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

GENERAL MOTORS OF CANADA  
1993 PONTIAC FIREBIRD FORMULA  
2-DOOR HATCHBACK

NHTSA NUMBER: CP0113

CALSPAN TEST NUMBER: 8056-17

APRIL 22, 1993

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FINAL REPORT

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National Highway Traffic Safety Administration  
ENFORCEMENT  
Office of Vehicle Safety Compliance  
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Washington, DC 20590

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16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1993 Pontiac Firebird Formula 2-Door Hatchback.  This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on April 22, 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 29.4 mph. The ambient temperature at the impact face was 47°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 a driver and passenger supplemental restraint system. The manual 3-point continuous loop belts were not used for this test.					
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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 Pontiac Firebird Formula 2-Door Hatchback, 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 CP0113

A frontal barrier was impacted by a 1993 Pontiac Firebird 2-Door Hatchback at a velocity of 29.4 mph. The test was performed at the Calspan Corporation Advanced Technology Center on April 22, 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 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right front passenger seating positions according to dummy placement instructions specified in the OVSC Laboratory Test Procedure.

Both ATDs were fully instrumented with head and chest triaxial accelerometers, chest displacement potentiometers and left/right femur load cells. These ATDs had been certified prior to the test.

The 25 channels of data were recorded on PC based data acquisition system. Appendix B contains the vehicle and dummy response data traces.

The driver's HIC was 330. The maximum chest deceleration over 3 milliseconds was 51.2 g's with 0.9 inches of deflection. The maximum force on the driver's left femur was 1711 pounds and 1100 pounds on the right femur.

The right front passenger's HIC was 262. The maximum chest deceleration over 3 milliseconds was 38.0 g's with 0.5 inches of deflection. Loads of 1129 and 1388 were recorded on the left and right femurs respectively.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No.: CP0113 Test Mode: 30 mph Frontal Barrier

Test Date: April 22, 1993 Time: 11:40 Temperature: 47 °F

Vehicle Make/Model/Body Style: 1993 Pontiac Firebird Formula 2-Door Hatchback

Vehicle Test Weight: 3860 lbs.

Vehicle/Barrier Impact Angle: 0°

Impact Velocity: 29.4 mph

Maximum Static Crush: 15.8 inches

Vehicle Rebound: 25.3 inches

<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	<u>Part 572E</u>	<u>Part 572E</u>
Restraint System:	<u>*Airbag</u>	<u>*Airbag</u>

Number of Data Channels: 25

Number of Cameras: 1 Real Time

14 High Speed

DOOR OPENING DATA: Closed-operable - Left Front

Closed-operable - Right Front

Front Seat(s) Data:	<u>DRIVER</u>	<u>PASSENGER</u>
Seat Track Failure:	<u>0.0"</u>	<u>0.0"</u>
	inches of shift	

Seat Back Failure:	<u>None</u>	<u>None</u>
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<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
	<u>Top of head-sunvisor</u>	<u>Top of head-sunvisor</u>
Head:	<u>Face-airbag</u>	<u>Face-airbag</u>
Abdomen:	<u>No Contact</u>	<u>No Contact</u>
Chest:	<u>Airbag</u>	<u>Airbag</u>
Knees:	<u>Dash Panel</u>	<u>Dash Panel</u>

\*Manual 3-point belt was not used for this test.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1993 Pontiac Firebird 2-Door Hatchback  
 NHTSA No.: CP0113; VIN: 2G2FV22P8P2201109; Color: Green  
 Engine Data: 8 cylinders; 350 CID; 5.7 Liters; - cc  
 Placement: X Longitudinal or In-Line; - Transverse or Lateral  
 Transmission Data: 4 speeds; - Manual; X Automatic; X Overdrive  
 Final Drive: X Rear Wheel Drive; - Front Wheel Drive; - Four Wheel Drive  
 Major Options: X A/C; X Pwr.Strg.; X Pwr.Brakes  
X Pwr.Windows; X Pwr.Door Locks; X Tilt Wheel  
 Date Received: 3/29/93; Odometer Reading 104 miles  
 Selling Dealer: Delia Buick, Cadillac, Pontiac GMC Truck, Inc.  
 & Address 535 Main St., East Aurora NY 14052

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: General Motors of Canada  
 Date of Manufacture: 2/93  
 GVWR: 4205 lbs.; GAWR: 2176 lbs. FRONT; 2029 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load: 35 psi FRONT  
35 psi REAR  
 Recommended Tire Size: P245/50ZR16  
 \* Recommended Cold Tire Pressure: 30 psi FRONT; 30 psi REAR  
 Size of Tires on Test Vehicle: P245/50ZR16; Manufacturer: Goodyear  
 Vehicle Capacity Data:  
 Type of Front Seats: - Bench; X Bucket; - Split Bench  
 Number of Occupants: 2 Front; 2 Rear; 4 Total  
 Vehicle Capacity Weight (VCW) = 701 lbs.  
 No. of Occupants x 150 lbs. = 600 lbs.  
 Rated Cargo/Luggage Weight (RCLW) = 101 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 = 1010 lbs.      Right Rear = 760 lbs.  
 Left Front = 970 lbs.      Left Rear = 700 lbs.  
 TOTAL FRONT = 1980 lbs.      TOTAL REAR = 1460 lbs.  
 % of Total Vehicle Weight = 57.6 % of Total Weight = 42.4 %  
 TOTAL DELIVERED WEIGHT = 3440 lbs.

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 3440 lbs.  
 Rated Cargo/Luggage Weight (RCLW) = 101 lbs.  
 Weight of 2 P.572 Dummies @ 167 ea. = 334 lbs.  
 TARGET TEST WEIGHT = 3875 lbs. (sum)

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 0 POUNDS OF CARGO WEIGHT:

Right Front = 1040 lbs.      Right Rear = 890 lbs.  
 Left Front = 1050 lbs.      Left Rear = 880 lbs.  
 TOTAL FRONT = 2090 lbs.      TOTAL REAR = 1770 lbs.  
 % of Total Weight = 54.1 %      % of Total Weight = 45.9 %  
 TOTAL TEST WEIGHT = 3860 lbs.  
 Weight of Ballast Secured in Vehicle Trunk Area = 0 lbs.  
 Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimensions in inches):

AS DELIVERED:    RF 27.4    LF 27.7    RR 28.3    LR 28.4  
 FULLY LOADED:    RF 26.5    LF 26.8    RR 26.1    LR 26.3  
 AS TESTED:      RF 27.2    LF 27.3    RR 27.2    LR 27.2  
 Vehicle's Wheel Base: 100.1 in.  
 Location of Vehicle's C.G.: 45.9 inches rearward of front wheel center

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 15.5 gallons  
 Usable Capacity Figure Furnished by COTR = 15.5 gallons  
 Test Volume Range (92 to 94% of Usable Capacity) = 14.3 to 14.6 gallons  
 ACTUAL TEST VOLUME = 14.4 gallons (with entire fuel system filled)

Table 3  
POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°  
 Test Date: April 22, 1993 Time: 11:40 Temperature: 47°F  
 Vehicle NHTSA No.: CPO113  
 Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.4 mph; Trap No. 2 = 29.4 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 = 185.0; C/L = 195.6; Left = 185.0  
 Post-Test Right = 174.5; C/L = 179.8; Left = 170.0  
 Crush Right = 10.5; C/L = 15.8; Left = 15.0  
 AVERAGE = 13.8 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:  
 Right = 25.1; C/L = 20.4; Left = 30.4  
 AVERAGE = 25.3 inches

DOOR OPENING:

	Left	Right
Front	<u>Closed</u>	<u>Closed</u>
Rear	<u>N/A</u>	<u>N/A</u>

SEAT MOVEMENT:

	Seat Back Failure	Seat Shift
Front	<u>None</u>	<u>0.0</u>
Rear	<u>N/A</u>	<u>N/A</u>

Table 3

POST IMPACT DATA (cont.)

GLAZING DAMAGE: Windshield sustained minor stress fractures but remained intact

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OTHER NOTABLE IMPACT FEATURES: None

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Section 3  
OCCUPANT AND VEHICLE DATA

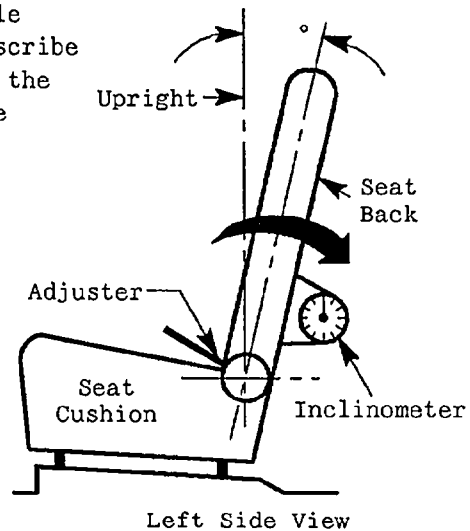
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year: 1993 Vehicle Model: Firebird Formula Body Style: 2-Door Hatchback

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: 28°

Measurement instructions: Place inclinometer on seat back frame next to seat back release latch

Seat back angle for passenger's seat: 27°

Measurement instructions: Same as passenger

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Seat was placed in 11th detent (mid-position) from a total of 21 detents.

Positioning of the passenger's seat (if applicable): Seat was placed 3 detents forward of full rearward detent (8 total detents)

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 15.5 gallons

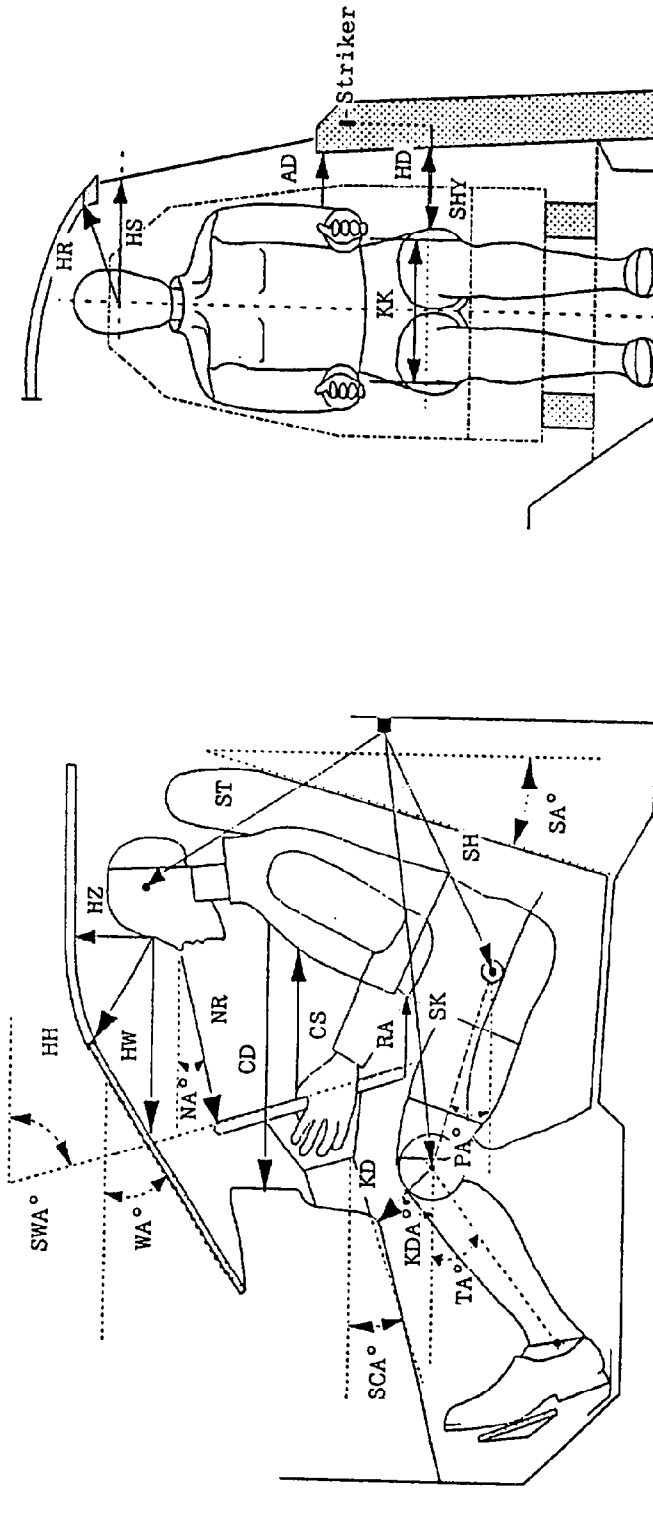
B. "Usable Capacity" of the optional equipment fuel tank is - gallons

4. Steering Column Position: Mid-Position

5. Other: None

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

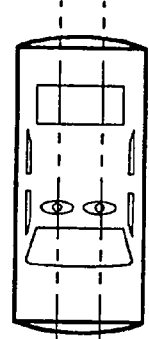


- HH - Head to Header
- HW - Head to Window
- HZ - Head to Roof
- NR - Nose to Rim
- CS - Steering Wheel to Chest
- CD - Chest to Dash
- RA - Rime to Abdomen
- KDL/KDR - Knee to Dash
- KDA - Knee to Dash Angle
- SH - Striker to H-Point

- 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

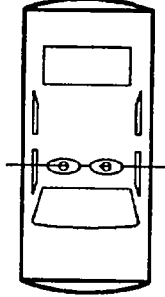


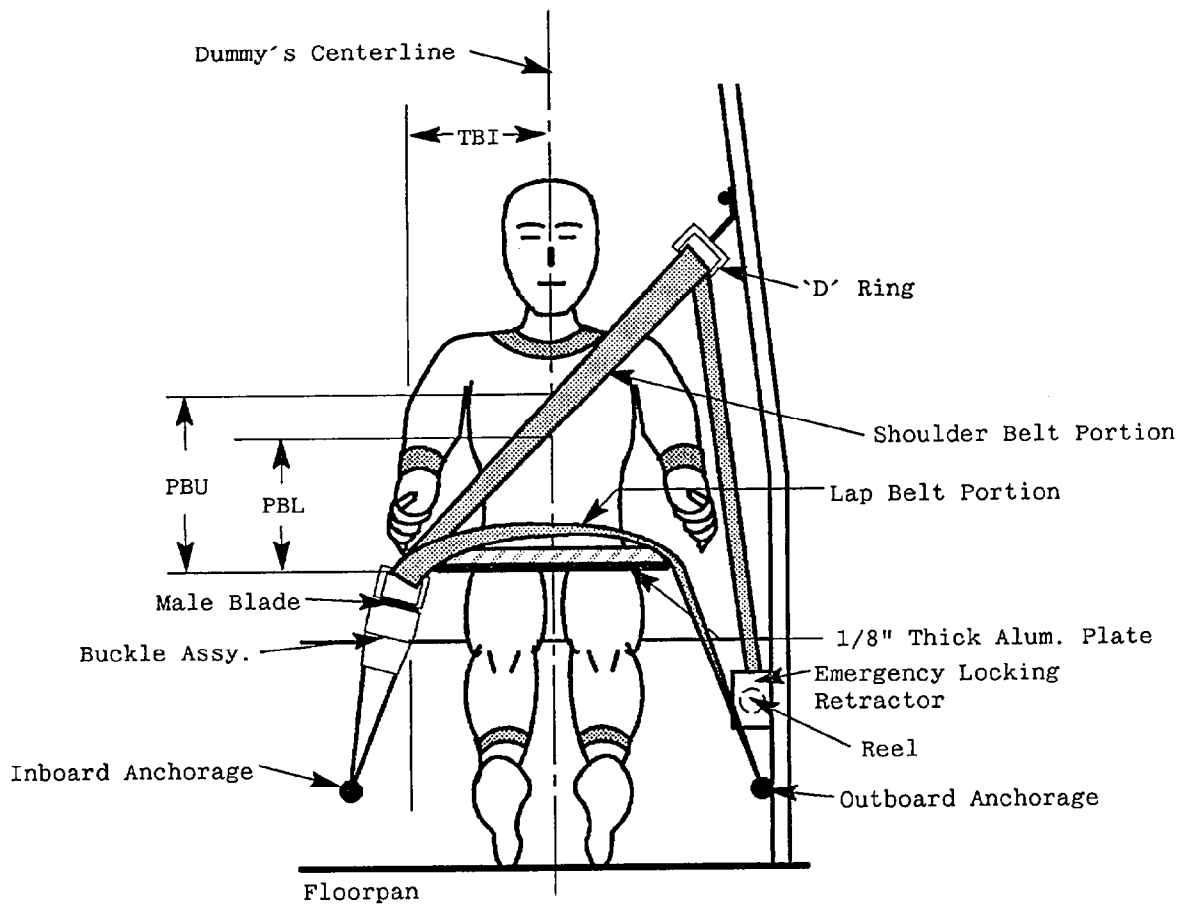
Table 4

FRONT SEAT OCCUPANT MEASUREMENTS

(all dimensions in inches unless otherwise specified)

	DRIVER (Serial #341)	PASS (Serial #342)
WA°	20°	-
SWA°	72°	-
SCA°	18°	-
SA°	28°	27°
HZ	6.1	5.9
HH	12.7	12.3
HW	23.9	23.6
HR	6.7	6.7
NR	14.3 Angle (NA) 10°	-
CD	19.2	18.8
CS	9.9	-
RA	6.8	-
KDL	6.6 Angle (KDA) 42°	6.8
KDR	5.9	6.3 Angle (KDA) 48°
PA°	25°	24°
TA°	33°	33°
KK	10.7	9.0
ST	23.1 Angle 48°	24.0 Angle 46°
SK	38.4 Angle 7°	37.8 Angle 6°
SH	24.2 Angle 13°	23.3 Angle 15°
SHY	9.0	8.3
HS	11.9	11.6
HD	5.0	5.1
AD	4.9	4.6

Figure 3  
SEAT BELT POSITIONING DATA

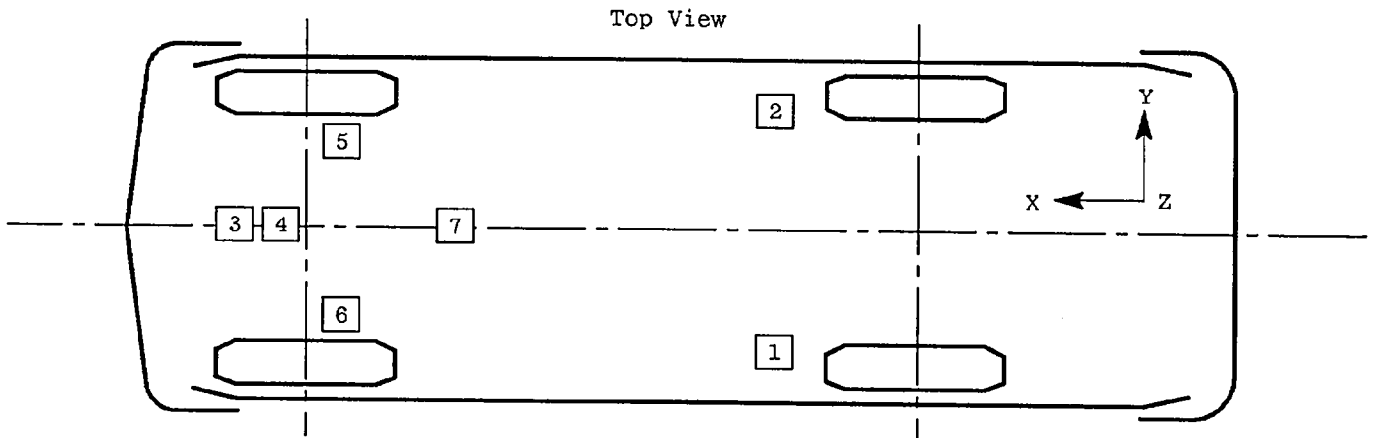


Front View of Driver Dummy

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

\*Manual 3-point belt not used for this test. Vehicle contained a driver and passenger supplemental restraint device.

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	PRE:	93.4	22.4	12.0				
		POST:	93.4	22.4	11.4				
	LONGITUDINAL ACCELERATION				2	-45	30	79	
2	REAR SEAT X-MEMBER AT RIGHT SIDE	PRE:	93.4	-22.4	12.0				
		POST:	93.4	-22.4	11.3				
	LONGITUDINAL ACCELERATION				2	25	34	79	
3	TOP OF ENGINE BLOCK	PRE:	148.6	-10.3	28.3				
		POST:	142.9	-10.3	28.0				
	LONGITUDINAL ACCELERATION				16	83	50	61	
4	BOTTOM OF ENGINE	PRE:	141.1	-4.5	7.1				
		POST:	135.6	-4.5	6.8				
	LONGITUDINAL ACCELERATION				10	77	44	63	
5	BRAKE CALIPER AT RIGHT SIDE	PRE:	141.6	-22.3	11.8				
		POST:	141.6	-22.3	11.8				
	LONGITUDINAL ACCELERATION				14	101	56	80	
6	BRAKE CALIPER AT LEFT SIDE	PRE:	141.6	22.3	11.8				
		POST:	141.6	22.3	11.8				
	LONGITUDINAL ACCELERATION				10	54	45	59	
7	DASH PANEL	PRE:	107.5	-2.5	26.5				
		POST:	107.5	-2.5	25.9				
	LONGITUDINAL ACCELERATION				25	55	55	85	

\*\*

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

DISTANCE MEASUREMENTS IN INCHES

Figure 5

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5.

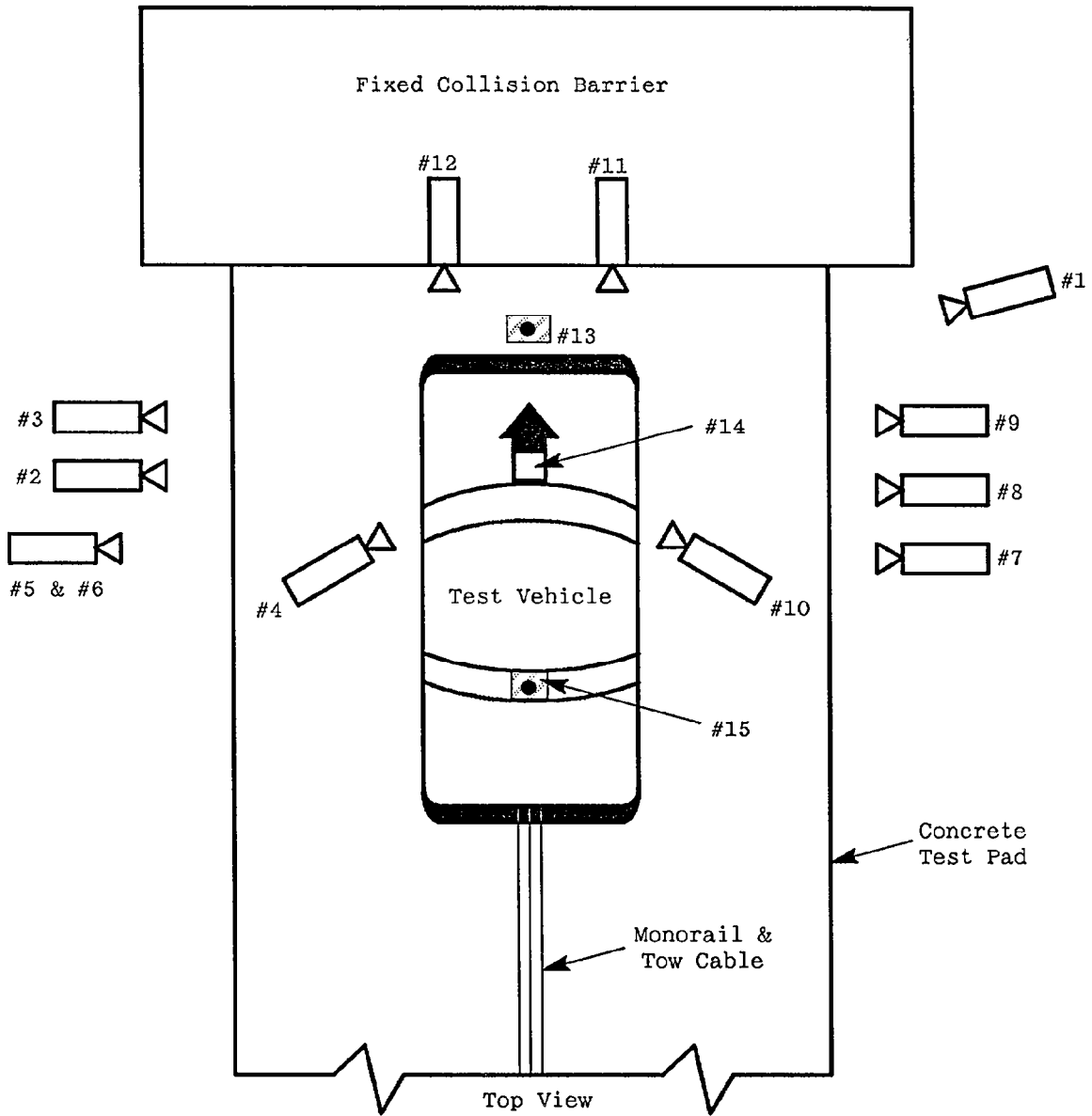


Table 6

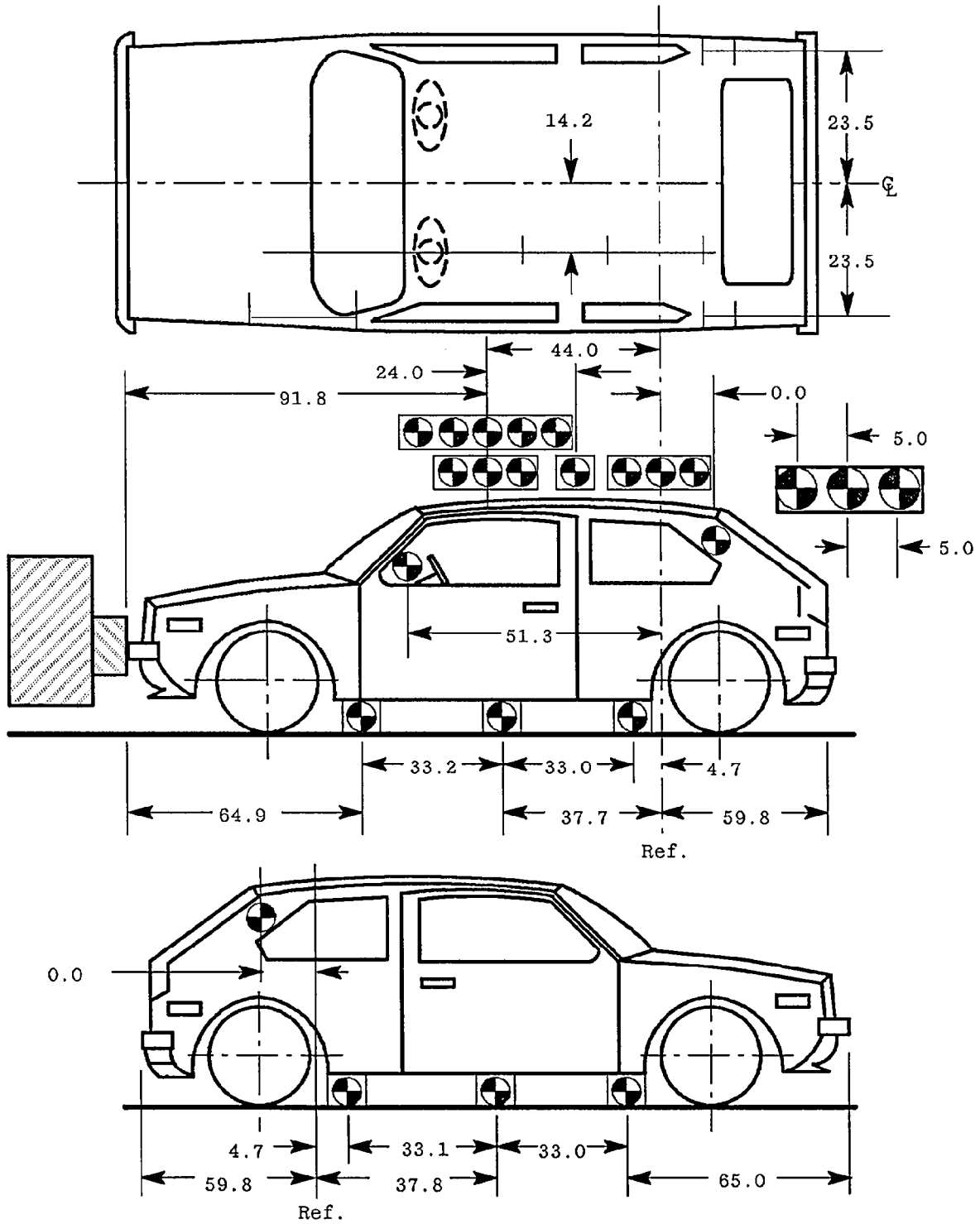
HIGH-SPEED CAMERA LOCATIONS

Test No. CP0113 Vehicle: 1993 PONTIAC FIREBIRD FORMULA 2-DOOR HATCHBACK

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	251	76	42	-3	233.8	13	550
3	Left Side View	362	48	41	-2	344.8	25	615
4	Driver and Interior View	122	128	68	-18	-	13	620
5	Steering Column (Bottom)	273	88	46	-4	255.8	25	760
6	Steering Column (Top)	273	88	70	-10	255.8	25	765
7	Overall Right Side	244	94	42	-3	226.8	13	525
8	Right Side View	364	65	41	-2	346.8	25	560
9	Right Passenger View	330	98	56	-5	312.8	35	590
10	Passenger and Interior View	114	113	67	-19	-	13	575
11	Passenger Front View	22	19	75	-37	-	13	630
12	Driver Front View	22	19	75	-37	-	13	600
13	Windshield View	0	0	130	-50	-	13	600
14	Pit View of Engine	0	32	-80	90	-	13	695
15	Pit View of Fuel Tank	0	162	-80	90	-	13	855

\*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

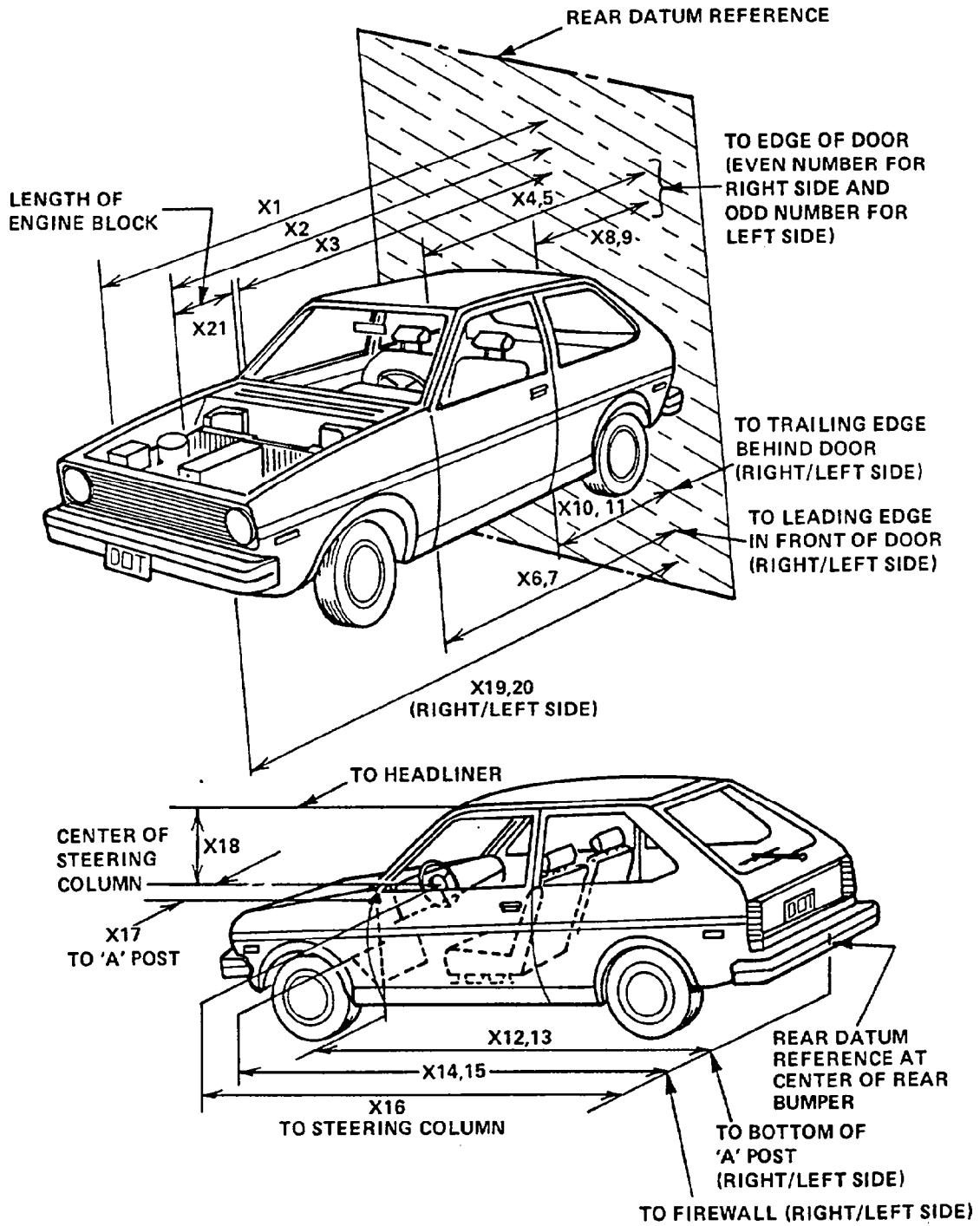


Table 7

## VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	195.6	179.8	15.8
X2	Rear Surface of Vehicle to Front of Engine	155.6	152.5	3.1
X3	Rear Surface of Vehicle to Firewall	131.2	130.2	1.0
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	121.5	121.4	0.1
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	121.6	121.5	0.1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	121.6	121.3	0.3
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	121.6	121.4	0.2
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	68.5	68.6	-0.1
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	68.5	69.2	-0.7
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	70.0	69.9	0.1
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	70.0	69.8	0.2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	122.3	122.4	-0.1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	123.0	123.0	0.0
X14	Rear Surface of Vehicle to Firewall, Right Side	137.2	139.8	-2.6
X15	Rear Surface of Vehicle to Firewall, Left Side	133.5	133.8	-0.3
X16	Rear Surface of Vehicle to Steering Column	103.2	105.3	-2.1
X17	Center of Steering Column to "A" Post	16.3	15.5	0.8
X18	Center of Steering Column to Headliner	15.0	15.2	-0.2
X19	Rear Surface of Vehicle to Right Side of Front Bumper	185.0	174.5	10.5
X20	Rear Surface of Vehicle to Left Side of Front Bumper	185.0	170.0	15.0
X21	Length of Engine Block	20.8	20.8	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.: CP0113 Vehicle: 1993 PONTIAC FIREBIRD FORMULA 2-DOOR HATCHBACK

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-61	-5	22	63	52	4	-45	51.2	0.9
Dummy (2)	-65	-13	-15	66	-34	-4	16	38.0	0.5

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	1711	1100
Dummy (2)	1128	1388

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc. (g) t <sub>1</sub> TO t <sub>2</sub>
		t <sub>1</sub> (msec)	t <sub>2</sub> (msec)	
Dummy (1)	329.96	76.440	98.760	46.55
Dummy (2)	262.23	64.320	98.760	35.70

\* 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: Labels located on driver and passenger side sunvisor.

The manufacturers label states "regular maintenance of the airbag system is not required, if the airbag readiness light comes on while you are 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 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:

Located at upper left 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.: CP0113  
Make/Model: 1993 Pontiac Firebird Formula 2-Door Hatchback  
Date of Comfort/Convenience Check: 4/21/93  
Technician Performing Check: VMP  
GVWR: 4205 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.

\*\*Manual seat belts were not used in this test.

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   X   NO   -  

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 drivetra in is engaged.

YES   X   NO   -  

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   X   NO   -  

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   0.3   pounds. Contact the COIR 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   N/A   NO   N/A
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   N/A   NO   N/A

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 8

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

Windshield is bonded in place with 0.5" rubber trim covering top of windshield and 0.8" rubber trim covering both sides of windshield. A plastic shroud covers the lower windshield area.

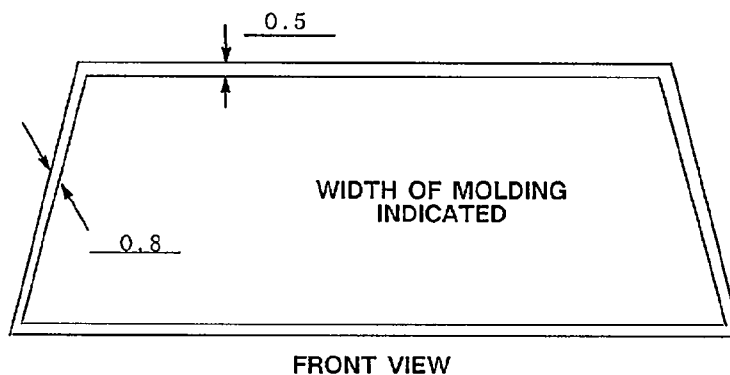
FMVSS 212 REQUIREMENTS:

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		PERCENT RETENTION
	PRE-TEST (in.)	POST-TEST (in.)	
RIGHT SIDE	98.55	98.55	100
LEFT SIDE	98.55	98.55	100
TOTAL	197.1	197.0	100

AREA OF RETENTION FAILURE:



FAILURE DETAILS:

None

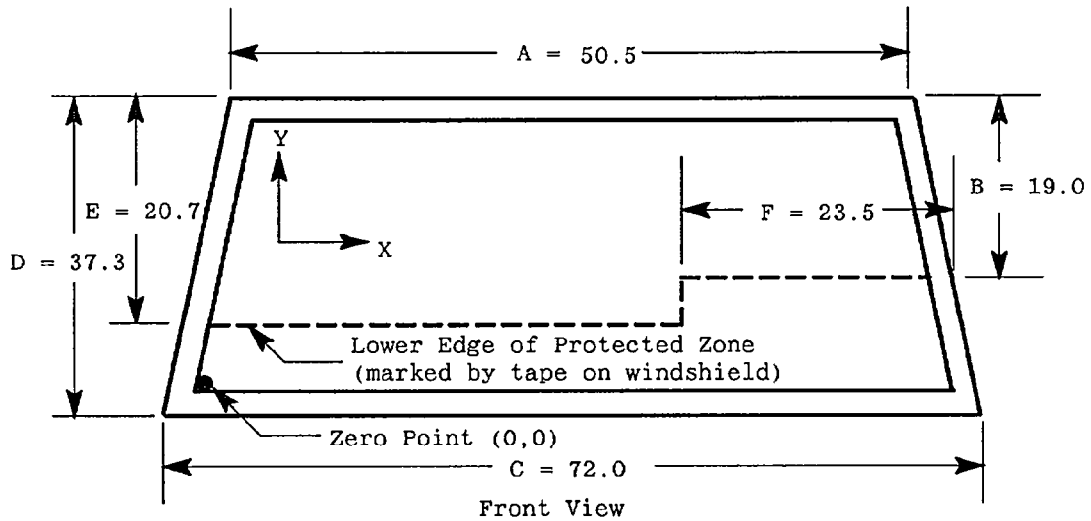
Figure 9

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.)



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

(Show location of penetration on above sketch)

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

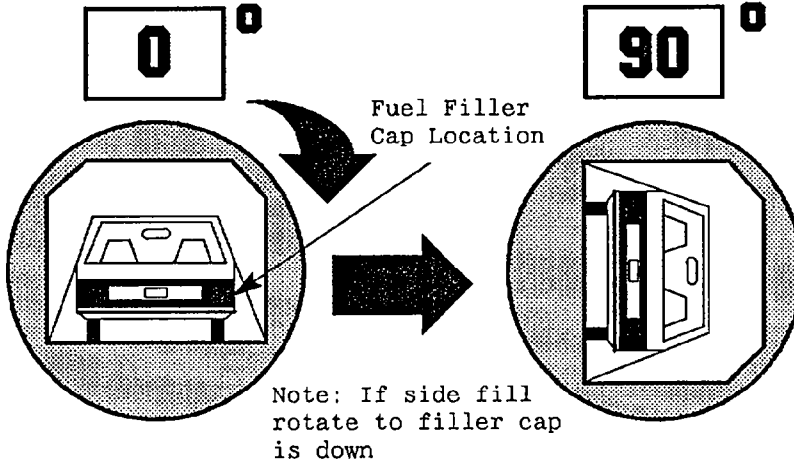


Table 14  
 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.:

CP0113



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):

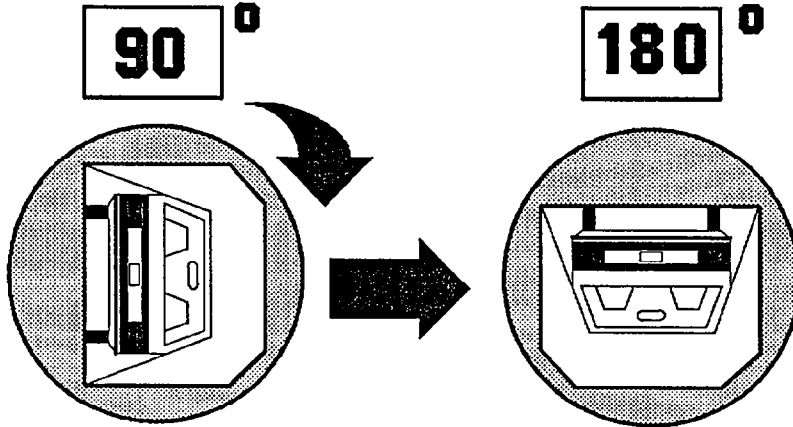
None

Table 13  
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:

CP0113



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____ 1 _____ minutes _____ 58 _____ seconds
FMVSS 301 Position Hold Time +	_____ 5 _____ minutes _____ 00 _____ seconds
TOTAL	_____ 6 _____ minutes _____ 58 _____ 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):

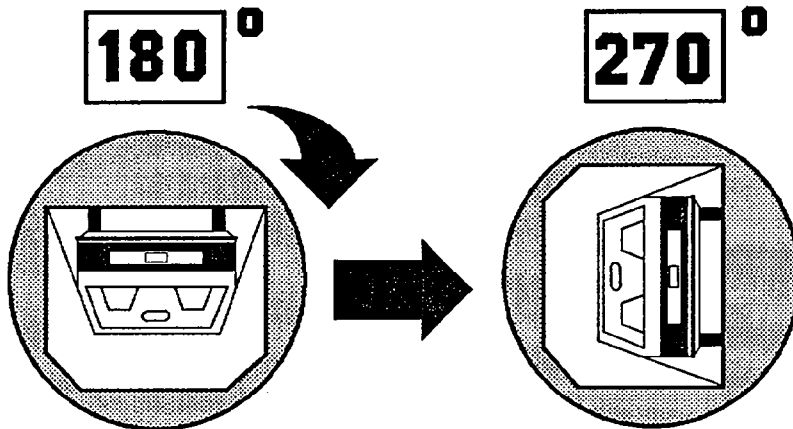
None

Table 13  
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:

CP0113



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____ 2 _____	minutes	_____ 10 _____	seconds
FMVSS 301 Position Hold Time +	_____ 5 _____	minutes	_____ 00 _____	seconds
TOTAL	_____ 7 _____	minutes	_____ 10 _____	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):

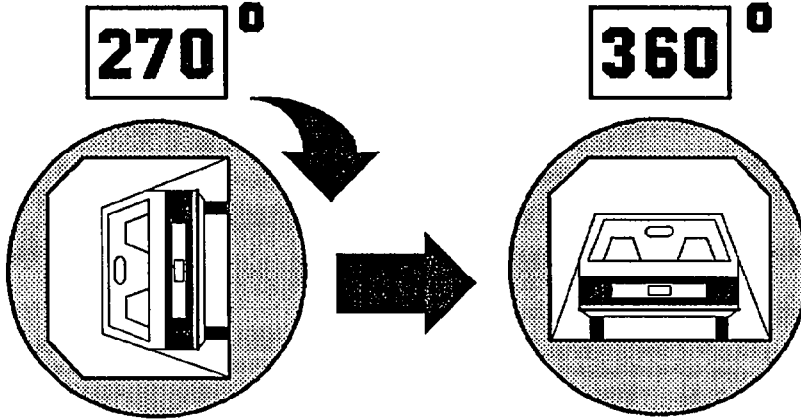
None

Table 13  
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:

CP0113



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____	minutes	_____	seconds
FMVSS 301 Position Hold Time +	_____	minutes	_____	seconds
TOTAL	_____	minutes	_____	seconds
Next whole minute interval	_____	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: April 22, 1993 Vehicle NHTSA No.: CP0113

Vehicle Manufacturer: General Motors of Canada

Model Year: 1993 VIN: 2G2FV22P8P2201109

Model: Firebird Formula Body Style: 2-Door Hatchback Build Date: 2/93

Dummy Stabilized Temperature at Time of Test: 70 °F (Spec. = 69-72°F)

Impact Velocity: 29.4 mph Time of Test: 11:40

Type of Automatic Restraint System: Driver and passenger airbags

Failure Details:

The vehicle as tested appears to meet the requirements of FMVSS No.s 208,

212, 219 (partial) and 301.

\_\_\_\_\_  
\_\_\_\_\_

Appendix A

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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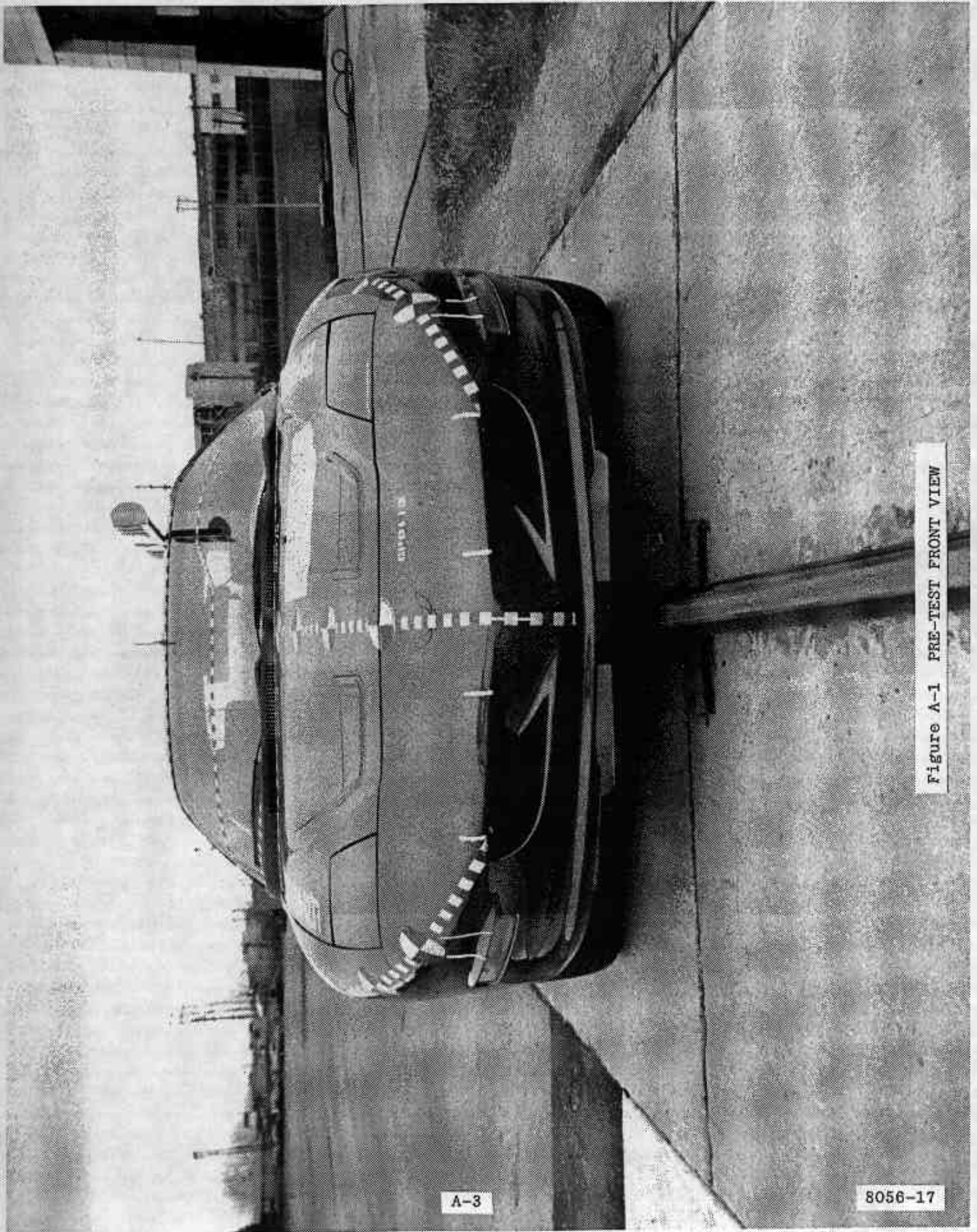


Figure A-1 PRE-TEST FRONT VIEW

A-3

8056-17

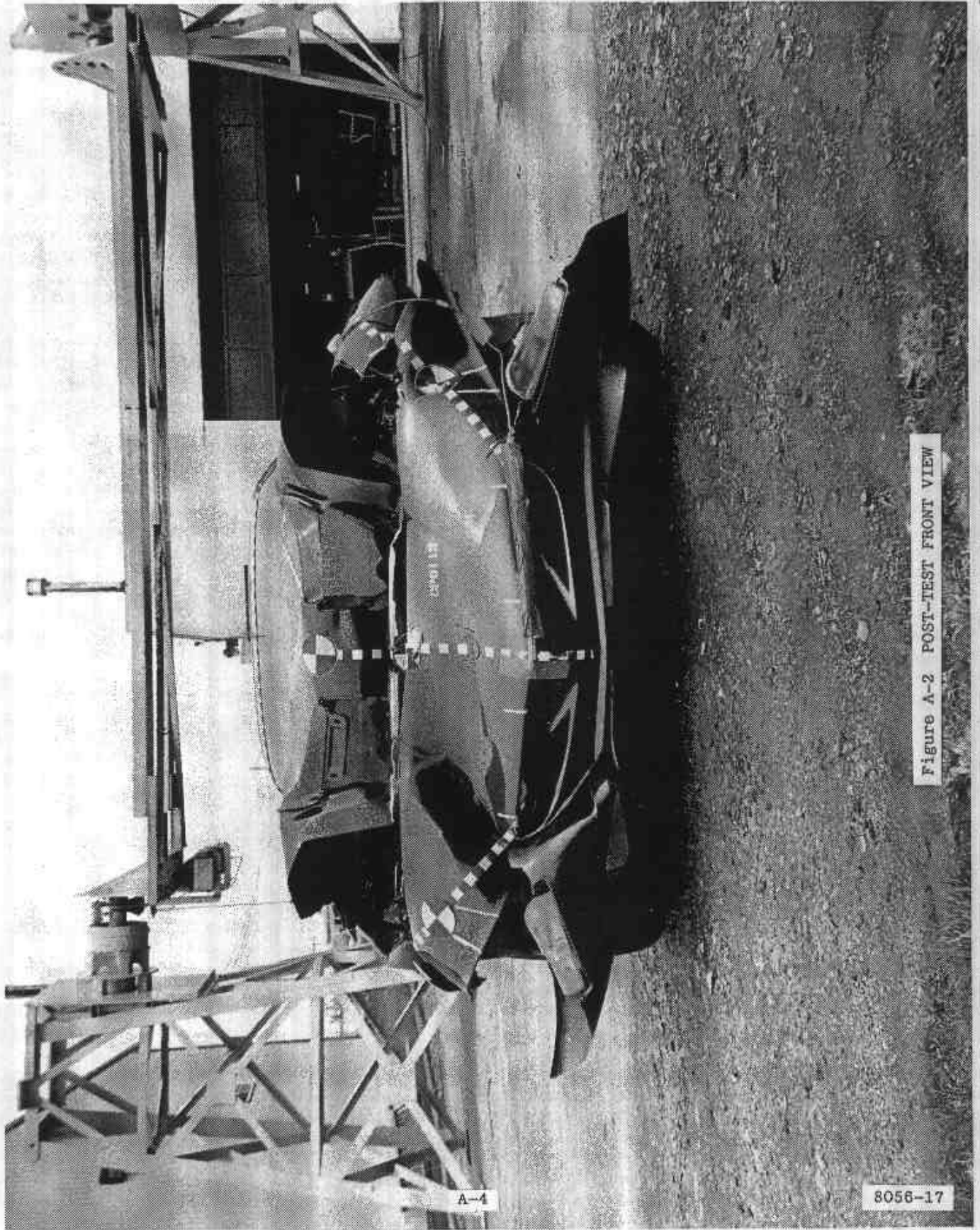


Figure A-2 POST-TEST FRONT VIEW

A-4

8056-17



A-5

8056-17

Figure A-3 PRE-TEST LEFT SIDE VIEW

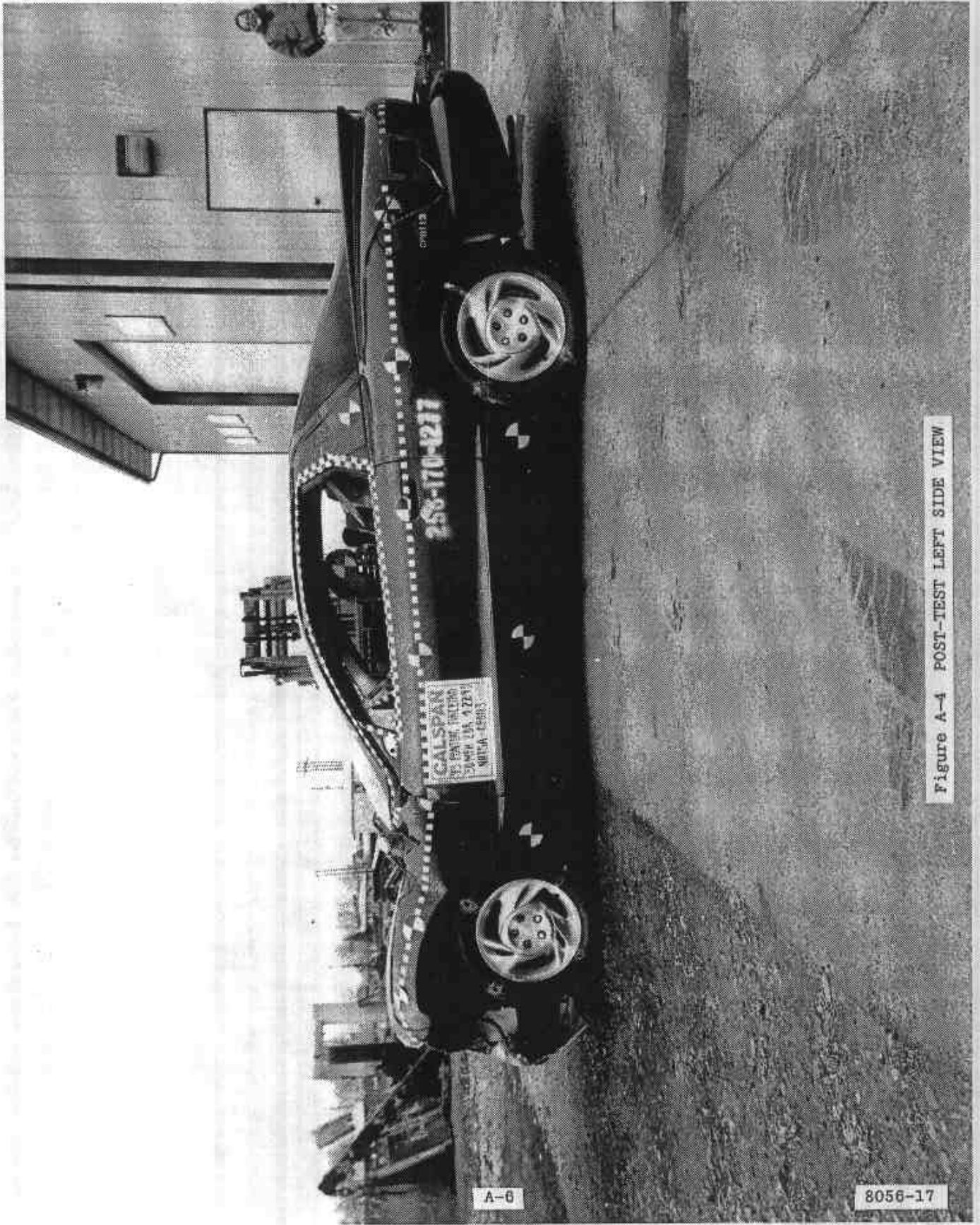


Figure A-4 POST-TEST LEFT SIDE VIEW

A-6

8056-17

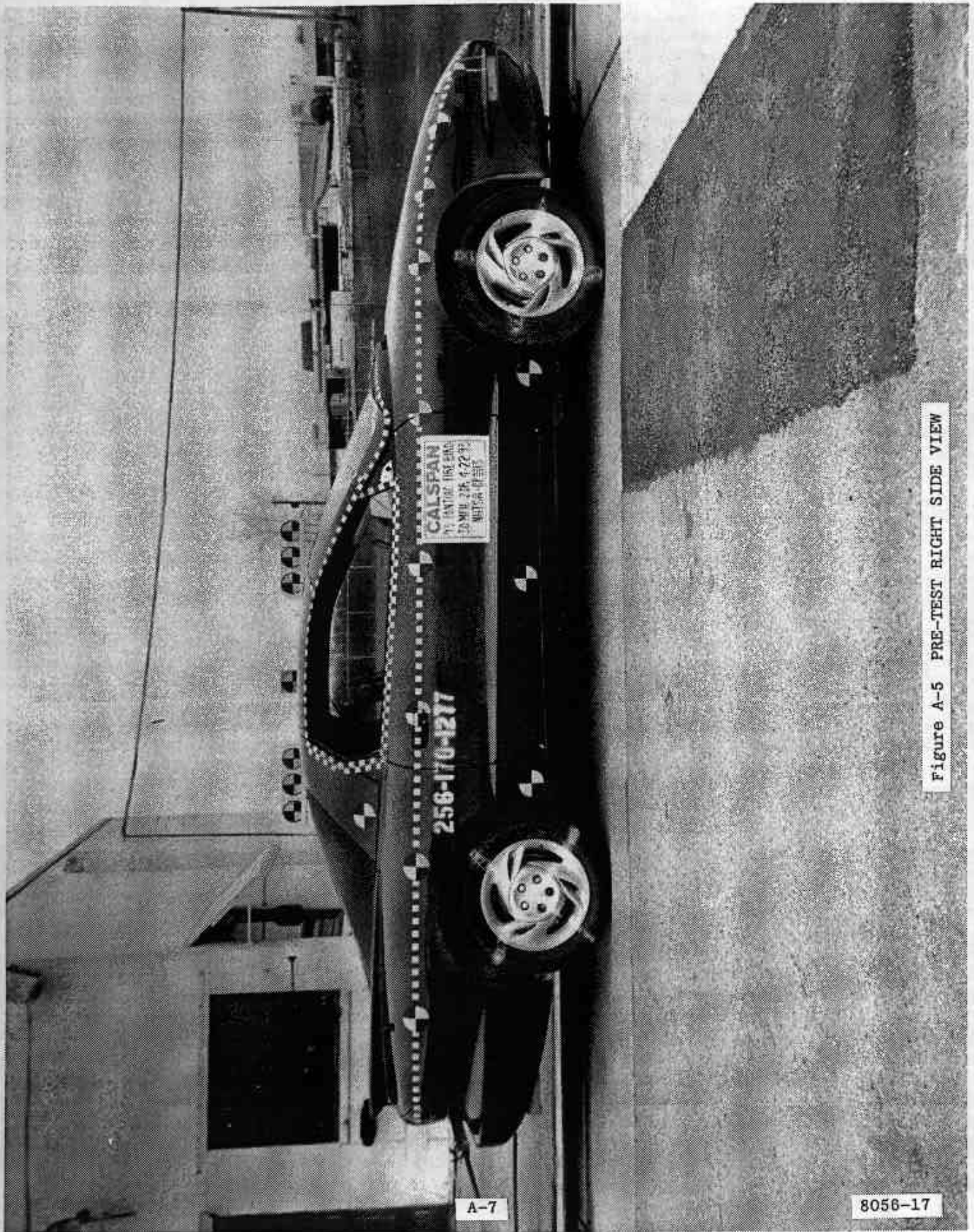


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

8056-17

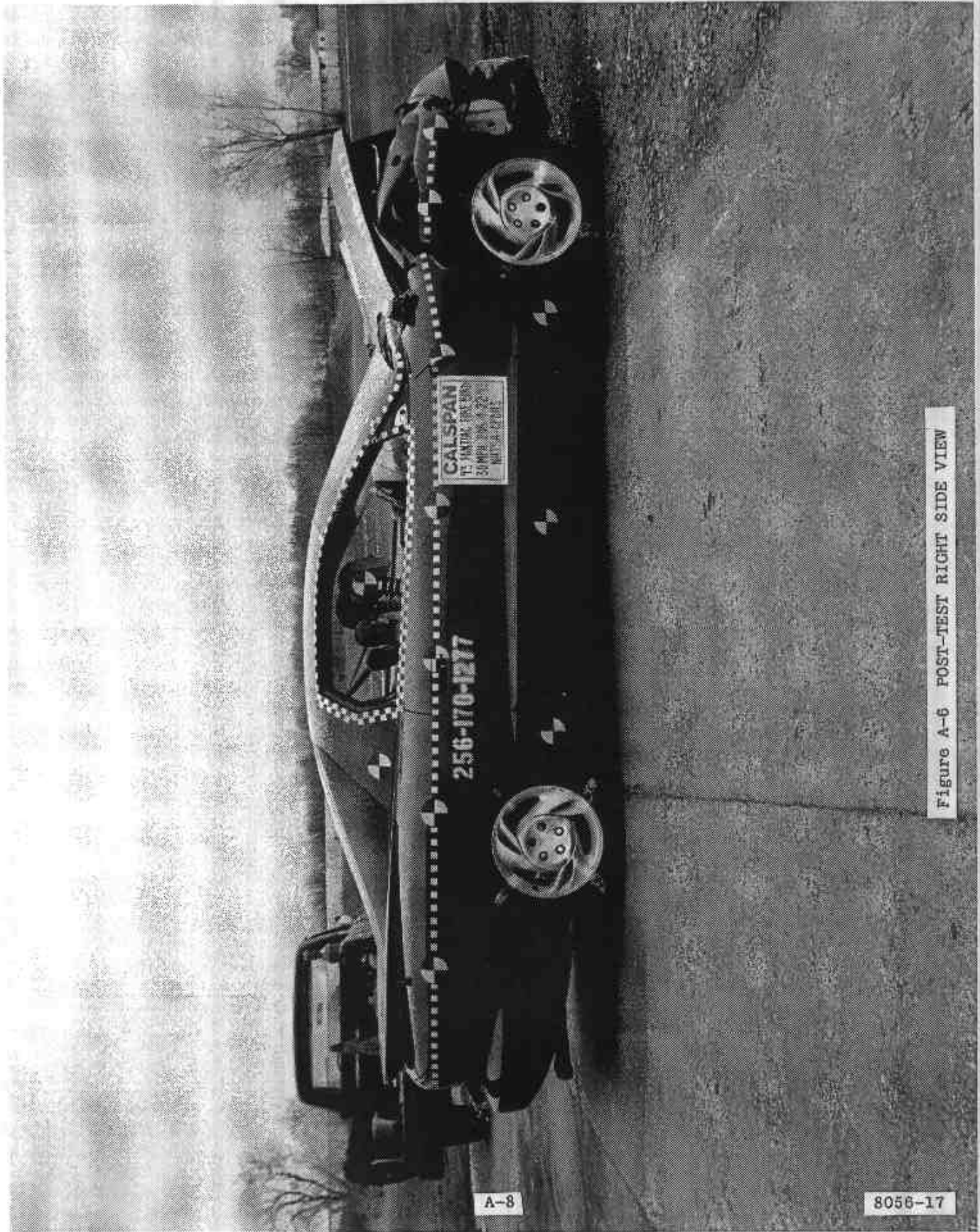


Figure A-6 POST-TEST RIGHT SIDE VIEW

A-8

8056-17

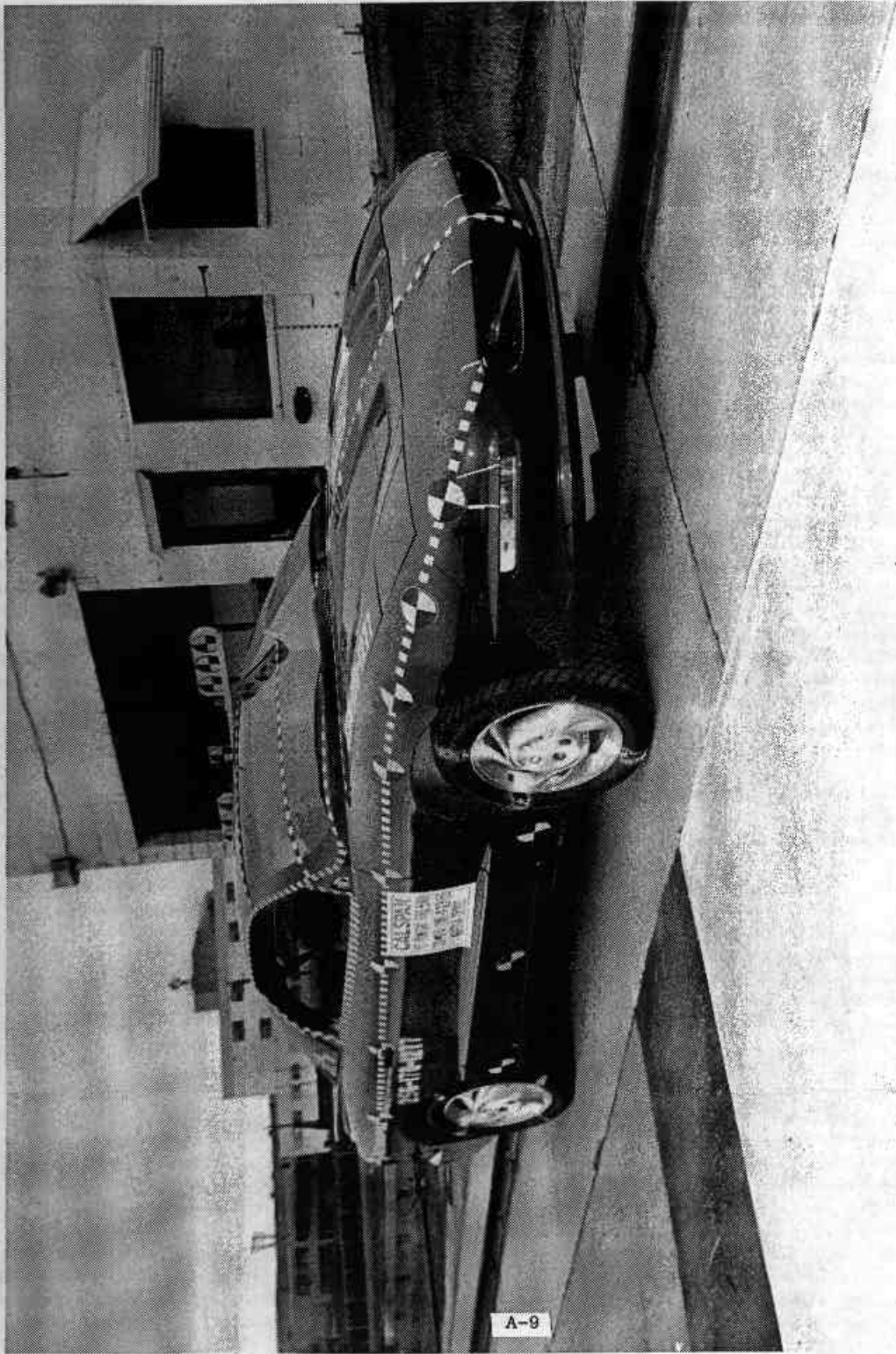
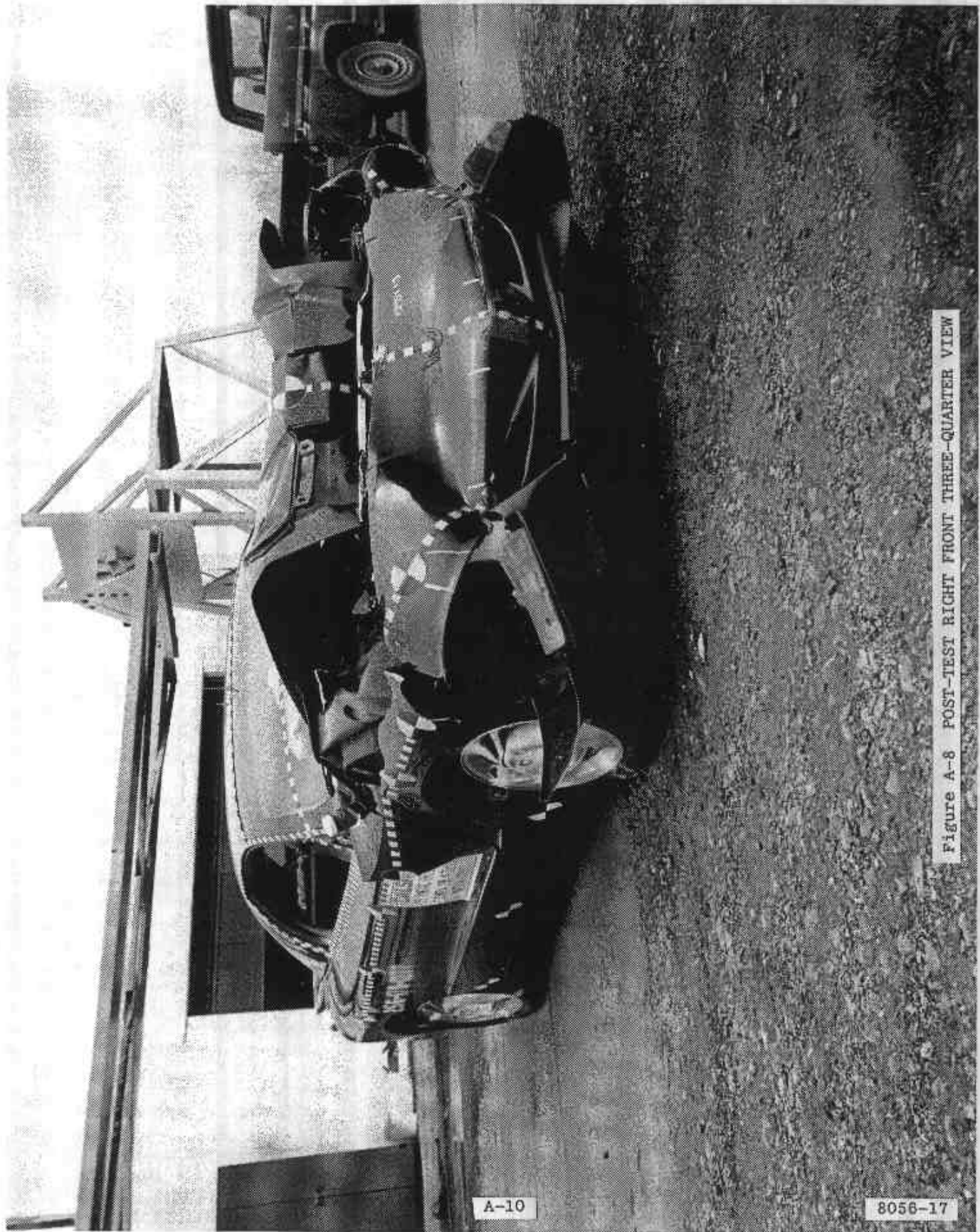


Figure A-7 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-9

8056-17



A-10

8056-17

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



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

A-11

8056-17

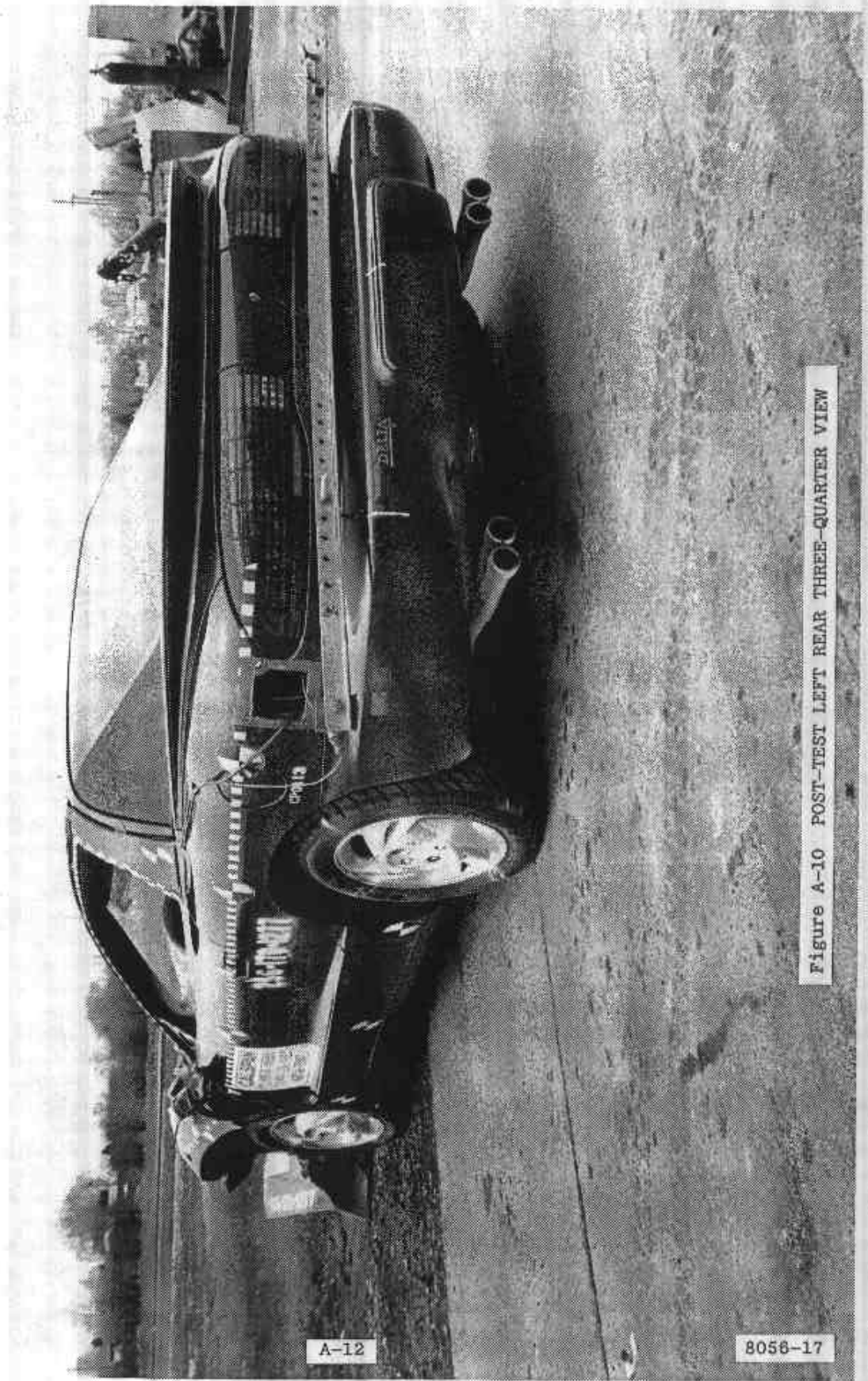


Figure A-10 POST-TEST LEFT REAR THREE-QUARTER VIEW

A-12

8058-17

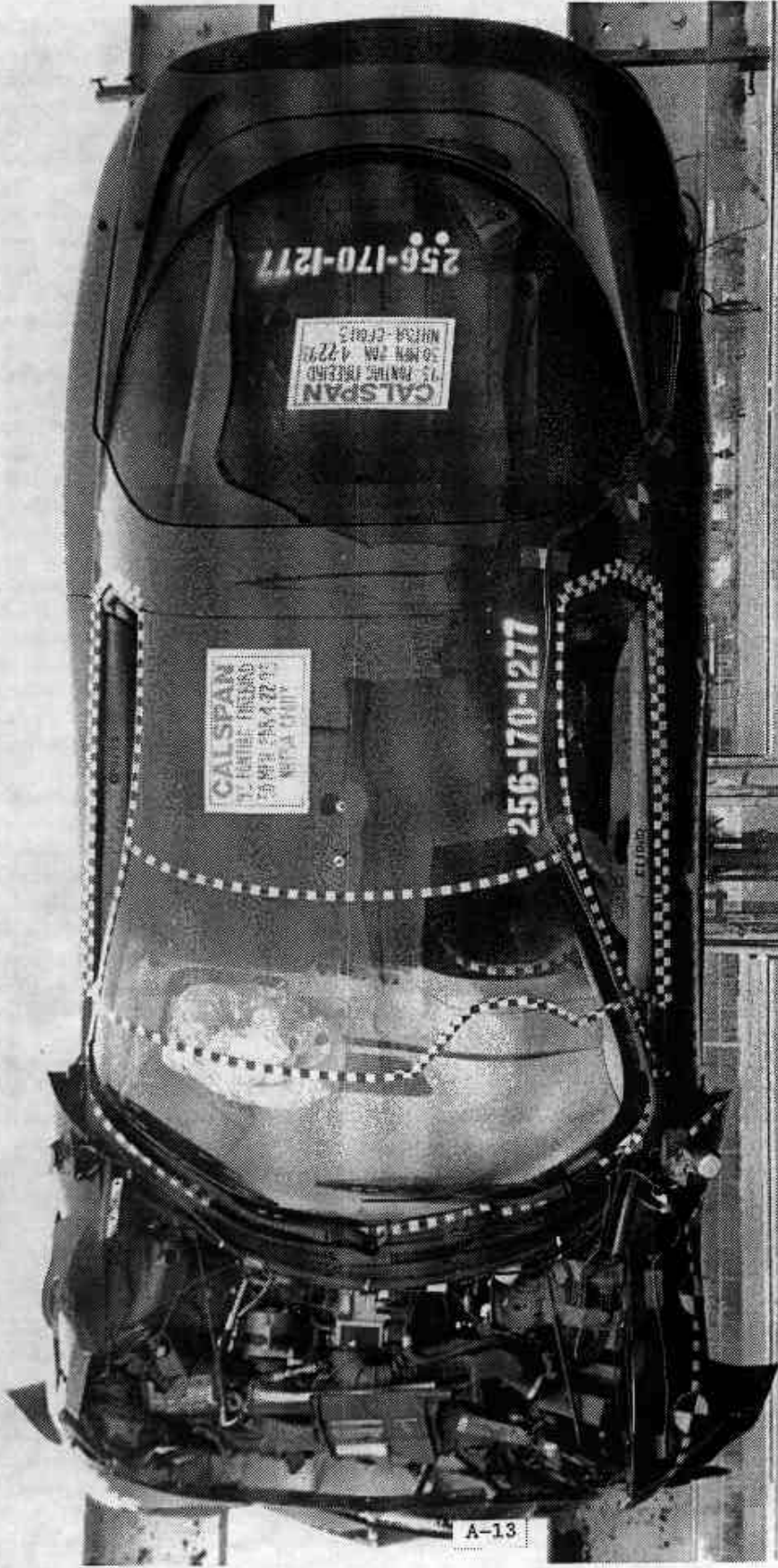
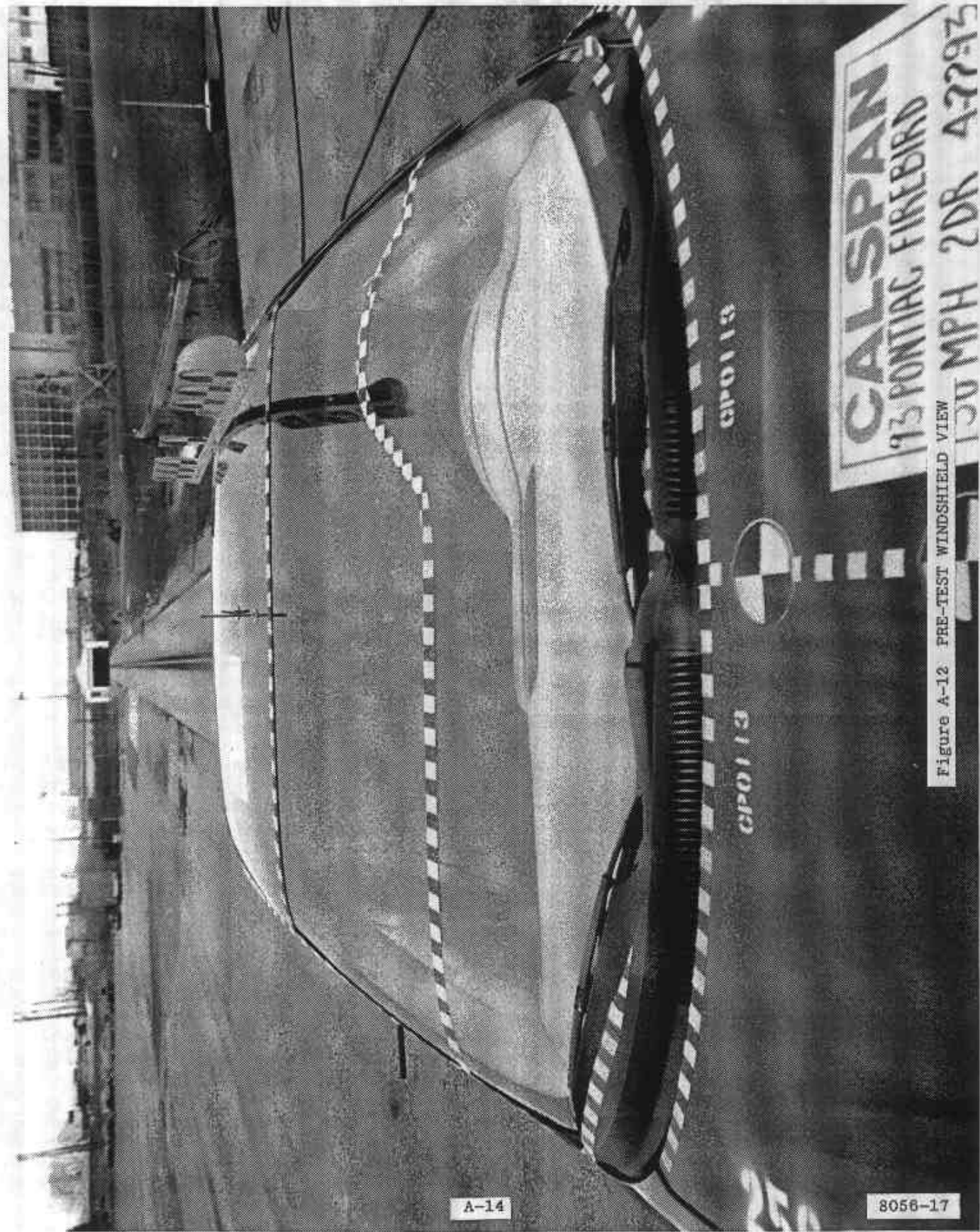


Figure A-11 POST-TEST TOP VIEW

A-13

8056-17



A-14

8056-17

Figure A-12 PRE-TEST WINDSHIELD VIEW

Figure A-13 POST-TEST WINDSHIELD VIEW

(Not Available)

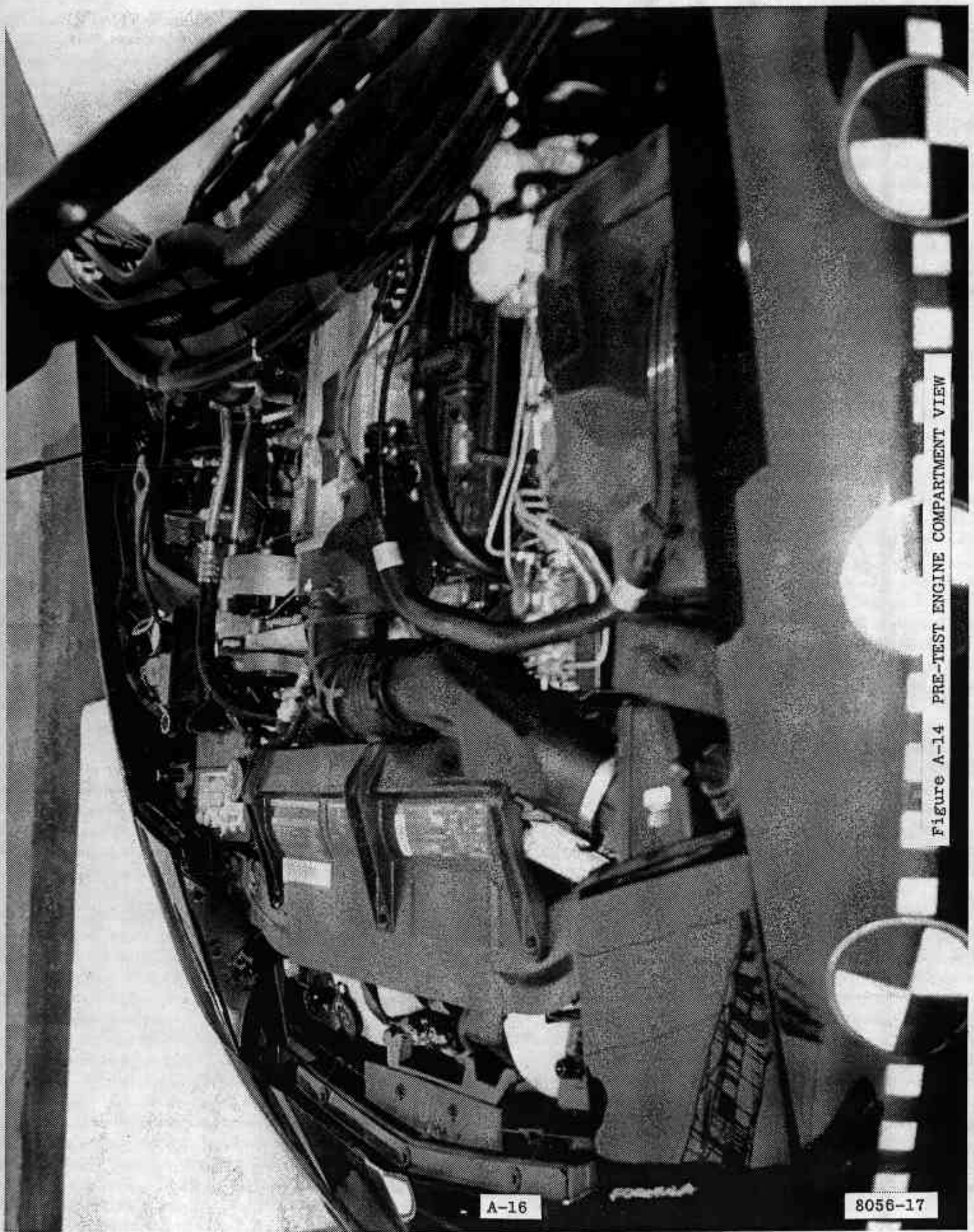


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

A-16

8056-17

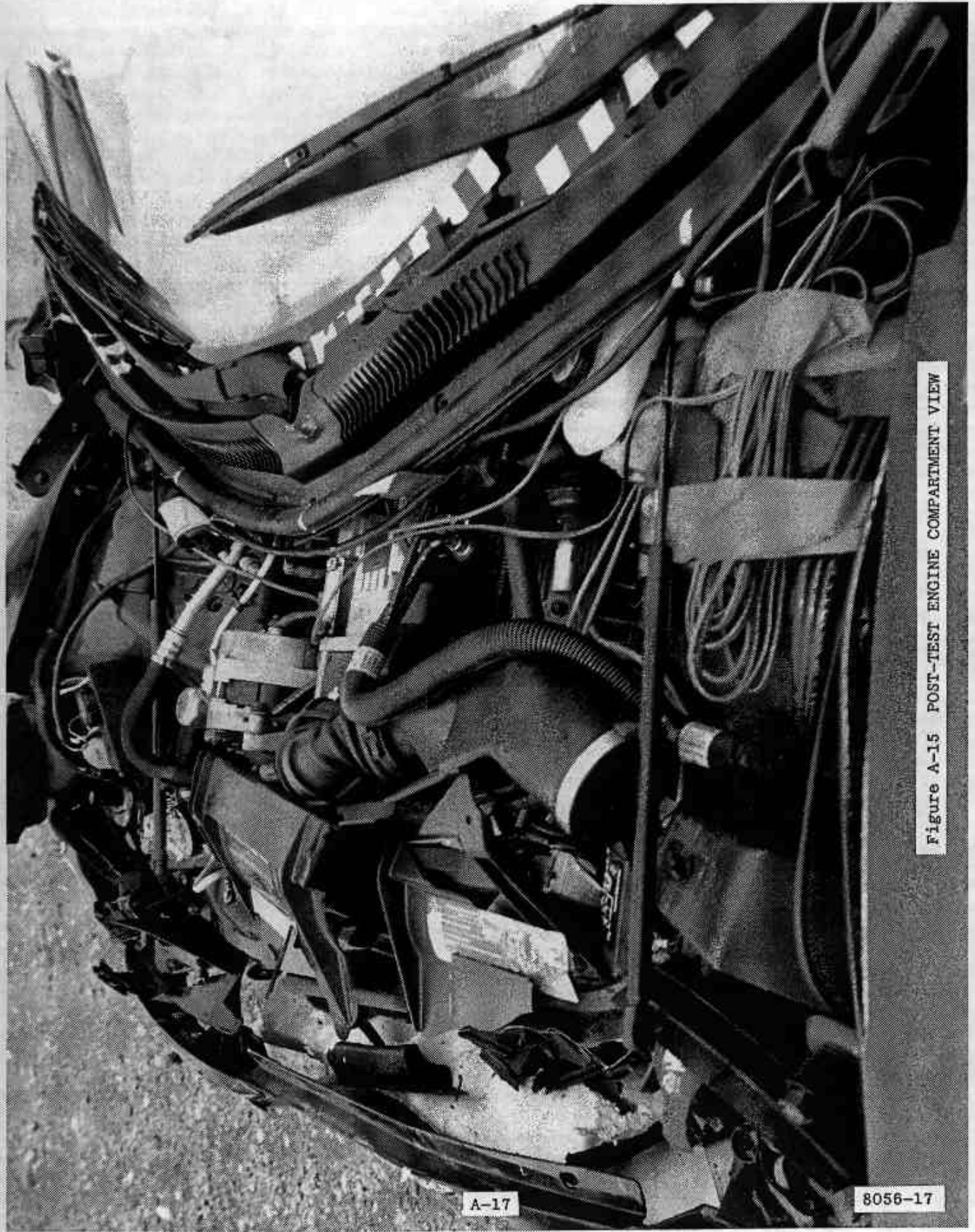


Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

A-17

8056-17



Figure A-16 PRE-TEST FUEL FILLER CAP PHOTO

A-18

8056-17

Figure A-17 POST-TEST FUEL FILLER

(CAP Photo Not Available))

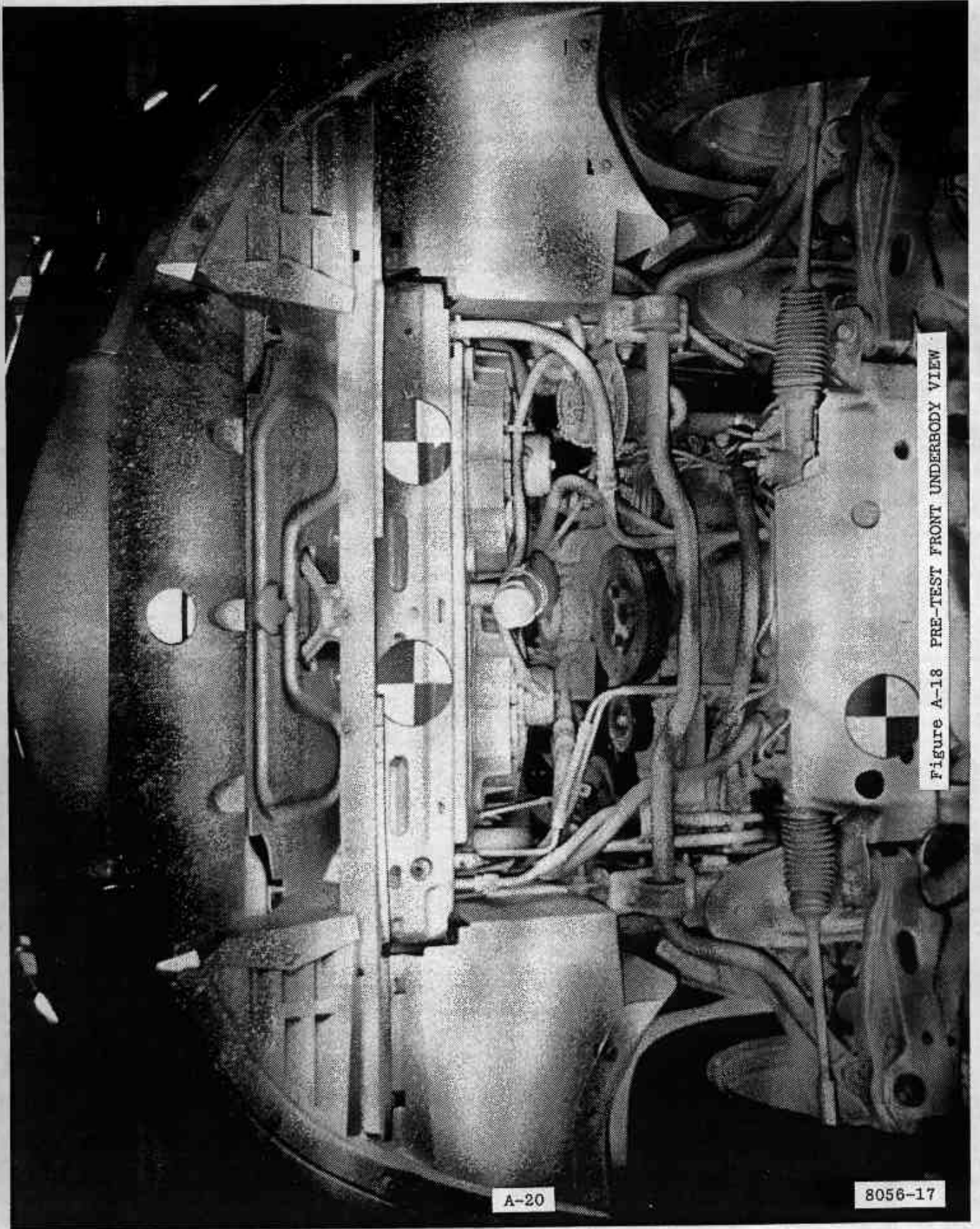


Figure A-18 PRE-TEST FRONT UNDERBODY VIEW

A-20

8056-17

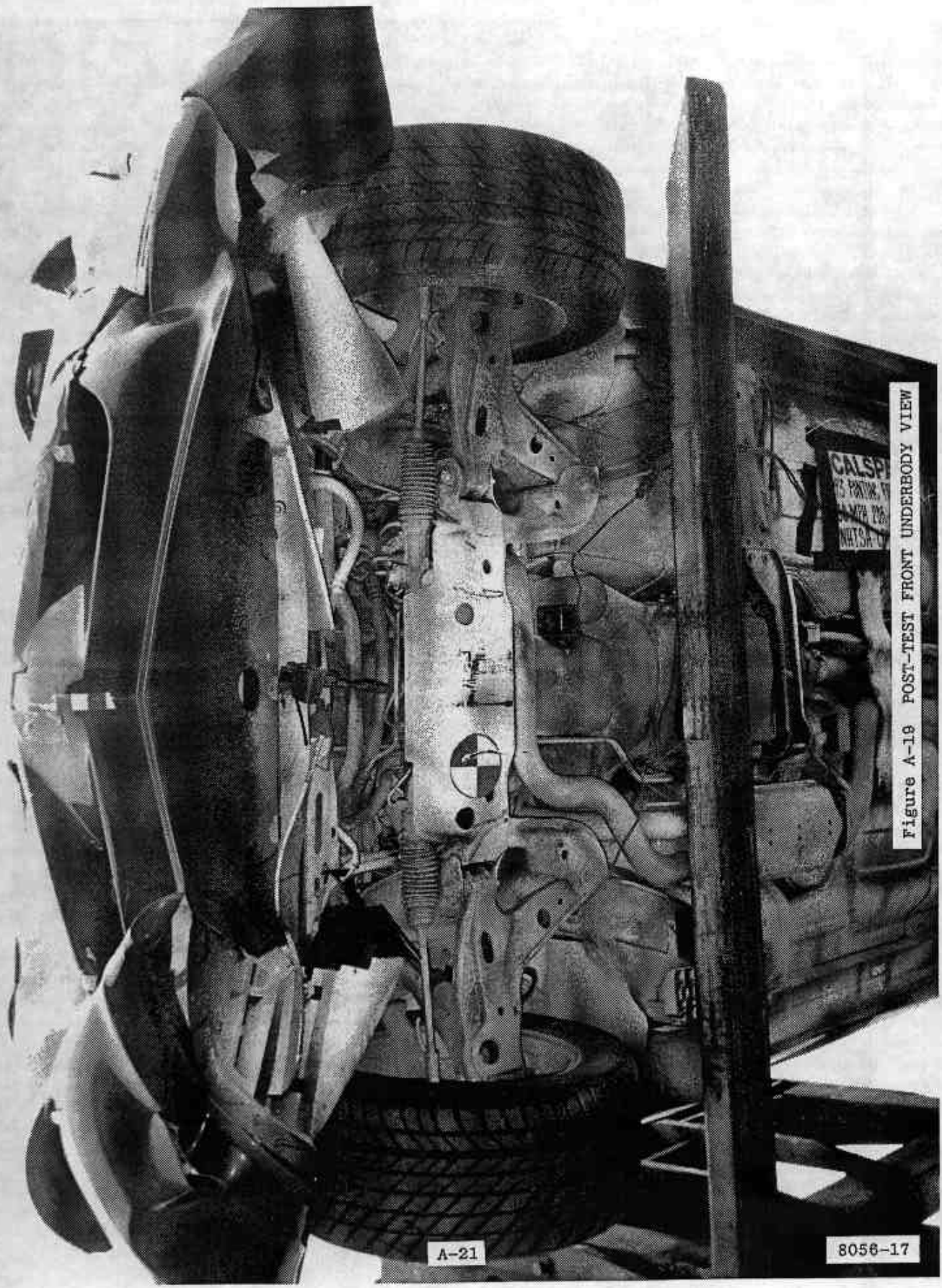


Figure A-19 POST-TEST FRONT UNDERBODY VIEW

A-21

8056-17

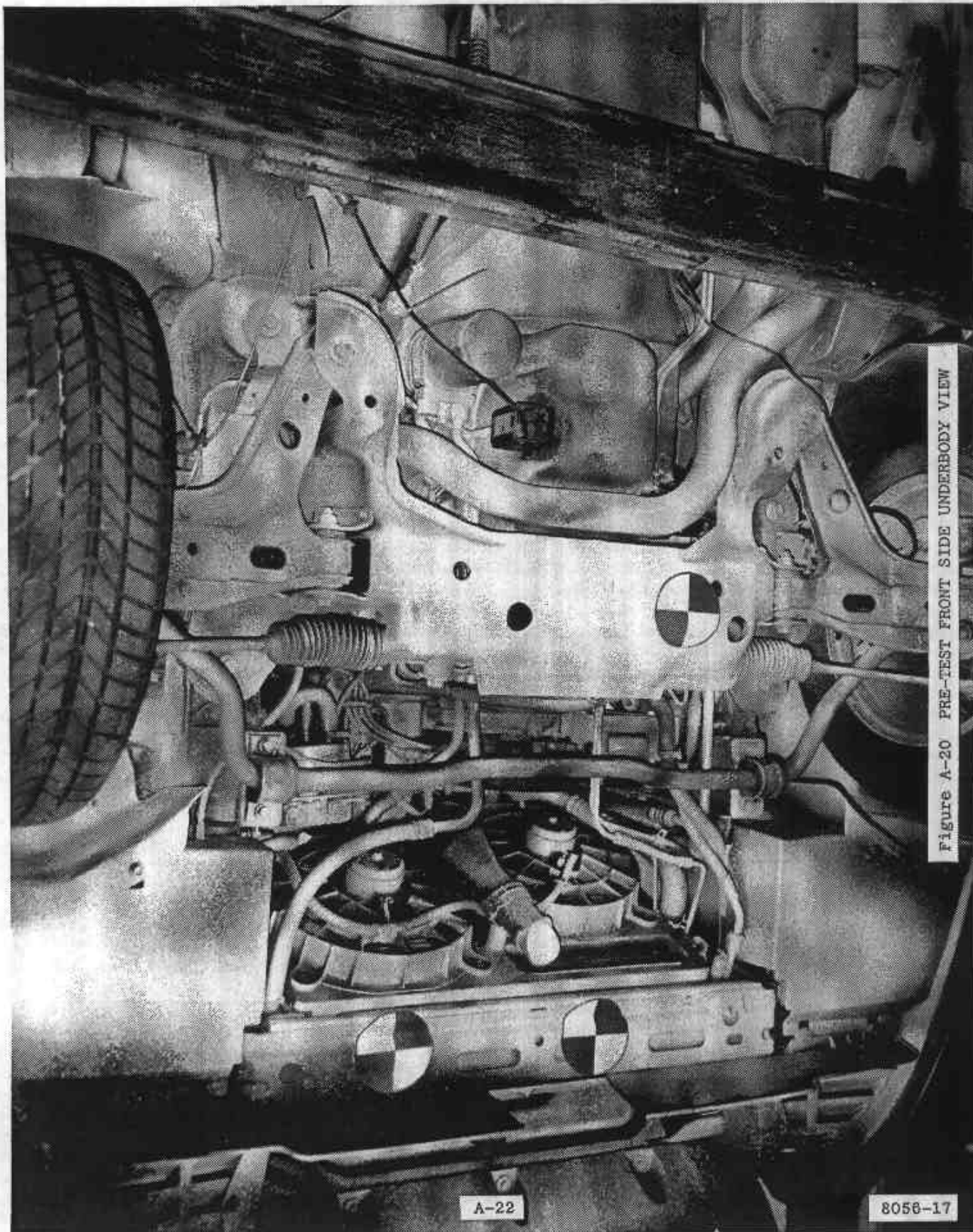
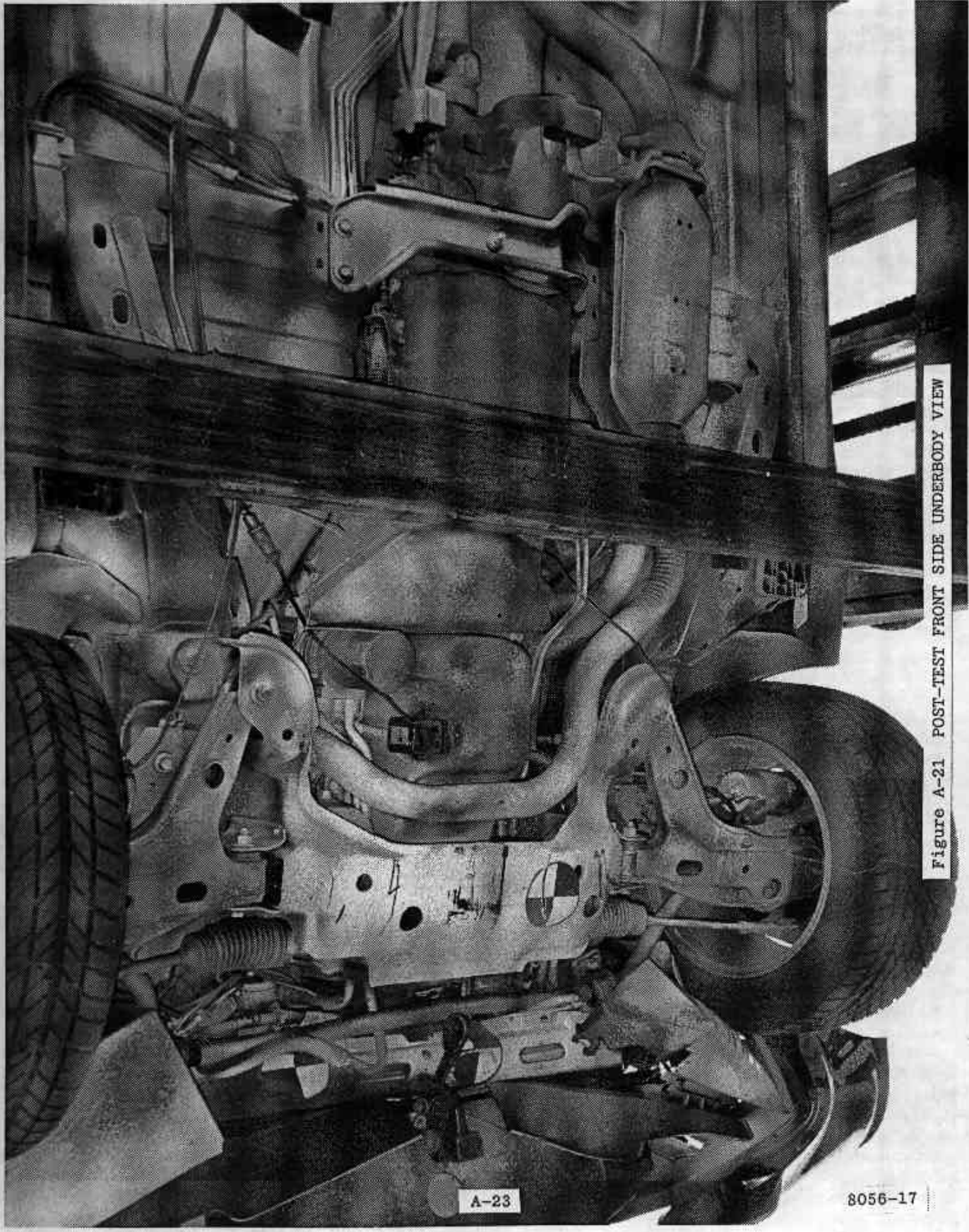


Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

A-22

8056-17

Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW



A-23

8056-17

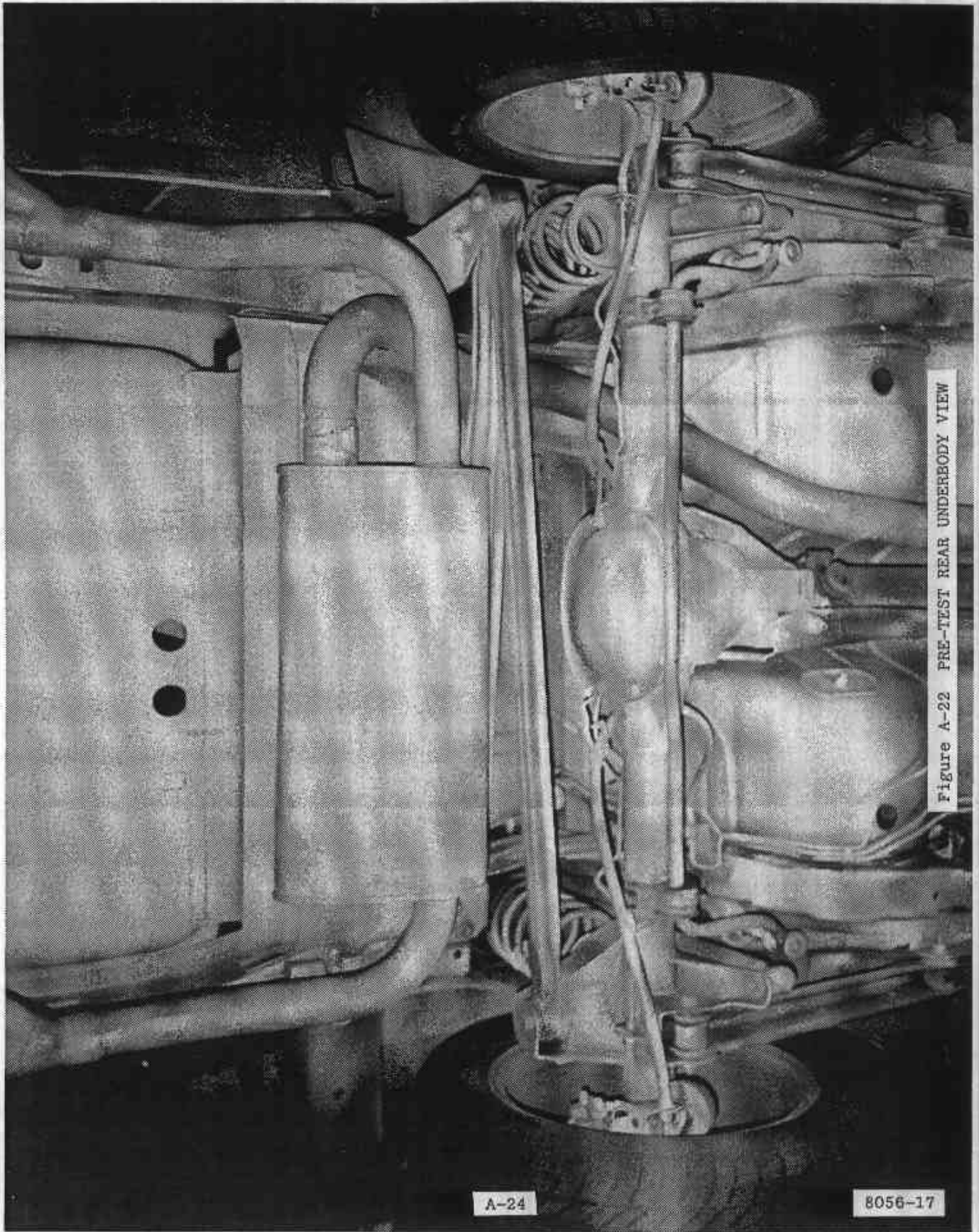


Figure A-22 PRE-TEST REAR UNDERBODY VIEW

A-24

8056-17

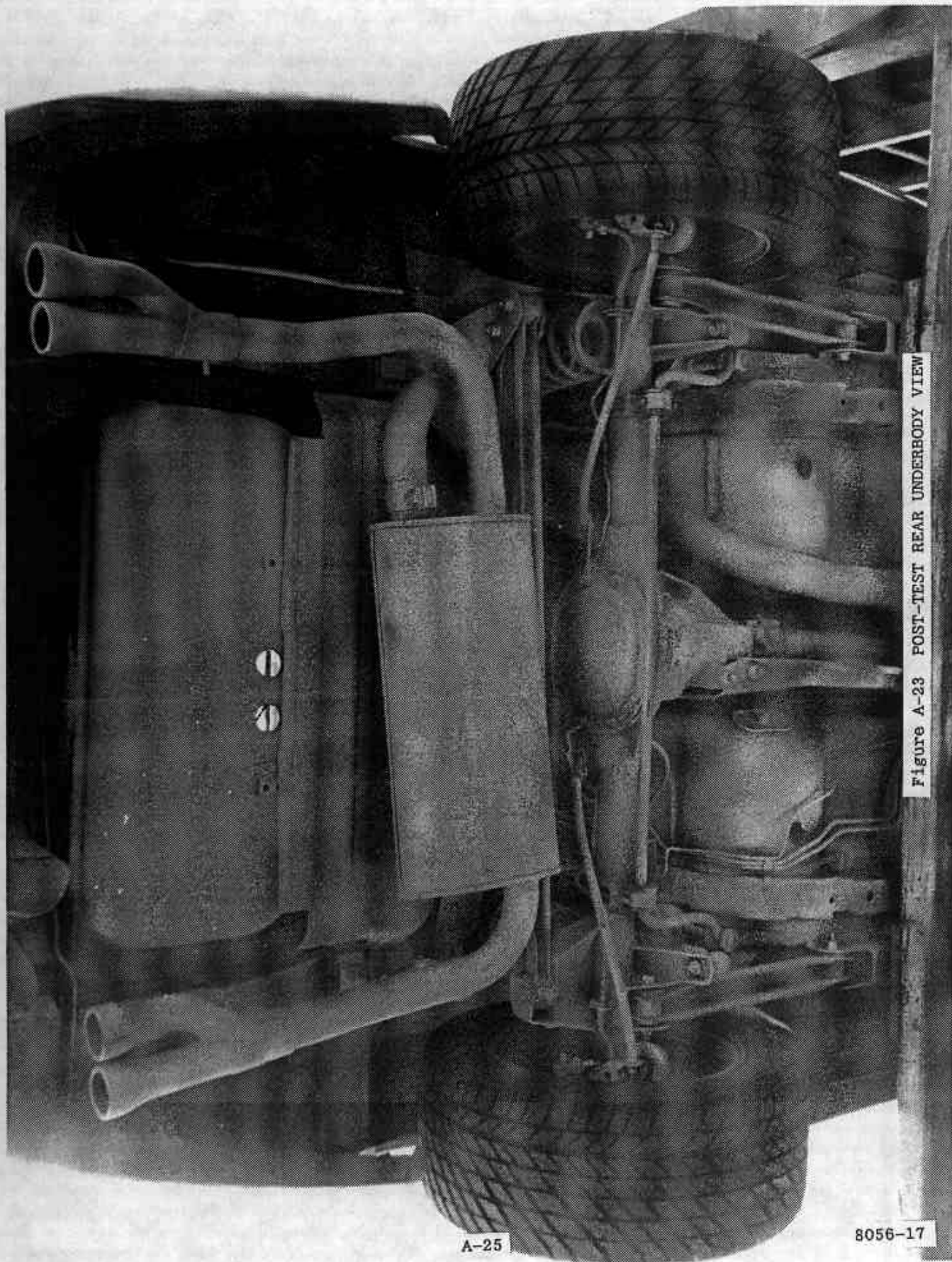


Figure A-23 POST-TEST REAR UNDERBODY VIEW

A-25

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MFD BY GENERAL MOTORS OF CANADA  
DATE 02/93 GVWR 4205LB GAWR FRT 2029LB  
1907KG 987KG 920KG



THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.  
2G2FV22P8P2201109 PASS CAR

10135843

GENERAL

TIRE-LOADING INFORMATION  
VEHICLE CAP. WT.  
OCCUPANTS  
FRT. CTR. RR. TOTAL LBS 701 JIB  
2 0 4  
MAX. LOAD PER AXLE 3505 LBS  
VEHICLE

Figure A-24 CERTIFICATION LABEL

SAFETY, BUMPER, AND THEFT PREVENTION  
 STANDARDS IN EFFECT ON THE DATE OF  
 MANUFACTURE SHOWN ABOVE.  
 2G2FV22P8P2201109 PASS CAR  
 10135543A  




 TIRE-LOADING INFORMATION  
 OCCUPANTS VEHICLE CAP. WT.  
 FRT. CTR. RR. TOTAL LBS KG  
 2 0 2 4 701 318  
 MAX. LOADING @ GVWR SAME AS VEHICLE  
 CAPACITY WEIGHT. FAF COLD TIRE  
 MODEL: FS87 SPEED PRESSURE  
 TIRE SIZE RTG PSI/KPA  
 FRT P245/50ZR16 Z 30/210  
 RR P245/50ZR16 Z 30/210  
 SPA T125/70D15 M 60/420  
 IF TIRES ARE HOT, ADD 4PSI/28KPA  
 SEE OWNER'S MANUAL FOR ADDITIONAL  
 INFORMATION  
 10135543A  


Figure A-25 TIRE FLACARD



Figure A-26 PRE-TEST DRIVER DUMMY POSITION

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Figure A-27 POST-TEST DRIVER DUMMY POSITION

A-29

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Figure A-28 PRE-TEST PASSENGER DUMMY POSITION

A-30

8056-17

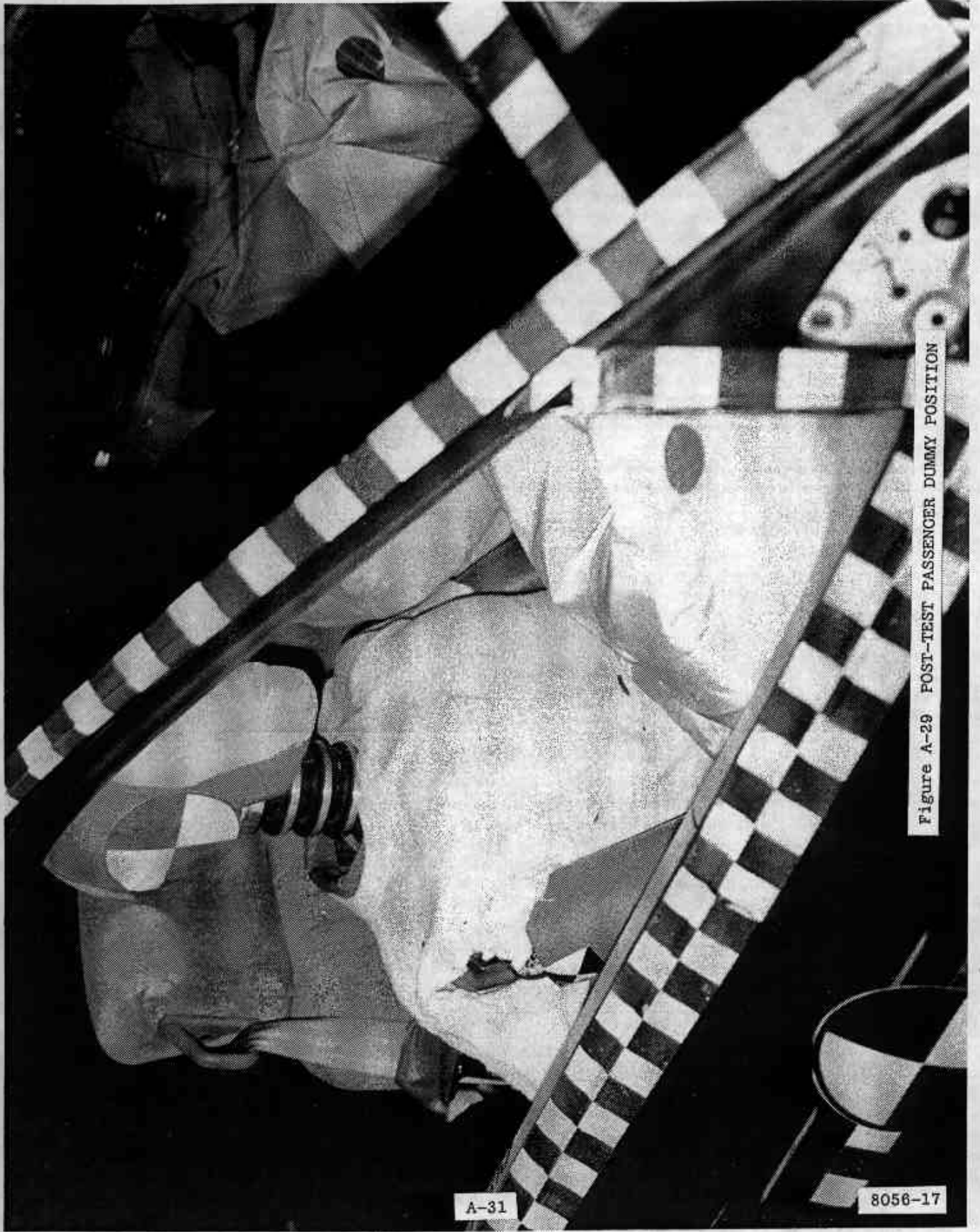


Figure A-29 POST-TEST PASSENGER DUMMY POSITION

A-31

8056-17



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

A-32

8056-17



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

A-33

8056-17

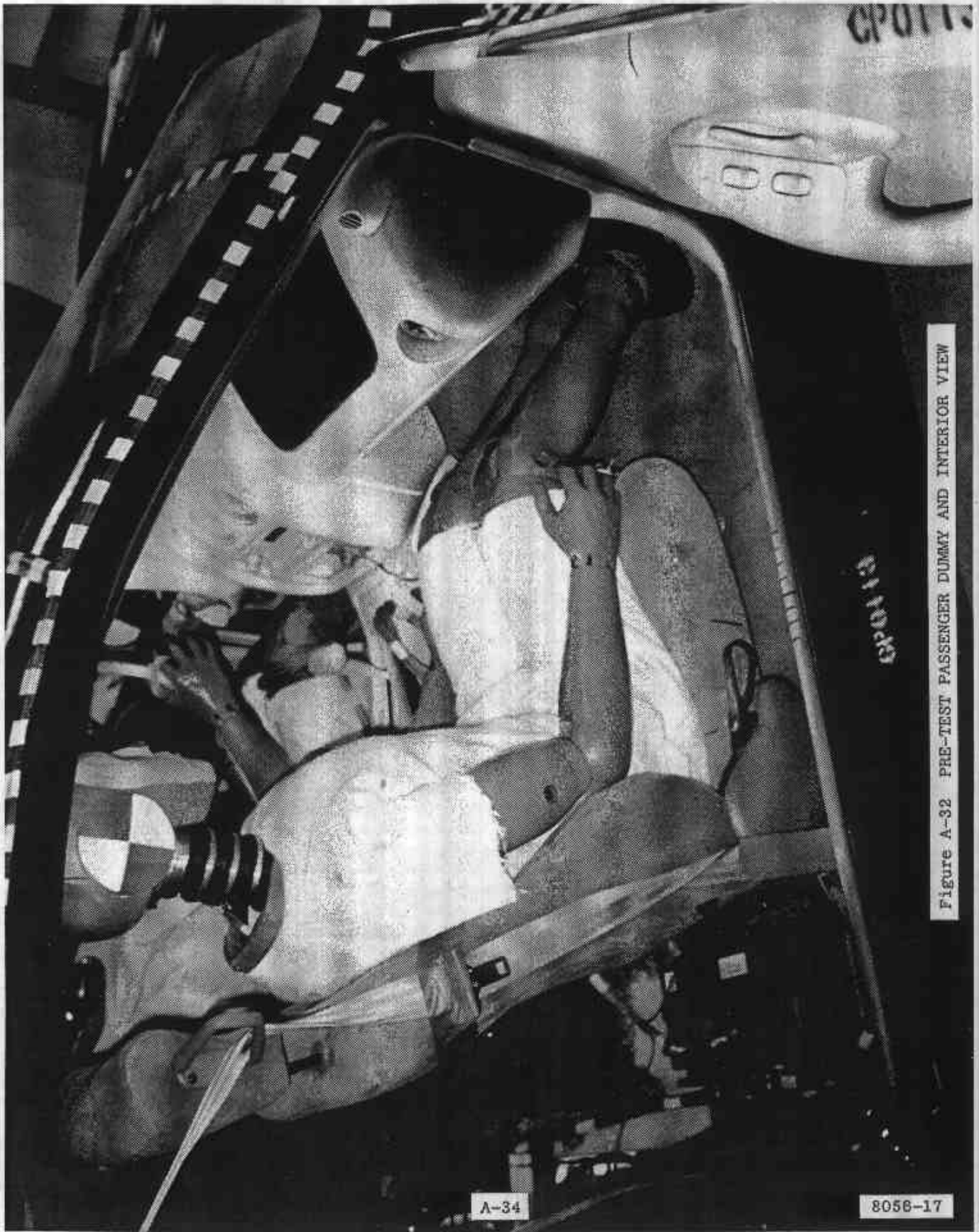


Figure A-32 PRE-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-34

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

A-35

8056-17

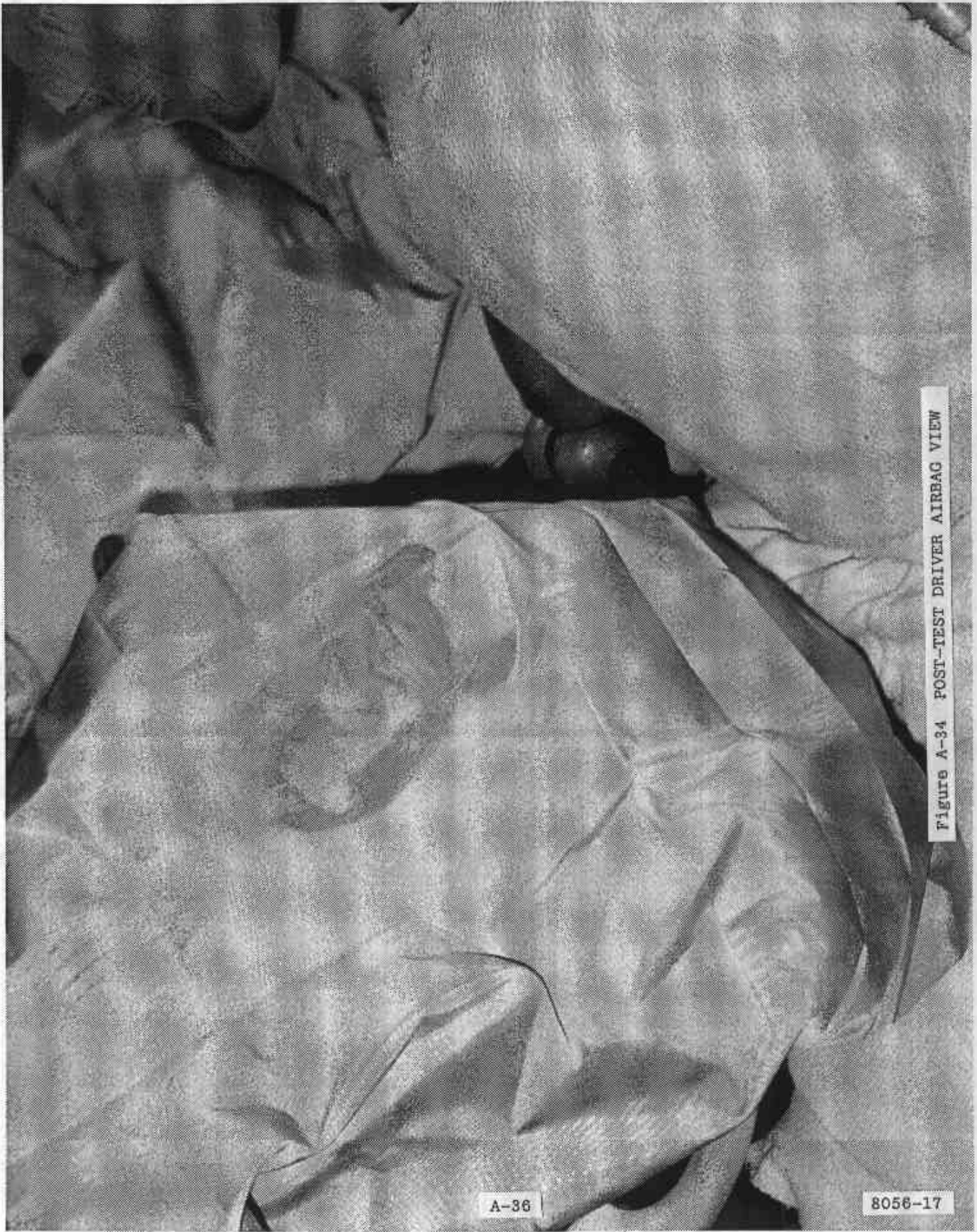


Figure A-34 POST-TEST DRIVER AIRBAG VIEW

A-36

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Figure A-35 POST-TEST PASSENGER AIRBAG VIEW

A-37

8056-17

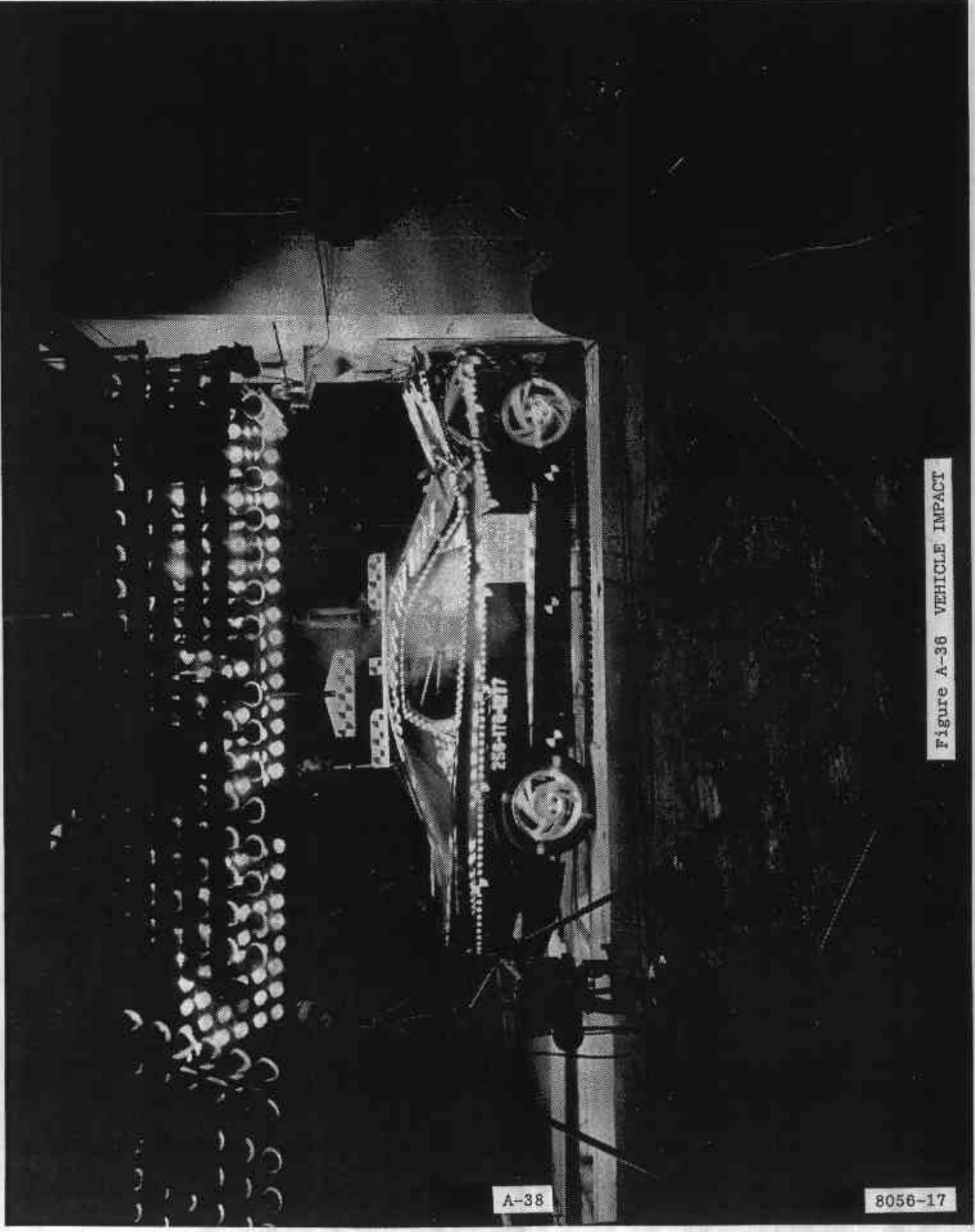


Figure A-36 VEHICLE IMPACT

A-38

8056-17

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CP0113

VEHICLE DATA

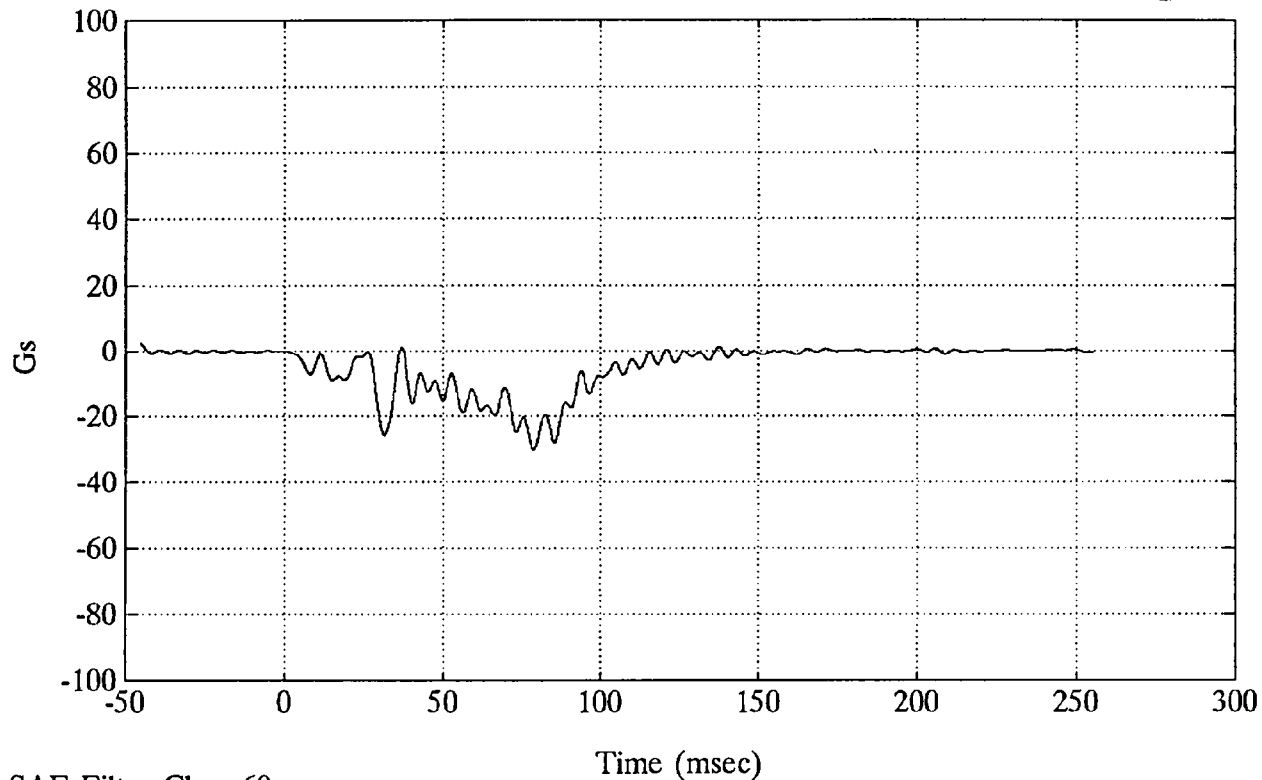
SAE FILTER CHANNEL CLASS

60

FMVSS 208 - 1993 PONTIAC FIREBIRD

L. Rear Crossmember X (#1)

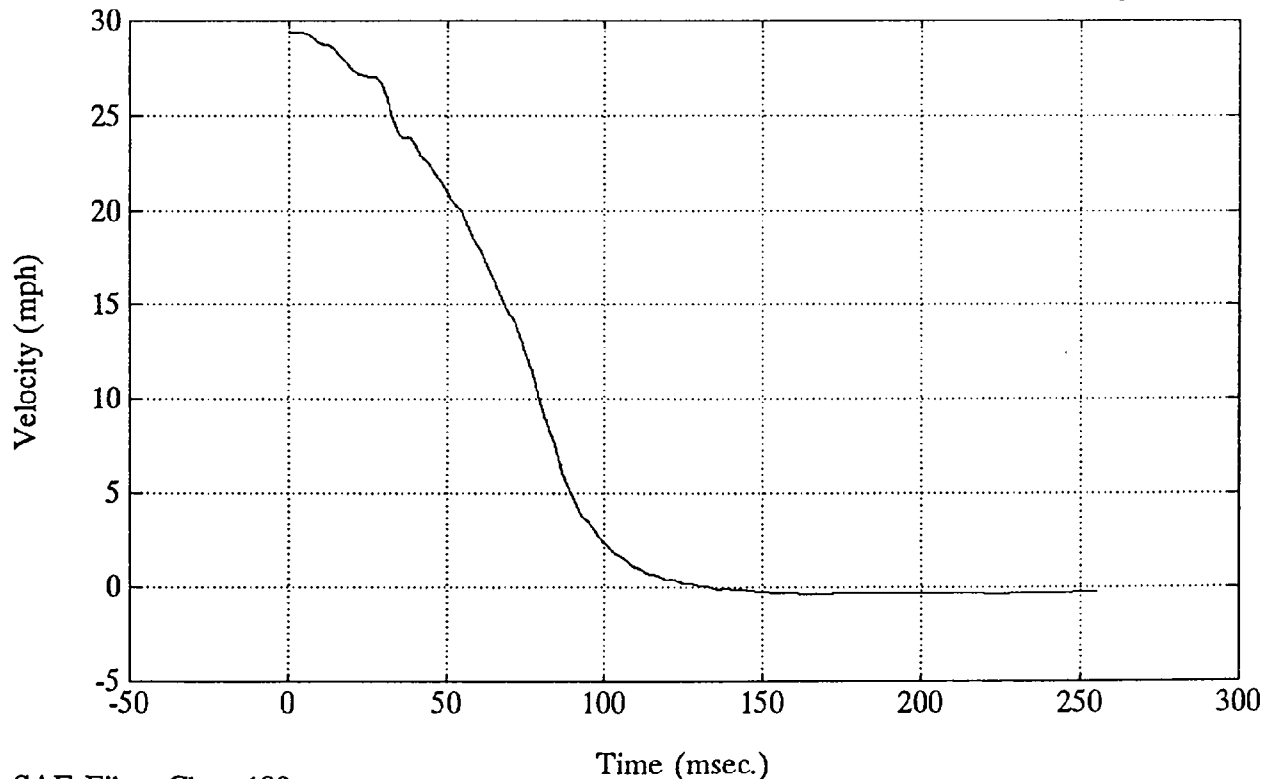
Max = 2.45 Gs @ -44.88 msec  
Min = -30.16 Gs @ 78.72 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

L. Rear Crossmember X (#1)

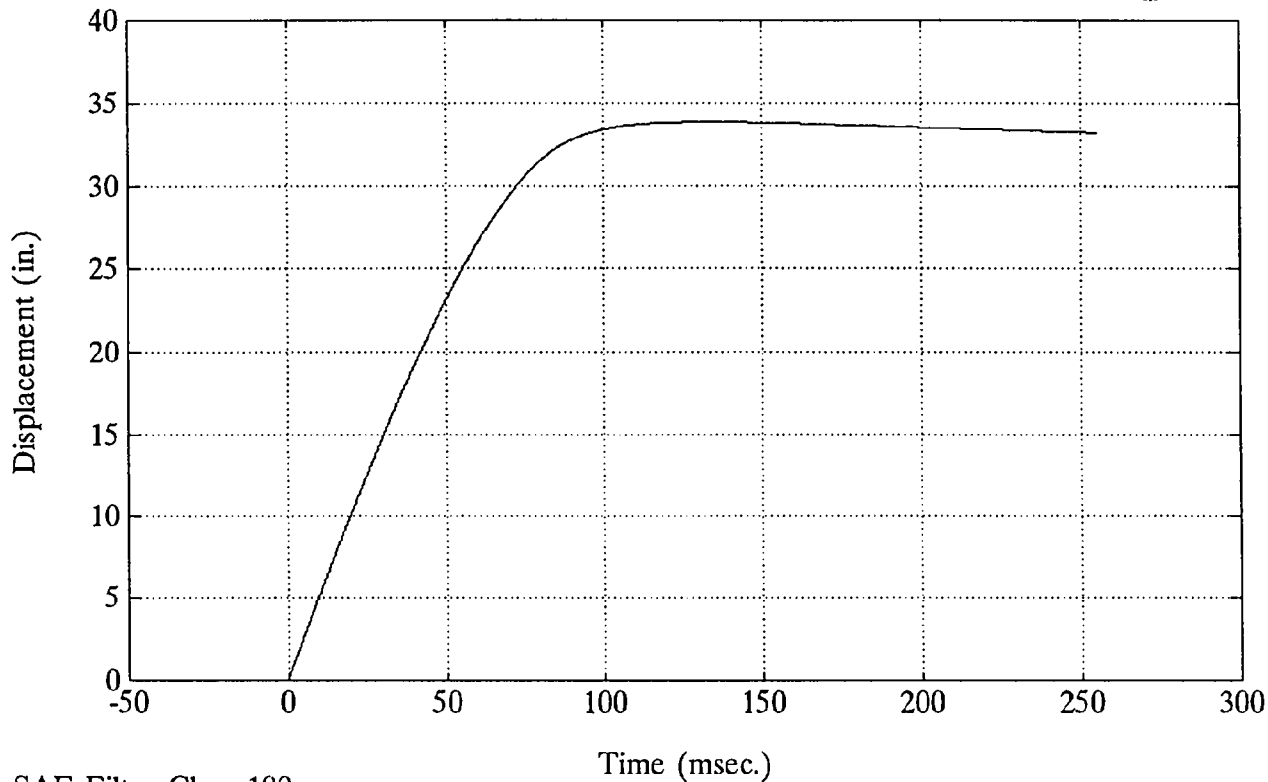
Max = 29.40 mph @ 2.16 msec  
Min = -0.39 mph @ 163.92 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

L. Rear Crossmember X (#1)

Max = 33.84 in. @ 134.40 msec  
Min = 0.00 in. @ -0.00 msec

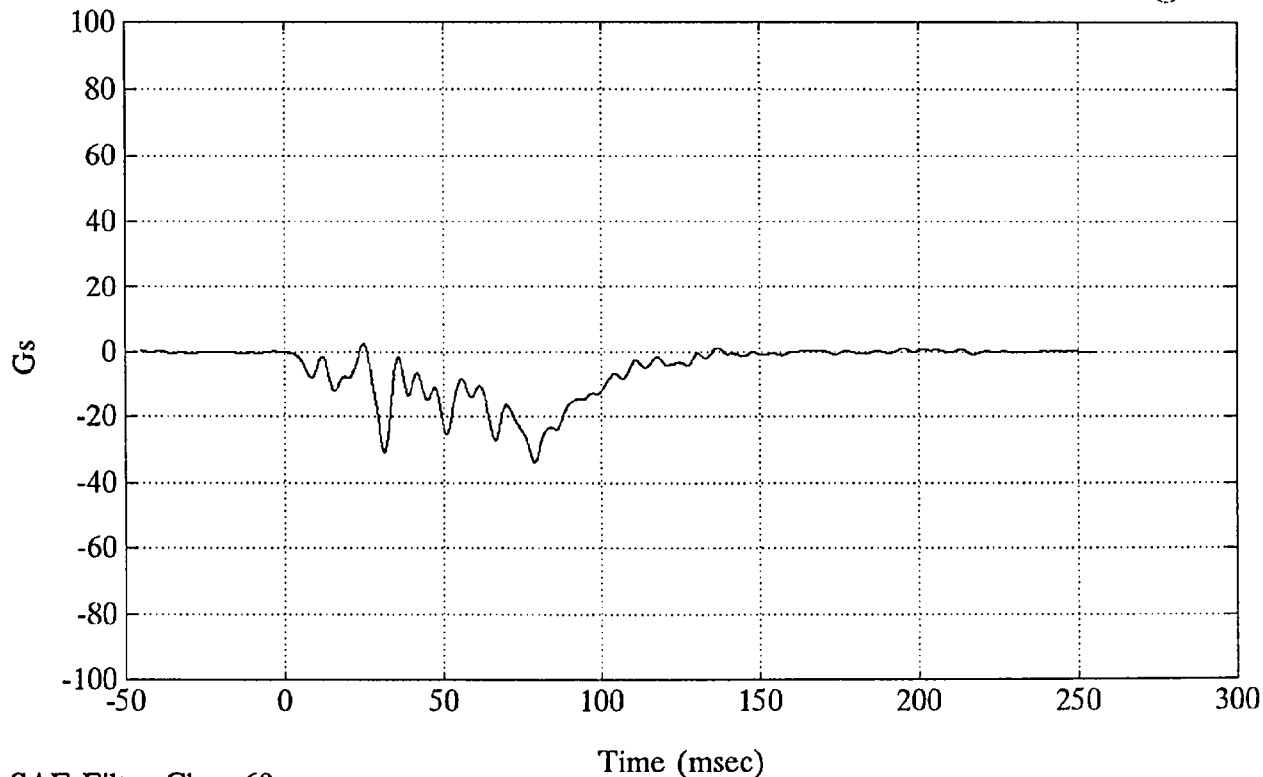


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

R. Rear Crossmember X (#2)

Max = 2.48 Gs @ 24.84 msec  
Min = -33.79 Gs @ 78.84 msec

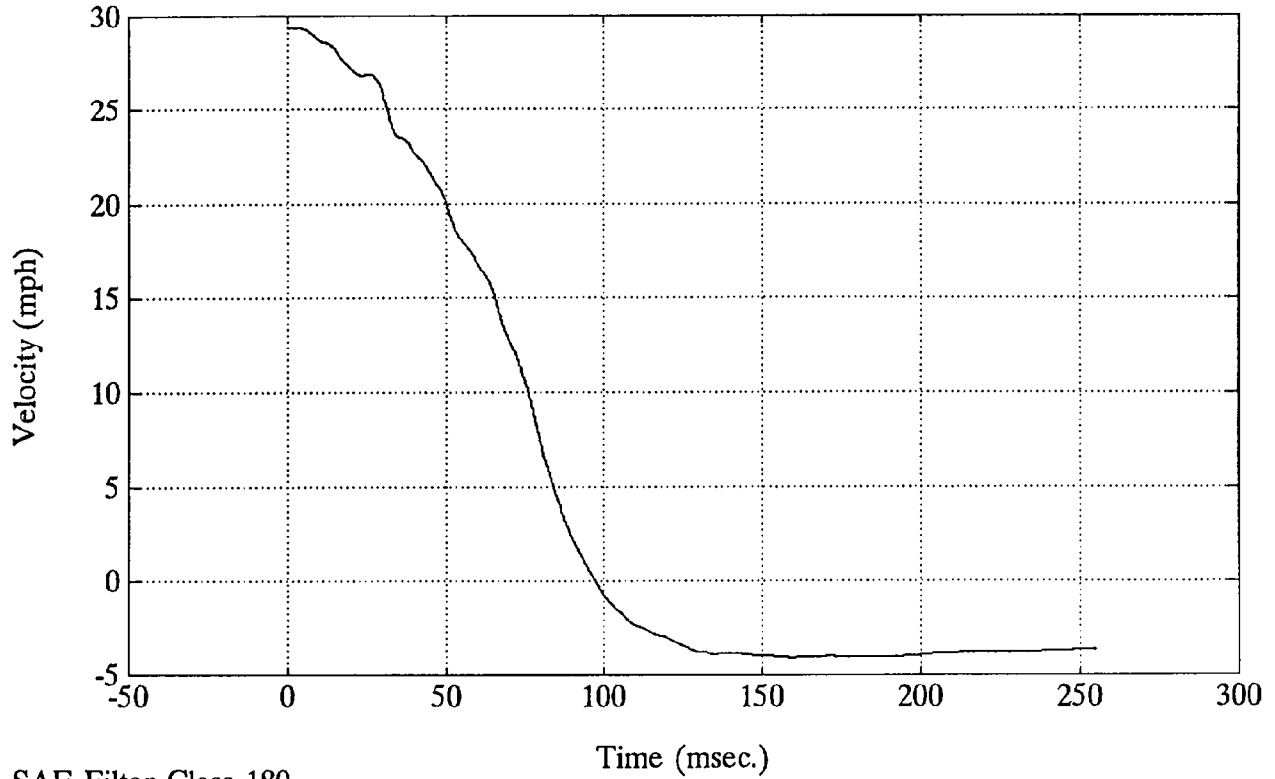


SAE Filter Class 60

FMVSS 208 - 1993 PONTIAC FIREBIRD

R. Rear Crossmember X (#2)

Max = 29.40 mph @ 1.44 msec  
Min = -4.08 mph @ 159.60 msec

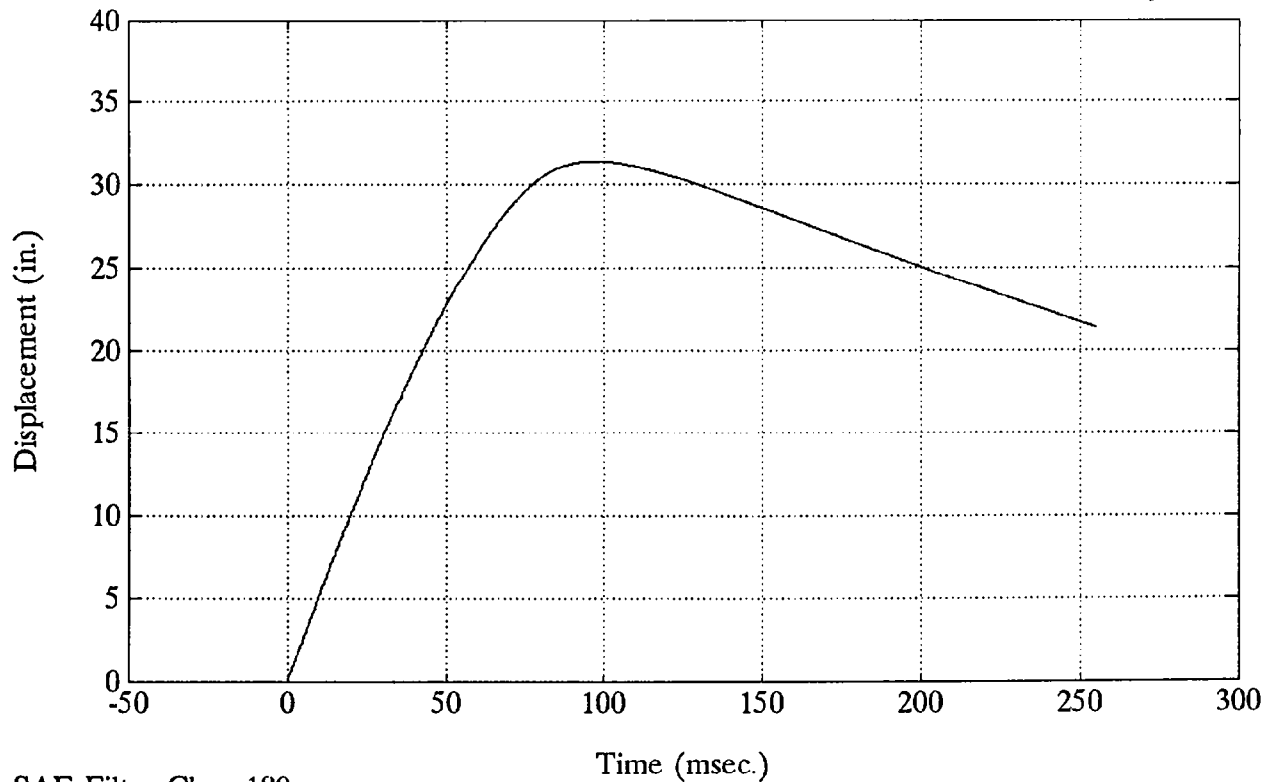


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

R. Rear Crossmember X (#2)

Max = 31.37 in. @ 98.88 msec  
Min = 0.00 in. @ -0.00 msec

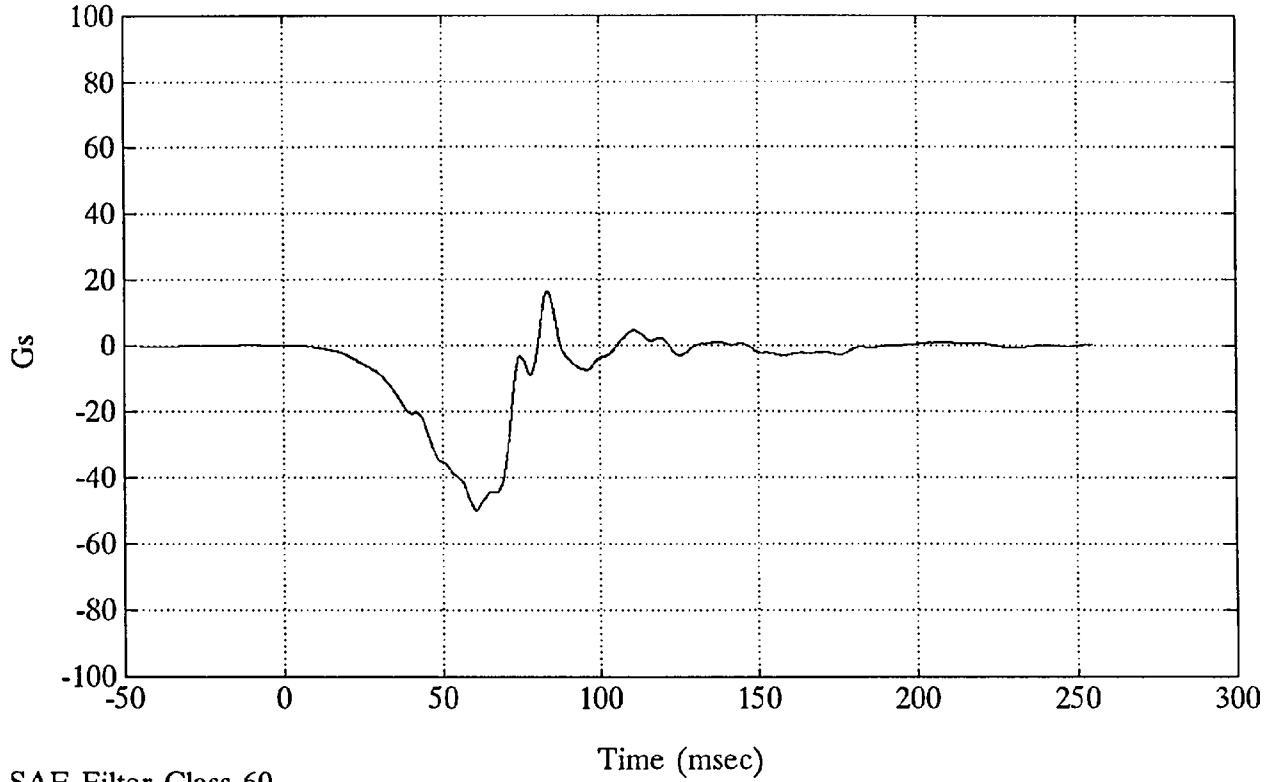


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Engine Top X (#3)

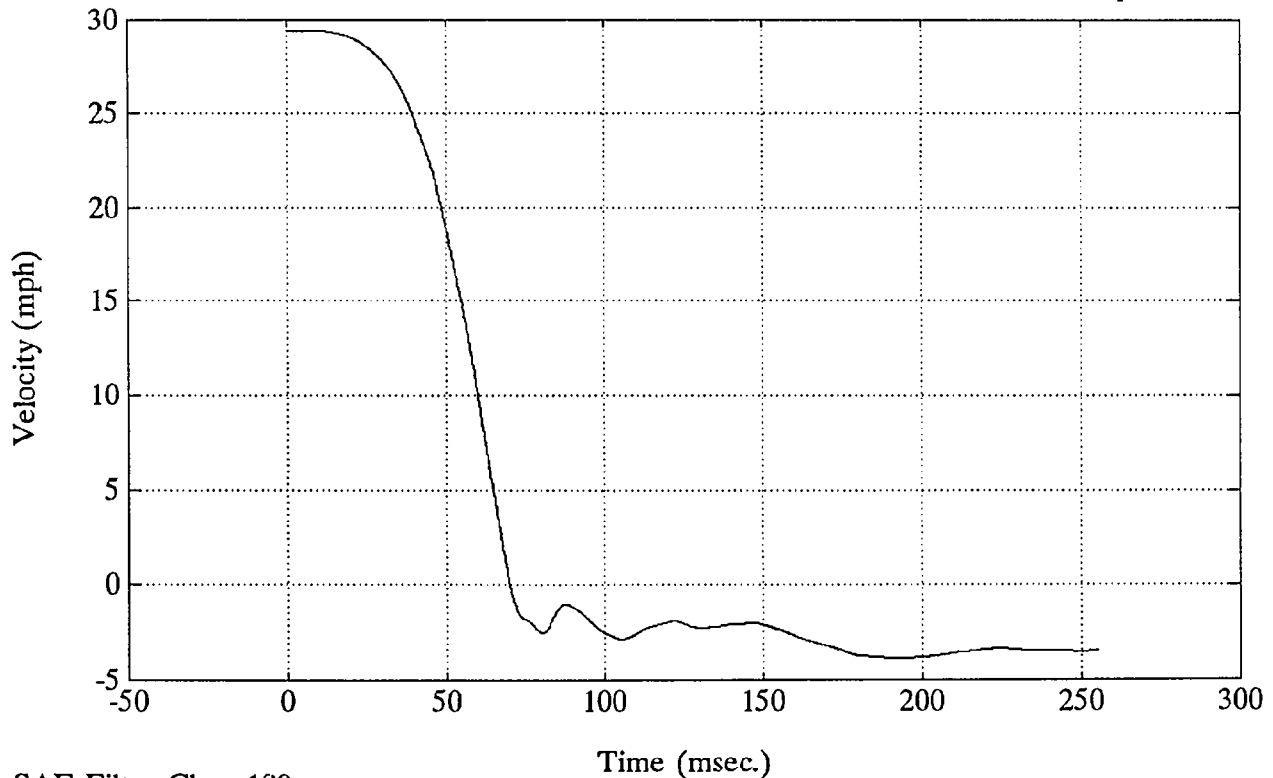
Max = 16.10 Gs @ 83.28 msec  
Min = -49.87 Gs @ 60.84 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

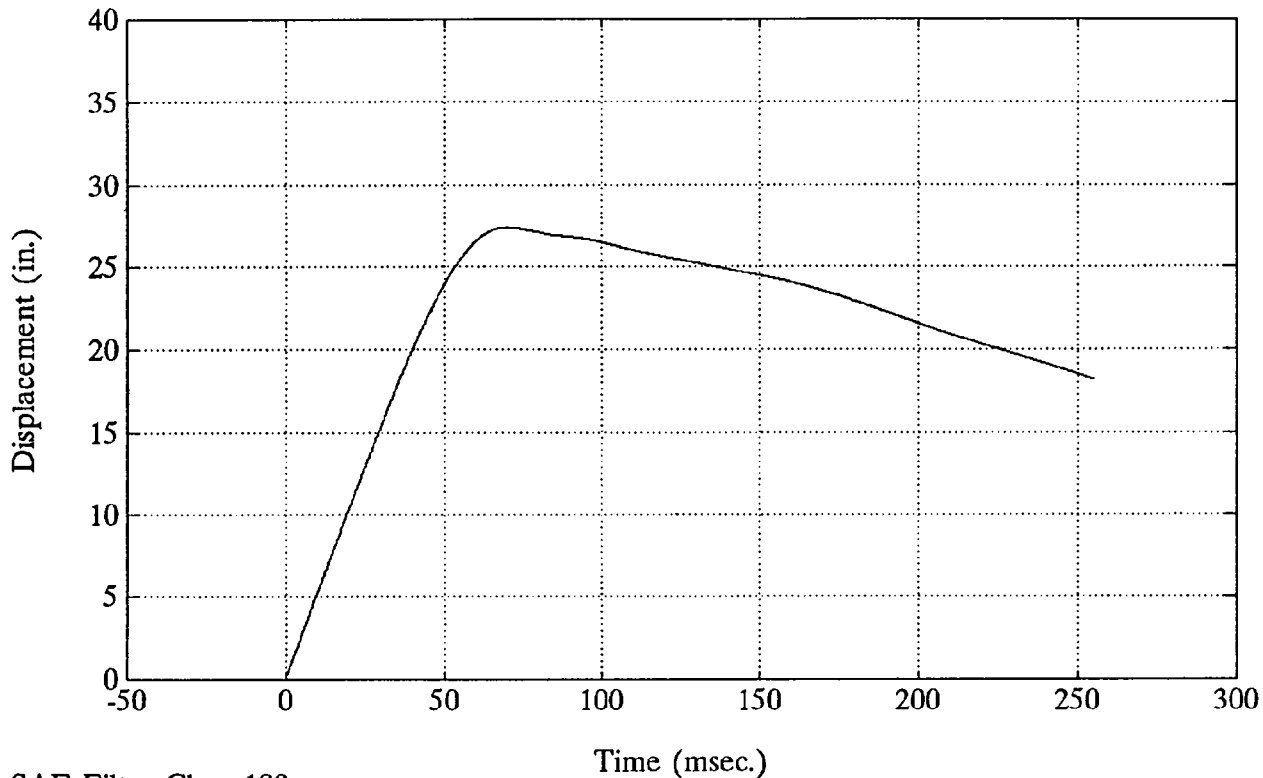
Engine Top X (#3)

Max = 29.41 mph @ 7.92 msec  
Min = -3.83 mph @ 193.68 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD  
Engine Top X (#3)

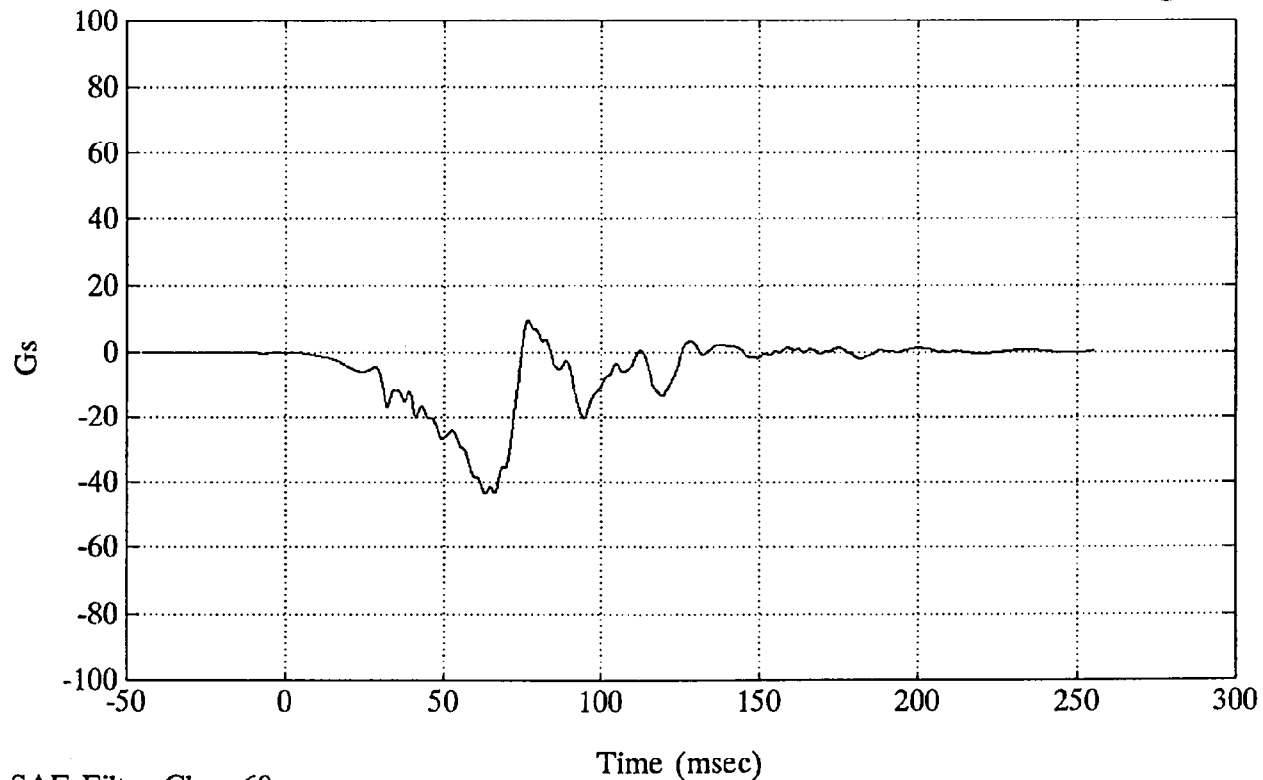
Max = 27.34 in. @ 70.08 msec  
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD  
Engine Bottom X (#4)

Max = 9.70 Gs @ 76.56 msec  
Min = -43.46 Gs @ 63.24 msec

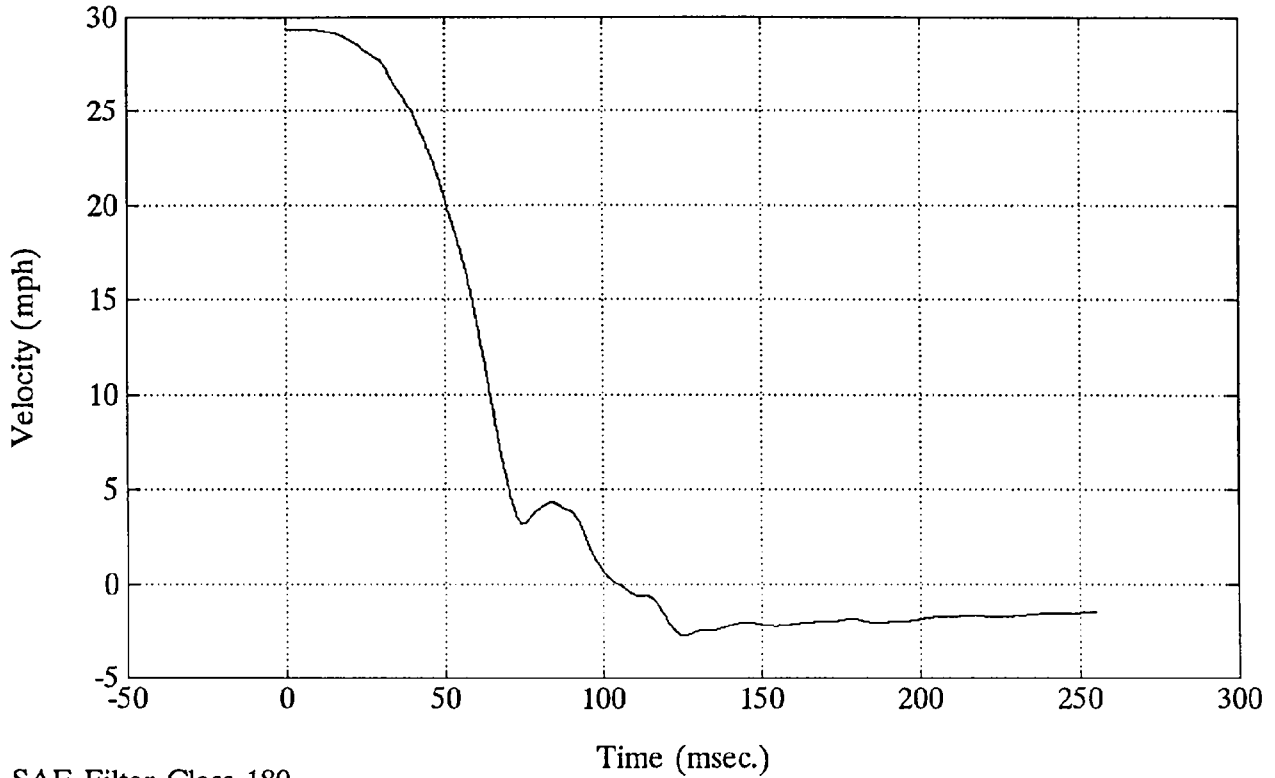


SAE Filter Class 60

FMVSS 208 - 1993 PONTIAC FIREBIRD

Engine Bottom X (#4)

Max = 29.41 mph @ 5.28 msec  
Min = -2.72 mph @ 125.28 msec

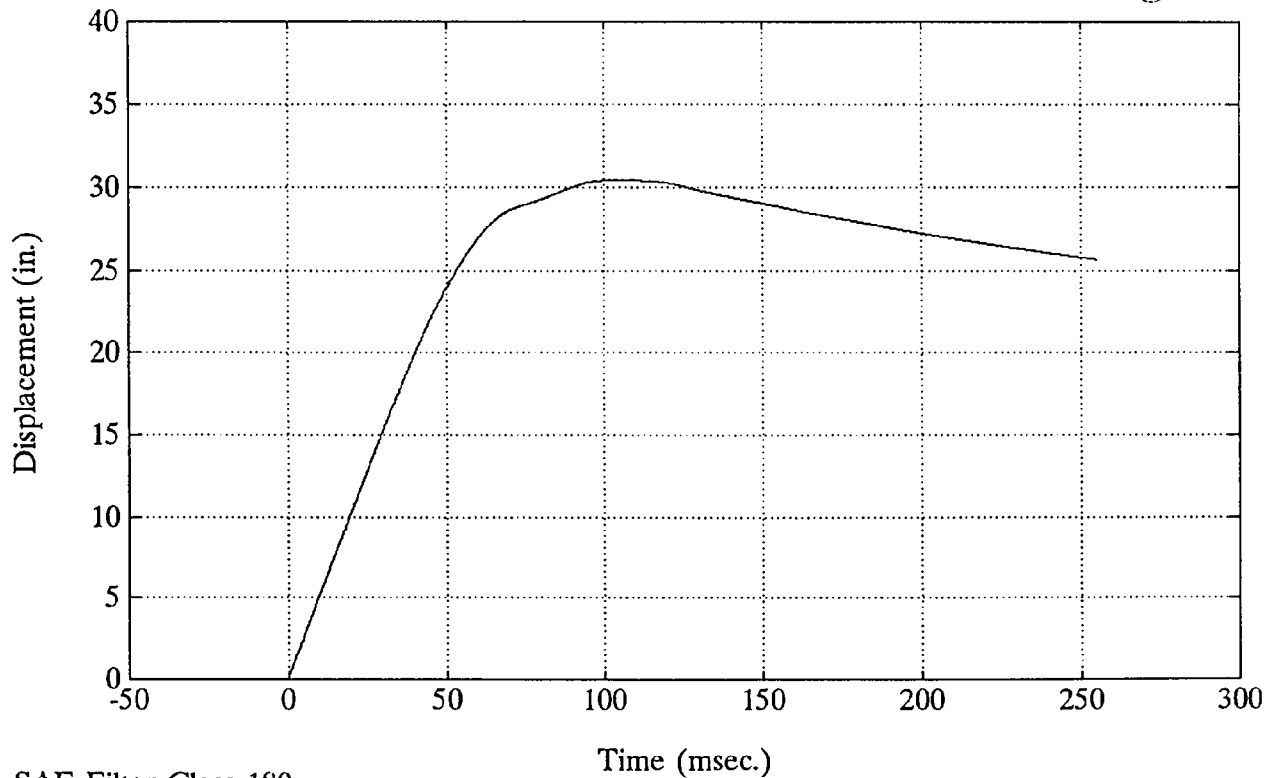


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Engine Bottom X (#4)

Max = 30.46 in. @ 108.24 msec  
Min = 0.00 in. @ -0.00 msec

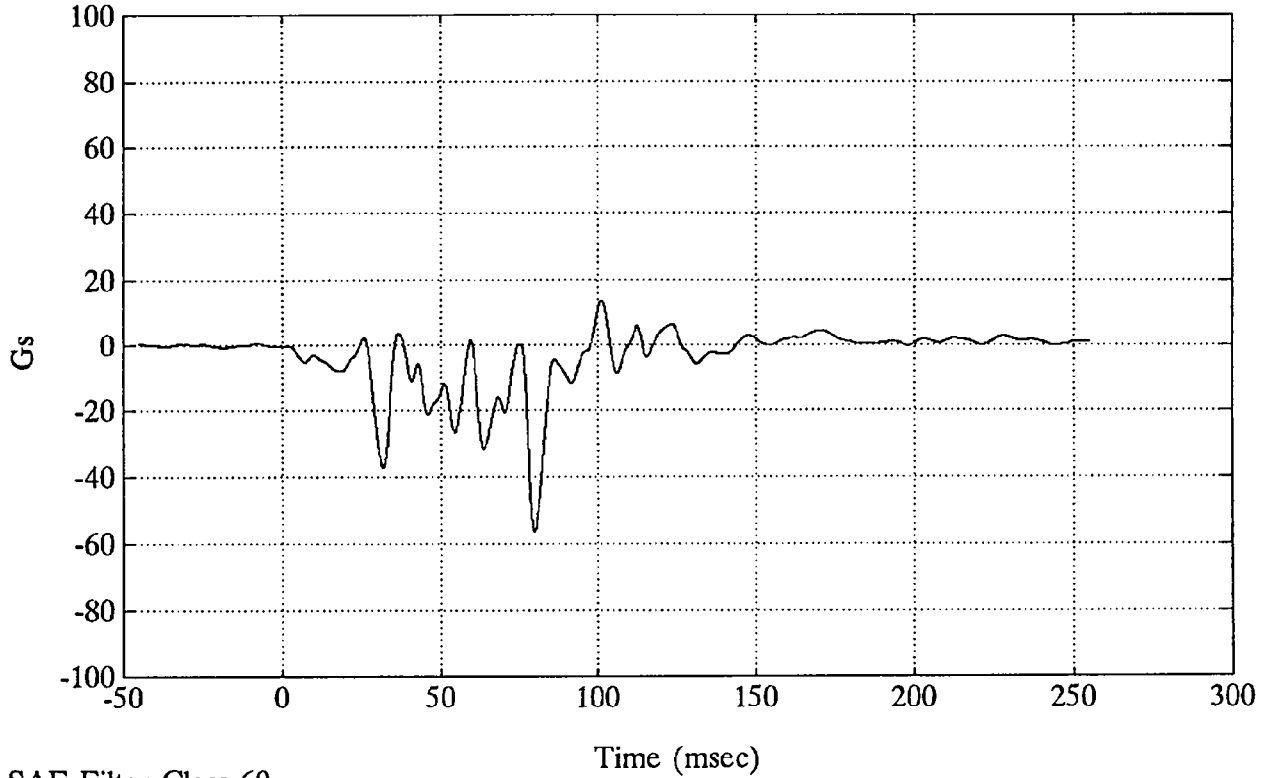


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

R. Brake Caliper X (#5)

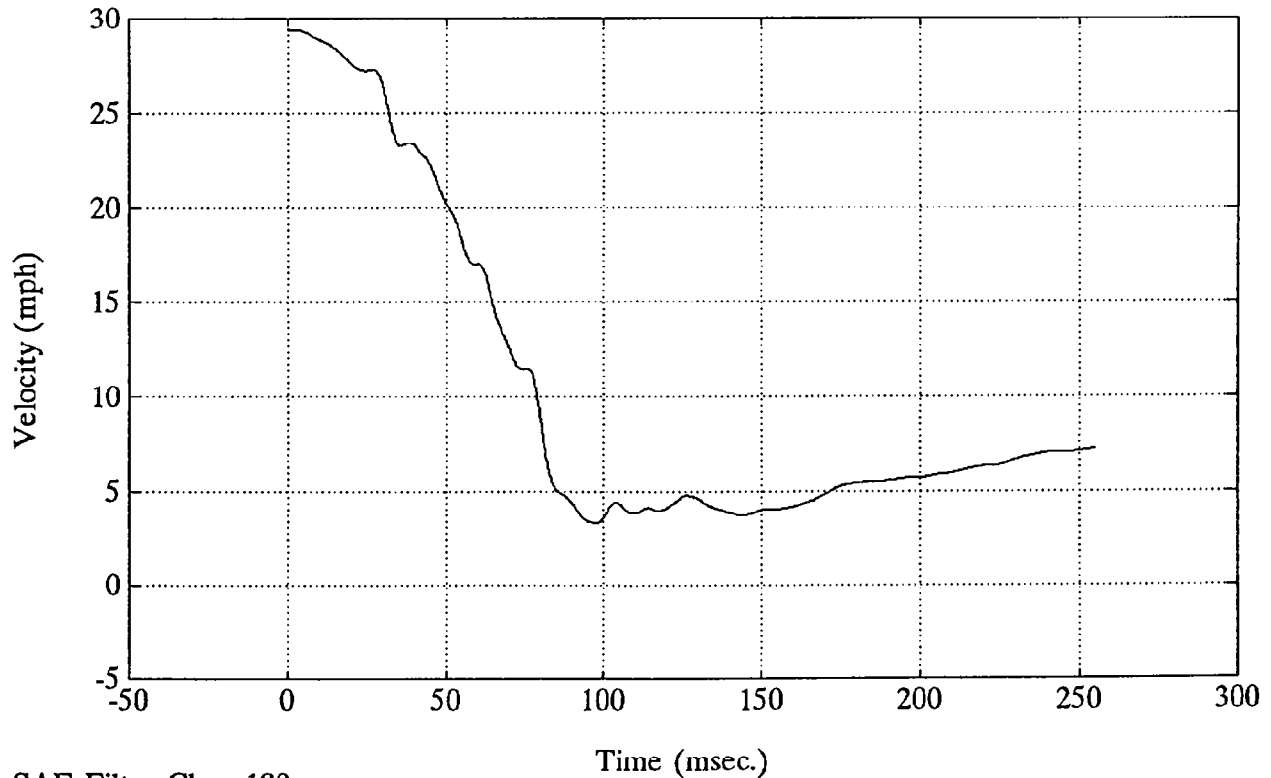
Max = 13.84 Gs @ 101.04 msec  
Min = -56.20 Gs @ 79.80 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

R. Brake Caliper X (#5)

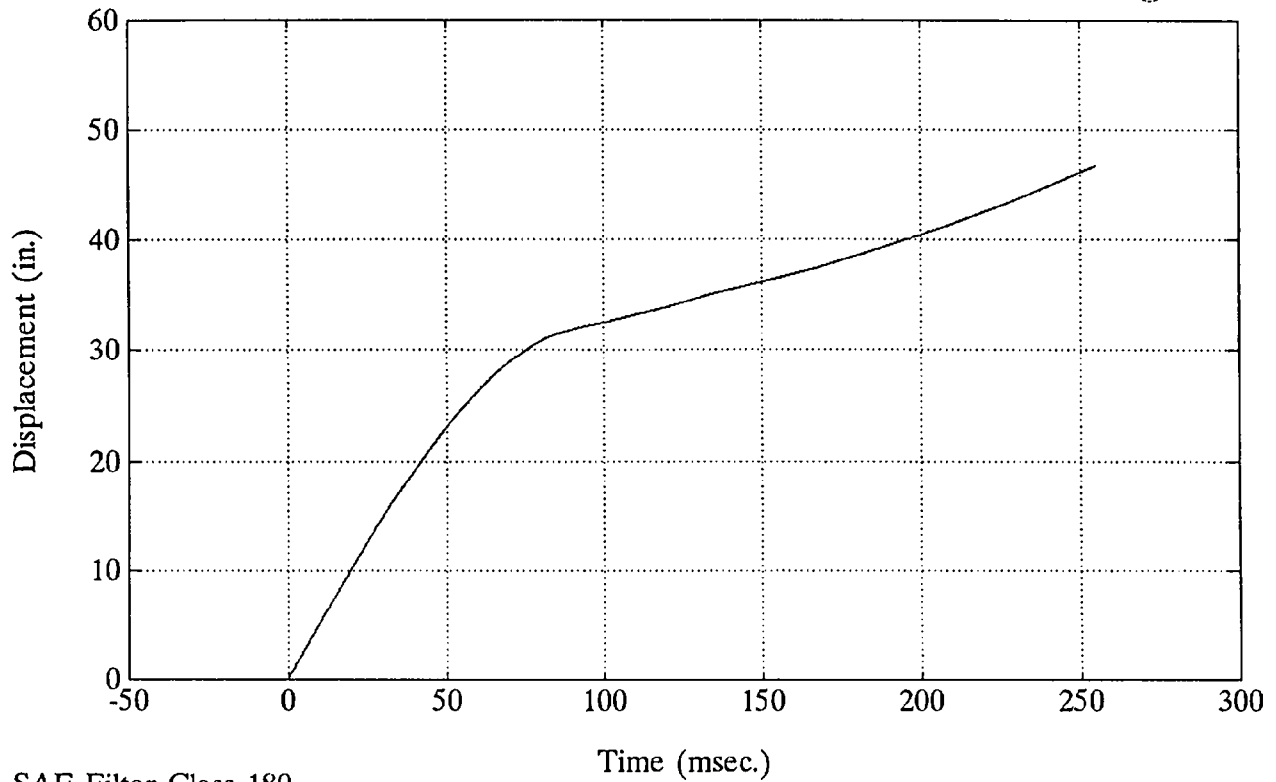
Max = 29.40 mph @ 0.24 msec  
Min = 3.30 mph @ 97.44 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

R. Brake Caliper X (#5)

Max = 46.73 in. @ 254.88 msec  
Min = 0.00 in. @ -0.00 msec

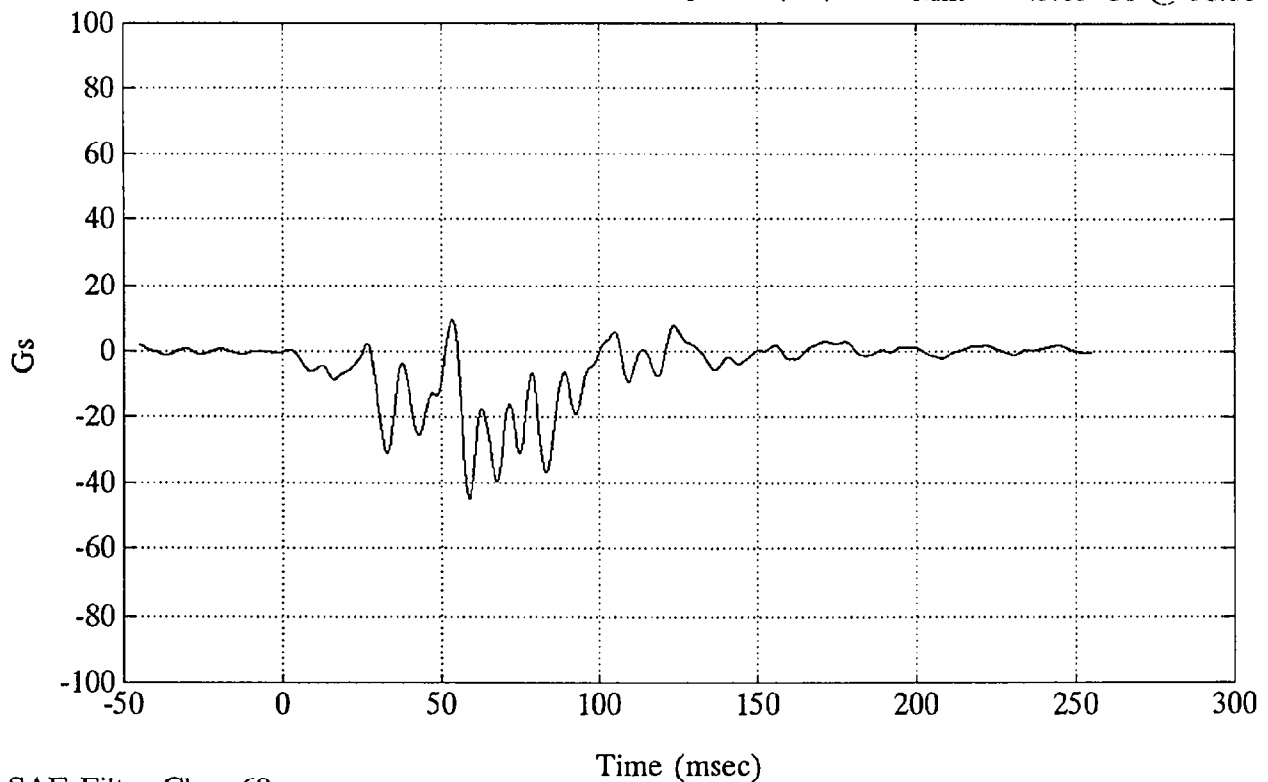


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

L. Brake Caliper X (#6)

Max = 9.66 Gs @ 53.52 msec  
Min = -45.03 Gs @ 58.80 msec

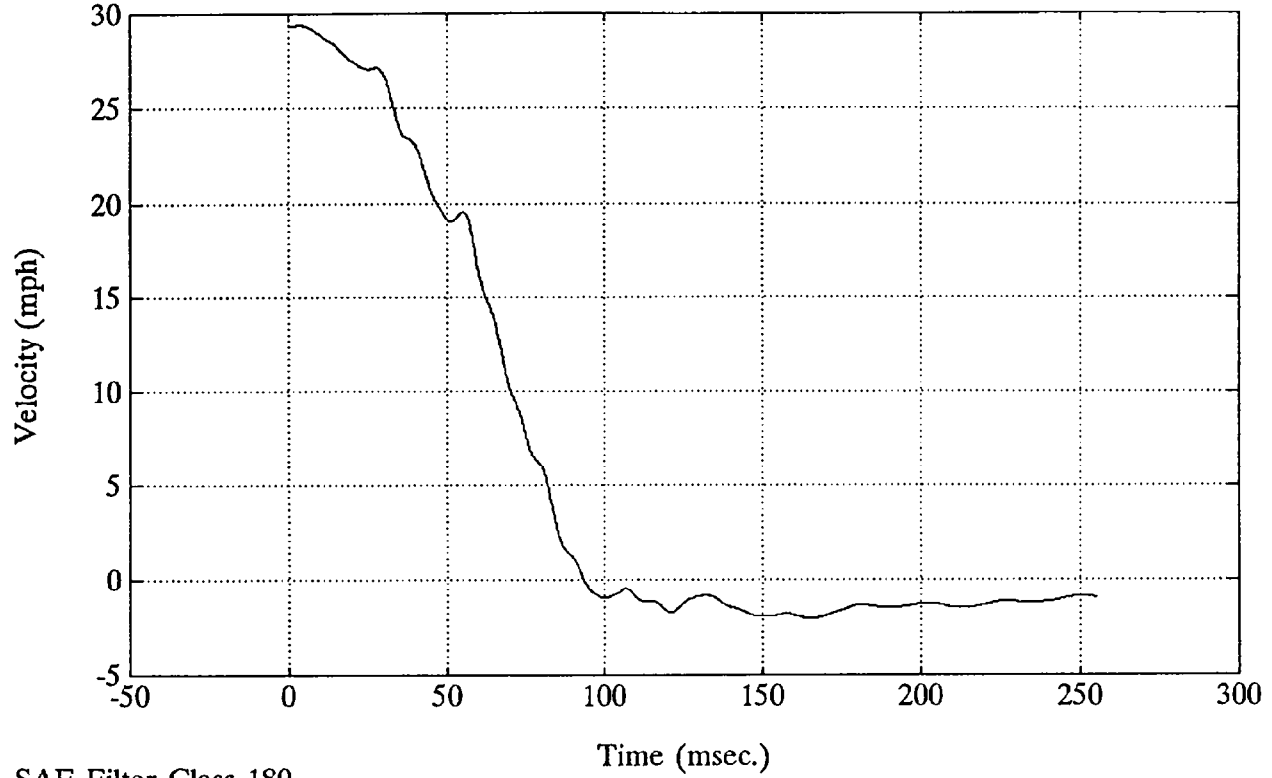


SAE Filter Class 60

FMVSS 208 - 1993 PONTIAC FIREBIRD

L. Brake Caliper X (#6)

Max = 29.43 mph @ 4.32 msec  
Min = -2.07 mph @ 164.88 msec

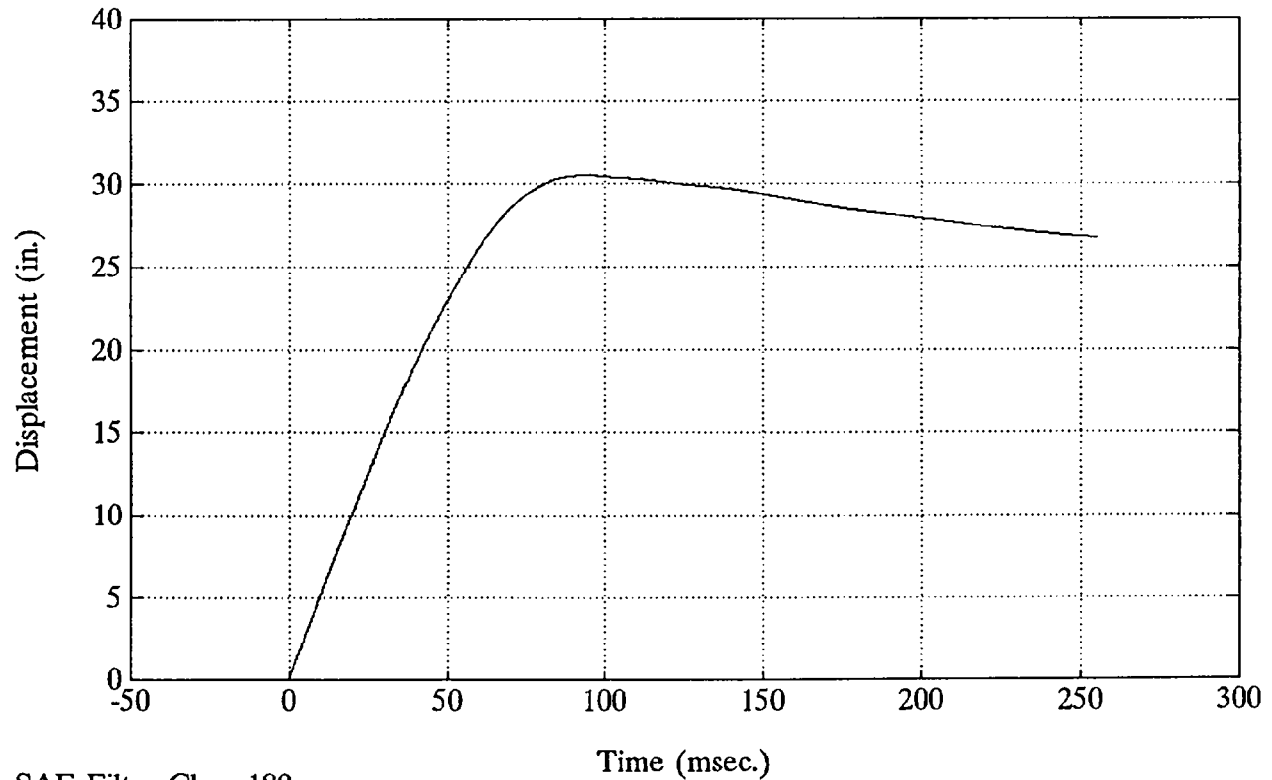


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

L. Brake Caliper X (#6)

Max = 30.53 in. @ 94.08 msec  
Min = 0.00 in. @ -0.00 msec

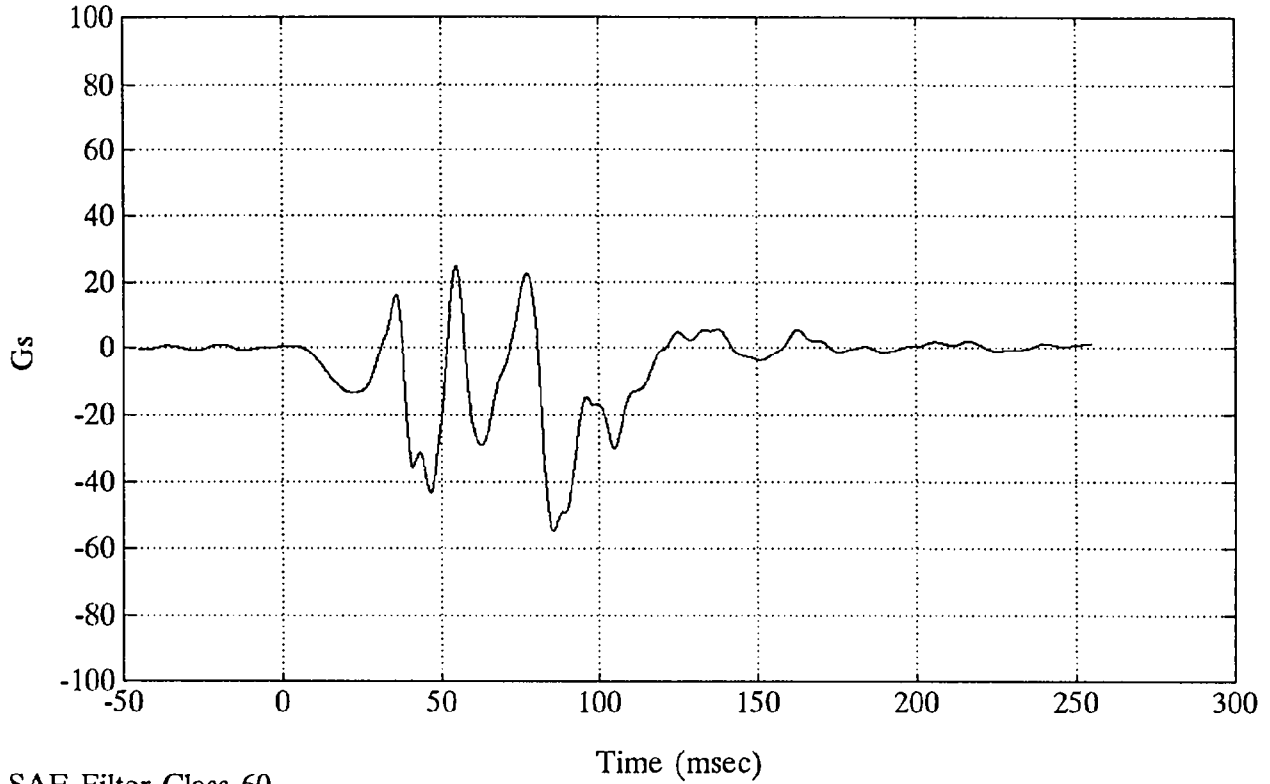


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Instrument Panel X (#7)

Max = 24.74 Gs @ 54.84 msec  
Min = -54.74 Gs @ 85.32 msec

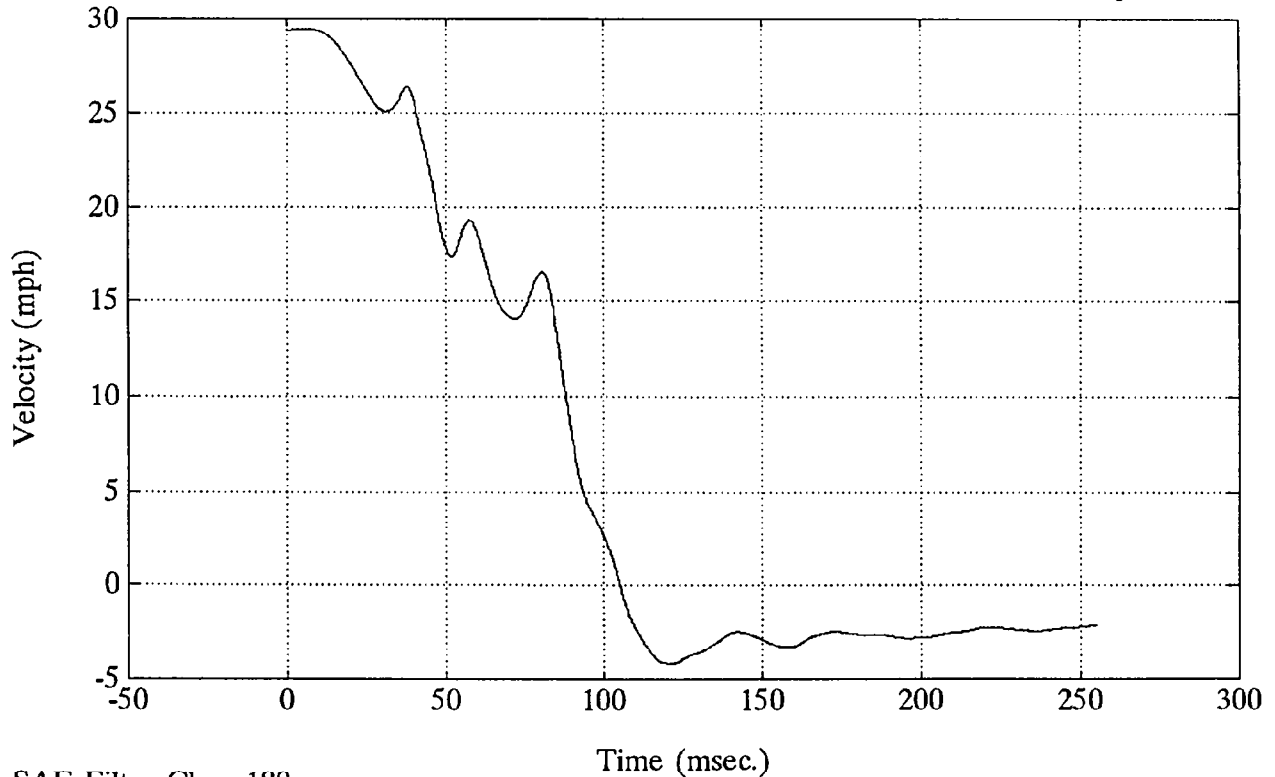


SAE Filter Class 60

FMVSS 208 - 1993 PONTIAC FIREBIRD

Instrument Panel X (#7)

Max = 29.46 mph @ 7.20 msec  
Min = -4.16 mph @ 121.20 msec

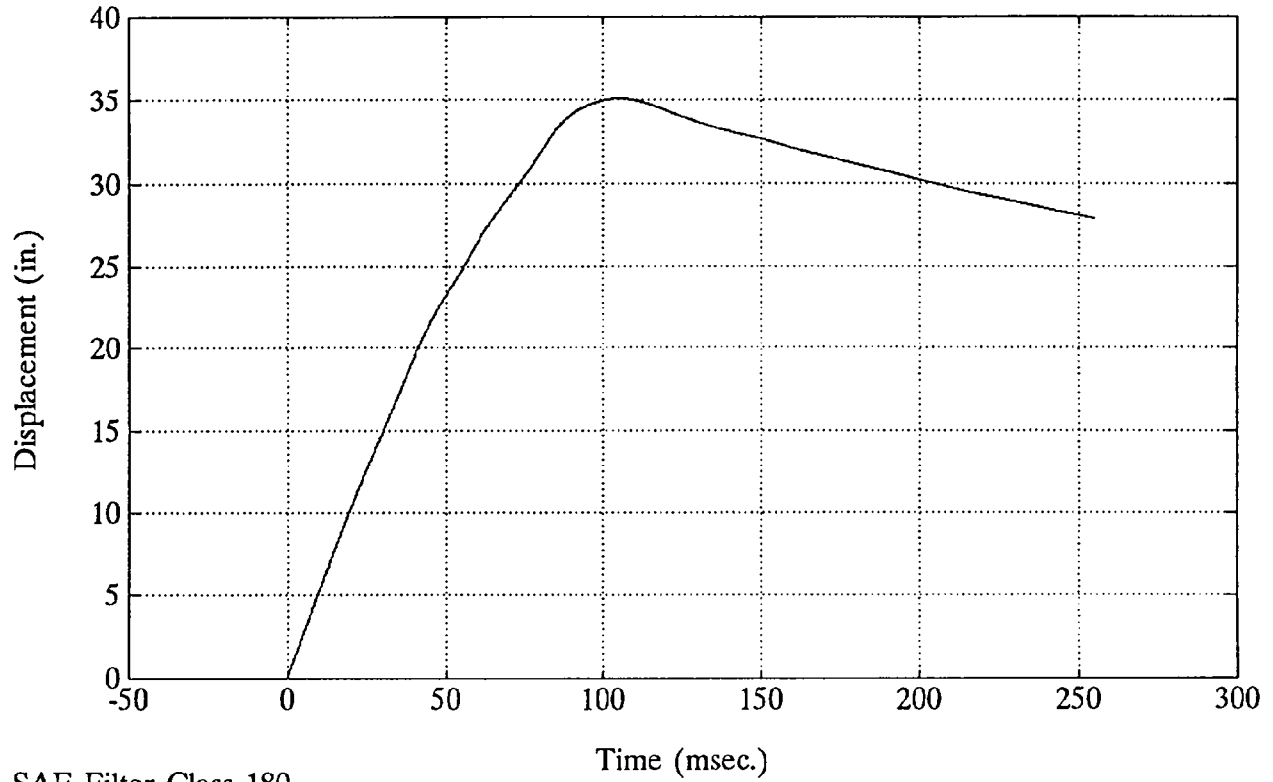


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Instrument Panel X (#7)

Max = 35.11 in. @ 105.36 msec  
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

TEST NO. CP0113

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

FACILITY: TRACK  
RUN #: 1277  
SERIES #: 17

TEST DATE: 22 Apr 1993

TITLE: NHTSA "208" TEST #17 - 1993 PONTIAC FIREBIRD

CLIP SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 51.195 G's  
Tstart = 100.8000 ms  
Tend = 103.9200 ms  
CSI = 402.895

CLIP SUMMARY: Pos. 2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 38.003 G's  
Tstart = 93.7200 ms  
Tend = 96.8400 ms  
CSI = 302.182

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

hic: 329.96  
t1 = 76.440 msec  
t2 = 98.760 msec  
Average G's Over Hic Duration = 46.55

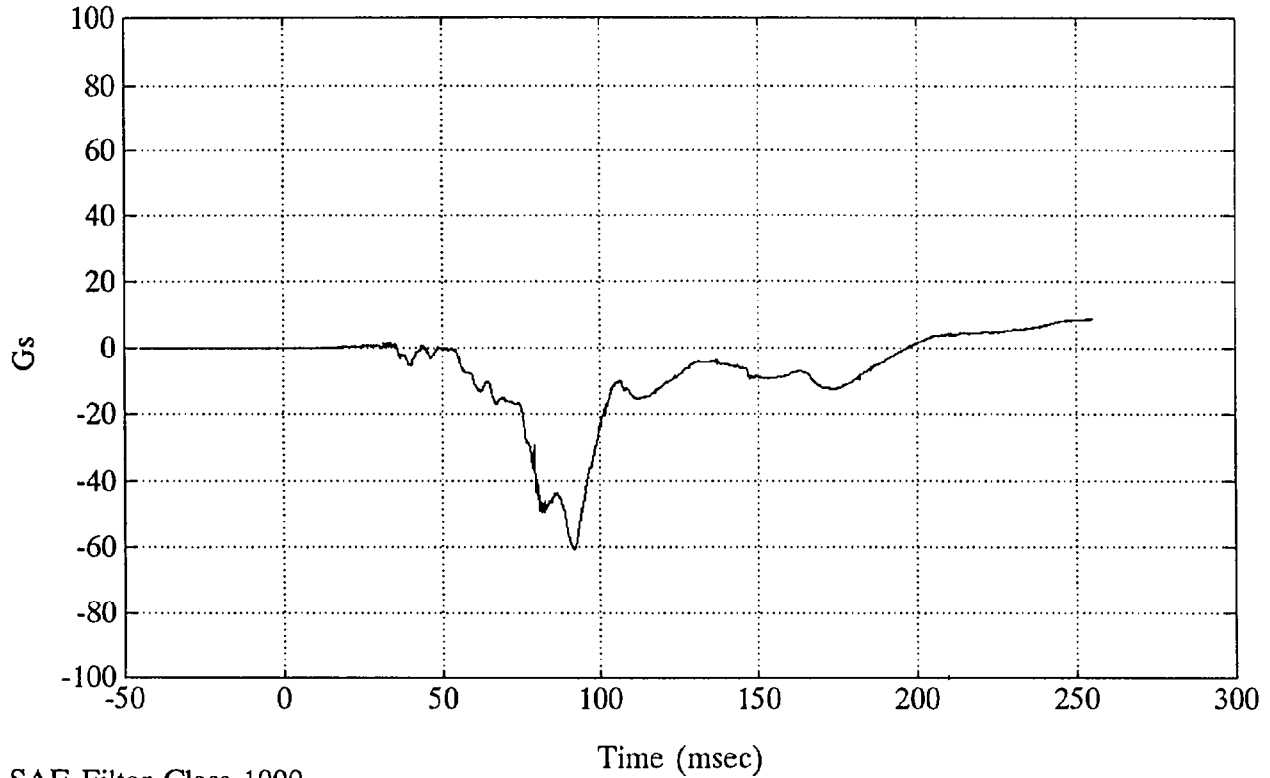
36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant

hic: 262.23  
t1 = 64.320 msec  
t2 = 98.760 msec  
Average G's Over Hic Duration = 35.70

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Head X

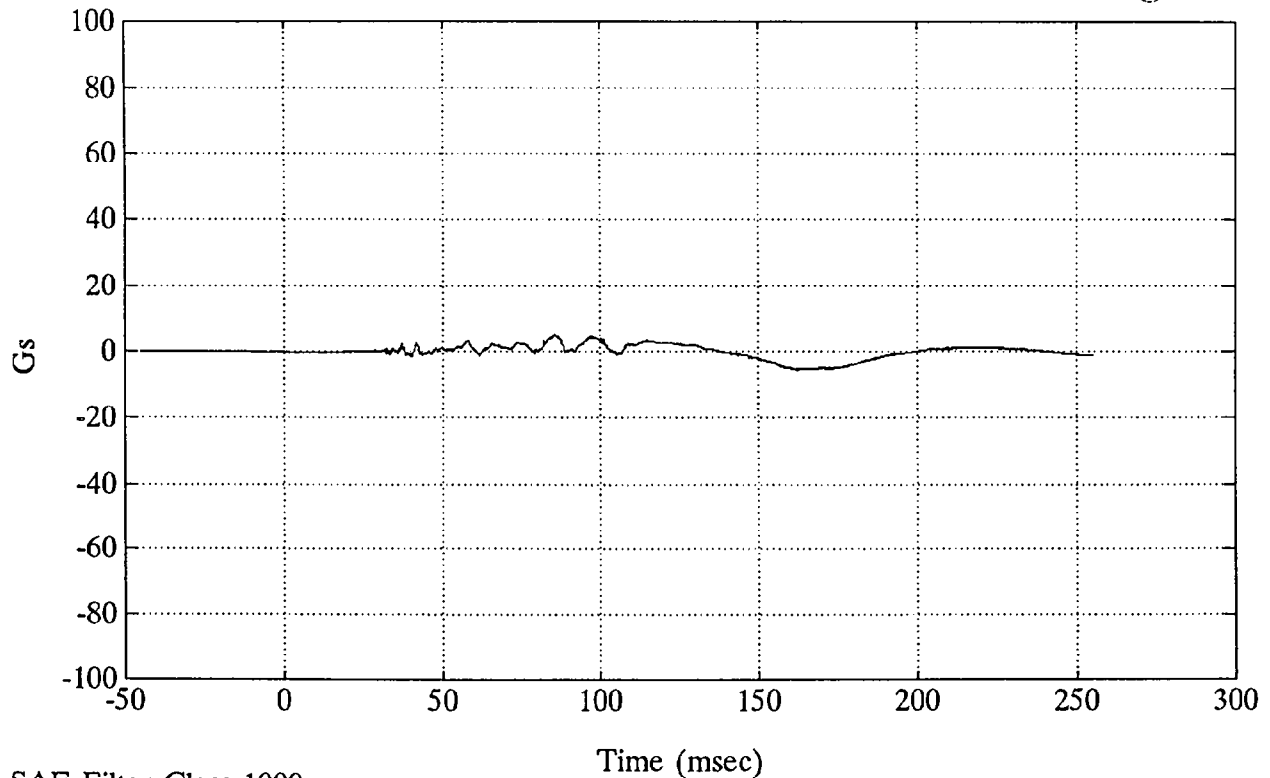
Max = 8.85 Gs @ 254.64 msec  
Min = -60.82 Gs @ 91.68 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Head Y

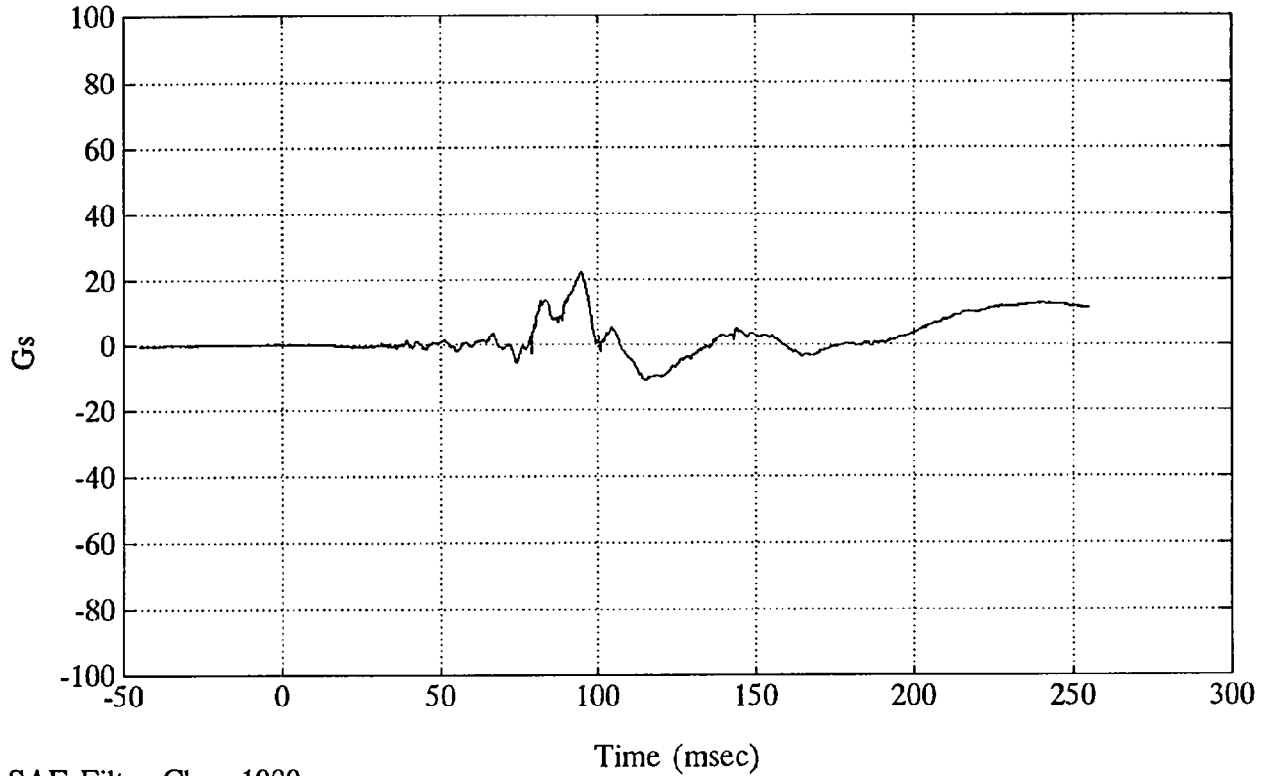
Max = 5.11 Gs @ 85.68 msec  
Min = -5.36 Gs @ 162.36 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Head Z

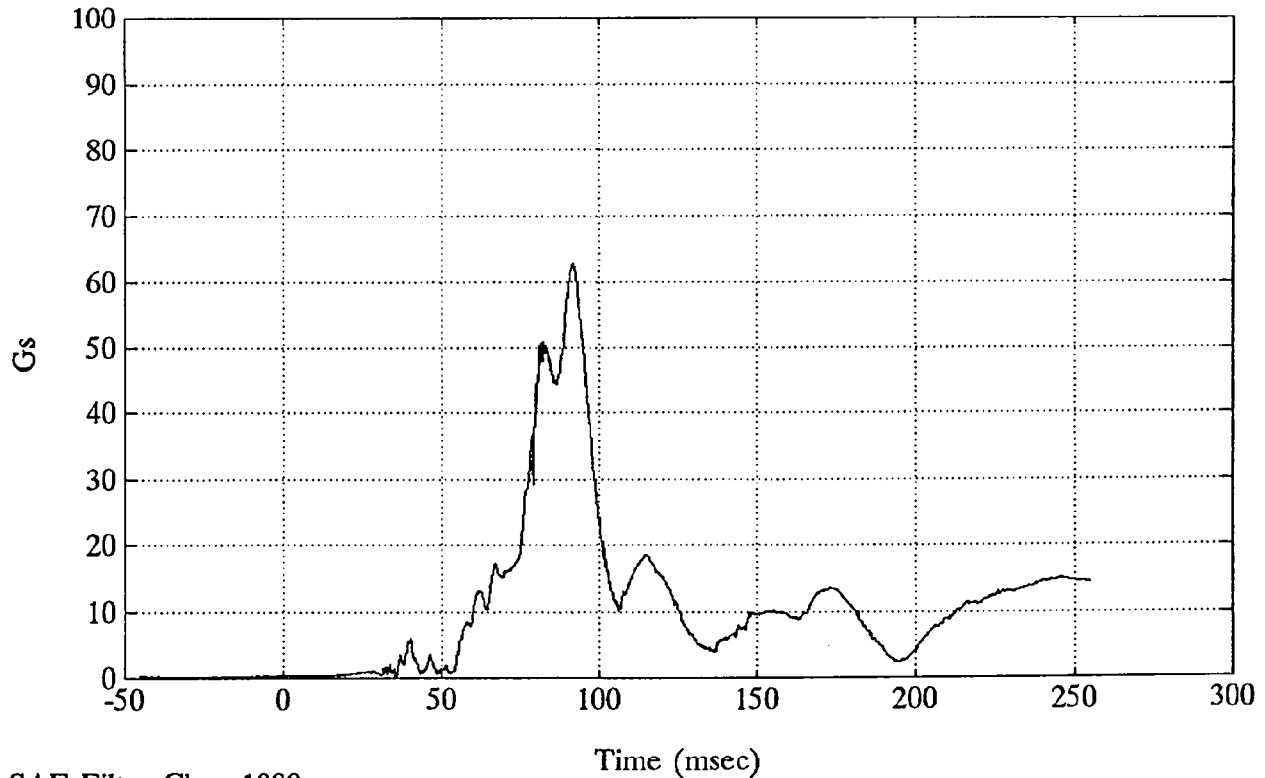
Max = 22.31 Gs @ 94.80 msec  
Min = -10.86 Gs @ 115.20 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Head Resultant

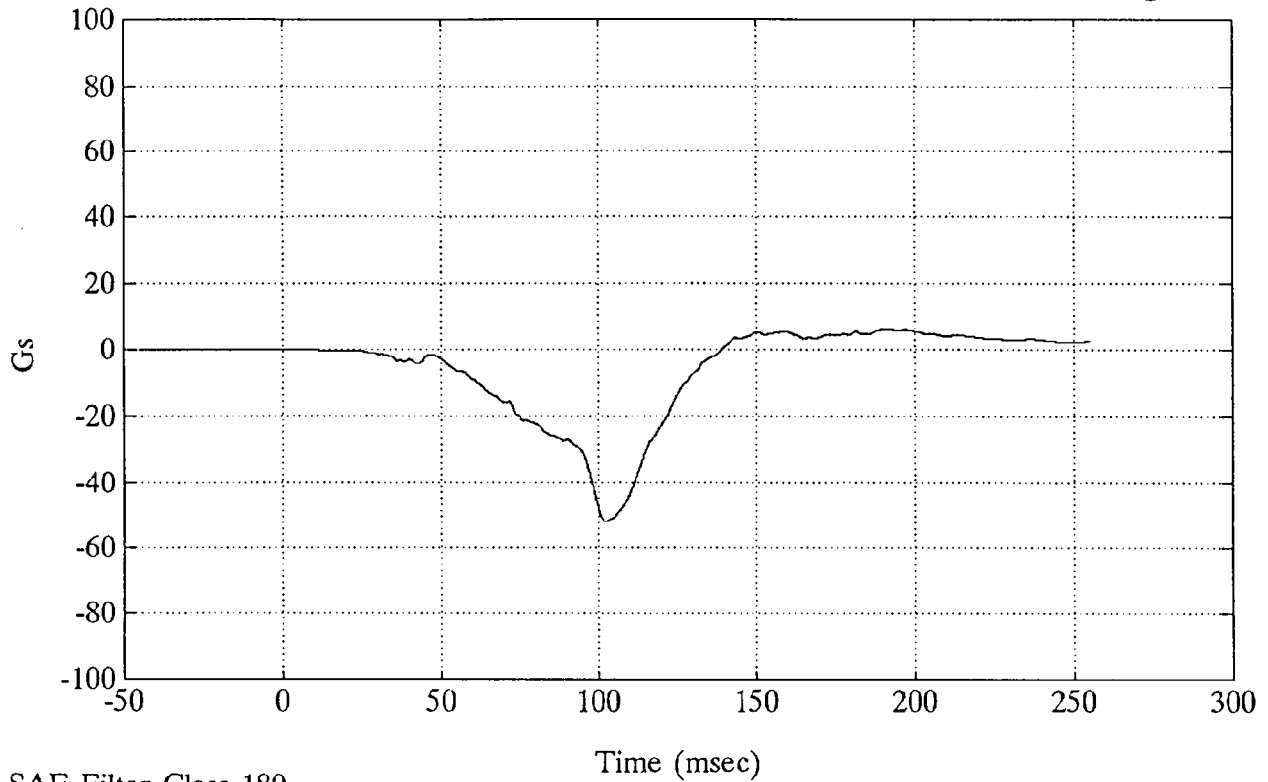
Max = 62.89 Gs @ 91.68 msec  
Min = 0.06 Gs @ -15.12 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Chest X

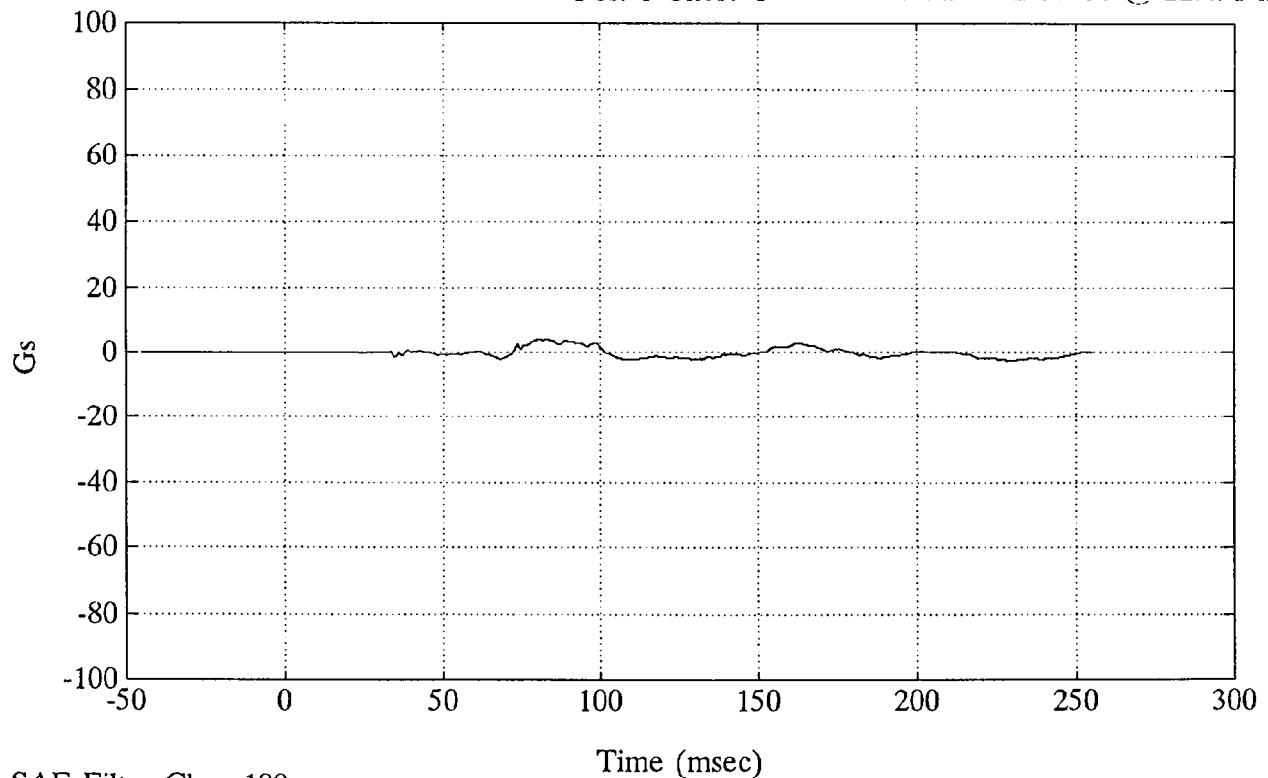
Max = 6.33 Gs @ 190.80 msec  
Min = -51.81 Gs @ 102.24 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Chest Y

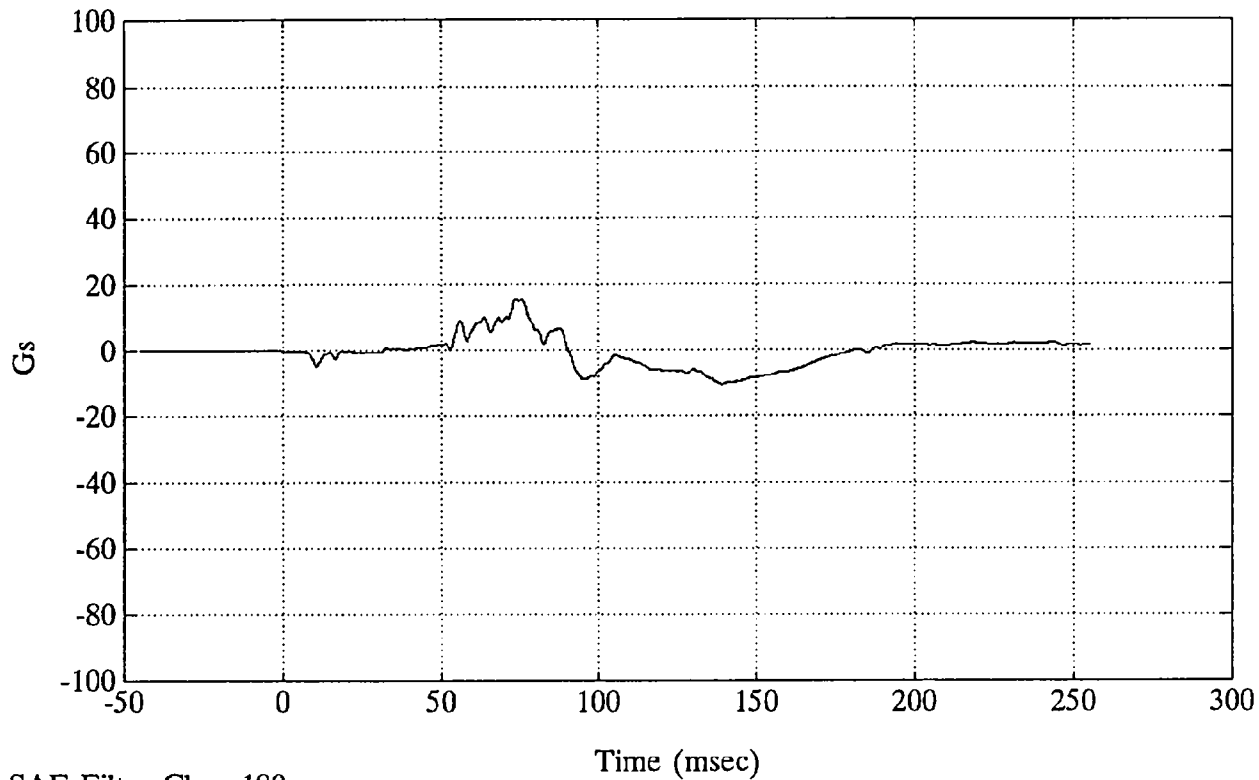
Max = 4.09 Gs @ 80.52 msec  
Min = -2.44 Gs @ 229.91 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Chest Z

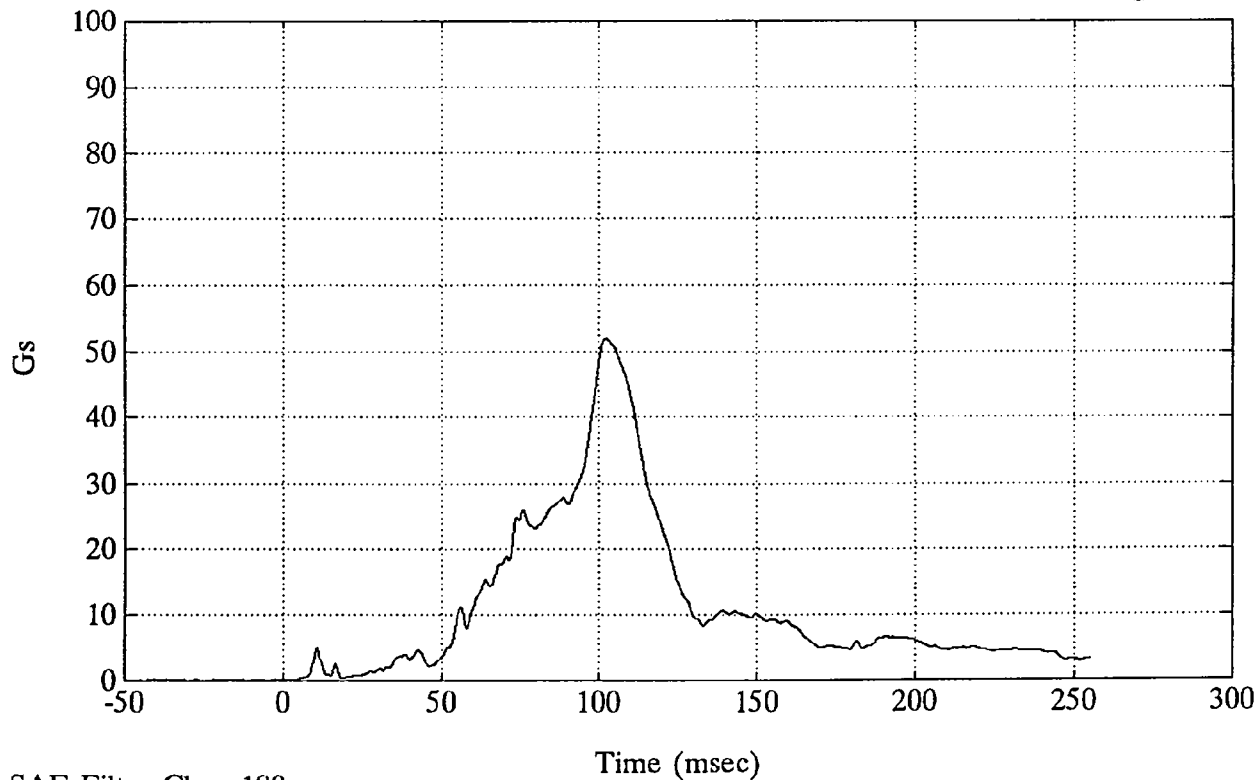
Max = 15.53 Gs @ 75.48 msec  
Min = -10.52 Gs @ 139.08 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Chest Resultant

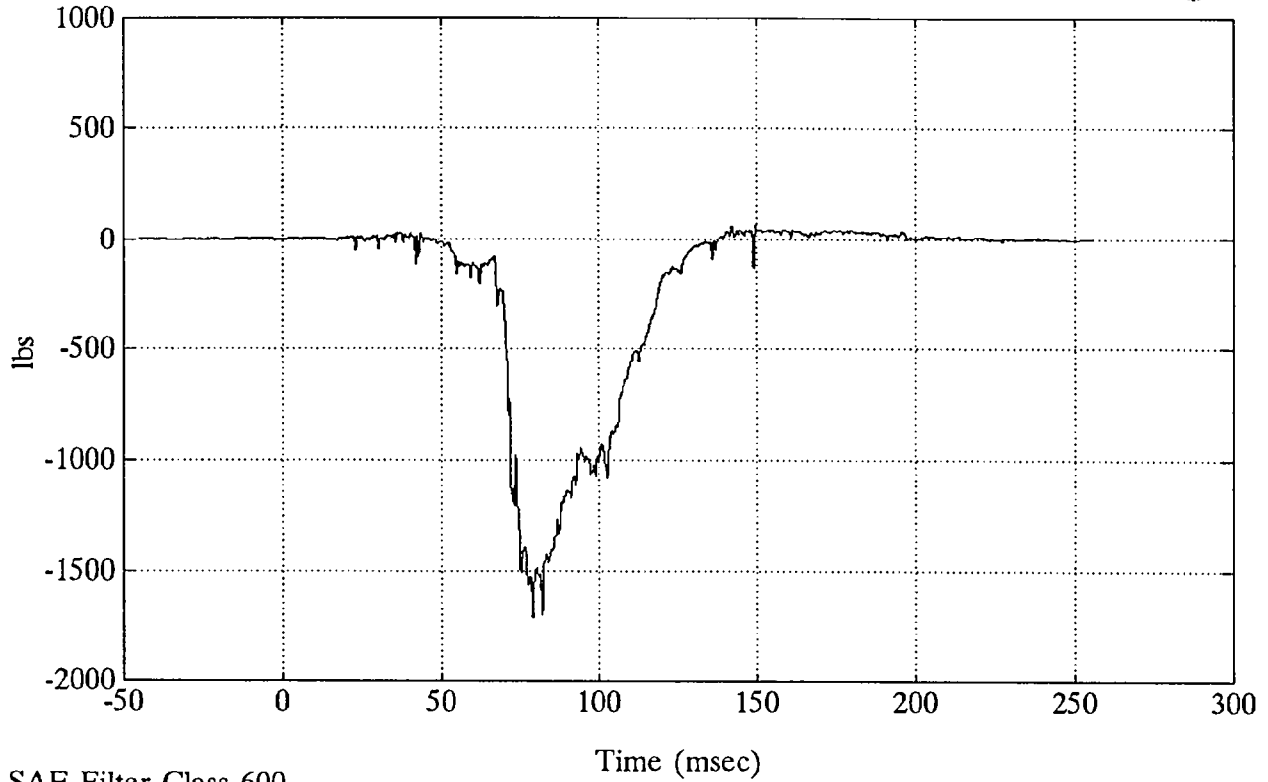
Max = 51.96 Gs @ 102.24 msec  
Min = 0.03 Gs @ -10.92 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Left Femur

Max = 62.65 lbs @ 149.40 msec  
Min = -1710.90 lbs @ 78.96 msec

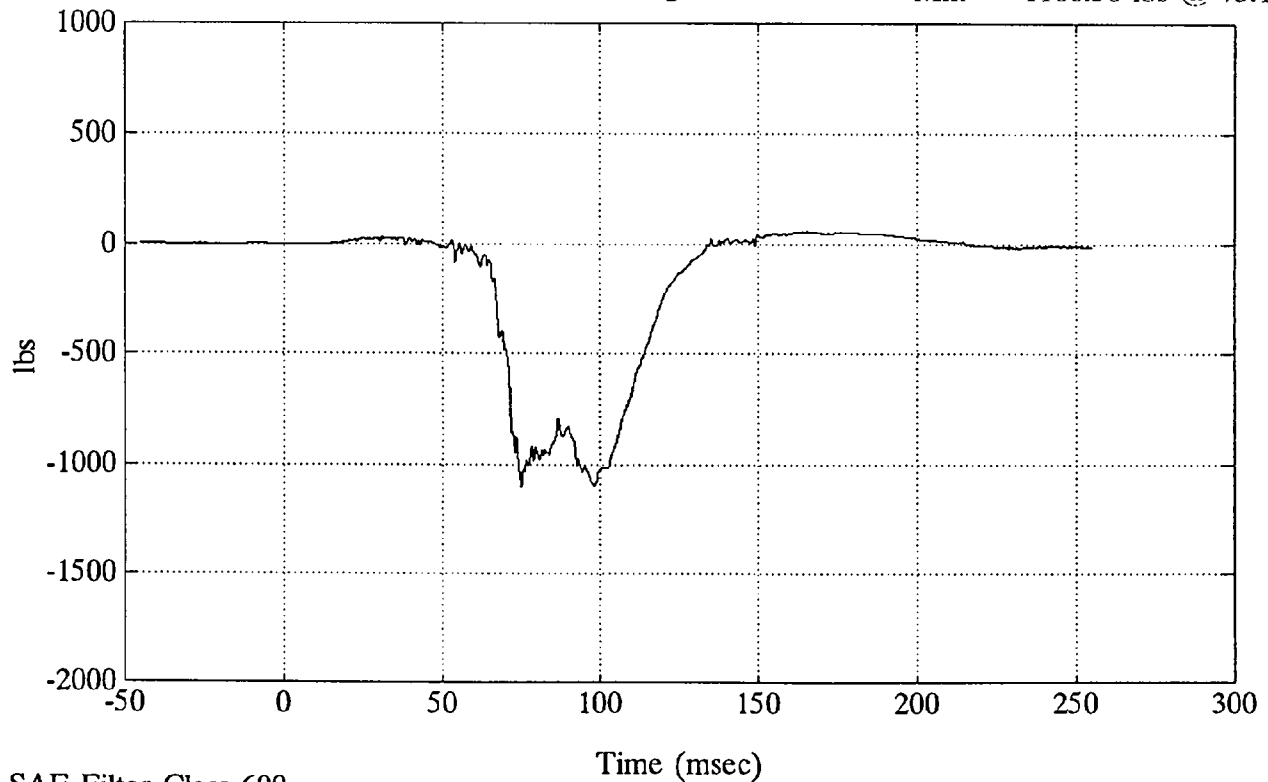


SAE Filter Class 600

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Right Femur

Max = 56.10 lbs @ 165.12 msec  
Min = -1100.30 lbs @ 75.12 msec

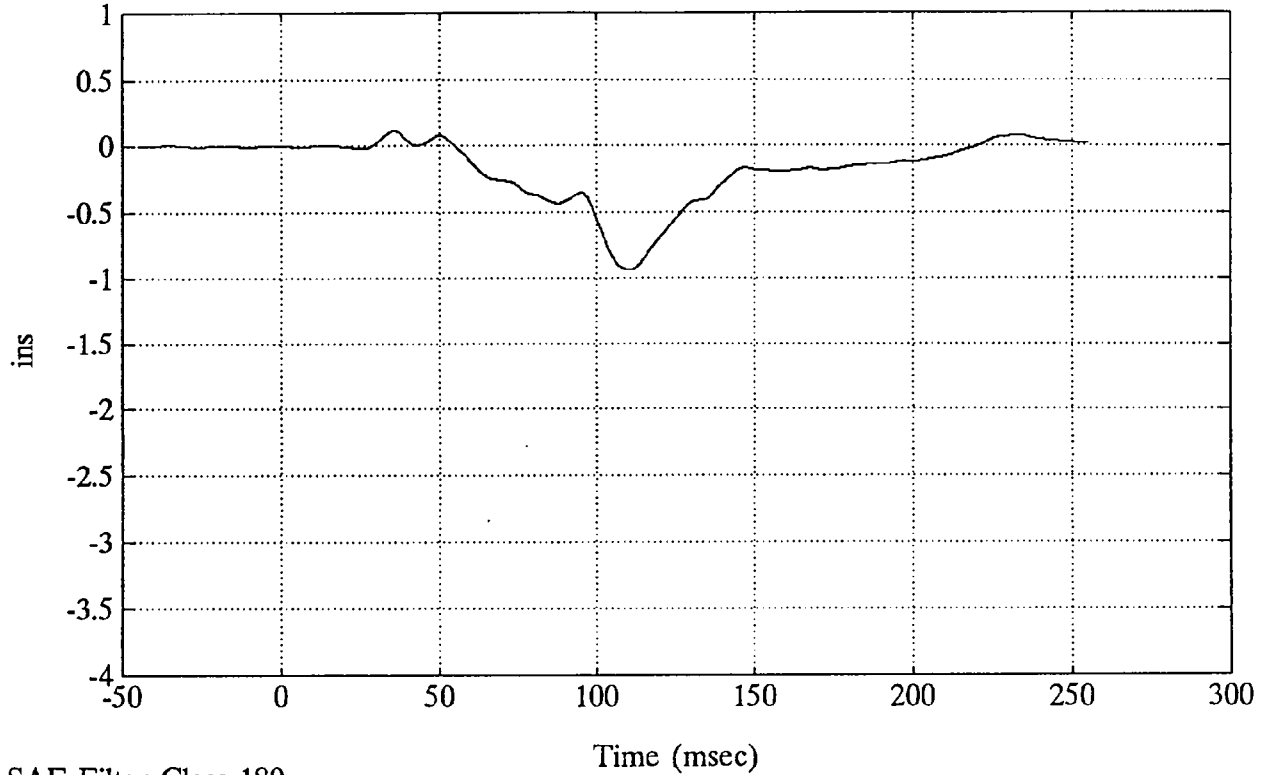


SAE Filter Class 600

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 1 Chest Deflection

Max = 0.11 ins @ 35.88 msec  
Min = -0.94 ins @ 110.28 msec

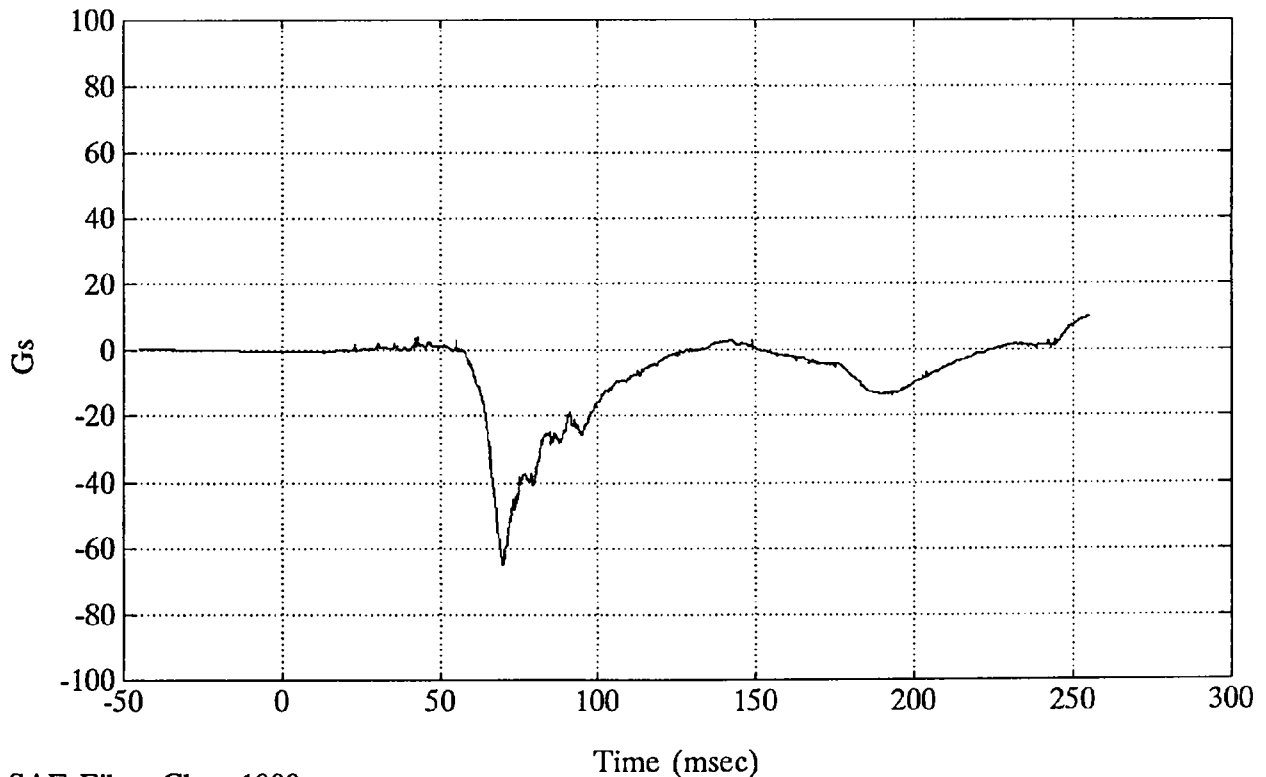


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Head X

Max = 10.08 Gs @ 254.88 msec  
Min = -64.77 Gs @ 69.96 msec

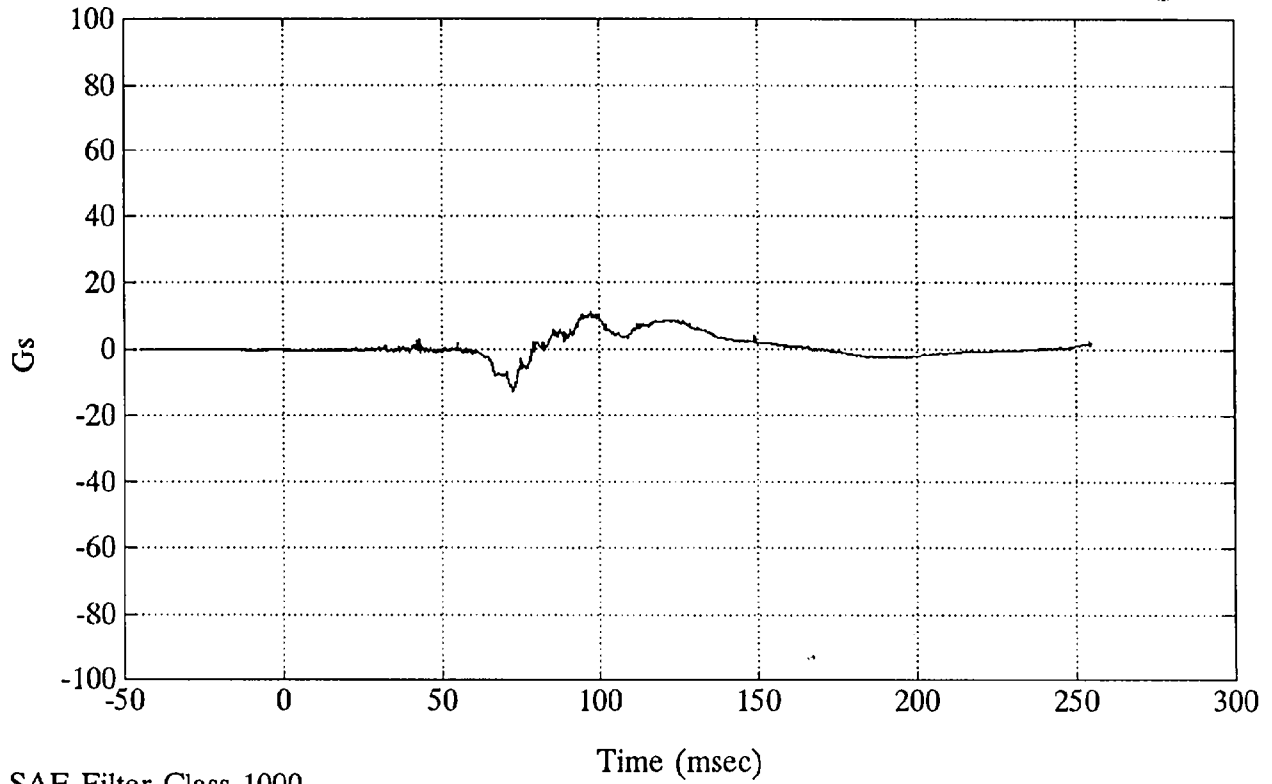


SAE Filter Class 1000

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Head Y

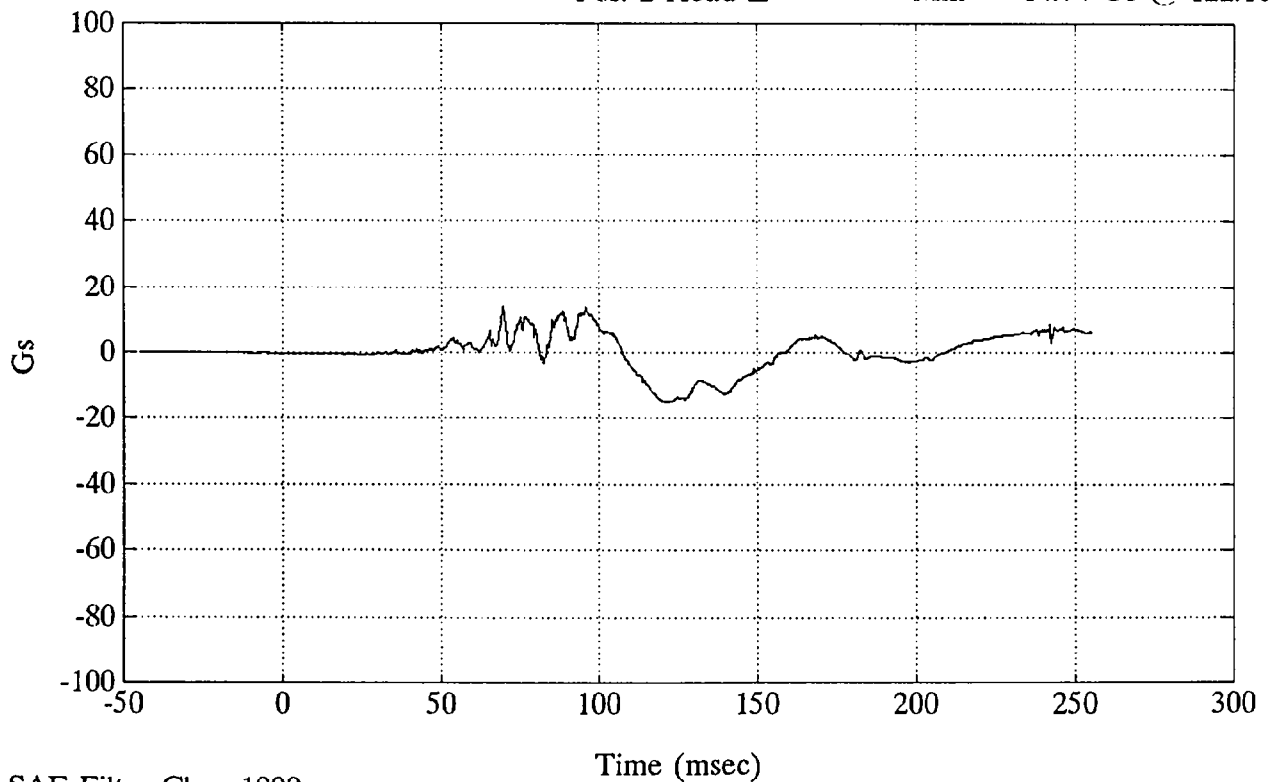
Max = 10.92 Gs @ 97.20 msec  
Min = -12.68 Gs @ 72.36 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Head Z

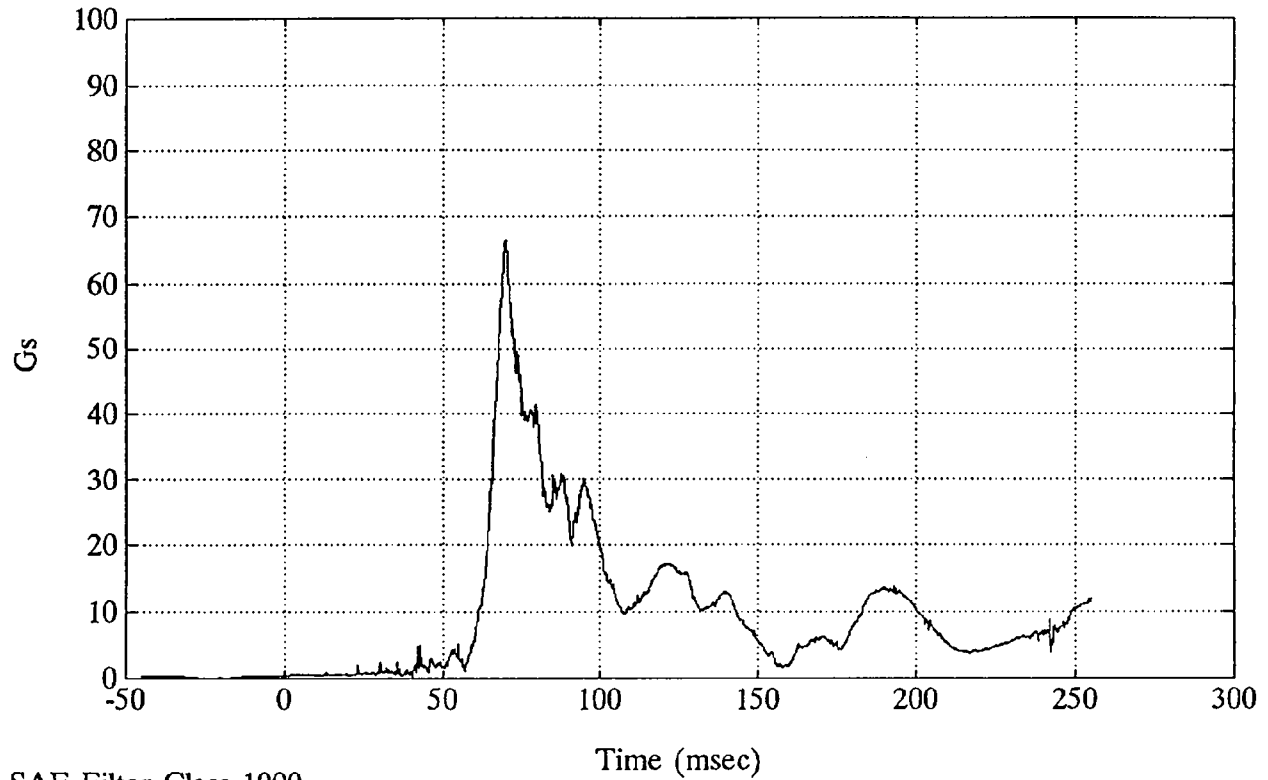
Max = 13.88 Gs @ 69.48 msec  
Min = -14.74 Gs @ 122.16 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Head Resultant

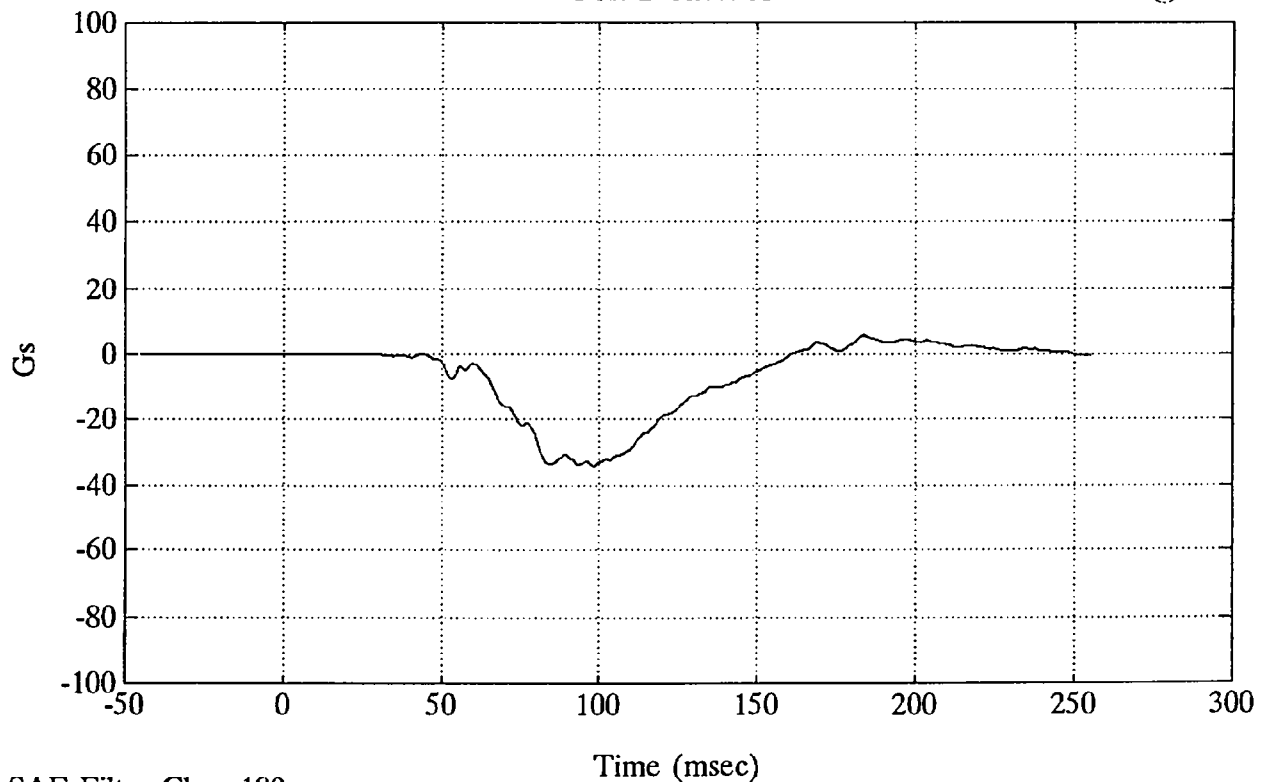
Max = 66.40 Gs @ 69.96 msec  
Min = 0.06 Gs @ -16.32 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Chest X

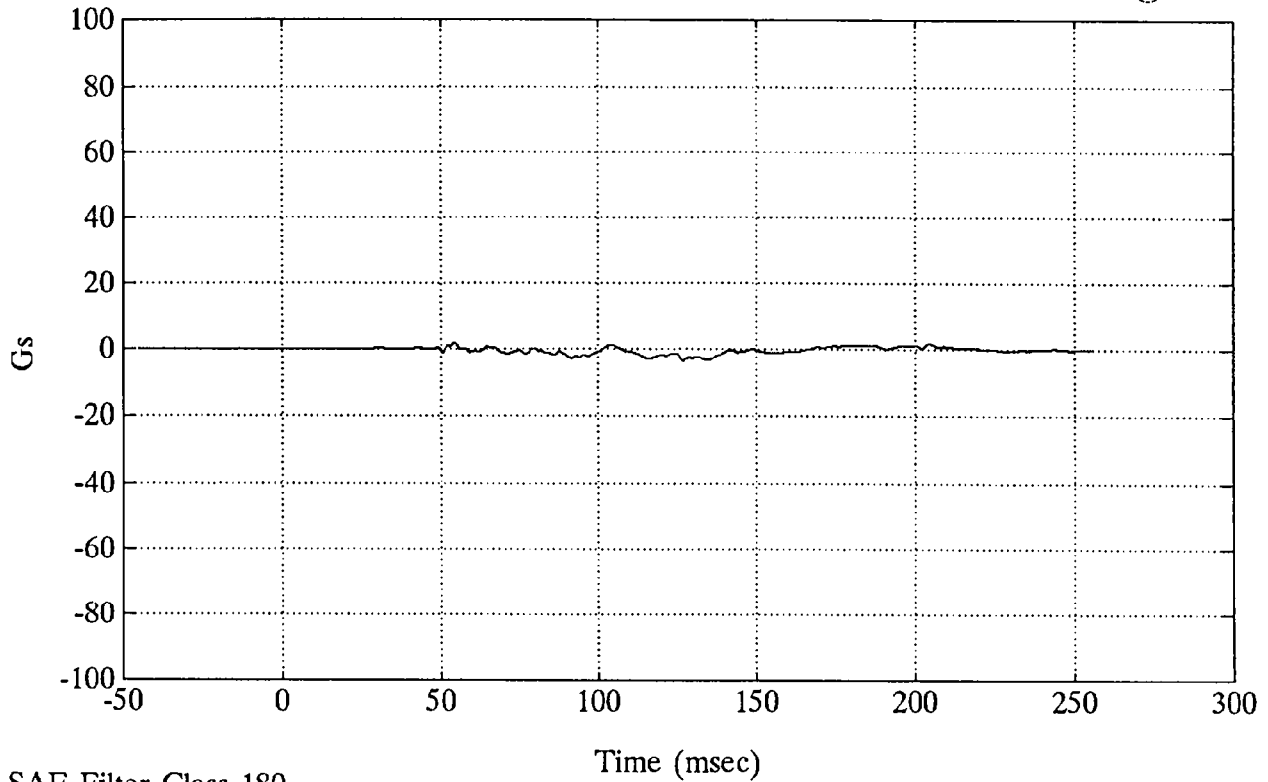
Max = 5.77 Gs @ 183.60 msec  
Min = -34.15 Gs @ 98.16 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Chest Y

Max = 2.05 Gs @ 54.36 msec  
Min = -3.55 Gs @ 126.60 msec

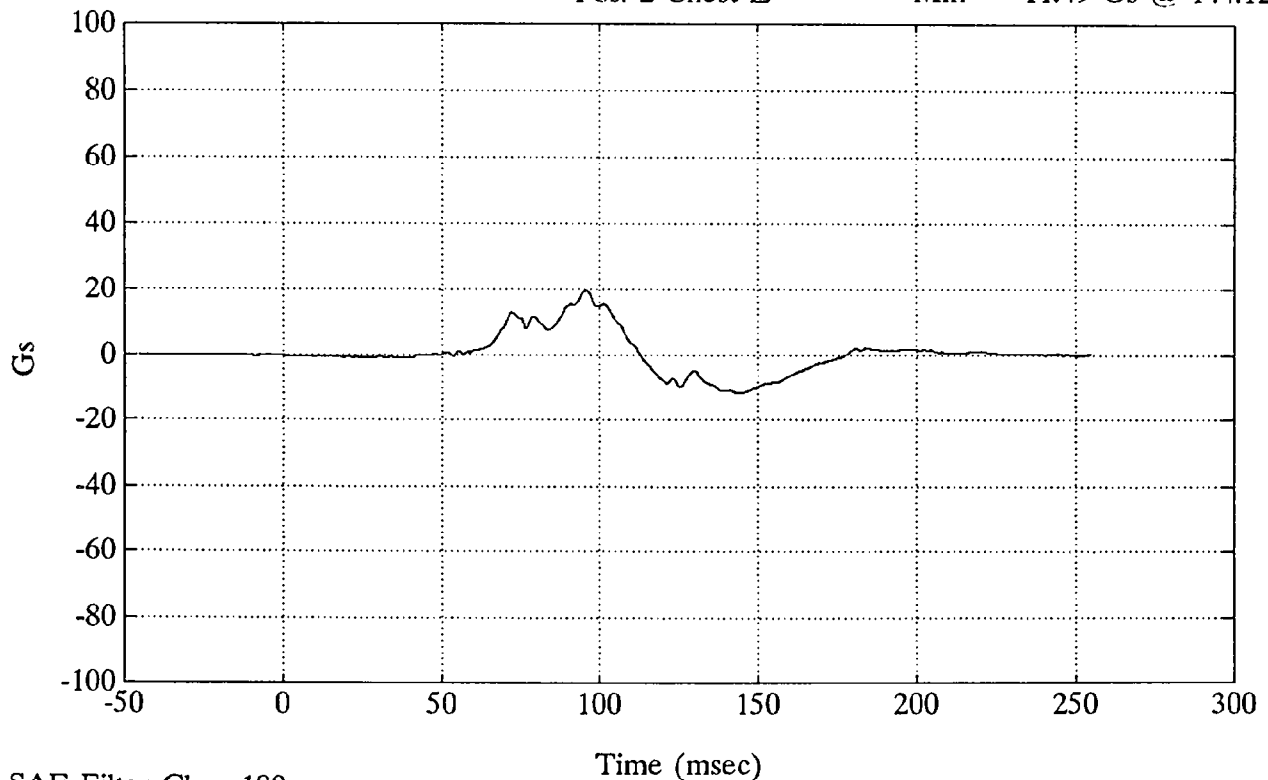


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Chest Z

Max = 19.45 Gs @ 95.64 msec  
Min = -11.49 Gs @ 144.12 msec

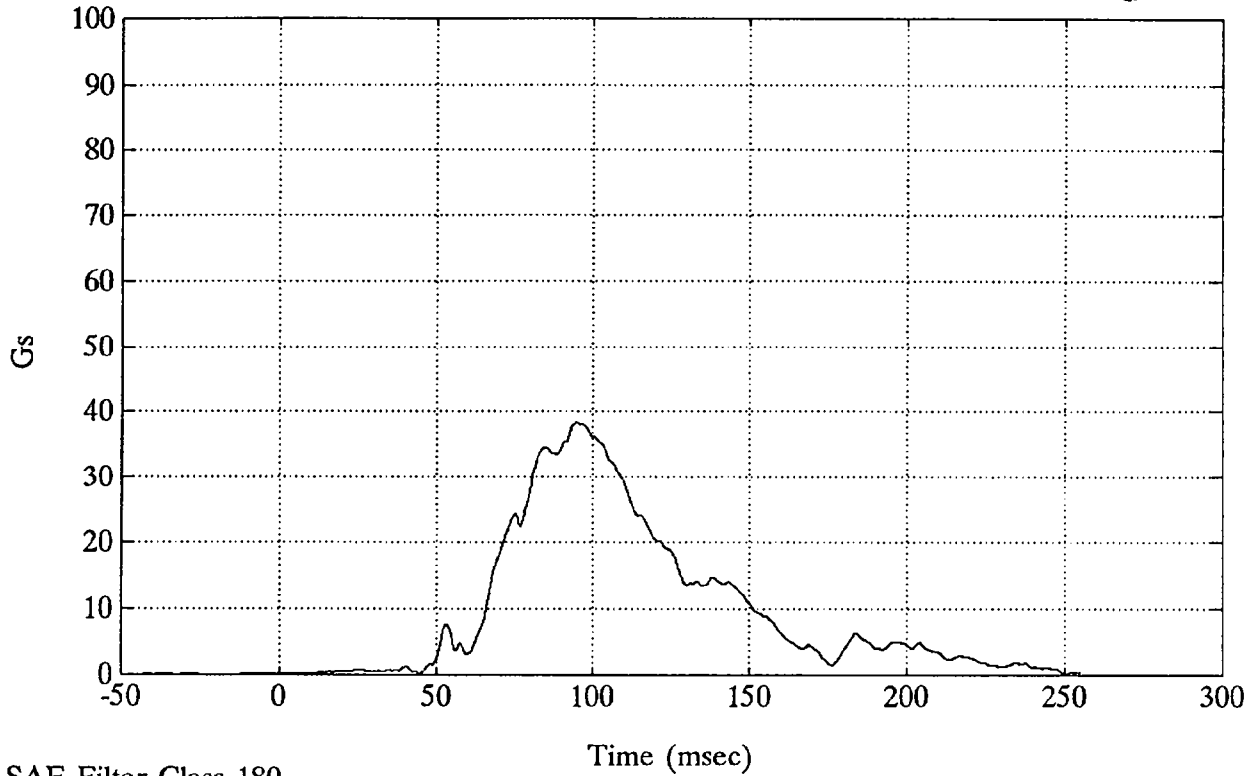


SAE Filter Class 180

FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Chest Resultant

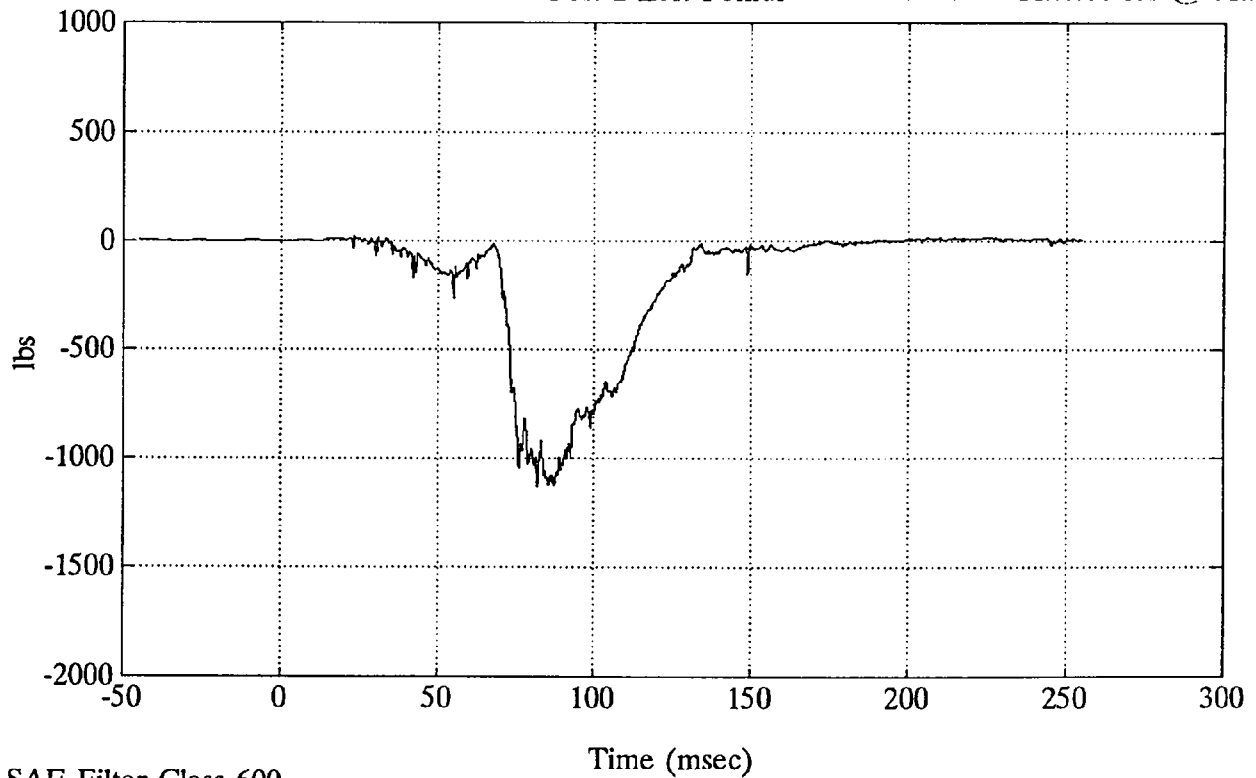
Max = 38.39 Gs @ 94.80 msec  
Min = 0.03 Gs @ -24.24 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Left Femur

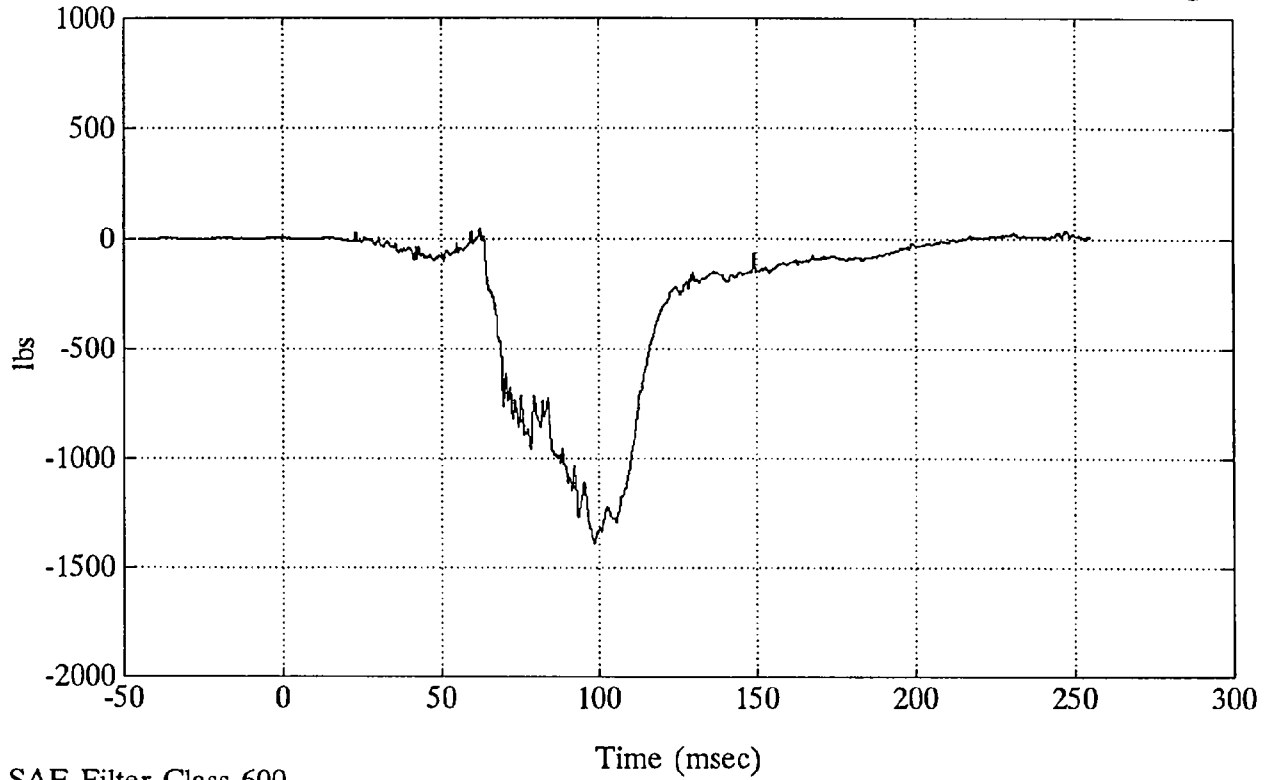
Max = 16.90 lbs @ 23.64 msec  
Min = -1128.60 lbs @ 81.96 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

Pos. 2 Right Femur

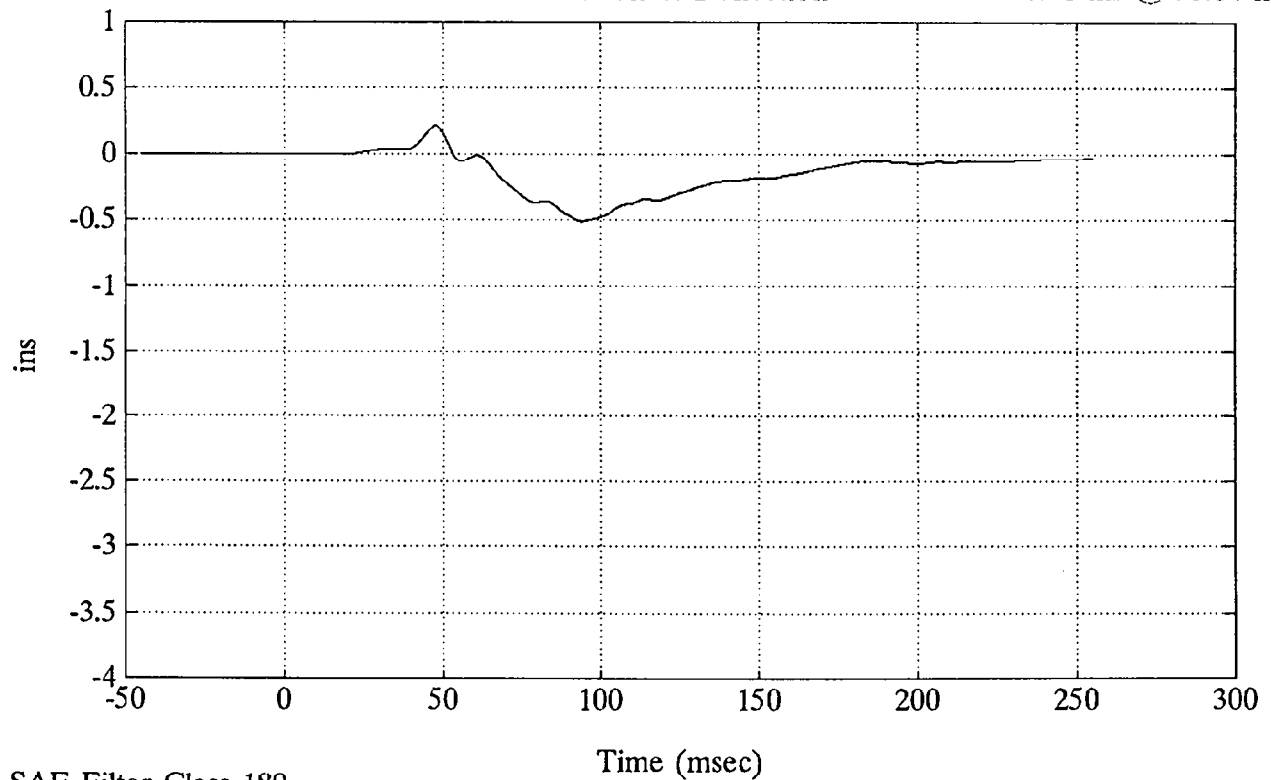
Max = 45.21 lbs @ 62.40 msec  
Min = -1388.30 lbs @ 98.52 msec



FMVSS 208 - 1993 PONTIAC FIREBIRD

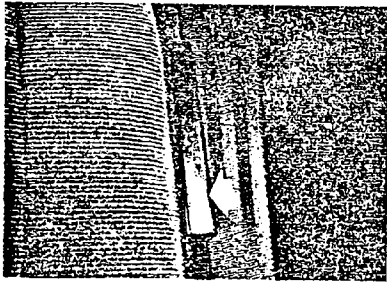
Pos. 2 Chest Deflection

Max = 0.21 ins @ 47.76 msec  
Min = -0.51 ins @ 93.84 msec



Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS



### Folding Rear Seatback

The rear seatback in your Pontiac folds down to provide more storage space.

To fold the seatback down:

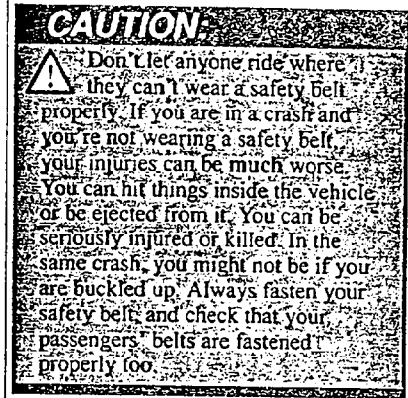
1. Pull forward on both levers.
2. Fold the seatback down.

To raise the seatback:

1. Pull it up to the locked, upright position.
2. Be sure both latches hold the seatback in place. Have them fixed if they don't.

### ■ Safety Belts: They're for Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts. And it explains the Supplemental Inflatable Restraint, or "air bag" system.



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## Seats & Safety Belts



This figure lights up when you turn the key to **Run** or **Start** when your safety belt isn't buckled, and you'll hear a chime, too. It's the reminder to buckle up.

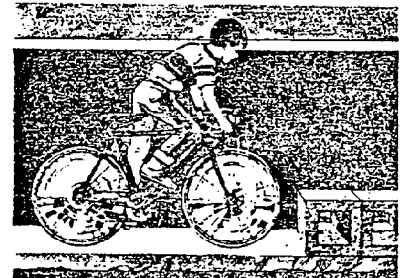
In many states and Canadian provinces, the law says to wear safety belts. Here's why: **They work.**



You never know if you'll be in a crash. If you do have a crash, you don't know if it will be a bad one.

A few crashes are very mild. In them, you won't get hurt even if you're not buckled up. And some crashes can be so serious, like being hit by a train, that even buckled up a person wouldn't survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could be badly hurt or killed.

After 25 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter ... a lot!

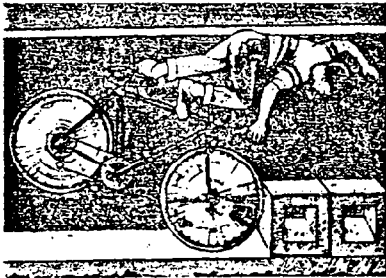


### ■ Why Safety Belts Work

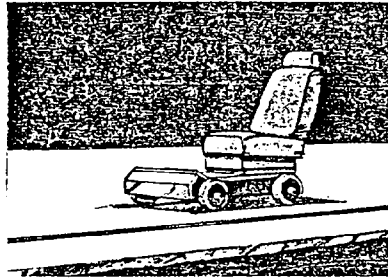
When you ride in or on anything, you go as fast as it goes.

For example, if the bike is going 10 mph (16 km/h), so is the child.

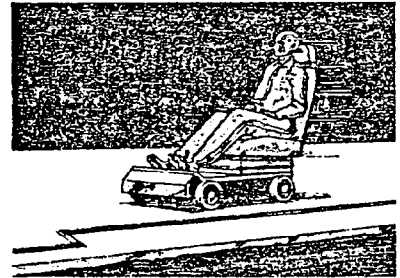
. . . 16



When the bike hits the block, it stops. But the child keeps going!



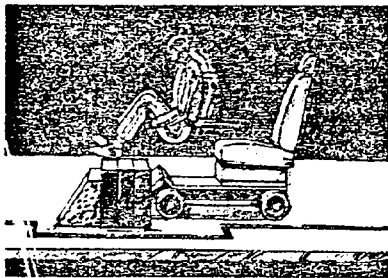
Take the simplest "car." Suppose it's just a seat on wheels.



Put someone on it.

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## Seats & Safety Belts



Get it up to speed. Then stop the "car." The rider doesn't stop.



The person keeps going until stopped by something. In a real vehicle, it could be the windshield ...



or the instrument panel ...

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or the safety belts!

With safety belts, you slow down as the vehicle does. You get more time to stop. You stop over more distance, and your strongest bones take the forces. That's why safety belts make such good sense.

### ■ *Here Are Questions Many People Ask about Safety Belts — and the Answers*

**Q:** Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?

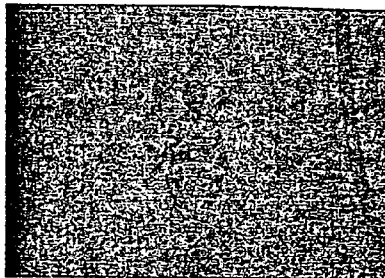
**A:** You could be — whether you're wearing a safety belt or not. But you can easily unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you can unbuckle and get out, is much greater if you are belted.

**Q:** Why don't they just put in air bags so people won't have to wear safety belts?

**A:** "Air bags," or Supplemental Inflatable Restraint systems, are in some vehicles today and will be in more of them in the future. But they are supplemental systems only — so they work with safety belts, not instead of them. Every "air bag" system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has "air bags," you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

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## Seats & Safety Belts



### ■ *Safety Belt Reminder Light*

When the key is turned to **Run** or **Start**, a chime will come on for about eight seconds to remind people to fasten their safety belts, unless the driver's safety belt is buckled. The safety belt light will also come on and stay on until the driver's belt is buckled.

**Q:** If I'm a good driver, and I never drive far from home, why should I wear safety belts?

**A:** You may be an excellent driver, but if you're in an accident — even one that isn't your fault — you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

### ■ *How to Wear Safety Belts Properly*

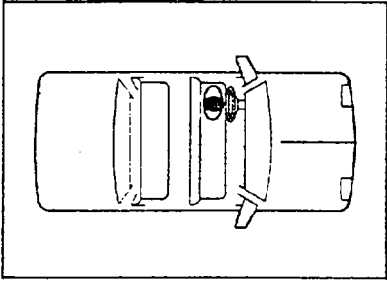
**Adults**

This section is only for people of adult size.

#### **CAUTION:**

⚠ There are special things to know about safety belts and children. And there are different rules for babies and smaller children. If a child will be riding in your Pontiac, see the section after this one, called "Children." Follow those rules for everyone's protection.

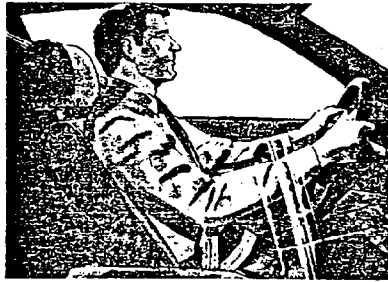
. . . 20



First, you'll want to know which restraint systems your vehicle has. We'll start with the driver position.

### Driver Position

This section describes the driver's restraint system.



### Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here's how to wear it properly.

1. Close and lock the door.
2. Adjust the seat (to see how, see "Seats" in the Index) so you can sit up straight.



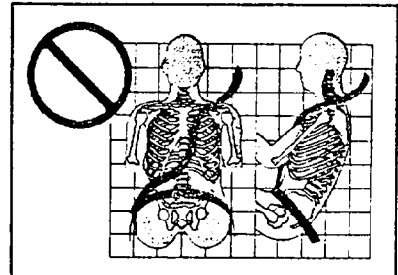
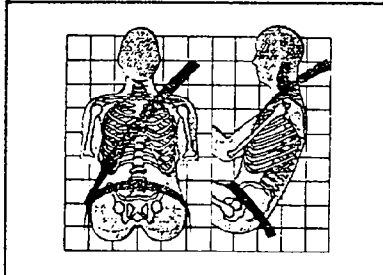
3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
4. Push the latch plate into the buckle until it clicks.

If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.

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## Seats & Safety Belts



5. To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder belt.

The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or crash.

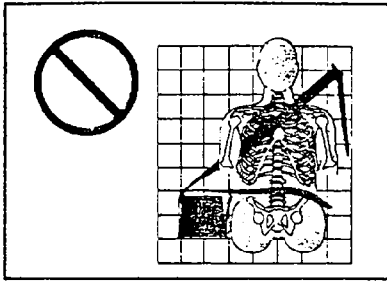
**Q:** What's wrong with this?

**A:** The shoulder belt is too loose. It won't give nearly as much protection this way.

### CAUTION:

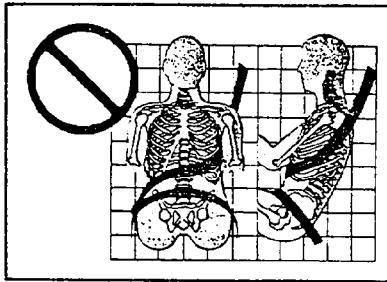
**⚠** You can be seriously hurt if your shoulder belt is too loose. In a crash you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

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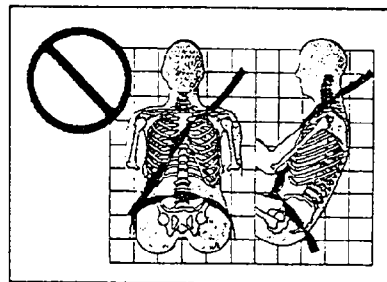
**Q:** What's wrong with this?  
**A:** The belt is buckled in the wrong place.

**CAUTION:**  
 You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.



**Q:** What's wrong with this?  
**A:** The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

**CAUTION:**  
 You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.



**Q:** What's wrong with this?  
**A:** The belt is twisted across the body.

**CAUTION:**  
 You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

## Seats & Safety Belts



To unfasten the belt, just push the button on the buckle. The belt should go back out of the way.  
 Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

**CAUTION: YOU NEED YOUR SAFETY BELT, EVEN WITH AN AIR BAG. AND HERE'S WHY...**

Air bags are not designed to protect you in rollovers or in rear, side or low-speed frontal crashes. In fact, if you're not wearing your seat belt, an air bag could seriously injure you. Safety belts help keep you in your seat in a crash.

**REGULAR MAINTENANCE OF THE AIR BAG SYSTEM IS NOT REQUIRED.**

### Supplemental Inflatable Restraint System (Air Bags)

This section explains the Supplemental Inflatable Restraint (SIR), or "air bag," system. Your Pontiac has an air bag for both the driver and the right-front passenger.

Here's the most important thing to know:

**CAUTION:**  
 Even with an air bag, if you're not wearing a safety belt and you're in a crash, your injuries may be much worse. Air bags are not designed to inflate in rollovers or in rear, side or low-speed frontal crashes. You need to wear your safety belt to reduce the chance of hitting things inside the vehicle or being ejected from it. Always wear your safety belt, even with an air bag.



**CAUTION:**

⚠ Air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, it could seriously injure you. Safety belts help keep you in position for an air bag inflation in a crash. Always wear your safety belt, even with an air bag, and the driver should sit as far back as possible while still maintaining control of the vehicle.

**CAUTION:**

⚠ An inflating air bag can seriously injure small children. Always secure children properly in your vehicle. To read how, see the "Children and Safety Belts" section of this manual, and read the caution label on the front passenger's safety belt.

**Air Bag System Light**

There is an air bag readiness light on the instrument panel, which has AIR BAG on it. The system checks itself and the light tells you if there is a problem.

You will see this light flash for a few seconds when you turn your ignition to Run or Start. Then the light should go out, which means the system is ready.

**Seats & Safety Belts**



**CAUTION:**

⚠ If the air bag readiness light doesn't come on when you start your vehicle, or stays on, or comes on when you are driving, your air bag system may not work properly. Have your vehicle serviced right away.

**How the Air Bag System Works**

**Where is the air bag?**

The driver's air bag is in the middle of the steering wheel.

The right-front passenger air bag is located in the instrument panel on the passenger's side.

**When is an air bag expected to inflate?**

The air bag is designed to inflate in moderate to severe frontal or near-frontal crashes. The air bag will only inflate if the velocity of the impact is above the designed threshold level. When impacting straight into a wall that does not move or deform, the threshold level for most GM vehicles is between 9 and 14 mph (14 and 23 km/h). However, this velocity threshold depends on the vehicle design and may be several miles-per-hour faster or slower. In addition, this threshold velocity will be considerably higher if the vehicle strikes an object such as a parked car which will move and deform on impact. The air bag is also not designed to

inflate in rollovers, side impacts, or rear impacts where the inflation would provide no occupant protection benefit.

In any particular crash, the determination of whether the air bag should have inflated cannot be based solely on the level of damage on the vehicle(s). Inflation is determined by the angle of the impact and the vehicle's deceleration, of which vehicle damage is only one indication. Repair cost is not a good indicator of whether an air bag should have deployed.

**What makes an air bag inflate?**

In a frontal or near-frontal impact of sufficient severity, sensors strategically located on the vehicle detect that the vehicle is suddenly stopping as a result of a crash. These sensors complete an electrical circuit, triggering a chemical reaction of the sodium azide sealed in the inflator. The reaction produces nitrogen gas, which inflates a cloth bag. The inflator, cloth bag, and related hardware are all part of the air bag inflator modules packed inside the steering wheel and in the instrument panel in front of the passenger.

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**How does an air bag restrain?**

In moderate to severe frontal or near-frontal collisions, even belted occupants can contact the steering wheel or the instrument panel. The air bag supplements the protection provided by safety belts. Air bags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But air bags would not provide protection in many types of collisions, including rollovers and rear and side impacts, primarily because an occupant's motion is not toward the air bag. Air bags should never be regarded as anything more than a supplement to safety belt protection in

moderate to severe frontal and near-frontal collisions.

**What will you see after an air bag inflation?**

After the air bag has inflated, it will then quickly deflate. This occurs so quickly that some people may not even realize that the air bag inflated. The air bag will not impede the driver's vision or ability to steer the vehicle, nor will it hinder the occupants from exiting the vehicle. There will be small amounts of smoke coming from vents in the deflated air bags. Some components of the air bag module in the steering wheel hub for the driver's air bag or the instrument panel for the passenger's bag may be hot for a short

time, but the portion of the bag that comes into contact with you will not be hot to the touch. The nitrogen gas used to inflate the air bag will have vented into the passenger compartment, and the bag will be deflated within seconds after the collision. Nitrogen makes up about 80% of the air we breathe and is not hazardous. As the nitrogen vents from the bag, small particles are also vented into the passenger compartment.

In many crashes severe enough to inflate an air bag, windshields are broken by vehicle deformation. Additional windshield breakage may occur in vehicles with passenger air bags because the windshield acts as a reaction surface for the inflating air bag.

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## CAUTION:



- Don't attach anything to the steering wheel pad. It might injure the driver if the air bag inflates.
- Don't set anything on or attach anything to the instrument panel. It might injure the passenger if the air bag inflates.
- The air bags are designed to inflate only once. After they inflate, you'll need some new parts for your air bag system. If you don't get them, the air bag system won't be there to help protect you in another crash. A new system will include air bag modules and possibly other parts.
- Let only qualified technicians work on your air bag system. Improper service can mean that your air bag system won't work properly. See your dealer for service.

## NOTICE:

If you damage the cover for the right-front passenger's air bag, it may not work properly. You may have to replace both the air bag and the instrument panel. Don't open or break the air bag cover.

### Servicing Your Pontiac with the Air Bag System

Please tell or remind anyone who works on your Pontiac that it has the air bag system. There are parts of the air bag system in several places around your vehicle. You don't want the system to inflate while someone is working on your vehicle. The air bag system does not need regular maintenance. Your Pontiac dealer and the 1993 Firebird Service Manual have information about the air bag system, including repair or disposal.

## CAUTION:



For up to 2 minutes after the ignition key is turned off and the battery disconnected, an air bag can still inflate during improper service. You can be injured if you are close to an air bag when it inflates. Be sure to follow the proper service procedures.

When electrical work is done under the hood or inside your vehicle, the ignition should be in **LOCK** if possible. Avoid wires wrapped with yellow tape, or yellow connectors. They are probably part of the air bag system.

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## Seats & Safety Belts

Your vehicle has a driver's air bag and a right-front passenger's air bag. Both bags must be disconnected if the ignition has to be on for electrical work or if the steering column is to be disassembled. First, disconnect the driver's air bag like this:

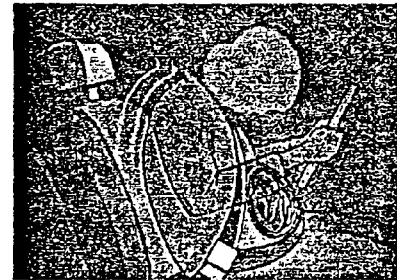
1. Turn off the ignition.
2. Remove the SIR (air bag) fuse. (See "Fuses and Circuit Breakers" in the Index.)
3. Disconnect the yellow connector at the base of the steering column.

After you follow this procedure for the driver's air bag, then disconnect the

right-front passenger's air bag like this:

1. Remove the cover under the instrument panel.
2. Disconnect the small yellow connector below the glove box.

When the work is complete, if the air bag system was disconnected, be sure to reattach everything and replace the fuse before turning the ignition on. When you turn the ignition key on, be sure you see the air bag readiness light on the instrument panel. If you don't see this light flash and then go out as usual, have your air bag system repaired.



### Safety Belt Use during Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.

A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible throughout the pregnancy.

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

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