

REPORT NUMBER: 208-CAL-94-6
212-CAL-94-6
301-CAL-94-6

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

**FORD MOTOR COMPANY
1994 FORD TEMPO GL
4-DOOR SEDAN**

NHTSA NUMBER: CR0200

CALSPAN TEST NUMBER: 8145-6

DECEMBER 8, 1993

**CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225**



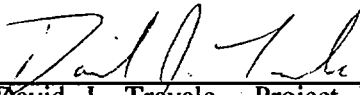
FINAL REPORT

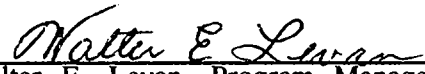
PREPARED FOR:

**U. S. Department of Transportation
National Highway Traffic Safety Administration
ENFORCEMENT
Office of Vehicle Safety Compliance
400 Seventh Street, S. W.
Room No. 6115 (NEF-30)
Washington, DC 20590**

*Rec'd
2/22/94*

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-90-D-02121. This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufactures' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared: 
David J. Travale, Project Engineer

Approved: 
Walter E. Levan, Program Manager
Transportation Sciences Center

FINAL REPORT ACCEPTED BY :


Contracting Office's Technical Representative
(COTR), NHTSA, Office of Vehicle Safety Compliance

6/12/95
Date of Report Acceptance

1. Report No. 208-CAL-94-6 212-CAL-94-6 301-CAL-94-6	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 1994 Ford Tempo GL 4-Door Sedan, NHTSA No. CR0200		5. Report Date December 8, 1993	
		6. Performing Organization Code CAL	
7. Author(s) David J. Travale, Project Engineer Walter E. Levan, Program Manager		8. Performing Organization Report No. 8145-6	
9. Performing Organization Name and Address Calspan Advanced Technology Center P.O. Box 400 Buffalo, New York 14225		10. Work Unit No.	
		11. Contract or Grant No. DTNH22-90-D-02121	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-30) 400 Seventh St , S.W., Rm. 6115, Washington, D.C. 20590		13. Type of Report and Period Covered Final, Dec. 1993 - Feb. 1994	
		14. Sponsoring Agency Code NEF-30	
15. Supplementary Notes			
16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1994 Ford Tempo GL 4-Door Sedan. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on December 8, 1993. The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards: 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" The test mode was perpendicular (0°) and the impact velocity was 29.3 mph. The ambient temperature at the impact face was 70°F. The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301. <u>Type of Restraint System:</u> The test vehicle was equipped with a driver Airbag and a passenger automatic torso seat belt restraint system. The driver manual 3-point belt and passenger manual lap belt were not used for this test.			
17. Key Words Compliance Testing Safety Engineering FMVSS 208		18. Distribution Statement Copies of this report are available from:	
		NHTSA Technical Reference Division ; Mail Code: NAD-52 400 Seventh , S.W., Room 5108, Washington, D.C. 20590 Telephone No. (202) 366-4946 Attn: Robert Hornickle	
19. Security Classif. (of this report) UNCLASSIFIED	20. Security Classif. (of this page) UNCLASSIFIED	21. No. of Pages 143	22. Price

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1 PURPOSE AND TEST PROCEDURE	1-1
2 SUMMARY OF FRONTAL BARRIER IMPACT TEST	2-1
3 OCCUPANT AND VEHICLE INFORMATION	3-1
4 SUMMARY OF RESULTS FOR: FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219 (Partial), "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"	4-1
APPENDIX A PHOTOGRAPHS	A-1
APPENDIX B VEHICLE AND DUMMY RESPONSE DATA	B-1
APPENDIX C VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS	C-1

LIST OF FIGURES

<u>Figure No.</u>		<u>Page No.</u>
1	TEST VEHICLE INFORMATION	3-2
2	PART 572 DUMMY IN-VEHICLE POSITION	3-3
3	SEAT BELT POSITIONING DATA	3-5
4	VEHICLE ACCELEROMETER LOCATIONS	3-6
5	CAMERA POSITION FOR FRONTAL IMPACT	3-8
6	VEHICLE TARGET LOCATIONS	3-10
7	TEST VEHICLE MEASUREMENTS	3-11
8	FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET	4-12
9	FMVSS NO. 219 - (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA SHEET	4-13

LIST OF TABLES

<u>Table No.</u>		<u>Page No.</u>
1	CRASH TEST SUMMARY	2-2
2	GENERAL TEST AND VEHICLE PARAMETER DATA	2-3
3	POST-IMPACT DATA	2-5
4	FRONT SEAT OCCUPANT MEASUREMENTS	3-4
5	VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY	3-7
6	HIGH SPEED CAMERA LOCATIONS	3-9
7	VEHICLE MEASUREMENTS	3-12
8	DUMMY INJURY CRITERIA VALUES	4-2
9	FMVSS NO. 208 - SEAT BELT WARNING SYSTEM CHECK	4-3
10	FMVSS NO. 208 - LABELING AND DRIVER'S MANUAL INFORMATION	4-4
11	FMVSS NO. 208 - READINESS INDICATOR	4-5
12	FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY	4-6
13	FMVSS NO. 301 - "FUEL SYSTEM INTEGRITY" POST-IMPACT TEST DATA	4-14
14	FMVSS NO. 301 - STATIC ROLLOVER DATA SHEET	4-15
15	TEST VEHICLE NONCOMPLIANCE NOTICE	4-19

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 Advanced Technology Center under Contract No. DTNH22-90-D-02121. The purpose of this test was to determine if the subject vehicle, a 1994 Ford Tempo GL 4-Door Sedan, 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-208-08, dated September 8, 1989.

Section 2

SUMMARY OF TEST NUMBER CR0200

A frontal barrier was impacted by a 1994 Ford Tempo GL 4-Door Sedan at a velocity of 29.3 mph. The test was performed at the Calspan Corporation Advanced Technology Center on December 8, 1993. 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 572B, 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 triaxial accelerometers, and left/right femur load cells. These ATDs had been certified prior to the test.

The 23 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 914. The maximum chest deceleration over 3 milliseconds was 45.0 g's. The maximum force on the driver's left femur was 1051.6 pounds and 1095.3 pounds on the right femur.

The right front passenger's HIC was 383. The maximum chest deceleration over 3 milliseconds was 44.9 g's. Loads of 1352.1 and 974.9 pounds were recorded on the left and right femurs respectively.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No. :	<u>CR0200</u>	Test Mode :	<u>30 mph Frontal Barrier</u>
Test Date :	<u>12/8/93</u>	Time:	<u>11:20</u> Temperature : <u>70</u> °F
Vehicle Make/Model/Body Style : <u>1994 Ford Tempo GL 4-Door Sedan</u>			
Vehicle Test Weight :	<u>3,200</u>	lbs	
Vehicle/Barrier Impact Angle :	<u>0</u>	°	
Impact Velocity :	<u>29.3</u>	mph	
Maximum Static Crush :	<u>14.3</u>	inches	
Vehicle Rebound :	<u>4.9</u>	inches	
<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Type :	<u>Part 572B</u>	<u>Part 572B</u>	
Restraint System :	<u>Airbag</u>	<u>Automatic Torso Belt</u>	
Number of Data Channels :	<u>23</u>		
Number of Cameras :	<u>1</u>	Real Time	
	<u>14</u>	High Speed	
<u>DOOR OPENING DATA :</u>	<u>Closed/operable</u>	- Left Front	
	<u>Closed/operable</u>	- Right Front	
Front Seat(s) Data :	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure :	<u>None</u>	<u>None</u>	
		Inches of shift	
Seat Back Failure :	<u>0.0</u>	<u>0.0</u>	
<u>VISIBLE DUMMY CONTACT POINTS :</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Head :	<u>Top & rear of head w/ sunvisor, face w/ top of airbag, forehead & top of head w/ windshield.</u>	<u>Top of head w/ sunvisor, chin w/ chest, rear of head w/ head-rest.</u>	
Abdomen :	<u>Airbag</u>	<u>No contact</u>	
Chest	<u>Airbag</u>	<u>No contact</u>	
Knees	<u>Lower dash panel.</u>	<u>Glove box door.</u>	

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION :

Year/Make/model/Body Style : 1994 Ford Tempo GL 4-Door Sedan

NHTSA No. : CR0200 ; VIN: 1FAAP36X4RK114449 ; Color : Green

Engine Data: 4 cylinders; - CID; 2.3 Liters; - cc

Placement : - Longitudinal or In-Line; X Transverse of Lateral

Transmission Data : 3 speeds; - Manual; X Automatic; - Overdrive

Final Drive : - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive

Major Options : X A/C; X Pwr.Strg.; X Pwr. Brakes
- Pwr. Windows; X Pwr. Door Locks; - Tilt Wheel

Date Received : 9/22/93 ; Odometer Reading 15.0 miles

Selling Dealer : MUCK MOTOR SALES INC.

& Address: Campbell Blvd., Getzville, N.Y. 14068

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : FORD MOTOR COMPANY

Date of Manufacture September, 1993

GVWR : 3825 lbs.; GAWR: 1998 lbs. FRONT; 1847 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 30 psi FRONT
30 psi REAR

Recommended Tire Size : P185/70 R14

* Recommended Cold Tire Pressure : 30 psi FRONT; 30 psi REAR

Size of Tires on Test Vehicle: P185/70 R14 ; Manufacturer: Michelin

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) = 850 lbs.

No. of Occupants x 150 lbs. = 750 lbs.

Rated Cargo/Luggage Weight (RCLW) = 100

*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	=	840	lbs.	Right Rear	=	550	lbs.
Left Front	=	850	lbs.	Left Rear	=	550	lbs.
TOTAL FRONT	=	1,690	lbs.	TOTAL REAR	=	1,100	lbs.
TOTAL DELIVERED WEIGHT =				2,790 lbs.			

% of Total Front of Vehicle Weight = 60.6 % of Total Rear Weight = 39.4 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	2,790	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	100	lbs.
Weight of 2 p.572 Dummies @ 164each	=	328	lbs.
TARGET TEST WEIGHT	=	3,218	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 82 POUNDS OF CARGO WEIGHT:

Right Front	=	905	lbs.	Right Rear	=	690	lbs.
Left Front	=	920	lbs.	Left Rear	=	685	lbs.
TOTAL FRONT	=	1,825	lbs.	TOTAL REAR	=	1,375	lbs.
TOTAL TEST WEIGHT =				3,200.0 lbs.			

% of Total Front Weight = 57.0 % % of Total Rear Weight = 43.0 %

Weight of Ballast Secured in Vehicle Trunk Area = 50.0 lbs.

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in inches):

AS DELIVERED :	RF	<u>26.1</u>	LF	<u>26.0</u>	RR	<u>25.1</u>	LR	<u>25.1</u>
FULLY LOADED :	RF	<u>25.6</u>	LF	<u>25.5</u>	RR	<u>22.3</u>	LR	<u>22.3</u>
AS TESTED :	RF	<u>26.0</u>	LF	<u>25.9</u>	RR	<u>24.2</u>	LR	<u>24.0</u>
Vehicle's Wheel Base : <u>99.9</u> in.								

Location of Vehicle's C.G. : 42.9 inches rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual = 15.9 gallons

Usable Capacity Figure Furnished by COTR = 15.9 gallons

Test Volume Range (92 to 94% of Usable Capacity) = 14.6 to 14.9 gallons

ACTUAL TEST VOLUME= 14.6 gallons (with entire fuel system filled)

Table 3

POST IMPACT DATATYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : December 8, 1993 Time: 11:20 Temperature: 70 °F
 Vehicle NHTSA No. : CR0200
 Required Impact Velocity Range : 28.9 to 29.9 mph

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

Trap No. 1 = 29.3 mph; Trap No. 2 = 29.3 mph
 Distance from vehicle to barrier : (1) entering trap = 52 inches
 (2) exiting trap = 12 inches

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

Vehicle Length:

Pre-Test Right = 174.8 ; C/L = 176.5 ; Left = 174.2
 Post-Test Right = 160.1 ; C/L = 162.2 ; Left = 161.1
 Crush Right = 14.7 ; C/L = 14.3 ; Left = 13.1
 AVERAGE = 14.0 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

Right = 6.9 ; C/L = 4.9 ; Left = 6.7
 AVERAGE = 6.2 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
Front	<u>None</u>	<u>None</u>
Rear	<u>N/A</u>	<u>N/A</u>

Table 3

POST IMPACT (cont.)

GLAZING DAMAGE :

Windshield cracked throughout, driver ATD head contacted windshield directly.

OTHER NOTABLE IMPACT FEATURES :

Steering column stroked, toe pan deformed. Slight deformation on right and left sides of roof near "B" pillars.

Section 3

OCCUPANT AND VEHICLE DATA

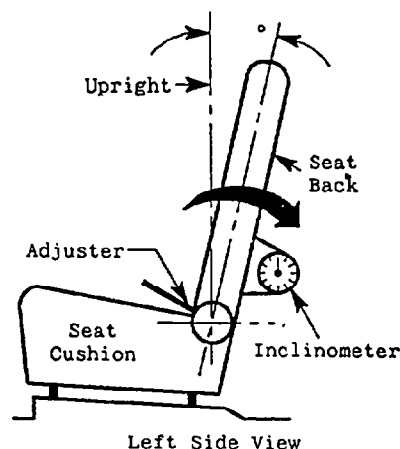
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1994 Vehicle Model: Ford Tempo GL Body Style : 4-Door Sedan

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.



Seat back angle for driver's seat : 20 deg.

Measurement instructions : Measure angle 13 inches up seat back from pivot point. Measure along frame.

Seat back angle for passenger's seat : 20 deg.

Measurement instructions : Same as Driver.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Seat placed in 8th (midposition) detent of 15 total detents.

Positioning of the passenger's seat (if applicable) : Seat placed in 7th (midposition) detent of 13 total detents.

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 15.9 gallons

B. "Usable Capacity" of the optional equipment fuel tank is N/A gallons

4. Steering Column Position :

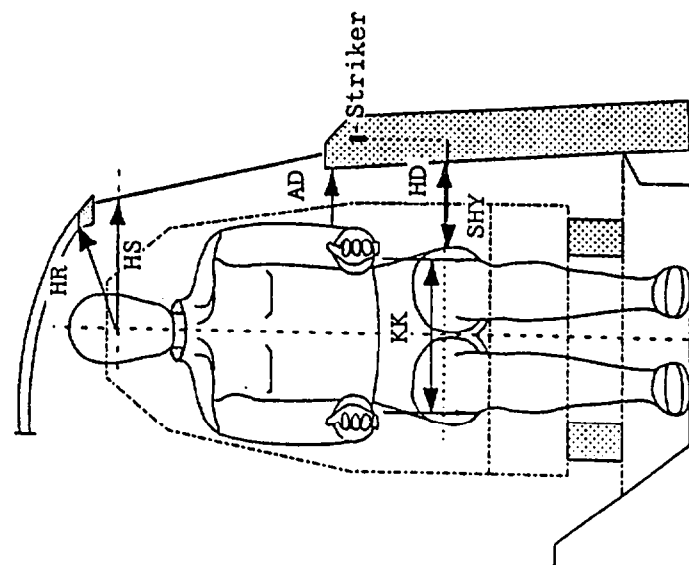
Not adjustable.

5. Other:

No other seat or belt adjustments possible.

Figure 2

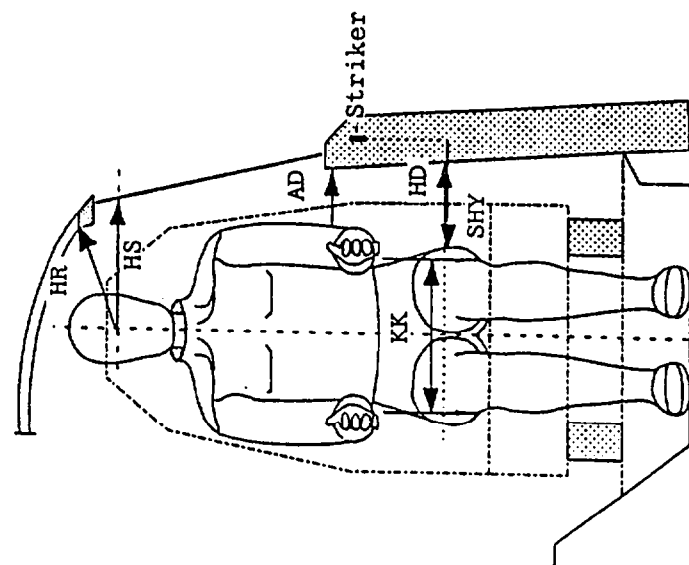
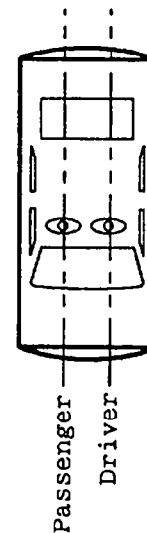
PART 572 DUMMY IN-VEHICLE POSITION



HH - Head to Header
 HW - Head to Windshield
 HZ - Head to Roof
 NR - Nose to Rim
 CS - Steering Wheel to Chest
 CD - Chest to Dash
 RA - Rime to Abdomen
 KDL/KDR - Knee to Dash
 KDA - Knee to Dash Angle
 SH - Striker to H-Point

SK - Striker to Knee
 ST - Striker to Head
 NA - Nose to Rim Angle
 TA - Tibial Angle
 PA - Pelvic Angle
 SA - Seat Back Angle
 SCA - Steering Column Angle
 SWA - Steering Wheel Angle
 WA - Windshield Angle

Vertical Longitudinal Planes



HR - Head to Side Header
 HS - Head to Side Window
 AD - Arm to Door
 HD - H-Point to Door
 SHY - Striker to H-Point (Y Dir.)
 KK - Knee to Knee

Vertical Transverse Plane

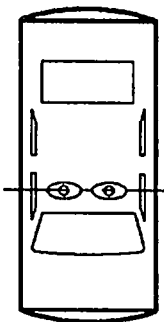


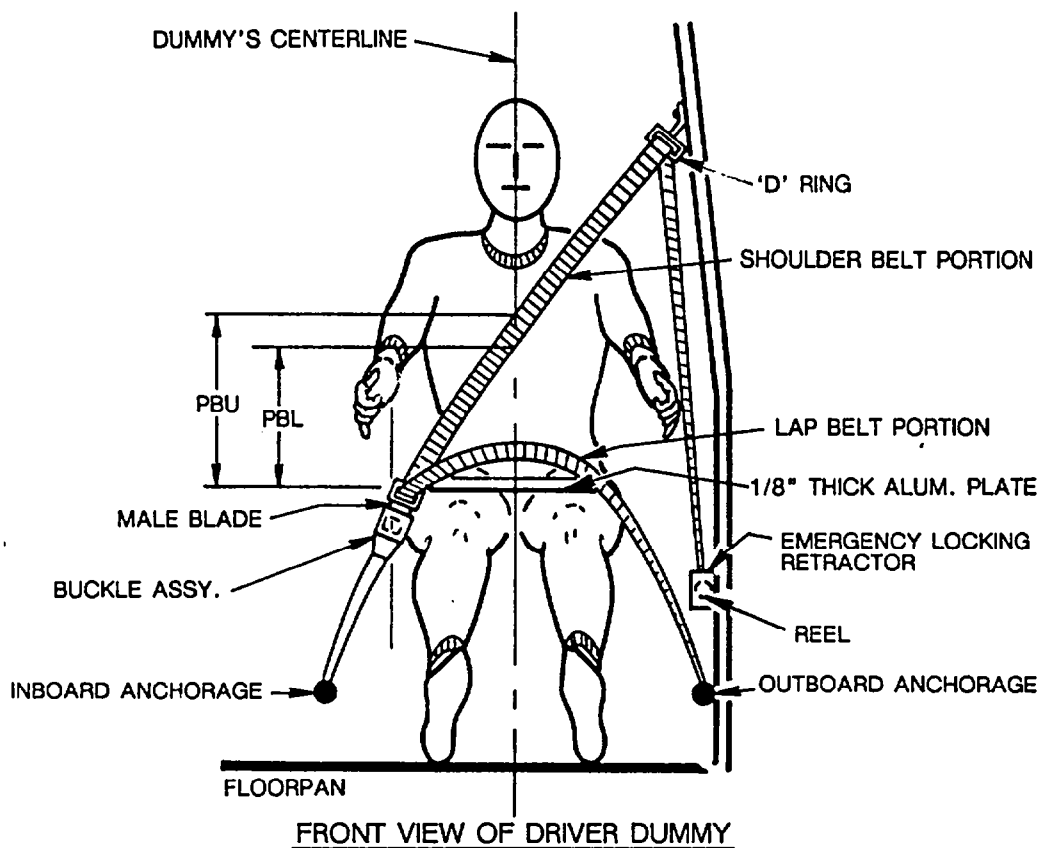
Table 4

FRONT SEAT OCCUPANT MEASUREMENTS

	DRIVER (Serial #1019)	PASS. (Serial #1022)
WA°	29 deg.	-
SWA°	66 deg.	-
SCA°	22 deg.	-
SA°	20 deg.	20 deg.
HZ	4.1	4.2
HH	11.7	11.3
HW	15.7	15.7
HR	6.4	5.4
NR	16.2 Angle 19 deg.	-
CD	21.4	22.3
CS	10.9	-
RA	6.1	-
KDL	5.5 Angle (KDA) 43 deg.	5.1
KDR	6.7	5.3 Angle (KDA) 33 deg
PA°	-	-
TA°	38 deg.	38 deg.
KK	13.3	11.5
ST	21.3 Angle 0 deg.	21.4 Angle 1 deg.
SK	21.3 Angle 96 deg.	21.5 Angle 95 deg.
SH	8.2 Angle 142 deg.	8.3 Angle 136 deg.
SHY	8.6	9.3
HS	10.9	10.3
HD	3.9 (To door Pocket).	4.9 (To door pocket).
AD	8.8	4.4

Figure 3

SEAT BELT POSITIONING DATA

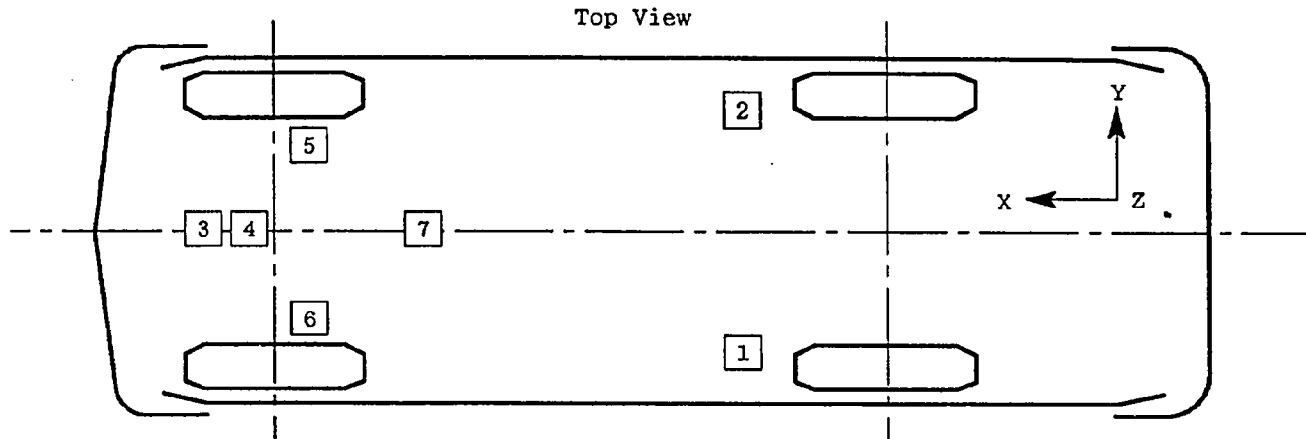


	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	*	**
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	*	**
<u>TBI</u> -- Distance from torso centerline to buckle	*	**

* Driver airbag only, 3 point belt system not used for this test.

** Passenger restrained with automatic torso belt, lap belt not used for this test.

Figure 4
VEHICLE ACCELEROMETER LOCATIONS



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	Left Disc Brake Caliper	X		
7	Instrument Panel	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

NO.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION**		NEGATIVE DIRECTION**	
						MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	REAR SEAT X-MEMBER AT LEFT SIDE LONGITUDINAL ACCELERATION	PRE:	70.9	22.4	15.4				
		POST:	70.9	22.4	15.5				
						1.6	134.6	-41.0	39.6
2	REAR SEAT X-MEMBER AT RIGHT SIDE LONGITUDINAL ACCELERATION	PRE:	70.9	22.4	15.4				
		POST:	70.9	-22.4	15.5				
						2.1	132.2	-42.9	39.8
3	TOP OF ENGINE BLOCK LONGITUDINAL ACCELERATION	PRE:	146.0	-13.5	33.3				
		POST:	138.4	-13.5	32.5				
						58.2	44.5	-131.2	26.8
4	BOTTOM OF ENGINE LONGITUDINAL ACCELERATION	PRE:	150.2	-11.8	10.2				
		POST:	145.4	-11.3	8.4				
						35.4	42.7	-104.8	27.5
5	BRAKE CALIPER AT RIGHT SIDE LONGITUDINAL ACCELERATION	PRE:	140.2	-21.9	17.5				
		POST:	135.8	25.3	18.1				
						19.2	55.2	-92.1	25.0
6	BRAKE CALIPER AT LEFT SIDE LONGITUDINAL ACCELERATION	PRE:	140.2	21.9	17.9				
		POST:	137.7	22.5	18.6				
						27.2	48.4	-82.0	34.4
7	DASH PANEL LONGITUDINAL ACCELERATION	PRE:	111.5	-3.4	30.2				
		POST:	113.2	-3.4	30.5				
						33.8	93.2	-61.6	70.4

*X + Forward from rear bumper
Y + Left from vehicle centerline
Z + Up from ground

**
LONGITUDINAL:
LATERAL:
VERTICAL:

POSITIVE
FORWARD
LEFTWARD
UPWARD

NEGATIVE
REARWARD
RIGHTWARD
DOWNWARD

DISTANCE MEASUREMENTS IN INCHES

Figure 5

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information shown on Table 5.

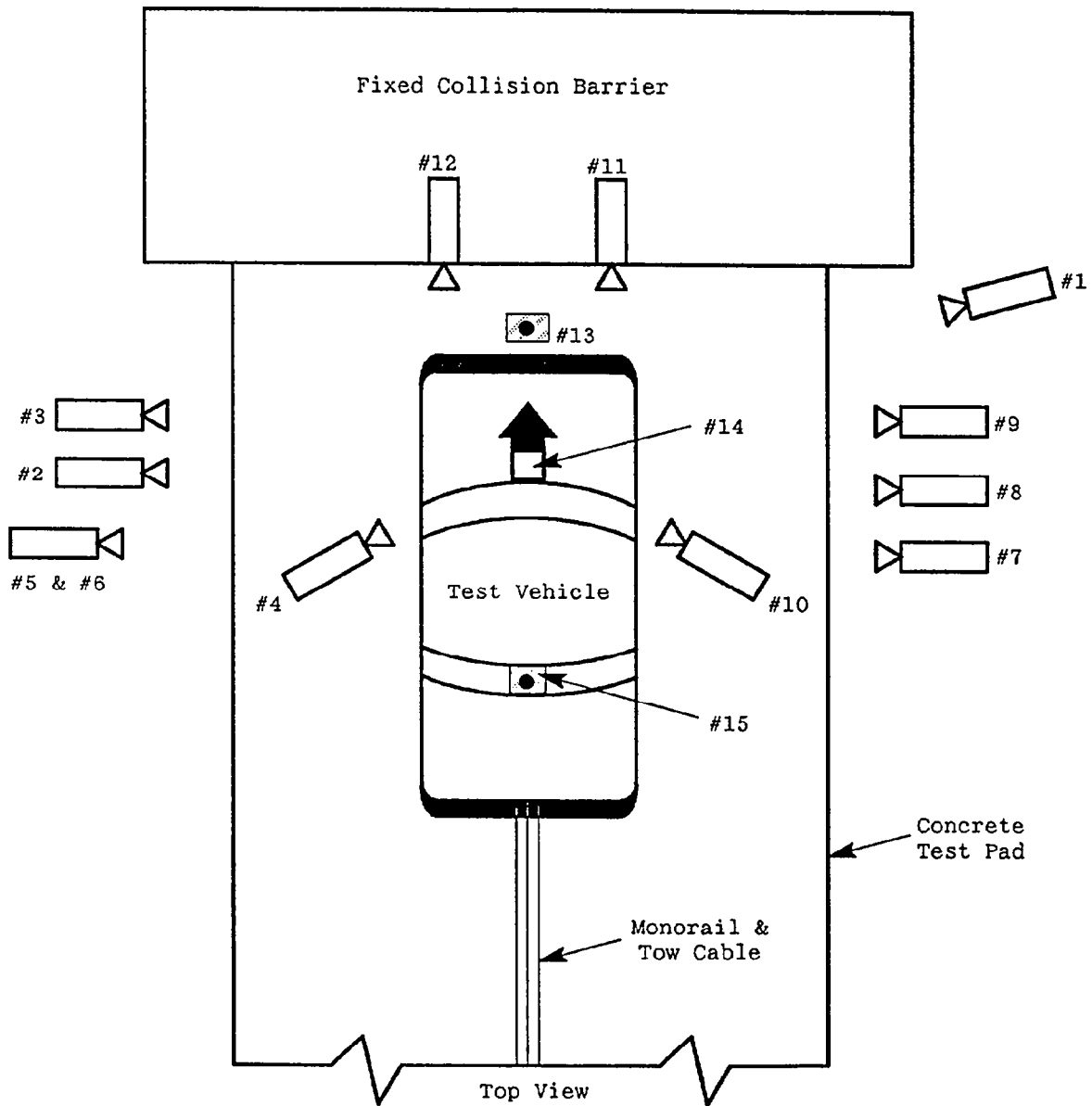


Table 6

HIGH-SPEED CAMERA LOCATIONS

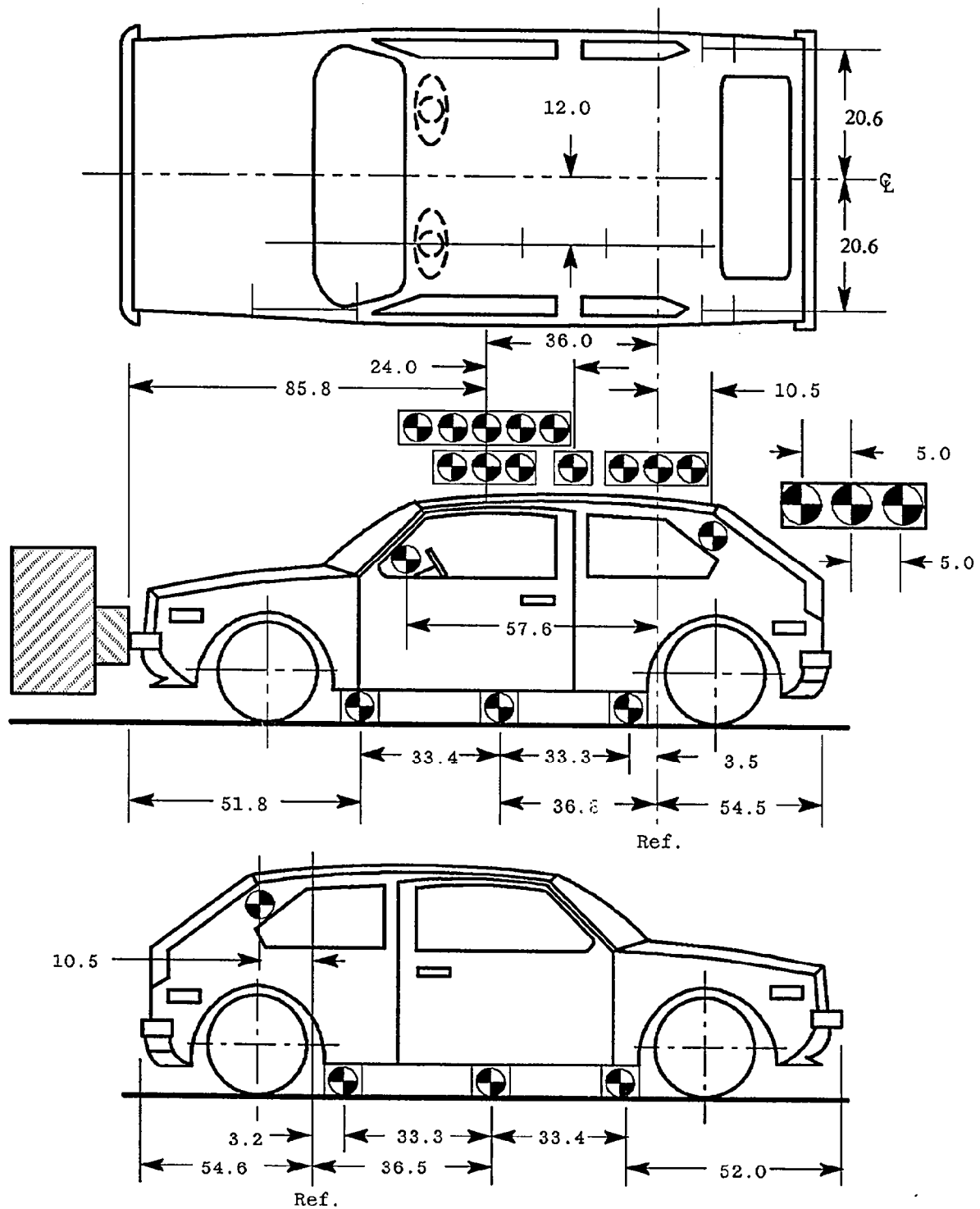
Test No. CR0200 Vehicle: 1994 Ford Tempo GL 4-Door Sedan

Camera No.	VIEW	CAMERA POSITIONS (In.)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	221	69	42	-3	206.0	13	1030
3	Left Side View	300	43	41	-3	285.0	25	1020
4	Driver and Interior View	110	100	71	-20	-	13	1045
5	Steering Column (Bottom)	255	80	46	-5	240.0	25	950
6	Steering Column (Top)	255	80	70	-9	240.0	25	1020
7	Overall Right Side	225	71	41	-2	210.0	13	950
8	Right Side View	296	55	41	-2	281.0	25	1140
9	Right Passenger View	287	73	58	-4	272.0	35	950
10	Passenger and Interior View	103	101	72	-19	-	13	1025
11	Passenger Front View	19	22	76	-46	-	13	1010
12	Driver Front View	19	22	76	-42	-	13	1020
13	Windshield View	0	0	126	-60	-	13	1100
14	Pit View of Engine	0	32	-86	90	-	13	730
15	Pit View of Fuel Tank	0	136	-86	90	-	13	750

*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



(Dimensions in inches)

Figure 7

TEST VEHICLE MEASUREMENTS

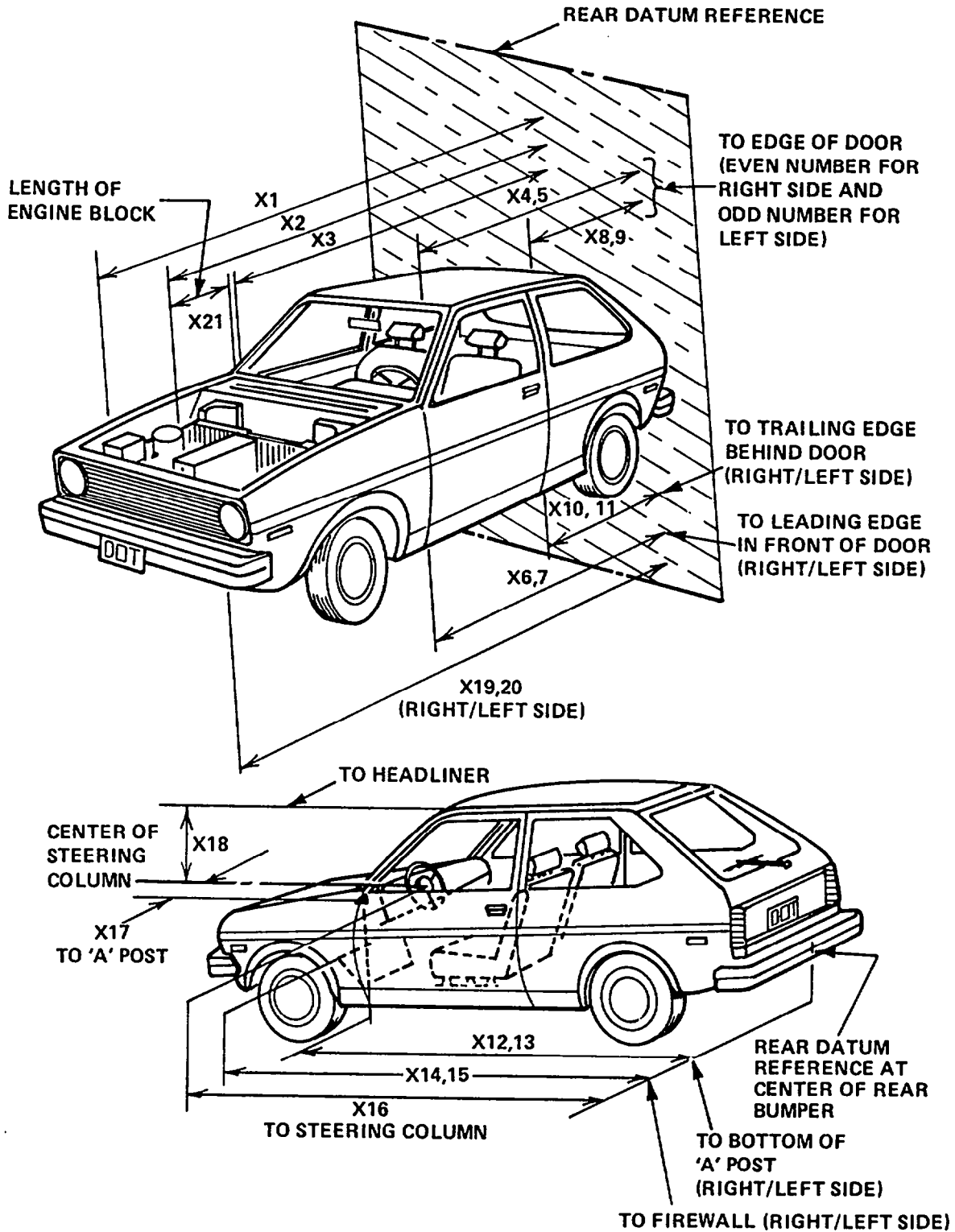


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	176.5	162.2	14.3
X2	Rear Surface of Vehicle to Front of Engine	146.7	140.5	6.2
X3	Rear Surface of Vehicle to Firewall	134.7	132.4	2.3
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	123.5	123.3	0.2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	123.1	123.3	-0.2
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	121.5	121.0	0.5
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	121.4	121.2	0.2
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	83.3	83.2	0.1
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	83.3	83.2	0.1
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	84.0	83.5	0.5
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	83.6	83.6	0.0
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	123.2	122.9	0.3
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	122.9	122.5	0.4
X14	Rear Surface of Vehicle to Firewall, Right Side	136.2	134.5	1.7
X15	Rear Surface of Vehicle to Firewall, Left Side	134.5	133.7	0.8
X16	Rear Surface of Vehicle to Steering Column	103.2	107.3	-4.1
X17	Center of Steering Column to "A" Post	16.0	18.5	-2.5
X18	Center of Steering Column to Headliner	17.0	16.5	0.5
X19	Rear Surface of Vehicle to Right Side of Front Bumper	174.8	160.1	14.7
X20	Rear Surface of Vehicle to Left Side of Front Bumper	174.2	161.1	13.1
X21	Length of Engine Block	21.0	21.0	0.0

Section 4

SUMMARY OF RESULTS OF FMVSS NOS. 208, 212, 219 AND 301-75

- "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. 301-75

Table 8

DUMMY INJURY CRITERIA VALUESNHTSA No. : CR0200 Vehicle : 1994 Ford Tempo GL 4-Door Sedan

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-133.7	-94.3	-147.7	211.1	-45.0	6.3	15.4	45.032	N/A
Dummy (2)	-21.8	15.2	56.0	56.5	-45.8	7.1	-10.0	44.872	N/A

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	-1051.6	-1095.3
Dummy (2)	-1352.1	-974.9

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc (g)
		t ₁ (msec)	t ₂ (msec)	t ₁ TO t ₂
Dummy (1)	913.65	69.840	87.480	76.86
Dummy (2)	383.01	55.560	91.440	40.86

* Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Table 9

FMVSS NO. 208 - SEAT BELT WARNING SYSTEM CHECK

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

Log time duration of audible warning signal = 6 sec.

Log time duration of reminder light operation = continuous sec.

With occupant in driver's position, lap belt in use, and the ignition switch placed in "Start/On" position :

Log time duration of audible warning signal
(audible warning should not operate) = 0 sec.

Log time duration of reminder light operation = 0 sec.

Note wording of visual warning :

Fasten Seat Belt -

Fasten Belt -

Symbol 101 X

Table 10

FMVSS NO. 208 - LABELING AND DRIVER'S MANUAL INFORMATION

Locate label which describes manufacturers maintenance or replacement schedule for crash-deployed occupant protection system.

Describe location :

Label located on driver sunvisor.

The label states, " Regular maintenance of the air bag system is not required. If the air bag readiness light comes on while you're driving, or doesn't come on when you first start your vehicle, see your dealer for service.

Were appropriate instructions concerning maintenance and/or replacement of this system provided ?

YES X NO -

Was a description of the functional operation of the system provided ?

YES X NO -

Is there a reference to the instructions and description of the system on the label ?

YES X NO -

Was an owner's manual provided ?

YES X NO -

Did the owner's manual contain appropriate information concerning maintenance and/or replacement and a description of the functional operation of the system ?

YES X NO -

Table 11

FMVSS NO. 208 - READINESS INDICATOR

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.

Is the system totally mechanical ? YES - NO X

Describe the location of the readiness indicator :

Readiness indicator located on right side of instrument cluster.

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

Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided ?

YES X NO -

Table 12

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No. :	CR0200
Make/Model :	1994 Ford Tempo GL 4-Door Sedan
Date of Comfort/Convenience Check :	12-7-93
Technician Performing Check :	D.J.T.
GVWR :	3825 lbs.

Seat belt comfort and convenience requirements cover vehicles manufactured on or after September 1, 1986, which have a gross vehicle weight rating of 10,000 pounds or less. Exemptions to this rule are belts installed in a walk-in, van-type vehicle and manual Type 2 belt systems installed in the front outboard seating positions of passenger automobiles. On or after September 1, 1989, the exemption of the type 2 manual seat belts installed in the front outboard seating positions of passenger automobiles will change depending on the states' enactment of mandatory usage laws.

Was vehicle built after or on September 1, 1986, and is it equipped with :

1. Automatic seat belts YES passenger NO driver

If yes, go to requirements D1, D2, and D3

2. Manual seat belts* YES driver NO -

- a. The seat belts, other than Type 2 lap/shoulder belts, are located in the front outboard seating positions of a passenger automobile.

YES - NO X

(Go to requirements D3, D4, D5, and D6)

- b. The seat belt system is Type 2 lap/shoulder belt in the front outboard seating positions or the seat belts are located in a walk-in van.

STOP

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

Table 12 (cont.)

D1
CONVENIENCE HOOKS

A convenience hook or other device is provided to stow seat belt webbing to facilitate entering or exiting the vehicle.

YES - NO X

Check the option which applies to this test vehicle:

1. A convenience hook or other device automatically releases the webbing when the automatic belt system is operational and remains in the released mode as long as the vehicle's ignition switch is moved to the "on" or "start" position and the vehicle's drivetrain is engaged.

YES N/A NO N/A

2. A convenience hook or other device automatically releases the webbing when the automatic belt system is operational and remains in the released mode as long as the vehicle's ignition switch is moved to the "on" or "start" position and the vehicle's parking brake is in the released mode (non-engaged)

YES N/A NO N/A

D2
WEBBING TENSION - RELIEVING DEVICE

The seat belt assembly installed in the outboard designated seating position has either manual or automatic tension relieving devices permitting the introduction of slack in the webbing of the shoulder belt ("comfort clips" or "window shade" devices).

YES - NO X

Check the owner's manual and determine the maximum amount of slack recommended by the manufacturer in inches. The recommended slack is n/a inches. Introduce this slack into the shoulder belt before testing the vehicle to comply with the requirements of FMVSS 208 S5.1. A warning is included in the owner's manual that introducing slack beyond the amount specified can significantly reduce the effectiveness of the shoulder belt.

YES N/A NO N/A

(If NO, provide explanation.)

Check the option which applies to this test vehicle:

1. This vehicle is equipped with automatic seat belts and the tension relieving device is cancelled each time the adjacent door is opened.

YES N/A NO N/A

(If NO, provide explanation.)

Table 12 (cont.)

2. This vehicle is equipped with manual belts, required to meet FMVSS 208 S4.6, and the tension relieving device is cancelled each time one of the following options occurs:

a. The adjacent door is opened.	YES	<u>N/A</u>	NO	<u>N/A</u>
b. The latch plate is released from the buckle.	YES	<u>N/A</u>	NO	<u>N/A</u>
3. This is an open-body vehicle, without doors. Does the manual mean to cancel any shoulder belt slack introduced by a tension relieving device to operate properly ?

	YES	<u>N/A</u>	NO	<u>N/A</u>
--	-----	------------	----	------------

(If NO, provide explanation.)

D3
BELT CONTACT FORCE

1. Do not measure the belt contact force if the manual or automatic seat belt assemblies in this vehicle incorporate a webbing tension relieving device. Does the vehicle incorporate a tension relieving device ?

	YES	<u>-</u>	NO	<u>X</u>
--	-----	----------	----	----------
2. Seat are adjusted according to instructions in Appendix B.

	YES	<u>X</u>	NO	<u>-</u>
--	-----	----------	----	----------
3. The test dummies are positioned according to dummy position placement instructions in Appendix B and Appendix C.

	YES	<u>X</u>	NO	<u>-</u>
--	-----	----------	----	----------
4. Close the vehicle's adjacent door, 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, then fasten the latch. 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. 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.

Table 12 (cont.)

D4
LATCHPLATE ACCESSIBILITY

- | | | | | | |
|----|--|-----|--------------|----|--------------|
| 1. | Position the test dummy in the driver's seat or passenger's seat in its forward most adjustment position. | YES | <u> X </u> | NO | <u> - </u> |
| 2. | Attach the inboard and outboard reach string. | YES | <u> X </u> | NO | <u> - </u> |
| 3. | Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. With the latchplate in the normal stowed position, check to assure that the latchplates are within the reach envelope. | YES | <u> X </u> | NO | <u> - </u> |
| 4. | Using the clearance test block, determine if there is sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latchplate or buckle. | YES | <u> X </u> | NO | <u> - </u> |

D5
RETRACTION

- | | | | | | |
|----|--|-----|--------------|----|--------------|
| 1. | Seats and seat backs are adjusted according to instructions in Appendix B "General Test Conditions" in TP-208-8. | YES | <u> X </u> | NO | <u> - </u> |
| 2. | 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 and restrain the dummies, using the belt systems for the positions being tested. | YES | <u> X </u> | NO | <u> - </u> |
| 3. | Outboard armrests which are capable of being stowed on vehicle seats shall be placed in their stowed positions. | YES | <u> X </u> | NO | <u> - </u> |
| 4. | Check the option which applies to this test vehicle: | YES | <u> X </u> | NO | <u> - </u> |
| | a. The torso and lap belt webbing of the seat belt system automatically retract to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released. | YES | <u> X </u> | NO | <u> - </u> |

Table 12 (cont.)

b. The torso and lap belt webbing of the seat belt system automatically retract when the seat belt latchplate is released.		YES	<u>X</u>	NO	<u>-</u>
5.	With the webbing and hardware in the stowed position, close the door to assure that the webbing and hardware are prevented from being pinched.	YES	<u>X</u>	NO	<u>-</u>
6.	If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, check to assure that the belt system fully retracts when the tension-relief device is manually deactivated.	YES	<u>N/A</u>	NO	<u>N/A</u>

D6
ACCESSIBILITY

The requirements for accessibility do not apply to:

1. Seats whose seat cushions are removable so that the seat back serves a function other than seating;
2. Seats which are removable;
3. 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, then determine if:

1. Each manual seat belt assembly whose webbing is designed to pass through the seat cushion or between the seat cushion and seat back has one of the following three parts (the seat belt latchplate, the buckle, or the seat belt webbing) 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	<u>X</u>	NO	<u>-</u>
-----	----------	----	----------
2. The remaining two seat belt parts are accessible under normal conditions.

YES	<u>X</u>	NO	<u>-</u>
-----	----------	----	----------

Table 12 (cont.)

- | | | | | |
|----|--|-----|------------------|---------------------|
| 3. | The buckle and latchplate pass through the guides or conduits provided and do not fall behind the seat when the following events occur in order: | | | |
| | a. The belt is completely retracted or, if the belt is non-retractable, the belt is unattached. | YES | <u> X </u> | NO <u> - </u> |
| | b. The seat is moved to any position to which it is designed to be adjusted. | YES | <u> X </u> | NO <u> - </u> |
| | c. The seat back, if foldable, is folded forward as far as possible and then moved backward into positions. | YES | <u> X </u> | NO <u> - </u> |
| 4. | Is the inboard receptacle end of the seat belt assembly which is 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 | <u> X </u> | NO <u> - </u> |

D7
LATCH MECHANISM

A seat belt assembly installed in a passenger car, except an automatic belt assembly, shall have a latch mechanism:

- | | | | | |
|----|--|-----|------------------|---------------------|
| 1. | Whose components are accessible to a seated occupant in both the stowed and operational positions. | YES | <u> X </u> | NO <u> - </u> |
| 2. | That releases both the upper torso restraint and the lap belt simultaneously, if the assembly has a lap belt and an upper torso restraint that require unlatching for release of the occupant. | YES | <u> X </u> | NO <u> - </u> |
| 3. | That releases at a single point by a push button action. | YES | <u> X </u> | NO <u> - </u> |

Figure 8

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 0.9 inch metal trim along the top and sides. the lower portion of the windshield is covered by a plastic shroud.

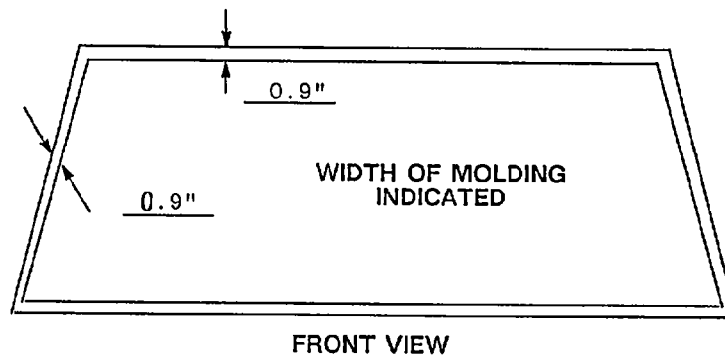
FMVSS 212 REQUIREMENTS :

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	77.7	77.7	100.0
LEFT SIDE	77.7	77.7	100.0
TOTAL	155	155	100.0

AREA OF RETENTION FAILURE:



FAILURE DETAILS : None

Figure 9

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

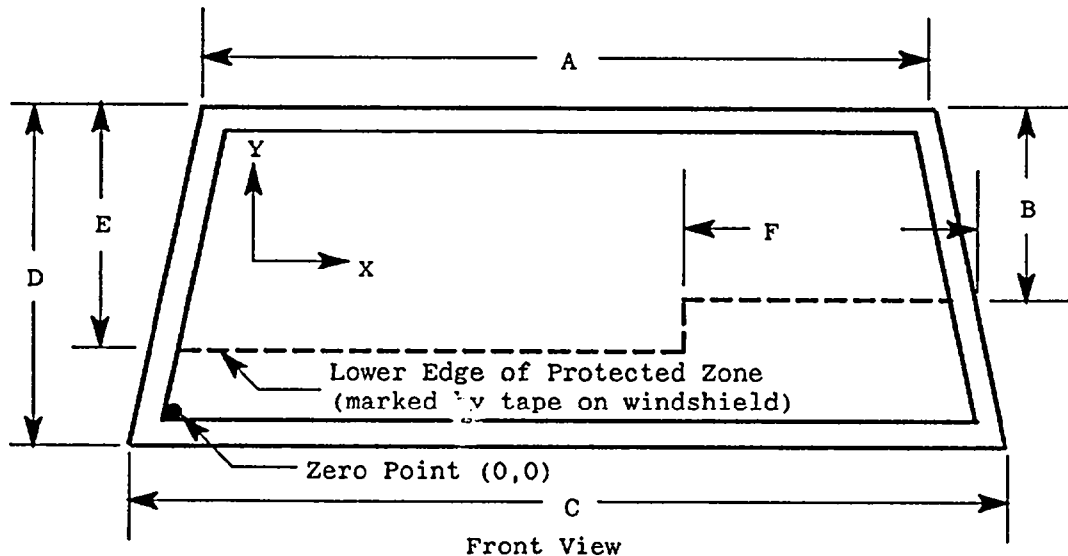
PROTECTED ZONE LOWER EDGE REQUIREMENT :

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

A=44.5
B=17.8
C=57.3
D=26.8
E=19.7
F=25.1



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

(Show location of penetration on above sketch)

None

COORDINATES		
	X	Y
1		
2		
3		
4		

Table 13

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO. : CR0200 TEST DATE : 12/8/93Vehicle Mfgr./Make/Model : 1994 Ford Tempo GL 4-Door Sedan

Test vehicle fuel tank filled to 92% to 94% of manufacturer's "usable" capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPE : X Frontal (30 mph)
- Oblique (30 mph) with 0 ° barrier face first
 contacting _____
 (driver/passenger) side
- Rear Moving Barrier (30 mph)
- Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:

1. From impact until vehicle motion ceases
2. For five minute period after vehicle motion ceases
3. For next 25 minutes

ACTUAL	MAX ALLOWED
0	1 oz.
0	5 oz.
0	1 oz./1 min.

SOLVENT SPILLAGE DETAILS :

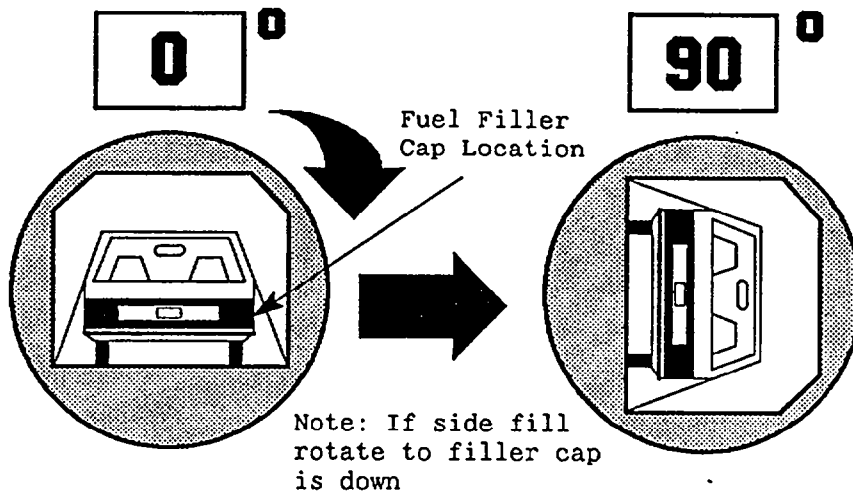
None

Table 14

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETTEST PHASE :

Vehicle NHTSA ID No. :

CR0200

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	13	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	13	seconds
Next whole minute interval	8	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	0
---	---	---	---

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

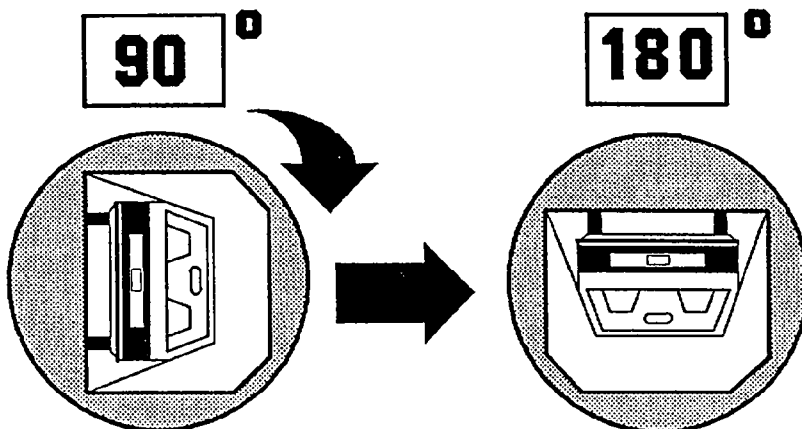
IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :

Vehicle NHTSA ID No. :
CR0200



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	09	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	09	seconds
Next whole minute interval	8	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	0
---	---	---	---

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

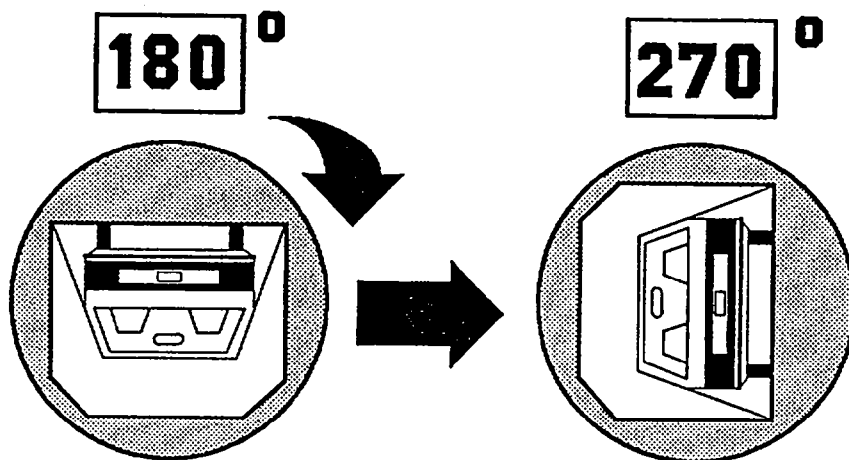
IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :

Vehicle NHTSA ID No. :
 CR0200



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>44</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>44</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.

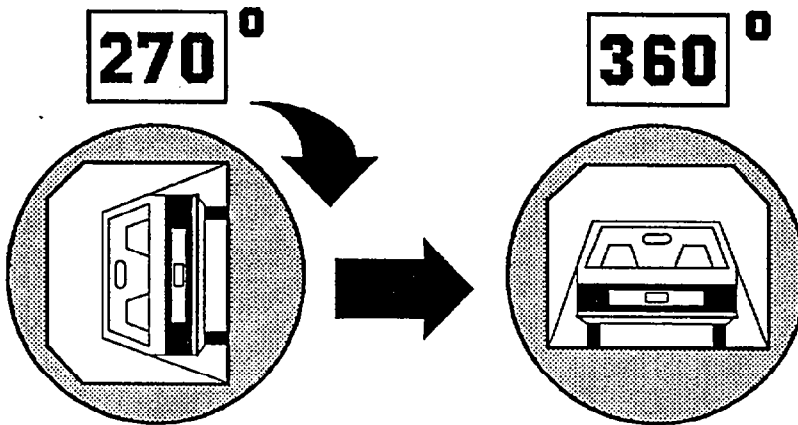
IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :

Vehicle NHTSA ID No. :
CR0200



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>57</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
	<u>6</u>	minutes	<u>57</u>	seconds
Next whole minute interval	<u>7</u>	minutes		
TOTAL				

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 15
TEST VEHICLE NONCOMPLIANCE NOTICE

NHTSA Contract Lab : Calspan Advanced Technology Center

Lab Project Manager & Telephone No. : Walter E. Levan (716) 632 - 7500

Date of Test : December 8 , 1993 Vehicle NHTSA No. : CR0200

Vehicle Manufacturer : FORD MOTOR COMPANY

Model Year : 1994 VIN : 1FAAP36X4RK114449

Model : Tempo GL Body Style: 4-Door Sedan Build Date : September, 1993

Dummy Stabilized Temperature at Time of Test : 71 °F (Spec. = 66 - 78 °F)

Impact Velocity : 29.3 mph; Time of Test : 11:20

Type of Automatic Restraint System :

Driver : Airbag

Passenger : Automatic Torso Belt

Failure Details :

Vehicle, as tested, appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial), and 301.

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 RIGHT FRONT THREE-QUARTER VIEW	A-9
A-8	POST-TEST RIGHT FRONT THREE-QUARTER VIEW	A-10
A-9	PRE-TEST LEFT REAR THREE-QUARTER VIEW	A-11
A-10	POST-TEST LEFT REAR THREE-QUARTER VIEW	A-12
A-11	POST-TEST TOP VIEW	A-13
A-12	PRE-TEST WINDSHIELD VIEW	A-14
A-13	POST-TEST WINDSHIELD VIEW	A-15
A-14	PRE-TEST ENGINE COMPARTMENT VIEW	A-16
A-15	POST-TEST ENGINE COMPARTMENT VIEW	A-17
A-16	PRE-TEST FUEL FILLER CAP PHOTO	A-18
A-17	POST-TEST FUEL FILLER CAP PHOTO	A-19
A-18	PRE-TEST FRONT UNDERBODY VIEW	A-20
A-19	POST-TEST FRONT UNDERBODY VIEW	A-21
A-20	PRE-TEST FRONT SIDE UNDERBODY VIEW	A-22
A-21	POST-TEST FRONT SIDE UNDERBODY VIEW	A-23
A-22	PRE-TEST REAR UNDERBODY VIEW	A-24
A-23	POST-TEST REAR UNDERBODY VIEW	A-25
A-24	CERTIFICATION LABEL	A-26
A-25	TIRE PLACARD	A-27
A-26	PRE-TEST DRIVER DUMMY POSITION VIEW	A-28
A-27	POST-TEST DRIVER DUMMY POSITION VIEW	A-29
A-28	PRE-TEST PASSENGER DUMMY POSITION VIEW	A-30
A-29	POST-TEST PASSENGER DUMMY POSITION VIEW	A-31
A-30	PRE-TEST DRIVER DUMMY AND INTERIOR VIEW	A-32
A-31	POST-TEST DRIVER DUMMY AND INTERIOR VIEW	A-33
A-32	PRE-TEST PASSENGER DUMMY AND INTERIOR VIEW	A-34
A-33	POST-TEST PASSENGER DUMMY AND INTERIOR VIEW	A-35
A-34	VEHICLE IMPACT	A-36
A-35	POST-TEST DRIVER AIRBAG VIEW	A-37
A-36	POST-TEST INTERIOR CONTACT POINTS	A-38

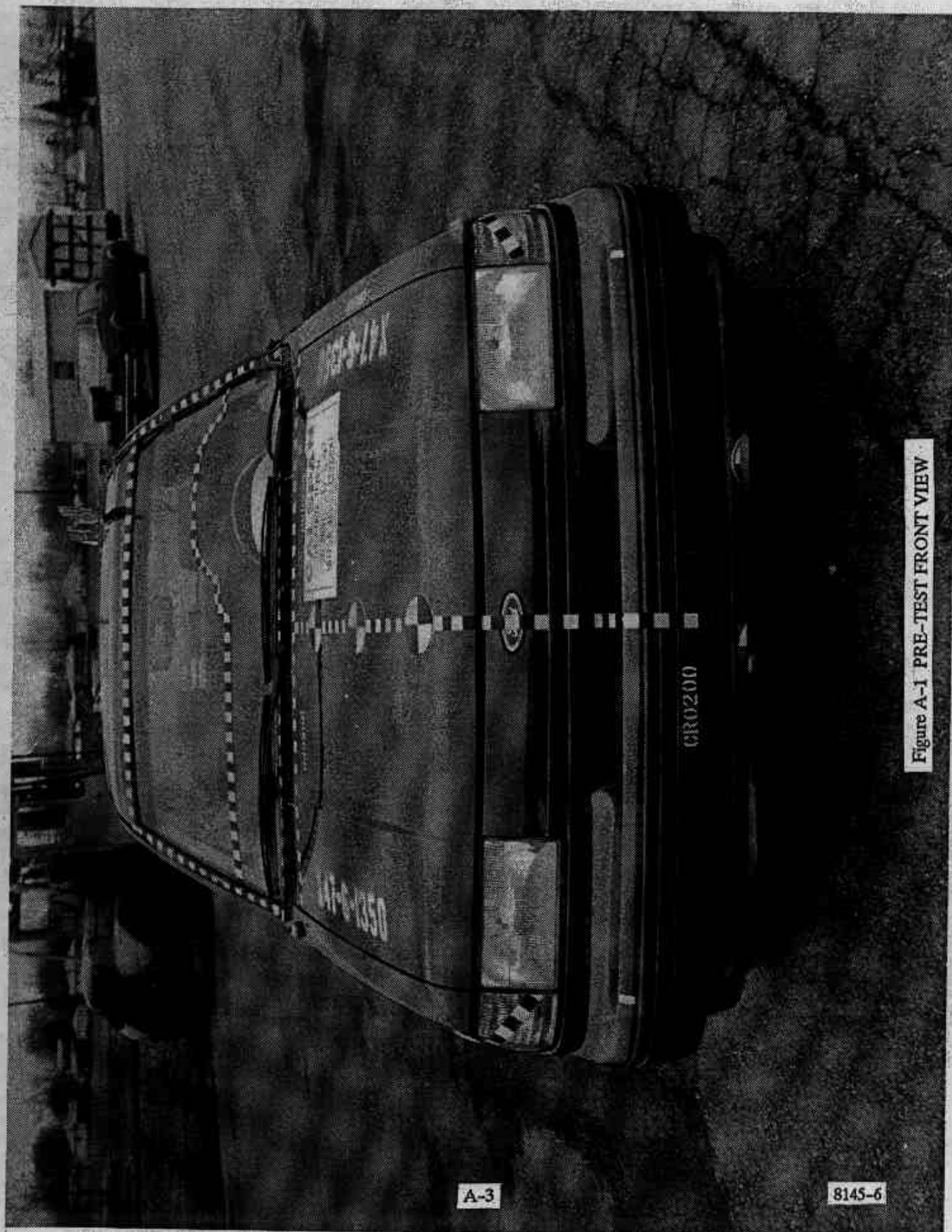


Figure A-1 PRE-TEST FRONT VIEW

A-3

8145-6

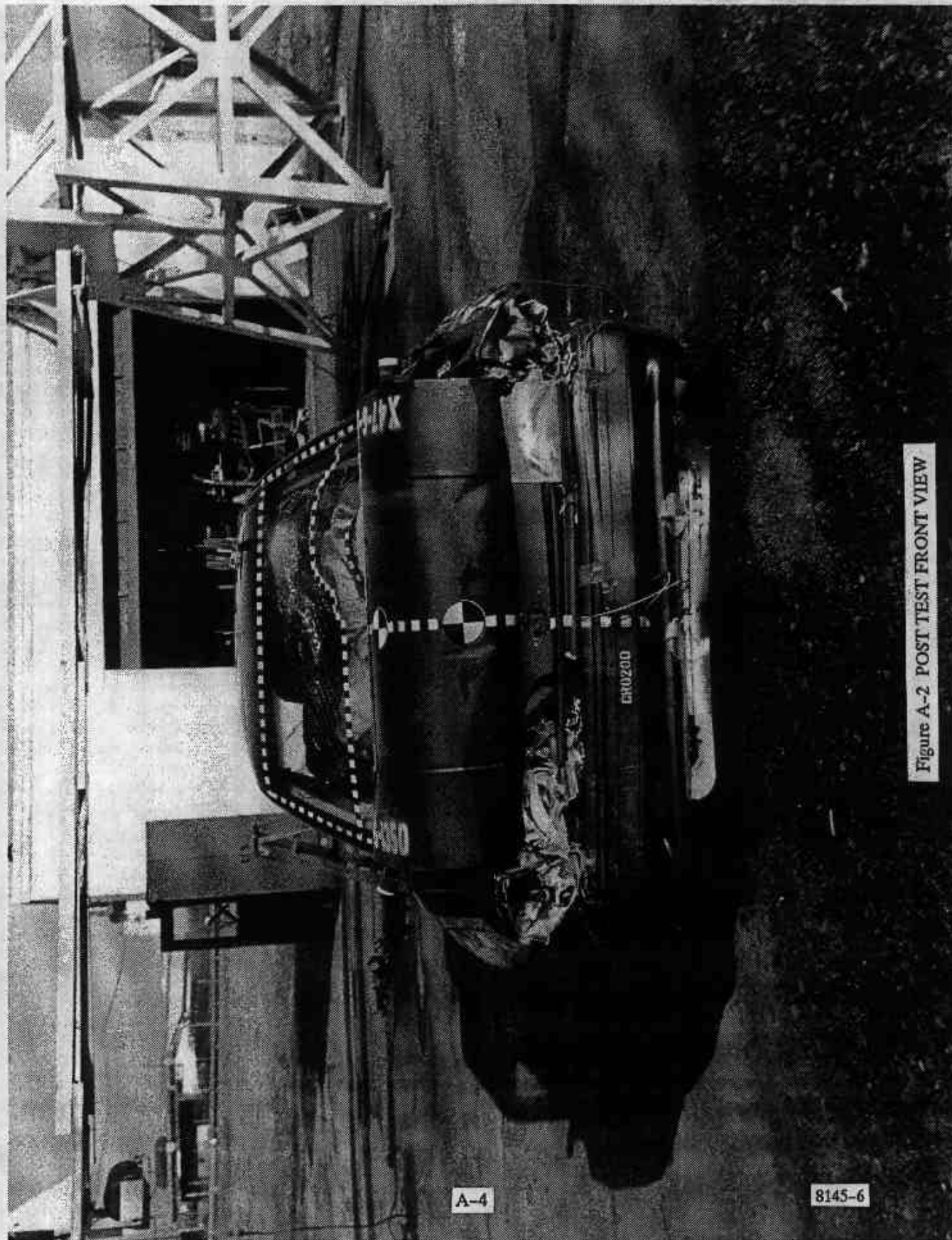


Figure A-2 POST TEST FRONT VIEW



X47-6-1350

CALSPAN
47102 154
47102 154
47102 154

A-5

8145-6

Figure A-3 PRE-TEST LEFT SIDE VIEW

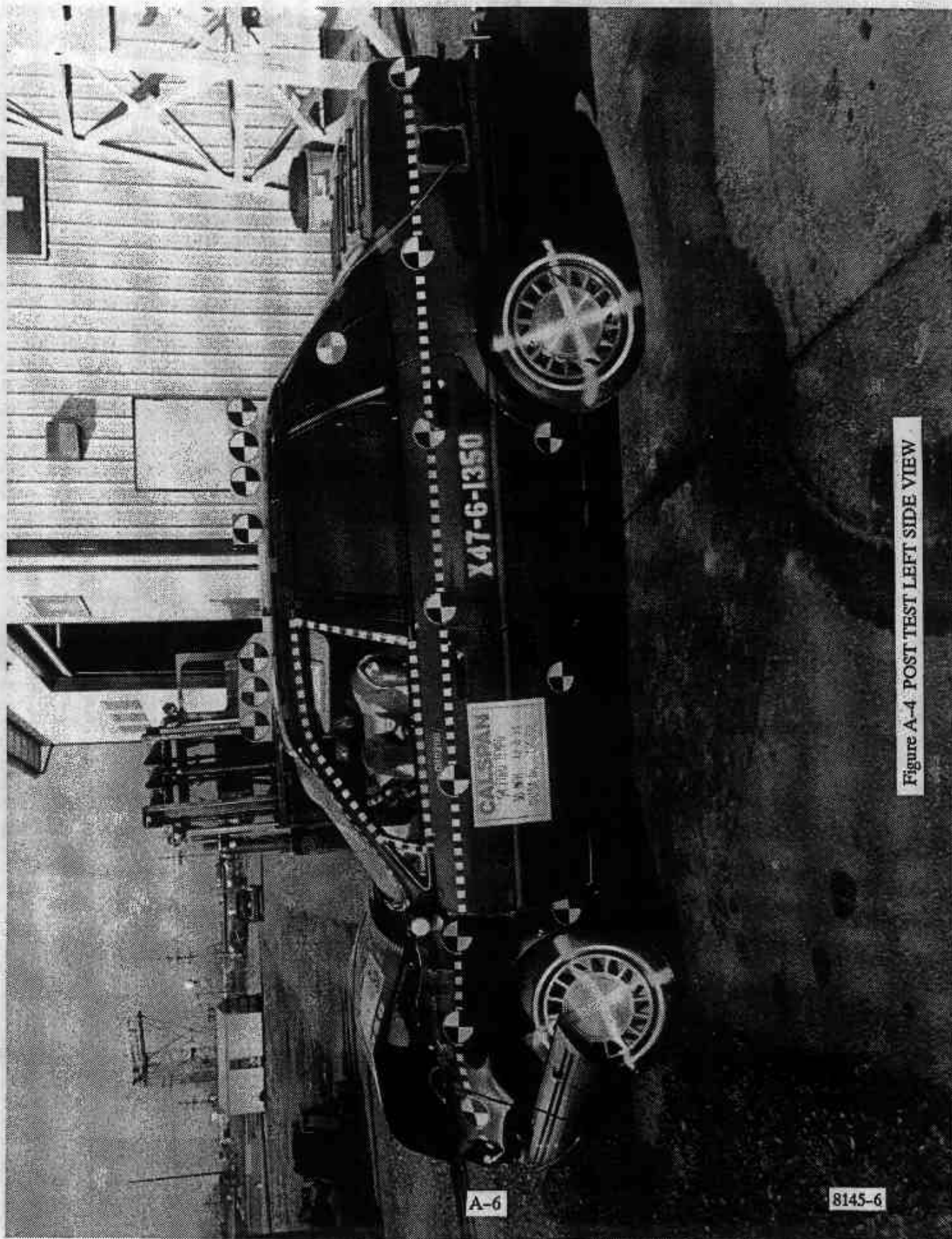


Figure A-4 POST TEST LEFT SIDE VIEW

A-6

8145-6

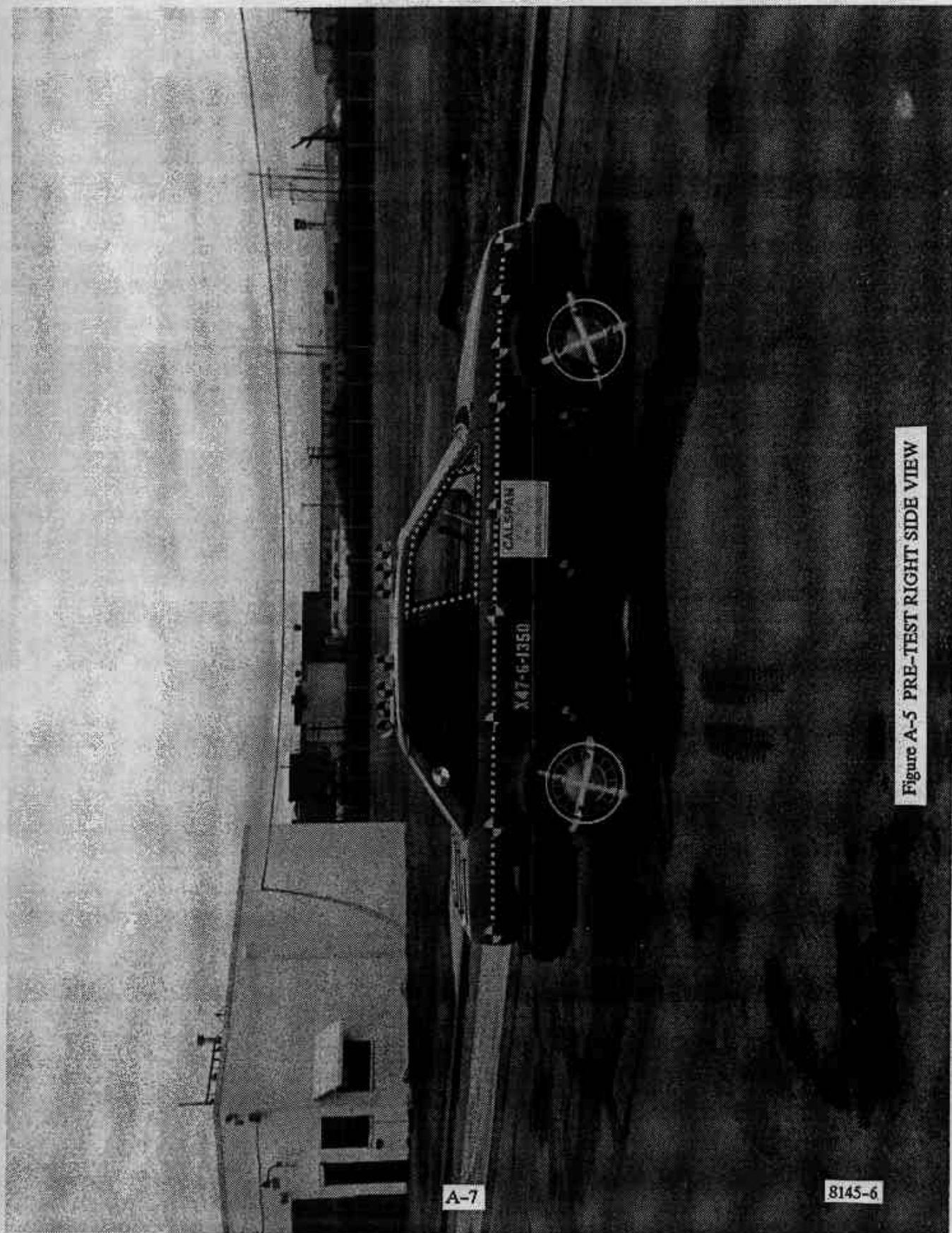


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

8145-6

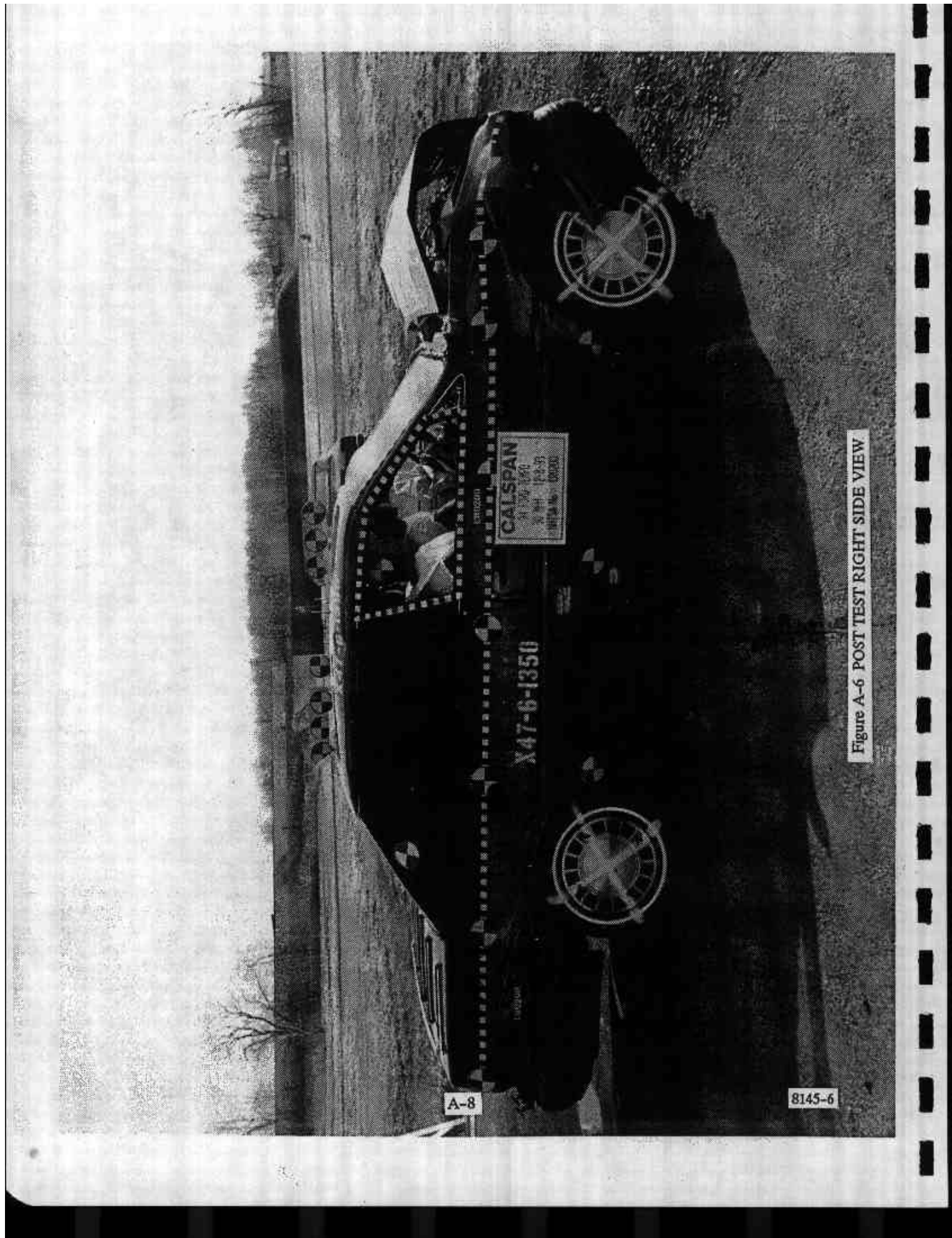


Figure A-6 POST TEST RIGHT SIDE VIEW

A-8

8145-6



Figure A-7 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-9

8145-6

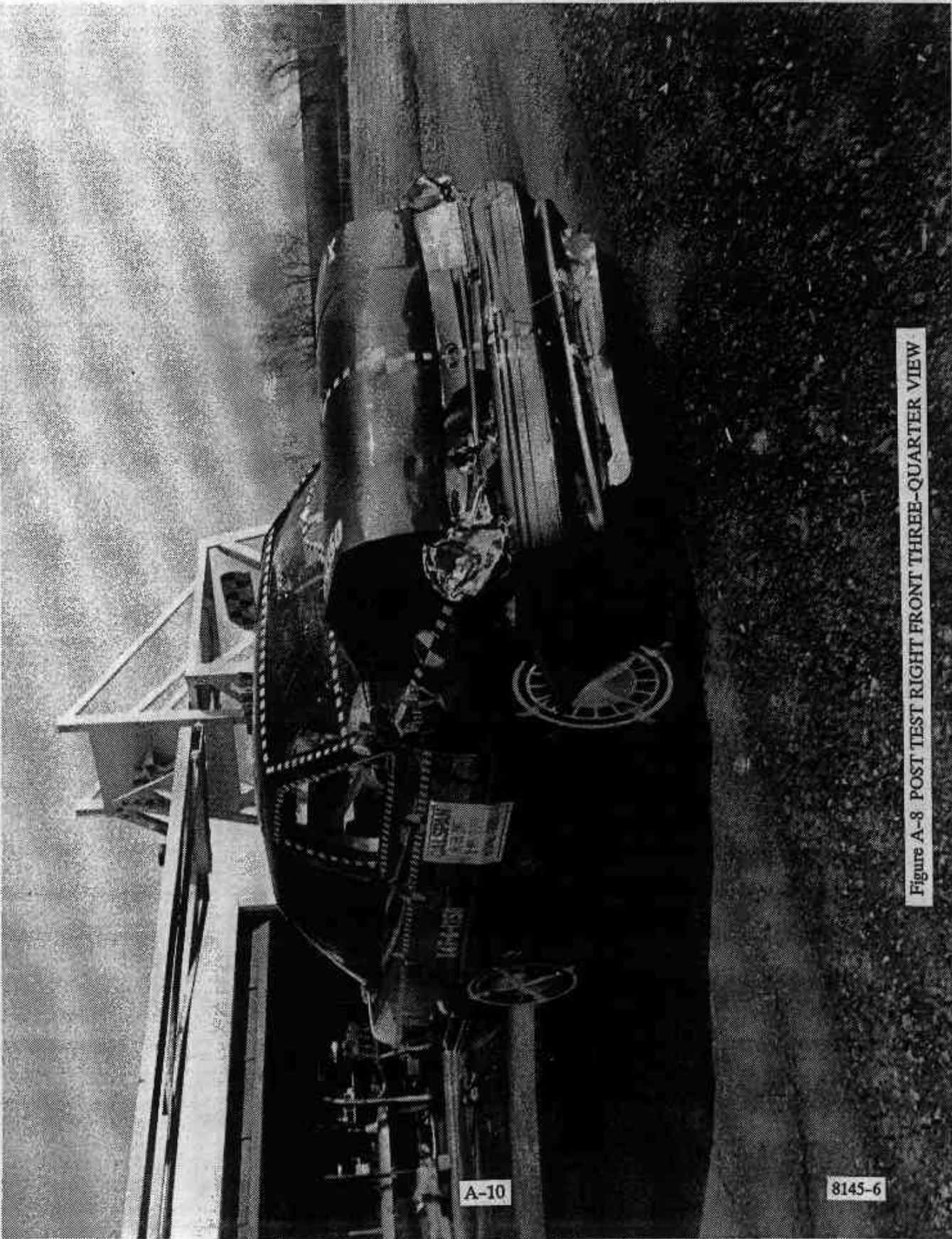


Figure A-8 POST TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

8145-6



Figure A-9 PRE-TEST LEFT REAR THREE-QUARTER VIEW

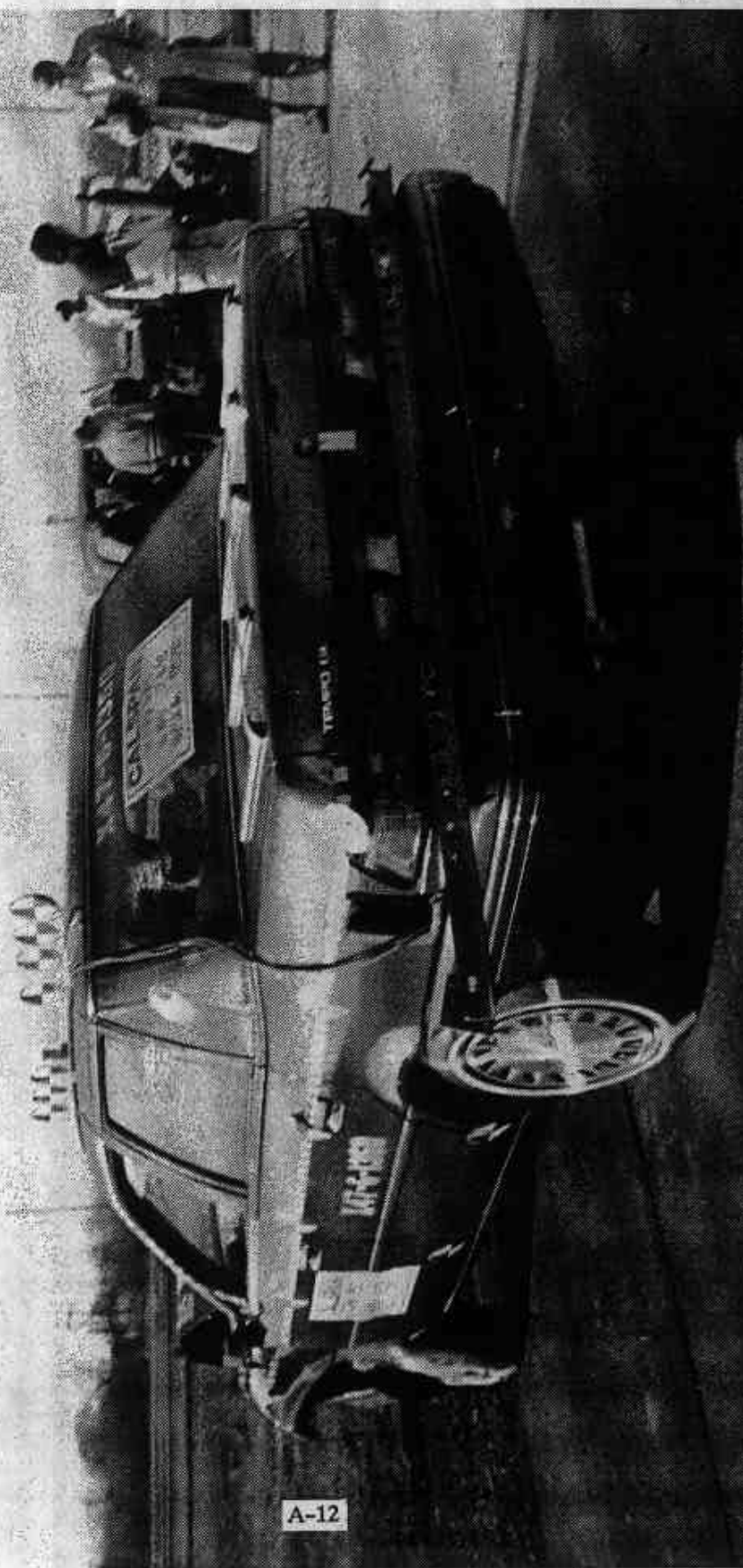


Figure A-10 POST TEST LEFT REAR THREE-QUARTER VIEW

A-12

8145-6

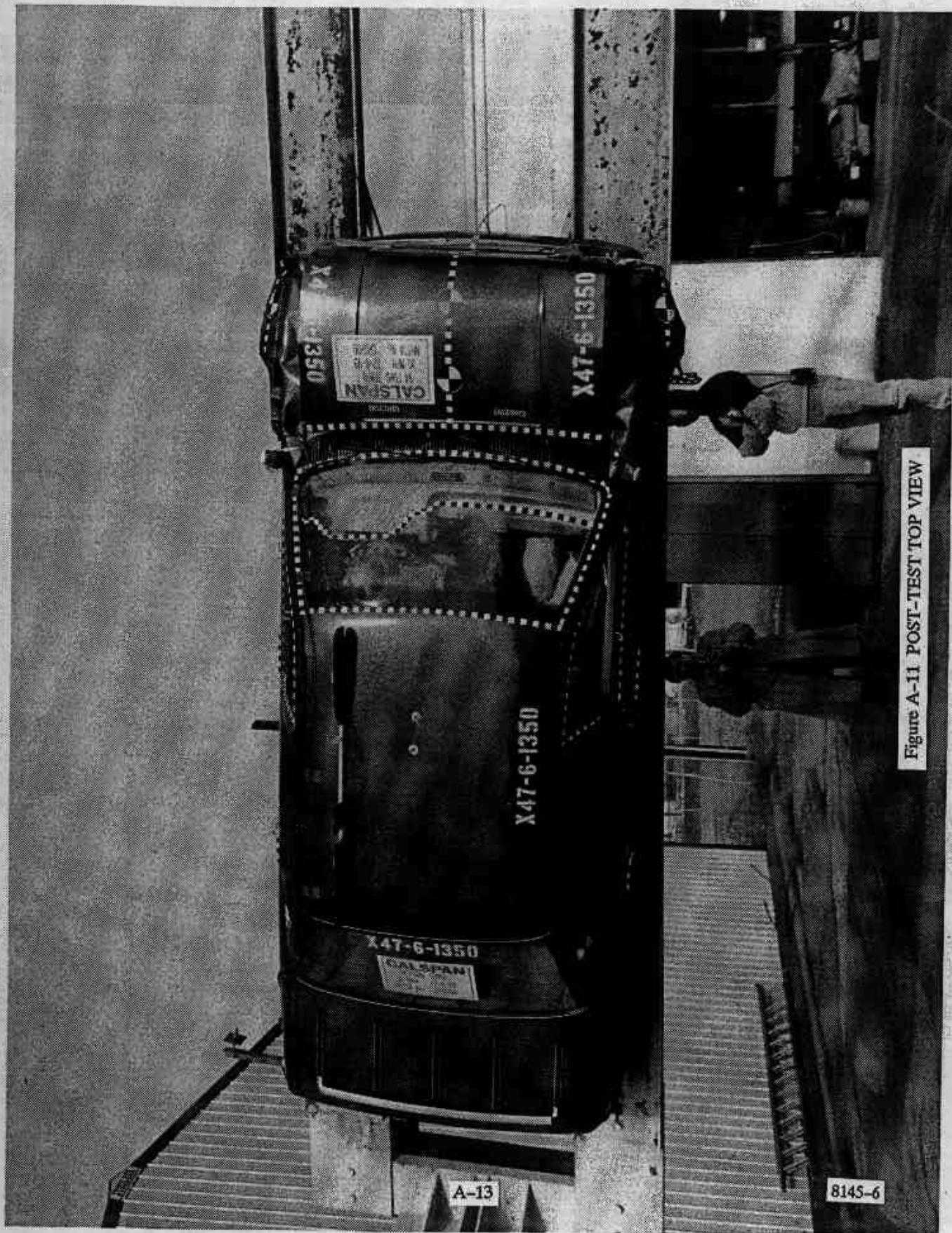
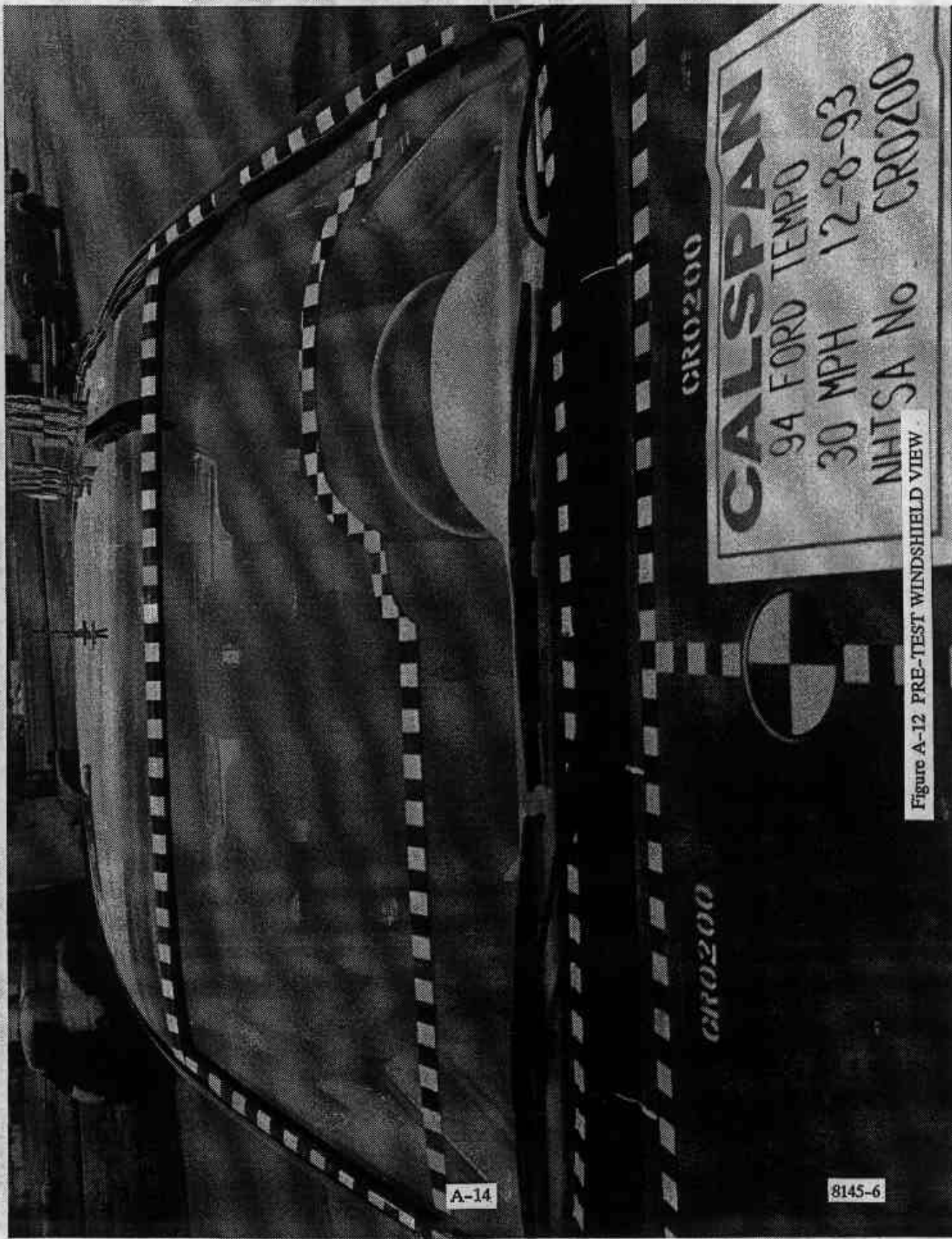


Figure A-11 POST-TEST TOP VIEW

A-13

8145-6



A-14

8145-6

Figure A-12 PRE-TEST WINDSHIELD VIEW

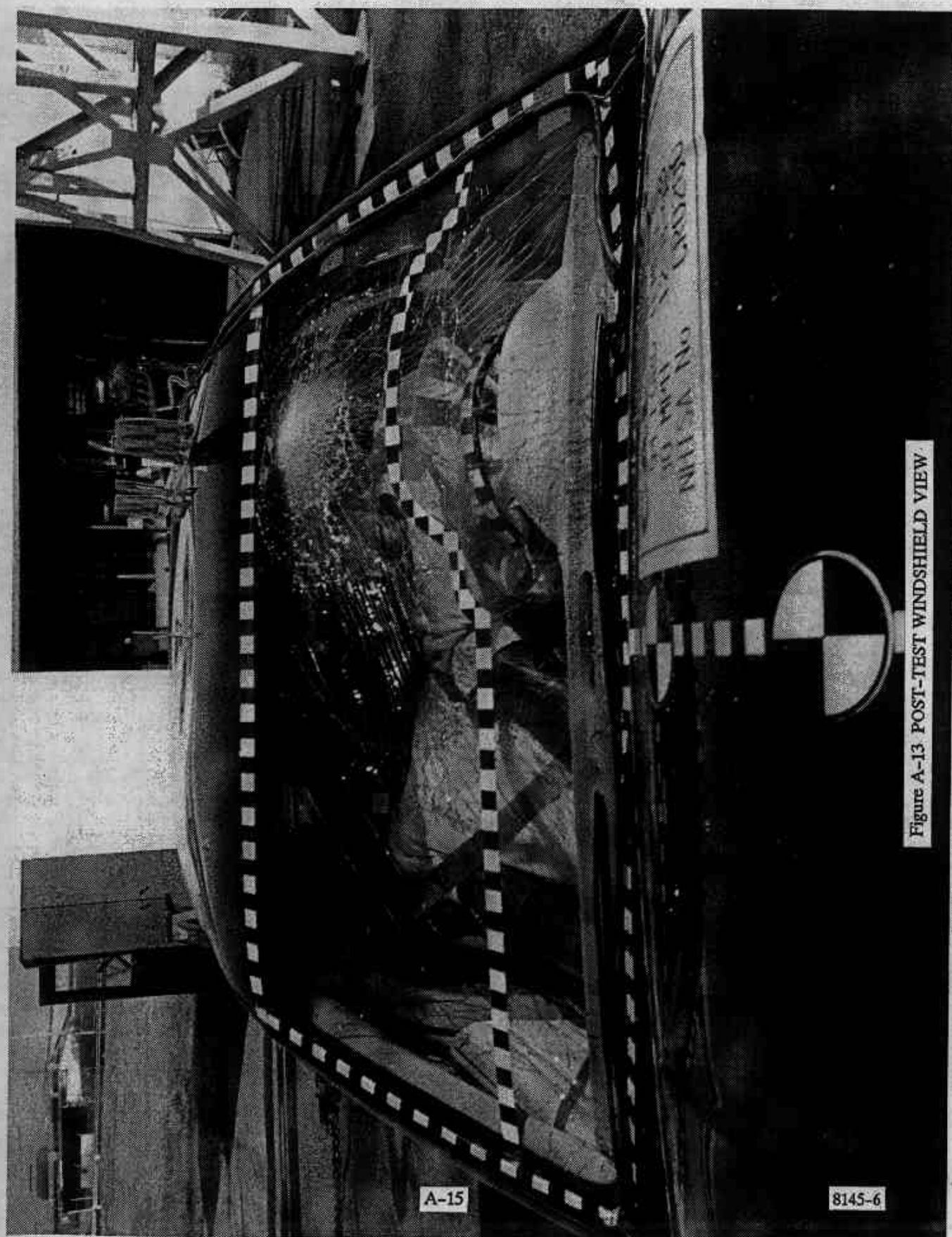
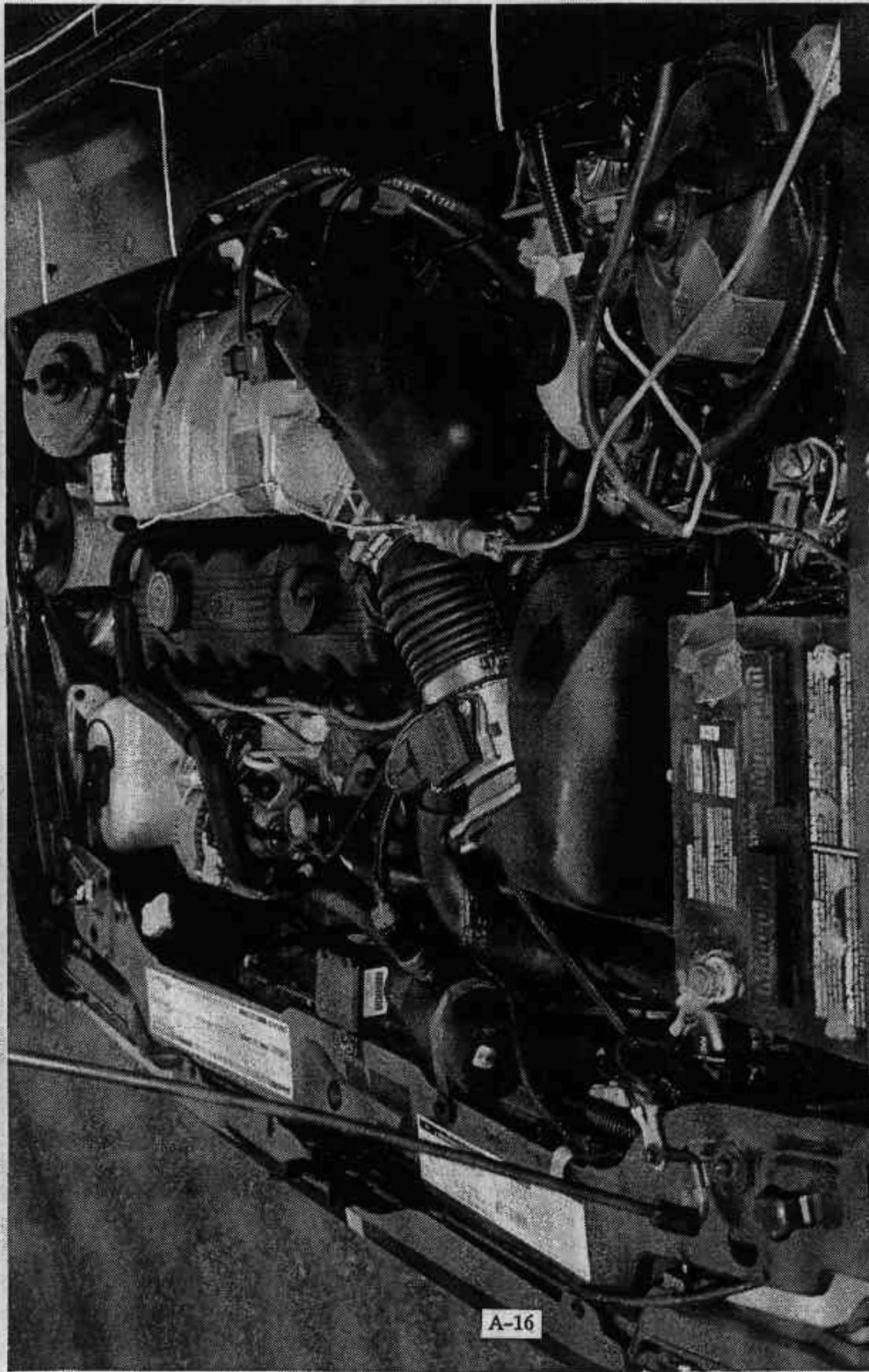


Figure A-13 POST-TEST WINDSHIELD VIEW.

A-15

8145-6



CR0200

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

A-16

8145-6

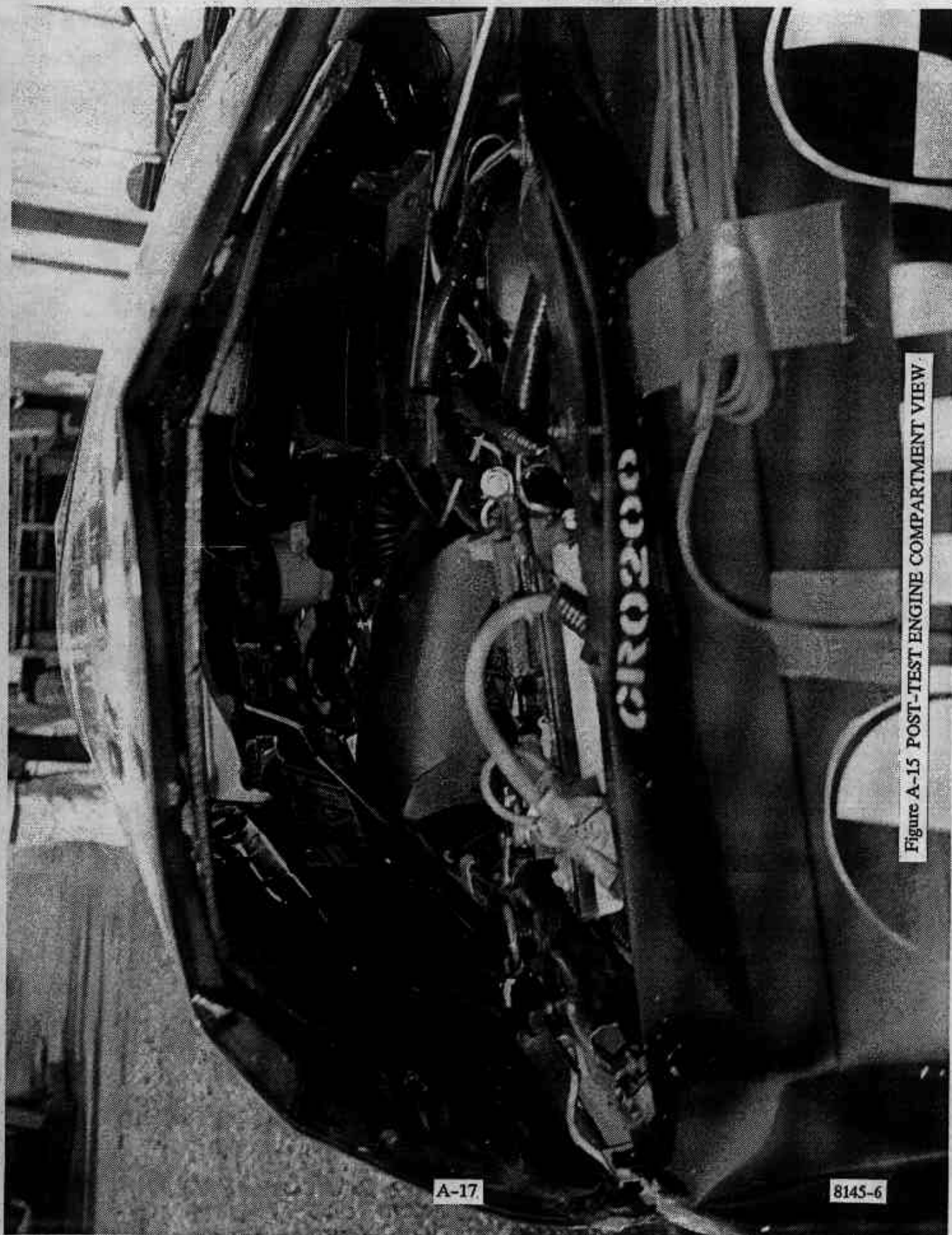


Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

A-17

8145-6

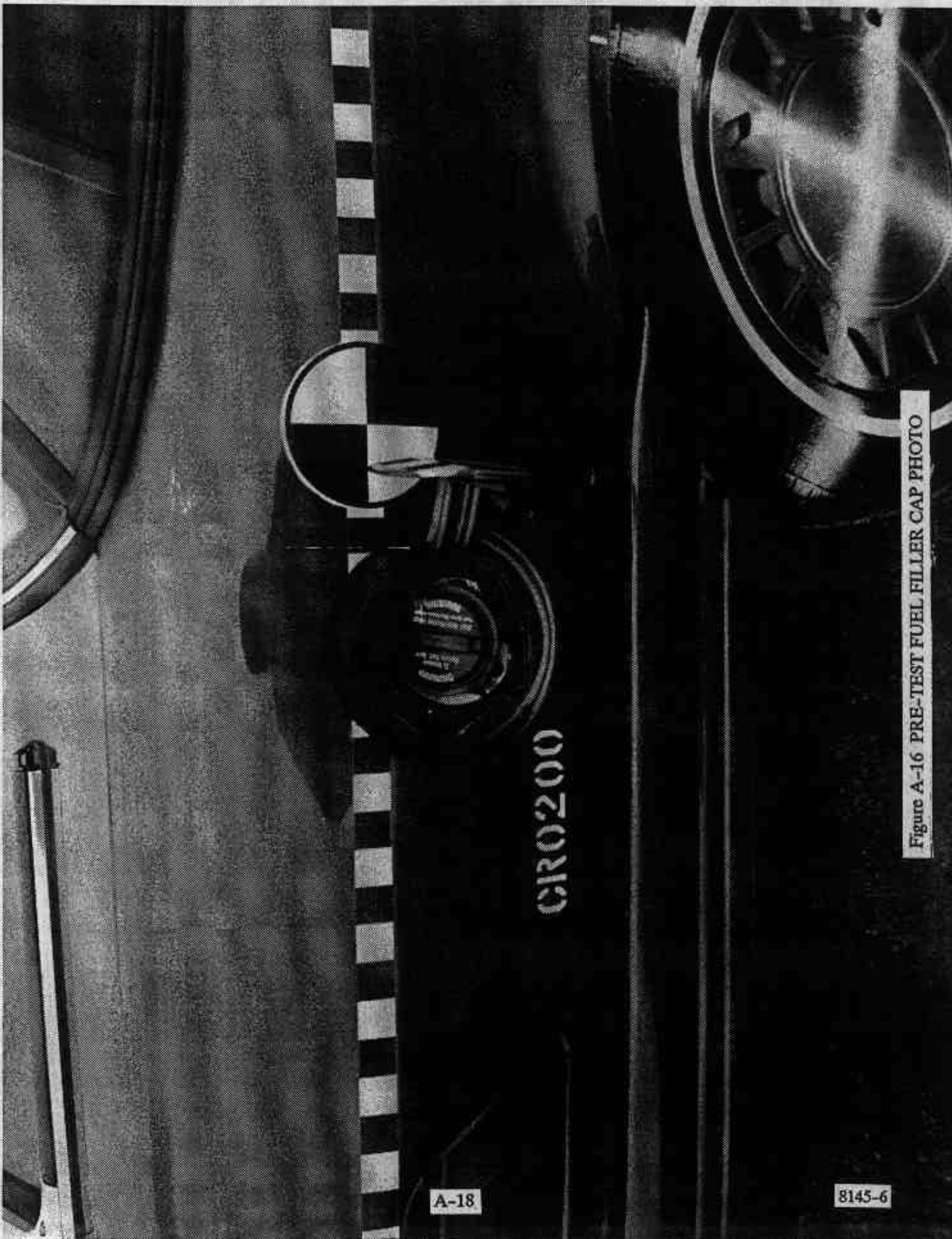


Figure A-16 PRE-TEST FUEL FILLER CAP PHOTO

A-18

8145-6

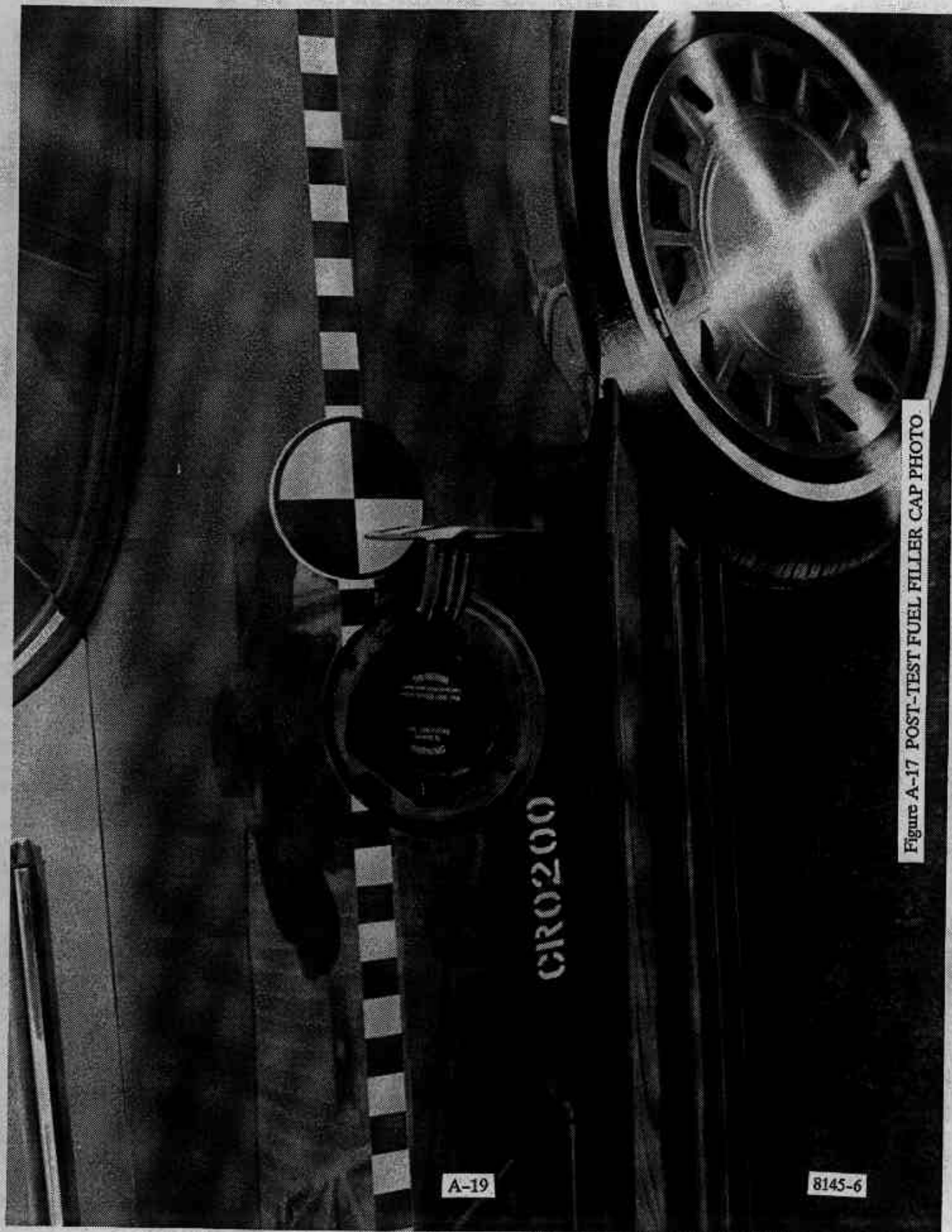


Figure A-17 POST-TEST FUEL FILLER CAP PHOTO.

A-19

8145-6

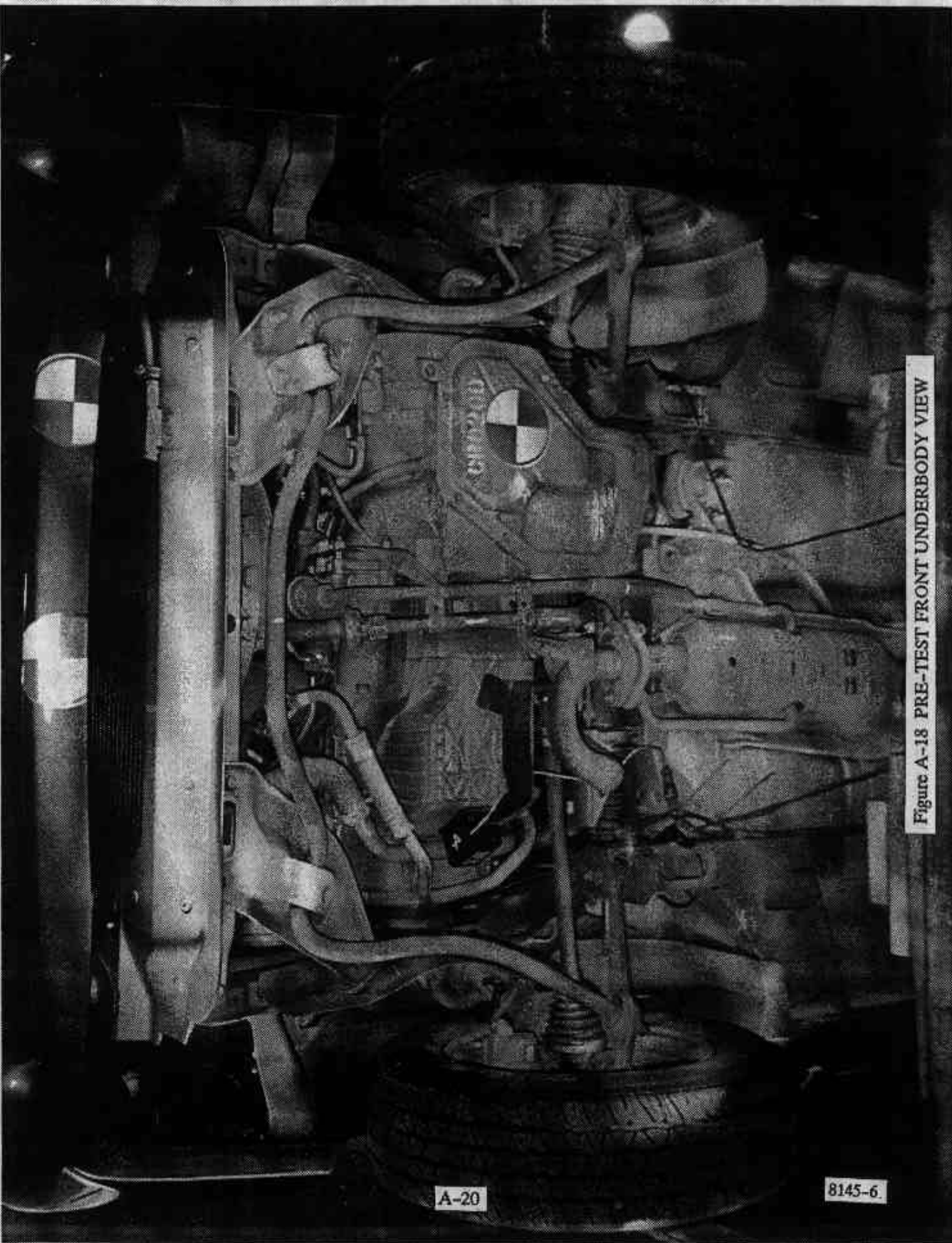


Figure A-18 PRE-TEST FRONT UNDERBODY VIEW

A-20

8145-6

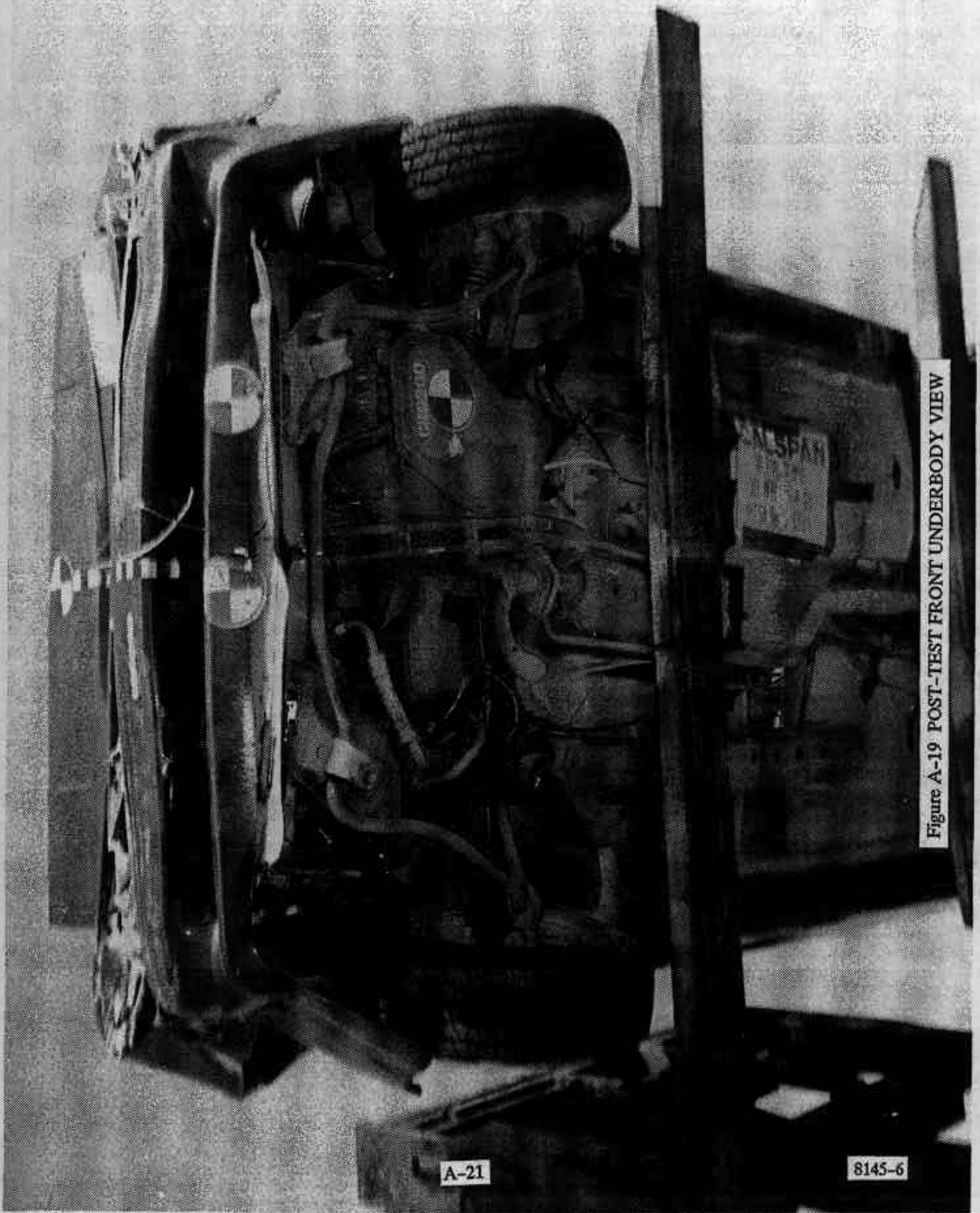


Figure A-19 POST-TEST FRONT UNDERBODY VIEW

A-21

8145-6

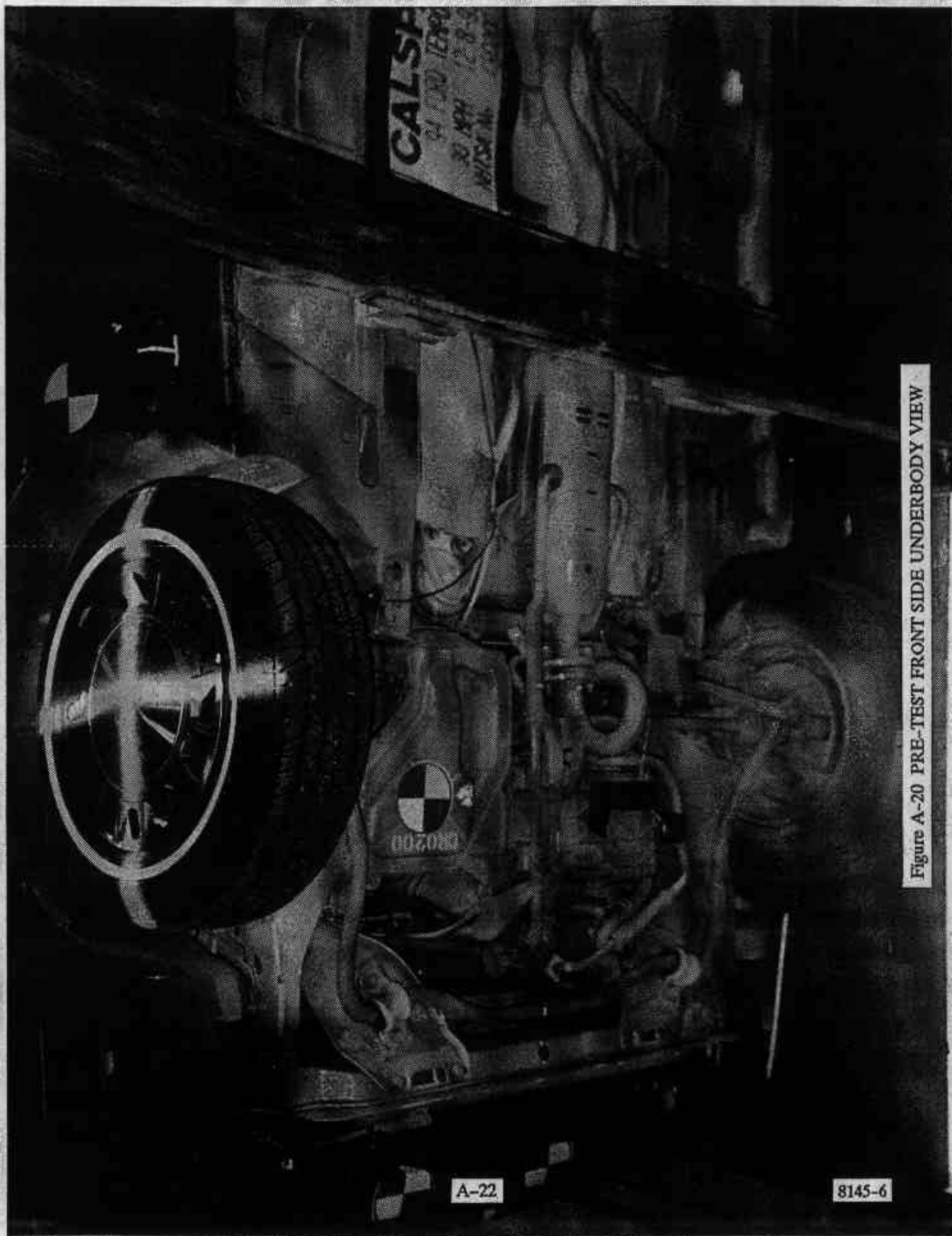


Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

A-22

8145-6



Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW

A-23

8145-6

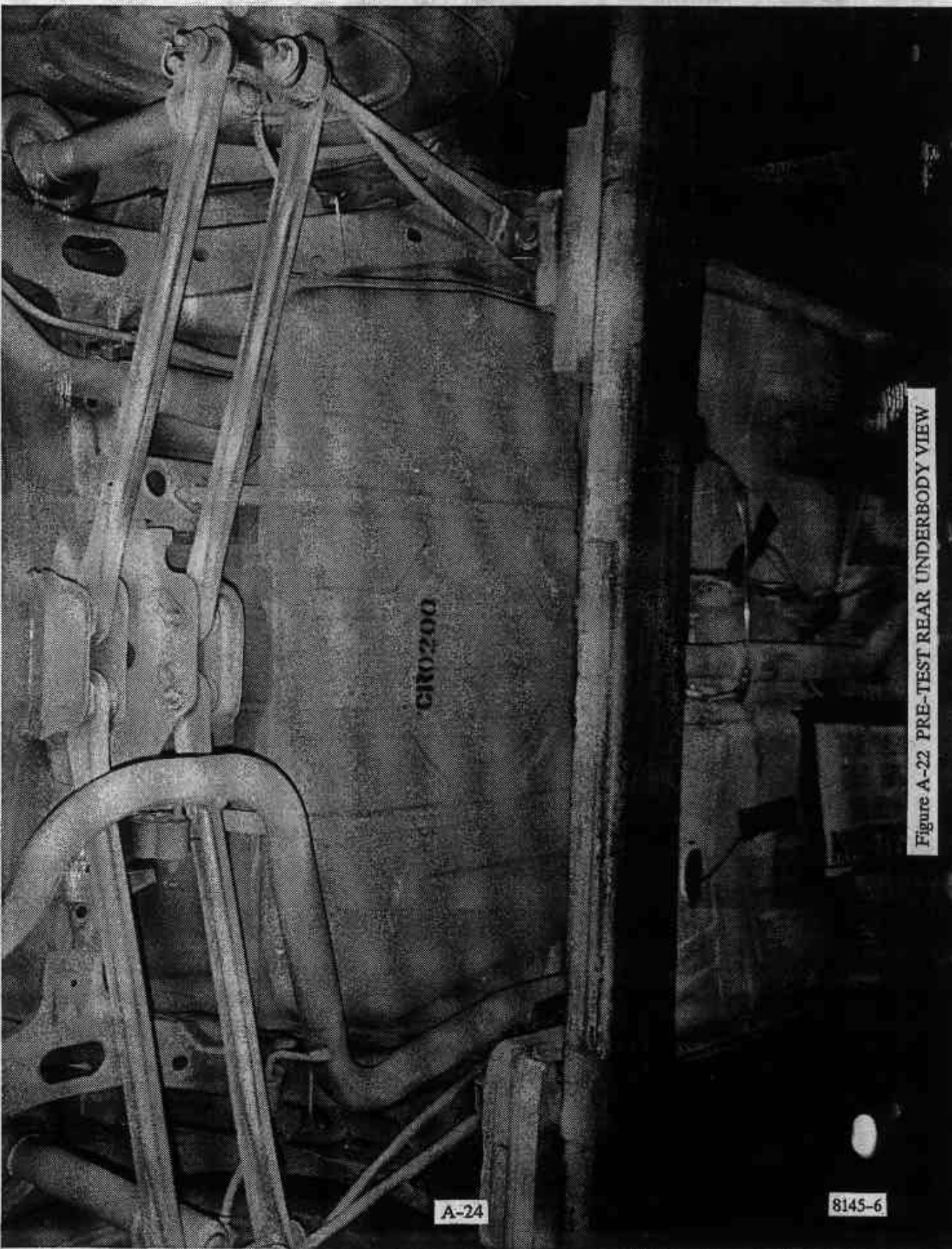


Figure A-22 PRE-TEST REAR UNDERBODY VIEW

A-24

8145-6



Figure A-23 POST-TEST REAR UNDERBODY VIEW

A-25

8145-6

MFD. BY FORD MOTOR CO. IN U.S.A.
 DATE: 09/93
 FRONT GAWR: 1998LB
 REAR GAWR: 1847LB
 GVWR: 3825LB/1734KG
 906KG
 837KG
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
 VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS
 IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 VIN: 1FAAP36X4RK114449
 TYPE: PASSENGER

F0107
 R0168

44

EXTERIOR PAINT COLORS
 BODY | VR | MLDG. | INT TRIM | TAPE | R | S | AX | YR
 GL4 | E | PH | 7 | 6 | 80000
 7 F8CB-58204A10-AB

Figure A-24 CERTIFICATION LABEL

TEMPO/TOPAZ						1
RECOMMENDED TIRE SIZE AND INFLATION PRESSURE (COLD)						
DIMENSIONS DES PNEUS ET PRESSIONS DE COMPLET RECOMMANDEES (A FROID)						
TIRE SIZE DIMENSIONS DES PNEUS	LOAD RANGE CHARGE NOMINALE	PRESSURE INFLATION		FRONT	REAR	
P185/70R14	STD	30 PSI IN/PSI*	207 kPa	30 PSI IN/PSI*	207 kPa	
T125/80D13 TEMPORAL SPARE PNEU DE SECOURS PROVISIONNEL	T	60 PSI IN/PSI*	415 kPa	60 PSI IN/PSI*	415 kPa	
TOTAL * OCCUPANTS PLUS LUGGAGE						
MAXIMUM LOAD						
CHARGE MAXIMALE						
850 lb. / 385 kg	5	TOTAL OCCUPANTS		CHARGE TOTALE * OCCUPANTS PLUS BAGAGES		
		TOTAL OCCUPANTS		DISTRIBUTION REPARTITION		
				FRONT	REAR	
				2	3	
				LUGGAGE BAGS		
				100 lb. / 45 kg		
* FOR SURTANDED HIGH-SPEED TRAILER TOWING, RECREATIONAL ACCESSORIES, OR TRAILERS, SHAW INFORMATION SEE OWNER'S MANUAL. * POUR LES VEHICULES SOUTERRAINS, ACCESSOIRES DE LOISIRS, PARTI DE SECOURS PROVISIONNEL, INFORMATION EN ACCORD AVEC LE MANUEL.						

Figure A-25 TIRE PLACARD

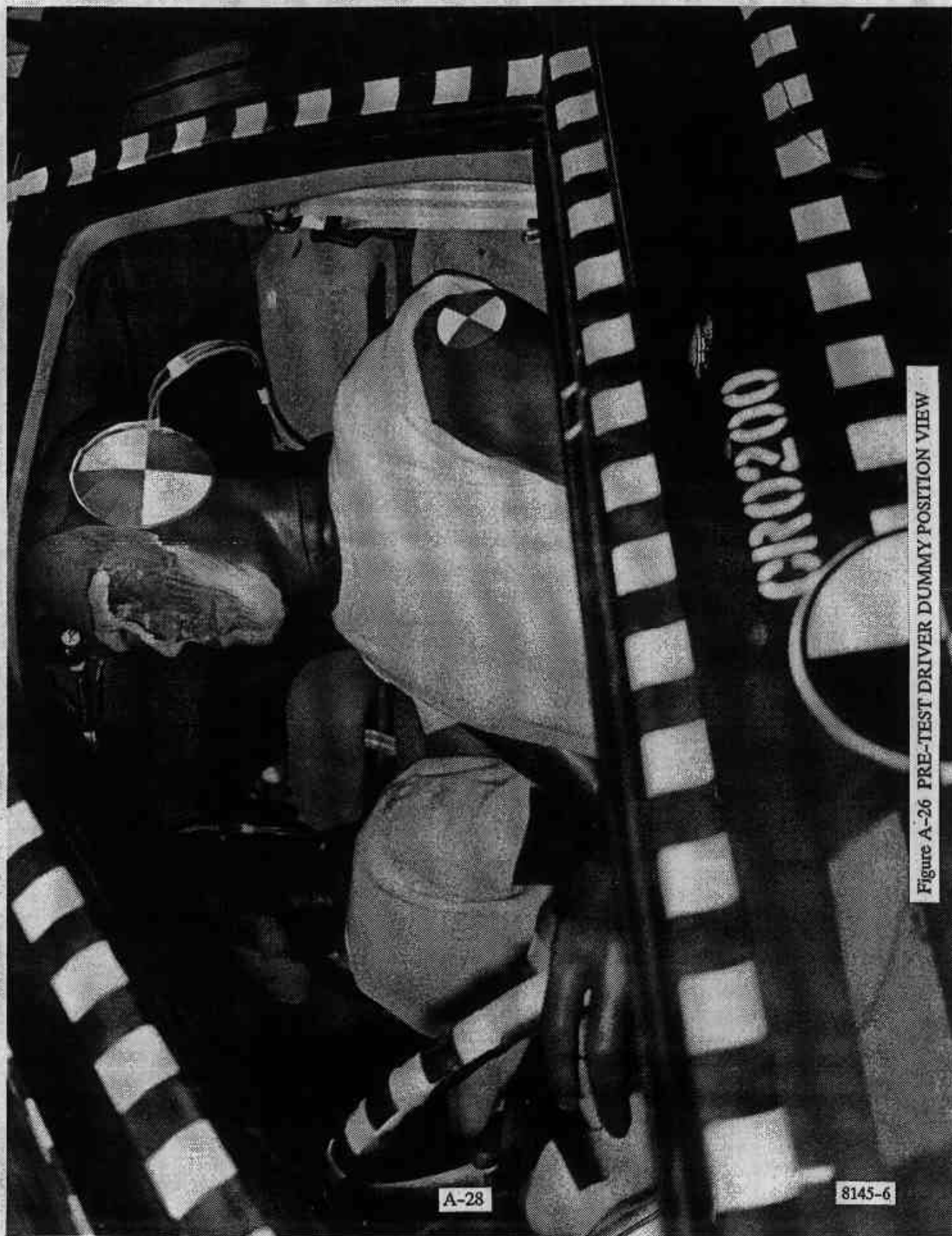


Figure A-26 PRE-TEST DRIVER DUMMY POSITION VIEW

A-28

8145-6

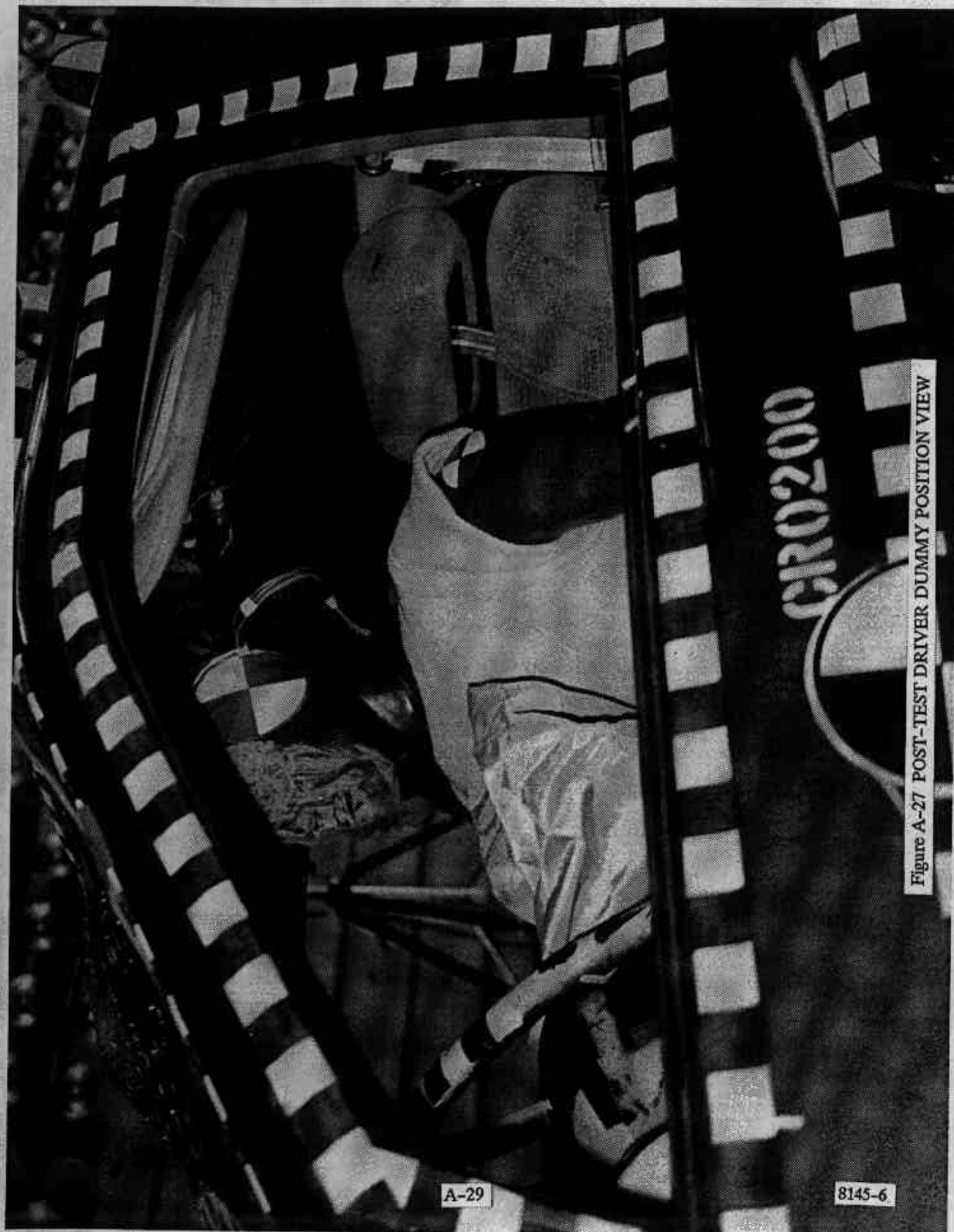


Figure A-27 POST-TEST DRIVER DUMMY POSITION VIEW

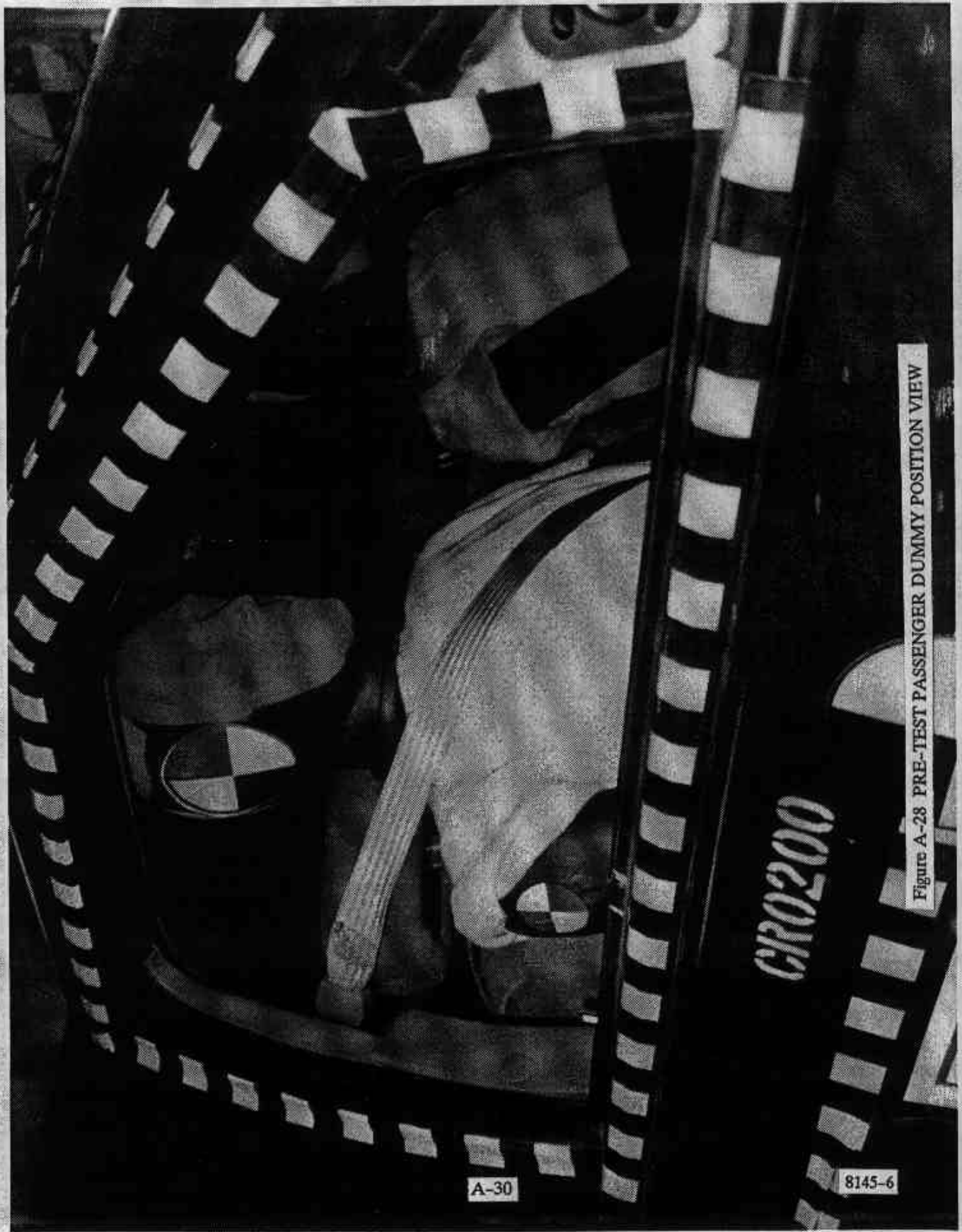


Figure A-28 PRE-TEST PASSENGER DUMMY POSITION VIEW

A-30

8145-6



Figure A-29 POST-TEST PASSENGER DUMMY POSITION VIEW

A-31

8145-6

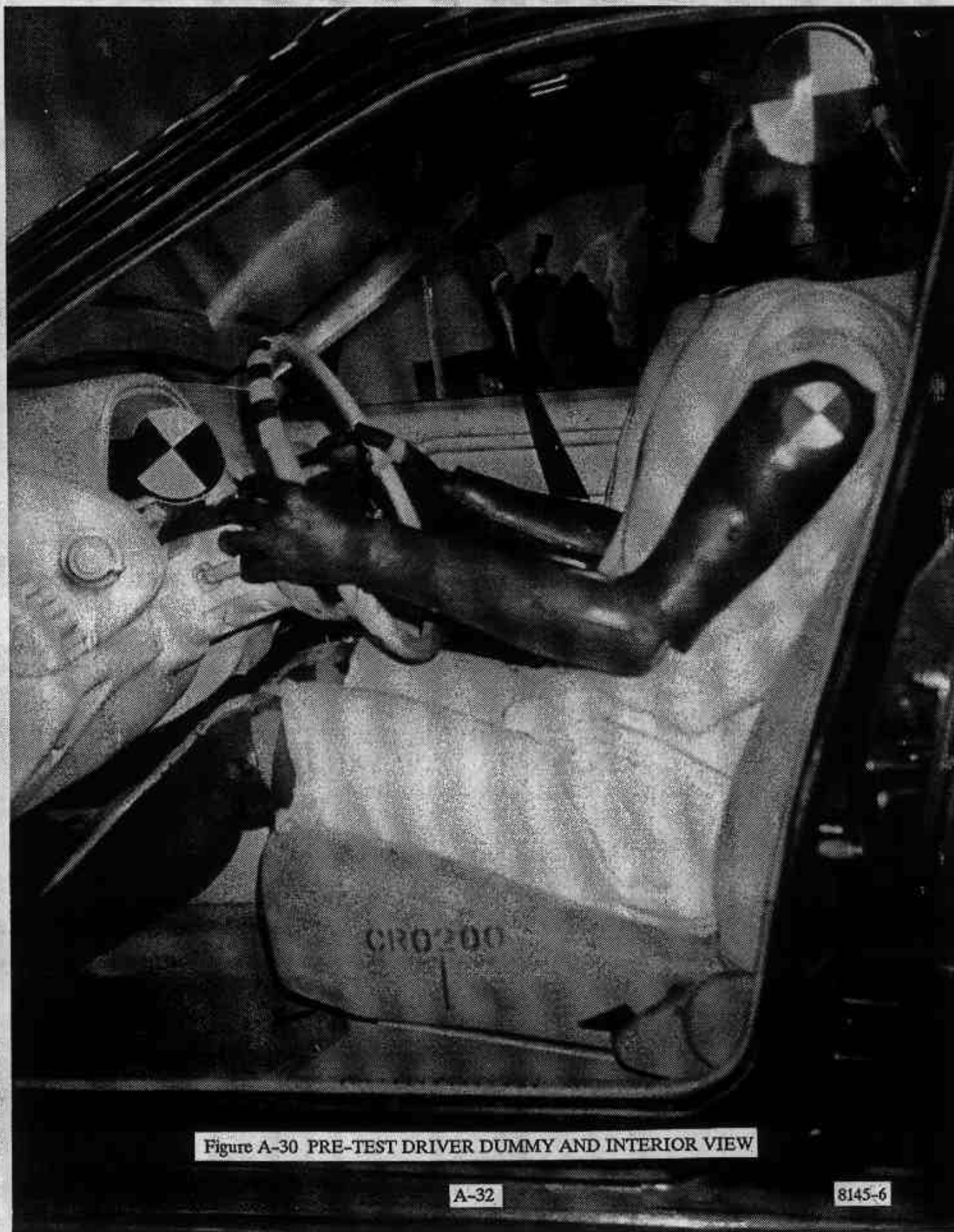


Figure A-30 PRE-TEST DRIVER DUMMY AND INTERIOR VIEW

A-32

8145-6

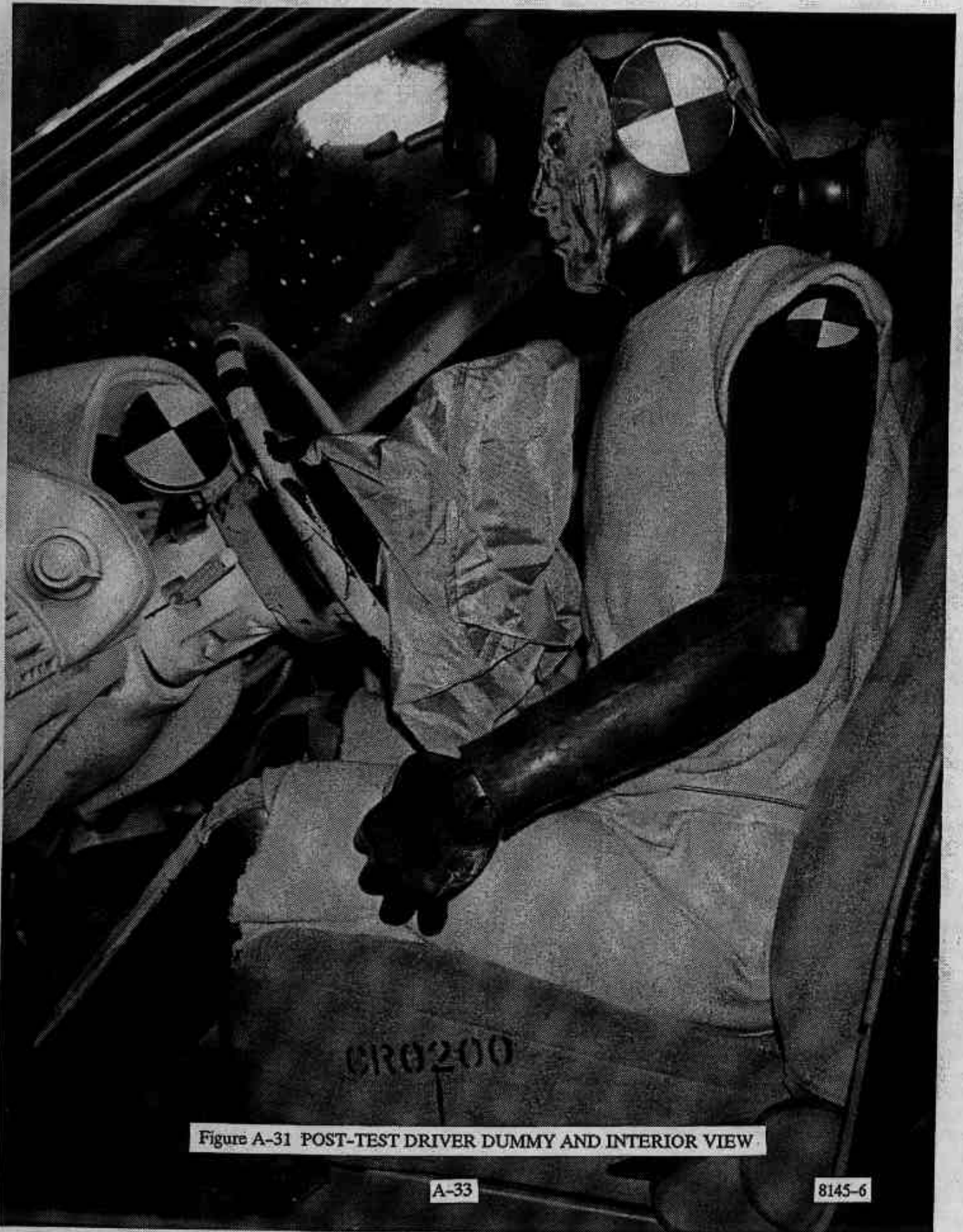


Figure A-31 POST-TEST DRIVER DUMMY AND INTERIOR VIEW

A-33

8145-6



Figure A-32 PRE-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-34

8145-6

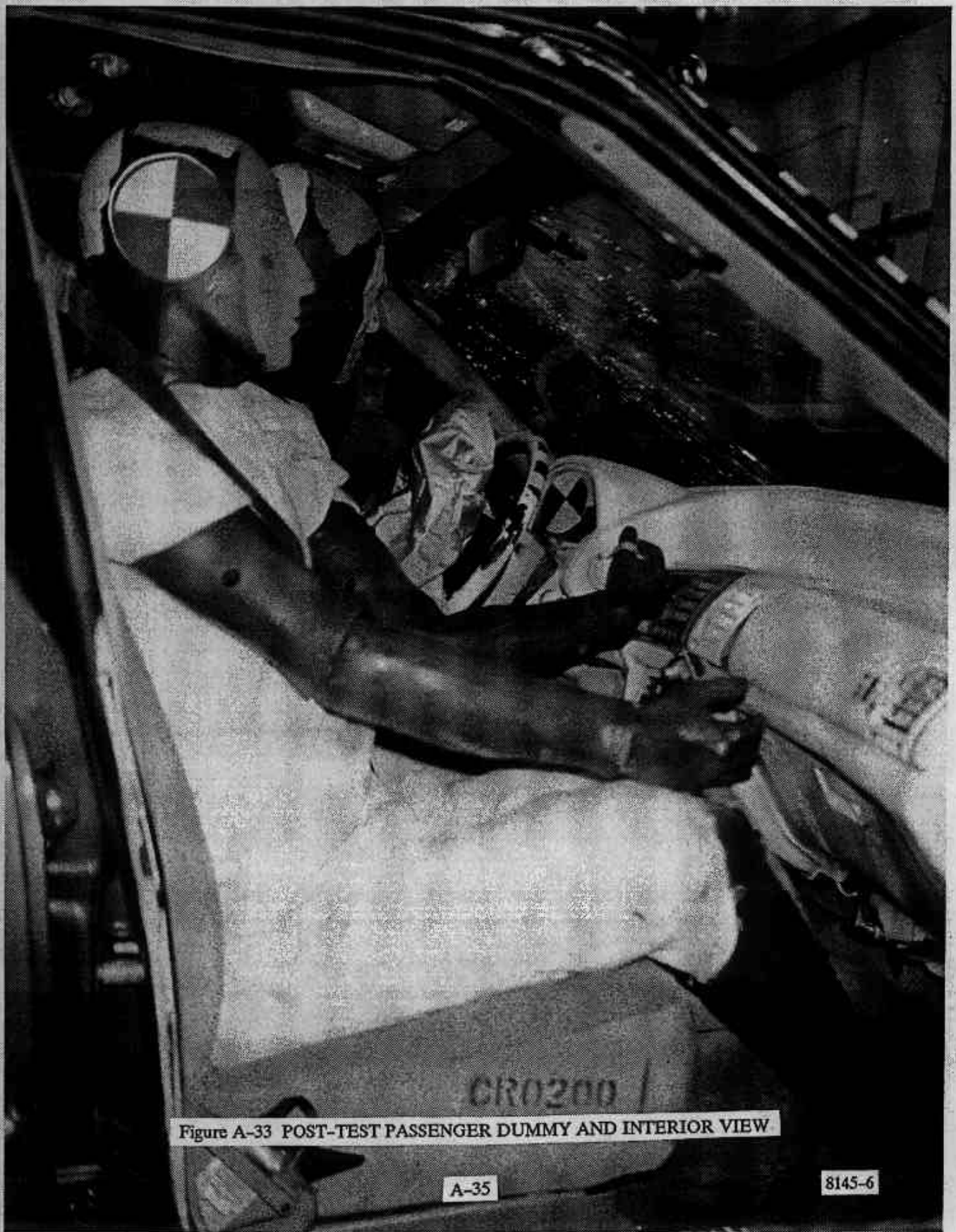


Figure A-33 POST-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-35

8145-6

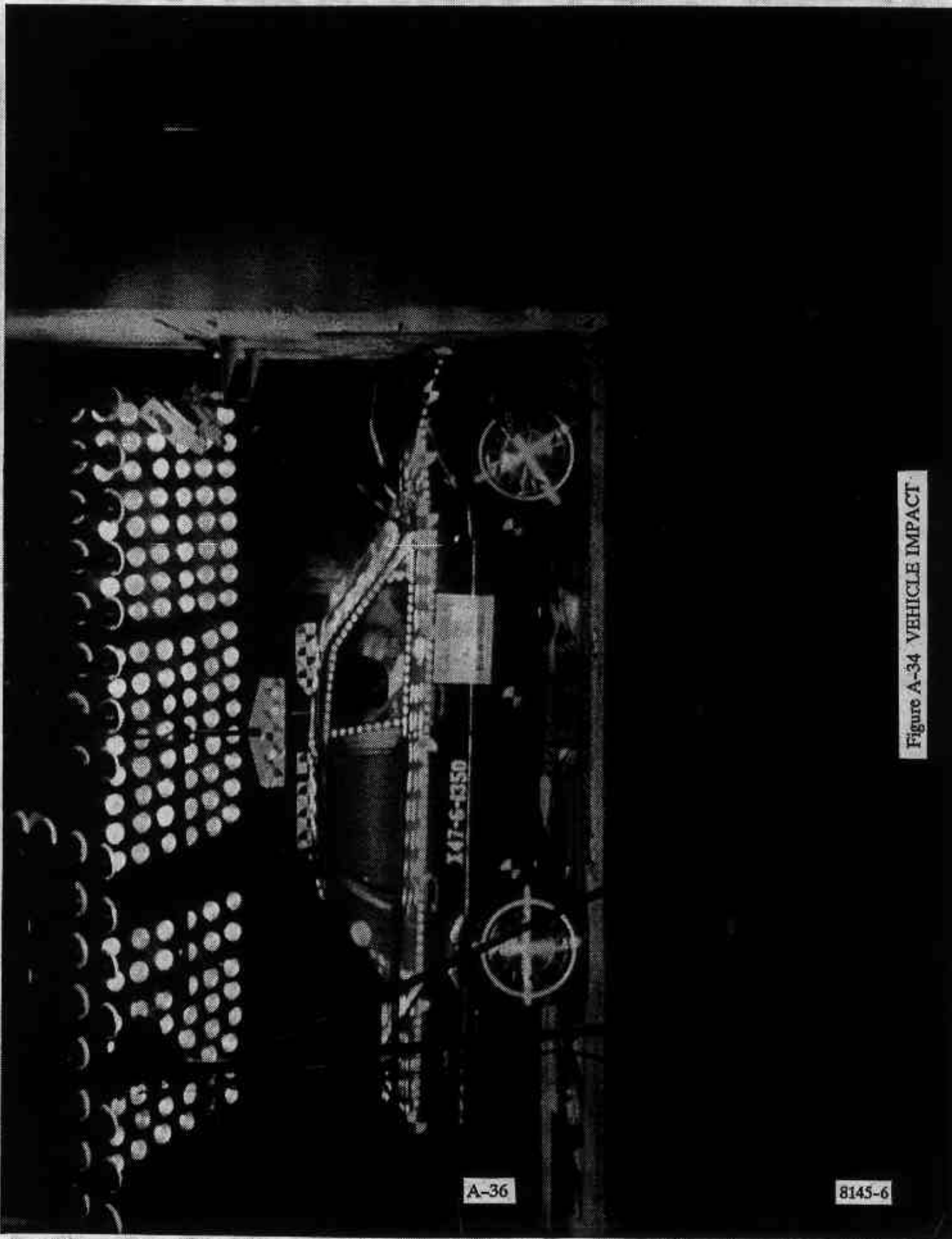


Figure A-34 VEHICLE IMPACT



Figure A-35 POST-TEST AIRBAG VIEW

A-37

8145-6



Figure A-36 POST-TEST INTERIOR CONTACT POINTS

A-38

8145-6

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CR0200

VEHICLE

SAE FILTER CHANNEL CLASS

60

FACILITY: TRACK
RUN #: 1352
SERIES #: 6

TEST DATE: 08 Dec 1993
TEST TIME: 12:05:37
BOARD: b

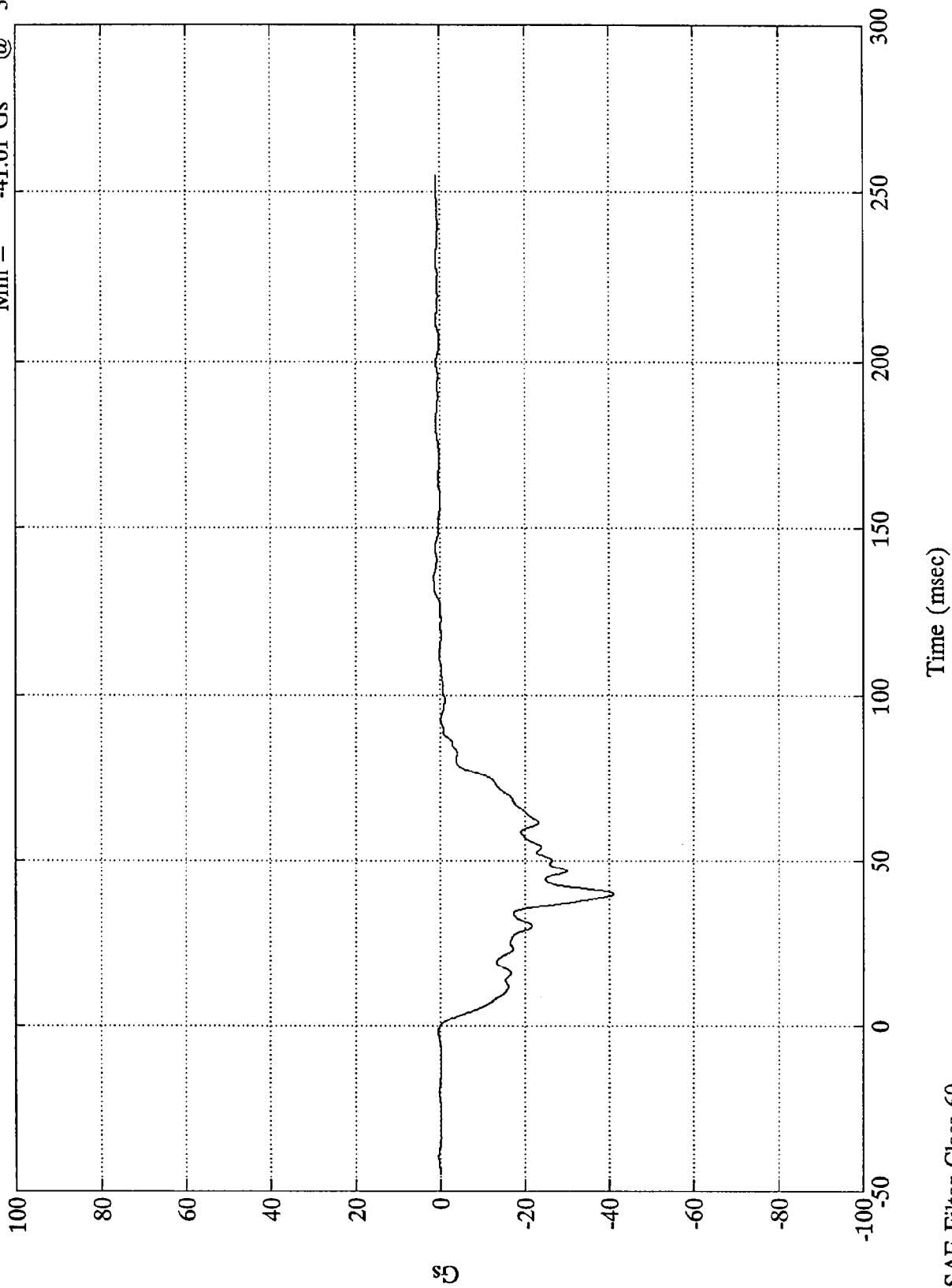
TITLE: NHTSA 208 TEST #6 - 1994 Ford Tempo GL

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	L. Rear X-member X (#1)	Gs	1.6	134.6	-41.0	39.6	60.0
2	R. Rear X-member X (#2)	Gs	2.1	132.2	-42.9	39.8	60.0
3	Engine Top X (#3)	Gs	58.2	44.5	-131.2	26.8	60.0
4	Engine Bottom X (#4)	Gs	35.4	42.7	-104.8	27.5	60.0
5	R. Brake Caliper X (#5)	Gs	19.2	55.2	-92.1	25.0	60.0
6	L. Brake Caliper X (#6)	Gs	27.2	48.4	-82.0	34.4	60.0
7	Instrument Panel X (#7)	Gs	33.8	93.2	-61.6	70.4	60.0

NHTSA 208 TEST #6 - 1994 Ford Tempo GL

L. Rear X-member X (#1)

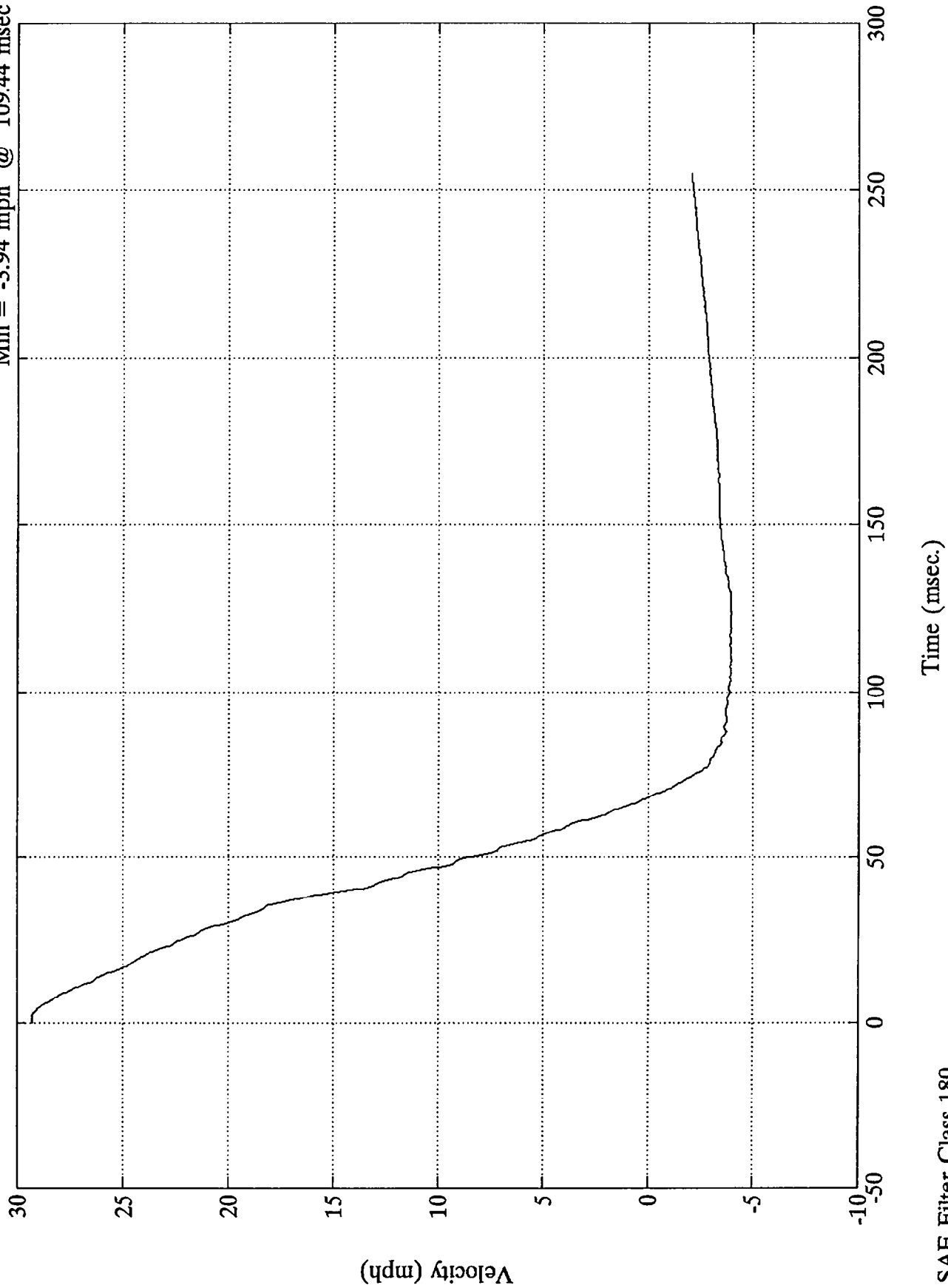
Max = 1.60 Gs @ 134.64 msec
Min = -41.01 Gs @ 39.59 msec



SAE Filter Class 60

L. Rear X-member X (#1)

Max = 29.31 mph @ 1.68 msec
Min = -3.94 mph @ 109.44 msec

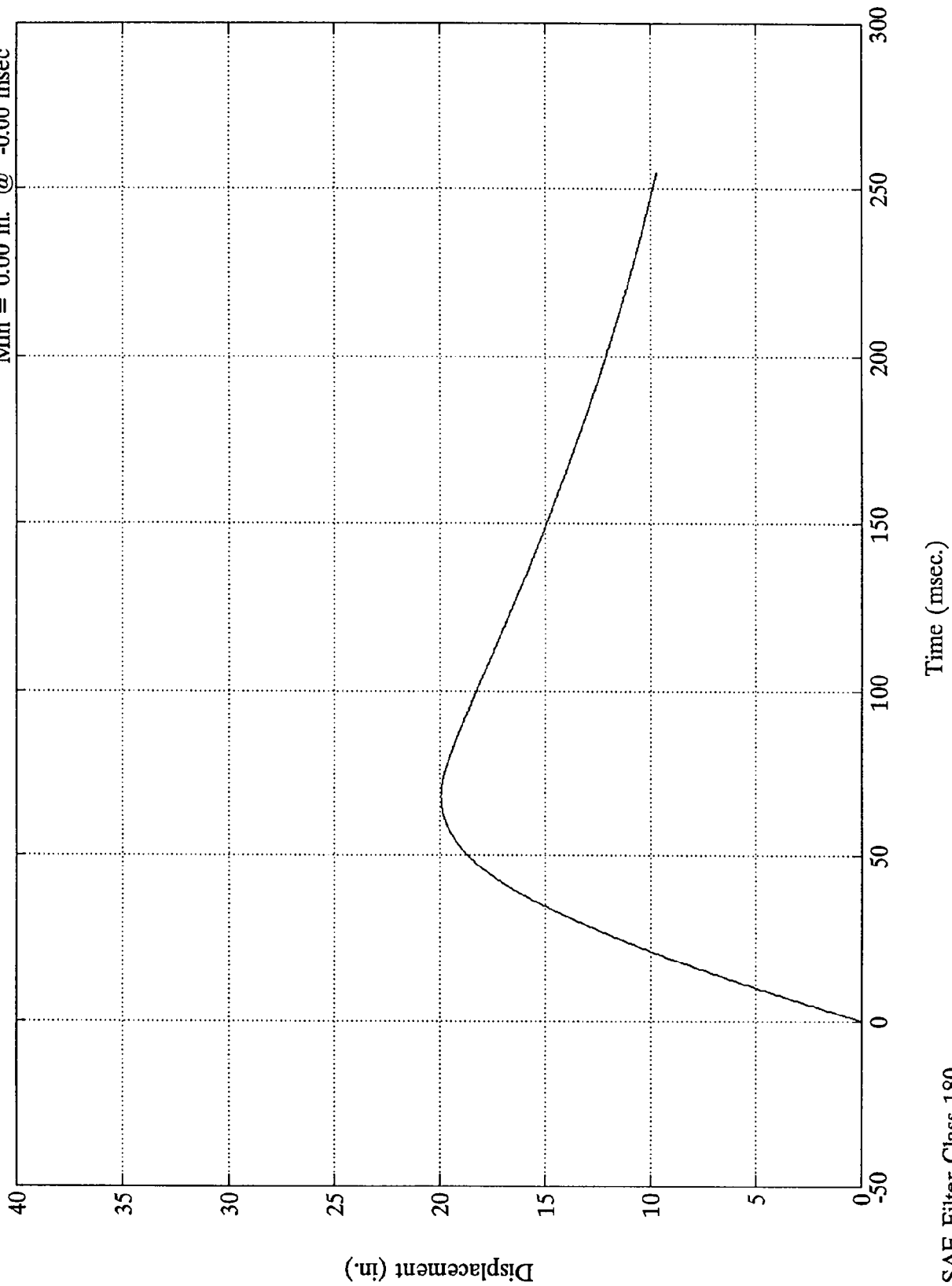


SAE Filter Class 180

FMVSS 208 Test 6 - 1994 Ford Tempo GL

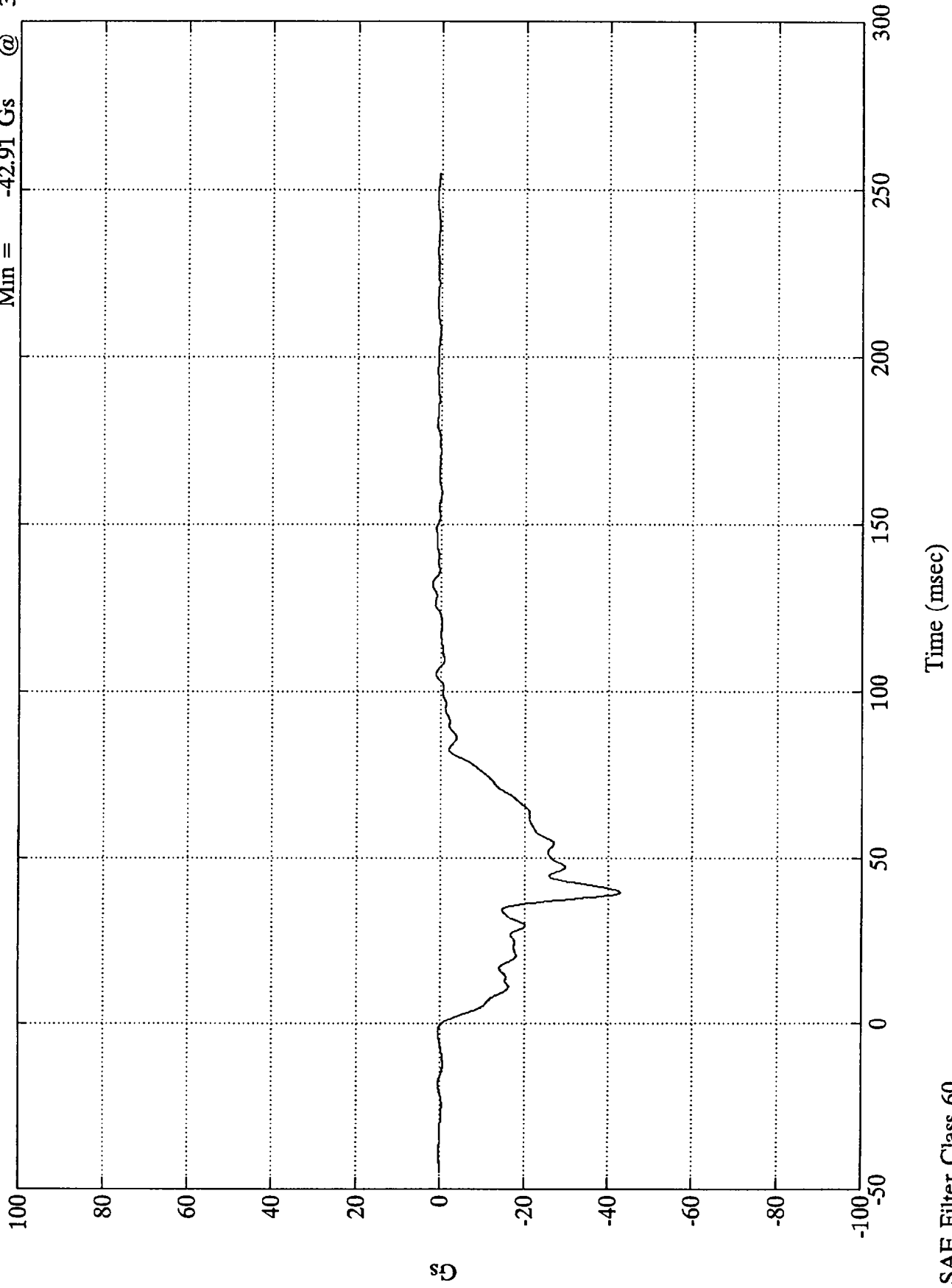
L. Rear X-member X (#1)

Max = 19.94 in. @ 68.16 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

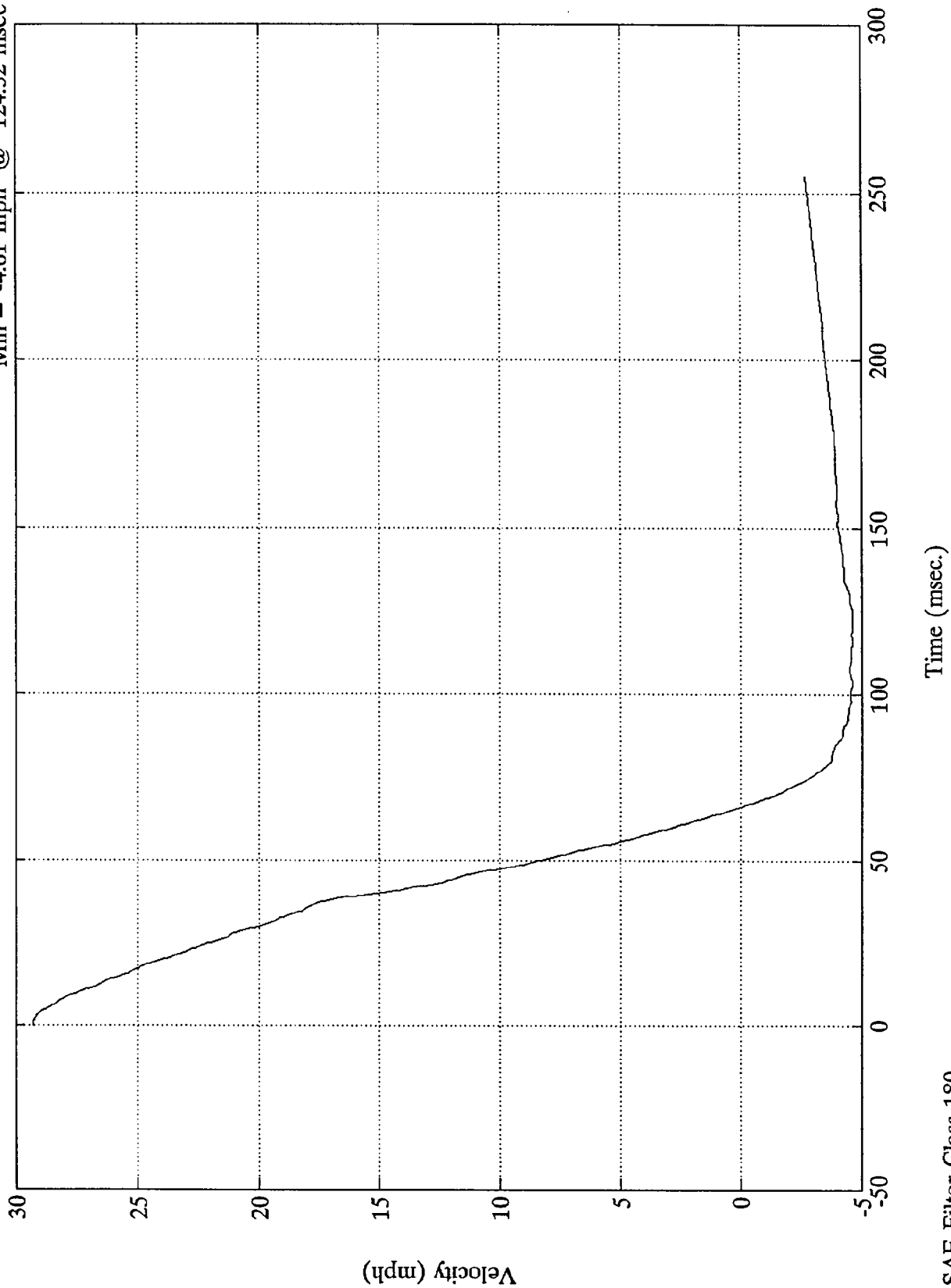
R. Rear X-member X (#2)
Max = 2.10 Gs @ 132.23 msec
Min = -42.91 Gs @ 39.84 msec



FMVSS 208 Test 6 - 1994 Ford Tempo GL

R. Rear X-member X (#2)

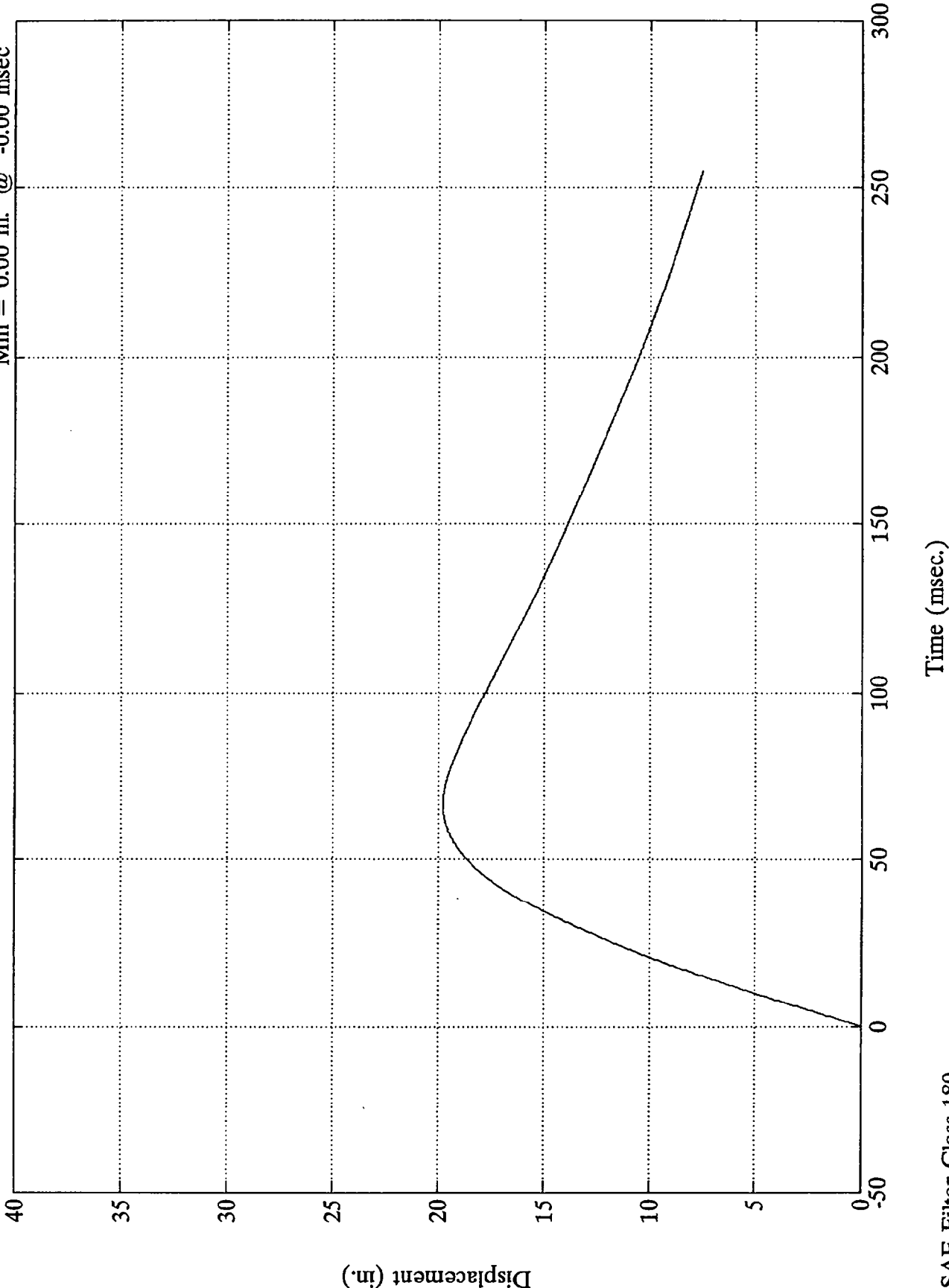
Max = 29.30 mph @ 0.72 msec
Min = -4.61 mph @ 124.32 msec



SAE Filter Class 180

R. Rear X-member X (#2)

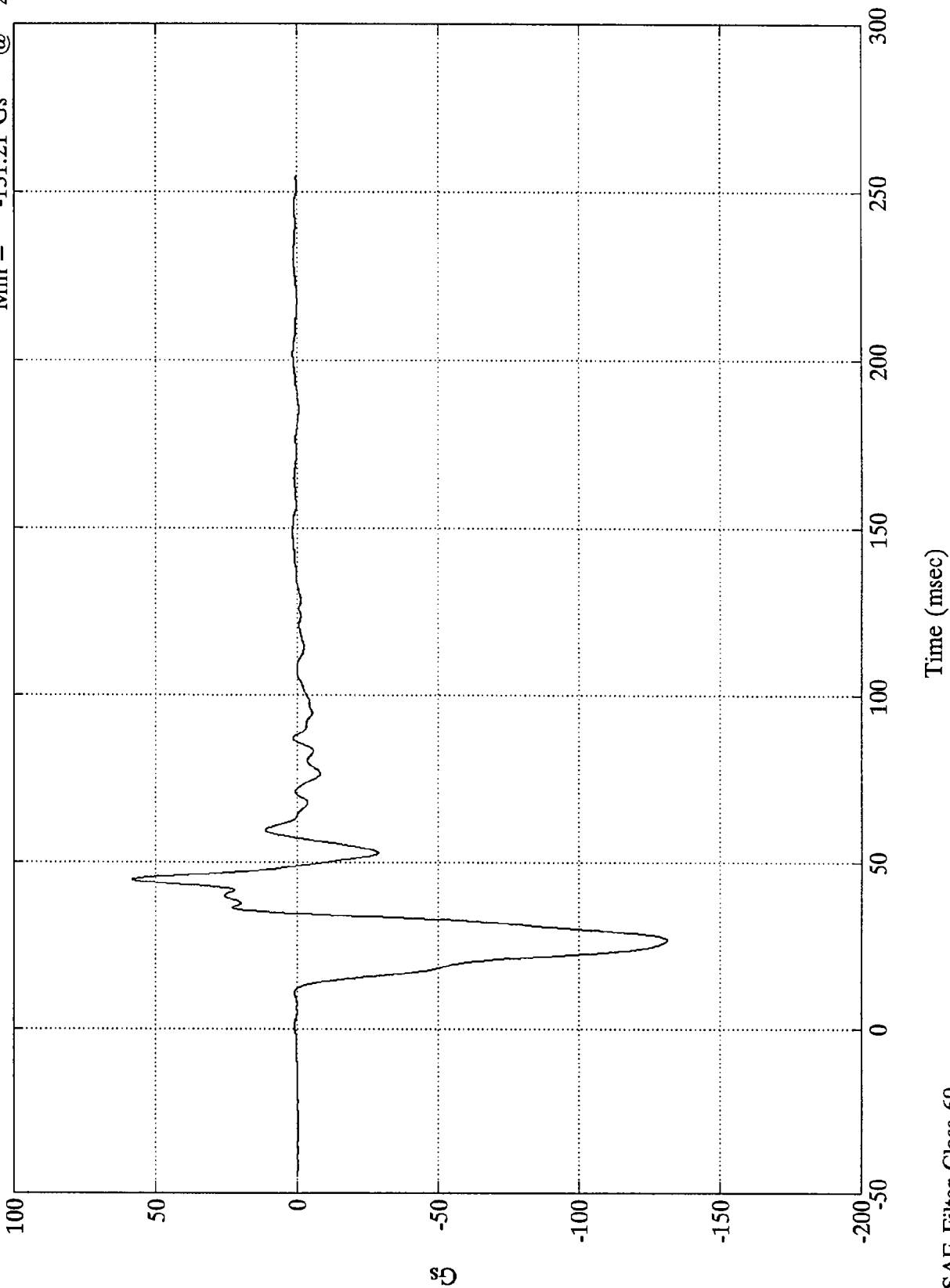
Max = 19.79 in. @ 67.68 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

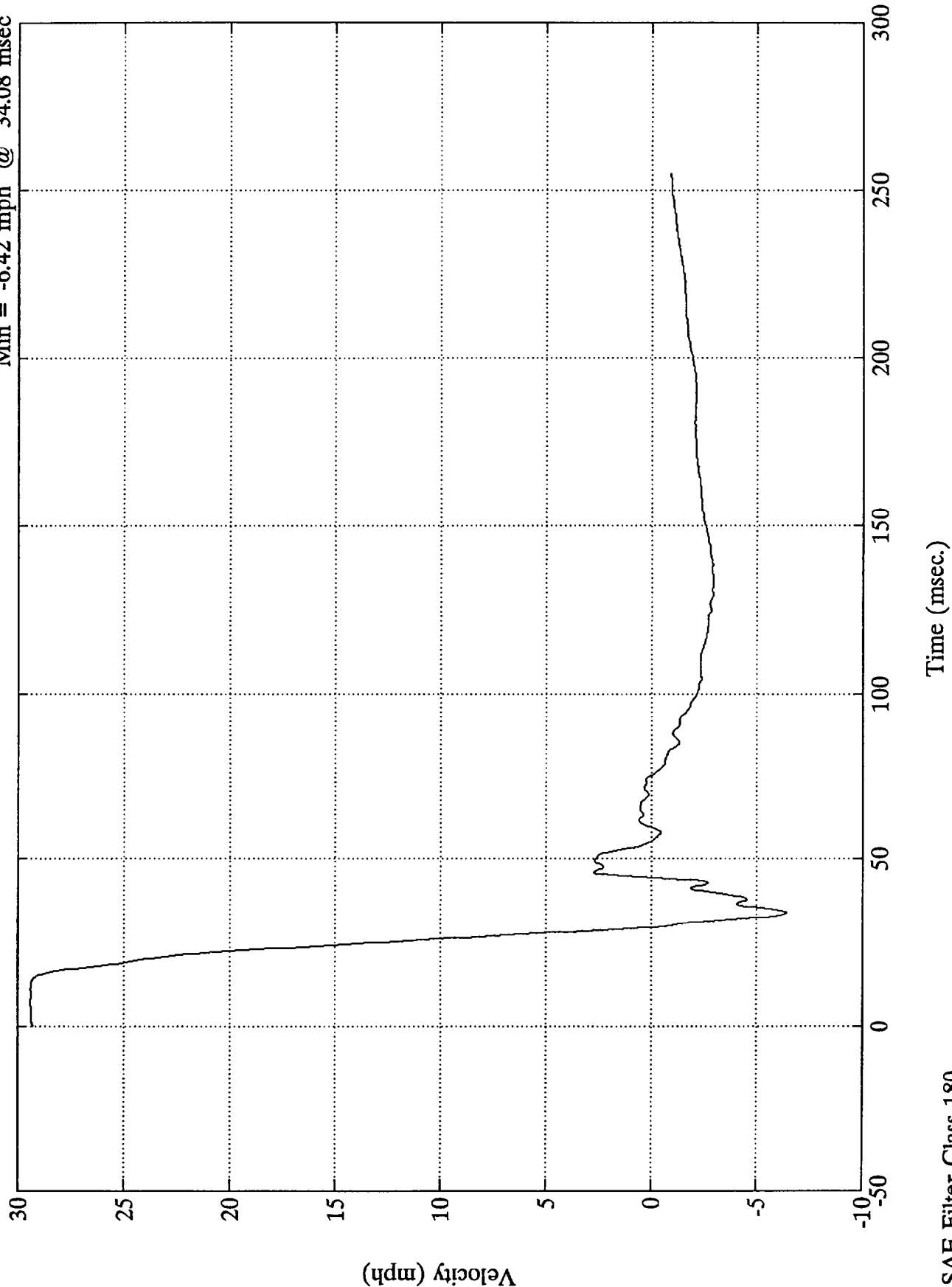
NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Engine Top X (#3)
Max = 58.24 Gs @ 44.52 msec
Min = -131.21 Gs @ 26.75 msec



SAE Filter Class 60

Engine Top X (#3)
Max = 29.41 mph @ 7.68 msec
Min = -6.42 mph @ 34.08 msec

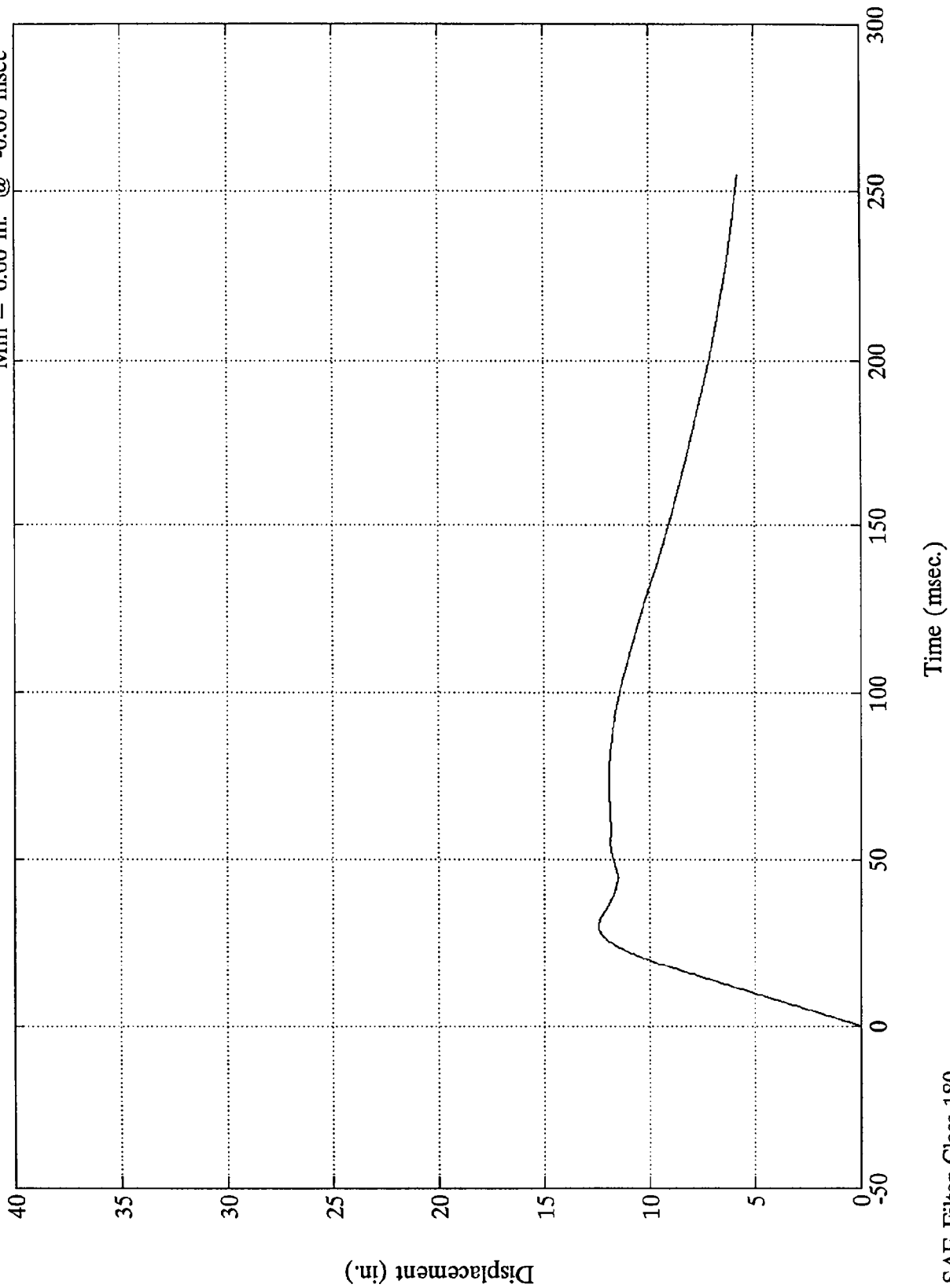


SAE Filter Class 180

FMVSS 208 Test 6 - 1994 Ford Tempo GL

Engine Top X (#3)

Max = 12.39 in. @ 30.48 msec
Min = 0.00 in. @ -0.00 msec

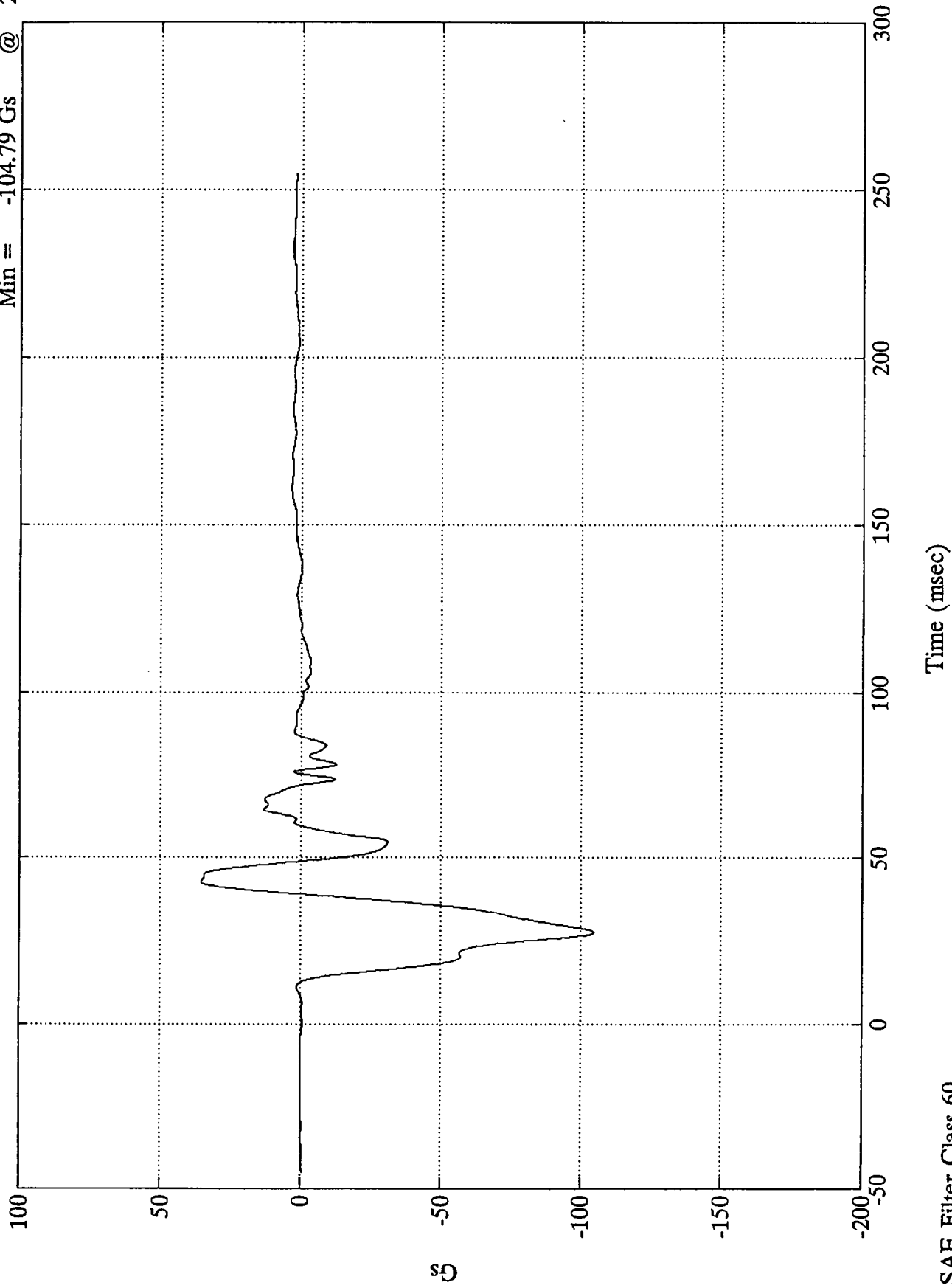


SAE Filter Class 180

Engine Bottom X (#4)

Max = 35.39 Gs
Min = -104.79 Gs

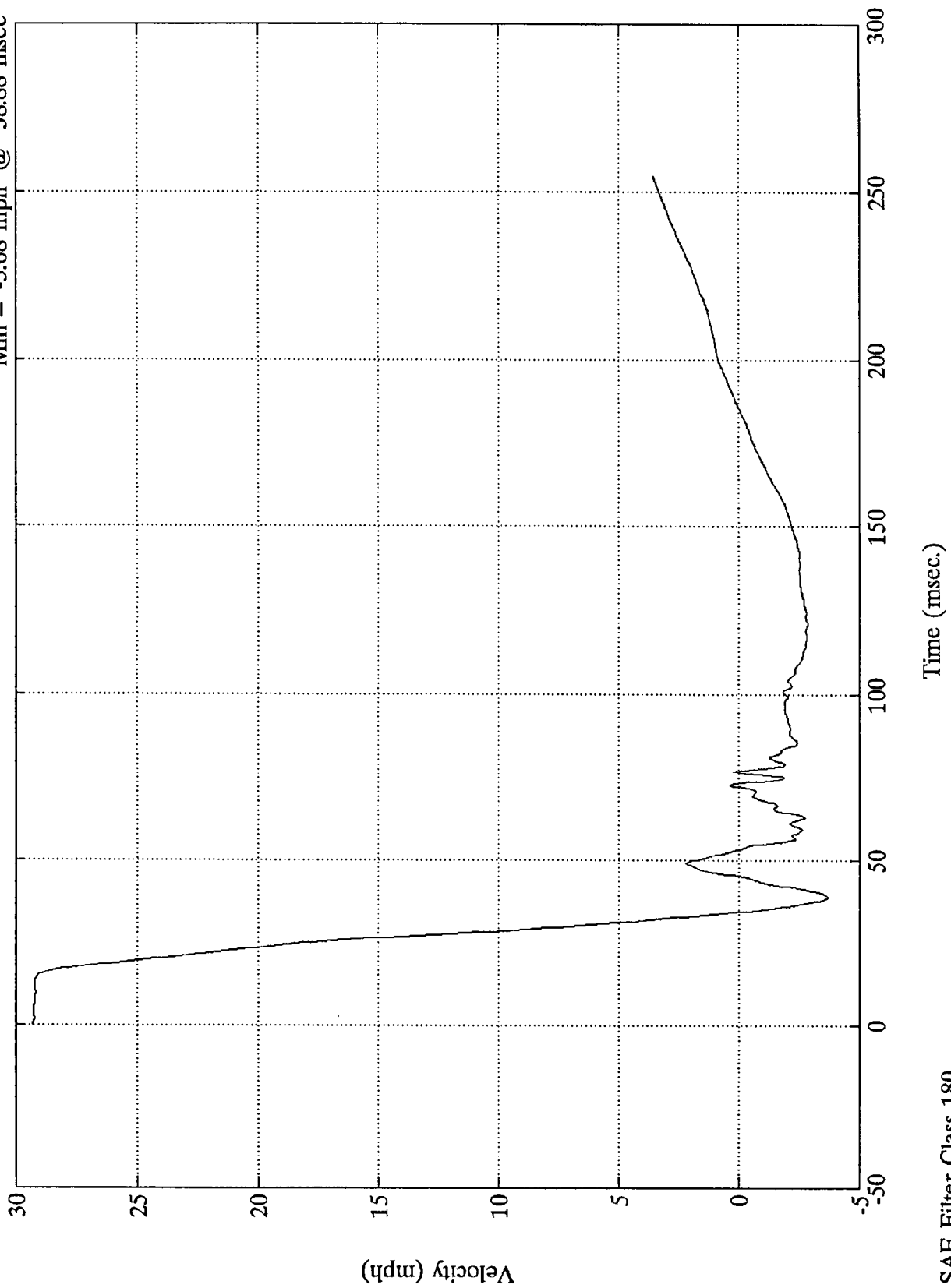
@ 42.72 msec
@ 27.48 msec



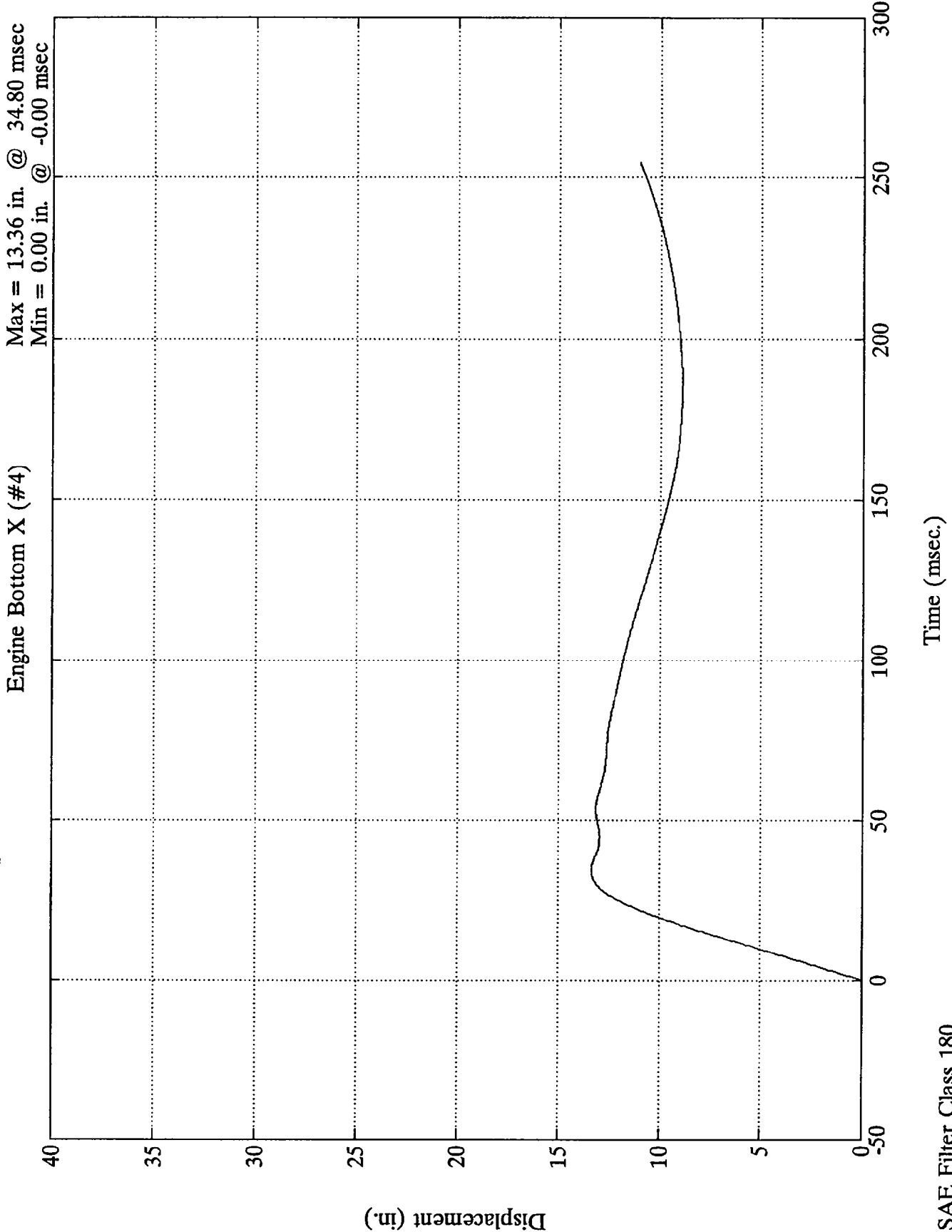
SAE Filter Class 60

FMVSS 208 Test 6 - 1994 Ford Tempo GL

Engine Bottom X (#4)
Max = 29.30 mph @ 0.24 msec
Min = -3.68 mph @ 38.88 msec



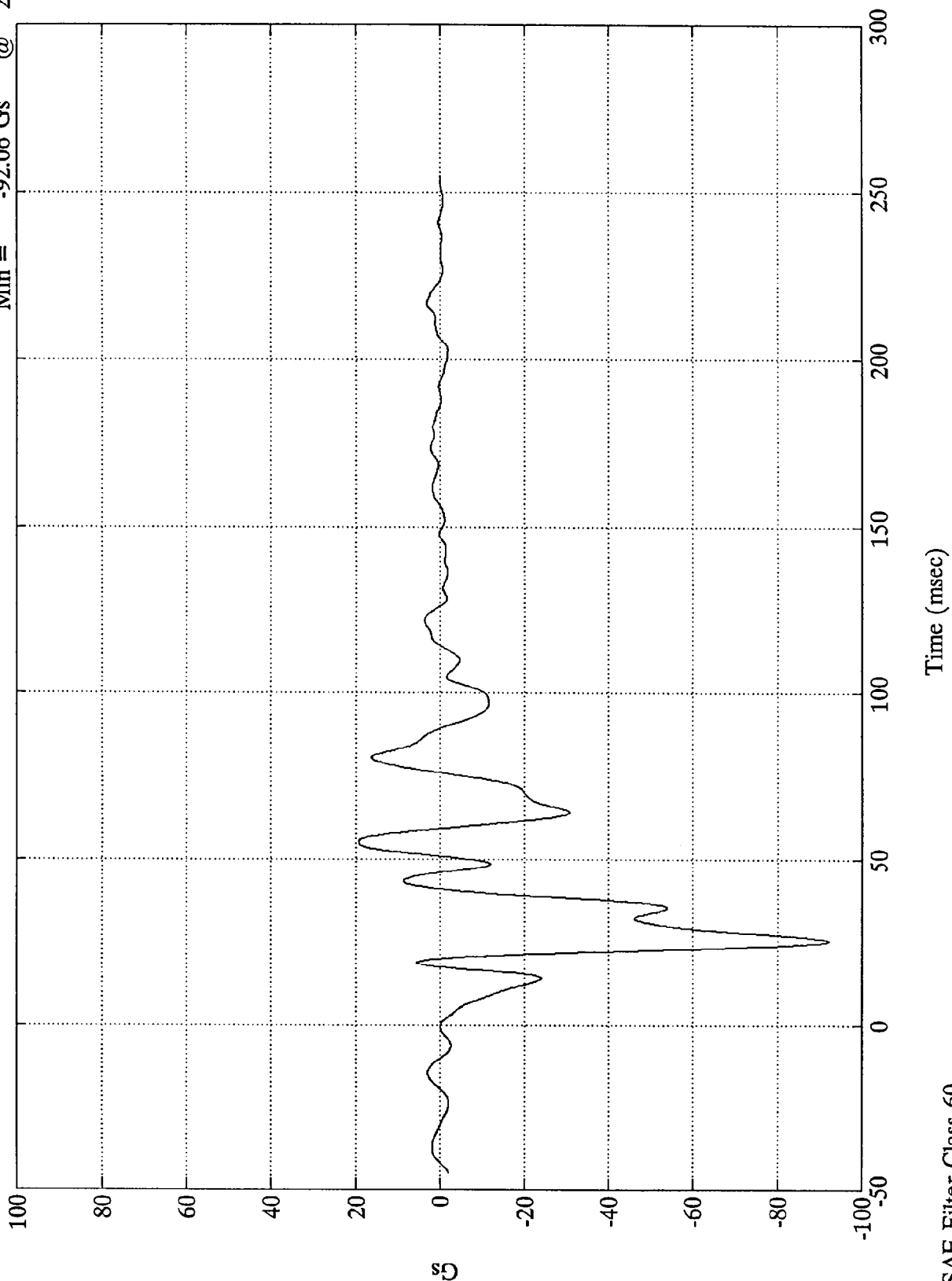
SAE Filter Class 180



NHTSA 208 TEST #6 - 1994 Ford Tempo GL

R. Brake Caliper X (#5)

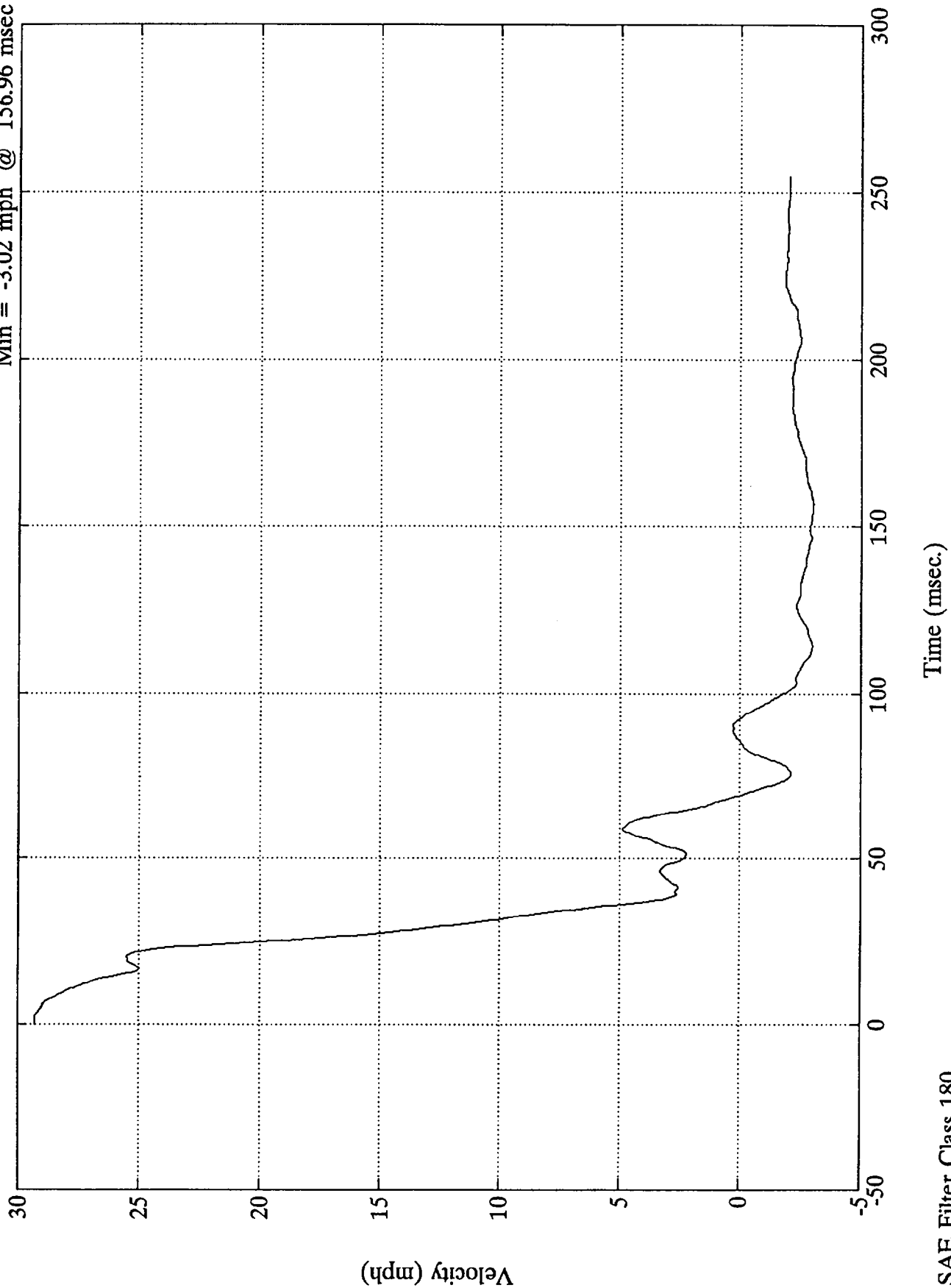
Max = 19.23 Gs @ 55.20 msec
Min = -92.06 Gs @ 24.96 msec



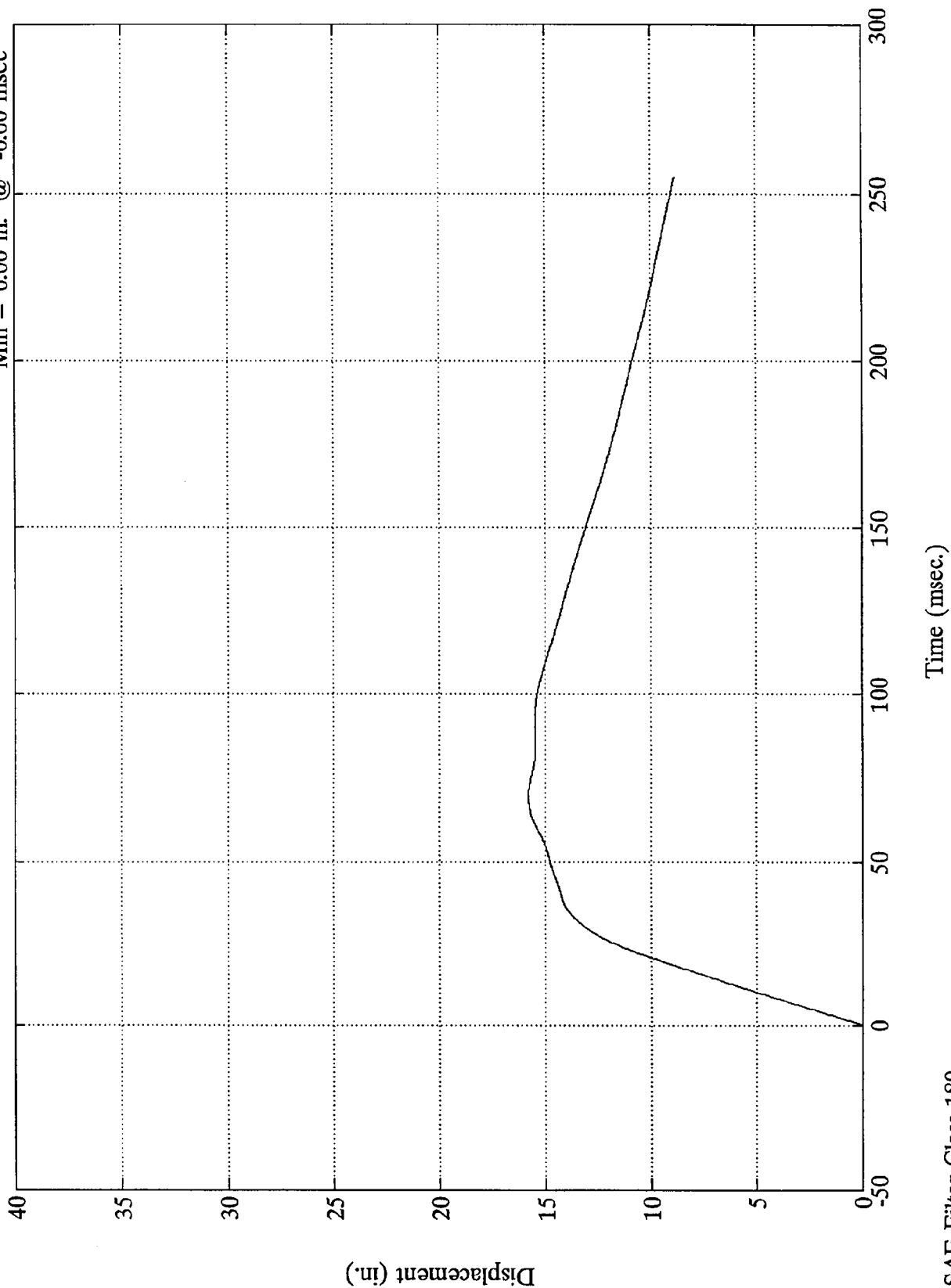
SAE Filter Class 60

R. Brake Caliper X (#5)

Max = 29.30 mph @ 2.16 msec
Min = -3.02 mph @ 156.96 msec

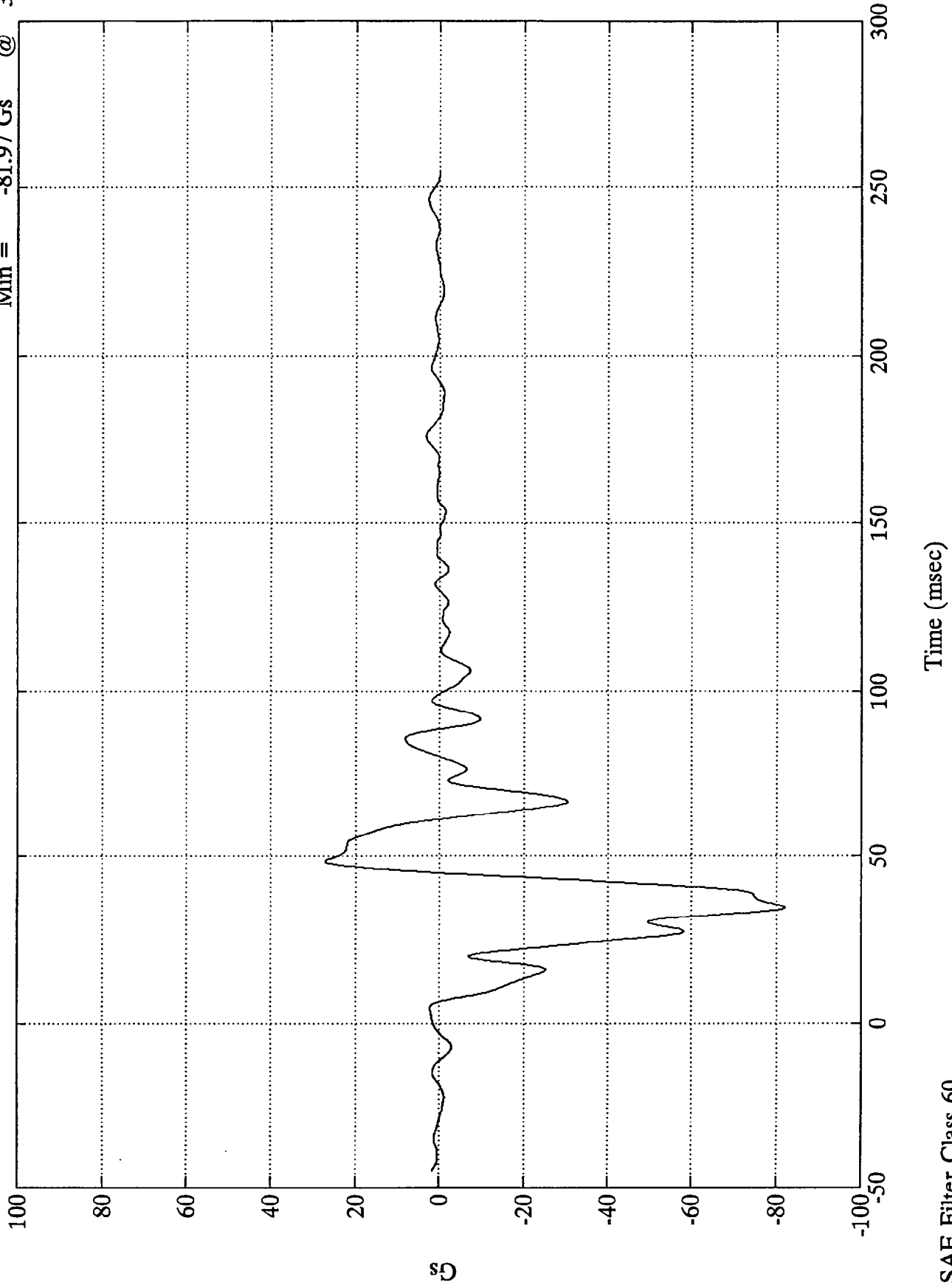


SAE Filter Class 180



L. Brake Caliper X (#6)

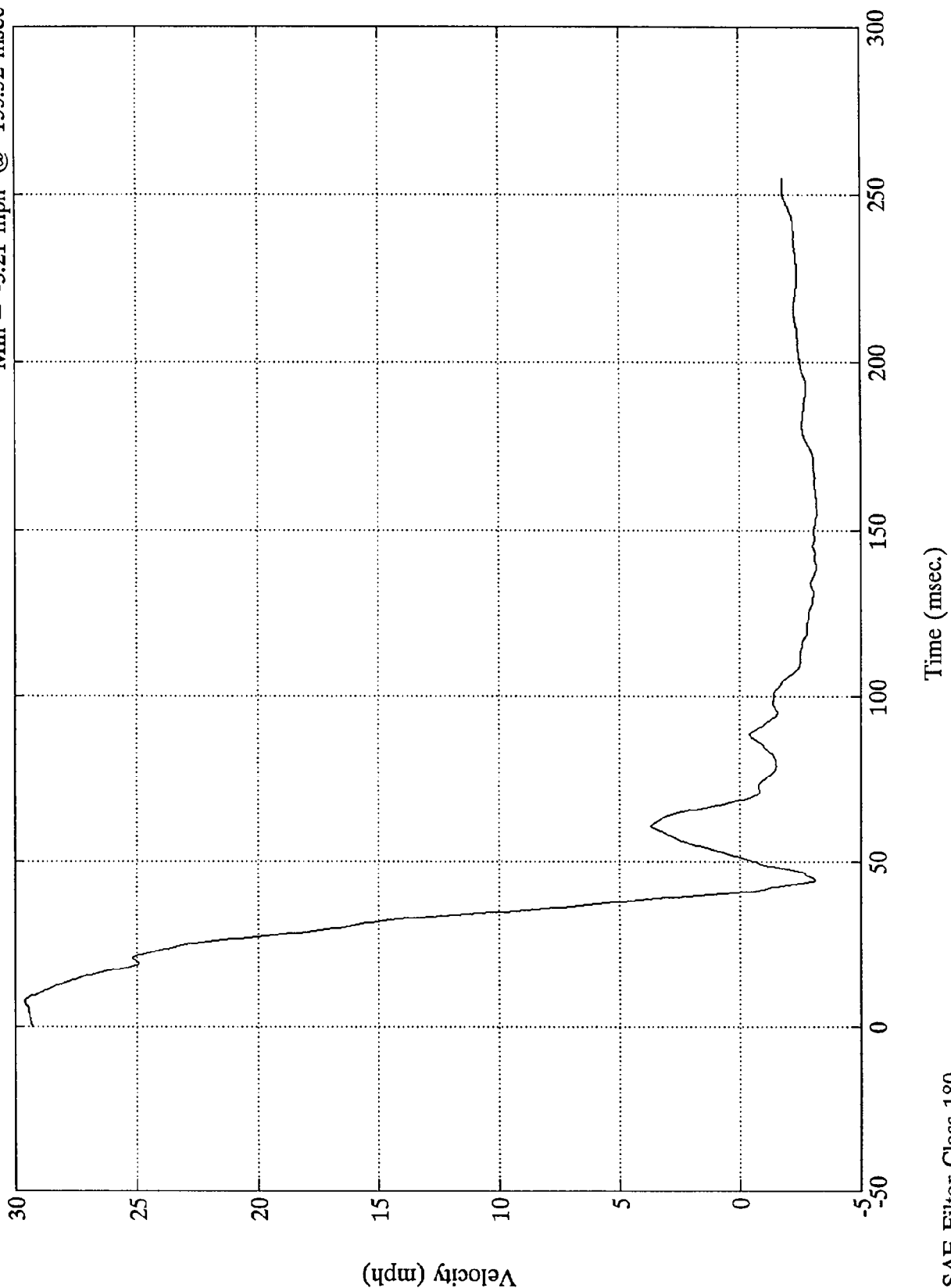
Max = 27.20 Gs @ 48.36 msec
Min = -81.97 Gs @ 34.43 msec



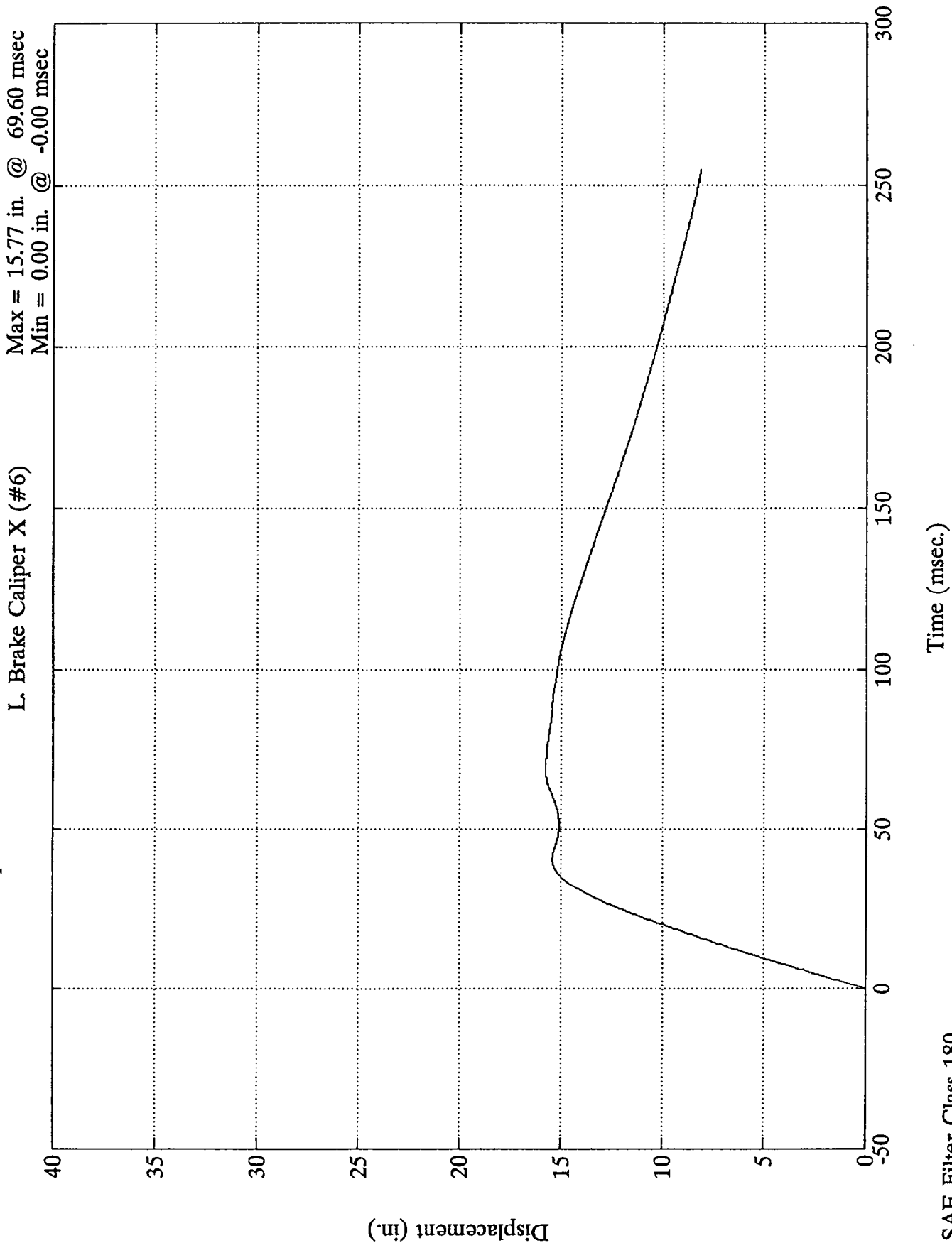
SAE Filter Class 60

FMVSS 208 Test 6 - 1994 Ford Tempo GL

L. Brake Caliper X (#6)
Max = 29.62 mph @ 7.44 msec
Min = -3.21 mph @ 155.52 msec



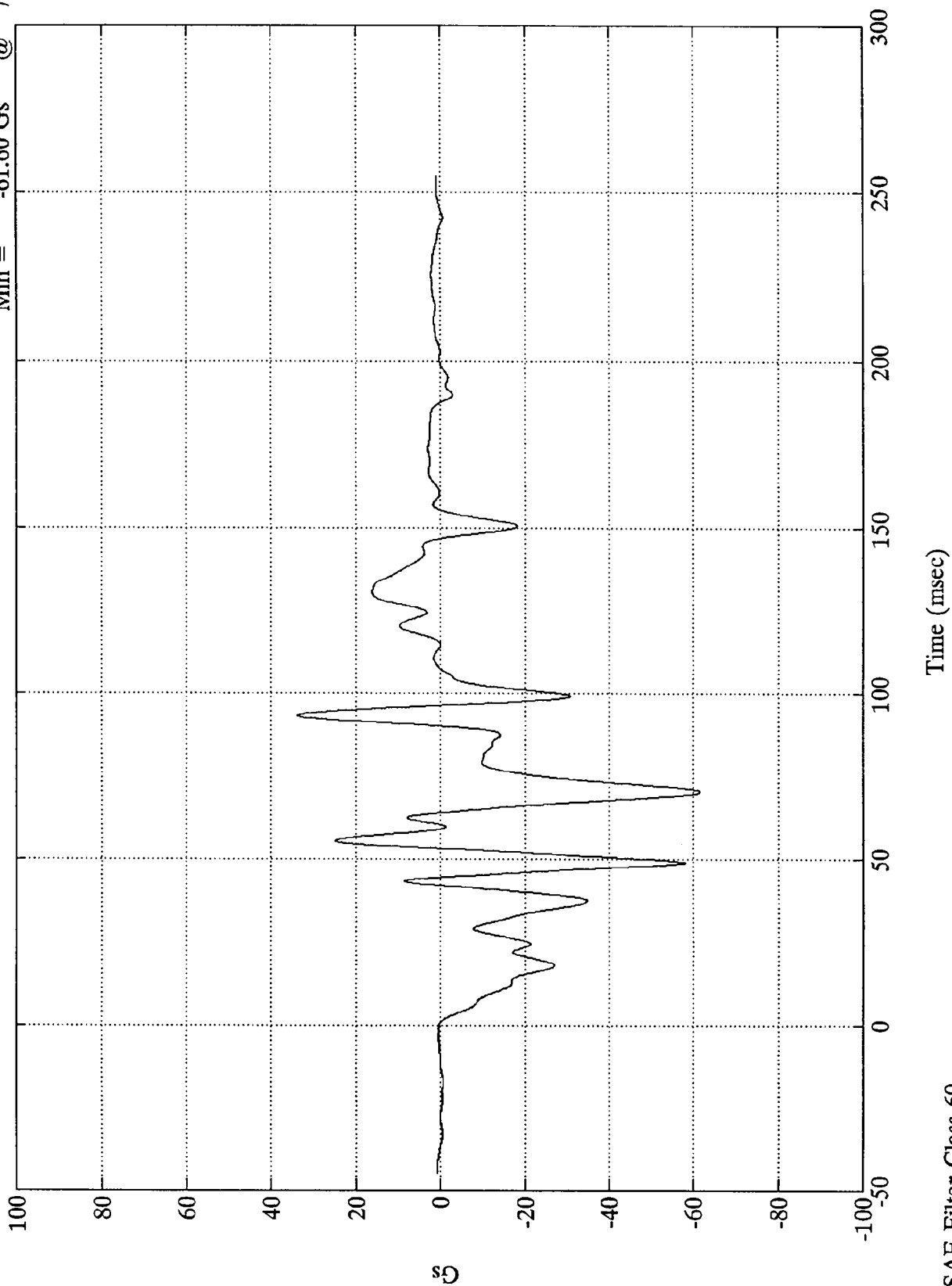
SAE Filter Class 180



NHTSA 208 TEST #6 - 1994 Ford Tempo GL

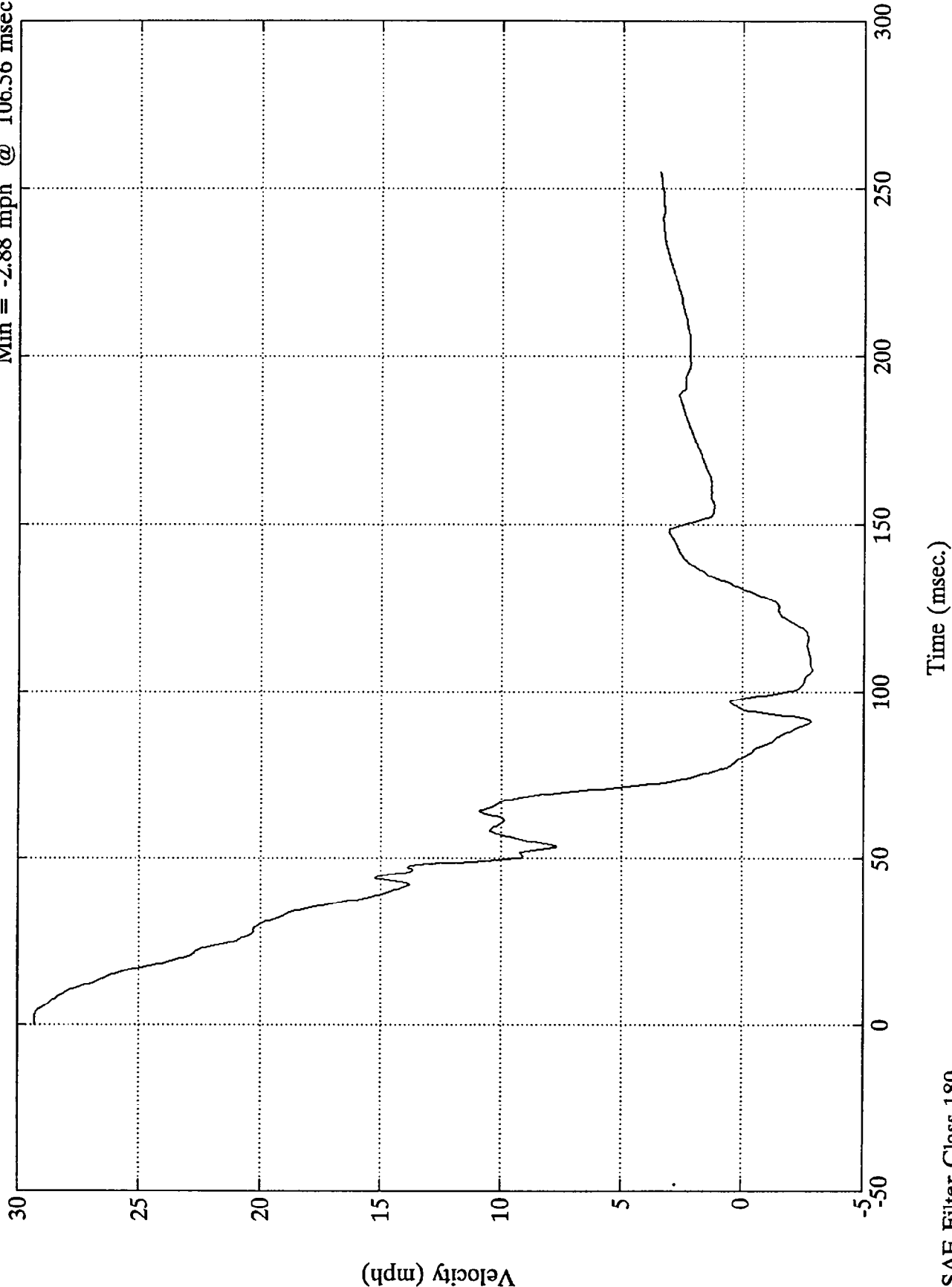
Instrument Panel X (#7)

Max = 33.81 Gs @ 93.23 msec
 Min = -61.60 Gs @ 70.44 msec



SAE Filter Class 60

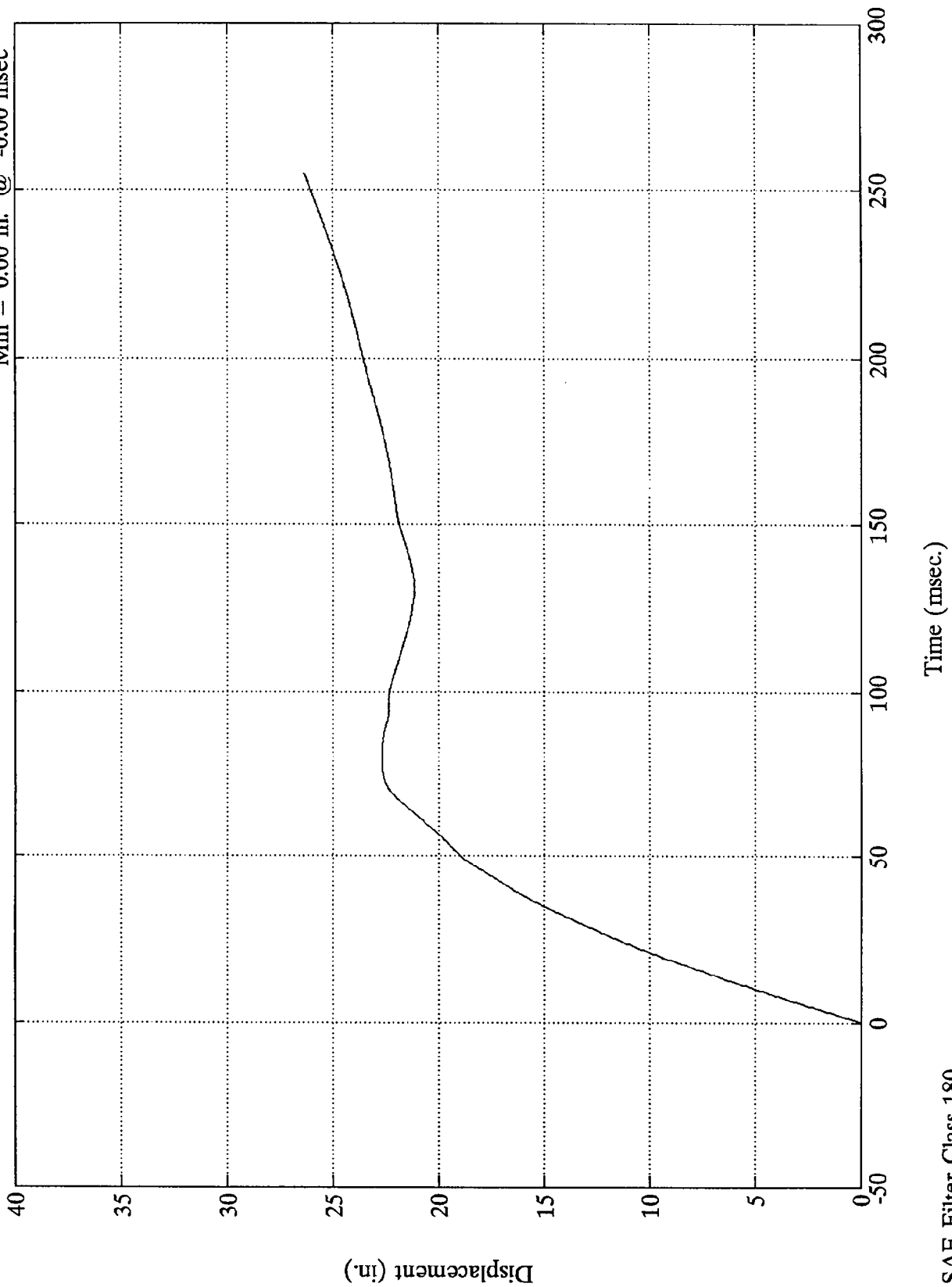
Instrument Panel X (#7)
Max = 29.30 mph @ 1.44 msec
Min = -2.88 mph @ 106.56 msec



SAE Filter Class 180

FMVSS 208 Test 6 - 1994 Ford Tempo GL

Instrument Panel X (#7)
Max = 26.34 in. @ 254.88 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

TEST NO. CR0200

DUMMY	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	100
Femur Forces	600

FACILITY: TRACK
RUN #: 1352
SERIES #: 6

TEST DATE: 08 Dec 1993
TEST TIME: 12:05:37
BOARD: a

TITLE: NHTSA 208 TEST #6 - 1994 Ford Tempo GL

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM AMP	msec	MINIMUM AMP	msec	FILTER CLASS
1	Pos. 1 Head X	Gs	4.6	31.0	-133.7	73.4	1000.0
2	Pos. 1 Head Y	Gs	36.3	76.2	-94.3	73.6	1000.0
3	Pos. 1 Head Z	Gs	116.7	71.8	-147.7	73.4	1000.0
4	Pos. 1 Left Femur	lbs	44.9	154.8	-1051.6	52.3	600.0
5	Pos. 1 Chest X	Gs	2.8	195.4	-45.0	84.8	180.0
6	Pos. 1 Chest Y	Gs	6.3	79.6	-2.7	92.3	180.0
7	Pos. 1 Chest Z	Gs	15.4	88.9	-9.7	80.0	180.0
8	Pos. 1 Right Femur	lbs	59.7	116.8	-1095.3	60.2	600.0
9	Pos. 2 Head X	Gs	4.6	183.4	-21.8	87.2	1000.0
10	Pos. 2 Head Y	Gs	15.2	94.4	-4.9	174.4	1000.0
11	Pos. 2 Head Z	Gs	56.0	70.8	-1.6	30.4	1000.0
12	Pos. 2 Left Femur	lbs	59.9	114.2	-1352.1	44.3	600.0
13	Pos. 2 Chest X	Gs	6.4	230.0	-45.8	56.3	180.0
14	Pos. 2 Chest Y	Gs	7.1	57.4	-2.5	233.2	180.0
15	Pos. 2 Chest Z	Gs	3.1	209.8	-10.0	76.1	180.0
16	Pos. 2 Right Femur	lbs	68.4	116.9	-974.9	52.1	600.0
17	Pos. 1 Head Resultant	Gs	211.2	73.4	.0	7.2	1000.0
18	Pos. 1 Chest Resultant	Gs	46.4	85.1	.0	-6.5	180.0
19	Pos. 2 Head Resultant	Gs	56.5	70.8	.1	-38.3	1000.0
20	Pos. 2 Chest Resultant	Gs	46.3	56.3	.0	-15.6	180.0

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

hic: 913.65
t1 = 69.840 msec
t2 = 87.480 msec
Average G's Over Hic Duration = 76.86

CLIP SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 45.032 G's
Tstart = 84.0000 ms
Tend = 87.1200 ms
CSI = 297.853

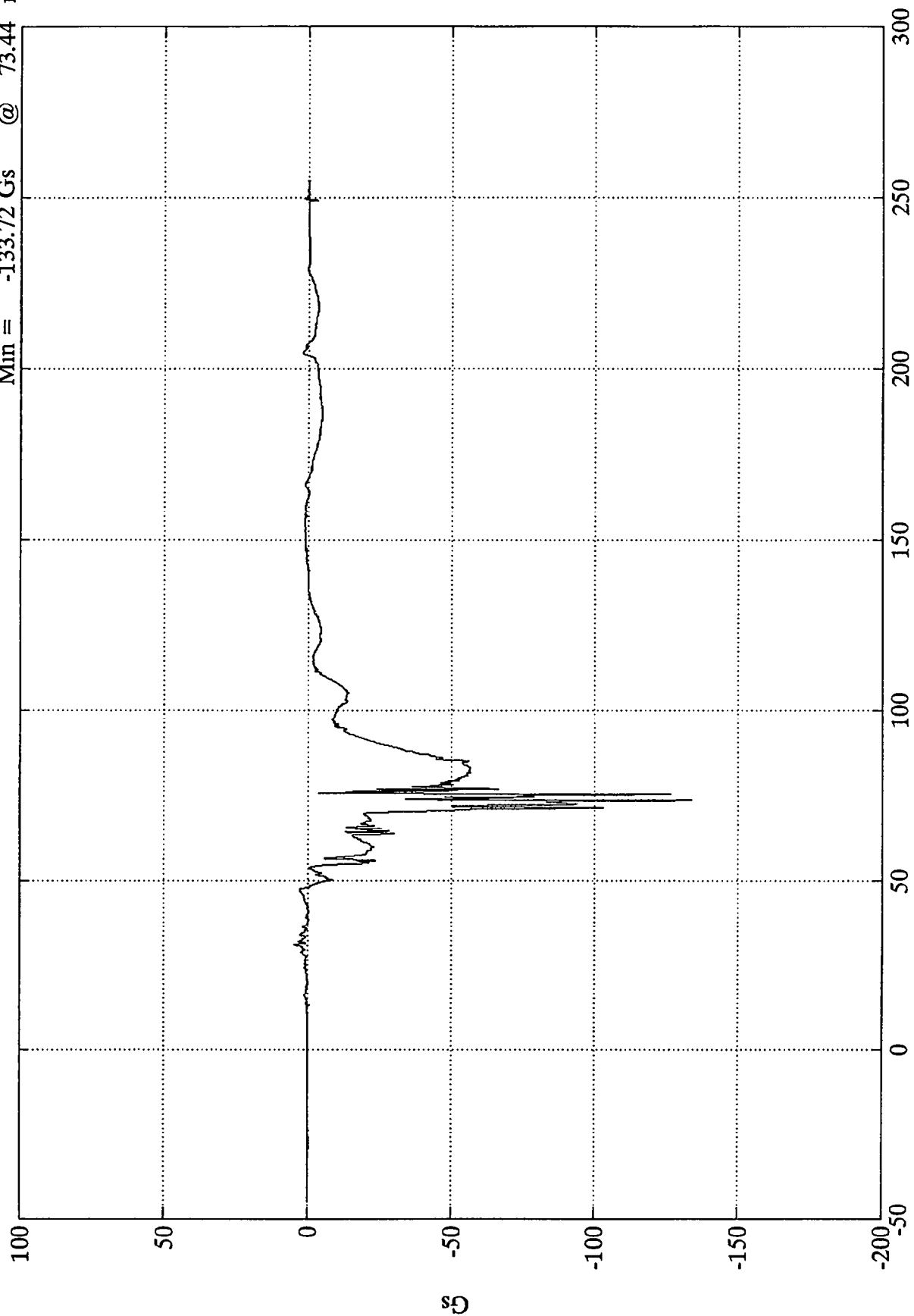
36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant

hic: 383.01
t1 = 55.560 msec
t2 = 91.440 msec
Average G's Over Hic Duration = 40.86

CLIP SUMMARY: Pos. 2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 44.872 G's
Tstart = 60.1200 ms
Tend = 63.2400 ms
CSI = 354.120

Pos. 1 Head X
 Max = 4.64 Gs @ 30.95 msec
 Min = -133.72 Gs @ 73.44 msec

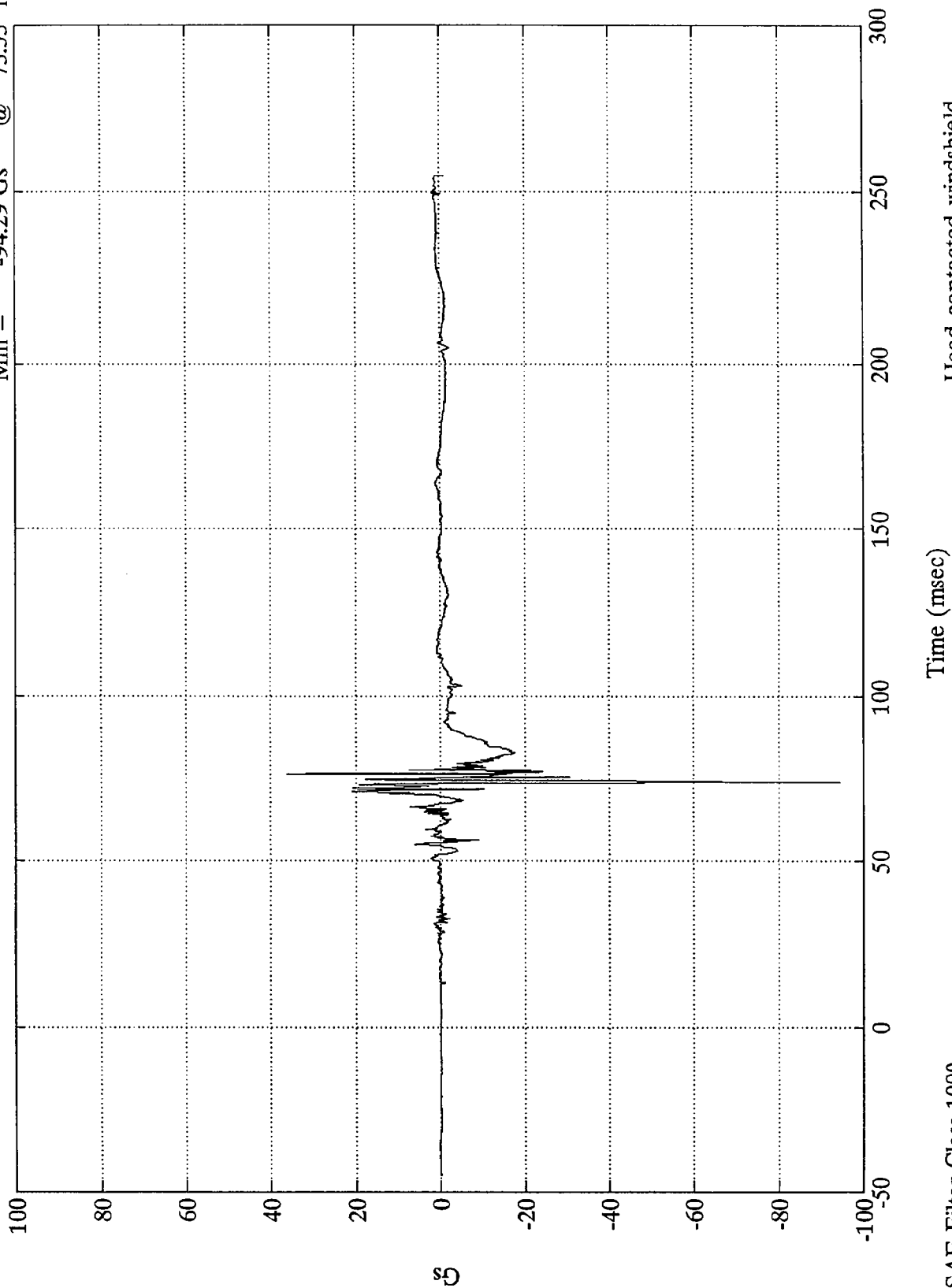


Time (msec)
 Head contacted windshield

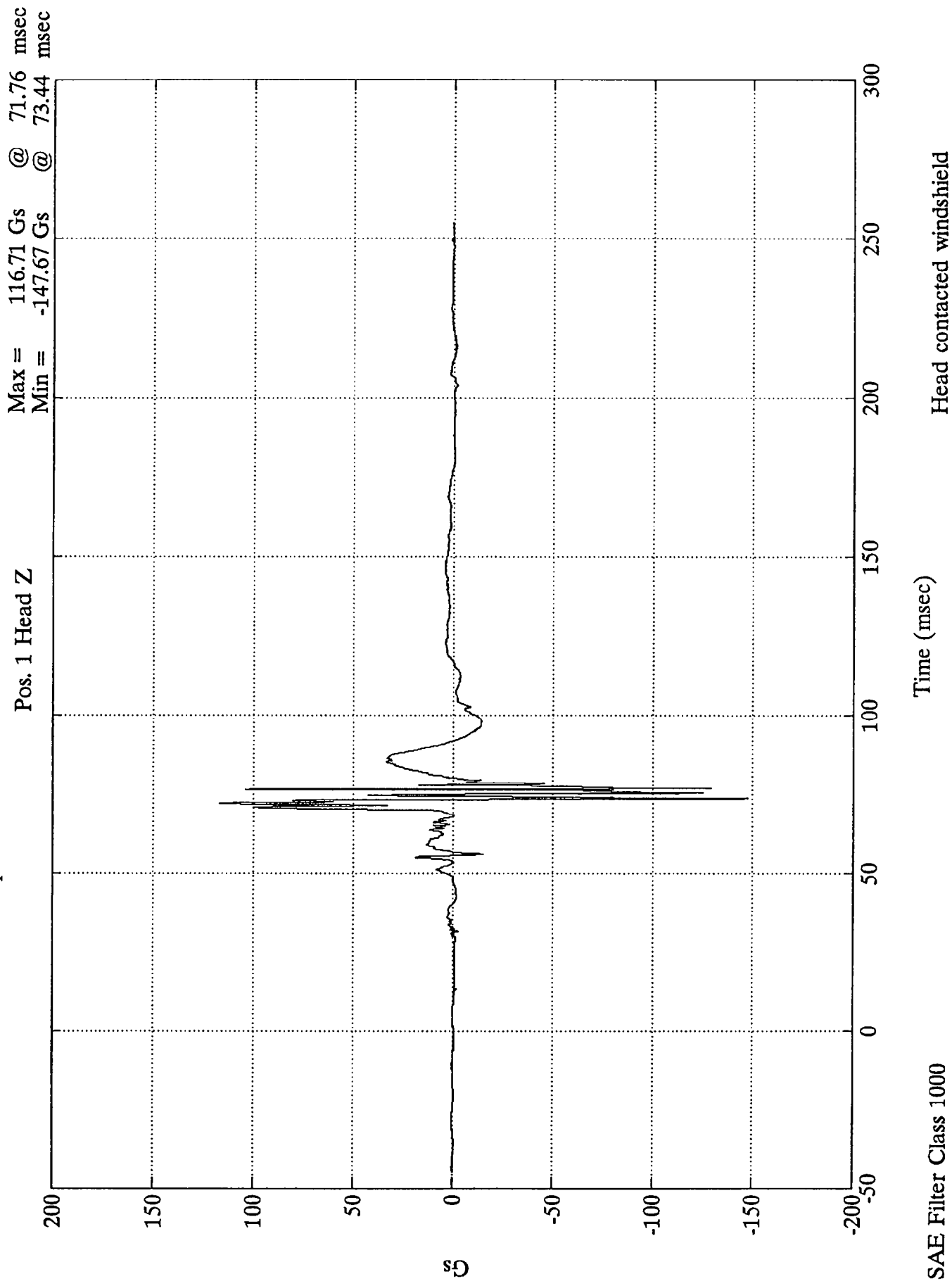
SAE Filter Class 1000

NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Pos. 1 Head Y
 Max = 36.28 Gs @ 76.20 msec
 Min = -94.29 Gs @ 73.55 msec

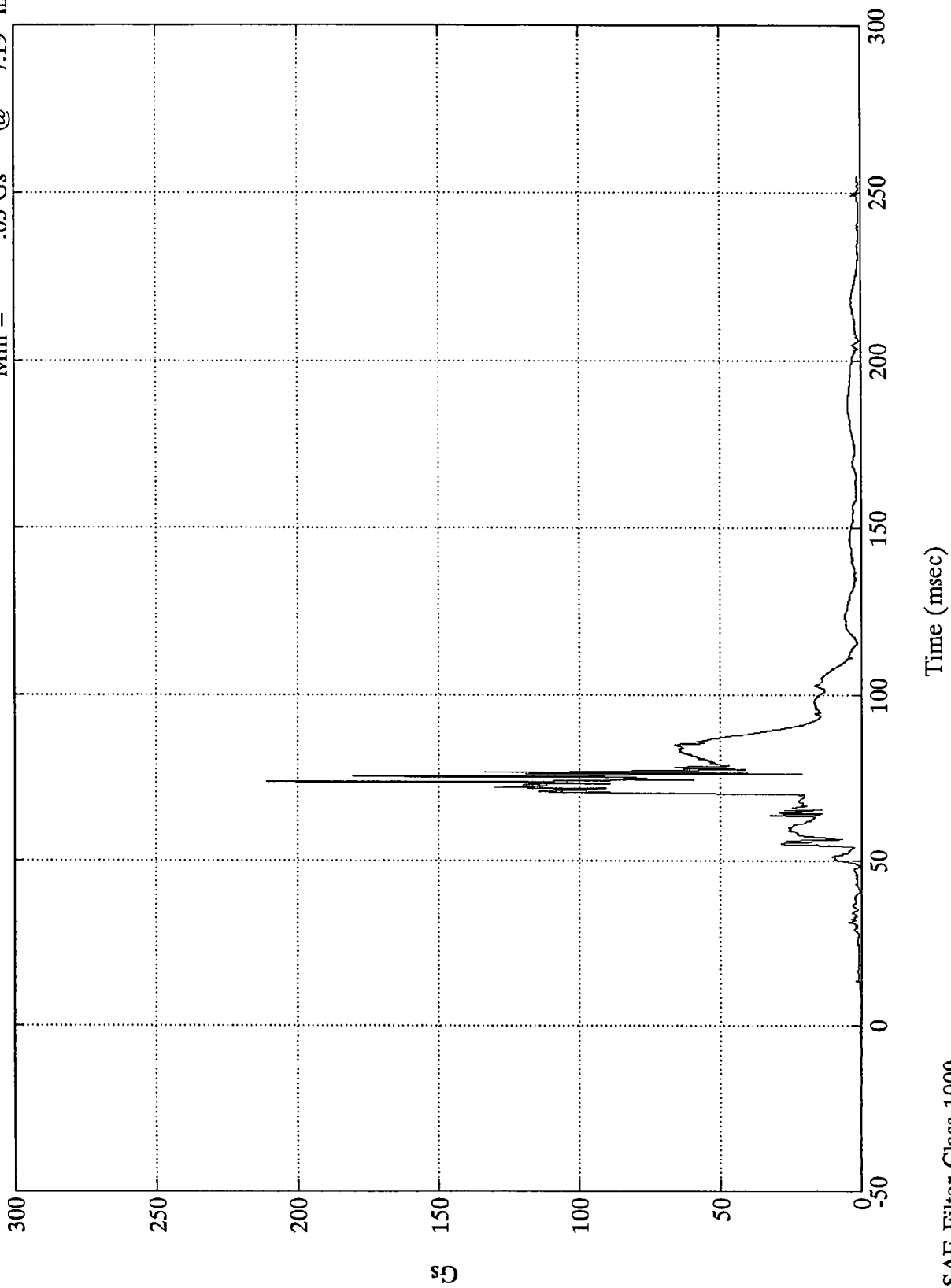


SAE Filter Class 1000

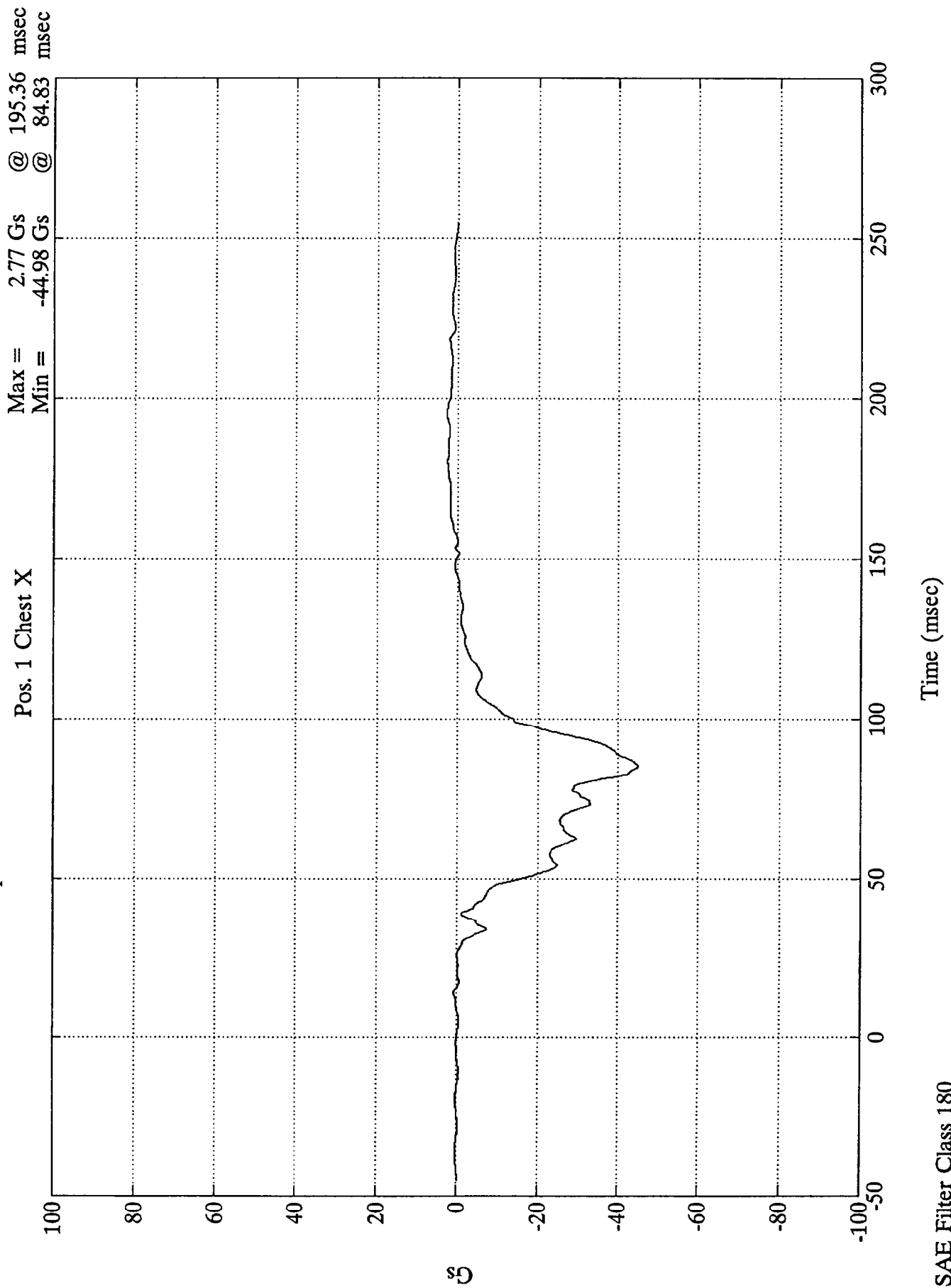


NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Pos. 1 Head Resultant
 Max = 211.25 Gs @ 73.44 msec
 Min = .03 Gs @ 7.19 msec



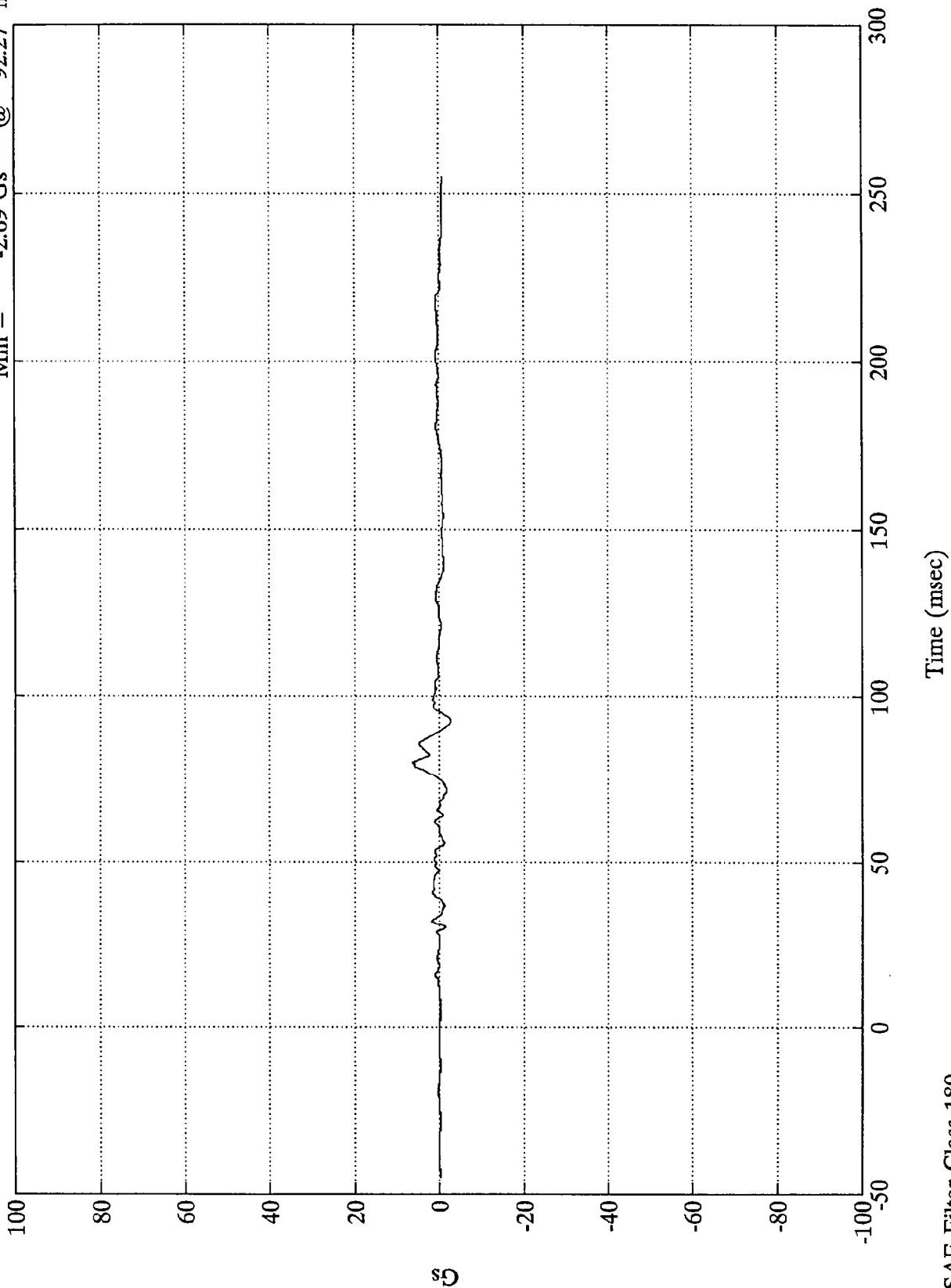
SAE Filter Class 1000



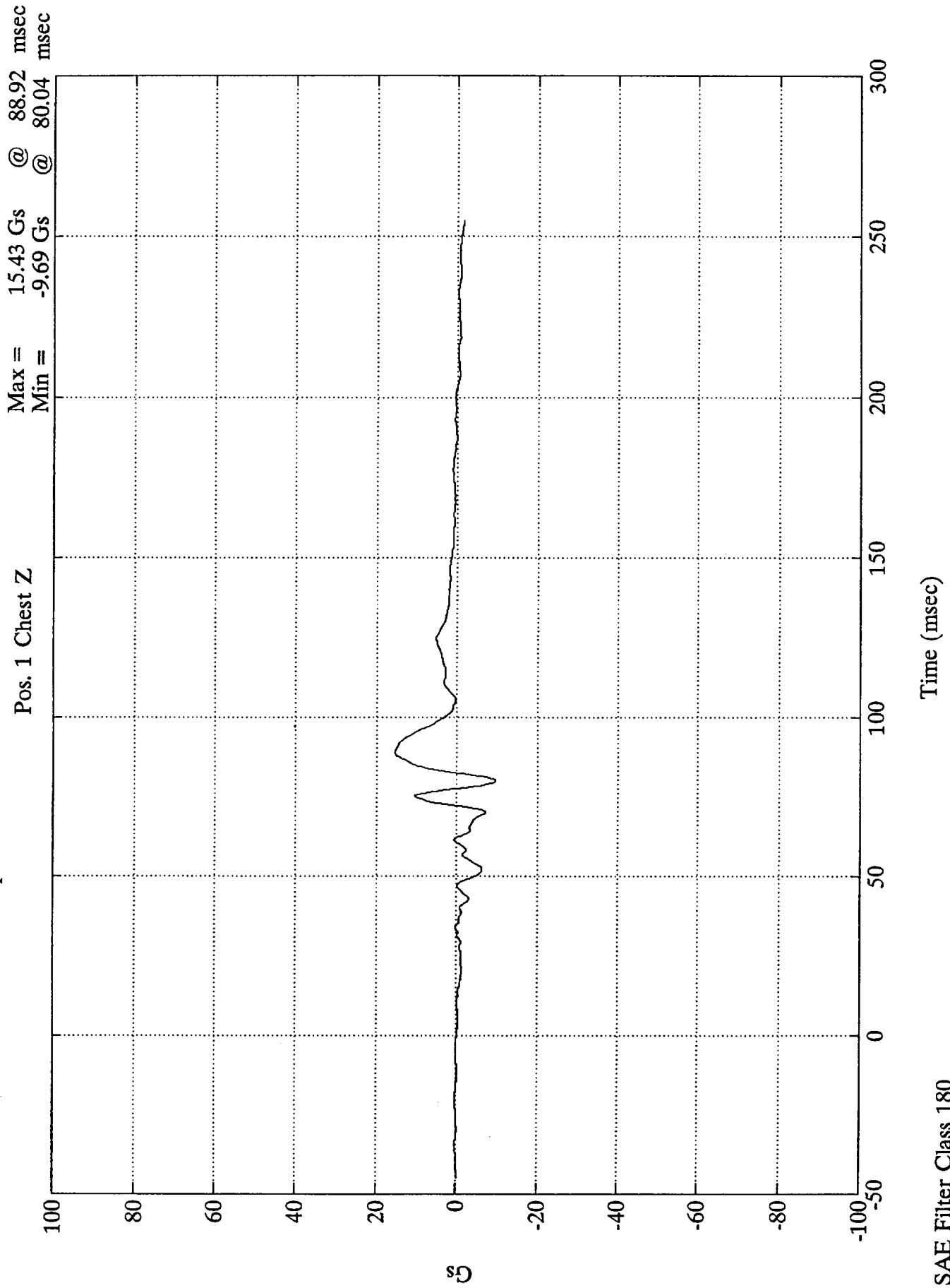
NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Max = 6.26 Gs @ 79.56 msec
 Min = -2.69 Gs @ 92.27 msec

Pos. 1 Chest Y

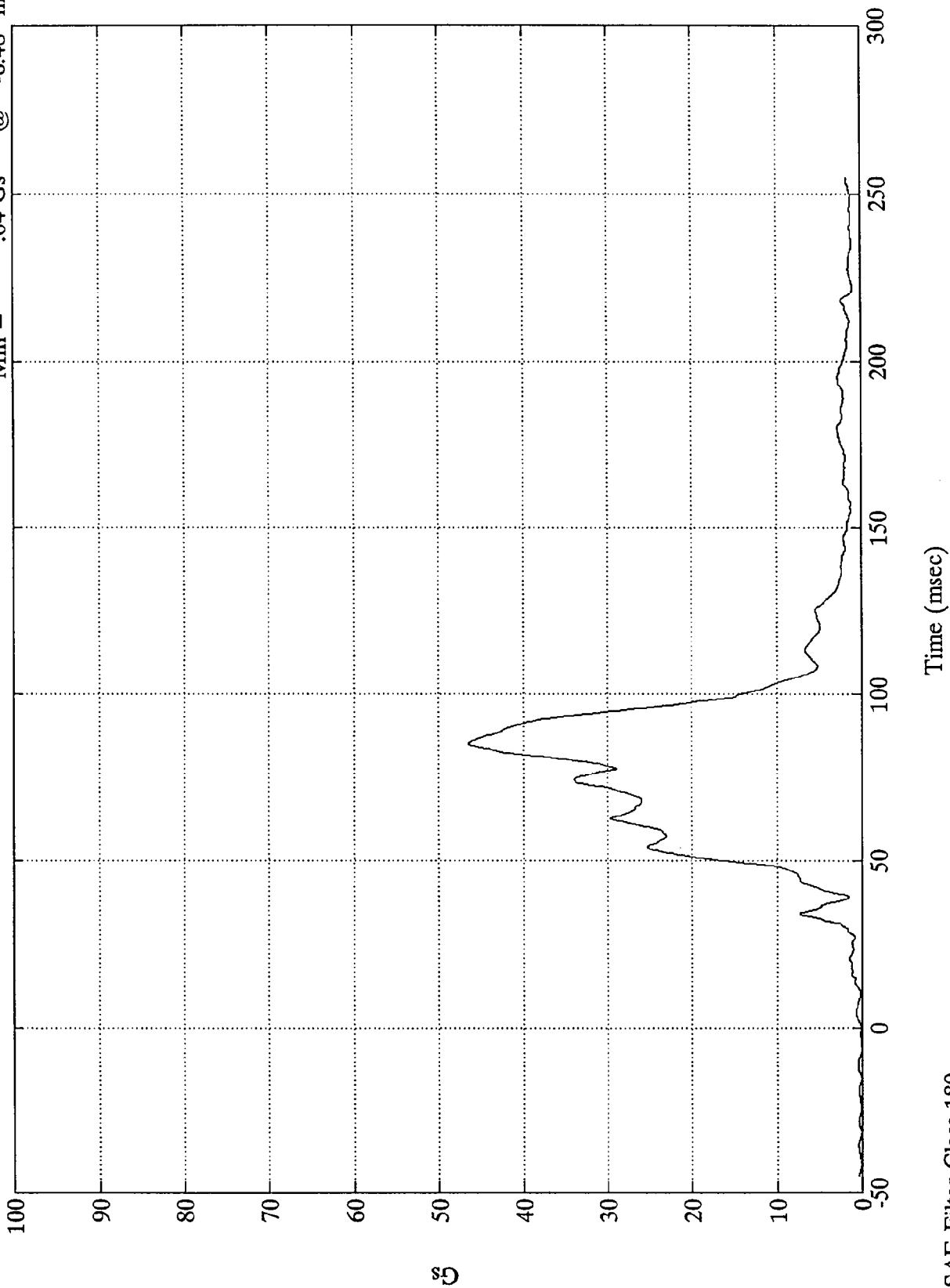


SAE Filter Class 180

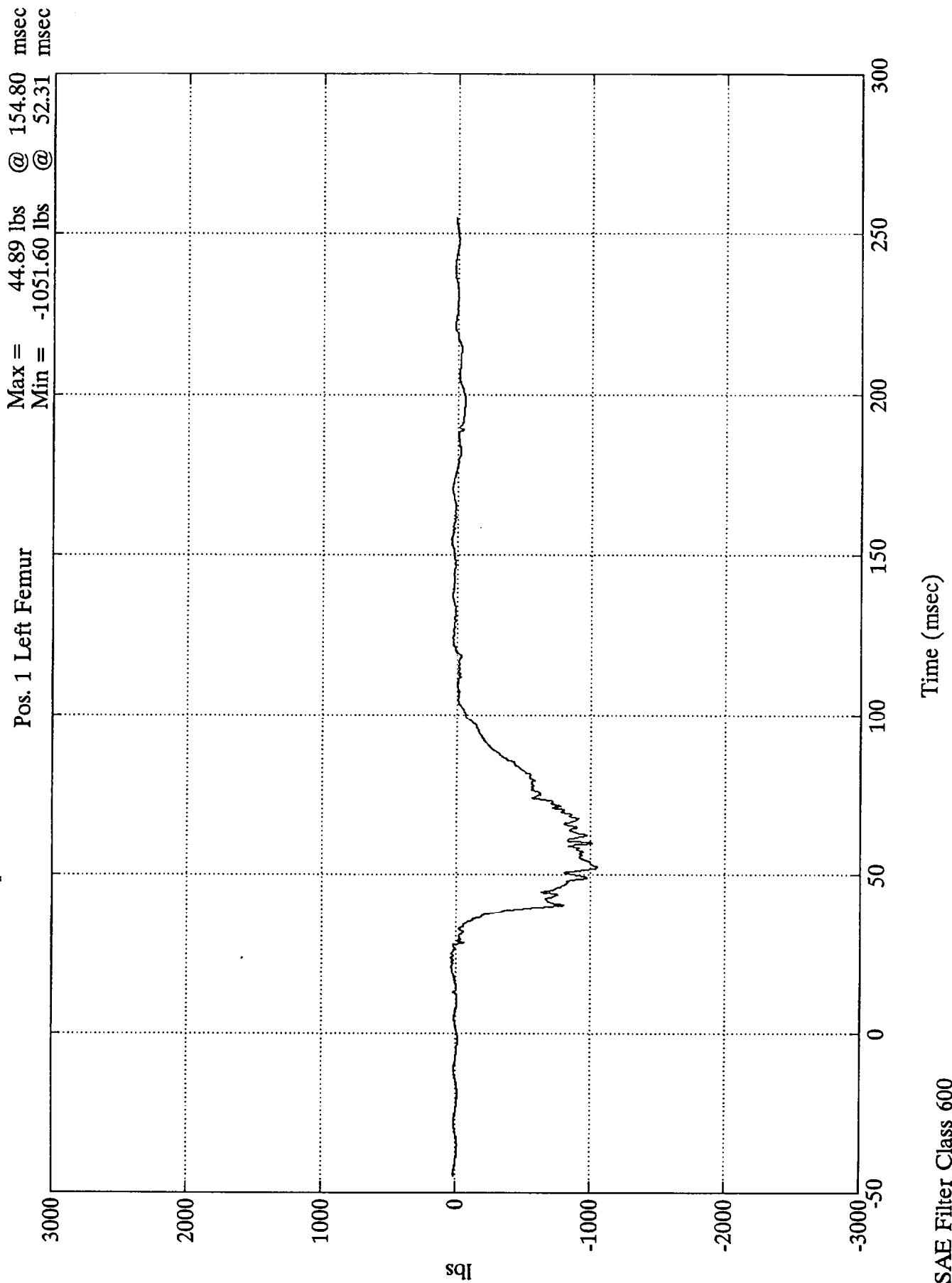


NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Pos. 1 Chest Resultant
 Max = 46.43 Gs @ 85.08 msec
 Min = .04 Gs @ -6.48 msec

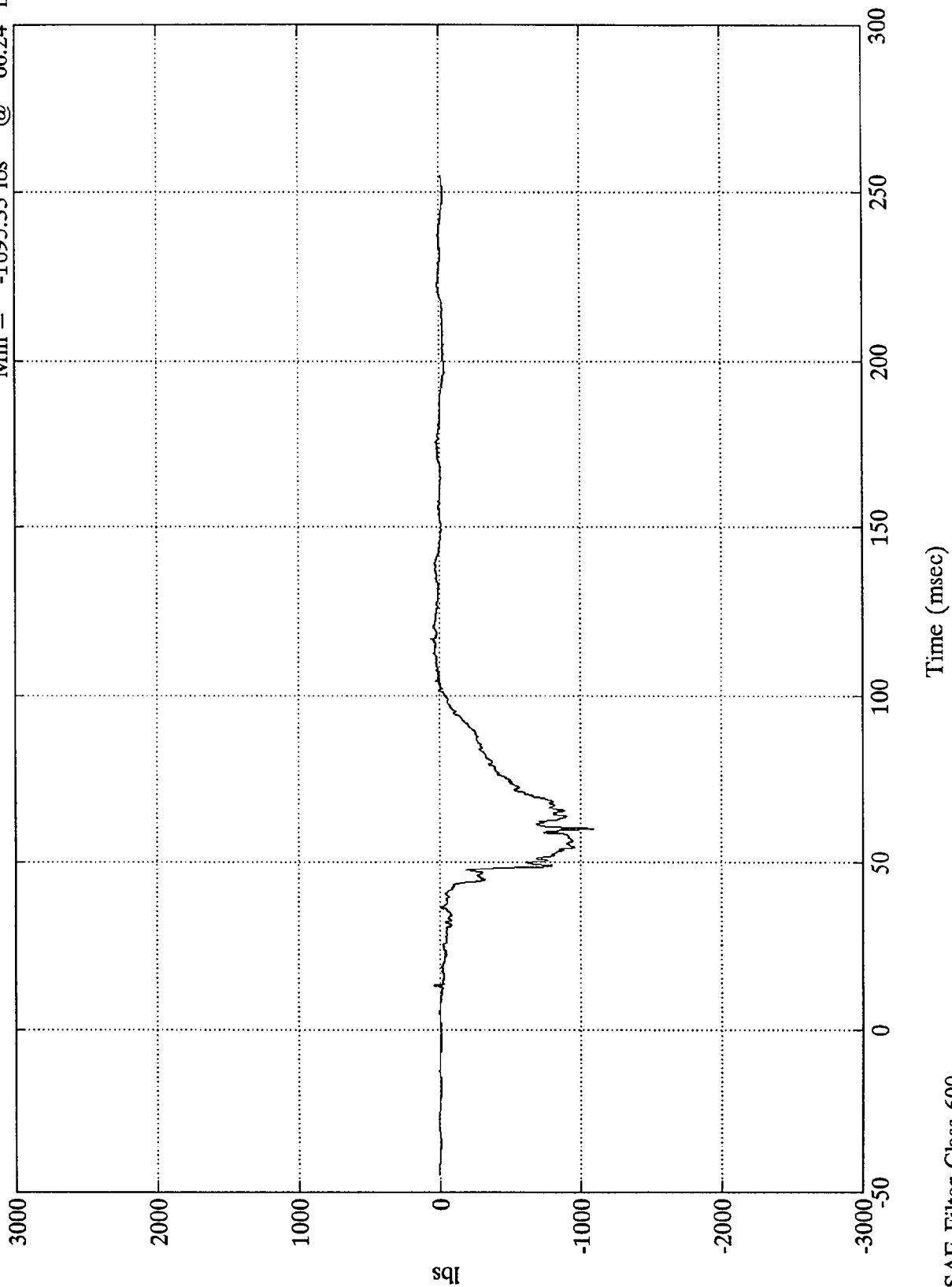


SAE Filter Class 180

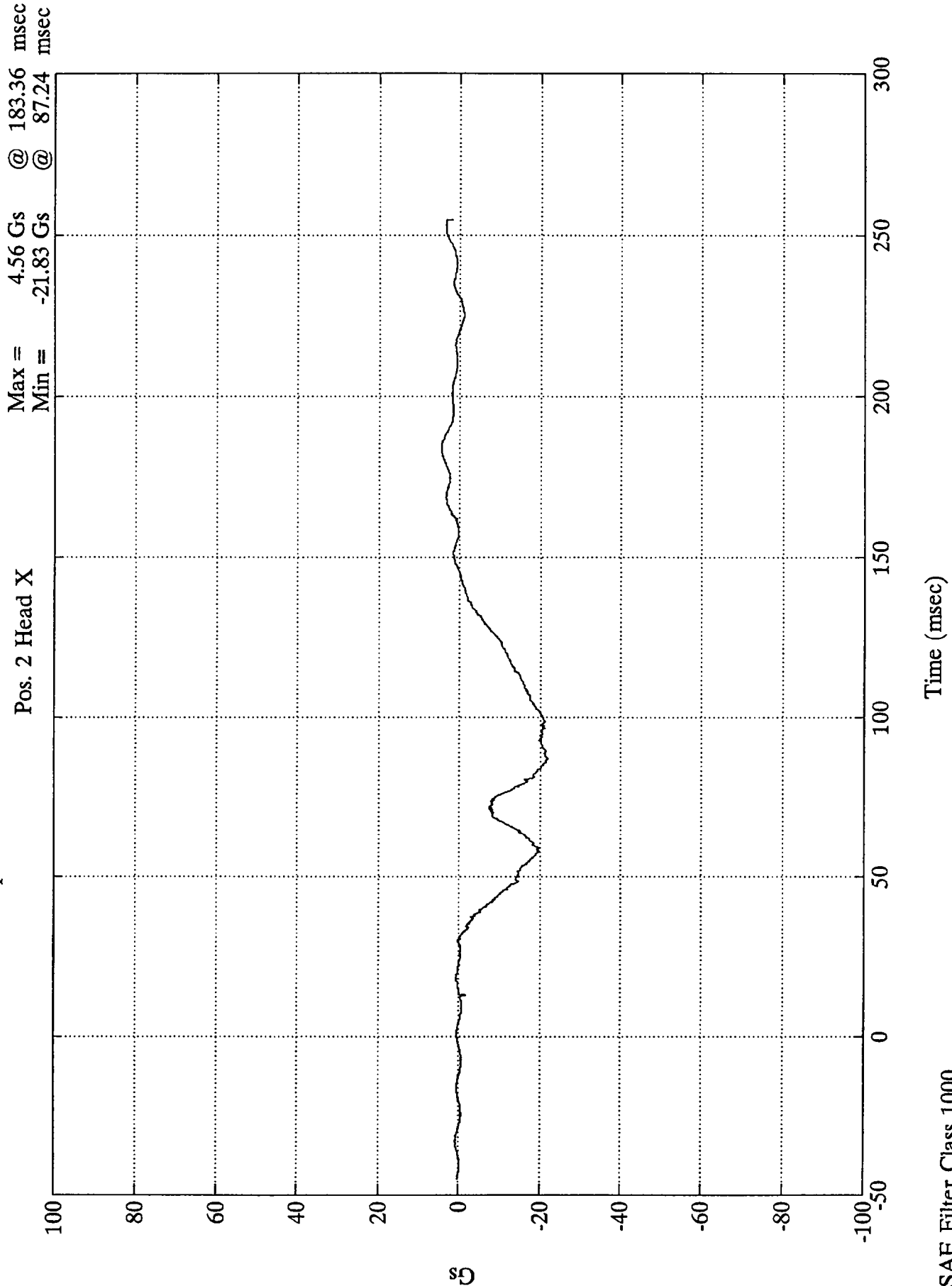


NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Pos. 1 Right Femur
Max = 59.73 lbs @ 116.76 msec
Min = -1095.33 lbs @ 60.24 msec



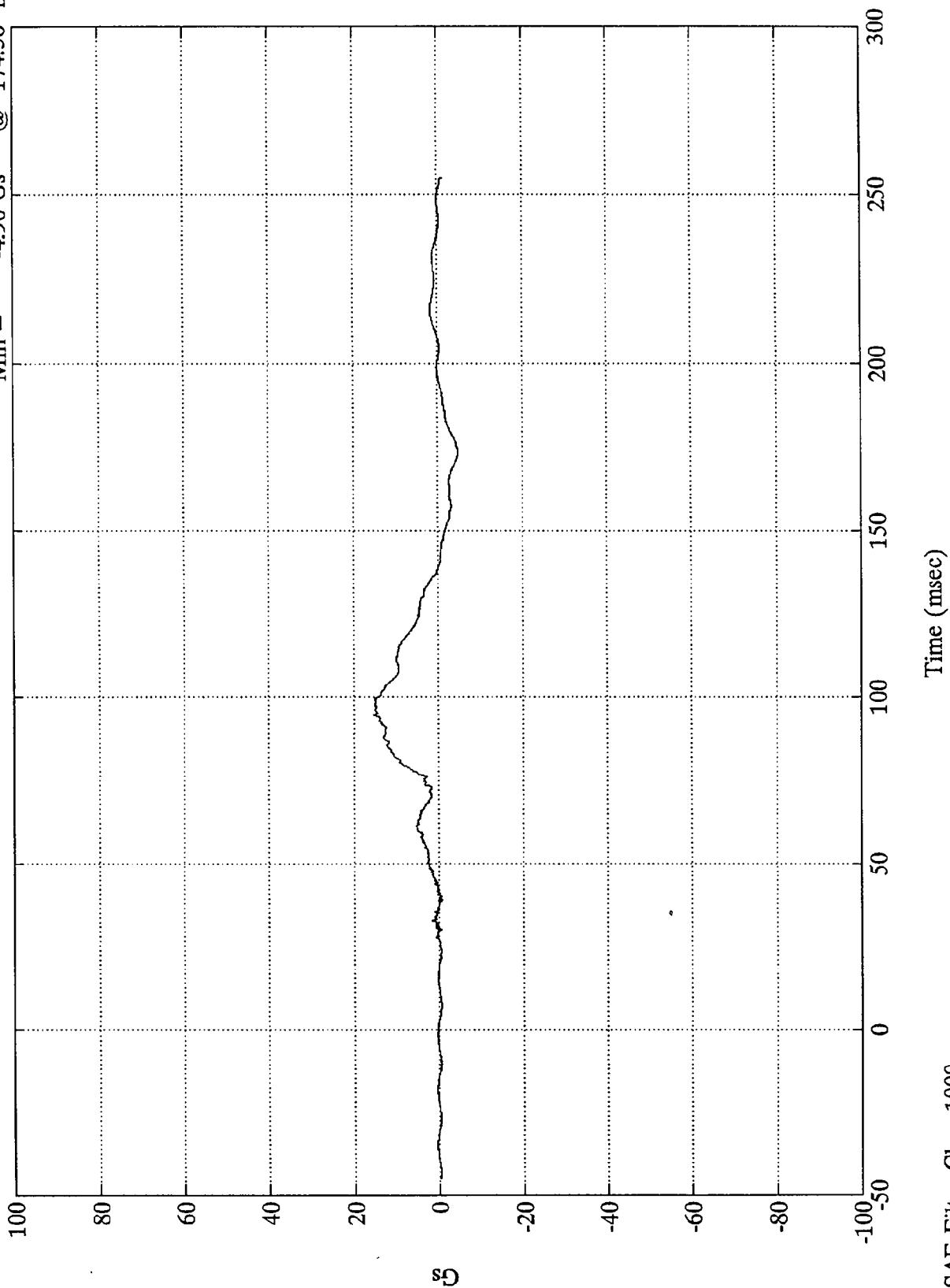
SAE Filter Class 600

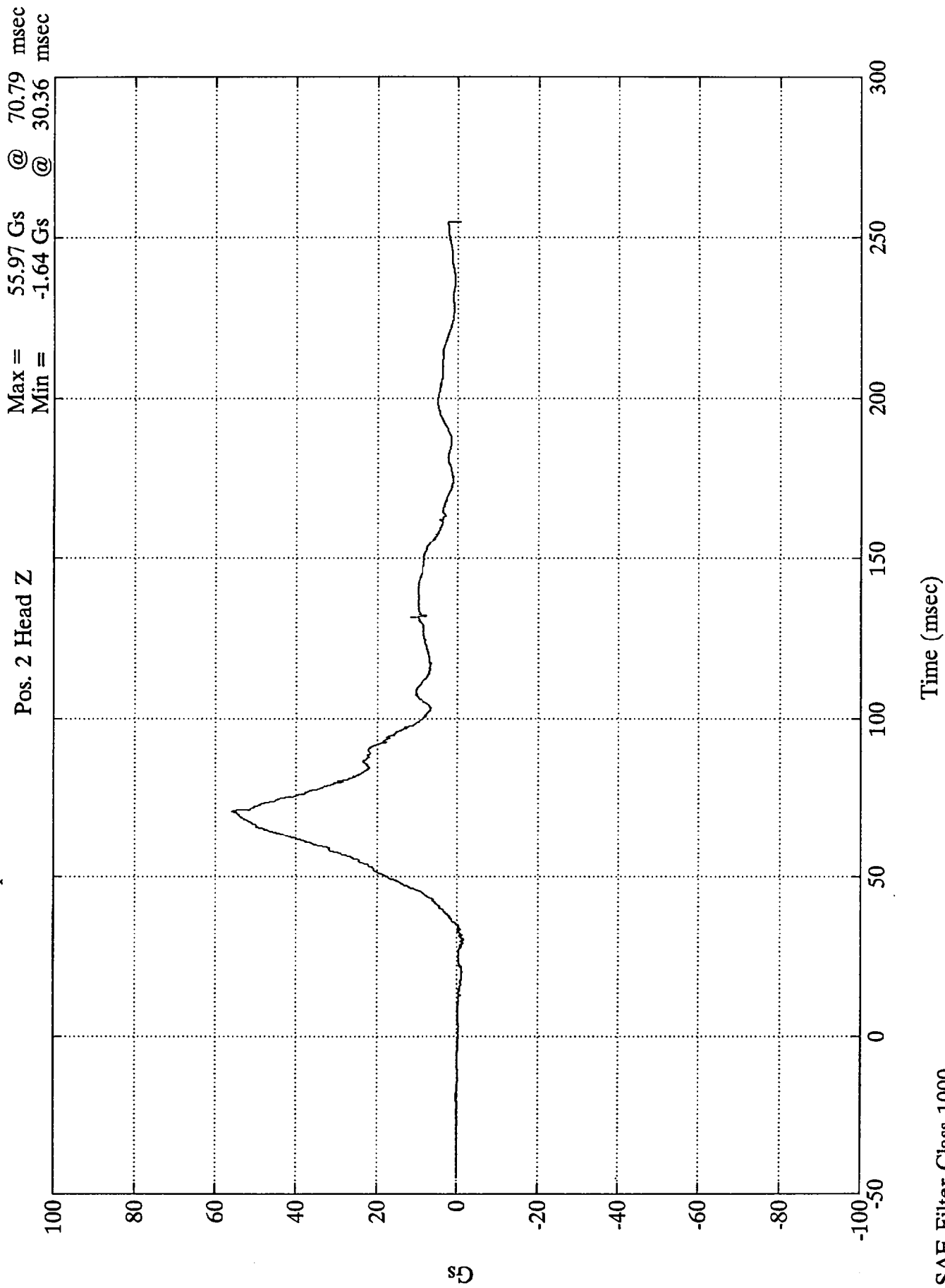


NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Max = 15.20 Gs @ 94.44 msec
 Min = -4.90 Gs @ 174.36 msec

Pos. 2 Head Y

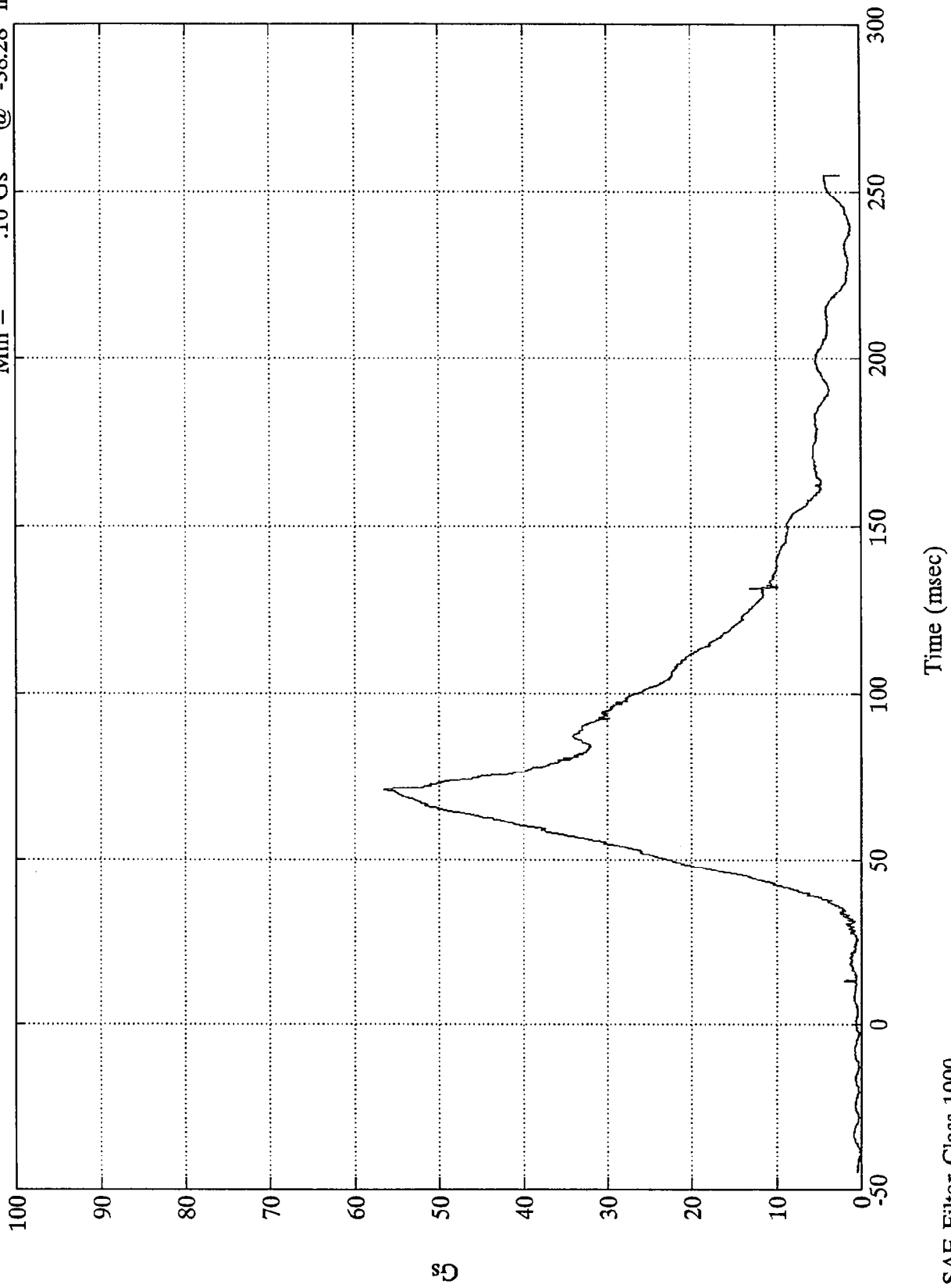




NHTSA 208 TEST #6 - 1994 Ford Tempo GL

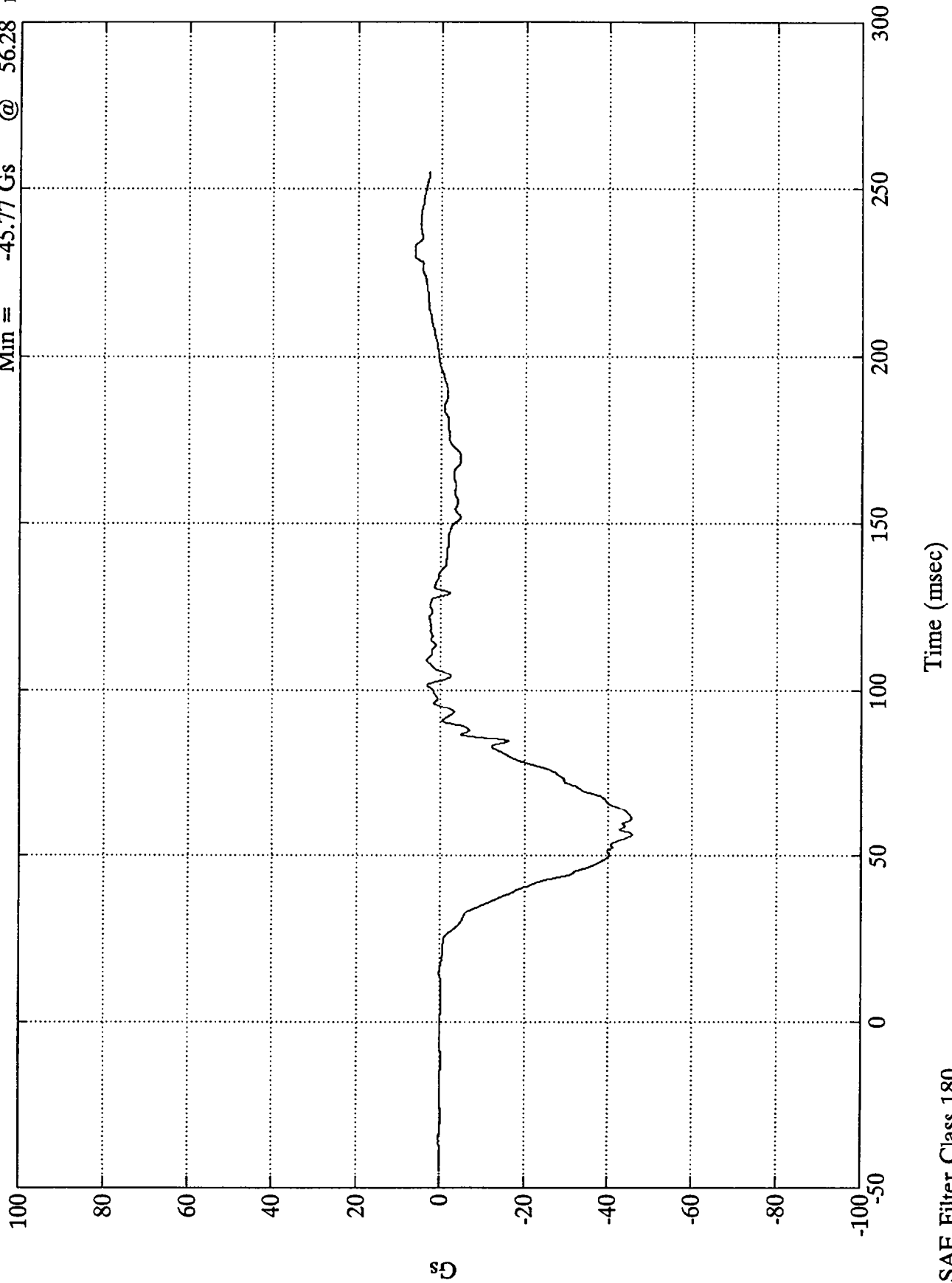
Max = 56.55 Gs @ 70.79 msec
Min = .10 Gs @ -38.28 msec

Pos. 2 Head Resultant



Max = 6.40 Gs @ 230.04 msec
Min = -45.77 Gs @ 56.28 msec

Pos. 2 Chest X

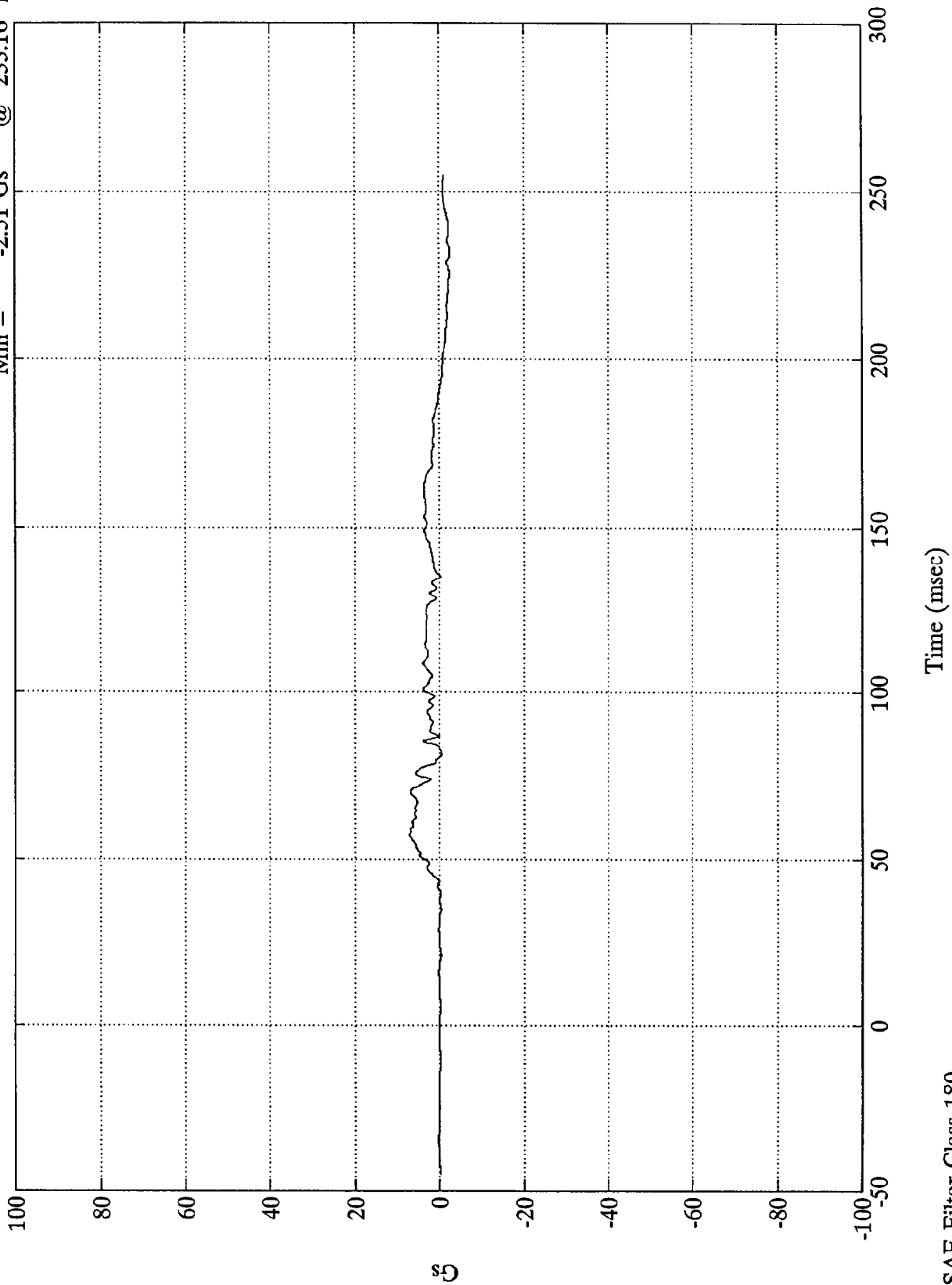


SAE Filter Class 180

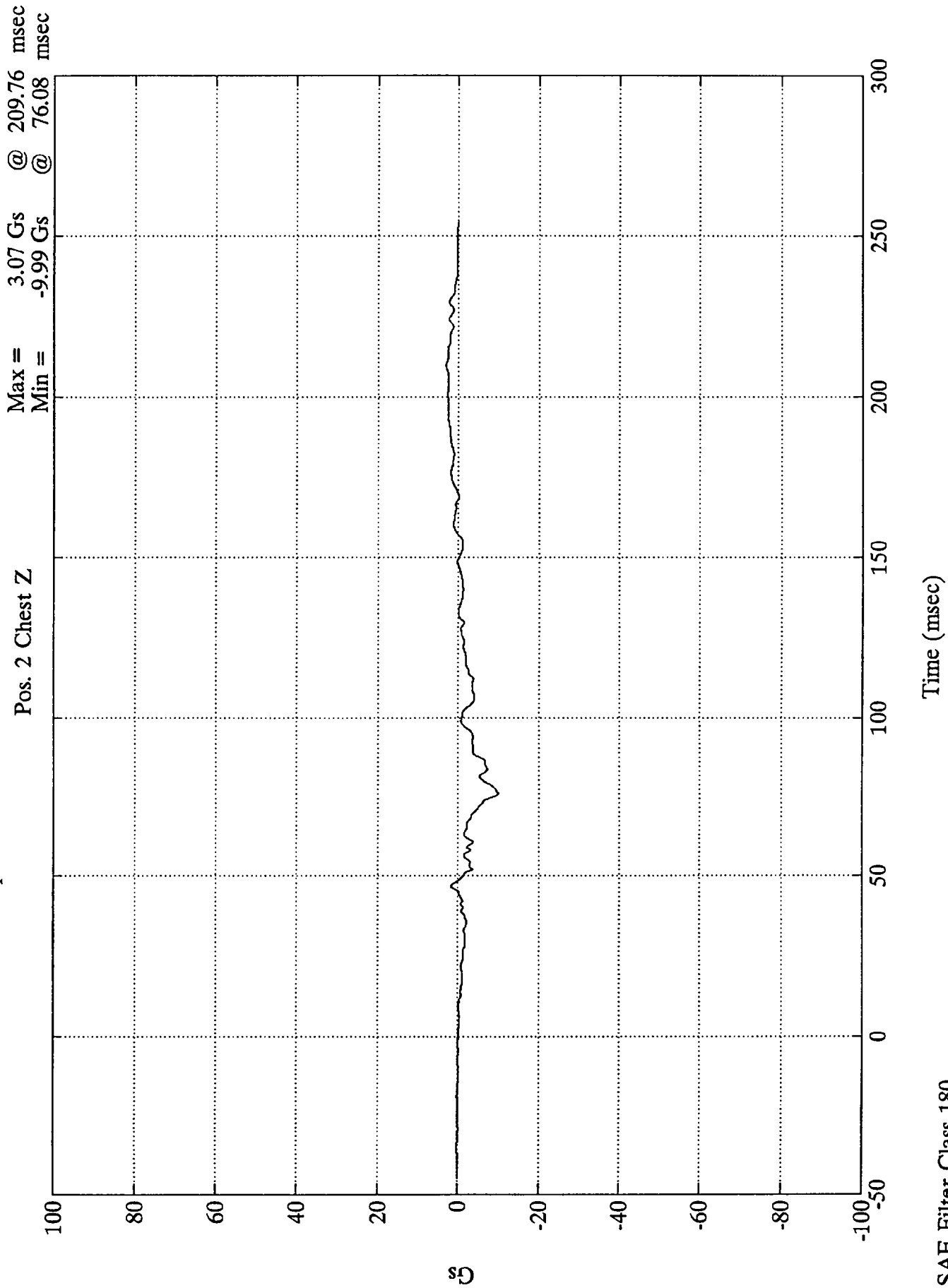
NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Max = 7.12 Gs @ 57.36 msec
 Min = -2.51 Gs @ 233.16 msec

Pos. 2 Chest Y

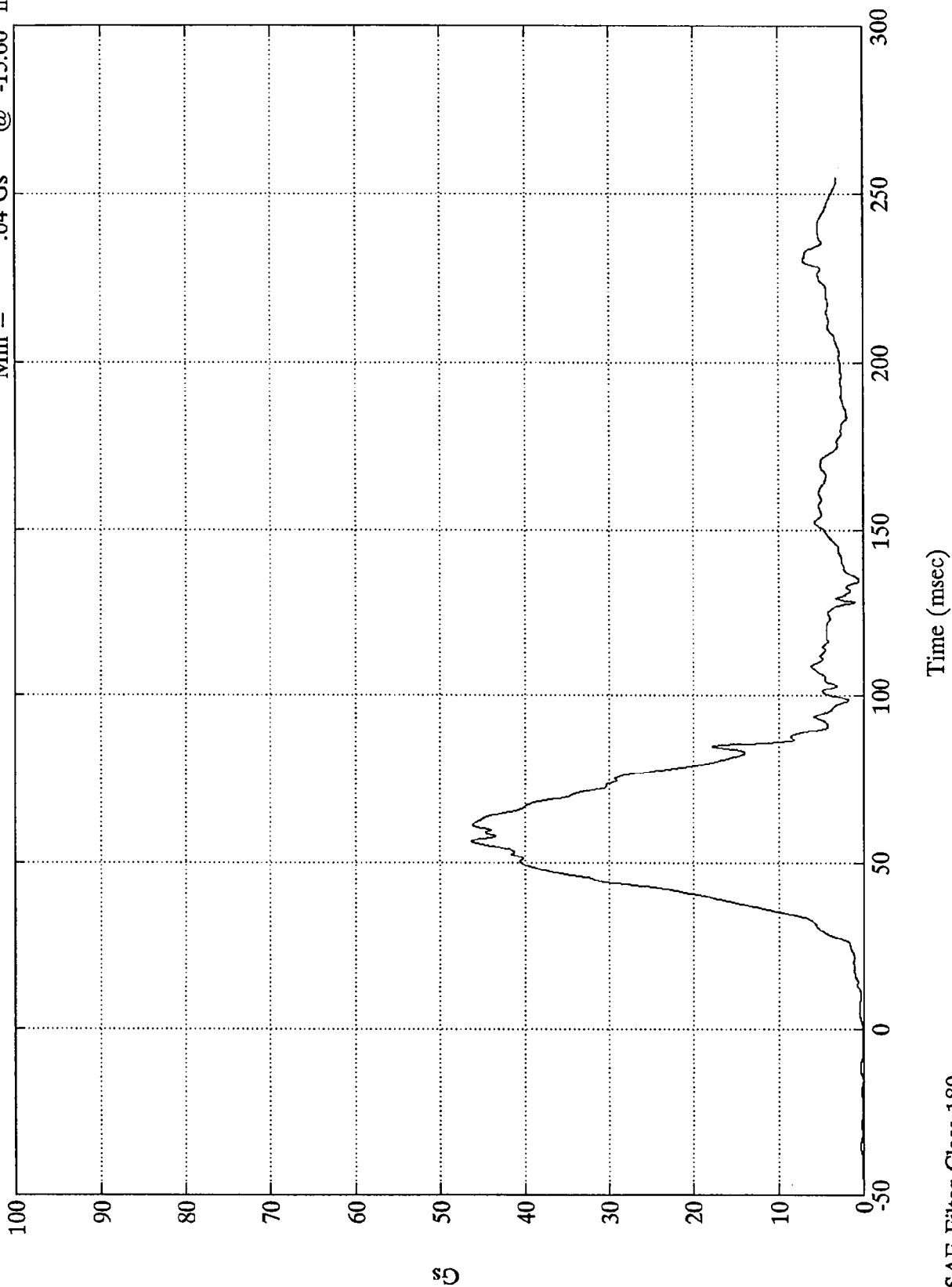


SAE Filter Class 180



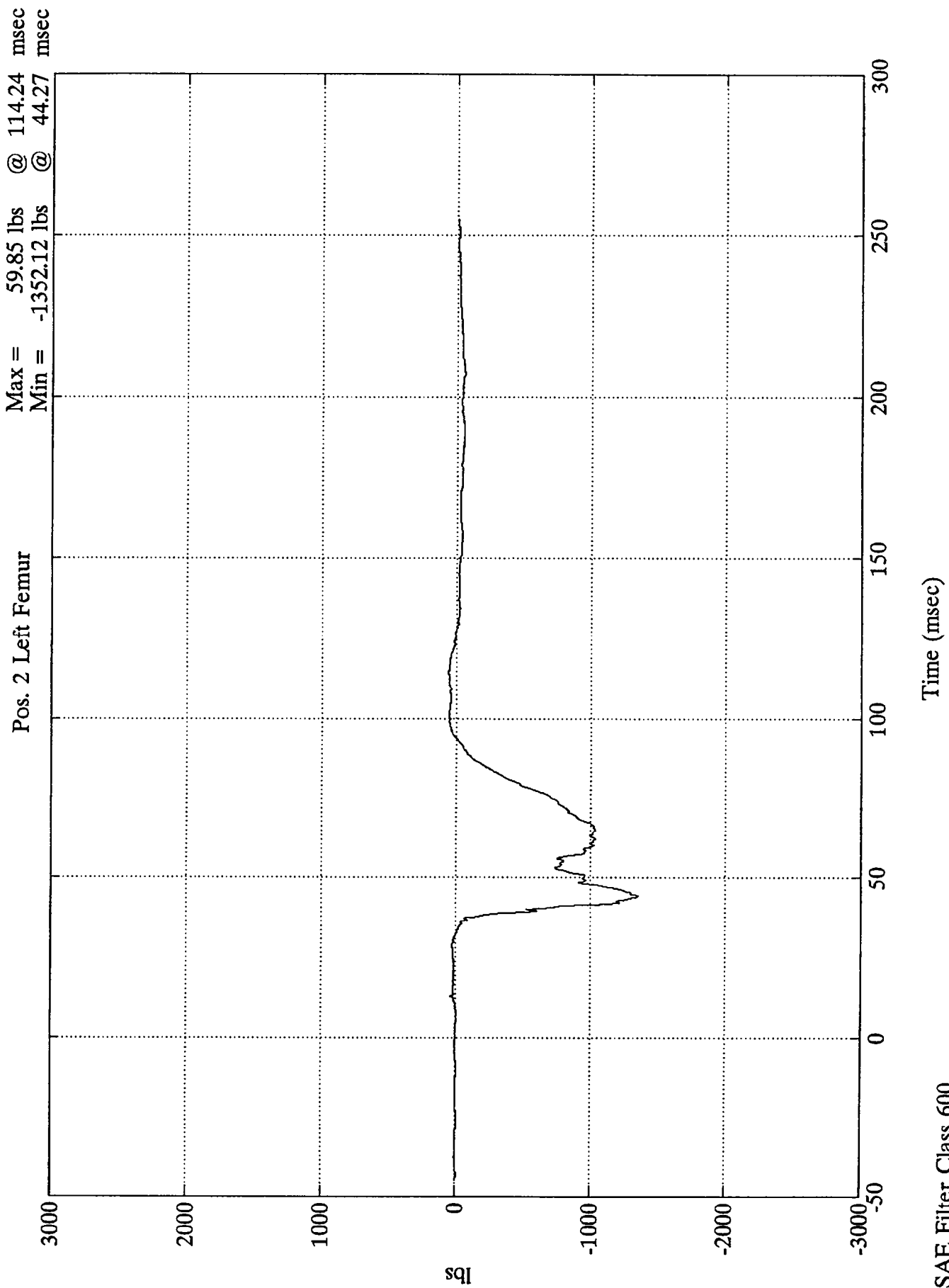
NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Pos. 2 Chest Resultant
 Max = 46.28 Gs @ 56.28 msec
 Min = .04 Gs @ -15.60 msec



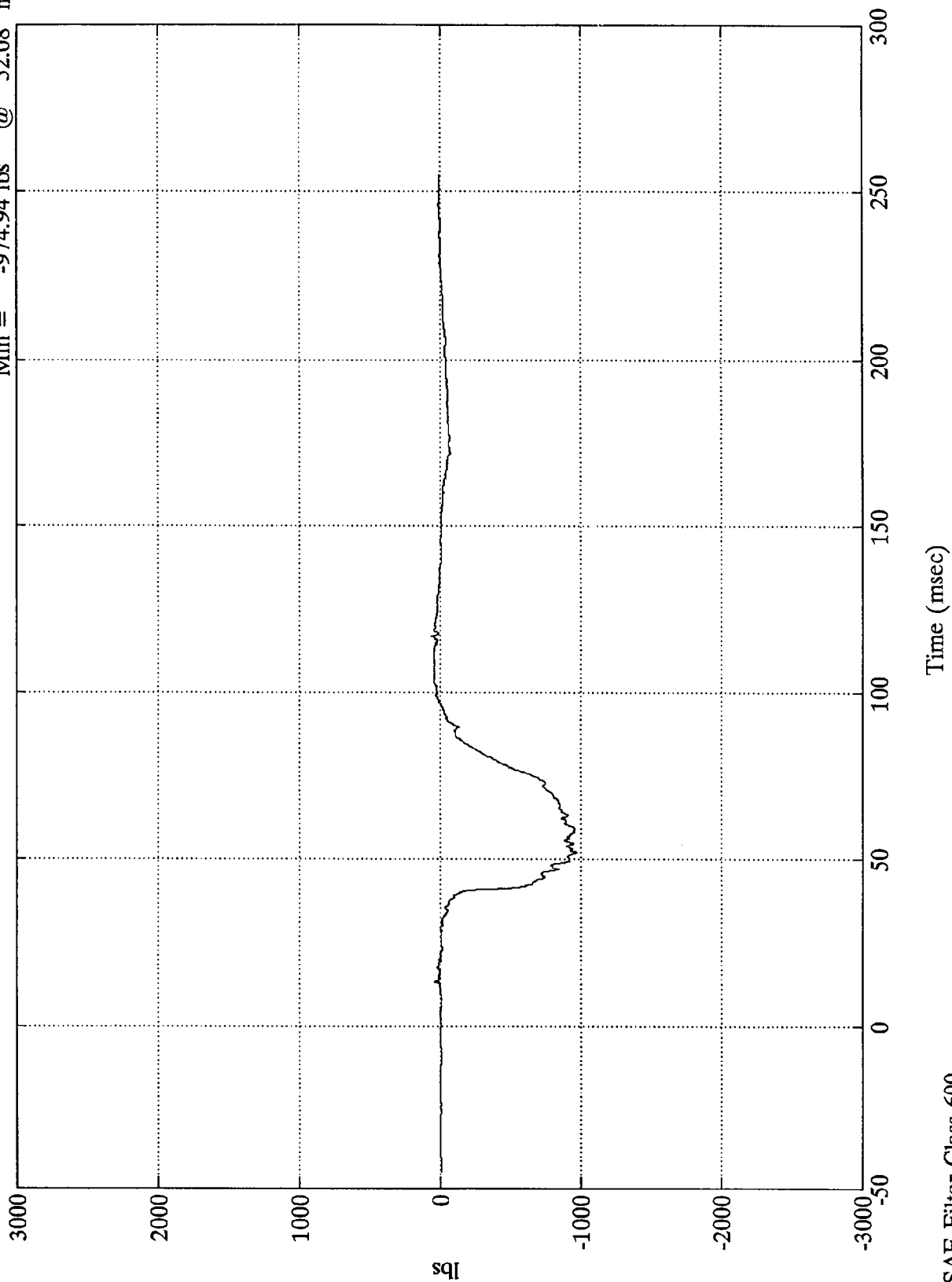
SAE Filter Class 180

NHTSA 208 TEST #6 - 1994 Ford Tempo GL



NHTSA 208 TEST #6 - 1994 Ford Tempo GL

Pos. 2 Right Femur
Max = 68.40 lbs @ 116.87 msec
Min = -974.94 lbs @ 52.08 msec



SAE Filter Class 600

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

Safety Restraints

Using Safety Restraints Properly Safety Belts

The use of safety belts help to restrain you and your passengers in case of a collision. In most states, the law requires their use. We strongly recommend that you use them every time you travel in your vehicle.

Safety belts provide best restraint when:

- ☐ the seatback is upright
- ☐ the occupant is sitting upright (not slouched)
- ☐ the lap belt is snug and low on the hips
- ☐ the shoulder belt is snug against the chest
- ☐ the knees are straight forward

For your safety, your vehicle has different types of safety belts:

- ☐ **Manual Front Seat Lap and Shoulder Belts** — for people who sit in the driver's seat or the right front passenger seat. (Available only on Canadian vehicles and the driver side of U.S. vehicles equipped with the Driver Side Air Bag Supplemental Restraint System.)
- ☐ **Motorized Shoulder Belt Passive Restraints for U.S. Vehicles** — an automatic shoulder belt for people who sit in the front seat or the passenger side of a U.S. vehicle equipped with a driver side air bag.

- ☐ **Manual Front Lap Belts** — for people who sit in the front seat and have an automatic shoulder belt.
- ☐ **Rear Seat Lap and Shoulder Belts** — for people who sit next to the side windows.
- ☐ **Lap Belts** — For people who sit in the middle position in the rear seat.

See the following sections for directions on how to properly use these safety belts. Also see *Safety Restraints for Children* in this chapter for special instructions about using safety belts for children.

Warning: Make sure that you and your passengers, including pregnant women, wear safety belts. Be sure that the lap belt portion of your safety belt fits snugly and as low as possible around the hips. If safety belts are not used properly, the risk of you or your passengers being injured in a collision greatly increases.

Do not allow any people to ride in your vehicle's trunk. People who are not riding in seats, with their safety belts fastened, are much more likely to be injured in a collision.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around your neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

Warning: Always drive and ride with your seatback upright and the lap belt portion of your safety belt snug and low across the hips. This will reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Never use a single belt for more than one person or across more than one seating position. This greatly increases the risk that one or both of the people will be injured in a collision. Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair.

Warning: Lock the doors of your vehicle before driving to lessen the risk of the door coming open in a collision.

Safety Belt Maintenance

Check the safety belt systems periodically to make sure that they work properly and are not damaged.

Warning: All safety belt assemblies, including retractors and attaching hardware, should be inspected after any collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Combination Lap and Shoulder Belts

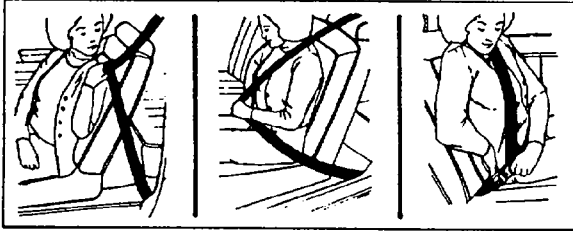
Rear seat lap and shoulder belts are standard for all outboard seating positions. Front seat lap and shoulder belts are available only on Canadian vehicles and the driver side of U.S. vehicles equipped with the Driver Side Air Bag Supplemental Restraint System.

While in motion, the combination lap and shoulder belt adjusts to your movement. However, if you brake hard, turn hard, or if your vehicle receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and helps reduce your forward movement.

After you get into your vehicle, close the door and lock it. Then adjust the seat to the position that suits you best.

To fasten the belt, pull the lap/shoulder belt from the retractor so that the shoulder portion of the belt crosses your shoulder and chest. Be sure the belt is not twisted. If it is, remove the twist. Insert the belt tongue into the proper

buckle until you hear a snap and feel it latch. Make sure the tongue is securely fastened to the buckle.



Fastening the front seat lap and shoulder belt (Canadian vehicles and vehicles equipped with the supplemental driver side airbag restraint system only)

Warning: Make sure that the lap belt is as low around your hips as possible. Do not wear the lap belt around your waist. If you do not use the lap belts properly, the risk of being injured in a collision greatly increases.

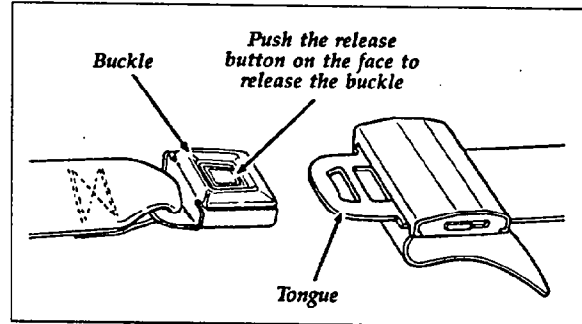
Warning: All front and rear seat outboard occupants (including pregnant women) should wear lap and shoulder belts, for optimum protection in a collision.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around the neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

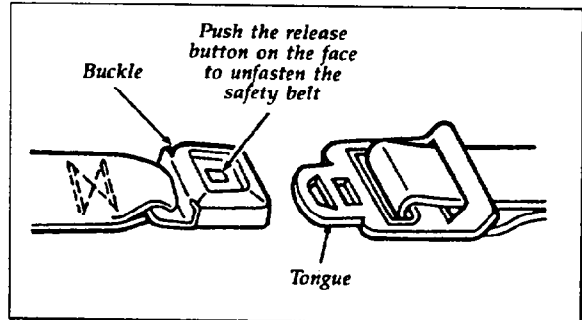
Adjust the lap part of the belt by pulling up on the shoulder belt until the lap belt fits snugly and as low as possible around your hips.

To unfasten the belt:

1. Push the release button on the buckle. This allows the tongue to unlatch from the buckle.

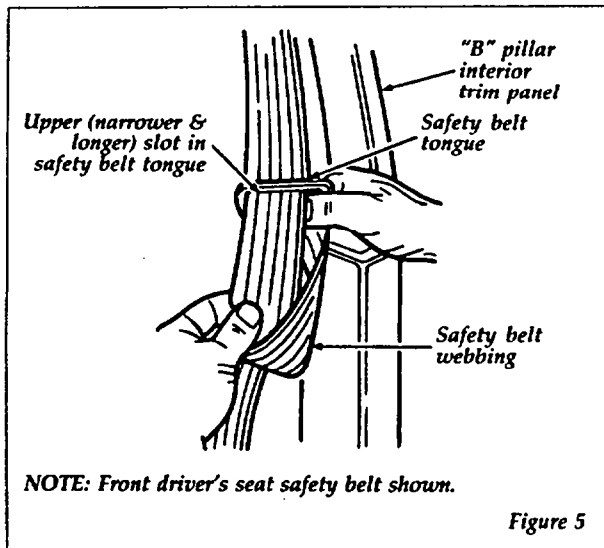


Unfastening the safety belts in center rear seating positions

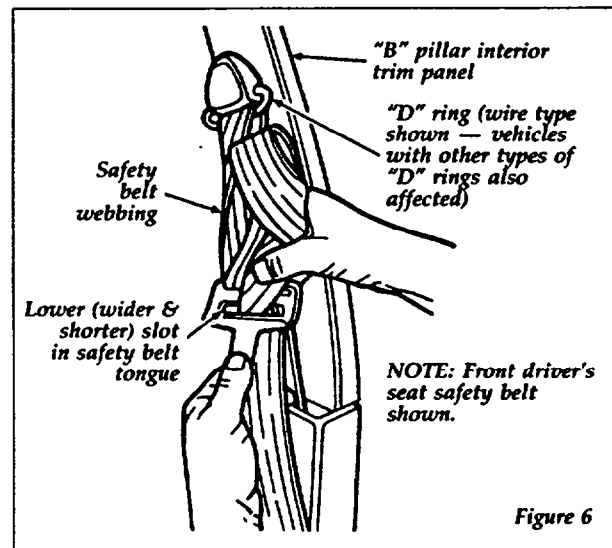


Unfastening the safety belts

2. While the belt retracts, guide the tongue to its original position. If you do not guide the tongue, it may strike you or part of the vehicle.



2. Working within the **upper** slot, rotate and fold the belt webbing over itself as required to remove the twist.
3. Pull the excess belt webbing back through the **upper** slot in the tongue.
4. Repeat the above steps to complete the removal of the twist at the **lower** (wider and larger) slot in the tongue. See Figure 6.



5. When completed, the safety belt should look like Figure 3.

Motorized Shoulder Belt Passive Restraint System

Not available on Canadian vehicles

The front seat shoulder belts automatically adjust and, together with the manual lap belt, help to provide added restraint in the event of a collision.

Warning: The lap safety belt is to be manually buckled by the driver/passenger and should always be worn with the shoulder belt. Be sure the lap belt is on your hips as low as possible.

To operate the motorized shoulder belt:

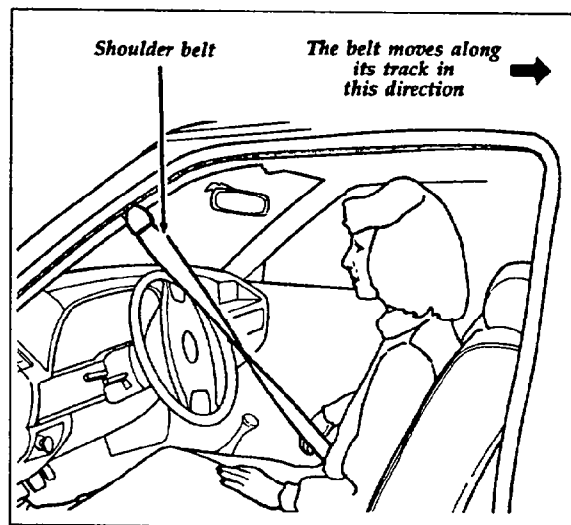
1. Get into your car and close the door. Check to be sure the shoulder belt emergency release levers, located in the floor console, are in the full down position.

NOTE: US vehicles equipped with the Supplemental Driver Side Air Bag System have only one emergency release lever. All other US vehicles have two emergency release levers.

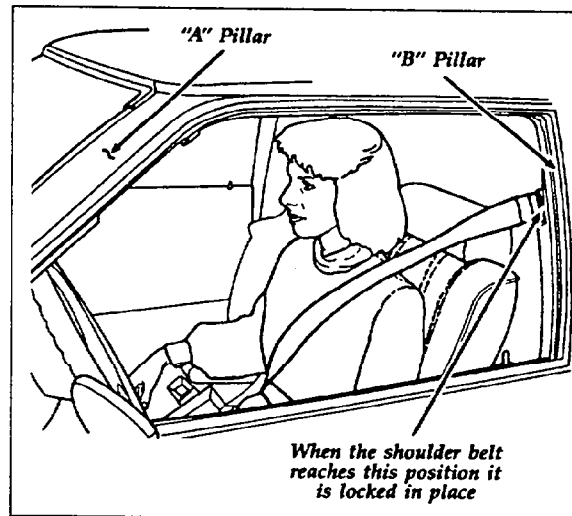
2. With the door closed and fully latched, insert the ignition key and turn it to the ON position. A motor will slide the shoulder belt along its track starting at the front "A" pillar and moving rearward to its locked position at the "B" pillar.

NOTE: If the shoulder belt does not move rearward to the "B" pillar, turn the ignition key to the OFF position and open and close the door; the belt will not move if the door is not fully latched. If the shoulder belt still does not move rearward to the "B" pillar or stops before reaching the "B" pillar, refer to the Manual Override Procedure contained in the "Important For Your Safety" portion of this Owner Guide.

Warning: For the shoulder belt to function properly and restrain the occupant in the event of a collision, the respective shoulder belt emergency release lever must be in the full down position.



The shoulder belt sliding along its track



The shoulder belt in the locked position



The safety belt light in the sport cluster

For more information on your passive restraint system, read the section titled *Emergency Release Levers*.

Warning: Always drive and ride with your seatback upright and the lap belt portion of your safety belt snug and low across the hips. This will reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Safety belts provide best restraint when:

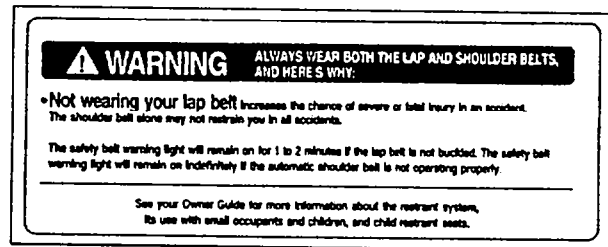
- ☐ the seatback is upright
- ☐ the occupant is sitting upright (not slouched)
- ☐ the lap belt is snug and low on the hips
- ☐ the shoulder belt is snug against the chest
- ☐ the knees are straight forward

When the vehicle ignition is turned to the OFF position and the door is opened, the shoulder belt will move forward to the "A" pillar. This

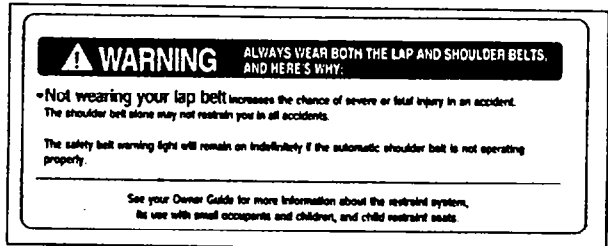
will allow ample room for the driver or passenger to exit the car. DO NOT USE the belt as an assist handle when entering or exiting the car.

Important For Your Safety

Before driving the car, read the label on the back of the sun visor. See the following figures.



Driver sun visor labels



Passenger sun visor labels

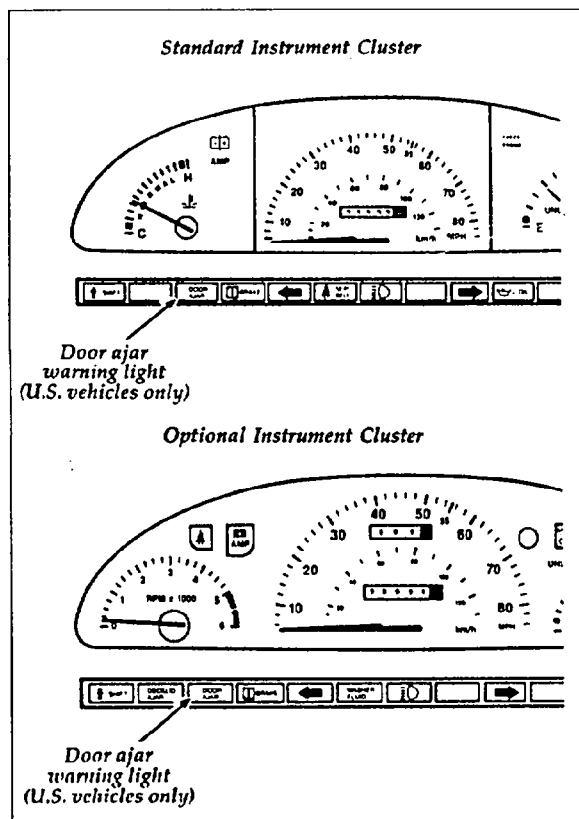
What To Do If Your Shoulder Belt Does Not Engage Properly

If the shoulder belt stalls before it locks into place, the shoulder belt indicator light flashes until corrective steps are taken.

If your shoulder belt does not move all the way across to the locked position on the "B" pillar, follow these steps:

1. Make sure the ignition key is in the OFF position.

2. Make sure your door is fully closed. The shoulder belt does not work if your door is open or ajar.

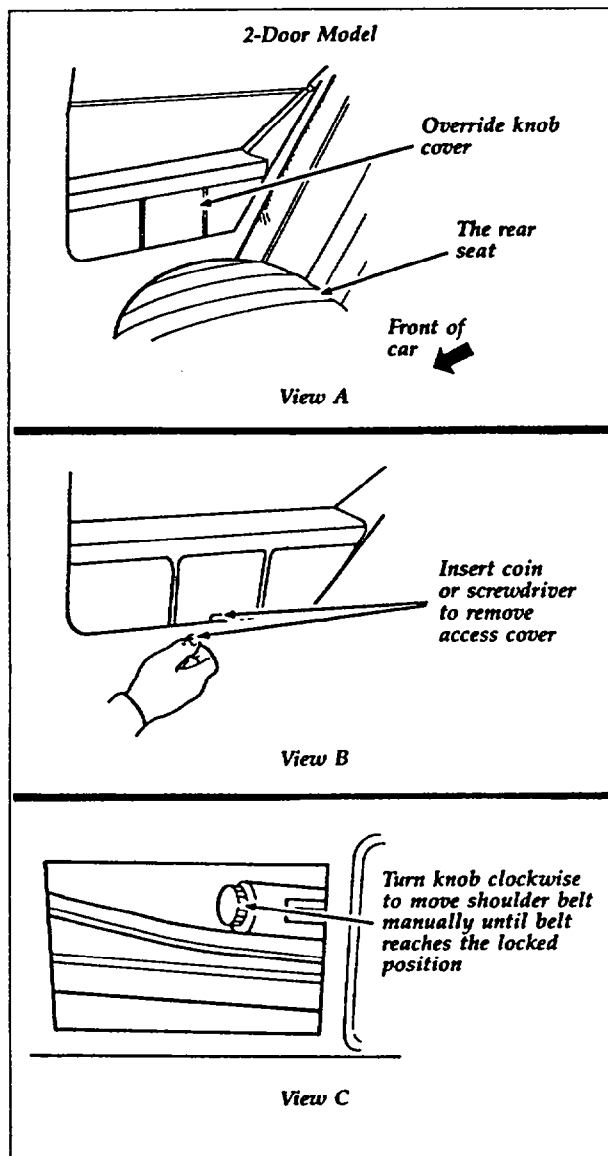


The door ajar warning light in the instrument panel (not available in Canada)

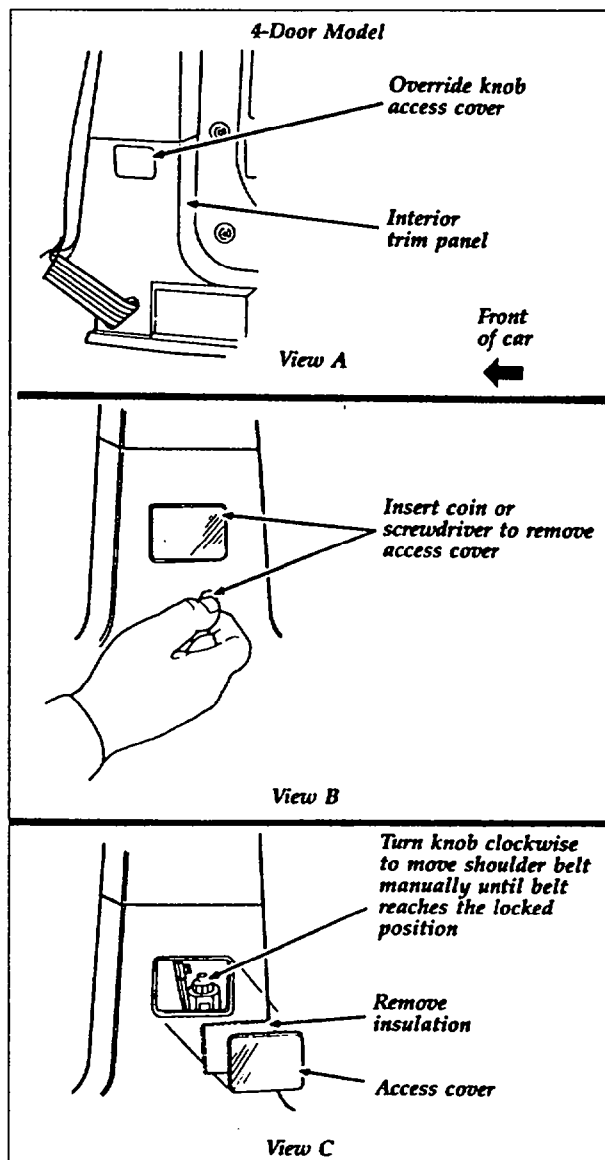
If your front door is ajar, the shoulder belt will remain in the forward position at the "A" pillar. The door ajar warning light located in the instrument panel will illuminate until the door is fully closed.

Warning: The vehicle should not be driven unless the doors are fully closed and the shoulder belts are in the locked position on the "B" pillar.

3. Turn the key to the ON position.
4. If the shoulder belt doesn't move across you, turn the ignition key to OFF. Then take a coin or screwdriver and remove the panel covering the override knob.



Moving the shoulder belt manually — passenger side shown, driver side similar



Moving the shoulder belt manually — passenger side shown, driver side similar

5. Turn the override knob clockwise until the shoulder belt moves to the lowest position on the "B" pillar.
6. If the shoulder belt still does not move, pull the belt while you are turning the knob and position the belt over your shoulder.

Warning: If it is necessary to use the override knob to put the shoulder belt in position, have the system serviced by a qualified technician as soon as possible.

While you drive, the shoulder belt adjusts to your movement. However, if you brake hard, turn hard, or if your car receives an impact of 5 mph (8 km/h) or more, the shoulder belt locks and helps reduce your forward movement.

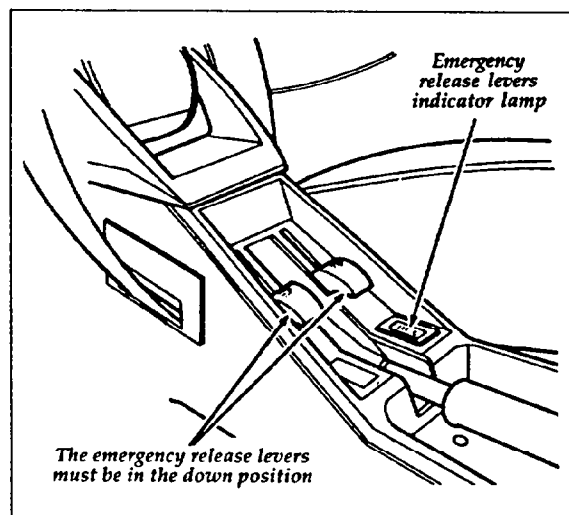
Emergency Release Levers

Warning: Do not operate the vehicle until BOTH emergency release levers located in the floor console are in the DOWN position, in order for the shoulder belts to help restrain the occupants.

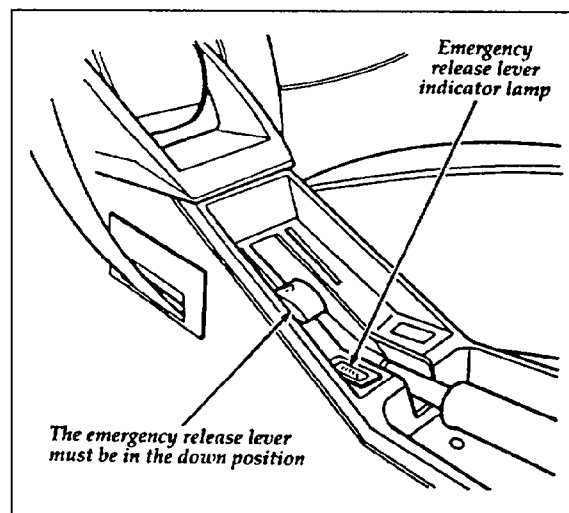
NOTE: US vehicles equipped with the Supplemental Driver Side Air Bag System have only one emergency release lever. All other US vehicles have two emergency release levers.

If the shoulder belt locks up in a collision it may stay locked. To unlock the belt, lift up the emergency release lever on the center floor console.

Warning: After a collision, refer to *Safety Belt Maintenance* in this section.



The emergency release levers without Driver Side Air Bag



The passenger emergency release lever with Driver Side Air Bag

The emergency release levers must be down while you drive your car. If either lever is raised, the PUSH SHOULDER BELT RELEASE LEVER DOWN lamp in the center console will flash, the safety belt light will remain lit and the chime will sound. For more details, see the *Understanding the Warning Lights And Gauges* section.

If your shoulder belts stop working after a collision, the fuel pump shut-off switch may have been triggered. The shut-off switch cuts power to the motors that move the shoulder belts. To reset the switch, see *The Fuel Pump Shut-off Switch* in the Index.

If your shoulder belts are not working properly, get your vehicle serviced as soon as possible.

Warning: If the fuel pump shut-off switch is not the cause for the shoulder belt not moving, have the system serviced by a qualified technician as soon as possible.

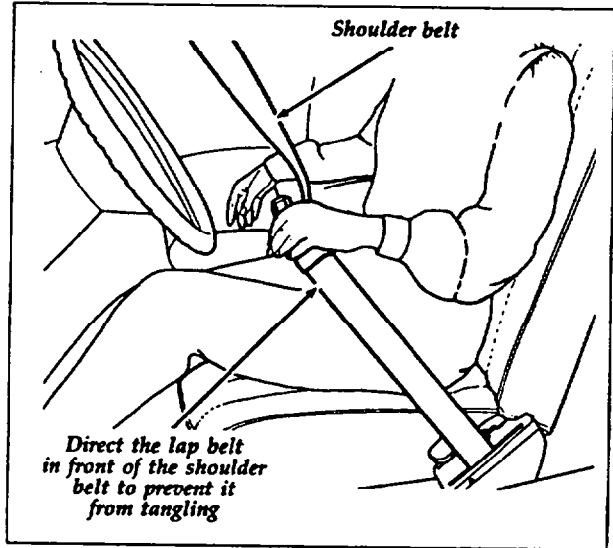
Lap Belts

You should always wear the lap belt in addition to the shoulder belt.

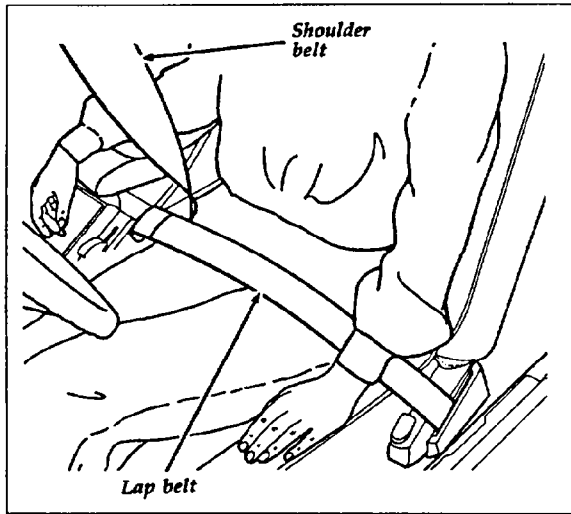
Warning: The lap belt must be manually buckled by the driver and front passenger and should fit snugly and as low as possible around the hips, not around the waist. Failure to do so may increase the risk of injury in the event of a collision.

Warning: Front and rear seat occupants (including pregnant women) should always wear the available safety restraints.

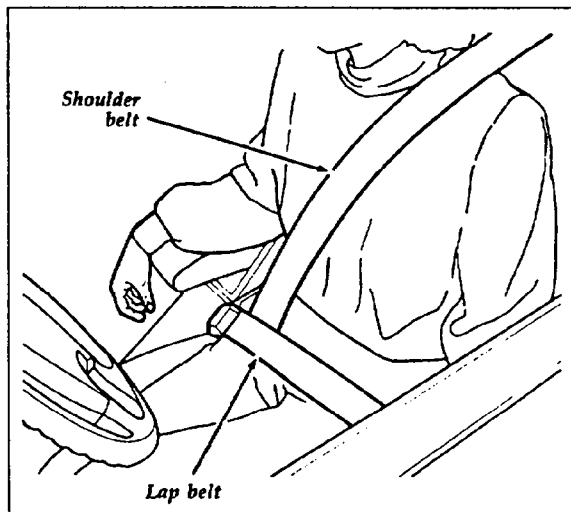
To fasten the lap belt, pull the belt out of the retractor and bring it across your lap. Insert the tongue into the buckle until it snaps and locks into place. Make sure the tongue is securely fastened to the buckle.



Buckling the lap belt



The lap belt fastened



The lap and shoulder belts in place

Air Bag Supplemental Restraint System (SRS)

Your car may be equipped with an optional air bag for the driver, located in the steering wheel. This air bag is a supplemental restraint system. It is designed to be used in addition to the safety belt to help protect against head and chest injuries in certain moderate to severe frontal collisions.

The Importance of Wearing Safety Belts

Warning: Safety belts must be worn by all vehicle occupants to be properly restrained and help reduce the risk of injury in a collision.

There are four very important reasons to use safety belts even with an air bag system. Use your safety belts to:

- ☐ help keep you in the proper position (away from the air bag) when it inflates
- ☐ reduce the risk of harm in rollover, side or rear impact collisions, because an air bag is not designed to inflate in such situations
- ☐ reduce the risk of harm in frontal collisions that are not severe enough to activate the air bag
- ☐ reduce the risk of being thrown from your vehicle

The Importance of Being Properly Seated

In a collision, the air bag must inflate extremely fast to help provide additional protection for you. In order to do this, the air bag must inflate with considerable force. If you are not seated in a normal riding position with your back against the seatback, the air bag may not protect you

properly and could possibly hurt you as it inflates.

Warning: Do not place objects or mount equipment in front of the air bag module cover or in front seat areas that may come in contact with a deploying air bag. Failure to follow this instruction could result in personal injury.

How the Air Bag Supplemental Restraint System Operates

The driver Air Bag Supplemental Restraint System has two main parts. One part is the air bag system with the air bag and inflator located in the center of the steering wheel. The second part is the electrical system which has impact sensors and a diagnostic module. The diagnostic module monitors its own internal circuits and the supplemental air bag electrical system readiness, including the crash sensors, system wiring, the air bag readiness light, air bag back-up power, and the supplemental air bag igniter.

The air bag system uses a readiness light and a tone to indicate the condition of the system. The readiness light is in the instrument cluster. When you turn the ignition key to ON, this light will illuminate for approximately six (6) seconds and then turn off. This indicates that the system is operating normally. **NOTE:** Maintenance of the air bag system is not required.

Warning: A problem with the system is indicated by one or more of the following:

☐ the readiness light will either flash or stay lit,

☐ or it will not light immediately after ignition is turned on,

☐ or a group of five beeps will be heard.

If any of these things happens, have the air bag system serviced at your Ford or Lincoln-Mercury Dealer immediately.

Tone generator

The air bag readiness light indicates the air bag system condition. However, a series of five sets of five beeps will be heard only if the readiness light doesn't work and there is a problem with the air bag system. This also means that the Air Bag Supplemental Restraint System (SRS) is in need of service. The tone pattern will repeat (five sets of five beeps) periodically until the problem and light are repaired. Unless serviced, the Air Bag Supplemental Restraint System may not function properly in the event of a collision.

Warning: Do not attempt to service, repair, or modify the Air Bag Supplemental Restraint System; tampering could cause activation of the system and increase the risk of personal injury. For servicing of the Air Bag Supplemental Restraint System, see your dealer.

The air bag system is designed to stay out of sight until it is activated. The air bag system is designed to deploy in frontal and front-angled collisions more severe than hitting a parked vehicle of similar size and weight head-on at about 28 mph (45 km/h). Because the system senses the crash severity rather than vehicle speed, **some** frontal collisions at speeds above 28 mph (45 km/h) will not inflate the air bag.

The following four steps show how the air bag system works:

1. Sensors in the vehicle will detect the degree of severity of a frontal impact. When two sensors close at the same time, electric current flows to the inflator and the system ignites the gas generant.
2. The propellant then rapidly burns in the metal container. The rapid burning produces nitrogen gas and small amounts of dust. The nitrogen gas and dust are cooled and filtered during inflation of the air bag.
3. The inflating air bag splits open the trim cover. The air bag then rapidly unfolds and inflates in front of the occupant.

NOTE: STEPS 1-3 TAKE PLACE IN A FRACTION OF A SECOND.

4. After inflation, the gas empties through holes in the air bag. The air bag deflates at once.

The surface of the air bags and the vehicle interior may be dusted with a powdery residue. The powder is corn starch or talcum powder, which is used to lubricate the air bag as it inflates, and sodium compounds such as sodium carbonates (e.g., baking soda), and possibly a very small amount of sodium hydroxide that may be irritating to the skin and eyes, but is not toxic.

Right after air bag inflation, you may notice smoke (from the powder and dust) and smell the burnt propellant. This is normal.

Warning: Several air bag system components get hot after inflation. Do not try to touch them after inflation.

Air bags may not inflate in certain frontal collisions, even though the vehicle may be badly damaged. The fact that your air bag did not inflate in such a collision does not mean that something is wrong with the air bag system. Rather, it means the crash forces were not severe enough to need an air bag to prevent serious injury.



Inflated driver-side air bag

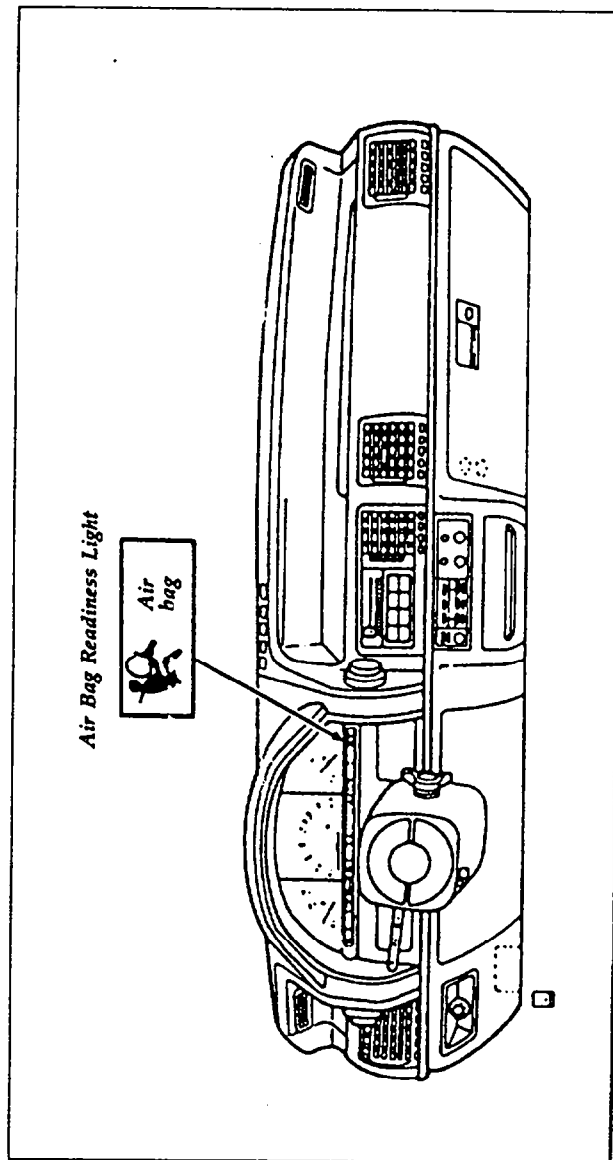
Warning: The air bag will inflate only once. The system is designed to function on a one-time-only basis. If the air bag is inflated, **THE AIR BAG WILL NOT FUNCTION AGAIN AND MUST BE REPLACED IMMEDIATELY.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

Disposal of air bag equipped vehicles

For disposal of air bags or air bag equipped vehicles, see your local Ford or Lincoln-Mercury dealer, or refer to the procedures in the 1994 Ford Service Manual. Information on how to order a service manual is available at an authorized Ford or Lincoln-Mercury Dealer. You can also order a service manual using the order form in the *Accessories* chapter of your Owner Guide.

Service and information labels

Service and information labels are attached to the sun visor (USA vehicles), on the headliner above the driver's seat (Canadian vehicles), and near the radiator support in the engine compartment.



Air bag information on the instrument panel