA NO.: CA5800 TEST DATE: 07/19/10

Seat Location: DRIVER Test Number: 6769, 6770

Pre-test measurements

SAE J826 Manikin torso angle: 25° Top of Head Restraint Height (mm): 845 mm

Striker to H-Point (mm): 337 mm Striker to H-Point angle: Down

Description of height retention lock: Electrically operated motor which raises and lowers The head restraint. Whenever head restraint is not moving it is locked in position.

Test measurements

Initial load (50 N ± 1 N): 51 N Initial Displacement, D1 (mm): 6.9 mm

Initial Displacement (D1) < 25 mm 6.9mm **PASS** X **FAIL**

Maximum load (495 N ± 5 N): 498 N Maximum Displacement, D2 (mm): 23.2 mm

Return load (50 N ± 1 N): 50 N Return Displacement, D3 (mm): 7.7 mm

Total displacement (D3-D1) < 13 mm: 0.8 mm **PASS** X **FAIL**

REMARKS:

RECORDED BY: G. FARRAND DATE: 07/19/10

APPROVED BY: D. MESSICK

DATA SHEET 7
BACKSET RETENTION TEST

VEH. NHTSA NO.: CA5800 TEST DATE: 07/20/10

Seat Location: PASSENGER Type of head restraint: ELECTRIC ADJUSTABLE

Test Number: 6772, 6773, 6774

Pre-test measurements

SAE J826 Manikin torso angle: 25° Top of Head Restraint Height (mm): 808 mm

Striker to H-Point (mm): 331 mm Striker to H-Point angle: Down

Displacement torso reference line

Test device back pan angle: 25°

Distance from the H-point to the initial location of the load (0.290 ± 0.013 m): .29 m

Initial load (N): 1286 N Initial moment (373 ± 7.5 Nm): 373 Nm

Backset retention and strength

Distance from the H-point to the head form tangency point (m): .743 m

Initial load (N): 50 N Initial moment (37 ± 0.7 Nm): 37 Nm

Initial head form displacement, D1 (< or = 25 mm): 15.1 mm **PASS** X **FAIL**

Load range to generate a 373 ± 7.5 Nm rearward moment (N): 502 N

Actual load applied (N): 503N Resultant moment (Nm): 373.7 Nm

Maximum Head form displacement, D2 (< or = 102 mm): 65.7 mm **PASS** X **FAIL**

Final head form displacement, D3 (mm): 25.2 mm
measured at (37 ± 0.7 Nm)

Total displacement (D3-D1) < 13 mm : 10.1 mm **PASS** X **FAIL**

Maximum applied load (> or equal to 885 N): 887 N **PASS** X **FAIL**

REMARKS:

RECORDED BY: G. FARRAND DATE: 07/20/10
APPROVED BY: D. MESSICK

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 – INSTRUMENTATION & EQUIPMENT LIST

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
HRMD	RONA KINETICS & ASSOCIATES LTD.	HRMD 0-62	N/A	N/A
J826 MANIKIN	ALDERSON RESEARCH LABS	3 DM/92	N/A	N/A
INCLINOMETER	MITUTOYO	PRO 360	BEFORE USE	BEFORE USE
STEEL TAPE	STANLEY	33-890	04/10	04/11
TORPEDO LEVEL	SANDS	500	BEFORE USE	BEFORE USE
FORCE GAUGE	CHATILLON	DPPN-50 870	BEFORE USE	BEFORE USE
LEVEL, LASER	BLACK & DECKER	360	BEFORE USE	BEFORE USE
LEVEL, LASER	SEAN & STEPHEN CORP	90º, 45º	BEFORE USE	BEFORE USE
LEVEL, LASER	GAERTNER	2789-A	BEFORE USE	BEFORE USE
ACCELEROMETER	ENDEVCO	FZ03	07/10	07/11
LOAD CELL	SENSOTEC	257818	07/10	07/11
LOAD CELL	INTERFACE	27246	02/10	02/11
LOAD CELL	INTERFACE	38068	02/10	02/11
STRING POT	WALDALE	102	BEFORE USE	BEFORE USE
STRING POT	CELESCO	69	BEFORE USE	BEFORE USE

SECTION 5
PHOTOGRAPHS

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

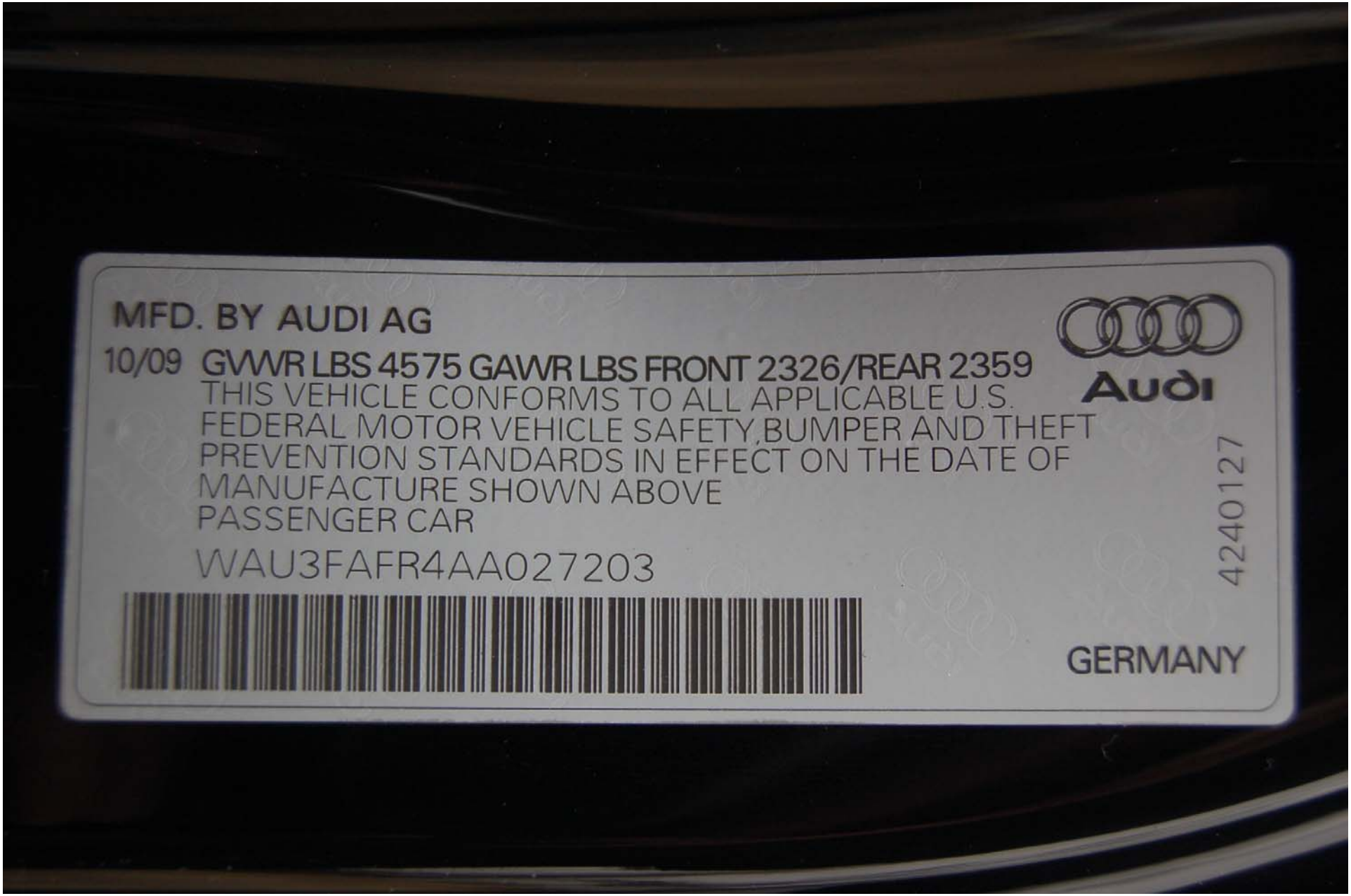
FIGURE 5.2
RIGHT SIDE VIEW OF VEHICLE

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.3
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

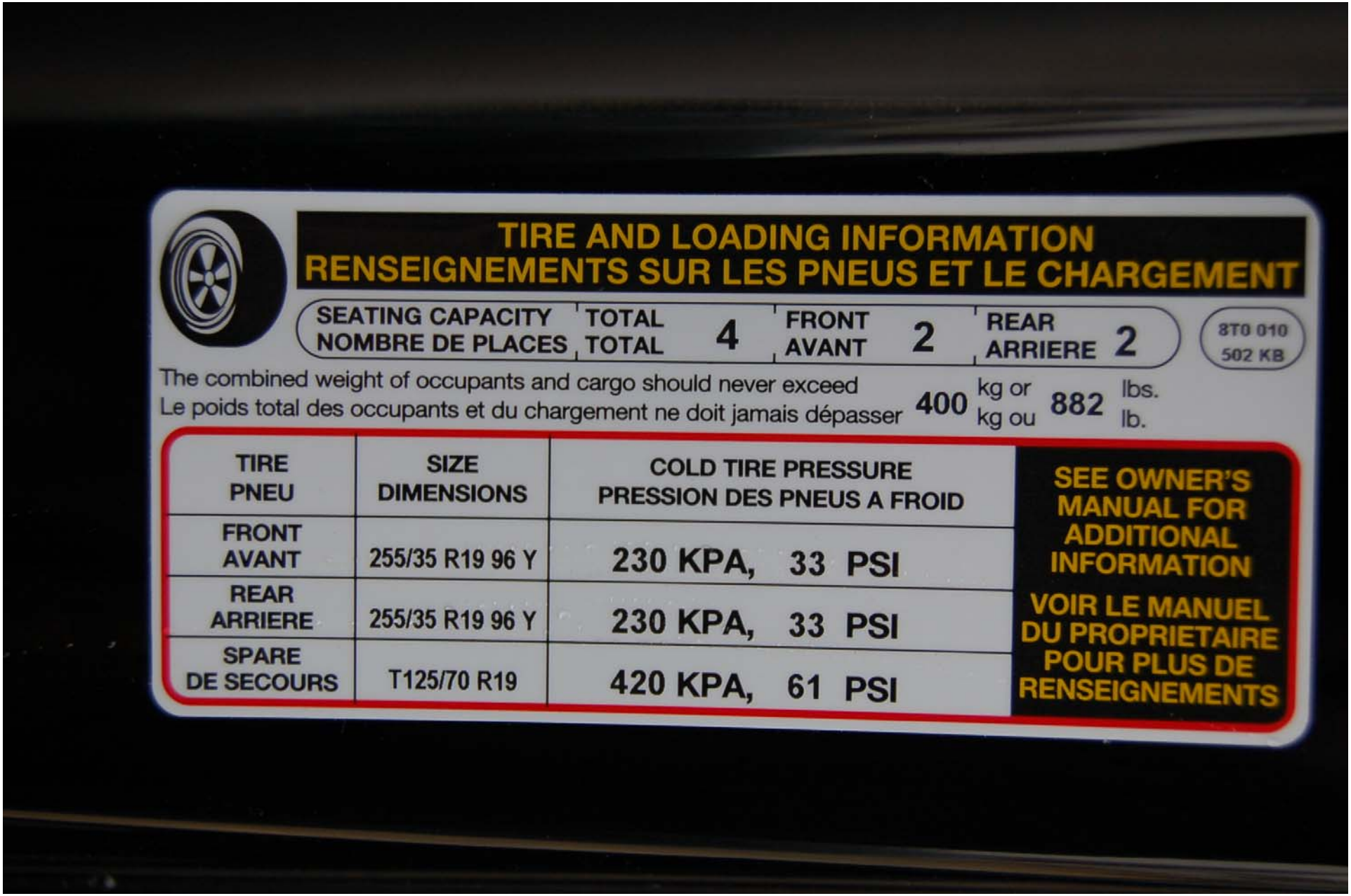
2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.4
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE



2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.5
VEHICLE CERTIFICATION LABEL



2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.6
VEHICLE TIRE INFORMATION LABEL

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.7
PRE-TEST VIEW OF DRIVER SEAT HEAD RESTRAINT IN LOWEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.8
PRE-TEST VIEW OF DRIVER SEAT HEAD RESTRAINT IN HIGHEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.9
PRE-TEST VIEW OF FRONT PASSENGER SEAT HEAD RESTRAINT IN LOWEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.10
PRE-TEST VIEW OF FRONT PASSENGER SEAT HEAD RESTRAINT IN HIGHEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.11
FRONT HEAD RESTRAINT ADJUSTMENT SWITCH FOR UP

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.12
FRONT HEAD RESTRAINT ADJUSTMENT SWITCH FOR DOWN

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.13
PRE-TEST REAR DRIVER HEAD RESTRAINT IN LOWEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.14
PRE-TEST REAR DRIVER HEAD RESTRAINT IN HIGHEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.15
PRE-TEST REAR PASSENGER HEAD RESTRAINT IN LOWEST POSITION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.16
REAR HEAD RESTRAINT ADJUSTMENT BUTTON

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.17
REAR HEAD RESTRAINT REMOVAL BUTTON

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.18
WIDTH MEASUREMENT ON FRONT DRIVER SEAT HEAD RESTRAINT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.19
WIDTH MEASUREMENT OF FRONT PASSENGER SEAT HEAD RESTRAINT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.20
WIDTH MEASUREMENT OF REAR DRIVER SEAT HEAD RESTRAINT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.21
WIDTH MEASUREMENT OF REAR PASSENGER HEAD RESTRAINT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.22
SAE J826 MANIKIN IN FRONT DRIVER SEAT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.23
HRMD IN FRONT DRIVER SEAT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

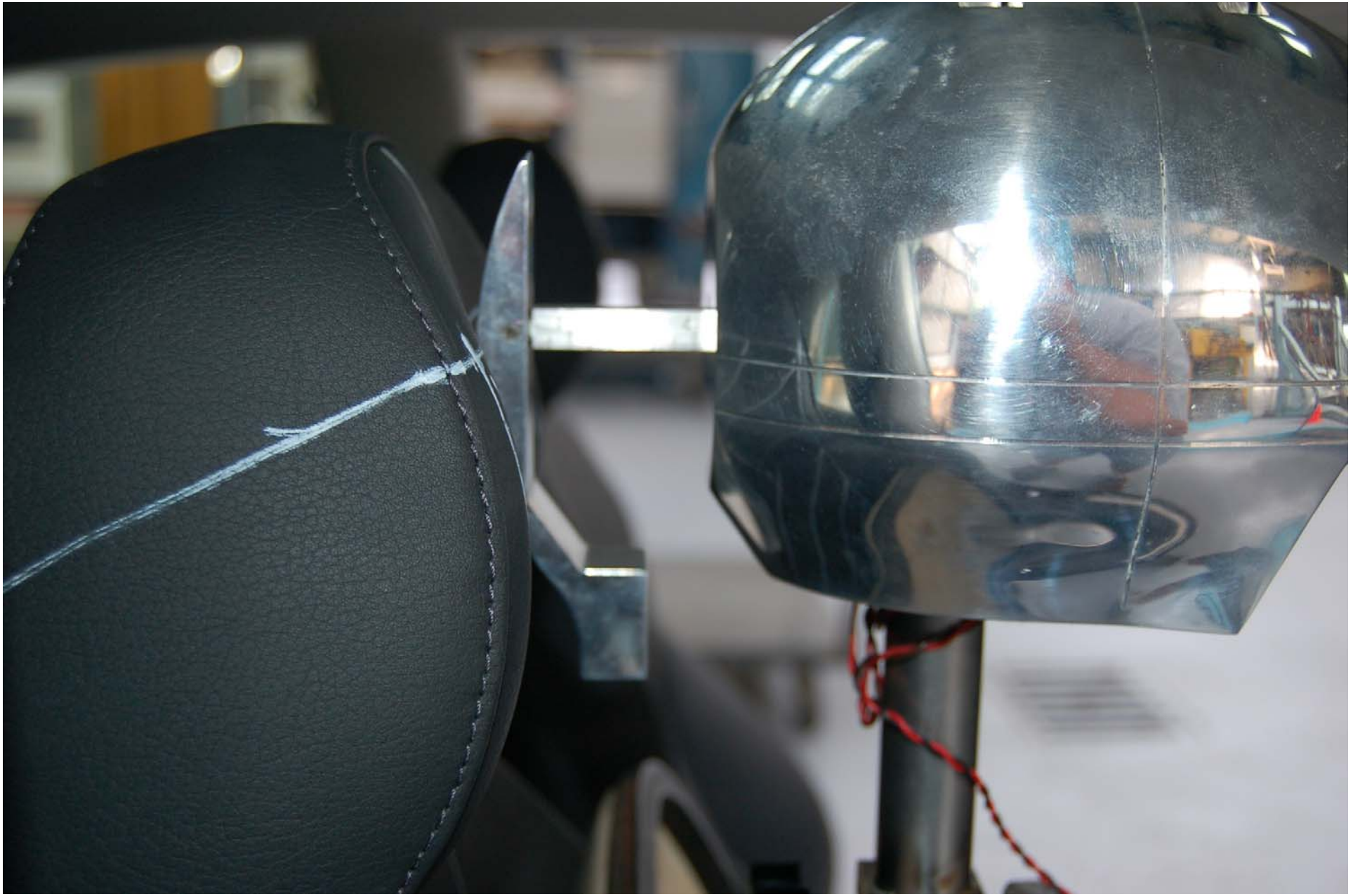
FIGURE 5.24
MEASUREMENT OF FRONT DRIVER SEAT BACKSET

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.25
SAE J826 MANIKIN IN FRONT PASSENGER SEAT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.26
HRMD IN FRONT PASSENGER SEAT



2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.27
MEASUREMENT OF FRONT PASSENGER SEAT BACKSET

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.28
SAE J826 MANIKIN IN REAR DRIVER SEAT

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.29
PRE-TEST SET-UP FOR HEIGHT RETENTION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.30
HEAD RESTRAINT AT INITIAL 50 N LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.31
HEAD RESTRAINT AT FULL LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

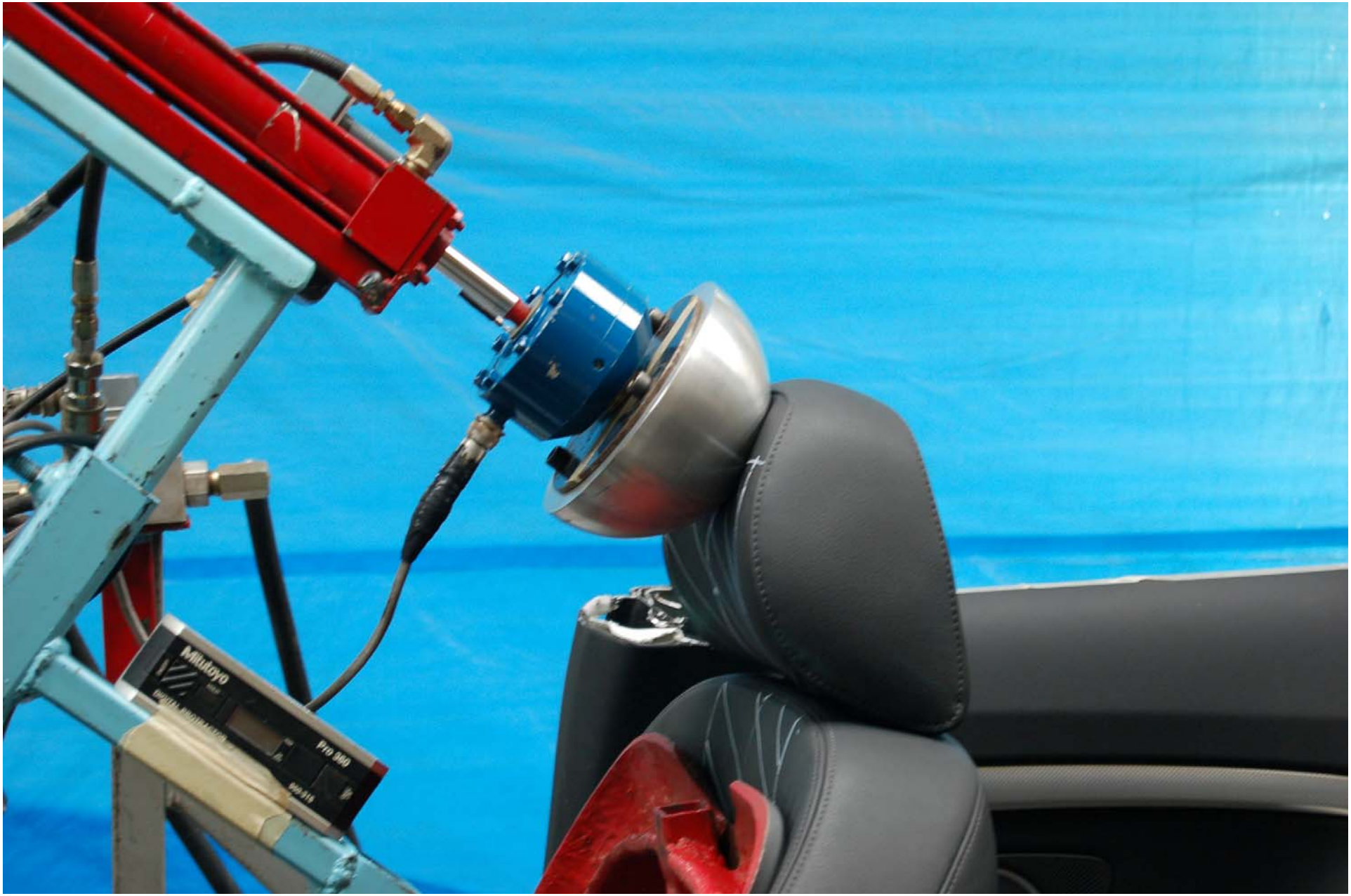
FIGURE 5.32
HEAD RESTRAINT AT POST 50 N LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.33
PRE-TEST SET-UP FOR BACKSET RETENTION

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.34
BACK PAN AT FULL LOAD



2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.35
HEAD FORM AT INITIAL 37 Nm LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.36
HEAD FORM AT 373 Nm LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.37
HEAD FORM AT POST 37 Nm LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

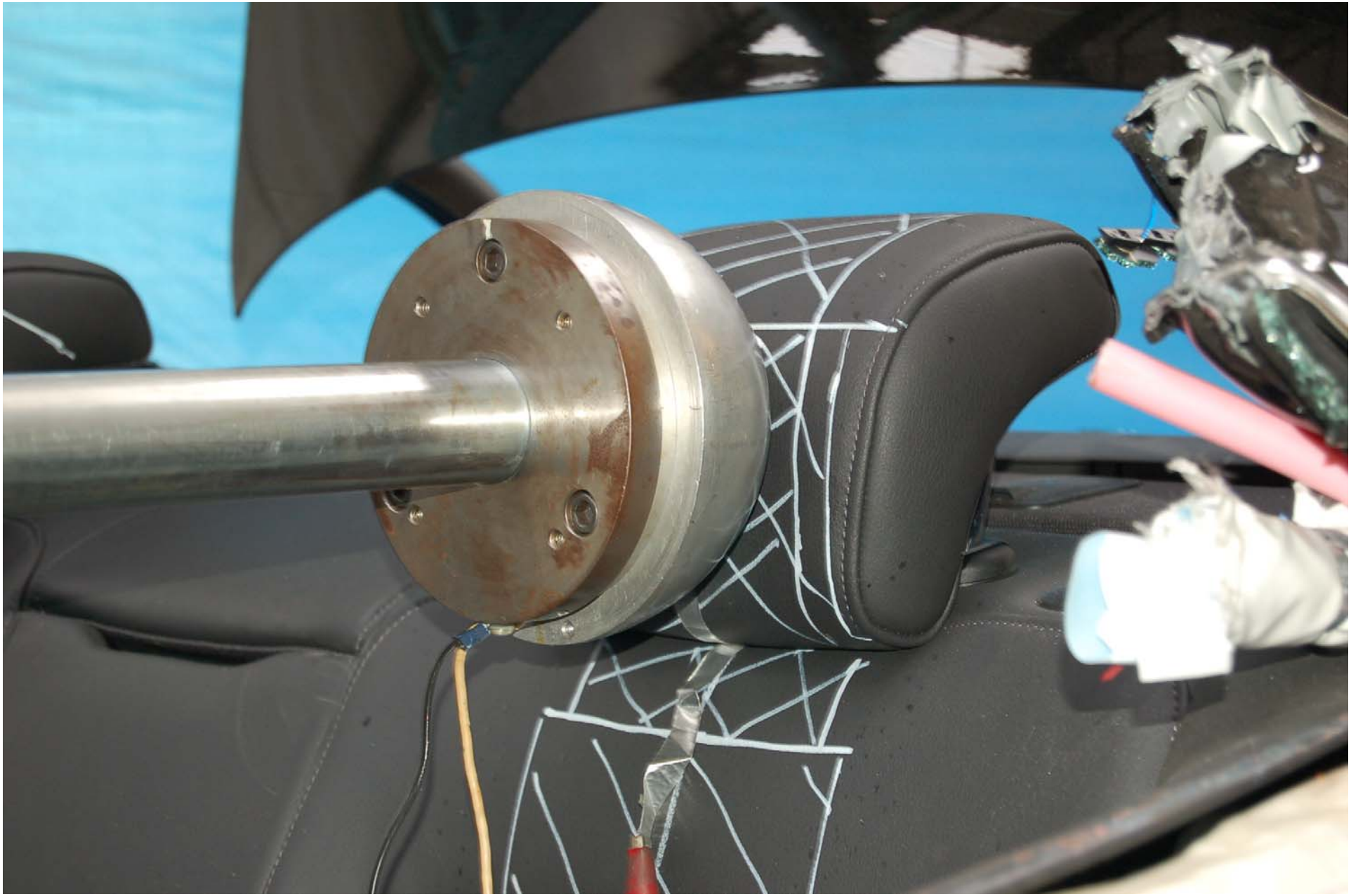
FIGURE 5.38
HEAD FORM AT 895 N LOAD

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.39
HEAD FORM POST TEST

2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

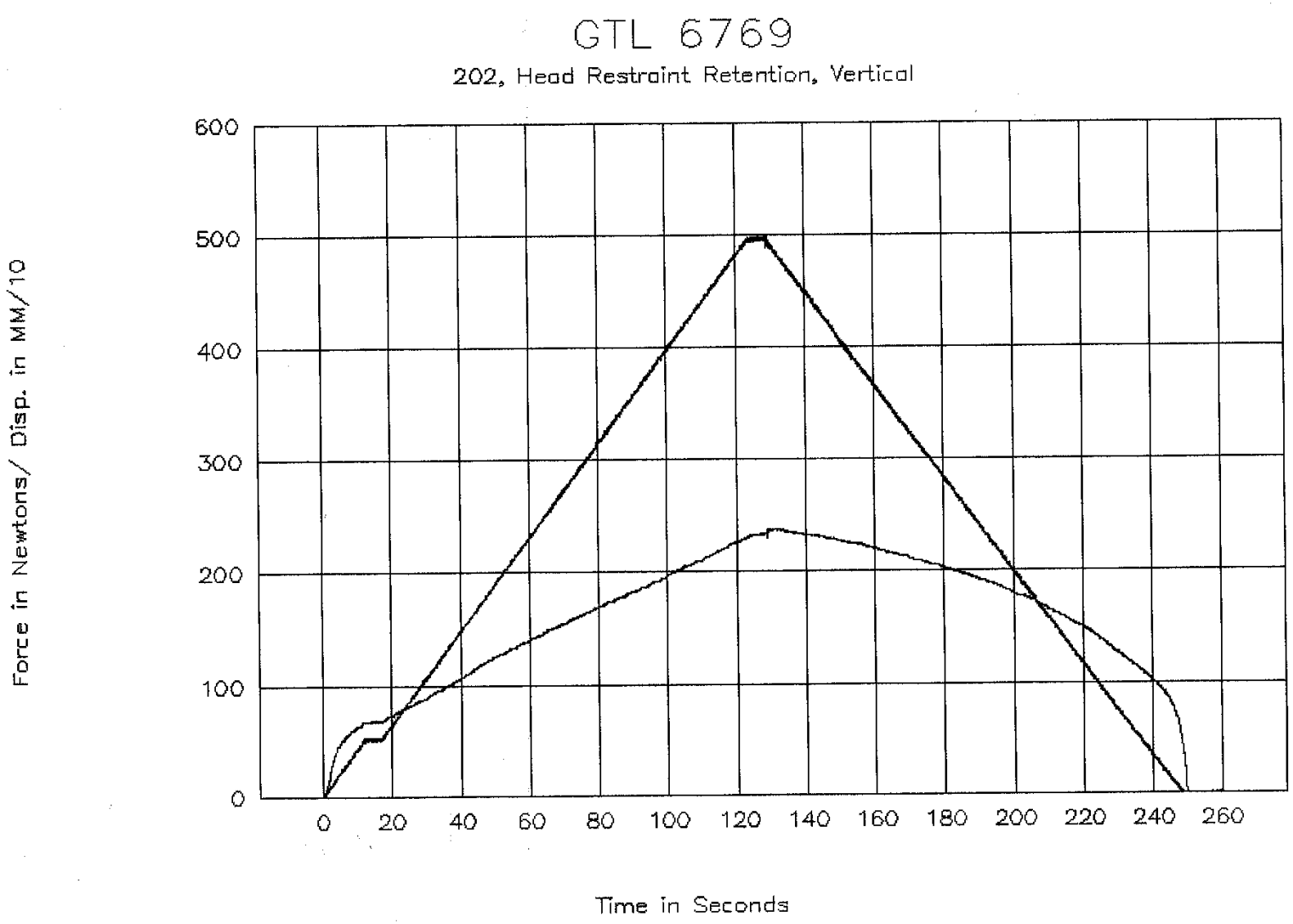
FIGURE 5.40
PRE-TEST SET-UP FOR ENERGY ABSORPTION

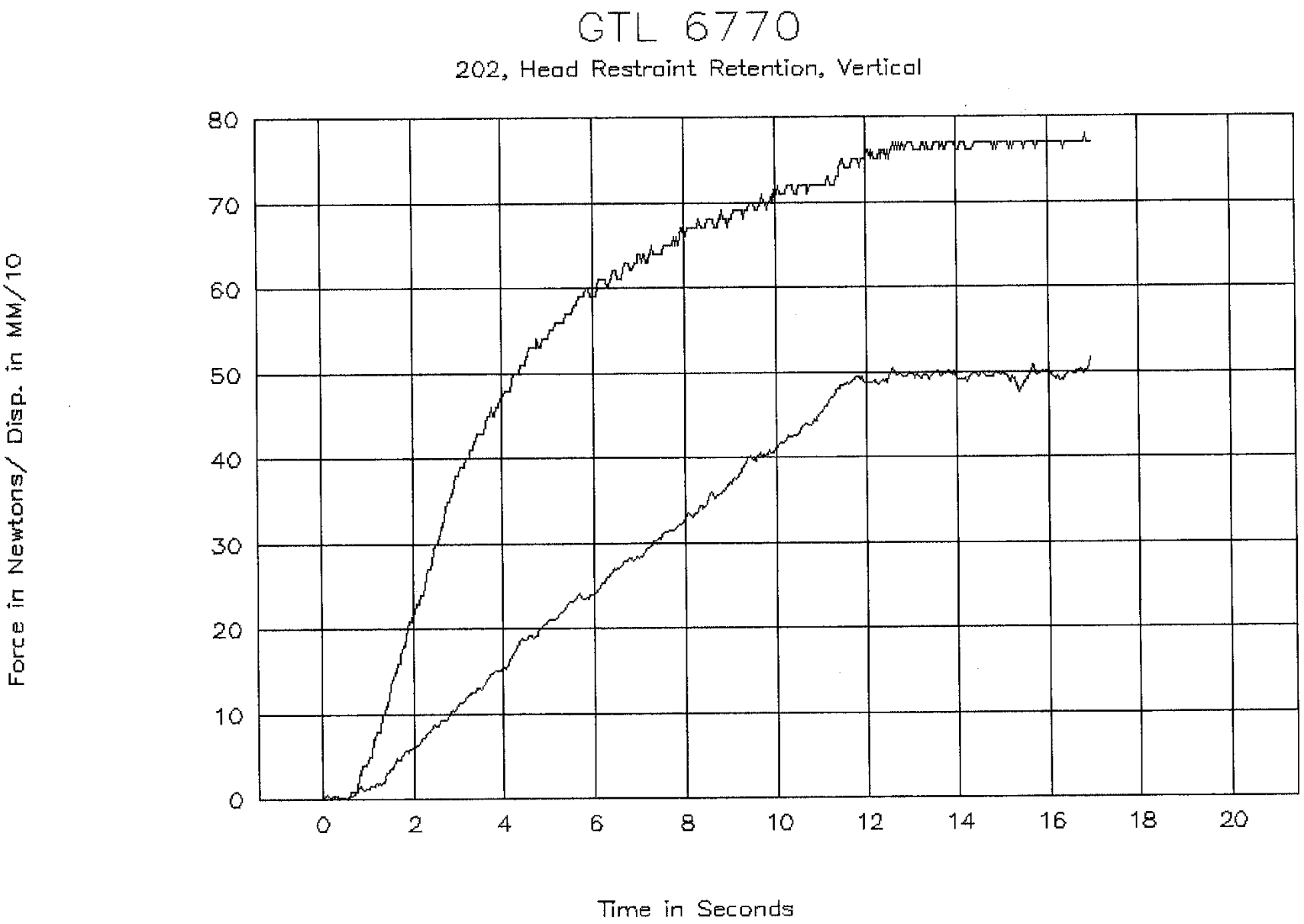


2010 AUDI A5
NHTSA NO. CA5800
FMVSS NO. 202a

FIGURE 5.41
POST TEST HEAD RESTRAINT FOR ENERGY ABSORPTION

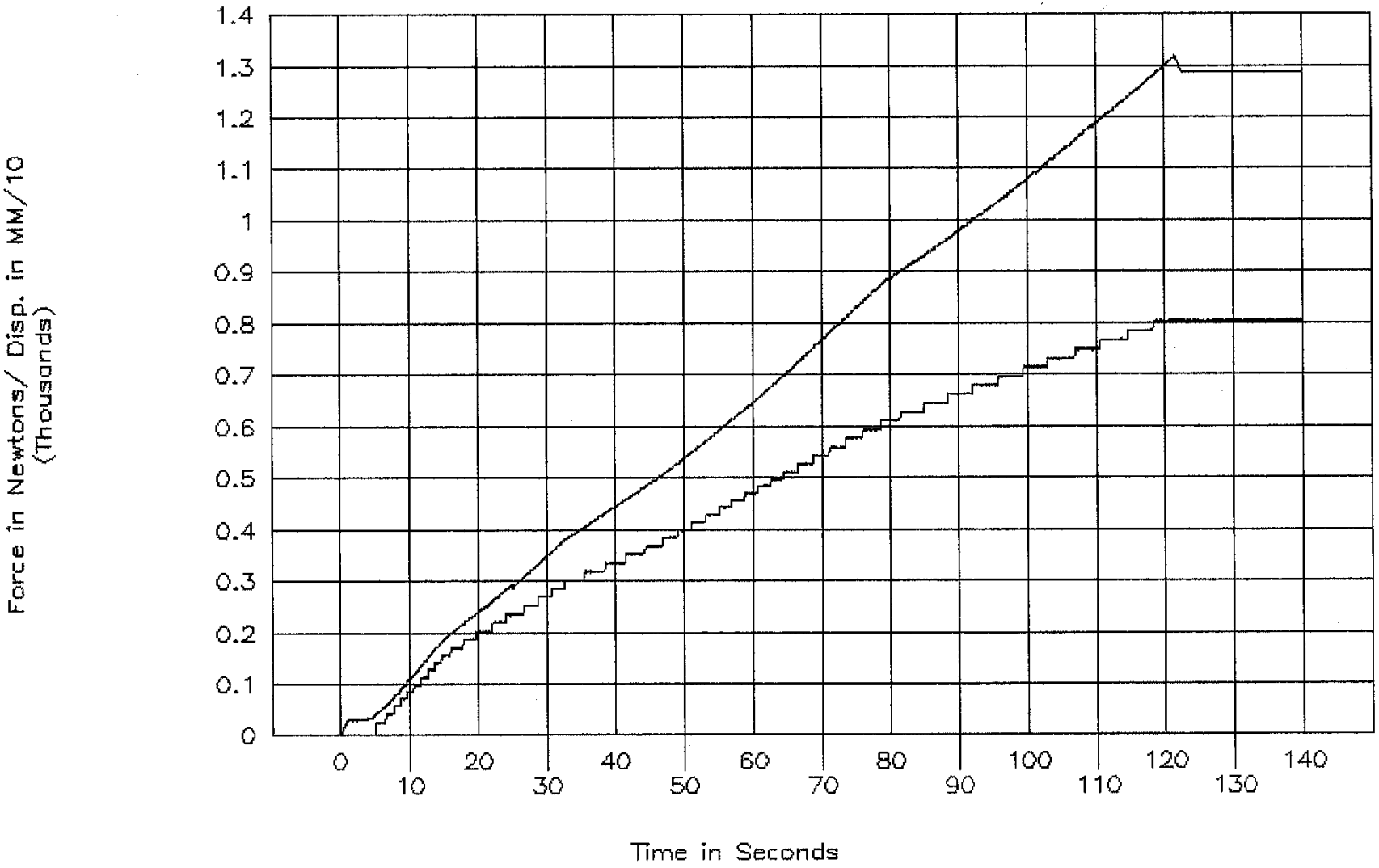
SECTION 6
TEST PLOTS


GTL 6769
202, Head Restraint Retention, Vertical
Force in Newtons/ Disp. in MM/10
600
500
400
300
200
100
0
0
20
40
60
80
100
120
140
160
180
200
220
240
260
Time in Seconds


GTL 6770
202, Head Restraint Retention, Vertical
Force in Newtons/ Disp. in MM/10
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
16
18
20
Time in Seconds

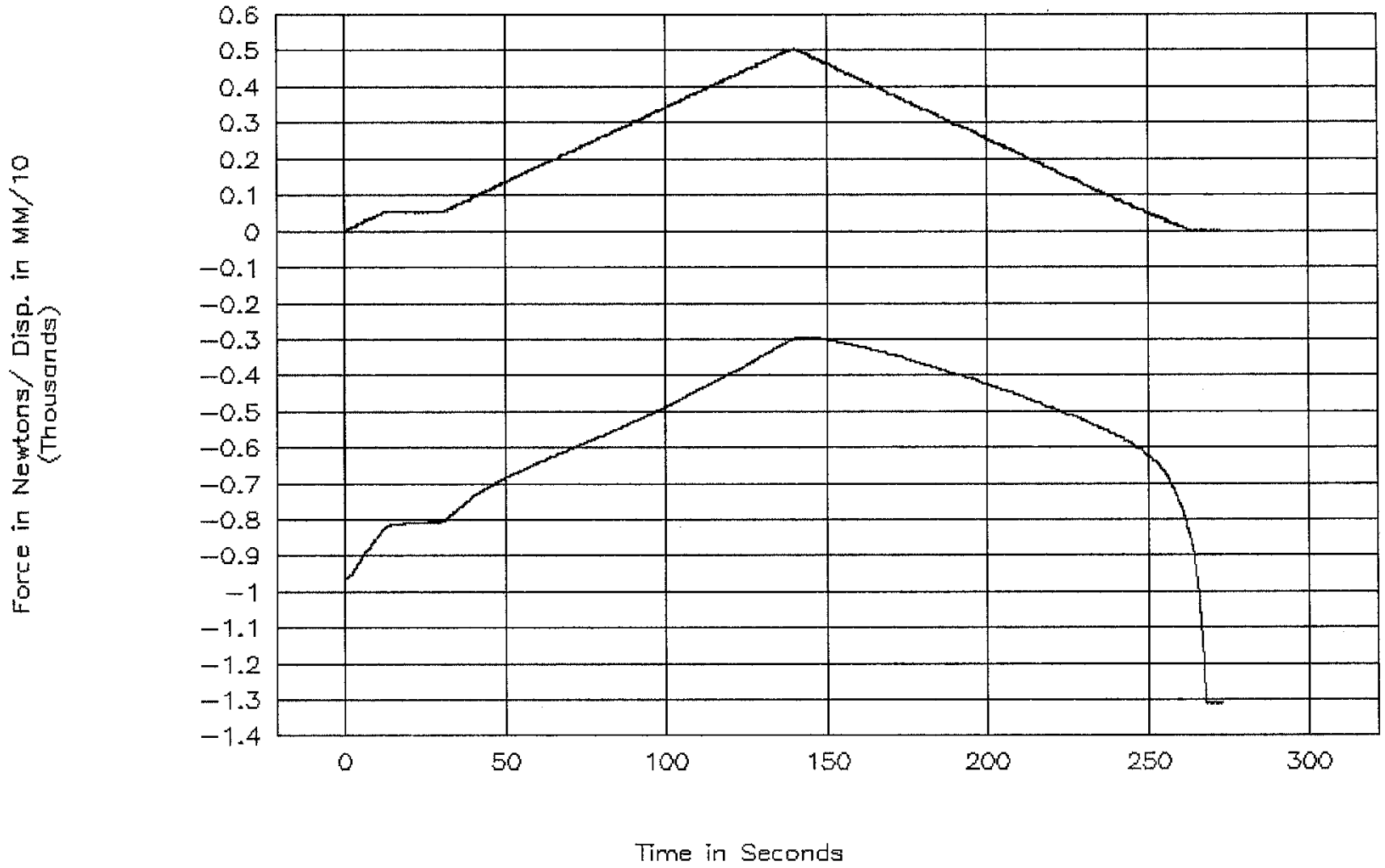
GTL 6771

202, Head Restraint Retention, Back Pan



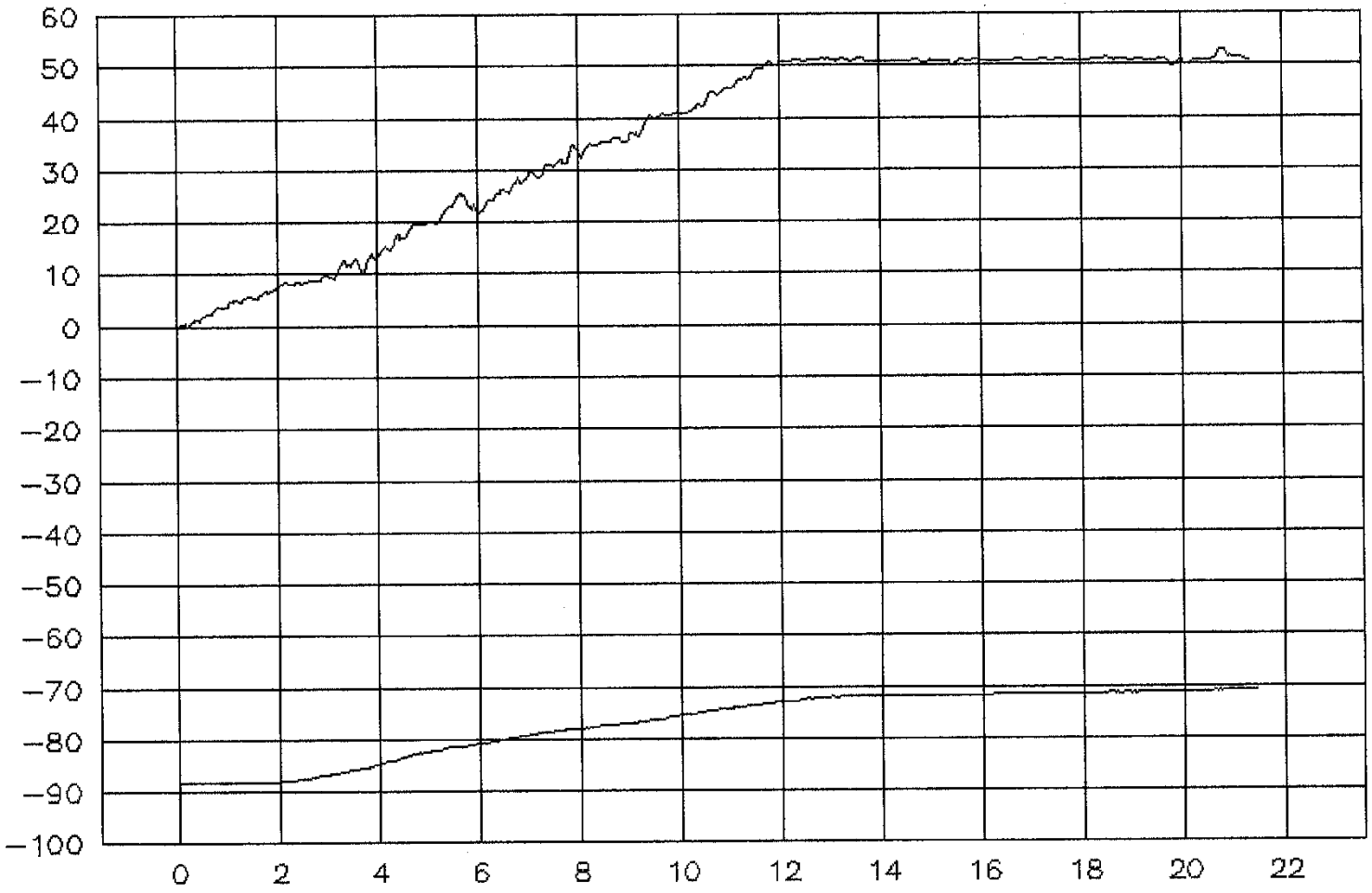
GTL 6772

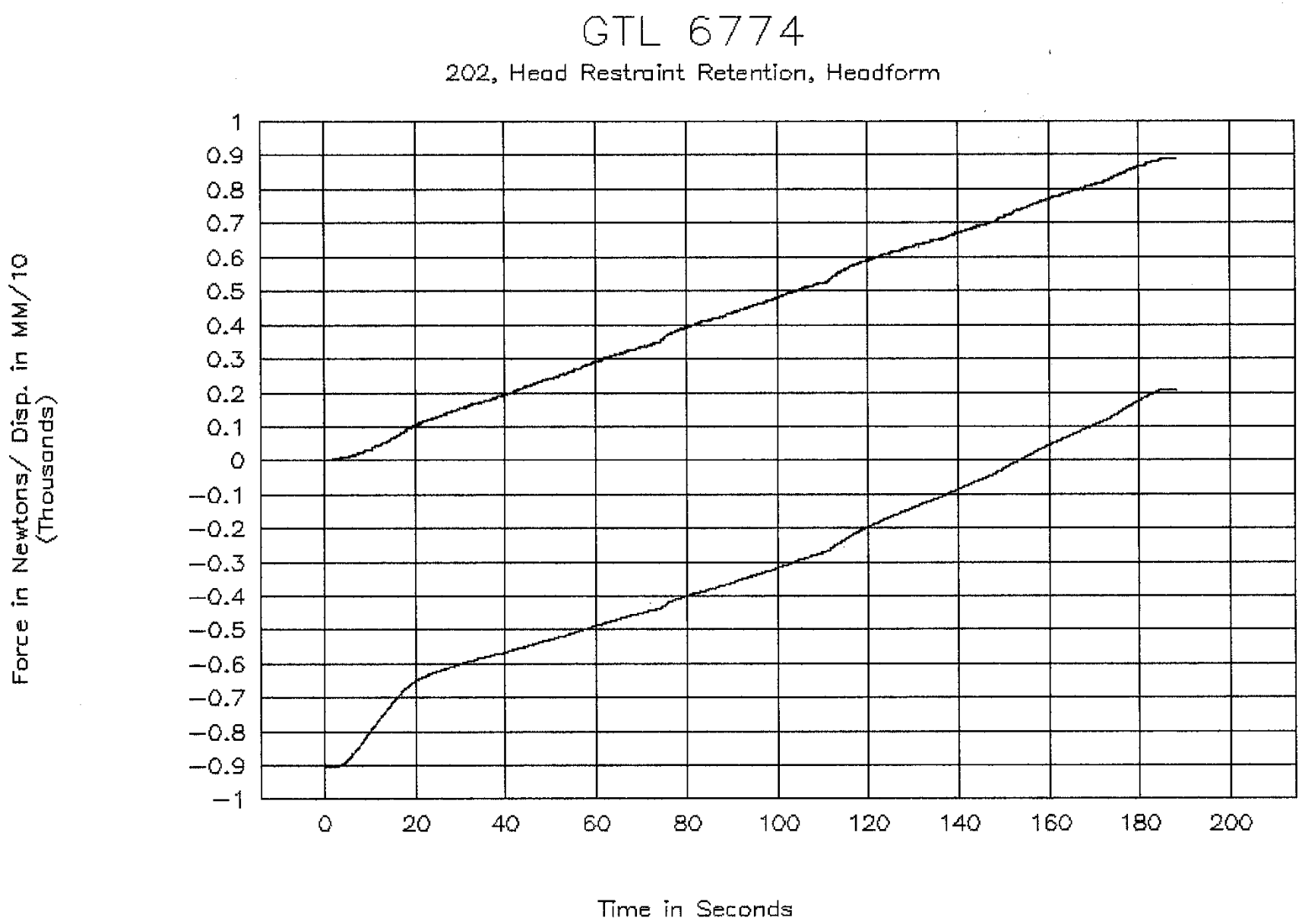
202, Head Restraint Retention, Headform

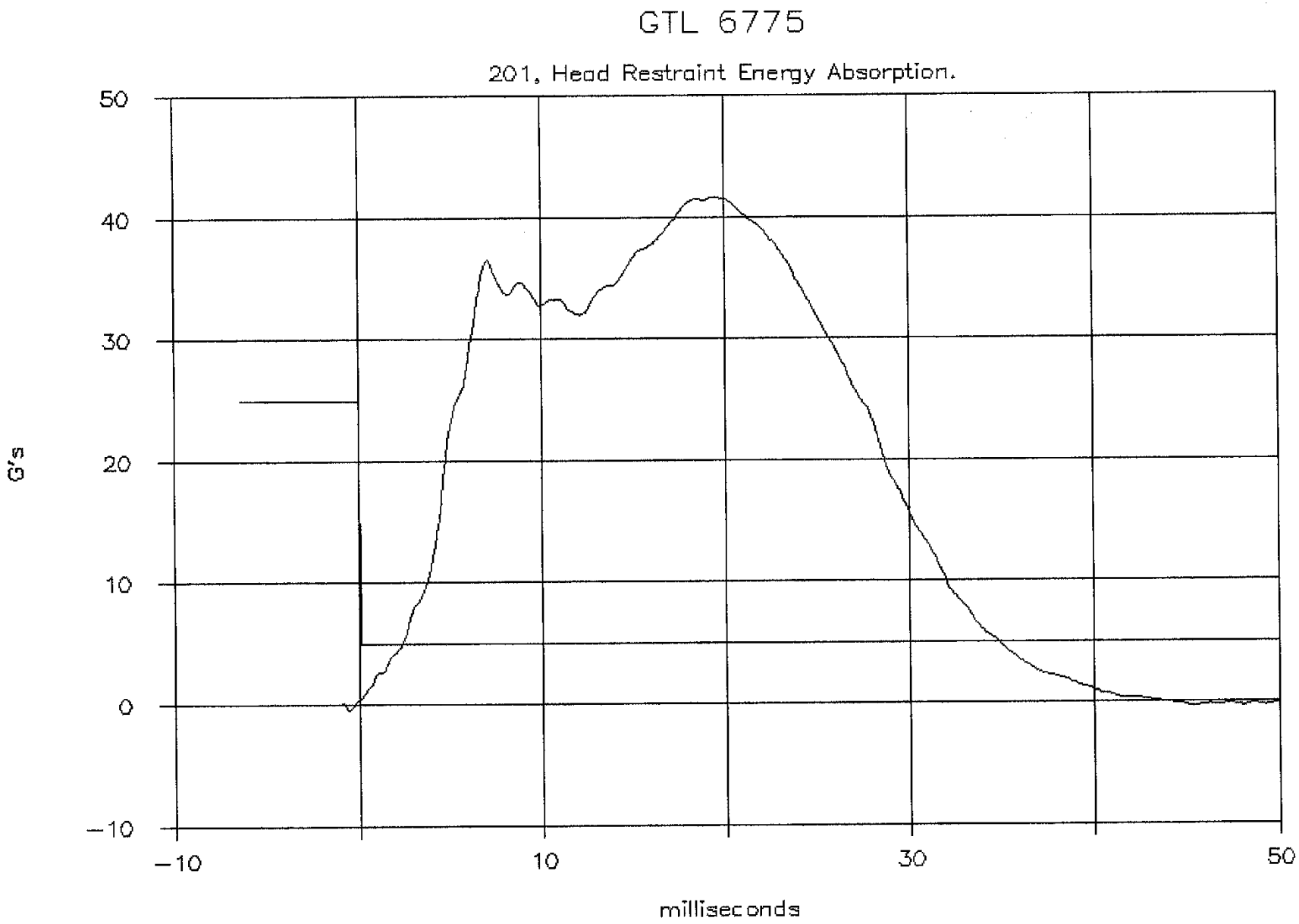


GTL 6773

202, Head Restraint Retention, Headform




GTL 6774
202, Head Restraint Retention, Headform
Force in Newtons/ Disp. in MM/10
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
−1
0
20
40
60
80
100
120
140
160
180
200
Time in Seconds


GTL 6775
201, Head Restraint Energy Absorption.
50
40
30
20
10
0
−10
G's
−10
10
30
50
milliseconds

SECTION 7
OWNER'S MANUAL INFORMATION

Applies to vehicles: with seat memory

Activating remote control key memory

To be able to recall the stored settings with the remote control key, the function has to be activated in the radio or MMI.*

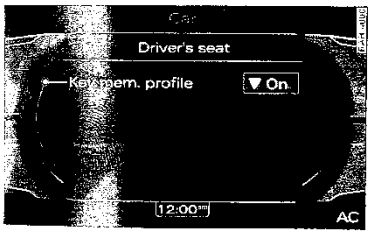


Fig. 76 MMI display: Driver's seat

– Select: Function button CAR > **Seat adjustment** > **Driver's seat** > **Key mem. profile** > **On.**

Tips

If you do not want another driver to store their settings on the remote key, switch off the Memory function using the radio or MMI* or the OFF button ⇒ *page 74.* ■

Head restraints

Adjusting the front head restraints

Head restraints that are adjusted according to body size, along with the seat belt, offer effective protection.

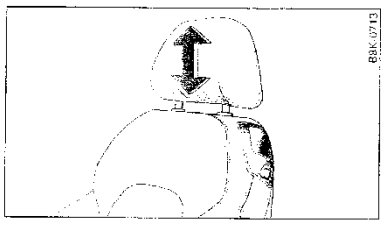


Fig. 77 Front seat: Adjusting the head restraint

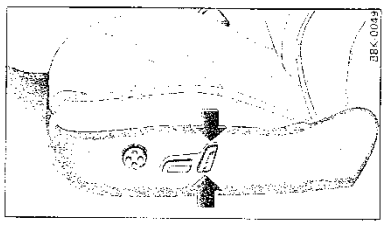


Fig. 78 Front seat: Adjusting head restraint electrically*

Raising/Lowering the head restraint

– The head restraints on the *front* seats can be adjusted to provide safe support to head and neck at the optimum height ⇒ fig. 77. When optimally adjusted, the top of the restraint should be level with the top of the head ⇒ *page 173,* "Proper adjustment of head restraints". ➤

- Grasp the sides of the head restraint with both hands und stellen Sie die gewünschte Position ein.

Electric height adjustment*

- Push the switch up or down ⇒ *page 76,* fig. 78 to adjust the height of the head restraint.
- Adjust the headrests so the upper edge is as even as possible with the top of your head ⇒ *page 76,* fig. 77 ⇒ *page 173,* "Proper adjustment of head restraints".

Refer to ⇒ *page 173,* "Proper adjustment of head restraints" for guidelines on how to adjust the height of the front head restraints to suit the occupant's body size.

⚠ WARNING

- **Driving without head restraints or with head restraints that are not properly adjusted increases the risk of serious or fatal neck injury dramatically.**
- **Read and heed all WARNINGS ⇒ *page 173.***

ⓘ Tips

Correctly adjusted head restraints and safety belts are an extremely effective combination of safety features. ■

Adjusting the rear head restraints

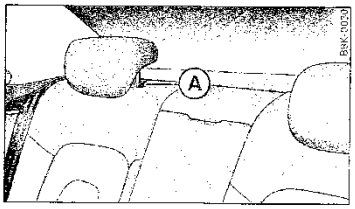


Fig. 79 Rear seats: Head restraint

Raising the head restraint

- Grasp the sides of the head restraint with both hands.
- Move the head restraint upward as far as it can go.

Lowering the head restraint

- Grasp the sides of the head restraint.
- Press the button Ⓐ ⇒ fig. 79 and push the head restraint down.

The most effective protection is achieved when the top of the head restraint is even with the top of your head.

So that the driver can have a better view to the rear, the head restraints should be pushed down completely when the rear seats are not occupied.

⚠ WARNING

- **Driving without head restraints or with head restraints that are not properly adjusted increases the risk of serious or fatal neck injury dramatically.**
- **Read and heed all WARNINGS ⇒ *page 173.***

Proper adjustment of head restraints

Correctly adjusted head restraints are an important part of your vehicle's occupant restraint system and can help to reduce the risk of injuries in accident situations.

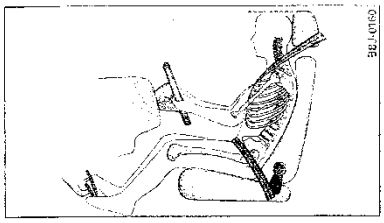


Fig. 182 Correctly adjusted head restraint viewed from the side

The head restraints must be correctly adjusted to achieve the best protection.

- Adjust the head restraint so that the upper edge of the restraint is level with the top of your head, but no lower than eye level and so it is as close to the back of your head as possible ⇒ *page 173*, fig. 182.

Adjusting head restraints ⇒ *page 76*.

⚠ WARNING

Driving without head restraints or with improperly adjusted head restraints increases the risk of serious injuries in a collision. To help reduce the risk of injury:

- **Always drive with the head restraints in place and properly adjusted.**
- **Every person in the vehicle must have a properly adjusted head restraint.**

⚠ WARNING (continued)

- **Always make sure each person in the vehicle properly adjusts their head restraint. Each head restraint must be adjusted according to occupants' size so that the upper edge is as even with the top of the person's head, but no lower than eye level and so it is as close to the back of to the head as possible.**
- **Never attempt to adjust head restraint while driving. If you have driven off and must adjust the driver headrest for any reason, first stop the vehicle safely before attempting to adjust the head restraint.**
- **Children must always be properly restrained in a child restraint that is appropriate for their age and size ⇒ *page 213*.**

Examples of improper seating positions

The occupant restraint system can only reduce the risk of injury if vehicle occupants are properly seated.

Improper seating positions can cause serious injury or death. Safety belts can only work when they are properly positioned on the body. Improper seating positions reduce the effectiveness of safety belts and will even increase the risk of injury and death by moving the safety belt to critical areas of the body. Improper seating positions also increase the risk of serious injury and death when an airbag deploys and strikes an occupant who is not in the proper seating position. A driver is responsible for the safety of all vehicle occupants and especially for children. Therefore:

- Never allow anyone to assume an incorrect seating position when the vehicle is being used ⇒ ⚠.

The following bulletins list only some sample positions that will increase the risk of serious injury and death. Our hope is that these