REPORT NUMBER 225-GTL-08-005

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 225 CHILD RESTRAINT ANCHORAGE SYSTEMS LOWER AND TETHER ANCHORAGES

BAYERISCHE MOTORENWERKE
2008 BMW 328i, PASSENGER CAR
NHTSA NO. C80509

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

SEPTEMBER 15, 2008

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2008 BMW 328i Passenger Car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 225 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 child restraint anchorage systems to ensure their proper location and strength for the effective securing of child restraints, to reduce the likelihood of the anchorage systems' failure and to increase the likelihood that child restraints are properly secured and thus more fully achieve their potential effectiveness in motor vehicles.

1.1 The test vehicle was a 2008 BMW 328i Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: WBAVC53588A246718

B. NHTSA No.: C80509

C. Manufacturer: BAYERISCHE MOTORENWERKE

D. Manufacture Date: 11/07

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 225 testing during the time period August 26-27, 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-225-01 dated 11 April 2005.

Based on the test performed, the 2008 BMW 328i Passenger Car appears to meet the requirements of FMVSS 225 testing.

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST DATA

The following data sheets document the results of testing on the 2008 BMW 328i Passenger Car.

DATA SHEET 1
SUMMARY OF RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

A. VISUAL INSPECTION OF TEST VEHICLE

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

RESULTS: OK FOR TEST

B. REQUIREMENTS FOR CHILD RESTRAINT SYSTEMS AND TETHER ANCHORAGES

	PASS	FAIL
DSP a	X	
DSP b	X	
DSP c	X	

C. LOCATION OF TETHER ANCHORAGES

	PASS	FAIL
DSP a	X	
DSP b	X	
DSP c	X	

D. LOWER ANCHORAGE DIMENSIONS

	PASS	FAIL
DSP a	X	
DSP b	N/A	N/A
DSP c	X	

DATA SHEET 1 CONTINUED
SUMMARY OF RESULTS

E. CONSPICUITY AND MARKING OF LOWER ANCHORAGES

	PASS	FAIL
DSP a	X	
DSP b	N/A	N/A
DSP c	X	

F. STRENGTH OF TETHER ANCHORAGES

	PASS	FAIL
DSP a	X	
DSP b	X	
DSP c	N/A	N/A

G. STRENGTH OF LOWER ANCHORAGES (Forward Force)

	PASS	FAIL
DSP a	N/A	N/A
DSP b	N/A	N/A
DSP c	X	

H. STRENGTH OF LOWER ANCHORAGE (Lateral Force)

	PASS	FAIL
DSP a	N/A	N/A
DSP b	N/A	N/A
DSP c	N/A	N/A

I. OWNER'S MANUAL PASS: X FAIL:

REMARKS:

NOTE:

RECORDED BY: G. Farrand DATE: 08/26/08
APPROVED BY: D. Messick

DATA SHEET 2
REQUIREMENTS FOR CHILD RESTRAINT ANCHORAGE SYSTEMS
AND TETHER ANCHORAGES

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

Number of rows of seats: 2
Number of rear, forward-facing designated seating positions: 3
Number of required CRAS (lower anchorages only, for convertibles/school buses): 2
Number of required tether anchorages (can be additional CRAS): 3
Is the vehicle a convertible? NO
Is the vehicle a school bus? NO

Does the vehicle have a CRAS (lower anchorage only, for convertibles/school buses) installed at a front passenger seating position? NO

If NO, skip to next question.
If YES, does the vehicle have rear designated seating positions? _____
If NO, does the vehicle have an air bag on-off switch or a special exemption for no passenger air bag?
If NO = FAIL If YES = PASS
If Yes, does the vehicle meet the requirements of S4.5.4.1 (b) of S208 and have and air bag on-off switch or a special exemption for no passenger air bag?____
Record the distance between the front and rear seat back:_____
If Distance <720 mm and vehicle has an air bag on-off switch or special exemption = PASS
If Distance ≥ 720 mm or no air bag on-off switch or no special exemption = FAIL

Does the vehicle have rear designated seating position(s) where the lower bars of a CRAS are prevented from being located because of transmission and/or suspension component interference?
NO
If NO, skip to next question.
If YES, does the vehicle have a tether anchorage at a front passenger seating position?
YES = PASS NO = FAIL (S5(e))

Number of provided CRAS (lower anchorage only, for convertibles/school buses), indicate if a built-in child restraint is counted as a CRAS: 2

Is the number of provided CRAS (lower anchorages only, for convertible/school buses) greater than or equal to the number of required CRAS (lower anchorages only, for convertibles/school buses)?
YES
YES = PASS NO = FAIL (S4.4(a) or (b) or (c))

DATA SHEET 2 CONTINUED

If the vehicle has 3 or more rows of seats is a CRAS (lower anchorage only for convertibles/school buses) provided in the second row: N/A

YES = PASS NO = FAIL (S4.4(a)(1))

Number of provided tether anchorages (can be additional CRAS) indicate if a built-in child restraint is counted as tether anchorage (NOTE: a built-in child restraint can only be counted toward either the required number of CRAS or tether anchorages, not both): 3

Is the number of provided tether anchorages greater than or equal to the number of required tether anchorages? YES

YES = PASS NO = FAIL (S4.4 (a) or (b) or (c))

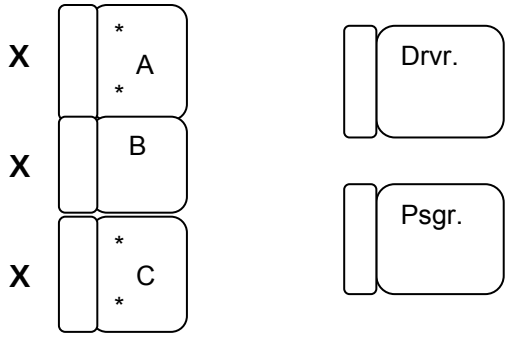
If the vehicle has 3 or more rear dsps and a non-outboard dsp, is a tether anchorage or CRAS provided at a non-outboard dsp? YES

YES = PASS NO = FAIL (S4.4 (a)(2))

Are all tether and lower anchorages available for use at all times when the seat is configured for passenger use? YES

YES = PASS NO = FAIL (S4.6 (b))

Provide a diagram showing the location of lower anchorages and/or tether anchorages.



X = Top Tether
***** = Lower Anchors

RECORDED BY: G. Farrand DATE: 08/26/08

APPROVED BY: D. Messick

DATA SHEET 3
LOCATION OF TETHER ANCHORAGES

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

DESIGNATED SEATING POSITION: ROW 2 LEFT, RIGHT AND CENTER POSITIONS

Detailed description of the location of the tether anchorage:
ON REAR HAT SHELF DIRECTLY BEHIND SEAT

Based on visual inspection, is the tether anchorage within the shaded zone? YES
If YES = PASS, skip to next section
If NO, After constructing the shaded zone, is the tether anchorage within the shaded zone?

If YES = PASS, skip to next section
If NO, Is it possible to locate a tether anchorage within the shaded zone without removing a seating component?
If YES = FAIL (S6.2.1)
If NO, Is a tether routing device provided?
If YES = PASS
IF NO = FAIL (S6.2.1.2)

Is the tether anchorage recessed? NO
If NO, skip to next question
If YES, is it outside of the tether strap wraparound area? _____
YES = PASS NO = FAIL (S6.2.1)

Does the tether anchorage permit attachment of a tether hook? YES
YES = PASS NO = FAIL (S6.1(a))

Is the tether anchorage accessible without the need for any tools other than a screwdriver or coin?
YES
YES = PASS NO = FAIL (S6.1(b))

After the tether anchorage is accessed, is it ready for use without the need for tools? YES
YES = PASS NO = FAIL (S6.1(c)

Is the tether anchorage sealed to prevent the entry of exhaust fumes into the passenger compartment? YES
YES = PASS NO = FAIL (S6.1(d))

If the DSP has a tether routing device, is it flexible or rigid? N/A

DATA SHEET 3 CONTINUED

DESIGNATED SEATING POSITION: ROW 2 LEFT, RIGHT AND CENTER POSITIONS

If the DSP has a flexible tether routing device, after installing SFAD2 record the tether strap tension:
N/A (Must be 60 N ± 5 N)

If the DSP has a flexible tether routing device, record the horizontal distance between the torso reference plane and the routing device: N/A
Greater than or equal to 65mm = PASS Less than 65mm = FAIL

If the DSP has a rigid tether routing device, record the horizontal distance between the torso reference plane and the routing device: N/A
Greater than or equal to 100mm = PASS Less than 100mm = FAIL

COMMENTS:

RECORDED BY: G. Farrand DATE: 08/26/08

APPROVED BY: D. Messick

DATA SHEET 4
LOWER ANCHORAGE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

DESIGNATED SEATING POSITION: ROW 2 LEFT SIDE (DSP A)

Outboard Lower Anchorage bar diameter: 6.02 mm
6mm ± 0.1 mm = PASS Other size = FAIL (S9.1.1(a))

Inboard Lower Anchorage bar diameter: 6.02 mm
6mm ± 0.1mm = PASS Other size = FAIL (S9.1.1(a))

Are the bars straight, horizontal and transverse? YES
YES = PASS NO = FAIL

Length of the straight portion of the bar (outboard lower anchorage): 28 mm
Length ≥25mm = PASS Length <25mm = FAIL(S9.1.1(c) (i))

Length of the straight portion of the bar (inboard lower anchorage): 28 mm
Length ≥25mm = PASS Length <25mm = FAIL(S9.1.1(c) (i))

Length between the anchor bar supports (outboard lower anchorage): 31 mm
Length ≤60mm = PASS Length >60mm = FAIL(S9.1.1(c) (ii))

Length between the anchor bar supports (inboard lower anchorage): 31 mm
Length ≤60mm = PASS Length >60mm = FAIL(S9.1.1(c) (ii))

CRF Pitch angle: 18.0°
Angle = 15º±10º = PASS Angle≠15º±10º = FAIL (S9.2.1)

CRF Roll angle: 0°
Angle = 0º±5º = PASS Angle≠0º±5º = FAIL (S9.2.1)

CRF Yaw angle: 0°
Angle = 0º±10º = PASS Angle≠0º±10º = FAIL (S9.2.1)

Distance between point Z on the CRF and the front surface of outboard anchor bar: 43 mm
Distance ≤70mm = PASS Distance > 70mm = FAIL

Distance between point Z on the CRF and the front surface of inboard anchor bar: 54 mm
Distance ≤70mm = PASS Distance > 70mm = FAIL

DATA SHEET 4 CONTINUED

DESIGNATED SEATING POSITION: ROW 2 LEFT SIDE (DSP A)

Distance between SgRP and the front surface of outboard anchor bar: 147 mm
Distance ≥ 120mm = PASS Distance < 120mm = FAIL

Distance between SgRP and the front surface of inboard anchor bar: 145 mm
Distance ≥ 120mm = PASS Distance < 120mm = FAIL

Based on visual observation, would a 100 N load cause the anchor bar to deform more than 5 mm?
NO

If NO = PASS
If YES = FAIL (S9.1.1(g)), Provide further description of the attachment of the anchor bar:

COMMENTS:

RECORDED BY: G. Farrand DATE: 08/26/08

APPROVED BY: D. Messick

DATA SHEET 4A
LOWER ANCHORAGE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

DESIGNATED SEATING POSITION: ROW 2 RIGHT SIDE (DSP C)

Outboard Lower Anchorage bar diameter: 6.02 mm
6mm ± 0.1 mm = PASS Other size = FAIL (S9.1.1(a))

Inboard Lower Anchorage bar diameter: 6.02 mm
6mm ± 0.1mm = PASS Other size = FAIL (S9.1.1(a))

Are the bars straight, horizontal and transverse? YES
YES = PASS NO = FAIL

Length of the straight portion of the bar (outboard lower anchorage): 28 mm
Length ≥25mm = PASS Length <25mm = FAIL(S9.1.1(c) (i))

Length of the straight portion of the bar (inboard lower anchorage): 28 mm
Length ≥25mm = PASS Length <25mm = FAIL(S9.1.1(c) (i))

Length between the anchor bar supports (outboard lower anchorage): 31 mm
Length ≤60mm = PASS Length >60mm = FAIL(S9.1.1(c) (ii))

Length between the anchor bar supports (inboard lower anchorage): 31 mm
Length ≤60mm = PASS Length >60mm = FAIL(S9.1.1(c) (ii))

CRF Pitch angle: 17.8°
Angle = 15º±10º = PASS Angle≠15º±10º = FAIL (S9.2.1)

CRF Roll angle: 0°
Angle = 0º±5º = PASS Angle≠0º±5º = FAIL (S9.2.1)

CRF Yaw angle: 0°
Angle = 0º±10º = PASS Angle≠0º±10º = FAIL (S9.2.1)

Distance between point Z on the CRF and the front surface of outboard anchor bar: 45 mm
Distance ≤70mm = PASS Distance > 70mm = FAIL

Distance between point Z on the CRF and the front surface of inboard anchor bar: 54 mm
Distance ≤70mm = PASS Distance > 70mm = FAIL

DATA SHEET 4A CONTINUED

DESIGNATED SEATING POSITION: ROW 2 RIGHT SIDE (DSP C)

Distance between SgRP and the front surface of outboard anchor bar: 142 mm
Distance ≥ 120mm = PASS Distance < 120mm = FAIL

Distance between SgRP and the front surface of inboard anchor bar: 147 mm
Distance ≥ 120mm = PASS Distance < 120mm = FAIL

Based on visual observation, would a 100 N load cause the anchor bar to deform more than 5 mm?
NO

If NO = PASS
If YES = FAIL (S9.1.1(g)), Provide further description of the attachment of the anchor bar:

COMMENTS:

RECORDED BY: G. Farrand DATE: 08/26/08

APPROVED BY: D. Messick

DATA SHEET 5
CONSPICUITY AND MARKING OF LOWER ANCHORAGES

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07 ; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

DESIGNATED SEATING POSITION: ROW 2 LEFT AND RIGHT SIDE (DSP A & C)

MARKING (Circles)

Diameter of the circle: 15.0 mm
Diameter ≥13mm = PASS Diameter <13mm = FAIL (S9.5(a)(1))

Does the circle have words, symbols or pictograms? PICTOGRAM
NO skip to next question
YES, are the meaning of the words, symbols or pictograms explained in the owner's manual?
YES
YES = PASS NO = FAIL (S9.5(a)(2))

Where is the circle located? Seat back or seat Cushion: Seat Back

For circles on seat backs, vertical distance from the center of the circle to the center of the anchor bar: 80 mm
Distance between 50&100mm = PASS Other Distance=FAIL (S9.5(a)(3))

For circles on seat cushions, horizontal distance from the center of the circle to the center of the bar:
N/A
Distance between 75&125mm= PASS Other Distance=FAIL (S9.5(a)(3))

Lateral distance from the center of the circle to the center of the anchor bar: 10 mm
Distance≤25mm = PASS Distance >25mm = FAIL (S9.5(a)(3))

CONSPICUITY (No Circles)

Is the anchor bar or guide visible when viewed from a point 30º above the horizontal in a vertical longitudinal plane bisecting the anchor bar or guide? N/A
YES = PASS NO = FAIL (S9.5(b))

If there is a guide, is it permanently attached? N/A
YES = PASS NO = FAIL (S9.5(b))

DATA SHEET 5 CONTINUED

DESIGNATED SEATING POSITION: ROW 2 LEFT SIDE AND RIGHT SIDE (DSP A & C)

Is there a cap or cover over the anchor bar? N/A

If YES, Is the cap or cover marked with words, symbols or pictograms? _____

If NO = FAIL (S9.5(b))

If YES, is the meaning of the words, symbols or pictograms explained in the owner's manual?

YES = PASS NO = FAIL (S9.5(b))

If NO, there are no requirements for having a cover.

RECORDED BY: G. Farrand DATE: 08/26/08

APPROVED BY: D. Messick

DATA SHEET 6
STRENGTH OF TETHER ANCHORAGES

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 27, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE
TEST NO: 6058

DESIGNATED SEATING POSITION: ROW 2 LEFT SIDE (DSP A)

SFAD: 2

Seat Back Angle: 26º

Location of seat back angle measurement: 2D Template

Head Restraint Position: UP

D-ring Position: N/A

Force at Point X (lower front crossmember for SFAD2) while securing belts and tether: 140 N

Lap belt tension: N/A (SFAD 1 only)

Tether strap tension: 55 N

Angle (measured above the horizontal at 500 N): 10º

Separation of tether anchorage at 500 N: NO
NO = PASS YES = FAIL (S6.3.1)

Force application rate: 577 N/S

Time to reach maximum force (24-30 s): 26 sec.

Maximum force (14,950 N ± 50 N): 14,968 N

Tested simultaneously with another DSP? NO

COMMENTS:

RECORDED BY: G. FARRAND DATE: 08/27/08

APPROVED BY: D. MESSICK

DATA SHEET 6A
STRENGTH OF TETHER ANCHORAGES

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 27, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE
TEST NO: 6060

DESIGNATED SEATING POSITION: ROW 2 CENTER (DSP B)

SFAD: 1

Seat Back Angle: 24º

Location of seat back angle measurement: 2D Template

Head Restraint Position: UP

D-ring Position: N/A

Force at Point X (lower front crossmember for SFAD2) while securing belts and tether: N/A

Lap belt tension: 55 N (SFAD 1 only)

Tether strap tension: 55 N

Angle (measured above the horizontal at 500 N): 10º

Separation of tether anchorage at 500 N: NO
NO = PASS YES = FAIL (S6.3.1)

Force application rate: 577 N/S

Time to reach maximum force (24-30 s): 26 sec.

Maximum force (14,950 N ± 50 N): 14,950 N

Tested simultaneously with another DSP? NO

COMMENTS:

RECORDED BY: G. FARRAND DATE: 08/27/08

APPROVED BY: D. MESSICK

DATA SHEET 7
STRENGTH OF LOWER ANCHORAGES (Forward Force)

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07 ; TEST DATE: AUGUST 27, 2008
TEST LABORATORY:GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE
TEST NO: 6059

DESIGNATED SEATING POSITION: ROW 2 RIGHT SIDE (DSP C)

Seat Back Angle: 26º

Location of seat back angle measurement: 2D Template

Head Restraint Position: N/A

Force at lower front crossmember for SFAD2 while tightening rearward extensions: 135 N

Angle (measured above the horizontal at 500 N): 10º

Force application rate: 423 N/S

Time to reach maximum force (24-30 s): 26 sec.

Maximum force (14,950 N ± 50 N): 10,973 N

Displacement, H1 (at 500N): 0

Displacement, H2 (at maximum load): 37.6 mm

Displacement of Point X: 37.6 mm (H2-H1)
Displacement > 175 mm = FAIL (S9.4.1(a))

Tested simultaneously with another DSP? NO

Distance between adjacent DSP's: 320 mm

COMMENTS:

RECORDED BY: G. FARRAND DATE: 08/27/08

APPROVED BY: D. MESSICK

DATA SHEET 8
OWNER'S MANUAL

VEH. MOD YR/MAKE/MODEL/BODY: 2008 BMW 328i Passenger Car
VEH. NHTSA NO: C80509; VIN: WBAVC53588A246718
VEH. BUILD DATE: 11/07; TEST DATE: AUGUST 26, 2008
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

Description of which DSP's are equipped with tether anchorages and child restraint anchorage systems: YES

PASS X FAIL

Step-by-step instructions for properly attaching a child restraint system's tether strap to the tether anchorage. Diagrams are required. YES

PASS X FAIL

Description of how to properly use the tether anchorage and lower anchor bars: YES

PASS X FAIL

If the lower anchor bars are marked with a circle, an explanation of what the circle indicates as well as any words or pictograms: YES

PASS X FAIL

COMMENTS:

RECORDED BY: G. Farrand DATE: 08/26/08

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
COMPUTER	AT&T	486DX266	BEFORE USE	BEFORE USE
LOAD CELL	INTERFACE	215709	01/08	01/09
LINEAR TRANSDUCER	SERVO SYSTEMS	20	BEFORE USE	BEFORE USE
SEAT BELT LOAD CELL	TRANSDUCER	135	BEFORE USE	BEFORE USE
SEAT BELT LOAD CELL	TRANSDUCER	137	BEFORE USE	BEFORE USE
LEVEL	STANLEY	42-449	BEFORE USE	BEFORE USE
FORCE GAUGE	CHATILLON	8761	BEFORE USE	BEFORE USE
CALIPER	N/A	Q9322365	BEFORE USE	BEFORE USE
CRF	MEASUREMENT FIXTURE	GTL CRF	BEFORE USE	BEFORE USE
SFAD 1	FORCE APPLICATION DEVICE	GTL SFAD 1	BEFORE USE	BEFORE USE
SFAD 2	FORCE APPLICATION DEVICE	GLT SFAD 2	BEFORE USE	BEFORE USE

SECTION 5

PHOTOGRAPHS

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

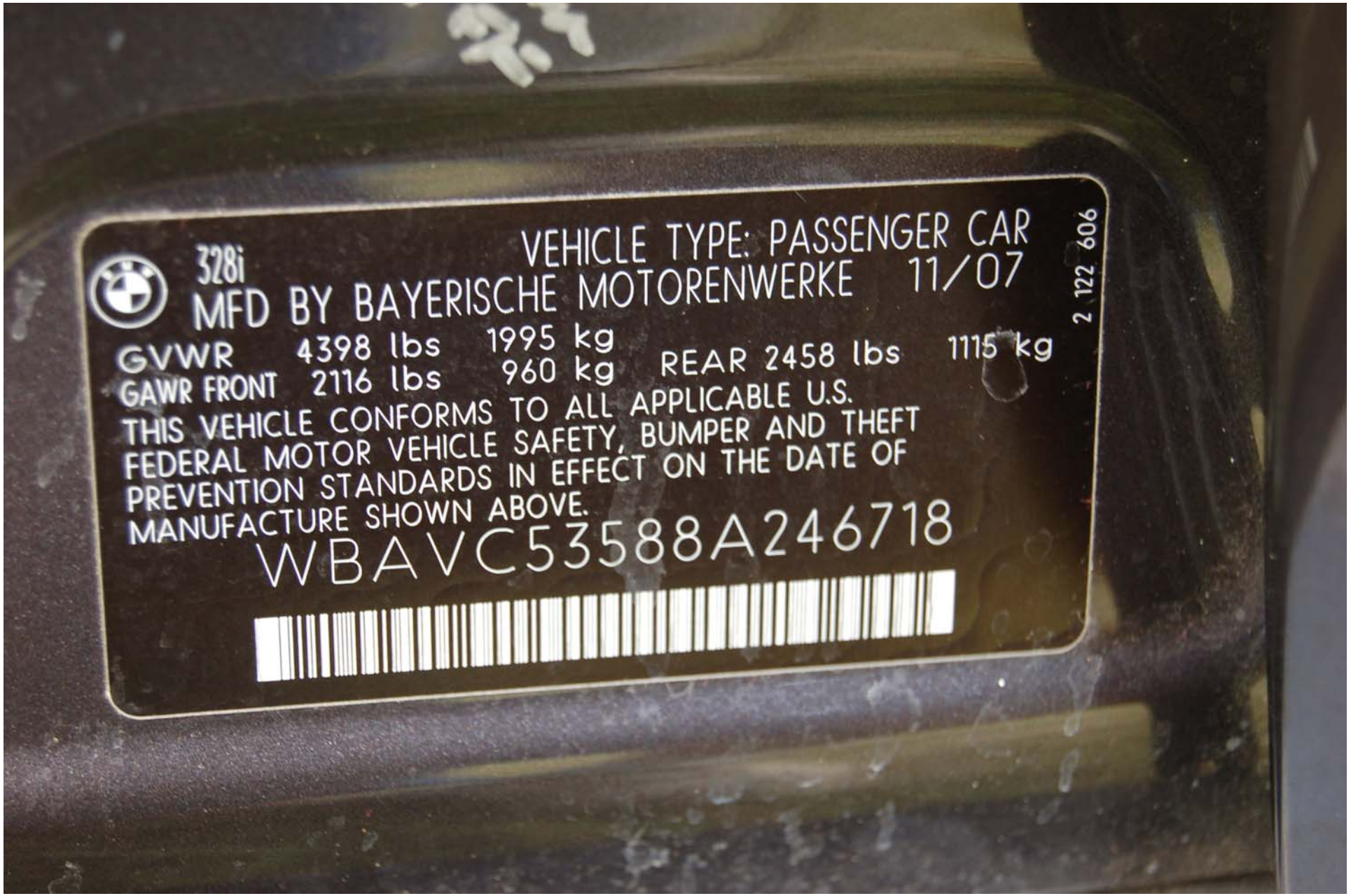
FIGURE 5.2
RIGHT SIDE VIEW OF VEHICLE

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.3
3/4 FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.4
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE



2008 BMW 328i
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FMVSS NO. 225

FIGURE 5.5
VEHICLE CERTIFICATION LABEL

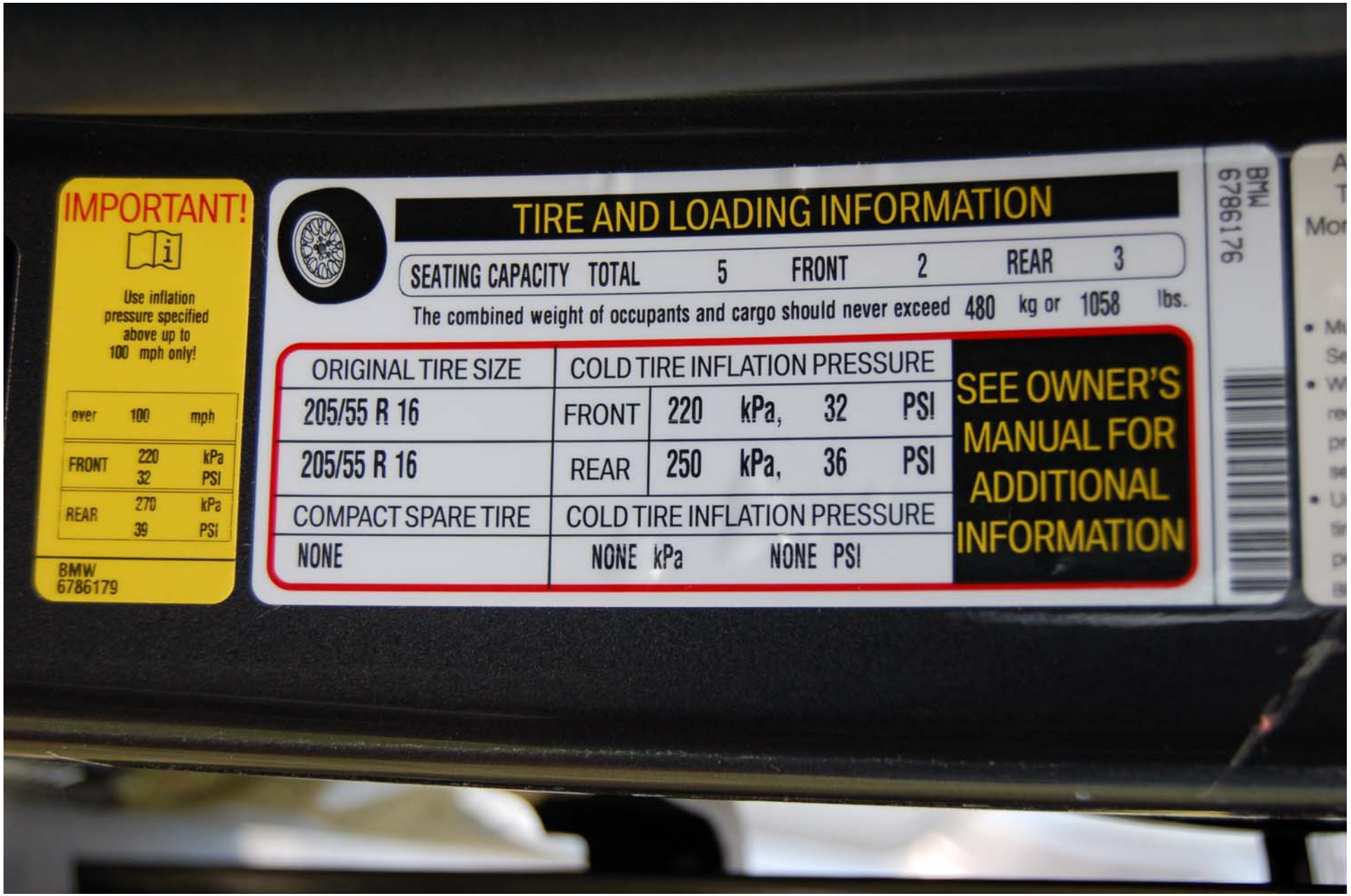

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FIGURE 5.6
VEHICLE TIRE INFORMATION LABEL

2008 BMW 328i
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FIGURE 5.7
ROW 2, LEFT SIDE, OUTBOARD LOWER ANCHOR,
PRE-TEST

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FIGURE 5.8
ROW 2, LEFT SIDE, INBOARD LOWER ANCHOR,
PRE-TEST

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FIGURE 5.9
ROW 2, LEFT SIDE, TOP TETHER ANCHOR, PRE-TEST

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FIGURE 5.10
ROW 2, CENTER, TOP TETHER ANCHOR, PRE-TEST

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FIGURE 5.11
ROW 2, RIGHT SIDE, INBOARD LOWER ANCHOR,
PRE-TEST

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FIGURE 5.12
ROW 2, RIGHT SIDE, INBOARD LOWER ANCHOR,
PRE-TEST

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FIGURE 5.13
ROW 2, RIGHT SIDE, TOP TETHER ANCHOR, PRE-TEST

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FIGURE 5.14
OVERALL VIEW OF ROW 2 SEATING POSITIONS
PRE-TEST

2008 BMW 328i
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FIGURE 5.15
ROW 2, LEFT SIDE WITH CRF

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FMVSS NO. 225

FIGURE 5.16
ROW 2, LEFT SIDE WITH 2-D TEMPLATE

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.17
ROW 2, LEFT SIDE WITH TOP TETHER ROUTING

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.18
ROW 2, RIGHT SIDE WITH CRF

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.19
ROW 2, RIGHT SIDE WITH 2-D TEMPLATE

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.20
ROW 2, RIGHT SIDE TOP TETHER ROUTING

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NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.21
ROW 2, CENTER WITH 2-D TEMPLATE

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.22
ROW 2, CENTER TOP TETHER ROUTING

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.23
ROW 2, RIGHT SIDE INBOARD CRF MEASUREMENT

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FMVSS NO. 225

FIGURE 5.24
ROW 2, RIGHT SIDE OUTBOARD CRF MEASUREMENT

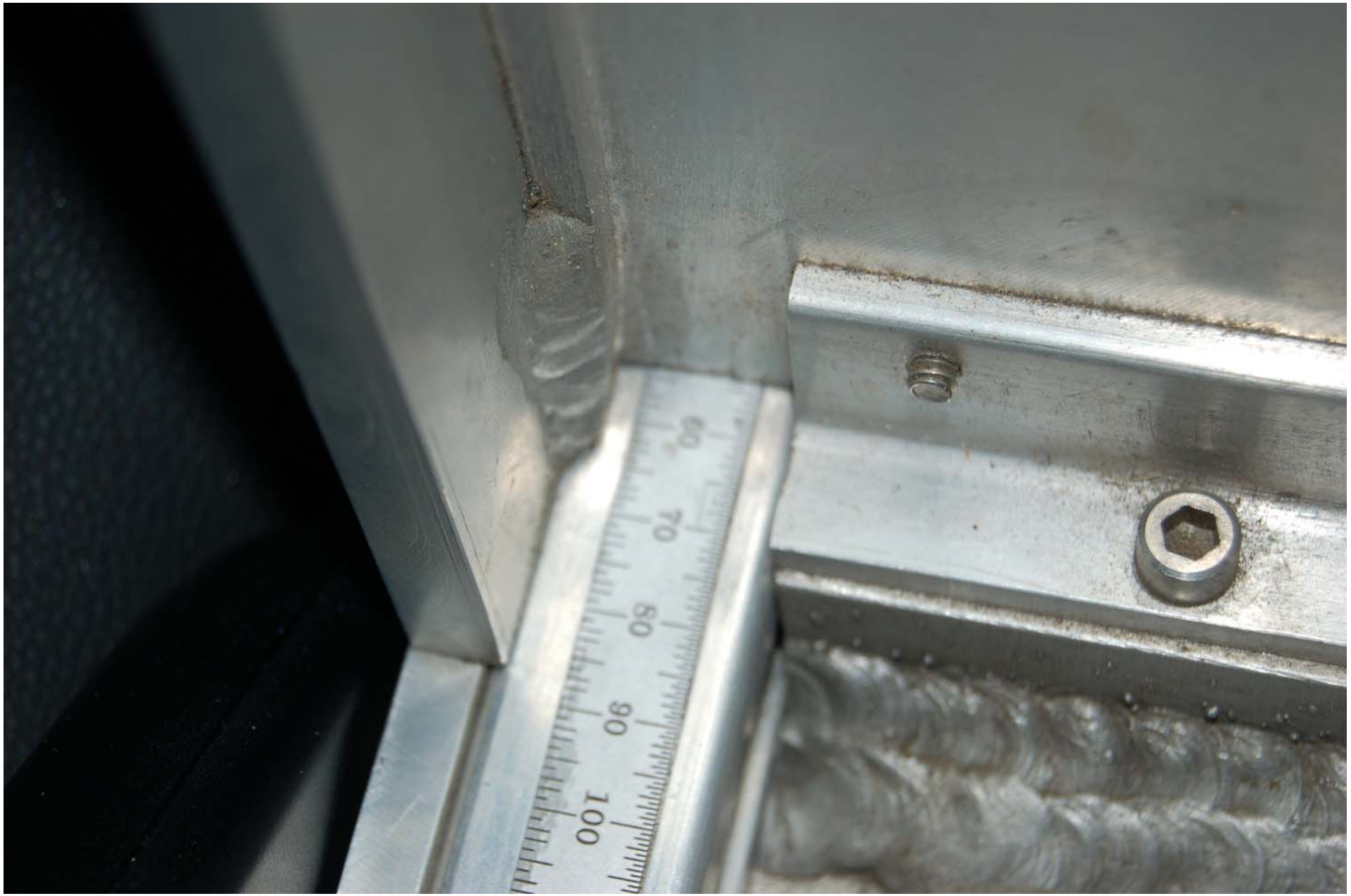

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FIGURE 5.25
ROW 2, LEFT SIDE INBOARD CRF MEASUREMENT

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FIGURE 5.26
ROW 2, LEFT SIDE OUTBOARD CRF MEASUREMENT

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FMVSS NO. 225

FIGURE 5.27
MEASUREMENT OF SYMBOL

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FIGURE 5.28
ROW 2, LEFT SIDE PITCH MEASUREMENT

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FIGURE 5.29
ROW 2, RIGHT SIDE PITCH MEASUREMENT

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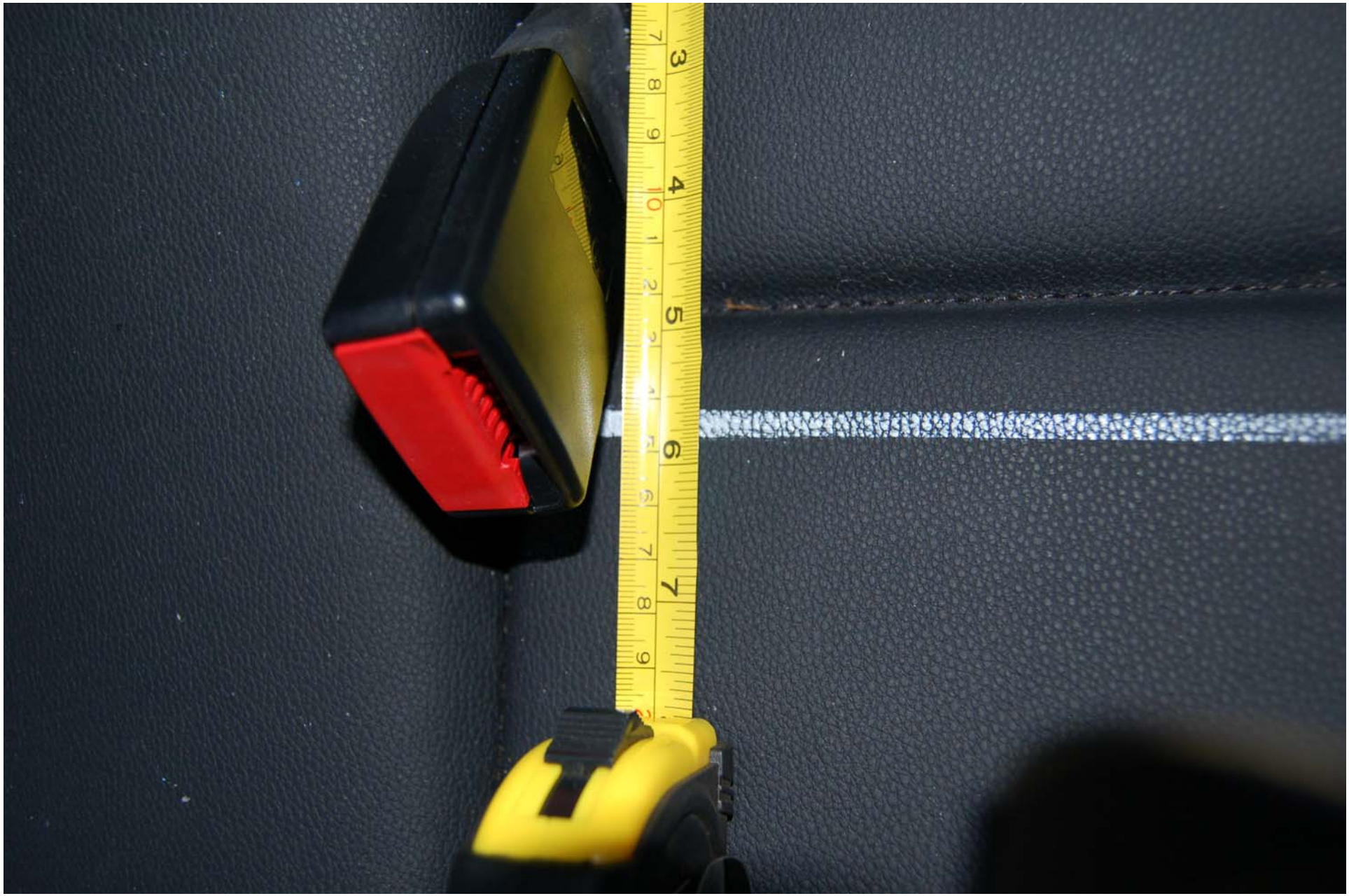
FMVSS NO. 225

FIGURE 5.30
ROW 2, LEFT SIDE, OUTBOARD SRP MEASUREMENT



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FMVSS NO. 225

FIGURE 5.31
ROW 2, LEFT SIDE INBOARD SRP MEASUREMENT

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FMVSS NO. 225

FIGURE 5.32
ROW 2, RIGHT SIDE, INBOARD SRP MEASUREMENT

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.33
ROW 2, RIGHT SIDE OUTBOARD SRP MEASUREMENT

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.34
¾ LEFT FRONT VIEW OF VEHICLE IN TEST RIG

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.35
¾ RIGHT FRONT VIEW OF VEHICLE IN TEST RIG

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.36
PRE-TEST ROW 2, LEFT SIDE WITH SFAD 2

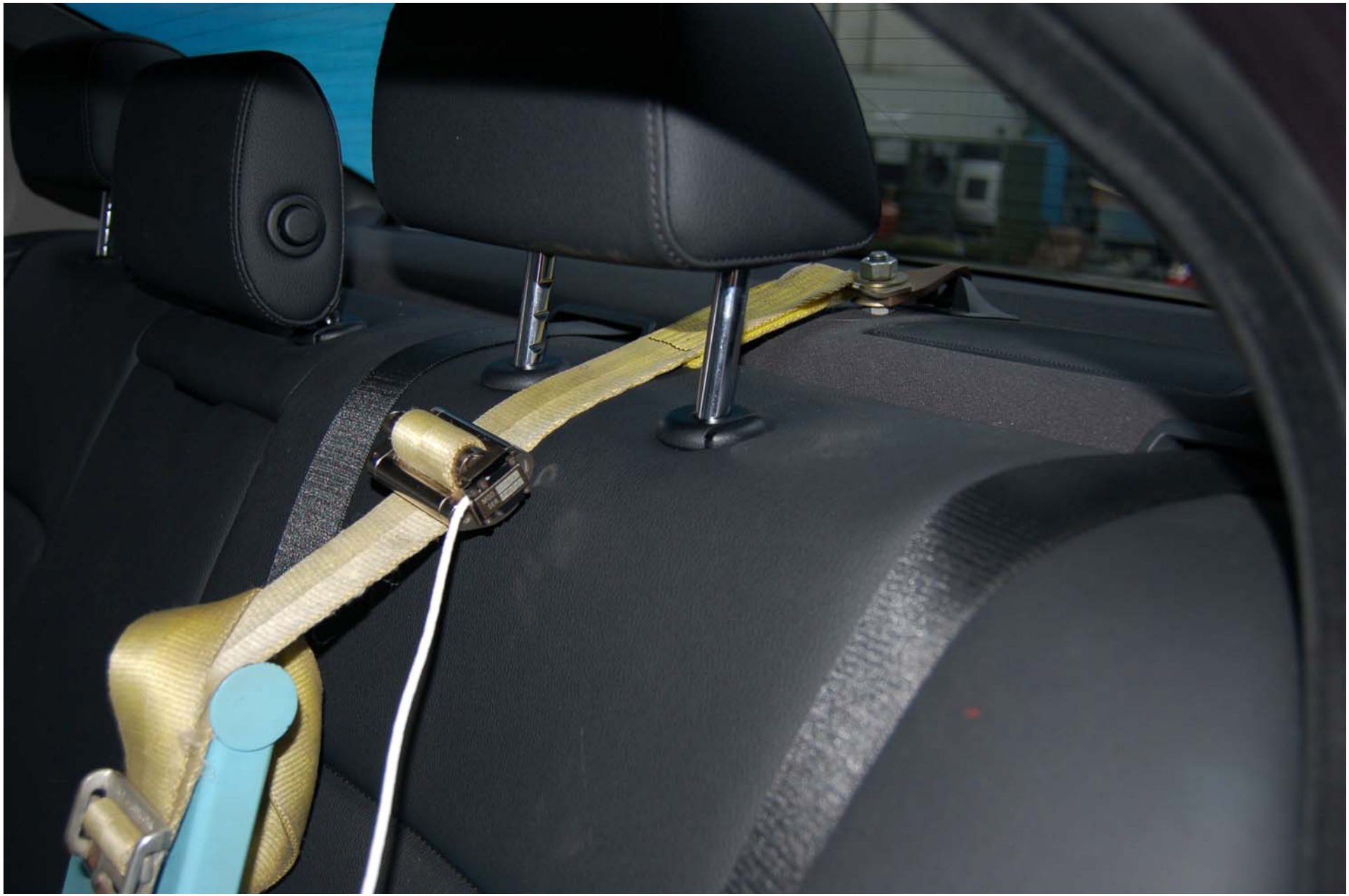

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FIGURE 5.37
PRE-TEST ROW 2, LEFT SIDE WITH SFAD 2

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FMVSS NO. 225

FIGURE 5.38
POST TEST ROW 2, LEFT SIDE WITH SFAD 2

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.39
POST TEST ROW 2, LEFT SIDE WITH SFAD 2

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.40
PRE-TEST ROW 2, RIGHT SIDE WITH SFAD 2

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

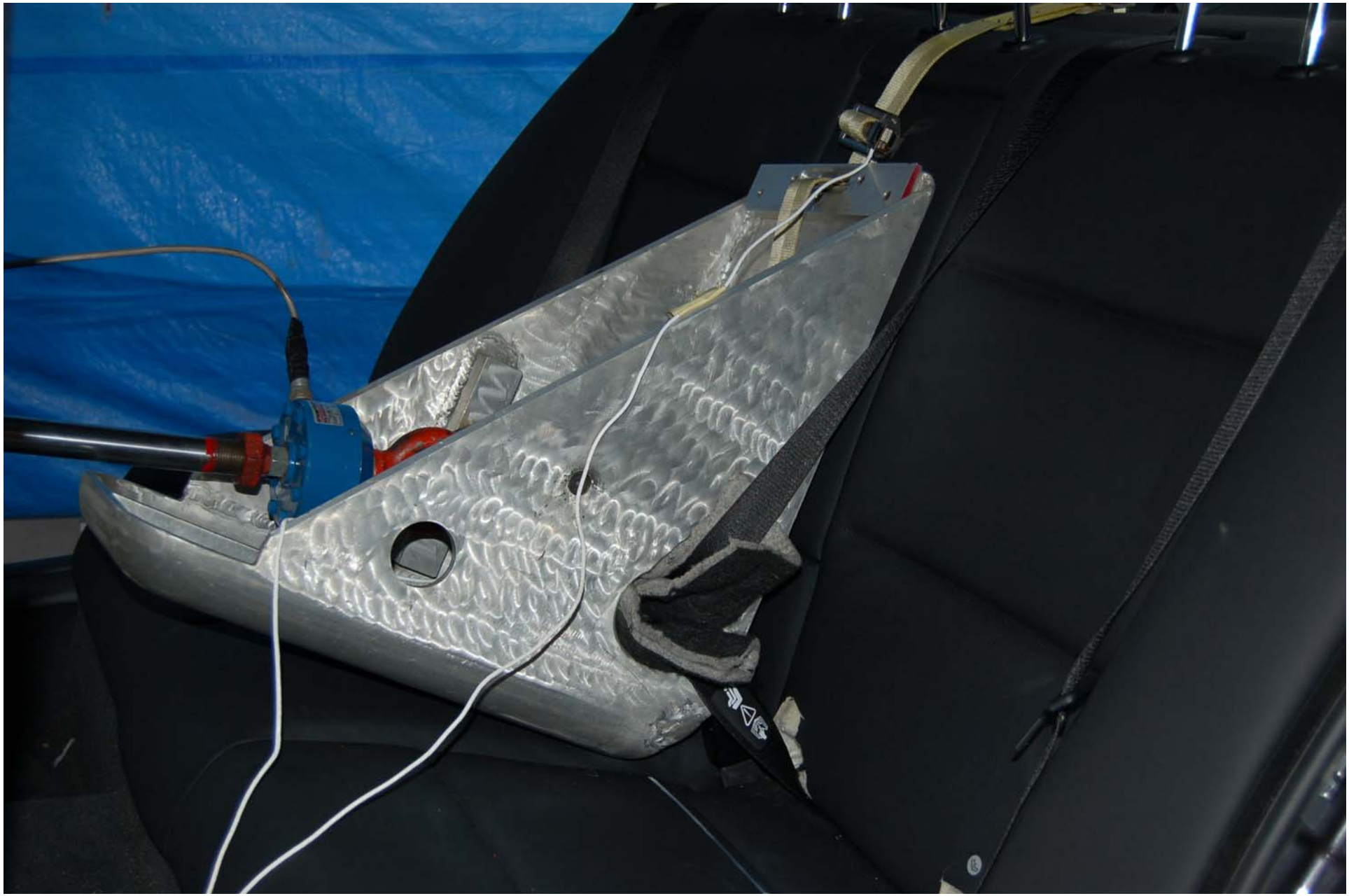
FIGURE 5.41
POST TEST ROW 2, RIGHT SIDE WITH SFAD 2

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.42
PRE-TEST ROW 2, CENTER WITH SFAD 1

2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.43
PRE-TEST ROW 2, CENTER WITH SFAD 1



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NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.44
POST TEST ROW 2, CENTER WITH SFAD 1

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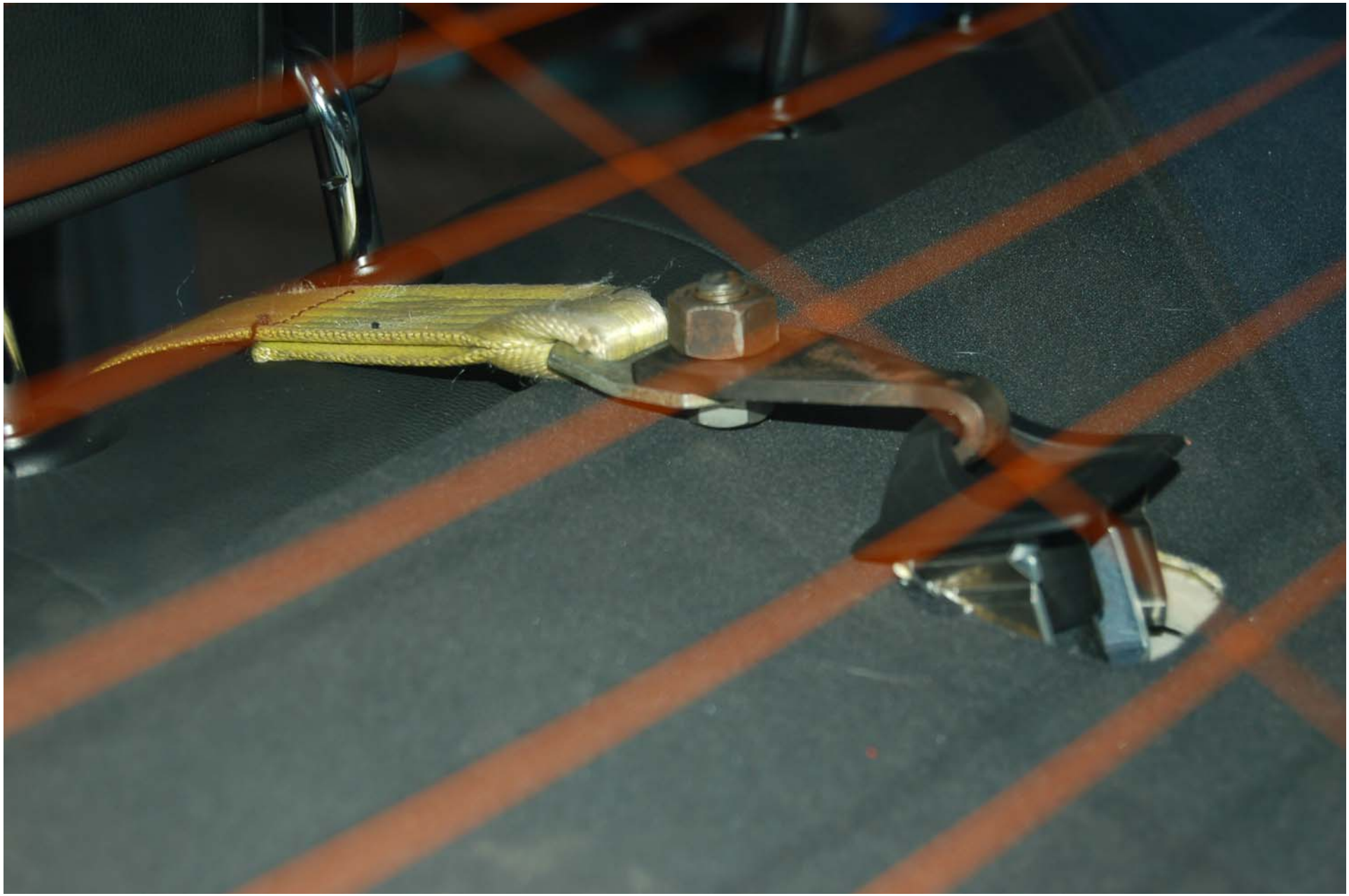
FMVSS NO. 225

FIGURE 5.45
POST TEST ROW 2, CENTER WITH SFAD 1



2008 BMW 328i
NHTSA NO. C80509
FMVSS NO. 225

FIGURE 5.46
POST TEST ROW 2, CENTER WITH SFAD 1

APPENDIX A
OWNER'S MANUAL RESTRAINT INFORMATION

Transporting children safely

The right place for children

Do not leave children unattended in the vehicle, otherwise they could endanger themselves and/or other persons by opening the doors, for example.◀

The rear center seat is not suitable for installing child-restraint systems for all age groups, approved for the age group in question.

Children always in the rear

Accident research has shown that the safest place for children is on the rear seat.

Children under the age of 13 or smaller than 5 ft/150 cm may be transported only in the rear in suitable child-restraint systems appropriate for their age, weight and size. Otherwise there is an increased risk of injury in the event of an accident.◀

Children 13 years of age or older must be buckled in with a safety belt as soon as there no longer is any child-restraint system that is appropriate for their age, size and weight.

Exception for front passenger seat

Should it be necessary to use a child-restraint system on the front passenger seat, the front and side airbags for the front passenger must be deactivated. Otherwise, a child traveling on that seat will face a significant risk of injury if the airbags are triggered off, even with a child-restraint system.◀

For more information on automatic deactivation of the front passenger airbags refer to page 77.

Installing child-restraint systems

Observe the child-restraint system manufacturer's instructions when selecting, installing and using child-restraint systems. Otherwise the protective effect may be diminished.◀

Standard child-restraint systems are designed to be secured with a lap belt or with the lap-belt section of a lap-and-shoulder belt. Incorrectly or improperly installed child-restraint systems can increase the risk of injury to children. Always follow the installation instructions for the system with the greatest care.

On the front passenger seat

After installing a child-restraint system on the front passenger seat, make sure that the front and side airbags for the front passenger are deactivated, otherwise there is an increased risk of injury if the airbags deploy.◀

Backrest width*

The backrest width of the front passenger's seat must be at its widest possible setting. Do not change the setting after installing the child seat. Otherwise the child seat's stability on the front passenger's seat is limited.◀

1. Adjust the backrest width to its widest setting, refer to page 36.
2. Install the child seat.

Child seat security

The rear safety belts and the front passenger's safety belt can be prevented from being pulled out in order to fasten child-restraint systems.

To lock the safety belt

1. Secure the child-restraint system with the belt.
2. Pull the belt strap all the way out.
3. Allow the belt strap to retract and pull it taut against the child-restraint system.

The safety belt is locked.

To unlock the safety belt

1. Open the belt buckle
2. Remove the child-restraint system.
3. Allow the safety belt strap to retract all the way.

LATCH child-restraint fixing system

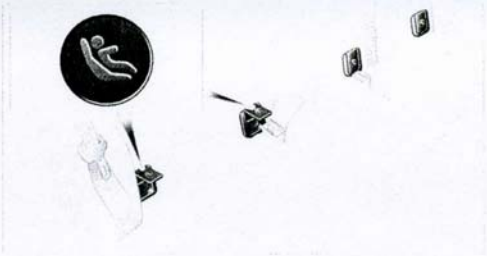
LATCH: Lower Anchors and Tethers for CHildren.

⚠ To install and use the LATCH child restraint system, follow the operating and safety instructions provided by the manufacturer of the system, otherwise the protective function of the seat may be compromised.◀

Before installing the child seat, pull the belt out of the area for the child-restraint fixing system.

⚠ Ensure that both lower LATCH anchors are correctly engaged and that the child restraint system is resting firmly against the backrest, otherwise the protective function of the seat may be compromised.◀

Rear seats with through-loading system



The anchor points for the lower LATCH anchors are located behind the labeled protective caps.

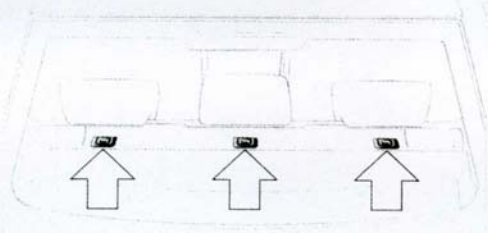
Rear seats without through-loading system

The anchor points for the lower LATCH anchors are located at the positions indicated by arrows, in the gap between the seat and the backrest.

Child-restraint system with tether strap

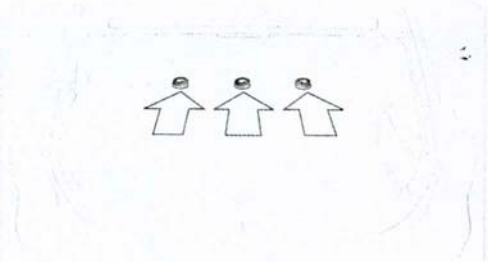
⚠ Use the top tether anchors to secure child-restraint systems only, otherwise the anchors could be damaged.◀

Sedan



There are three additional anchors for child-restraint systems with tether straps, see arrows.

Sports Wagon

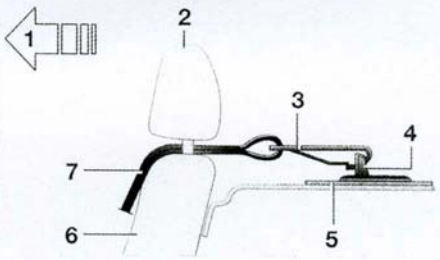


There are three additional anchors under a cover for child-restraint systems with tether straps, see arrows.

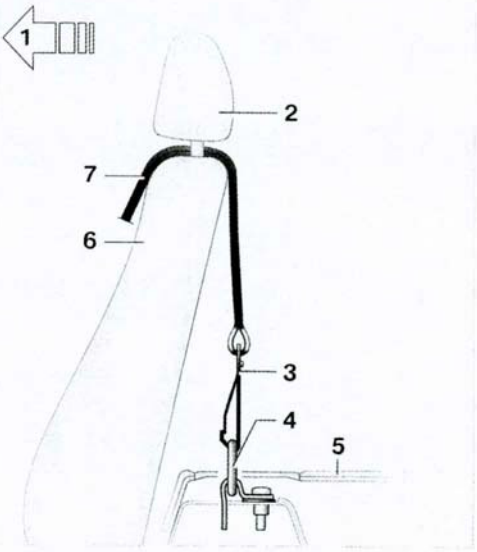
Placement of the tether strap

Make sure the upper retaining strap does not run over sharp edges and is not twisted as it passes to the top anchor. Otherwise the strap will not properly secure the child-restraint system in the event of an accident.◀

Sedan



Sports Wagon



1 Direction of travel

2 Head restraint

3 Hook for upper retaining strap

4 Anchor

5 Rear window shelf/cargo bay floor

6 Seat backrest

7 Upper retaining strap of child-restraint system

Fold the anchors and, if necessary, the head restraints* upward before use.

1. Push the head restraint upward.
2. Guide the upper retaining strap between the head restraint holders.

3. Use the hook to clip the retaining strap to the anchor.
4. Push the head restraint into its lowermost position.
5. Pull the retaining strap taut.

On journeys

Child-safety locks for rear doors

Slide down the safety lever on the rear door:

The door can now be opened from the outside only.

Safety switch for power windows

Press the safety switch for the power windows, refer to page 29, if children are traveling on the rear seat.

APPENDIX B

MANUFACTURER'S DATA

FORM – 225
Rev. 03/20/07

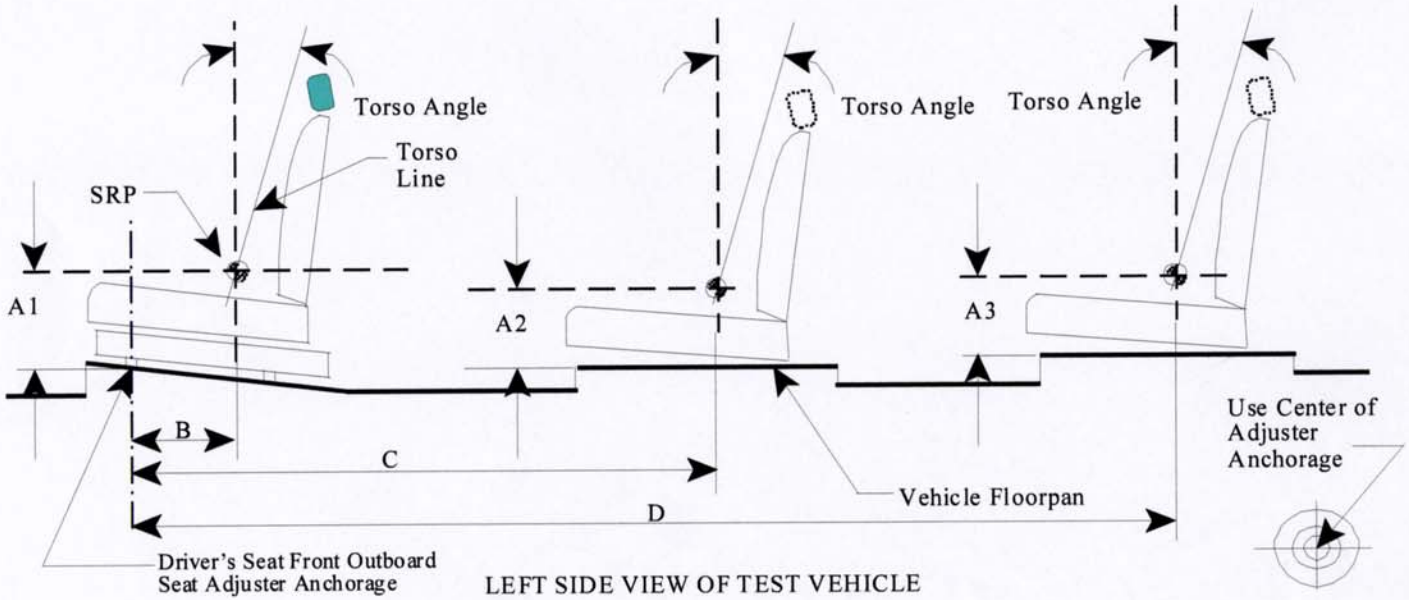
SEAT REFERENCE POINT (SRP) AND TORSO ANGLE DATA

FMVSS No. 225

(All dimensions in mm[1])

MODEL YEAR: __2008___/ MAKE: ____BMW_____/ MODEL: ___3 series_____/ BODY STYLE: ___sedan_____

SEAT STYLE: FRONT ROW: _not applicable_/ SECOND ROW: _bench type seat_/ THIRD ROW: _ not applicable ___



LEFT SIDE VIEW OF TEST VEHICLE

Table 1. Seating Positions[1] and Torso Angles

		Left (Driver Side)	Center (if any)	Right
A1		(Driver) N/A	N/A	(Front Passenger) N/A
A2		32	71	32
A3		N/A	N/A	N/A
B		N/A	N/A	N/A
C – standard rear seat		1146	1114	1146
C – rear seat with fold-down "ski bag"		1141	1114	1141
D		N/A	N/A	N/A
Torso Angle (degree)	Front Row	N/A	N/A	N/A
	Second Row	27	27	27
	Third Row	N/A	N/A	N/A

Note: All dimensions are in mm. If not, provide the unit used.

SEATING REFERENCE POINT

FMVSS No. 225
(All dimensions in mm)

MODEL YEAR: __2008___/ MAKE: ____BMW_____/ MODEL: ___3 series_____/ BODY STYLE: ___sedan_____

SEAT STYLE: FRONT ROW: _not applicable_/ SECOND ROW: _bench type seat_/ THIRD ROW: _ not applicable ___

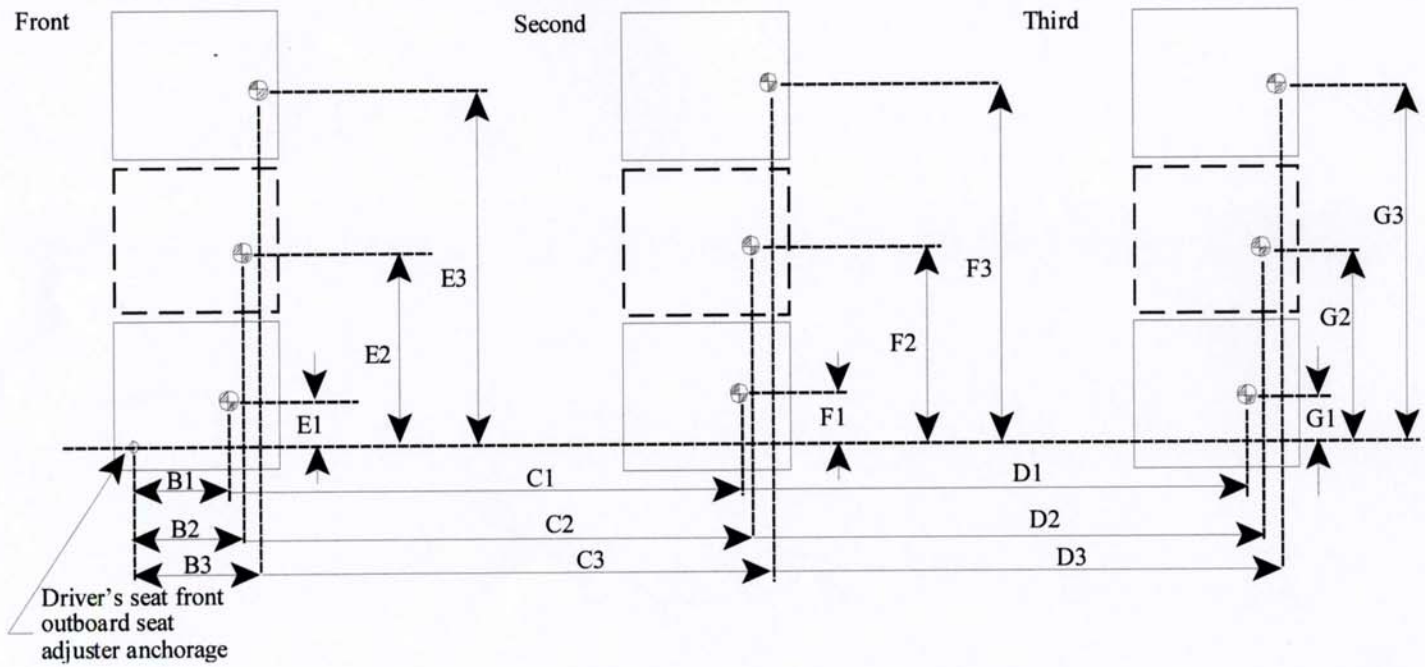


Table 2. Seating Reference Point and Tether Anchorage Locations

Seating Reference Point (SRP)		Distance from Driver's front outboard seat adjuster anchorage[1]
Front Row	B1	N/A
	E1	N/A
	B2	N/A
	E2	N/A
	B3	N/A
	E3	N/A
Second Row	C1 – standard seat	1146
	C1 – "ski-bag" seat	1141
	F1	278
	C2	1114
	F2	603
	C3 – standard seat	1146
	C3 – "ski-bag" seat	1141
	F3	928
Third Row	D1	N/A
	G1	N/A
	D2	N/A
	G2	N/A
	D3	N/A
	G3	N/A

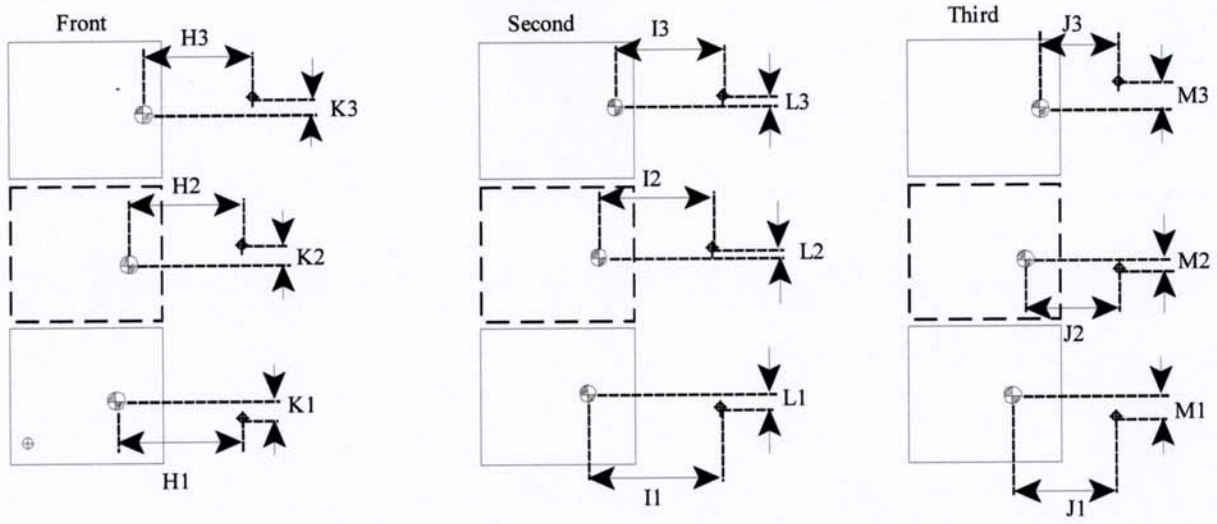
Note: Use the center of anchorage.

TETHER ANCHORAGE LOCATIONS

FMVSS No. 225
(All dimensions in mm)

MODEL YEAR: __2008___/ MAKE: ____BMW_____/ MODEL: ___3 series_____/ BODY STYLE: ___sedan_____

SEAT STYLE: FRONT ROW: _not applicable_/ SECOND ROW: _bench type seat_/ THIRD ROW: _ not applicable ___



⊕: SRP
♦: Tether anchorage

Note: The location shall be measured at the center of anchorage.

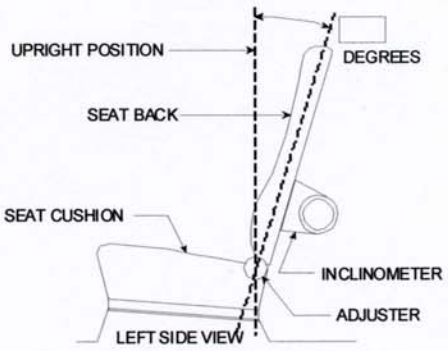
Table 3. Seating Reference Point and Tether Anchorage Locations

Seating Reference Point (SRP)	Distance from SRP	
Front Row	H1	N/A
	K1	N/A
	H2	N/A
	K2	N/A
	H3	N/A
	K3	N/A
Second Row	I1	647
	L1	10
	I2	680.5
	L2	0
	I3	647
	L3	10
Third Row	J1	N/A
	M1	N/A
	J2	N/A
	M2	N/A
	J3	N/A
	M3	N/A

Note: Use the center of anchorage.

NOMINAL DESIGN RIDING POSITION

For adjustable driver, passenger, 2nd row and 3rd row seat backs, describe how to position the inclinometer to measure the seat back angle. Include a description of the location of the seat back adjustment latch detent if applicable. Indicate if applicable, how the detents are numbered (Is the first detent "0"or "1"?). Indicate if the seat back angle is measured with the dummy in the seat.



Seat back angle for driver's seat = __N/A__ degrees.

Measurement Instructions:

_____

_____

Seat back angle for passenger's seat = __N/A__ degrees.

Measurement Instructions:

_____

_____

Seat back angle for 2nd row seat = __27__ degrees.

Measurement Instructions:

_____

_____

Seat back angle for 3rd row seat = __N/A__ degrees.

Measurement Instructions:

_____

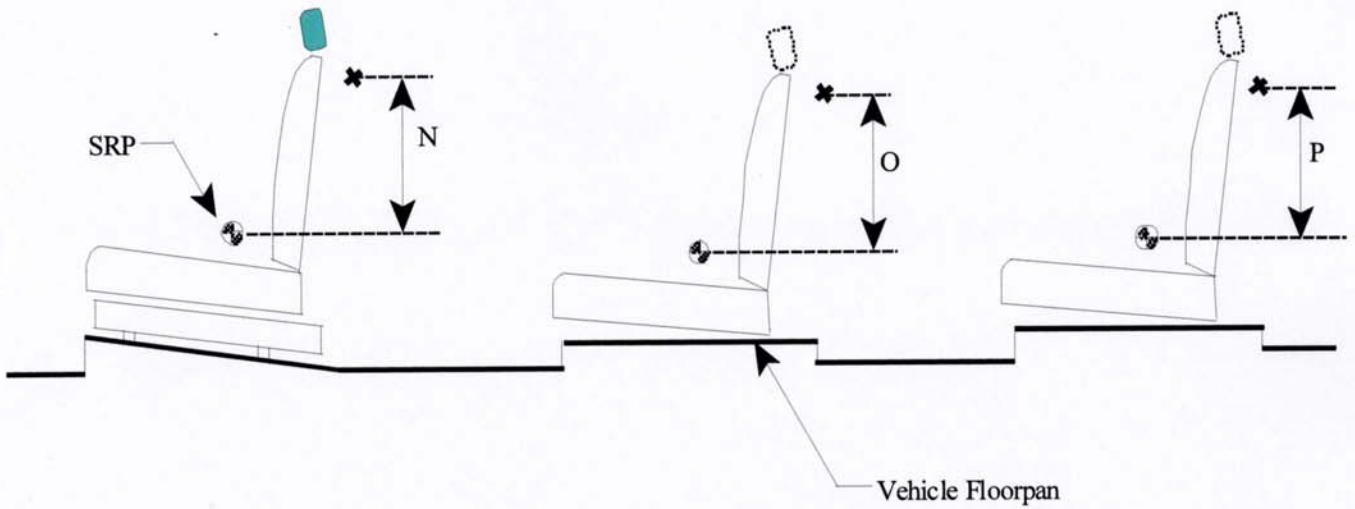
_____

TETHER ANCHORAGE LOCATIONS - VERTICAL

FMVSS No. 225
(All dimensions in mm)

MODEL YEAR: __2008___/ MAKE: ____BMW_____/ MODEL: ___3 series_____/ BODY STYLE: ___sedan_____

SEAT STYLE: FRONT ROW: _not applicable_/ SECOND ROW: _bench type seat_/ THIRD ROW: _ not applicable ___



LEFT SIDE VIEW OF TEST VEHICLE

Table 4. Vertical Dimension For The Tether Anchorage

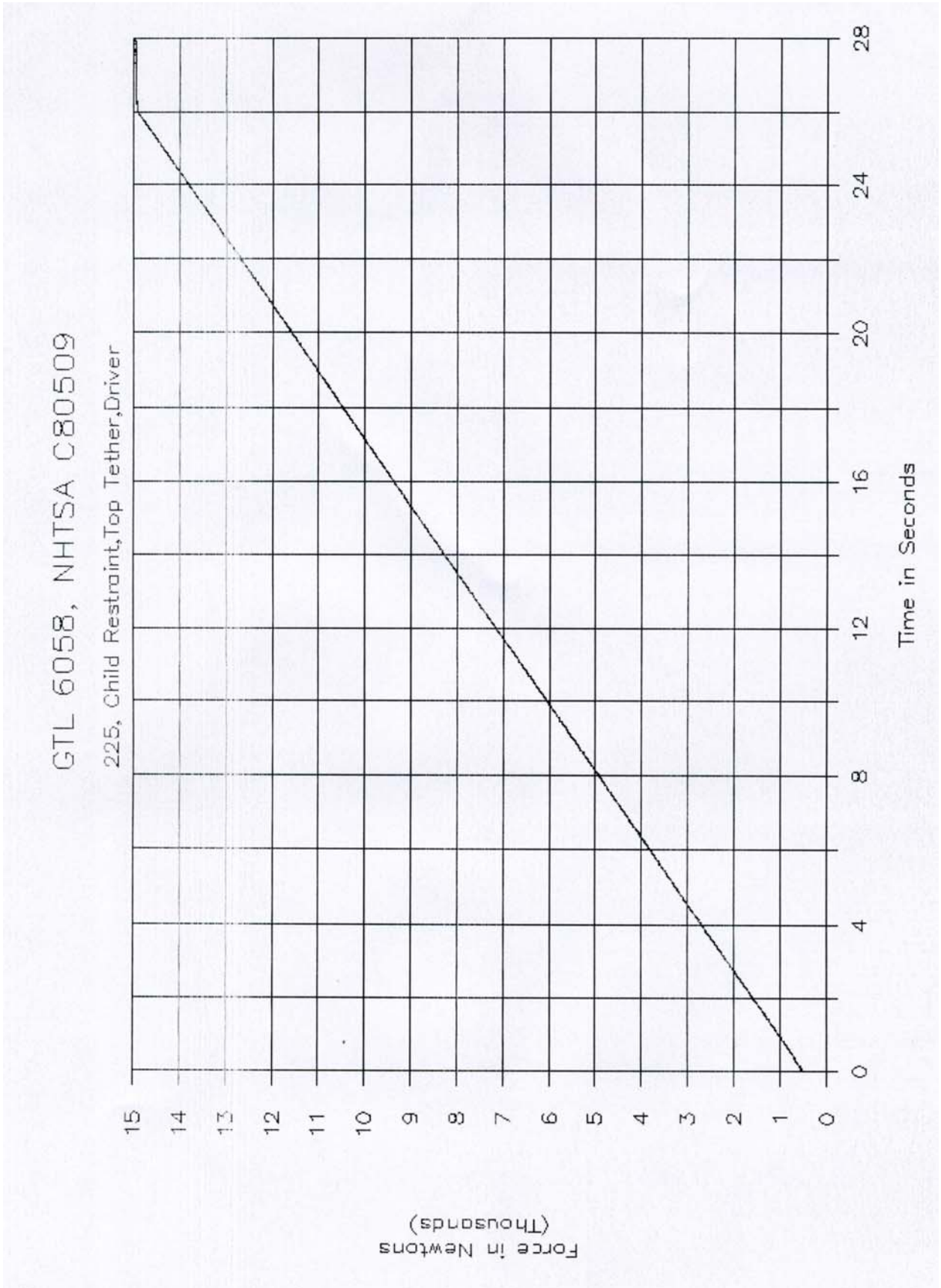
Seating Row	Vertical Distance from Seating Reference Point	
Front Row	N1 (Driver)	N/A
	N2 (Center)	N/A
	N3 (Right)	N/A
Second Row	O1 (Left)	592
	O2 (Center)	554
	O3 (Right)	592
Third Row	P1 (Left)	N/A
	P2 (Center)	N/A
	P3 (Right)	N/A

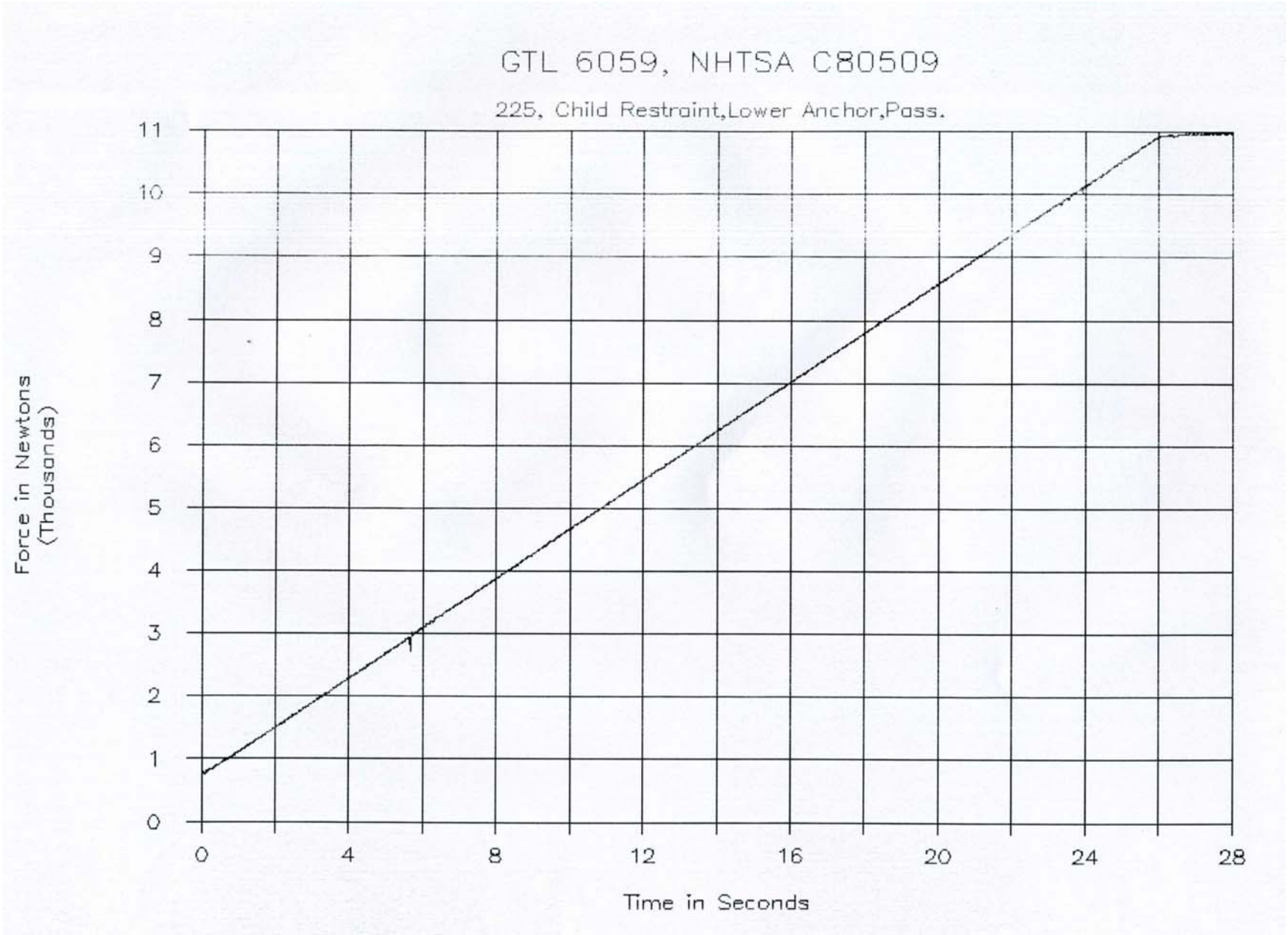
Note: All dimensions are in mm. If not, provide the unit anchorage.

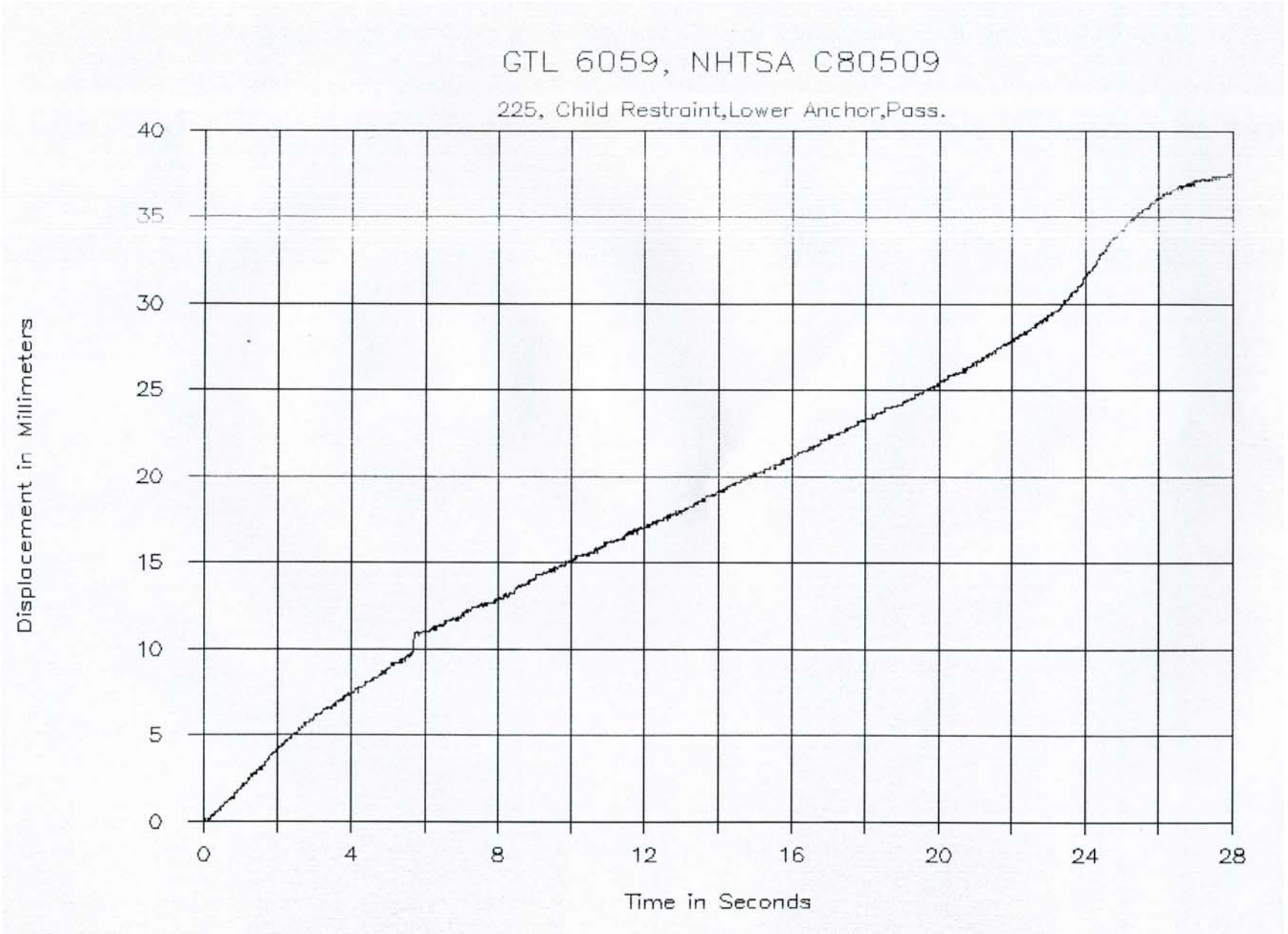
For each vehicle, provide the following information:

1. How many designated seating positions exist in the vehicle? FRONT 2 REAR 3
2. How many designated seating positions are equipped with lower anchorages and tether anchorages? Specify which position(s).
3. 2 in SECOND ROW – OUTER 2
4. How many designated seating positions are equipped with tether anchorages? Specify which positions(s).
   3 in SECOND ROW – OUTER 2 AND INNER 1
5. Lower Anchorages Marking and Conspicuity: Whether the anchorages are certified to S9.5(a) or S9.5(b) of FMVSS No. 225. Marking according to S9.5(a)

APPENDIX C
PLOTS


GTL 6058, NHTSA C80509
225, Child Restraint,Top Tether,Driver
Force in Newtons
(Thousands)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
4
8
12
16
20
24
28
Time in Seconds


GTL 6059, NHTSA C80509
225, Child Restraint,Lower Anchor,Pass.
Force in Newtons
(Thousands)
11
10
9
8
7
6
5
4
3
2
1
0
0
4
8
12
16
20
24
28
Time in Seconds


GTL 6059, NHTSA C80509
225, Child Restraint,Lower Anchor,Pass.
Displacement in Millimeters
40
35
30
25
20
15
10
5
0
0
4
8
12
16
20
24
28
Time in Seconds


GTL 6060, NHTSA C80509
225, Child Restraint,Top Tether,Center.
Force in Newtons
(Thousands)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
4
8
12
16
20
24
28
Time in Seconds