

V2830

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**VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT CRASH PROTECTION
WINDSHIELD MOUNTING, WINDSHIELD ZONE INTRUSION (PARTIAL)
AND FUEL SYSTEM INTEGRITY**

**CHRYSLER CORPORATION
1998 JEEP GRAND CHEROKEE
4-DOOR MPV**

NHTSA NUMBER: CW0308

CALSPAN TEST NUMBER: 8407-1

March 26, 1998

**CALSPAN CORPORATION
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FINAL REPORT

PREPARED FOR:

**U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
Mail Code: NSA-30
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Washington, DC 20590**

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 208-CAL-98-1 212-CAL-98-1 301-CAL-98-1	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 208, 212, 219 (Partial), and 301 Compliance Testing of a 1998 Jeep Grand Cherokee 4-Door MPV NHTSA No. CW0308		5. Report Date March 26, 1998	6. Performing Organization Code CAL
7. Author(s) Patrick G. MacDiarmid, Jr., Project Engineer David J. Travale, Program Manager		8. Performing Organization Report No. 8407-1	
9. Performing Organization Name and Address Calspan Corporation P.O. Box 400 Buffalo, New York 14225		10. Work Unit No.	11. Contract or Grant No. DTNH22-93-D-11089
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15. Supplementary Notes			
16. Abstract <p>A 30 mph vehicle safety compliance test was conducted on a 1998 Jeep Grand Cherokee 4-Door MPV. This test was performed at the Calspan Corporation in Buffalo, New York on March 26, 1998. The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards:</p> <ol style="list-style-type: none"> 1. FMVSS No. 208, "Occupant Crash Protection" 2. FMVSS No. 212, "Windshield Mounting" 3. FMVSS No. 219 (partial), "Windshield Zone Intrusion" 4. FMVSS No. 301, "Fuel System Integrity" <p>The test mode was perpendicular (0°) and the impact velocity was 29.0 mph. The ambient temperature at the impact face was 67 °F. The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301. Both dummies were tested unbelted. However, Chrysler only certified the passenger unbelted with a barrier test. In addition, there are no FMVSS 208 neck performance criteria for the barrier test. Therefore, the neck data and driver data will not be used to confirm compliance with FMVSS 208.</p> <p>Type of Restraint System: The test vehicle was equipped with a driver airbag, knee bolster and a passenger airbag, knee bolster restraint system. The manual seat belts were not used for this test.</p>			
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Section 1

PURPOSE AND TEST PROCEDURE

This 30 mph frontal barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208, 212, 219 (partial) and 301 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by Calspan Corporation under Contract No. DTNH22-93-D-11089. The purpose of this test was to determine if the subject vehicle, a 1993 Jeep Grand Cherokee 4-Door MPV, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS No. 212, "Windshield Mounting"; FMVSS No. 219 (partial), "Windshield Zone Intrusion"; and FMVSS No. 301, "Fuel System Integrity". This compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-208-10, dated January 15, 1998.

Section 2

SUMMARY OF TEST NUMBER CW0308

A frontal barrier was impacted by a 1998 Jeep Grand Cherokee 4-Door MPV at a velocity of 29.0 mph. The test was performed at the Calspan Corporation on March 26, 1998. Pre- and Post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by one real-time camera and 14 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the OVSC Laboratory Test Procedure.

Both ATDs were fully instrumented with head and chest three axis (x, y, and z) accelerometers, chest displacement potentiometers and left/right femur load cells. These ATDs had been certified prior to the test.

The 44 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle and dummy response data traces.

The driver's HIC was 278.00. The maximum chest deceleration over 3 milliseconds was 46.073 g's with 1.6 inches of deflection. The maximum force on the driver's left femur was -1655.1 pounds and -1507.7 pounds on the right femur.

The right front passenger's HIC was 139.96. The maximum chest deceleration over 3 milliseconds was 49.217 g's with 0.5 inches of deflection. Loads of -1692.0 and -1779.9 pounds were recorded on the left and right femurs respectively.

The left rear cross-member X accelerometer sustained a cut wire during the impact. This data is not accurate after 60 ms. The left side overall, right side overall, and left side view cameras malfunctioned during the impact event. Test film is not available for these camera views.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No. : CW0308 Test Mode : 30 mph Frontal Barrier
 Test Date : March 26, 1998 Time: 13:45 Temperature : 67 °F
 Vehicle Make/Model/Body Style : 1998 Jeep Grand Cherokee 4-Door MPV

Vehicle Test Weight : 4463 lbs
 Vehicle/Barrier Impact Angle : 0 °
 Impact Velocity : 29.0 mph
 Maximum Static Crush : 18.0 inches
 Vehicle Rebound : 8.3 inches

<u>DUMMIES:</u>	<u> DRIVER </u>	<u> PASSENGER </u>
Type :	<u> P572E </u>	<u> P572E </u>
Restraint System :	<u> Airbag, Knee Bolster </u>	<u> Airbag, Knee Bolster </u>

Number of Data Channels : 44
 Number of Cameras : 1 Real Time
 14 High Speed

DOOR OPENING DATA : Closed/Operable - Left Front
 Closed/operable - Right Front

Front Seat(s) Data :	<u> DRIVER </u>	<u> PASSENGER </u>
Seat Track Failure (inches of shift):	<u> 0 </u>	<u> 0 </u>
Seat Back Failure :	<u> None </u>	<u> None </u>

<u>VISIBLE DUMMY CONTACT POINTS :</u>	<u> DRIVER </u>	<u> PASSENGER </u>
Head :	<u> Face to the top center of the airbag; The back of the head to the right outboard edge of the headrest. </u>	<u> Face to the top center of the airbag; The back of the head to the right outboard side of the headrest. </u>
Abdomen :	<u> - </u>	<u> - </u>
Chest	<u> Airbag </u>	<u> Airbag </u>
Knees	<u> Knee Bolster </u>	<u> Knee Bolster and HVAC ducts </u>

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1998 Jeep Grand Cherokee 4-Door MPV
 NHTSA No. : CW0308 ; VIN: 1J4GZ5BS1WC120835 ; Color : White
 Engine Data: 6 cylinders; - CID; 4.0 Liters; - cc
 Placement : X Longitudinal or In-Line; - Transverse of Lateral
 Transmission Data : 4 speeds; - Manual; X Automatic; X Overdrive
 Final Drive : - Rear Wheel Drive; - Front Wheel Drive; X Four Wheel Drive
 Major Options : X A/C; X Pwr. Strg.; X Pwr. Brakes
X Pwr. Windows; X Pwr. Door Locks; X Tilt Wheel
 Date Received : 02/20/98 ; Odometer Reading 187 miles
 Selling Dealer : Holmes Jeep-Eagle
 & Address: 9-17 Olean Street East Aurora, New York 14052-9739

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Chrysler Corporation
 Date of Manufacture 08/97
 GVWR : 5300 lbs.; GAWR: 2750 lbs. FRONT; 2950 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 44 psi FRONT
44 psi REAR
 Recommended Tire Size : P215/75R15 or P225/75R15
 * Recommended Cold Tire Pressure : 36 psi FRONT; 36 psi REAR
 Size of Tires on Test Vehicle: P225/75R15 ; Manufacturer: Goodyear
 Vehicle Capacity Data :
 Type of Front Seats: - Bench; X Bucket; - Split Bench
 Number of Occupants: 2 Front; 3 Rear; 5 Total
 Vehicle Capacity Weight (VCW) = 1150 lbs.
 No. of Occupants x 150 lbs. = 750 lbs.
 Rated Cargo/Luggage Weight (RCLW) = 400 lbs.

*Tire pressure used for test

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front	=	<u>1071</u>	lbs.	Right Rear	=	<u>846</u>	lbs.
Left Front	=	<u>1079</u>	lbs.	Left Rear	=	<u>849</u>	lbs.
TOTAL FRONT	=	<u>2,150</u>	lbs.	TOTAL REAR	=	<u>1,695</u>	lbs.
TOTAL DELIVERED WEIGHT	=	<u>3,845.0</u>	lbs.				
% of Total Front of Vehicle Weight	=	<u>55.9</u>	%	% of Total Rear Weight	=	<u>44.1</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight	=	<u>3,845</u>	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	<u>300</u>	lbs. *maximum allowed
Weight of 2 p.572 Dummies @ 167 each	=	<u>334</u>	lbs.
TARGET TEST WEIGHT	=	<u>4,479</u>	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 284 POUNDS OF CARGO WEIGHT:

Right Front	=	<u>1161</u>	lbs.	Right Rear	=	<u>1070</u>	lbs.
Left Front	=	<u>1159</u>	lbs.	Left Rear	=	<u>1073</u>	lbs.
TOTAL FRONT	=	<u>2,320</u>	lbs.	TOTAL REAR	=	<u>2,143</u>	lbs.
TOTAL TEST WEIGHT	=	<u>4,463.0</u>	lbs.				
% of Total Front Weight	=	<u>52.0</u>	%	% of Total Rear Weight	=	<u>48.0</u>	%
Weight of Ballast Secured in Vehicle Trunk Area	=	<u>190</u>	lbs.				
Vehicle Components Removed for Weight Reduction:				None			

VEHICLE ATTITUDE (all dimension in inches) :

AS DELIVERED :	RF	<u>32.3</u>	LF	<u>32.3</u>	RR	<u>32.6</u>	LR	<u>32.5</u>
FULLY LOADED :	RF	<u>31.6</u>	LF	<u>31.8</u>	RR	<u>30.8</u>	LR	<u>31.0</u>
AS TESTED :	RF	<u>31.8</u>	LF	<u>31.8</u>	RR	<u>30.9</u>	LR	<u>31.0</u>
Vehicle's Wheel Base :		<u>105.9</u>	in.					
Location of Vehicle's C.G. :		<u>50.9</u>	inches rearward of front wheel center.					

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual	=	<u>22.5</u>	gallons
Usable Capacity Figure Furnished by COTR	=	<u>22.5</u>	gallons
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>20.7</u>	to <u>21.2</u> gallons
ACTUAL TEST VOLUME=		<u>20.9</u>	gallons (with entire fuel system filled)

Table 3

POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : March 26, 1998 Time: 13:45 Temperature: 67 °F
 Vehicle NHTSA No. : CW0308
 Required Impact Velocity Range : 28.9 to 29.9 mph

BARRIER IMPACT VELOCITY: (Speed traps within 5 feet of impact plane.)

Trap No. 1 = 29.0 mph; Trap No. 2 = 29.0 mph
 Distance from vehicle to barrier : (1) entering trap = 32 inches
 (2) exiting trap = 12 inches

VEHICLE STATIC CRUSH: (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test Right = 174.5 ; C/L = 176.0 ; Left = 174.5
 Post-Test Right = 156.5 ; C/L = 158.5 ; Left = 159.2
 Crush Right = 18.0 ; C/L = 17.5 ; Left = 15.3
 AVERAGE = 16.9 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

Right = 7.4 ; C/L = 7.2 ; Left = 10.3
 AVERAGE = 8.3 inches

DOOR OPENING :

	Left	Right
Front	<u>Closed/Operable</u>	<u>Closed/Operable</u>
Rear	<u>Closed/Operable</u>	<u>Closed/Operable</u>

SEAT MOVEMENT :

	Seat Back Failure	Seat Shift
Driver	<u>None</u>	<u>0</u>
Passenger	<u>None</u>	<u>0</u>

Table 3

POST IMPACT (cont.)

GLAZING DAMAGE :

The windshield cracked in the left and right lower corners and along the passenger side A-pillar due to the impact.

OTHER NOTABLE IMPACT FEATURES :

The bottom of the steering wheel was bent inward after the impact.

Section 3

OCCUPANT AND VEHICLE DATA

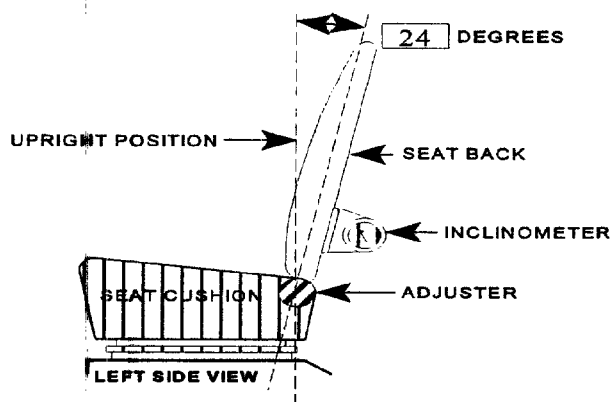
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1998 Vehicle Model: Jeep Grand Cherokee Body Style : 4-Door MPV

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat : 24°

Measurement instructions : Adjust the seat back to full-forward position. Using an inclinometer, move seat back reward 8 degrees from the full forward position.

Seat back angle for passenger's seat : 24°

Measurement instructions : Same as the driver's seat.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : The seat had 20 total detents numbered from 0 to 19. The seats were placed at detent number 10 for this test.

Positioning of the passenger's seat (if applicable) : Same as the driver's seat.

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 22.5 gallons

B. "Usable Capacity" of the optional equipment fuel tank is - gallons

4. Steering Column Position :

There are 5 total positions numbered 0 to 4. Mid-position is labeled position number 2. The steering column was placed in mid-position.

5. Other:

The adjustable seat belt anchorages had 6 total positions. The belted test position was listed as position number 3 when the detents are numbered from 0 to 5. Seatbelts were not used for this test.

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

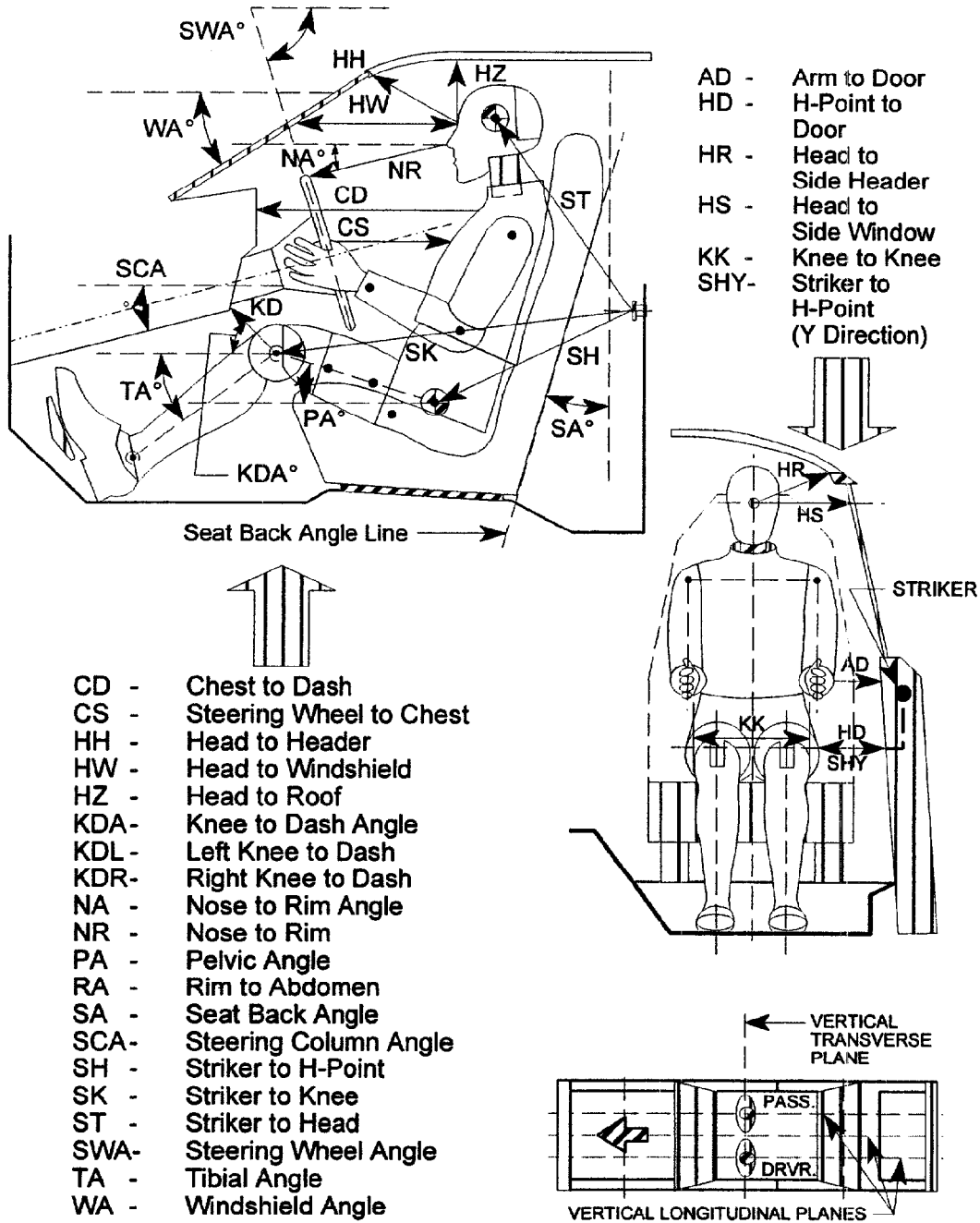


Table 4

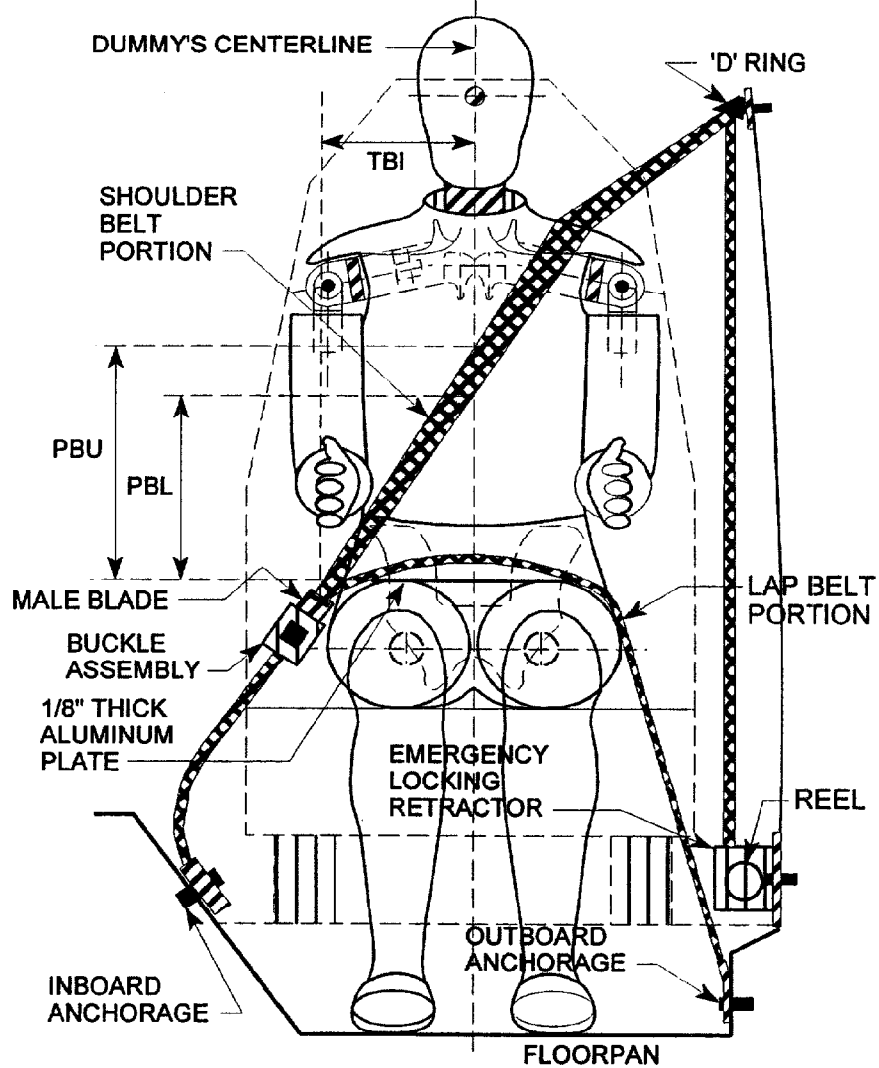
FRONT SEAT OCCUPANT MEASUREMENTS

(All dimensions excluding angles are in inches).

	DRIVER (Serial #341)			PASS. (Serial #342)		
WA ^o	32.7 deg.			N/A		
SWA ^o	23.3 deg.			N/A		
SCA ^o	66.7 deg.			N/A		
SA ^o	24 deg.			24 deg.		
HZ	7.0			7.0		
HH	14.6			13.6		
HW	21.8			20.8		
HR	8.8			8.6		
NR	15.3	Angle	-16 deg.	N/A		
CD	20.8			21.5		
CS	11.3			N/A		
RA	6.1			N/A		
KDL	7.0	Angle (KDA)	32 deg.	6.3		
KDR	6.8			6.4	Angle (KDA)	31 deg.
PA ^o	22.8 deg.			24.0 deg.		
TA ^o	-40.2 deg.			-42.5 deg.		
KK	11.1			10.4		
ST	22.8	Angle	11 deg.	23.2	Angle	13.9 deg.
SK	23.5	Angle	92 deg.	23.9	Angle	92 deg.
SH	8.9	Angle	119.3 deg.	9.1	Angle	117.9 deg.
SHY	8.9			8.2		
HS	11.1			11.1		
HD	5.9			5.0		
AD	3.6			3.1		

Figure 3

SEAT BELT POSITIONING DATA



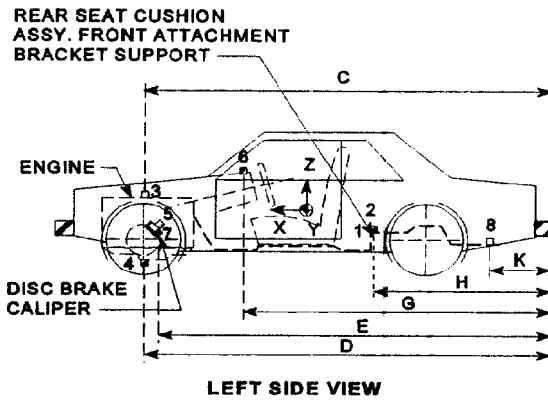
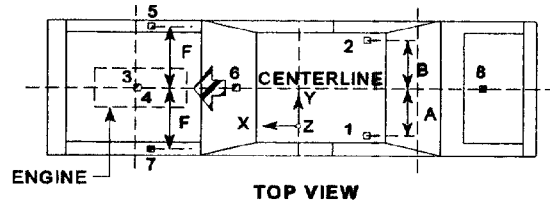
FRONT VIEW OF DUMMY

	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	*	*
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	*	*
<u>TBI</u> -- Distance from torso centerline to buckle	*	*

* Seatbelts were not used for this test.

Figure 4

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	DIRECTION		
		X	Y	Z
1	Left Rear Seat Crossmember	X		
2	Right Rear Seat Crossmember	X		
3	Top of Engine	X		
4	Bottom of Engine	X		
5	Right Disc Brake Caliper	X		
6	Instrument Panel	X		
7	Left Disc Brake Caliper	X		
8	Trunk Z			X

*The accelerometer pack number can be correlated with the vehicle response data traces found in Appendix B.

Table 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (Inches)		
	PRE-TEST VALUES	POST-TEST VALUES	
A Left Rear Seat Crossmember Y	25.5	25.5	
B Right Rear Seat Crossmember Y	24.5	24.5	
C Top of Engine X	151	147.1	
D Bottom of Engine X	123	121.2	
E Disc Brake Calipers X	142	135.1	139.8
F Disc Brake Calipers Y	19.6	18.2	19.3
G Instrument Panel X	112	110.9	
H Rear Seat Crossmembers X	89.8	89.8	
K Trunk X	15.0	15.0	

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	*	*	*	*
2	Rear Seat X-Member @ Right Side	1.8	157.9	-35.3	42.9
3	Top of Engine Block	34.0	43.1	-104.5	33.1
4	Bottom of Engine	24.0	41.9	-97.2	34.8
5	Disc Brake Caliper @ Right Side	73.9	68.6	-89.8	32.7
6	Instrument Panel	13.3	62.0	-81.3	36.2
7	Disc Brake Caliper @ Left Side	44.5	86.8	-57.8	64.2
8	Trunk	25.8	29.2	-17.4	143.4

* Data is not accurate after 60 ms.

Figure 5

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information shown on Table 6.

CAMERA POSITIONS FOR FRONTAL IMPACTS

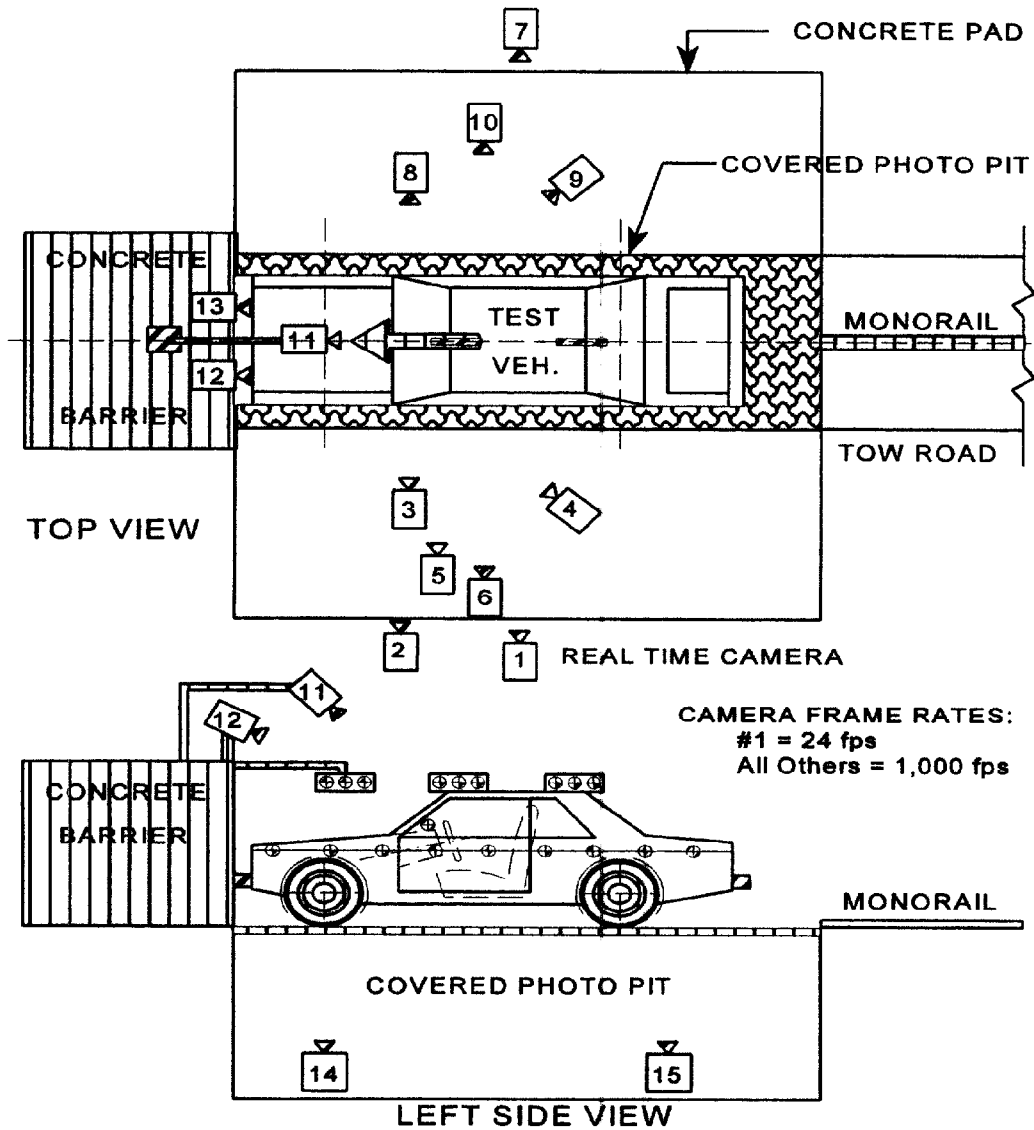


Table 6

HIGH-SPEED CAMERA LOCATIONS

Camera No.	VIEW	CAMERA POSITIONS (In.)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET (In.)	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	253.0	66.0	42.5	-4	234.5	12.5	N/A
3	Left Side View	306.0	35.5	49.4	-4	287.5	25	N/A
4	Driver and Interior View	195.8	111.9	77.9	-12	-	25	1010
5	Steering Column (Bottom)	293.2	75.3	46.5	-3	274.7	25	1020
6	Steering Column (Top)	293.2	75.3	70.5	-9	274.7	25	1000
7	Overall Right Side	304.0	75.4	44.7	-3	322.5	13	N/A
8	Right Side View	301.0	61.2	50.5	-3	319.5	25	1000
9	Passenger and Interior View	189.3	117.3	80.4	-12	-	35	1030
10	Right Passenger View	266.9	80.2	56.3	-2	-	25	1000
11	Windshield View	0.0	0.0	132.8	-61	-	13	1000
12	Driver Front View	22.0	-17.9	78.9	-49	-	8	1040
13	Passenger Front View	22.0	-17.9	77.4	-53	-	8	1000
14	Pit View of Engine	0.0	32.0	-120	90	-	13	1000
15	Pit View of Fuel Tank	0.0	144.3	-120	90	-	13	900

*X = film plane to monorail centerline
 Y = film plane to impact location
 Z = film plane to ground
 ** = referenced to horizontal plane

Figure 6

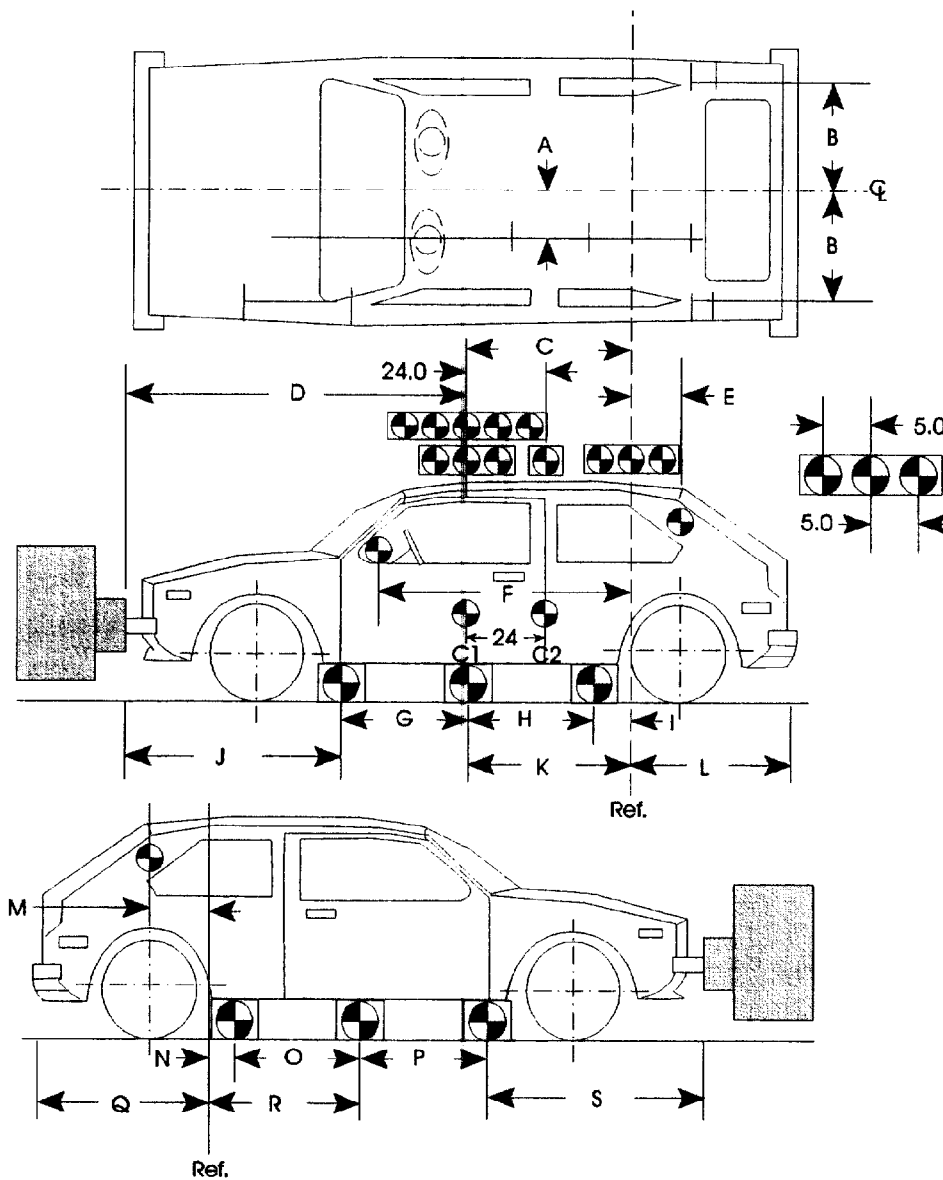
VEHICLE TARGET LOCATIONS
(All dimensions in inches)

Key (Inches)

A =	15.5
B =	19.0

C =	48.0
D =	70.2
E =	14.3
F =	55.5
G =	34.0
H =	34.0
I =	4.3
J =	45.9
K =	38.3
L =	57.8

M =	14.3
N =	4.3
O =	34.0
P =	34.0
Q =	57.8
R =	38.3
S =	45.9



Note: Targets on front fender are 12.0 inches apart. Targets rearward of front fender are 24.0 inches apart.

Figure 7

TEST VEHICLE MEASUREMENTS

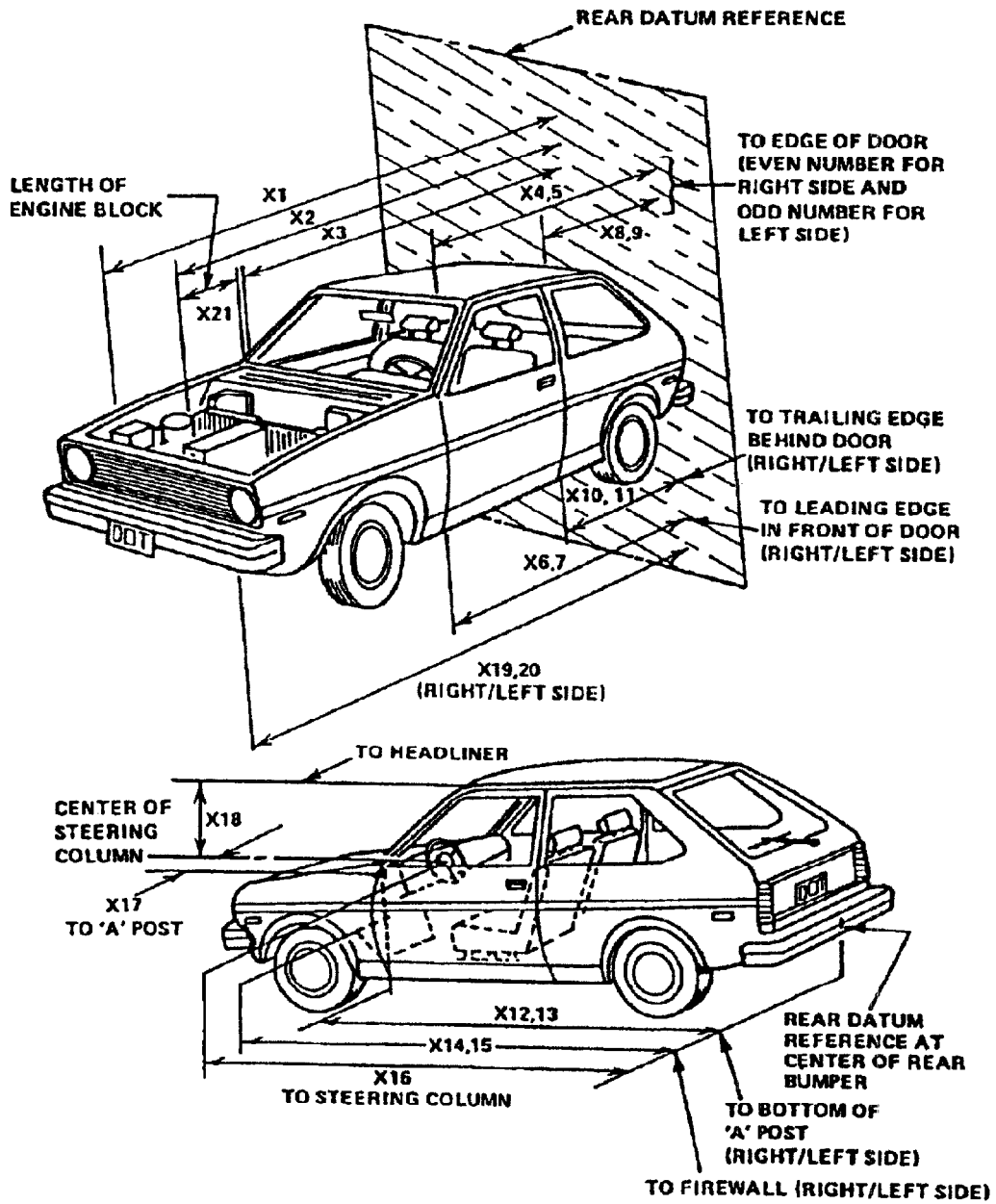


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	176.0	158.5 *	17.5*
X2	Rear Surface of Vehicle to Front of Engine	158.5	153.7	4.8
X3	Rear Surface of Vehicle to Firewall	135.0	133.6	1.4
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	122.9	123.3	-0.4
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	123.2	123.6	-0.4
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	121.0	121.3	-0.3
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	121.5	121.1	0.4
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	80.6	81.5	-0.9
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	80.9	81.4	-0.5
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	79.8	79.9	-0.1
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	80.0	80.0	0.0
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	119.8	119.5	0.3
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	120.4	120.4	0.0
X14	Rear Surface of Vehicle to Firewall, Right Side	135.0	133.4	1.6
X15	Rear Surface of Vehicle to Firewall, Left Side	135.2	134.5	0.7
X16	Rear Surface of Vehicle to Steering Column	103.1	103.6	-0.5
X17	Center of Steering Column to "A" Post	16.3	16.0	0.3
X18	Center of Steering Column to Headliner	17.5	14.3	3.2
X19	Rear Surface of Vehicle to Right Side of Front Bumper	174.5	156.5 *	18.0*
X20	Rear Surface of Vehicle to Left Side of Front Bumper	174.5	159.2 *	15.3*
X21	Length of Engine Block	25.0	25.0	0.0

* Estimated

Section 4

SUMMARY OF RESULTS OF FMVSS NOS. 208, 212, 219 AND 301

- "Occupant Crash Protection," FMVSS No. 208 Data
- "Windshield Mounting," FMVSS No. 212 Data
- "Windshield Zone Intrusion," FMVSS No. 219 (Partial) Data
- "Fuel System Integrity," FMVSS No. 301

Table 8

DUMMY INJURY CRITERIA VALUESNHTSA No. : CW0308 Vehicle : 1998 Jeep Grand Cherokee 4-Door MPV

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-45.6	-3.7	15.0	47.2	-47.1	6.2	5.8	46.073	1.6
Dummy (2)	-33.4	-16.7	24.2	35.5	-45.3	5.7	-25.5	49.207	0.5

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	-1655.1	-1507.7
Dummy (2)	-1692.0	-1779.9

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc (g)
		t ₁ (msec)	t ₂ (msec)	t ₁ TO t ₂
Dummy (1)	278.02	58.200	94.200	35.90
Dummy (2)	139.96	62.100	98.100	27.28

* Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

	NECK DATA****	
	Dummy (1)	Dummy (2)
Flexion*** (N-m)	34.5	99.6
Extension*** (N-m)	-17.4	-26.9
Tension (N)	2070.7	1003.1
Compression (N)	-177.7	-553.0
Fore Shear Force (N)	353.2	253.1
Aft Shear Force (N)	-582.2	-1039.7

***Neck flexion and extension are about the occipital condyle.

****Both dummies were tested unbelted. However, Chrysler only certified the passenger unbelted with a barrier test. In addition, there are no FMVSS 208 neck performance criteria for the barrier test. Therefore, the neck data and driver data will not be used to confirm compliance with FMVSS 208.

Table 9

FMVSS 208 SEAT BELT WARNING SYSTEM CHECK

Year/Make/Model/Body Style: 1998 Jeep Grand Cherokee 4-Door MPV
NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date March 18, 1998

Complete the following to determine which seat belt warning system option (S7.3(a)(1) or S7.3(a)(2)) is used.
(Manufacturers may use either option.)

A. With occupant in driver's position and lap belt in stowed position and ignition switch placed in "Start/On" position:

(1) S7.3(a)(1)

Time duration of audible warning signal = - seconds
(4 to 8 seconds)

Time duration of reminder light operation = - seconds
(no less than 60 seconds)

(2) S7.3(a)(2)

Time duration of audible warning signal = 6 seconds
(4 to 8 seconds)(see 49 USCS @ 30124)

Time duration of reminder light operation = 8 seconds
(4 to 8 seconds)

B. With occupant in drivers position and lap belt in use and the ignition switch placed in "Start/On" position:

(1) S7.3(a)(1)

Time duration of audible warning signal = - seconds
(audible warning not required)

Time duration of reminder light operation = - seconds
(reminder light not required)

(2) S7.3(a)(2)

Time duration of audible warning signal = 0 seconds
(audible warning not required)

Time duration of reminder light operation = 8 seconds
(4 to 8 seconds)

C. Note wording of visual warning:

Fasten Seat Belt -

Fasten Belt -

Symbol 101 X

REMARKS:

Table 10

FMVSS 208 READINESS INDICATOR—(S4.5.2)

Year/Make/Model/Body Style: 1998 Jeep Grand Cherokee 4-Door MPV
NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date March 18, 1998

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation)

1. Is the system totally mechanical ? YES - NO X

(If YES this Data Sheet is complete.)

2. Describe the location of the readiness indicator :

The word "AIRBAG" appears in red on the bottom center of the instrument panel cluster.

3. Is the readiness indicator clearly visible to the driver ? YES X NO -

4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided ?
YES X NO -

REMARKS:

Table 11

FMVSS 208 - REAR OUTBOARD SEATING POSITION SEAT BELTS

Year/Make/Model/Body Style: 1998 Jeep Grand Cherokee 4-Door MPV
NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date March 18, 1998

Do all rear outboard seating positions have type 2 seat belts? YES X NO -

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a type 2 belt was not installed.

REMARKS:

Table 12

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date April 6, 1998

DESIGNATED SEATING POSITION: Front Right Side Passenger

1. Record test seat position. 10th detent rearward of foremost (S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
- Yes; X No
(NOTE: If yes, go to 6.1. If no, go to 7.)
- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
- Yes-Pass; - No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
Measured distance between A and B 26.0 inches

Table 12 (continued)

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lapbelt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
Measured force application angle 12 (spec. 5 - 15 degrees)
13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B 21 inches
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.(S7.1.1.5(c)(5))
Record onset rate 25 lb/sec (spec. 10 to 50 lb/sec)
Measured distance between A and B 21 inches (S7.1.1.5(c)(6))
15. Subtract the measurement in 14 from the measurement in 13. Is the difference 2 inches or less?
(S7.1.1.5(c)(7)) 13-14= 0 inches; X Yes-Pass; - No-FAIL
16. Subtract the measurement in 10 from the measurement in 14. Is the difference 3 inches or more?
(S7.1.1.5(c)(7)) 10-14= 5 inches; X Yes-Pass; - No-FAIL

REMARKS:

Table 12 (continued)

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date April 6, 1998

DESIGNATED SEATING POSITION: Rear Right Side Passenger

1. Record test seat position. Fixed Position (S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
- Yes; X No
(NOTE: If yes, go to 6.1. If no, go to 7.)
- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
- Yes-Pass; - No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
Measured distance between A and B 26.0 inches

Table 12 (continued)

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lapbelt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
 Measured force application angle 15 (spec. 5 - 15 degrees)
13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
 Measured distance between A and B 21 inches
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.(S7.1.1.5(c)(5))
 Record onset rate 25 lb/sec (spec. 10 to 50 lb/sec)
 Measured distance between A and B 21 inches (S7.1.1.5(c)(6))
15. Subtract the measurement in 14 from the measurement in 13. Is the difference 2 inches or less?
 (S7.1.1.5(c)(7)) 13-14= 0 inches; X Yes-Pass; - No-FAIL
16. Subtract the measurement in 10 from the measurement in 14. Is the difference 3 inches or more?
 (S7.1.1.5(c)(7)) 10-14= 5 inches; X Yes-Pass; - No-FAIL

REMARKS:

Table 12 (continued)

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date April 6, 1998

DESIGNATED SEATING POSITION: Rear Center Passenger

1. Record test seat position. Fixed Position (S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
- Yes; X No
(NOTE: If yes, go to 6.1. If no, go to 7.)
- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
- Yes-Pass; - No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
Measured distance between A and B 26.0 inches

Table 12 (continued)

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lapbelt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
 Measured force application angle 13 (spec. 5 - 15 degrees)
13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
 Measured distance between A and B 21 inches
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.(S7.1.1.5(c)(5))
 Record onset rate 25 lb/sec (spec. 10 to 50 lb/sec)
 Measured distance between A and B 21 inches (S7.1.1.5(c)(6))
15. Subtract the measurement in 14 from the measurement in 13. Is the difference 2 inches or less?
 (S7.1.1.5(c)(7)) 13-14 = 0 inches; X Yes-Pass; - No-FAIL
16. Subtract the measurement in 10 from the measurement in 14. Is the difference 3 inches or more?
 (S7.1.1.5(c)(7)) 10-14 = 5 inches; X Yes-Pass; - No-FAIL

REMARKS:

Table 12 (continued)

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date April 6, 1998

DESIGNATED SEATING POSITION: Rear Left Side Passenger

1. Record test seat position. Fixed Position (S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing (S7.1.1.5(a)) X Yes-Pass; - No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
- Yes; X No
(NOTE: If yes, go to 6.1. If no, go to 7.)
- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
- Yes-Pass; - No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
Measured distance between A and B 26.0 inches

Table 12 (continued)

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lapbelt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
 Measured force application angle 10 (spec. 5 - 15 degrees)
13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
 Measured distance between A and B 21 inches
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.(S7.1.1.5(c)(5))
 Record onset rate 25 lb/sec (spec. 10 to 50 lb/sec)
 Measured distance between A and B 21 inches (S7.1.1.5(c)(6))
15. Subtract the measurement in 14 from the measurement in 13. Is the difference 2 inches or less?
 (S7.1.1.5(c)(7)) 13-14= 0 inches; X Yes-Pass; - No-FAIL
16. Subtract the measurement in 10 from the measurement in 14. Is the difference 3 inches or more?
 (S7.1.1.5(c)(7)) 10-14= 5 inches; X Yes-Pass; - No-FAIL

REMARKS:

Table 13

AIR BAG LABELS

NHTSA NO. CW0308 ; Technician Patrick MacDiarmid ; Date March 31, 1998

1. Air Bag Maintenance Label and Owner's Manual Instructions: (S4.5.1(a))

1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?

 - Yes (Go to 1.2) ; X No (Go to 2)

1.2 Does the Vehicle have a maintenance or replacement label?

 - Yes-Pass ; - No-FAIL

1.3 Does the label contain one of the following?

 - Yes-Pass ; - No-FAIL

Check applicable schedule

 - Schedule on label specifies month and year (Record date)

 - Schedule on label specifies vehicle mileage (Record mileage)

 - Schedule on label specifies interval measured from date on certification label
(Record date)

1.4 Is the label permanently affixed within the passenger compartment?

 - Yes-Pass ; - No-FAIL

1.5 Is the label lettered in English?

 - Yes-Pass ; - No-FAIL

1.6 Is the label in block capitals and numerals?

 - Yes-Pass ; - No-FAIL

1.7 Are the letters and numerals at least 3/32 inches high?

 - Yes-Pass ; - No-FAIL

1.8 Does the owner's manual set forth the recommended schedule for maintenance or replacement?

 - Yes-Pass ; - No-FAIL

2. Does the owner's manual: (S4.5.1(f))

2.1 Include a description of the vehicle's air bag system in an easily understandable format?

 X Yes-Pass ; - No-FAIL

2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at the front outboard seating positions?

 X Yes-Pass ; - No-FAIL

Table 13 (continued)

- 2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions?
 Yes-Pass ; No-FAIL
- 2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an air bag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?
 Yes-Pass ; No-FAIL
- 2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to insure maximum safety protection for those occupants?
 Yes-Pass ; No-FAIL
- 2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?
 Yes-Pass ; No-FAIL
3. Does the vehicle:
- 3.1 Provide an automatic means to ensure that the air bag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard passenger?
 Yes ; No
- 3.2 Incorporate sensors, other than or in addition to weight sensors, which automatically prevent the passenger air bag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seats, and unbelted or improperly belted children?
 Yes ; No
- 3.3 Have a passenger air bag designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children?
 Yes ; No
- If yes to 3.1, or 3.2, or 3.3, the vehicle is not required to have a Sun Visor Warning Label (S4.5.1(b)), an air bag alert label (S4.5.1(c)) or a label on the dash (S4.5.1(e)) and this check sheet is complete. (S4.5.1) If no to 3.1, 3.2 and 3.3, go to 4.**
4. Sun Visor Warning Label
- 4.1 Is the label permanently affixed (may be permanent marking or molding) to either side of the sun visor at each front outboard seating position with an air bag? (S4.5.1(b)(2))
- Driver side Yes-Pass; No-FAIL
- Passenger side N/A Yes-Pass; No-FAIL

Table 13 (continued)

4.2 Does the label conform in content (vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children." (S4.5.1(b)(2)(v))) to the label shown in either Figure 8a or 8b as appropriate at each front outboard seating position with an air bag? (S4.5.1(b)(2))

4.2.1 Dual air bags - N/A

Driver side X Yes-Pass; - No-FAIL

Passenger side X Yes-Pass; - No-FAIL

4.2.2 Vehicle with driver air bag ONLY - either 4.2.2.1 or 4.2.2.2 is applicable not both. (S4.5.1(b)(2)(iv))

4.2.2.1 Does the label conform in content to the label shown in either Figure 8a or 8b as appropriate?

X N/A

Driver side - Yes-Pass; - No-FAIL -

4.2.2.2 Does the label conform in content to the label shown in Figure 8a where the label can be modified to omit the pictogram and the message text may read:

DEATH or SERIOUS INJURY can occur.

- Sit as far back as possible from the air bag.
- ALWAYS use SEAT BELTS and CHILD RESTRAINTS.
- The BACK SEAT is the SAFEST place for children.

X N/A

Driver side - Yes-Pass; - No-FAIL -

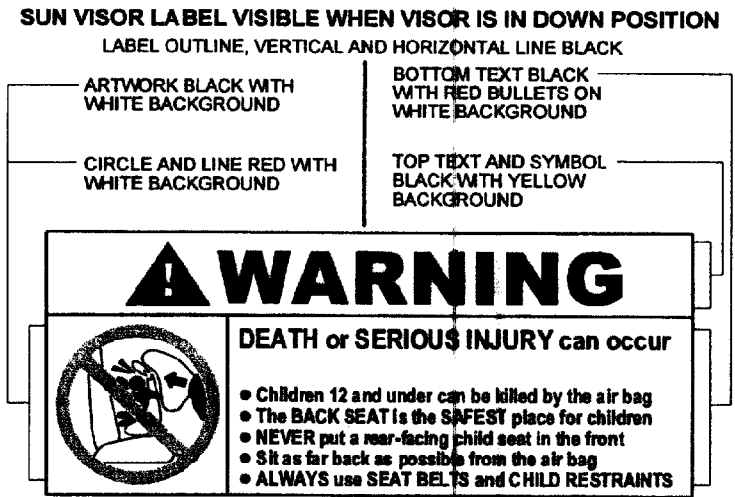


FIGURE 8A

Table 13 (continued)

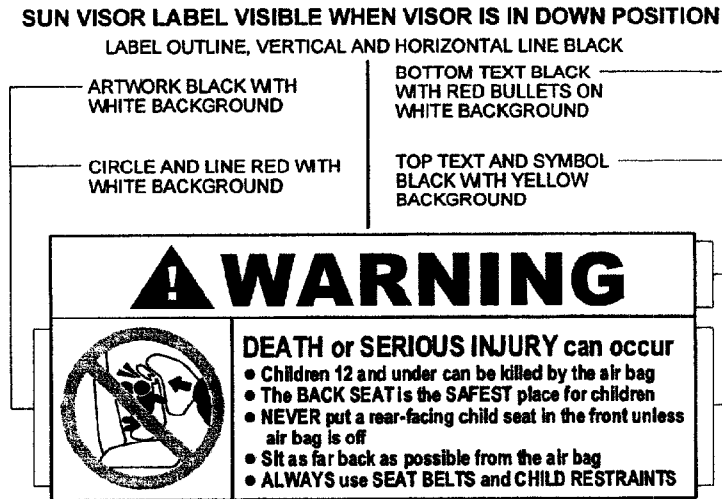


FIGURE 8B

4.3 Is the label heading area yellow with the word "warning" and the alert symbol in black? (S4.5.1(b)(2)(i))

Driver side		<u> X </u>	Yes-Pass;	<u> - </u>	No-FAIL
Passenger side	<u> - </u>	No air bag	<u> X </u>	Yes-Pass;	<u> - </u> No-FAIL

4.4 Is the message white with black text? (S4.5.1(b)(2)(ii))

Driver side		<u> X </u>	Yes-Pass;	<u> - </u>	No-FAIL
Passenger side	<u> - </u>	No air bag	<u> X </u>	Yes-Pass;	<u> - </u> No-FAIL

4.5 Is the message area at least 30 cm²? (S4.5.1(b)(2)(ii))

Actual message area	<u> 30.4 </u>	cm ²			
Driver side		<u> X </u>	Yes-Pass;	<u> - </u>	No-FAIL
Passenger side	<u> - </u>	No air bag	<u> X </u>	Yes-Pass;	<u> - </u> No-FAIL

4.6 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(b)(2)(iii) & (S4.5.1(b)(2)(iv))

For vehicles with driver side air bag ONLY				<u> X </u>	N/A
Driver side		<u> X </u>	Yes-Pass;	<u> - </u>	No-FAIL
Passenger side	<u> - </u>	No air bag	<u> X </u>	Yes-Pass;	<u> - </u> No-FAIL

REMARKS:

Table 13 (continued)

4.7	Is the pictogram at least 30 mm in diameter? (S4.5.1(b)(2)(iii))			
	Actual diameter	<u>30</u>	mm	
	For vehicles with driver side air bag ONLY			<u>X</u> N/A
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
4.8	Is the same side of the sun visor to which the sun visor label is affixed free of other information with the exception of an air bag maintenance label? (S4.5.1(b)(3))			
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
4.9	Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label or the utility vehicle label? (S4.5.1(b)(3))			
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
5.	Air Bag Alert Label			
5.1	Is the Sun Visor Warning Label visible when the sun visor is in the stowed position? (if yes, go to 6.)			
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
5.2	Does the label conform in content to the label shown in Figure 8c? (S4.5.1(c)(2))			
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
5.3	Is the message area black with yellow text? (S4.5.1(c)(2)(i))			
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
5.4	Is the message area at least 20 cm ² ? (S4.5.1(c)(2)(i))			
	Actual message area	<u>28</u>	cm ²	
	Driver side	<u>X</u>	Yes-Pass;	<u>-</u> No-FAIL
	Passenger side	<u>-</u>	No air bag <u>X</u> Yes-Pass;	<u>-</u> No-FAIL
5.5	Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2)(ii))			
	For vehicles with driver side air bag ONLY			<u>-</u> N/A
	<u>X</u>	Yes-Pass ;	<u>-</u>	No-FAIL

REMARKS:

Table 13 (continued)

- 5.6 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2)(ii))
Actual diameter 30 mm
For vehicles with driver side air bag ONLY - N/A
X Yes-Pass ; - No-FAIL

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN UP POSITION

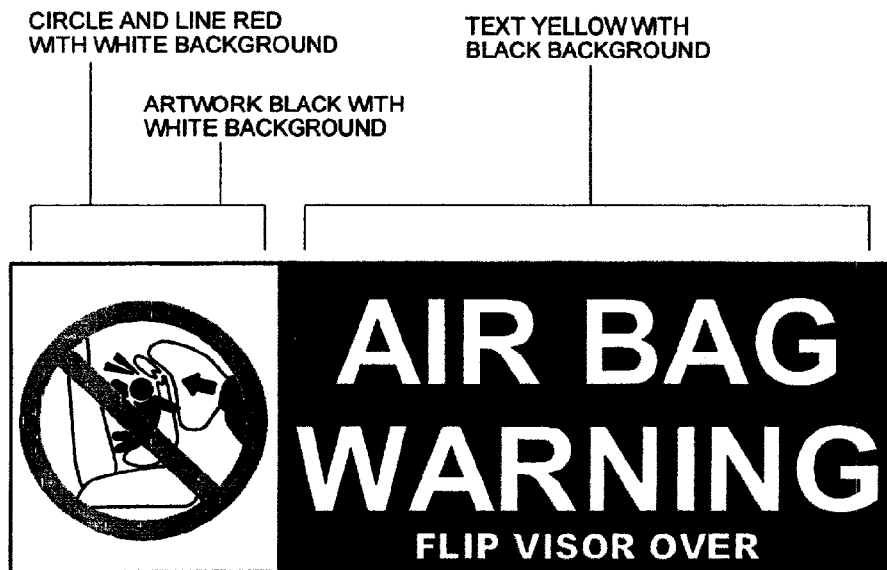


FIGURE 8C

6. Label On the Dash
- 6.1 Does the vehicle have a passenger side air bag?
X Yes-Pass ; - No (If no, this check sheet is complete)
- 6.2 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e))
X Yes-Pass ; - No-FAIL
- 6.3 Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children 12 and under." (S4.5.1(e)(iii))) to the label shown in Figure 9?(S4.5.1(e))
X Yes-Pass ; - No-FAIL
- 6.4 Is the heading area yellow with the word "warning" and the alert symbol in black? (S4.5.1(e)(i))
X Yes-Pass ; - No-FAIL

Table 13 (continued)

6.5 Is the message white with black text? (S4.5.1(e)(ii))

X Yes-Pass ; - No-FAIL

6.6 Is the message area at least 30 cm²? (S4.5.1(e)(ii))

Actual message area 33.8 cm² ; X Yes-Pass ; - No-FAIL



FIGURE 9

Table 14

FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TESTS

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Left Side (Driver)
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

1.1 Does the vehicle incorporate a webbing tension-relieving device?

- Yes - go to latchplate access
- No - continue with this check sheet

1.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

CHECK
 N/A

1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

CHECK
 N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

CHECK
 N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

CHECK
 N/A

Table 14 (continued)

1. BELT CONTACT FORCE (S7.4.3) (continued)

1.6 Place each adjustable head restraint in its highest adjustment position.

 X CHECK
 - N/A

1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 - CHECK
 X N/A

1.8 Position the test dummies according to dummy position placement instructions in Appendix B.

 X CHECK

1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.

Contact force 0.2 lb.

 X 0.0 to 0.7 pounds - Pass
 - greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Table 14 (continued)

2. LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Left Side (Driver)
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 2.1 Position the seat in its forward most adjustment position.

 X CHECK
- 2.2 Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.)

 X CHECK
- 2.3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.

 X CHECK
- 2.4 Attach the inboard and outboard reach string.

 X CHECK
- 2.5 Place the latch plate in the stowed position.

 X CHECK
- 2.6 Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

 X Yes - Pass - NO - FAIL
- 2.7 Using the clearance test block, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

 X Yes - Pass - NO - FAIL

Table 14 (continued)

3. RETRACTION (S7.4.5)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Left Side (Driver)
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

3.1 Is the vehicle a passenger car or walk-in van-type vehicle?

- Yes X No

If yes, go to seat belt guides and hardware.

3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

X CHECK

3.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

X CHECK

3.3 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

X CHECK

3.4 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

X CHECK

3.5 Place each adjustable head restraint in its highest adjustment position.

X CHECK

3.6 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

X CHECK

Table 14 (continued)

3. RETRACTION (S7.4.5) (continued)

- 3.7 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B of TP208-10
 X CHECK
- 3.8 Restrain the dummies using the belt systems for the position being tested.
 X CHECK
- 3.9 Stow outboard armrests which are capable of being stowed.
 X CHECK
- 3.10 Check the statement that applies to this test vehicle:
- (A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.
 X Pass
- (B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.
 X Pass
- (C) Neither A or B apply.
 - **FAIL**
- 3.11 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
 X Yes - Pass - **NO - FAIL**
- 3.12 If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
 X N/A - Yes - Pass - **NO - FAIL**

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Left Side (Driver)
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following:

4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

 Yes: go to 4.2. X No: this form is complete.

4.2. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

 Yes - Pass **NO - FAIL**

4.3. Are the remaining two seat belt parts accessible under normal conditions?

 Yes - Pass **NO - FAIL**

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6) (continued)

4.4. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

 - CHECK

(B) The seat is moved to any position to which it is designed to be adjusted.

 - CHECK

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

 - CHECK

 - Yes - Pass - NO - FAIL

4.5. Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

 - Yes - Pass - NO - FAIL

Table 14 (continued)

FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TESTS

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

1.1 Does the vehicle incorporate a webbing tension-relieving device?

- Yes - go to latchplate access
- No - continue with this check sheet

1.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

- CHECK
- N/A

1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

- CHECK
- N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

- CHECK
- N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

- CHECK
- N/A

Table 14 (continued)

1. BELT CONTACT FORCE (S7.4.3) (continued)

1.6 Place each adjustable head restraint in its highest adjustment position.

 X CHECK

 - N/A

1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 - CHECK

 X N/A

1.8 Position the test dummies according to dummy position placement instructions in Appendix B.

 X CHECK

1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.

Contact force 0.2 lb.

 X 0.0 to 0.7 pounds - Pass

 - greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Table 14 (continued)

2. LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 2.1 Position the seat in its forward most adjustment position. X CHECK
- 2.2 Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.) X CHECK
- 2.3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant. X CHECK
- 2.4 Attach the inboard and outboard reach string. X CHECK
- 2.5 Place the latch plate in the stowed position. X CHECK
- 2.6 Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope? X Yes - Pass - NO - FAIL
- 2.7 Using the clearance test block, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle? X Yes - Pass - NO - FAIL

Table 14 (continued)

3. RETRACTION (S7.4.5)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

3.1 Is the vehicle a passenger car or walk-in van-type vehicle?

 Yes X No

If yes, go to seat belt guides and hardware.

3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

 X CHECK

3.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

 X CHECK

3.3 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

 X CHECK

3.4 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

 X CHECK

3.5 Place each adjustable head restraint in its highest adjustment position.

 X CHECK

3.6 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 X CHECK

Table 14 (continued)

3. **RETRACTION (S7.4.5) (continued)**
- 3.7 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B of TP208-10
 X CHECK
- 3.8 Restrain the dummies using the belt systems for the position being tested.
 X CHECK
- 3.9 Stow outboard armrests which are capable of being stowed.
 X CHECK
- 3.10 Check the statement that applies to this test vehicle:
- (A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.
 X Pass
- (B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.
 X Pass
- (C) Neither A or B apply.
 - **FAIL**
- 3.11 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
 X Yes - Pass - **NO - FAIL**
- 3.12 If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
 X N/A - Yes - Pass - **NO - FAIL**

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Front Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 Yes: go to 4.2. No: this form is complete.
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 Yes - Pass NO - FAIL
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 Yes - Pass NO - FAIL

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6) (continued)

4.4. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

 - CHECK

(B) The seat is moved to any position to which it is designed to be adjusted.

 - CHECK

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

 - CHECK

 - Yes - Pass - NO - FAIL

4.5. Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

 - Yes - Pass - NO - FAIL

Table 14 (continued)

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

1.1 Does the vehicle incorporate a webbing tension-relieving device?

- Yes - go to latchplate access
- No - continue with this check sheet

1.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

- CHECK
- N/A

1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

- CHECK
- N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

- CHECK
- N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

- CHECK
- N/A

Table 14 (continued)

1. BELT CONTACT FORCE (S7.4.3) (continued)

1.6 Place each adjustable head restraint in its highest adjustment position.

 X CHECK

 - N/A

1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 - CHECK

 X N/A

1.8 Position the test dummies according to dummy position placement instructions in Appendix B.

 X CHECK

1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.

Contact force 0.2 lb.

 X 0.0 to 0.7 pounds - Pass

 - greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Table 14 (continued)

2. LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 2.1 Position the seat in its forward most adjustment position. X CHECK
- 2.2 Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.) X CHECK
- 2.3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant. X CHECK
- 2.4 Attach the inboard and outboard reach string. X CHECK
- 2.5 Place the latch plate in the stowed position. X CHECK
- 2.6 Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope? X Yes - Pass - NO - FAIL
- 2.7 Using the clearance test block, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle? X Yes - Pass - NO - FAIL

Table 14 (continued)

3. RETRACTION (S7.4.5)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

3.1 Is the vehicle a passenger car or walk-in van-type vehicle?

 Yes X No

If yes, go to seat belt guides and hardware.

3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

 X CHECK

3.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

 X CHECK

3.3 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

 X CHECK

3.4 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

 X CHECK

3.5 Place each adjustable head restraint in its highest adjustment position.

 X CHECK

3.6 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 X CHECK

Table 14 (continued)

3. RETRACTION (S7.4.5) (continued)

3.7 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B of TP208-10

X CHECK

3.8 Restrain the dummies using the belt systems for the position being tested.

X CHECK

3.9 Stow outboard armrests which are capable of being stowed.

X CHECK

3.10 Check the statement that applies to this test vehicle:

(A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.

X Pass

(B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.

X Pass

(C) Neither A or B apply.

- FAIL

3.11 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

X Yes - Pass - NO - FAIL

3.12 If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

X N/A - Yes - Pass - NO - FAIL

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Right Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 Yes: go to 4.2. No: this form is complete.
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 Yes - Pass NO - FAIL
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 Yes - Pass NO - FAIL

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6) (continued)

4.4. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

 X CHECK

(B) The seat is moved to any position to which it is designed to be adjusted.

 X CHECK

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

 X CHECK

 X Yes - Pass - NO - FAIL

4.5. Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

 - Yes - Pass - NO - FAIL

Table 14 (continued)

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Left Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

1.1 Does the vehicle incorporate a webbing tension-relieving device?

- Yes - go to latchplate access
- No - continue with this check sheet

1.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

- CHECK
- N/A

1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

- CHECK
- N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

- CHECK
- N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

- CHECK
- N/A

Table 14 (continued)

1. BELT CONTACT FORCE (S7.4.3) (continued)

1.6 Place each adjustable head restraint in its highest adjustment position.

 X CHECK
 - N/A

1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 - CHECK
 X N/A

1.8 Position the test dummies according to dummy position placement instructions in Appendix B.

 X CHECK

1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.

Contact force 0.2 lb.

 X 0.0 to 0.7 pounds - Pass
 - greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Table 14 (continued)

2. LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Left Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 2.1 Position the seat in its forward most adjustment position.

 X CHECK
- 2.2 Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.)

 X CHECK
- 2.3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.

 X CHECK
- 2.4 Attach the inboard and outboard reach string.

 X CHECK
- 2.5 Place the latch plate in the stowed position.

 X CHECK
- 2.6 Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

 X Yes - Pass - NO - FAIL
- 2.7 Using the clearance test block, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

 X Yes - Pass - NO - FAIL

Table 14 (continued)

3. RETRACTION (S7.4.5)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Left Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

3.1 Is the vehicle a passenger car or walk-in van-type vehicle?

 Yes X No

If yes, go to seat belt guides and hardware.

3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

 X CHECK

3.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

 X CHECK

3.3 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

 X CHECK

3.4 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

 X CHECK

3.5 Place each adjustable head restraint in its highest adjustment position.

 X CHECK

3.6 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

 X CHECK

Table 14 (continued)

3.	RETRACTION (S7.4.5) (continued)		
3.7	Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B of TP208-10	<u> X </u>	CHECK
3.8	Restrain the dummies using the belt systems for the position being tested.	<u> X </u>	CHECK
3.9	Stow outboard armrests which are capable of being stowed.	<u> X </u>	CHECK
3.10	Check the statement that applies to this test vehicle:		
	(A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.	<u> X </u>	Pass
	(B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.	<u> X </u>	Pass
	(C) Neither A or B apply.	<u> - </u>	FAIL
3.11	With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?	<u> X </u>	Yes - Pass <u> - </u> NO - FAIL
3.12	If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?	<u> X </u>	N/A <u> - </u> Yes - Pass <u> - </u> NO - FAIL

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.:	CW0308
Vehicle Model Year/Make/Model/Body Style:	1998 Jeep Grand Cherokee 4-Door MPV
Designated Seating Position Tested:	Rear Left Side Passenger
Date of Comfort/Convenience Check:	March 18, 1998
Technician Performing Check:	Patrick MacDiarmid
GVWR:	5300 lbs.

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 Yes: go to 4.2. No: this form is complete.
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 Yes - Pass NO - FAIL
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 Yes - Pass NO - FAIL

Table 14 (continued)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6) (continued)

4.4. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

 X CHECK

(B) The seat is moved to any position to which it is designed to be adjusted.

 X CHECK

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

 X CHECK

 X Yes - Pass - NO - FAIL

4.5. Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

 - Yes - Pass - NO - FAIL

Figure 10

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC. :

The windshield is bonded in place with a 0.9 inch molding.

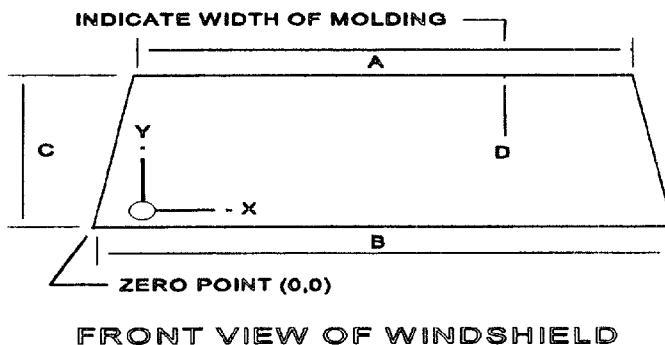
FMVSS 212 REQUIREMENTS :

The Post - Test periphery retention amount must be at least 75% of the Pre - Test periphery measurement for vehicle NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 TEST DATA :

	WINDSHIELD PERIPHERY		PERCENT RETENTION
	PRE - TEST (in.)	POST - TEST (in.)	
RIGHT SIDE	82	82	100.0
LEFT SIDE	82	82	100.0
TOTAL	164.0	164.0	100.0

AREA OF RETENTION FAILURE:



FAILURE DETAILS : None

Figure 11

FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA SHEET

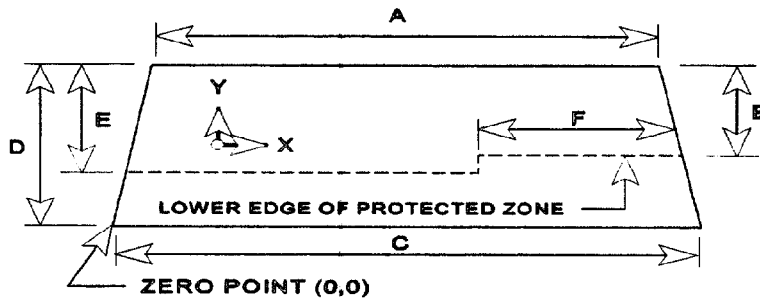
PROTECTED ZONE LOWER EDGE REQUIREMENT :

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield

FMVSS 219 TEST DATA : (Dimensions in inches.)

KEY (Inches):

A =	49.5
B =	13.9
C =	62.5
D =	26.0
E =	19.5
F =	33.0



FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4" :

(Show location of penetration on above sketch)

COORDINATES		
	X	Y
1	-	-
2	-	-
3	-	-
4	-	-

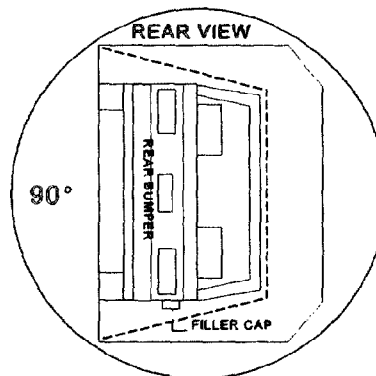
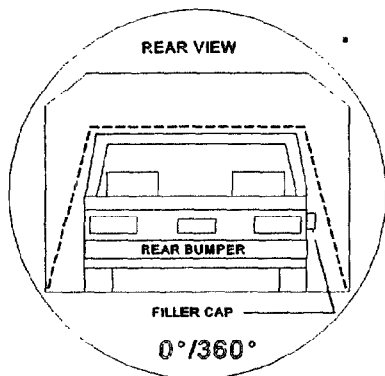
None

Table 16

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE :
0-90 Deg.

Vehicle NHTSA ID No.:
CW0308



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>09</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>9</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	N/A
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

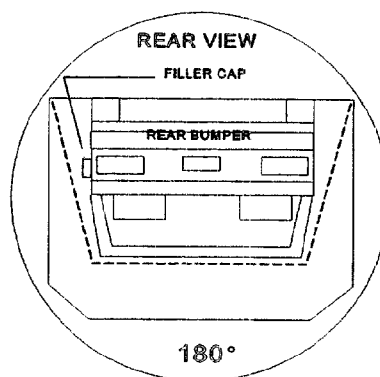
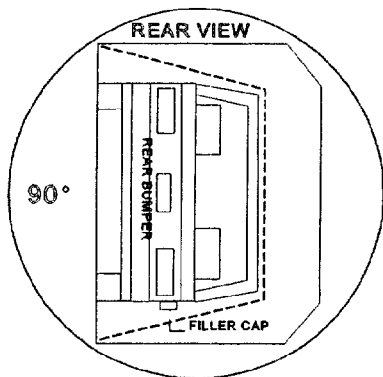
None

Table 16

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
90-180 Deg.

Vehicle NHTSA ID No. :
CW0308



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	10	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	10	seconds
Next whole minute interval	7	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	N/A
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

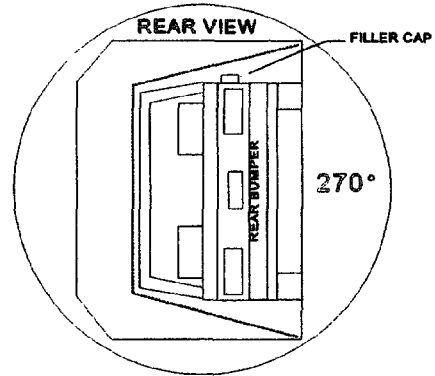
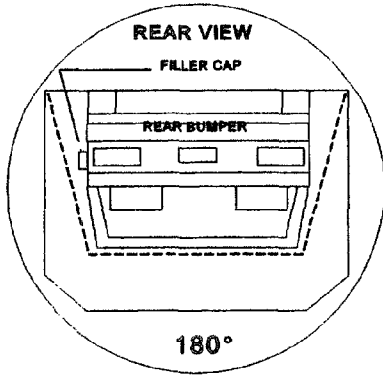
None

Table 16

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
180-270 Deg.

Vehicle NHTSA ID No. :
CW0308



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	03	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	3	seconds
Next whole minute interval	7	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	N/A
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

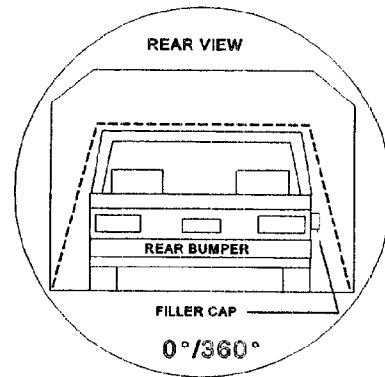
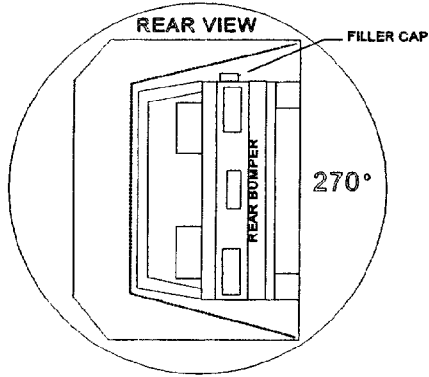
None

Table 16

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
270-360 Deg.

Vehicle NHTSA ID No. :
CW0308



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>12</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>12</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	N/A
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

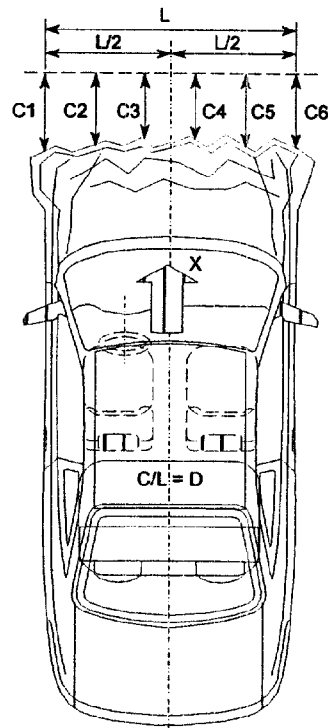
Table 18

ACCIDENT INVESTIGATION DIVISION DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1998 Jeep Grand Cherokee 4-Door MPV
 VEHICLE NHTSA NO. : CW0308 VIN NO. : 1J4GZ58S1WC120835
 WHEELBASE: 105.9 in. BUILD DATE: 08/97 TEST DATE: March 26, 1998
 VEH SIZE CATEGORY: MPV TEST WEIGHT: 4463 lbs.
 FRONT OVERHANG: 57.8 in. OVERALL WIDTH: 69.8 in.
 COLLISION DEFORMATION (CDC) CODE: 12FDEW2
 IMPACT MODE: 30 mph zero degree frontal barrier.

CRUSH DEPTH DIMENSIONS: (Inches)

	PRE	POST	DIFF
C1 =	172.5	158.0	-14.5
C2 =	175.5	159.0	-16.5
C3 =	176.0	158.7	-17.3
C4 =	176.0	158.0	-18
C5 =	175.2	157.2	-18
C6 =	172.0	157.0	-15



MIDPOINT OF DAMAGE: D= (Vehicle Longitudinal Centerline) 31.9 inches
 LENGTH OF DAMAGE REGION: L= 63.8 inches

Remarks: _____

Appendix A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

<u>Figure</u>	<u>Photograph Title</u>	<u>Page No.</u>
A-1	PRE-TEST FRONT VIEW	A-3
A-2	POST- TEST FRONT VIEW	A-4
A-3	PRE-TEST LEFT SIDE VIEW	A-5
A-4	POST -TEST LEFT SIDE VIEW	A-6
A-5	PRE-TEST RIGHT SIDE VIEW	A-7
A-6	POST -TEST RIGHT SIDE VIEW	A-8
A-7	PRE-TEST FRONT UNDERBODY VIEW	A-9
A-8	POST- TEST FRONT UNDERBODY VIEW	A-10
A-9	PRE-TEST DRIVER SIDE VIEW	A-11
A-10	POST-TEST DRIVER SIDE VIEW	A-12
A-11	PRE-TEST PASSENGER SIDE VIEW	A-13
A-12	POST-TEST PASSENGER SIDE VIEW	A-14
A-13	PRE-TEST DRIVER KNEE BOLSTER	A-15
A-14	POST-TEST DRIVER KNEE BOLSTER	A-16
A-15	PRE-TEST PASSENGER KNEE BOLSTER	A-17
A-16	POST-TEST PASSENGER KNEE BOLSTER	A-18
A-17	PRE-TEST UNDERBODY STEERING SHAFT	A-19
A-18	POST-TEST UNDERBODY STEERING SHAFT	A-20
A-19	PRE-TEST STEERING COLUMN/FIREWALL INSIDE VIEW	A-21
A-20	POST-TEST STEERING COLUMN/FIREWALL INSIDE VIEW	A-22
A-21	CERTIFICATION PLACARD	A-23
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A-25	POST-TEST PASSENGER AIRBAG VIEW	A-27



Figure A-1 PRE-TEST FRONT VIEW



Figure A-2 POST-TEST FRONT VIEW

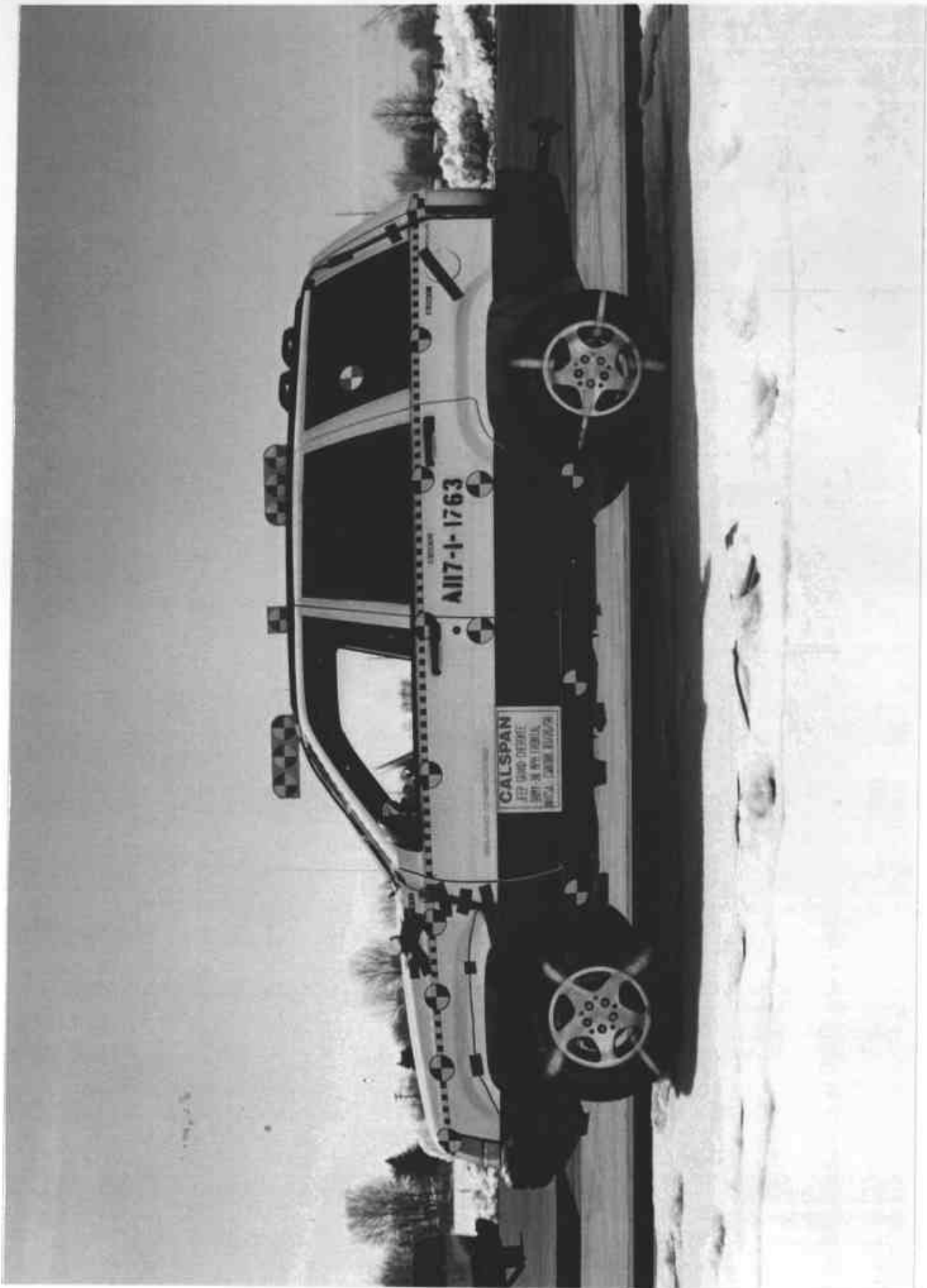


Figure A-3 PRE-TEST LEFT SIDE VIEW

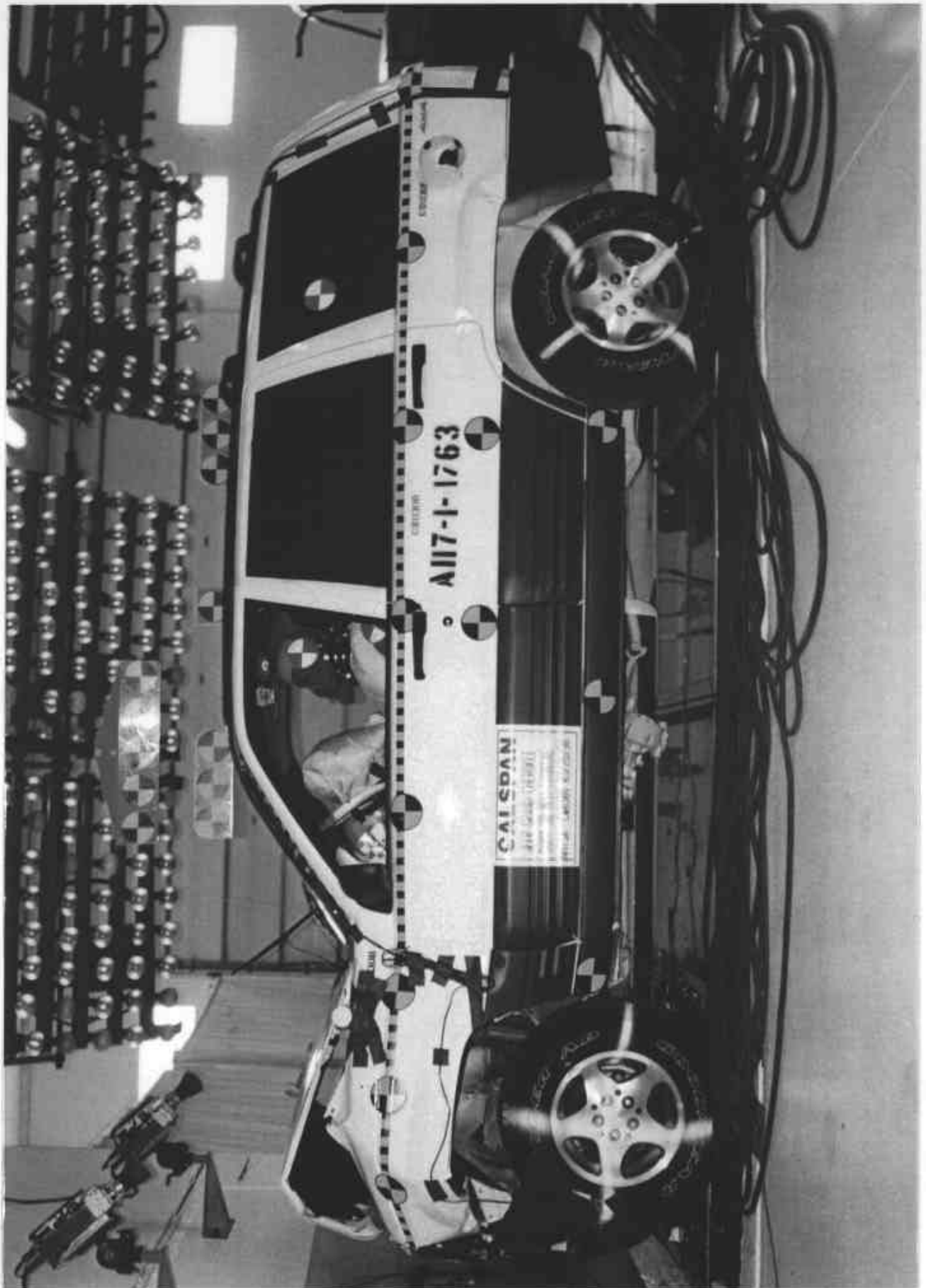


Figure A-4 POST-TEST LEFT SIDE VIEW

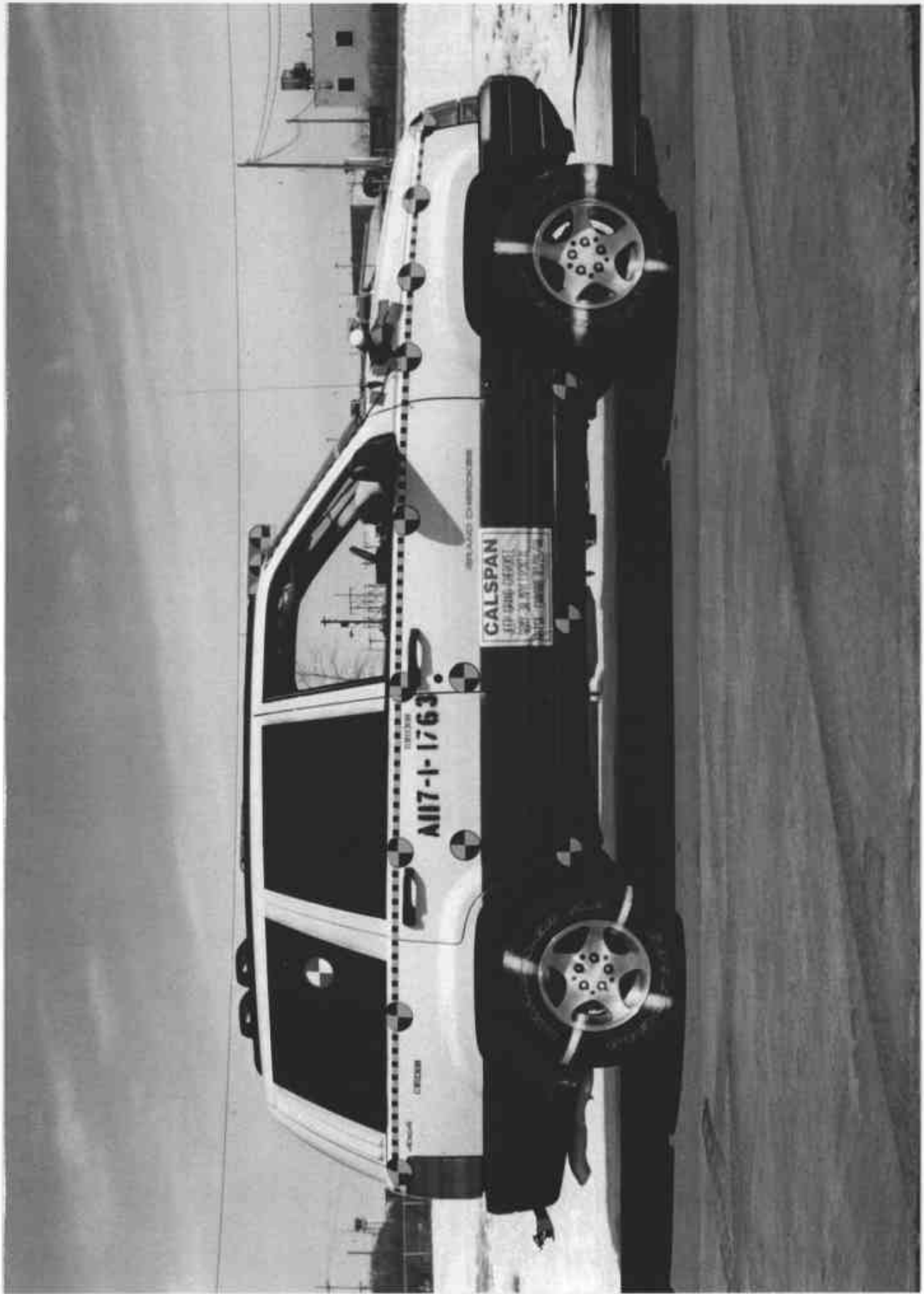


Figure A-5 PRE-TEST RIGHT SIDE VIEW

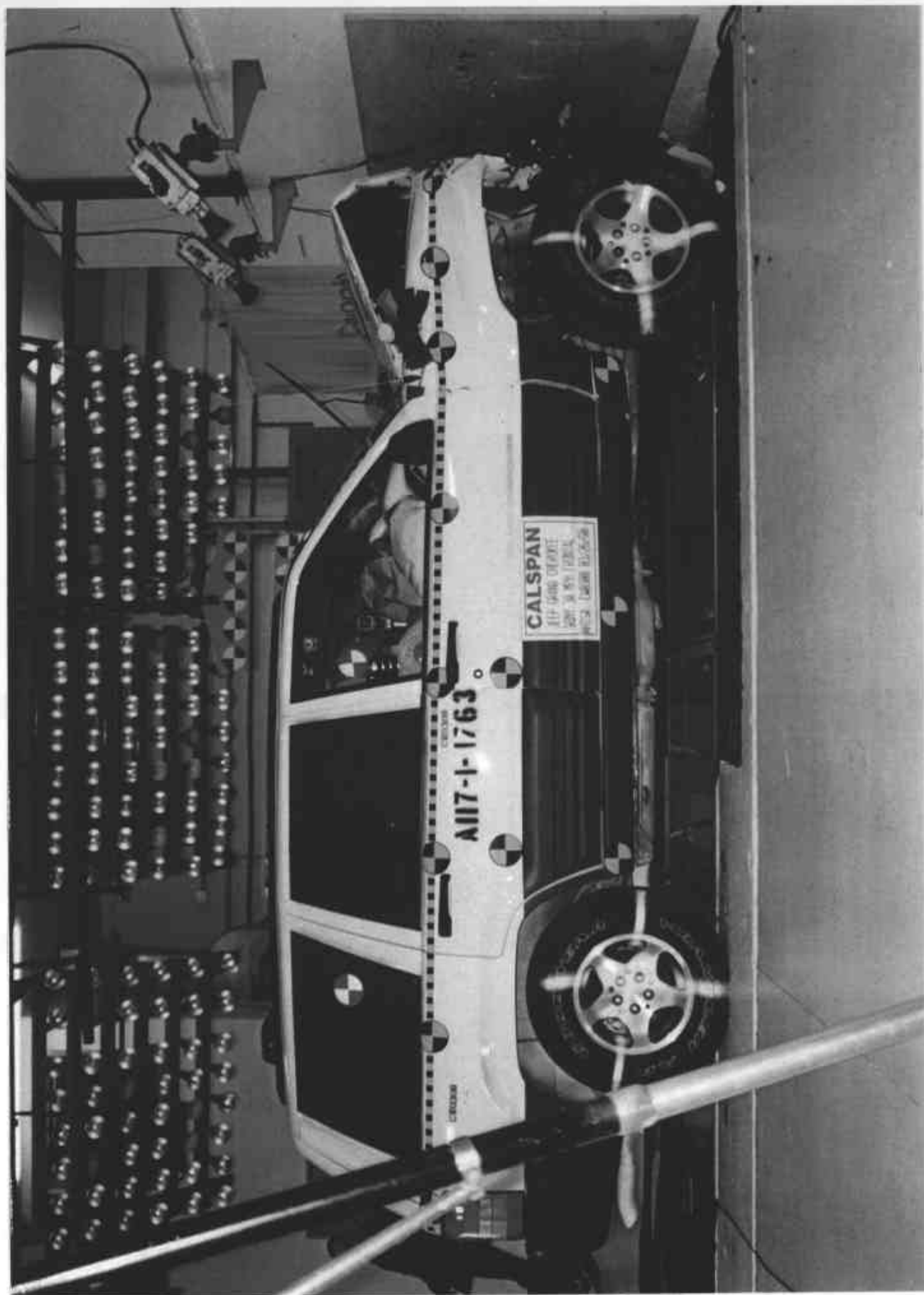


Figure A-6 POST-TEST RIGHT SIDE VIEW

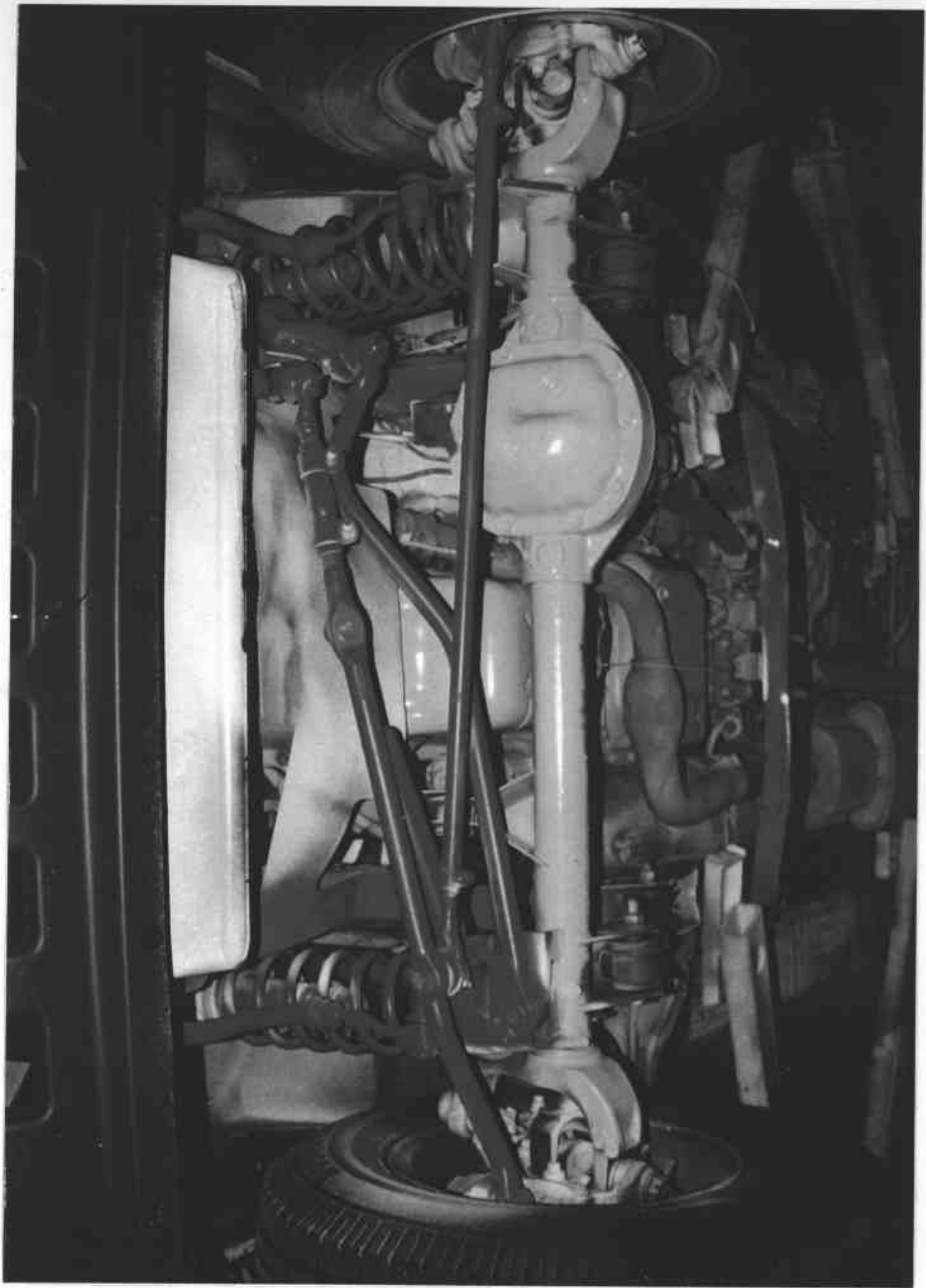


Figure A-7 PRE-TEST FRONT UNDERBODY VIEW

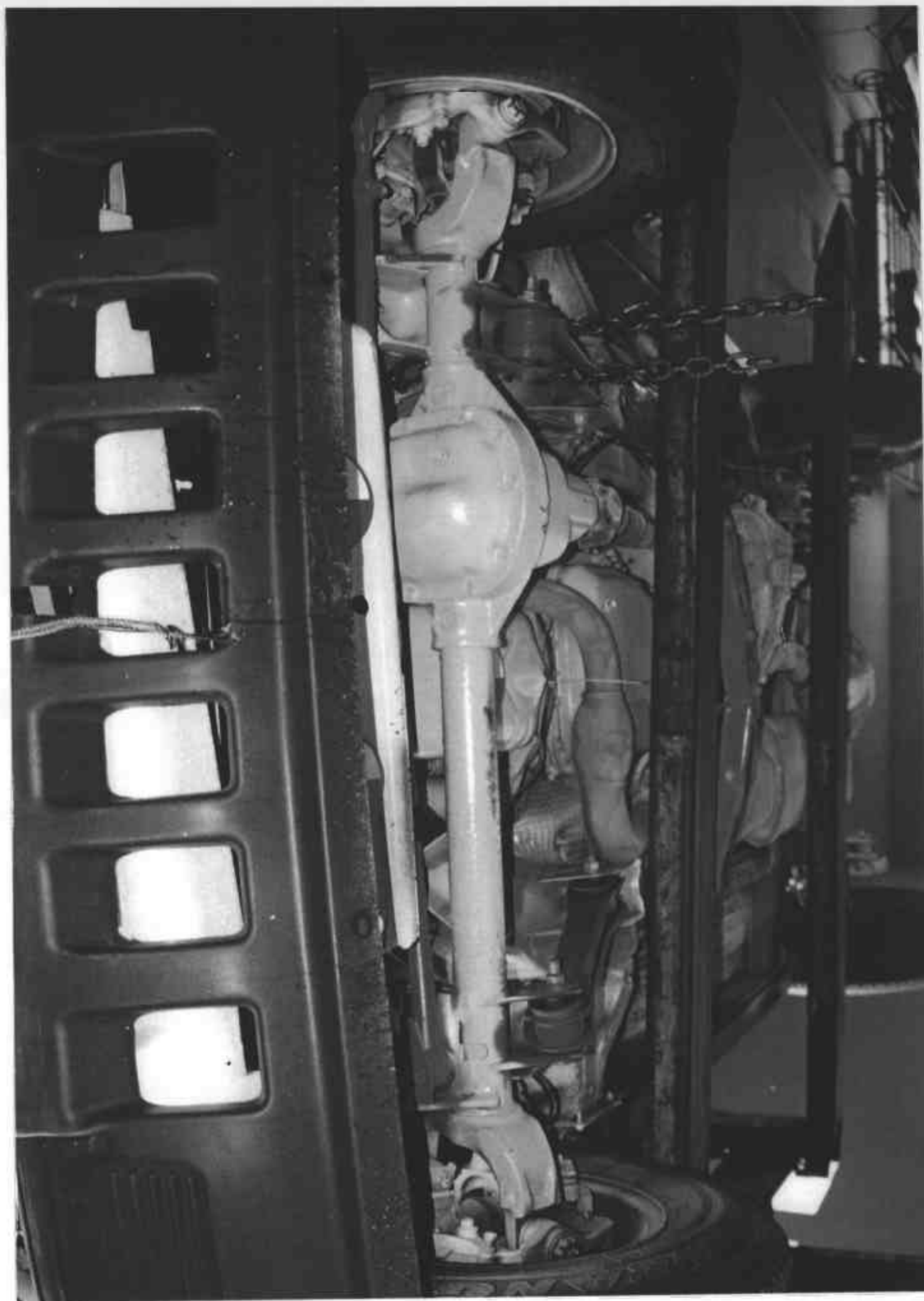


Figure A-8 POST-TEST FRONT UNDERBODY VIEW

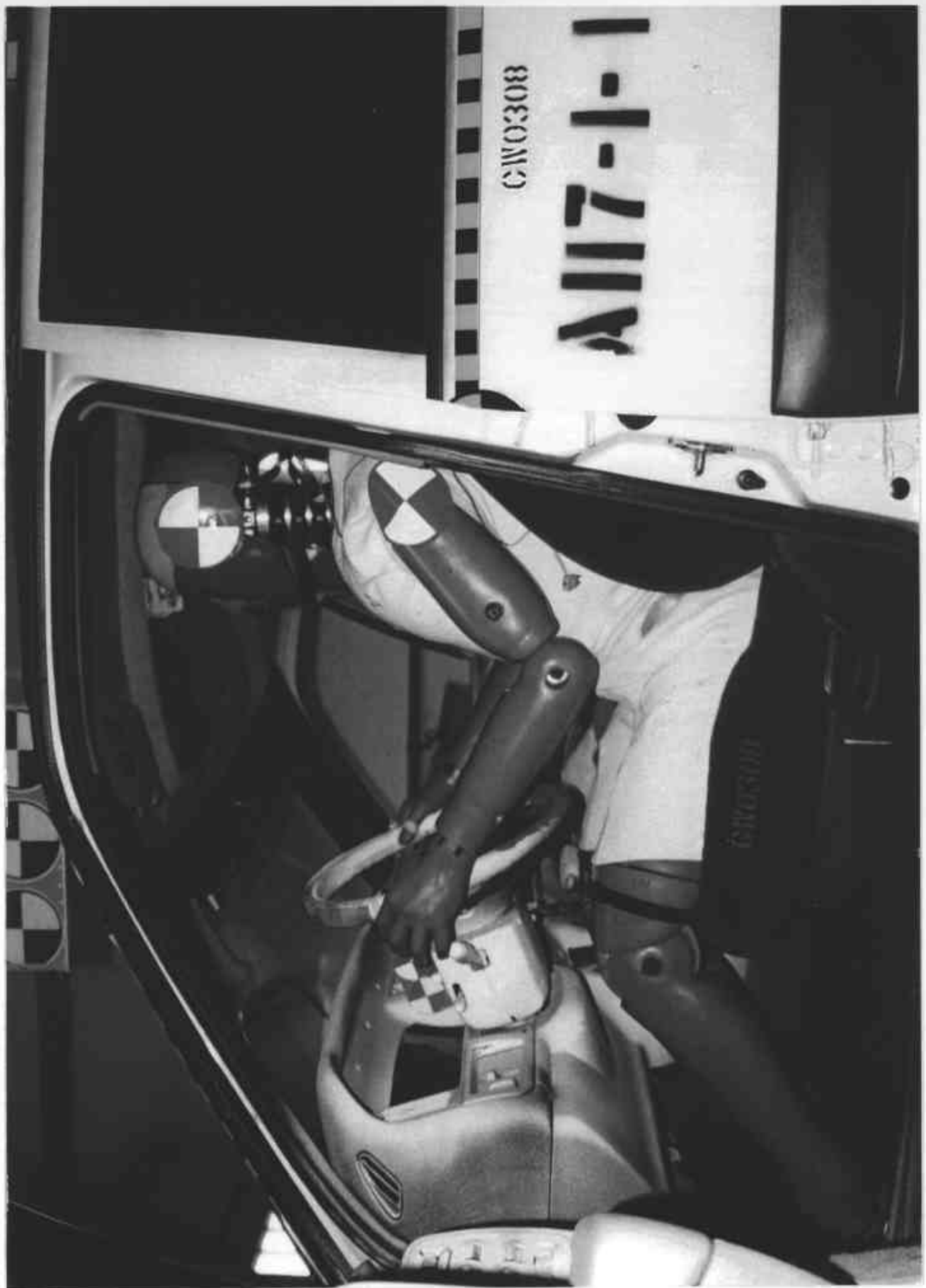


Figure A-9 PRE-TEST DRIVER SIDE VIEW



Figure A-10 POST-TEST DRIVER SIDE VIEW



Figure A-11 PRE-TEST PASSENGER SIDE VIEW



Figure A-12 POST-TEST PASSENGER SIDE VIEW



Figure A-13 PRE-TEST DRIVER KNEE BOLSTER



Figure A-14. POST-TEST DRIVER KNEE BOLSTER



Figure A-15 PRE-TEST PASSENGER KNEE BOLSTER



Figure A-16 POST-TEST PASSENGER KNEE BOLSTER



Figure A-17 PRE-TEST UNDERBODY STEERING SHAFT

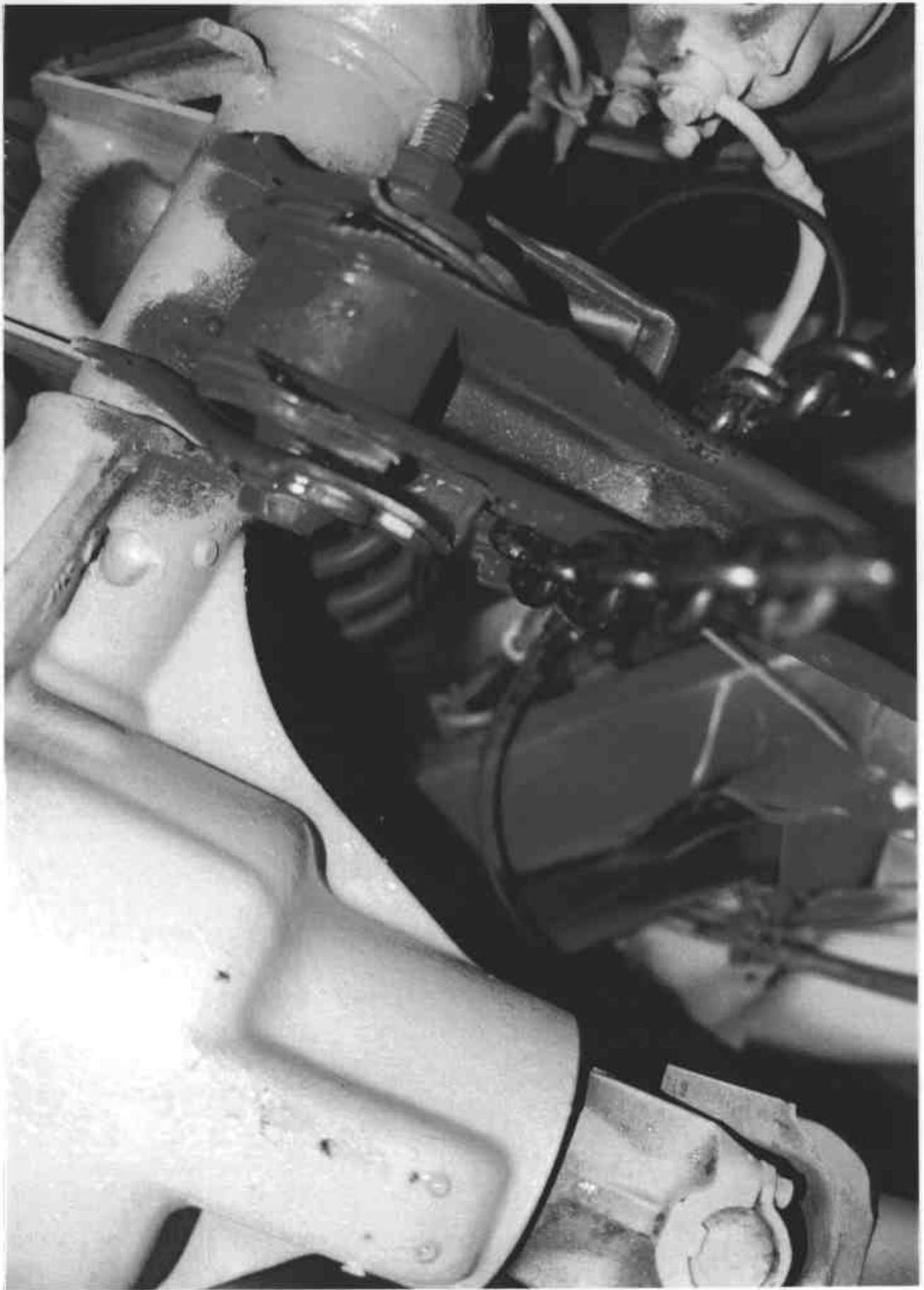


Figure A-18 POST-TEST UNDERBODY STEERING SHAFT



Figure A-19 PRE-TEST STEERING COLUMN/FIREWALL INSIDE VIEW

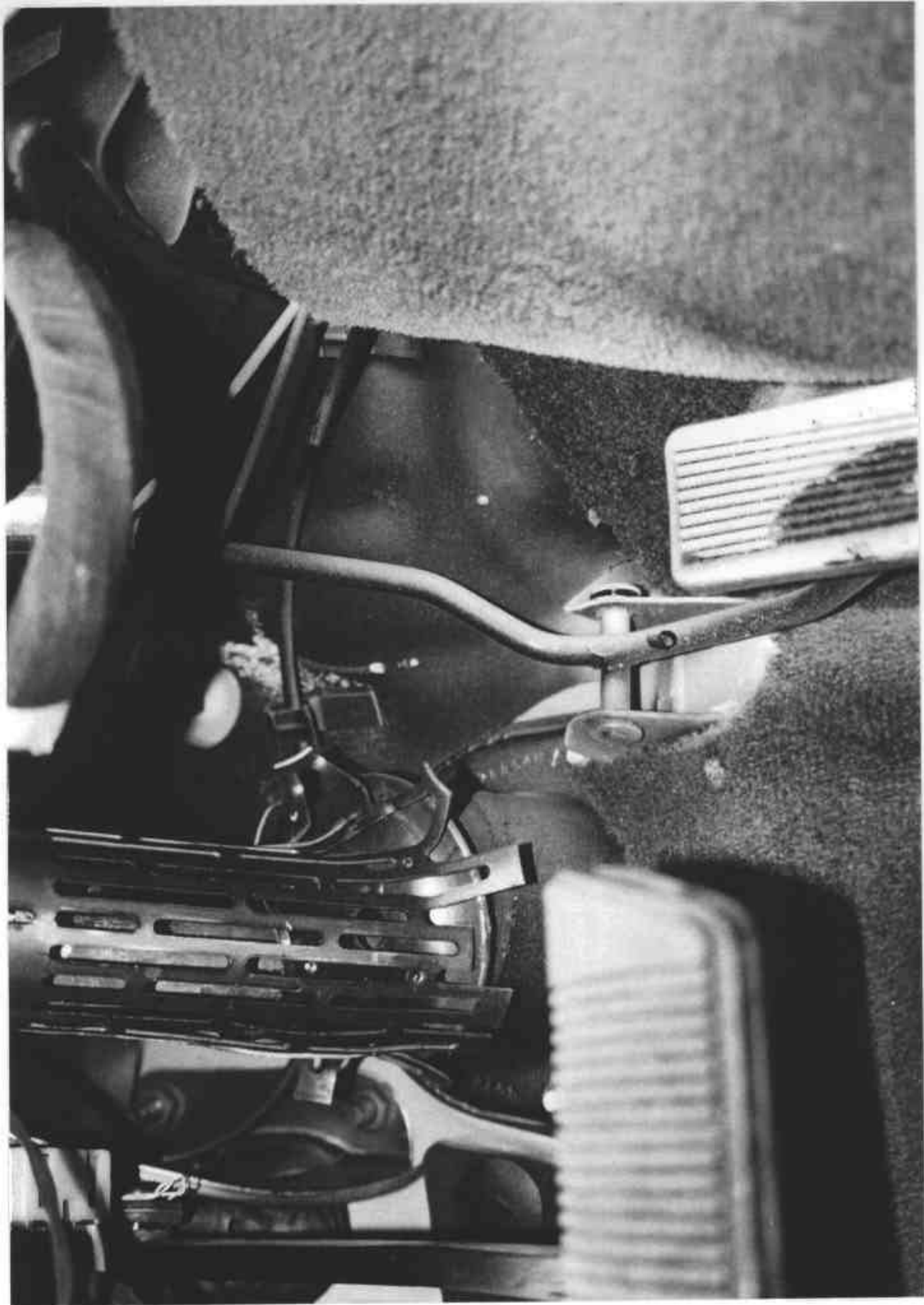



Figure A-20 POST-TEST STEERING COLUMN/FIREWALL INSIDE VIEW

Jeep 

<p>TIRE INFLATION PRESSURE Inflate tires cold - before running DO NOT reduce pressure if tires are warm</p>	<p>See owners manual for optional tires, high speed operation and additional data</p>				
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">Front psi/kPa 36/248</td> <td style="width: 50%; padding: 2px;">Rear psi/kPa 36/248</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 2px;">(At Full Load)</td> </tr> </table>	Front psi/kPa 36/248	Rear psi/kPa 36/248	(At Full Load)		<p>Minimum Tire Size P215/75R15 (W/4.0 L) P225/75R15 (W/5.2 L)</p>
Front psi/kPa 36/248	Rear psi/kPa 36/248				
(At Full Load)					
<p>Vehicle Capacity 1150 LB / 522 kg</p>	<p>Seating Capacity Front 2 Rear 3</p>				

Figure A-22 TIRE PLACARD

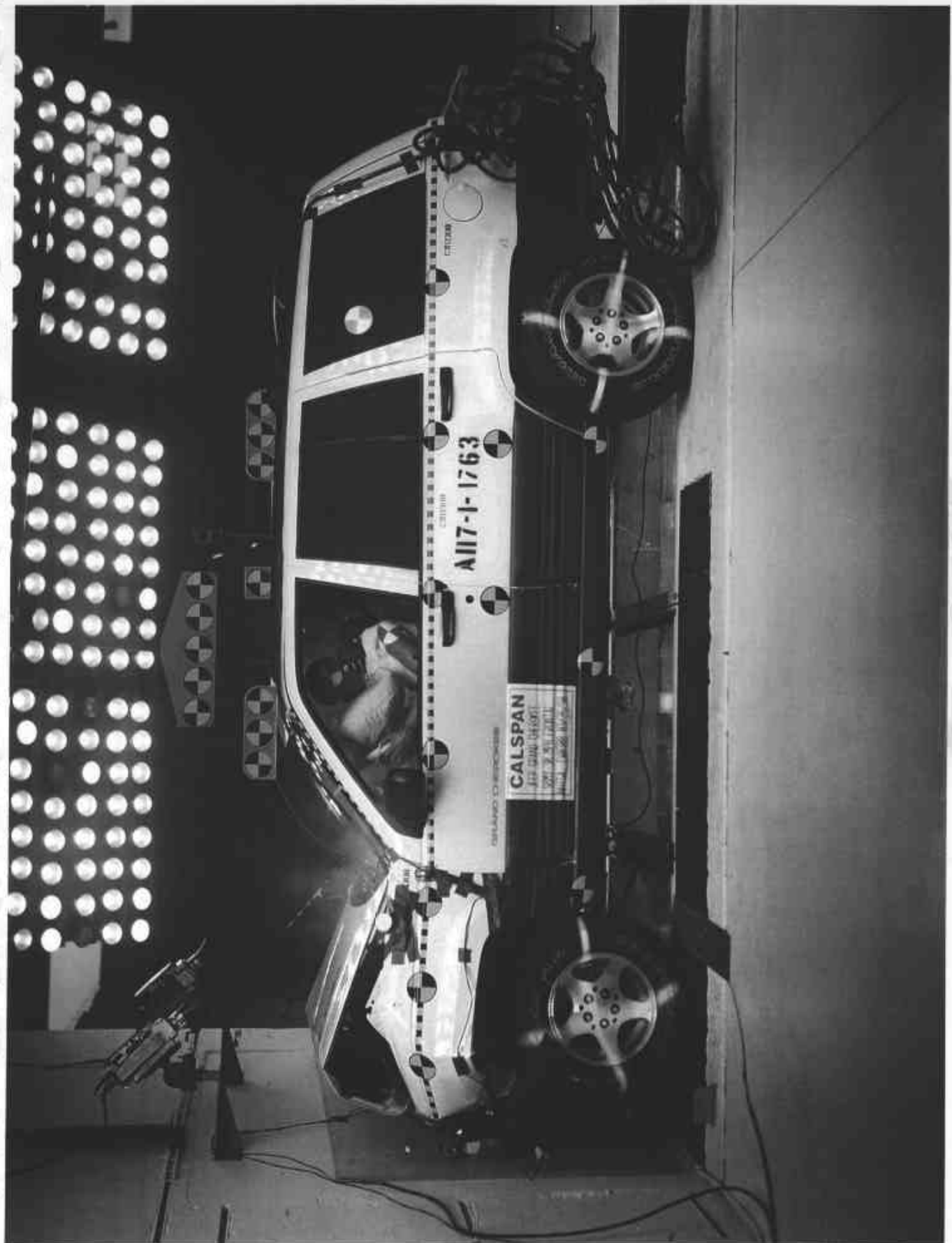


Figure A-23 VEHICLE IMPACT



Figure A-24 POST-TEST DRIVER AIRBAG VIEW

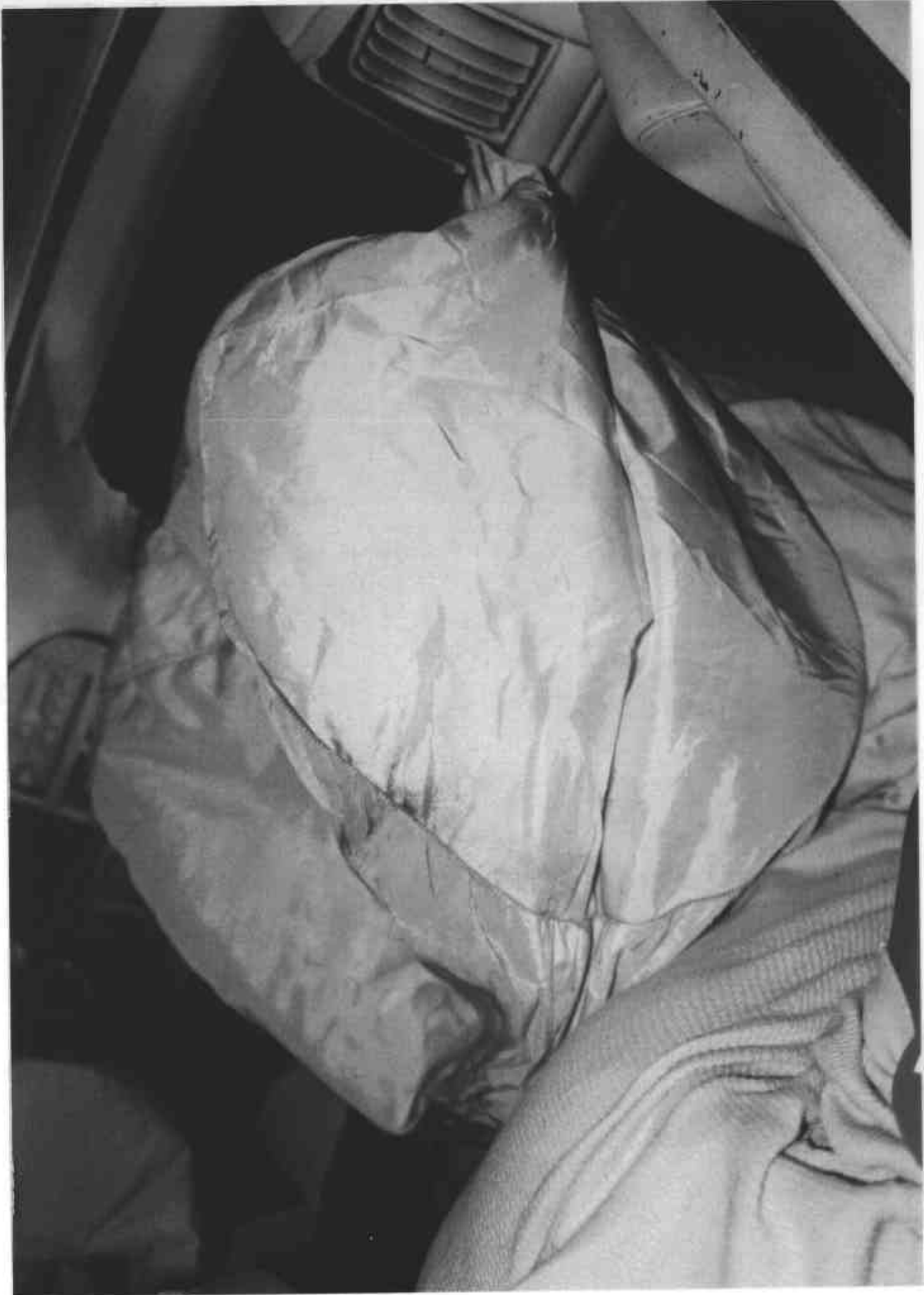


Figure A-25 POST-TEST PASSENGER AIRBAG VIEW

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

**NOTE : Data trace scales are automatically scaled at the
request of the COTR. Use caution when
reviewing data.**

FACILITY: track TEST DATE: 26 Mar 1998
 RUN #: 1763 TEST TIME: 13:19:29
 SERIES #:1 BOARD: a

TITLE: 208 Test #1 - 1998 Jeep Grand Cherokee

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	7.3	340.3	-45.6	68.7	1000.0
2	Pos. 1 Head Y	Gs	2.1	90.0	-3.7	54.5	1000.0
3	Pos. 1 Head Z	Gs	15.0	70.8	-11.0	96.4	1000.0
4	Pos. 1 Left Femur	lbs	32.7	132.2	-1655.1	52.6	600.0
5	Pos. 1 Chest X	Gs	4.2	299.8	-47.1	73.0	180.0
6	Pos. 1 Chest Y	Gs	6.2	74.1	-3.8	64.5	180.0
7	Pos. 1 Chest Z	Gs	5.8	72.4	-4.1	48.0	180.0
8	Pos. 1 Right Femur	lbs	47.9	135.3	-1507.7	55.5	600.0
9	Pos. 2 Head X	Gs	11.3	290.9	-33.4	47.2	1000.0
10	Pos. 2 Head Y	Gs	6.1	292.5	-16.7	95.1	1000.0
11	Pos. 2 Head Z	Gs	24.2	76.8	-15.2	44.8	1000.0
12	Pos. 2 Left Femur	lbs	84.2	109.8	-1692.0	55.4	600.0
13	Pos. 2 Chest X	Gs	3.3	344.5	-45.3	80.2	180.0
14	Pos. 2 Chest Y	Gs	2.3	59.7	-5.7	78.0	180.0
15	Pos. 2 Chest Z	Gs	4.6	32.3	-25.5	80.8	180.0
16	Pos. 2 Right Femur	lbs	35.4	133.3	-1779.9	58.4	600.0
17	Pos. 1 Head Resultant	Gs	47.2	70.0	0.0	21.5	1000.0
18	Pos. 1 Chest Resultant	Gs	47.8	72.9	0.1	-31.5	180.0
19	Pos. 2 Head Resultant	Gs	35.5	47.3	0.0	-4.6	1000.0
20	Pos. 2 Chest Resultant	Gs	52.0	80.4	0.0	-34.5	180.0

V2 36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant

hic: 278.00
 t1 = 58.200 msec
 t2 = 94.200 msec
 Average G's Over Hic Duration = 35.90

V2 36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant

hic: 139.96
 t1 = 62.100 msec
 t2 = 98.100 msec
 Average G's Over Hic Duration = 27.28

CLIP V2.1 SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 46.073 G's
 Tstart = 71.6860 ms
 Tend = 74.6860 ms
 CSI = 329.174

CLIP V2.1 SUMMARY: Pos. 2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 49.217 G's
 Tstart = 78.4892 ms
 Tend = 81.4892 ms
 CSI = 411.033

FACILITY: track TEST DATE: 26 Mar 1998
 RUN #: 1763 TEST TIME: 13:19:29
 SERIES #:1 BOARD: b

TITLE: 208 Test #1 - 1998 Jeep Grand Cherokee

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos.1 Upper Neck Fx	N	353.2	154.2	-582.2	79.0	1000.0
2	Pos.1 Upper Neck Fy	N	104.8	29.8	-134.7	138.5	1000.0
3	Pos.1 Upper Neck Fz	N	2070.7	71.0	-177.7	140.9	1000.0
4	Pos.1 Chest Displacement	ins	0.0	22.6	-1.6	90.7	600.0
5	Pos.1 Upper Neck Mx	N-M	7.8	78.8	-4.9	53.4	600.0
6	Pos.1 Upper Neck My	N-M	33.7	146.2	-20.6	99.4	600.0
7	Pos.1 Upper Neck Mz	N-M	4.4	91.8	-9.7	359.6	600.0
8	Pos.2 Chest Displacement	ins	0.0	28.2	-0.5	54.6	600.0
9	Pos.2 Upper Neck Fx	N	253.1	205.4	-1039.7	77.7	1000.0
10	Pos.2 Upper Neck Fy	N	559.9	99.6	-332.3	140.7	1000.0
11	Pos.2 Upper Neck Fz	N	1003.1	77.6	-553.0	30.2	1000.0
12	Trunk Z	Gs	25.8	29.2	-17.4	143.4	60.0
13	Pos.2 Upper Neck Mx	N-M	24.3	166.8	-10.6	111.2	600.0
14	Pos.2 Upper Neck My	N-M	85.8	58.9	-27.0	143.4	600.0
15	Pos.2 Upper Neck Mz	N-M	47.7	109.4	-20.0	188.5	600.0
16	NULL	ins	0.0	359.9	0.0	359.9	1000.0
17	Pos.1 Neck Force Res.	N	2101.7	71.0	2.0	-19.4	1000.0
18	Pos.1 Neck Moment Res.	N-M	33.9	146.2	0.0	-37.9	600.0
19	Pos.2 Neck Force Res.	N	1474.3	77.6	3.3	-3.3	1000.0
20	Pos.2 Neck Moment Res.	N-M	87.3	59.0	0.0	-30.2	600.0

FACILITY: track TEST DATE: 26 Mar 1998
RUN #: 1763 TEST TIME: 13:19:29
SERIES #:1 BOARD: c

TITLE: 208 Test #1 - 1998 Jeep Grand Cherokee

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Left Rear X-member X	Gs	184.8	238.3	-224.4	35.6	60.0
2	Right Rear X-member X	Gs	1.8	157.9	-35.3	42.9	60.0
3	Engine Top X	Gs	34.0	43.1	-104.5	33.1	60.0
4	Engine Bottom X	Gs	24.0	41.9	-97.2	34.8	60.0
5	Right Brake Caliper X	Gs	73.9	68.6	-89.8	32.7	60.0
6	Left Brake Caliper X	Gs	13.3	62.0	-81.3	36.2	60.0
7	Instrument Panel X	Gs	44.5	86.8	-57.8	64.2	60.0

TEST NO. CW0308

VEHICLE

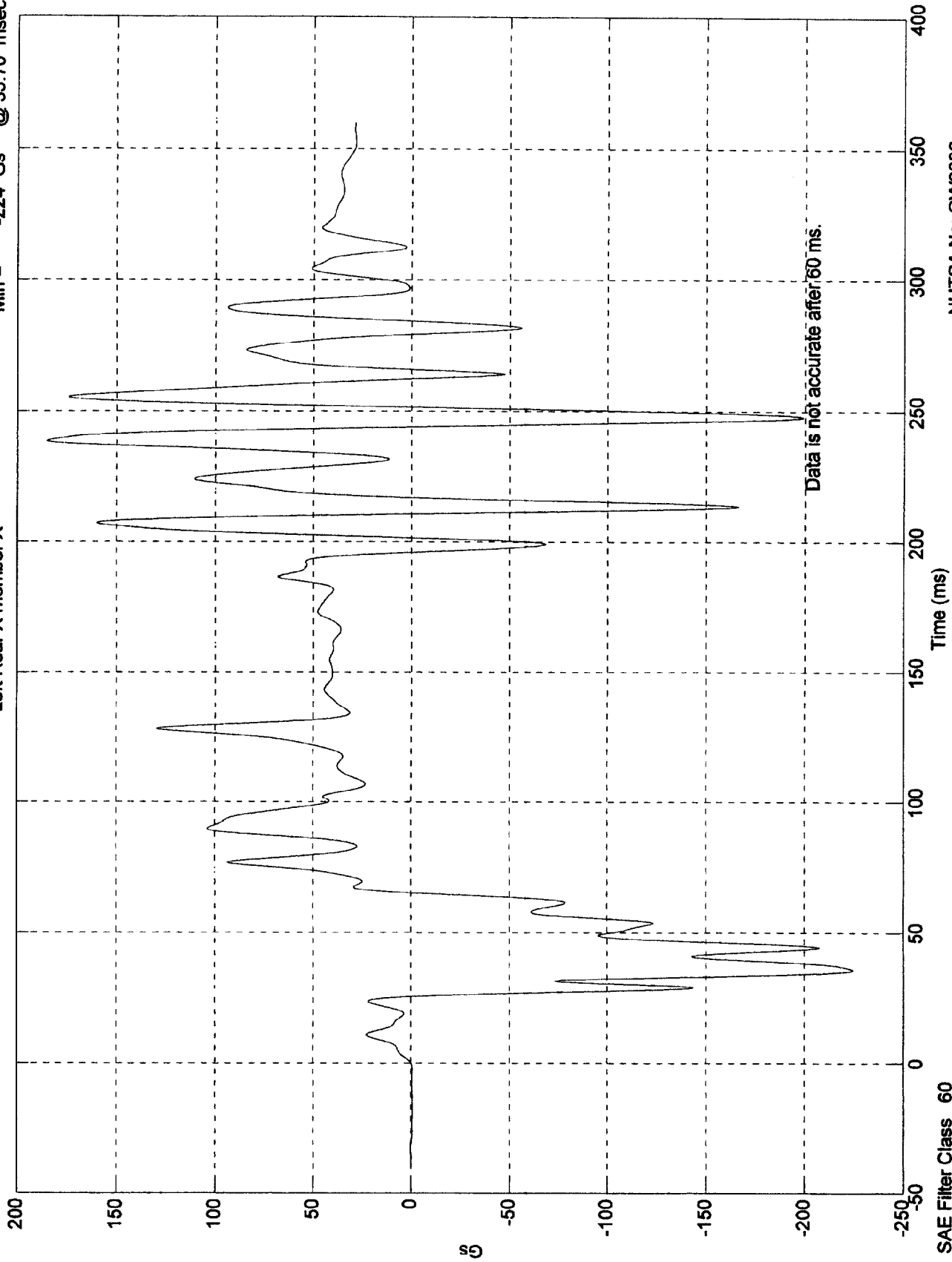
SAE FILTER CHANNEL CLASS

60

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 185 Gs @ 238.40 msec
Min = -224 Gs @ 35.70 msec

Left Rear X-member X

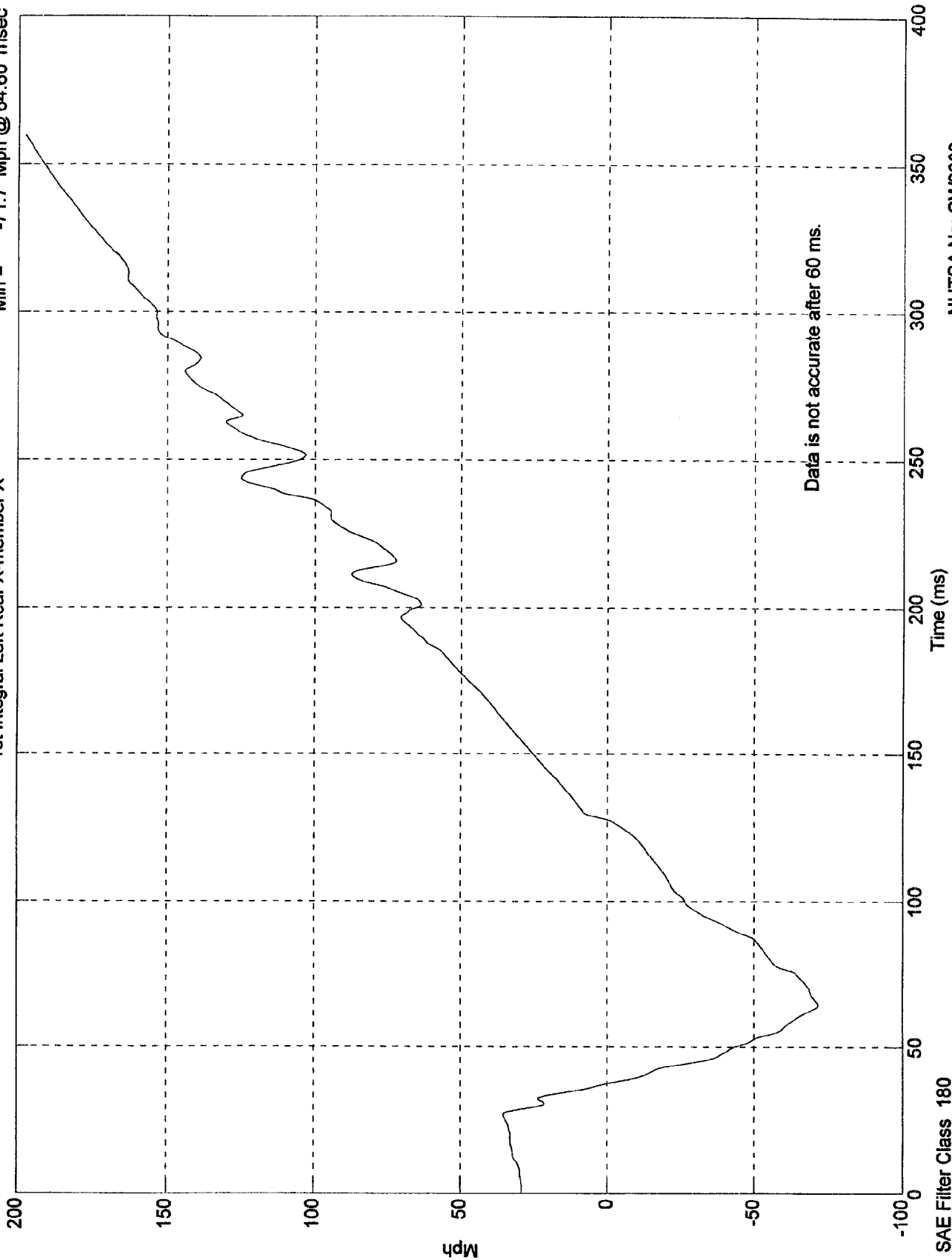


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

1st Integral Left Rear X-member X

Max = 198 Mph @ 360.00 msec
Min = -71.7 Mph @ 64.60 msec



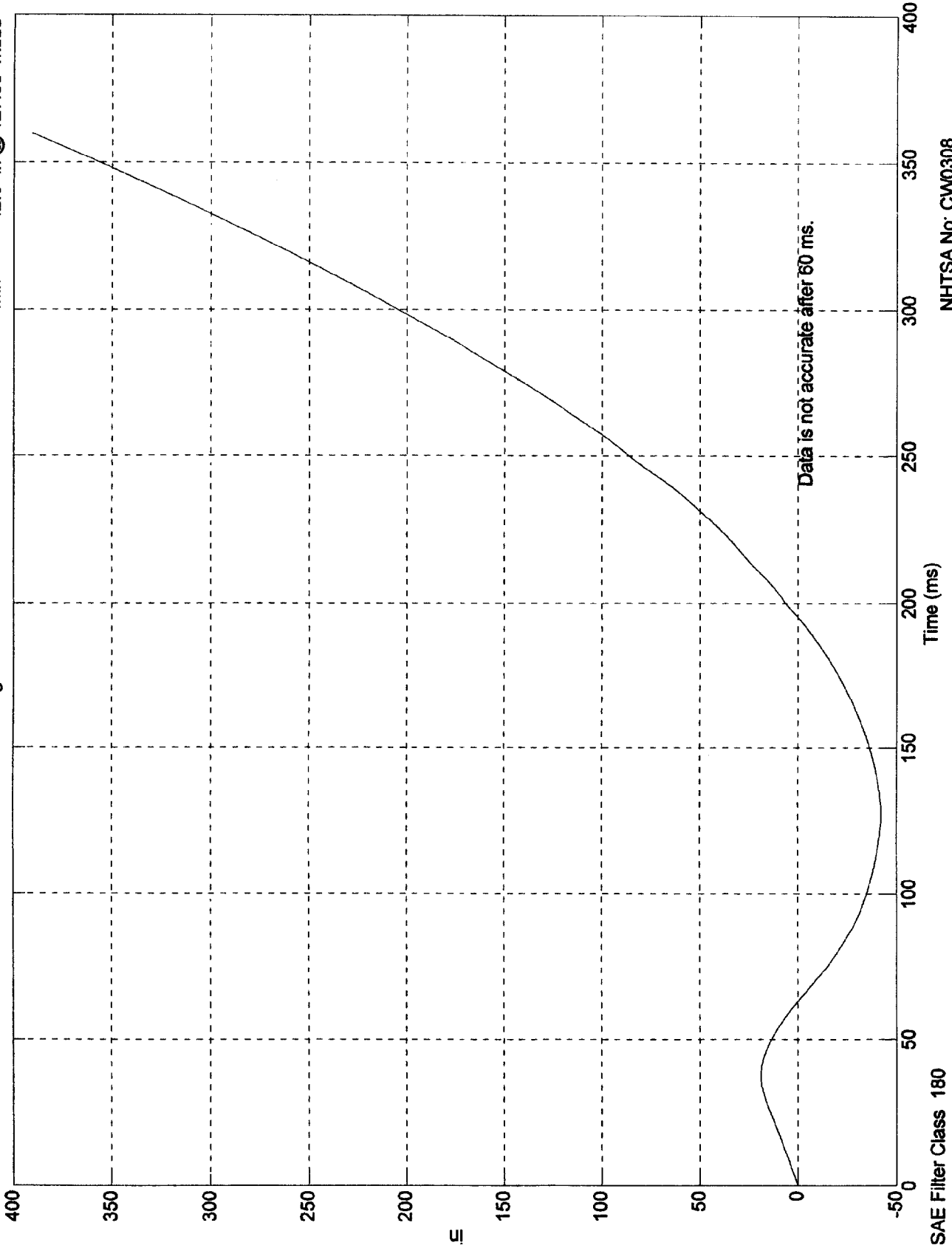
Data is not accurate after 60 ms.

NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

Max = 391 in @ 360.00 msec
Min = -42.3 in @ 127.80 msec

2nd Integral Left Rear X-member X

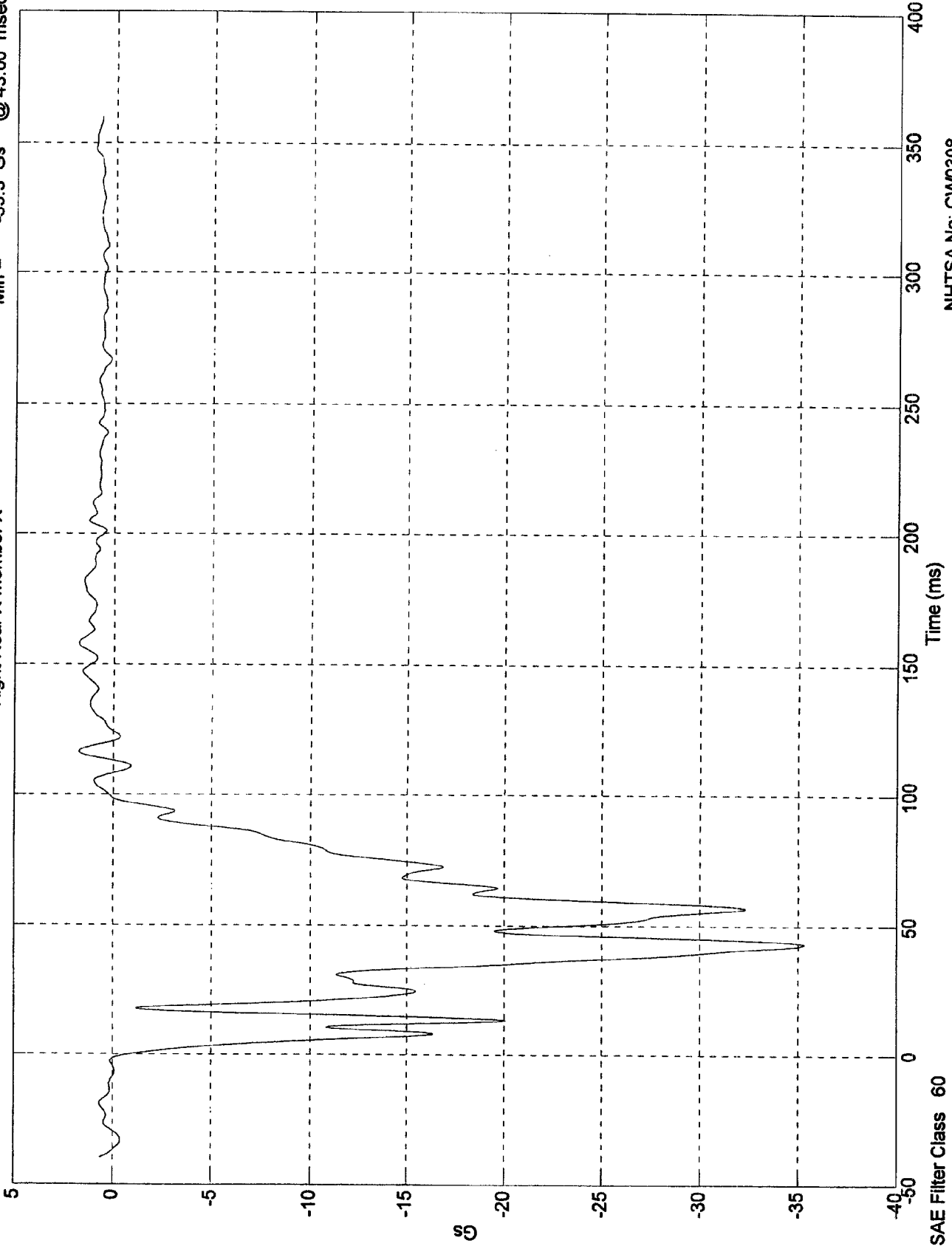


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Right Rear X-member X

Max = 1.76 Gs @ 157.90 msec
Min = -35.3 Gs @ 43.00 msec

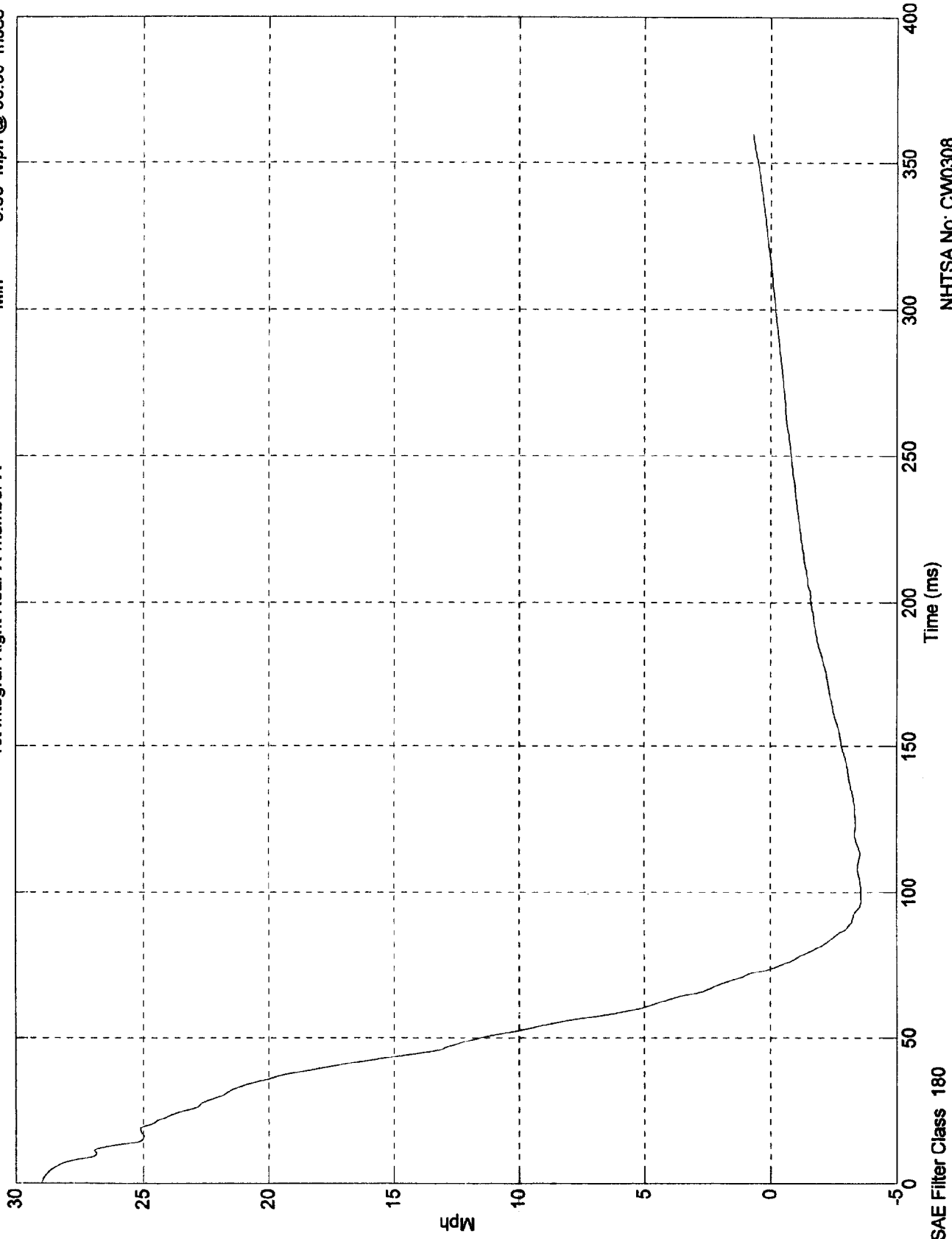


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 29 Mph @ 0.00 msec
Min = -3.59 Mph @ 96.90 msec

1st Integral Right Rear X-member X



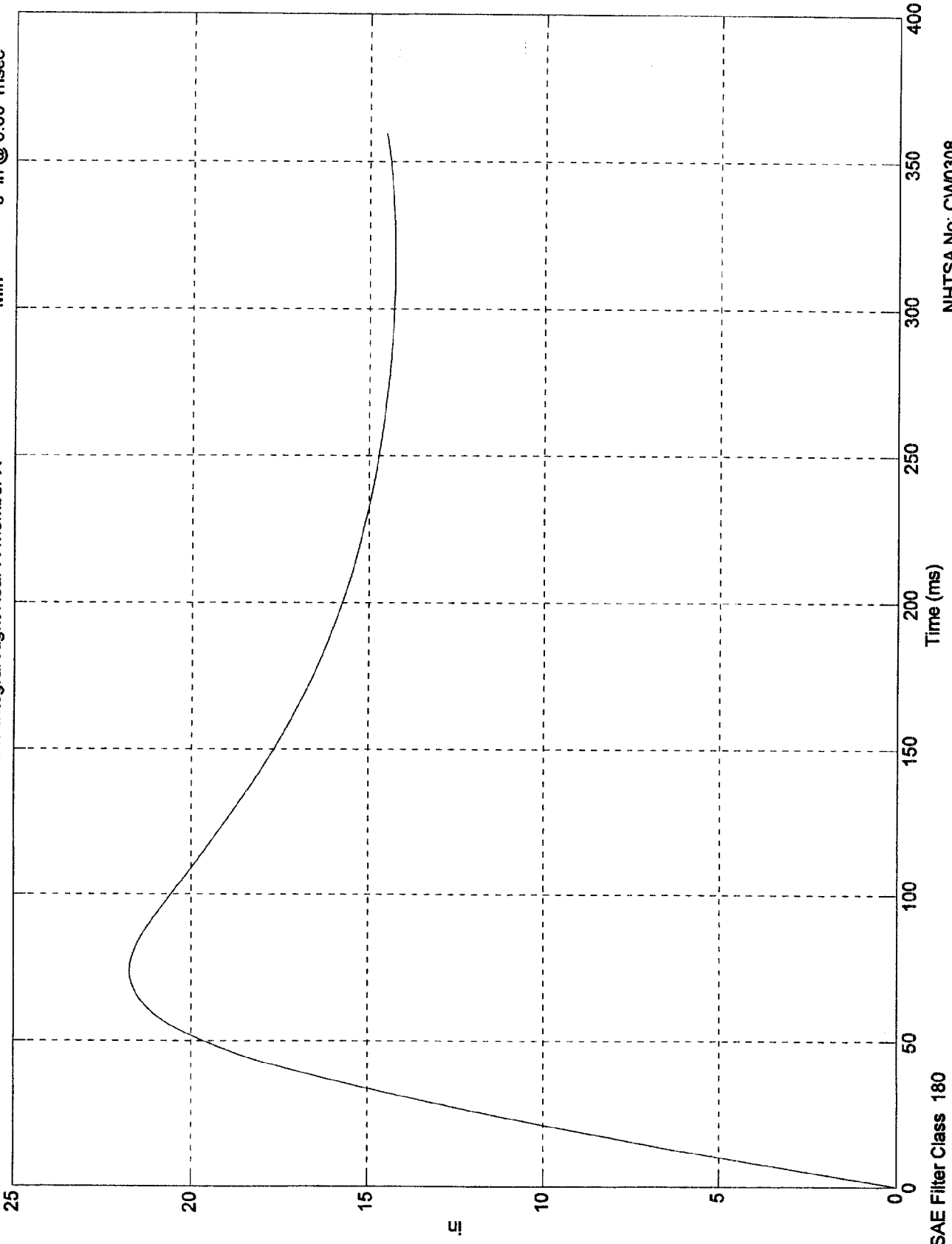
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 21.7 in @ 73.70 msec
Min = 0 in @ 0.00 msec

2nd Integral Right Rear X-member X



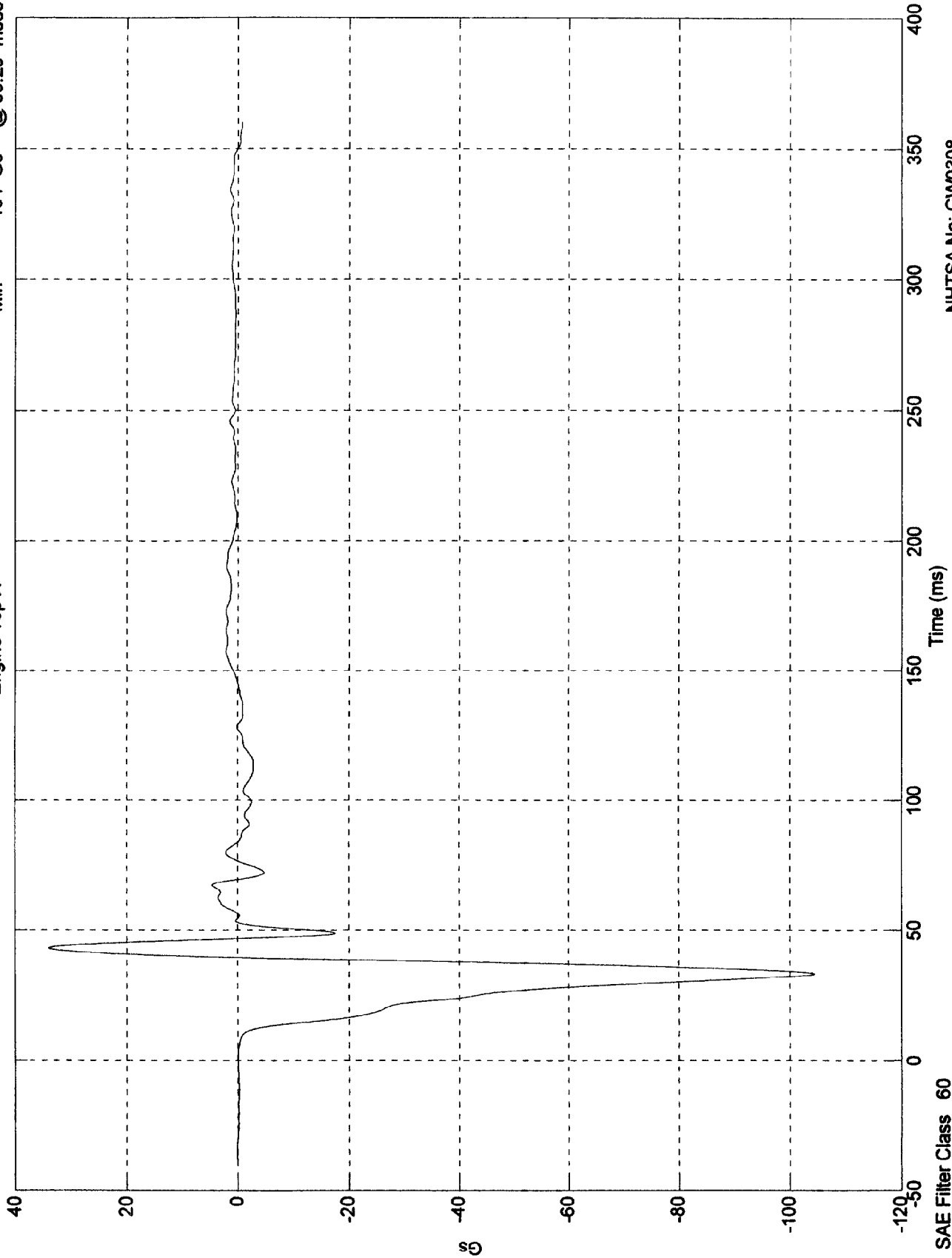
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 34 Gs @ 43.20 msec
Min = -104 Gs @ 33.20 msec

Engine Top X



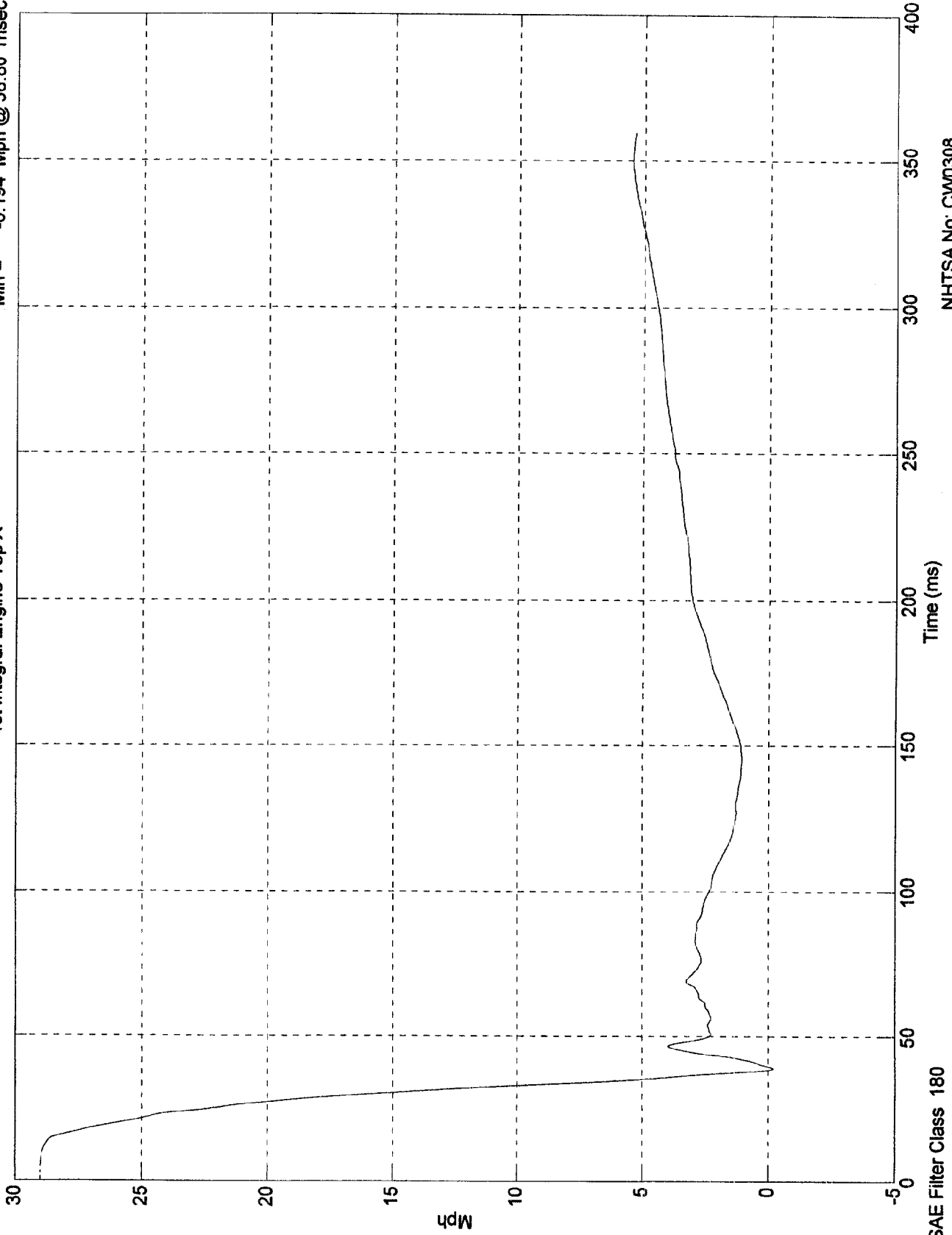
SAE Filter Class 60

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

1st Integral Engine Top X

Max = 29 Mph @ 0.00 msec
Min = -0.194 Mph @ 38.80 msec

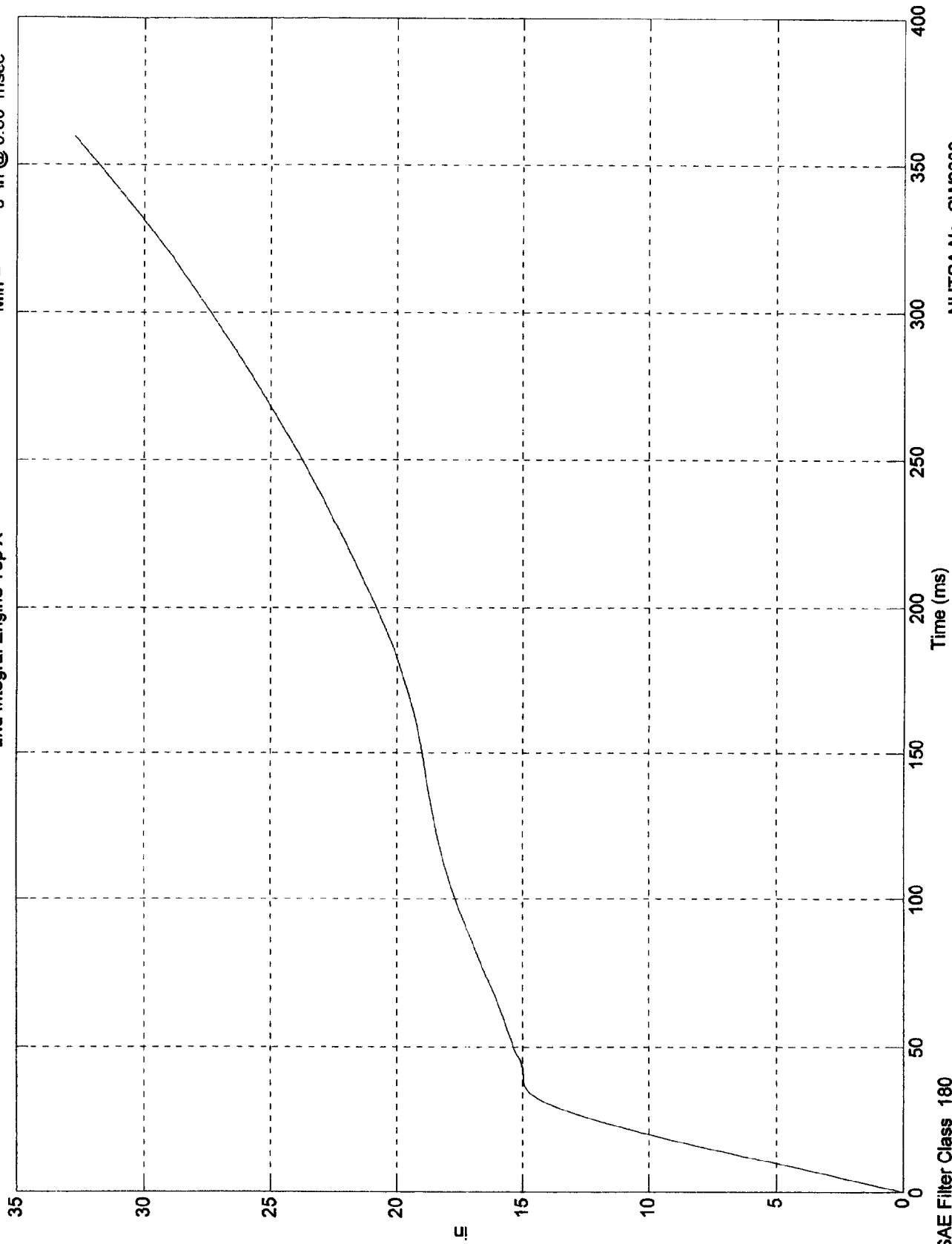


NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

Max = 32.7 in @ 360.00 msec
Min = 0 in @ 0.00 msec

2nd Integral Engine Top X



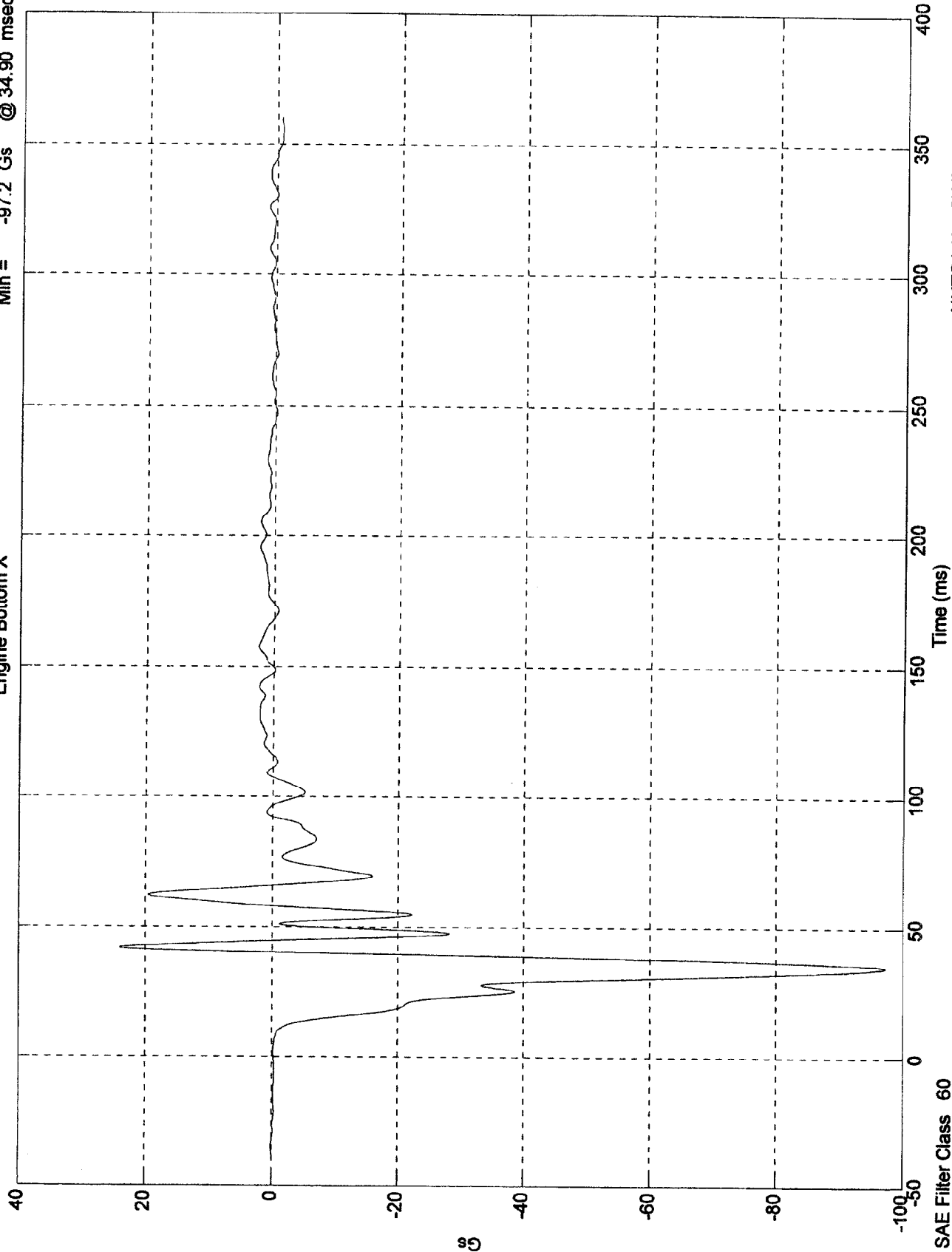
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Engine Bottom X

Max = 24 Gs @ 42.00 msec
Min = -97.2 Gs @ 34.90 msec

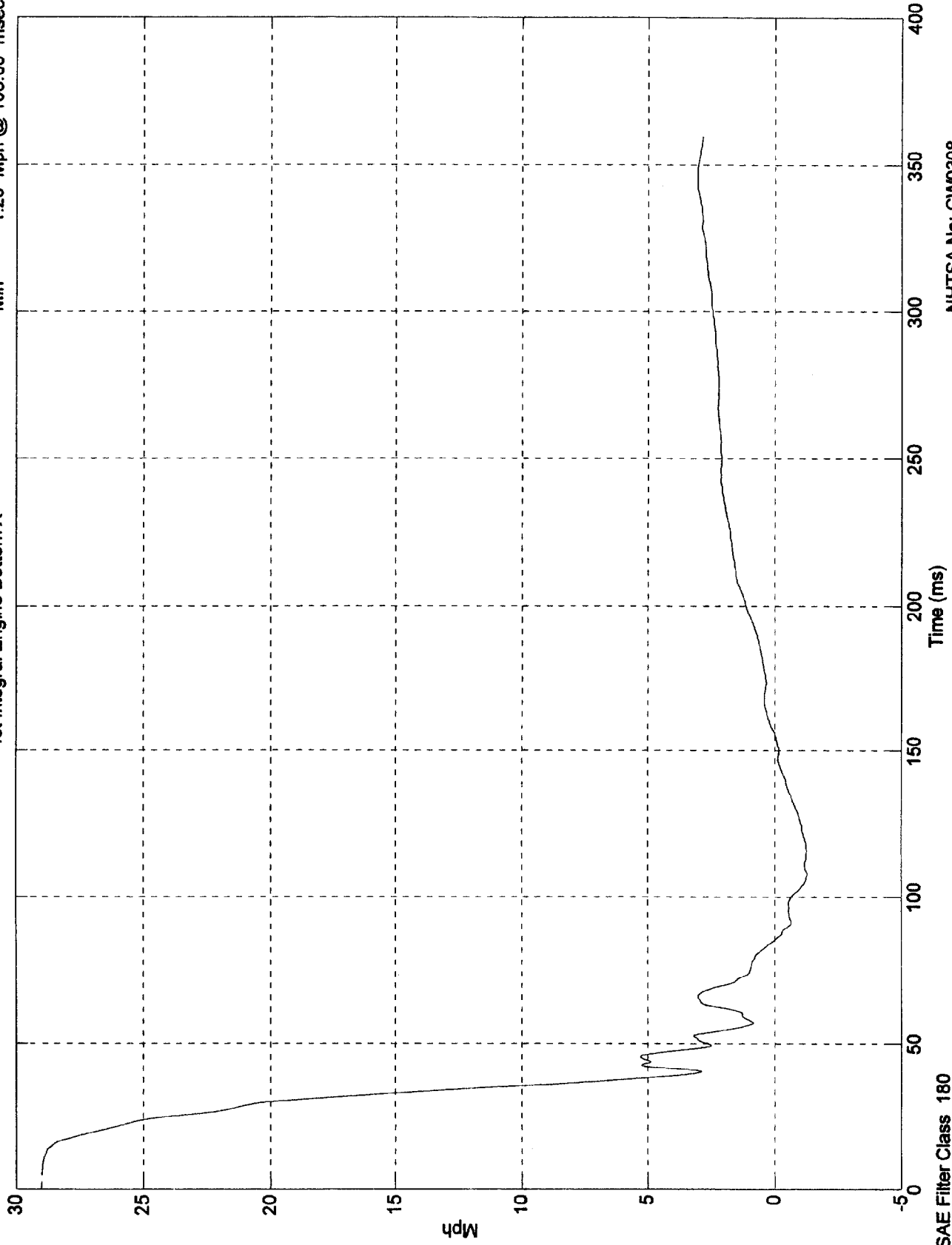


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 29 Mph @ 0.00 msec
Min = -1.28 Mph @ 108.00 msec

1st Integral Engine Bottom X



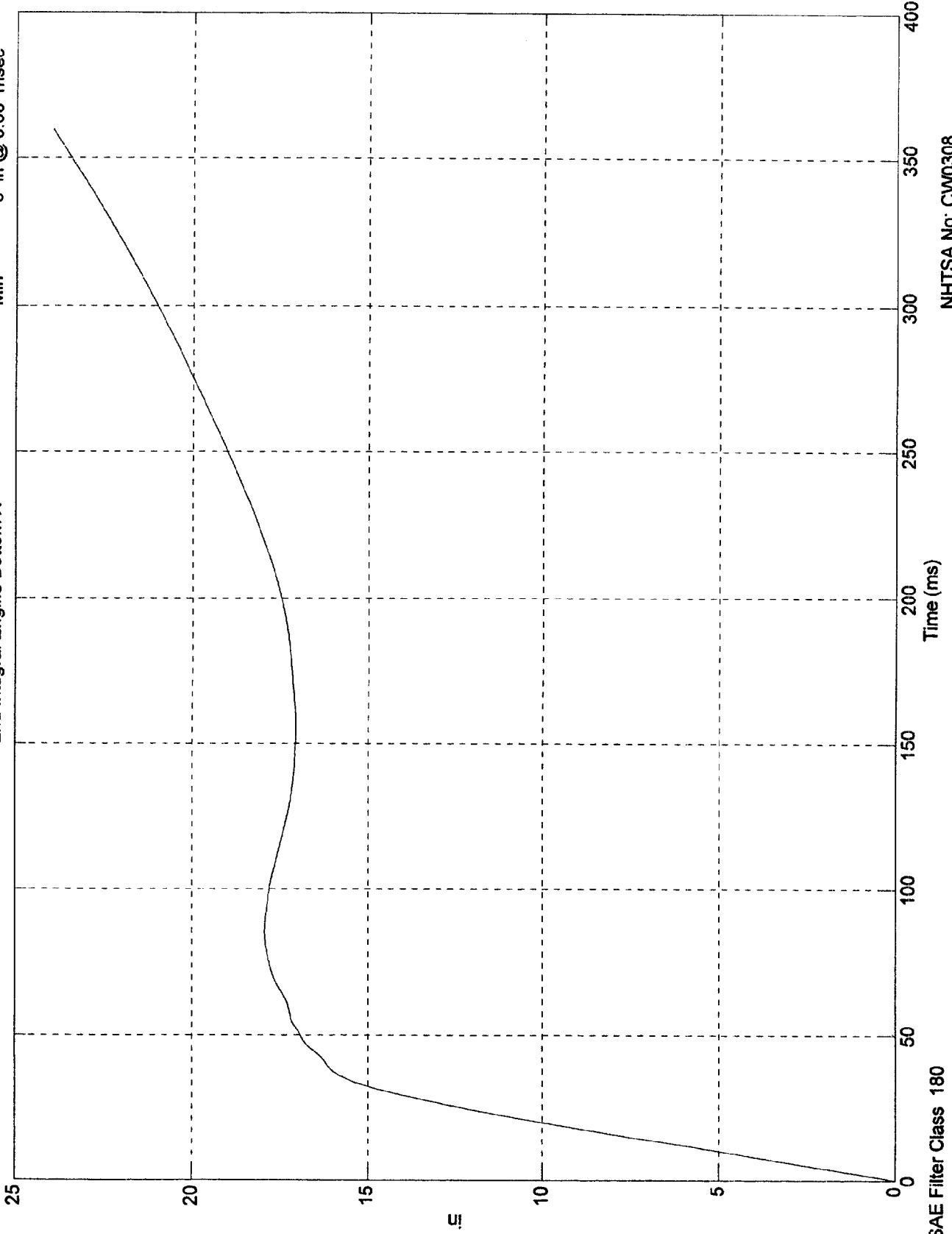
SAE Filter Class 180

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

2nd Integral Engine Bottom X

Max = 24 in @ 360.00 msec
Min = 0 in @ 0.00 msec



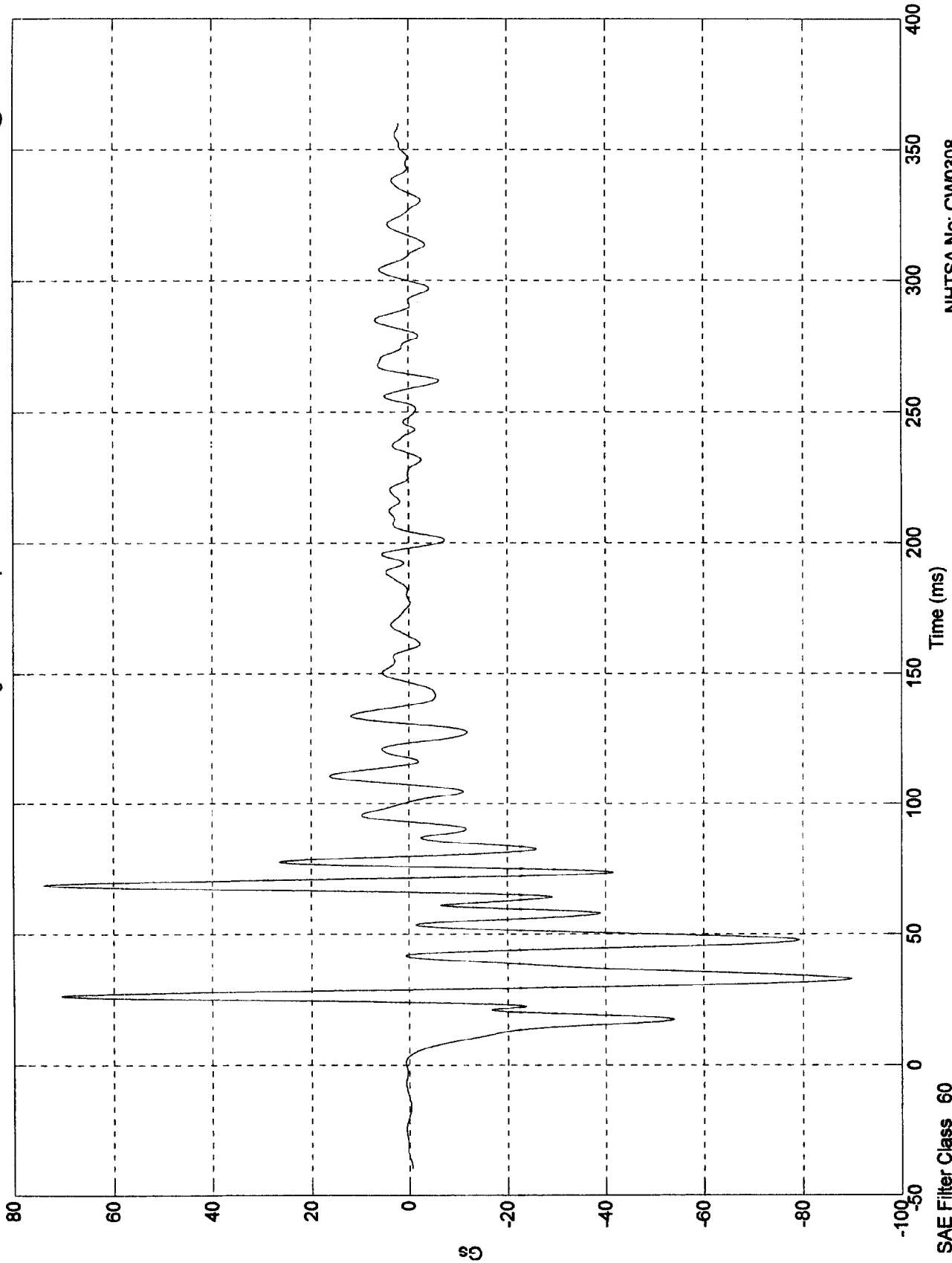
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 73.9 Gs @ 68.70 msec
Min = -89.8 Gs @ 32.80 msec

Right Brake Caliper X

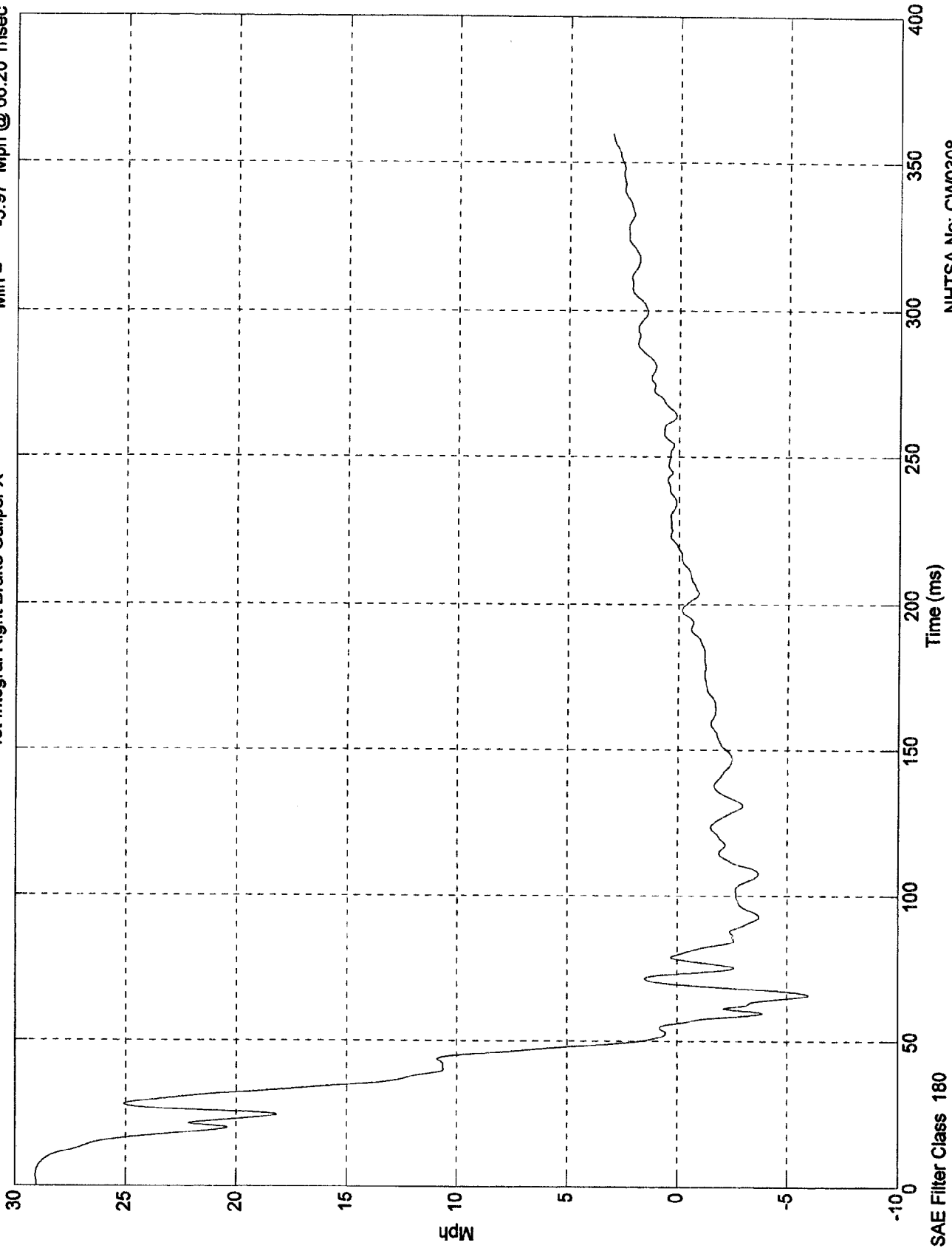


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 29 Mph @ 3.30 msec
Min = -5.97 Mph @ 66.20 msec

1st Integral Right Brake Caliper X



NHTSA No: CW0308
Date: 26 Mar 1998

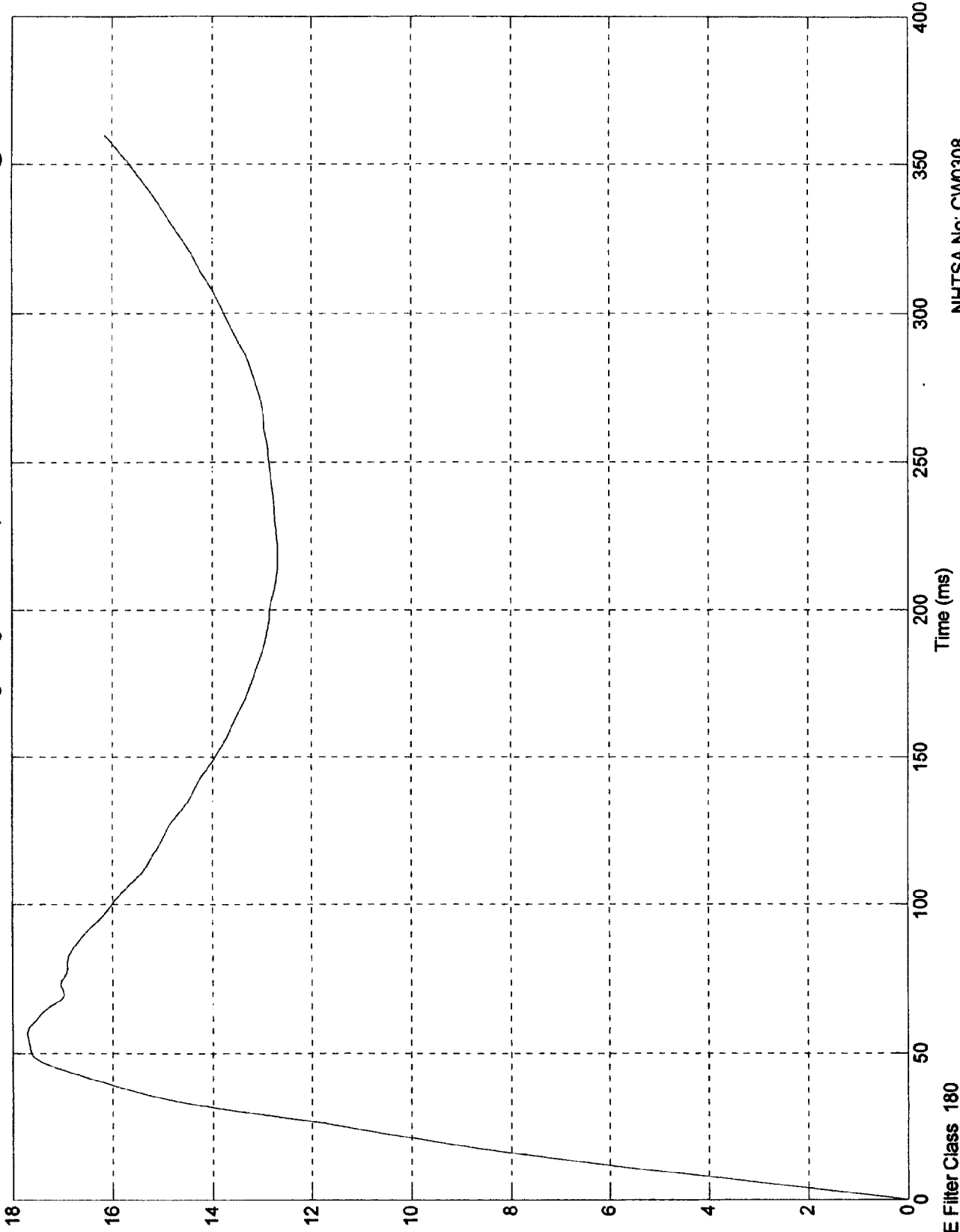
SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 17.7 in @ 56.40 msec

Min = 0 in @ 0.00 msec

2nd Integral Right Brake Caliper X



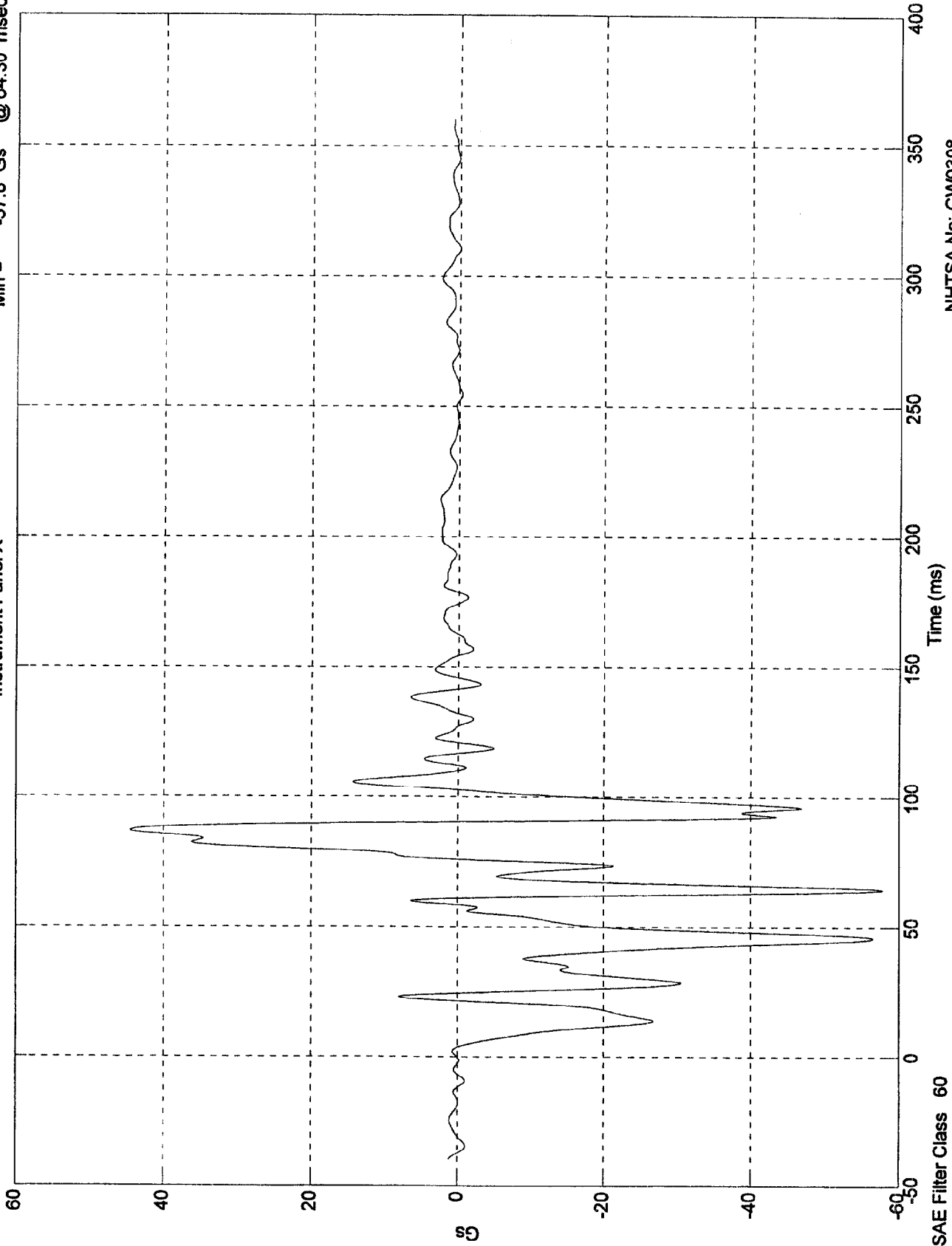
SAE Filter Class 180

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Instrument Panel X

Max = 44.5 Gs @ 86.90 msec
Min = -57.8 Gs @ 64.30 msec

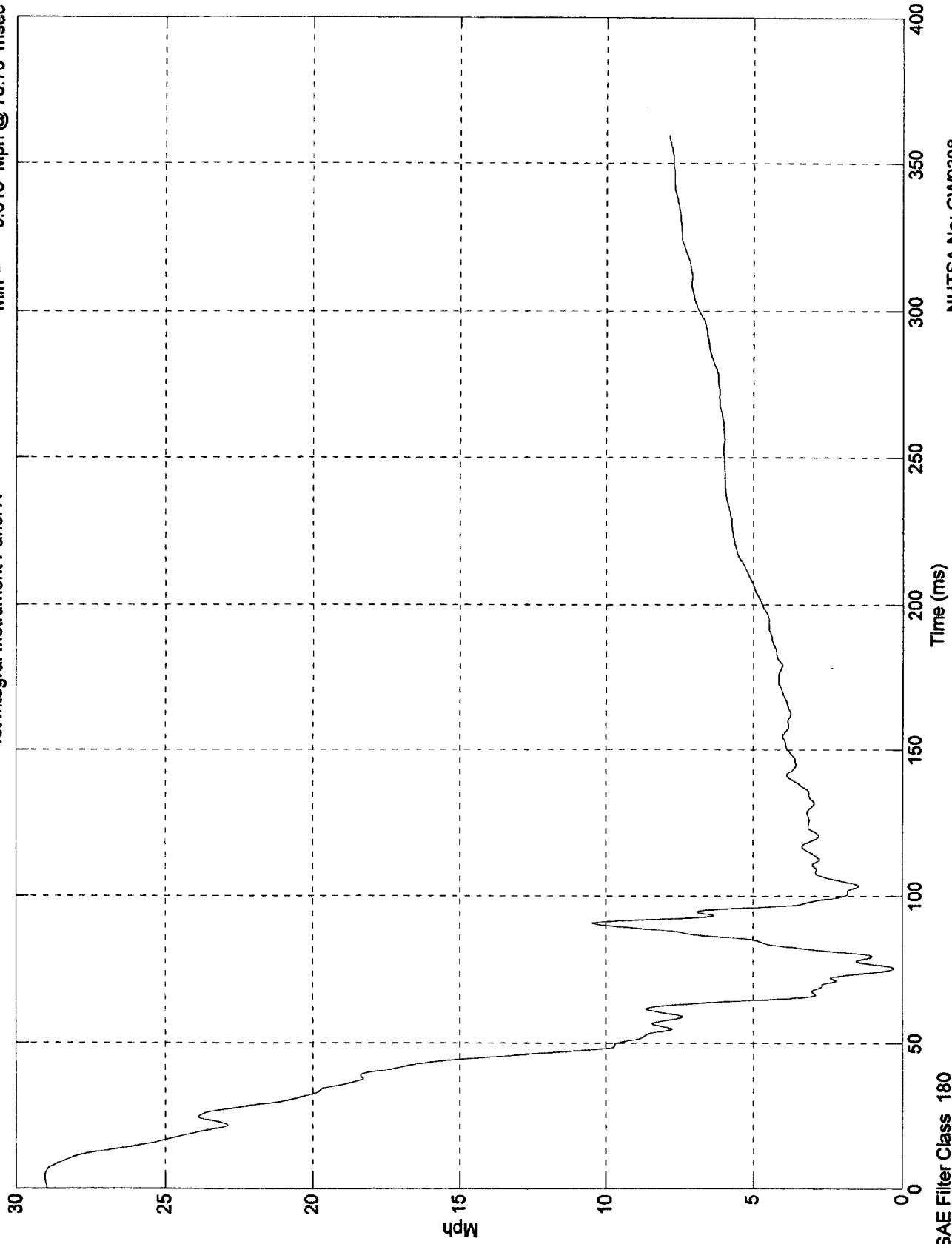


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1996 Jeep Grand Cherokee

1st Integral Instrument Panel X

Max = 29.1 Mph @ 3.90 msec
Min = 0.316 Mph @ 75.70 msec



SAE Filter Class 180

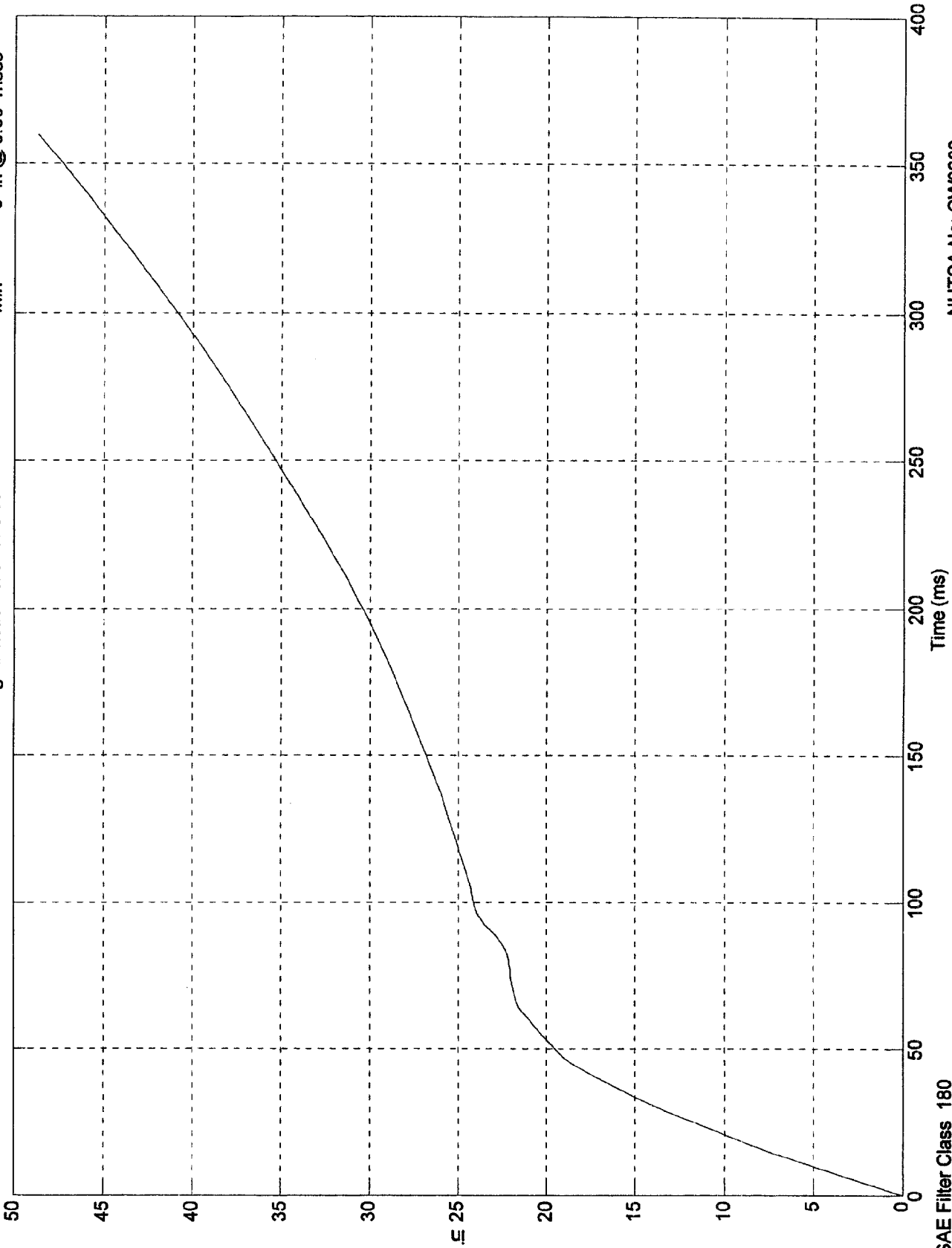
Time (ms)

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

2nd Integral Instrument Panel X

Max = 48.7 in @ 360.00 msec
Min = 0 in @ 0.00 msec



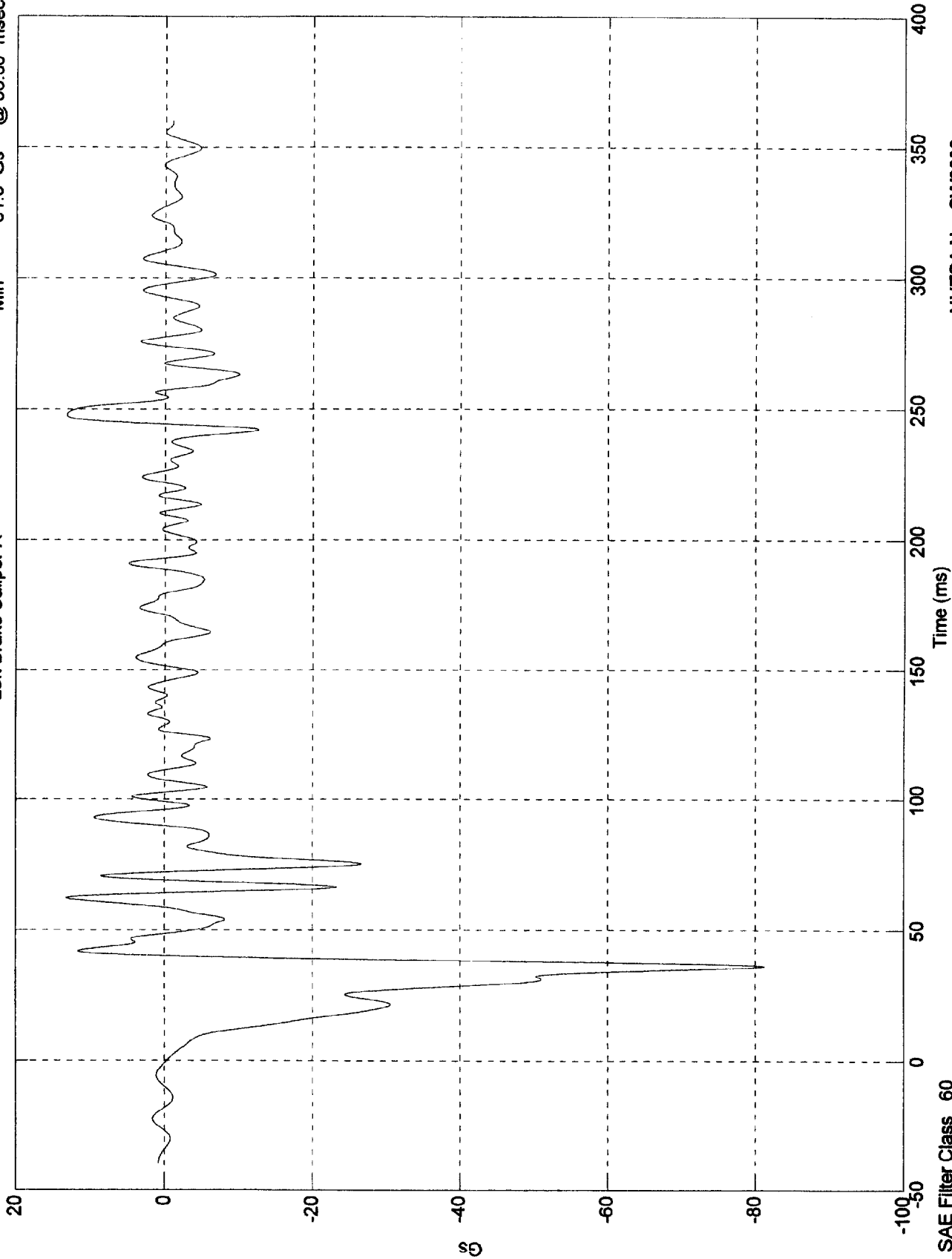
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 13.3 Gs @ 62.10 msec
Min = -81.3 Gs @ 36.30 msec

Left Brake Caliper X



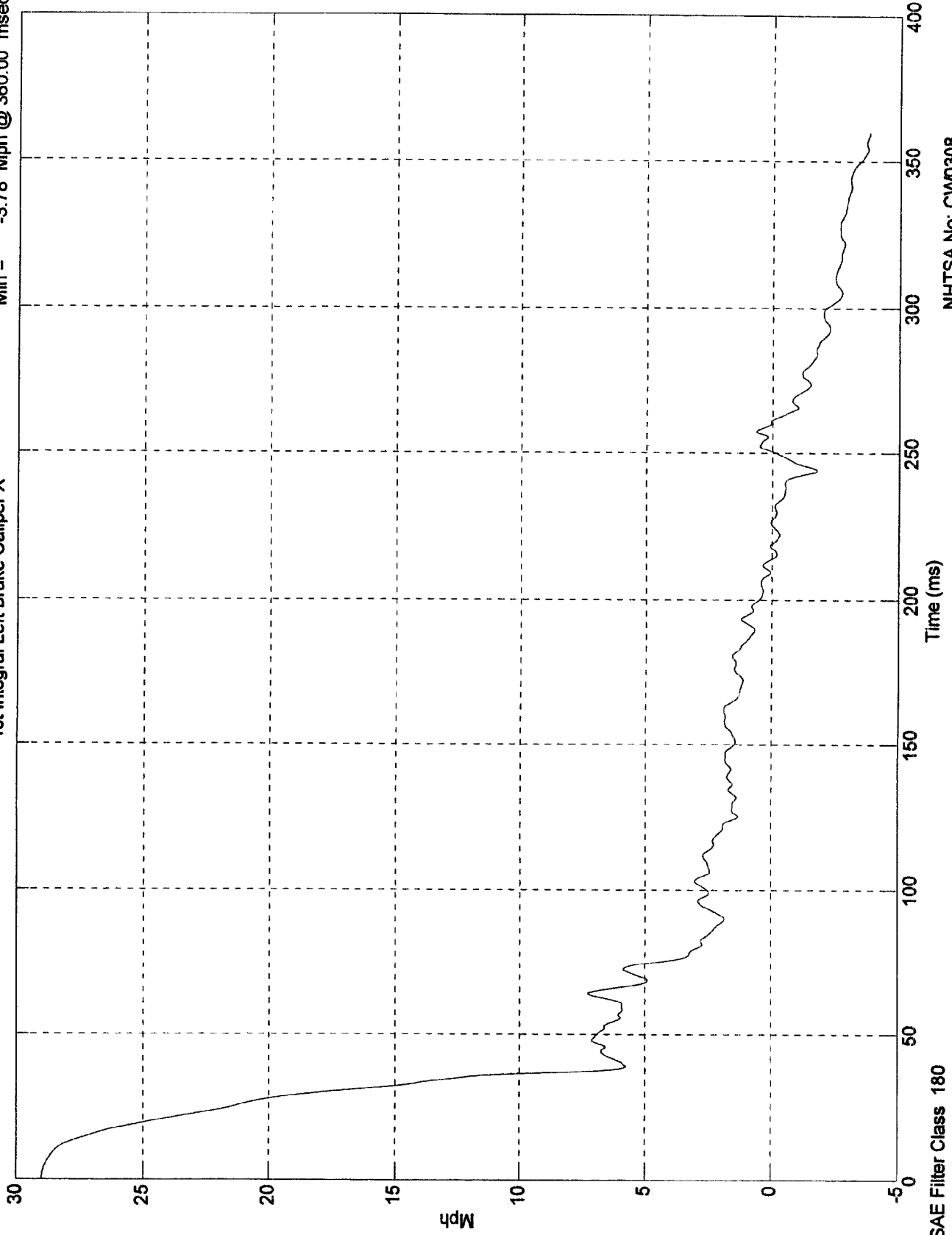
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 60

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 29 Mph @ 0.00 msec
Min = -3.78 Mph @ 360.00 msec

1st Integral Left Brake Caliper X



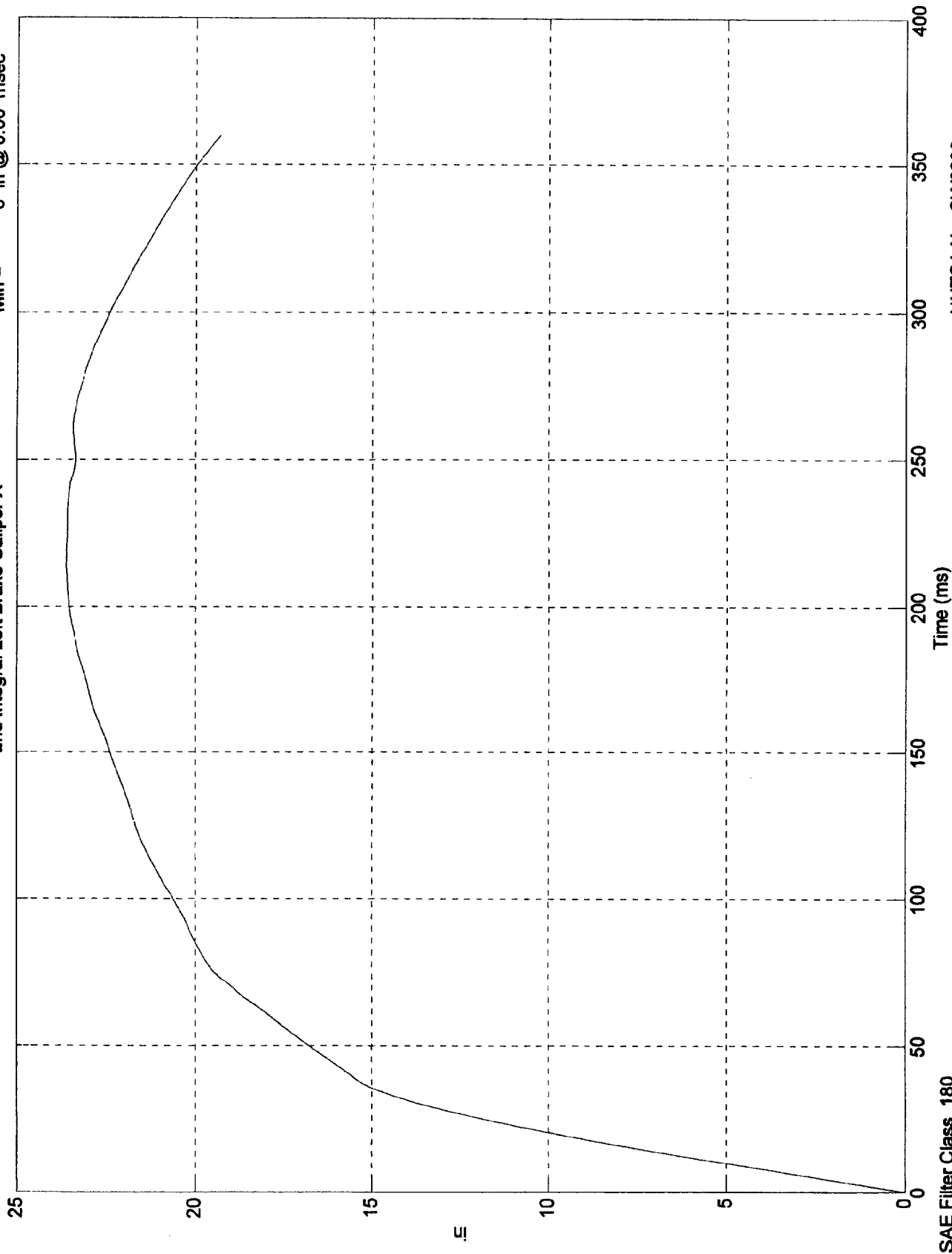
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 23.6 in @ 214.00 msec
Min = 0 in @ 0.00 msec

2nd Integral Left Brake Caliper X

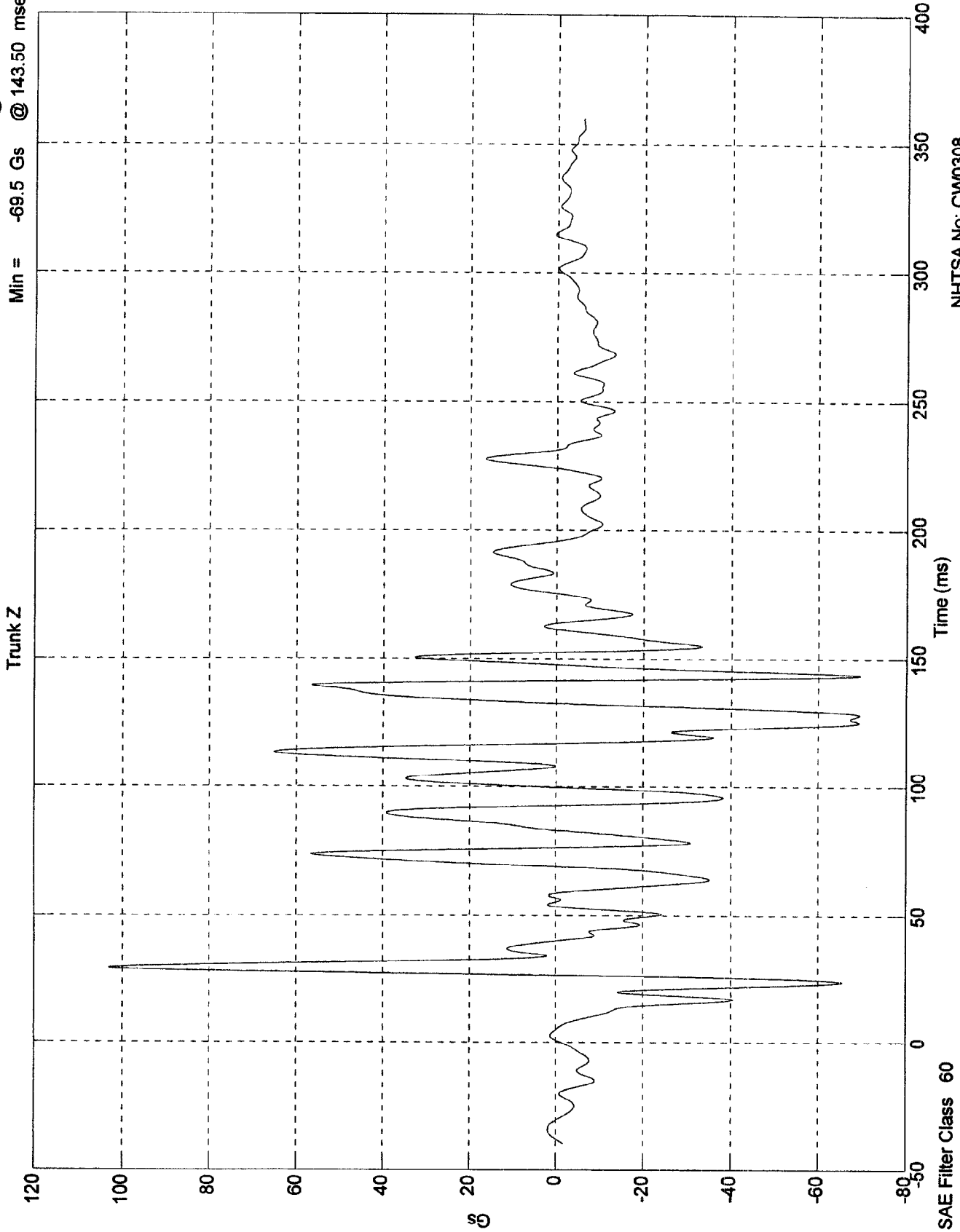


NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 103 Gs @ 29.30 msec
Min = -69.5 Gs @ 143.50 msec



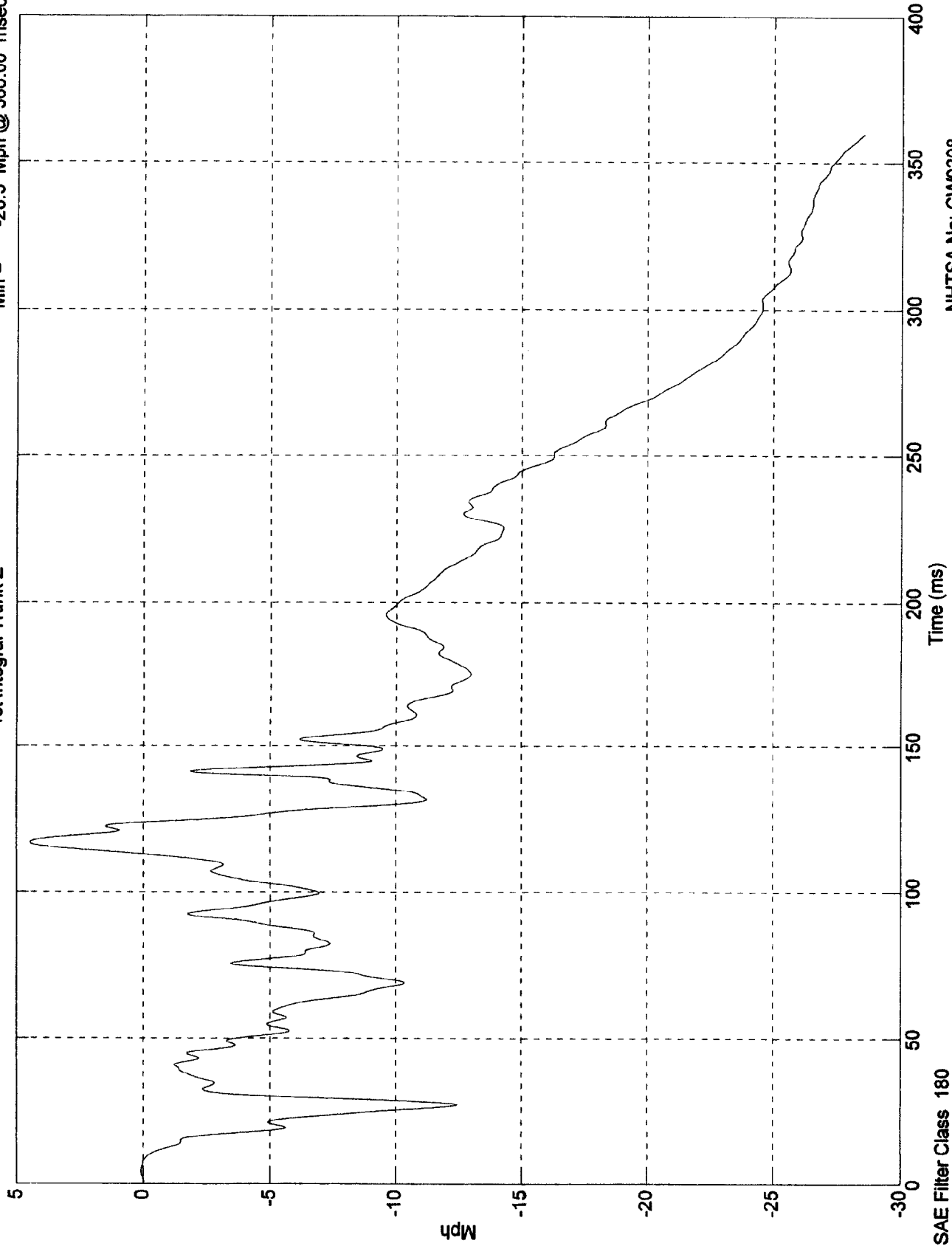
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 60

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 4.48 Mph @ 116.80 msec
Min = -28.5 Mph @ 360.00 msec

1st Integral Trunk Z



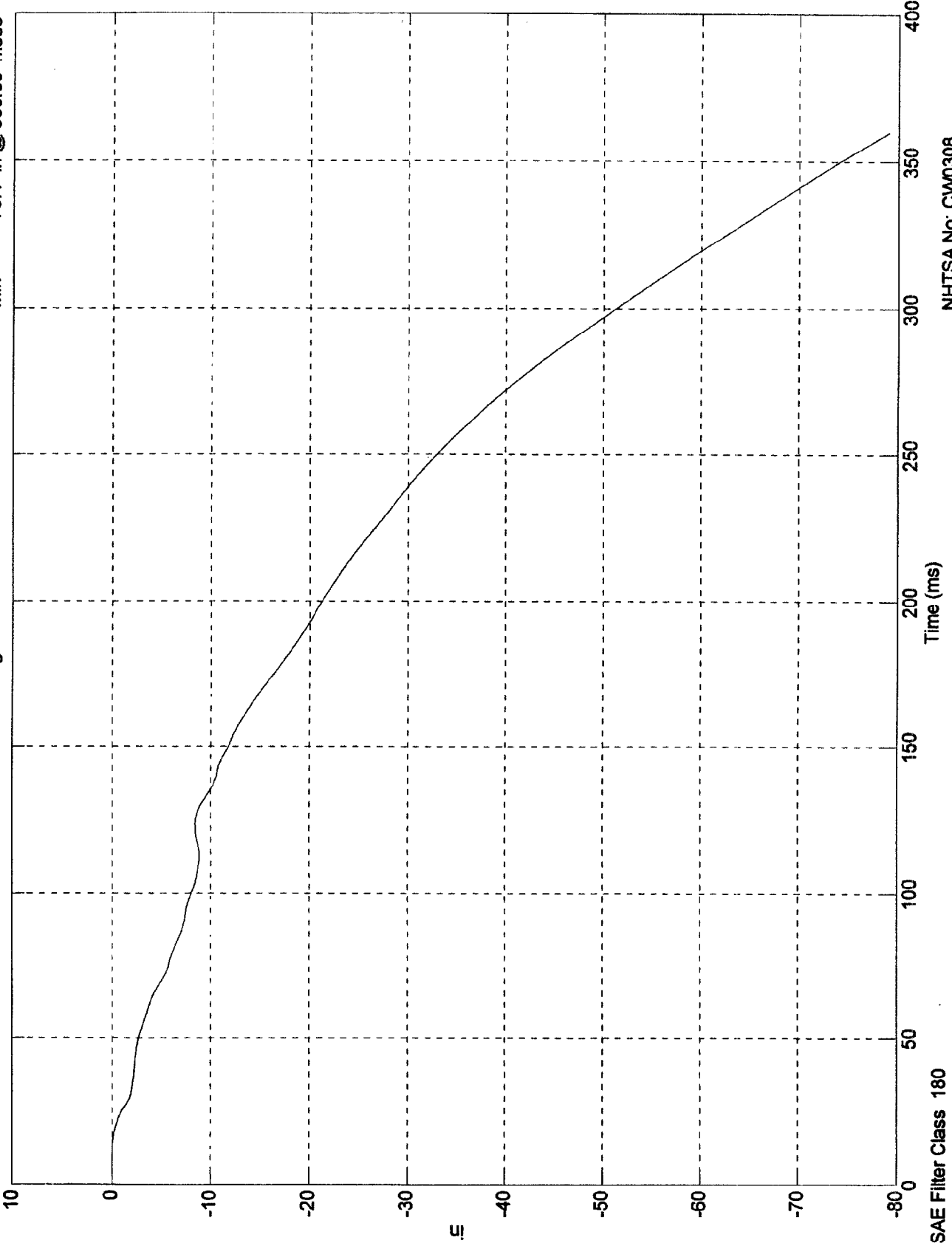
SAE Filter Class 180

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 0.00504 in @ 7.70 msec
Min = -79.1 in @ 360.00 msec

2nd Integral Trunk Z



NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

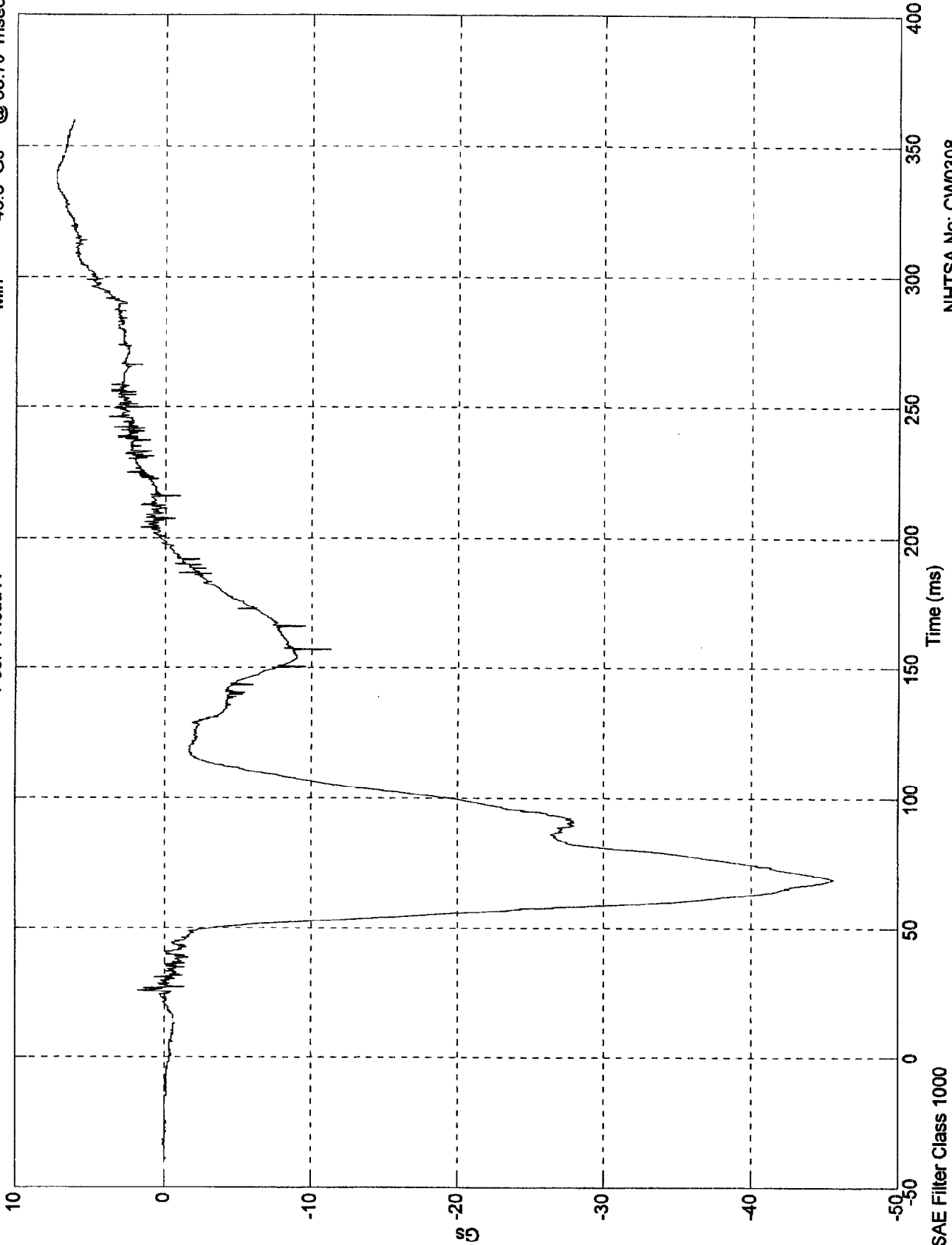
TEST NO. CW0308

<u>DUMMY</u>	<u>SAE_FILTER_CHANNEL_CLASS</u>
Head Accelerations	1000
Chest Accelerations	180
Neck Forces	1000
Neck Moments	600
Femur Forces	600

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 1 Head X

Max = 7.33 Gs @ 335.50 msec
Min = -45.6 Gs @ 68.70 msec



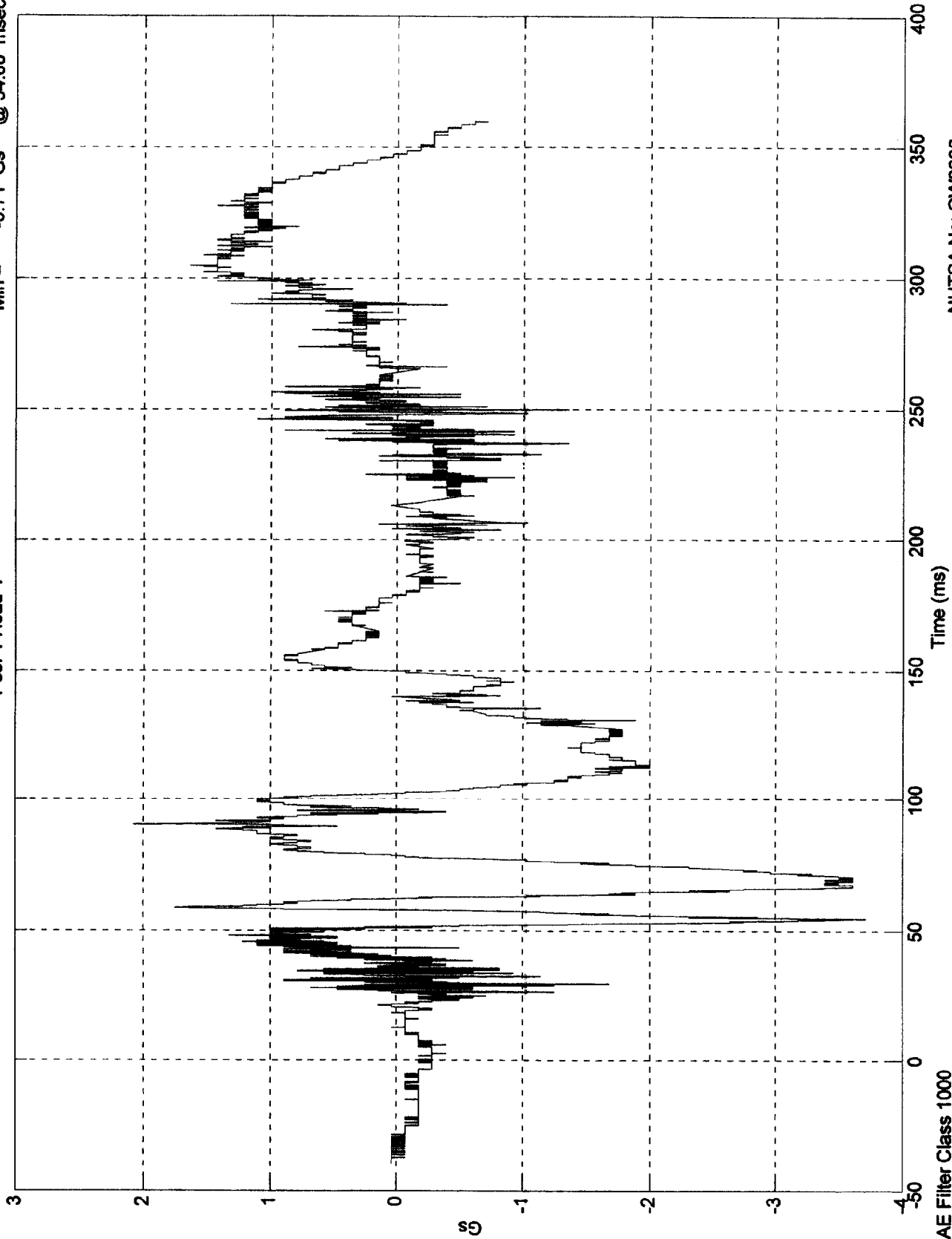
SAE Filter Class 1000

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 2.07 Gs @ 90.10 msec
Min = -3.71 Gs @ 54.60 msec

Pos. 1 Head Y

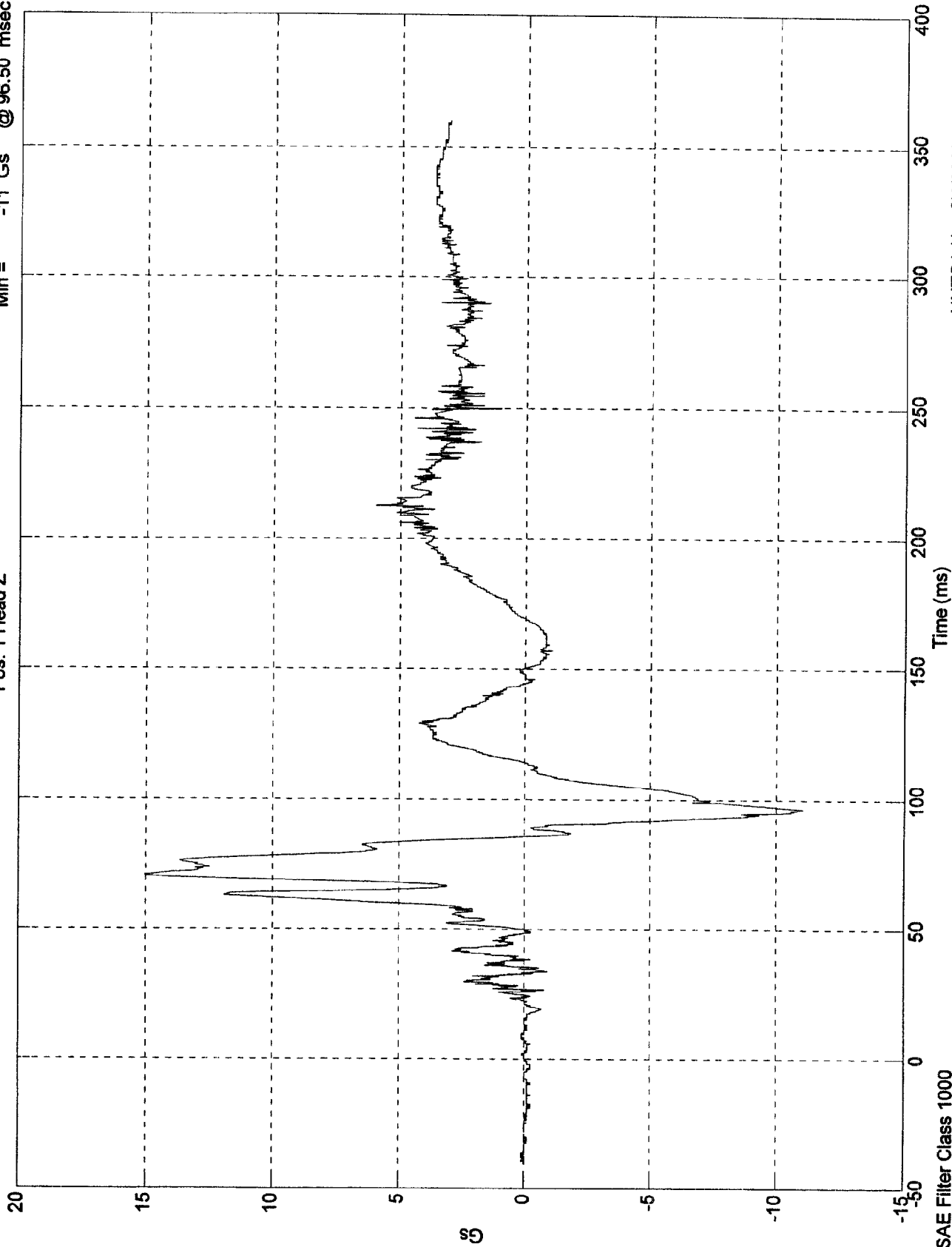


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 1 Head Z

Max = 15 Gs @ 70.60 msec
Min = -11 Gs @ 96.50 msec

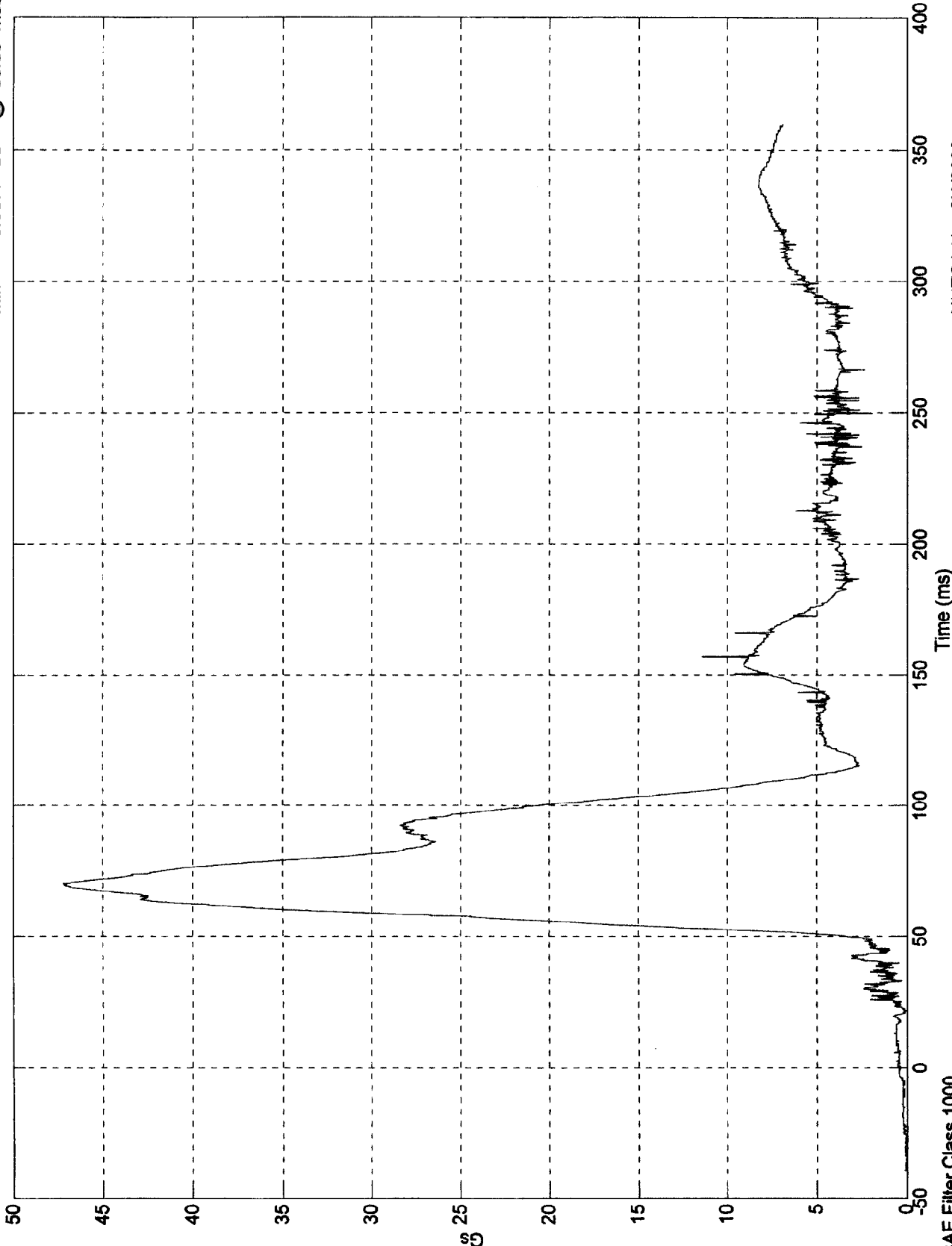


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 47.2 Gs @ 70.10 msec
Min = 0.0377 Gs @ -39.50 msec

Pos. 1 Head Resultant

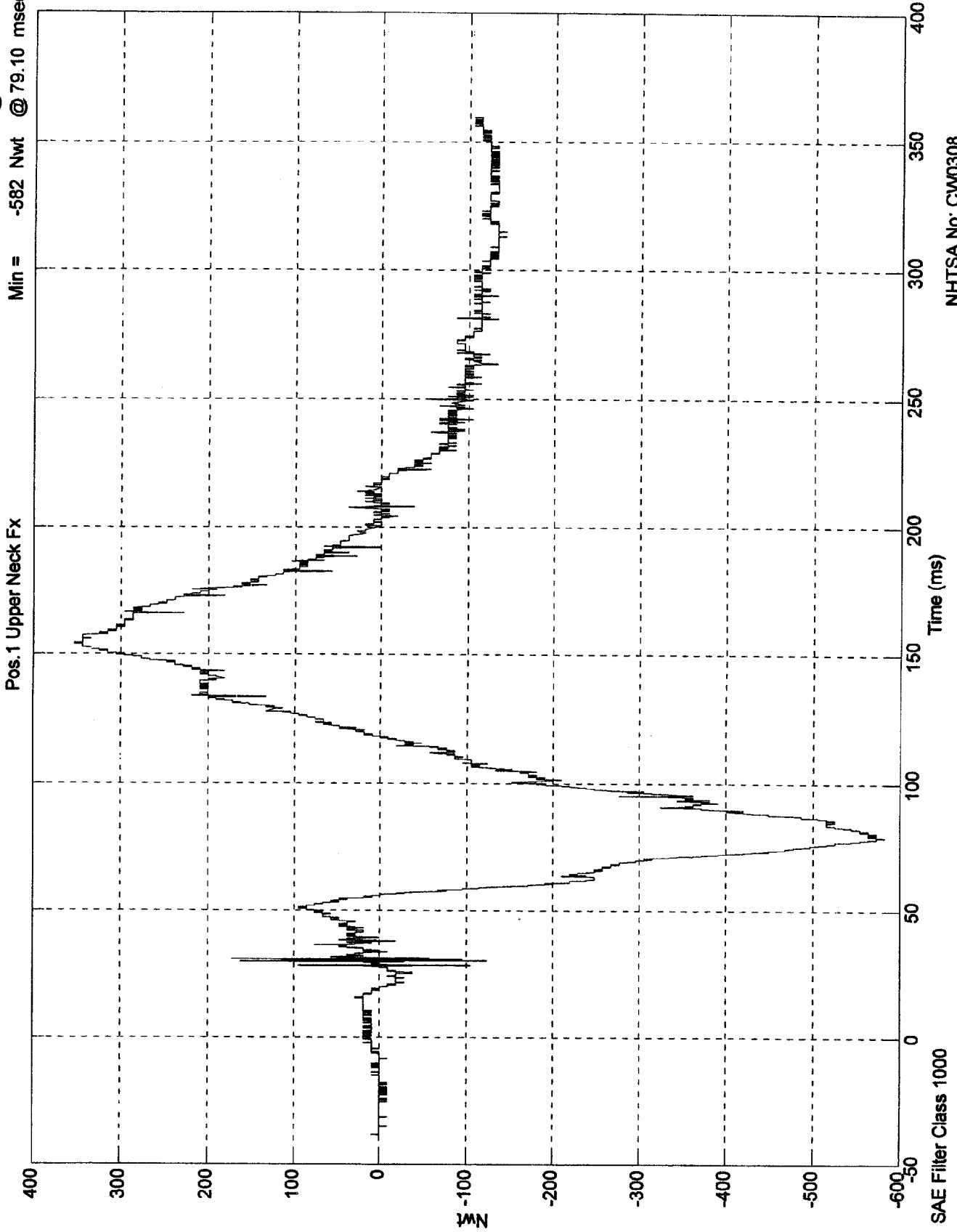


NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 1000

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 353 Nwt @ 153.80 msec
Min = -582 Nwt @ 79.10 msec

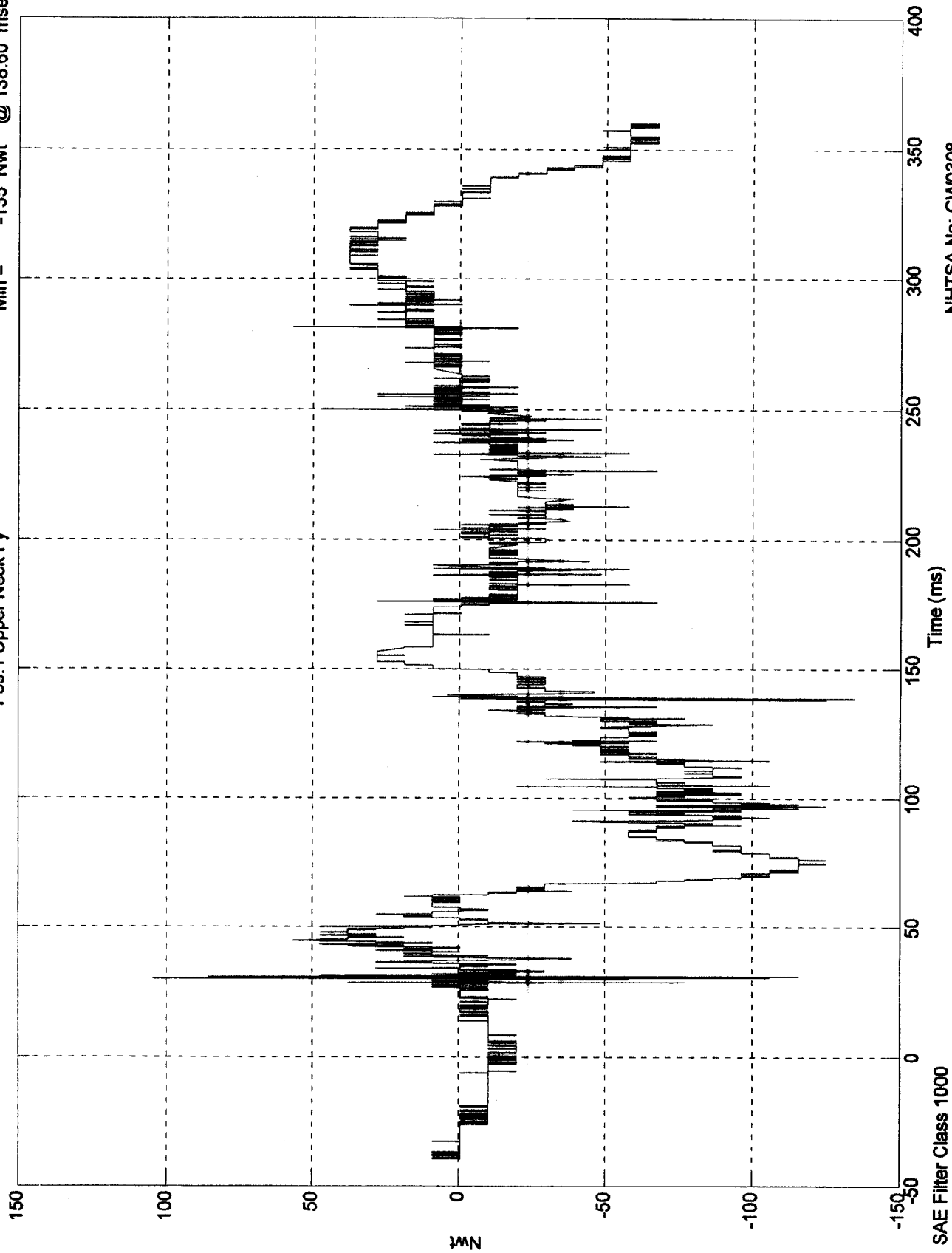


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 105 Nwt @ 29.90 msec
Min = -135 Nwt @ 138.60 msec

Pos.1 Upper Neck Fy

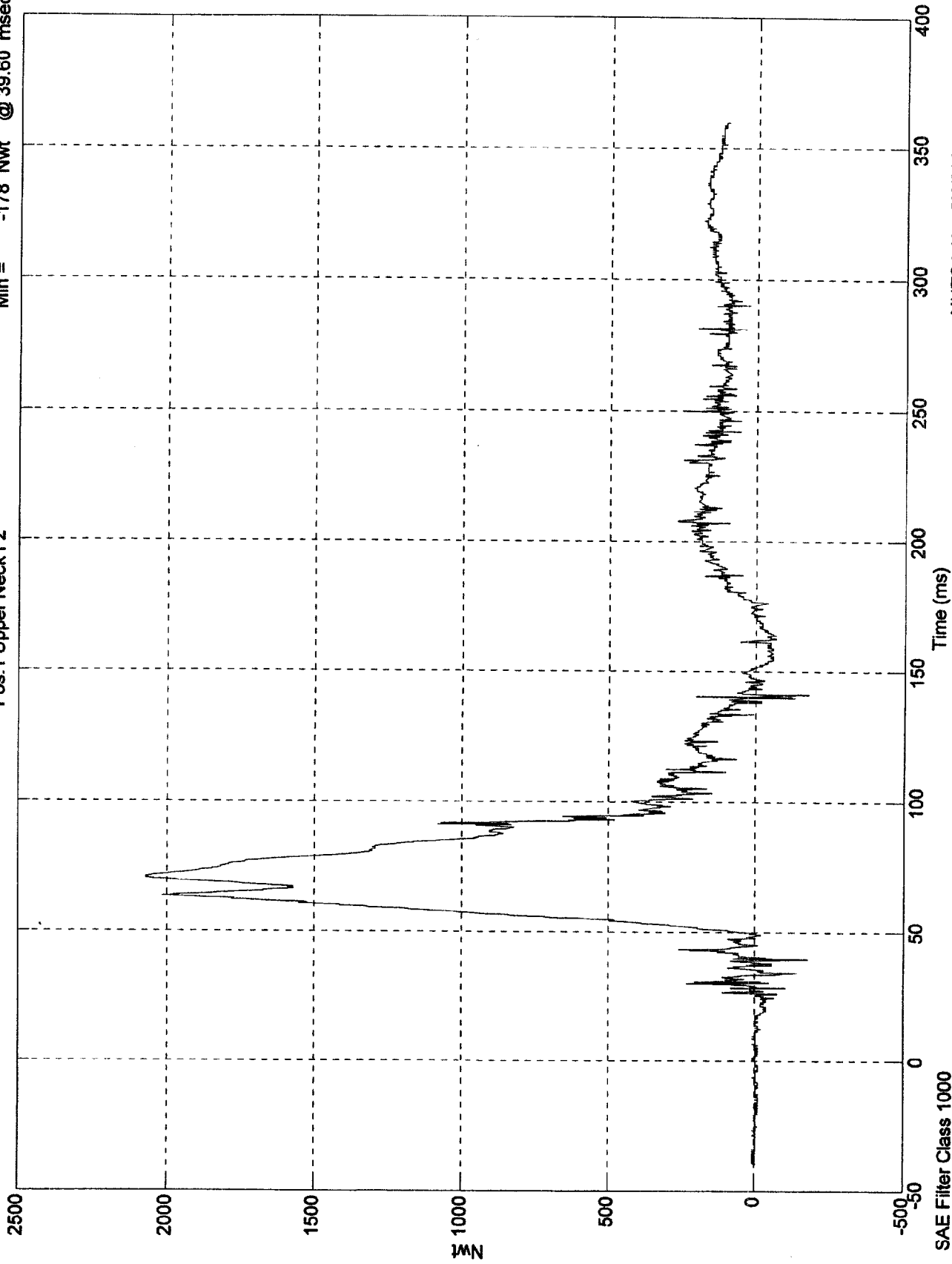


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 2.07e+003 Nwt @ 70.20 msec
Min = -178 Nwt @ 39.60 msec

Pos.1 Upper Neck Fz

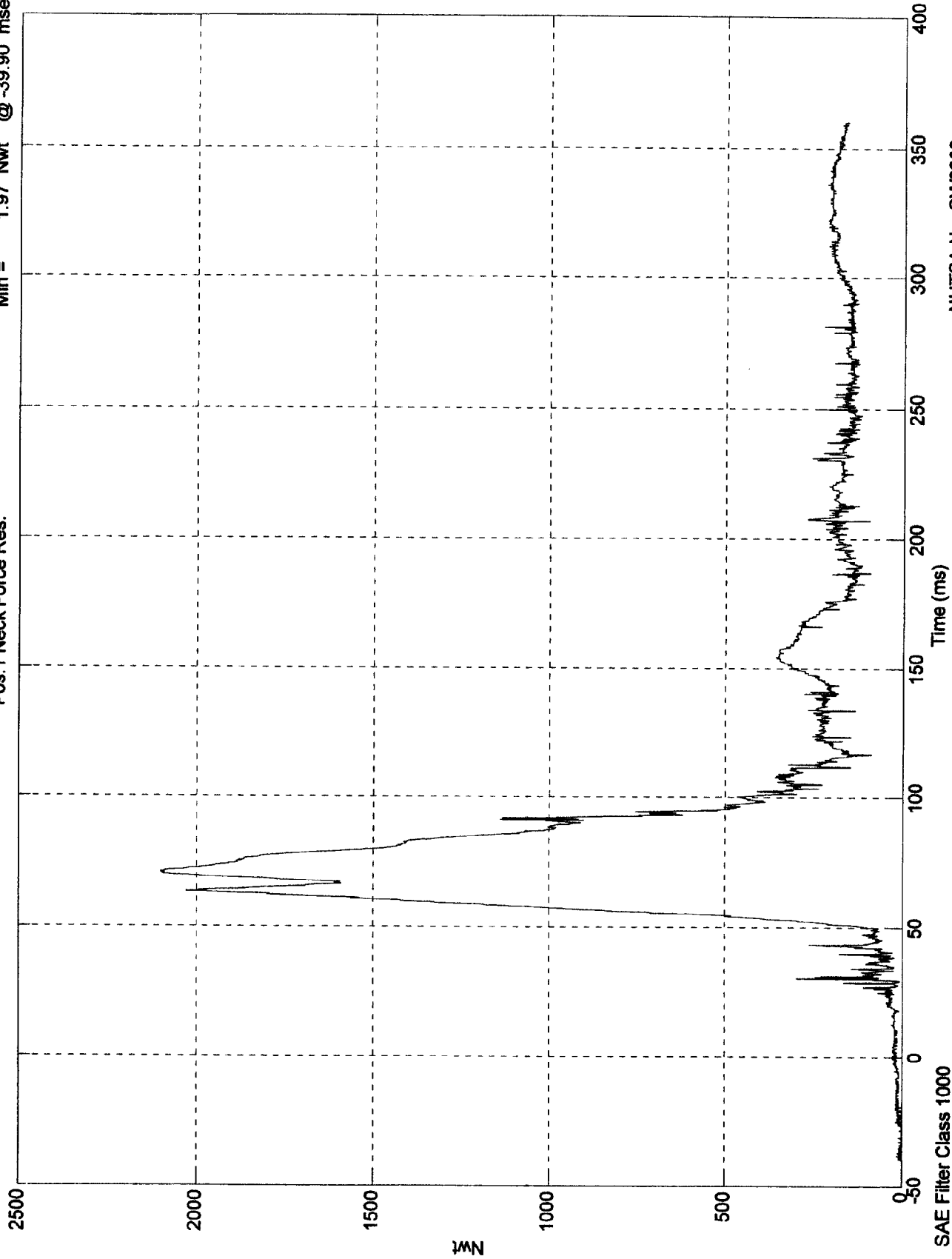


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 2.1e+003 Nwt @ 71.10 msec
Min = 1.97 Nwt @ -39.90 msec

Pos.1 Neck Force Res.

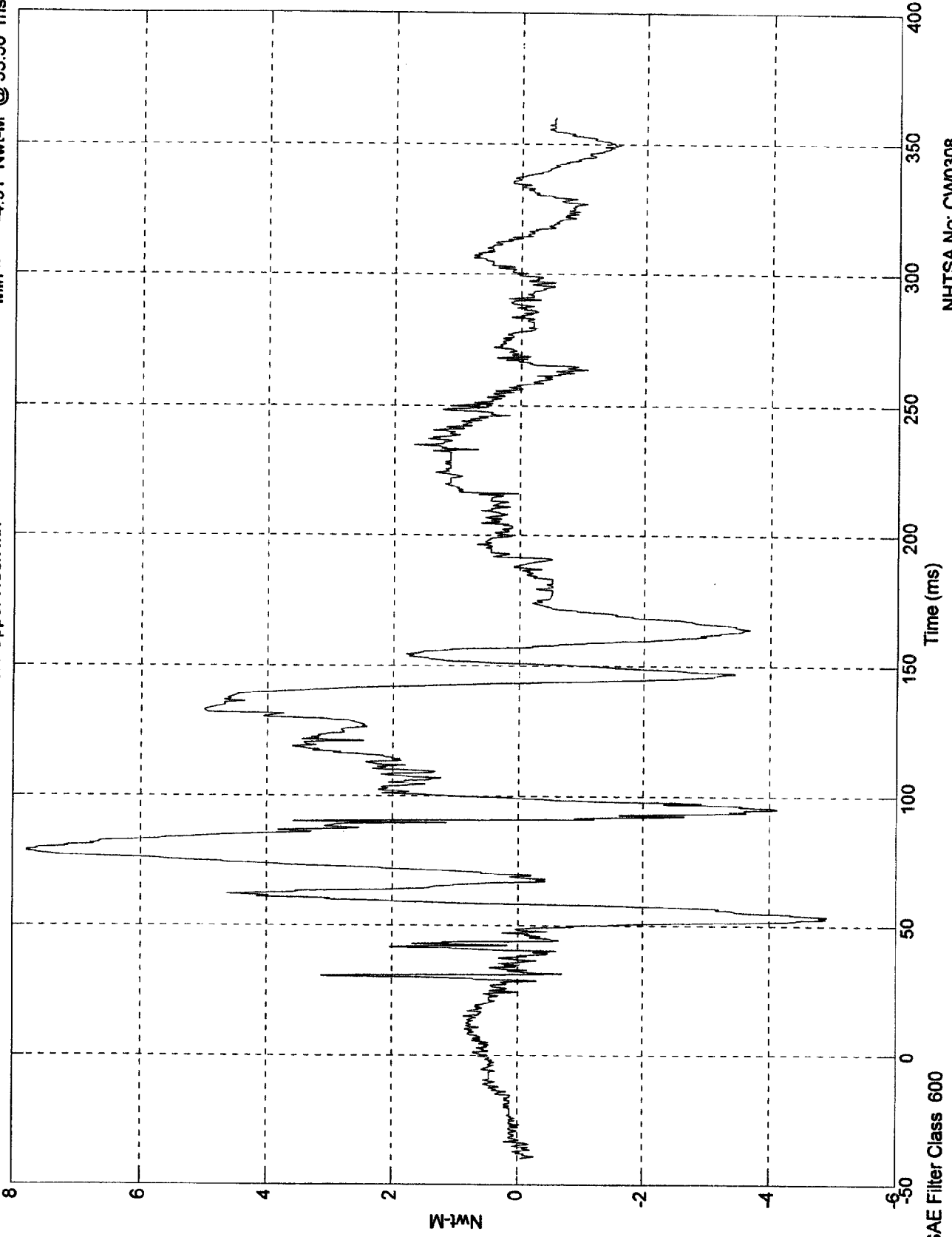


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Pos.1 Upper Neck Mx

Max = 7.79 Nwt-M @ 78.90 msec
Min = -4.91 Nwt-M @ 53.50 msec

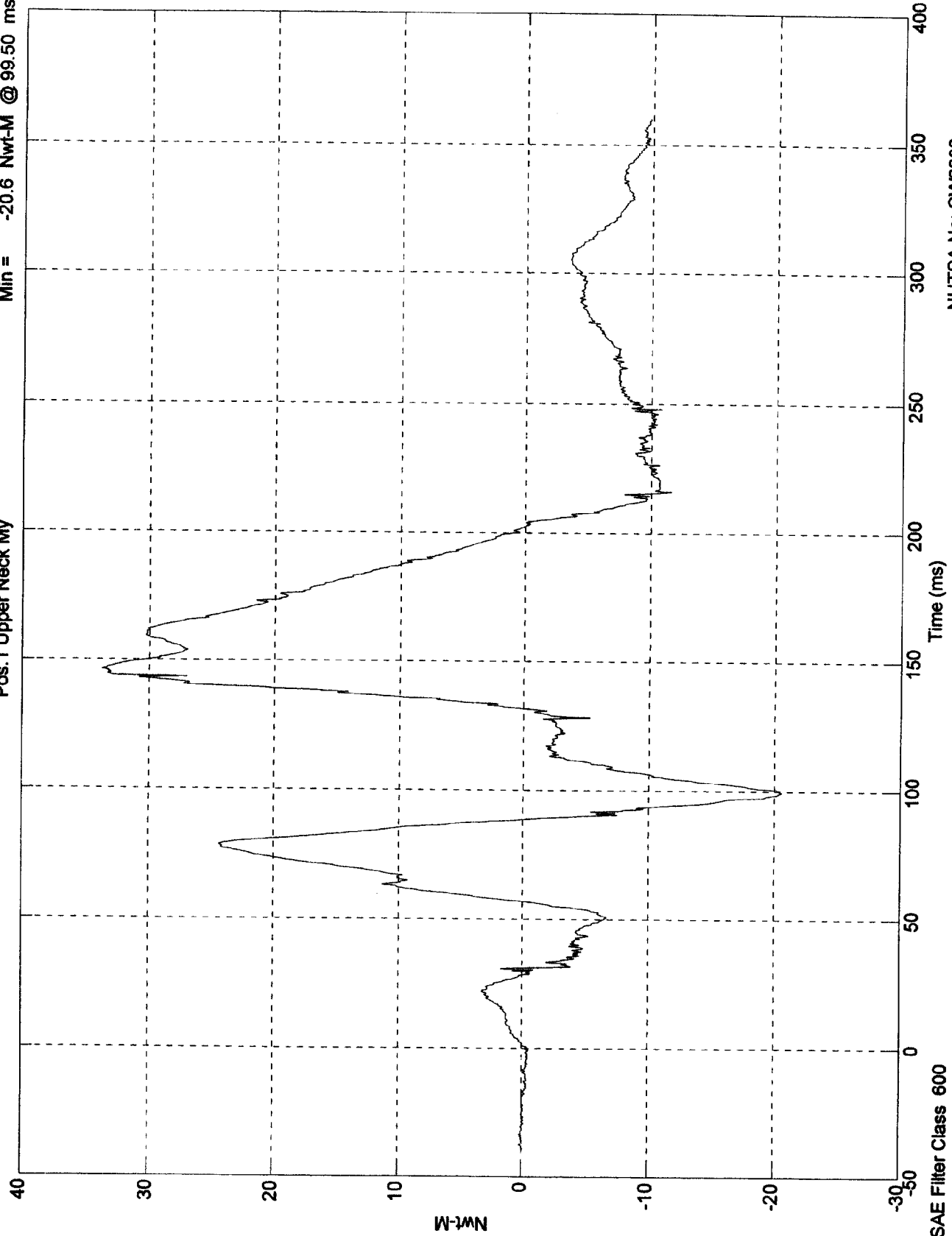


NHTSA No: CW0308
Date: 26 Mar 1988

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 33.7 Nwt-M @ 146.30 msec
Min = -20.6 Nwt-M @ 99.50 msec

Pos.1 Upper Neck My

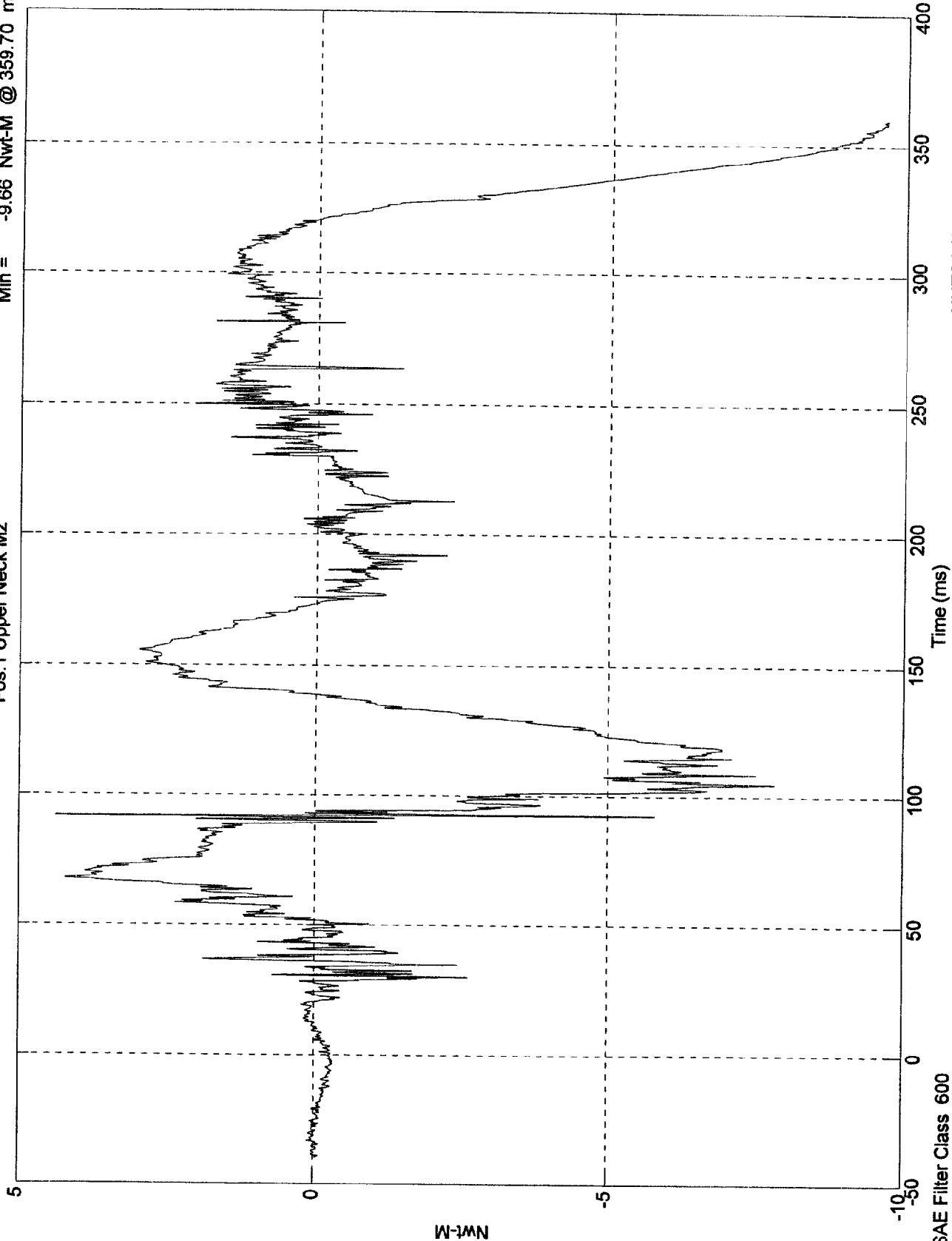


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 4.38 Nwt-M @ 91.90 msec
Min = -9.66 Nwt-M @ 359.70 msec

Pos.1 Upper Neck Mz



NHTSA No: CW0308
Date: 26 Mar 1998

W-1WN

B-41

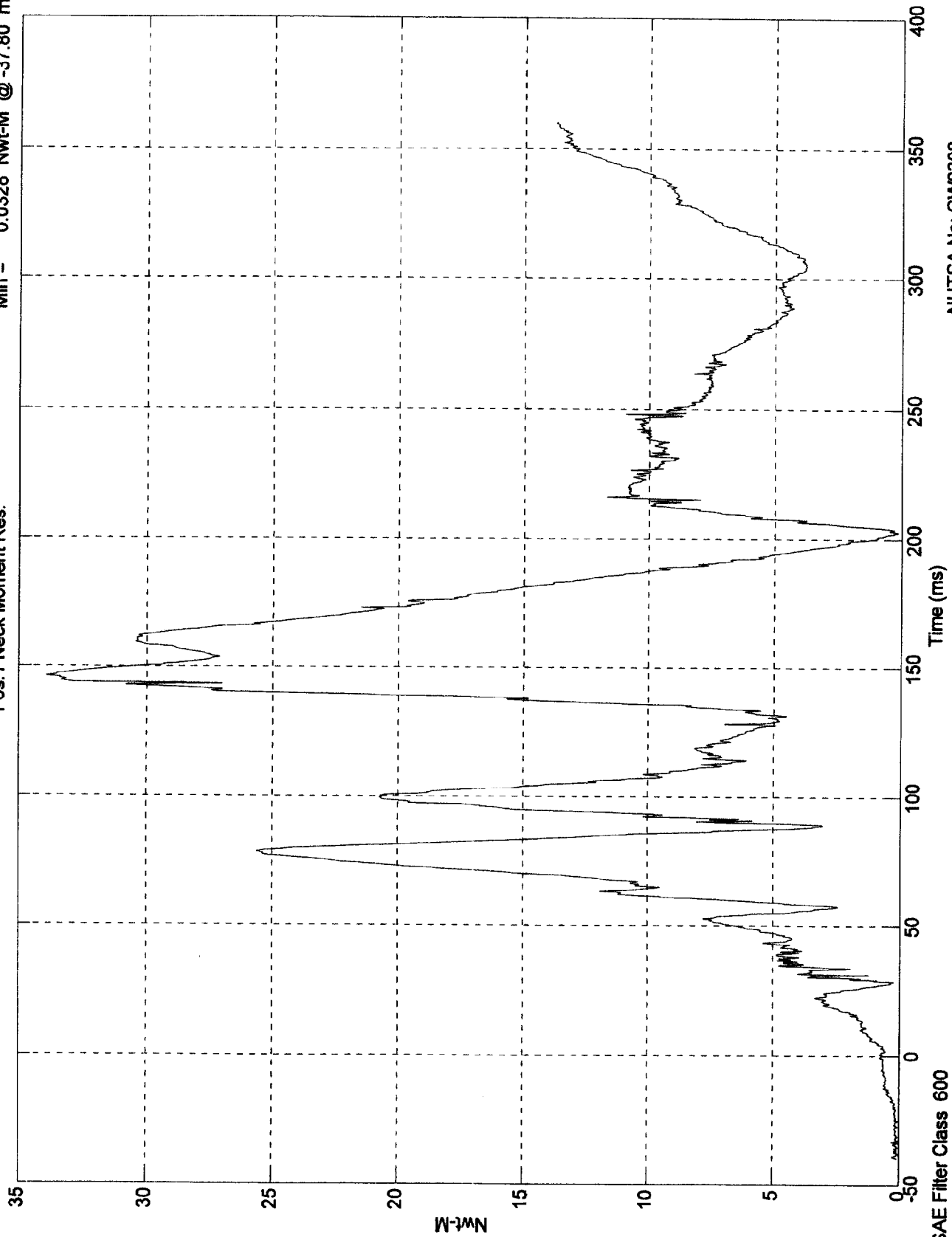
8407-1

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 33.9 Nwt-M @ 146.30 msec
Min = 0.0328 Nwt-M @ -37.80 msec

Pos. 1 Neck Moment Res.



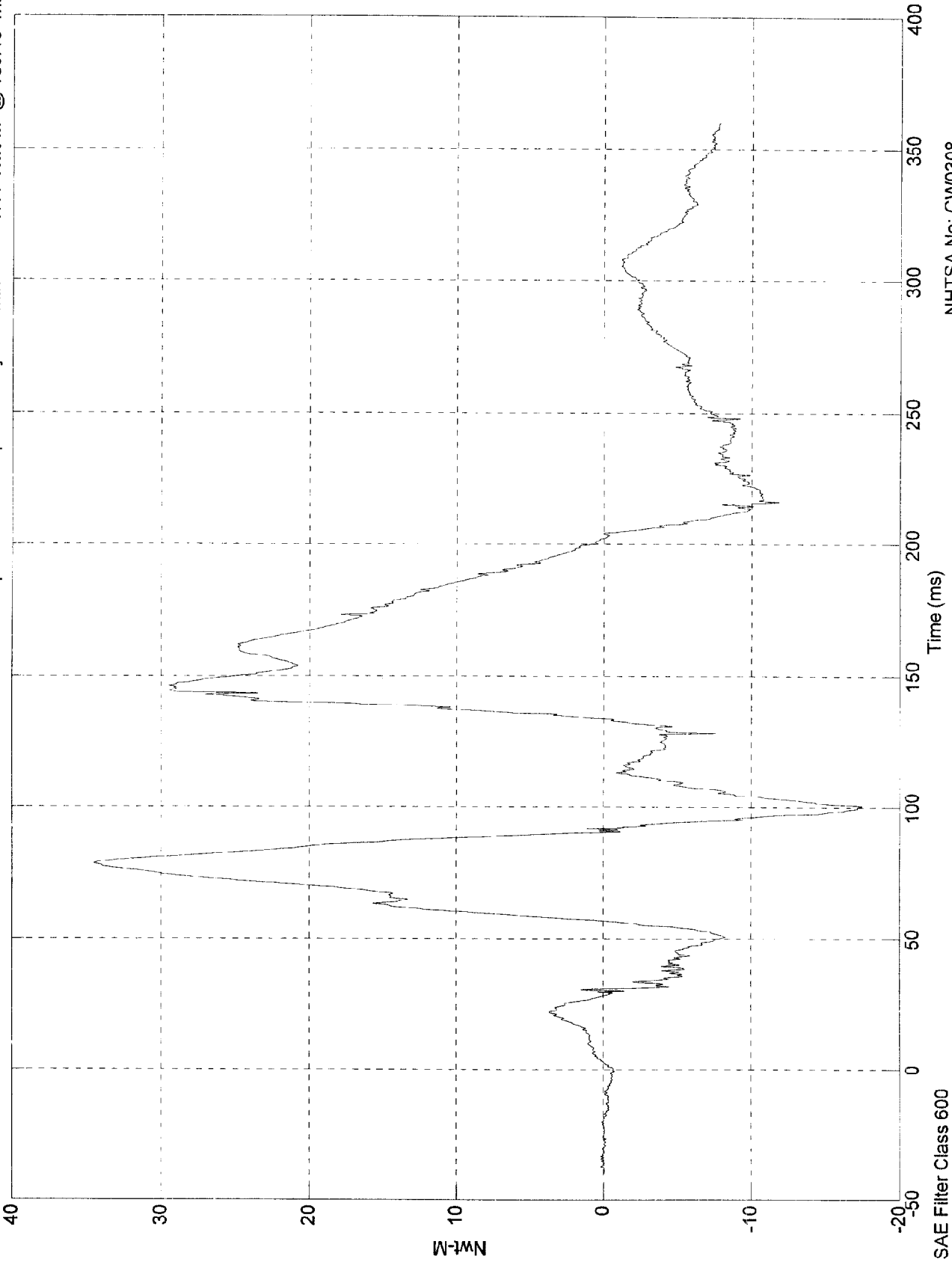
SAE Filter Class 600

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 34.5 Nwt-M @ 78.60 msec
Min = -17.4 Nwt-M @ 100.40 msec

Position 1 Head Y Moment With Respect to the Occipital Condyles

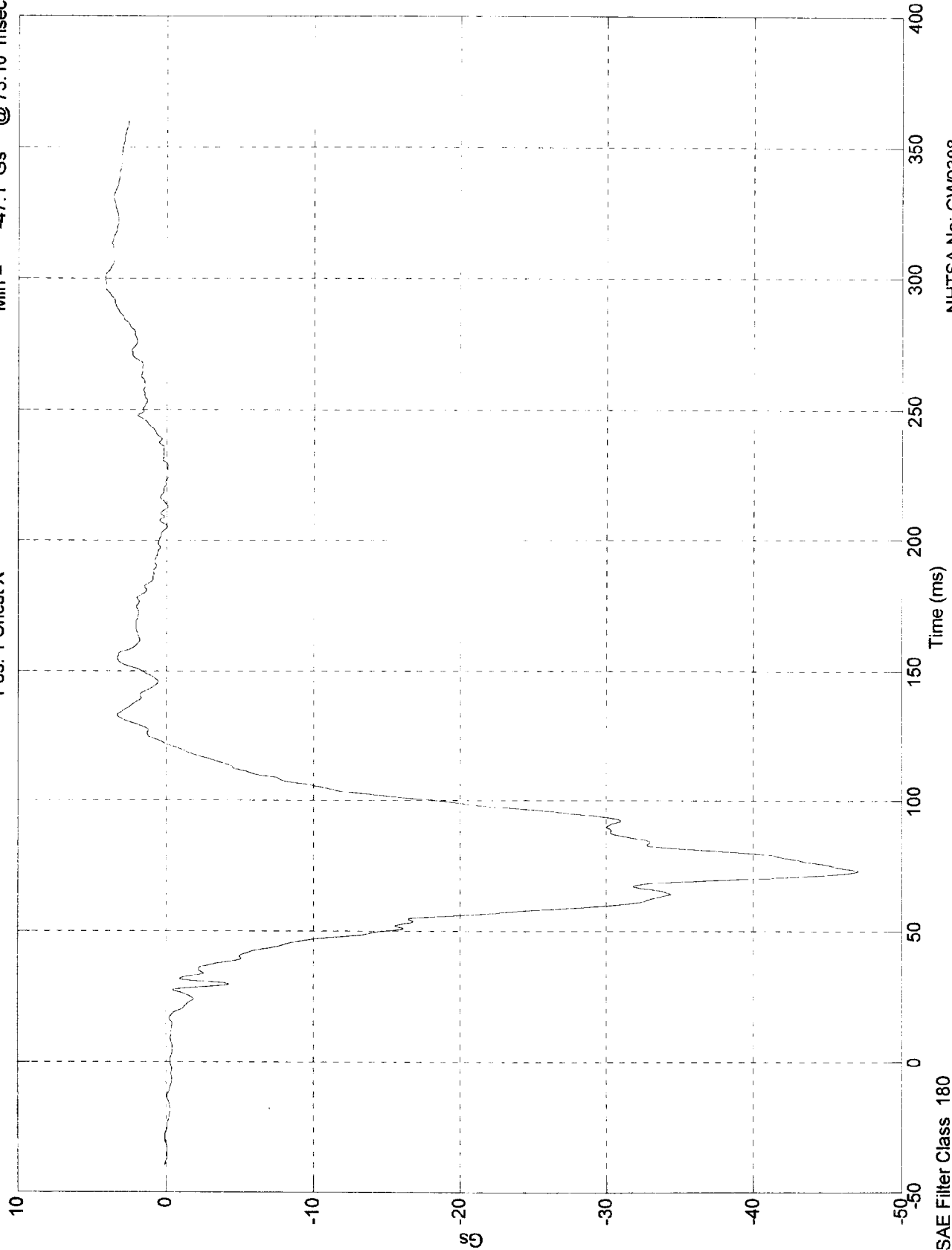


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 4.18 Gs @ 299.90 msec
Min = -47.1 Gs @ 73.10 msec

Pos. 1 Chest X

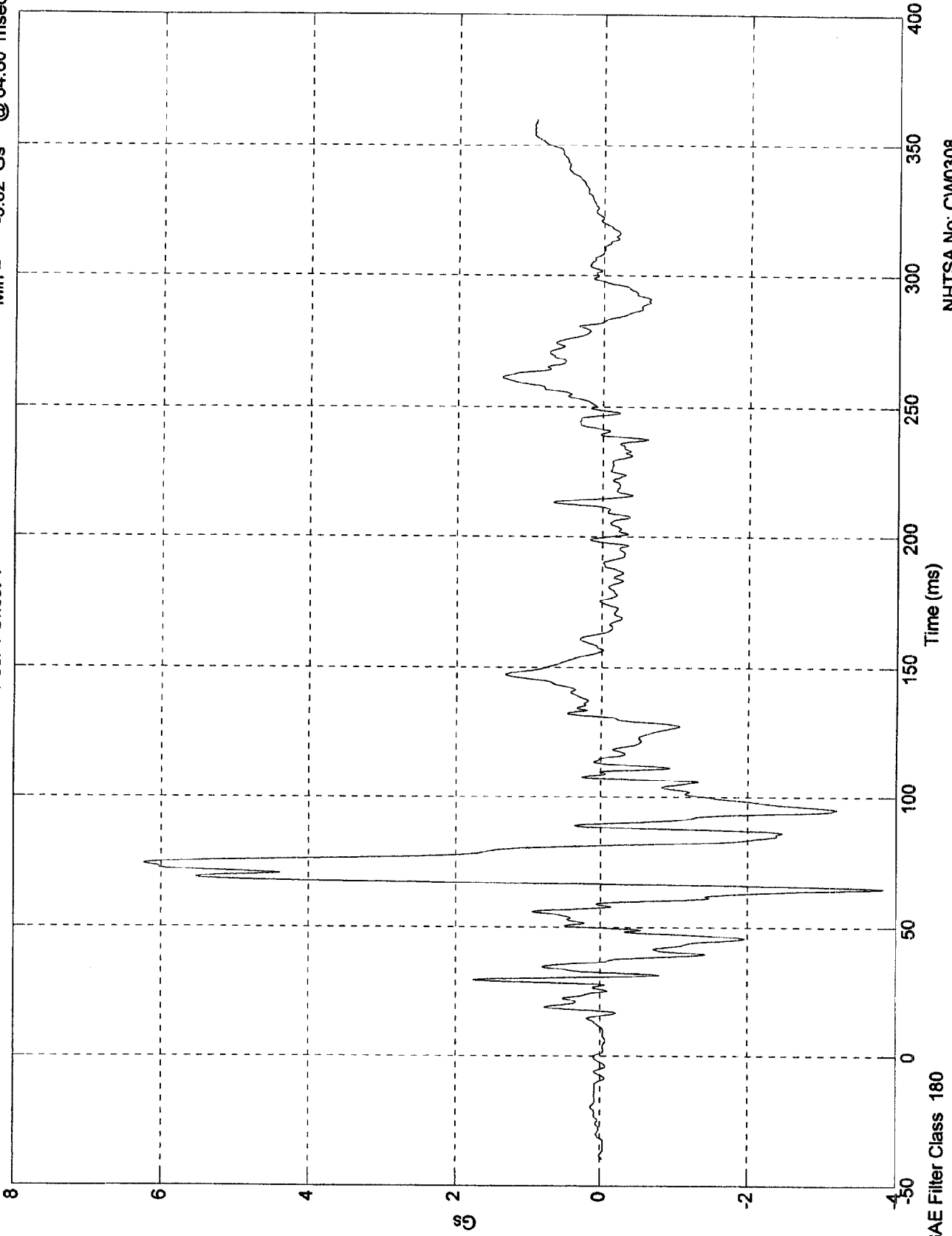


SAE Filter Class 180
NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 1 Chest Y

Max = 6.23 Gs @ 74.20 msec
Min = -3.82 Gs @ 64.60 msec



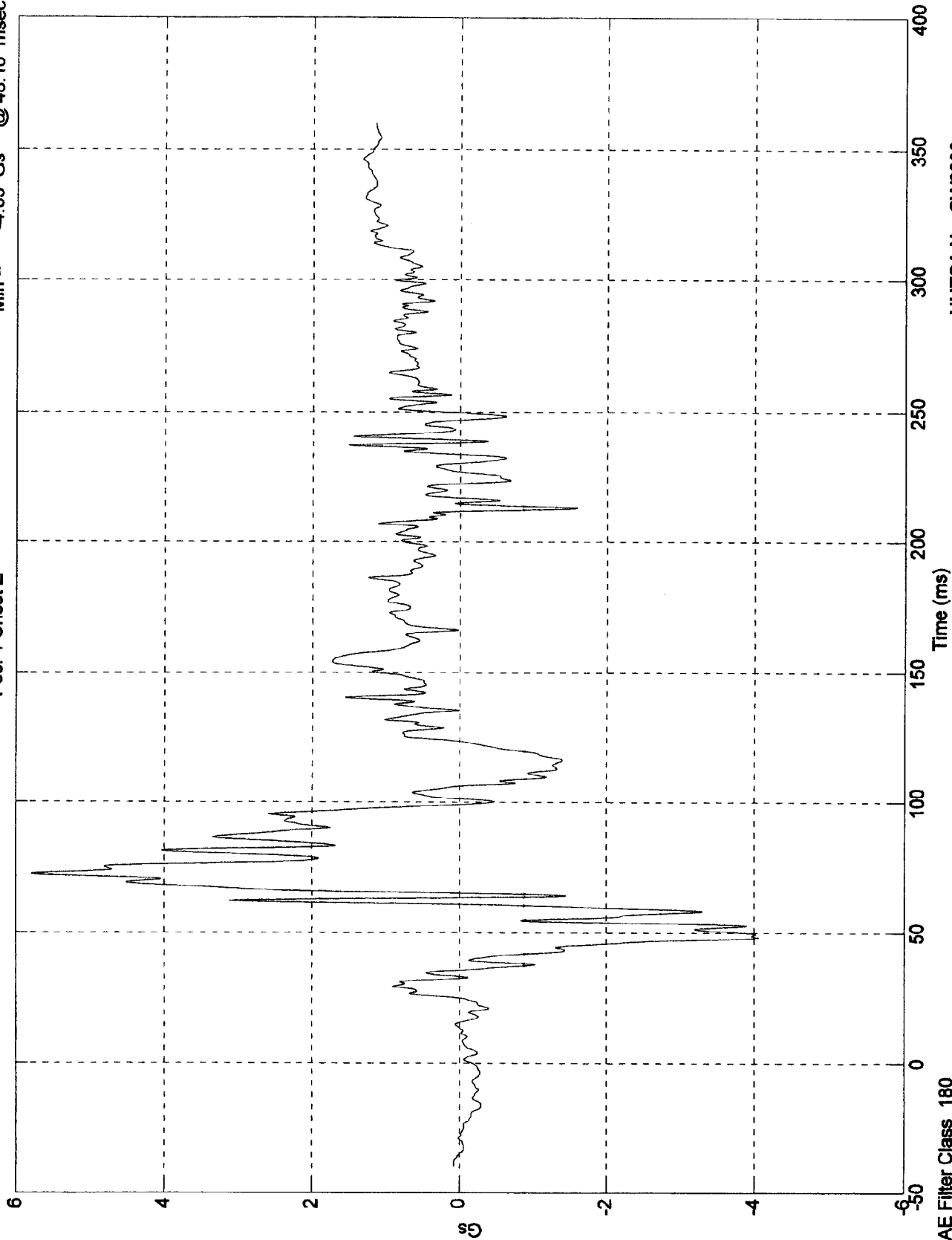
SAE Filter Class 180

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 5.79 Gs @ 72.50 msec
Min = -4.05 Gs @ 48.10 msec

Pos. 1 Chest Z



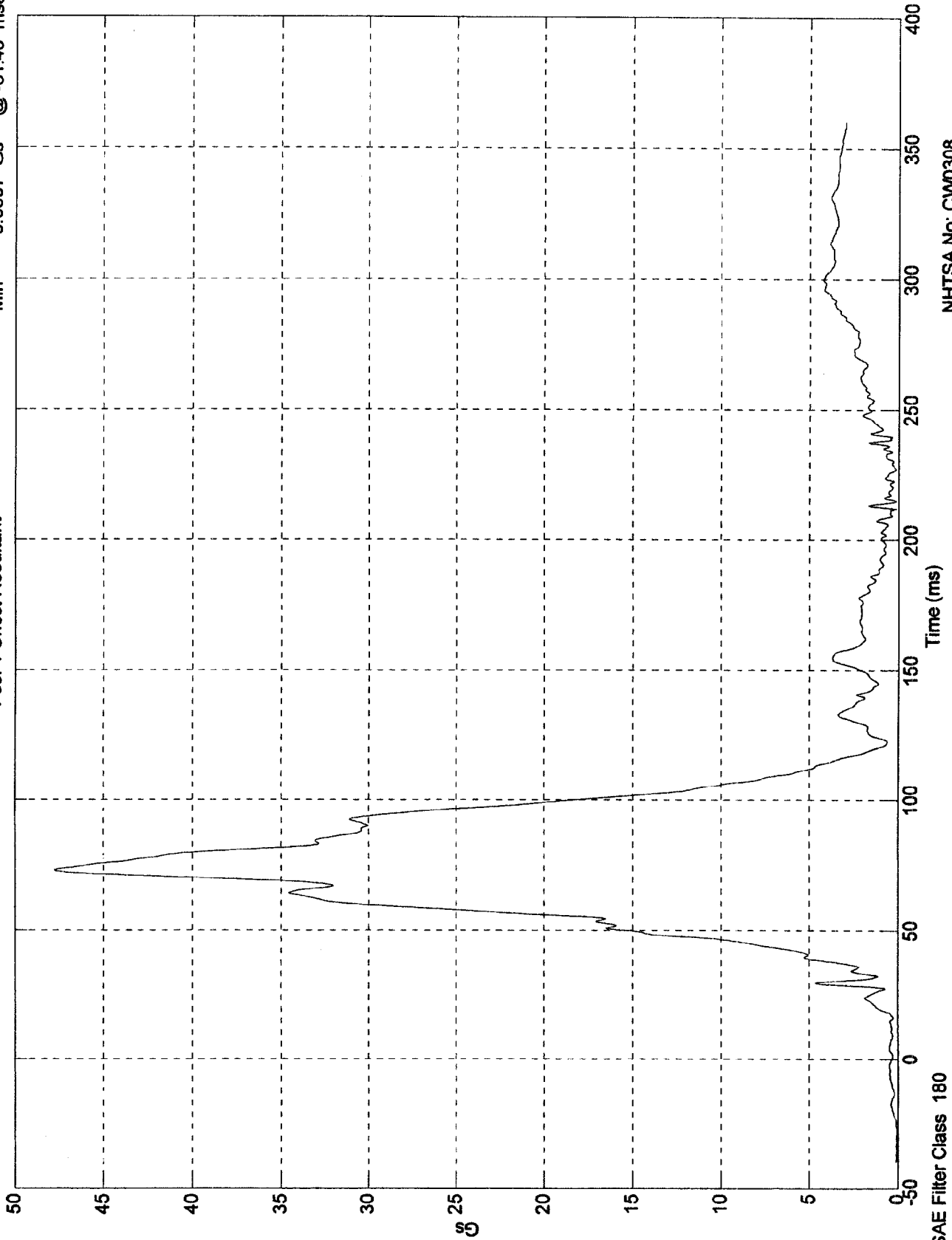
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 1 Chest Resultant

Max = 47.8 Gs @ 73.00 msec
Min = 0.0597 Gs @ -31.40 msec



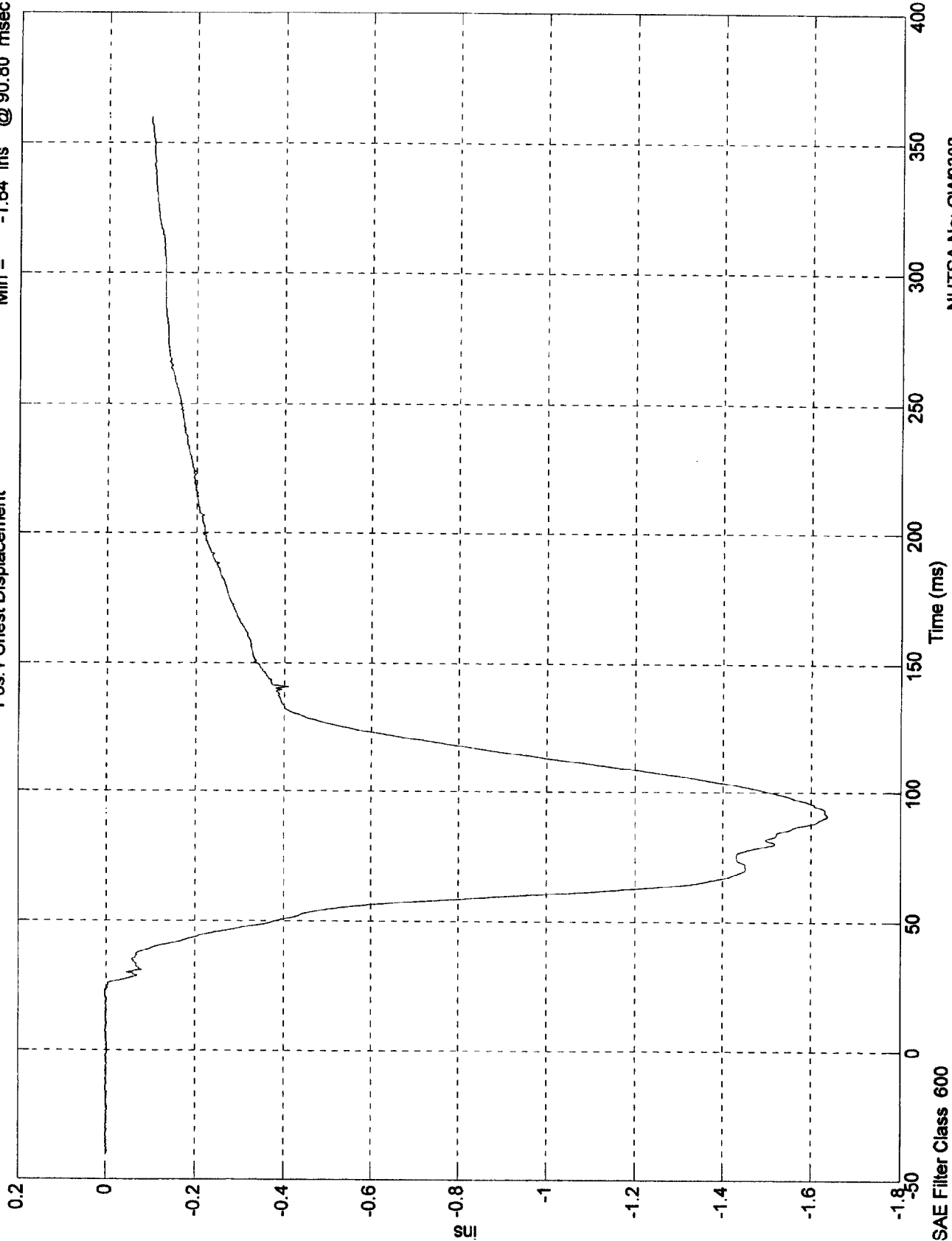
SAE Filter Class 180

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 0.00331 ins @ 22.70 msec
Min = -1.64 ins @ 90.80 msec

Pos.1 Chest Displacement

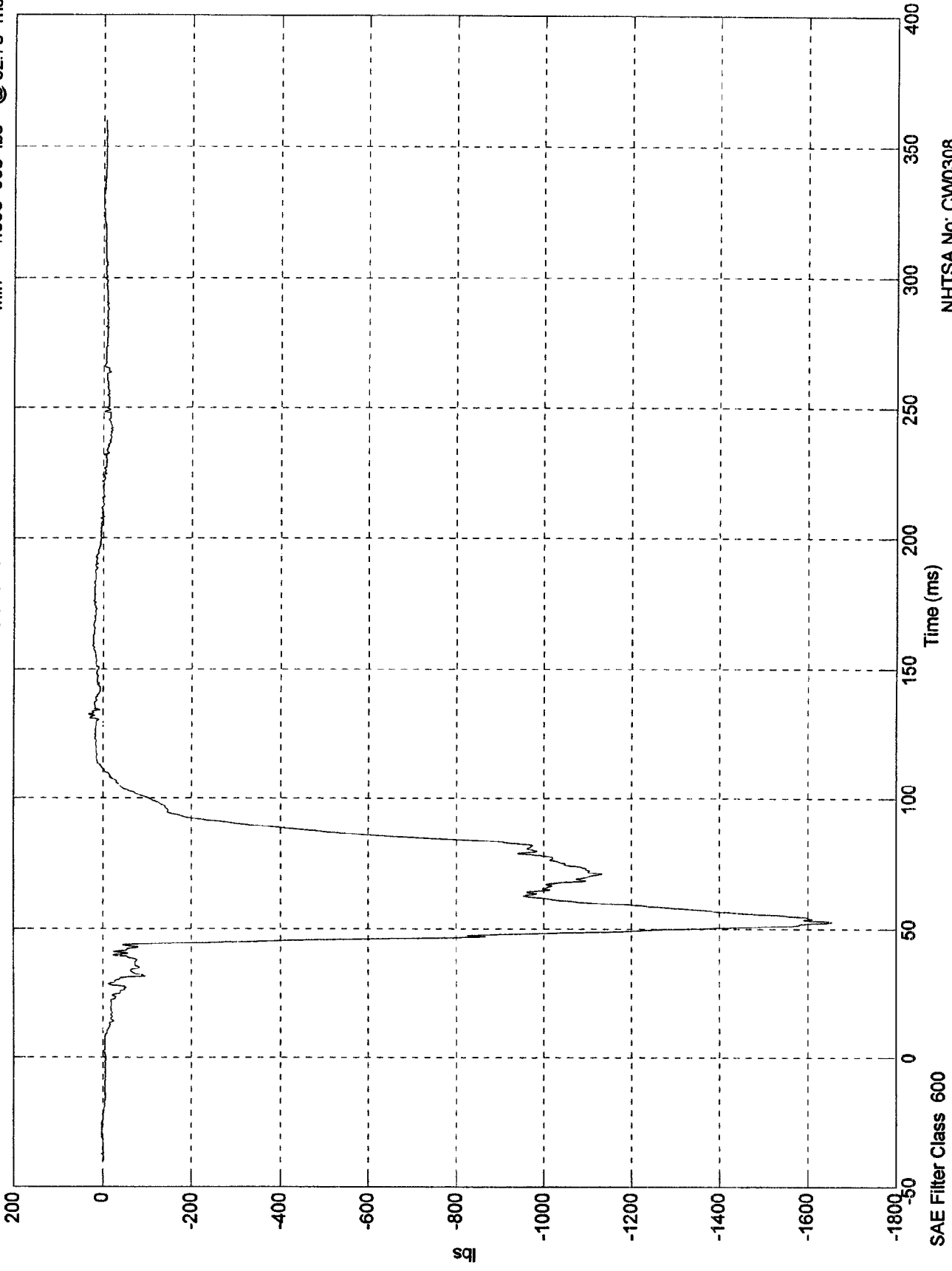


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 32.6 lbs @ 132.30 msec
Min = -1.66e+003 lbs @ 52.70 msec

Pos. 1 Left Femur



NHTSA No: CW0308
Date: 26 Mar 1998

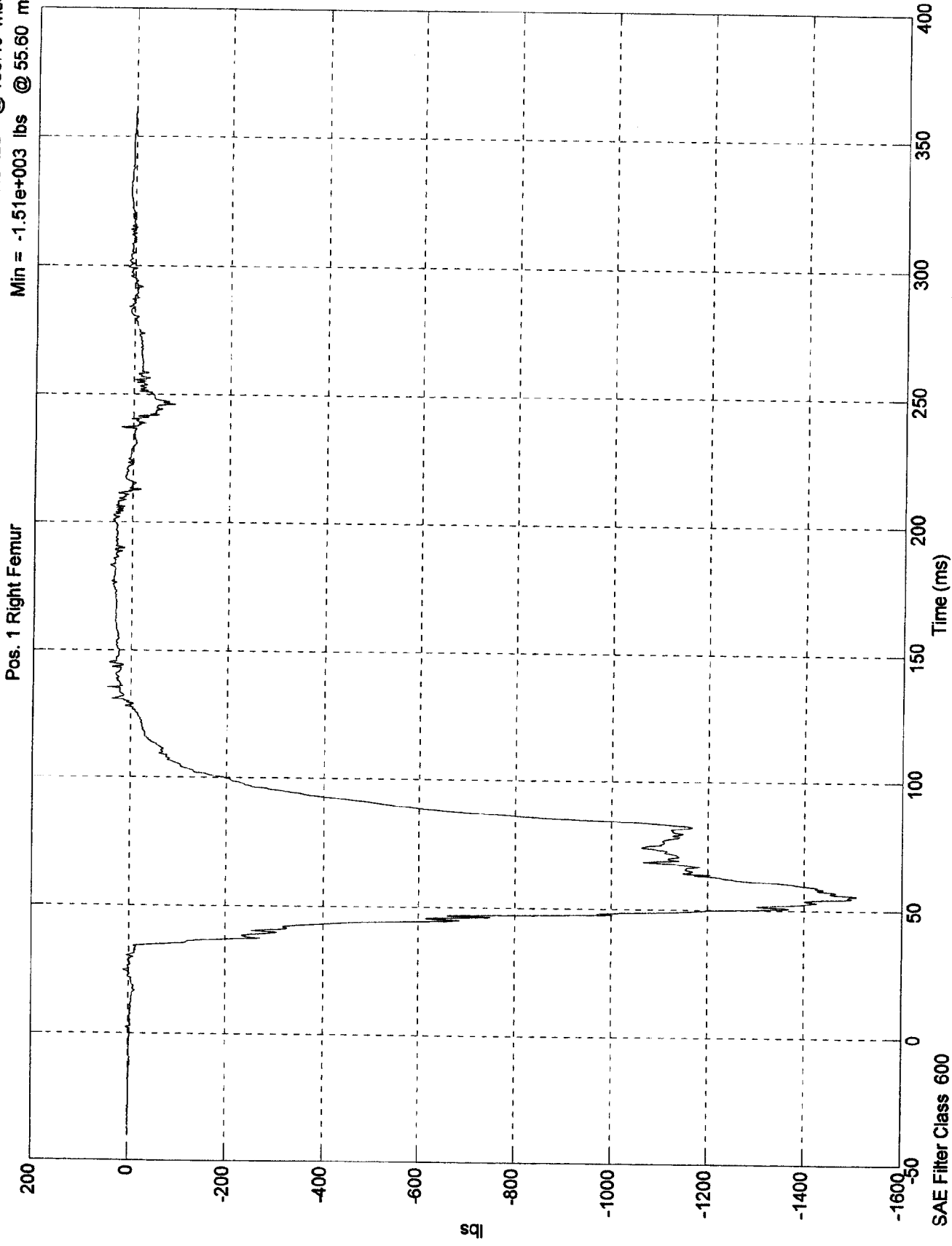
SAE Filter Class 600

B-49

8407-1

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 47.9 lbs @ 135.40 msec
Min = -1.51e+003 lbs @ 55.60 msec

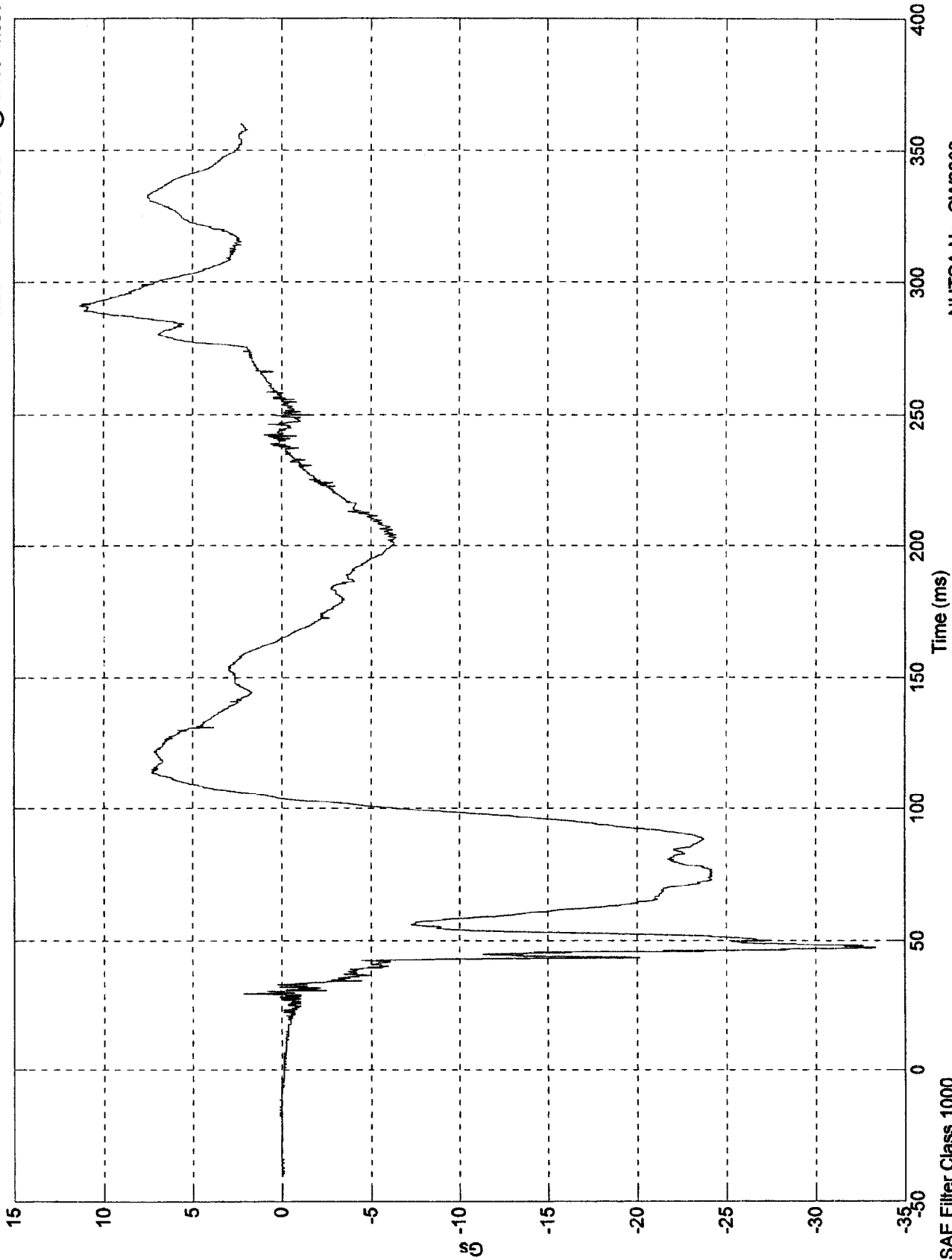


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 11.3 Gs @ 291.00 msec
Min = -33.4 Gs @ 47.30 msec

Pos. 2 Head X



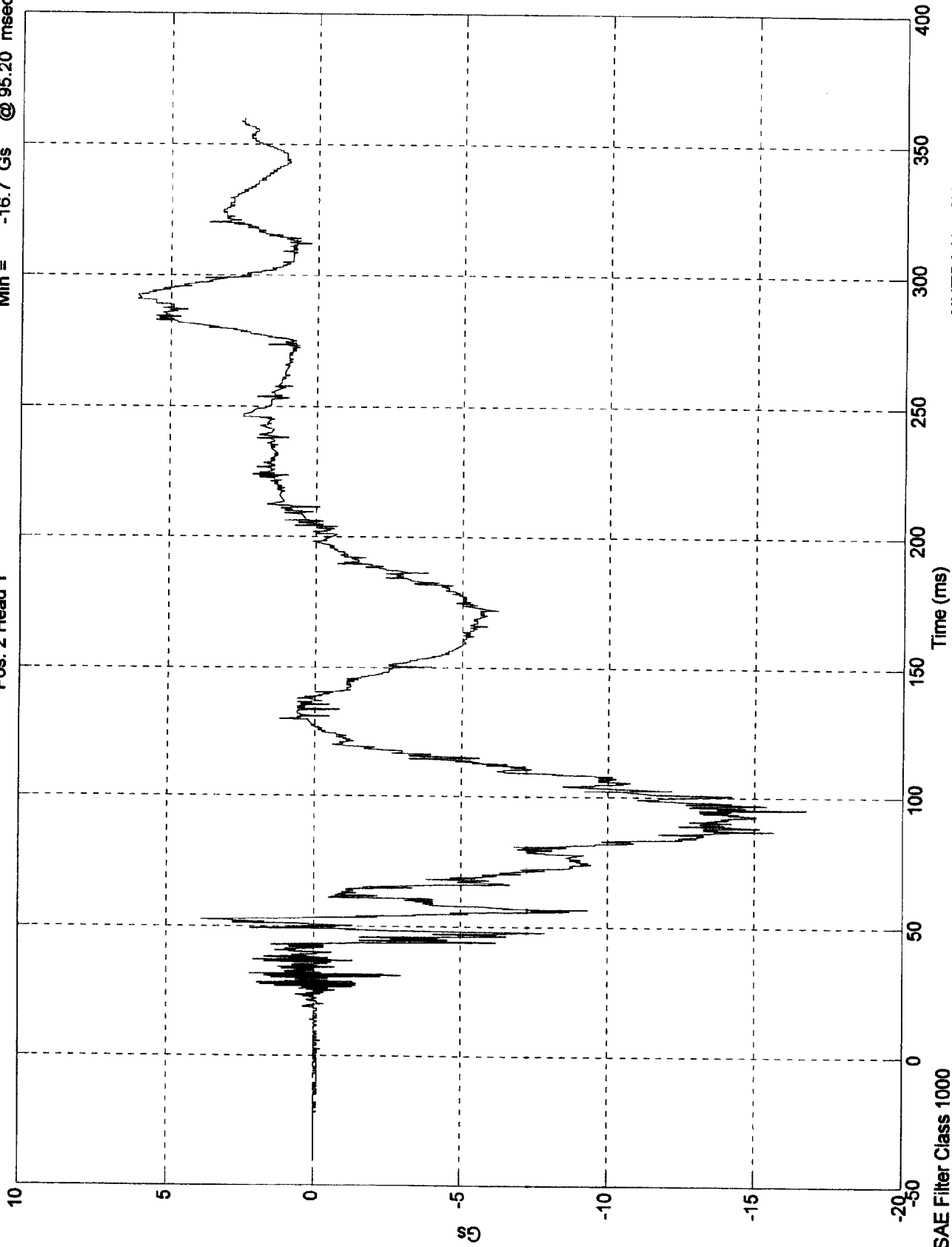
SAE Filter Class 1000

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 2 Head Y

Max = 6.09 Gs @ 291.00 msec
Min = -16.7 Gs @ 95.20 msec



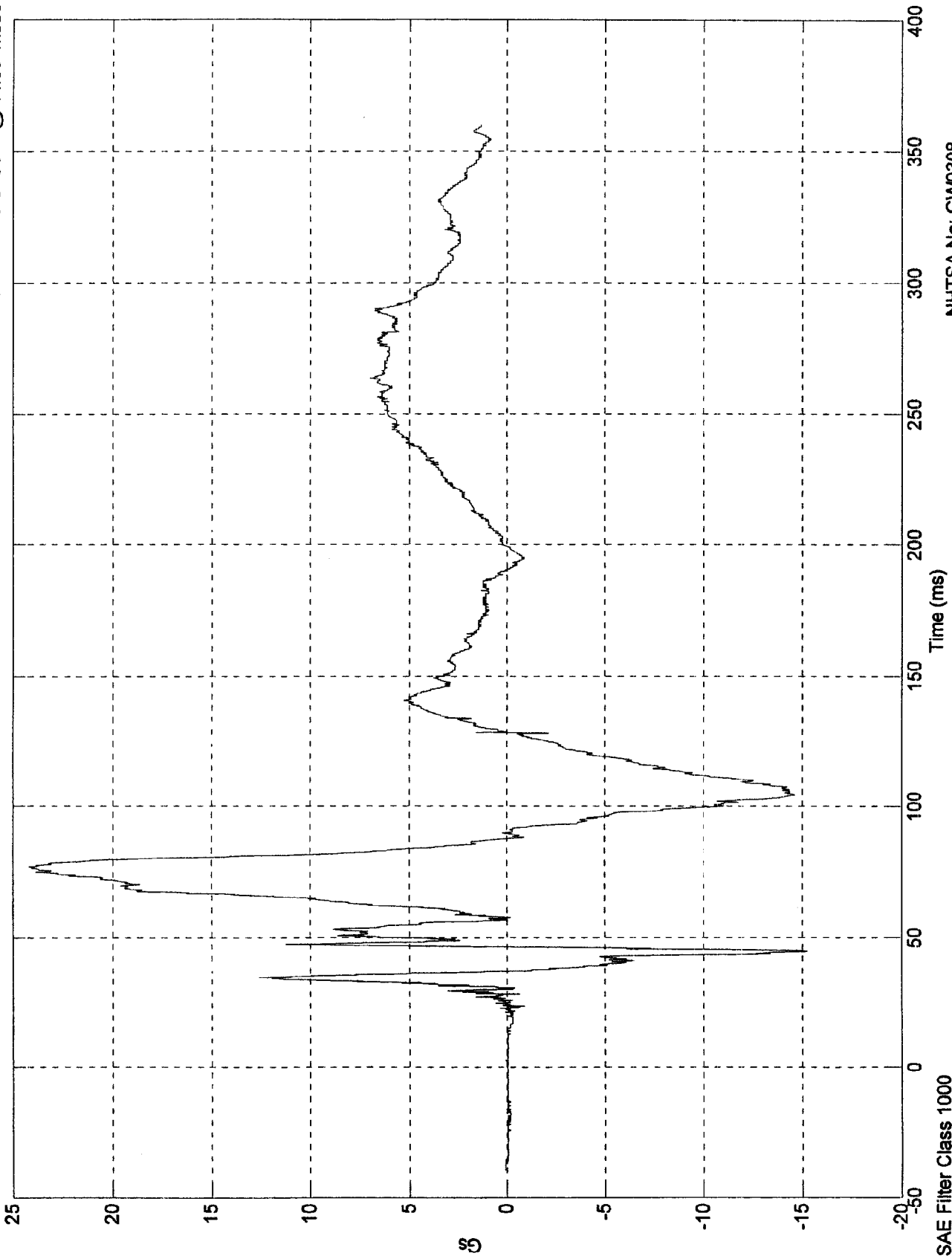
SAE Filter Class 1000

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 24.2 Gs @ 76.90 msec
Min = -15.2 Gs @ 44.90 msec

Pos. 2 Head Z

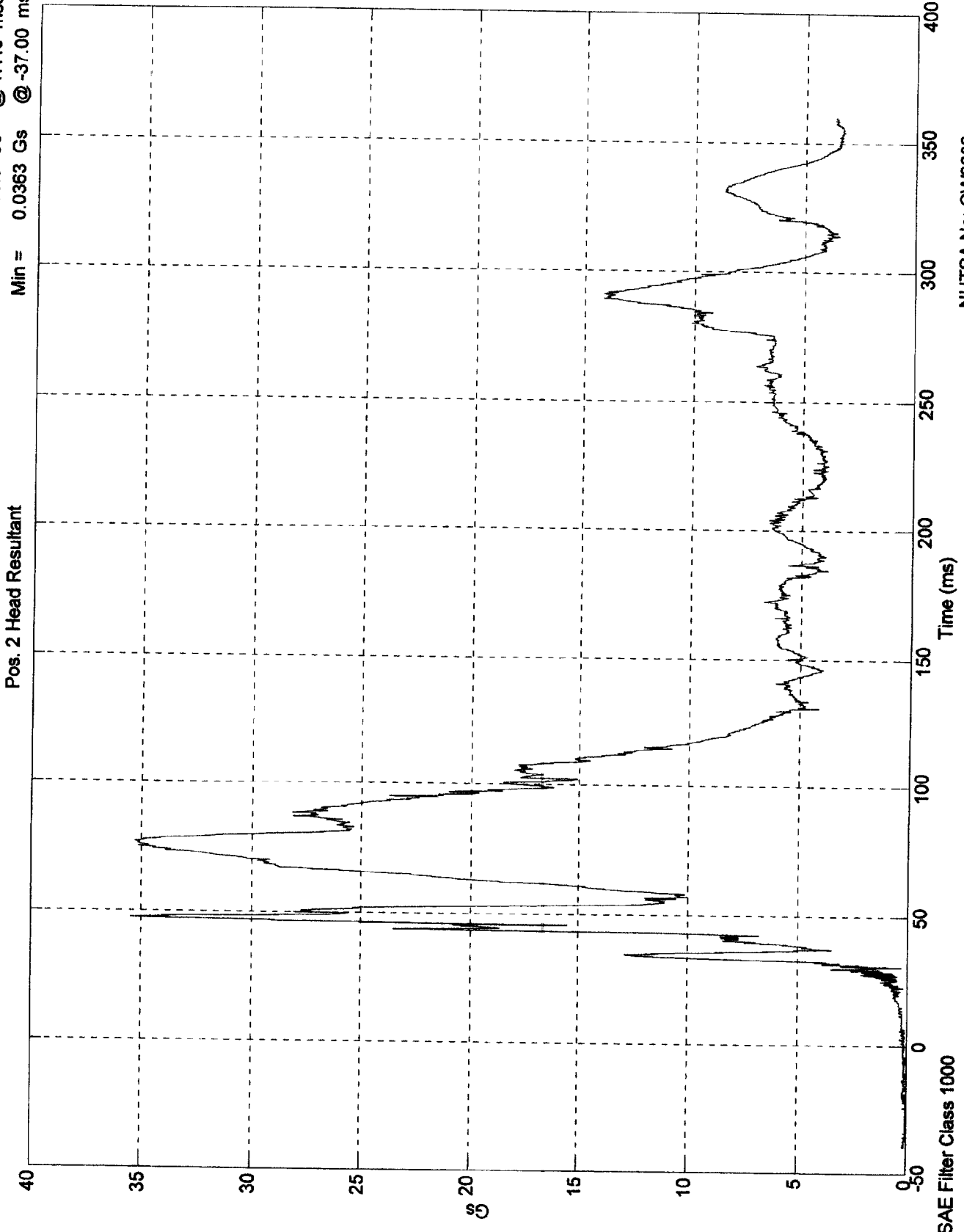


NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 1000

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 35.5 Gs @ 47.40 msec
Min = 0.0363 Gs @ -37.00 msec

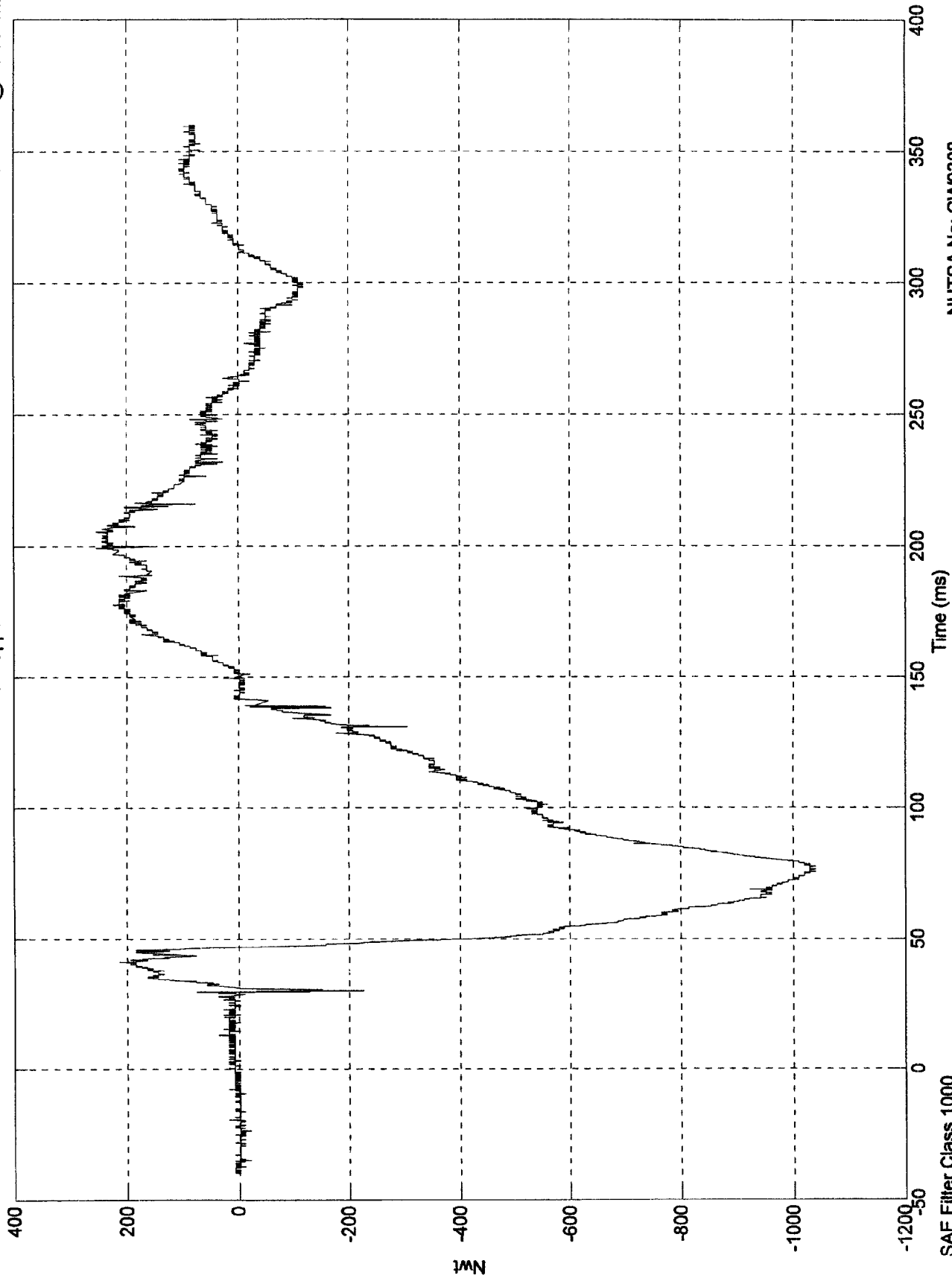


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 253 Nwt @ 199.40 msec
Min = -1.04e+003 Nwt @ 75.80 msec

Pos.2 Upper Neck Fx

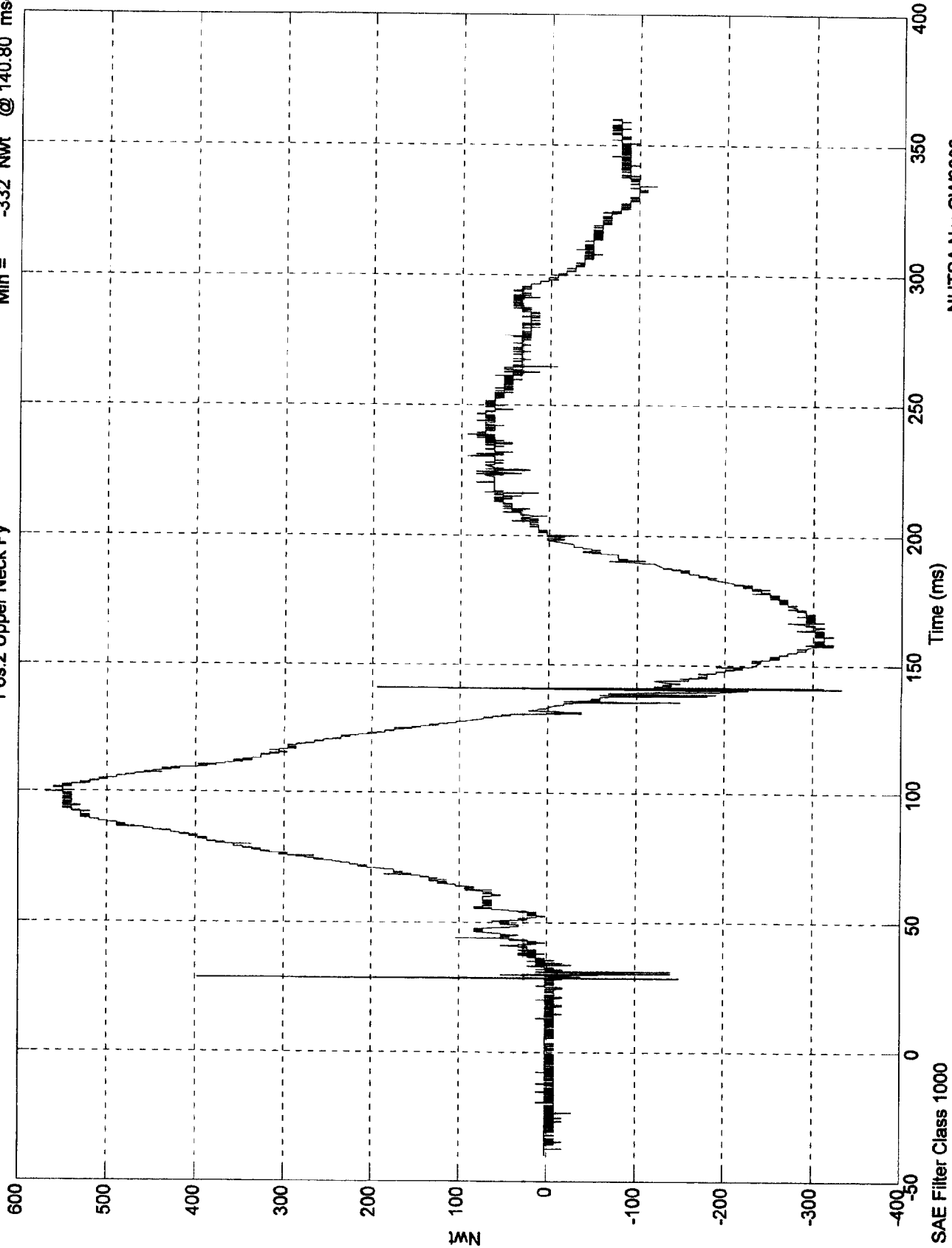


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 570 Nwt @ 99.70 msec
Min = -332 Nwt @ 140.80 msec

Pos.2 Upper Neck Fy

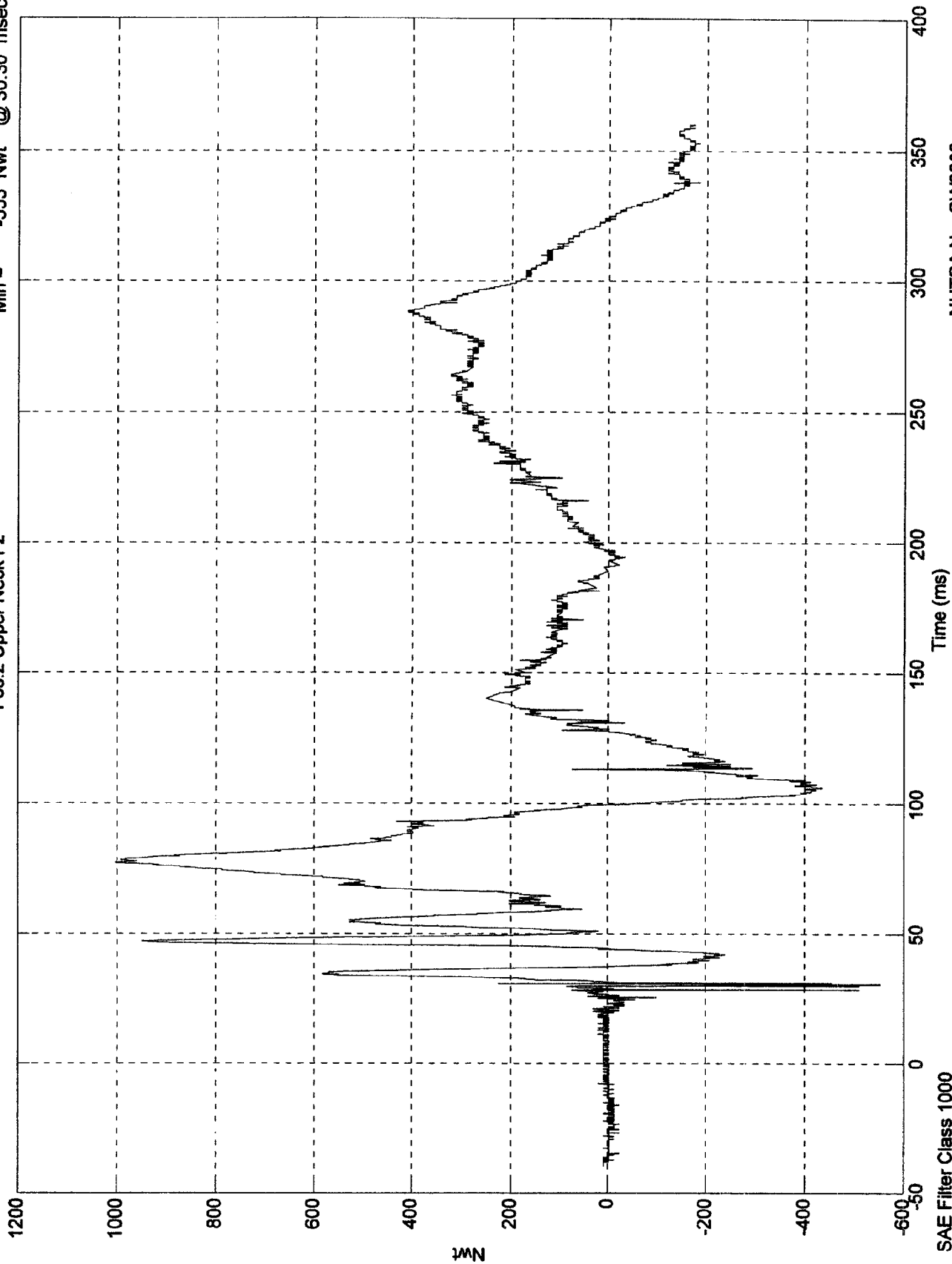


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 1e+003 Nwt @ 77.50 msec
Min = -553 Nwt @ 30.30 msec

Pos.2 Upper Neck Fz

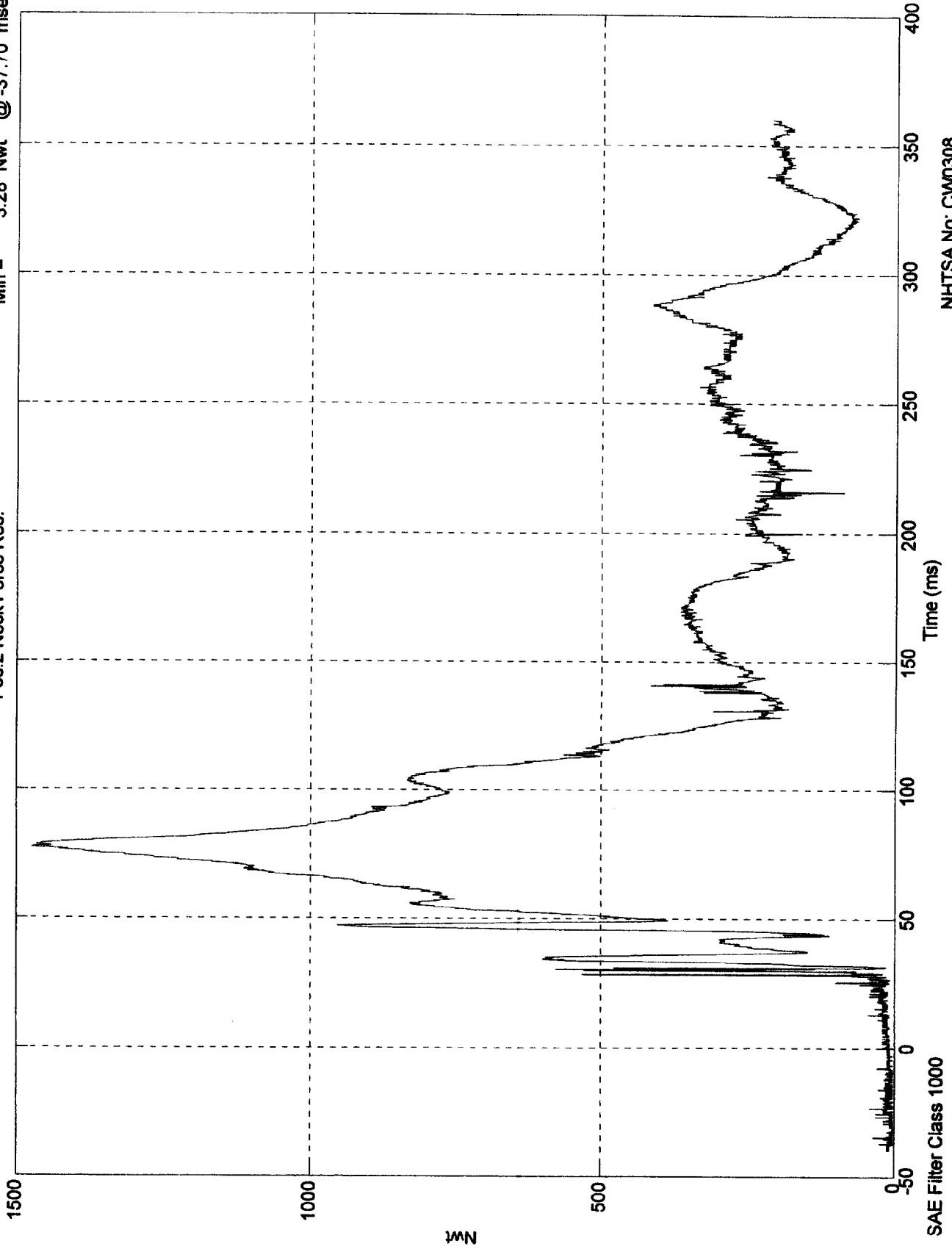


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 1.47e+003 Nwt @ 77.60 msec
Min = 3.28 Nwt @ -37.70 msec

Pos.2 Neck Force Res.

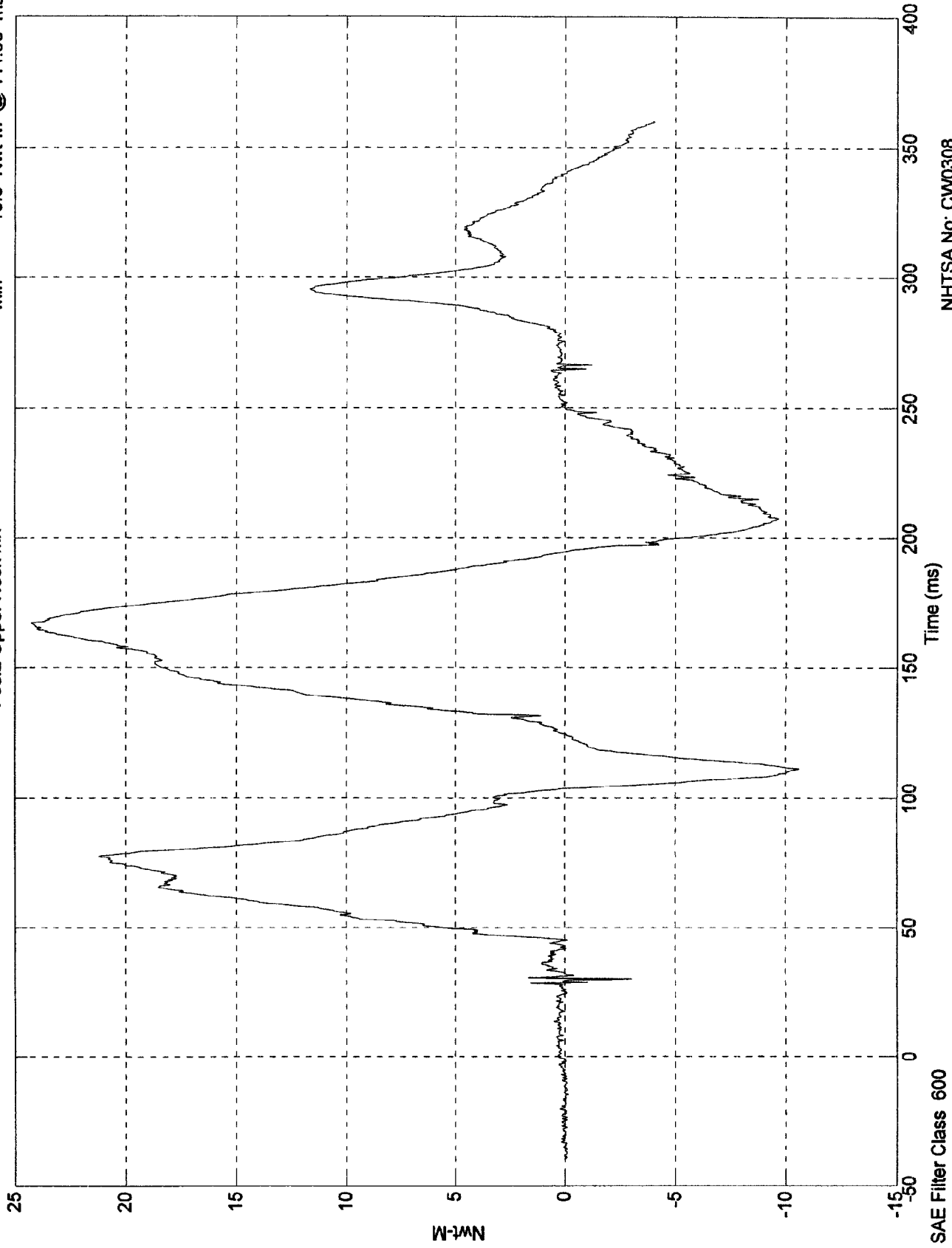


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 24.3 Nwt-M @ 166.90 msec
Min = -10.6 Nwt-M @ 111.30 msec

Pos.2 Upper Neck Mx



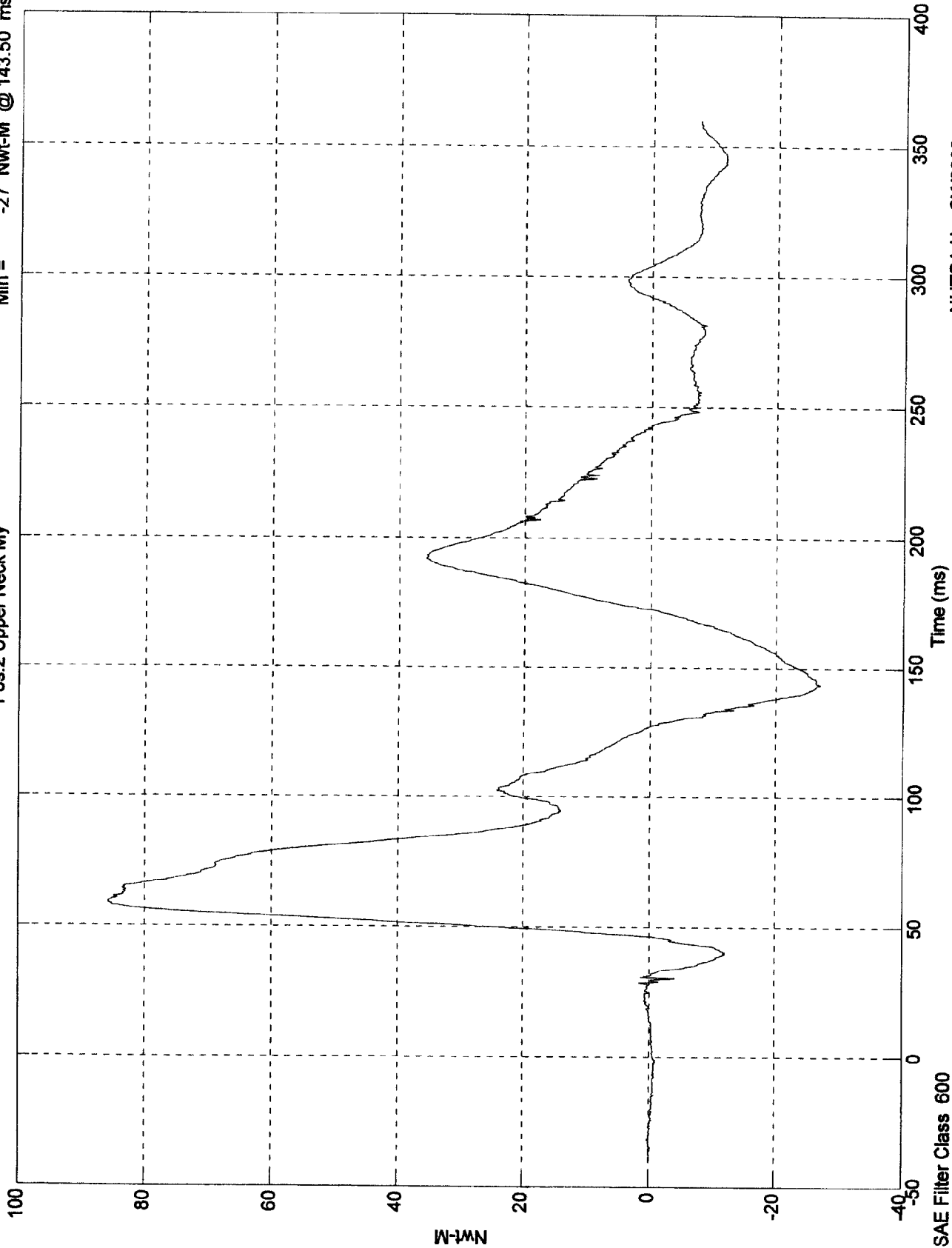
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 85.8 Nwt-M @ 59.00 msec
Min = -27 Nwt-M @ 143.50 msec

Pos.2 Upper Neck My



NHTSA No: CW0308
Date: 26 Mar 1998

W-IWN

B-60

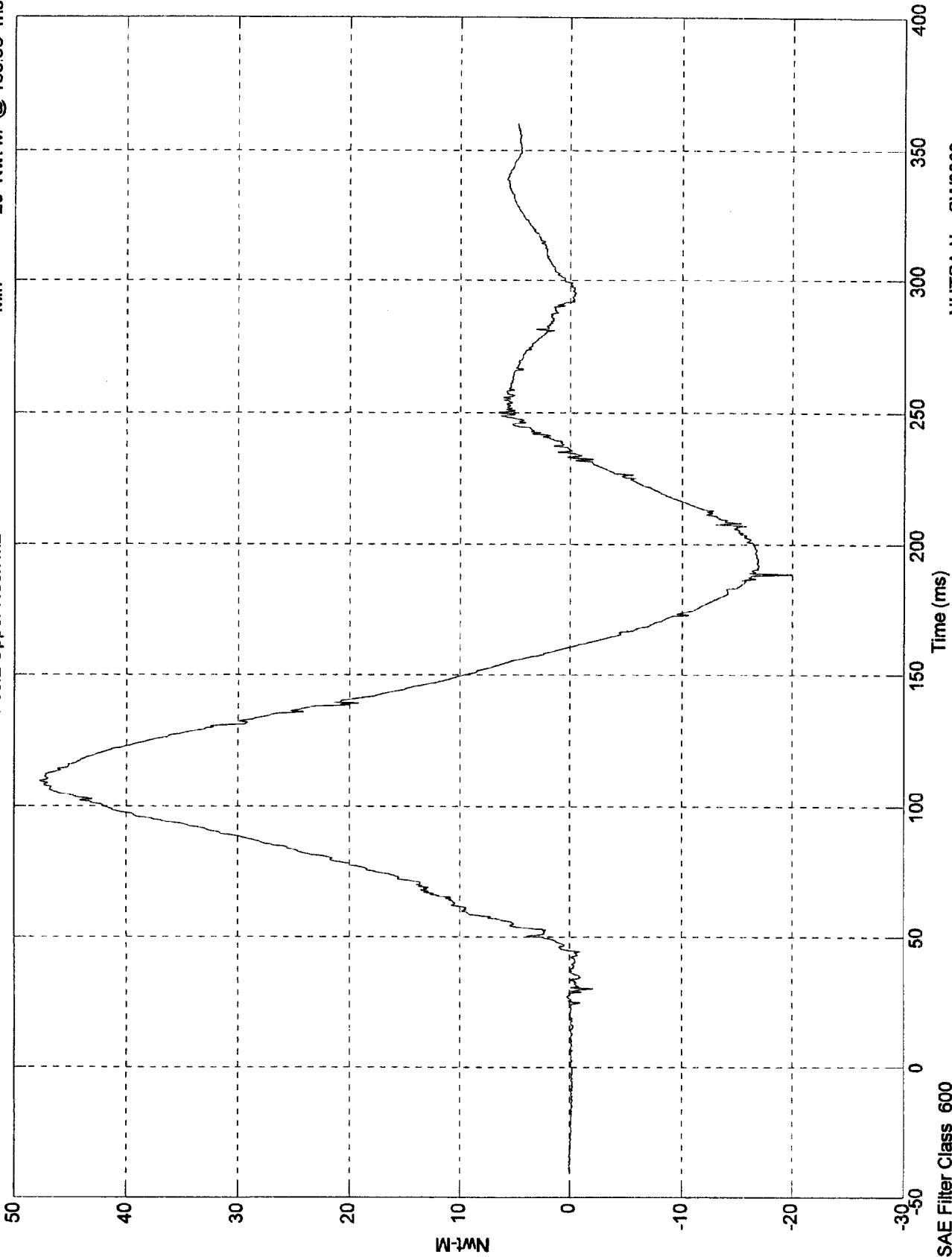
8407-1

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 47.7 Nwt-M @ 109.50 msec
Min = -20 Nwt-M @ 188.60 msec

Pos.2 Upper Neck Mz



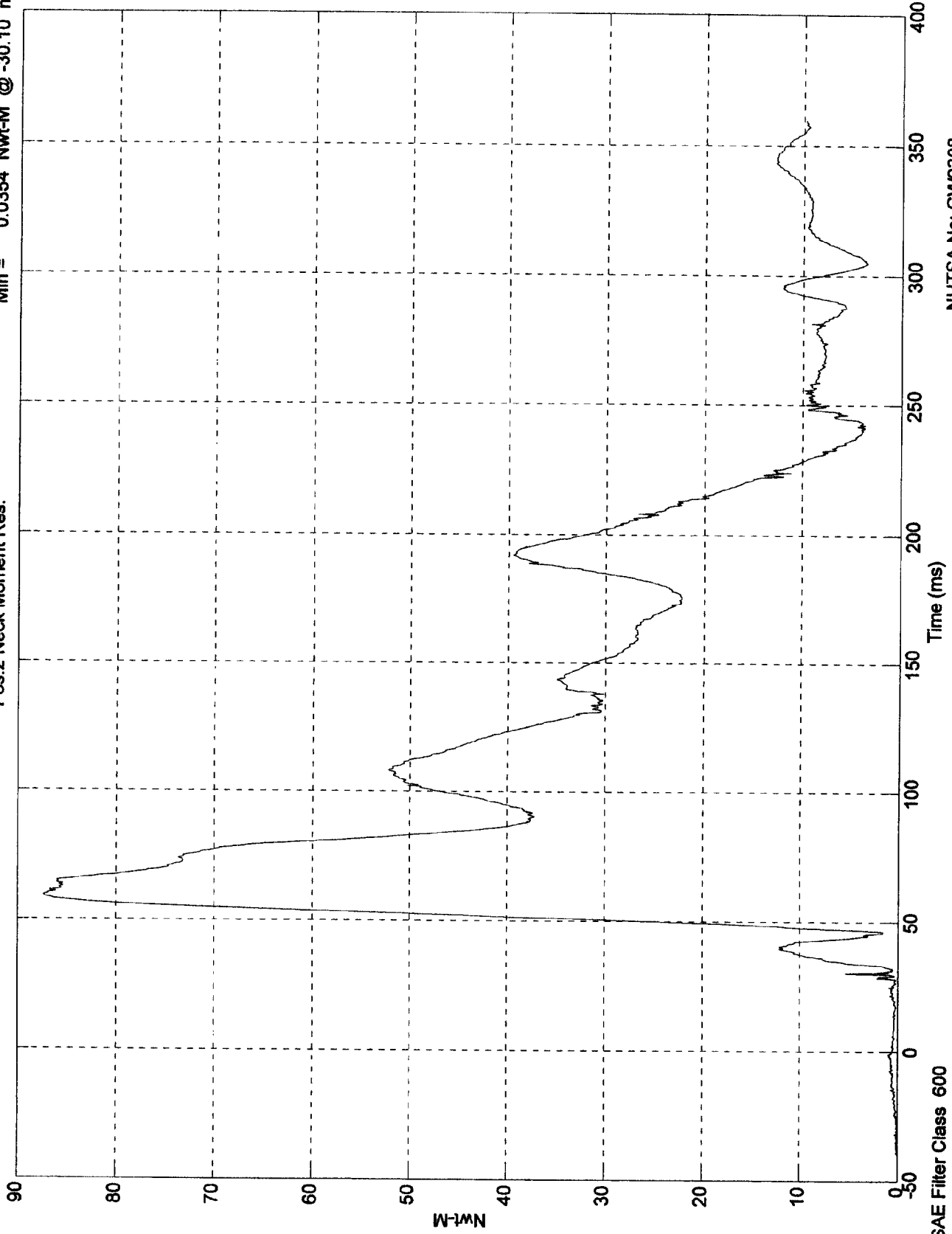
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 87.3 Nwt-M @ 59.10 msec
Min = 0.0354 Nwt-M @ -30.10 msec

Pos.2 Neck Moment Res.



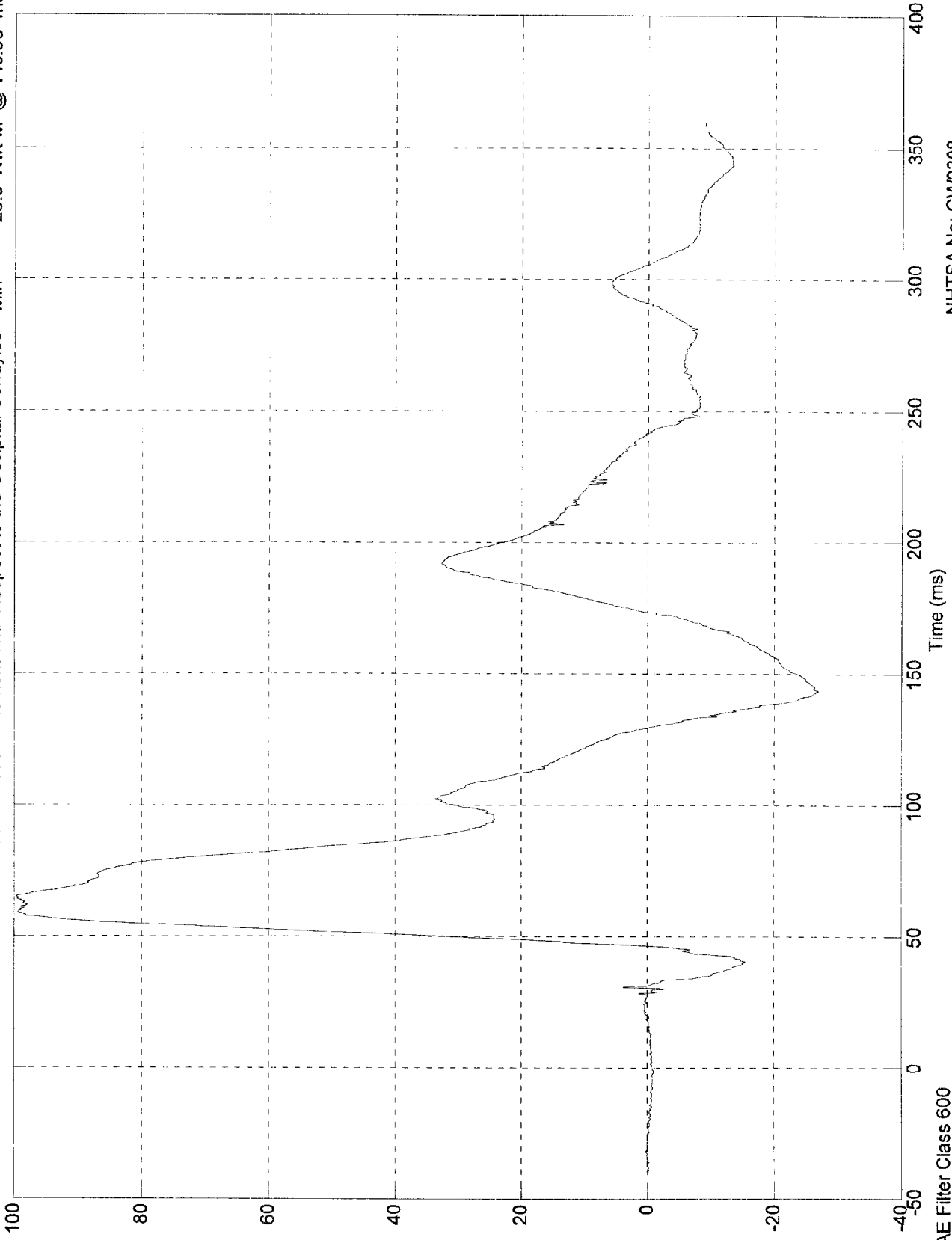
NHTSA No: CWO308
Date: 26 Mar 1998

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 99.6 Nwt-M @ 65.00 msec
Min = -26.9 Nwt-M @ 143.50 msec

Position 2 Head Y Moment With Respect to the Occipital Condyles



NHTSA No: CW0308
Date: 26 Mar 1998

W-1MN

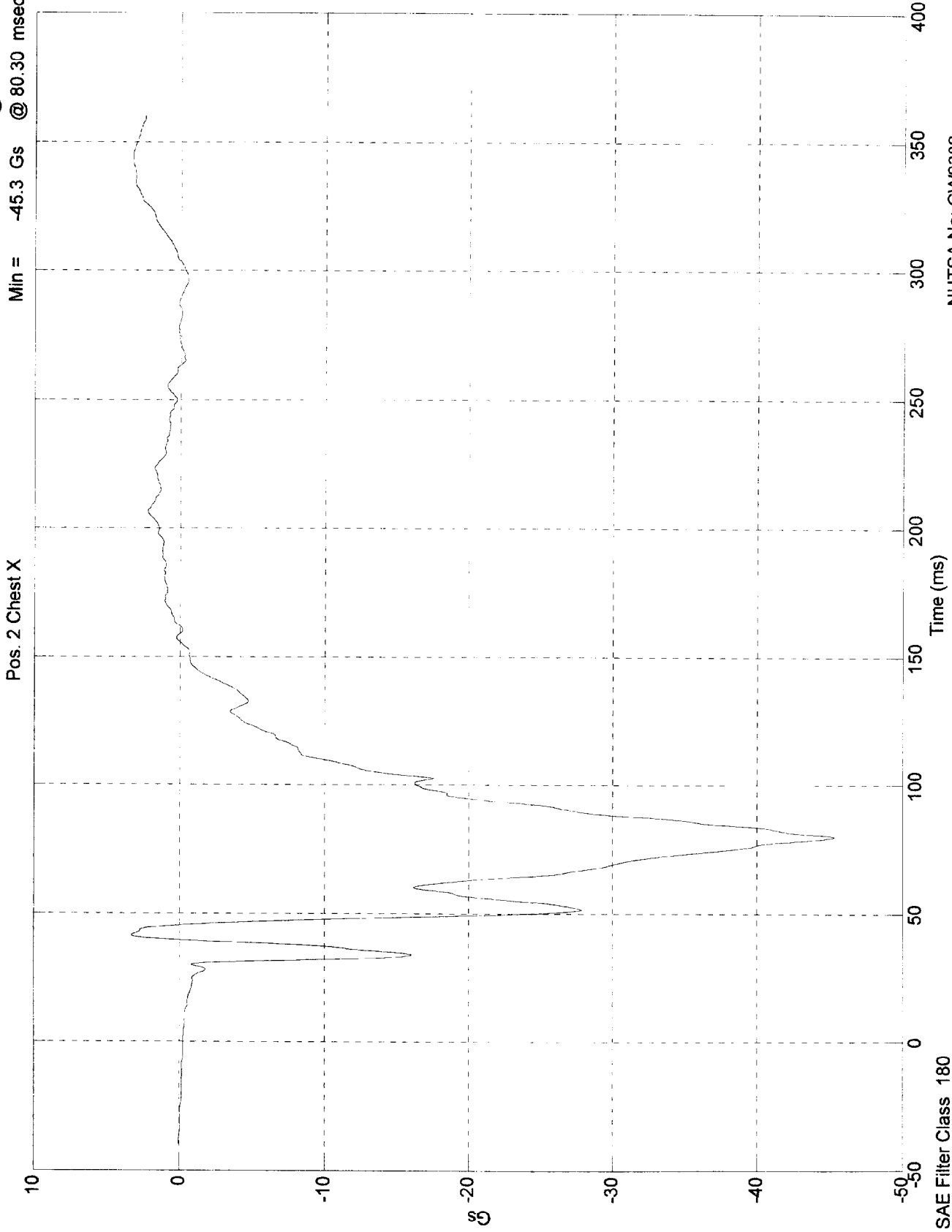
B-63

8407-1

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 3.33 Gs @ 344.50 msec
Min = -45.3 Gs @ 80.30 msec

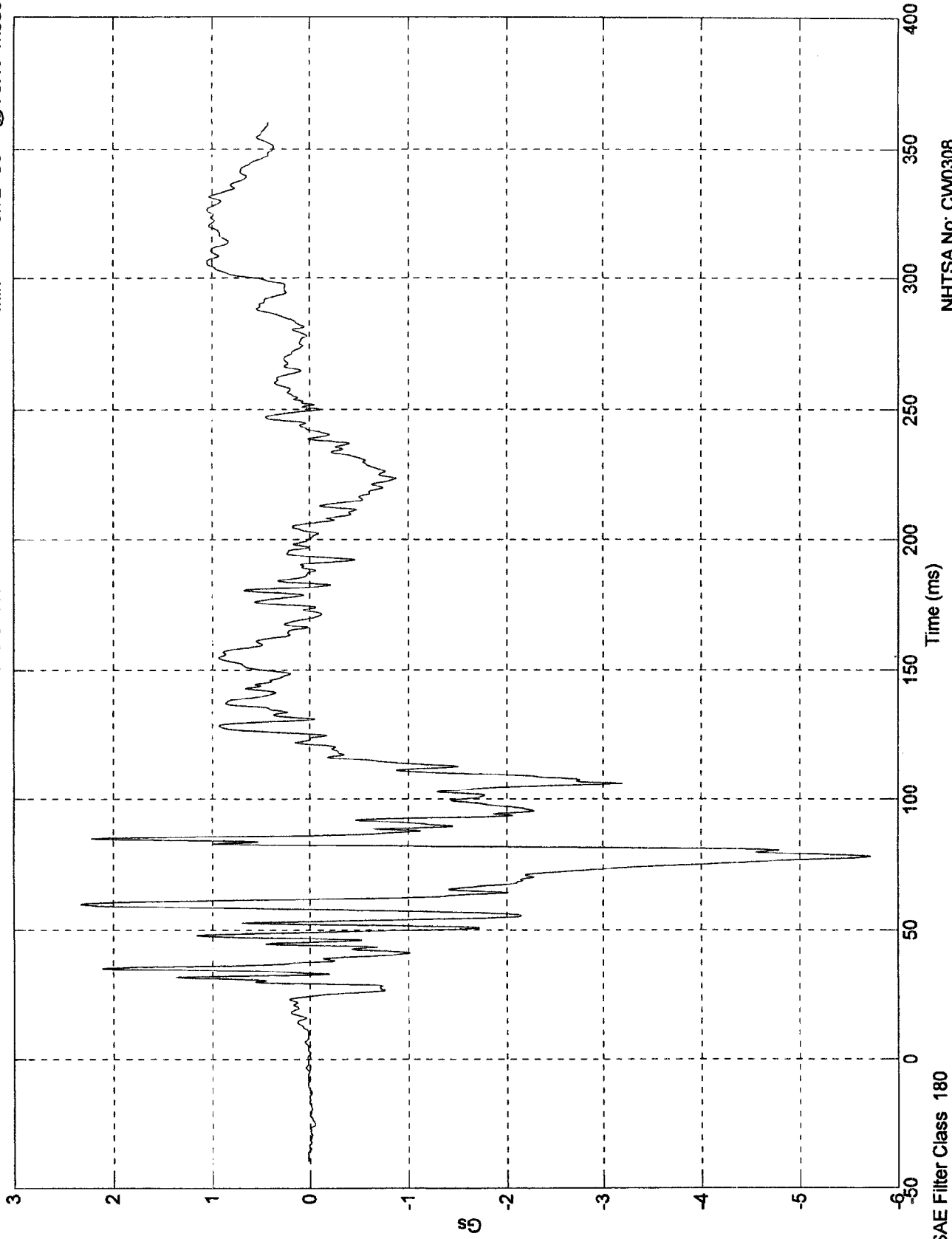


NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 2 Chest Y

Max = 2.32 Gs @ 59.80 msec
Min = -5.72 Gs @ 78.10 msec



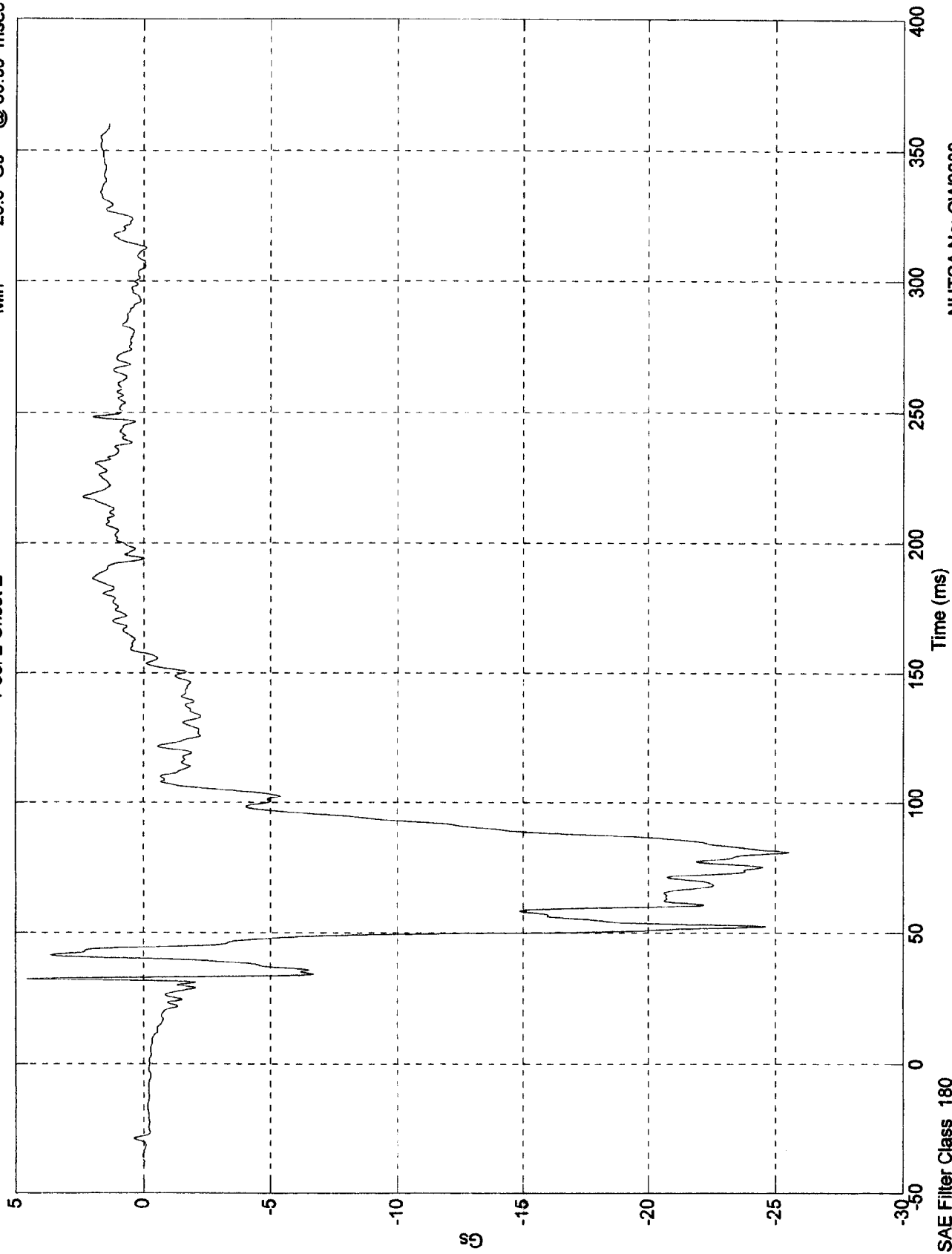
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 4.56 Gs @ 32.40 msec
Min = -25.5 Gs @ 80.90 msec

Pos. 2 Chest Z



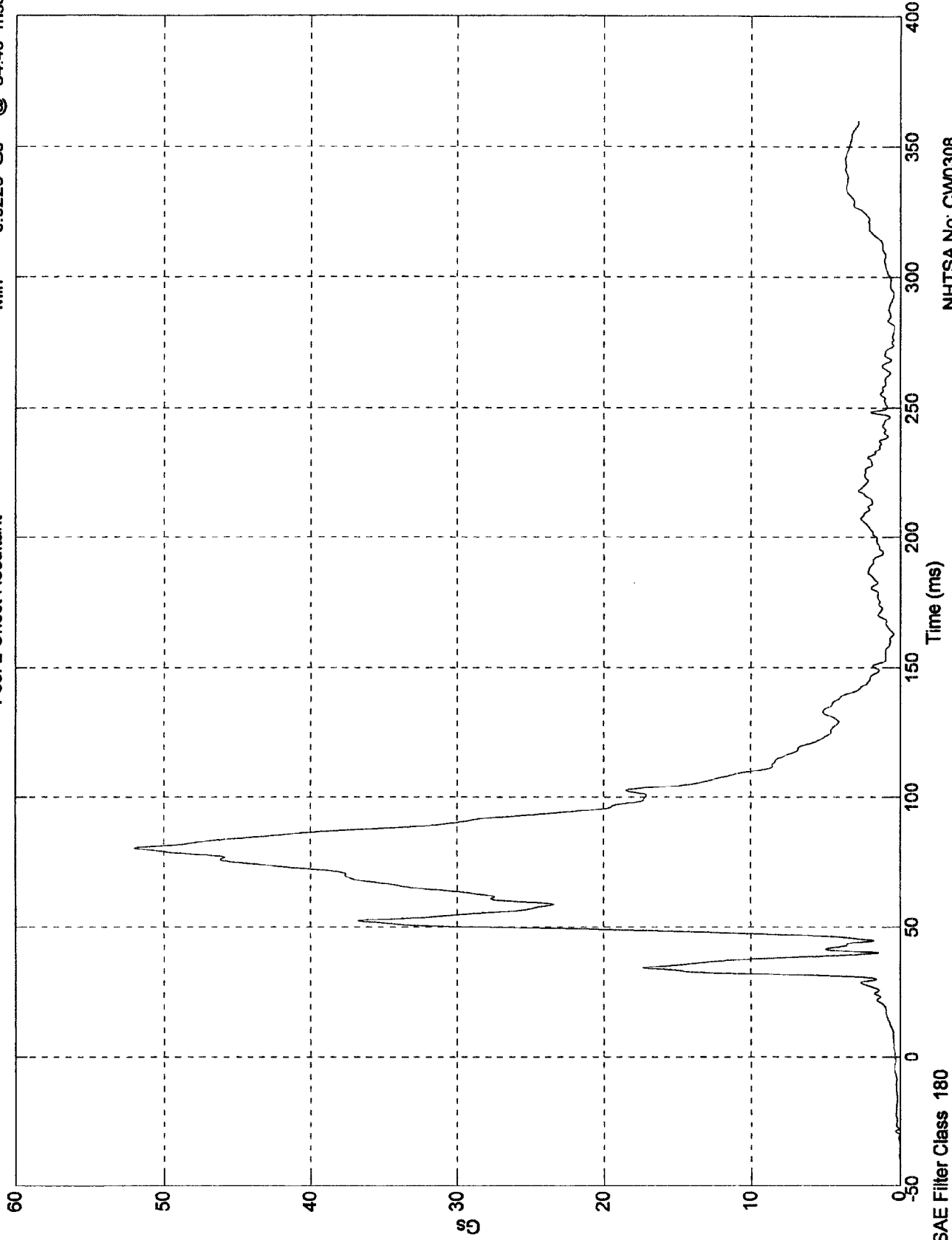
SAE Filter Class 180

NHTSA No: CW0308
Date: 26 Mar 1998

208 Test #1 - 1998 Jeep Grand Cherokee

Pos. 2 Chest Resultant

Max = 52 Gs @ 80.50 msec
Min = 0.0225 Gs @ -34.40 msec



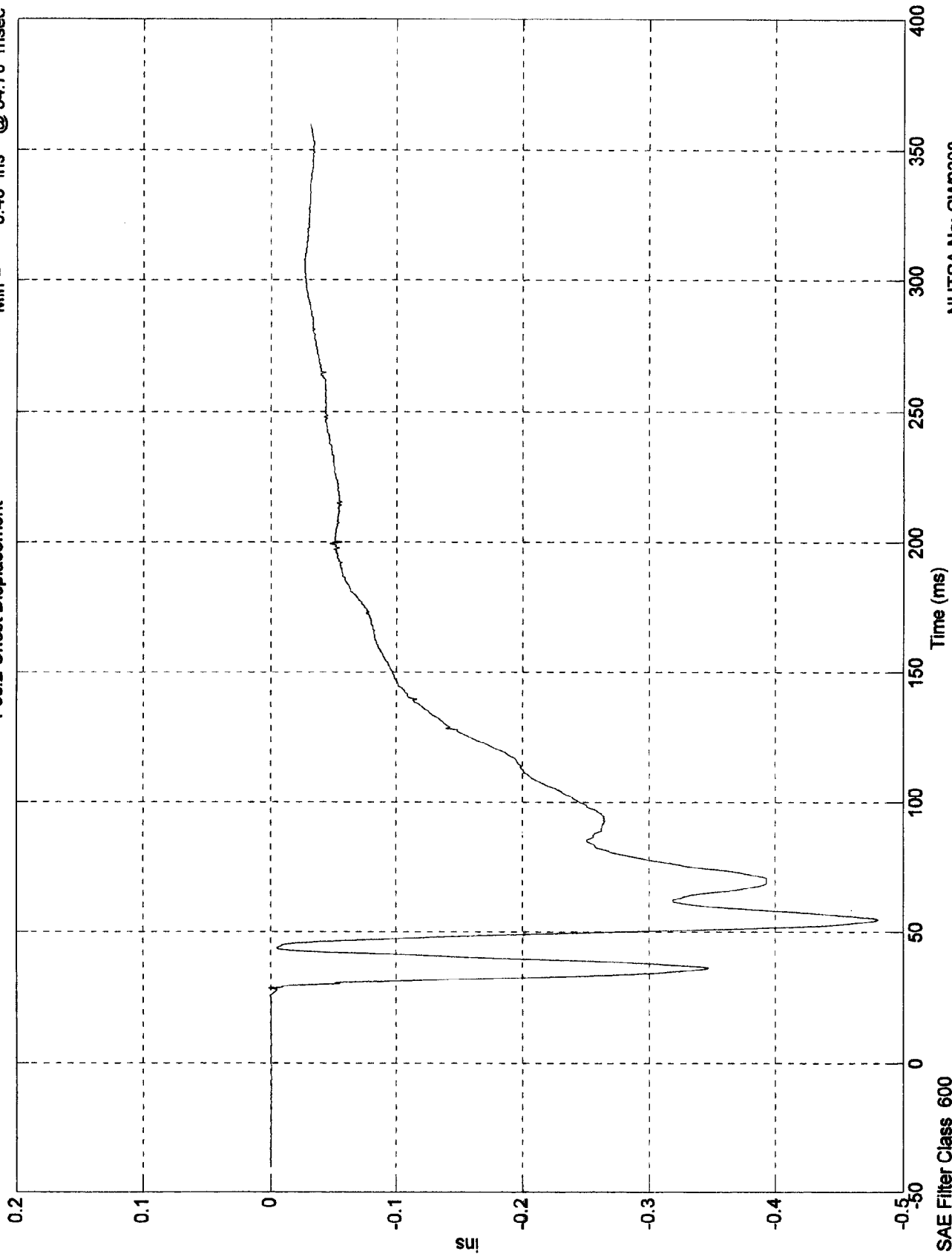
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 180

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 0.00166 ins @ 28.30 msec
Min = -0.48 ins @ 54.70 msec

Pos.2 Chest Displacement



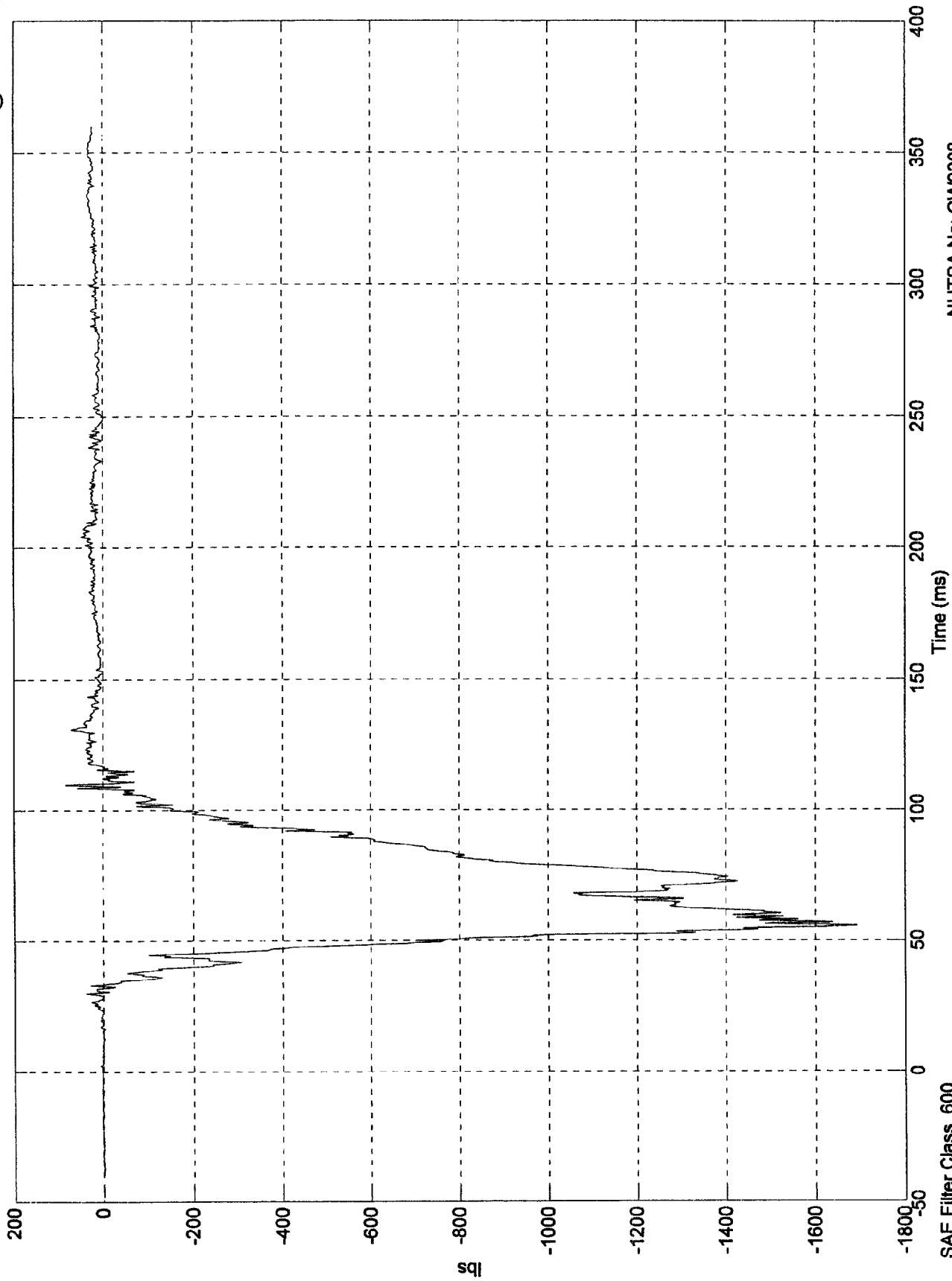
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 84.2 lbs @ 109.90 msec
Min = -1.69e+003 lbs @ 55.50 msec

Pos. 2 Left Femur



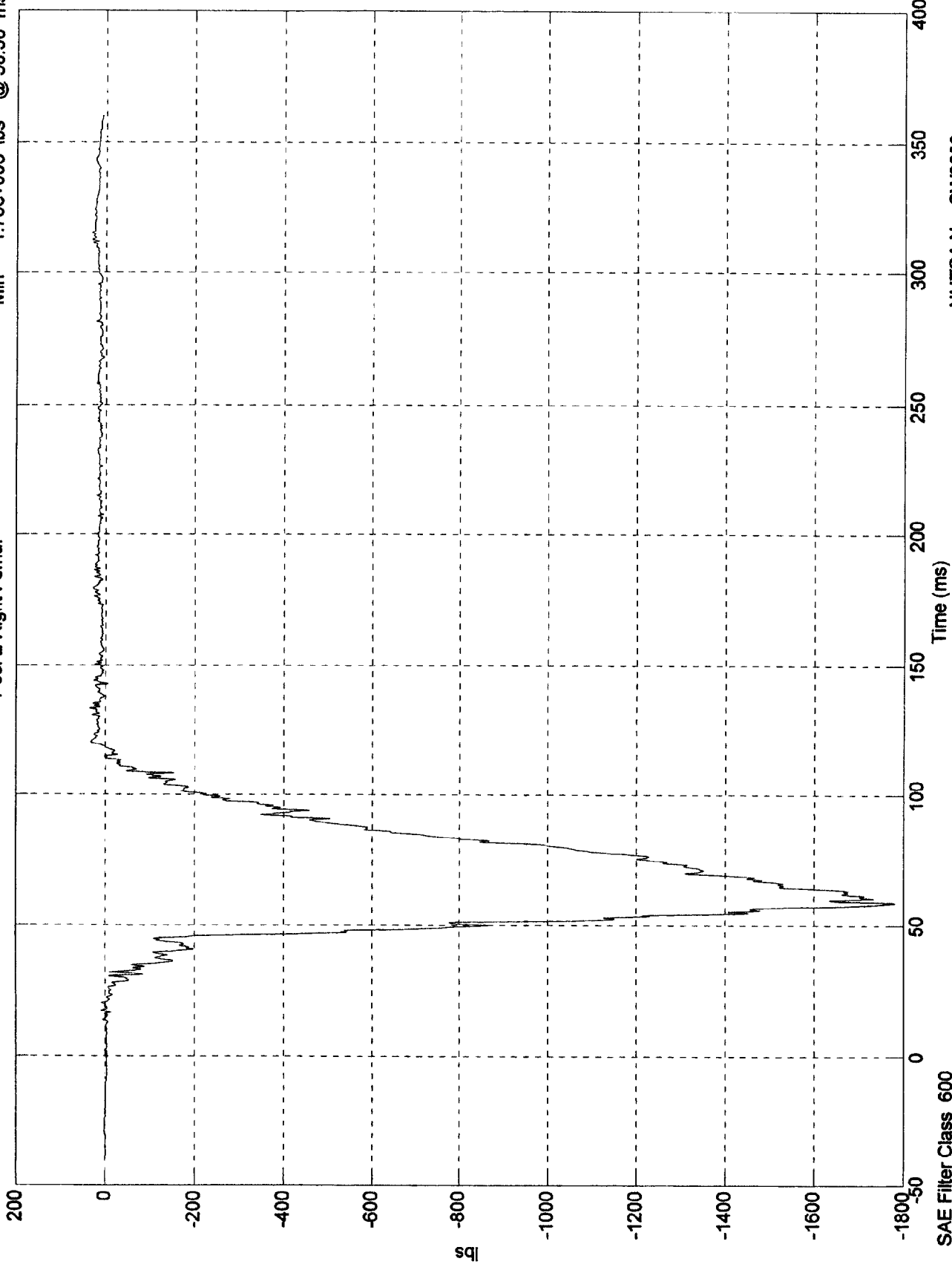
NHTSA No: CW0308
Date: 26 Mar 1998

SAE Filter Class 600

208 Test #1 - 1998 Jeep Grand Cherokee

Max = 35.4 lbs @ 133.40 msec
Min = -1.78e+003 lbs @ 58.50 msec

Pos. 2 Right Femur



NHTSA No: CW0308
Date: 26 Mar 1998

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

OCCUPANT RESTRAINTS

One of the most important safety features in your vehicle is the restraint system. This system includes the front and rear seat belts, and airbags for the driver and right front passenger. Your seat belts can also be used to hold infant and child restraint systems if you will be carrying children too small for adult-size belts.

Please pay careful attention to the information in this section. It tells you how to use your restraint system properly to keep you and your passengers as safe as possible.

Seat Belt Warning Light

A warning chime and an indicator light will alert you to buckle the seat belts when you first start your vehicle.

WARNING!

In a collision, you and your passengers can suffer much greater injuries if you are not properly buckled up. You can strike parts of the inside of your vehicle or other passengers, or you can be thrown out of the vehicle. Always be sure you and others in your vehicle are buckled up properly.

Buckle up even though you are an excellent driver, even on short trips. Someone on the road may be a poor driver and cause a collision which includes you. This can happen far away from home or on your own street.

Research has shown that seat belts save lives. And they can reduce the seriousness of injuries in a collision. Some of the worst injuries happen when people are thrown from the vehicle. Seat belts provide protection against that, and they reduce the risk of injury caused by striking the inside of the vehicle. Everyone in a motor vehicle needs to be buckled up all the time.

Unibelts

The seats next to the front and rear doors of your vehicle are equipped with UNIBELTS.

Each unbelt is a combined lap/shoulder belt system. The belt webbing retractor will lock only during very sudden stops or impacts. This feature allows the shoulder part of the belt to move freely with you under normal conditions. But in a collision, the belt will lock and reduce the risk of you striking the inside of the vehicle or being thrown out.

WARNING!

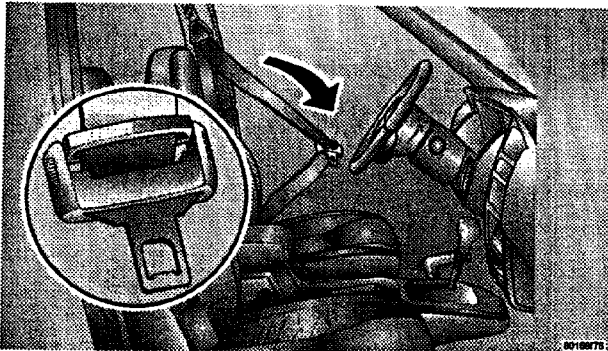
- Wearing a seat belt incorrectly is dangerous. Seat belts are designed to go around the large bones of your body. These are the strongest parts of your body and can take the forces of a collision the best. Wearing your belt in the wrong place could make your injuries in a collision much worse. You might suffer internal injuries, or you could even slide out of part of the belt. Follow these instructions to wear your seat belt safely and to keep your passengers safe, too.
- Belting two people into one seat belt can lead to greater injury. People belted together can crash into one another in an accident, hurting one another badly. Never use a unbelt or a lap belt for more than one person, no matter what their size.

Unibelt Operating Instructions

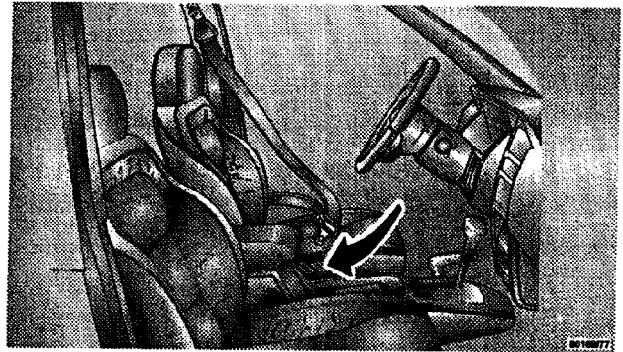
1. Enter the vehicle and close the door. Sit back and adjust the seat.

18 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

2. The seat belt latch plate is above the back of your seat. Grasp the latch plate and pull out the belt. Slide the latch plate up the webbing as far as necessary to make the belt go around your lap.



3. When the belt is long enough to fit, insert the latch plate into the buckle until you hear a "click".



THINGS TO KNOW BEFORE STARTING YOUR VEHICLE 19

WARNING!

A belt that is buckled into the wrong buckle will not protect you properly. The lap portion could ride too high on your body, possibly causing internal injuries. Always buckle your belt into the buckle nearest you.

A belt that is too loose will not protect you as well. In a sudden stop you could move too far forward, increasing the possibility of injury. Wear your seat belt snugly.

A belt that is worn under your arm is very dangerous. Your body could fall into the inside surfaces of the vehicle in a collision, increasing head and neck injury. And a belt worn under the arm can cause internal injuries.

Wear the belt over your shoulder so that your strongest bones will take the force in a collision.

4. Position the lap belt across your thighs, below your abdomen. To remove slack in the lap portion, pull up a bit on the shoulder belt. To loosen the lap belt if it is too tight, tilt the latch plate and pull on the lap belt. A snug belt reduces the risk of sliding under the belt in a collision.

2

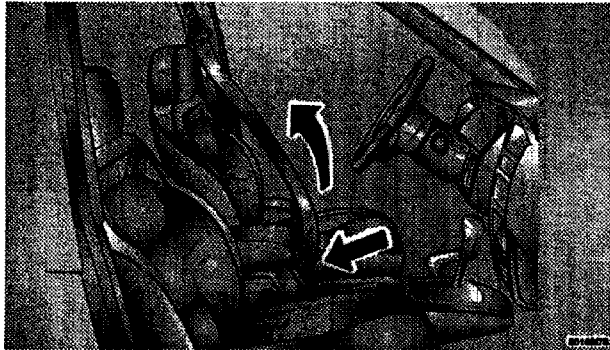
WARNING!

A lap belt worn too high can increase the risk of injury in a collision. The belt forces won't be at the strong hip and pelvic bones, but across your abdomen. Always wear the lap part of your seat belt as low as possible and keep it snug.

5. Position the shoulder belt on your chest so that it is comfortable and not resting on your neck. The retractor will withdraw any slack in the belt.

WARNING!

A twisted belt can't do its job as well. In a collision it could even cut into you. Be sure the belt is straight. If you can't straighten a belt in your vehicle, take it to your dealer and have it fixed.



6. To release the belt, push the red button marked PRESS on the buckle. The belt will automatically retract to its stowed position. If necessary, slide the latch plate down the webbing to allow it to retract fully.

Adjustable Upper Shoulder Belt Anchorage

In the front seat and the outboard rear seating positions, the shoulder belt can be adjusted upward or downward to position the belt away from your neck. Push on the release lever to release the anchorage, and then move it up or down to the position that serves you best.



As a guide, if you are shorter than average, you will prefer a lower position, and if you are taller than average, you'll prefer a higher position. When you release the anchorage, try to move it up or down to make sure that it is locked in position.

Seat Belts and Pregnant Women

We recommend that pregnant women use seat belts throughout their pregnancy. Keeping the mother safe is the best way to keep the baby safe.

Pregnant women should wear the lap part of the belt across the thighs and as snug across the hips as possible. Keep the belt low so that it does not come across the abdomen. That way the strong bones of the hips will take the force if there is a collision.

Rear Center Lap Belt

The rear center seating position has a lap belt only. To fasten a lap belt, slip the latch plate into the buckle.

To lengthen the lap belt, tilt the latch plate and pull. To remove slack, pull the loose end of the webbing. Wear the belt snug against the hips. Sit back and erect in the seat, then adjust the belt as tightly as is comfortable.

WARNING!

A lap belt worn too loose or too high is dangerous. A belt worn too loose can allow you to slip down and under the belt in a collision. A belt that is too high will apply crash forces to the abdomen, not to the stronger hip bones. In either case, the risk of internal injuries is greater. Wear a lap belt low and snug.

WARNING!

A frayed or torn belt could rip apart in a collision and leave you with no protection. Inspect the belt system periodically, checking for cuts, frays, or loose parts. Damaged parts must be replaced immediately. Do not disassemble or modify the system. Seat belt assemblies must be replaced after an accident if they have been damaged (bent retractor, torn webbing, etc.).

Seat Belt Extender

If a seat belt is too short, even when fully extended, your dealer can provide you with a seat belt extender. This extender should be used only if the existing belt is not long enough. When it is not required, remove the extender and stow it.

WARNING!

Using a seat belt extender when not needed can increase the risk of injury in a collision. Only use when the lap belt is not long enough when it is worn low and snug, and in the recommended seating positions. Remove and stow when not needed.

Child Restraint

Everyone in your vehicle needs to be buckled up all the time, babies and children, too.

WARNING!

In a collision, an unrestrained child, even a tiny baby, can become a missile inside the vehicle. The force required to hold even an infant on your lap could become so great that you could not hold the child, no matter how strong you are. The child and others could be badly injured. Any child riding in your vehicle should be in a proper restraint for the child's size.

All states and Canadian provinces require small children to ride in proper restraint systems. This is the law, and you can be prosecuted for ignoring it.

Infants and Small Children

There are different sizes and types of restraints for children from newborn size to the bigger child almost large enough for an adult safety belt. Use the restraint that is correct for your child.

Two different child restraint systems are generally available.

- The infant carrier for babies weighing up to 20 lbs. (9 kg.)

- The child seat for small children over 20 lbs.

In addition, some manufacturers make systems that can be used first as an infant carrier, and then converted to a child seat as the child grows.

Here are some tips on getting the most out of your child restraint:

- Before buying any restraint system, make sure that it has a label certifying that it meets Motor Vehicle Safety Standard 213. Chrysler also recommends that before you buy a child restraint, you try it in the vehicle seats where you will use it.
- The restraint must be appropriate for your child's weight and height. Check the label on the restraint for this too.
- If possible, install the restraint in the rear seat. According to accident statistics, children are safer when properly restrained in the rear seats than in the front.
- Carefully follow the instructions that come with the restraint. If you install the restraint improperly, it may not work when you need it.

WARNING!

- A rearward facing infant restraint should only be used in a rear seat. A rearward facing infant restraint in the front seat may be struck by a deploying passenger airbag which may cause severe or fatal injury to the infant.
- Improper installation can lead to failure of an infant or child restraint. It could come loose in a collision. The child could be badly injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.

- Infant and child restraints are secured in the vehicle seats by the lap belt or the lap part of the lap/shoulder belt. In the rear seats, you may have trouble tightening the belt on the child restraint because the buckle or latch plate interferes with the belt path opening on the restraint. Disconnect the latch plate from the buckle and twist the short buckle-end belt several turns to shorten it. Reassemble the latch plate to the buckle with the release button facing out.

24 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

In the front seat, move the seat forward to reposition the buckle against the side of the child restraint.

In the center rear seat if the belt can't be tightened, or if by pulling and pushing on the restraint loosens the belt, you may need to do something more. Disconnect the latch plate from the buckle, turn it over, and reconnect it to the buckle. If you still can't make the child restraint secure, try a different seating position.

- Some child seat manufacturers recommend the use of a top anchorage (tether) strap in addition to the lap belt. Your vehicle has tether strap anchorages behind the rear seating positions for use with these child seats. Your dealer can provide you with anchorage hardware and installation instructions.

WARNING!

An incorrectly anchored tether strap could lead to seat failure and injury to the child. In a collision, the seat could come loose and allow the child to crash into the inside of the vehicle or other passengers, or even be thrown from the vehicle. Use only the specified anchor positions to secure a child restraint requiring top tether strap(s).

- Buckle the child into the seat exactly as the seat manufacturer's directions tell you. The cinching latch plate will keep the belt tight.
- When your infant carrier or child seat is not in use, secure it with the seat belt or remove it from the vehicle. Don't leave it loose in the vehicle. In a sudden stop or collision, it could strike occupants and injure them.

Children Too Large For Child Seats

Children who are too large for child seats and who can sit upright by themselves should use the available lap/shoulder belts for best protection.

THINGS TO KNOW BEFORE STARTING YOUR VEHICLE 25

- Make sure that the child is seated upright in the seat.
- The lap belt should be fastened low on the hips and as snug as possible.
- Check belt fit periodically. A child's squirming or slouching can move the belt out of position.

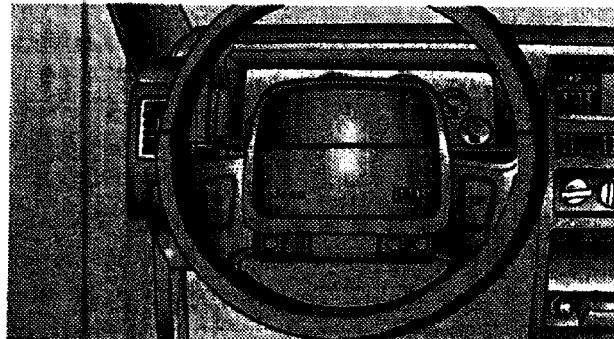
If the shoulder belt contacts the face or neck, move the child closer to the middle of the vehicle. If this doesn't solve the problem, move the child to the center rear seating position and use the lap belt.

Booster seats that may help overcome this problem are also available for use with lap/shoulder belts. Before buying a booster seat, make sure that it has a label certifying that it meets applicable Motor Vehicle Safety Standards. Make sure it is satisfactory for use in this vehicle.

Driver And Right Front Passenger Supplemental Restraint System (SRS) — AIRBAG

This airbag is certified to the new Federal regulations that allow less forceful airbags.

This vehicle has airbags for the driver and right front passenger as a supplement to the seat belt restraint system. The driver's airbag is mounted in the steering wheel. The passenger side airbag is mounted in the instrument panel, above the glove compartment. These airbags inflate in higher speed impacts. They work with the instrument panel knee bolsters and the seat belts to provide improved protection for the driver and right front passenger.



2

WARNING!

- Relying on the airbags alone could lead to more severe injuries. Wear your seat belt even though you have an airbag.
- Being too close to the steering wheel or instrument panel during airbag deployment could cause serious injury. Airbags need room to inflate. Sit back, comfortably extending your arms to reach the steering wheel or instrument panel.

The seat belt is designed to protect you in many types of collisions. The airbag deploys only in frontal collisions. And it will not deploy in collisions at slow speed. But even in collisions where the airbag does work, you need the seat belt to keep you in the right position for the airbag to protect you properly.

WARNING!

Ignoring the AIRBAG light in your instrument panel could mean you won't have the airbag to protect you in a collision. If the light does not come on for 6 to 8 seconds after the ignition is turned on, stays on after you start the vehicle, or if it comes on as you drive, have the airbag system checked right away.

Here are four simple steps you can take to minimize the risk of harm from a deploying airbag.

1. Infants in a rear facing child safety seats designed for children up to one year or 20 pounds (9 kg) should NEVER ride in the front seat of a vehicle with a passenger side airbag unless the Airbag Switch is turned OFF. See the paragraph on Passenger Side Airbag Shut Off Switch.

Children up to 60 pounds (27 kg) should be secured in child seats or booster seats. Older children who do not use child safety seats or booster seats should ride properly buckled up.

Never allow children to slide the shoulder belt behind them or under the arm.

2. All occupants should wear their lap and shoulder belts properly.
3. The driver and front seat passenger seats should be moved as far back as practical to allow the airbags room to inflate.
4. You should read the instructions provided with your child safety seat or booster seat to make sure that you are using it properly.

The airbag system consists of the following:

- Airbag Control Module (ACM)
- AIRBAG Light
- Airbag/Inflator Unit
- Unique Steering Wheel and Column
- Interconnecting Wiring
- Knee Impact Bolster

How The Airbag System Works

- The Airbag Control Module (ACM) will not detect side, rollover, or rear impacts.
- The ACM monitors the readiness of the electronic parts of the system whenever the ignition switch is in the START or ON position. These include all of the items listed above except the steering wheel and column and the knee bolsters. It also software to determine if a frontal impact is severe enough to require the airbag.

The ACM also turns on the AIRBAG light in the instrument panel for 6 to 8 seconds when the ignition is first turned on, then turns the light off. If it detects a malfunction in any part of the system, it turns on the light either momentarily or continuously. If the instrument cluster detects an airbag lamp failure it turns on the seat belt light either momentarily or continuously.

- The Airbag/Inflator Units are located in the center of the steering wheel for the driver and in the upper right side of the instrument panel for the front seat passenger. When the ACM detects an impact requiring the airbags, it signals the inflator units. A large quantity of

non-toxic nitrogen and/or argon gas is generated to inflate the airbag. The steering wheel hub trim cover and the upper right side of the instrument panel separate and fold out of the way as the bags inflate to their full size. The bags fully inflate in about 50-70 milliseconds. This is about half of the time it takes to blink your eyes. The bags then quickly deflate by venting the gas through holes and/or pores in the airbag fabric toward the instrument panel. In this way the bags do not interfere with your control of the vehicle.

If A Deployment Occurs

The airbag system is designed to deploy the airbags when the impact sensors detect a moderate-to-severe frontal collision, and then immediately deflate.

NOTE: A frontal collision that is not severe enough to need airbag protection will not activate the system. This does not mean something is wrong with the airbag system.

If you do have a collision which deploys the airbags, any or all of the following may occur:

- The nylon airbag material may sometimes cause abrasions and/or skin reddening to the occupants as the airbag deploys and unfolds itself from the steering wheel and the upper right side of the instrument panel.

The abrasions are similar to friction rope burns or those you might get sliding along a carpet or gymnasium floor. They are not caused by contact with chemicals. They are not permanent and normally heal quickly. However, if you haven't healed significantly within a few days, or if you have any blistering, see your doctor immediately.

- As the airbags deflate you may see some smoke-like particles. The particles are a normal by-product of the process that generates the non-toxic gas used for airbag inflation. These airborne particles may irritate the skin, eyes, nose, or throat. If you have skin or eye irritation, rinse the area with cool water. For nose or throat irritation, move to fresh air. If the irritation continues, see your doctor.

If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

Maintaining Your Airbag System

- Your vehicle may be driveable after the airbags deploy. If so, you can tuck the deployed driver side airbag inside the opening in the steering wheel hub trim cover to make driving somewhat easier. You may tuck the passenger side airbag under the trim cover in the right side of the instrument panel.

WARNING!

Deployed airbags can't protect you in another collision. Have the airbags replaced by an authorized dealer as soon as possible.

WARNING!

- Modifications to any part of the airbag system could cause it to fail when you need it. You could be injured if the airbag system is not there to protect you. Do not modify the components or wiring, including adding any kind of badges or stickers to the steering wheel hub trim cover or the upper right side of the instrument panel. Do not modify the front bumper or vehicle body structure.
- You need proper knee impact protection in a collision. Do not mount or locate any aftermarket equipment on or behind the knee bolsters.
- It is dangerous to try to repair any part of the airbag system yourself. Don't try to repair the airbag system. Be sure to tell anyone who works on your vehicle that it has an airbag system.

Airbag Light

You will want to have the airbag system ready to inflate for your protection in an impact. The airbag system is designed to be maintenance free. If any of the following occurs, have an authorized dealer service the system promptly:

- The AIRBAG light does not come on or flickers during the 6 to 8 seconds when the ignition switch is first turned on.
- The light remains on or flickers after the 6 to 8 second interval.
- The light flickers or comes on and remains on while driving.
- The seat belt light remains on or flickers after the 6 to 8 second interval after the vehicle has been started or comes on while driving. The seat belt light is used in place of the airbag light when there is an airbag lamp malfunction.

NEW VEHICLE BREAK-IN RECOMMENDATIONS

Your new Jeep engine is ready for the road. To provide the longest engine life, follow these guidelines for the first few hundred miles (or kilometers).

- Check the fluid and engine oil levels regularly and be alert for indications of overheating in any component of the vehicle. Engines tend to use more fuel and oil until they are broken in, so don't expect top economy for the first 1,200 miles (1 900 km).
- After starting a cold engine, let it warm up for 15 seconds or so before shifting into gear.
- Drive at varying speeds below 50 mph (80 km/h) for first 100 miles (160 km) and below 55 mph (88 km/h) for first 500 miles (800 km). Avoid driving at full throttle or top speeds, steady speeds, or excessive idling during this period. Avoid fast starts and quick stops.

- A break-in oil is not used. The original engine oil is the same type specified for regular oil changes. There is no need to have it changed or the oil filter replaced until the first scheduled maintenance interval except in heavy-duty operation. Don't add anti-friction compounds or special break-in oils during the first few thousand miles (or kilometers) of operation, since these additives might interfere with proper piston ring seating.

NOTE: Maintaining proper fluid levels is particularly important during the break-in period. Refer to the **Service and Maintenance** section for checking fluid levels.

CHECKING YOUR VEHICLE FOR SAFETY**Exhaust Gas****WARNING!**

Exhaust gases can injure or kill. They contain carbon monoxide (CO) which is colorless and odorless. Breathing it can make you unconscious and can eventually poison you. To avoid breathing (CO) follow the safety tips below.

- Do not run the engine in a closed garage or in confined areas any longer than needed to move your vehicle in or out of the area.
- If it is necessary to sit in a parked vehicle with the engine running, adjust your heating or cooling controls to force outside air into the vehicle. Set the blower at high speed.
- Do not inhale exhaust gases. They contain carbon monoxide, a colorless and odorless gas which can kill. Never run the engine in a closed area, such as a garage, and never sit in a parked vehicle with the