V1775

REPORT NUMBERS: 208-CAL-93-4
212-CAL-93-4
301-CAL-93-4

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

Ford Motor Company
1993 Crown Victoria
4-door Sedan

NHTSA NUMBER: CP0204

CALSPAN TEST NUMBER: 8056-5

OCTOBER 29, 1992

CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
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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

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-90-C-01003. This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

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2/16/93

Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
208-CAL-93-4 212-CAL-93-4 301-CAL-99-4		

4. Title and Subtitle	5. Report Date
Final report of FMVSS Nos. 208, 212, 219 (Partial), and 301 testing on a 1993 Ford Crown Victoria 4-door Sedan	October 29, 1992
	6. Performing Organization Code: CAL

7. Author(s)	8. Performing Organization Report No.
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9. Performing Organization Name and Address	10. Work Unit No.
Calspan Advanced Technology Center P.O. Box 400 Buffalo, New York 14225	256-5-1231
	11. Contract or Grant No.: DTNH22-90-C-01003

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
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, DC 20590	Final Report October-November 1992
	14. Sponsoring Agency Code: DOT/NHTSA/NEF/OVSC

15. Supplementary Notes

16. Abstract

A 30 mph vehicle safety compliance test was conducted on a 1993 Ford Crown Victoria 4-door sedan.

This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on October 29, 1992. 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 29.5 mph. The ambient temperature at the impact face was 55°F.

The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301.

Type of Restraint System: The test vehicle was equipped with driver and right front passenger air bags. The manual 3-point seat belt restraints were not used for this test.

17. Key Words	18. Distribution Statement
30 mph Vehicle Safety Compliance Testing FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity" Frontal Impact	Copies of this report are available from: Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 (NAD-52) 400 Seventh St., S.W., Washington, DC 20590

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED		

Form DOT F1700.7 (8-69)

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Section 1

PURPOSE AND TEST PROCEDURE

This 30 mph frontal barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208, 212, 219 (partial) and 301 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by Calspan Advanced Technology Center under Contract No. DTNH22-90-C-01003. The purpose of this test was to determine if the subject vehicle, a 1993 Ford Crown Victoria 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 CP0204

A frontal barrier was impacted by a 1993 Ford Crown Victoria 4-door sedan at a velocity of 29.5 mph. The test was performed at the Calspan Corporation Advanced Technology Center on October 29, 1992. 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 two 14-channel FM tape recorders. Appendix B contains the vehicle and dummy response data traces.

The driver's HIC was 205. The maximum chest deceleration over 3 milliseconds was 46.7 g's. The maximum force on the driver's left femur was 1431 pounds and 874 pounds on the right femur.

The right front passenger's HIC was 435. The maximum chest deceleration over 3 milliseconds was 37.1 g's. Loads of 1154 and 1085 pounds were recorded on the left and right femurs respectively.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No.: CP0204 Test Mode: 30 mph Frontal Barrier

Test Date: October 29, 1992 Time: 12:05 Temperature: 55 °F

Vehicle Make/Model/Body Style: 1993 Ford Crown Victoria 4-door Sedan

Vehicle Test Weight: 4450 lbs.

Vehicle/Barrier Impact Angle: 0°

Impact Velocity: 29.5 mph

Maximum Static Crush: 13.5 inches

Vehicle Rebound: 0.6 inches

DUMMIES:	DRIVER	PASSENGER
Type:	Part 572B	Part 572B
Restraint System:	Air Bag	Air Bag

Number of Data Channels: 23

Number of Cameras: 1 Real Time

14 High Speed

DOOR OPENING DATA: Closed-operable - Left Front

Closed-operable - Right Front

Front Seat(s) Data:	DRIVER	PASSENGER
Seat Track Failure:	0.0 (power seat)	1.6" Forward (Manual Seat)
	inches of shift	
Seat Back Failure:	None	None

VISIBLE DUMMY CONTACT POINTS:	DRIVER	PASSENGER
Head:	Face with air bag, forehead and top of head with sunvisor	Face with air bag, forehead and top of head with sunvisor
Abdomen:	Air bag	Air bag
Chest:	Air bag	Air bag
Knees:	Lower dash	Glove box door

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1993 Ford Crown Victoria 4 Door Sedan

NHTSA No.: CP0204 ; VIN: 2FALP74W7PX106060 ; Color: White

Engine Data: 8 cylinders; - CID; 4.6 Liters; - cc

Placement: ✓ Longitudinal or In-Line; - Transverse or Lateral

Transmission Data: 4 speeds; - Manual; - Automatic; ✓ Overdrive

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

Major Options: ✓ A/C; ✓ Pwr.Strg.; ✓ Pwr.Brakes

✓ Pwr.Windows; - Pwr.Door Locks; ✓ Tilt Wheel

Date Received: 9-14-92 ; Odometer Reading 20 miles

Selling Dealer: Muck Motor Sales Inc.

& Address Campbell Blvd., Getzville, NY 14068

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Ford Motor Co. Canada LTD

Date of Manufacture: 08/92

GVWR: 5490 lbs.; GAWR: 2638 lbs. FRONT; 2877 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load: 30 psi FRONT

34 psi REAR

Recommended Tire Size: P215/70R15S

* Recommended Cold Tire Pressure: 30 psi FRONT; 34 psi REAR

Size of Tires on Test Vehicle: P215/70R15; Manufacturer: Michelin

Vehicle Capacity Data:

Type of Front Seats: - Bench; - Bucket; ✓ Split Bench

Number of Occupants: 3 Front; 3 Rear; 6 Total

Vehicle Capacity Weight (VCW) = 1100 lbs.

No. of Occupants x 150 lbs. = 900 lbs.

Rated Cargo/Luggage Weight (RCLW) = 200 lbs. (Difference)

*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 = 1110 lbs. Right Rear = 870 lbs.

Left Front = 1090 lbs. Left Rear = 870 lbs.

TOTAL FRONT = 2200 lbs. TOTAL REAR = 1740 lbs.

% of Total Vehicle Weight = 55.8 % of Total Weight = 44.2 %

TOTAL DELIVERED WEIGHT = 3940 lbs.

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 3940 lbs.

Rated Cargo/Luggage Weight (RCLW) = 200 lbs.

Weight of 2 P.572 Dummies @ 164 ea. = 328 lbs.

TARGET TEST WEIGHT = 4468 lbs. (sum)

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 182 POUNDS OF CARGO WEIGHT:

Right Front = 1150 lbs. Right Rear = 1090 lbs.

Left Front = 1090 lbs. Left Rear = 1120 lbs.

TOTAL FRONT = 2240 lbs. TOTAL REAR = 2210 lbs.

% of Total Weight = 50.3 % % of Total Weight = 49.7 %

TOTAL TEST WEIGHT = 4450 lbs.

Weight of Ballast Secured in Vehicle Trunk Area = 100 lbs.

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimensions in inches):

AS DELIVERED:	RF 29.0"	LF 29.3"	RR 29.5"	LR 29.6"
FULLY LOADED:	RF 27.4"	LF 27.8"	RR 26.9"	LR 27.0"
AS TESTED:	RF 28.7"	LF 29.1"	RR 27.7"	LR 27.9"

Vehicle's Wheel Base: 114.5 in.

Location of Vehicle's C.G.: 56.9 inches rearward of front wheel center

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 20 gallons

Usable Capacity Figure Furnished by COTR = 20 gallons

Test Volume Range (92 to 94% of Usable Capacity) = 18.4 to 18.8 gallons

ACTUAL TEST VOLUME = 18.6 gallons (with entire fuel system filled)

Table 3

POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°

Test Date: October 29, 1992 Time: 12:05 Temperature: 55°F

Vehicle NHTSA No.: CP0204

Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.5 mph; Trap No. 2 = 29.5 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 = 208.3 ;	C/L = 211.8 ;	Left = 208.4
Post-Test	Right = 194.8 ;	C/L = 199.6 ;	Left = 196.8
Crush	Right = 13.5 ;	C/L = 12.2 ;	Left = 11.6

AVERAGE = 12.4 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

Right = 0.0 ; C/L = 1.9 ; Left = 0.0

AVERAGE = 0.6 inches

DOOR OPENING:	Left	Right
Front	Closed-operable	Closed
Rear	Closed-operable	Closed

SEAT MOVEMENT:	Seat Back Failure	Seat Shift
Front	None	Driver 0.0, Passenger 1.6" forward
Rear	N/A	N/A

Table 3

POST IMPACT DATA (cont.)

GLAZING DAMAGE: None

OTHER NOTABLE IMPACT FEATURES: Steering column stroked, hood unlatched during impact.

Section 3

OCCUPANT AND VEHICLE DATA

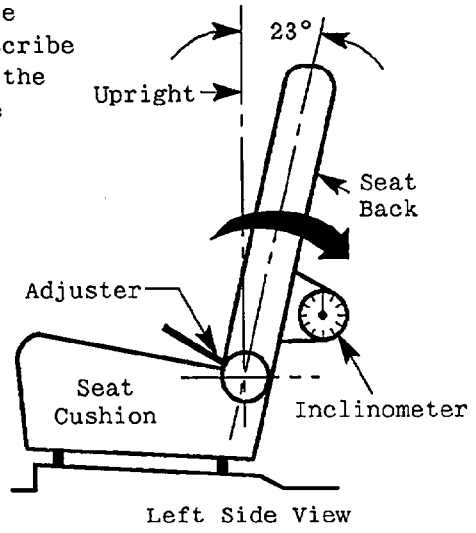
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year: 1993 Vehicle Model: Ford Crown Victoria 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.



Left Side View

Seat back angle for driver's seat: 23°

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

Seat back angle for passenger's seat: 23°

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

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Place power seat in mid position of travel

Positioning of the passenger's seat (if applicable): Seat in 8th detent (mid-position) of 15 total detents

3. Fuel Tank Capacity Data

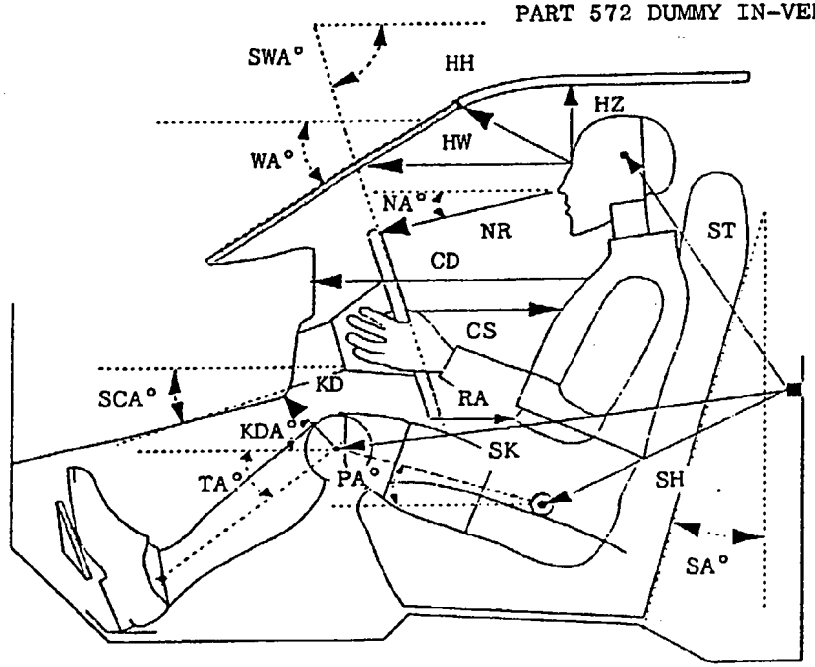
A. "Usable Capacity" of the standard equipment fuel tank is 20 gallons

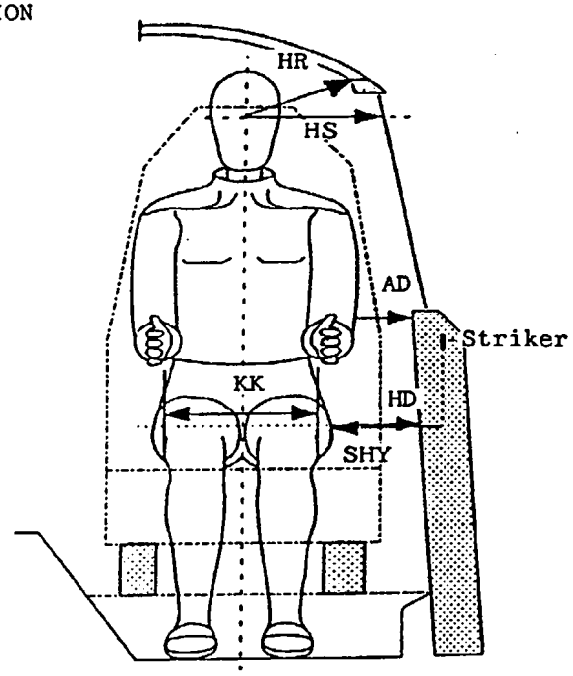
B. "Usable Capacity" of the optional equipment fuel tank is - gallons

Additional Instructions: Steering column in mid-position, third detent of five total detents

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION



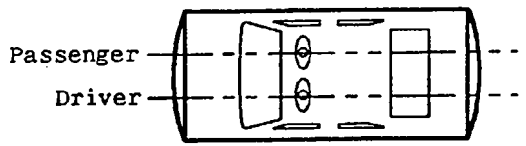


HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
NR - Nose to Rim
CS - Steering Wheel to Chest
CD - Chest to Dash
RA - Rime to Abdomen
KDL/KDR - Knee to Dash
KDA - Knee to Dash Angle
SH - Striker to H-Point

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

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 Longitudinal Planes



Vertical Transverse Plane

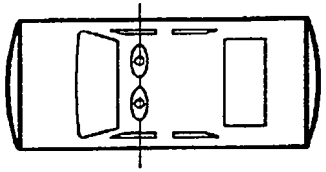


Table 4

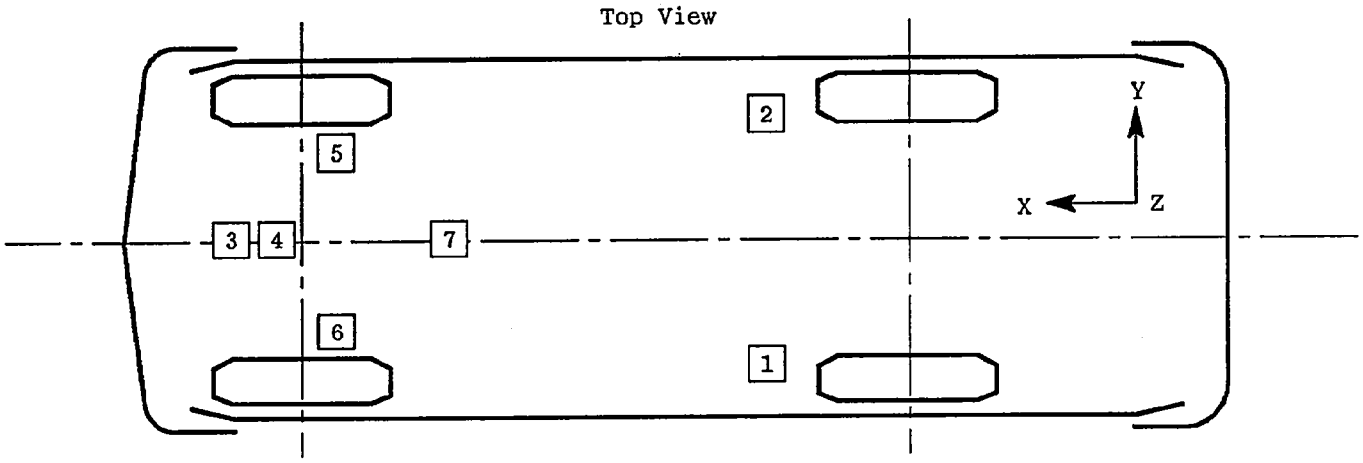
FRONT SEAT OCCUPANT MEASUREMENT

	DRIVER (Serial #1020)	PASS (Serial #1022)
WA°	31°	-
SWA°	-68°	-
SCA°	22°	-
SA°	See Note	See Note
HZ	5.6	5.8
HH	17.1	18.4
HW	22.3	23.7
HR	6.8	-
NR	18.7 Angle (NA) 20°	-
CD	24.3	24.0
CS	11.6	N/A
RA	6.0	N/A
KDL	7.2 Angle (KDA) 37°	8.0
KDR	8.1	7.7 Angle (KDA) 39°
FA°	10°	12°
TA°	28°	31°
KK	14.6	11.8
ST	22.3 Angle -6°	22.0 Angle -6°
SK	22.1 Angle 98°	21.2 Angle 96°
SH	7.5 Angle 134°	6.6 Angle 138
SHY	10.9	11.5
HS	12.2	12.2
HD	7.4	7.9
AD	3.9	5.1

Note: Seat backs were positioned as specified by manufacturer at 23°.

Figure 3

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** MAX (g)	POSITIVE DIRECTION** TIME (msec)	NEGATIVE DIRECTION** MAX (g)	NEGATIVE DIRECTION** TIME (msec)
1	REAR SEAT X-MEMBER AT LEFT SIDE	PRE:	86.4	24.1	17.0				
		POST:	86.4	24.1	15.5				
	LONGITUDINAL ACCELERATION					3	162	-25	28
2	REAR SEAT X-MEMBER AT RIGHT SIDE	PRE:	86.4	-24.1	17.0				
		POST:	86.4	-24.1	16.0				
	LONGITUDINAL ACCELERATION					7	136	-33	28
3	TOP OF ENGINE BLOCK	PRE:	170.8	-1.0	31.4				
		POST:	167.3	-1.0	34.1				
	LONGITUDINAL ACCELERATION					14	91	-40	61
4	BOTTOM OF ENGINE	PRE:	164.8	+4.0	11.1				
		POST:	161.8	+4.0	9.8				
	LONGITUDINAL ACCELERATION					3	86	-42	33
5	BRAKE CALIPER AT RIGHT SIDE	PRE:	164.5	-23.5	10.1				
		POST:	163.5	-23.5	9.8				
	LONGITUDINAL ACCELERATION					31	47	-49	31
6	BRAKE CALIPER AT LEFT SIDE	PRE:	164.5	23.5	10.1				
		POST:	162.5	23.5	9.9				
	LONGITUDINAL ACCELERATION					21	48	-55	36
7	DASH PANEL	PRE:	130.5	-4.0	34.6				
		POST:	130.5	-4.0	33.0				
	LONGITUDINAL ACCELERATION					30	67	-59	32

		**	POSITIVE	NEGATIVE
*X	+ Forward from rear bumper	LONGITUDINAL:	FORWARD	REARWARD
Y	+ Left from vehicle centerline	LATERAL:	LEFTWARD	RIGHTWARD
Z	+ Up from ground	VERTICAL:	UPWARD	DOWNWARD

DISTANCE MEASUREMENTS IN INCHES

Figure 4

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5.

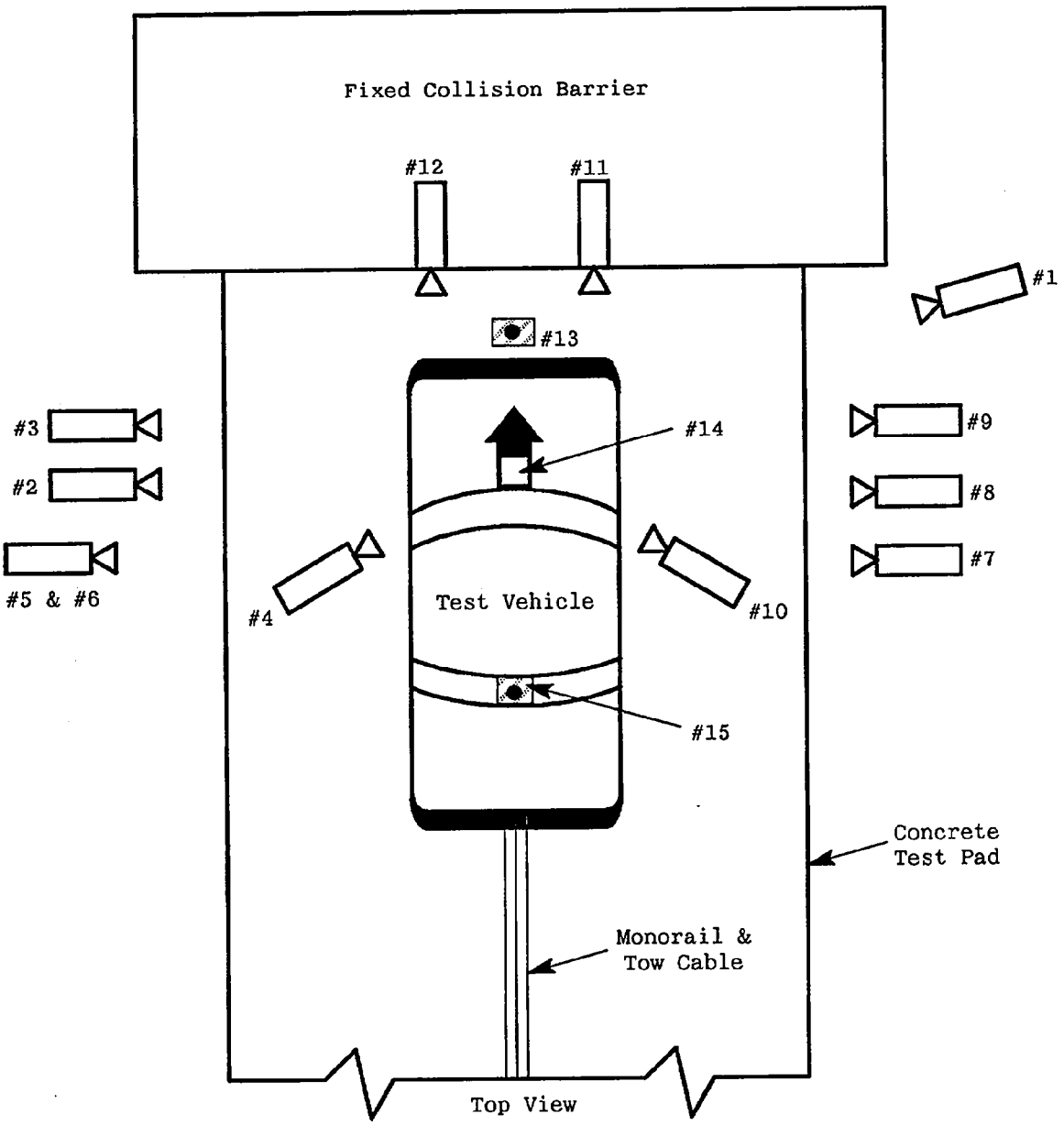


Table 6

HIGH-SPEED CAMERA LOCATIONS

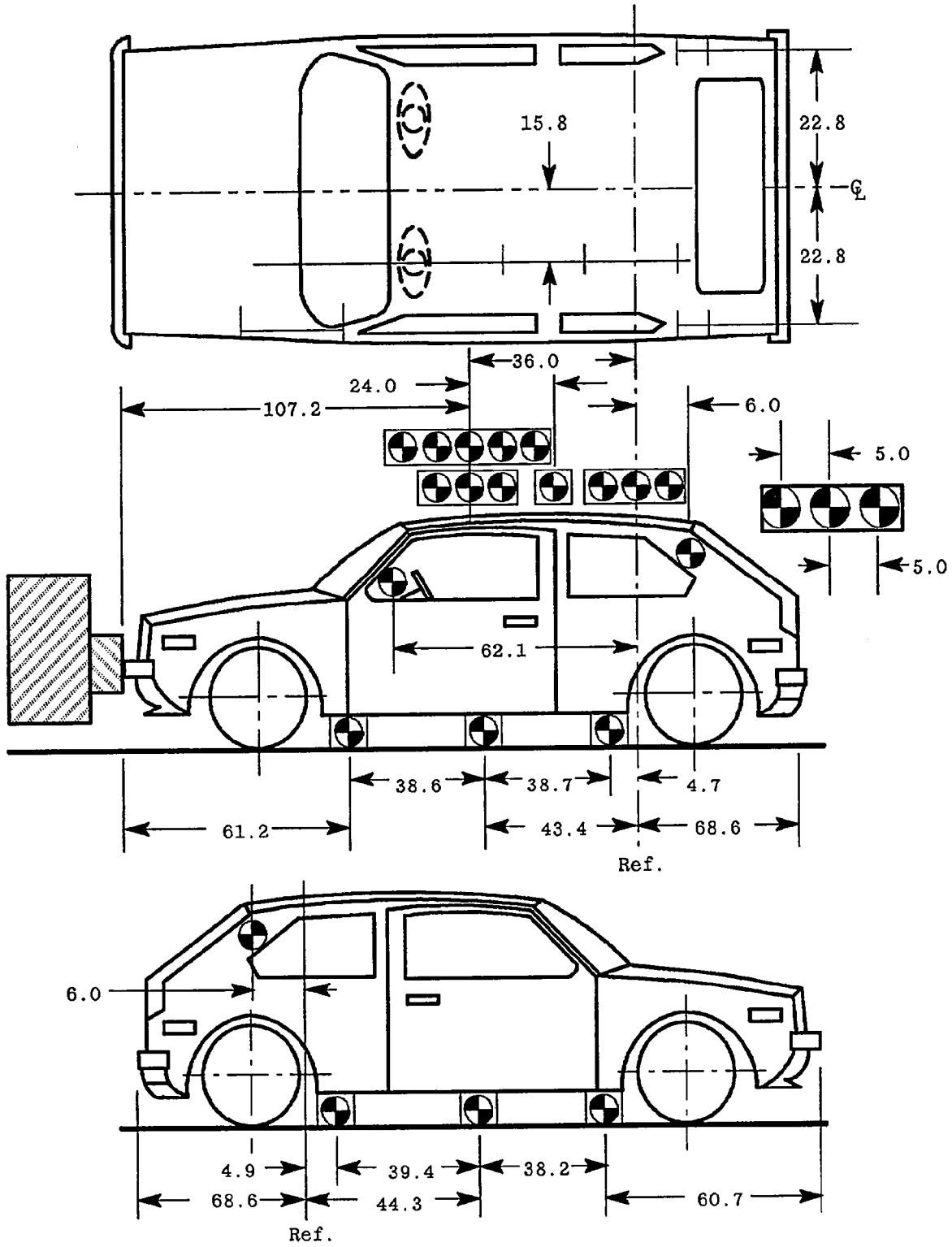
Test No. CP0204 Vehicle: 1993 Ford Crown Victoria 4-door Sedan

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	275	83	41	-3	256.2	13	550
3	Left Side View	349	49	42	-4	330.2	25	620
4	Driver and Interior View	119	119	70	-16	-	13	570
5	Steering Column (Bottom)	300	92	46	-4	281.2	25	590
6	Steering Column (Top)	300	92	70	-8	281.2	25	575
7	Overall Right Side	264	90	42	-4	245.2	13	595
8	Right Side View	335	67	41	-1	316.2	25	510
9	Right Passenger View	336	91	56	-4	317.2	35	500
10	Passenger and Interior View	113	119	66	-16	-	13	570
11	Passenger Front View	22	19	77	-38	-	13	625
12	Driver Front View	22	19	77	-38	-	13	590
13	Windshield View	0	0	126	-40	-	13	605
14	Pit View of Engine	0	36	76	90	-	13	755
15	Pit View of Fuel Tank	0	137	76	90	-	13	920

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

Figure 5

VEHICLE TARGET LOCATIONS



(Dimensions in inches)

Figure 6

TEST VEHICLE MEASUREMENTS

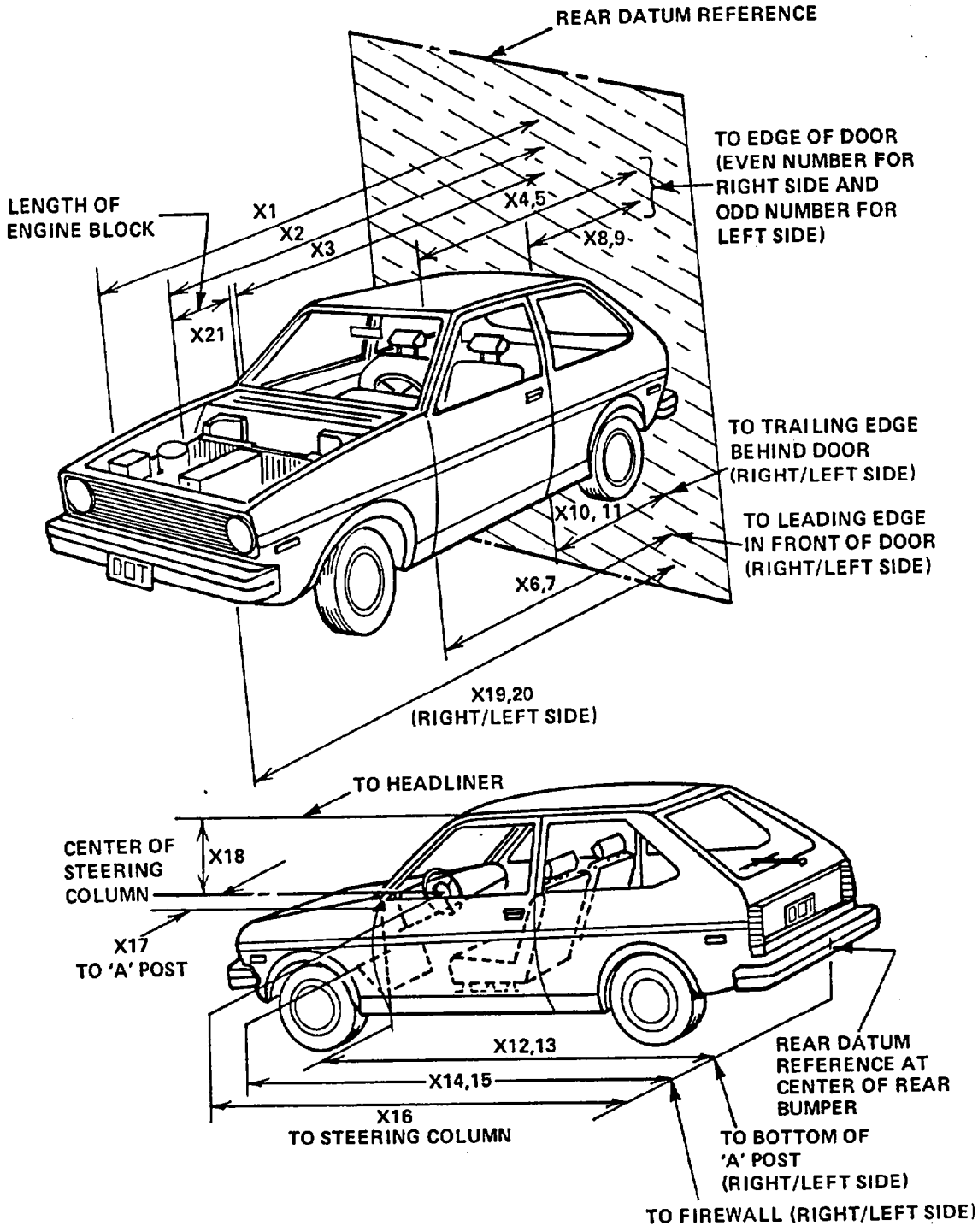


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	211.8	199.6	12.2
X2	Rear Surface of Vehicle to Front of Engine	177.6	173.0	4.6
X3	Rear Surface of Vehicle to Firewall	154.2	153.7	0.5
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	143.9	143.1	0.8
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	144.3	144.3	0.0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	143.5	142.9	0.6
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	143.5	142.8	0.7
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	99.8	99.4	0.4
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	99.8	99.5	0.3
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	100.0	99.2	0.8
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	100.1	99.2	0.9
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	143.2	142.4	0.8
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	143.5	142.8	0.7
X14	Rear Surface of Vehicle to Firewall, Right Side	152.0	152.0	0.0
X15	Rear Surface of Vehicle to Firewall, Left Side	153.5	153.7	-0.2
X16	Rear Surface of Vehicle to Steering Column	122.5	124.8	-2.3
X17	Center of Steering Column to "A" Post	17.3	17.8	-0.5
X18	Center of Steering Column to Headliner	16.2	15.0	1.2
X19	Rear Surface of Vehicle to Right Side of Front Bumper	208.3	194.8	13.5
X20	Rear Surface of Vehicle to Left Side of Front Bumper	208.4	196.8	11.6
X21	Length of Engine Block	21.5	21.5	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 VALUES

NHTSA No.: CP0204 Vehicle: 1993 Ford Crown Victoria 4-door Sedan

	MAXIMUM ACCELERATION (g's)							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
Dummy (1)	-75	13	37	77	-48	7	15	46.7
Dummy (2)	-94	9	38	101	-36	-5	16	37.1

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	1431	874
Dummy (2)	1154	1085

	HEAD INJURY CRITERIA**			
		36 millisecond Maximum		Avg. Acc. (g)
	HIC	t_1 (msec)	t_2 (msec)	t_1 TO t_2
Dummy (1)	204.81	77.640	84.840	60.48
Dummy (2)	435.16	78.480	89.640	68.61

*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 = 6 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 = 0 sec.
(audible warning should not operate)

Log time duration of reminder light operation = 6 sec.

Note wording of visual warning:

Fasten Seat Belt –

Fasten Belt –

Symbol 101-80 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: Locked on driver side sunvisor

The label on the driver sunvisor states, "NO SRS MAINTENANCE IS NEEDED unless:

- "Air Bag" lamp flashes or stays lit.
- "Air Bag" lamp does not light when key is turned on.
- Groups of five beeps are heard.

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 systems? 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:

Upper right hand corner 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.: C00204

Make/Model: 1993 Ford Crown Victoria

Date of Comfort/Convenience Check: 10/28/92

Technician Performing Check: D.J.T.

GVWR: 5490 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 - NO X

If yes, go to requirements D1, D2 and D3

2. Manual seat belts* YES X 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 (nonengaged).

   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 ___-___ 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 N/A NO N/A

   b. The latch plate is released from the buckle. YES N/A NO N/A

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 N/A NO N/A

(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 - NO X

2. Seats are adjusted according to instructions in Appendix B.

   YES X NO -

3. The test dummies are positioned according to dummy position placement instructions in Appendix B and Appendix C.

   YES X NO -

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. The contact force is 0.4 pounds. 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 ___X___ NO ___-___

2. Attach the inboard and outboard reach string. YES ___X___ NO ___-___

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 ___X___ NO ___-___

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 ___X___ NO ___-___

D5

RETRACTION

1. Seats and seat backs are adjusted according to instructions in Appendix B "General Test Conditions" in TP-208-8.

YES ___X___ NO ___-___

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 ___X___ NO ___-___

3. Outboard armrests which are capable of being stowed on vehicle seats shall be placed in their stowed positions.

YES ___X___ NO ___-___

4. Check the option which applies to this test vehicle:

   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 ___X___ NO ___-___

Table 12 (cont.)

b. The torso and lap belt webbing of the seat belt system automatically retract when the seat belt latch plate is released.

YES ___X___ NO ___-___

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 ___X___ NO ___-___

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 ___N/A___ NO ___N/A___

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 ___X___ NO ___-___

2. The remaining two seat belt parts are accessible under normal conditions.

YES ___X___ NO ___-___

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 nonretractable, the belt is unattached.

   YES ___X___ NO ___-___

   b. The seat is moved to any position to which it is designed to be adjusted.

   YES ___X___ NO ___-___

   c. The seat back, if foldable, is folded forward as far as possible and then moved backward into positions.

   YES ___X___ NO ___-___

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 ___X___ NO ___-___

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 ___X___ NO ___-___

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 ___X___ NO ___-___

3. That releases at a single point by a push button action.

   YES ___X___ NO ___-___

Figure 7

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

Windshield is bonded in place with 0.75 rubber trim covering the top and sides. The lower portion of the windshield is covered by a plastic shroud.

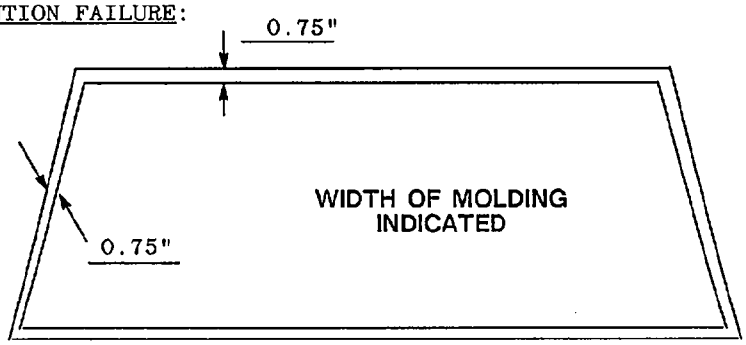
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles 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		
	PRE-TEST (in.)	POST-TEST (in.)	PERCENT RETENTION
RIGHT SIDE	87.1	87.1	100
LEFT SIDE	87.1	87.1	100
TOTAL	174.2	174.2	100

AREA OF RETENTION FAILURE:



FRONT VIEW

FAILURE DETAILS:

None

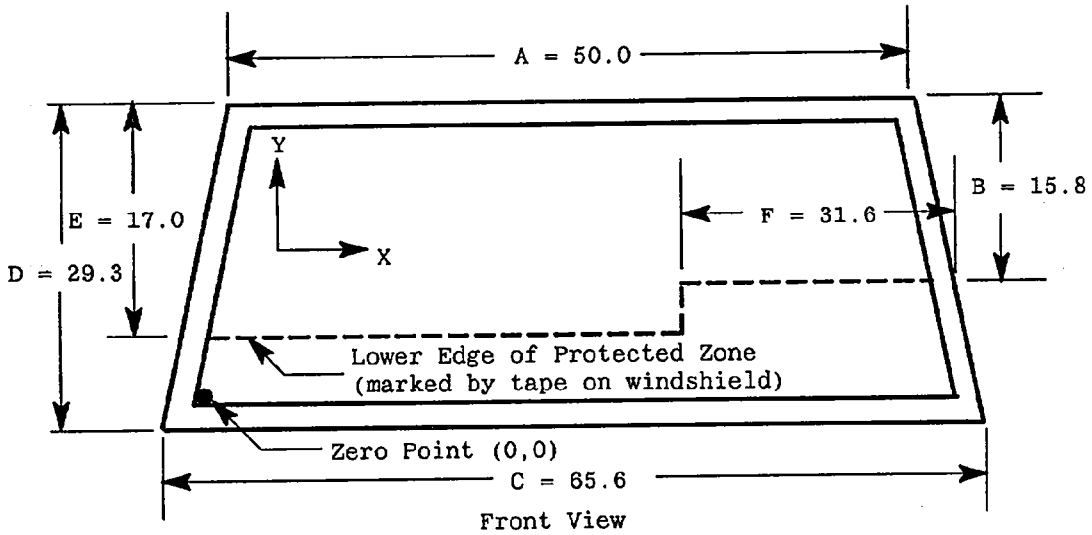
Figure 8

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.)



Front View

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.: | C | P | 0 | 2 | 0 | 4 | TEST DATE: October 29, 1992

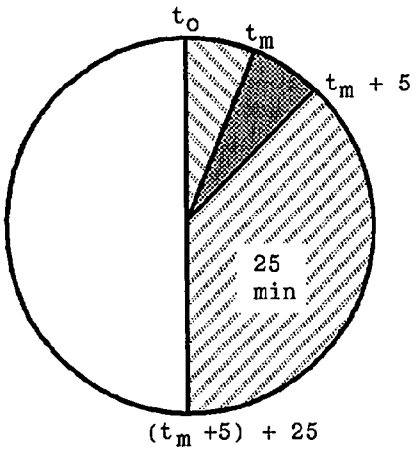
Vehicle Mfgr./Make/Model: 1993 Ford Crown Victoria 4-door Sedan

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 ____° barrier face first contacting _____ (driver/passenger) side
- _ Rear Moving Barrier (30 mph)
- _ Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:



	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	0	1 oz.
2. For 5 minute period after vehicle motion ceases	0	5 oz.
3. For next 25 minutes	0	1 oz./1 min.

SOLVENT SPILLAGE DETAILS:

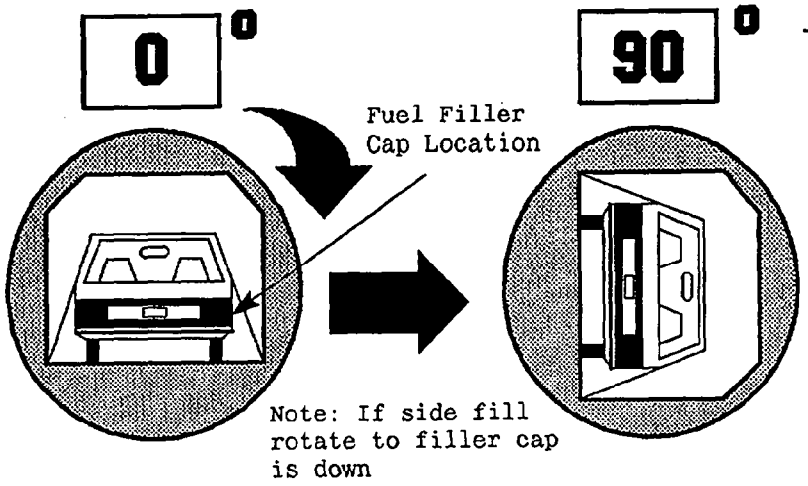
None

Table 14

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.: CP0204



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2 minutes	03 seconds
FMVSS 301 Position Hold Time +	5 minutes	00 seconds
TOTAL	7 minutes	03 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min 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):

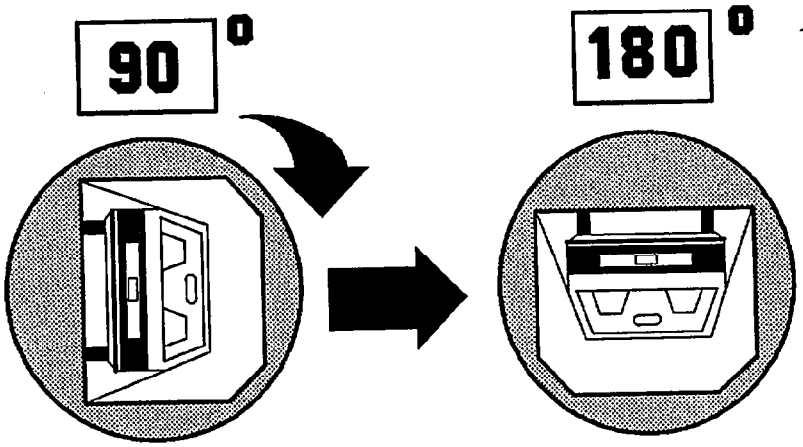
None

Table 13

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

TEST PHASE:

Vehicle NHTSA ID No.: CP0204



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1 minutes	44 seconds
FMVSS 301 Position Hold Time +	5 minutes	00 seconds
TOTAL	6 minutes	44 seconds
Next whole minute interval	7 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min 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):

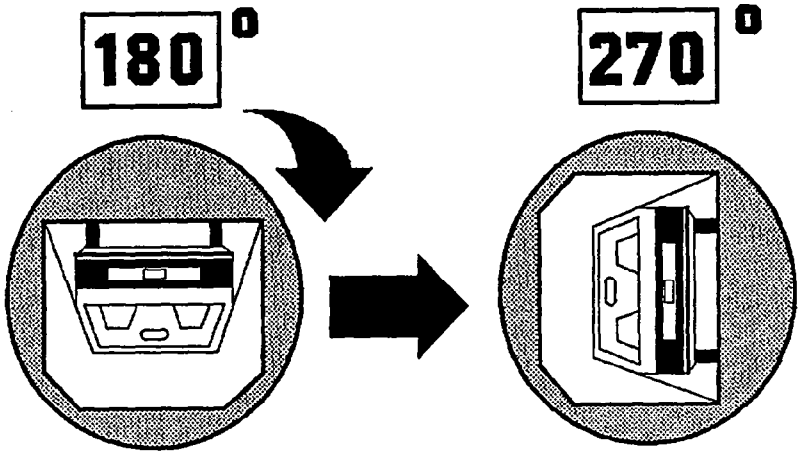
None

Table 13

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

TEST PHASE:

Vehicle NHTSA ID No.: CP0204



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2 minutes	05 seconds
FMVSS 301 Position Hold Time +	5 minutes	00 seconds
TOTAL	7 minutes	05 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min 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):

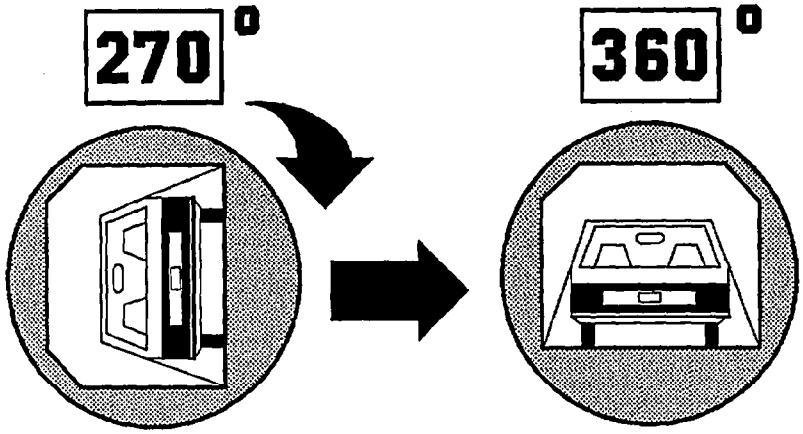
None

Table 13

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

TEST PHASE:

Vehicle NHTSA ID No.: CP0204



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2 minutes	05 seconds
FMVSS 301 Position Hold Time +	5 minutes	00 seconds
TOTAL	7 minutes	05 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min 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 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: October 29, 1992 Vehicle NHTSA No.: CP0204

Vehicle Manufacturer: Ford Motor

Model Year: 1993 VIN: 2FALP74W7PX106060

Model: Crown Victoria Body Style: 4-door Sedan Build Date: 8/92

Dummy Stabilized Temperature at Time of Test: 70°F (Spec. = 66-78°F)

Impact Velocity: 29.5 mph Time of Test: 12:05

Type of Automatic Restraint System: Driver and right front passenger air bags

Failure Details:

The vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (Partial); and 301

Appendix A

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

Figure A-1 PRE-TEST FRONT VIEW

Figure A-2 POST-TEST FRONT VIEW

Figure A-3 PRE-TEST LEFT SIDE VIEW

Figure A-4 POST-TEST LEFT SIDE VIEW

Figure A-5 PRE-TEST RIGHT SIDE VIEW

Figure A-6 POST-TEST RIGHT SIDE VIEW

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

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

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

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

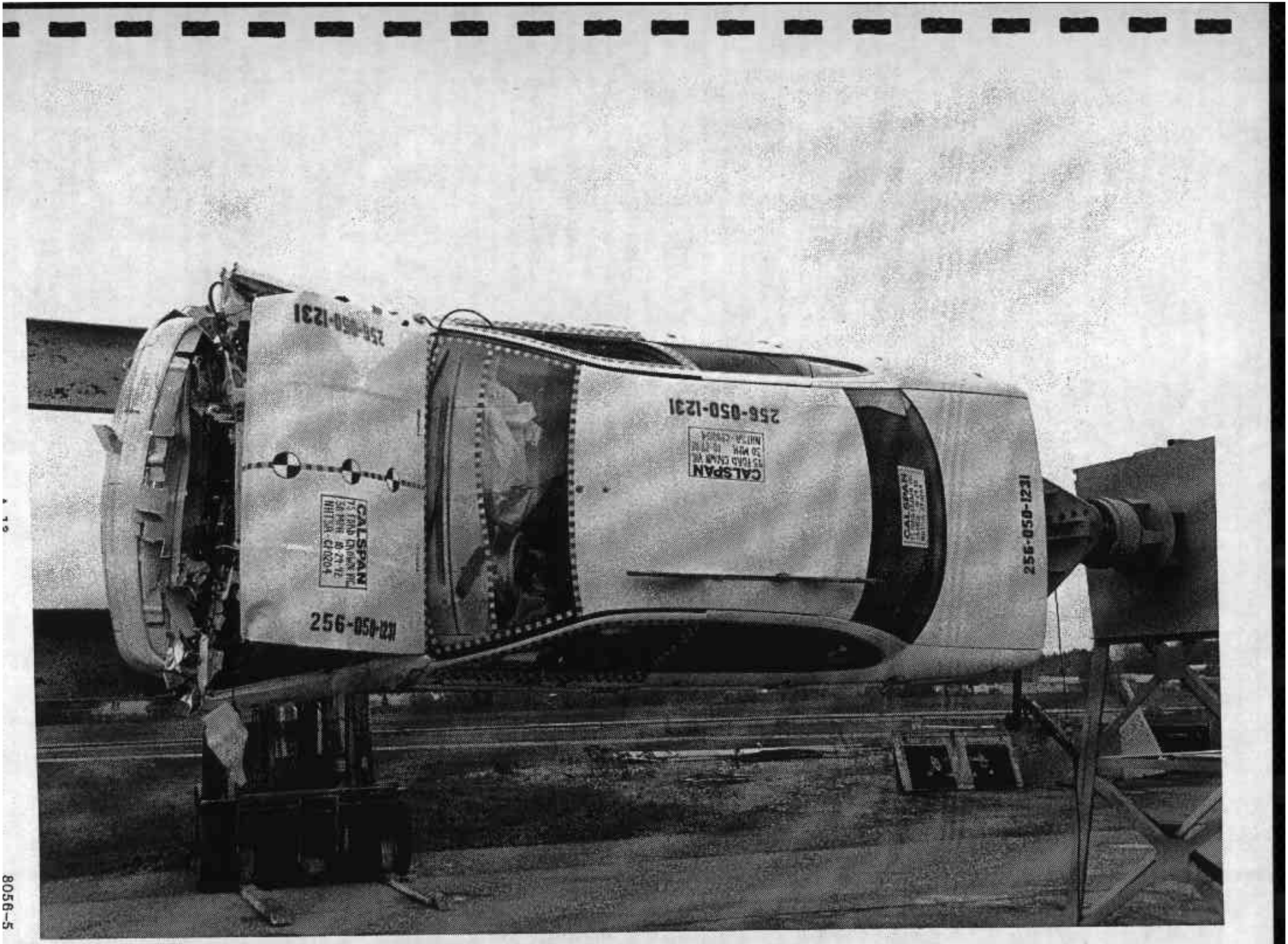


Figure A-11 POST-TEST TOP VIEW

Figure A-12 PRE-TEST WINDSHIELD VIEW

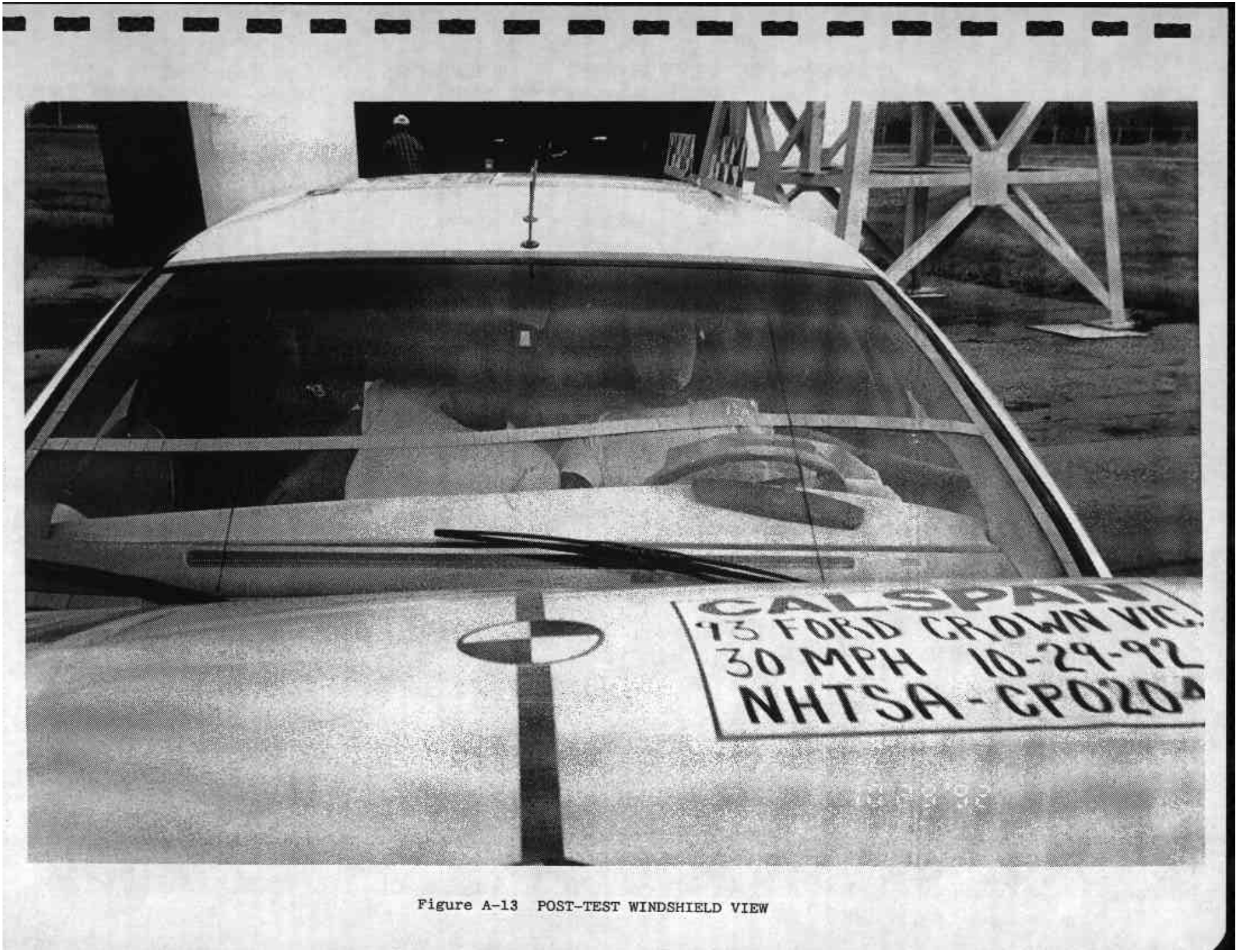


Figure A-13 POST-TEST WINDSHIELD VIEW

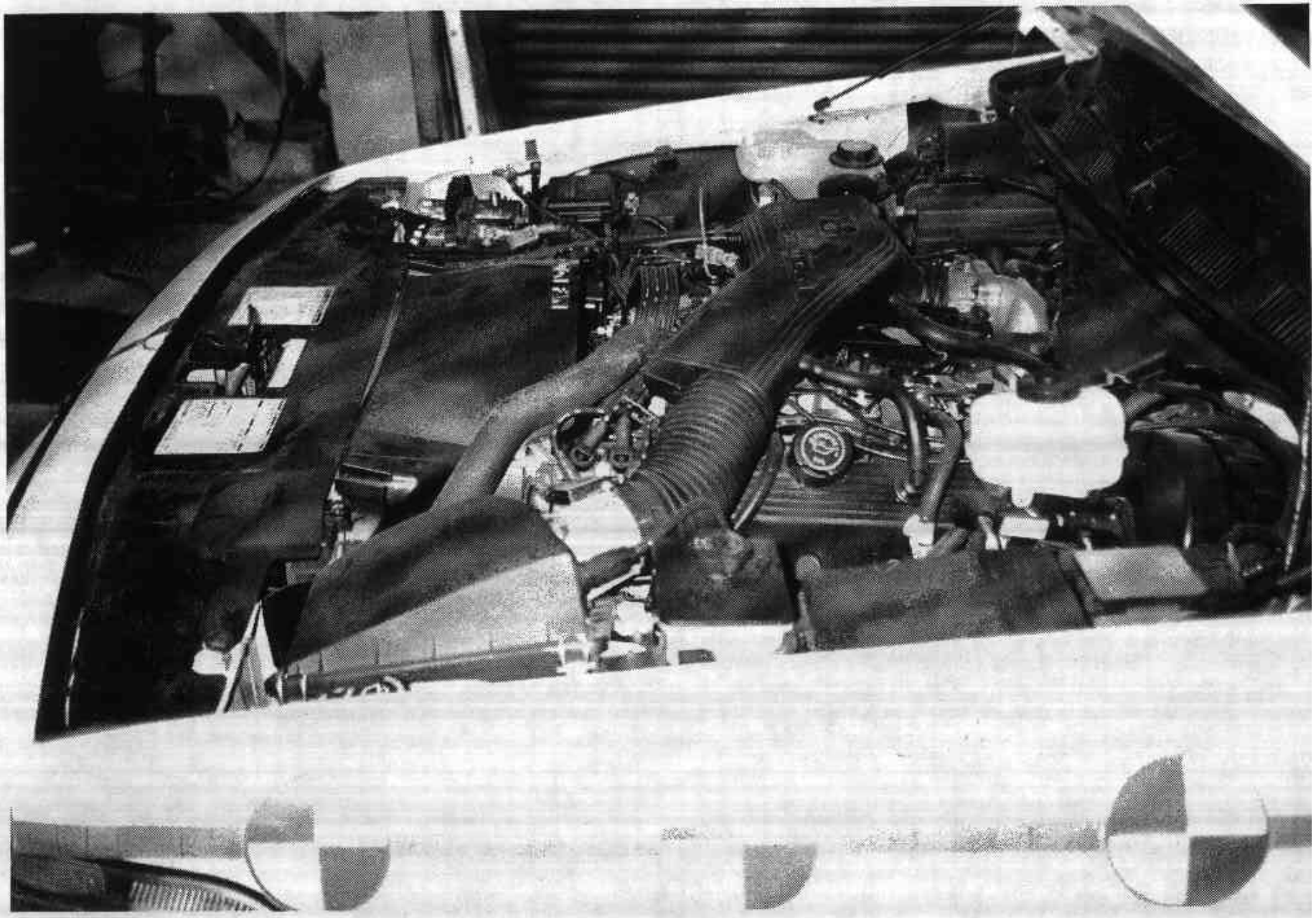


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

Figure A-16 PRE-TEST FUEL FILLER CAP PHOTO

Figure A-17 POST-TEST FUEL FILLER CAP PHOTO

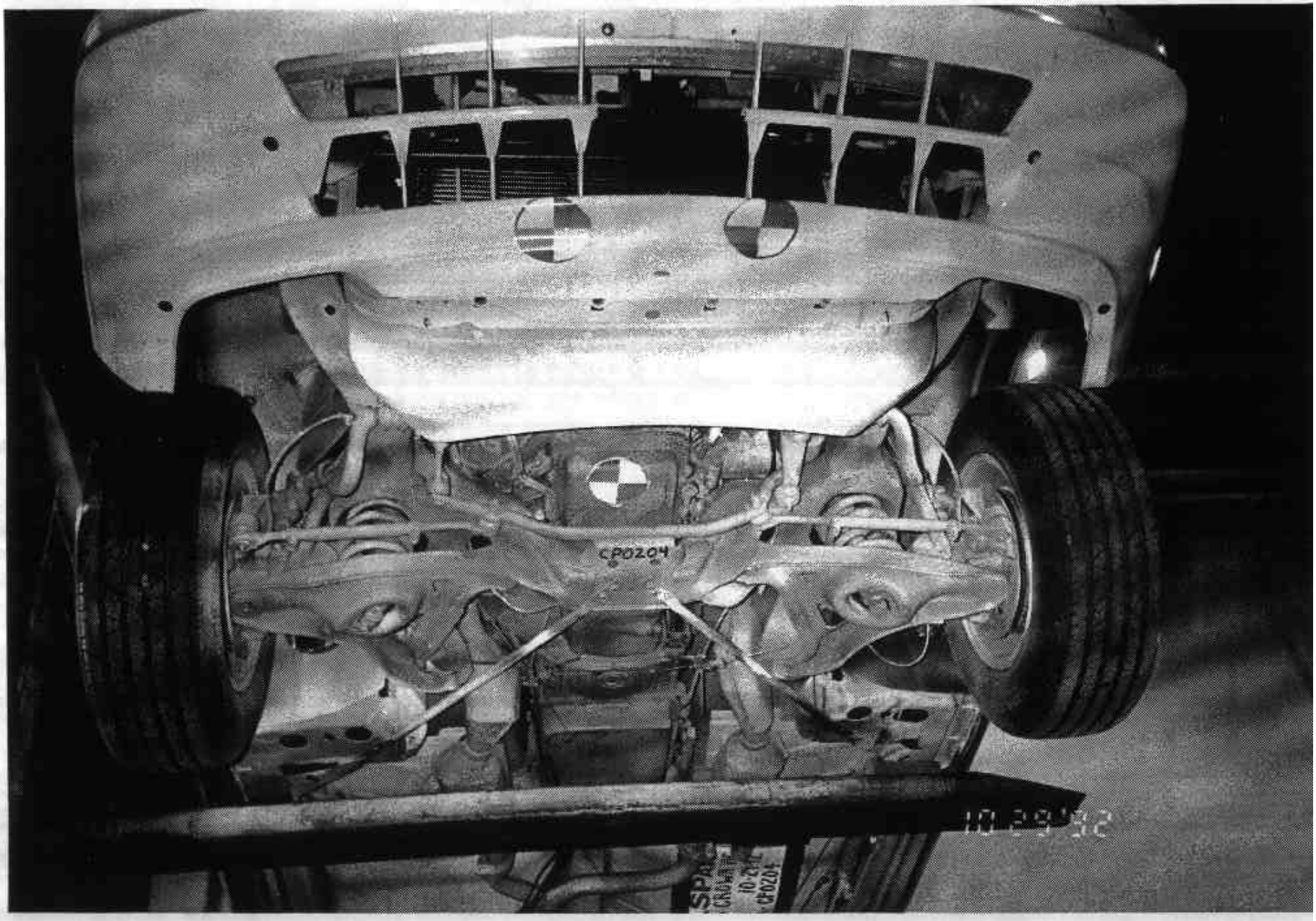


Figure A-18 PRE-TEST FRONT UNDERBODY VIEW

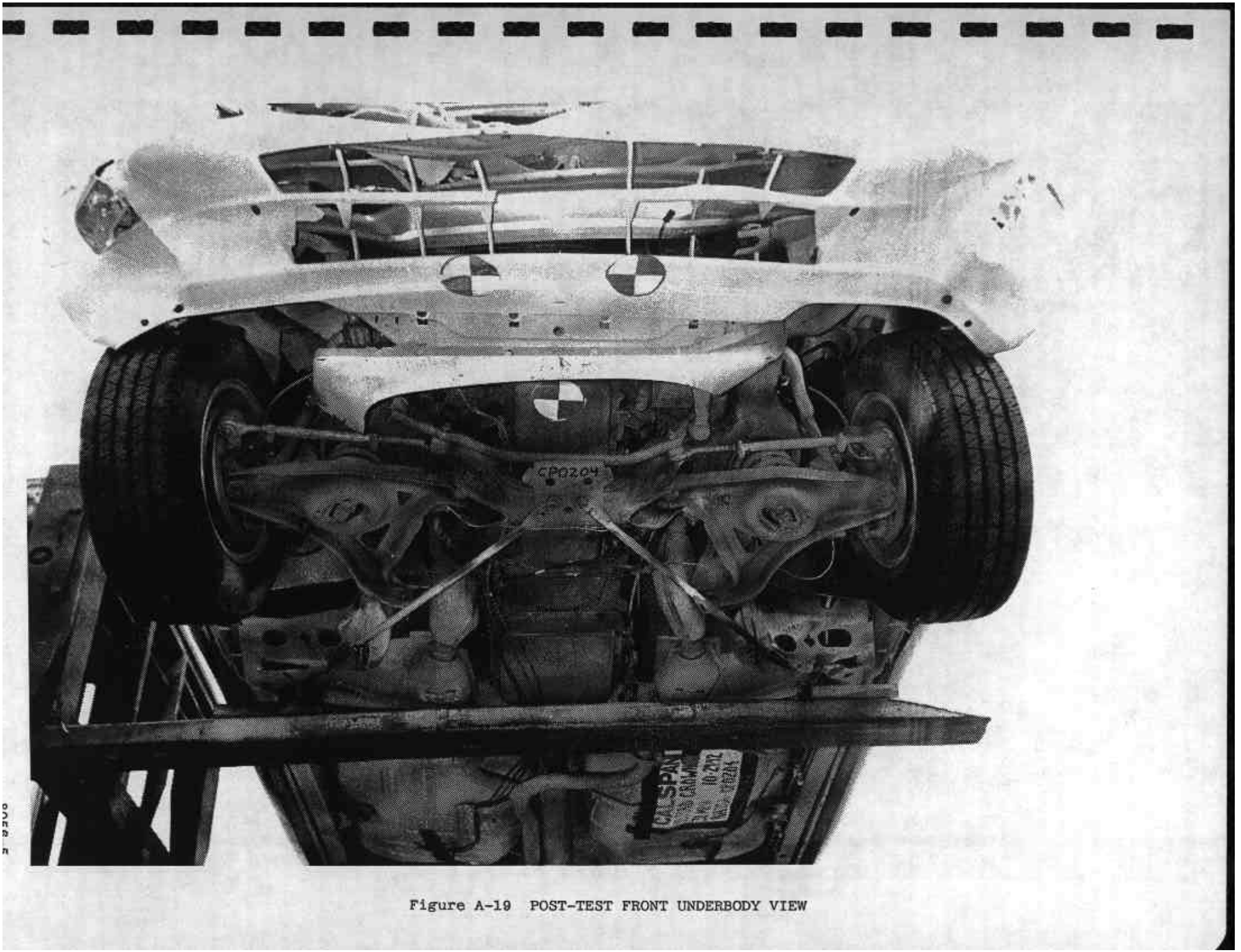


Figure A-19 POST-TEST FRONT UNDERBODY VIEW

Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

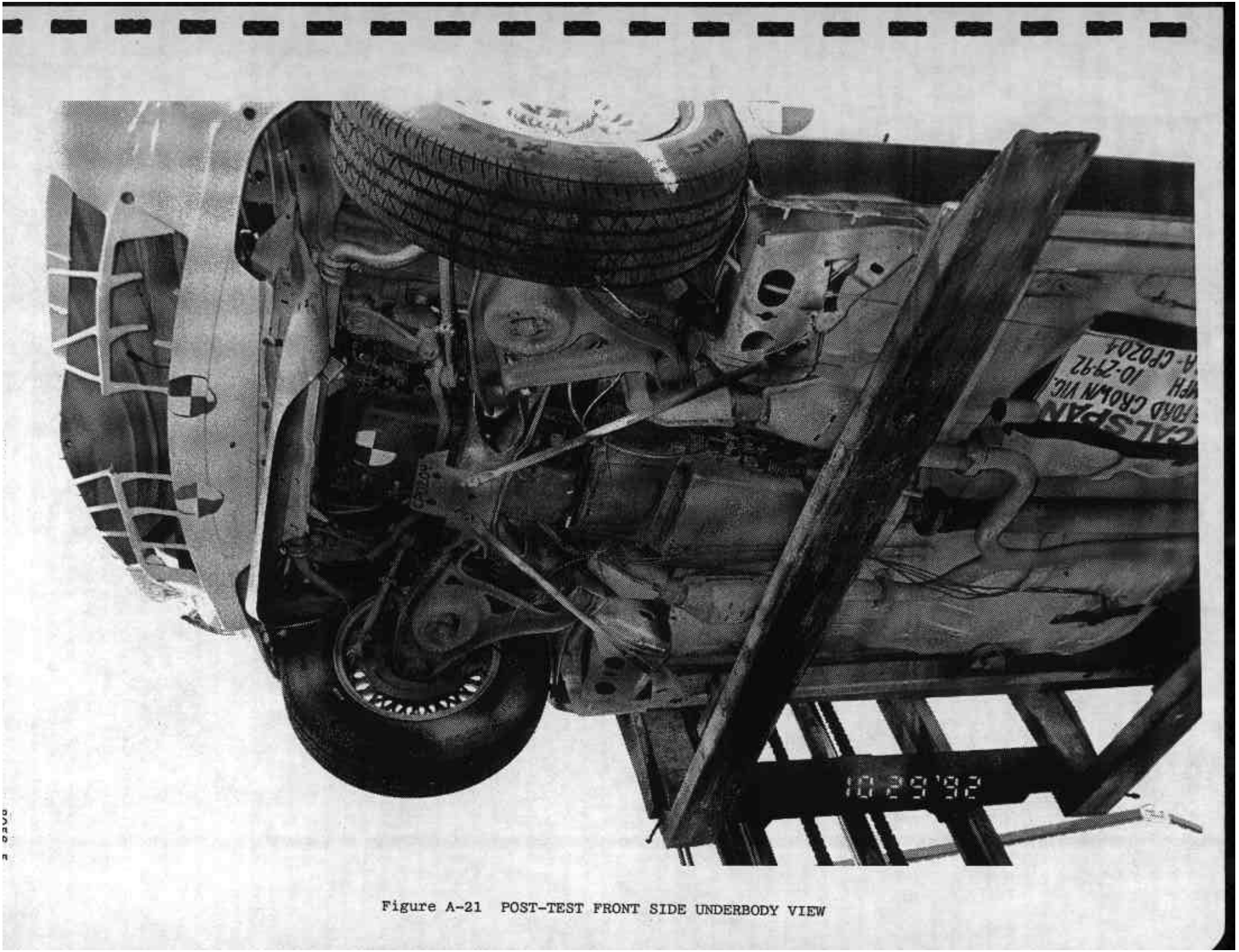


Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW

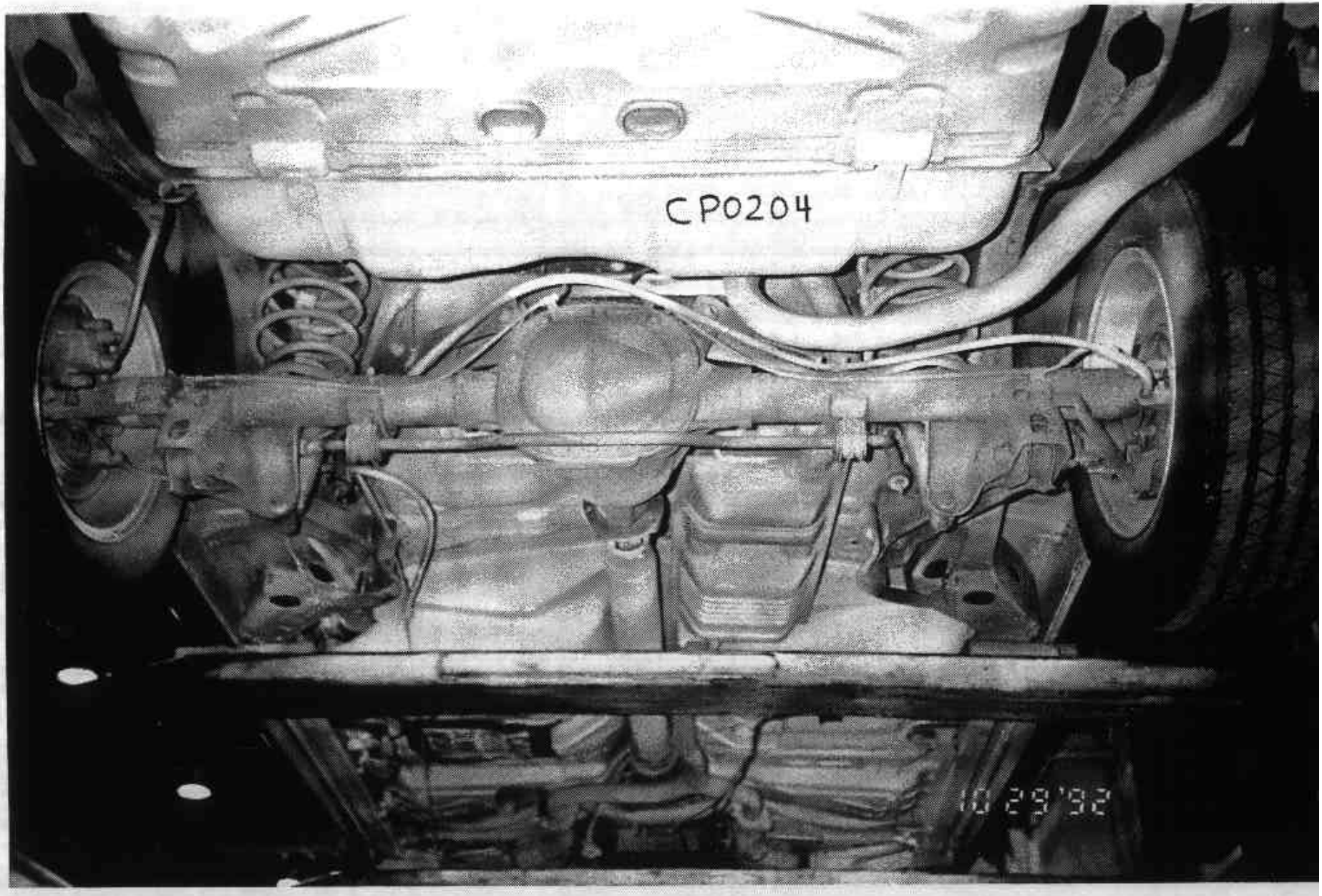
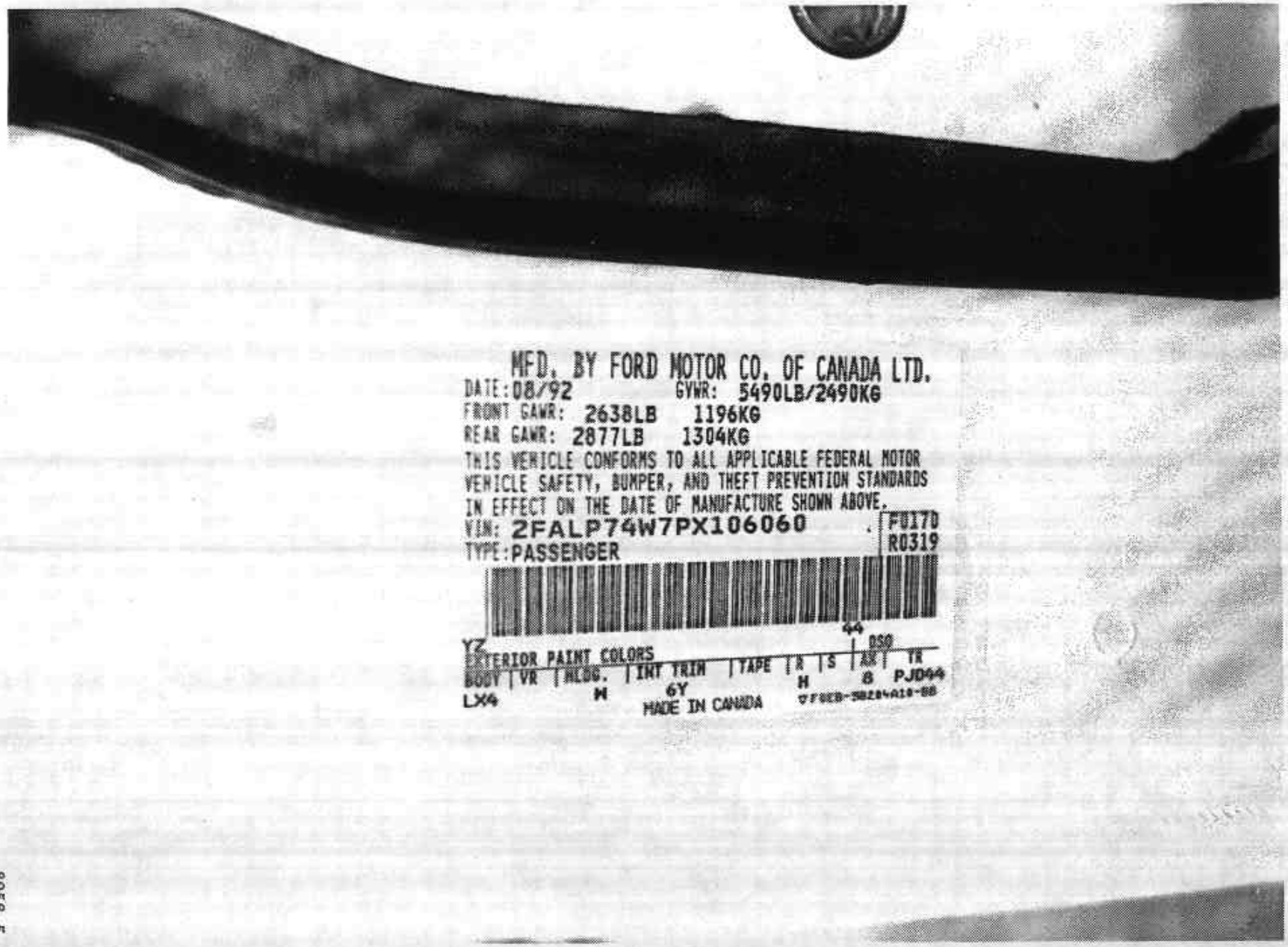


Figure A-22 PRE-TEST REAR UNDERBODY VIEW

Figure A-23 POST-TEST REAR UNDERBODY VIEW



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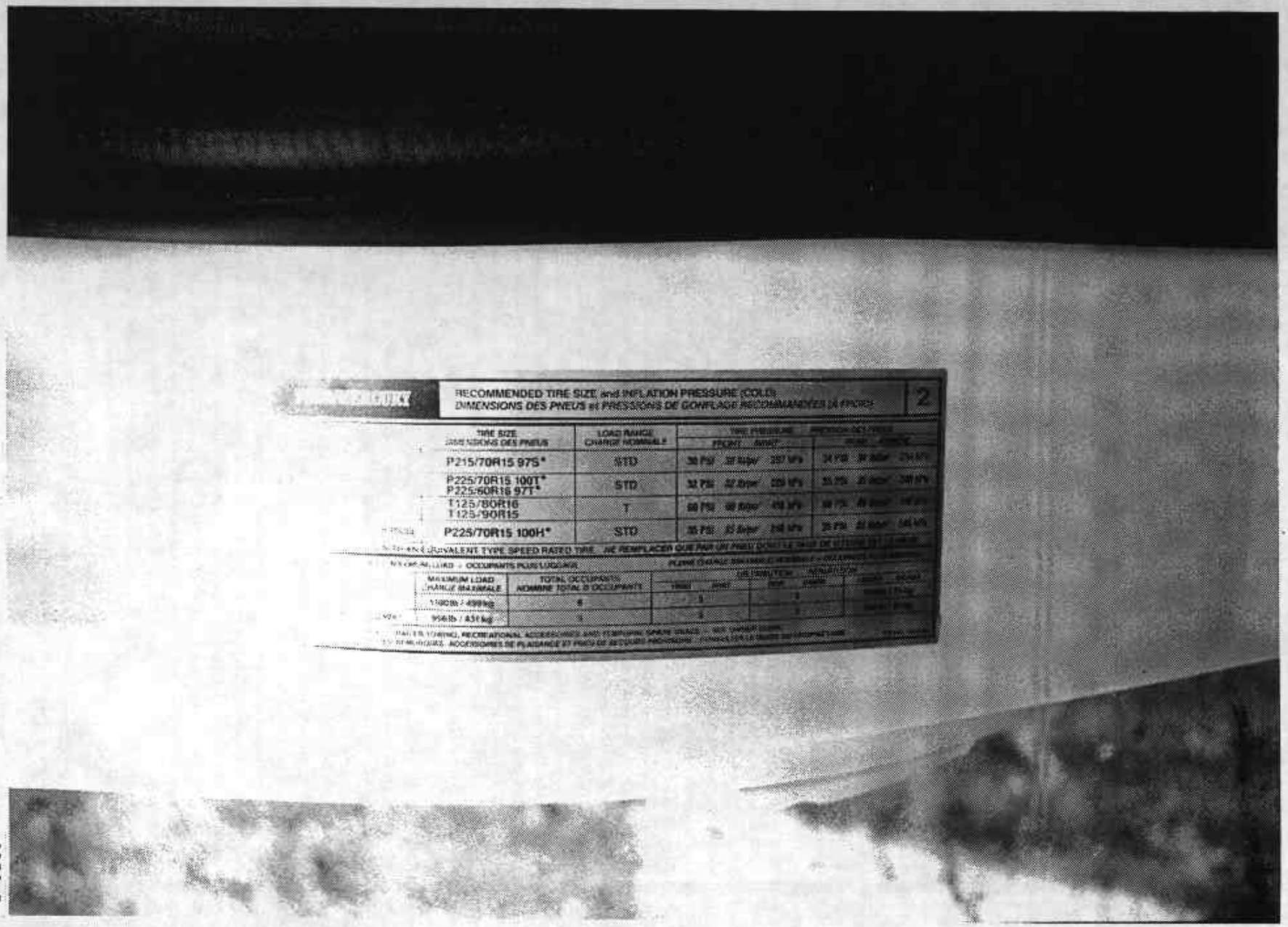
8056-5

Figure A-24 CERTIFICATION LABEL



A-27

8056-5

Figure A-25 TIRE PLACARD

Figure A-26 PRE-TEST DRIVER DUMMY POSITION

Figure A-27 POST-TEST DRIVER DUMMY POSITION

Figure A-28 PRE-TEST PASSENGER DUMMY POSITION

Figure A-29 POST-TEST PASSENGER DUMMY POSITION

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

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

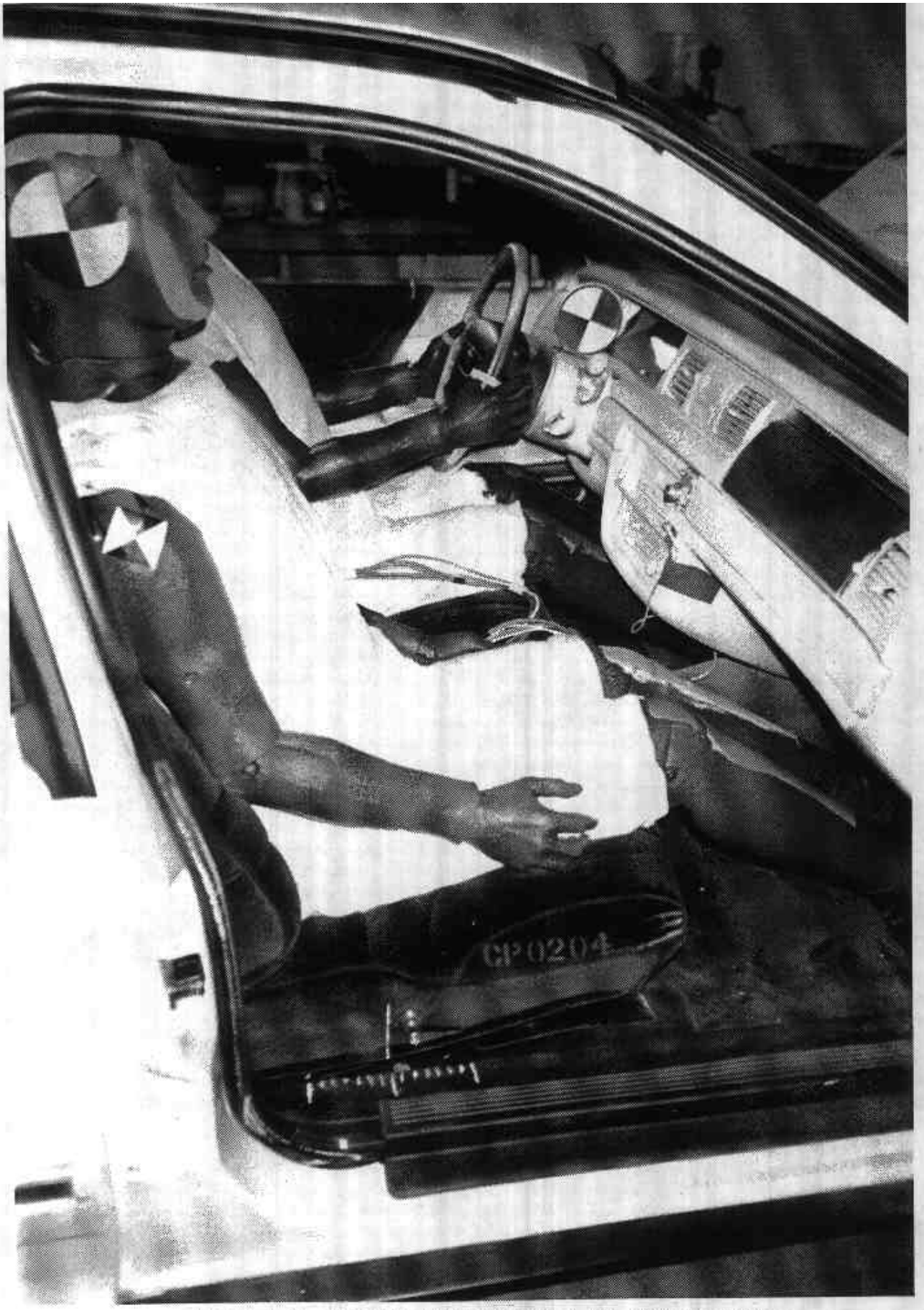


Figure A-32 PRE-TEST PASSENGER DUMMY AND INTERIOR VIEW

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

Figure A-34 POST-TEST DRIVER AIRBAG VIEW

Figure A-35 POST-TEST PASSENGER AIRBAG VIEW

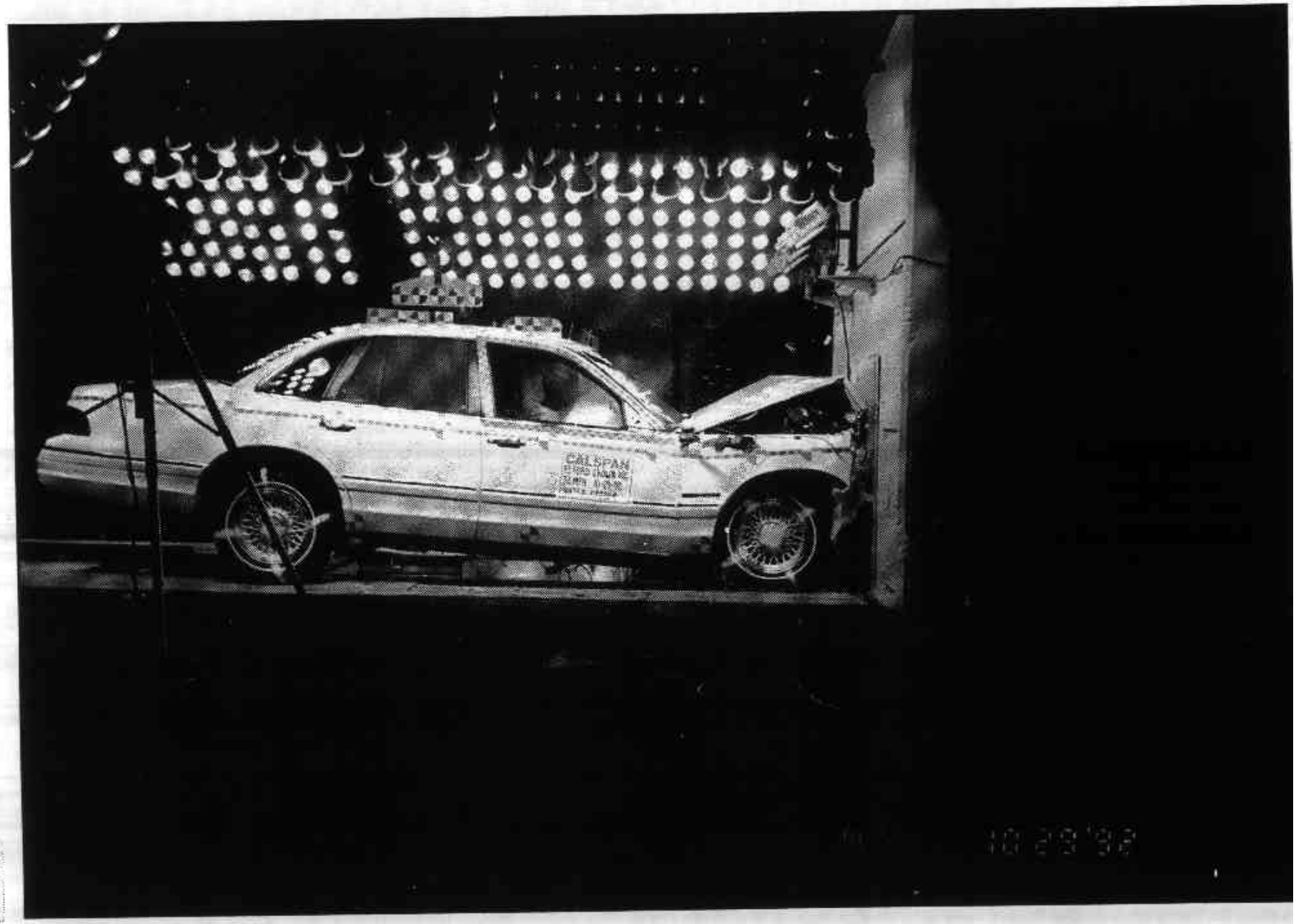


Figure A-36 VEHICLE IMPACT

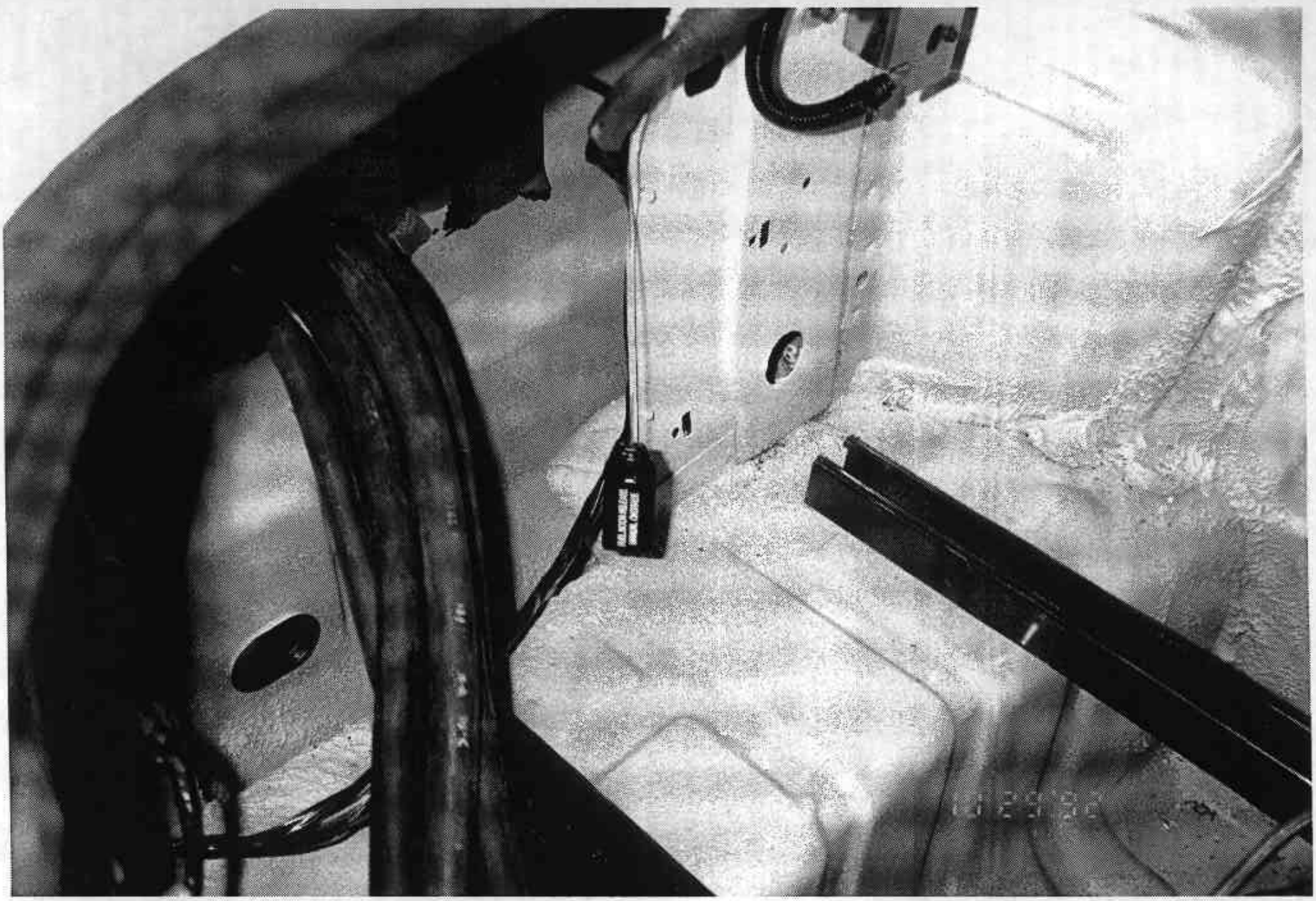


Figure A-37 BALLAST PLACED IN LEFT REAR OF TRUNK

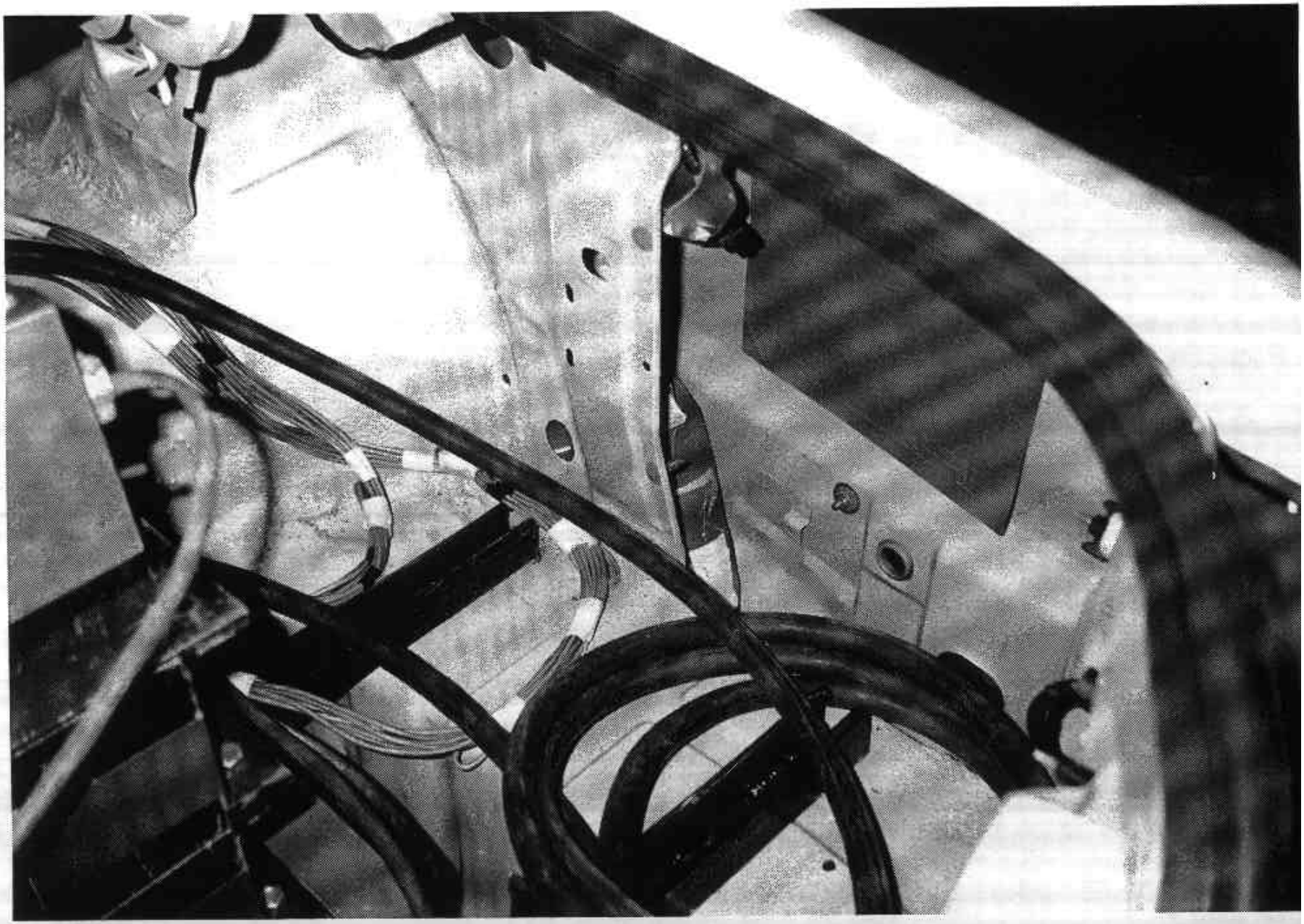


Figure A-38 BALLAST PLACED IN RIGHT REAR OF TRUNK

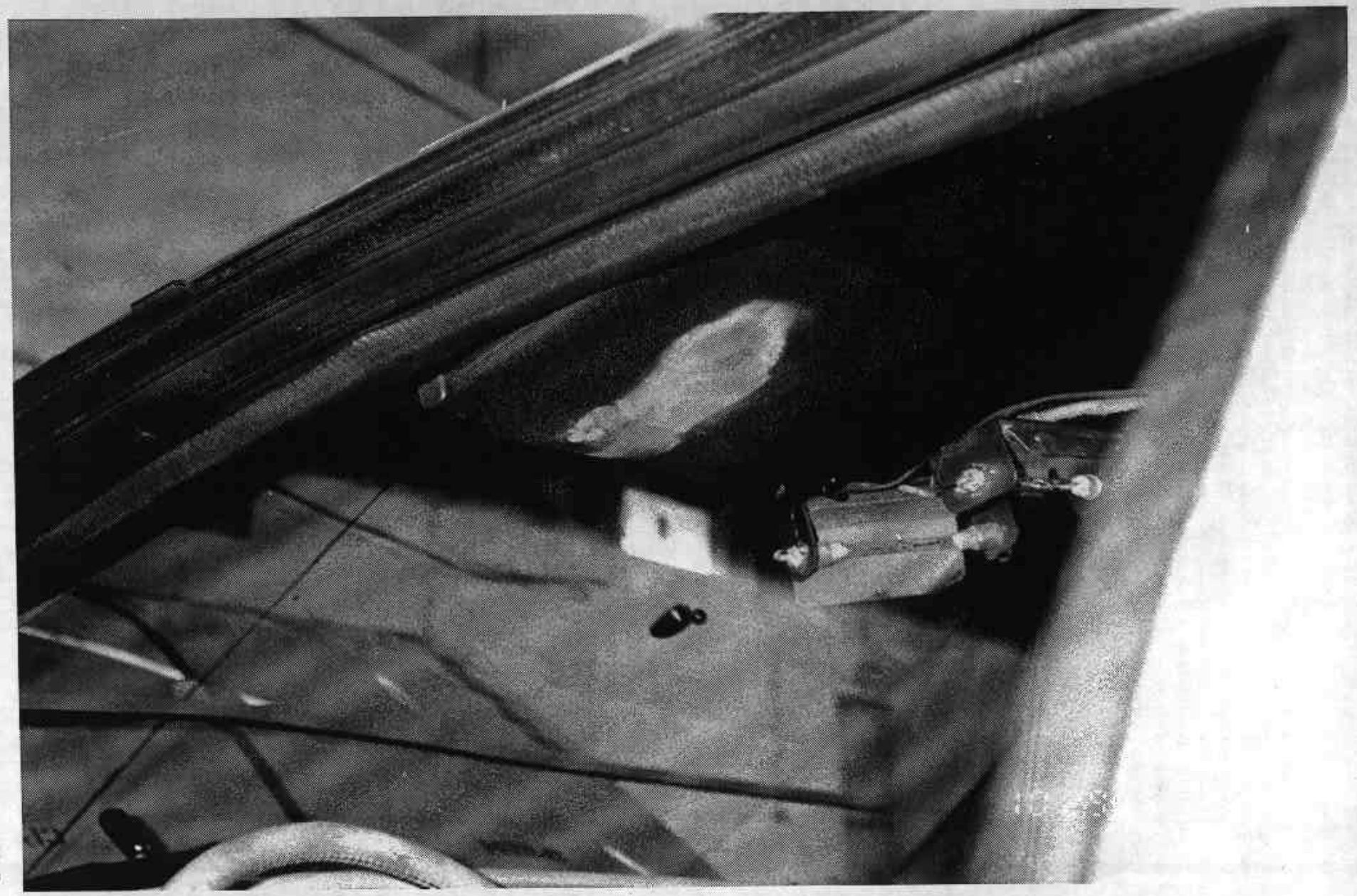


Figure A-39 DRIVER HEAD CONTACT WITH SUNVISOR

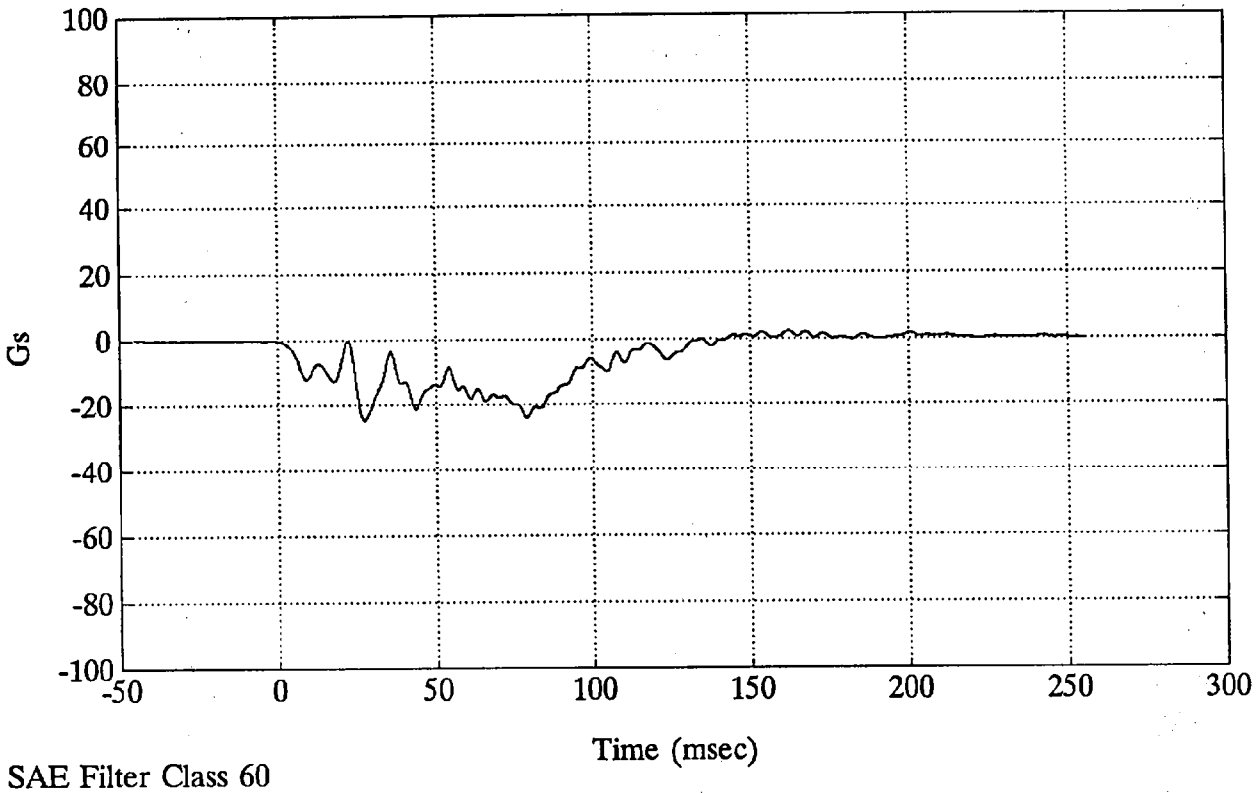
Figure A-40 PASSENGER HEAD CONTACT WITH SUNVISOR

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

FMVSS 208 - 1993 FORD CROWN VICTORIA
L. Rear X-member X (#1)

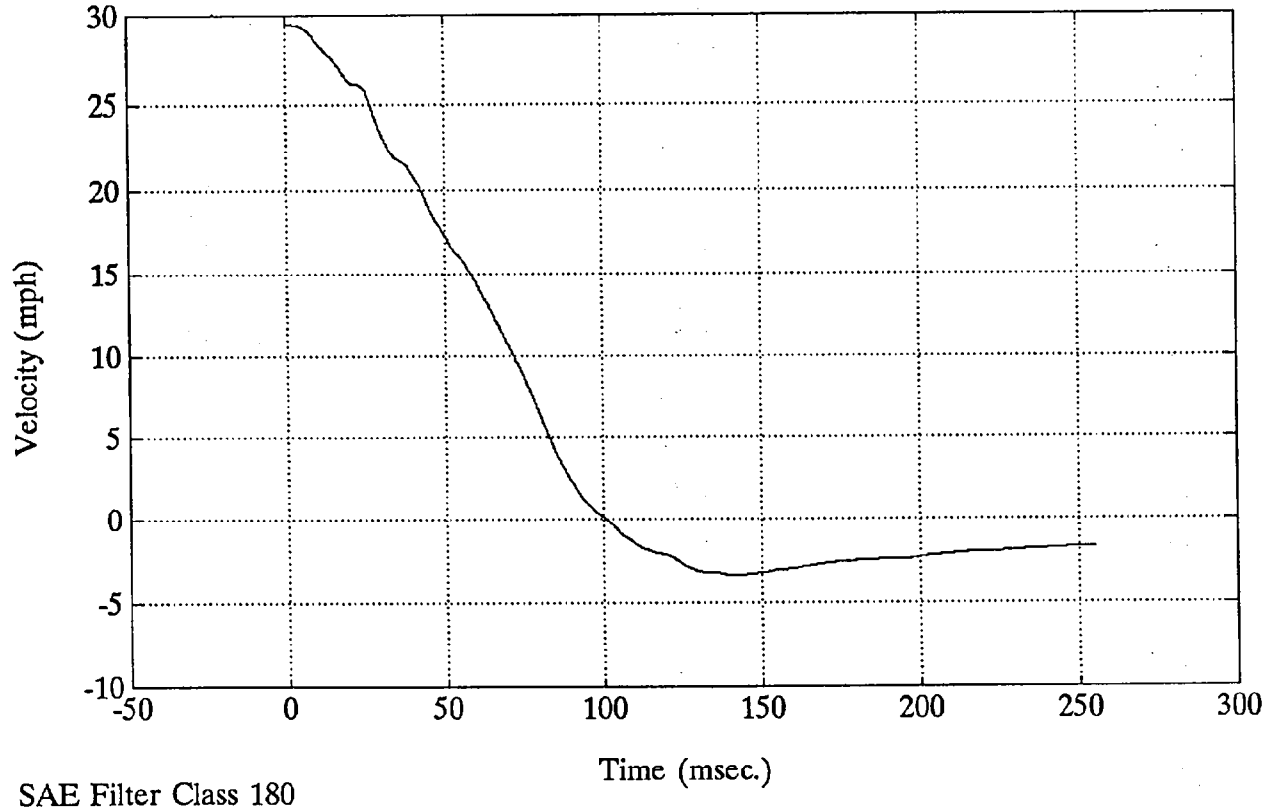
Max = 2.47 Gs @ 162.00 msec
Min = -24.46 Gs @ 27.48 msec



SAE Filter Class 60

FMVSS 208 - 1993 FORD CROWN VICTORIA
L. Rear X-member X (#1)

Max = 29.50 mph @ 0.24 msec
Min = -3.40 mph @ 142.32 msec

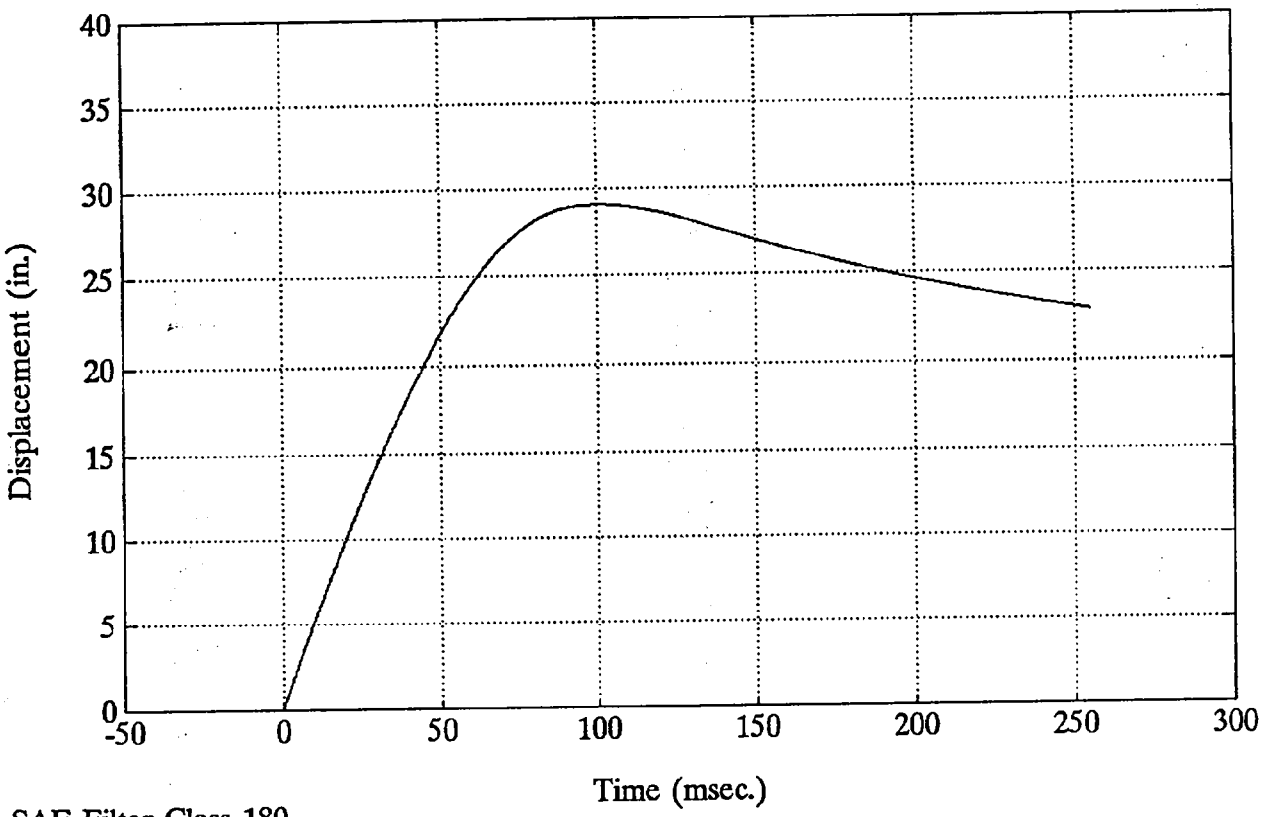


SAE Filter Class 180

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
L. Rear X-member X (#1)

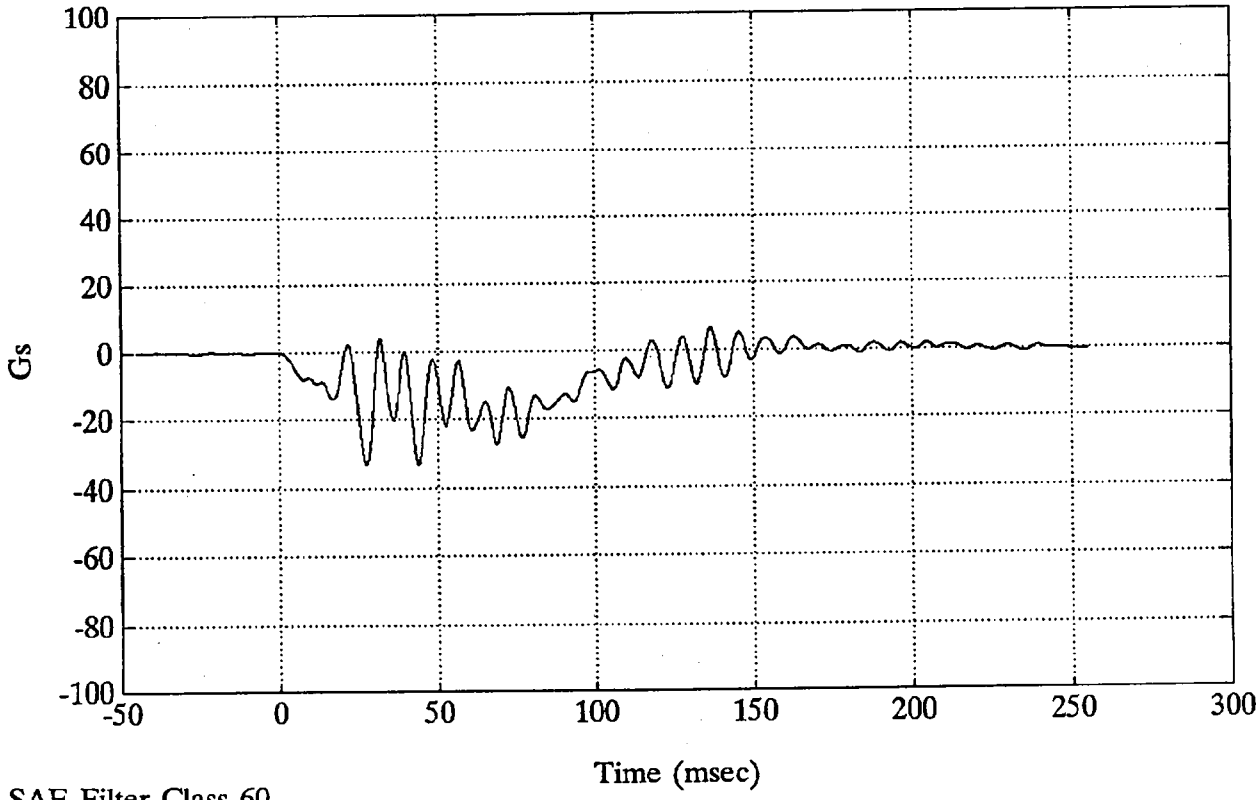
Max = 29.10 in. @ 102.96 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
R. Rear X-member X (#2)

Max = 6.49 Gs @ 136.44 msec
Min = -33.21 Gs @ 27.60 msec

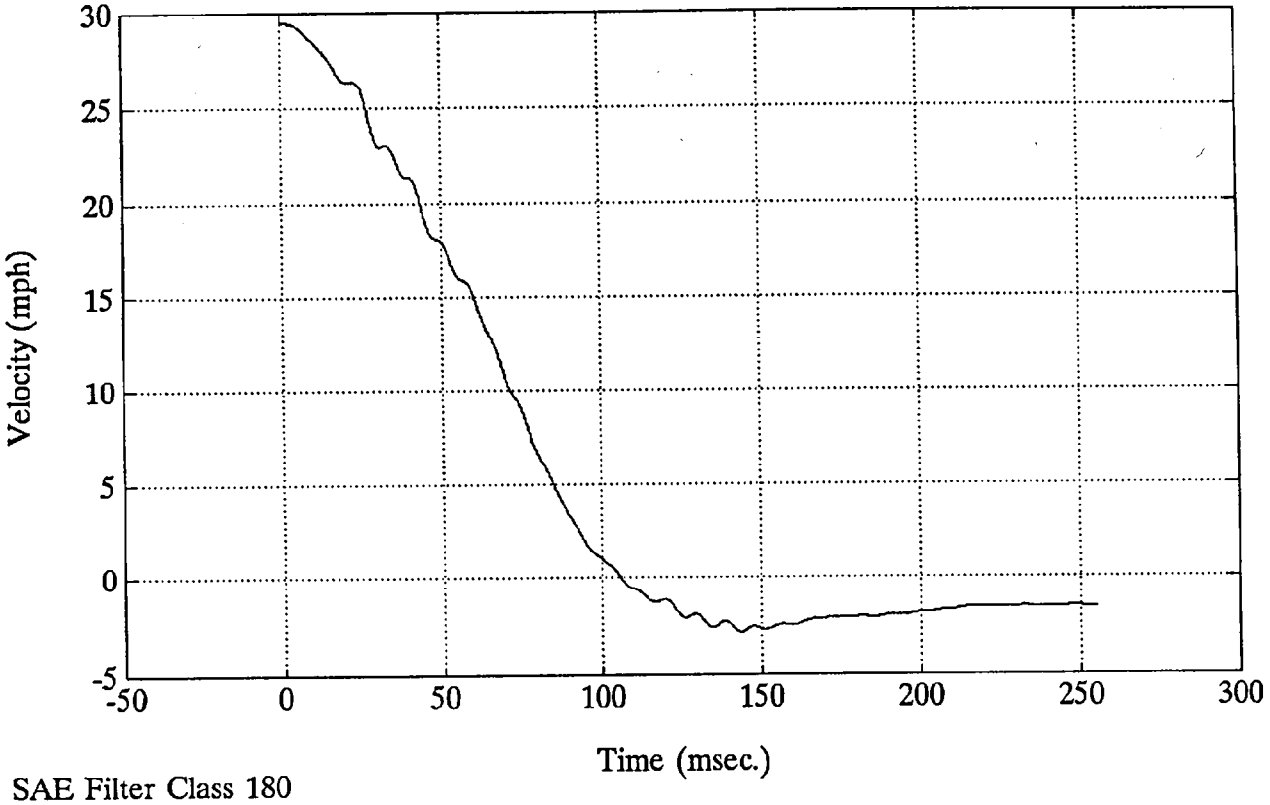


SAE Filter Class 60

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
R. Rear X-member X (#2)

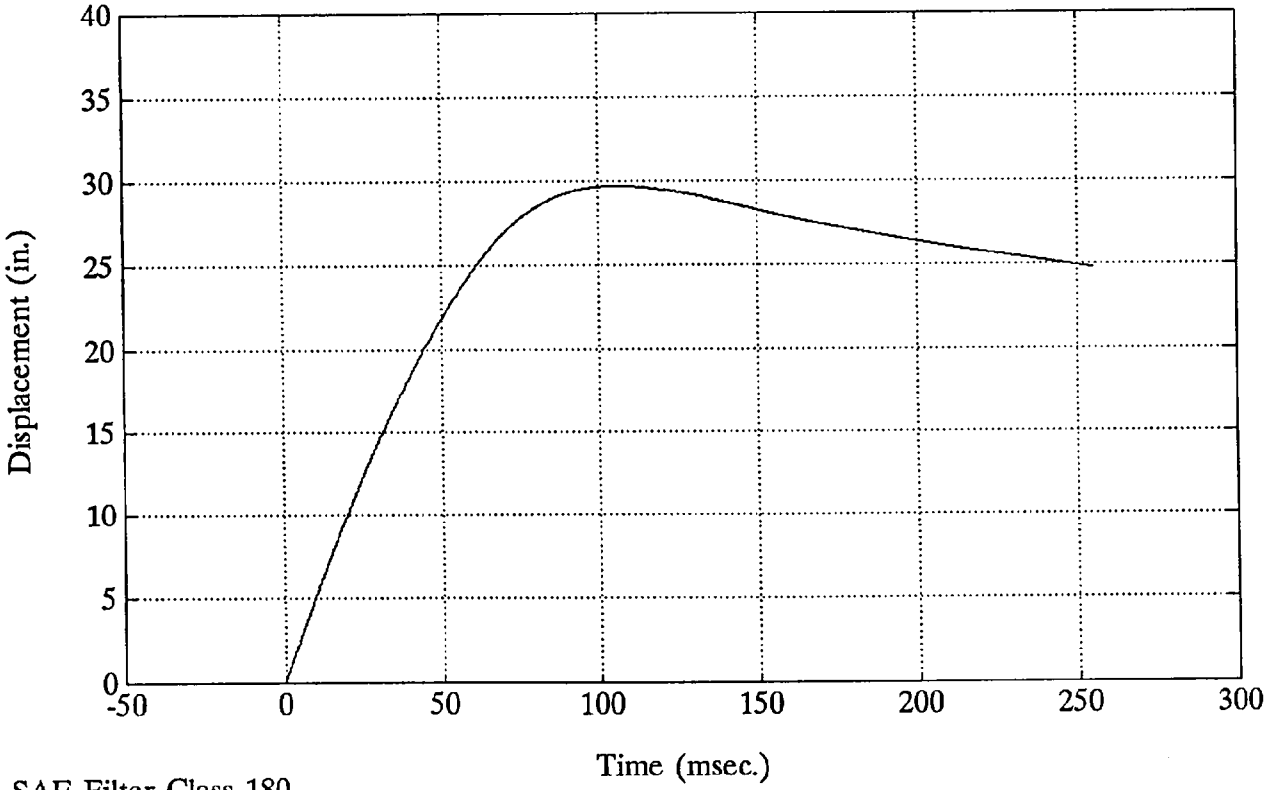
Max = 29.50 mph @ 0.96 msec
Min = -2.87 mph @ 143.52 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
R. Rear X-member X (#2)

Max = 29.73 in. @ 107.28 msec
Min = 0.00 in. @ -0.00 msec

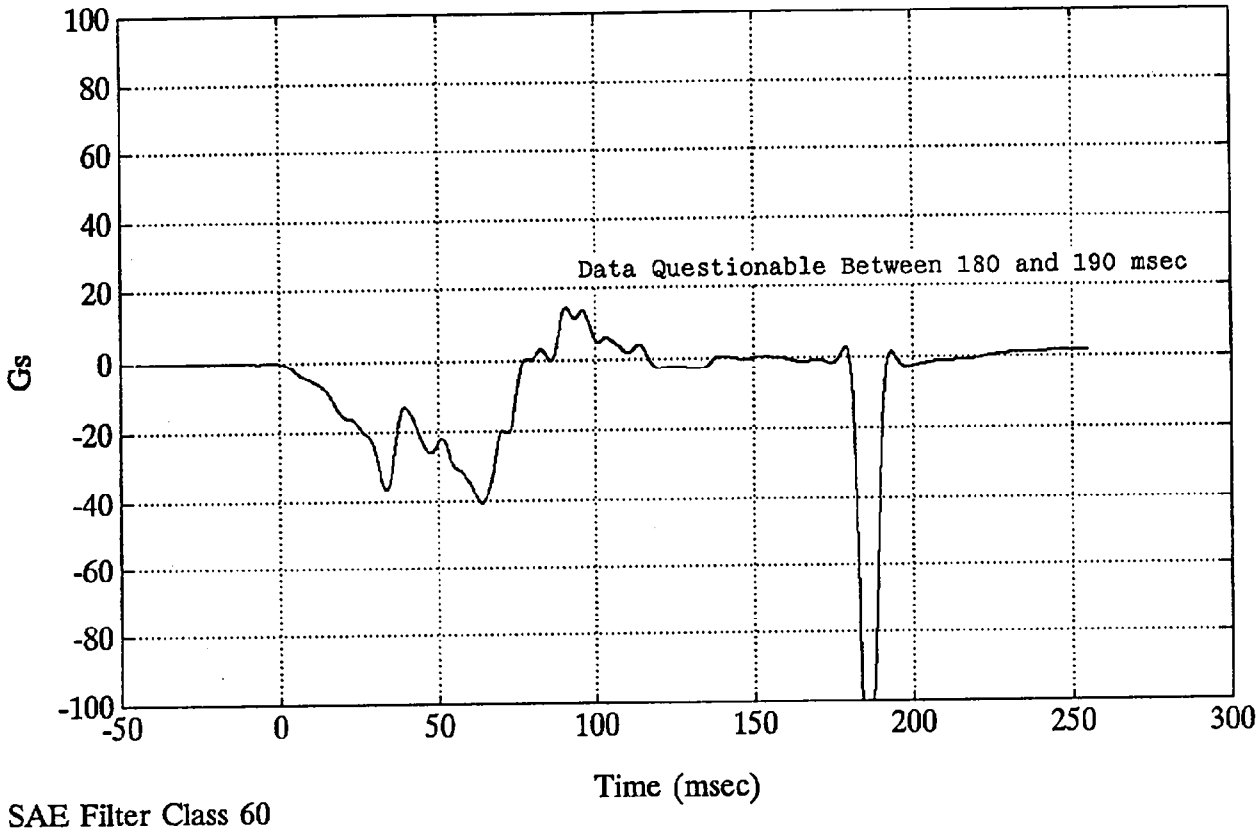


SAE Filter Class 180

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
Engine Top X (#3)

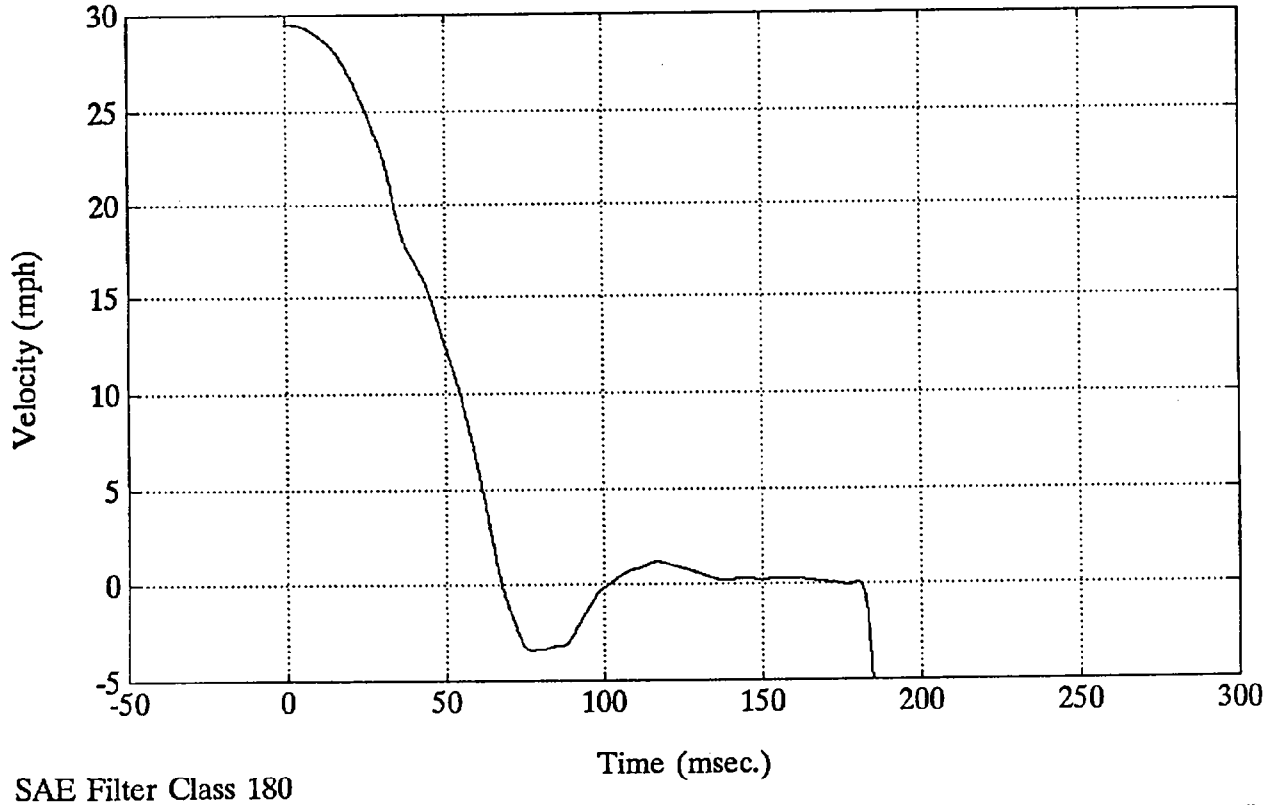
Max = 14.25 Gs @ 90.60 msec
Min = -123.97 Gs @ 185.04 msec



SAE Filter Class 60

FMVSS 208 - 1993 FORD CROWN VICTORIA
Engine Top X (#3)

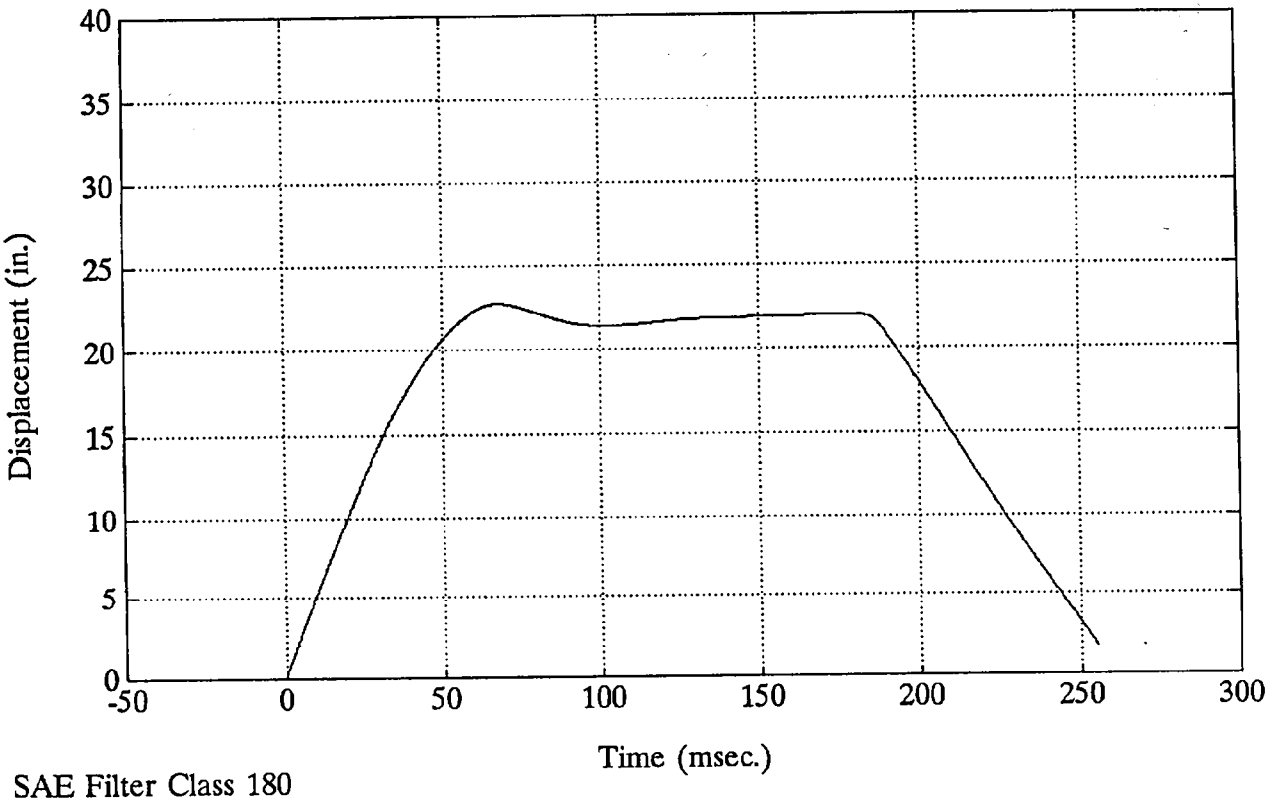
Max = 29.50 mph @ 0.24 msec
Min = -17.03 mph @ 223.92 mse



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
Engine Top X (#3)

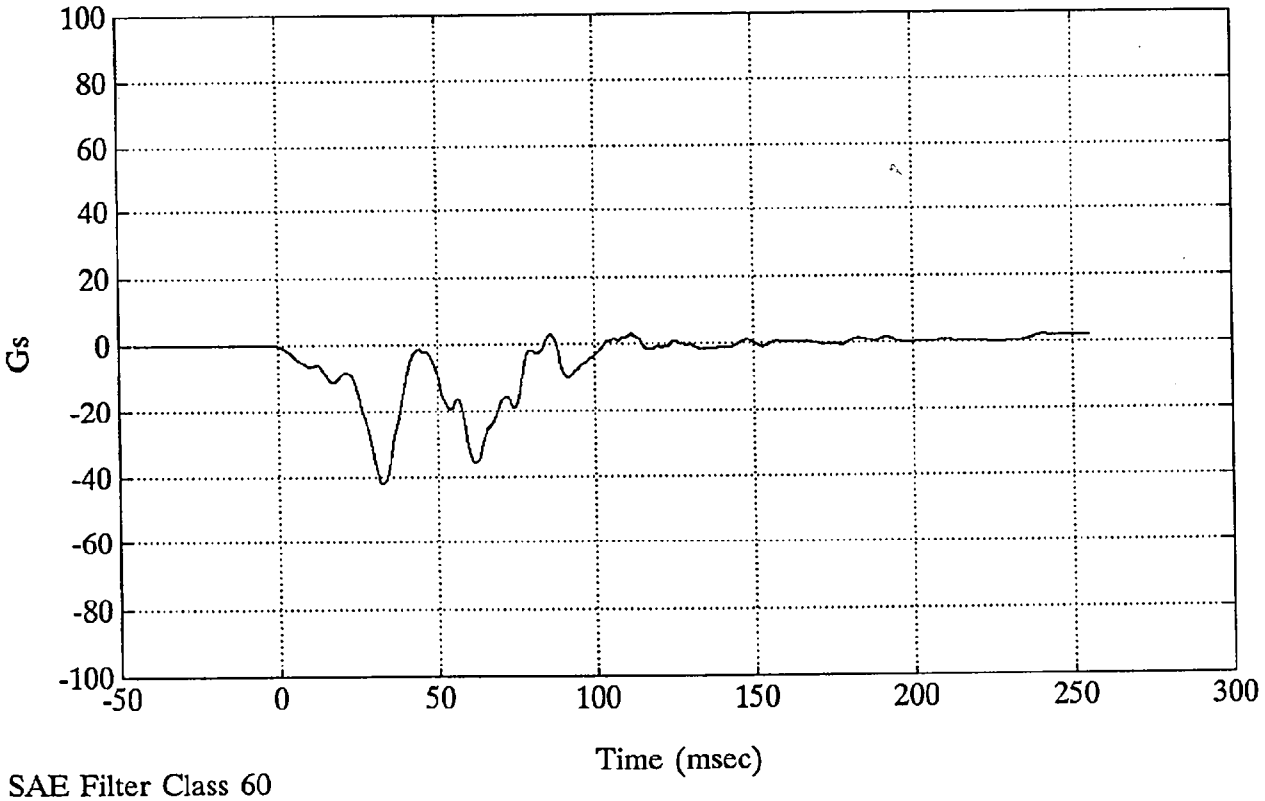
Max = 22.72 in. @ 67.92 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
Engine Bottom X (#4)

Max = 2.91 Gs @ 85.80 msec
Min = -41.99 Gs @ 32.52 msec

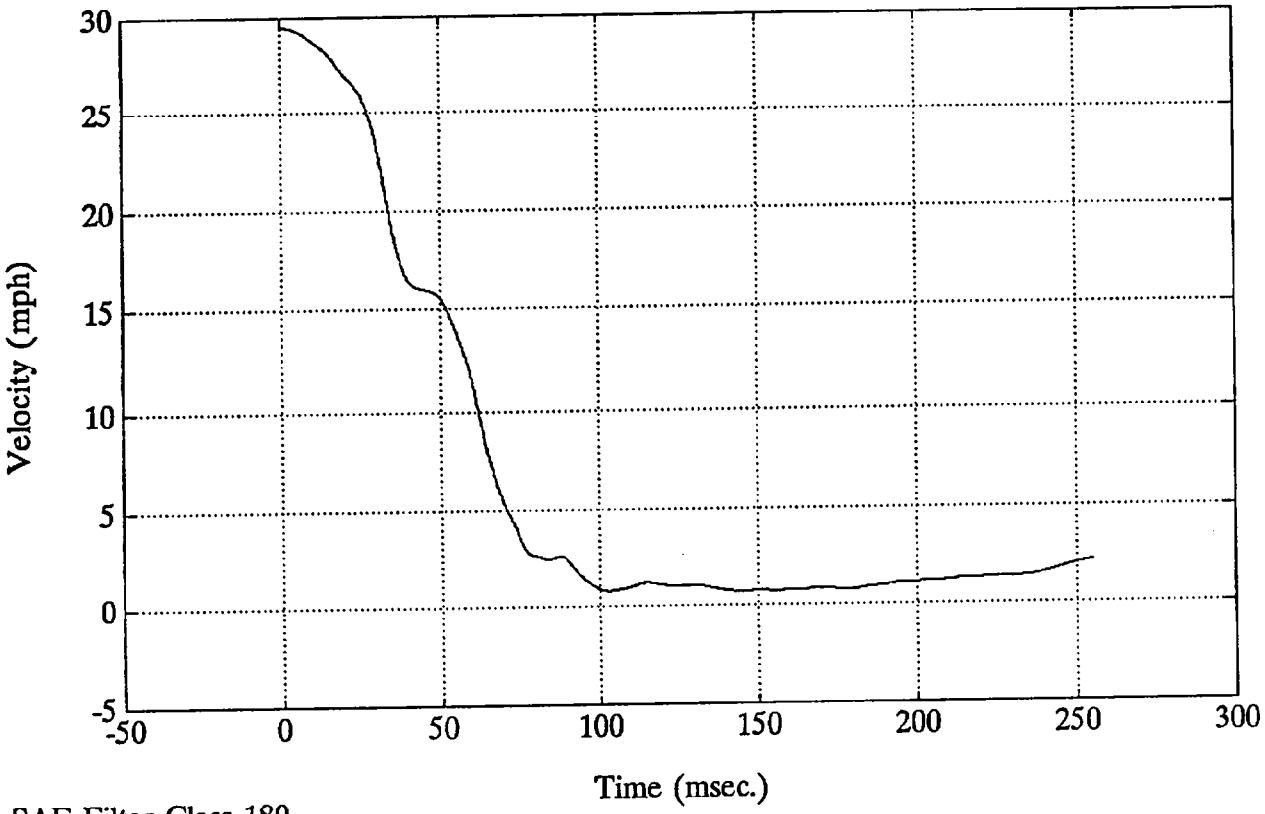


SAE Filter Class 60

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
Engine Bottom X (#4)

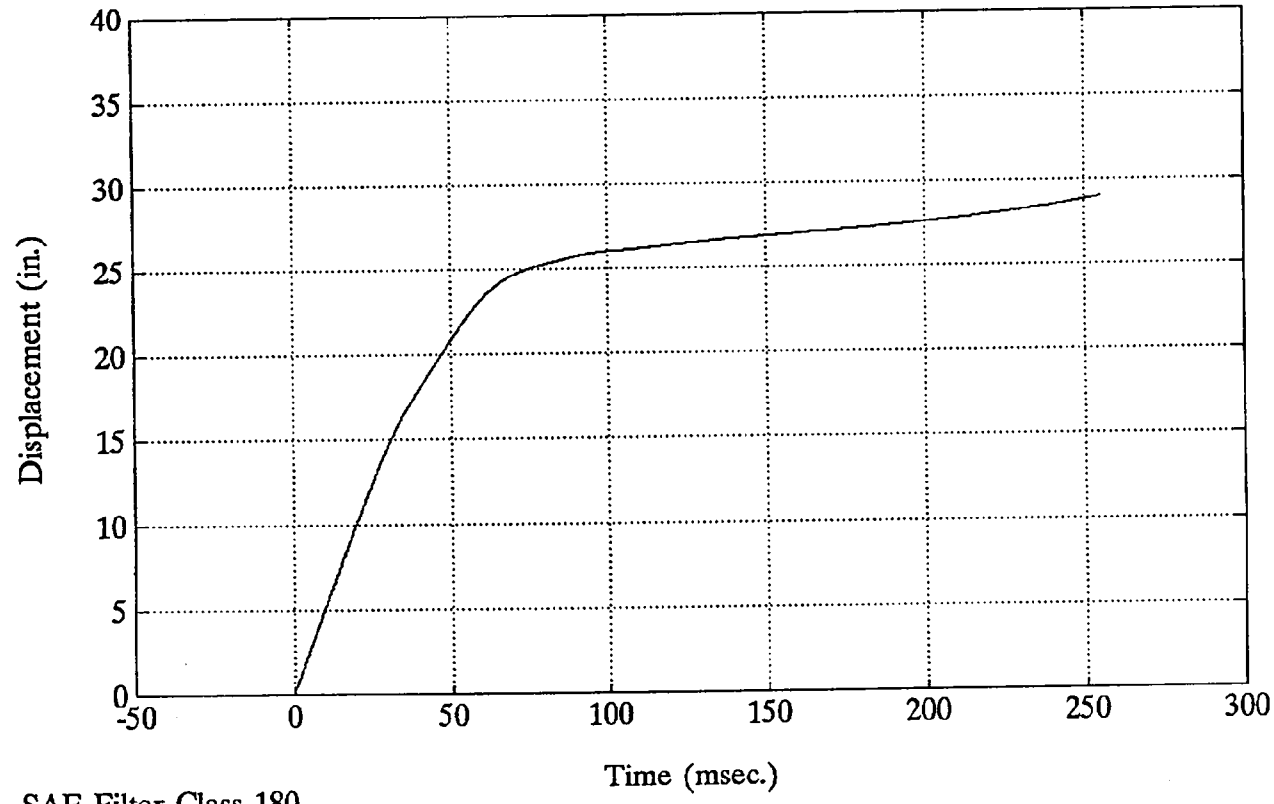
Max = 29.50 mph @ 0.24 msec
Min = 0.71 mph @ 145.20 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
Engine Bottom X (#4)

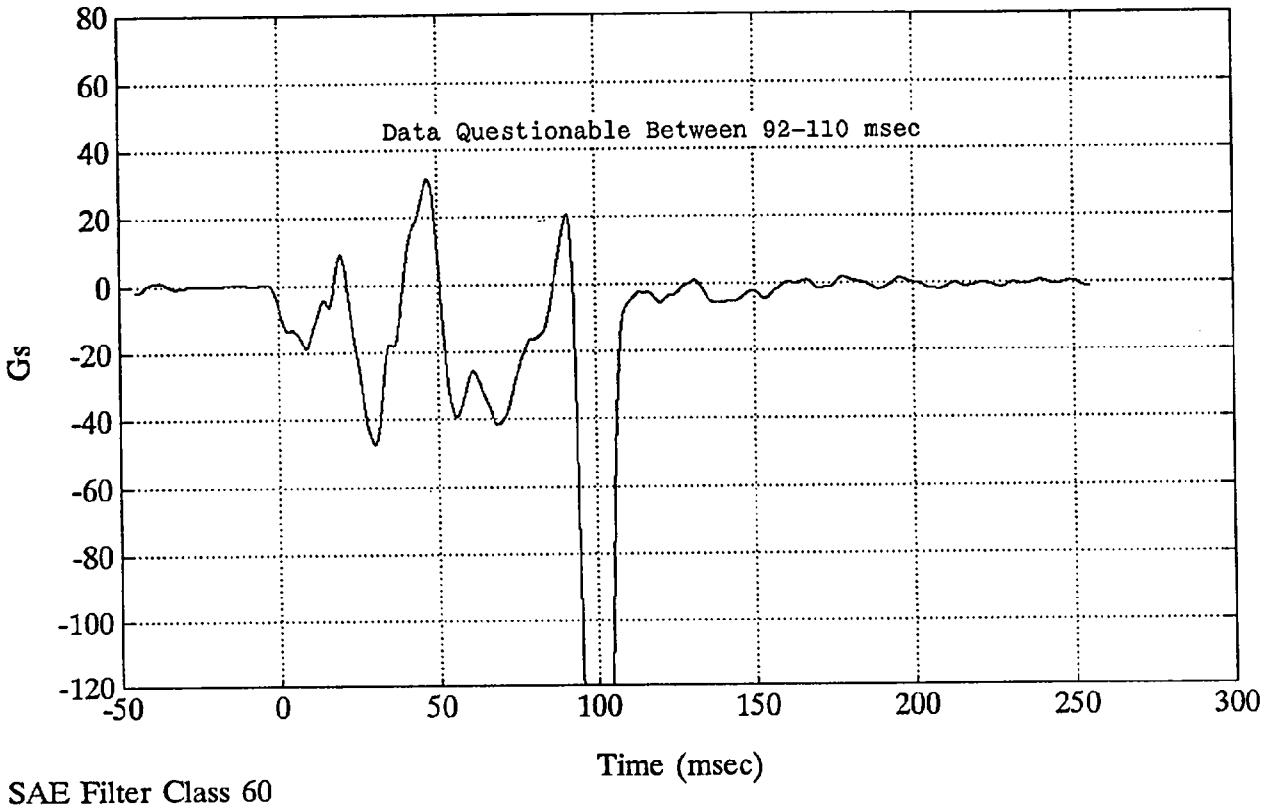
Max = 29.05 in. @ 254.88 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
R. Brake Caliper X (#5)

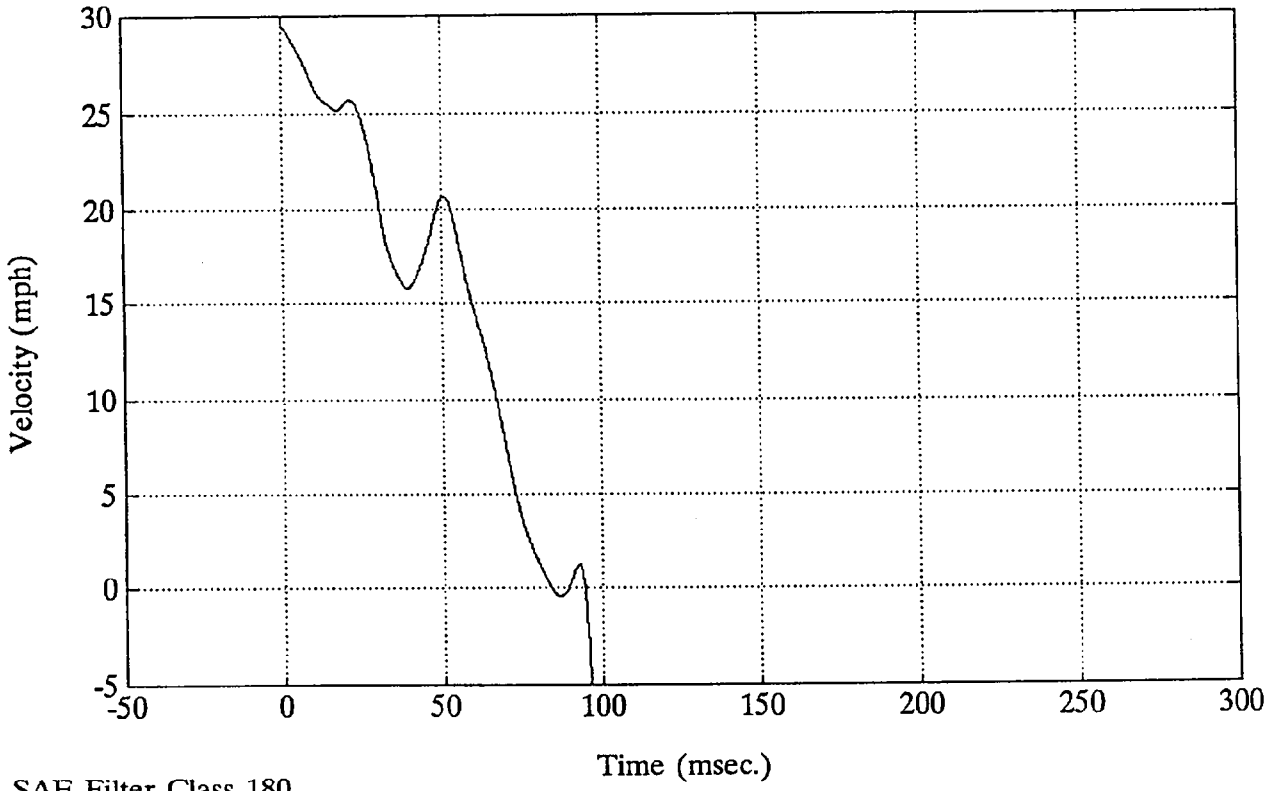
Max = 31.44 Gs @ 47.04 msec
Min = -203.71 Gs @ 99.48 msec



SAE Filter Class 60

FMVSS 208 - 1993 FORD CROWN VICTORIA
R. Brake Caliper X (#5)

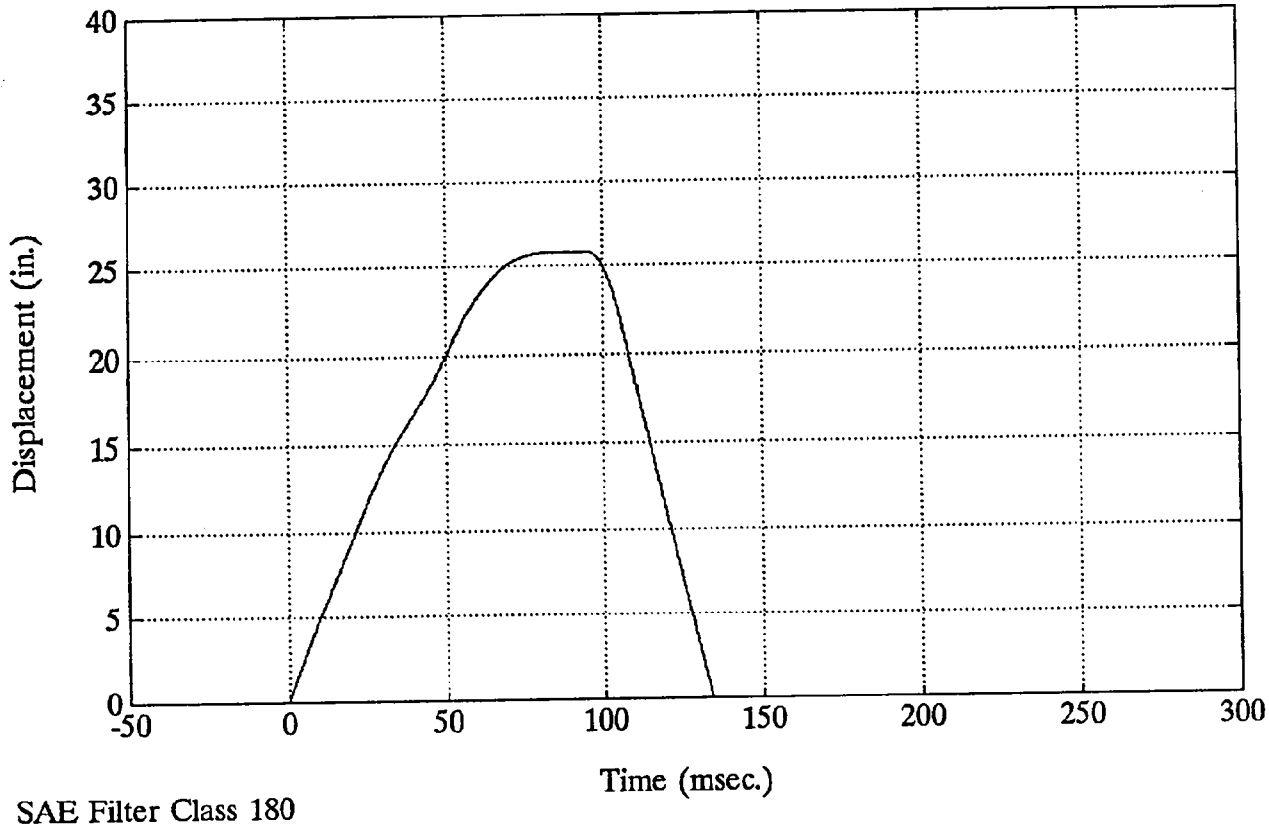
Max = 29.50 mph @ -0.00 msec
Min = -47.42 mph @ 254.88 mse



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
R. Brake Caliper X (#5)

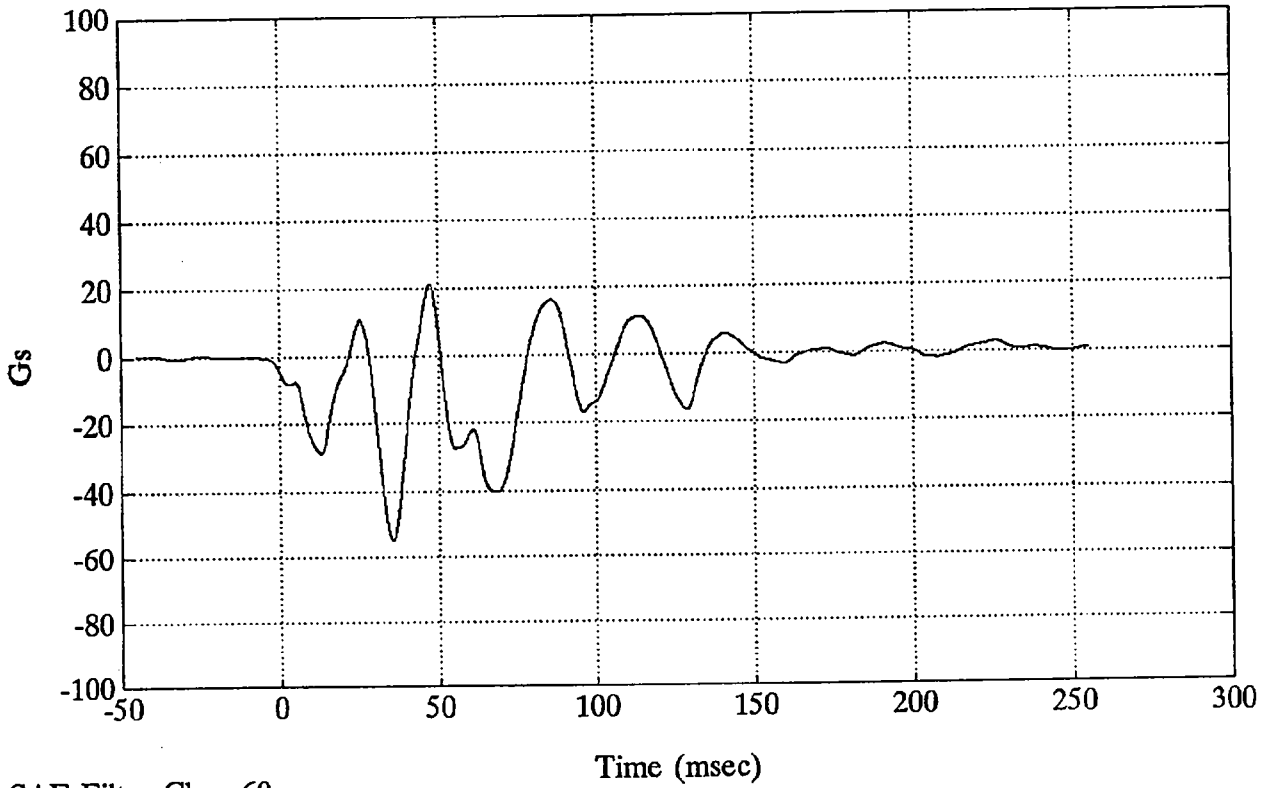
Max = 25.86 in. @ 94.80 msec
Min = -99.71 in. @ 254.88 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
L. Brake Caliper X (#6)

Max = 21.07 Gs @ 47.52 msec
Min = -54.81 Gs @ 35.64 msec

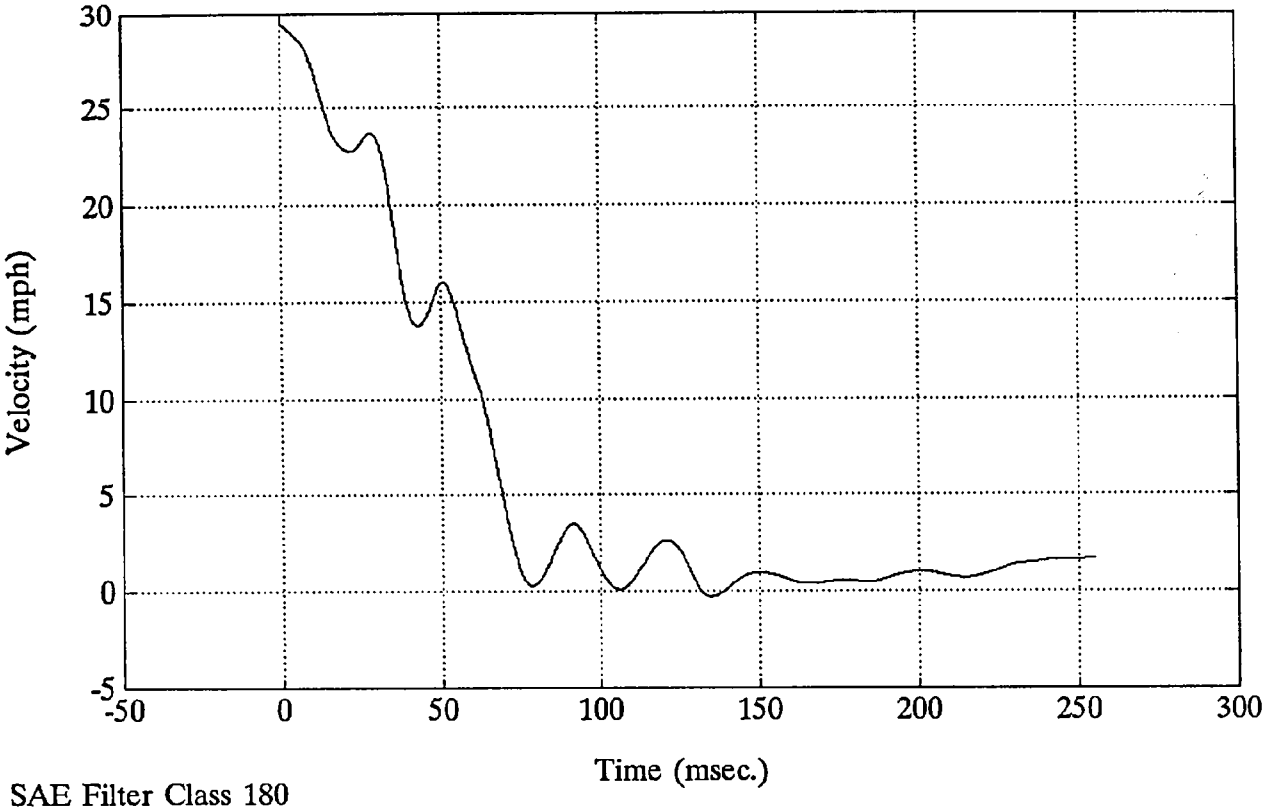


SAE Filter Class 60

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
L. Brake Caliper X (#6)

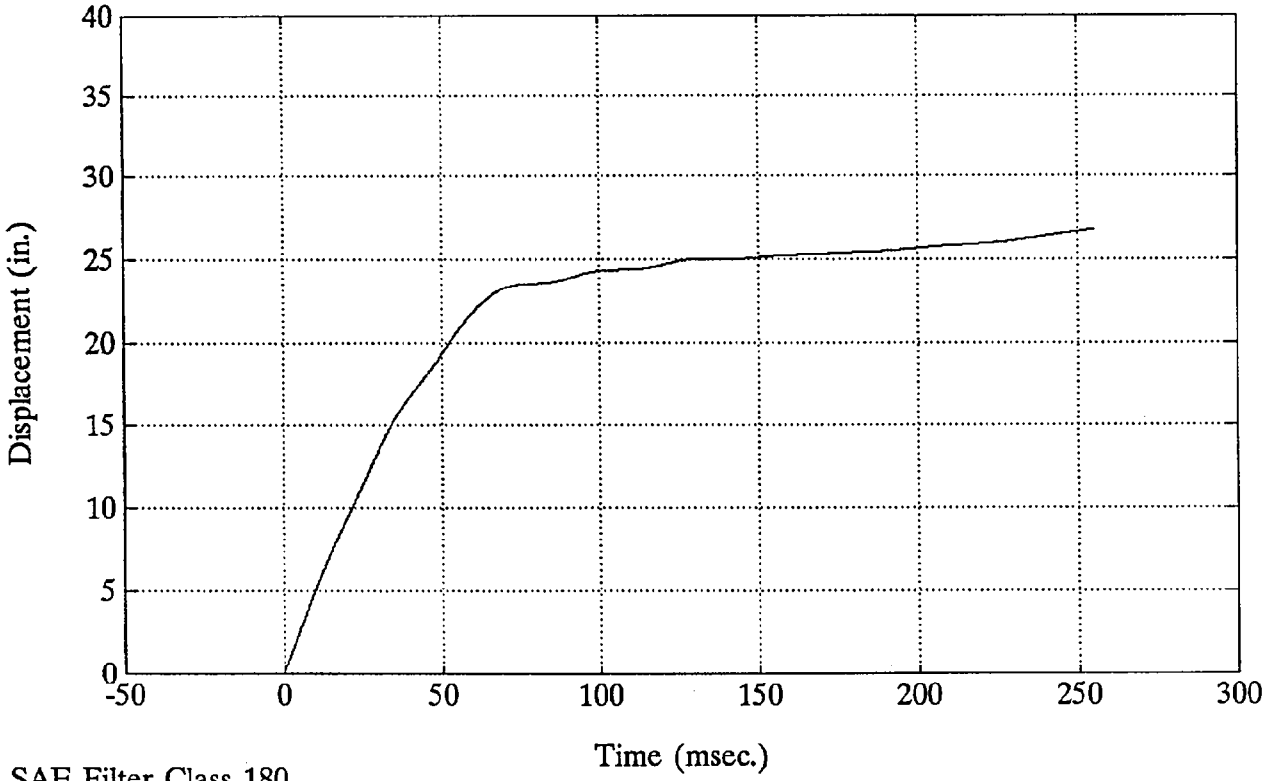
Max = 29.50 mph @ -0.00 msec
Min = -0.28 mph @ 134.64 msec



SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA
L. Brake Caliper X (#6)

Max = 26.80 in. @ 254.88 msec
Min = 0.00 in. @ -0.00 msec

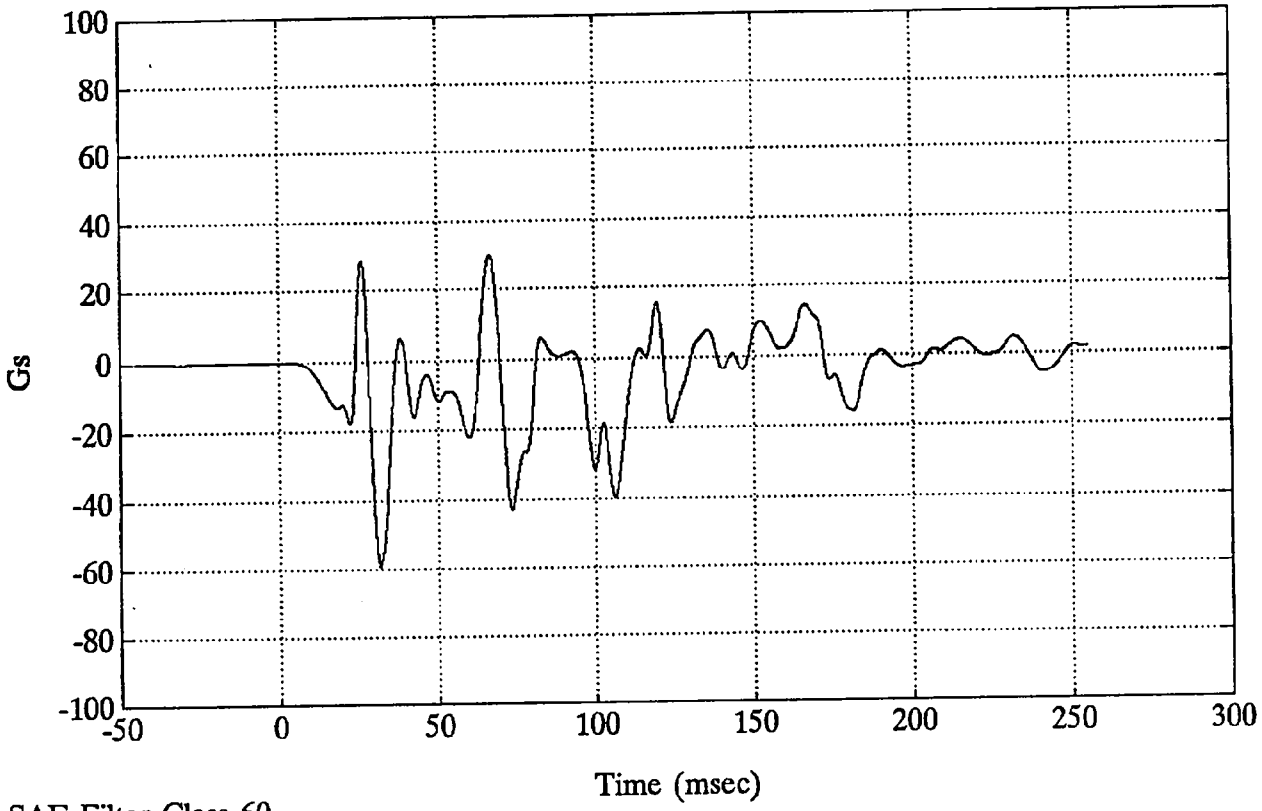


SAE Filter Class 180

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
Instrument Panel X (#7)

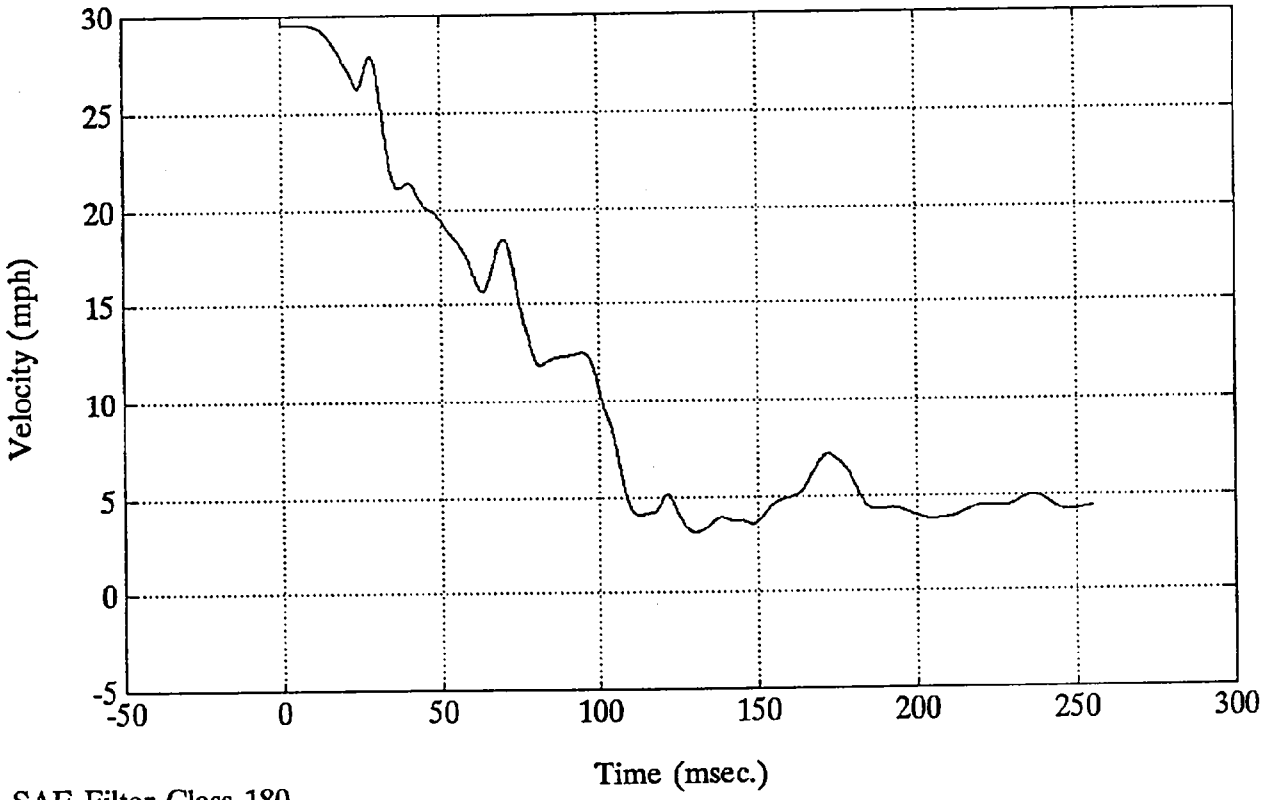
Max = 30.02 Gs @ 66.84 msec
Min = -59.33 Gs @ 31.68 msec



SAE Filter Class 60

FMVSS 208 - 1993 FORD CROWN VICTORIA
Instrument Panel X (#7)

Max = 29.51 mph @ 7.20 msec
Min = 3.10 mph @ 130.32 msec



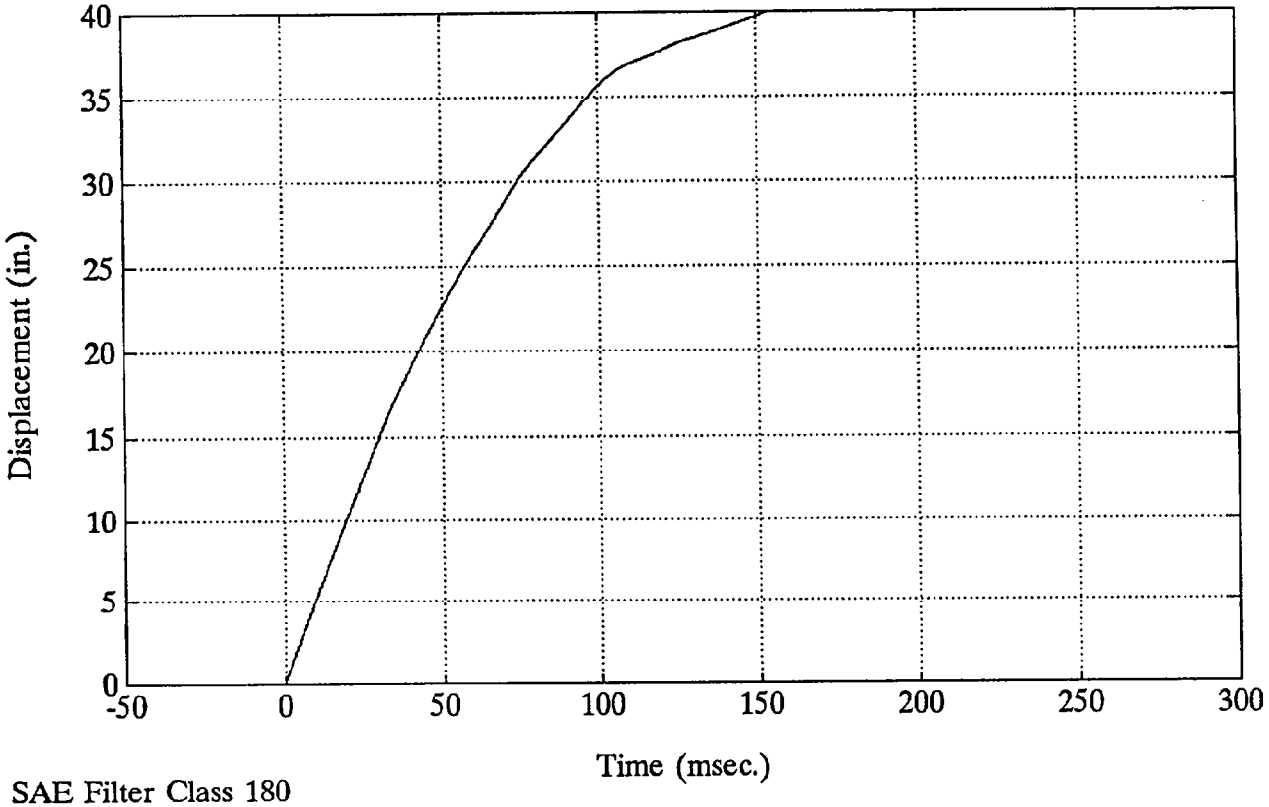
SAE Filter Class 180

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA

Instrument Panel X (#7)

Max = 48.48 in. @ 254.88 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

TEST NO. CP0204

VEHICLE DATA

SAE FILTER CHANNEL CLASS

60

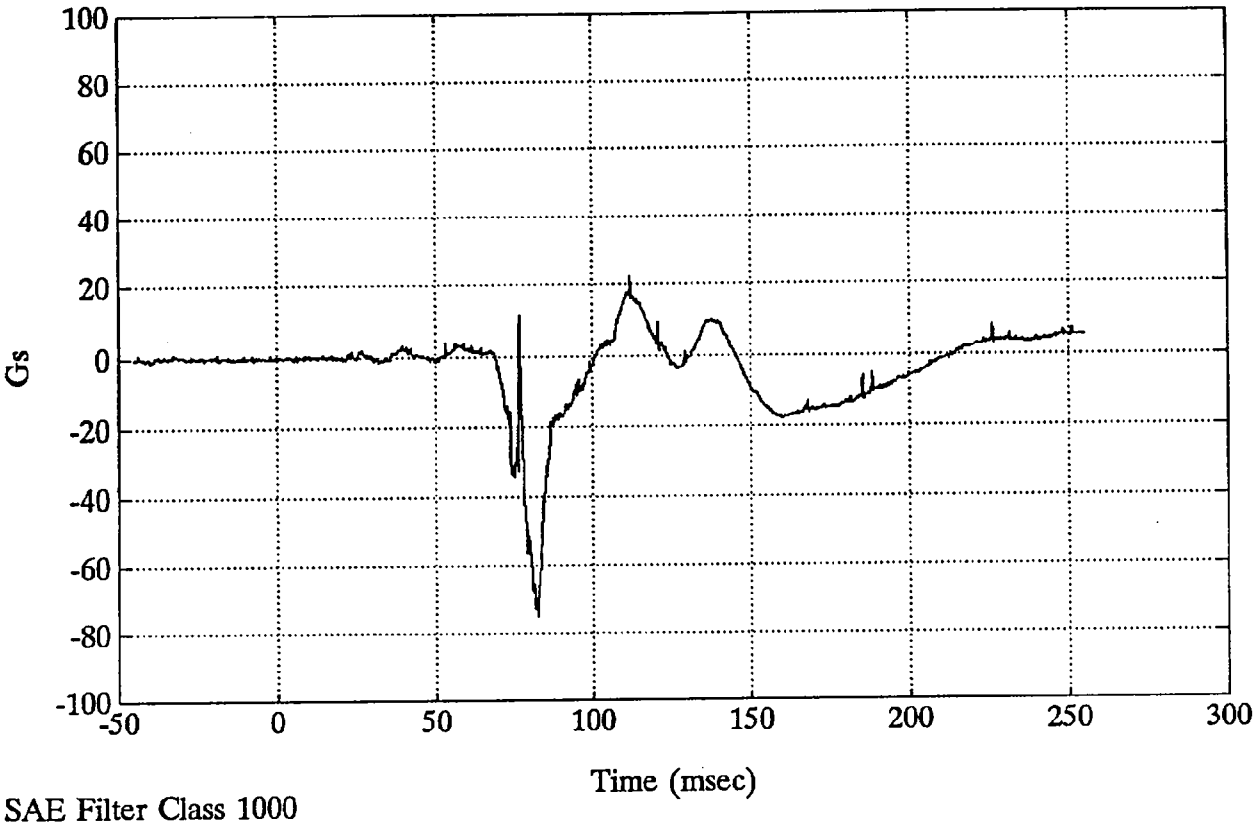
TEST NO. CP0204

DUMMY DATA	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Head X

Max = 22.31 Gs @ 111.72 msec
Min = -75.01 Gs @ 82.20 msec

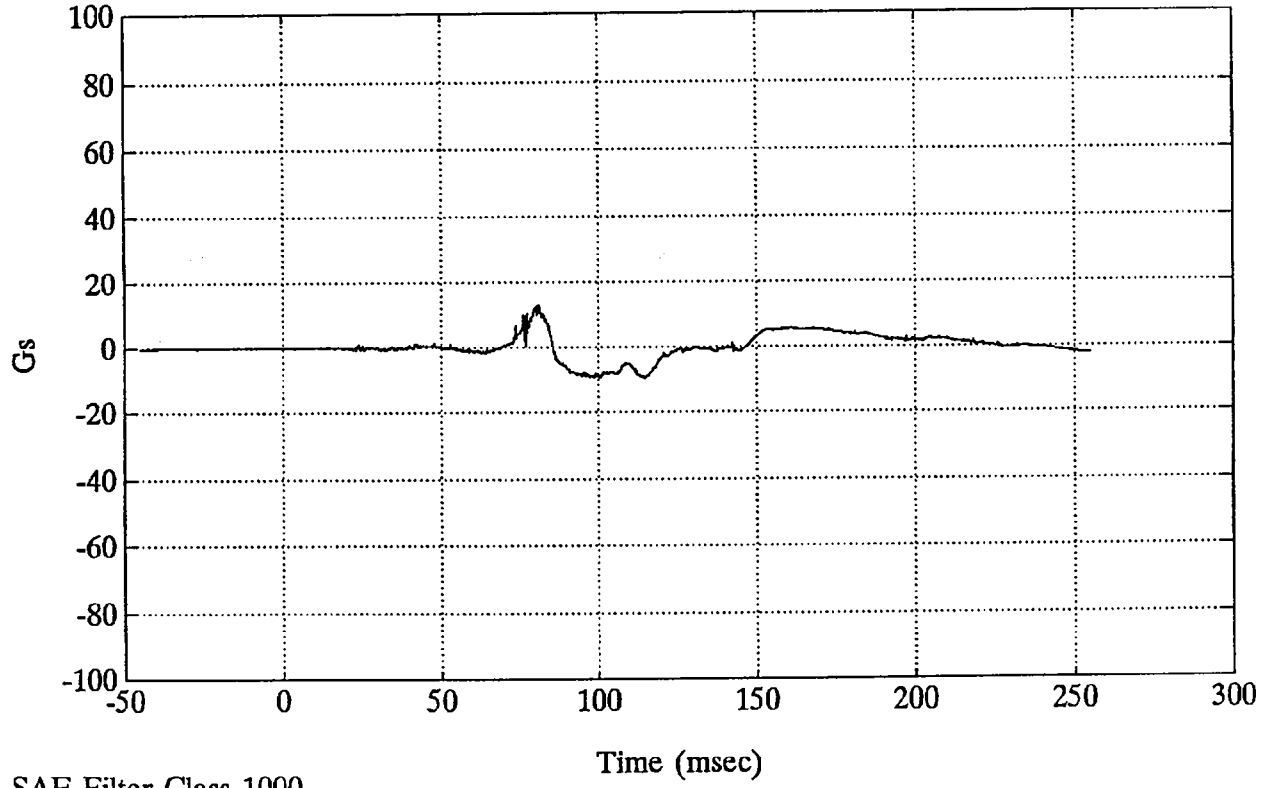


SAE Filter Class 1000

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Head Y

Max = 13.03 Gs @ 81.00 msec
Min = -9.47 Gs @ 114.72 msec

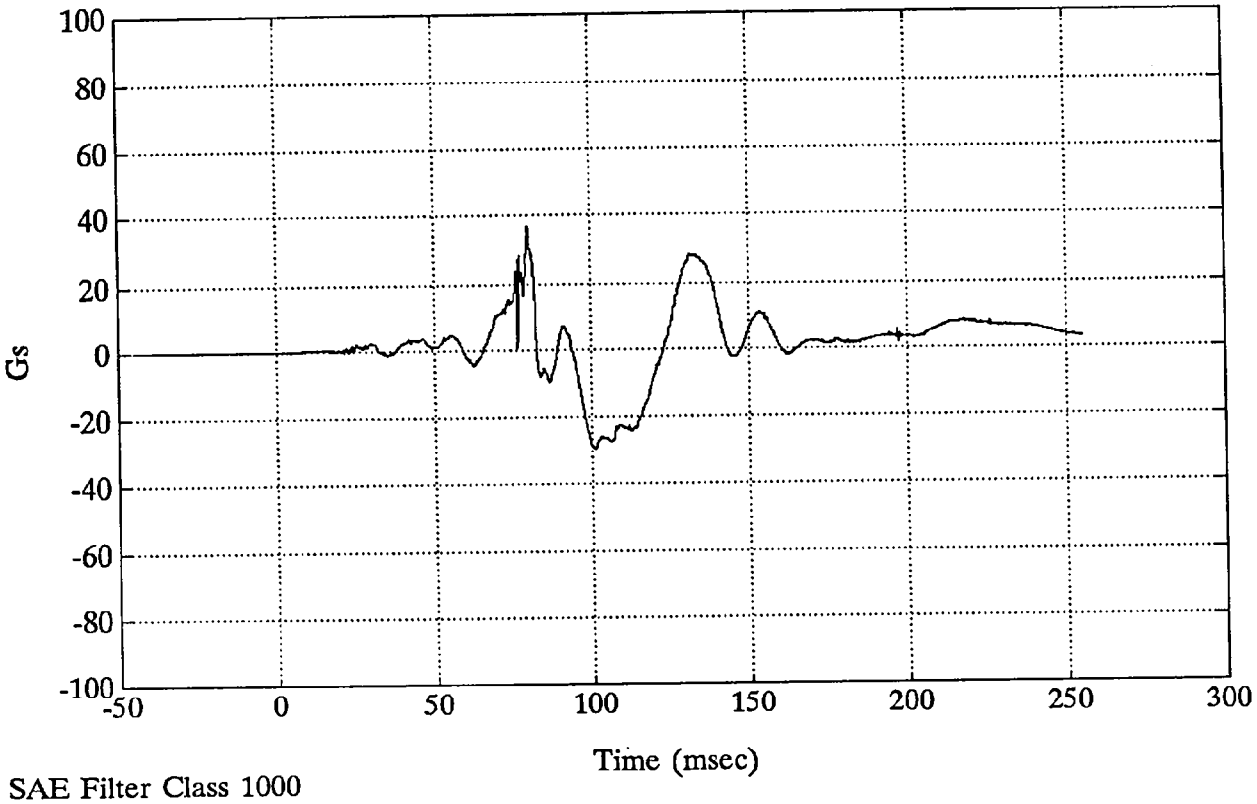


SAE Filter Class 1000

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Head Z

Max = 36.67 Gs @ 80.04 msec
Min = -29.51 Gs @ 100.68 msec

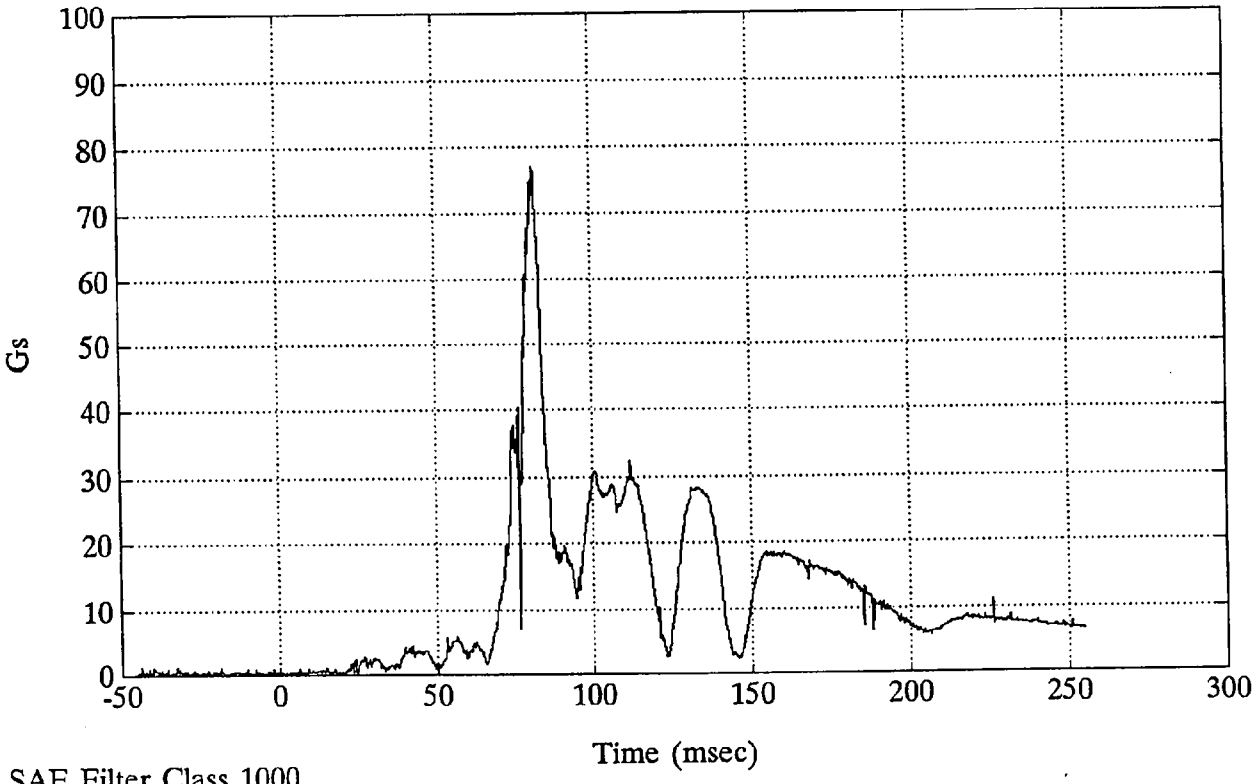


SAE Filter Class 1000

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Head Resultant

Max = 77.01 Gs @ 81.60 msec
Min = 0.05 Gs @ -6.48 msec



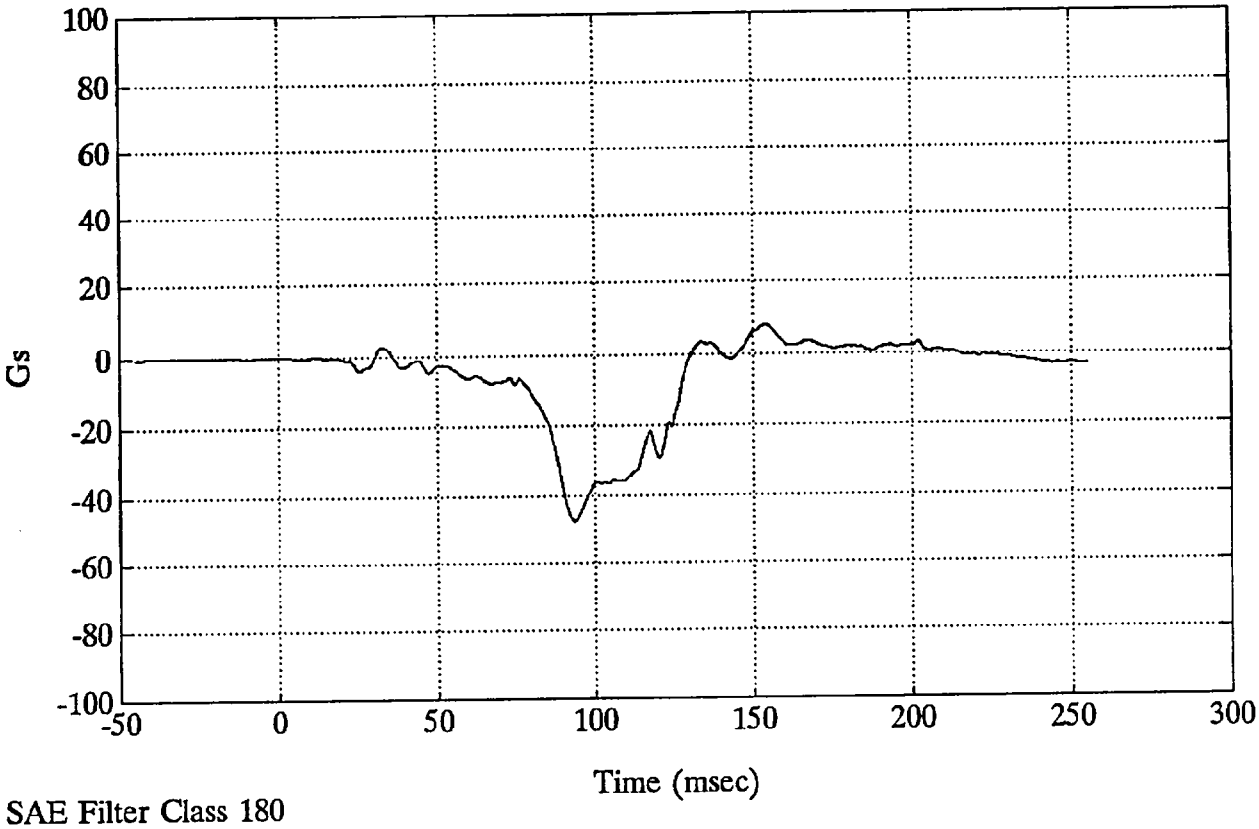
SAE Filter Class 1000

8056-5

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Chest X

Max = 7.93 Gs @ 153.84 msec
Min = -47.62 Gs @ 93.48 msec

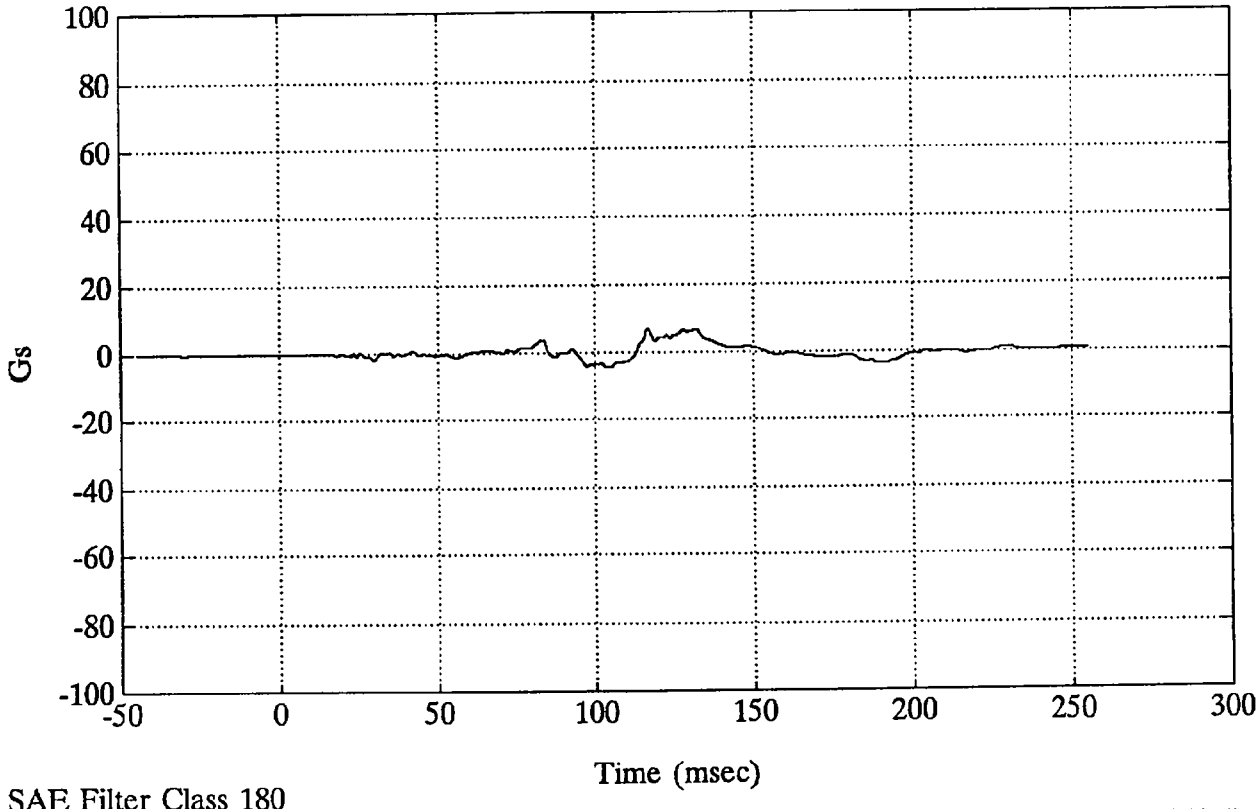


SAE Filter Class 180

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Chest Y

Max = 7.04 Gs @ 116.52 msec
Min = -4.10 Gs @ 104.76 msec

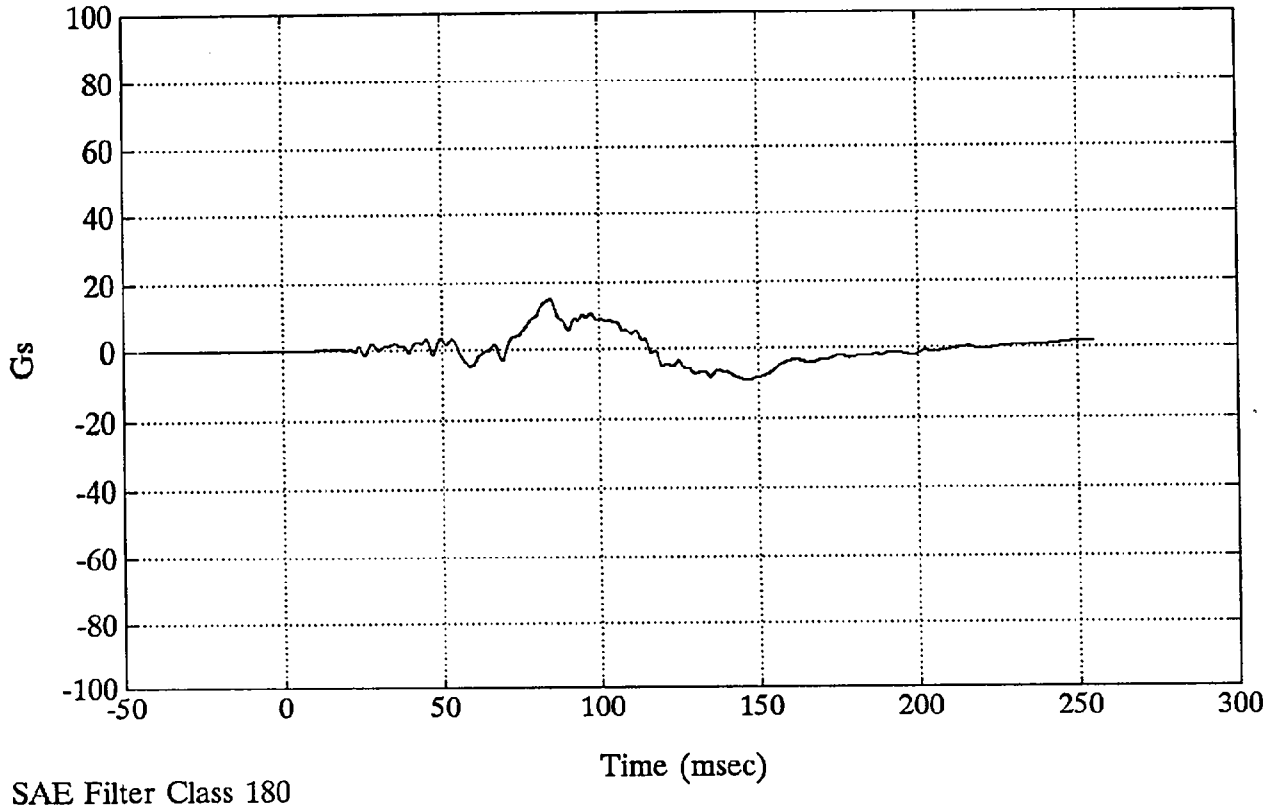


SAE Filter Class 180

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Chest Z

Max = 15.08 Gs @ 84.24 msec
Min = -8.83 Gs @ 146.64 msec

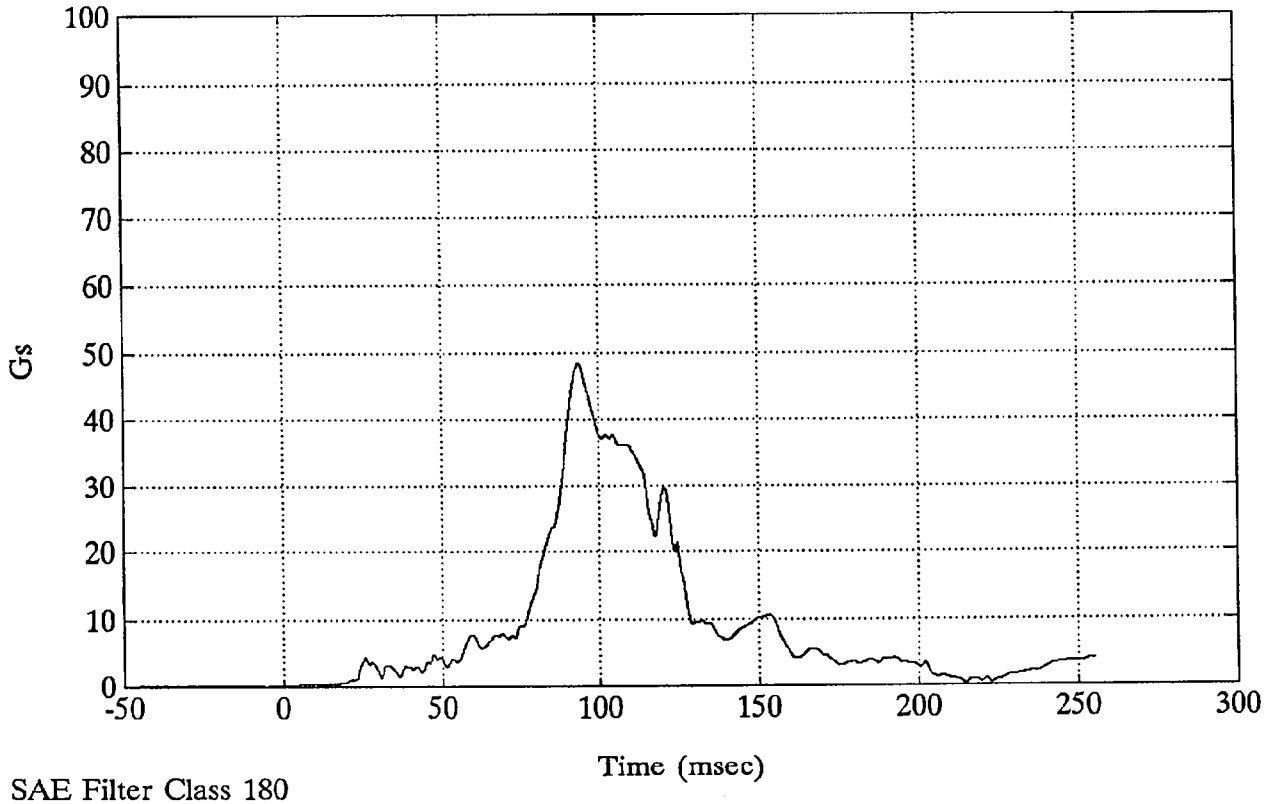


SAE Filter Class 180

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Chest Resultant

Max = 48.47 Gs @ 93.60 msec
Min = 0.06 Gs @ -4.92 msec

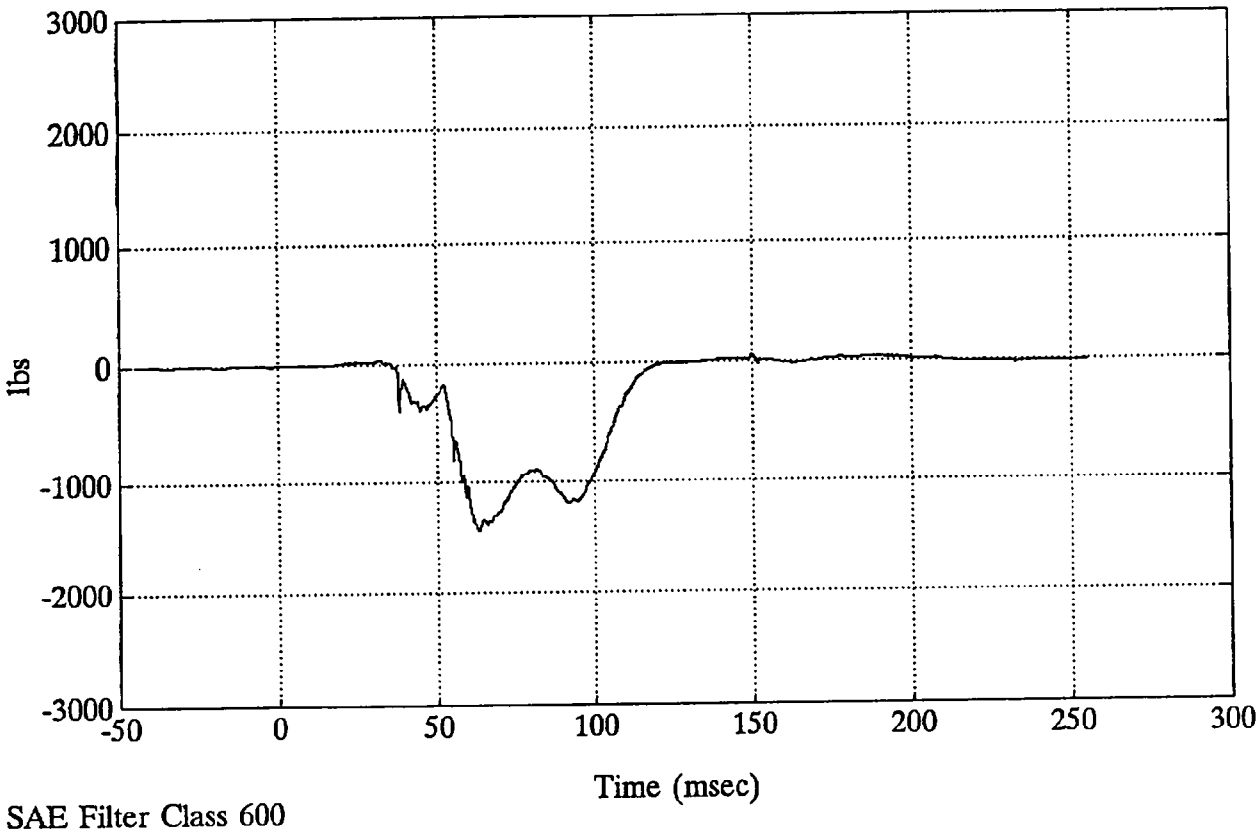


SAE Filter Class 180

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Left Femur

Max = 58.09 lbs @ 149.52 msec
Min = -1430.70 lbs @ 63.36 msec

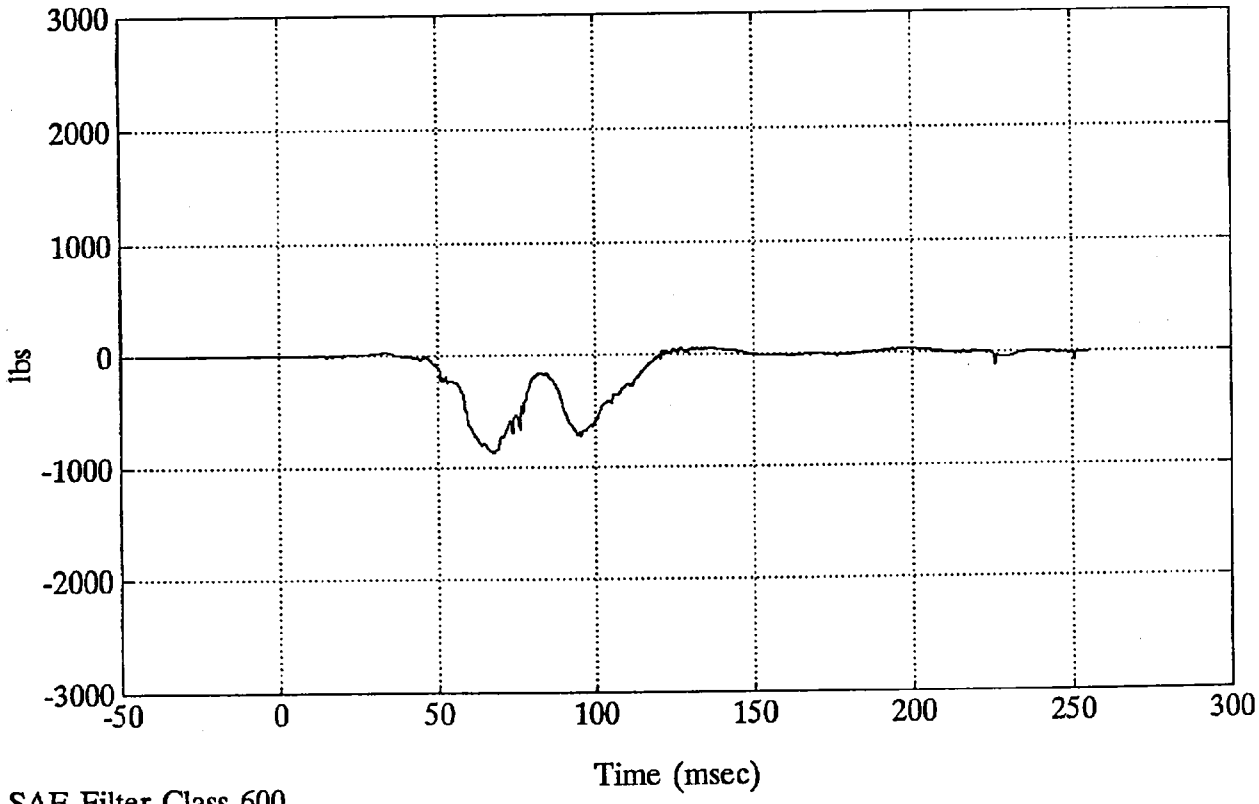


SAE Filter Class 600

FMVSS 208-1993 FORD CROWN VICTORIA

Pos. 1 Right Femur

Max = 59.74 lbs @ 137.40 msec
Min = -874.41 lbs @ 67.68 msec

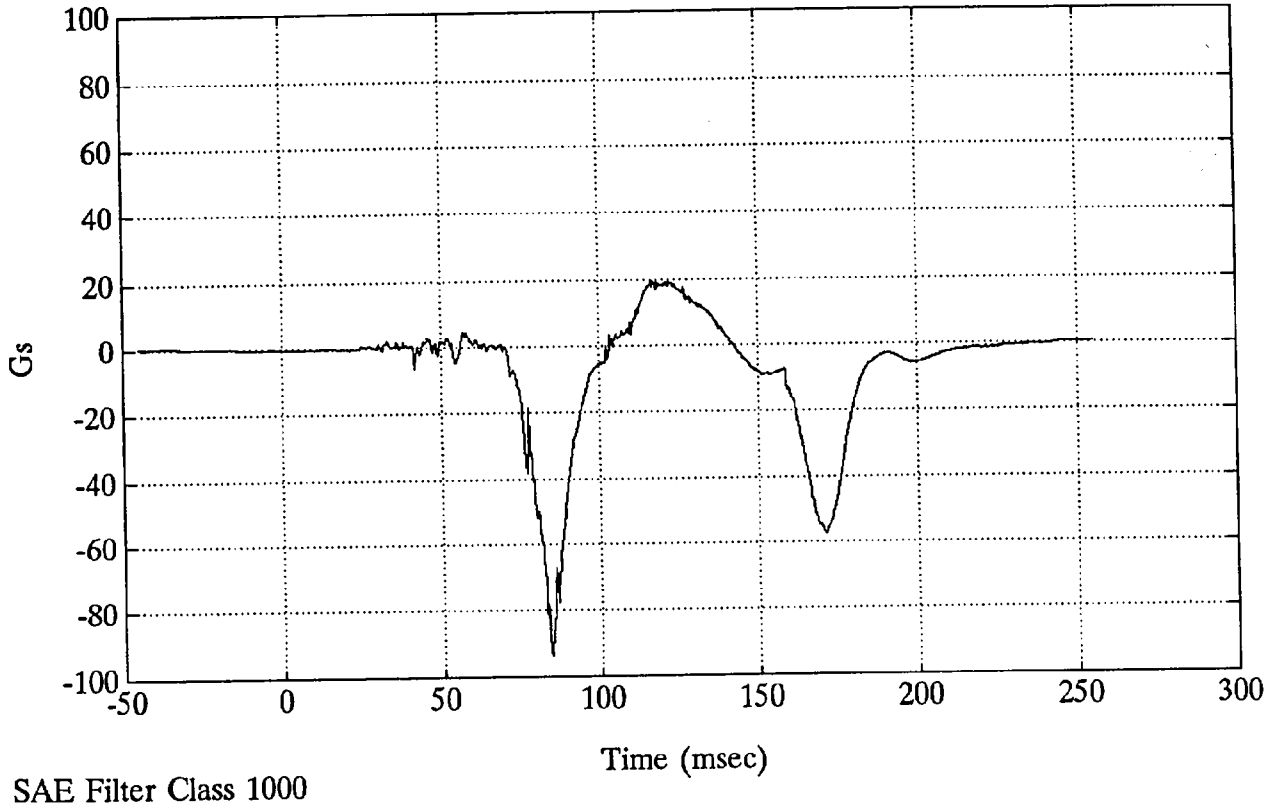


SAE Filter Class 600

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Head X

Max = 19.80 Gs @ 116.40 msec
Min = -93.76 Gs @ 84.00 msec

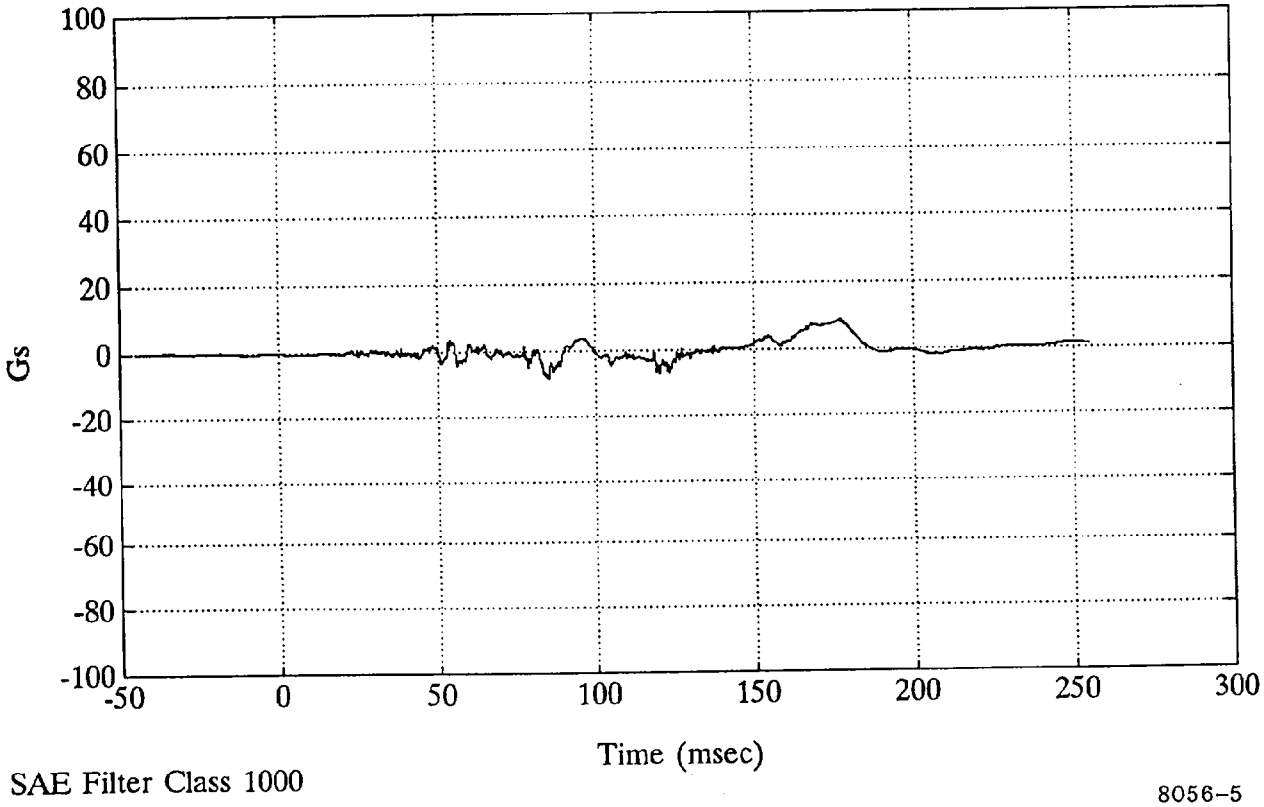


SAE Filter Class 1000

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Head Y

Max = 8.91 Gs @ 177.24 msec
Min = -8.02 Gs @ 85.20 msec



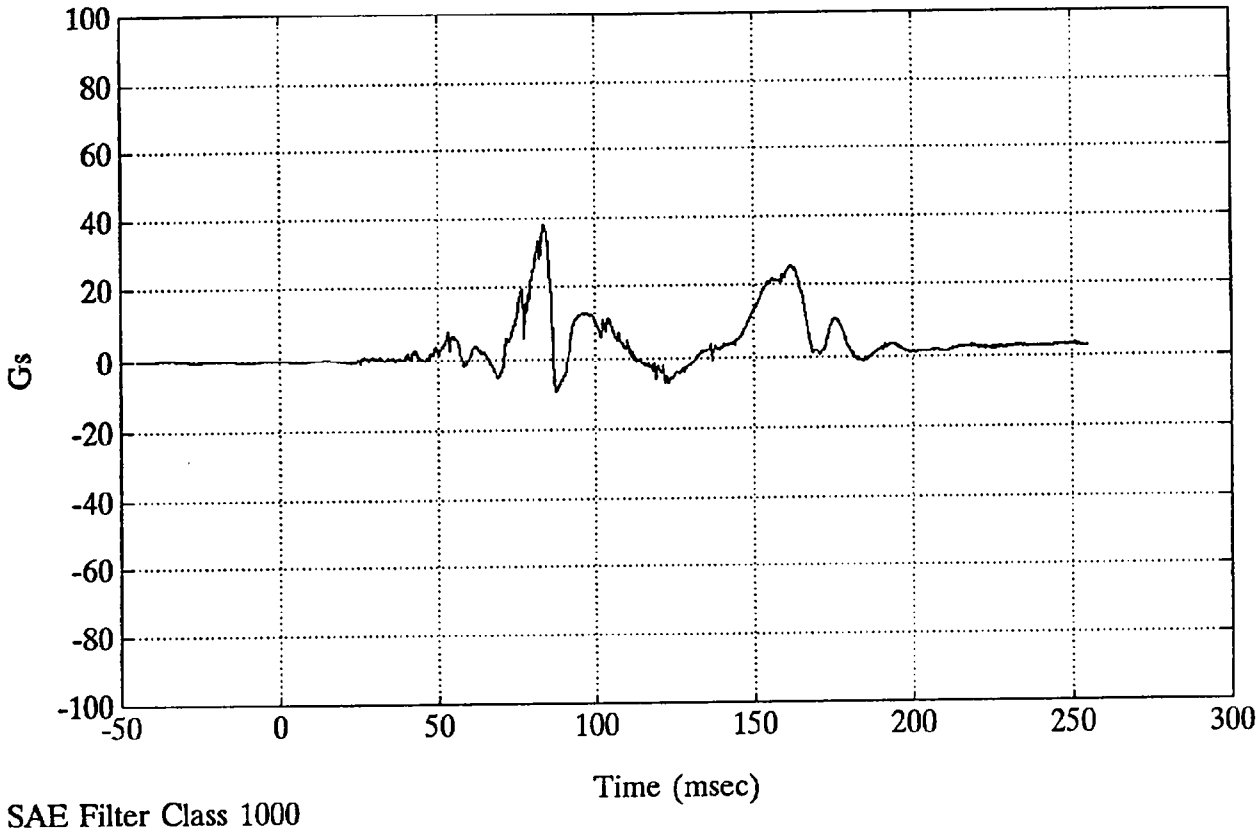
SAE Filter Class 1000

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Head Z

Max = 38.44 Gs @ 83.52 msec
Min = -9.26 Gs @ 87.36 msec

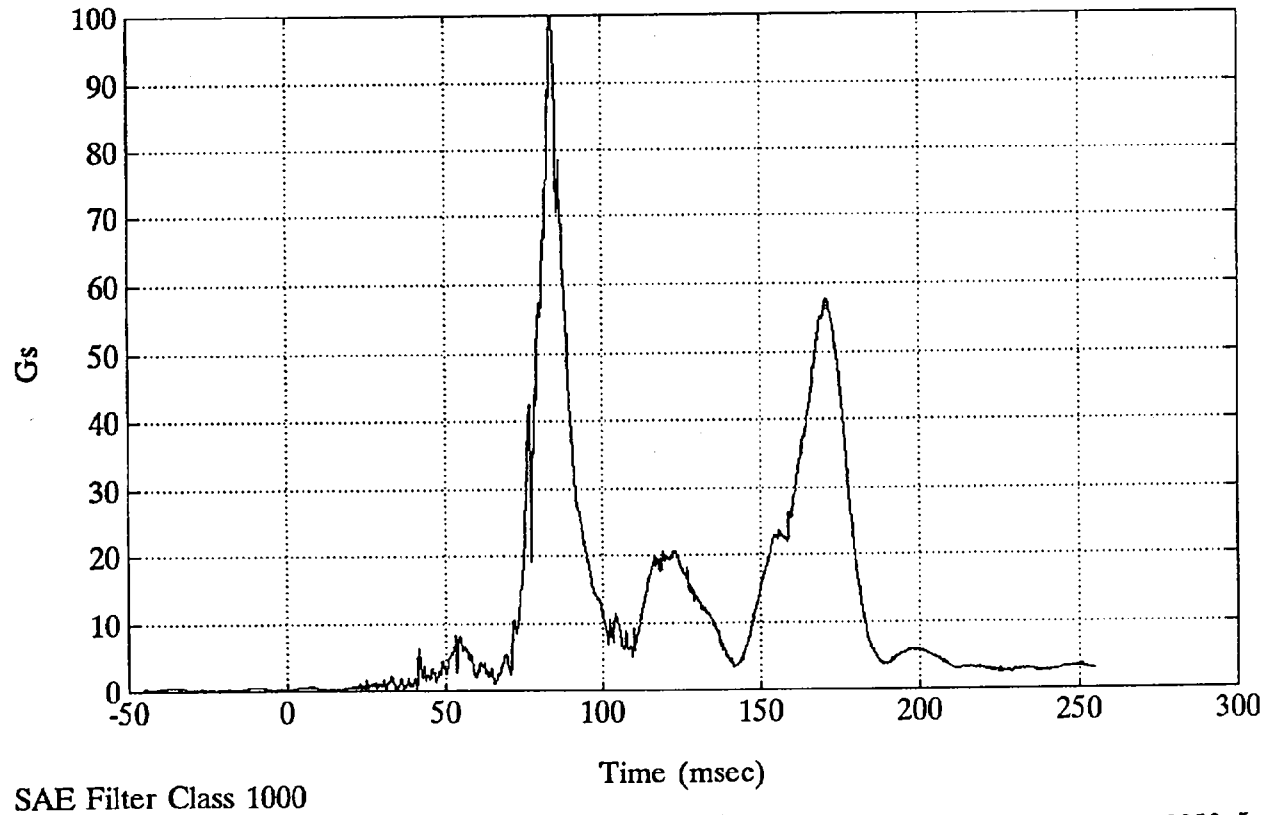


SAE Filter Class 1000

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Head Resultant

Max = 101.12 Gs @ 84.00 msec
Min = 0.04 Gs @ -21.84 msec



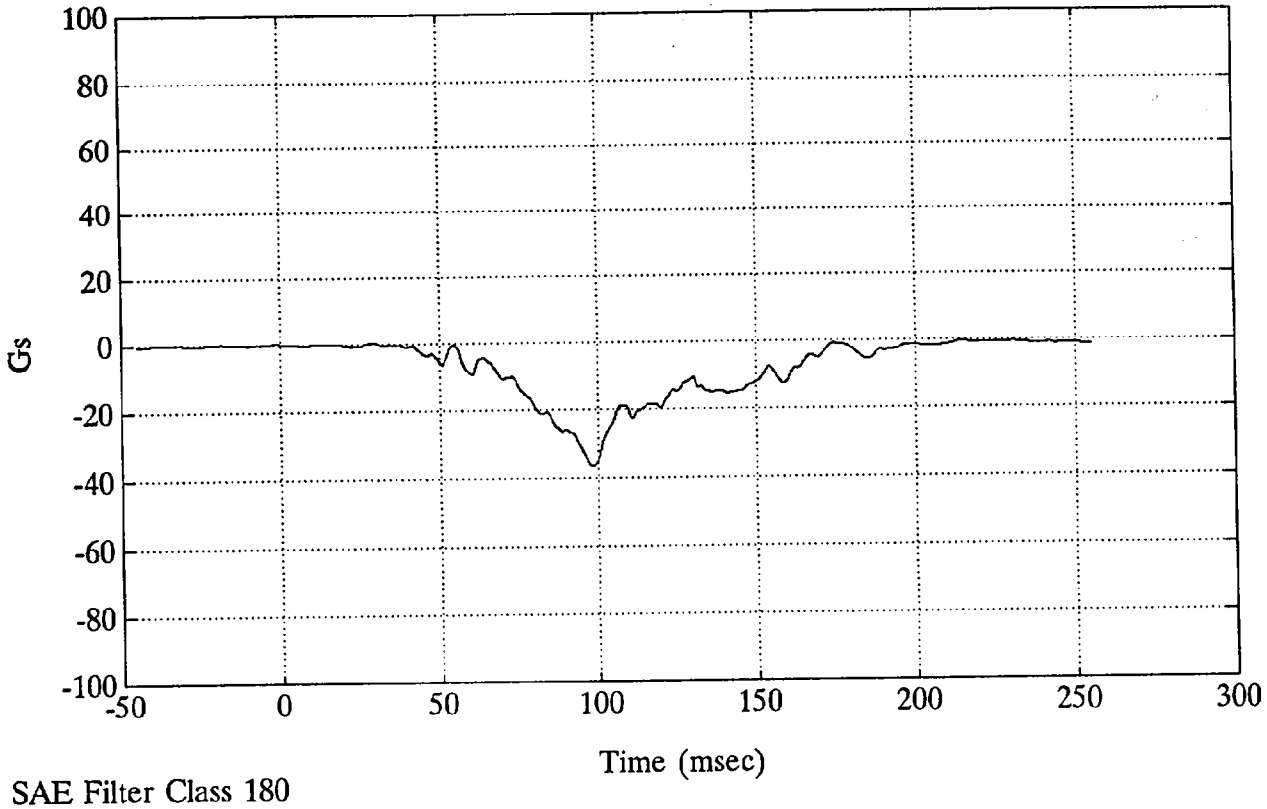
SAE Filter Class 1000

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Chest X

Max = 0.31 Gs @ 29.64 msec
Min = -36.40 Gs @ 98.04 msec

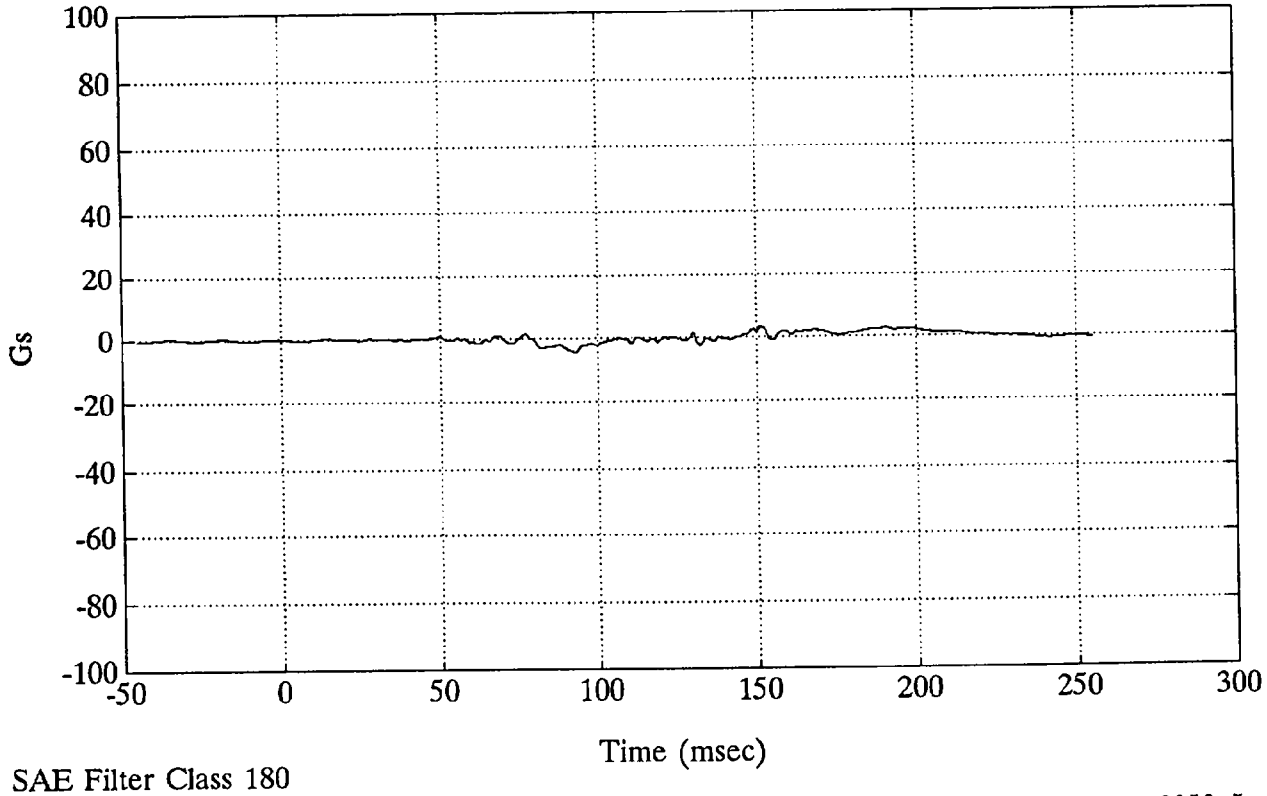


SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Chest Y

Max = 3.43 Gs @ 150.96 msec
Min = -4.48 Gs @ 92.88 msec



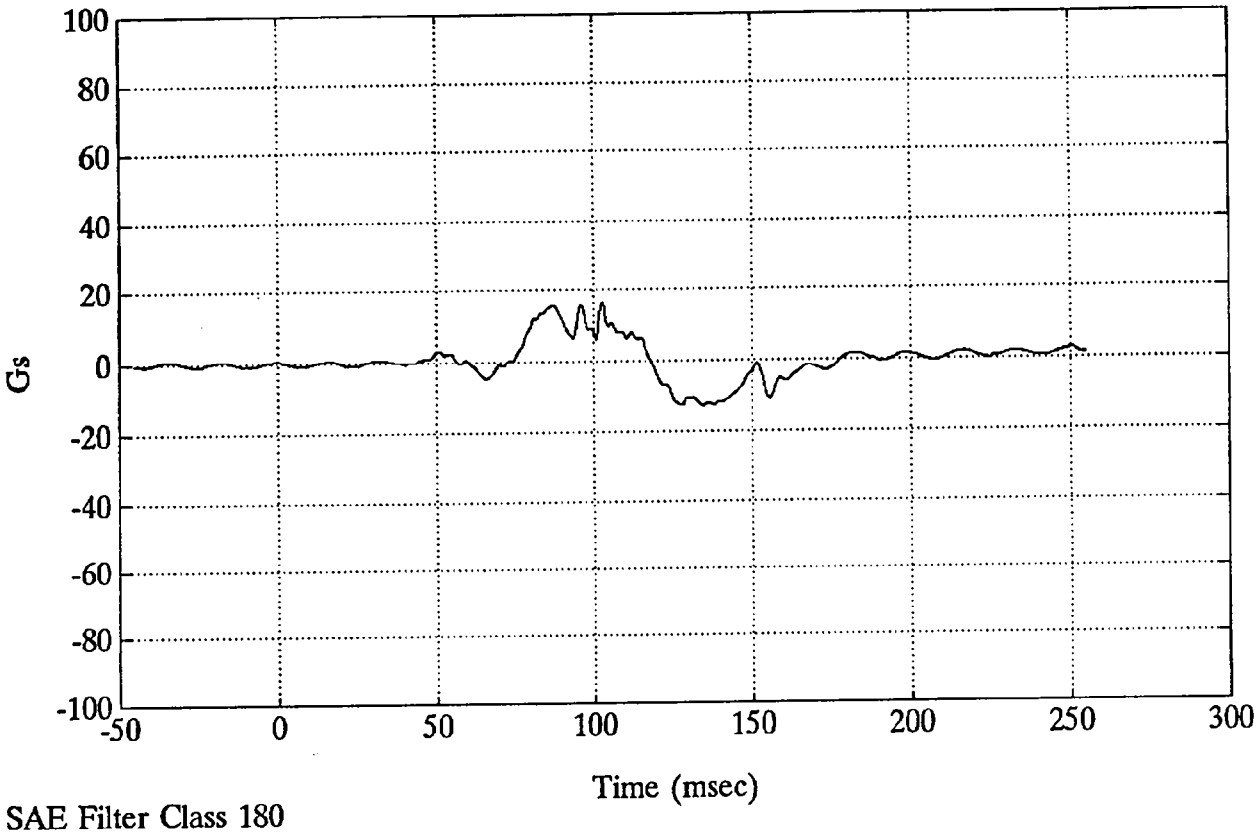
SAE Filter Class 180

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Chest Z

Max = 15.83 Gs @ 102.60 msec
Min = -12.68 Gs @ 134.28 msec

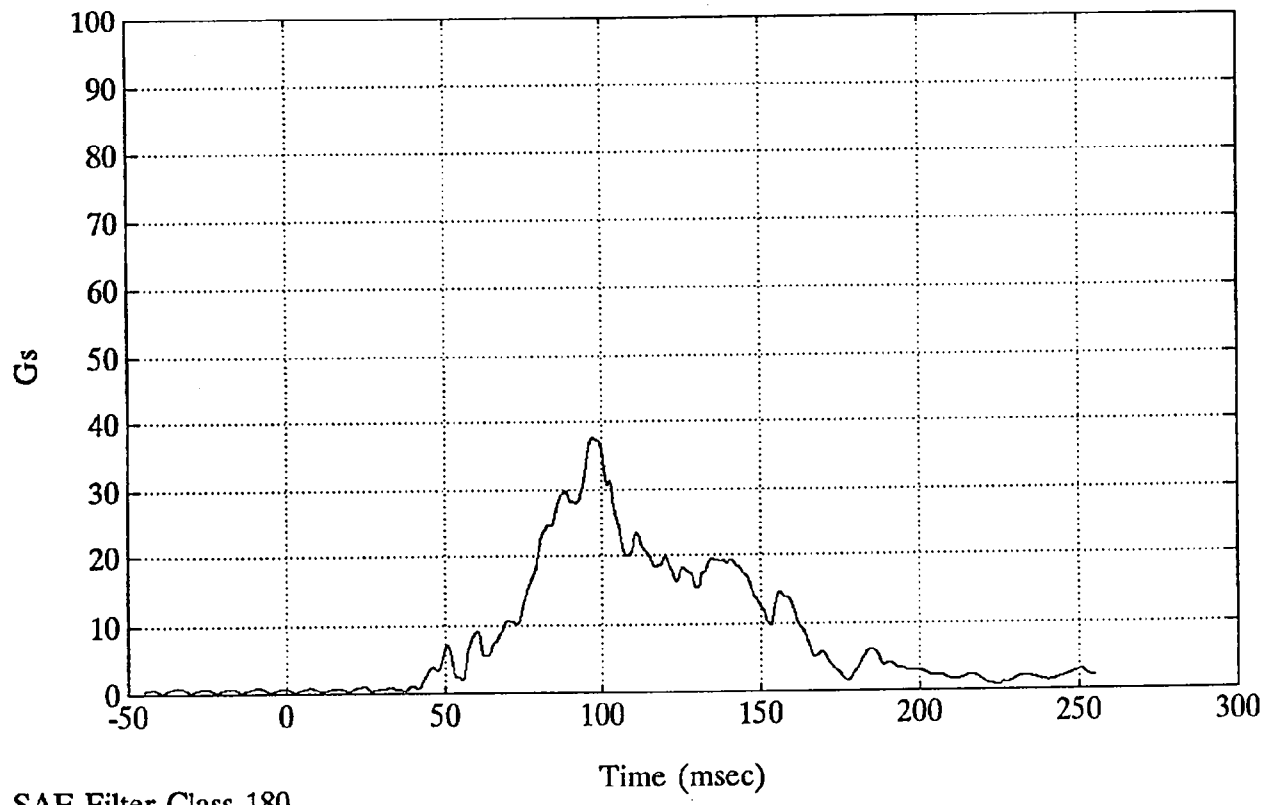


SAE Filter Class 180

FMVSS 208 - 1993 FORD CROWN VICTORIA

Pos. 2 Chest Resultant

Max = 37.67 Gs @ 96.96 msec
Min = 0.04 Gs @ -39.12 msec

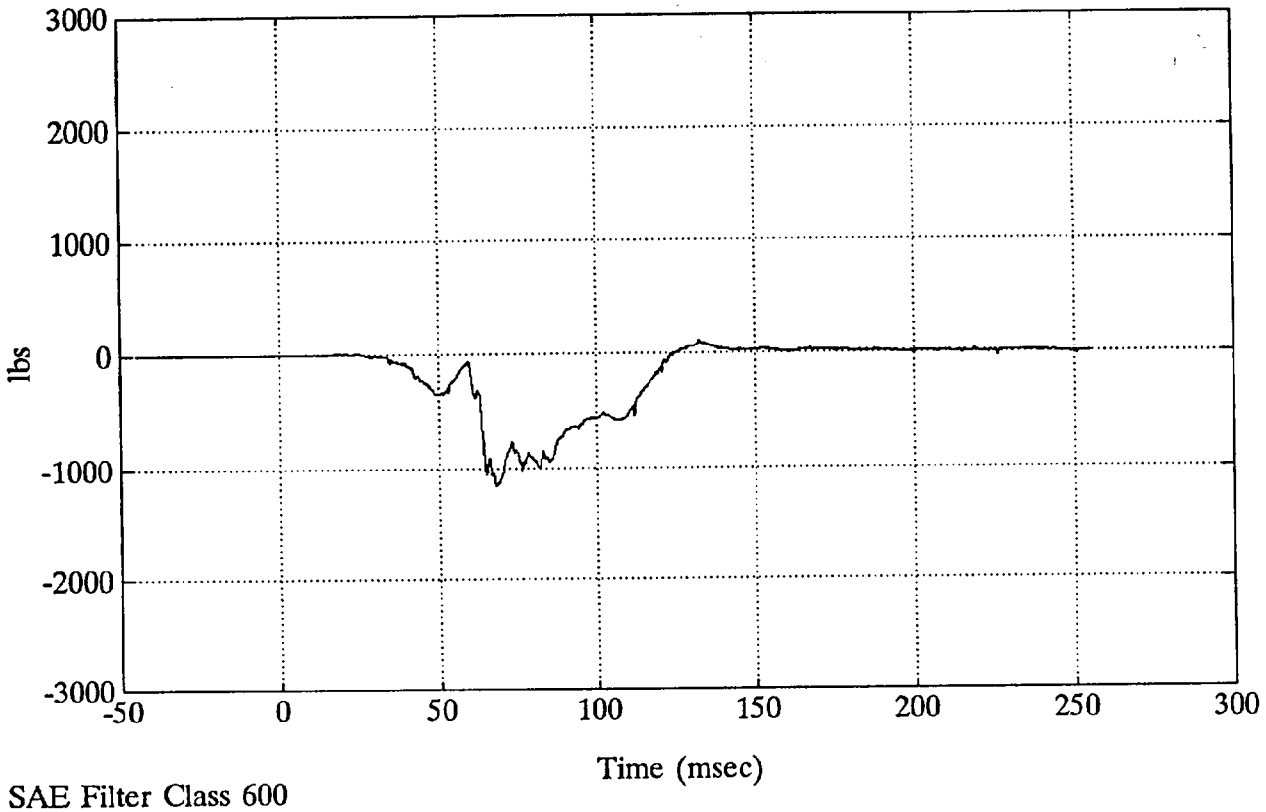


SAE Filter Class 180

8056-5

FMVSS 208 - 1993 FORD CROWN VICTORIA
Pos. 2 Left Femur

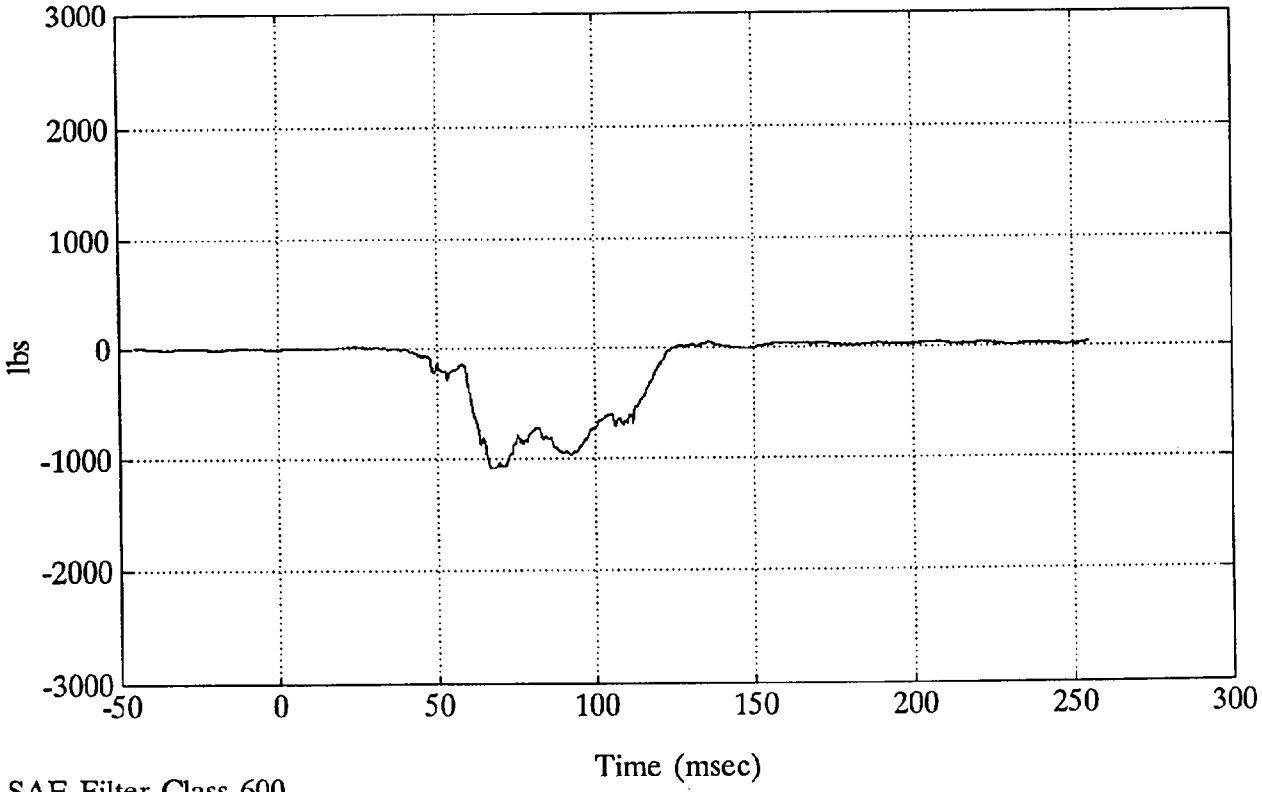
Max = 110.79 lbs @ 132.24 msec
Min = -1154.00 lbs @ 68.16 msec



SAE Filter Class 600

FMVSS 208 - 1993 FORD CROWN VICTORIA
Pos. 2 Right Femur

Max = 51.86 lbs @ 135.72 msec
Min = -1084.90 lbs @ 66.84 msec



SAE Filter Class 600

8056-5

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.

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.

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:

- ❑ Lap and shoulder belts – for people who sit next to the windows in either the front or rear seats
- ❑ Lap belts – for people who sit in the middle seat in either the front or the rear seats.

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 belts fit 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.

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. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

Do not allow any people to ride in the cargo area of your vehicle. People who are not riding in seats with their safety belts fastened are much more likely to be 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.

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 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.

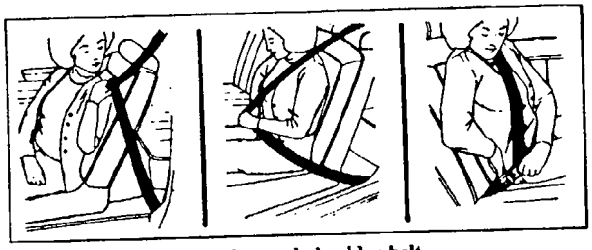
Warning: All safety belt assemblies, including retractors and attaching hardware, should be inspected after any collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the 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

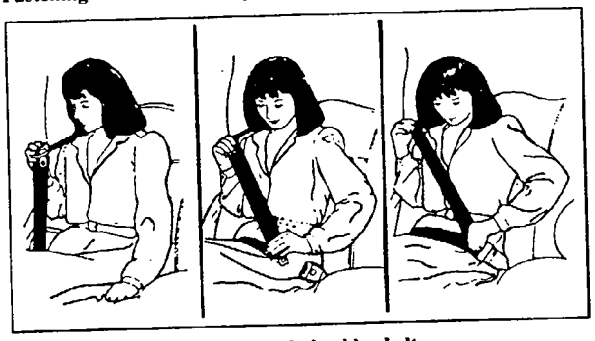
While your vehicle is in motion, the combination lap and shoulder belts adjusts to your movement. However, if you brake hard, corner hard or if your vehicle receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and helps reduce your forward movement. The front seat belt systems can also be made to lock by jerking on the belt.

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 in the buckle.



Fastening the front seat lap and shoulder belt



Fastening the rear seat lap and shoulder belt

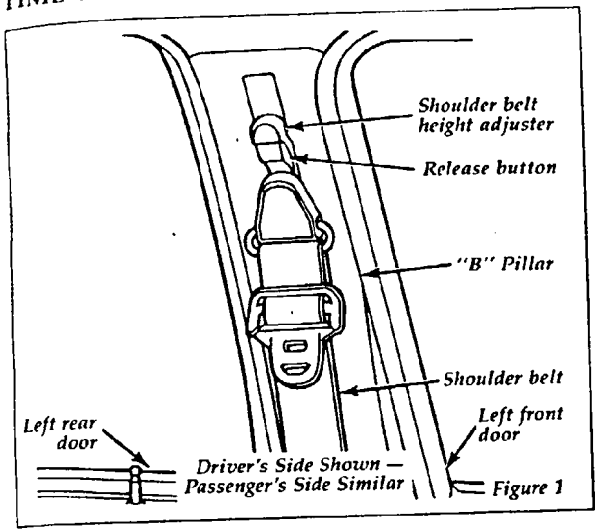
Shoulder Belt Adjustment

Driver and Right Front Passenger

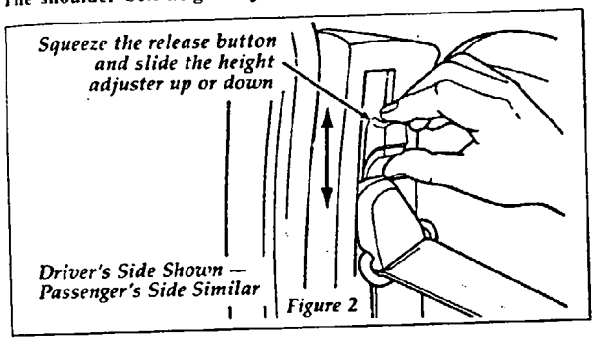
You can adjust the shoulder belt height to one of five (5) positions. To adjust, pinch the release button (see Figures 1 and 2) and slide it up or down until the belt rests on your shoulder near your neck. Release the button and make sure the adjuster is firmly in one of the five (5) positions.

Warning: If the shoulder belt is off your shoulder or on your upper arm, there is a greater risk of severe injury in a collision.

BE SURE THE BELT IS PROPERLY POSITIONED ON YOUR SHOULDER EACH TIME YOU USE THE BELT.



The shoulder belt height adjuster



The shoulder belt height adjuster

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.

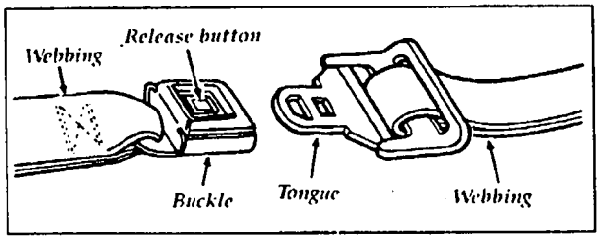
Warning: Front and rear seat outboard occupants (including pregnant women) should wear safety belts, for optimum protection in a collision.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around 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.

To adjust the lap part of the belt, pull up on the shoulder belt until the lap belt fits snugly low on your hips.

To unfasten the belt:

1. Push the release button in the center of the buckle. This allows the tongue to unlatch from the buckle.

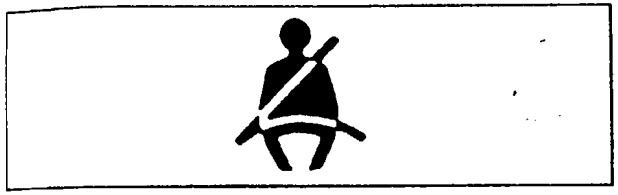


Unfastening the outboard lap/shoulder belts

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.

Safety Belt Light/Chime

This warning light and chime remind you to fasten your safety belt. If the driver does not fasten the safety belt before the ignition key is turned to the ON position, the chime sounds for four (4) to eight (8) seconds. Also, each time you turn the ignition key to the ON position, the warning light comes on for four (4) to eight (8) seconds to remind you to fasten your safety belt.



The safety belt light

How to Untwist or Unjam a Safety Belt Retractor

If you should jam the belt retractor by allowing the belt to retract when it is twisted, you can free the webbing with this procedure:

1. Pull on the belt with both hands to tighten it on the retractor spool.
2. Feed the belt back into the retractor until it is completely retracted. Repeat previous step if necessary.

Air Bag Supplemental Re. System (SRS)

Driver and Optional Right Front Pa. Air Bag

This vehicle has a standard driver side air bag. If the letters "SRS" are above the glove box it also has a right front passenger air bag.

The driver air bag is a Supplemental Restraint System (SRS) designed to add to the protection provided to a properly belted driver in moderate to severe frontal collisions. The supplemental air bag system does not provide restraint to the lower body.

Warning: ALWAYS WEAR THE SAFETY BELT!

The Importance of Wearing Safety Belts

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 when the air bag 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

Warning: The optional right front passenger air bag is not designed to protect occupants in the center front seating position.

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.

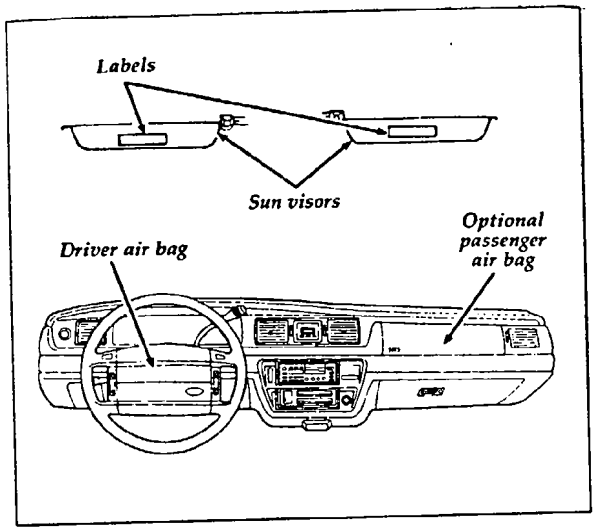
Warning: If your vehicle is equipped with a right front passenger air bag, front passengers, especially children and small adults, should never sit on the edge of the seat, stand near the glove compartment of the instrument panel, or lean over with their faces near the glove compartment when the vehicle is moving. All occupants should sit with their backs against the seatback and use the safety belts. Children weighing less than 40 lbs. (18 kg) should use child or infant seats. Forward facing child seats must have the passenger seat moved as far back from the instrument panel as possible. REAR FACING INFANT SEATS SHOULD NEVER BE USED IN THE FRONT SEAT, BECAUSE THE FORCE OF THE RAPIDLY INFLATING PASSENGER AIR BAG COULD PUSH THE TOP OF THE REAR FACING SEAT AGAINST THE VEHICLE SEATBACK OR CENTER ARMRESTS. REAR FACING INFANT SEATS MUST ALWAYS BE PLACED IN THE REAR SEAT.

Warning: Do not put objects in front of the air bag system storage area that might restrict inflation or that might increase personal injury.

How the Air Bag Supplemental Restraint System Operates

The air bag supplemental restraint system has two main parts. One part is the air bag system with driver and, if so equipped, passenger-side air bags and inflators. 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, the system wiring, the air bag system readiness light, air bag back up power, and the air bag igniters.

The driver air bag is in the center of the steering wheel. The front passenger seat air bag is in the upper right hand section of the instrument panel ledge above the glove compartment, if the letters "SRS" appear there.



The location of the air bag and warning labels

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,
- ❑ or a group of five beeps will be heard.

If any of these things happen, 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 Ford or Lincoln-Mercury 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 car of similar size and weight head-on at about 28 mph (45 km/h). Because the system senses 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.

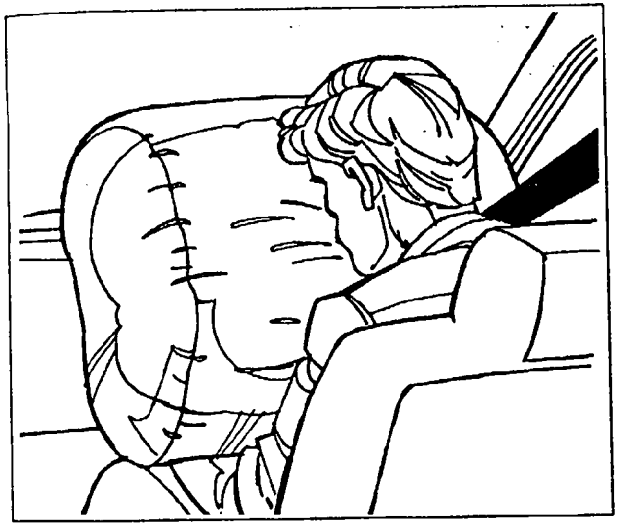
The surface of the air bag(s) and the vehicle interior may be dusted with a powdery residue. The powder is corn starch or talcum powder, which is used to lubricate the air bag as it inflates, and sodium compounds such as sodium carbonates (e.g., baking soda), and possibly a very small amount of sodium 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.

NOTE: 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.

The driver side supplemental air bag inflated



The optional passenger side supplemental air bag inflated

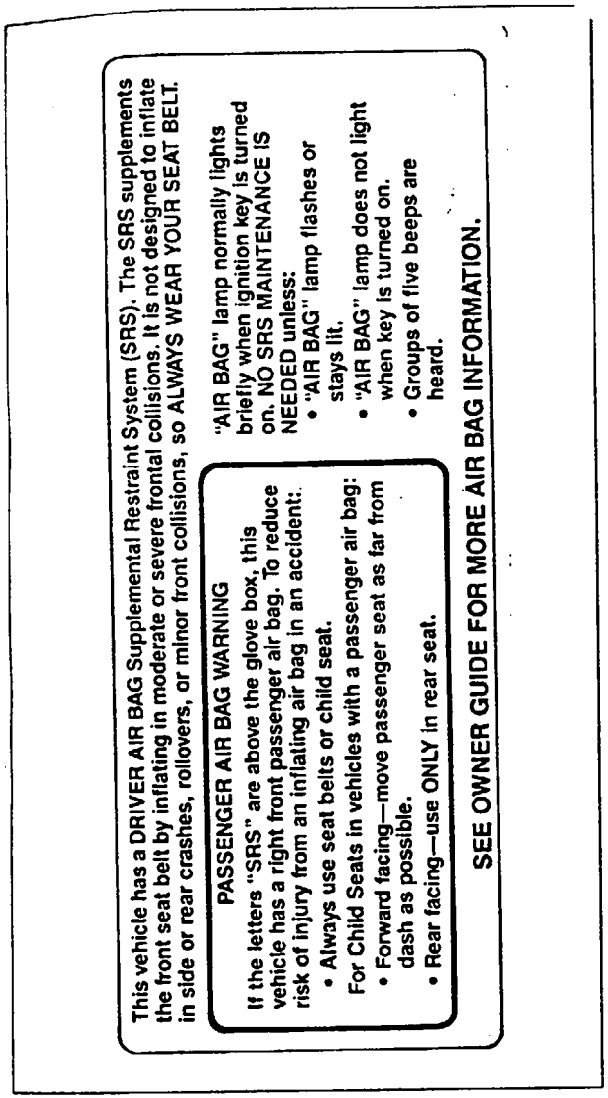
Warning: The air bag will inflate only once. The system is designed to function on a one-time-only basis. If the air bag is inflated, THE AIR BAG WILL NOT FUNCTION AGAIN AND MUST BE REPLACED IMMEDIATELY. If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

Disposal of Air Bag Equipped Vehicles

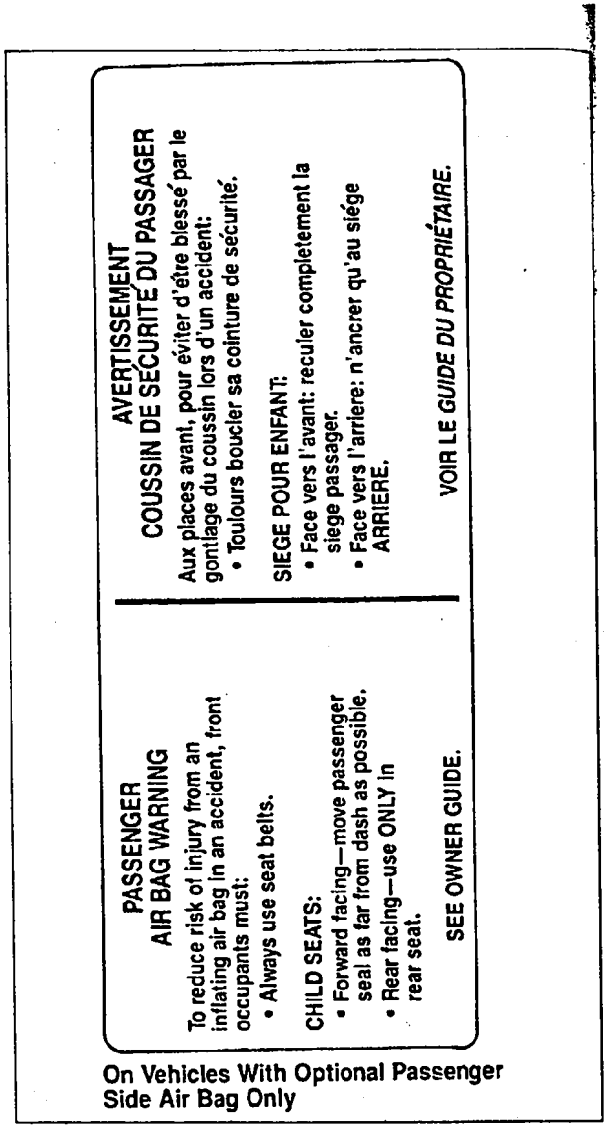
For disposal of air bags or air bag equipped vehicles, see your local Ford or Lincoln-Mercury dealer, or refer to the procedures in the 1993 Ford Shop Manual. Information on how to order a shop manual is available at an authorized Ford or Lincoln-Mercury Dealer. You can also order a shop manual using the order form in the back of your Owner's Guide.

Service and Information Labels

Service and information labels are attached to the sun visor(s), and the radiator support in the engine compartment.

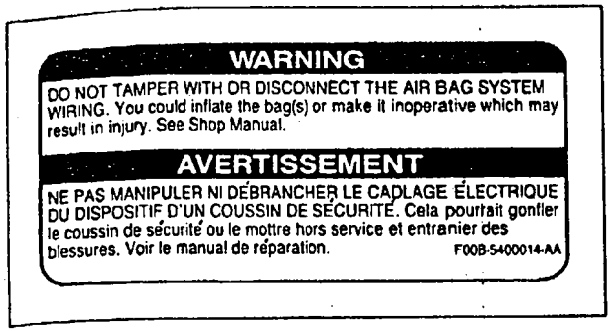


The label on the driver side sun visor in the down position



On Vehicles With Optional Passenger Side Air Bag Only

The label on the passenger side sun visor in the down position



Label on radiator support in the engine compartment

Safety Restraints for Children

In most states, you are required by law to use safety restraints for children. If small children ride in your vehicle – this generally includes children who are four years old or younger and who weigh 40 pounds (18 kg) or less – you must put them in safety seats that are made specially for children. Safety belts alone do not provide maximum protection for these children. Check your local and state laws for specific requirements.

Warning: 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.

Warning: Never let children or adults ride in the cargo area of your vehicle. Make sure that they sit where they can be properly restrained. If they are not restrained, the risk of their being injured in a collision greatly increases.