REPORT NUMBER 202a-GTL-08-001

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

HONDA OF AMERICA MFG., INC.
2008 HONDA ACCORD LX, PASSENGER CAR
NHTSA NO. C85306

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

DECEMBER 1, 2008

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

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FINAL REPORT ACCEPTANCE BY OVSC:

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4. Title and Subtitle Final Report of FMVSS 202a Compliance Testing of 2008 Honda Accord LX, Passenger Car NHTSA No. C85306		5. Report Date December 1, 2008 6. Performing Organ. Code GTL
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager		8. Performing Organ. Rep# GTL-DOT-08-202a-001
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15. Supplementary Notes		
16. Abstract Compliance tests were conducted on the subject, 2008 Honda Accord LX, 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		
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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2008 Honda Accord LX passenger car 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 2008 Honda Accord LX passenger car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1HGCP26368A052441

B. NHTSA No.: C85306

C. Manufacturer: HONDA OF AMERICA MFG., INC.

D. Manufacture Date: 12/07

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 202a testing during the time period November 6-12, 2008.

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 2008 Honda Accord 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 2008 Honda Accord passenger car.

DATA SHEET 1 (1 of 2)
SUMMARY OF RESULTS

VEH. MOD YR/MAKE/MODEL/BODY STYLE: 2008 HONDA ACCORD LX PASSENGER CAR

VEH. NHTSA NO.: C85306 ; VIN: 1HGCP26368A052441

VEH. BUILD DATE: 12/07 ; TEST DATE: November 6-12, 2008

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

RECORDED BY: G. FARRAND DATE: 11/12/08

APPROVED BY: D. MESSICK

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

VEH. NHTSA NO.: C85306 TEST DATE: 11/06/08

Seat Location: DRIVER

Height Measurement

SAE J826 three-dimensional manikin torso angle: 25°

Striker to H-Point (mm): 94 mm (Ahead) Striker to H-Point angle: Down

Position the head restraint in the highest position of vertical adjustment.
Height, Hh (mm): 852 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): 780 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): 787 mm

Width, W (mm): 215 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: 24.5°

Striker to H-Point (mm): 95 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): 37 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: 11/06/08

APPROVED BY: D. MESSICK

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

VEH. NHTSA NO.: C85306 TEST DATE: 11/06/08

Seat Location: PASSENGER

Height Measurement

SAE J826 three-dimensional manikin torso angle: 24°

Striker to H-Point (mm): 101 mm (Ahead) Striker to H-Point angle: Down

Position the head restraint in the highest position of vertical adjustment.
Height, Hh (mm): 856 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): 780 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): 791 mm

Width, W (mm): 215 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 2b (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: 24°

Striker to H-Point (mm): 101 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): 35 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: 11/06/08

APPROVED BY: D. MESSICK

DATA SHEET 3
OWNER'S MANUAL

VEH. NHTSA NO.: C85306 TEST DATE: 11/06/08

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 X FAIL _____ N/A _____

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: 11/06/08

APPROVED BY: D. MESSICK

DATA SHEET 4
REMOVABILITY

VEH. NHTSA NO.: C85306 TEST DATE: 11/06/08

Are the head restraints removable? X **YES** **NO**

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

Description of action(s) for head restraint adjustment:
To raise the headrest, just lift up. To lower the headrest, push in release button on left side post while pushing down on headrest. The headrest has 6 adjustment positions.

Description of distinct action for removal: Push in release button on left post and lift up at the same time.

REMARKS:

RECORDED BY: G. FARRAND DATE: 11/06/08

APPROVED BY: D. MESSICK

DATA SHEET 5
ENERGY ABSORPTION TEST

VEH. NHTSA NO.: C85306 TEST DATE: 11/11/08

Seat Location: PASSENGER Type of head restraint: ADJUSTABLE

Test Number: 6109

635 mm Height Measurement for lower boundary of the impact zone

SAE J826 three-dimensional manikin torso angle: 25°

Striker to H-Point (mm): 94 mm Striker to H-Point angle: Down

Description of equipment or method used to rigidly fix the seat back: Telescoping steel tube brace from top of seat back frame to rear floor of vehicle.

Accelerometer identification: F209 Accelerometer type/brand: ENDEVCO

Last calibration date: 11/08

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

Distance between head form and target location (> or = 25 mm): 65 mm

Impact velocity (23.6 kph ± 0.5 kph): 24.0 KpH

Impact location: 150 mm down from top of headrest on left/right centerline of headrest.

Maximum deceleration (< or = 785 m/s² (80 g)): 38.9 **PASS** X **FAIL**

REMARKS:

RECORDED BY: G. FARRAND DATE: 11/11/08

APPROVED BY: D. MESSICK

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

VEH. NHTSA NO.: C85306 TEST DATE: 11/10/08

Seat Location: DRIVER Test Number: 6106

Pre-test measurements

SAE J826 Manikin torso angle: 25° Top of Head Restraint Height (mm): 852 mm

Striker to H-Point (mm): 94 mm Striker to H-Point angle: Down

Description of height retention lock: Spring loaded button catch on left side headrest support tube.

Test measurements

Initial load (50 N ± 1 N): 50 N Initial Displacement, D1 (mm): 9.1 mm

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

Maximum load (495 N ± 5 N): 491 N Maximum Displacement, D2 (mm): 30.3 mm

Return load (50 N ± 1 N): 50 N Return Displacement, D3 (mm): 17.8 mm

Total displacement (D3-D1) < 13 mm: 8.7 mm **PASS** X **FAIL**

REMARKS:

RECORDED BY: G. FARRAND DATE: 11/10/08

APPROVED BY: D. MESSICK

DATA SHEET 7
BACKSET RETENTION TEST

VEH. NHTSA NO.: C85306 TEST DATE: 11/11/08

Seat Location: DRIVER Type of head restraint: ADJUSTABLE

Test Number: 6107, 6108, 6110

Pre-test measurements

SAE J826 Manikin torso angle: 25° Top of Head Restraint Height (mm): 800 mm

Striker to H-Point (mm): 94 mm Striker to H-Point angle: Down

Displacement torso reference line

Test device back pan angle: 24.5°

Distance from the H-point to the initial location of the load (0.290 ± 0.013 m): .290 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): .735 m

Head Restraint contact (mm) : -99.6 mm

Initial load (N): 50 N @ -76.3 Initial moment (37 ± 0.7 Nm): 37 Nm

Initial head form displacement, D1 (< or = 25 mm): 23.3 mm **PASS** X **FAIL**

Load range to generate a 373 ± 7.5 Nm rearward moment (N): 508 N

Actual load applied (N): 508N @ -19.5 Resultant moment (Nm): 373 Nm

Maximum Head form displacement, D2 (< or = 102 mm): 56.8 mm **PASS** X **FAIL**

Final head form displacement, D3 (mm): 71.6 mm
measured at (37 ± 0.7 Nm)

Total displacement (D3-D1) < 13 mm : 4.7 mm **PASS** X **FAIL**

Maximum applied load (> or equal to 885 N): 886 N **PASS** X **FAIL**

REMARKS: Tested in Height Position 2

RECORDED BY: G. FARRAND DATE: 11/11/08
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
DIGITAL PROTRACTOR	MITUTOYO	950-315 PRO 360	BEFORE USE	BEFORE USE
RULE/SCALE	STARRET	C331		
TORPEDO LEVEL	SANDS	500	BEFORE USE	BEFORE USE
FORCE GAUGE	CHATILLON	DPPN-50 870	BEFORE USE	BEFORE USE
CALIPER	STARRET	N/A	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	F209	11/08	11/09
LOAD CELL	SENSOTEC	257818	01/08	01/09
LOAD CELL	INTERFACE	27246	05/08	05/09
STRING POT	WALDALE	102	BEFORE USE	BEFORE USE
STRING POT	CELESCO	69	BEFORE USE	BEFORE USE

SECTION 5
PHOTOGRAPHS

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NHTSA NO. C85306
FMVSS NO. 202a

FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE

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FIGURE 5.2
RIGHT SIDE VIEW OF VEHICLE

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FIGURE 5.3
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

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FIGURE 5.4
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE

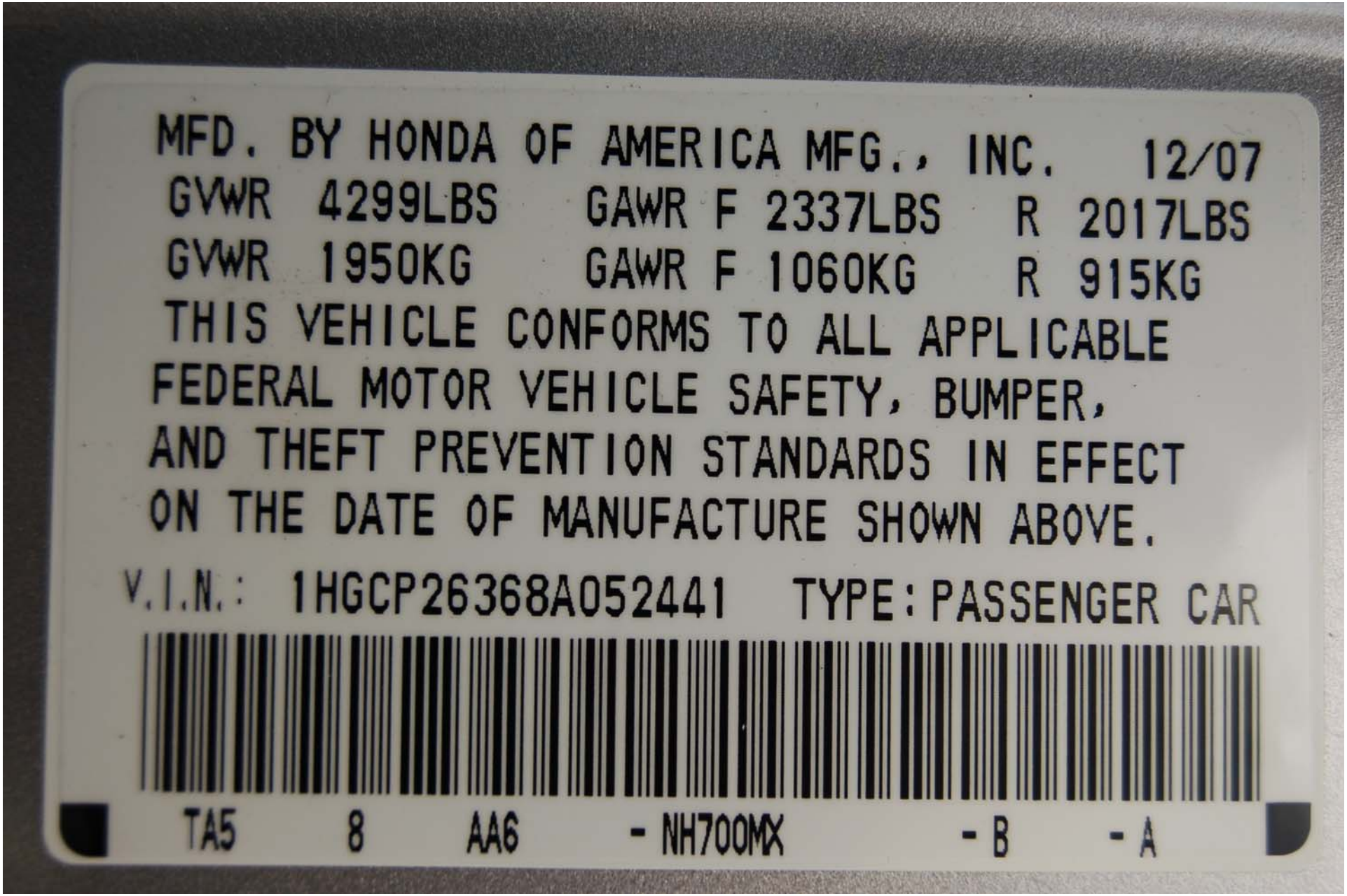

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FIGURE 5.5
VEHICLE CERTIFICATION LABEL

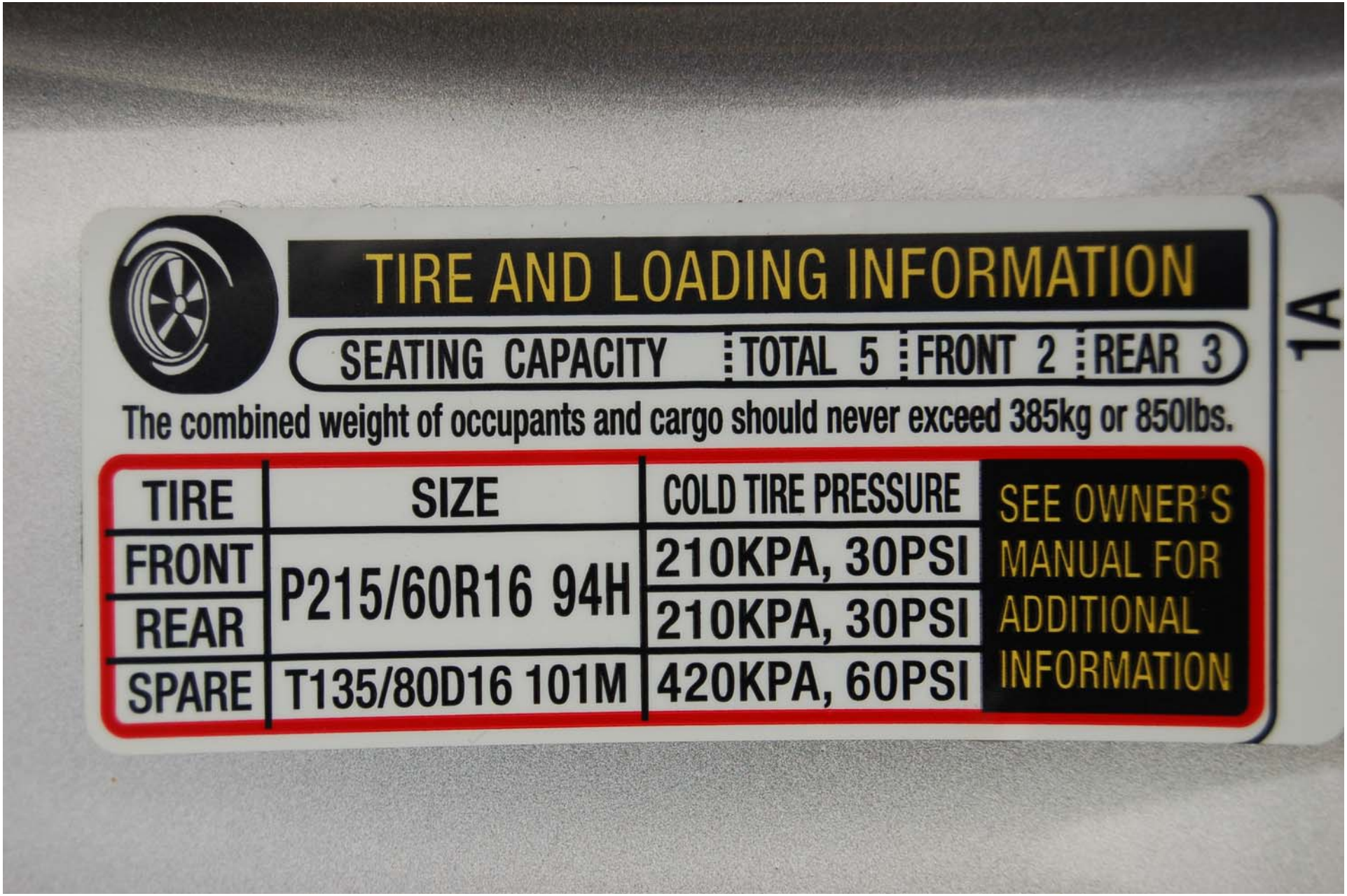

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FIGURE 5.6
VEHICLE TIRE INFORMATION LABEL

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FIGURE 5.7
DRIVER SEAT HEAD RESTRAINT

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FIGURE 5.8
PASSENGER SEAT HEAD RESTRAINT

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FIGURE 5.9
ROW 2, RIGHT SIDE HEAD RESTRAINT

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FIGURE 5.10
ROW 2, CENTER HEAD RESTRAINT

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FIGURE 5.11
ROW 2, LEFT SIDE HEAD RESTRAINT

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FIGURE 5.12
J826 MANIKIN POSITIONED IN DRIVER SEAT

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FIGURE 5.13
DRIVER HEAD RESTRAINT IN LOWEST POSITION

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FIGURE 5.14
DRIVER HEAD RESTRAINT IN HIGHEST POSITION

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FIGURE 5.15
DRIVER HEAD RESTRAINT WIDTH MEASUREMENT

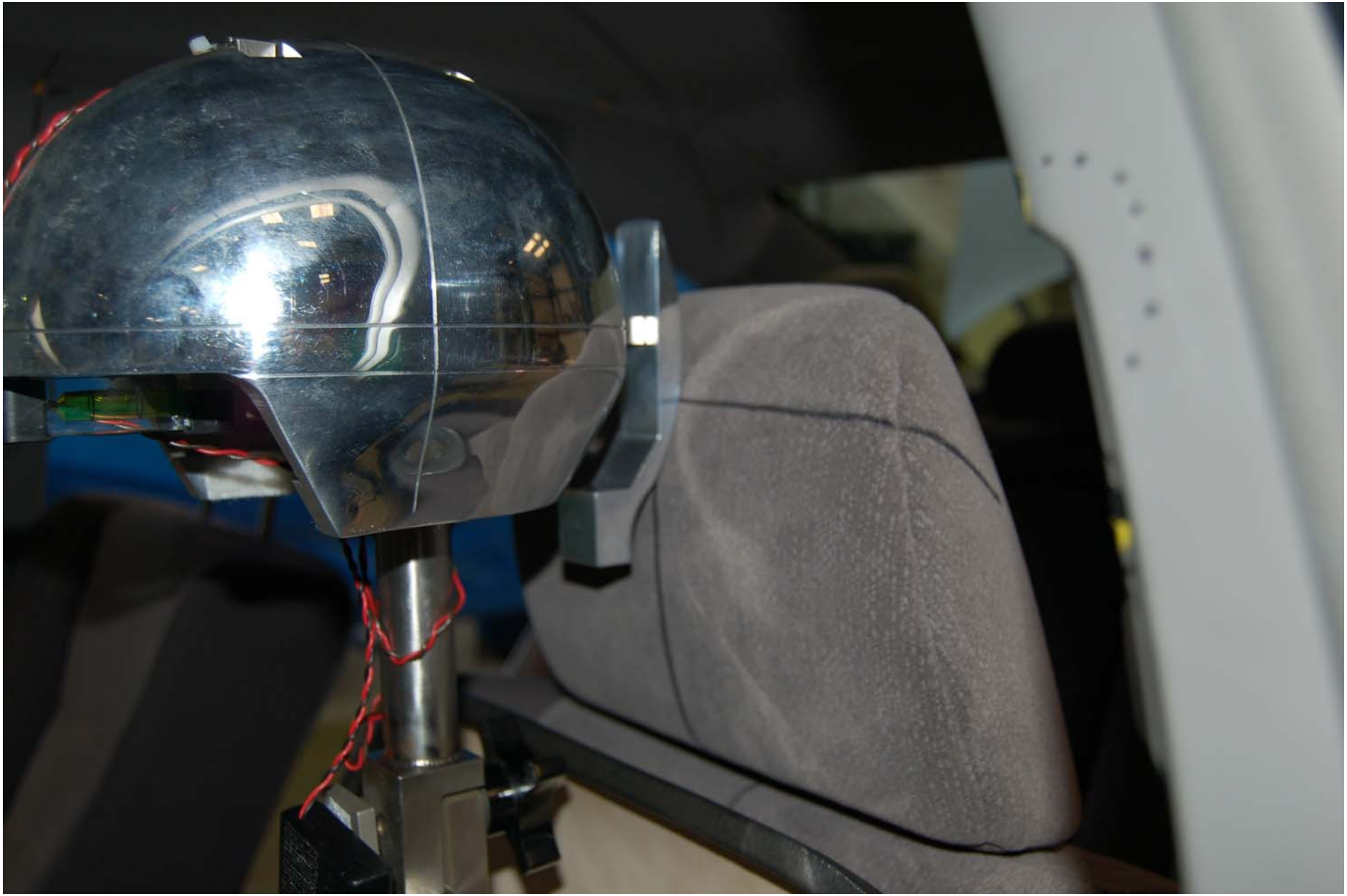

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FIGURE 5.16
DRIVER HEAD RESTRAINT HRMD BACKSET MEASUREMENT

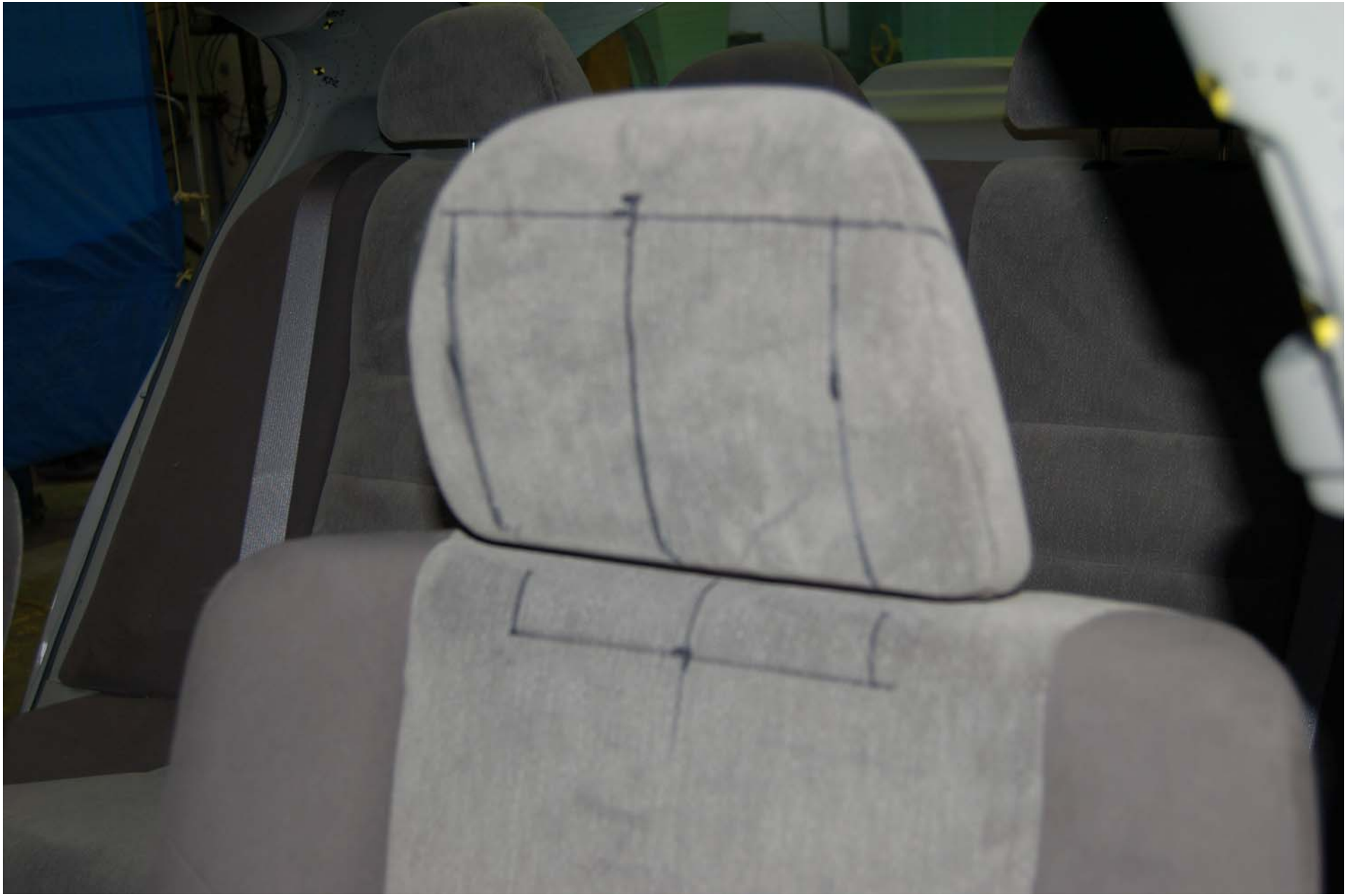

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FIGURE 5.17
DRIVER HEAD RESTRAINT IMPACT ZONE AND GAPS

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FIGURE 5.18
TYPICAL HEAD RESTRAINT ADJUSTMENT/
REMOVAL BUTTON

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FIGURE 5.19
PASSENGER SEAT WITH J826 MANIKIN POSITIONED

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FIGURE 5.20
PASSENGER HEAD RESTRAINT IN LOWEST POSITION

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FIGURE 5.21
PASSENGER HEAD RESTRAINT IN HIGHEST POSITION

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FIGURE 5.22
PASSENGER HEAD RESTRAINT WIDTH
MEASUREMENT

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FIGURE 5.23
PASSENGER HEAD RESTRAINT HRMD BACKSET MEASUREMENT

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FIGURE 5.24
PASSENGER HEAD RESTRAINT IMPACT ZONE
AND GAPS

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FIGURE 5.25
PRE-TEST SET-UP FOR HEIGHT RETENTION

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FIGURE 5.26
HEAD RESTRAINT WITH 50 N LOAD FOR HEIGHT RETENTION

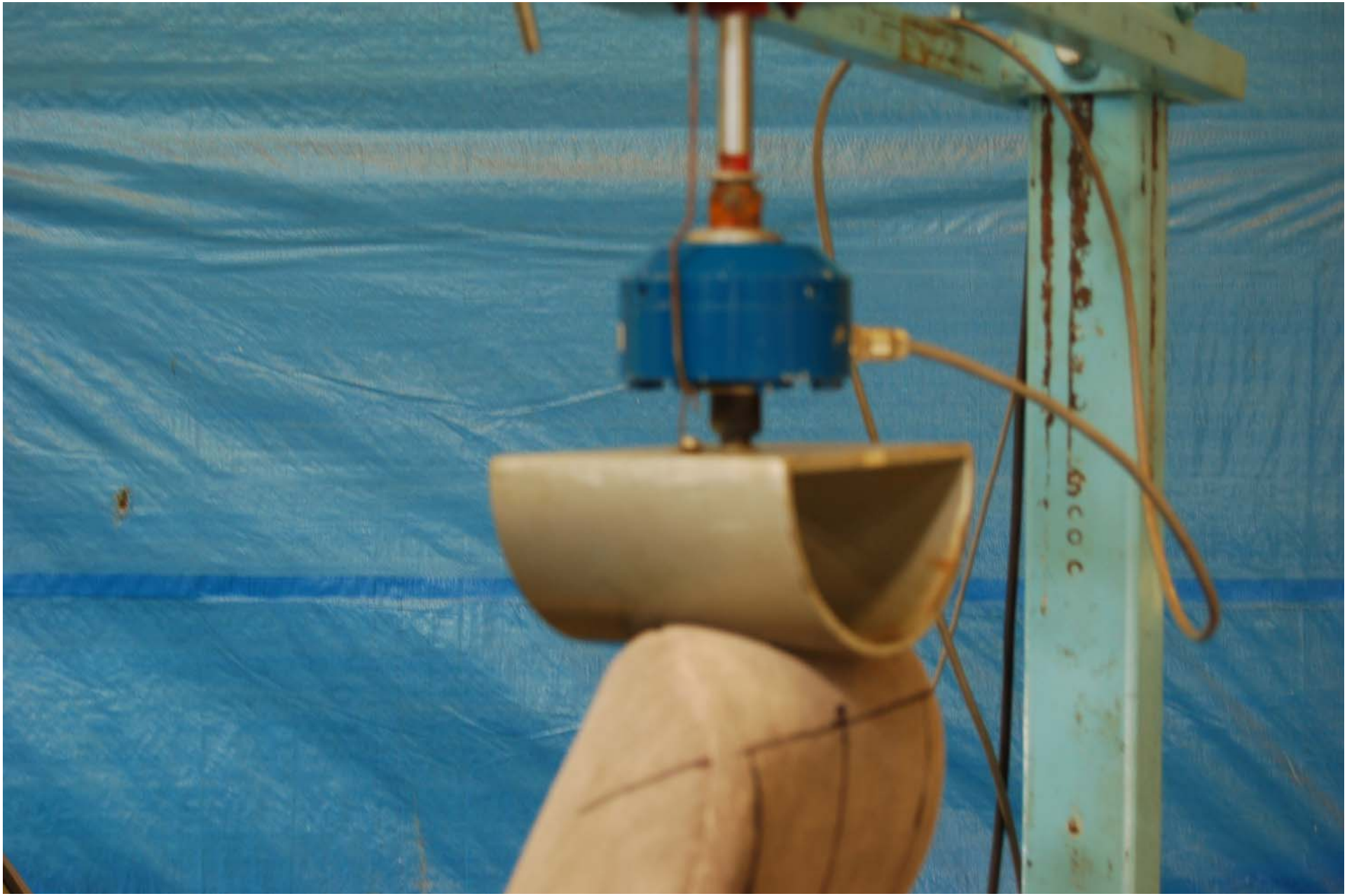

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FIGURE 5.27
HEAD RESTRAINT WITH FULL LOAD FOR
HEIGHT RETENTION

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FIGURE 5.28
HEAD RESTRAINT POST TEST HEIGHT
RETENTION

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FIGURE 5.29
PRE-TEST SET-UP FOR BACKSET RETENTION TEST

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FIGURE 5.30
BACK PAN LOADING FOR DISPLACED TORSO LINE

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FMVSS NO. 202a

FIGURE 5.31
HEAD RESTRAINT WITH 37 Nm LOAD APPLIED

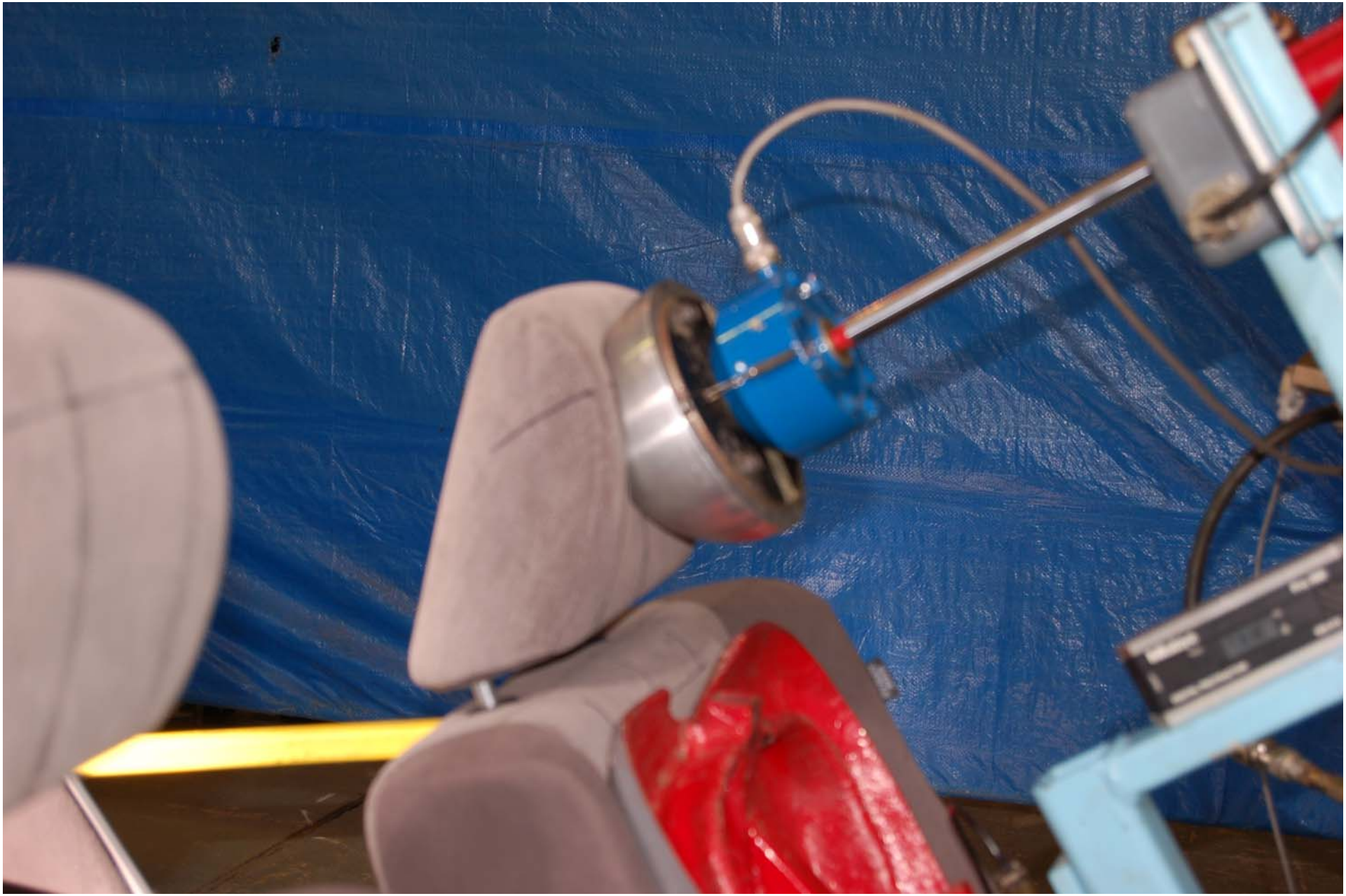

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FIGURE 5.32
HEAD RESTRAINT WITH 373 Nm LOAD APPLIED

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FIGURE 5.33
HEAD RESTRAINT POST TEST 373 Nm LOAD

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FIGURE 5.34
HEAD RESTRAINT WITH 895 N LOAD APPLIED

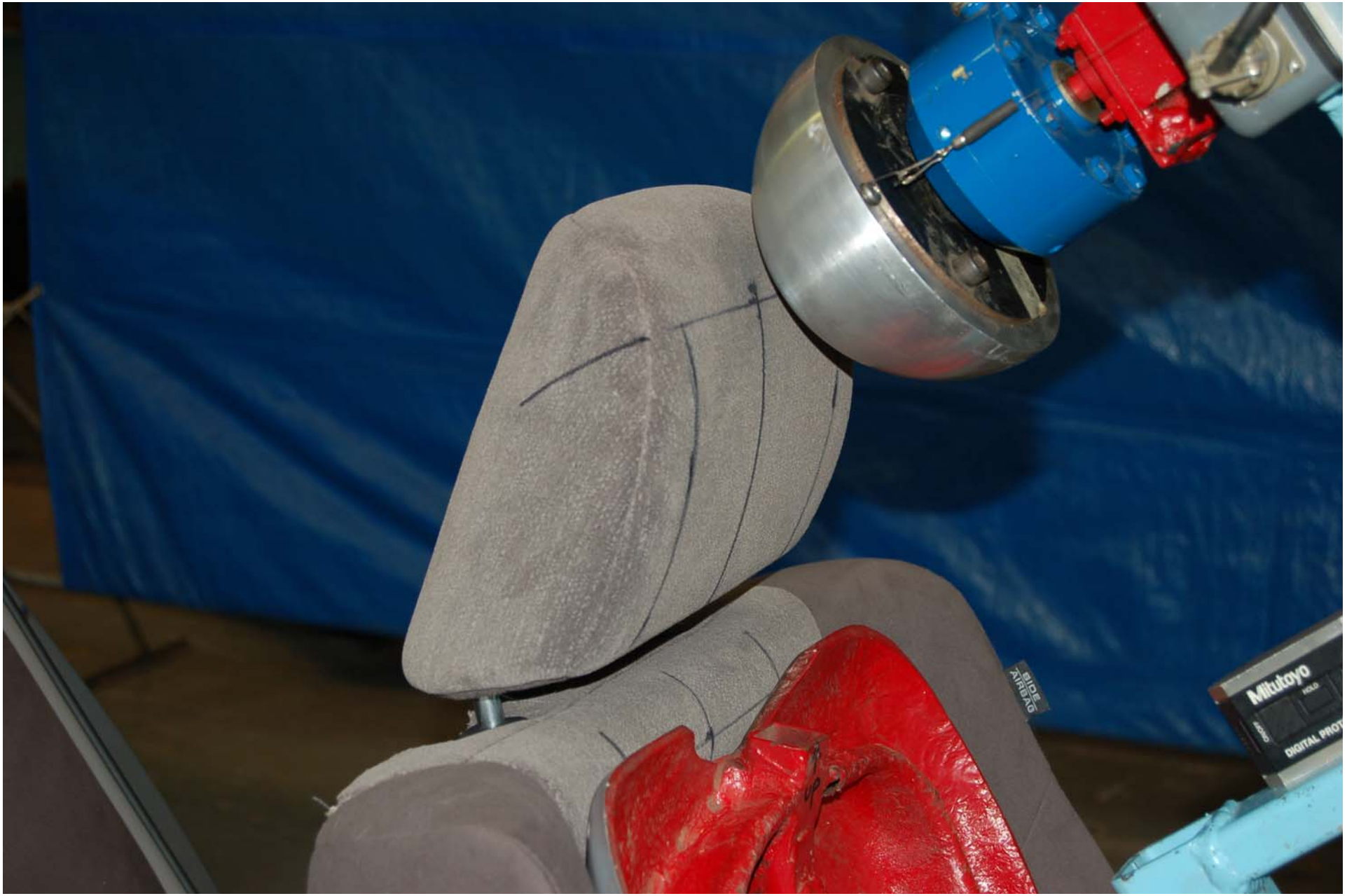

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FIGURE 5.35
HEAD RESTRAINT POST TEST 895 N LOAD

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FIGURE 5.36
PRE-TEST SET-UP FOR ENERGY ABSORPTION TEST

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NHTSA NO. C85306
FMVSS NO. 202a

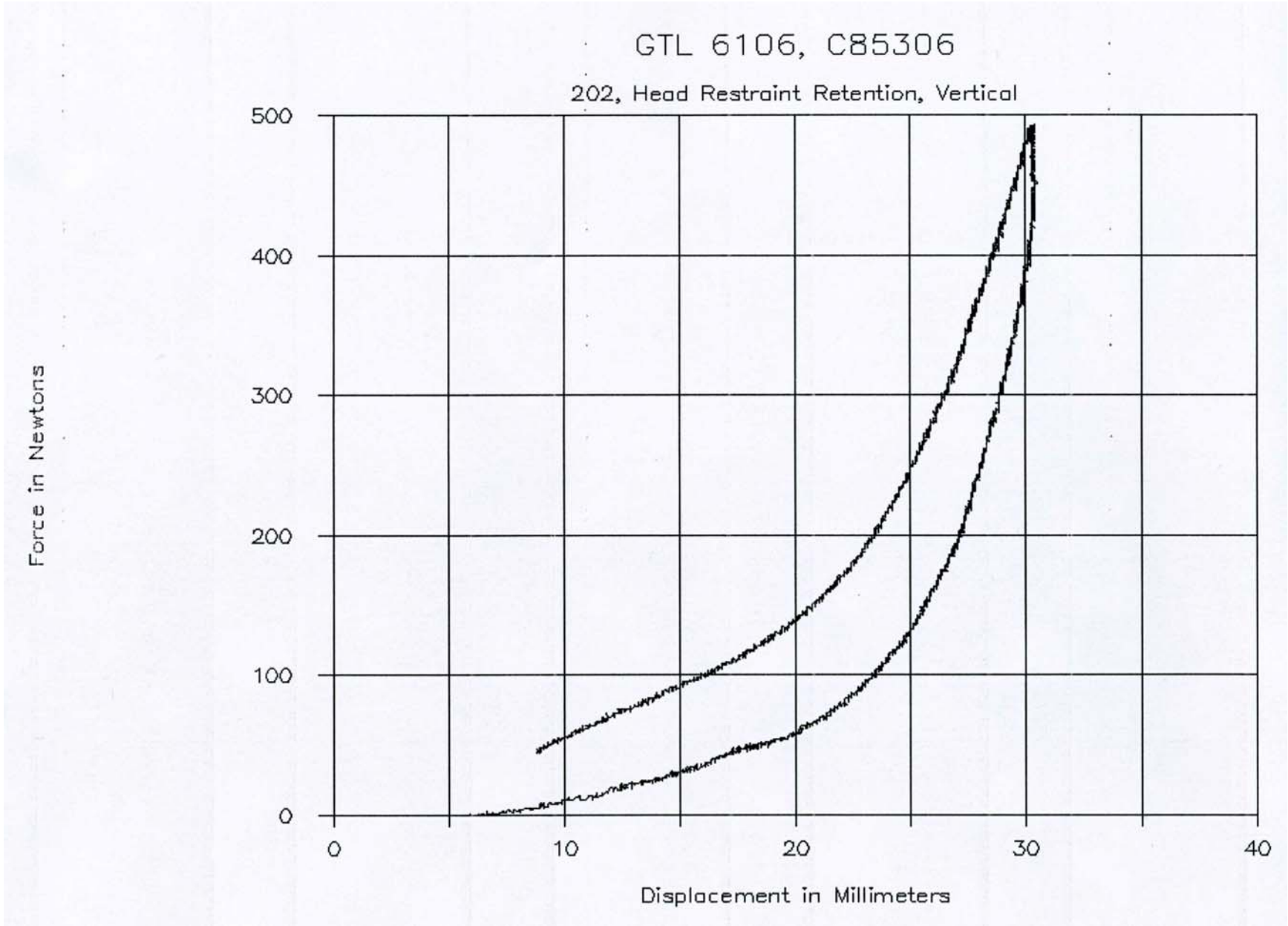
FIGURE 5.37
PRE-TEST SET-UP FOR ENERGY ABSORPTION TEST

2008 HONDA ACCORD
NHTSA NO. C85306
FMVSS NO. 202a

FIGURE 5.38
POST TEST ENERGY ABSORPTION TEST

SECTION 6
TEST PLOTS


GTL 6106, C85306
202, Head Restraint Retention, Vertical
Force in Newtons/ Disp. in MM/10
500
400
300
200
100
0
0
40
80
120
160
200
240
Time in Seconds

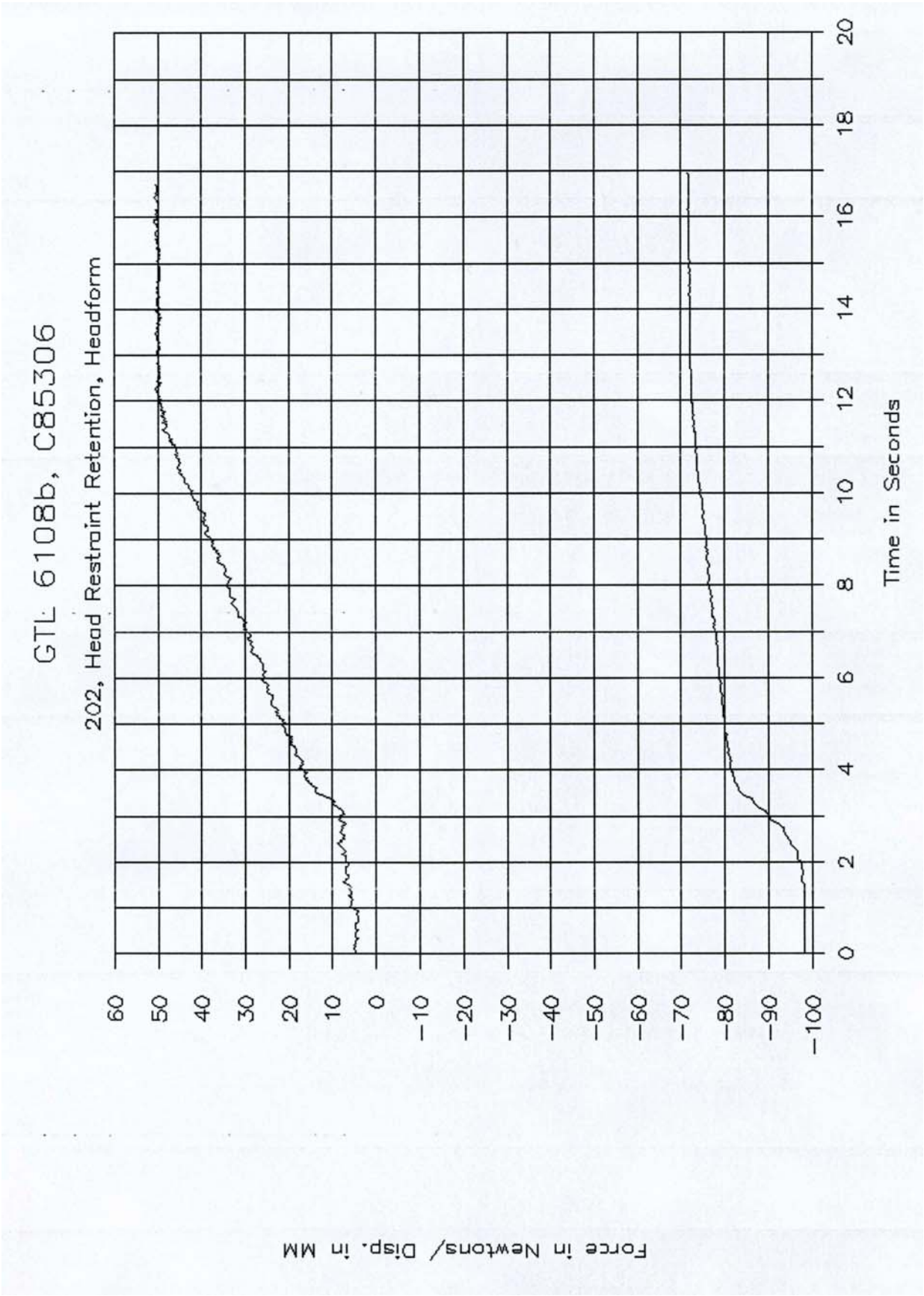

GTL 6106, C85306
202, Head Restraint Retention, Vertical
Force in Newtons
500
400
300
200
100
0
0
10
20
30
40
Displacement in Millimeters

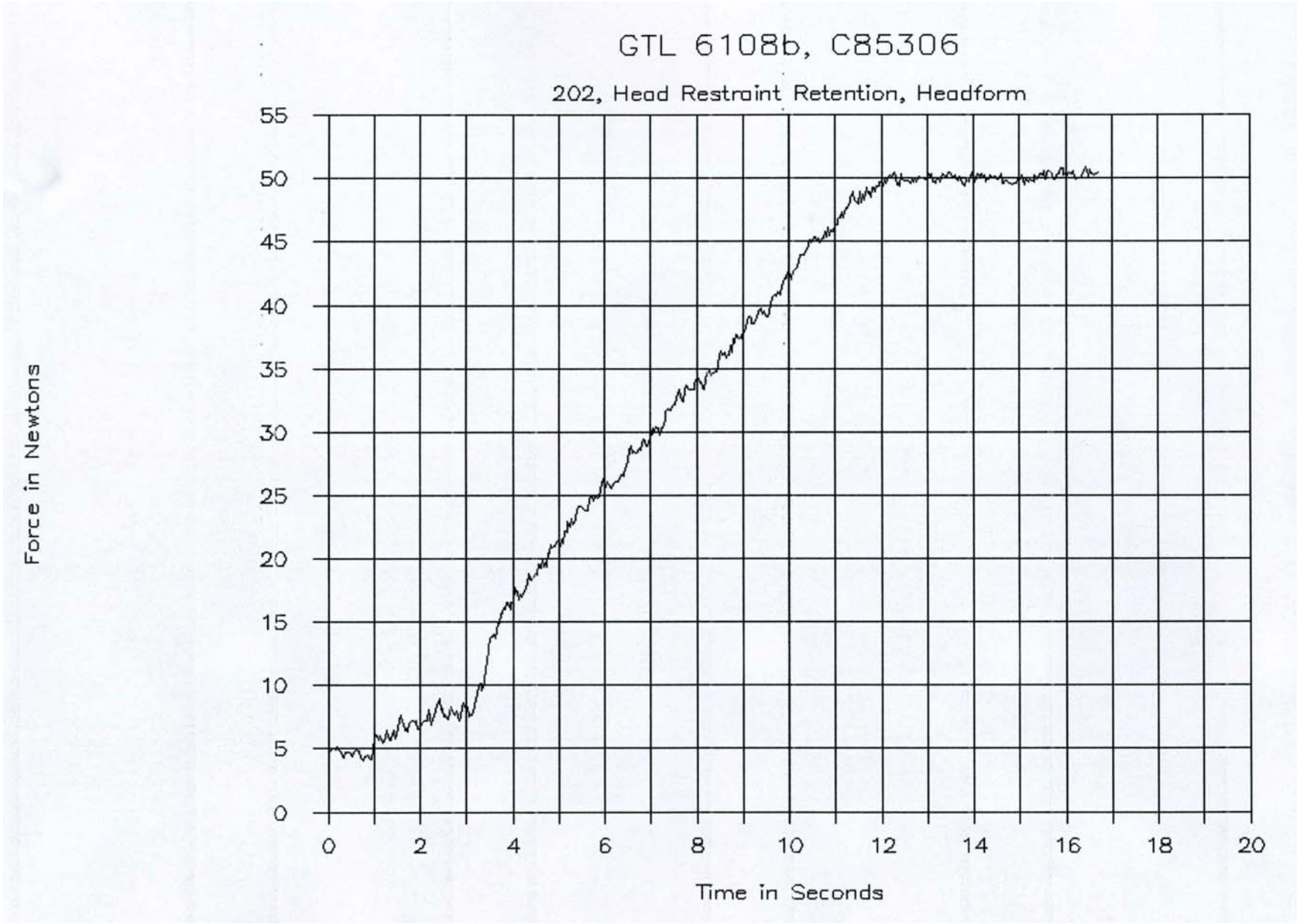

GTL 6107, C85306
202, Head Restraint Retention, Back Pan
Force in Newtons/ Disp. in MM/10
(Thousands)
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
20
40
60
80
100
120
140
Time in Seconds


GTL 6108; C85306
202, Head Restraint Retention, Headform
Force in Newtons/ Disp. in MM/10
(Thousands)
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
40
80
120
160
200
240
280
Time in Seconds

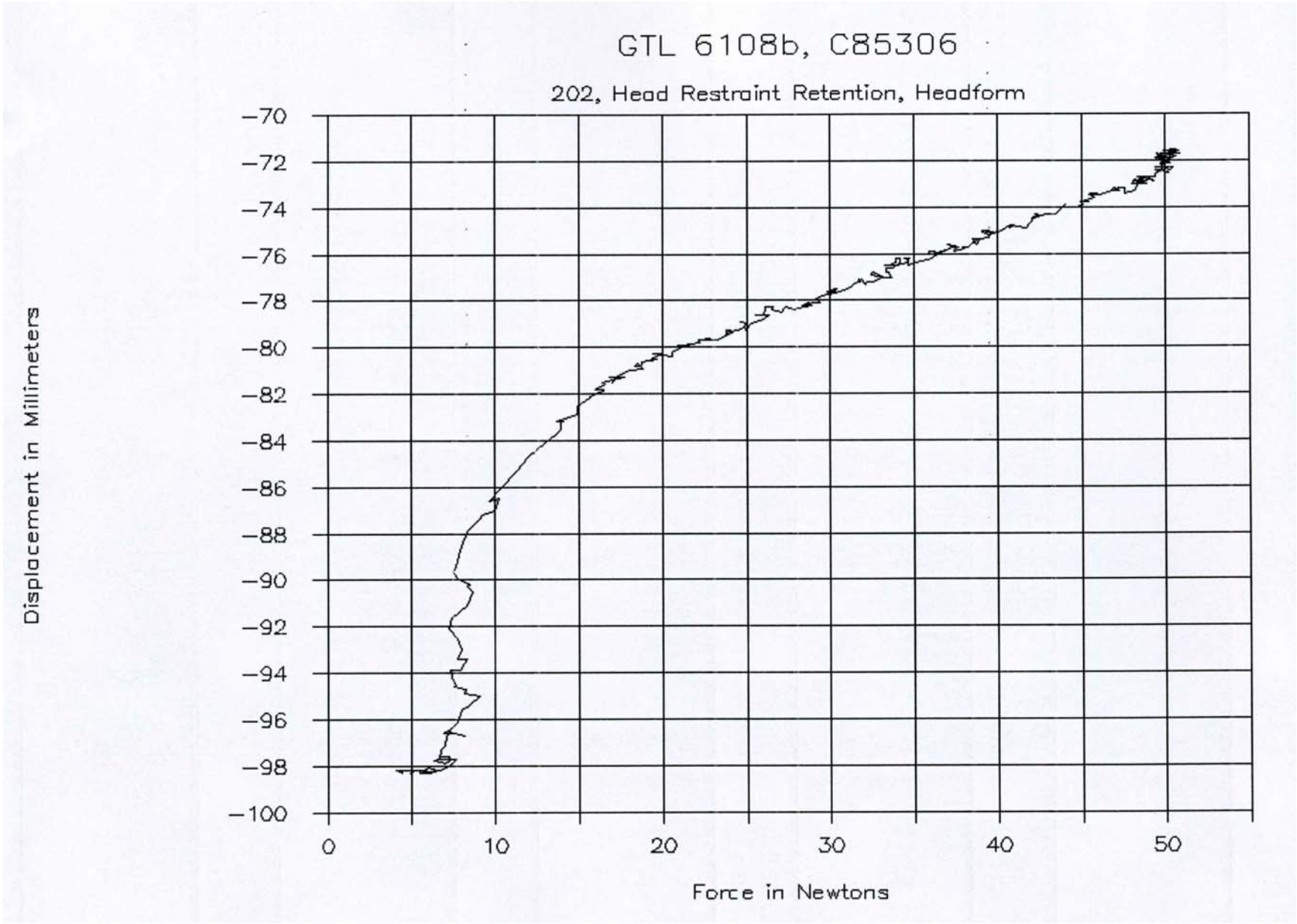

GTL 6108, C85306
202, Head Restraint Retention, Headform
Force in Newtons
600
500
400
300
200
100
0
0
40
80
120
160
200
240
280
Time in Seconds

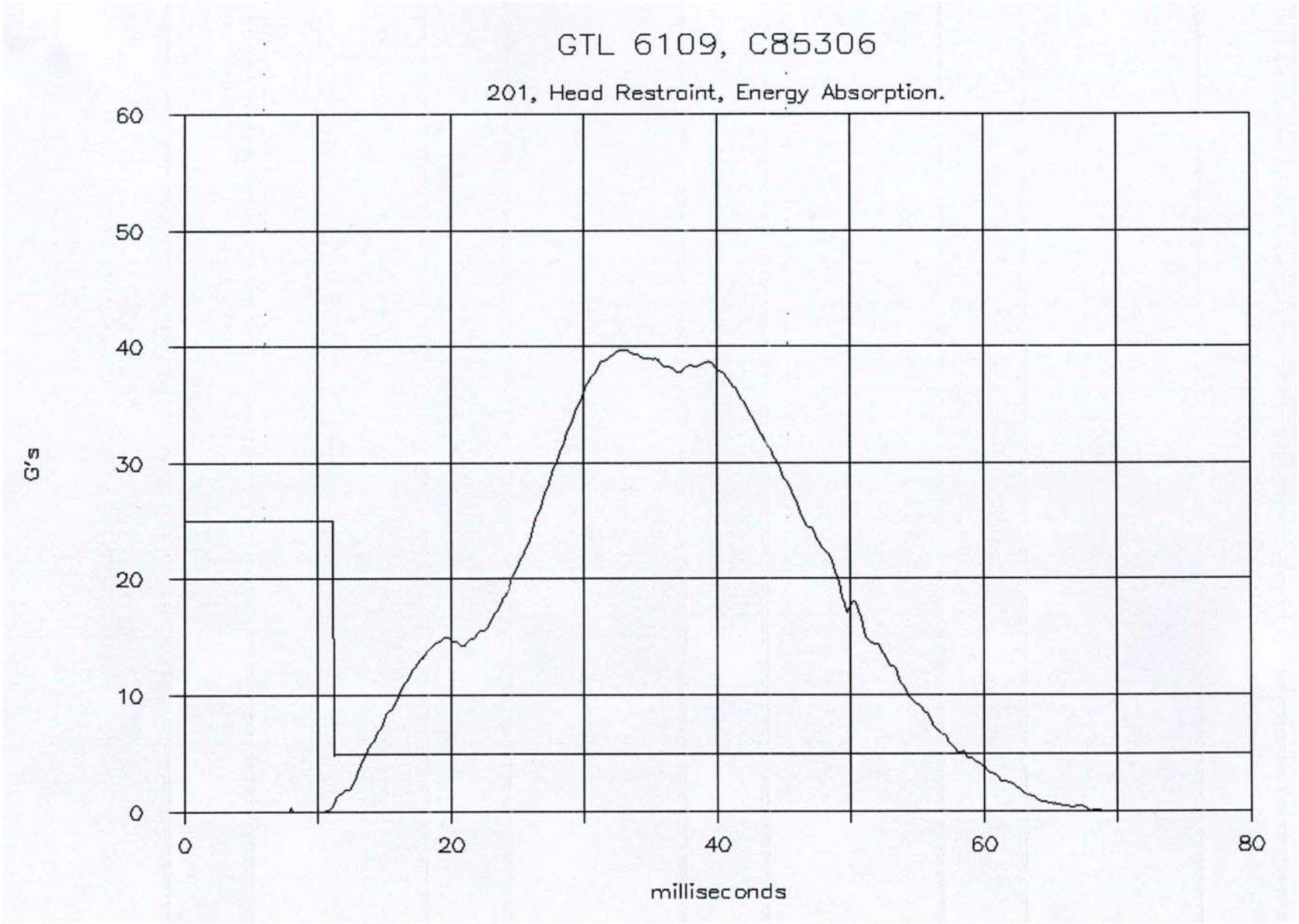

GTL 6108, C85306
202, Head Restraint Retention, Headform
Displacement in Millimeters
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
0
40
80
120
160
200
240
280
Time in Seconds

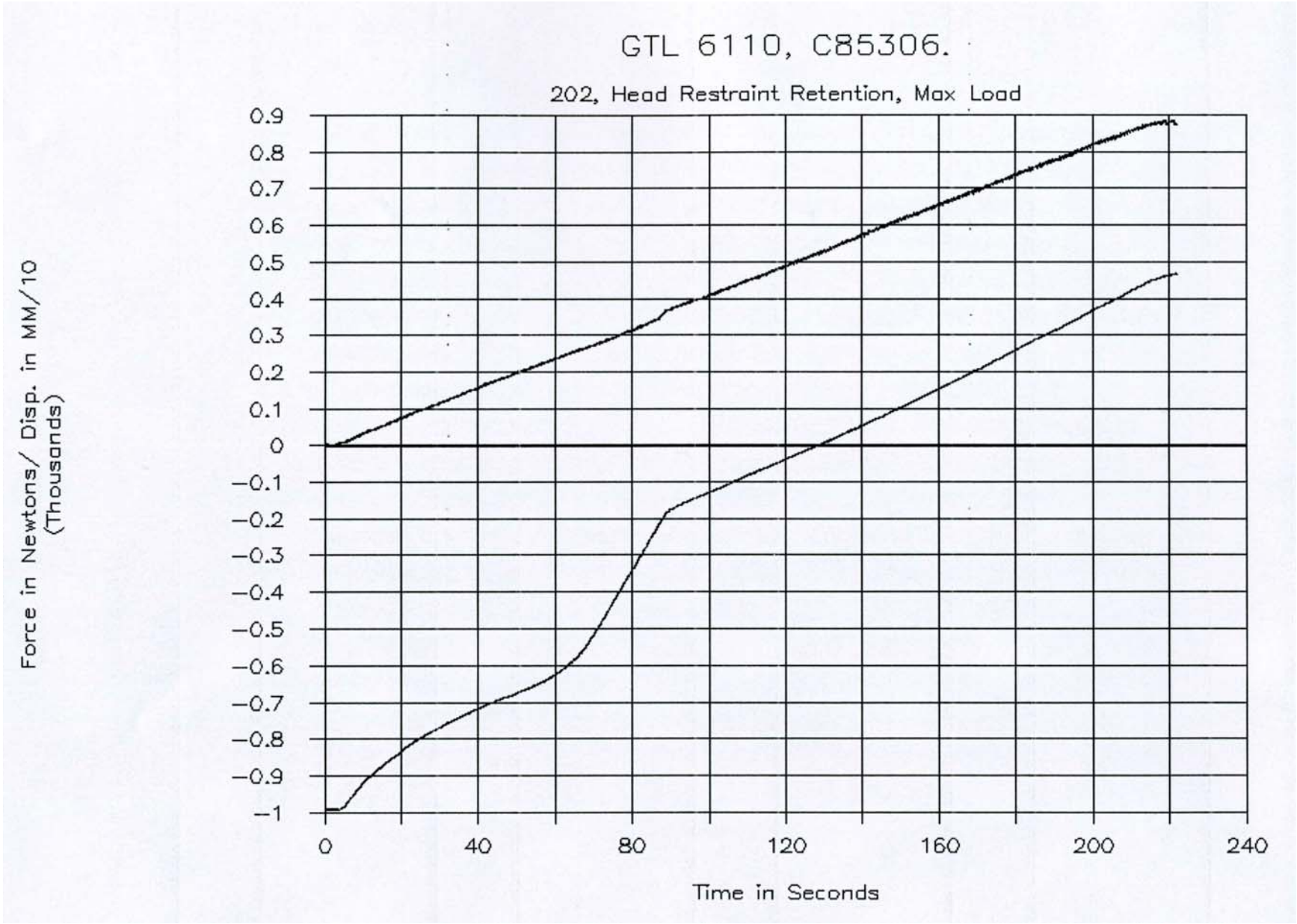

GTL 6108b, C85306
202, Head Restraint Retention, Headform
Force in Newtons/ Disp. in MM
Time in Seconds
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
2
4
6
8
10
12
14
16
18
20


GTL 6108b, C85306
202, Head Restraint Retention, Headform
Force in Newtons
55
50
45
40
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
18
20
Time in Seconds

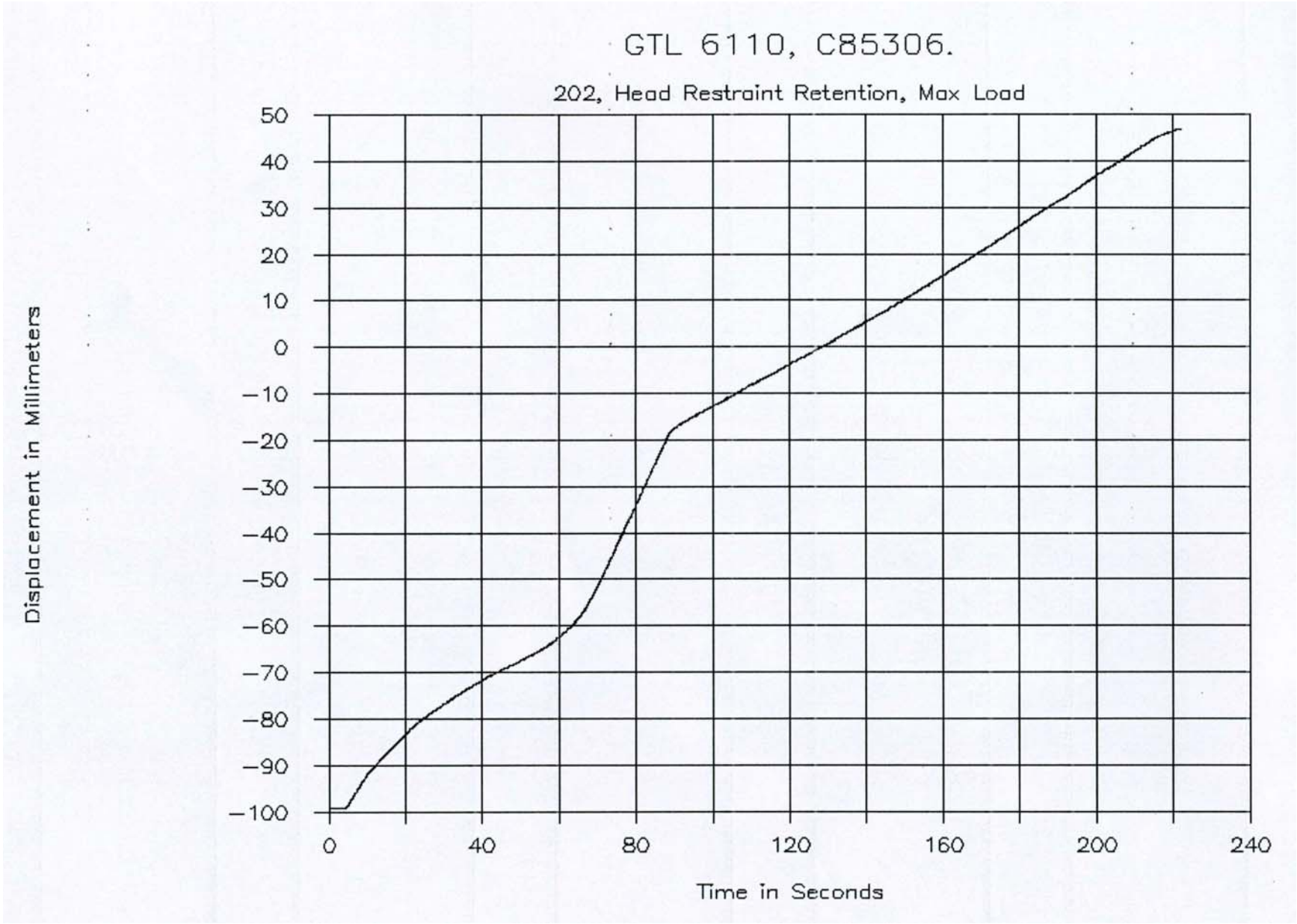

GTL 6108b, C85306
202, Head Restraint Retention, Headform
Displacement in Millimeters
−70
−72
−74
−76
−78
−80
−82
−84
−86
−88
−90
−92
−94
−96
−98
−100
0
2
4
6
8
10
12
14
16
18
20
Time in Seconds

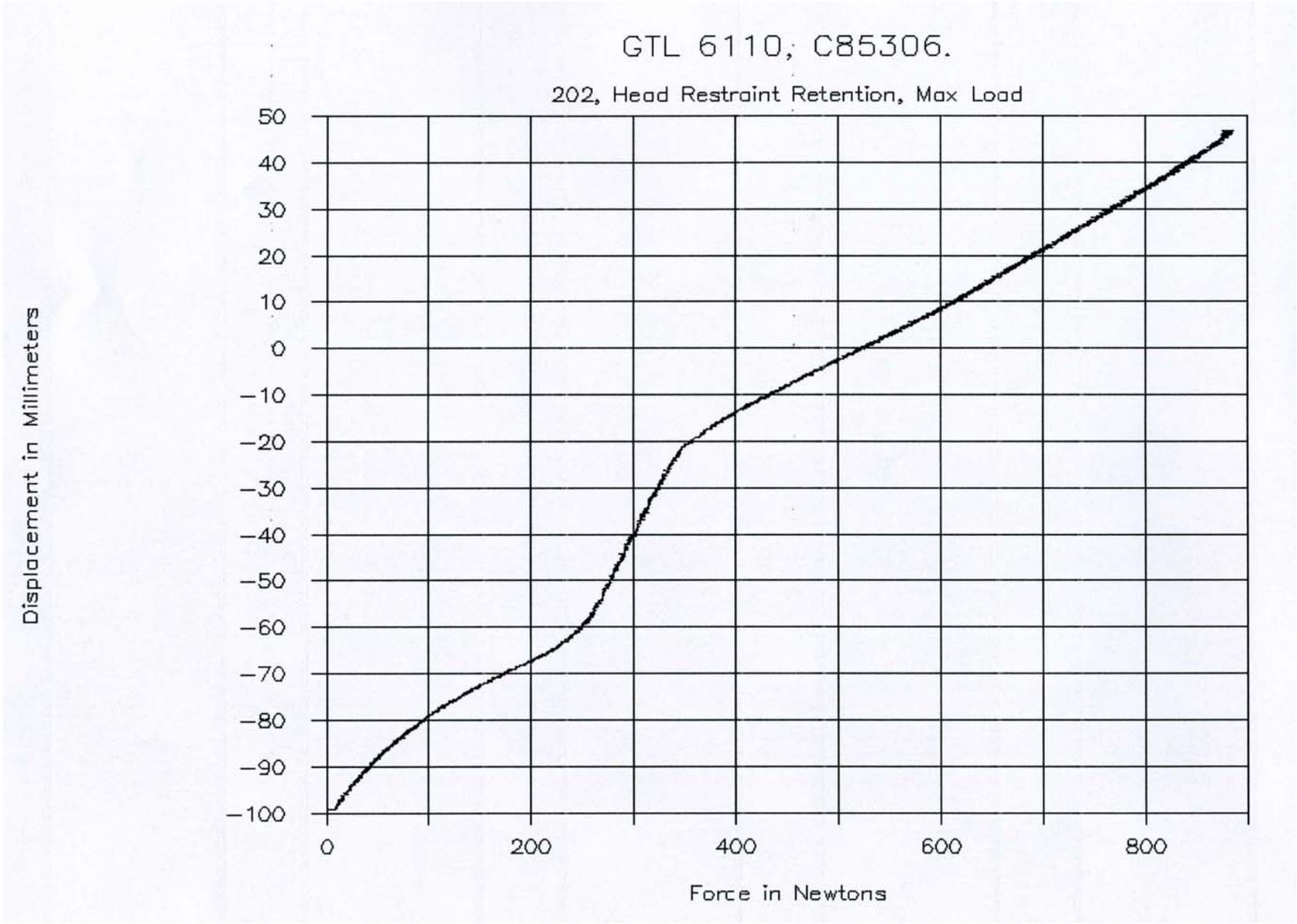

GTL 6108b, C85306
202, Head Restraint Retention, Headform
Displacement in Millimeters
−70
−72
−74
−76
−78
−80
−82
−84
−86
−88
−90
−92
−94
−96
−98
−100
0
10
20
30
40
50
Force in Newtons


GTL 6109, C85306
201, Head Restraint, Energy Absorption.
60
50
40
30
20
10
0
G's
0
20
40
60
80
milliseconds


GTL 6110, C85306.
202, Head Restraint Retention, Max Load
Force in Newtons/ Disp. in MM/10
(Thousands)
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
40
80
120
160
200
240
Time in Seconds


GTL 6110, C85306.
202, Head Restraint Retention, Max Load
Force in Newtons
900
800
700
600
500
400
300
200
100
0
0
40
80
120
160
200
240
Time in Seconds


GTL 6110, C85306.
202, Head Restraint Retention, Max Load
Displacement in Millimeters
50
40
30
20
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
0
40
80
120
160
200
240
Time in Seconds


GTL 6110; C85306.
202, Head Restraint Retention, Max Load
Displacement in Millimeters
50
40
30
20
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
0
200
400
600
800
Force in Newtons

SECTION 7
OWNER'S MANUAL INFORMATION

⚠WARNING

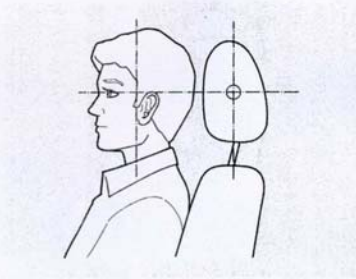
Reclining the seat-back too far can result in serious injury or death in a crash.

Adjust the seat-back to an upright position, and sit well back in the seat.

Reclining a seat-back so that the shoulder part of the belt no longer rests against the occupant's chest reduces the protective capability of the belt. It also increases the chance of sliding under the belt in a crash and being seriously injured. The farther a seat-back is reclined, the greater the risk of injury.

See page 93 for how to adjust the manual adjustable seat-back, and page 92 for the power adjustable seat-back.

4. Adjust the Head Restraints



Adjust the driver's head restraint so the center of the back of your head rests against the center of the restraint.

Have passengers adjust their head restraints properly as well. Taller persons should adjust their restraint as high as possible.

⚠WARNING

Improperly positioning head restraints reduces their effectiveness and you can be seriously injured in a crash.

Make sure head restraints are in place and positioned properly before driving.

Properly adjusted head restraints will help protect occupants from whiplash and other crash injuries.

See page 95 for how to adjust the head restraints and how the driver's and front passenger's active head restraints work.

Driver's Seat Manual Height Adjustment

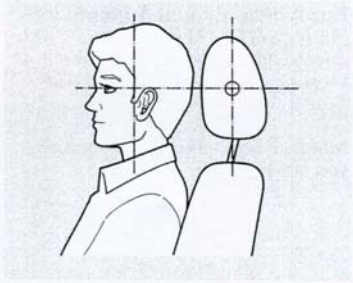
LX model

The height of your driver's seat is adjustable. To raise the seat, repeatedly pull up the lever on the outside of the seat cushion. To lower the seat, push the lever down repeatedly.

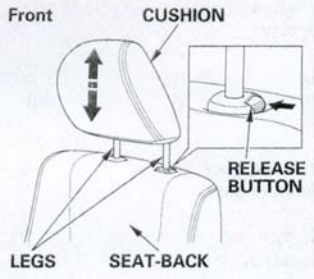
Head Restraints

See page 13 for important safety information and a warning about improperly positioning head restraints.

Your vehicle is equipped with head restraints in all seating positions to help protect you and your passengers from whiplash and other injuries.

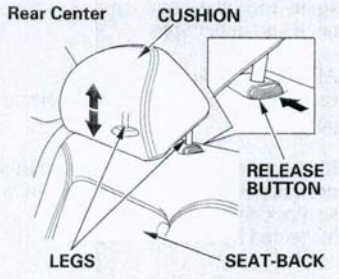


They are most effective when you adjust them so the center of the back of the occupant's head rests against the center of the restraint.



Adjusting the Head Restraint

The head restraints adjust for height. You need both hands to adjust a restraint. Do not attempt to adjust it while driving. To raise it, pull upward. To lower the restraint, push the release button sideways, and push the restraint down.



Removing the Head Restraint

To remove a head restraint for cleaning or repair, pull it up as far as it will go. Push the release button, then pull the restraint out of the seat-back.

⚠WARNING

Failure to reinstall the head restraints can result in severe injury during a crash.

Always replace the head restraints before driving.

When reinstalling a head restraint, put the legs back in place. Then adjust it to the appropriate height while pressing the release button.

Make sure the head restraint locks in position when you reinstall it.

CONTINUED