

REPORT NOS. 208-CAL-88-03
212-CAL-88-03
301-CAL-88-03

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

HONDA MOTOR COMPANY
1988 ACURA LEGEND LS
4-DOOR SEDAN

NHTSA NO. CJ5304
CALSPAN TEST NO. 7669-4
AUGUST 2, 1988

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



FINAL REPORT

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, S.W.
ROOM NO. 6115 (NEF-31)
WASHINGTON, DC 20590

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-88-C-01038. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

Prepared:

Michael J. Kilgallon
Michael J. Kilgallon, Project Engineer

Approved:

Walter E. Levan
Walter E. Levan, Program Manager
Transportation Research/
Physical Sciences Department

Approval date: _____

FINAL REPORT ACCEPTED BY:

John J. Brammer
Contracting Officer's Technical Representative
(COTR), NHTSA, Office of Vehicle Safety Compliance

Nov 23, 1988
Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 212-CAL-88-03 208-CAL-88-03 301-CAL-88-03		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS Nos. 208, 212, 219 (partial) and 301 Compliance Testing of 1988 Acura Legend LS 4-Door Sedan				5. Report Date August 2, 1988	
				6. Performing Organization Code CAL	
7. Author(s) Michael J. Kilgallon, Project Engineer Walter E. Levan, Program Manager				8. Performing Organization Report No. 7669-4	
9. Performing Organization Name and Address Calspan Advanced Technology Center P.O. Box 400 Buffalo, NY 14225 Phone No.: (716) 632-7500				10. Work Unit No. 330- 3-845	
				11. Contract or Grant No. DTNH22-88-C-01038	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-31) 400 Seventh St., S.W., Rm.6115, Washington, DC 20590				13. Type of Report and Period Covered Final Report July-August	
				14. Sponsoring Agency Code DOT/NHTSA/NEF/OVSC	
15. Supplementary Notes					
16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1988 Acura Legend LS 4-Door Sedan. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York, on August 2, 1988. The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards (FMVSS): 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 29.8 mph. The ambient temperature at the impact face was 86°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 driver dummy was restrained with an airbag. The Passenger dummy was restrained with a 3-point belt system.					
17. Key Words 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				18. Distribution Statement Copies of this report are available from: Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 400 Seventh St., S.W., Washington, DC 20590	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages	
				22. Price	

TABLE OF CONTENTS

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

LIST OF FIGURES

<u>Figure No.</u>	<u>Description</u>	<u>Page No.</u>
1	TEST VEHICLE INFORMATION	3-2
2	SEAT BACK POSITIONING INFORMATION	3-3
3	PART 572 DUMMY IN-VEHICLE POSITION	3-4
4	OCCUPANT CLEARANCE DIMENSIONS	3-5
5	DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY REFERENCE DIMENSIONS	3-6
6	SEAT BELT POSITIONING DATA	3-7
7	VEHICLE ACCELEROMETER LOCATIONS	3-8
8	CAMERA POSITIONS FOR FRONTAL IMPACTS	3-10
9	VEHICLE TARGET LOCATIONS	3-12
10	TEST VEHICLE MEASUREMENTS	3-13
11	FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET	4-8
12	FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA SHEET	4-9

LIST OF TABLES

<u>Table No.</u>	<u>Description</u>	<u>Page No.</u>
1	Crash Test Summary	2-2
2	General Test and Vehicle Parameter Data	2-3
3	Post-Impact Data	2-5
4	Vehicle Accelerometer Locations and Data Summary	3-9
5	High Speed Camera Locations	3-11
6	Vehicle Measurements	3-14
7	Dummy Injury Criteria Values	4-2
8	FMVSS No. 208 - Seat Belt Warning System Check	4-3
9	FMVSS No. 208 - Labeling and Driver's Manual Information	4-4
10	FMVSS No. 208 - Readiness Indicator	4-5
11	FMVSS No. 208 - Comfort and Convenience Test Summary	4-6
12	FMVSS No. 301 - "Fuel System Integrity" Post-Impact Test Data	4-10
13	FMVSS No. 301 - Static Rollover Data Sheet	4-11
14	Test Vehicle Noncompliance Notice	4-15

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. DTNH22-88-C-01038. The purpose of this test was to determine if the subject vehicle, a 1988 Acura Legend LS 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-208-07.

Section 2
SUMMARY OF FRONTAL BARRIER IMPACT TEST CJ5304

A frontal barrier was impacted by a 1988 Acura Legend LS 4-Door Sedan at a velocity of 29.8 mph. The test was performed at the Calspan Corporation Advanced Technology Center on August 2, 1988. 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 572, 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 Laboratory Test Procedure.

Both ATDs were fully instrumented with head and chest triaxial accelerometers and right/left femur load cells. These ATDs had been certified prior to the test. The test vehicle was equipped with 5 restraint systems.

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 left femur data became intermittent between 85 to 115 milliseconds. It is believed that the femur force did not exceed the maximum femur force as specified by FMVSS 208.

The driver's head struck the air bag and his HIC was 284. The maximum chest deceleration over 3 milliseconds was 45 g's and femur loads were 1651 and 1548 pounds.

The right-front passenger's HIC was 387. The maximum chest deceleration over 3 milliseconds was 37 g's and femur loads were 1235 and 659 pounds.

TABLE 1

CRASH TEST SUMMARYVEHICLE NHTSA NO.: CJ5304 TEST MODE: 30 mph Frontal BarrierTEST DATE: 8/2/88 TIME: 12:10 TEMP: 86° FVEHICLE MAKE/MODEL/BODY STYLE: 1988 Acura Legend LS 4-Door SedanVEHICLE TEST WEIGHT: 3750VEHICLE/BARRIER IMPACT ANGLE: 0°IMPACT VELOCITY: 29.8MAXIMUM STATIC CRUSH: 14.6VEHICLE REBOUND: 14.1DUMMIES:DRIVERPASSENGER

TYPE

Part 572 (S/N 1019)Part 572 (S/N 1020)

RESTRAINT SYSTEM

Airbag3-point belt systemNUMBER OF DATA CHANNELS: 23NUMBER OF CAMERAS: 1 Real Time14 High SpeedDOOR OPENING DATA: operable - Left Frontoperable - Right Front

FRONT SEAT(S) DATA:

DRIVERPASSENGER

Seat Track Failure -

NoneNone

inches of shift

Seat Back Failure -

NoneNone

VISIBLE DUMMY CONTACT POINTS:

DRIVERPASSENGER

Head

Airbag & windshieldNo contact

Chest

No contactNo contact

Knees

DashDash

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1988 Acura Legend LS 4-Door Sedan
NHTSA No. CJ5304; VIN JH4KA4666JC030305; Color: Gold
Engine Data: 6 cylinders; 163 CID; 2.7 Litres; - cc
Placement - Longitudinal or In-Line; X Transverse or lateral
Transmission Data: 4 speeds; - Manual; X Automatic; - Overdrive
Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive
Major Options: - A/C; X Pwr Strg. X Pwr. Brakes X Pwr Windows
- Power Door Locks; Cruise

Date Received: 6-21-88; Odometer Reading - 39.5 miles
Selling Dealer: Ray Laks Acura
& address 3551 Southwestern Blvd, Orchard Park, NY 14127

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Honda Motor Co. Ltd.
Data of Manufacture: 3/88; VIN JH4KA4666JC030305
GVWR: 4120 lbs; GAWR: 2335 lbs FRONT
1820 lbs REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load 28 psi Front
28 psi Rear

Recommended Tire Size 205/60R1590H

Recommended Cold Tire Pressure 28 psi Front 28 psi Rear

Size of Tires on Test Vehicle 205/60R1590H

Type of Spare Tire: X Space Saver; - Regular

Vehicle Capacity Data:

Type of Front Seats - Bench X Bucket - Split Bench

Number of Occupants 2 Front 3 Rear 5 Total

Vehicle Capacity Weight (VCW) = 850 lbs.

No. of Occupants x 150 lbs = 750 lbs.

Rated Cargo/Luggage Weight (RCLW) = 100 lbs. (Difference)

WEIGHT OF TEST VEHICLE AS RECEIVED AT LABORATORY (with maximum fluids):

Right Front = 1040 lbs Right Rear = 590 lbs

Left Front = 1060 lbs Left Rear = 640 lbs

TOTAL FRONT = 2100 lbs TOTAL REAR = 1230 lbs

% of Total Weight = 63 % % of Total Weight = 37 %

TOTAL DELIVERED WEIGHT = 3330 lbs.

TABLE 2
GENERAL TEST & VEHICLE PARAMETER DATA (cont.)

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	<u>3330</u>	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	<u>100</u>	lbs.
Weight of 2 P.572 Dummies @ 164 ea.	=	<u>328</u>	lbs.
TARGET TEST WEIGHT	=	<u>3758</u>	lbs. (sum)

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 92 LBS OF CARGO WEIGHT:

Right Front =	<u>1110</u>	lbs.	Right Rear =	<u>750</u>	lbs.
Left Front =	<u>1190</u>	lbs.	Left Rear =	<u>700</u>	lbs.
TOTAL FRONT =	<u>2300</u>	lbs.	TOTAL REAR =	<u>1450</u>	lbs.
% of Total Weight =	<u>61</u>	%	% of Total Weight =	<u>39</u>	%
TOTAL TEST WEIGHT = <u>3750</u> lbs.					
Weight of Ballast secured in vehicle's cargo area = <u>0</u> lbs.					
Vehicle Components Removed for Weight Reduction <u>None</u>					

TEST VEHICLE ATTITUDE: (all dimensions in inches)

AS DELIVERED	RF	<u>27.9</u>	LF	<u>27.8</u>	RR	<u>27.5</u>	LR	<u>27.4</u>
FULLY LOADED	RF	<u>27.2</u>	LF	<u>27.1</u>	RR	<u>26.4</u>	LR	<u>26.1</u>
AS TESTED	RF	<u>27.6</u>	LF	<u>27.4</u>	RR	<u>26.5</u>	LR	<u>26.1</u>

Vehicle's Wheelbase = 108.7 inches

Location of Vehicle's C.G. = 66.7 inches rearward of front wheel centerline
(if required)

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 18.0 gallons

Usable Capacity Figure Furnished by COTR = 18.0 gallons

Test Volume Range (92 to 94% of Usable Capacity) = 16.6 to 16.9 gallons

ACTUAL TEST VOLUME = 16.7 gallons (with entire fuel system filled)

Test Fluid Type: Stoddard Solution; Spec. Grav. 0.764

Kinematic Viscosity = 0.96 centistokes; Color = Purple

Type of Fuel Pump: X Electric; - Manual/Mechanical

Does Electric Pump operate with ign. sw. "ON" & engine "OFF"? No (yes/no)

TABLE 3
POST-IMPACT DATA

TYPE OF TEST: X Frontal (0°) Impact; - Oblique (30°) Impact- - Left/ - Right

- Rear; - Lateral/Side - - Left/ - Right

TEST DATE: August 2, 1988 TIME: 12:10 TEMP: 86 °F

VEHICLE NHTSA NO.: CJ5304; VIN JH4KA4666JC030305

REQUIRED IMPACT VELOCITY RANGE: 28.9 to 29.9 mph

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

Trap No. 1 = 29.8 mph; Trap No. 2 = 29.8 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 = 185.2 "; C/L = 189.1 "; Left = 185.2 "

Post-Test Right = 170.9 "; C/L = 174.5 "; Left = 172.4 "

CRUSH Right = 14.3 "; C/L = 14.6 "; Left = 13.1 "

AVERAGE = 14.0 inches

VEHICLE REBOUND: (from rigid barrier only)

Distance from front of test vehicle to impact point:

Right = 14.4 "; C/L = 13.3 "; Left = 14.7 "

AVERAGE = 14.1 inches

DOOR OPENING:

Left

Right

Front operable

operable

Rear operable

operable

SEAT MOVEMENT:

Seat Back Failure

Seat Shift

Front None

None

Rear None

None

TABLE 3

POST-IMPACT DATA (cont)

GLAZING DAMAGE: Windshield remained intact

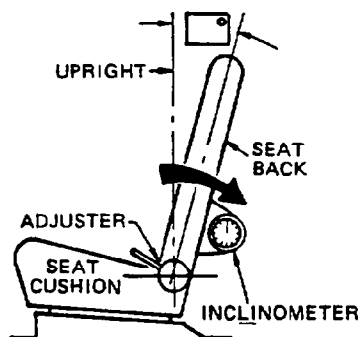
Section 3
OCCUPANT AND VEHICLE DATA

Figure 1
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model year: 1988 Vehicle Model: Acura Legend 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 N/A
Measurement instructions: Not suitable place to position inclinometer.

Seat was set as specified by manufacturer.

Seat back angle for passenger's seat N/A
Measurement instructions: Seat back set at fourth notch from upright.

2. **Seat Fore and Aft Positioning**

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat: Seat was placed in midposition

Positioning of the passenger's seat (if applicable): Seat was set in
mid position

3. **Fuel Tank Capacity Data**

A. "Usable Capacity" of the standard equipment fuel tank is 18.0 gallons.

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

Additional Instructions: None

SEAT BACK POSITIONING INFORMATION

Attachment

THE PROCEDURE FOR SETTING SEAT BACK TO THE NOMINAL DESIGN ANGLE (Driver's power seat)

THE SEAT IS EQUIPPED WITH A MOTORIZED SEAT BACK ADJUSTING MECHANISM THEREFORE, PLEASE ADJUST THE SEAT BACK ANGLE TO THE DESIGNED ANGLE BY MEASURING THE HORIZONTAL DISTANCE SHOWN DOWN BELOW. IN MEASURING, PLEASE MAKE SURE THAT THE SIDE SILL OF THE VEHICLE IS HOLD HORIZONTAL.

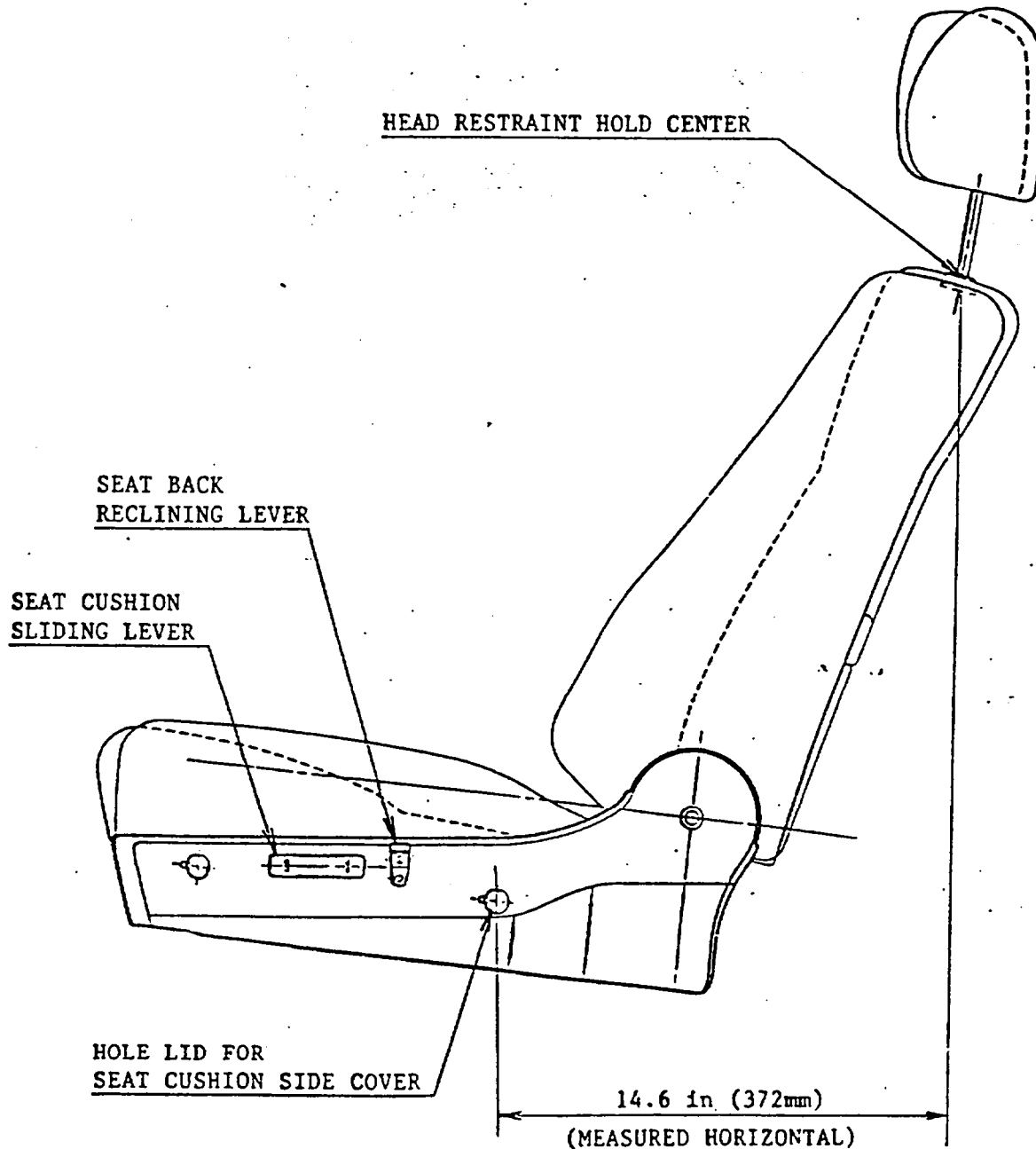


Figure 3

PART 572 DUMMY IN-VEHICLE POSITION

TEST NO.: CJ5304

VEHICLE: 1988 Acura Legend LS

SEAT TYPE:

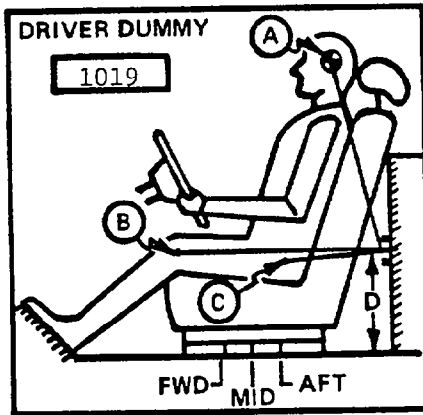
☐ Bench
☒ Bucket
☐ Split Bench

ADJUSTER TYPE:

☒ Manual - Passenger
☒ Power - Driver

BUCKET SEAT BACK TYPE:

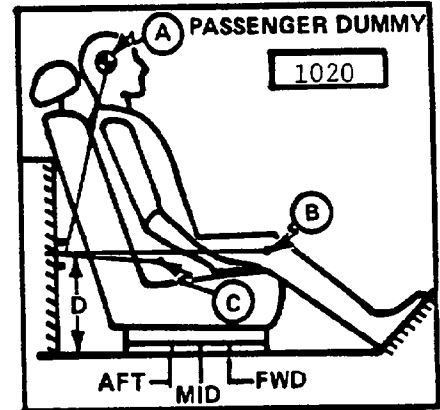
☐ Fixed
☒ Adjustable Reclining



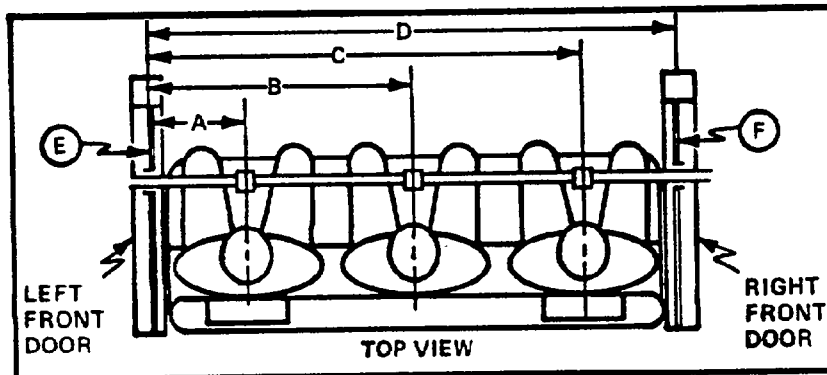
A = 21.2 in. -2 Degrees
 B = 21.0 in. 102 Degrees
 C = 8.0 in. 135 Degrees
 D = 14.2 in.

MEASUREMENT LOCATION

A - Head Target
 B - Knee Joint
 C - Approximate 'H' Point
 D - Sill to Reference Point



A = 20.7 in. -5 Degrees
 B = 20.5 in. 105 Degrees
 C = 7.8 in. 135 Degrees
 D = 14.2 in.



1019

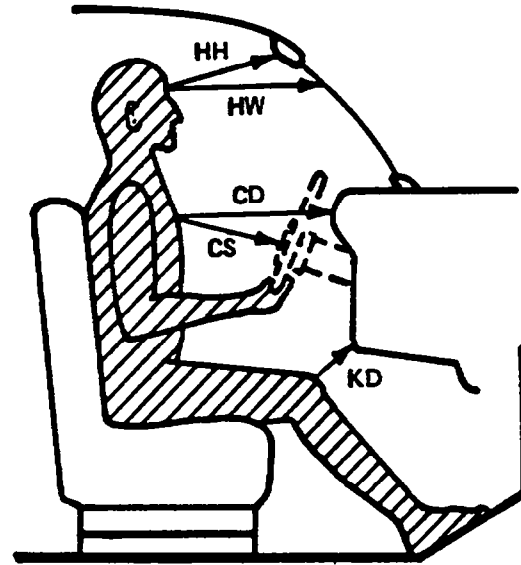
1020

A = Left Door to Driver Centerline 12.6 in.
 B = Left Door to Center Passenger Centerline - in.
 C = Left Door to Right Passenger Centerline 39.7 in.
 D = Left Door to Right Door 52.0 in.
 E, F = Window Glass Height (Right and Left Must Be Equal) 11.0 in.

Figure 4

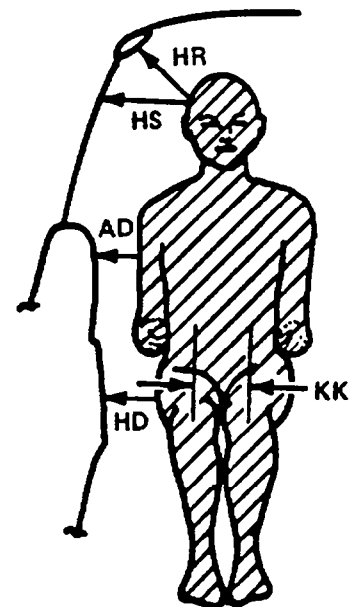
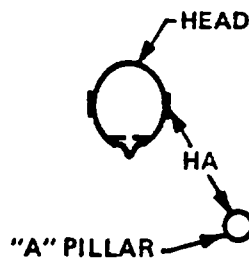
OCCUPANT CLEARANCE DIMENSIONS

	DRIVER	PASSENGER
HH	15.7	16.5
HW	20.2	20.9
CD	22.9	24.7
CS	15.1	--
KDL	6.5	9.2
KDR	6.7	8.7
SA	See Note	See Note
TA	23°	23°



HH = Head to Windshield Header
 HW = Head to Windshield
 CD = Chest to Dash
 CS = Chest to Steering Wheel
 KD(L/R)= Knee to Dash (Left/Right)
 SA = Seat Back Angle
 TA = Torso Angle

HA = Head Target to "A" Pillar
 HR = Head to Side Roof
 HS = Head to Side Window
 AD = Arm to Door
 HD = Hip to Door
 KK = Knee to Knee

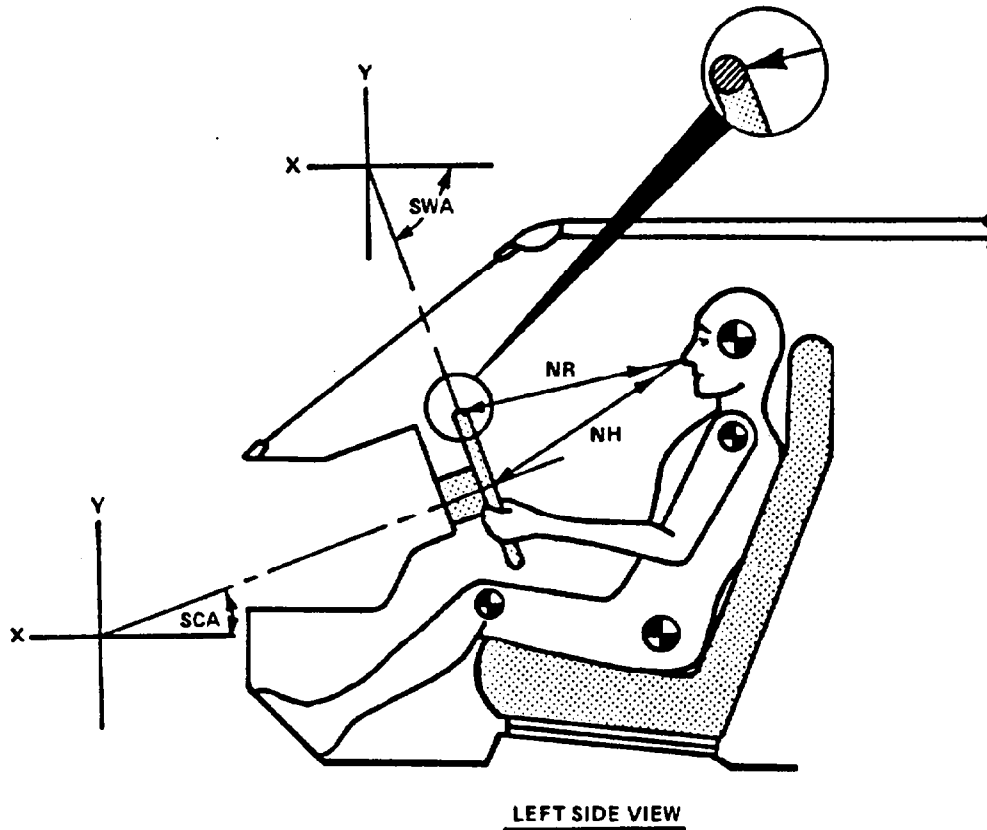


	DRIVER	PASSENGER
HR	6.2	5.7
HS	9.4	8.8
AD	4.5	4.2
HD	5.3	5.5
KK	10.0	8.8
HA	18.8	18.7

Note: Seat back angle was set as specified by manufacturer.

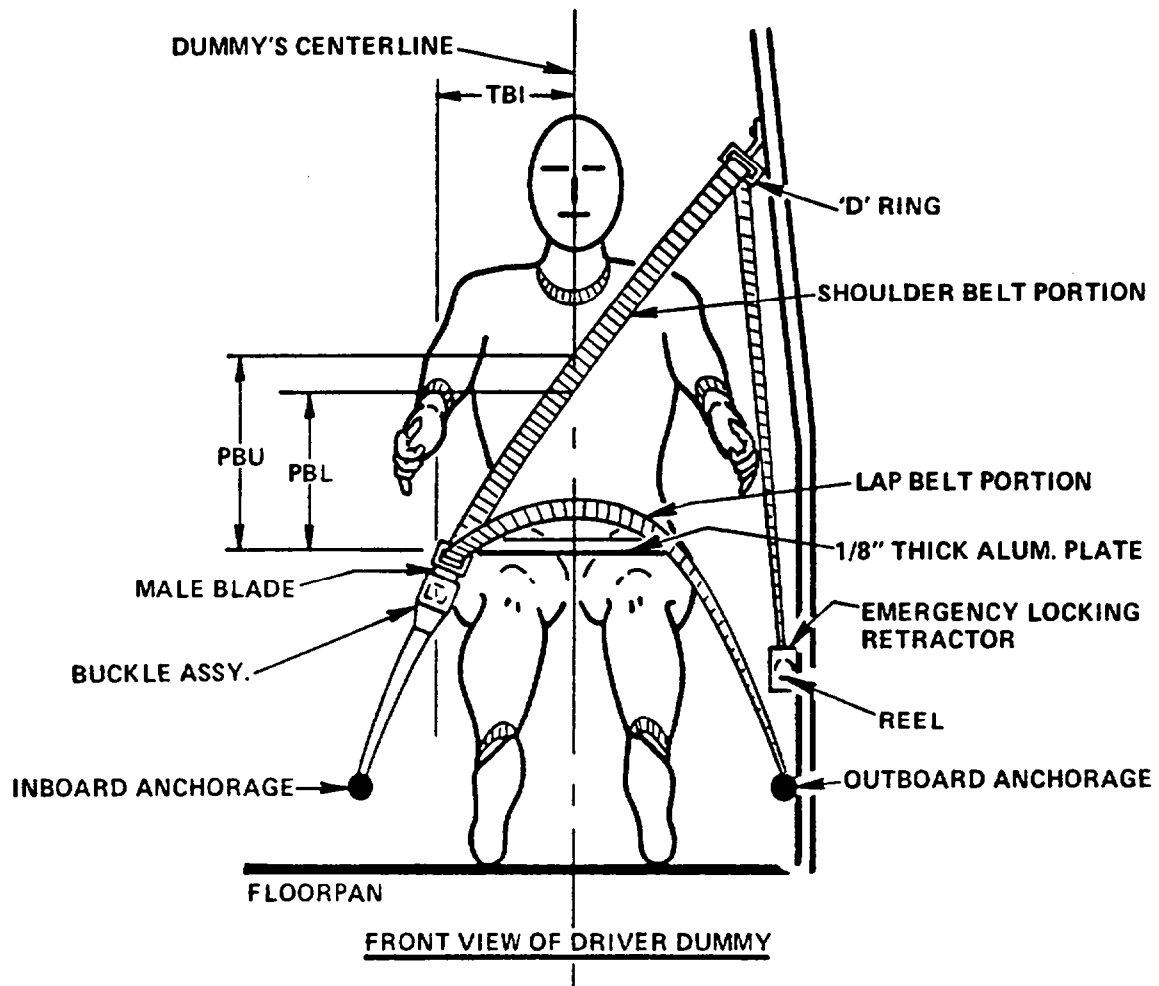
Figure 5

DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSY. REFERENCE DIMENSIONS



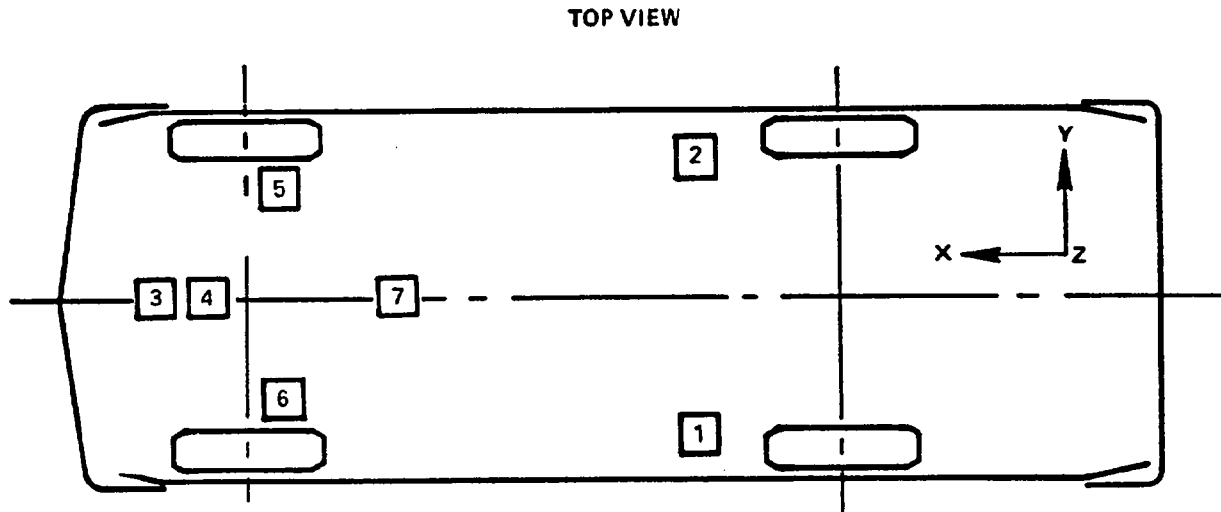
		MEASUREMENTS
<u>NR</u> -- Distance from tip of dummy's nose to Top Rear surface of steering wheel rim	20.0	Inches
<u>NH</u> -- Distance from tip of dummy's nose to center of steering column hub	20.4	Inches
<u>SCA</u> -- Angle of steering column relative to the horizontal X axis	25	Degrees
<u>SWA</u> -- Angle of steering wheel relative to the horizontal X axis	65	Degrees

Figure 6
SEAT BELT POSITIONING DATA



	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	N/A	13.2
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	N/A	10.0
<u>TBI</u> -- distance from Torso centerline to buckle	N/A	8.6

Figure 7
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 4

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: POST: LONGITUDINAL FORCE	74.2	21.0	16.0				
		73.8	21.0	14.4				
					1	168	33	52
2	REAR SEAT X-MEMBER AT RIGHT SIDE PRE: POST: LONGITUDINAL FORCE	74.2	-21.0	16.0				
		73.8	-21.0	13.4				
					1	199	35	50
3	TOP OF ENGINE BLOCK PRE: POST: LONGITUDINAL FORCE	167.3	0	32.0				
		160.3	-4.8	29.4				
					54	48	119	28
4	BOTTOM OF ENGINE BLOCK PRE: POST: LONGITUDINAL FORCE	153.7	0	11.0				
		135.3	-11.8	10.8				
					33	40	102	32
5	BRAKE CALIPER AT RIGHT SIDE PRE: POST: LONGITUDINAL FORCE	147.3	-21.0	19.0				
		145.9	-24.0	19.0				
					22	64	65	32
6	BRAKE CALIPER AT LEFT SIDE PRE: POST: LONGITUDINAL FORCE	147.3	21.0	19.0				
		147.1	22.0	19.3				
					30	62	69	45
7	DASH PANEL PRE: POST: LONGITUDINAL FORCE	119.1	0	20.0				
		118.1	0	19.0				
					20	63	45	52

**

POSITIVENEGATIVE

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

LONGITUDINAL: FORWARD
 LATERAL: LEFTWARD
 VERTICAL: UPWARD

REARWARD
 RIGHTWARD
 DOWNWARD

DISTANCE MEASUREMENTS IN INCHES

Figure 8
CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5

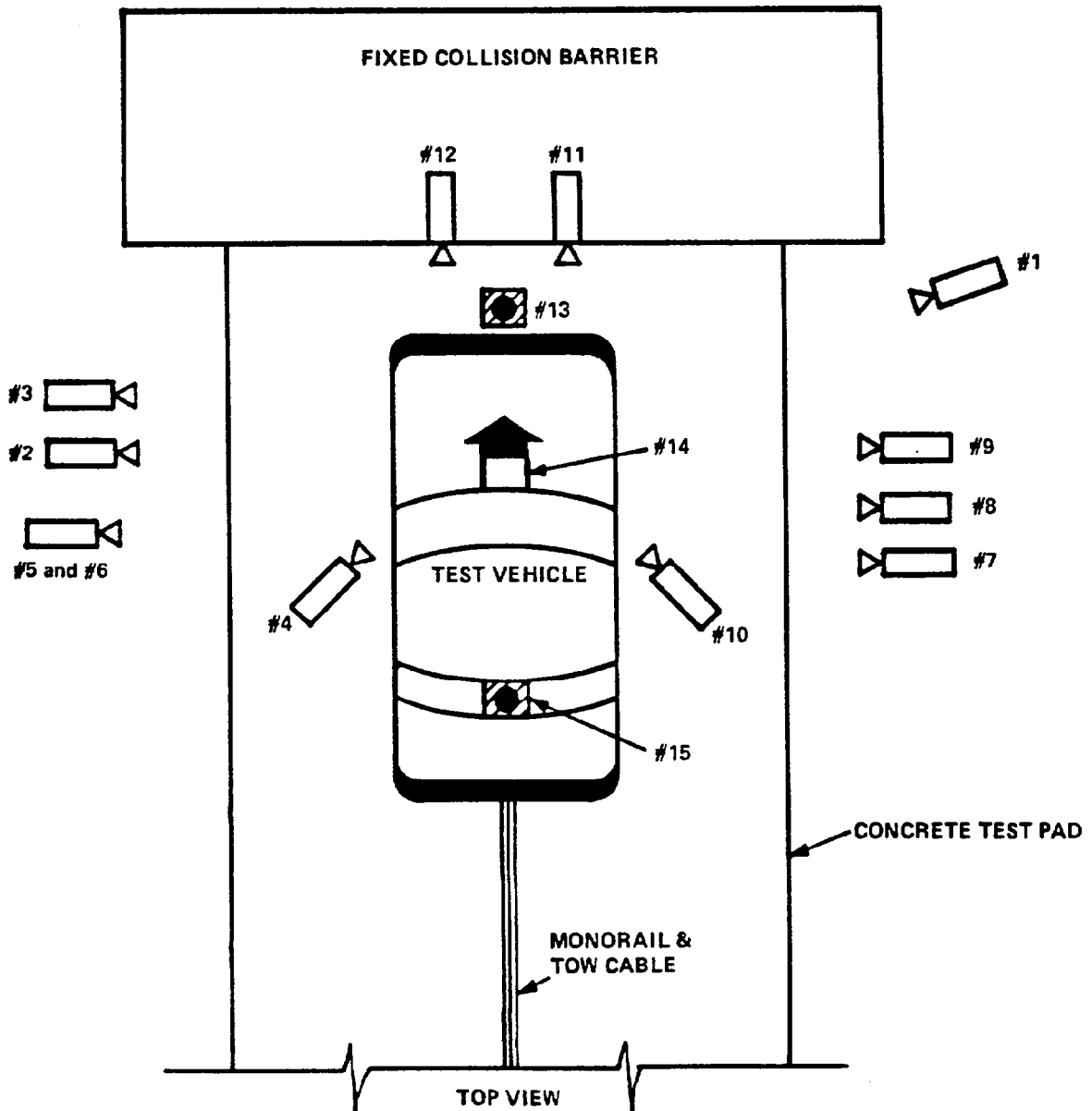
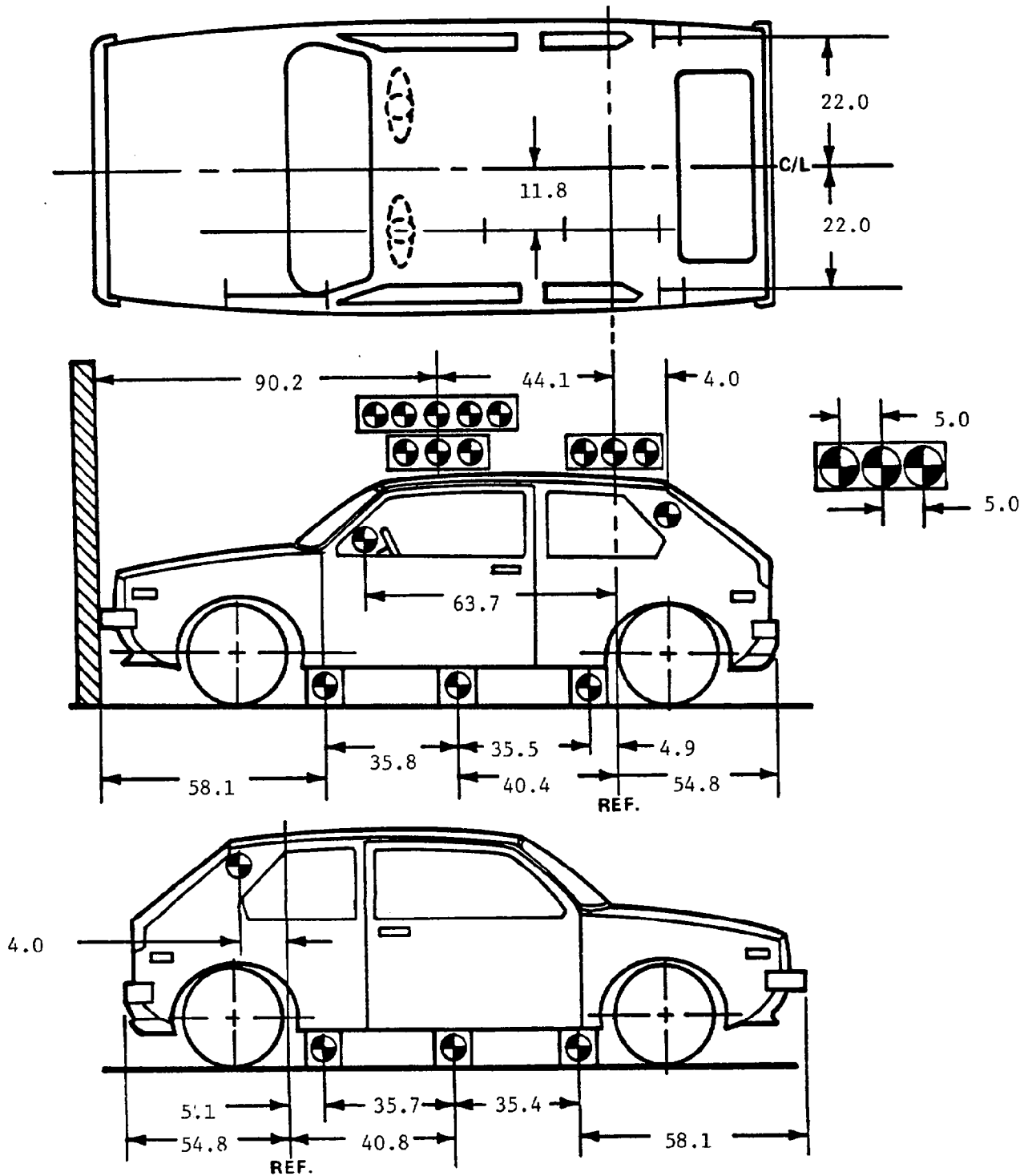


TABLE 5
HIGH-SPEED CAMERA LOCATIONS

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	235	66	41	-4	218.5	13	530
3	Left Side View	308	44	42	-4	291.5	25	520
4	Driver and Interior View	99	112	72	-17	-	13	765
5	Steering Column (bottom)	324	94	46	-4	307.5	25	540
6	Steering Column (top)	324	94	70	-9	307.5	25	540
7	Overall Right Side	246	80	42	-3	229.5	13	800
8	Right Side View	295	72	58.5	-4	278.5	25	750
9	Right Passenger View	266	58	41	-1	249.5	25	800
10	Passenger & Interior View	90	118	73	-22	-	35	595
11	Passenger Front View	22	18	75	-49	-	13	545
12	Driver Front View	22	18	75	-45	-	13	535
13	Windshield View	0	0	120	-60	-	13	530
14	Pit View of Engine	0	24	85	90	-	13	840
15	Pit View of Fuel Tank	0	93	86	90	-	13	800

* X = Film plane to monorail centerline
 Y = Film plane to impact location
 Z = Film Plane to ground
 ** = Referenced to horizontal plane

Figure 9
VEHICLE TARGET LOCATIONS



(DIMENSIONS IN INCHES)

Figure 10
TEST VEHICLE MEASUREMENTS

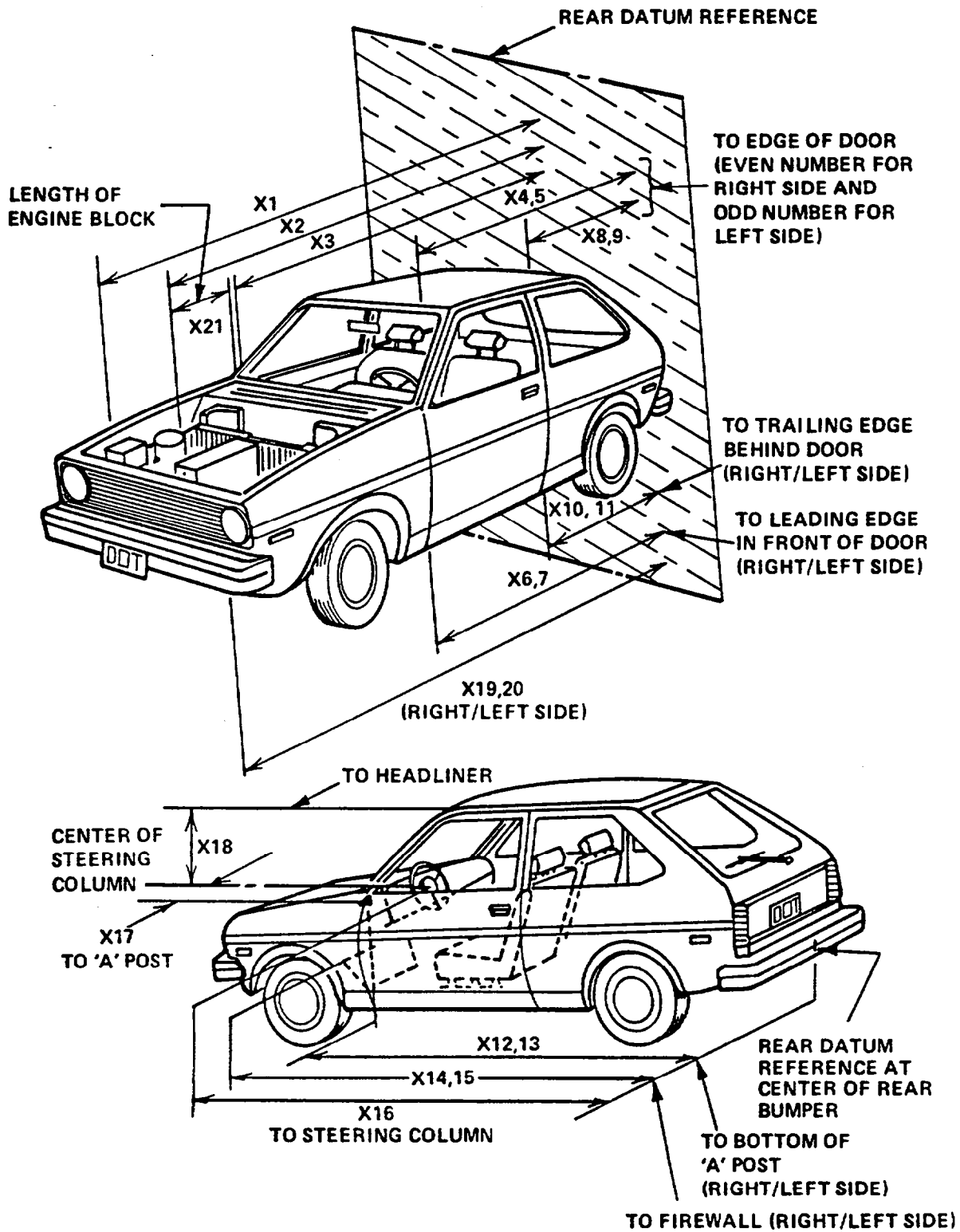


TABLE 6
VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	189.0	174.5	14.6
X2	Rear Surface of Vehicle to Front of Engine	172.5	165.1	7.4
X3	Rear Surface of Vehicle to Firewall	142.3	141.0	1.3
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	128.5	128.6	-0.1
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	129.1	129.5	-0.4
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	129.1	128.5	0.6
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	129.5	129.2	0.3
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	88.5	88.2	0.3
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	88.8	88.9	-0.1
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	89.0	88.6	0.4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	89.5	89.1	0.4
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	129.4	129.0	0.4
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	129.8	129.3	0.5
X14	Rear Surface of Vehicle to Firewall, Right Side	141.2	139.8	1.4
X15	Rear Surface of Vehicle to Firewall, Left Side	141.2	140.1	1.2
X16	Rear Surface of Vehicle to Steering Column	111.8	114.9	-3.1
X17	Center of Steering Column to "A" Post	15.0	14.5	0.5
X18	Center of Steering Column to Headliner	17.5	19.8	-2.3
X19	Rear Surface of Vehicle to Right Side of Front Bumper	185.2	170.9	14.3
X20	Rear Surface of Vehicle to Left Side of Front Bumper	185.5	172.4	13.1
X21	Length of Engine Block	25.0	25.0	0.0

*Pre-test done with windows open; post-test done differently due to closed power windows.

Section 4

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

- o "Occupant Crash Protection," FMVSS No. 208 Data
- o "Windshield Mounting," FMVSS No. 212 Data
- o "Windshield Zone Intrusion," FMVSS No. 219 (Partial) Data
- o "Fuel System Integrity," FMVSS No. 301-75

TABLE 7
DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DUMMY (1)	-55	32	49	74	-46	-8	12	45
DUMMY (2)	-19	20	51	52	-39	-19	14	37

	MAXIMUM FORCE - FEMUR LOAD (LBS)	
	Right Femur	Left Femur
DUMMY (1)	1651	1548
DUMMY (2)	1235	659

	HEAD INJURY CRITERIA **			
	HIC	36 millisecond Maximum		AVE. ACC. (g) t ₁ TO t ₂
		t ₁ (SEC)	t ₂ (SEC)	
DUMMY (1)	284	.07170	.10770	36.2
DUMMY (2)	387	.07815	.11415	41.0

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

TABLE 8

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 = 6.1 sec.

Log time duration of reminder light operation = 0.0 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 = 6.1 sec.

Note wording of visual warning:

Fasten seat belt

Fasten Belt

Symbol 101-80 X

TABLE 9

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: Owner's Manual

The manufacturers recommended schedule is to inspect this system after a time interval of 10 years.

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 N/A NO N/A

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 10
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:

Lower Left Side of Instrument Panel

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 _____ NO X

TABLE 11

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No.:	<u>CJ5304</u>
Make/Model:	<u>1988 Acura Legend LS</u>
Date of Comfort/Convenience Check:	<u>7-12-88</u>
Technician Performing Check:	<u>RFH</u>
GVWR:	<u>4120</u>

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

TABLE 11 (continued)

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

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

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.

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.

Figure 11

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

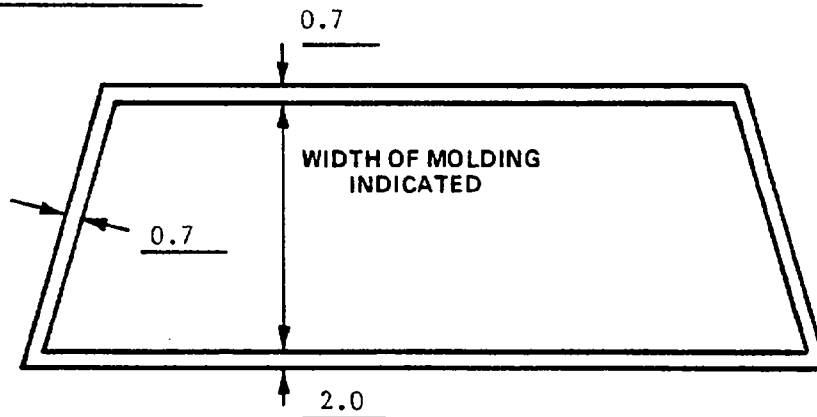
Windshield is bonded in place. The top and side edges are covered with 0.7 inches molding. The bottom edge is covered with 2.0 inch molding.

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	83.85	83.85	100%
LEFT SIDE	83.85	83.85	100%
TOTAL	167.7	167.7	100%

AREA OF RETENTION FAILURE:



FRONT VIEW

FAILURE DETAILS:

NONE

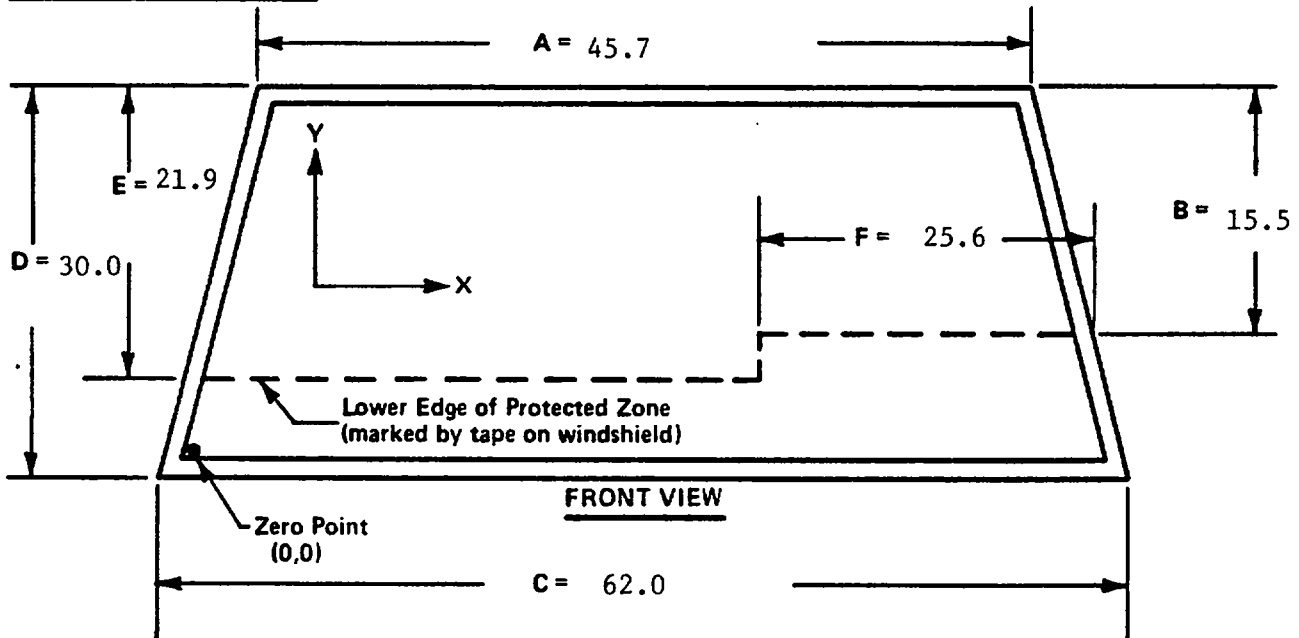
Figure 12

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:



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 12

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATAFMVSS NO. 301

TEST VEHICLE NHTSA NO.:

C J 5 3 0 4

TEST DATE: August 2, 1988

Vehicle Mfr/Make/Model:

1988 Acura Legend LS 4-Door Sedan

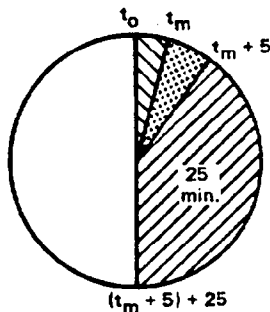
Test vehicle fuel tank filled to 92% to 94% of manufacturer's "useable" capacity and with electric fuel pump operating (if it will operate without engine operation) Part 572 test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPEX 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

1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

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

SOLVENT SPILLAGE DETAILS

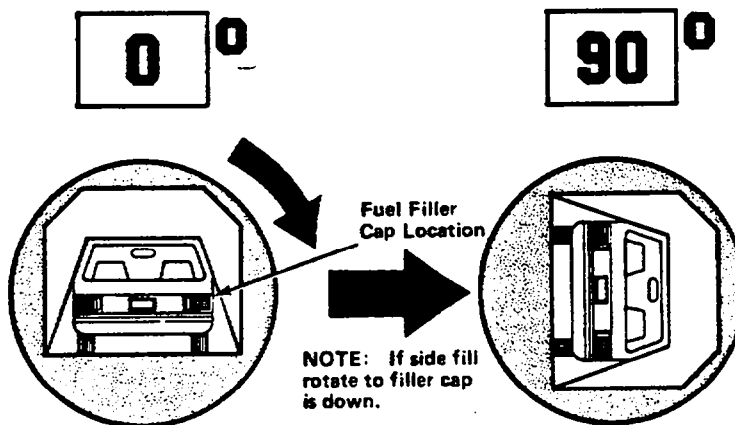
NONE

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:

CJ5304

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 3 minutes 0 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 05 minutes 00 seconds

TOTAL 8 minutes 0 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.

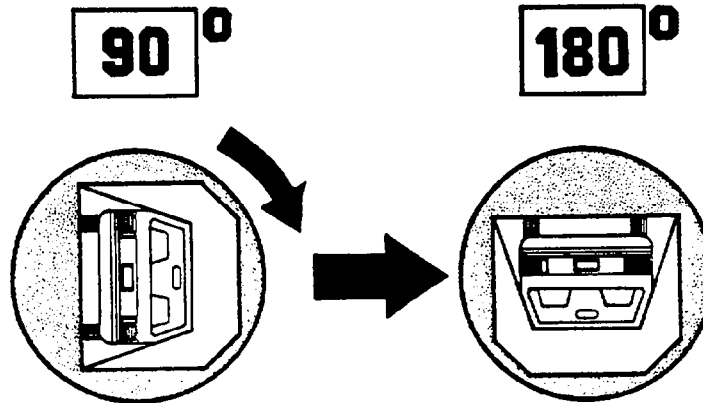
IV. SOLVENT SPILLAGE LOCATION(S):

NONE

TABLE 13 (continued)
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
 CJ5304

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>2</u> minutes <u>58</u> seconds
FMVSS 301 Position Hold Time +	<u>05</u> minutes <u>00</u> seconds
TOTAL	<u><u>7</u></u> minutes <u><u>58</u></u> seconds
Next whole minute interval	<u>8</u> 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.

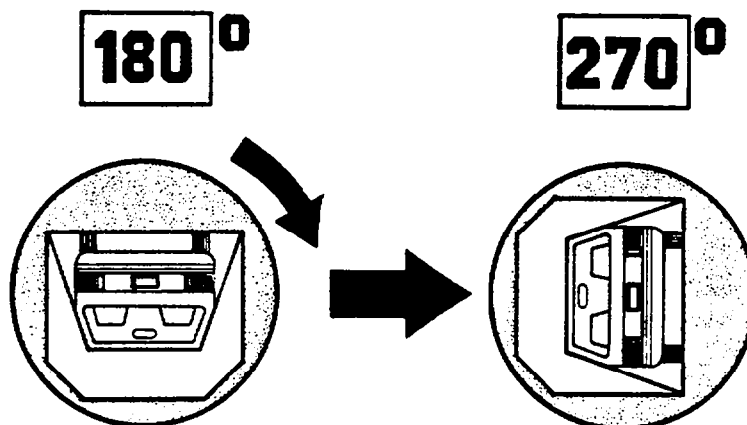
IV. SOLVENT SPILLAGE LOCATION(S):

NONE

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ5304

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 55 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 05 minutes 00 seconds

TOTAL

7 minutes 55 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.

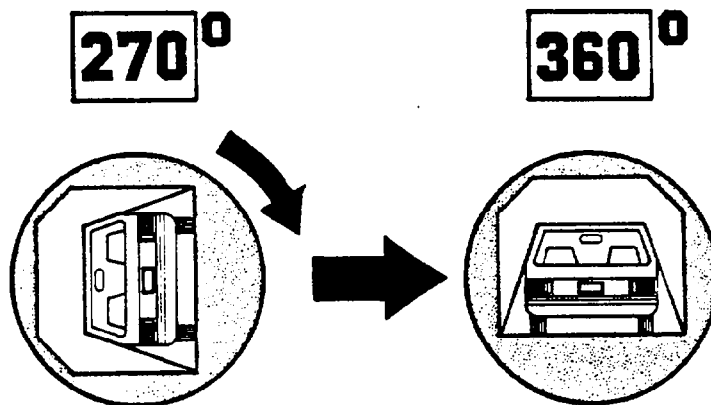
IV. SOLVENT SPILLAGE LOCATION(S):

NONE

TABLE 13 (continued)
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ5304

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>2</u> minutes <u>56</u> seconds
FMVSS 301 Position Hold Time +	<u>05</u> minutes <u>00</u> seconds
TOTAL	<u><u>7</u></u> minutes <u><u>56</u></u> seconds
Next whole minute interval	<u>8</u> 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 14

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: August 2, 1988 VEH. NHTSA No. CJ5304

VEHICLE MANUFACTURER: Honda Motor Company

Model Year 1988 VIN: JH4KA4666JC030305

Body Style: 4-Door Sedan Build Date: 3/88

DUMMY STABILIZED TEMPERATURE AT TIME OF TEST: 72 °F (Spec. = 66-78°F)

IMPACT VELOCITY: 29.8 mph TIME OF TEST: 12:10

TYPE OF AUTOMATIC RESTRAINT SYSTEM: Driver Airbag and Passenger 3-point
restraint

FAILURE DETAILS: Vehicle appears to comply with the requirement of
FMVSS Nos 208, 212, 219 (partial) and 301.

Approximate date that final test report will be made available to CTM:

August 1988

Appendix A

PHOTOGRAPHS

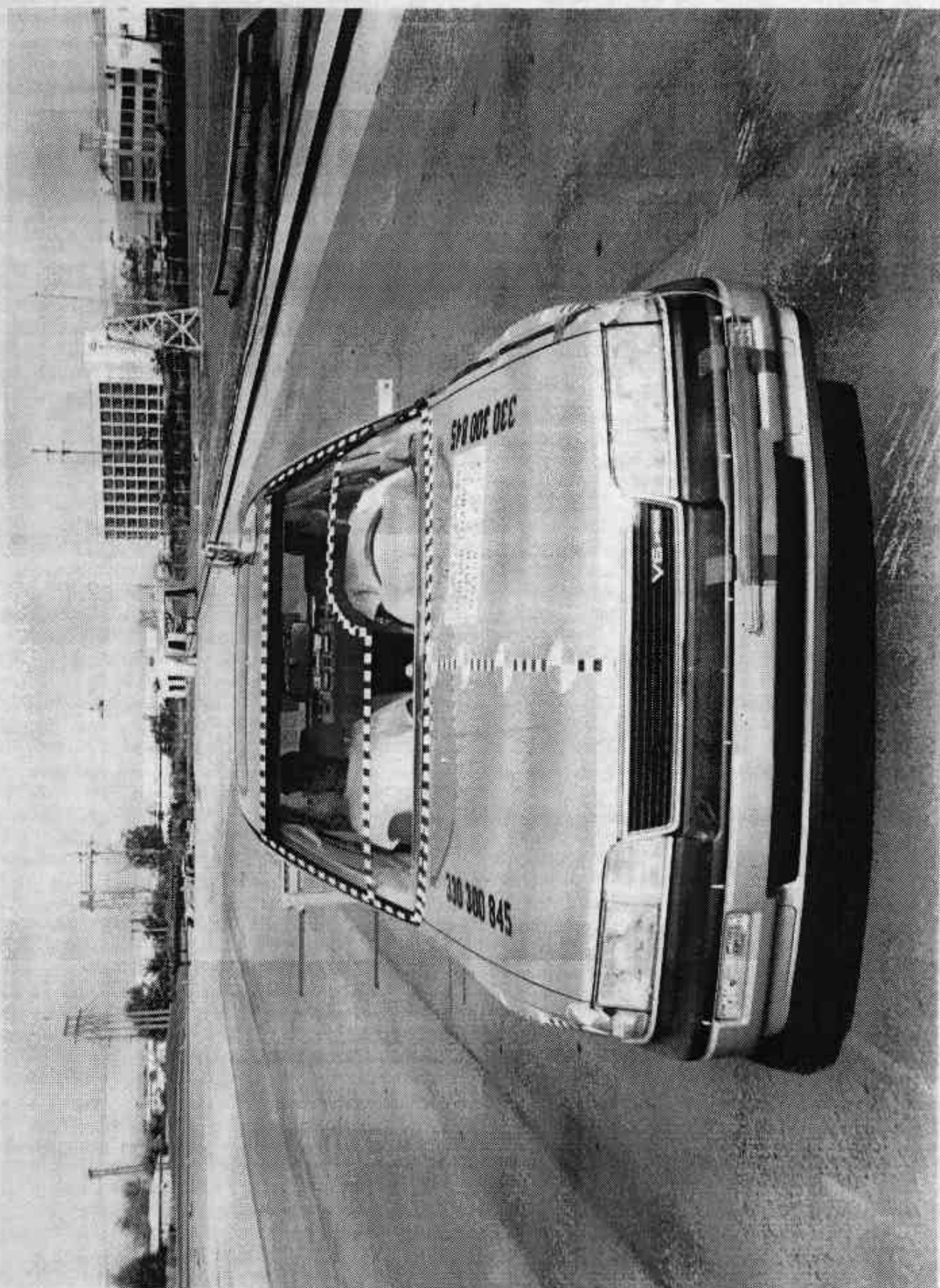


Figure A-1 PRE-TEST FRONT VIEW

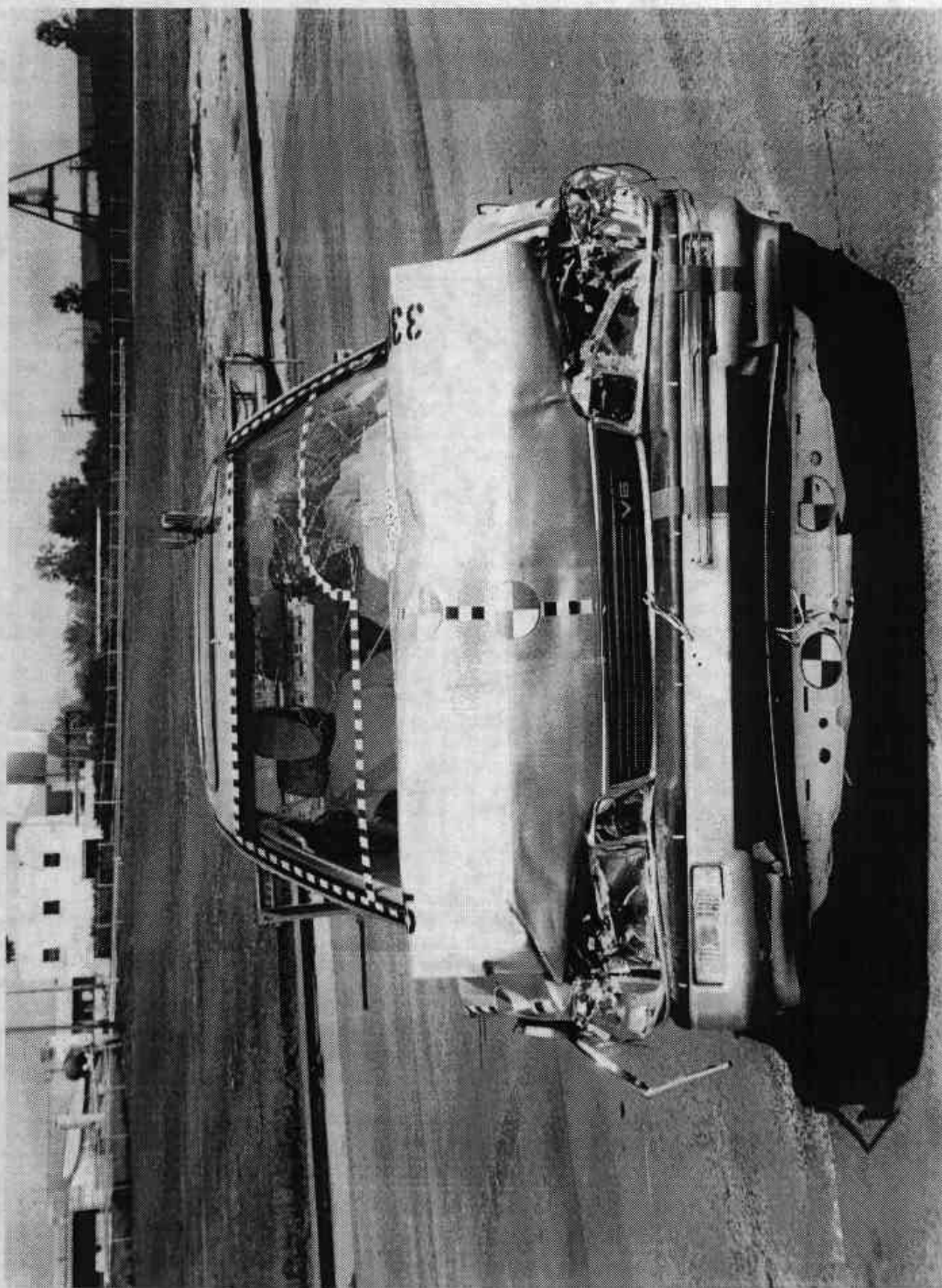


Figure A-2 POST-TEST FRONT VIEW

A-3

7669-4

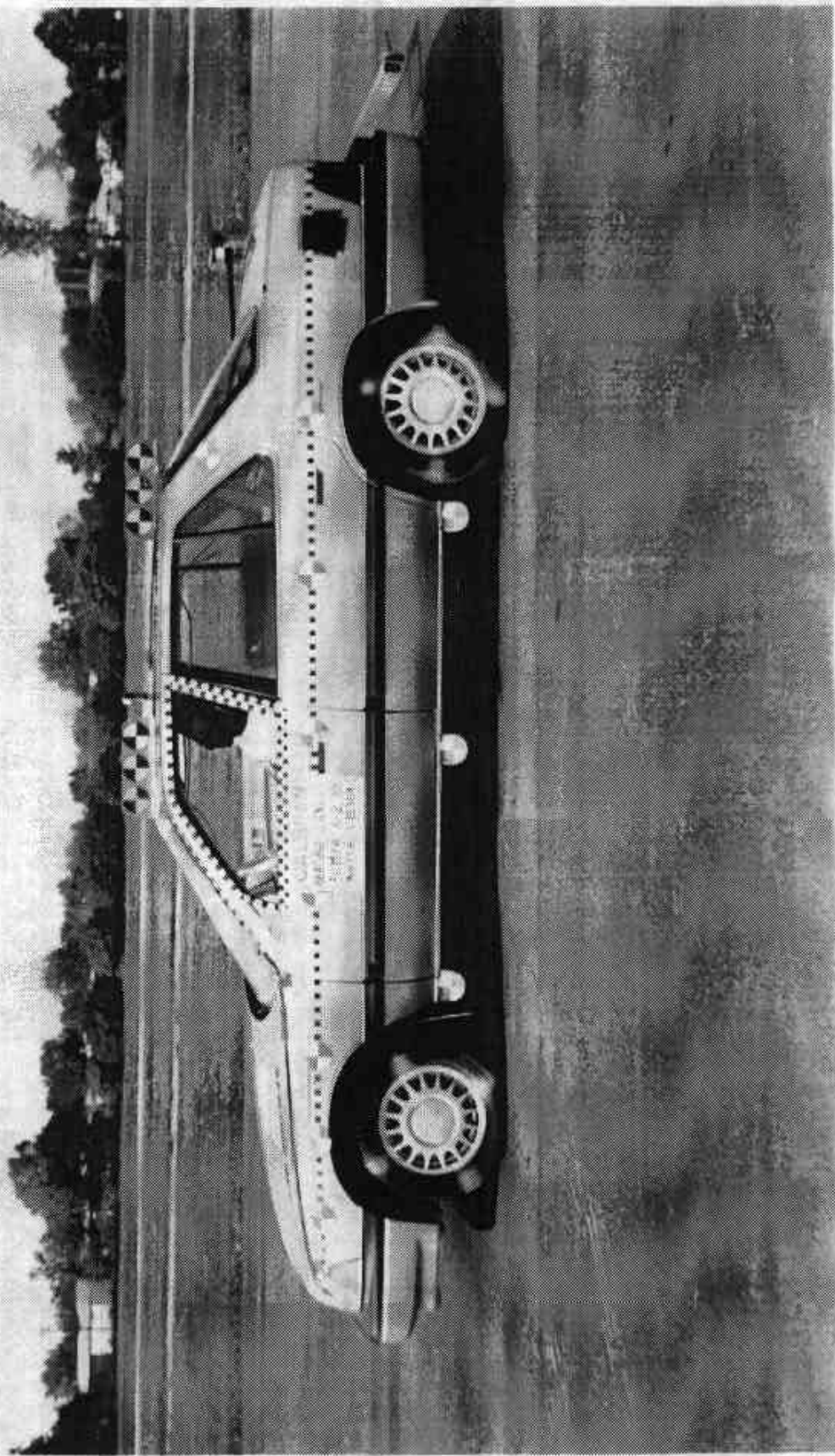


Figure A-3 PRE-TEST LEFT SIDE VIEW

A-4

7669-4

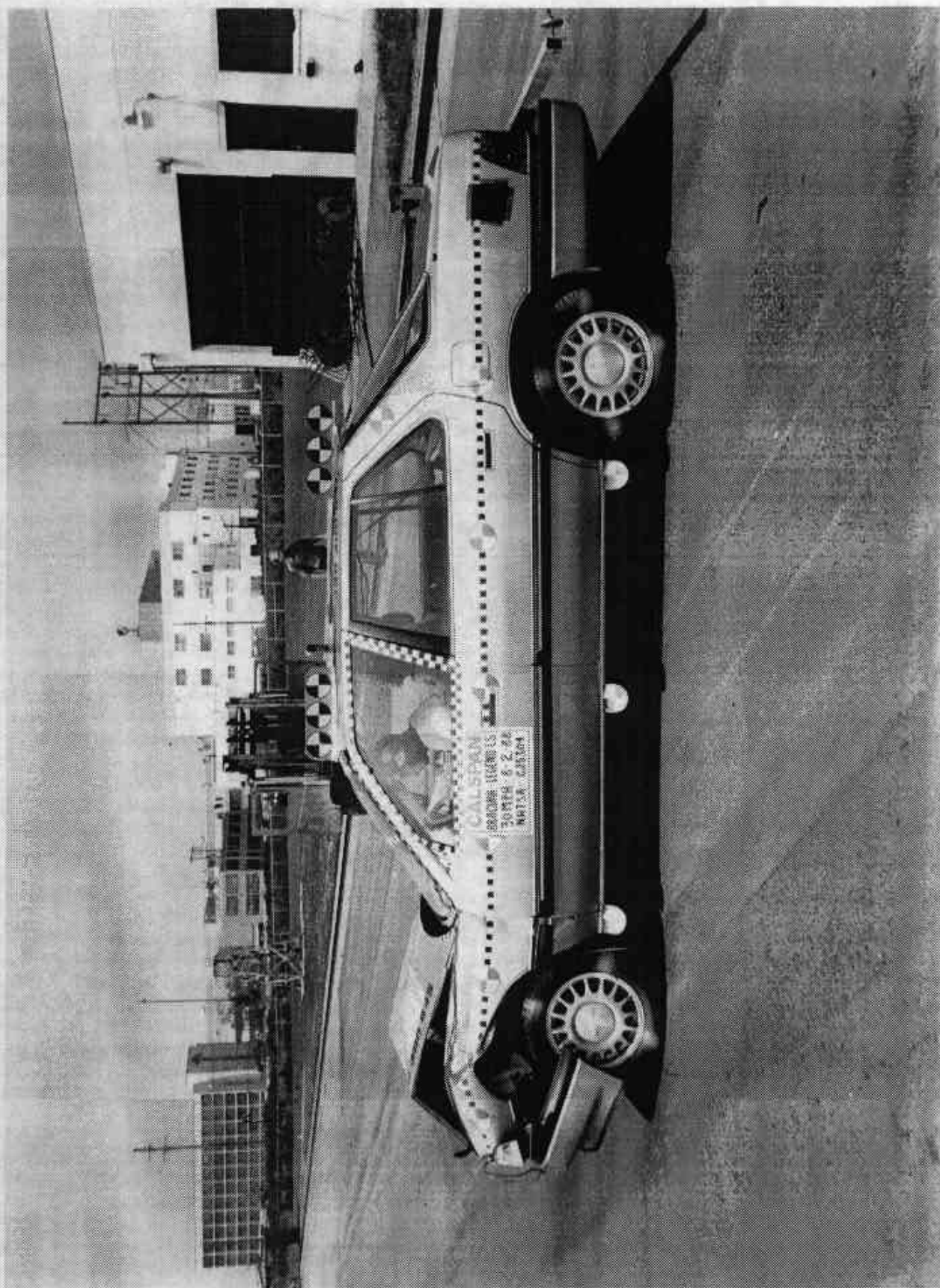


Figure A-4 POST-TEST LEFT SIDE VIEW

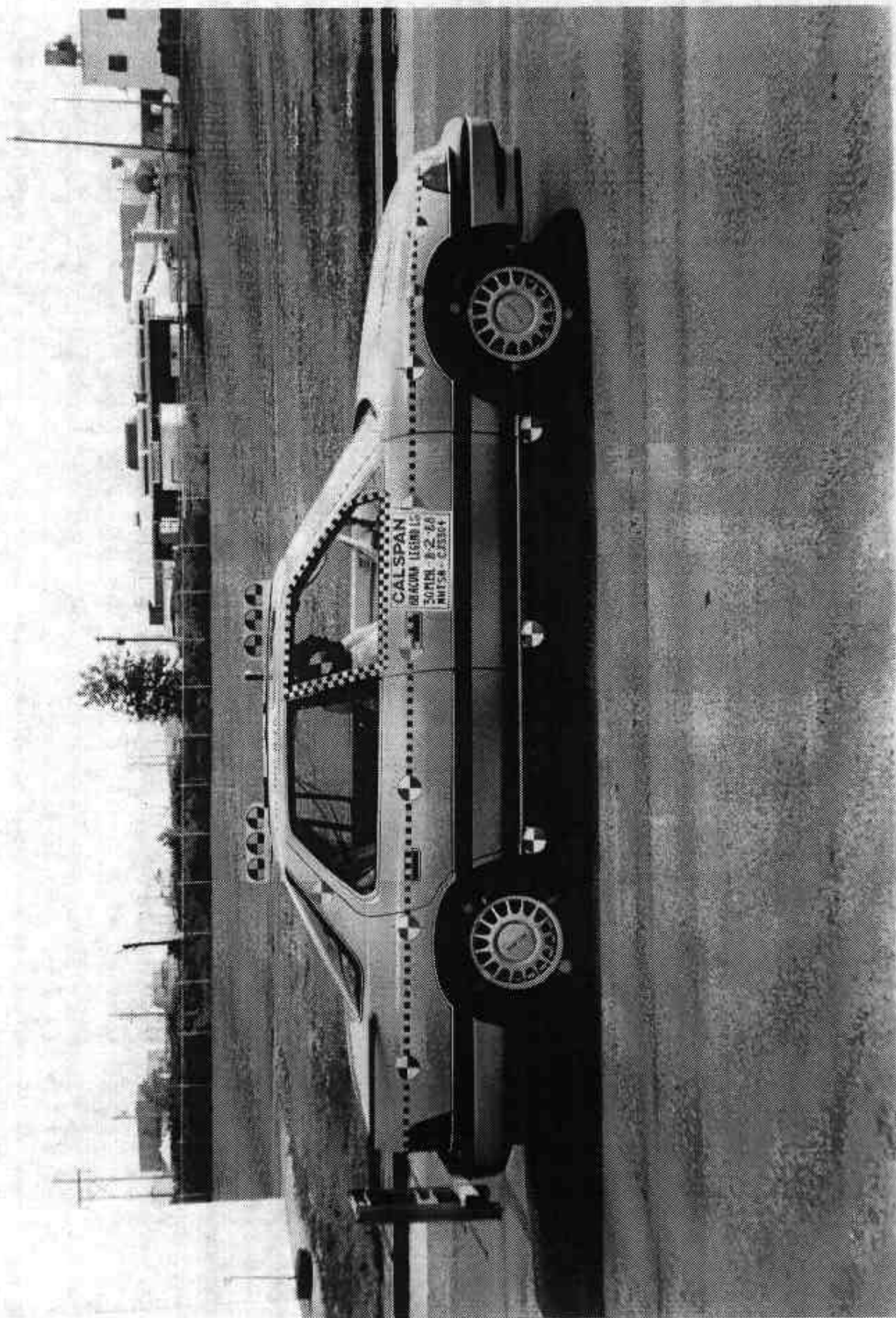


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-6

7669-4

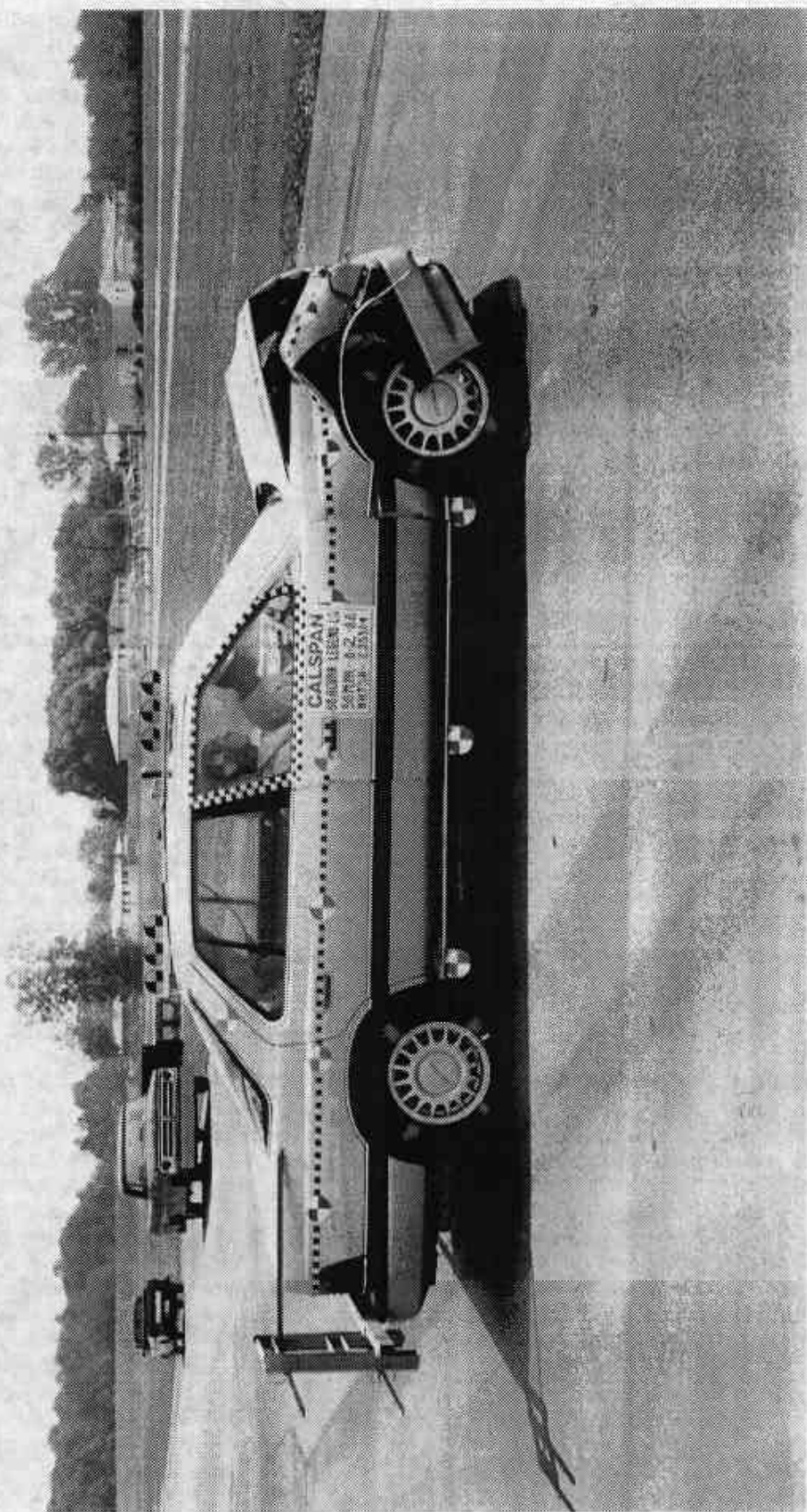


Figure A-6 POST-TEST RIGHT SIDE VIEW

A-7

7669-4

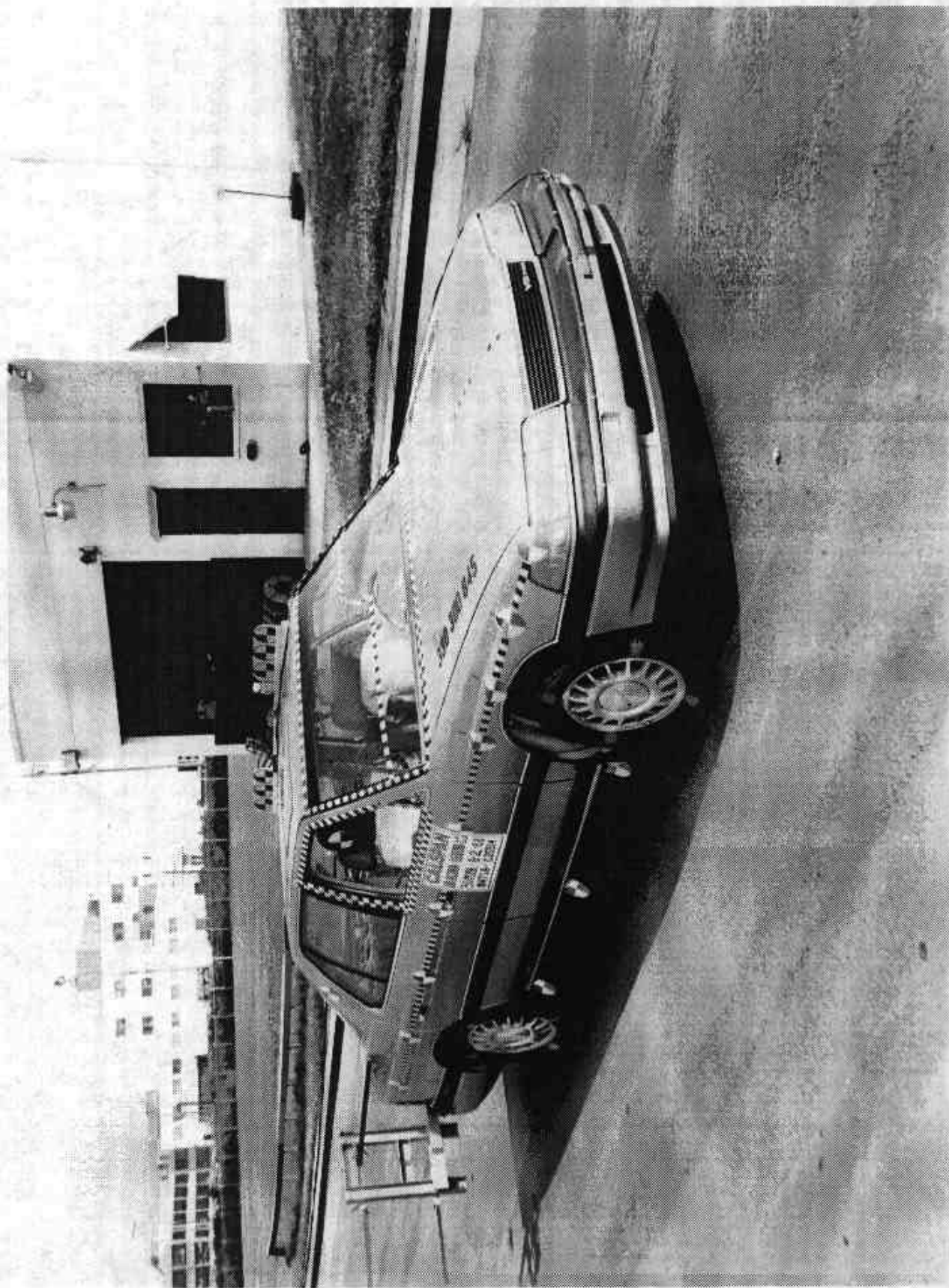


Figure A-7 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-8

7669-4

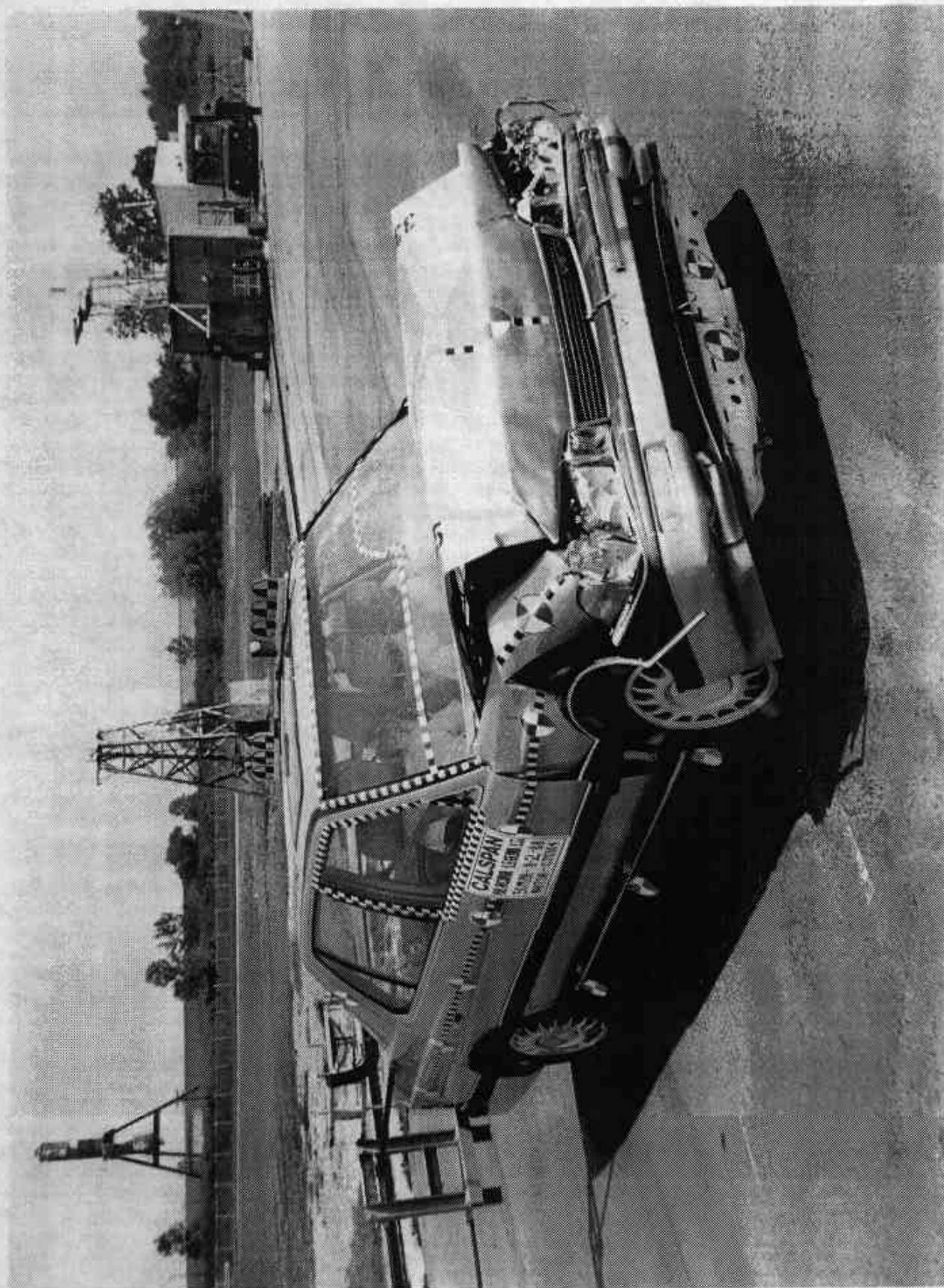


Figure A-8 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-9

7669-4

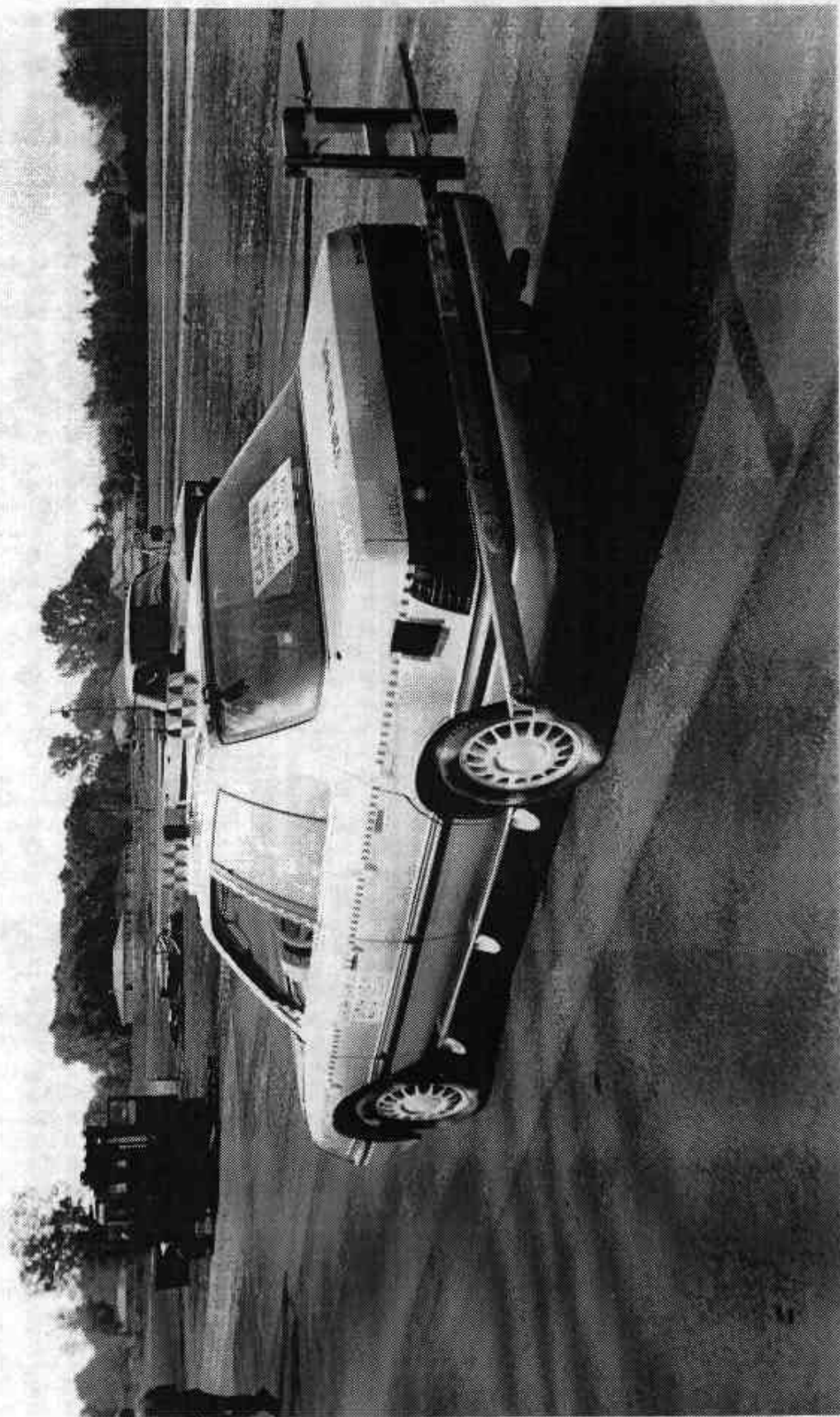


Figure A-9 PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-10

7669-4

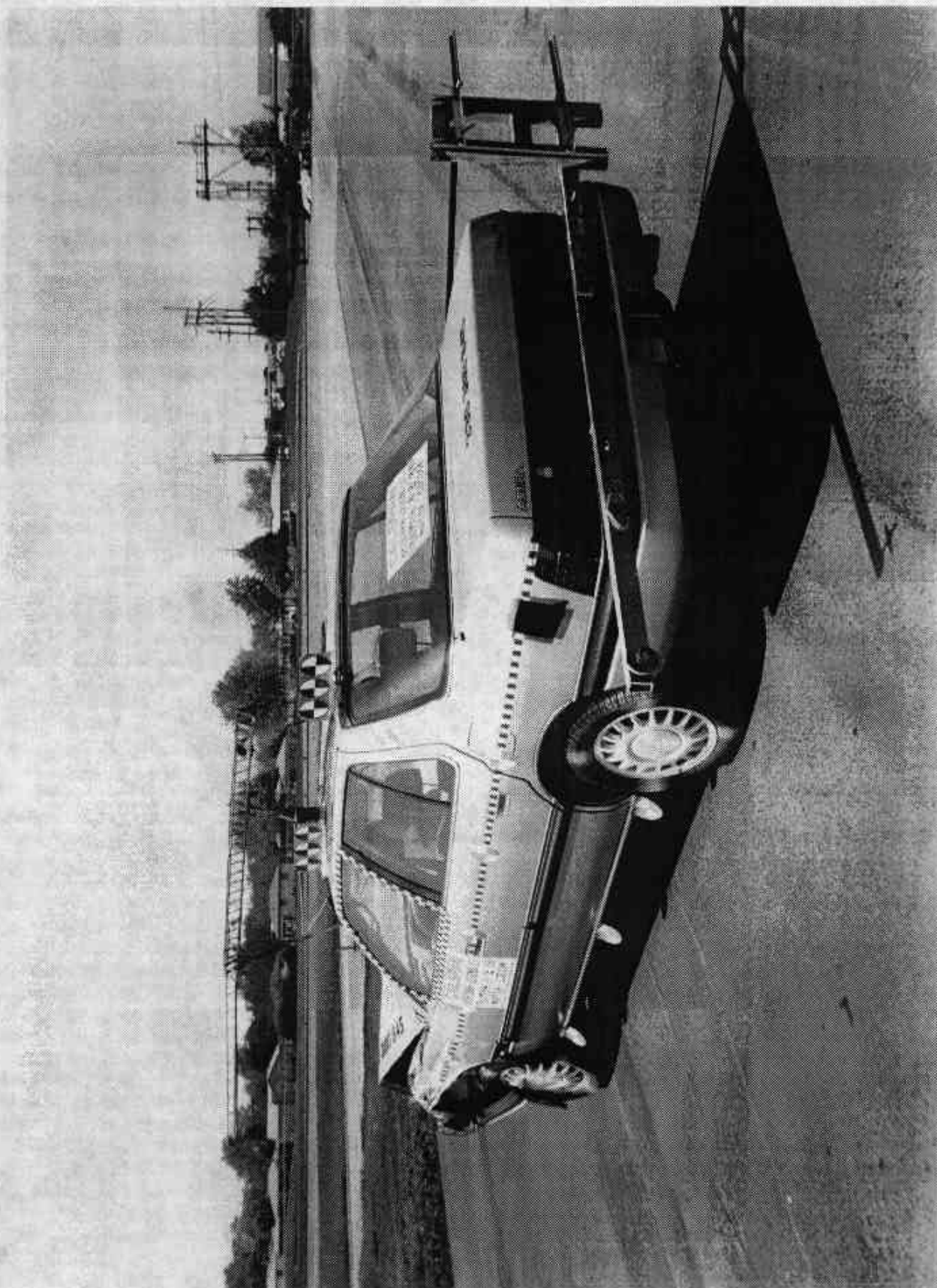


Figure A-10 POST-TEST LEFT REAR THREE-QUARTER VIEW

A-11

7669-4



Figure A-11 POST-TEST TOP VIEW

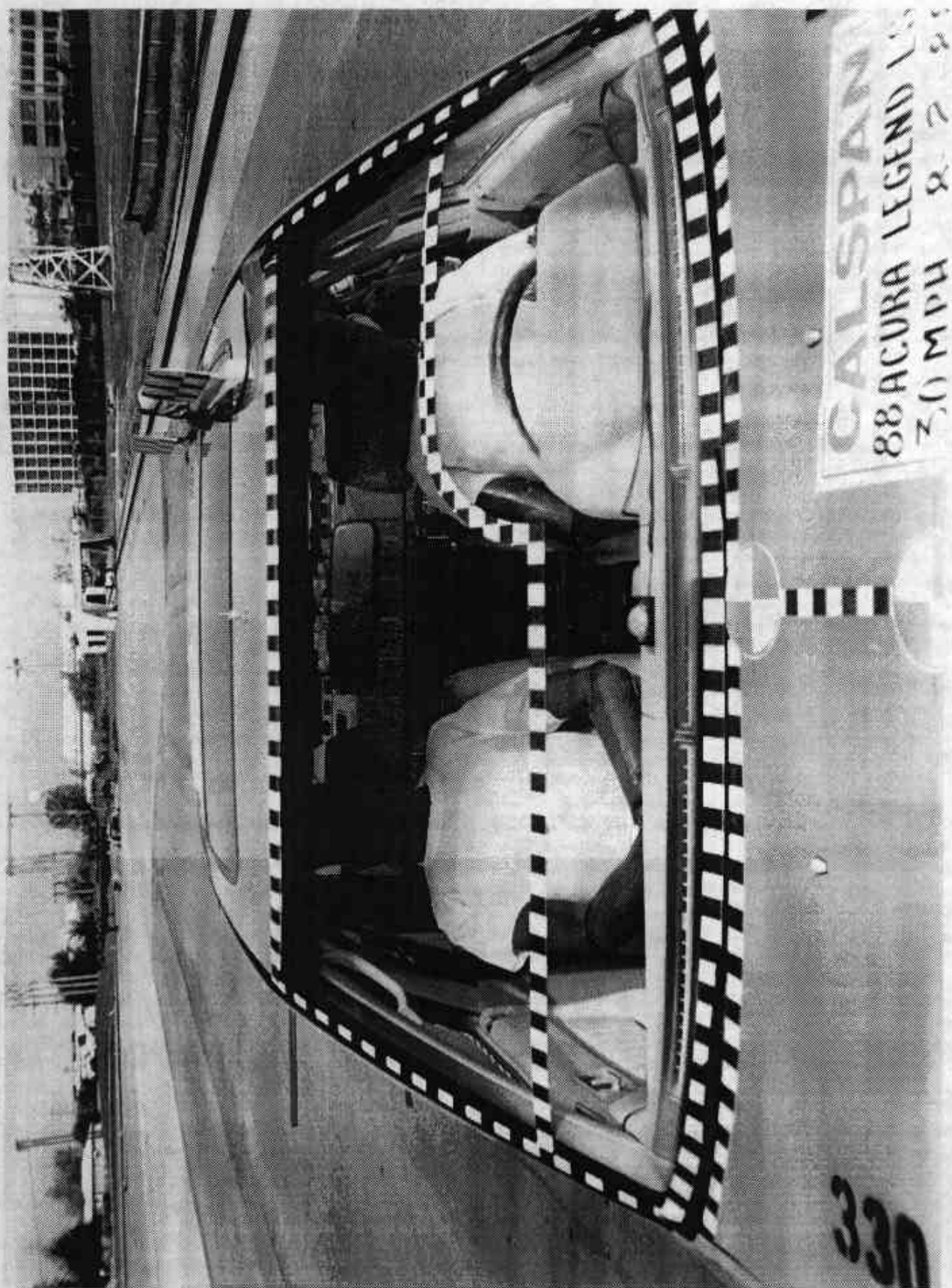


Figure A-12 PRE-TEST WINDSHIELD VIEW

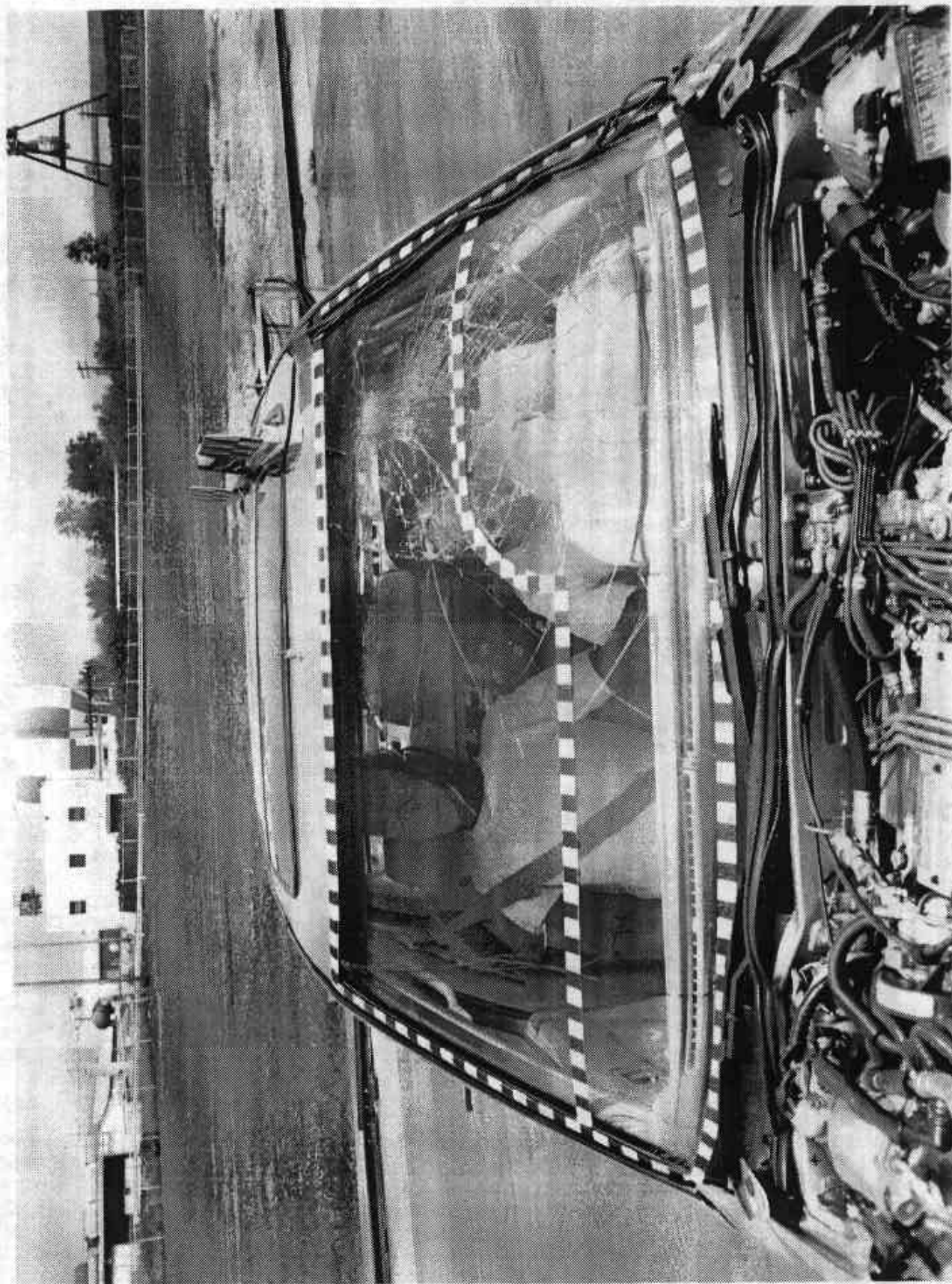


Figure A-13 POST-TEST WINDSHIELD VIEW

A-14

7669-4

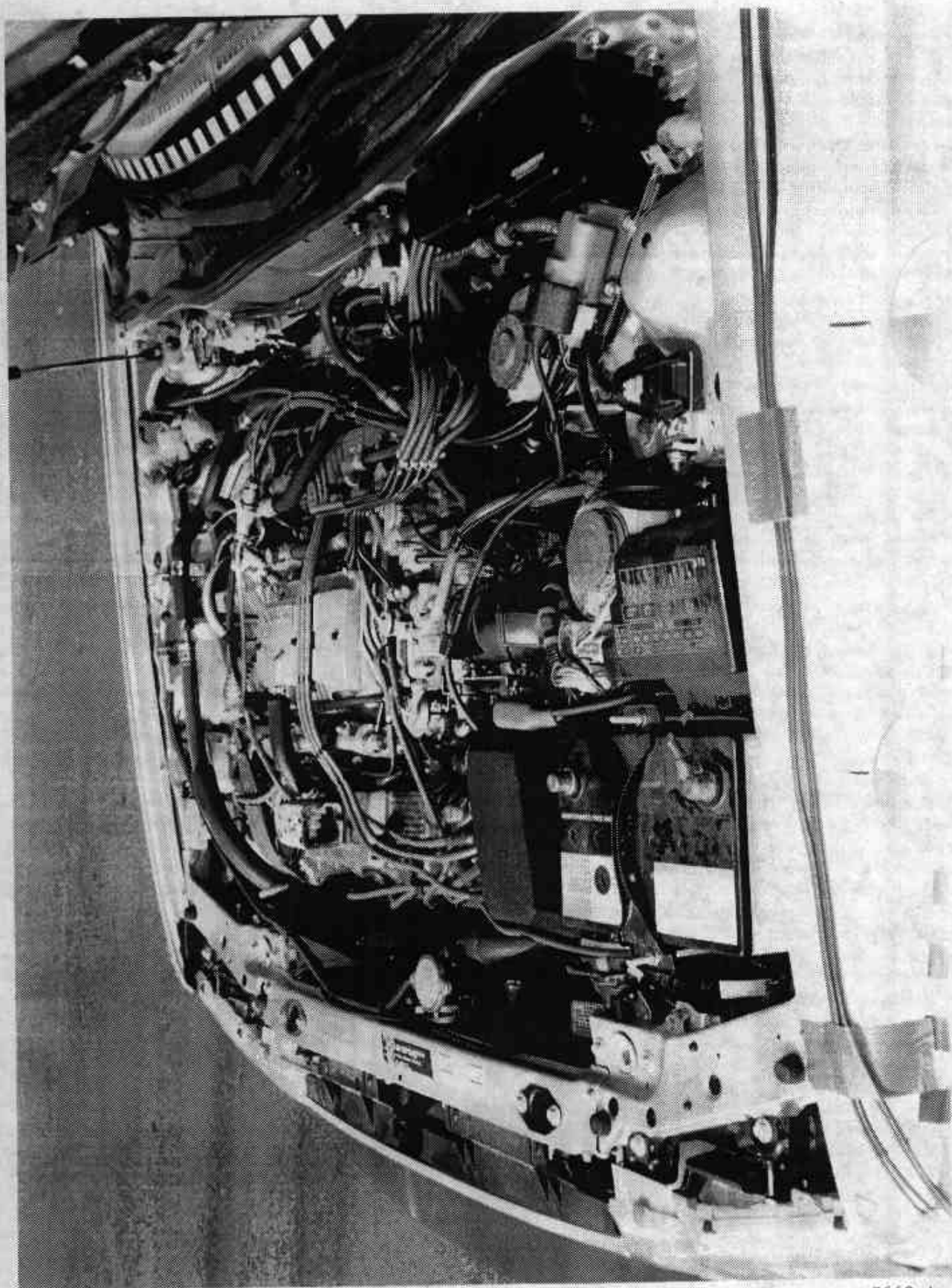


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

A-15

7669-4

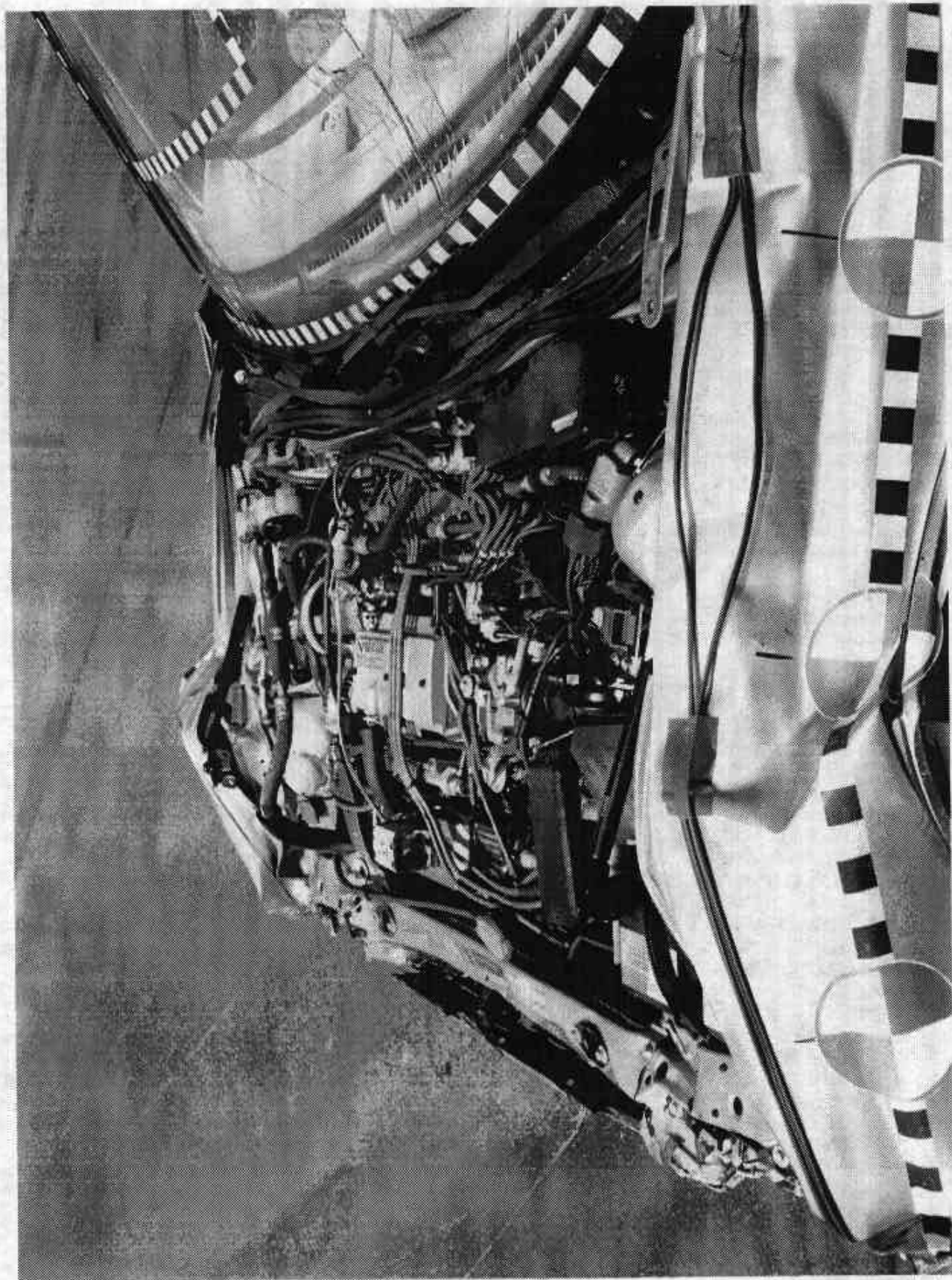


Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

A-16

7669-4

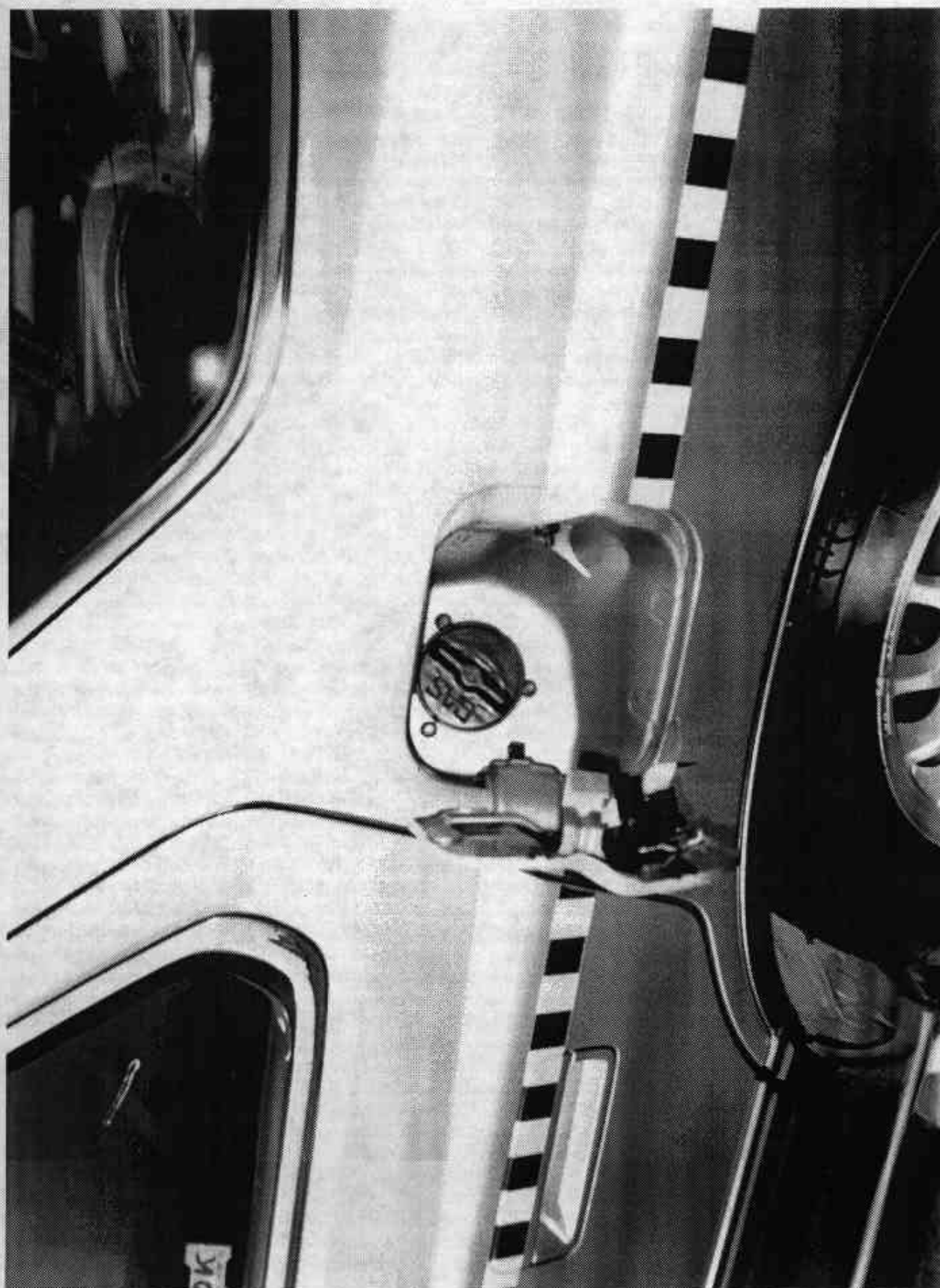


Figure A-16 PRE-TEST FUEL FILLER CAP VIEW

A-17

7669-4

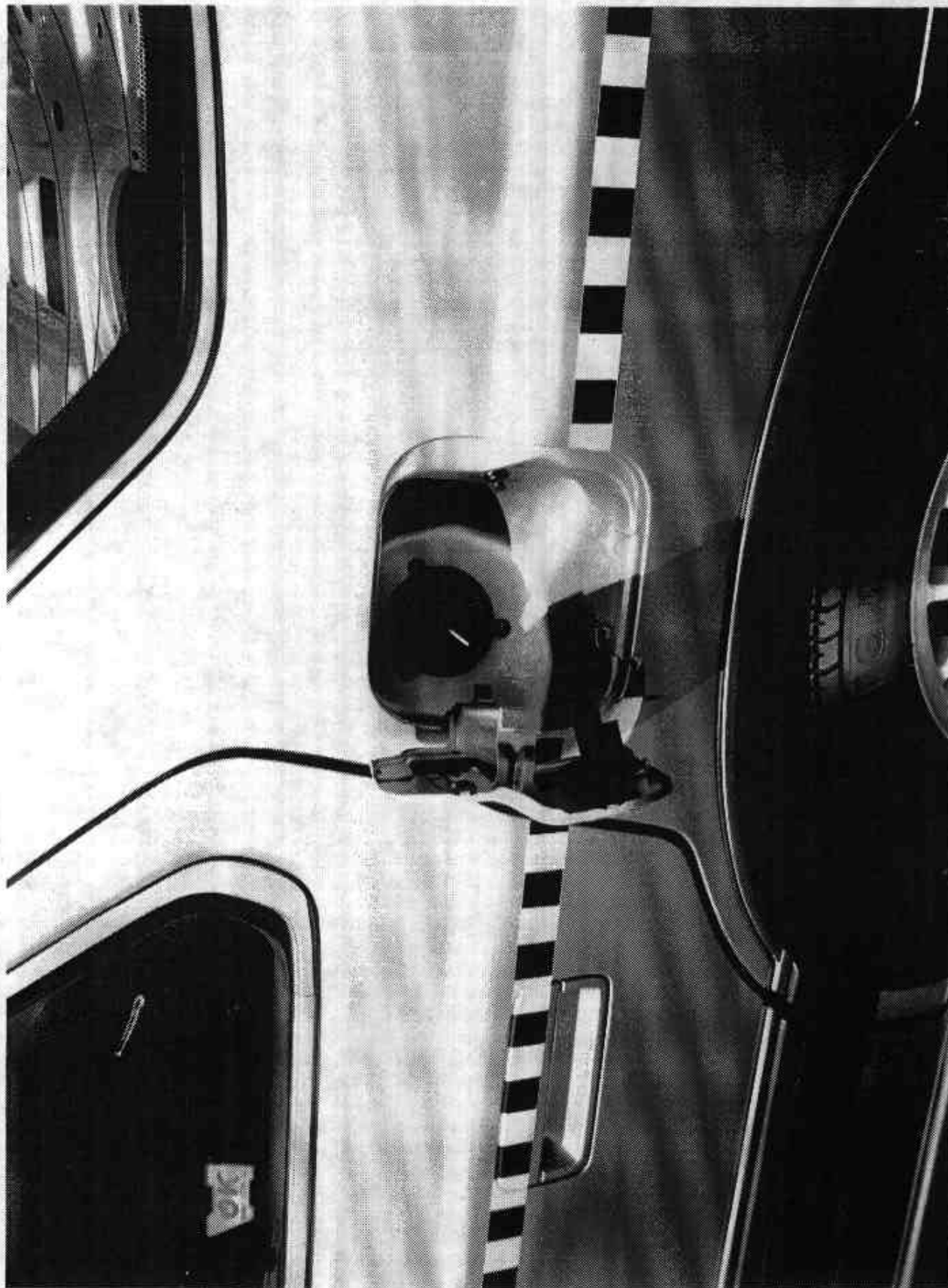


Figure A-17 POST-TEST FUEL FILLER CAP VIEW

A-18

7669~4

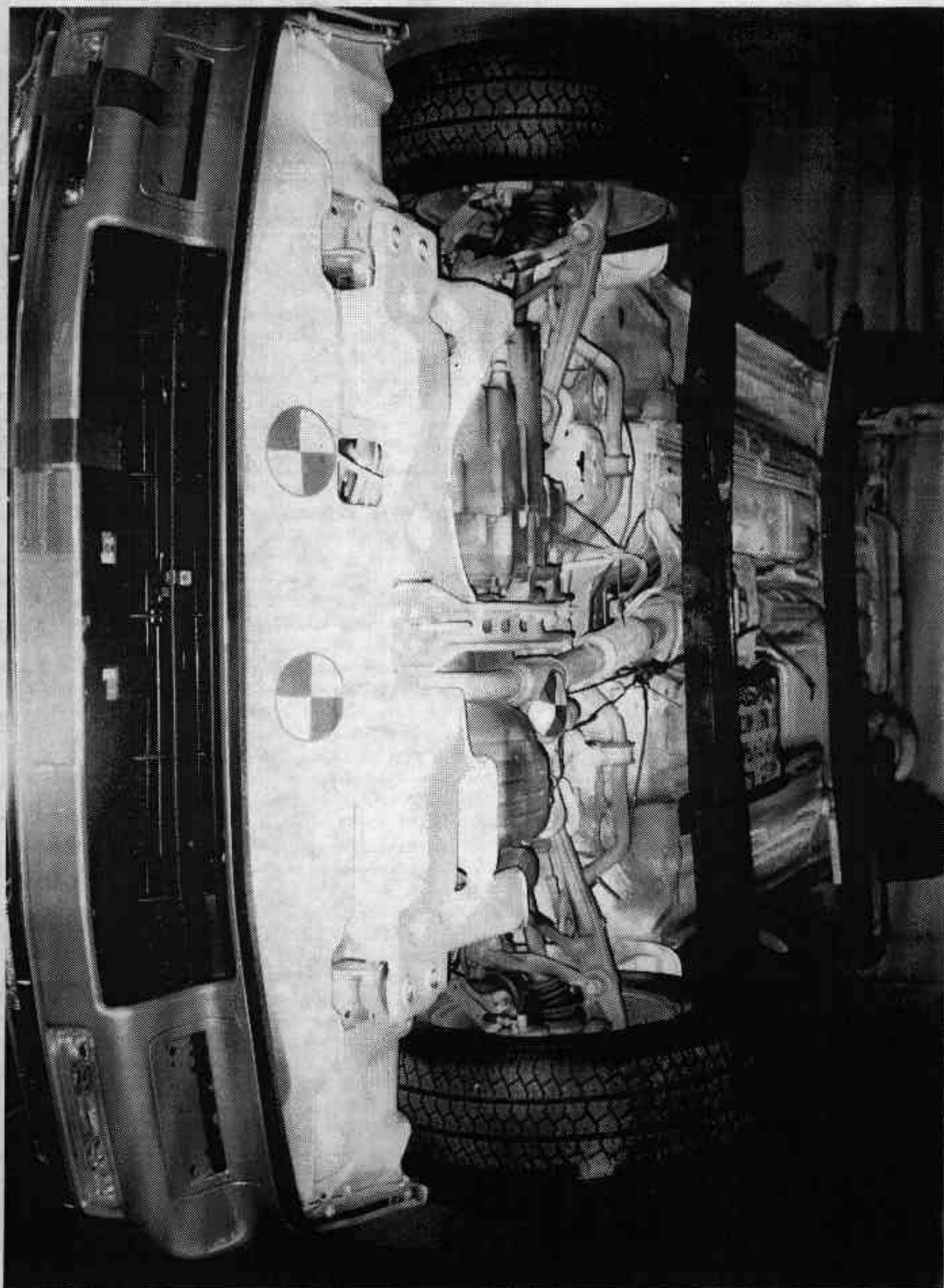


Figure A-18 PRE-TEST FRONT UNDERBODY VIEW

A-19

7669-4

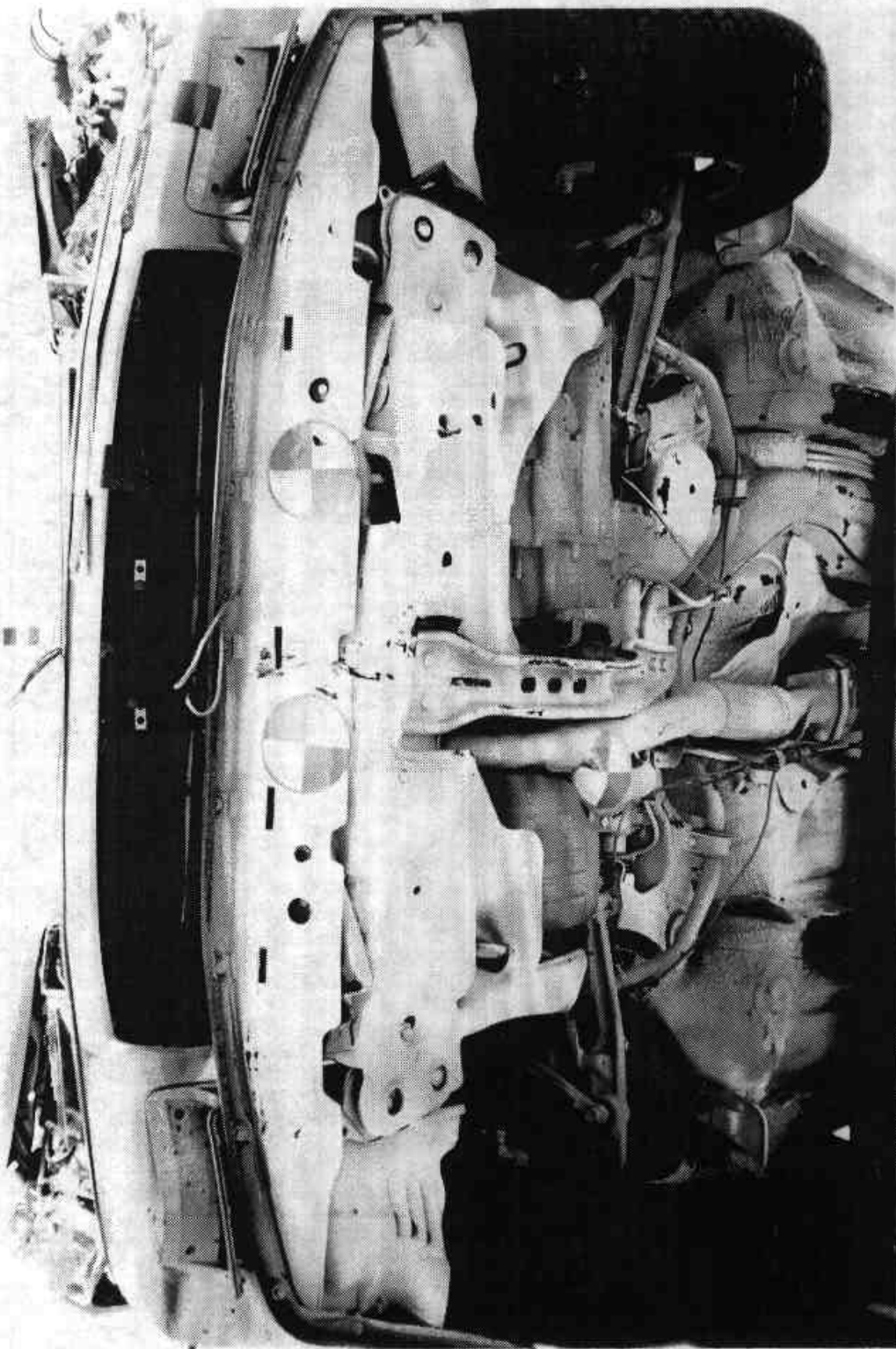


Figure A-19 POST-TEST FRONT UNDERBODY VIEW

A-20

7659-4

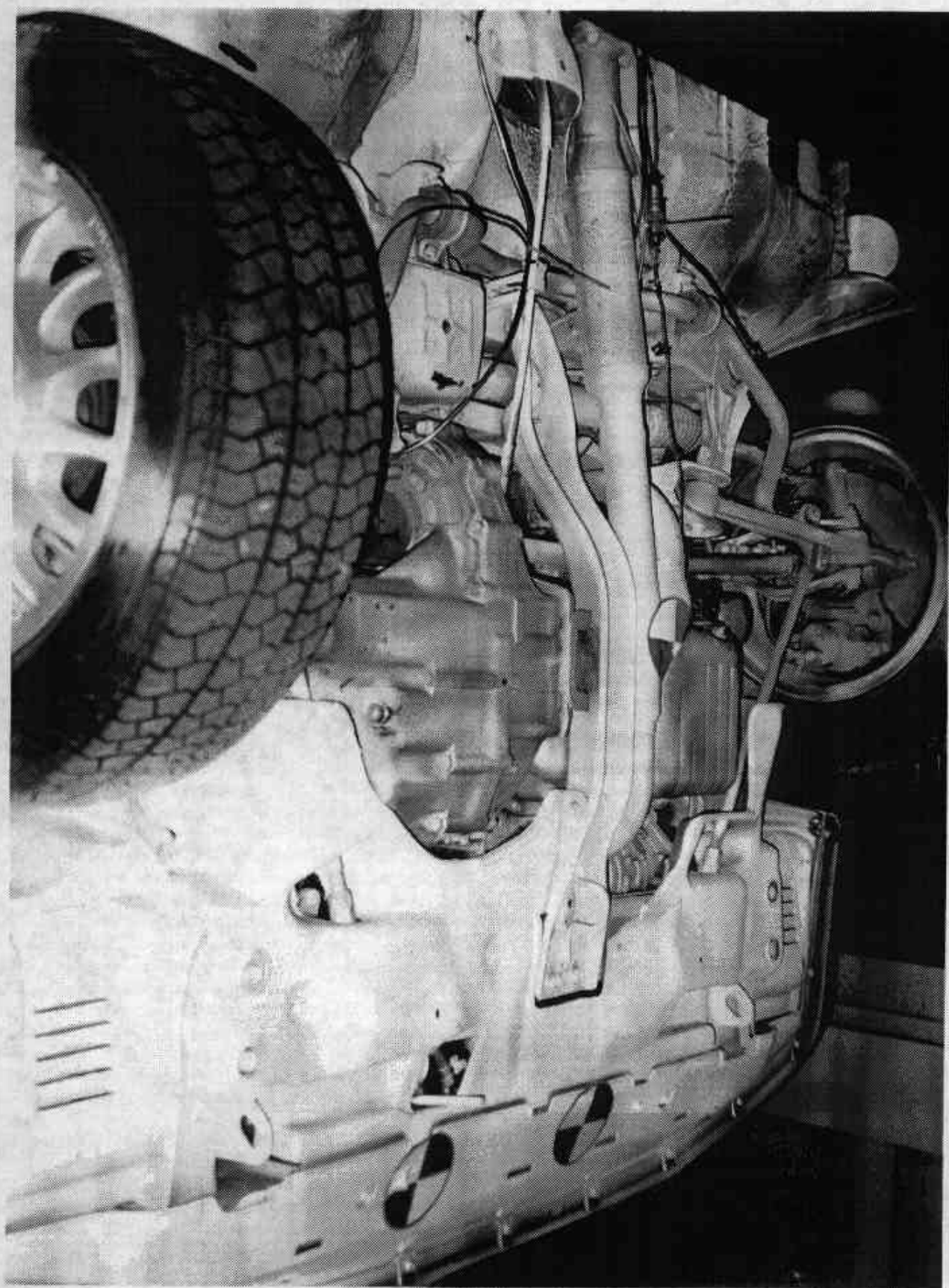


Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

A-21

7669-4

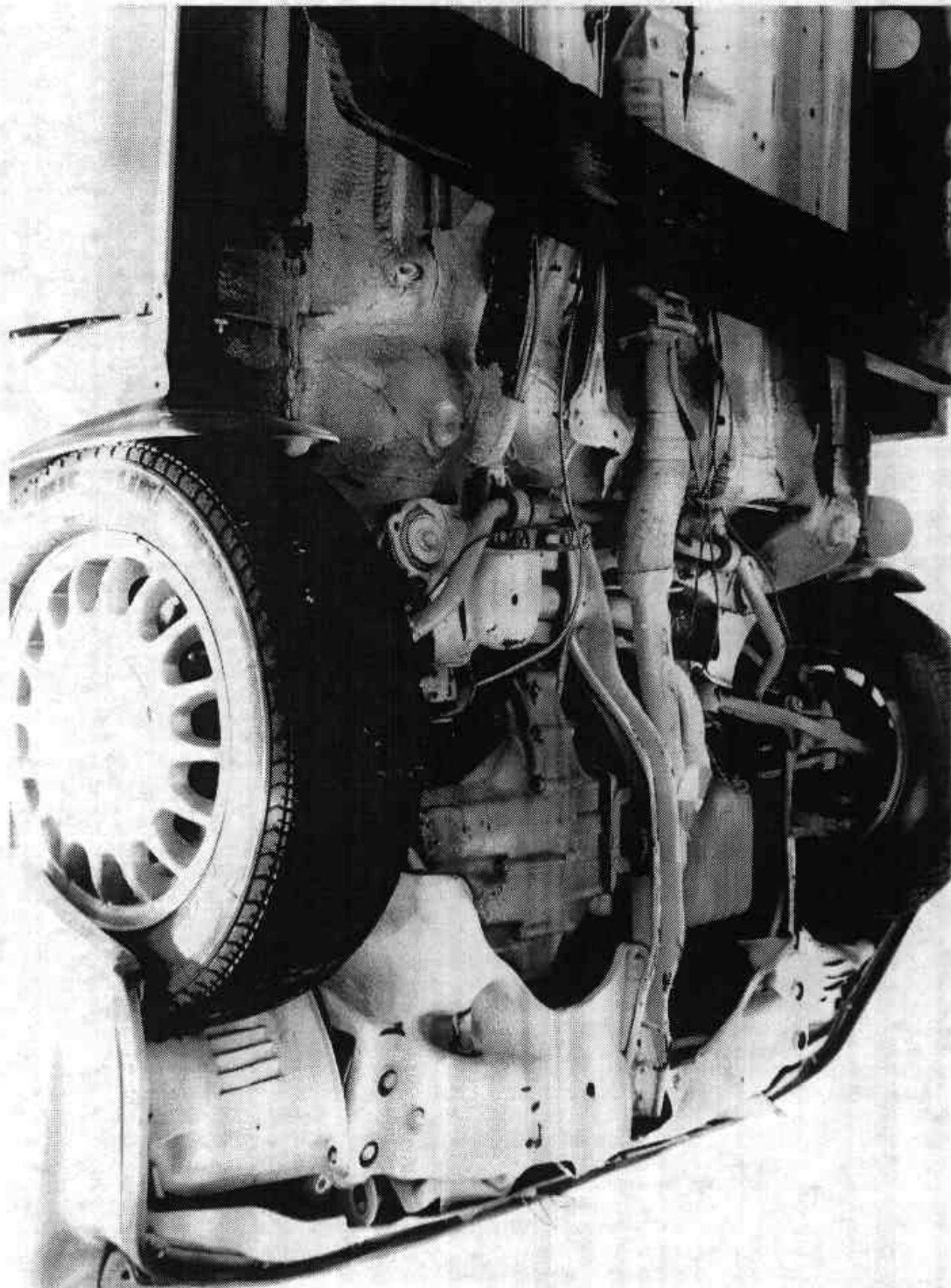


Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW

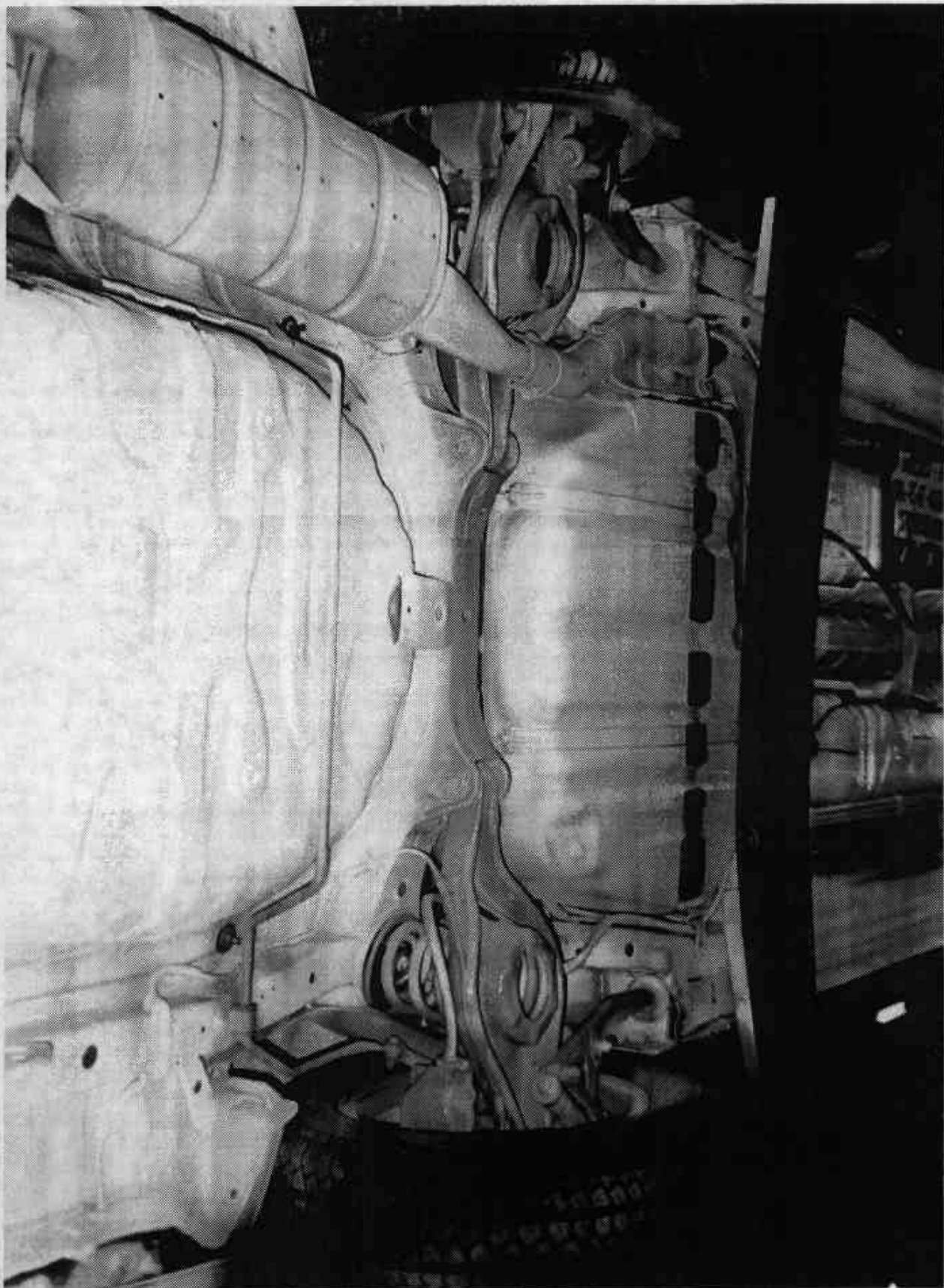


Figure A-22 PRE-TEST REAR UNDERBODY VIEW

A-23

7669-4

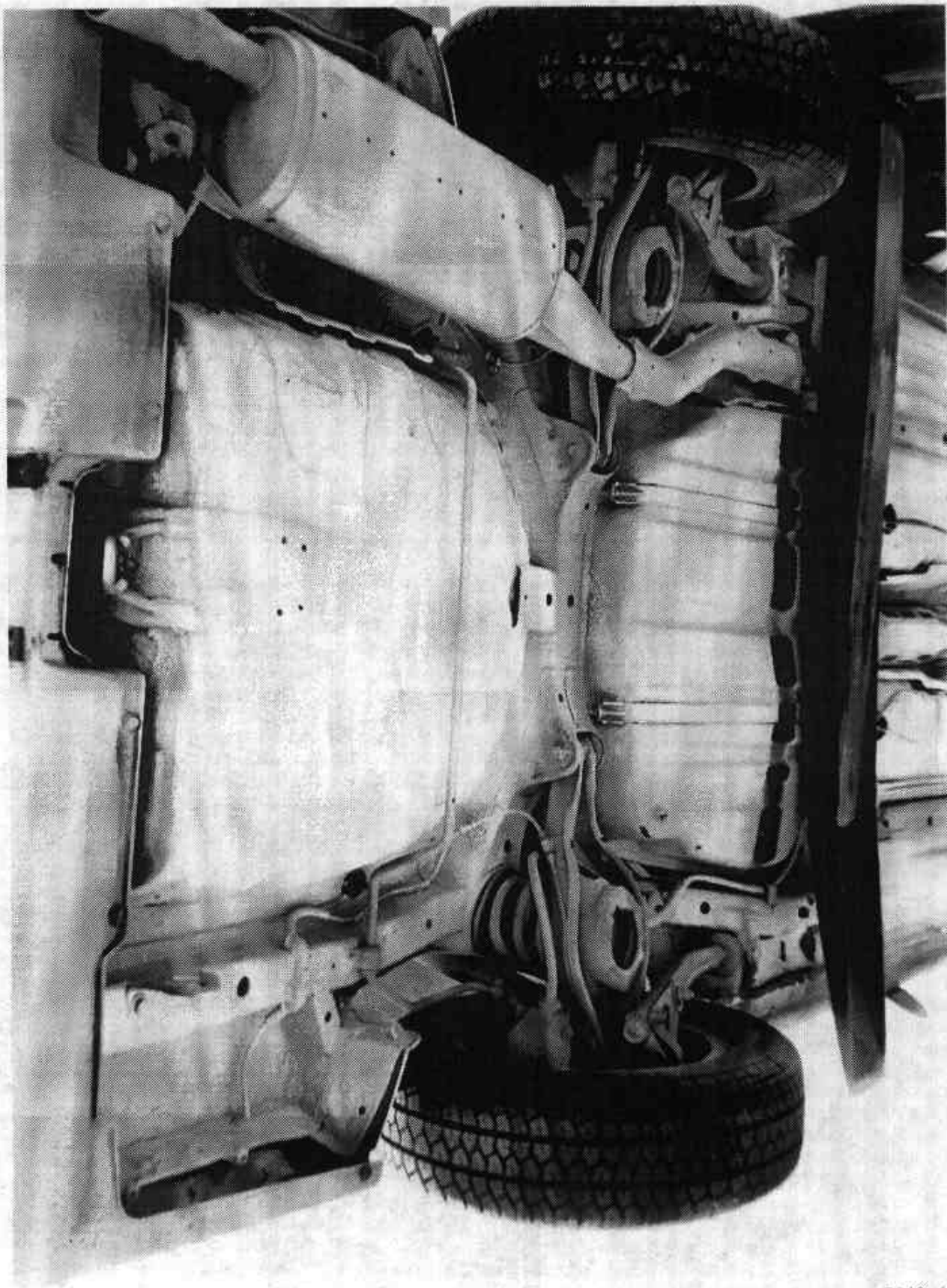


Figure A-23 POST-TEST REAR UNDERBODY VIEW

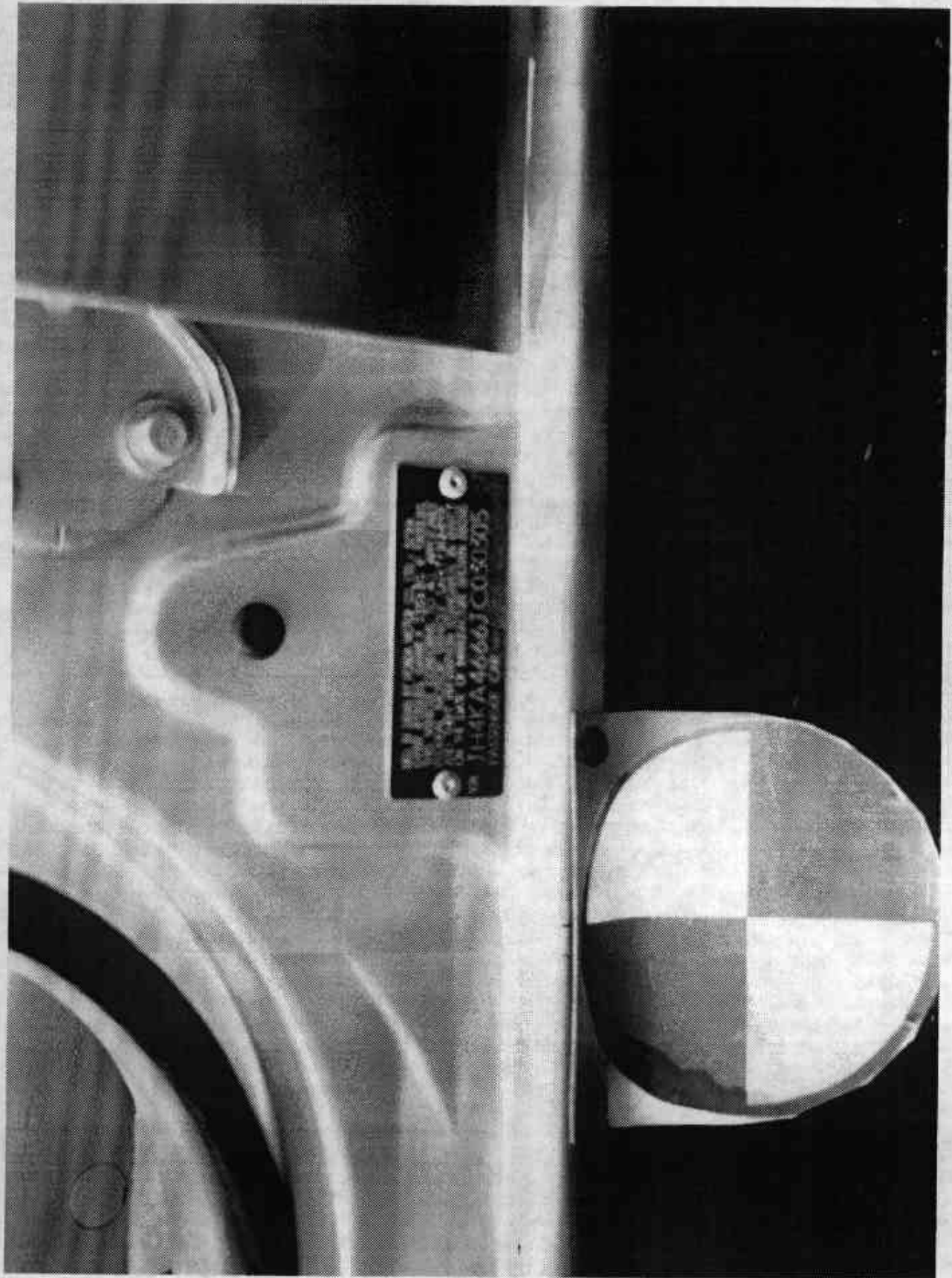


Figure A-24 CERTIFICATION LABEL

A-25

7669-4

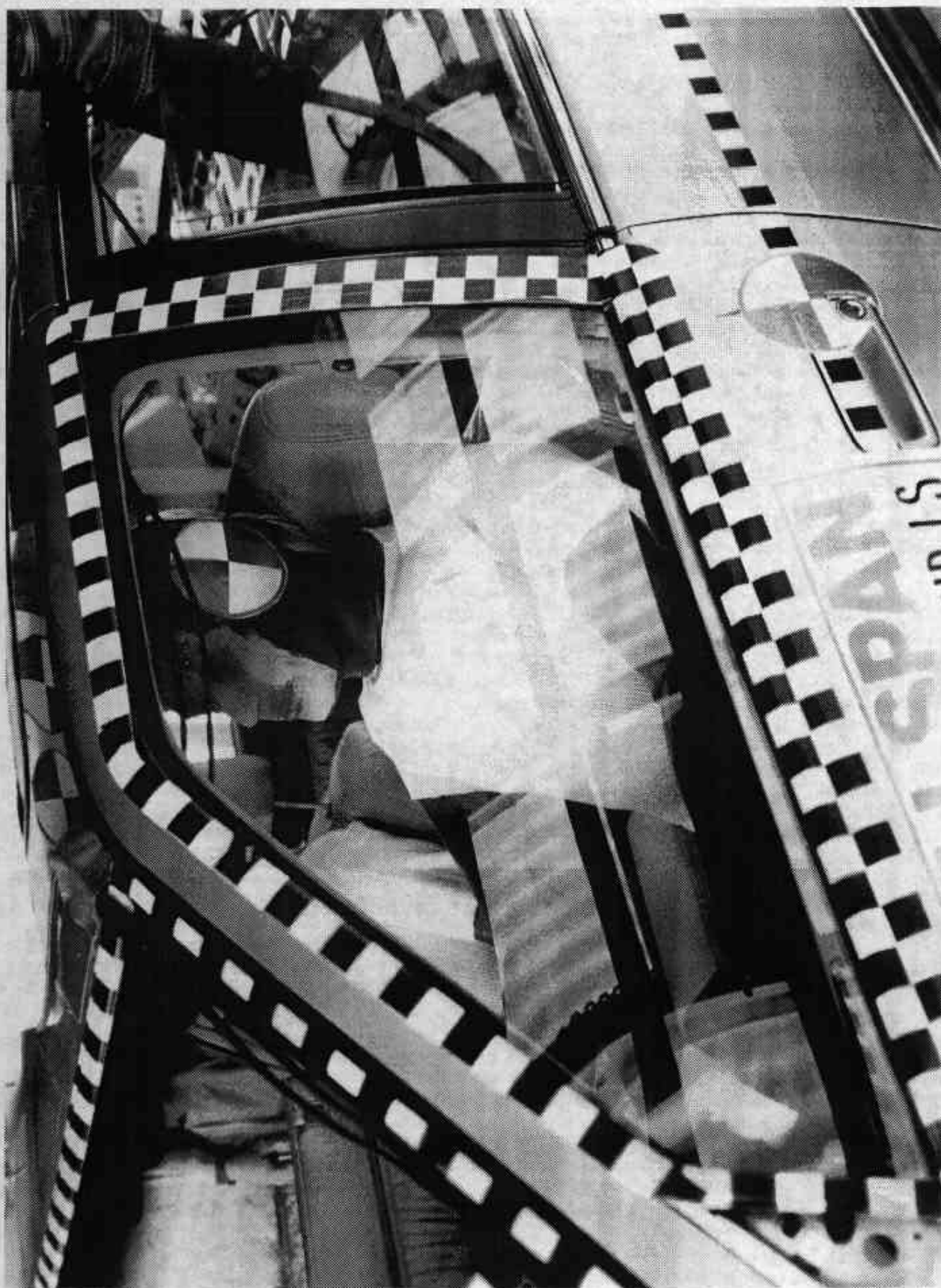


Figure A-26 PRE-TEST DRIVER DUMMY POSITION

A-27

7669-4



Figure A-27 POST-TEST DRIVER DUMMY POSITION



Figure A-28 PRE-TEST PASSENGER DUMMY POSITION



Figure A-29 POST-TEST PASSENGER DUMMY POSITION

A-30

7669-4

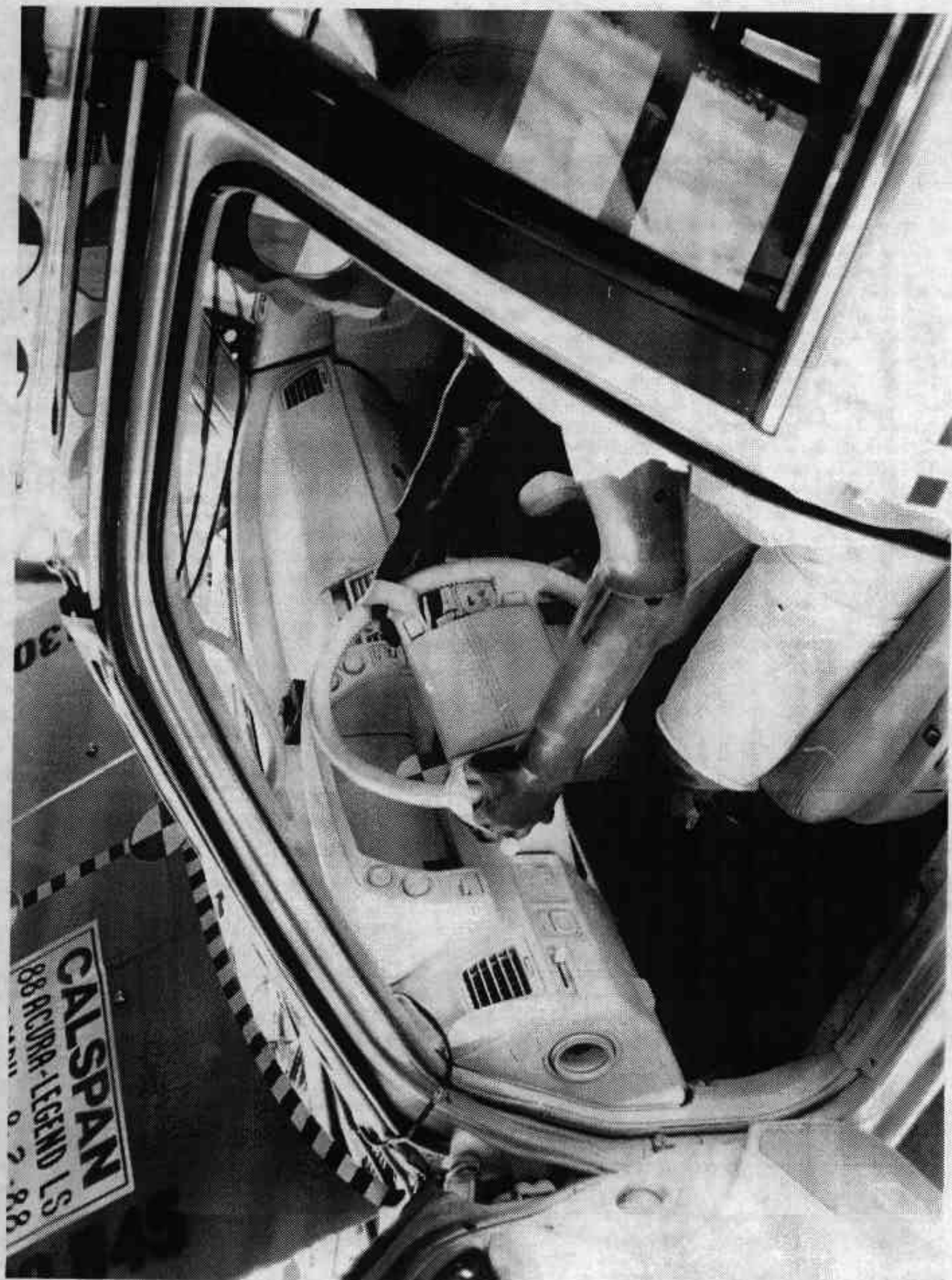


Figure A-30 PRE-TEST DRIVER DUMMY AND INTERIOR VIEW

A-31

7669-4



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

A-32

7669-4



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

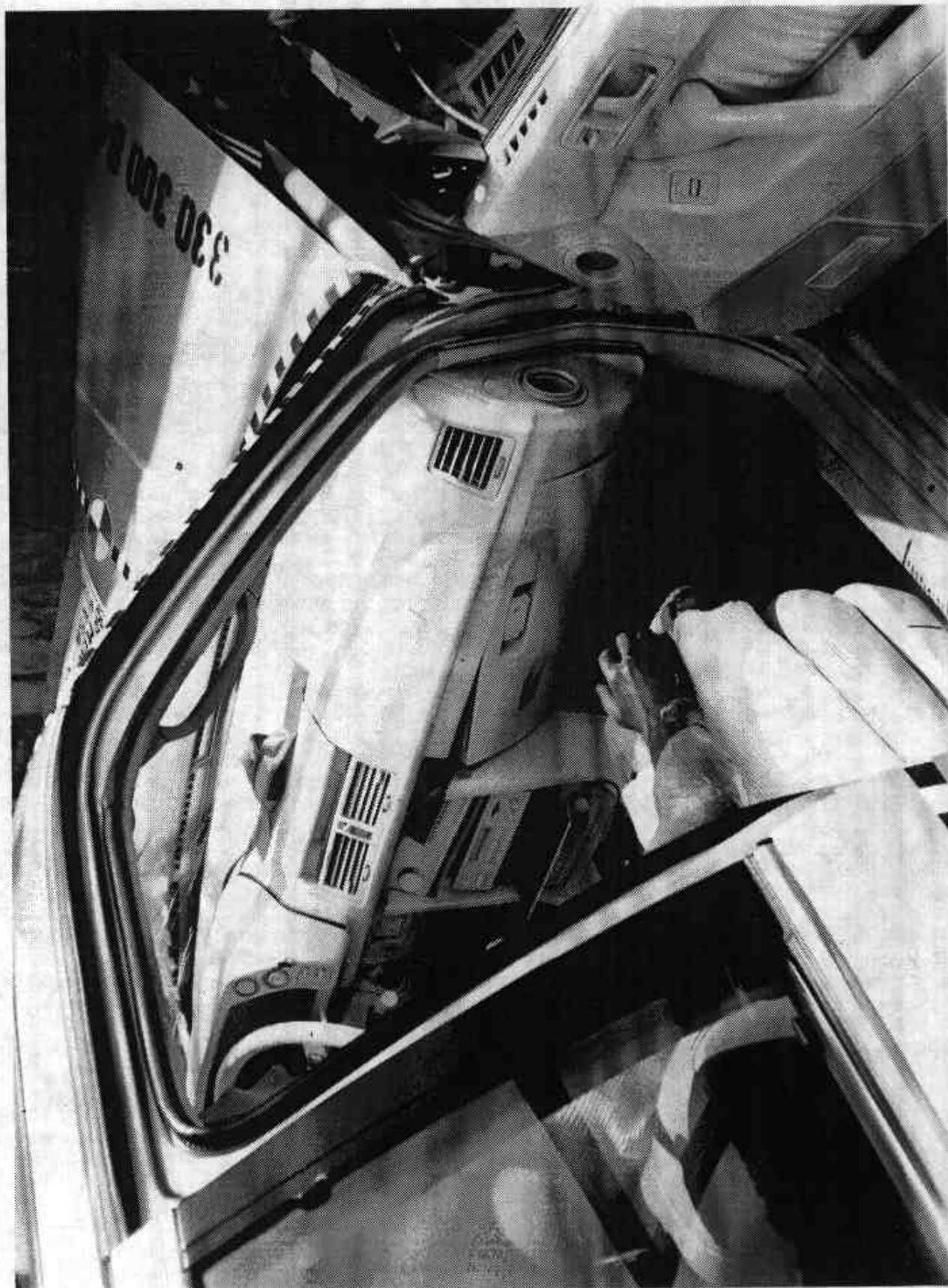


Figure A-33 POST-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-34

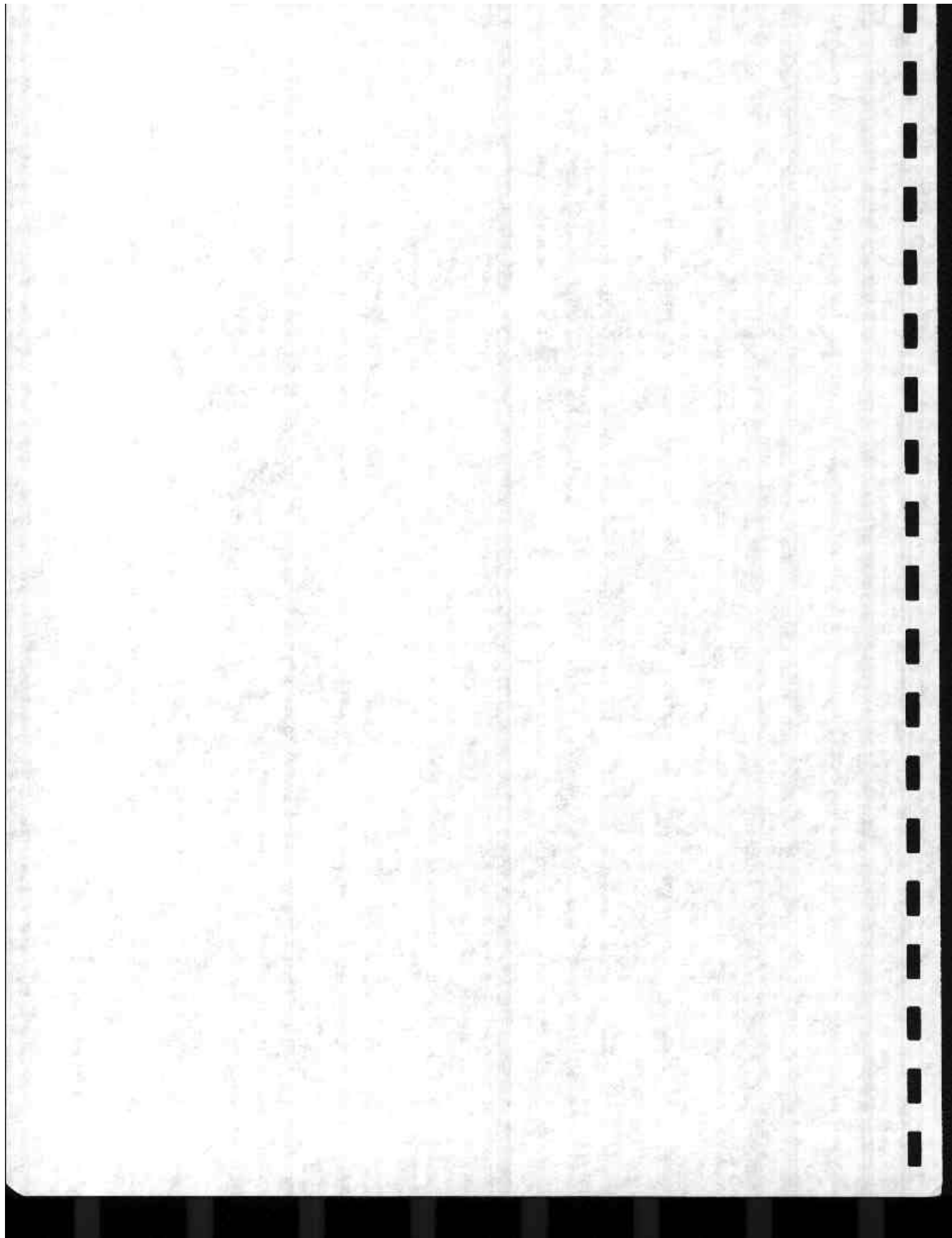
7669-4



Figure A-34 POST-TEST AIRBAG VIEW

A-35

7669-4



Appendix B

VEHICLE AND DUMMY RESPONSE DATA

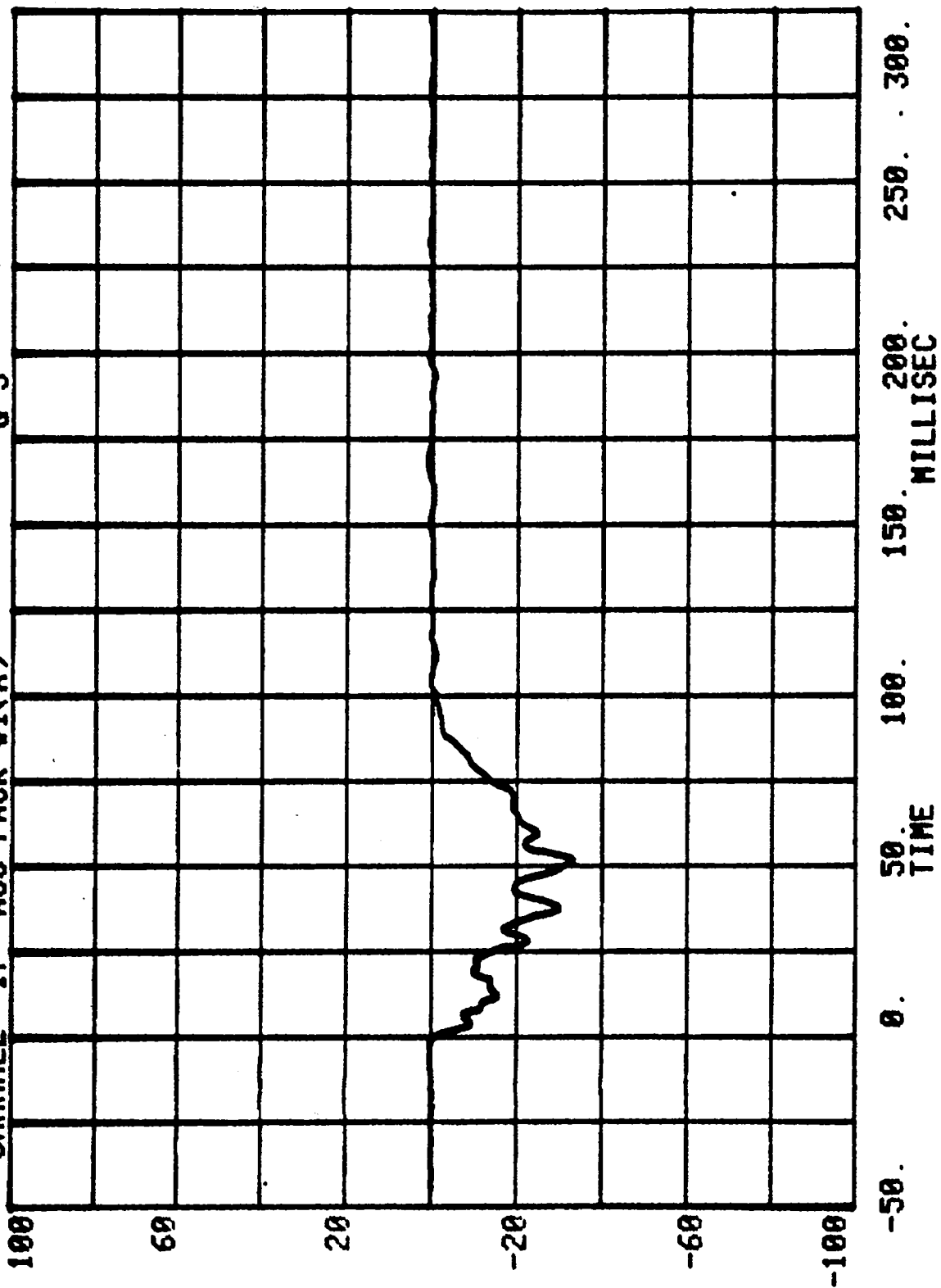
TEST NO. CJ5304

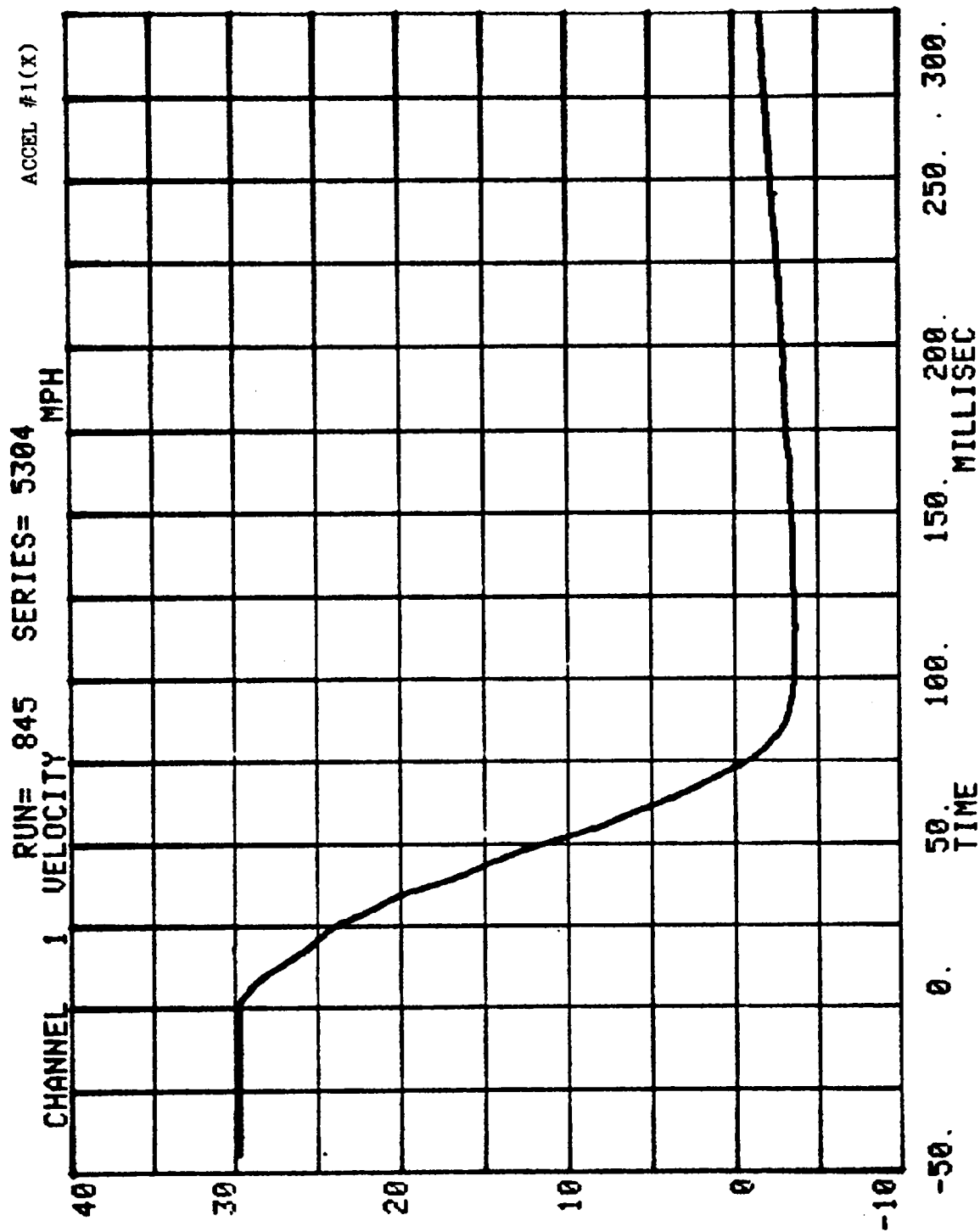
VEHICLE DATA

FILTER CHANNEL CLASS

60

RUN= 845 SERIES= 5304
CHANNEL 17 ACC PACK #1(X) G'S





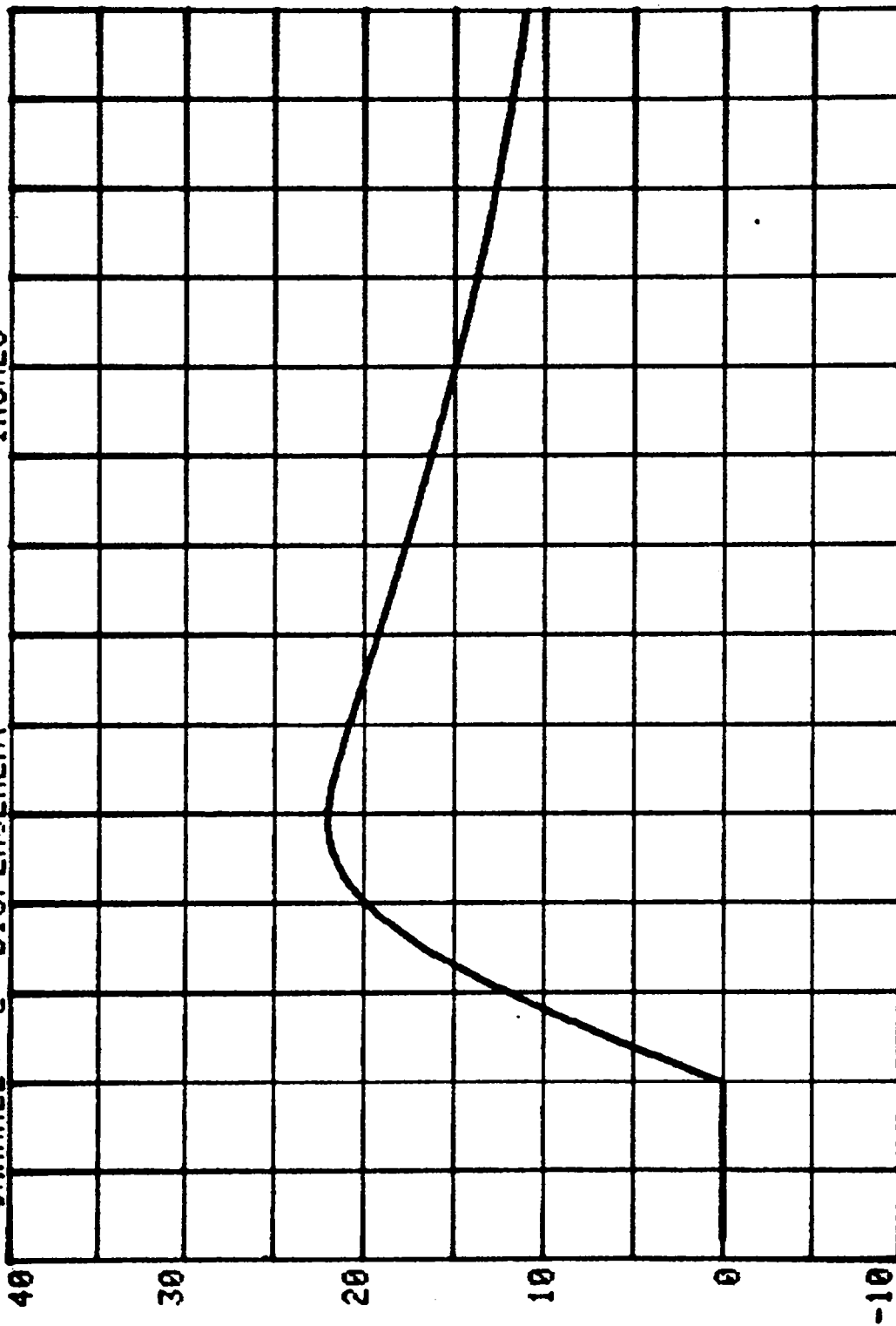
ACCEL #1(X)

INCHES

SERIES= 5304

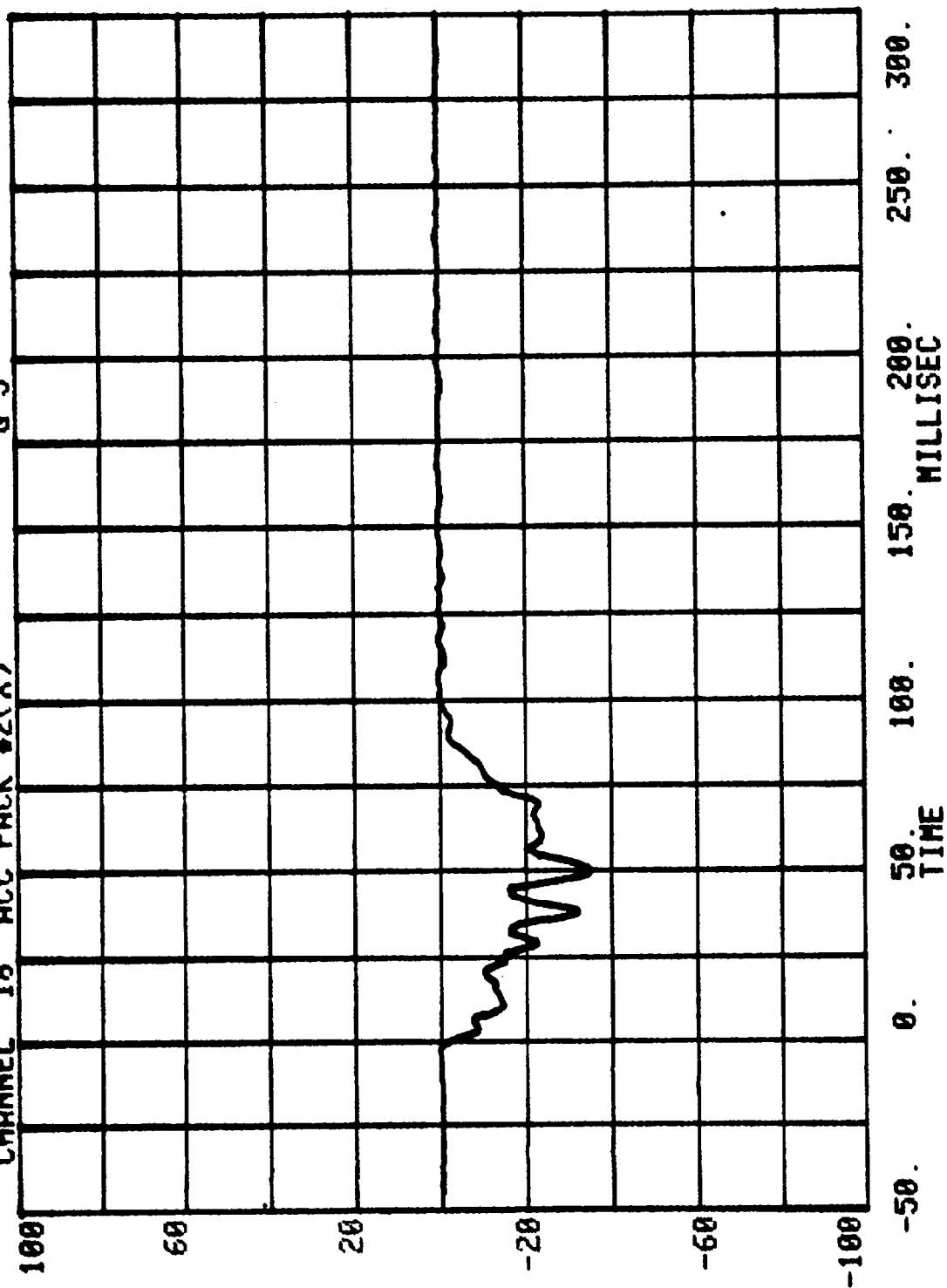
RUN= 845

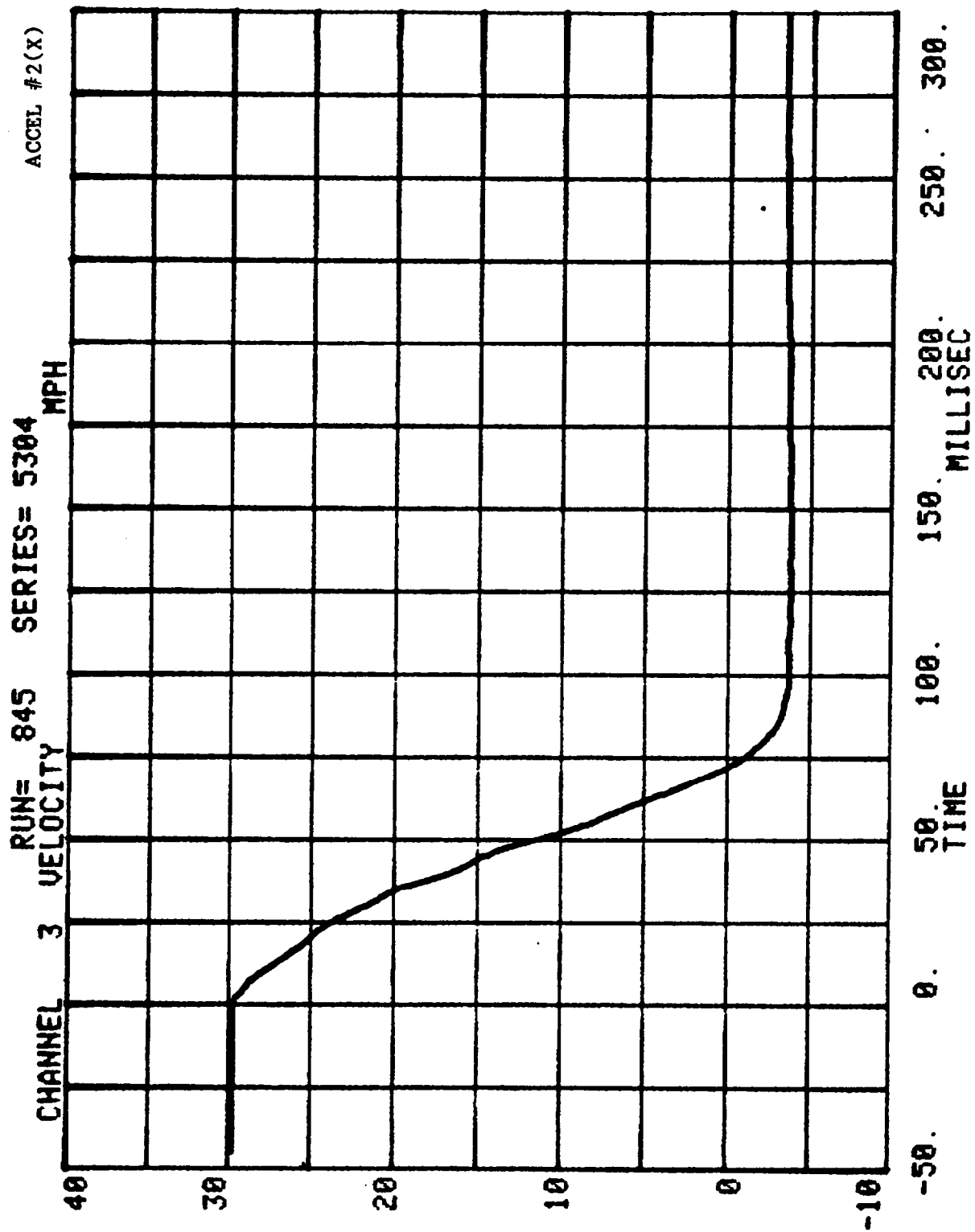
CHANNEL 2 DISPLACEMENT

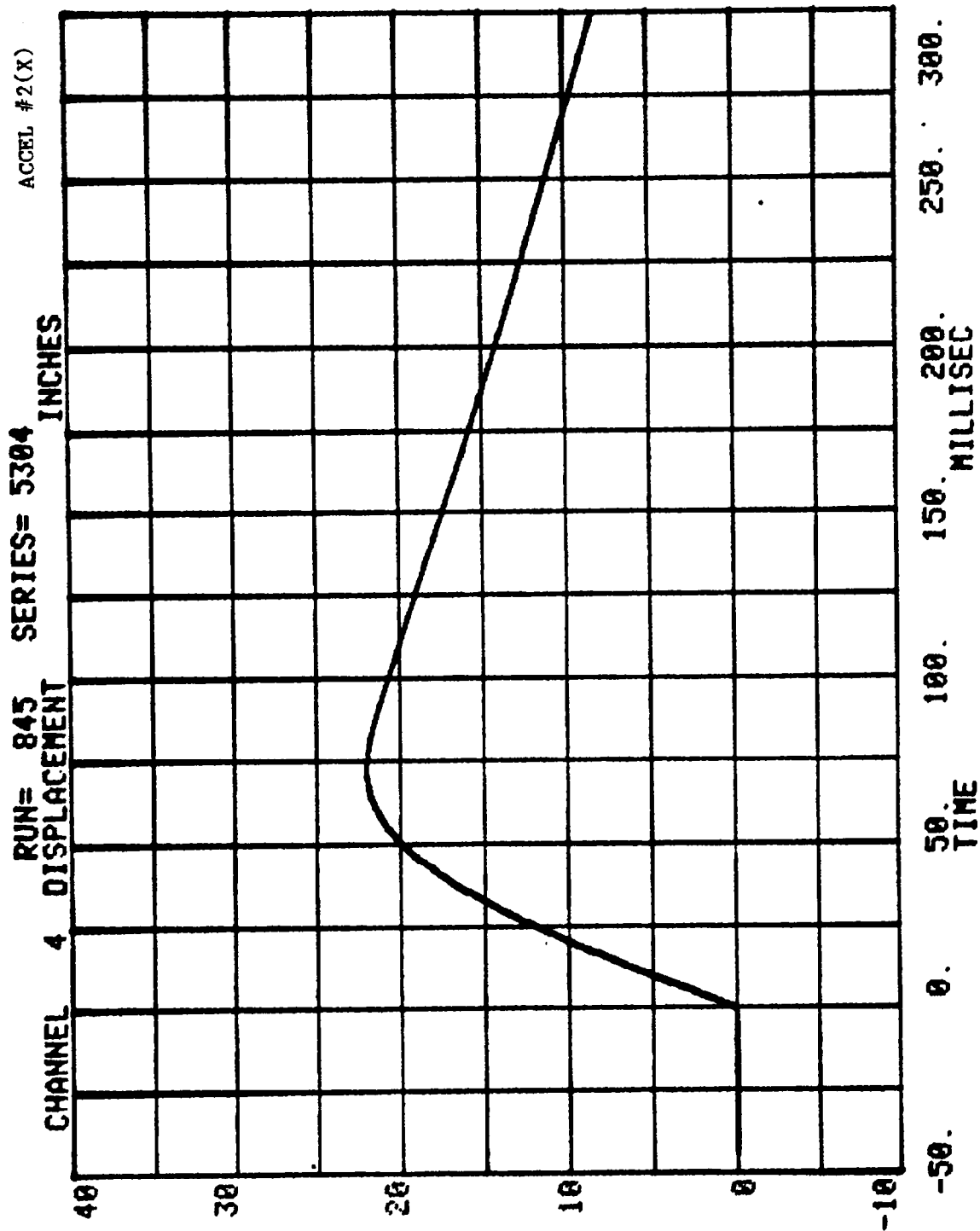


TIME
-50. 0. 50. 100. 150. 200. 250. 300.

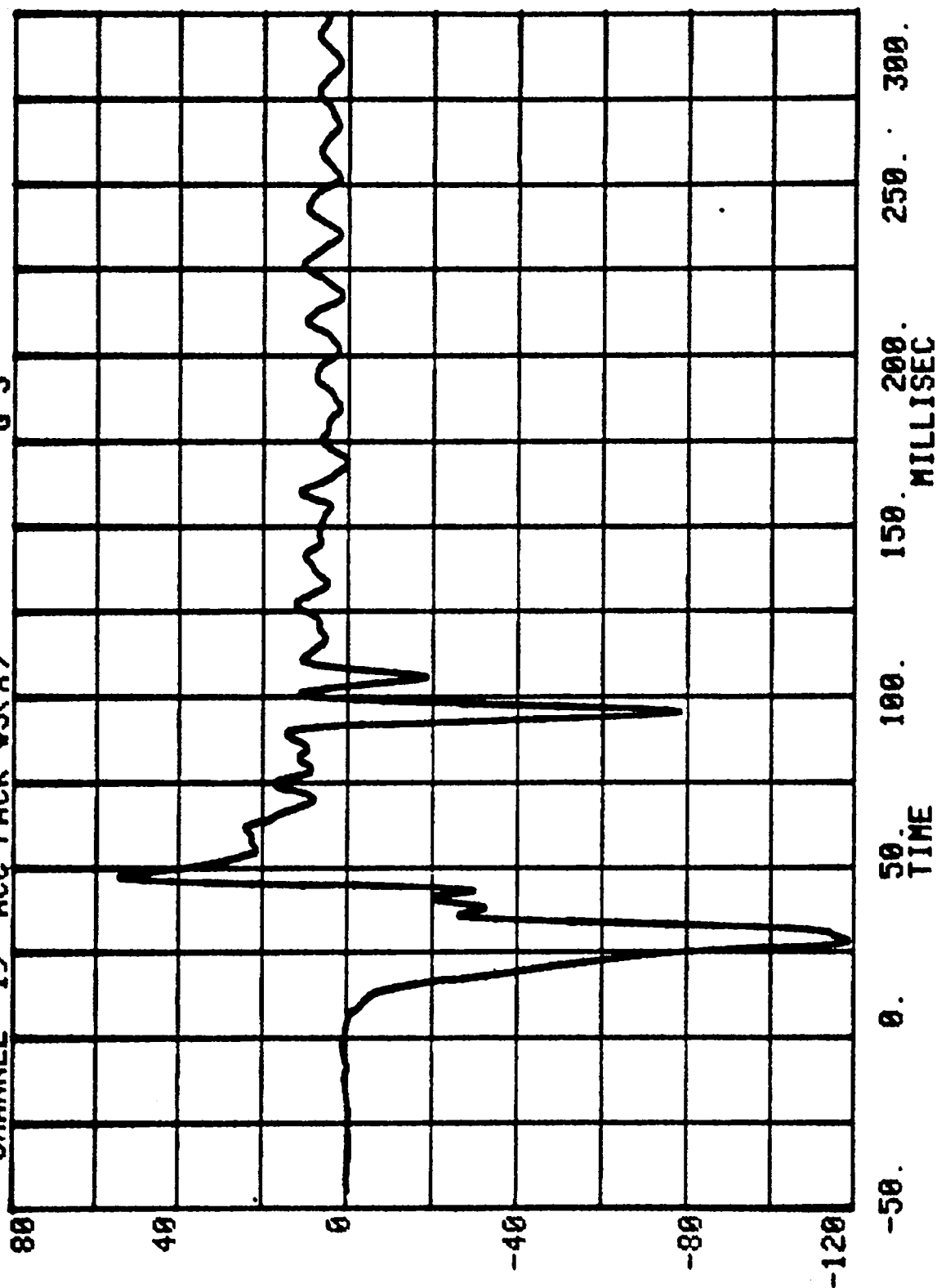
RUN= 845 SERIES= 5304 G'S
CHANNEL 18 ACC PACK #2(X)

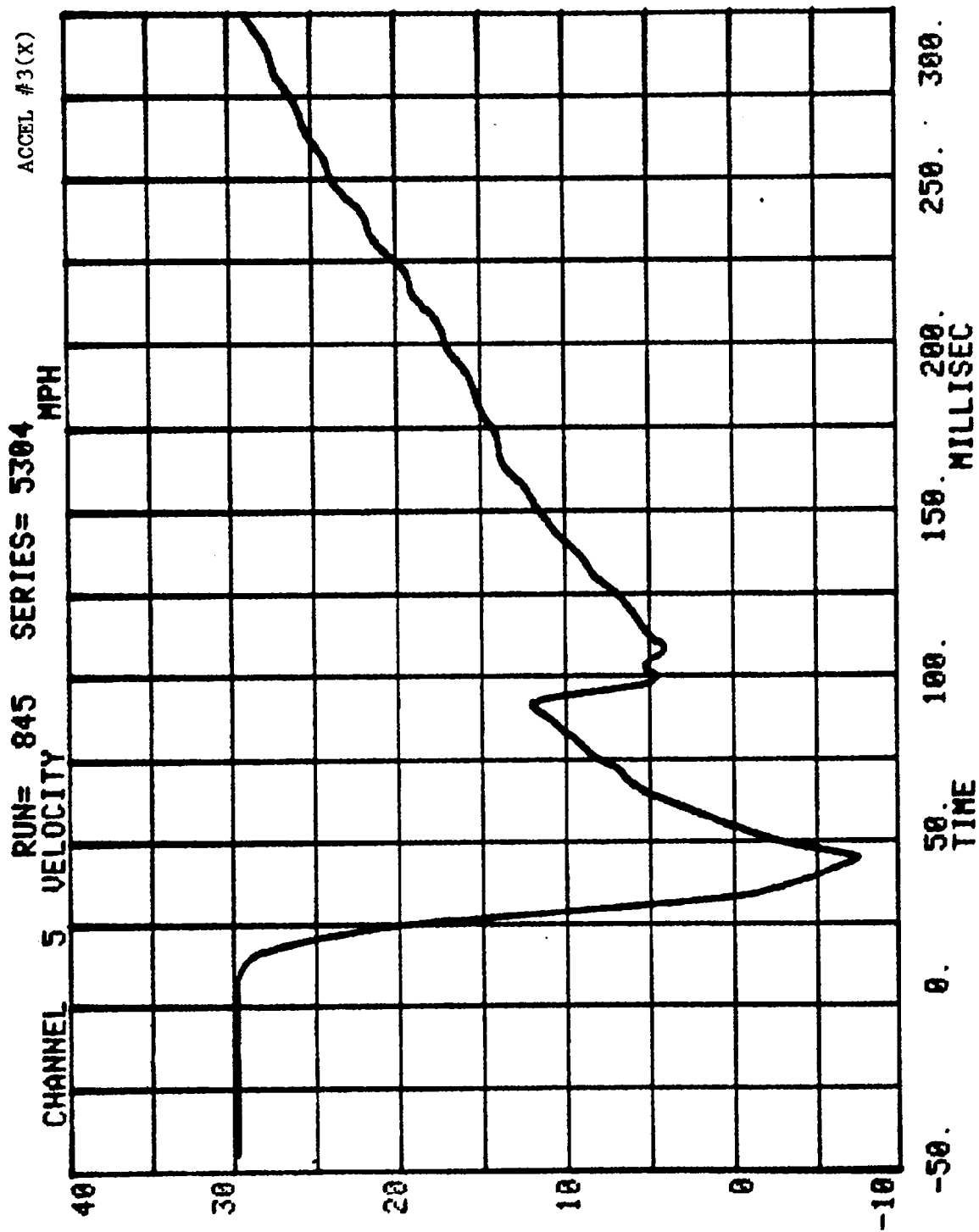


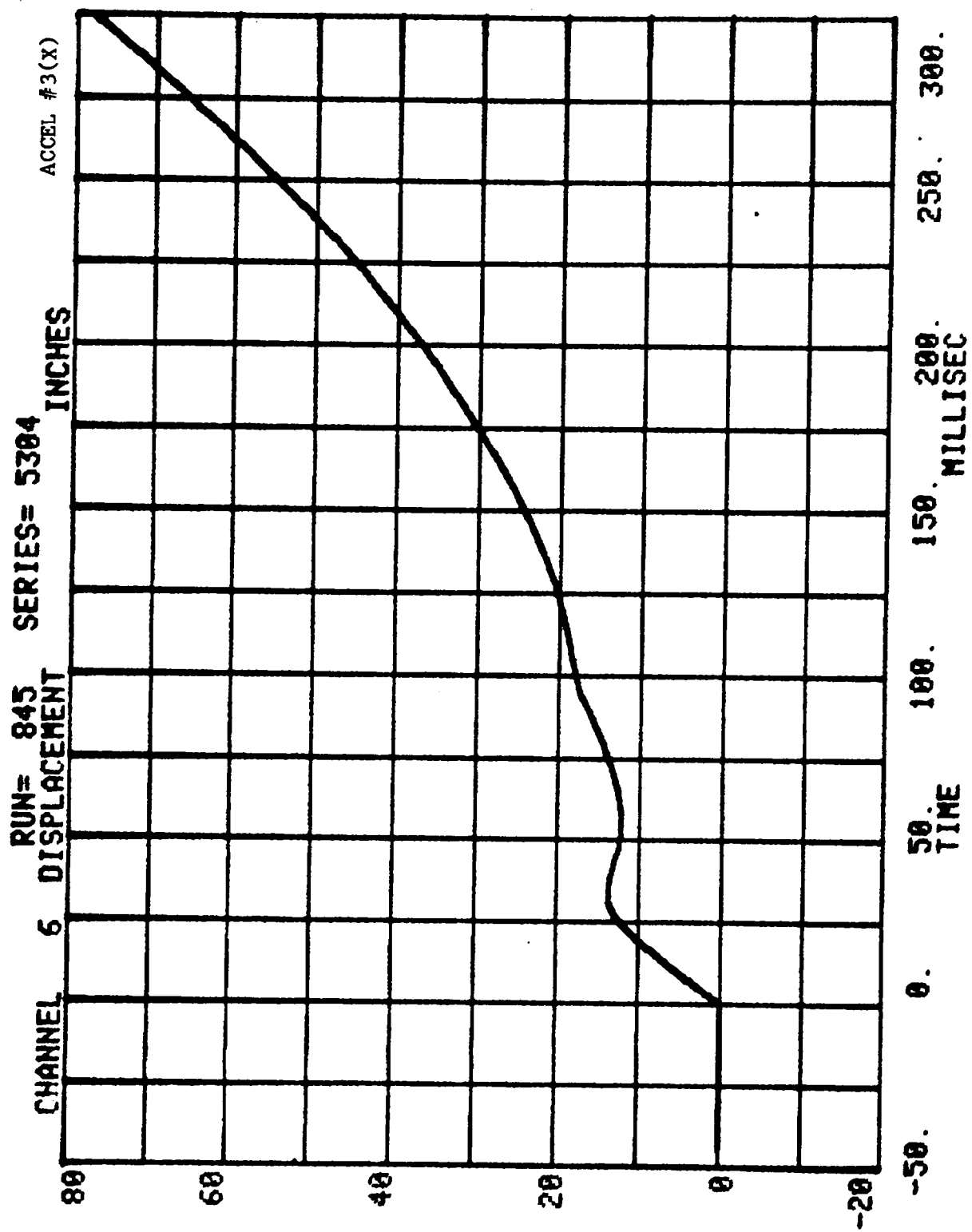




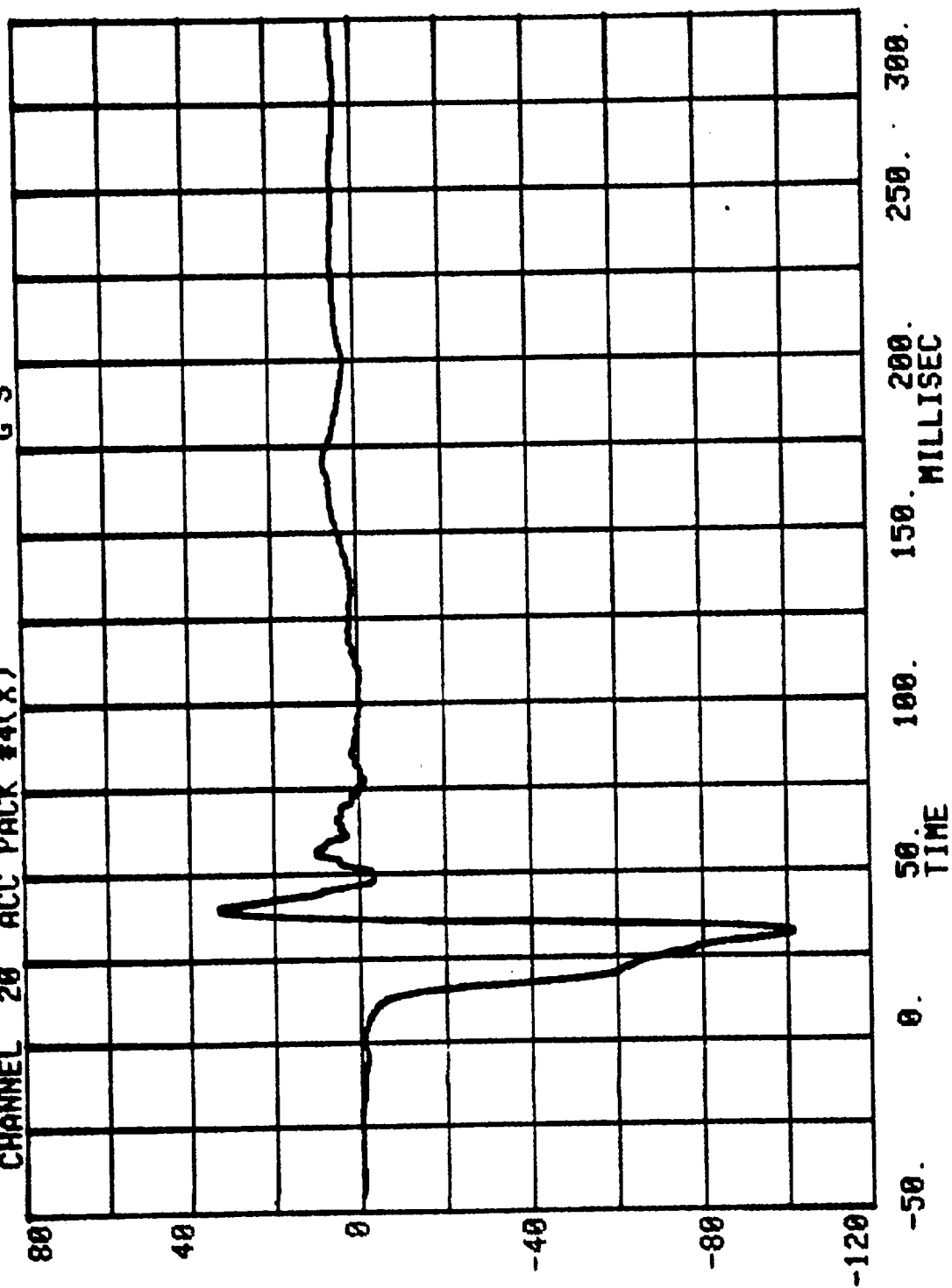
RUN= 845 SERIES= 5304
CHANNEL 19 ACC PACK #3(X) G'S



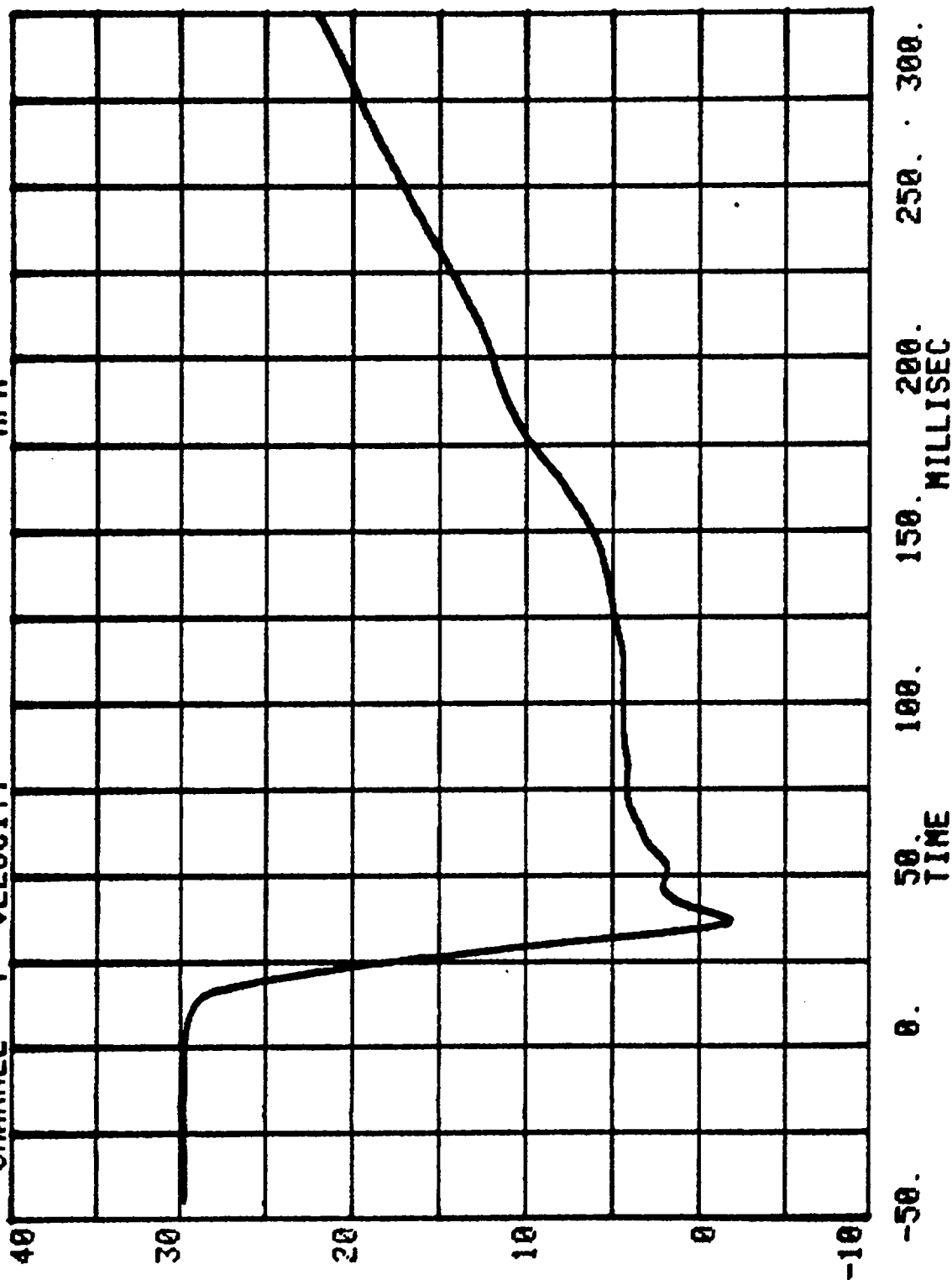


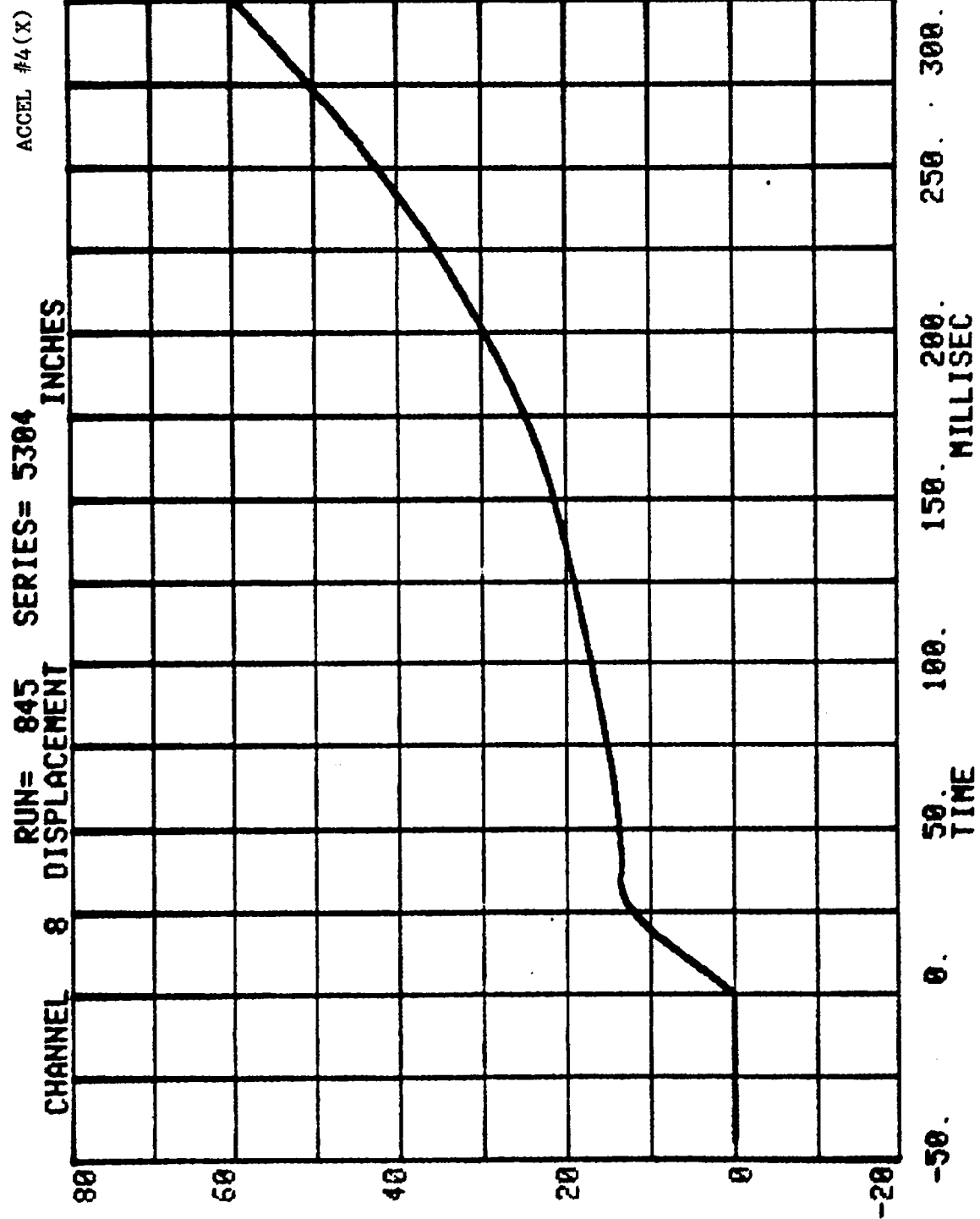


RUN= 845 SERIES= 5304
CHANNEL 20 ACC PACK #4(X) G'S

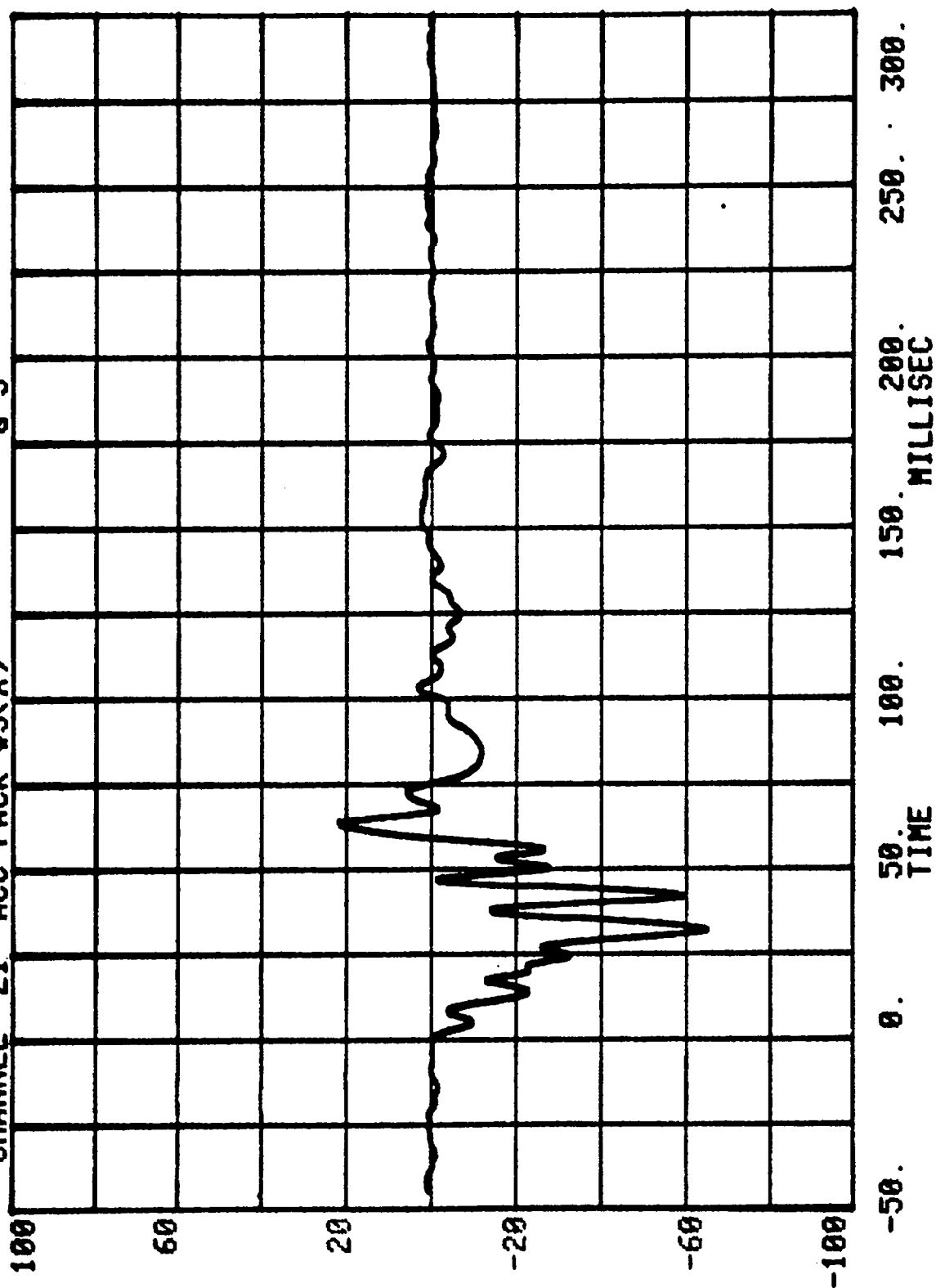


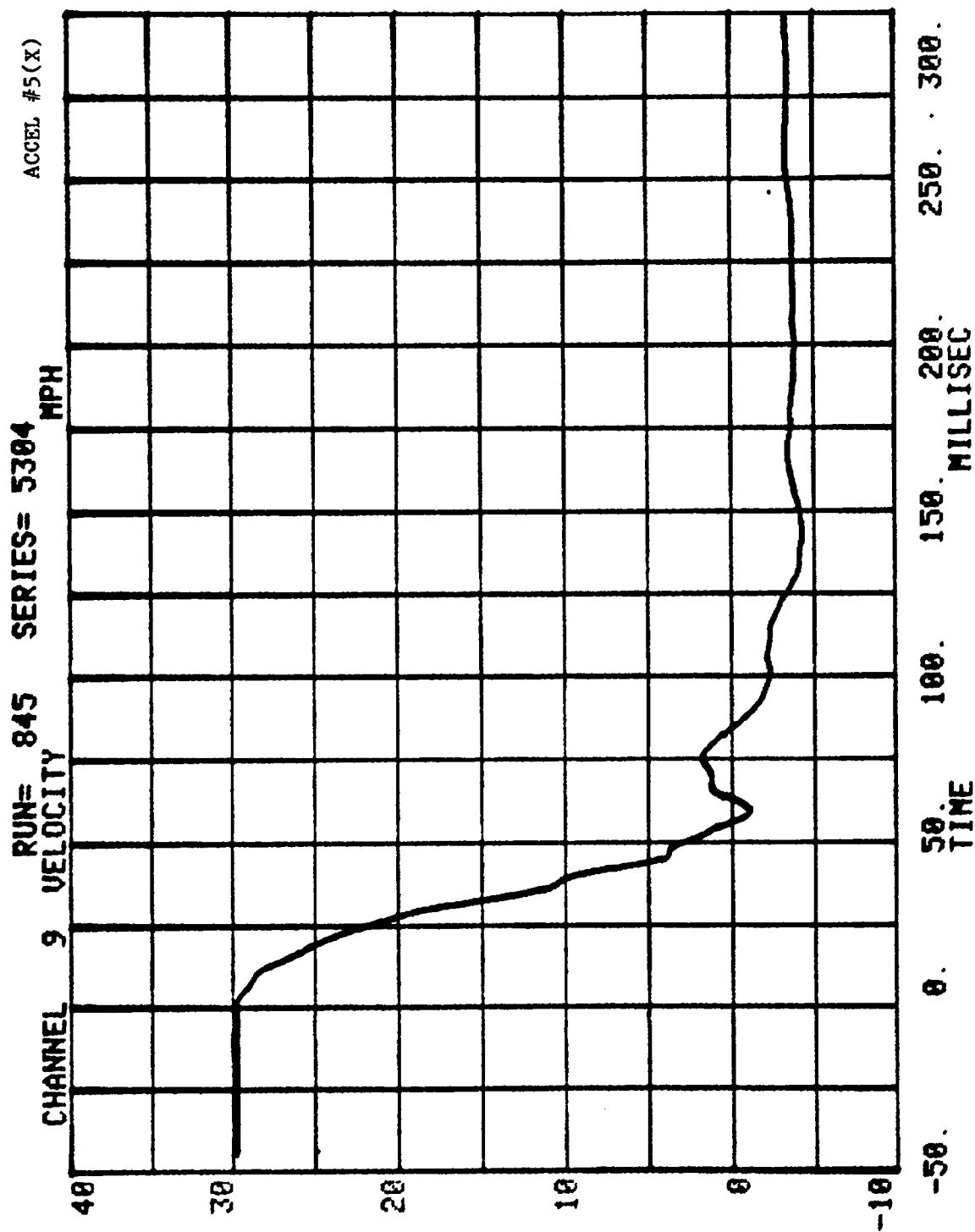
CHANNEL 7 VELOCITY RUN= 845 SERIES= 5304 MPH ACCEL #4 (X)





RUN= 845 SERIES= 5304
CHANNEL 21 ACC PACK #5(X) G'S





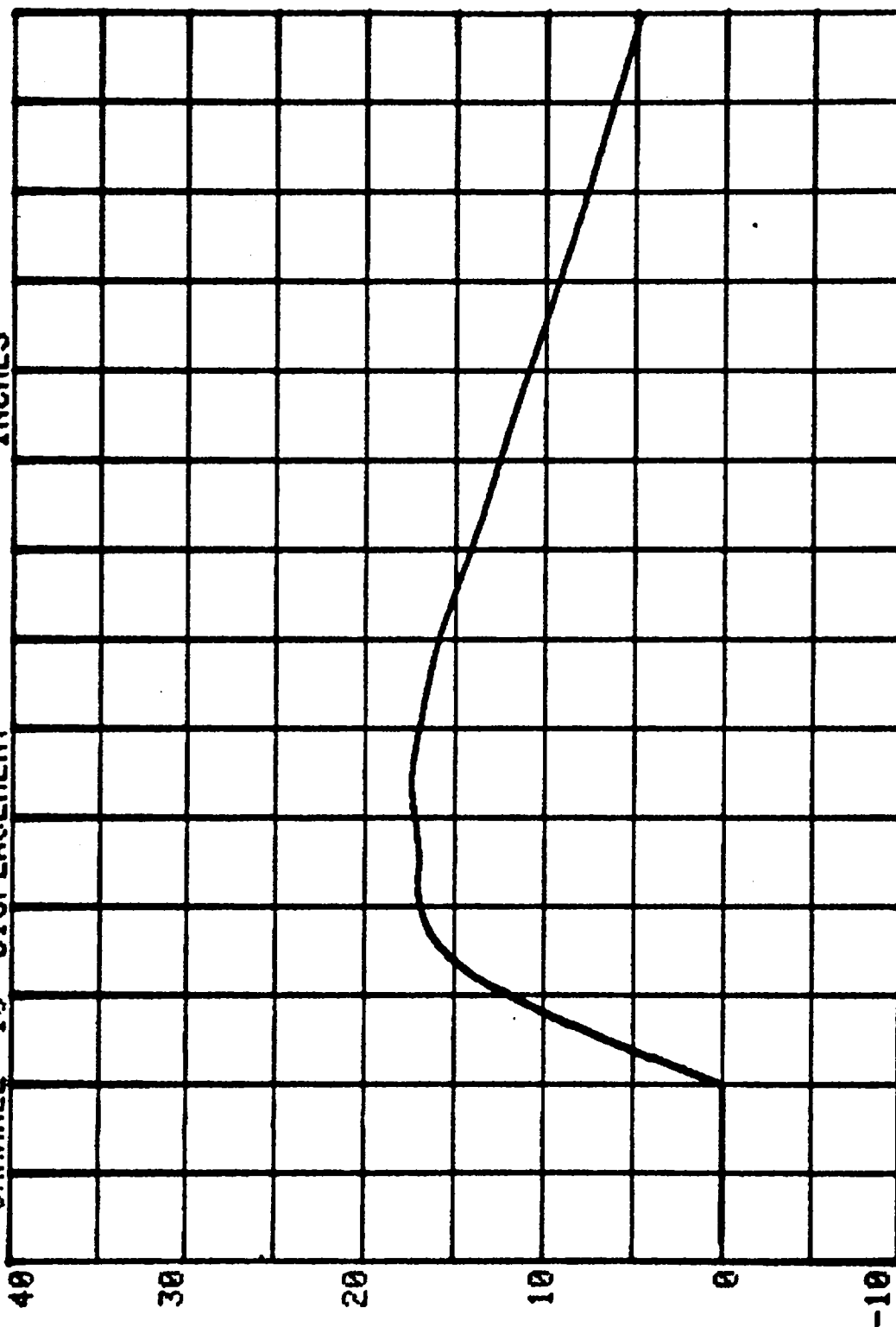
ACCEL #5(X)

INCHES

SERIES= 5304

RUN= 845

CHANNEL 10 DISPLACEMENT



300.

250.

200.

150.

100.

50.

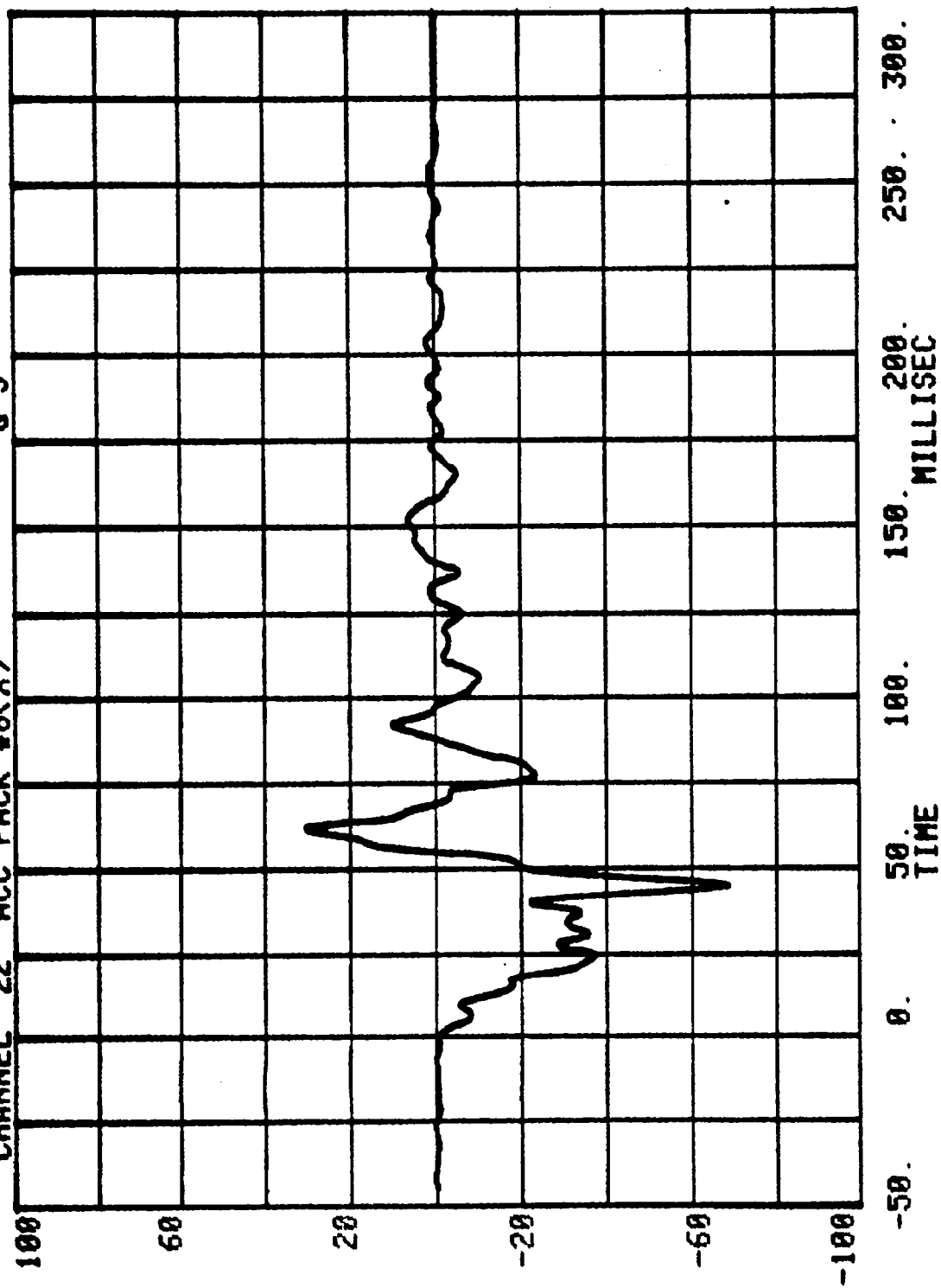
0.

-50.

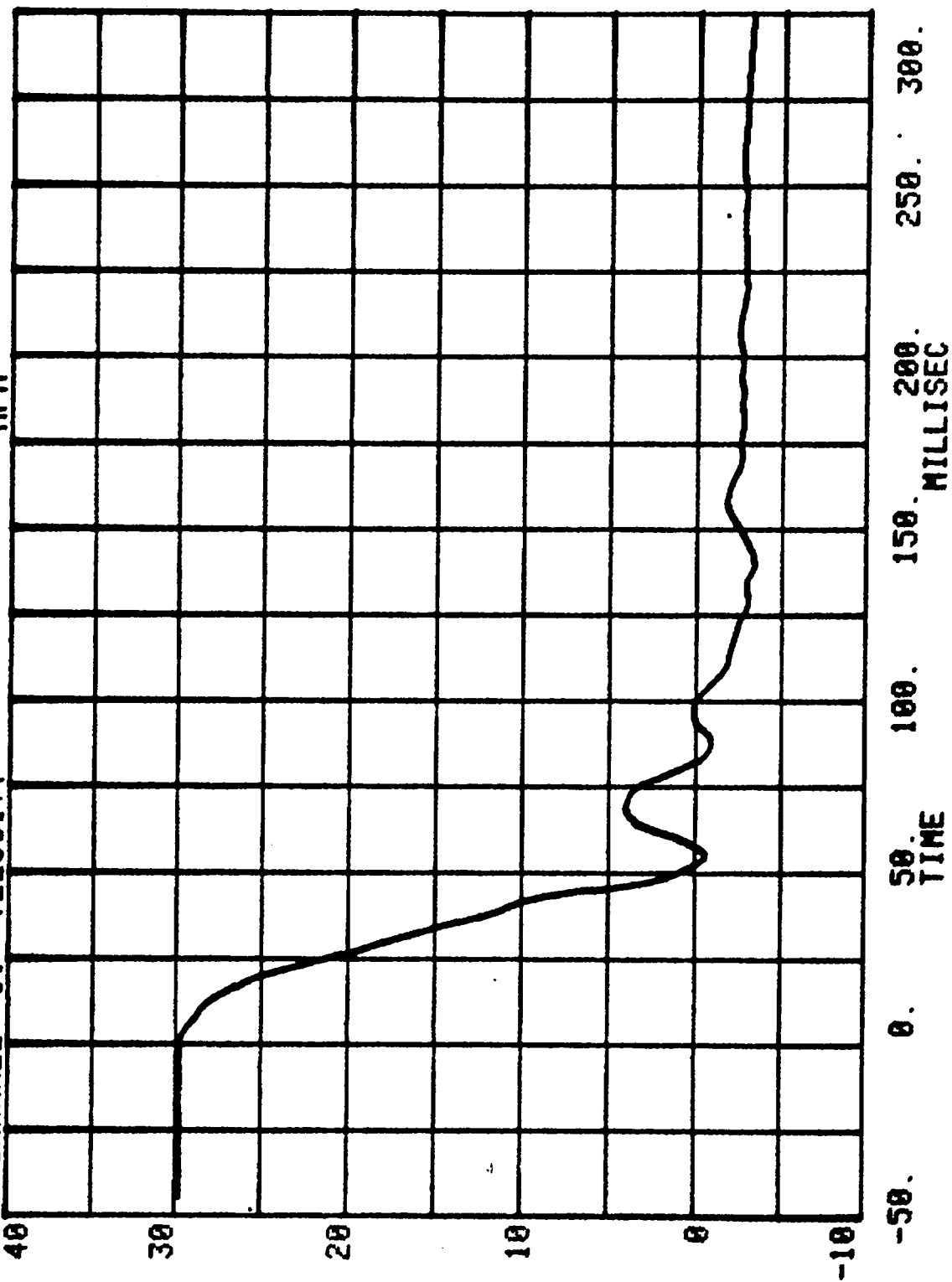
MILLISEC

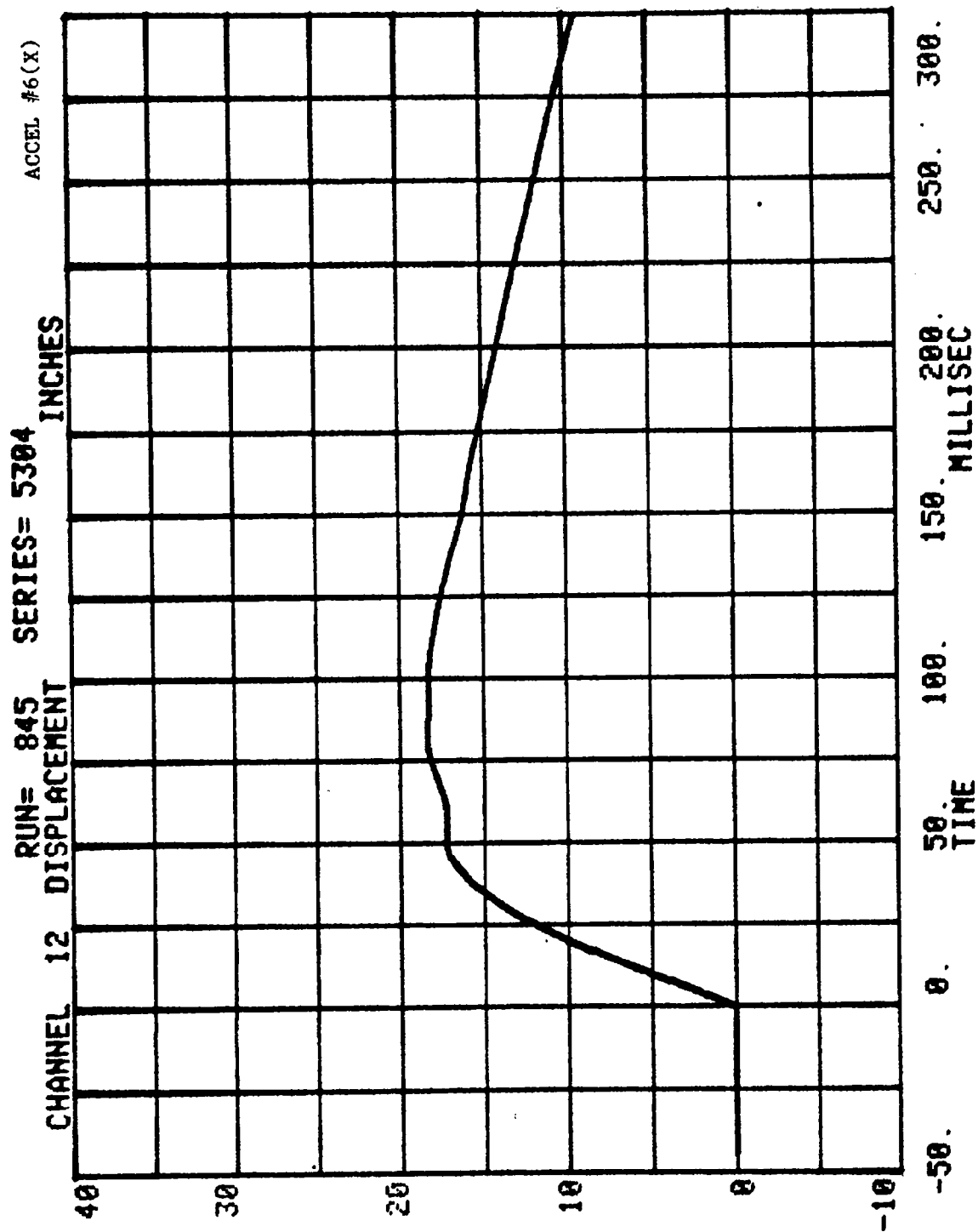
TIME

RUN= 845 SERIES= 5304 G'S
CHANNEL 22 ACC PACK #6(X)

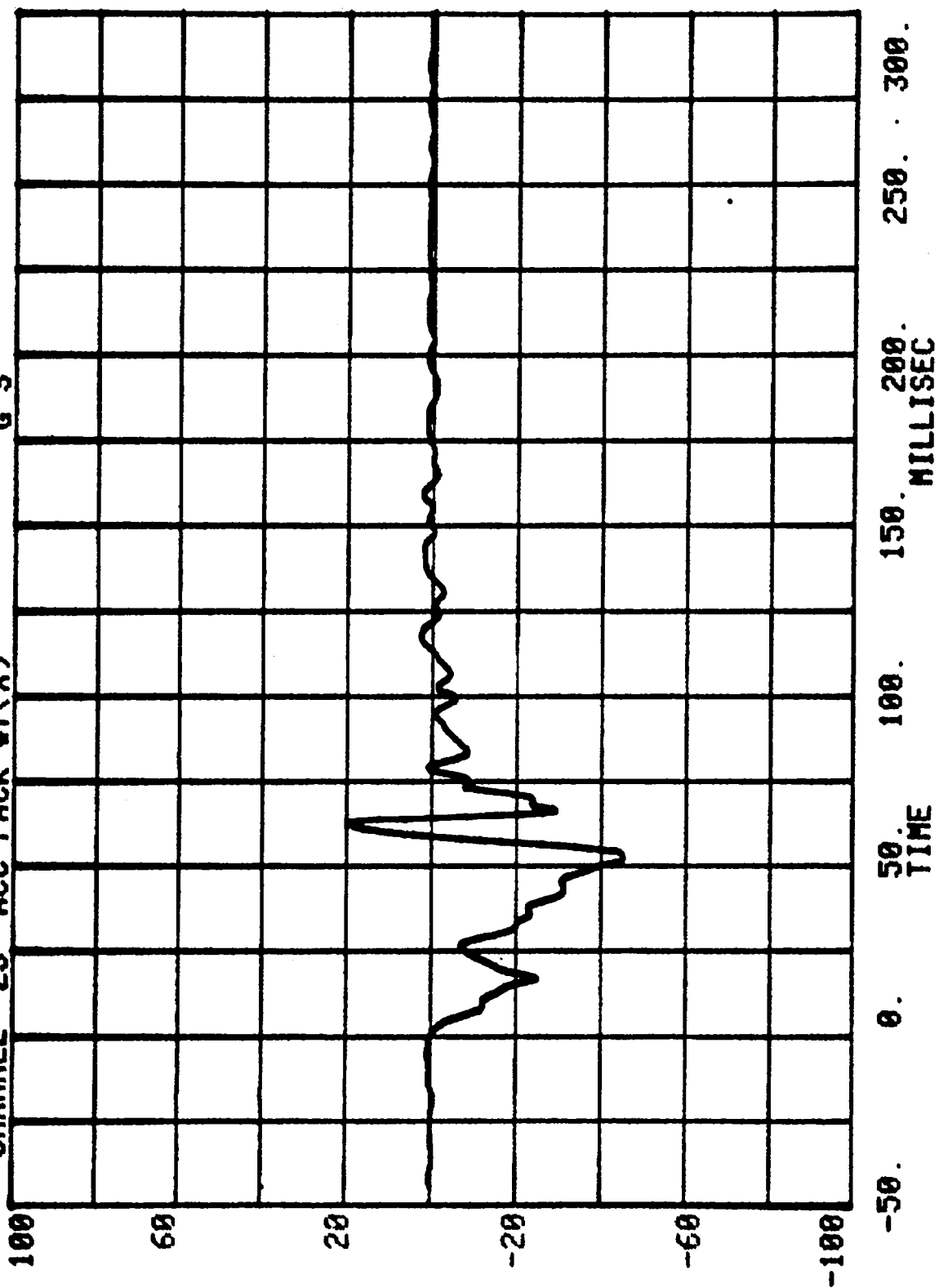


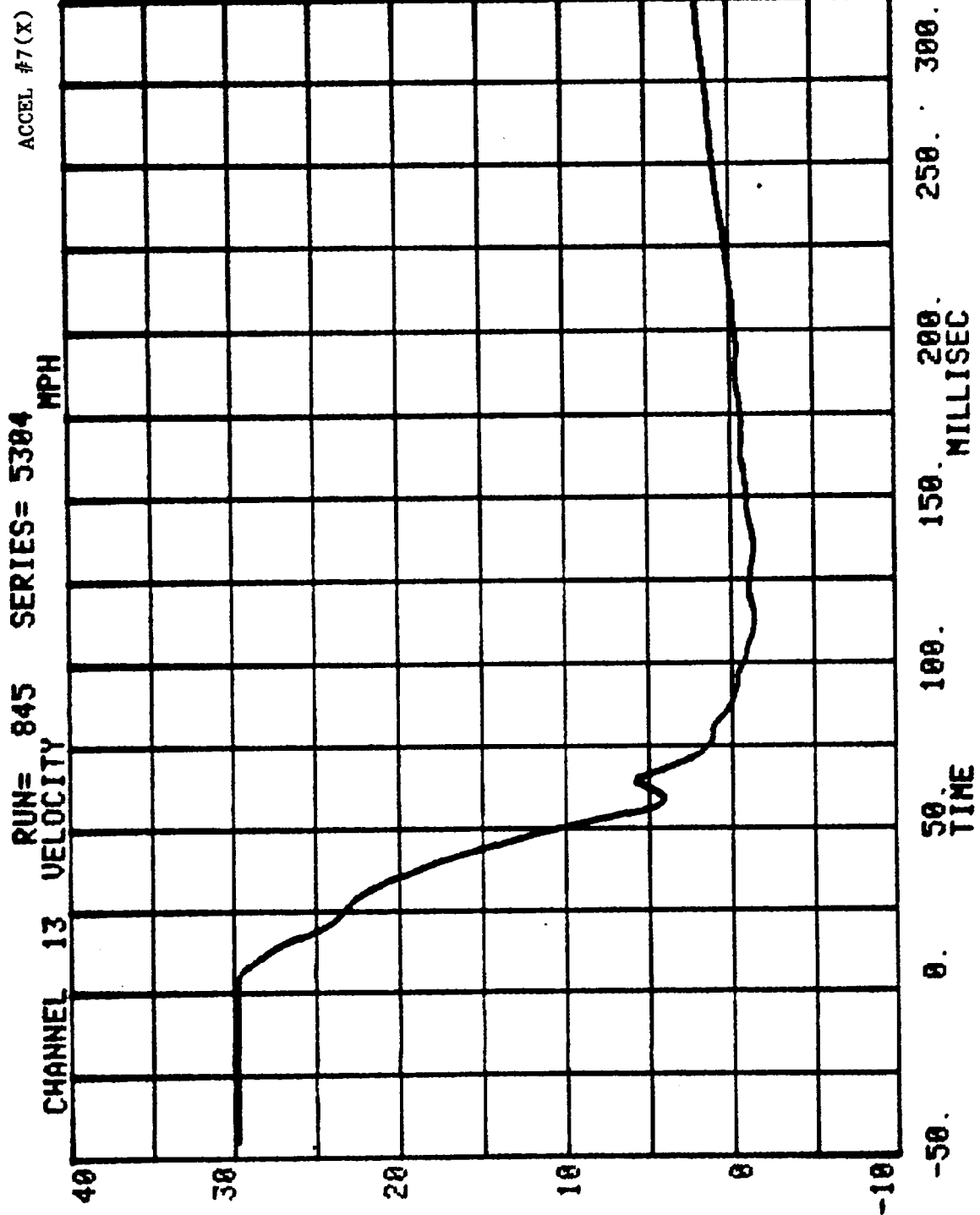
CHANNEL 11 VELOCITY
RUN= 845 SERIES= 5304 MPH
ACCEL #6 (X)



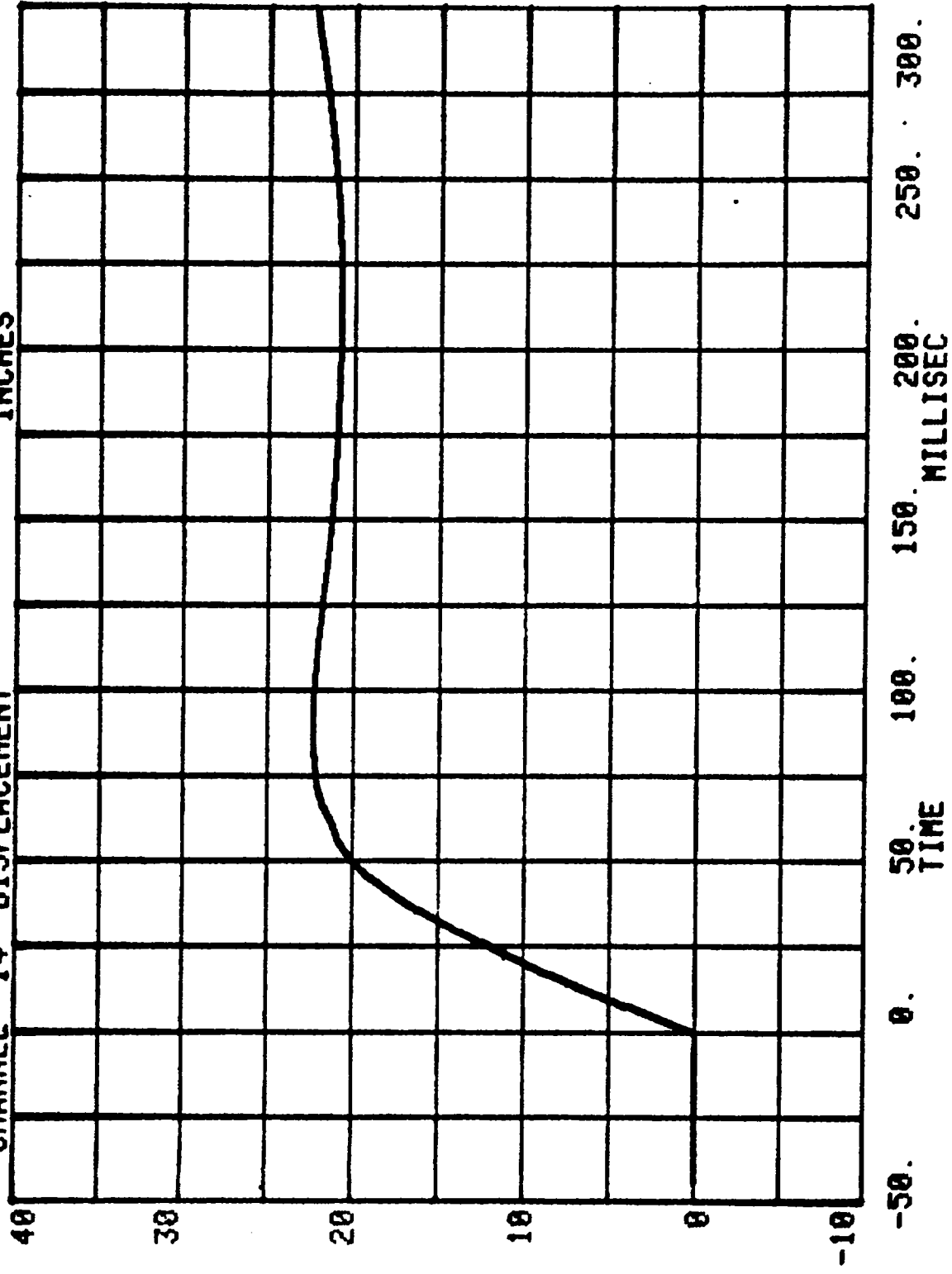


RUN= 845 SERIES= 5304
CHANNEL 23 ACC PACK #7(X) G'S





CHANNEL 14 DISPLACEMENT RUN= 845 SERIES= 5304 ACCEL #7(X)



TEST NO. CJ5304

DUMMY DATA

	FILTER CHANNEL CLASS
HEAD ACCELERATIONS	1000
CHEST ACCELERATIONS	180
FEMUR FORCES	600
BELT LOADS	60

HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

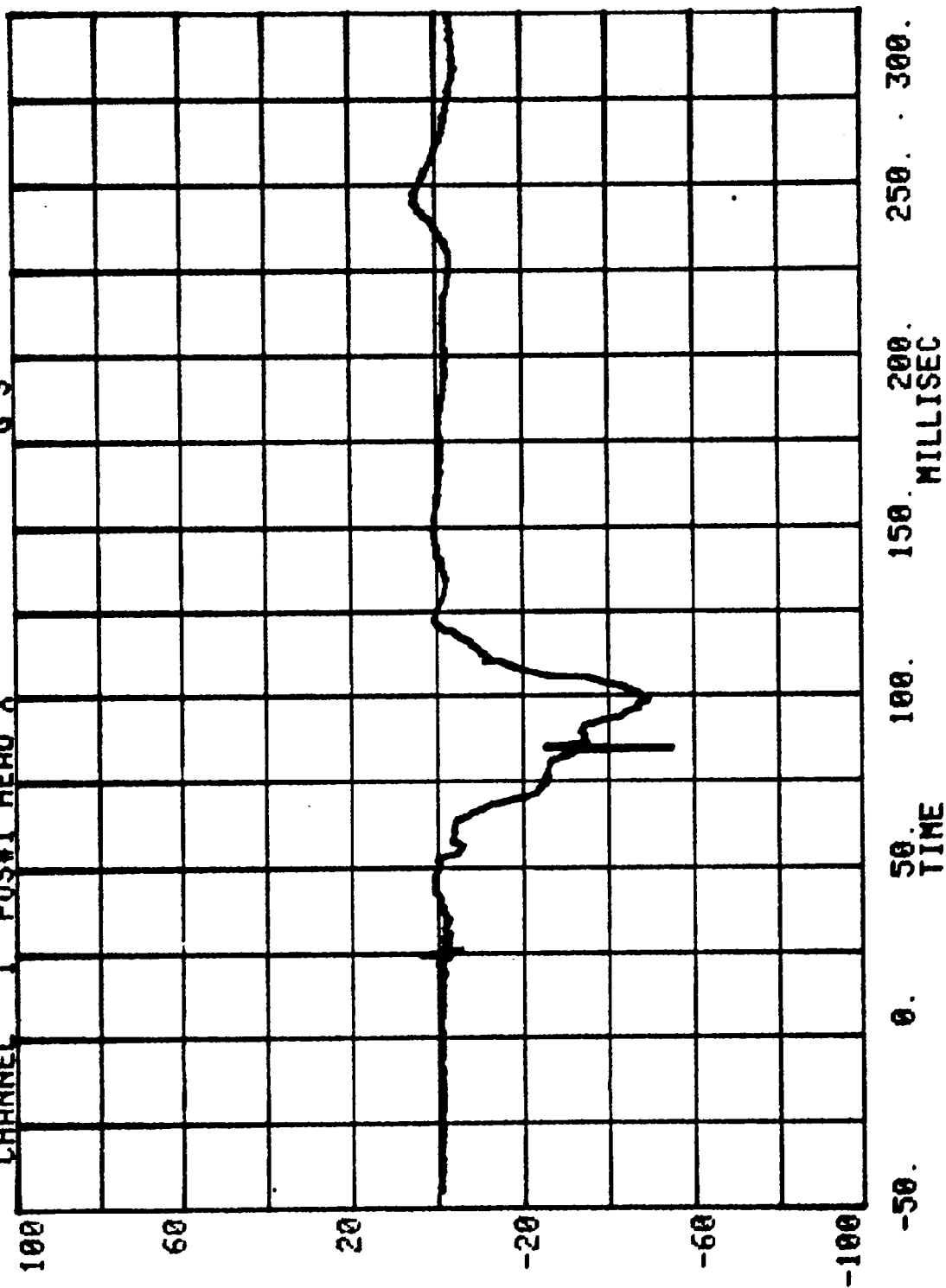
NHTSA CRASH TEST - PROC. 208

RUN= 845

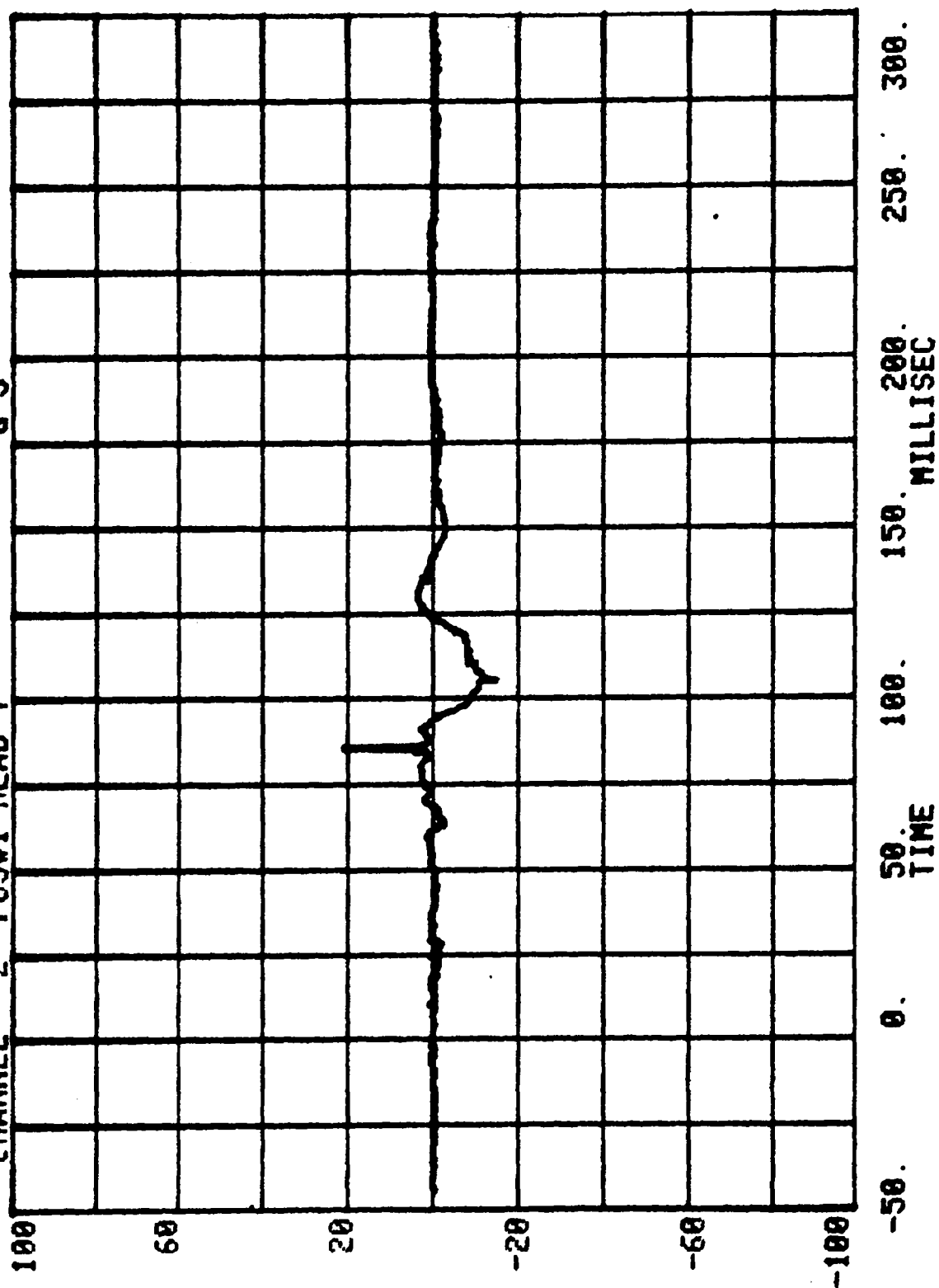
POS#1 HEAD R

HIC= 283.8 FROM T1= .07170 TO T2= .10770
AVERAGE ACCELERATION BETWEEN T1 AND T2= 36.2G'S
EVENT TIME= 300.0 MSEC
SEVERITY INDEX= 340.6

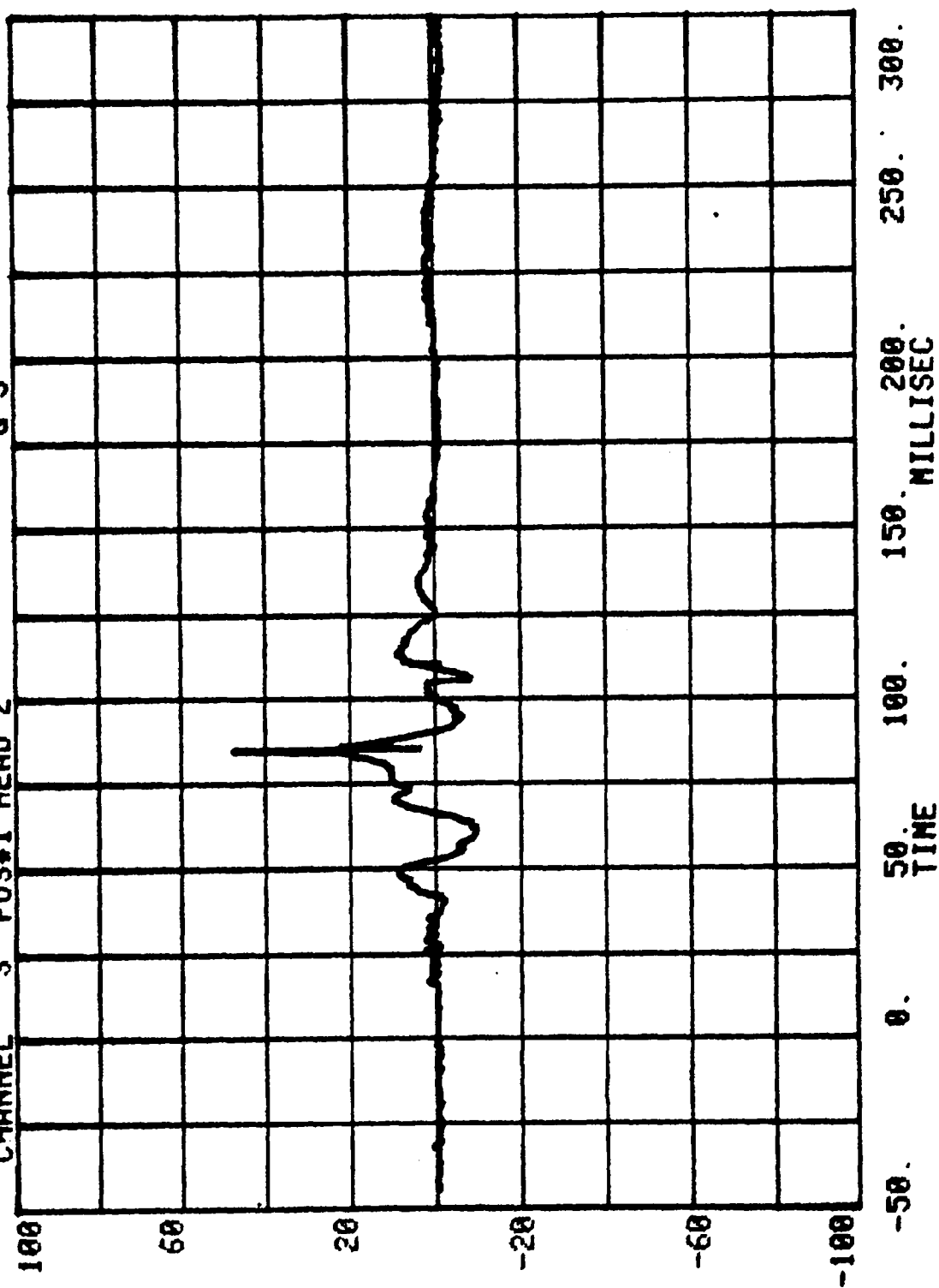
CHANNEL 1 POS#1 HEAD X
RUN= 845 SERIES= 5304 G'S



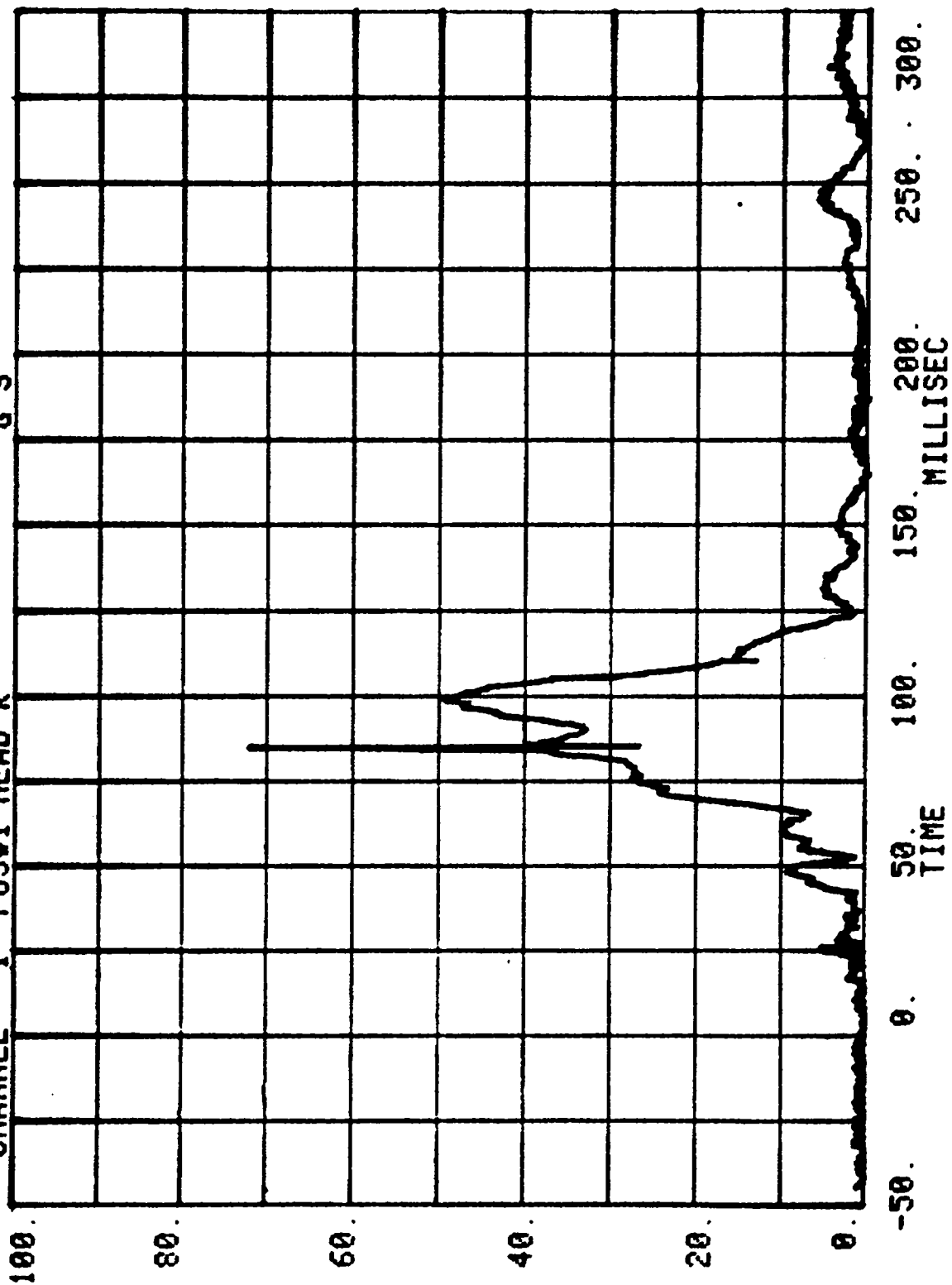
CHANNEL 2 POS#1 HEAD Y RUN= 845 SERIES= 5304 G'S



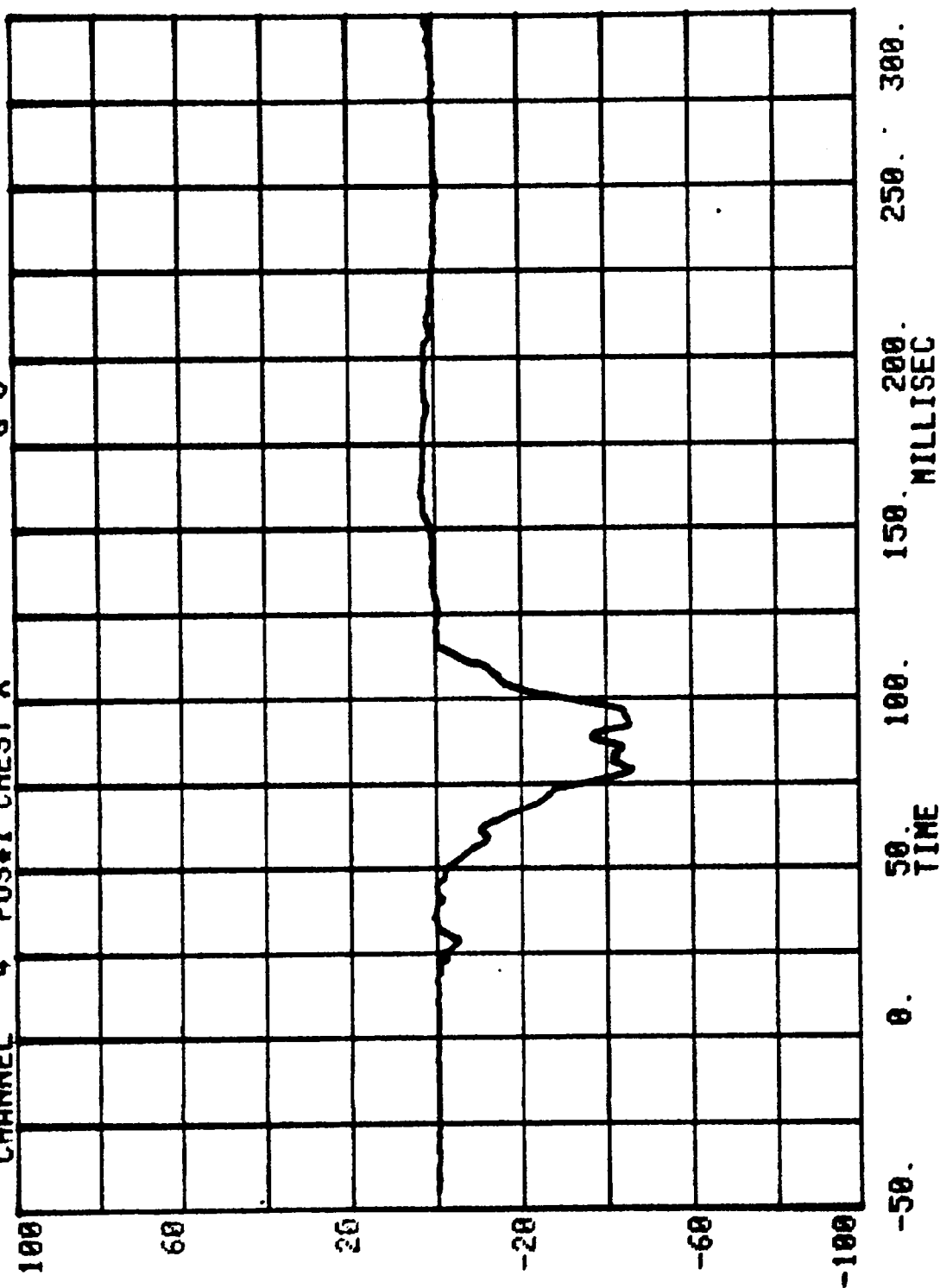
CHANNEL 3 POS#1 HEAD 2 RUN= 845 SERIES= 5304 G'S



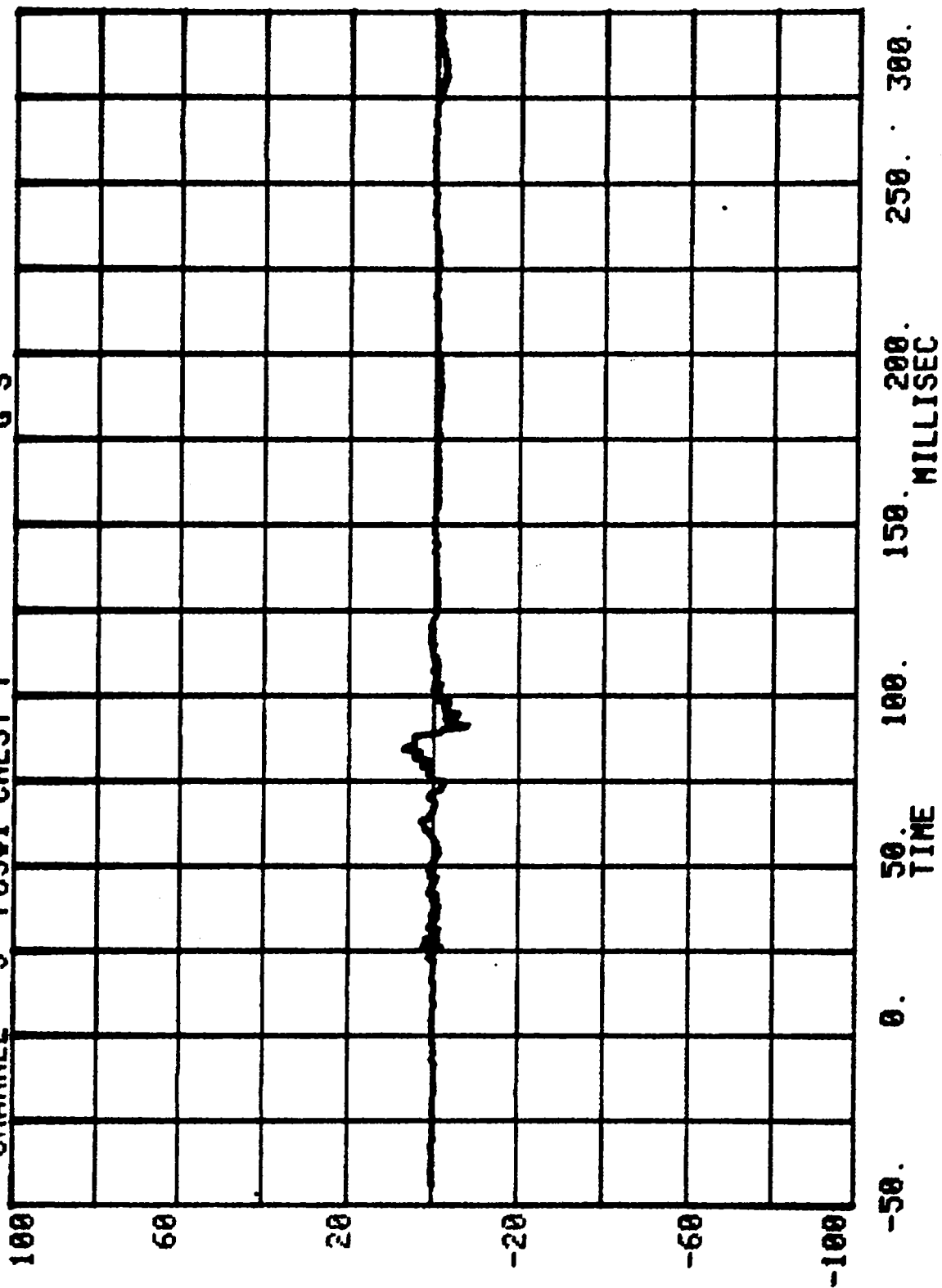
CHANNEL 1 POS#1 HEAD R RUN= 845 SERIES= 5304 G'S



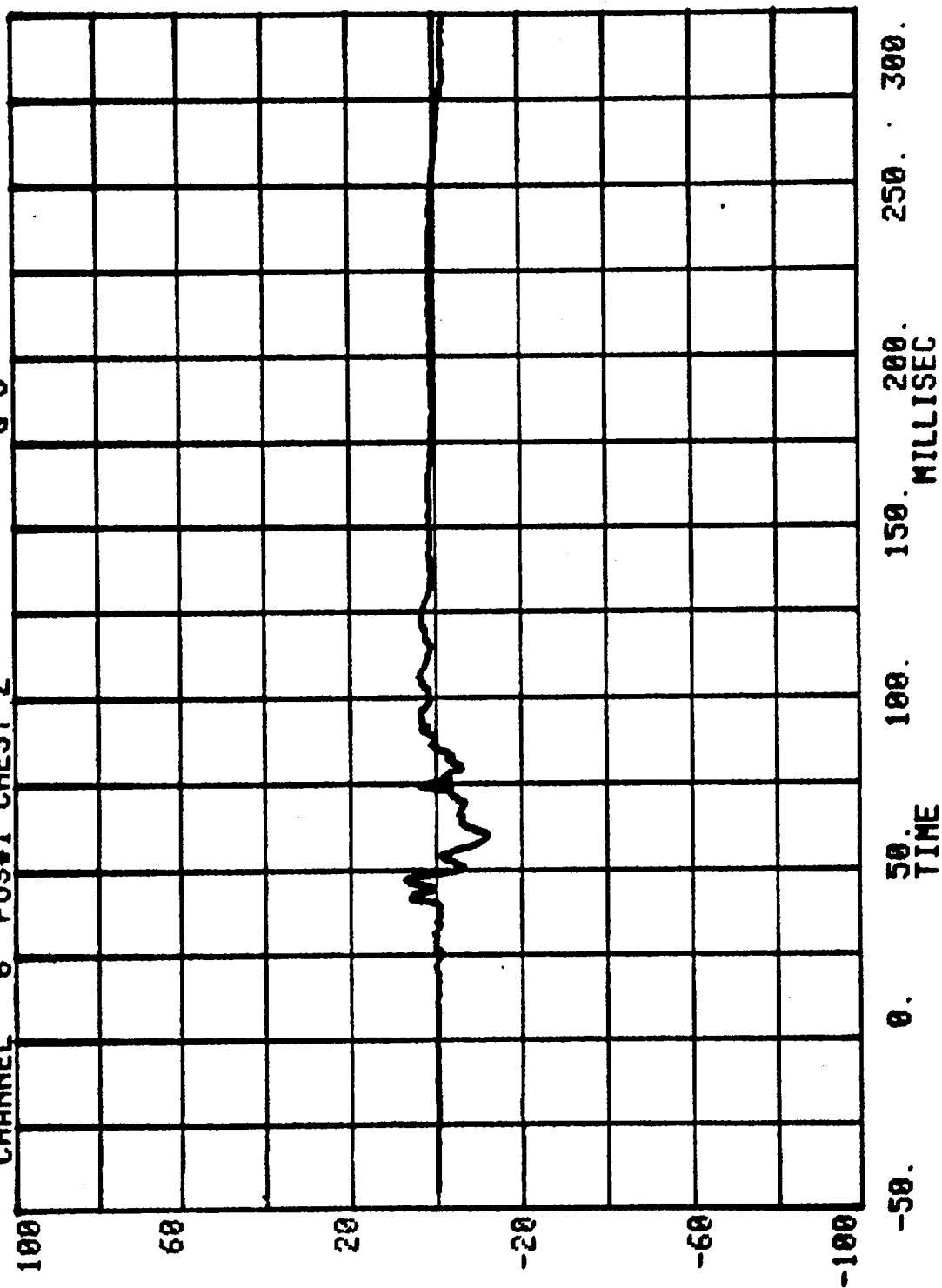
CHANNEL 4 POS#1 CHEST X RUN= 845 SERIES= 5304 G'S



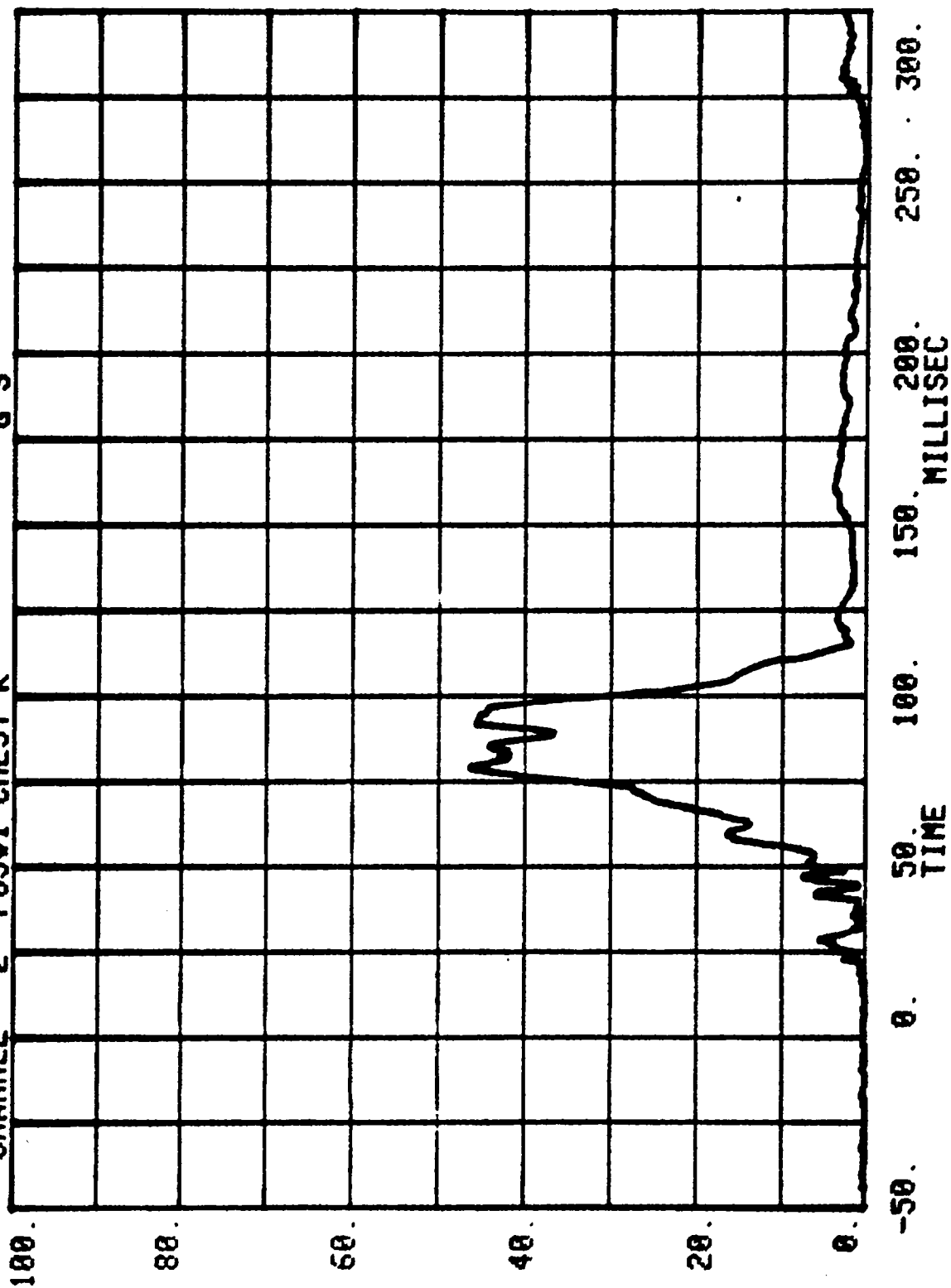
RUN= 845 SERIES= 5304
CHANNEL 5 POS#1 CHEST Y G'S



CHANNEL 6 POS#1 CHEST Z RUN= 845 SERIES= 5304 G'S

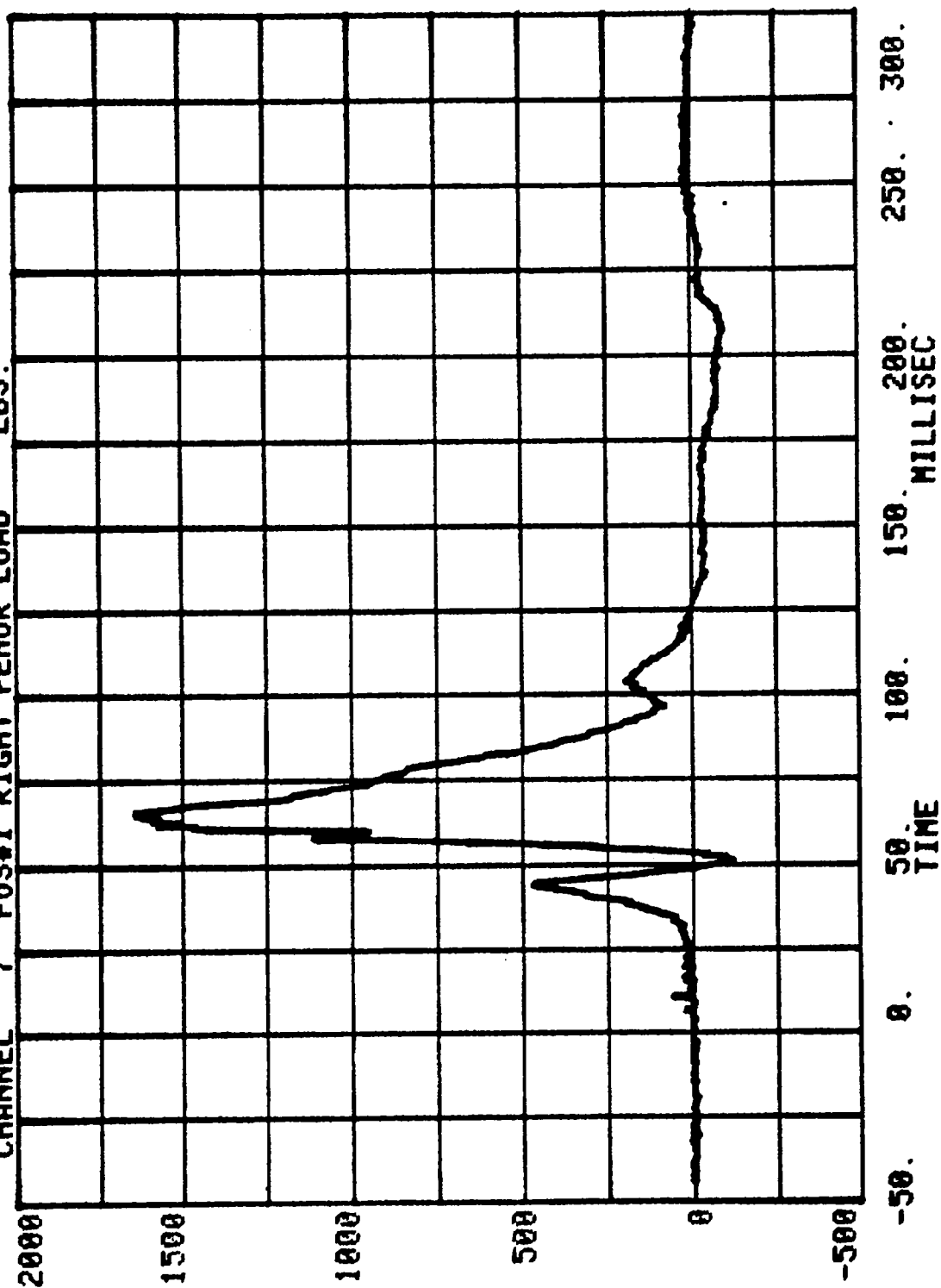


CHANNEL 2 POS#1 CHEST R
RUN= 845 SERIES= 5304 G'S

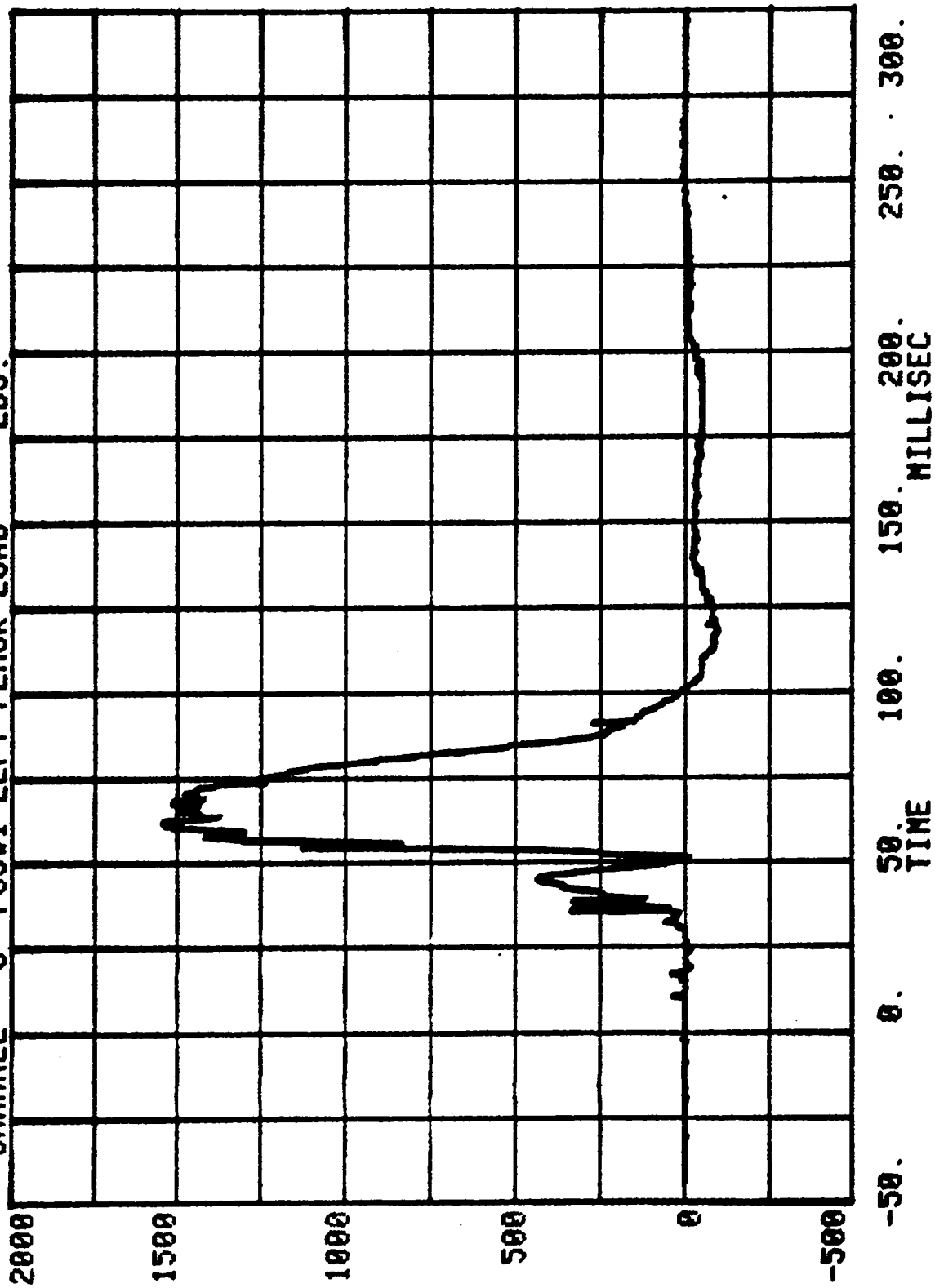


CHANNEL 7 POS#1 RIGHT FEMUR LOAD LBS.

RUN= 845 SERIES= 5304



RUN= 845 SERIES= 5304
CHANNEL 8 POS#1 LEFT FEMUR LOAD LBS.



HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

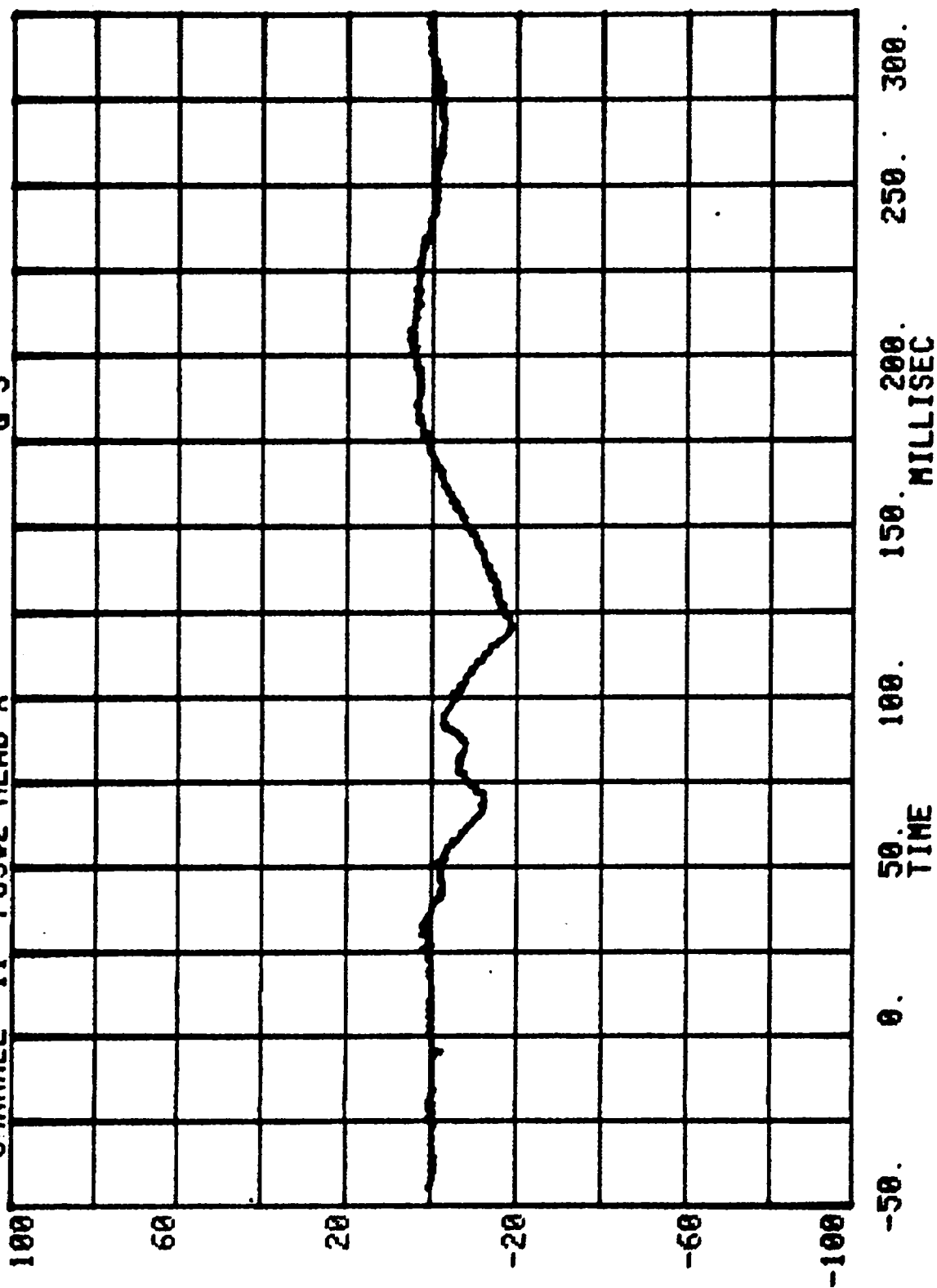
NHTSA CRASH TEST - PROC.208

RUN= 845

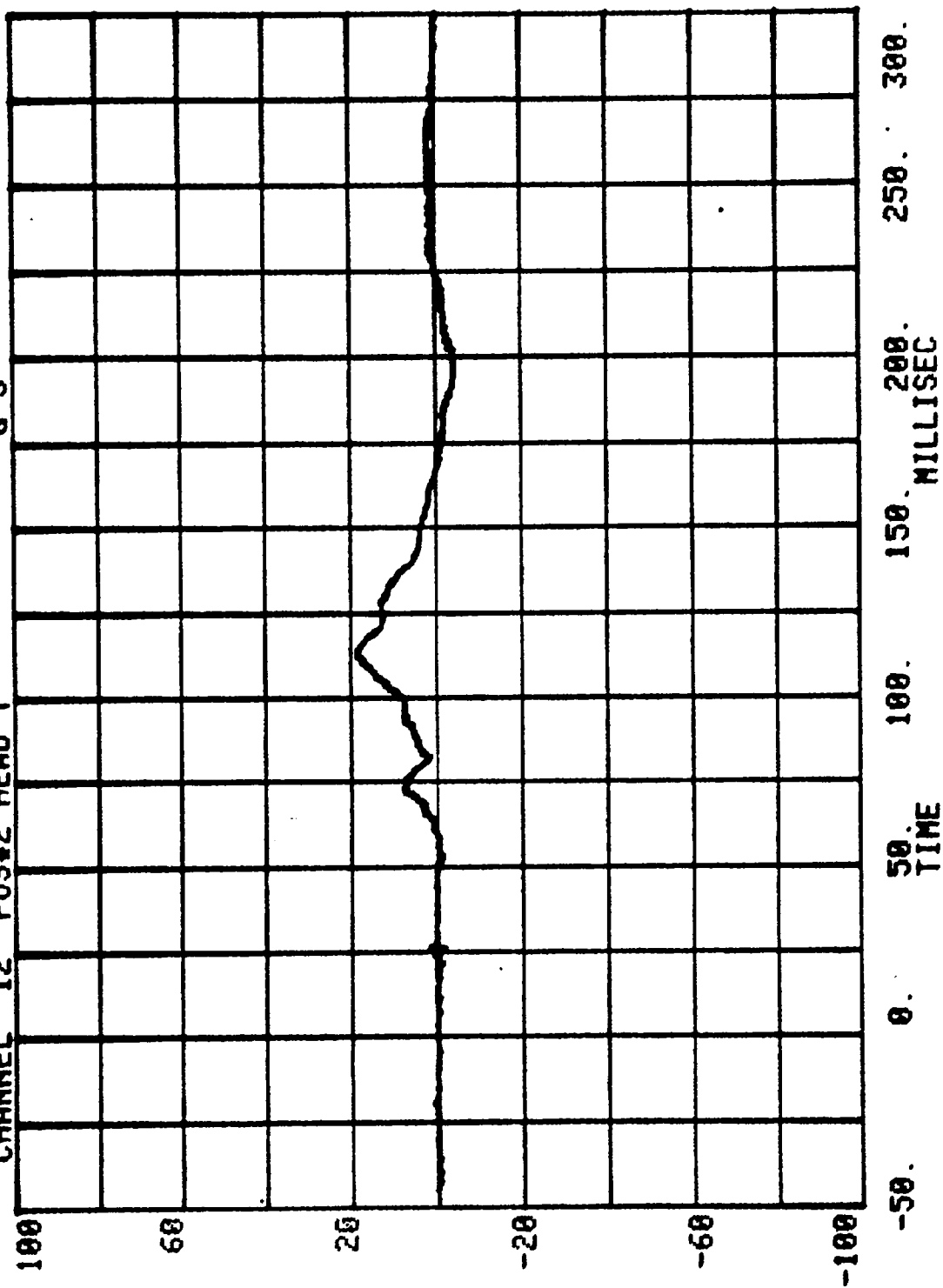
POS#2 HEAD R

HIC= 387.1 FROM T1= .07815 TO T2= .11415
AVERAGE ACCELERATION BETWEEN T1 AND T2= 41.0G'S
EVENT TIME= 300.0 MSEC
SEVERITY INDEX= 639.3

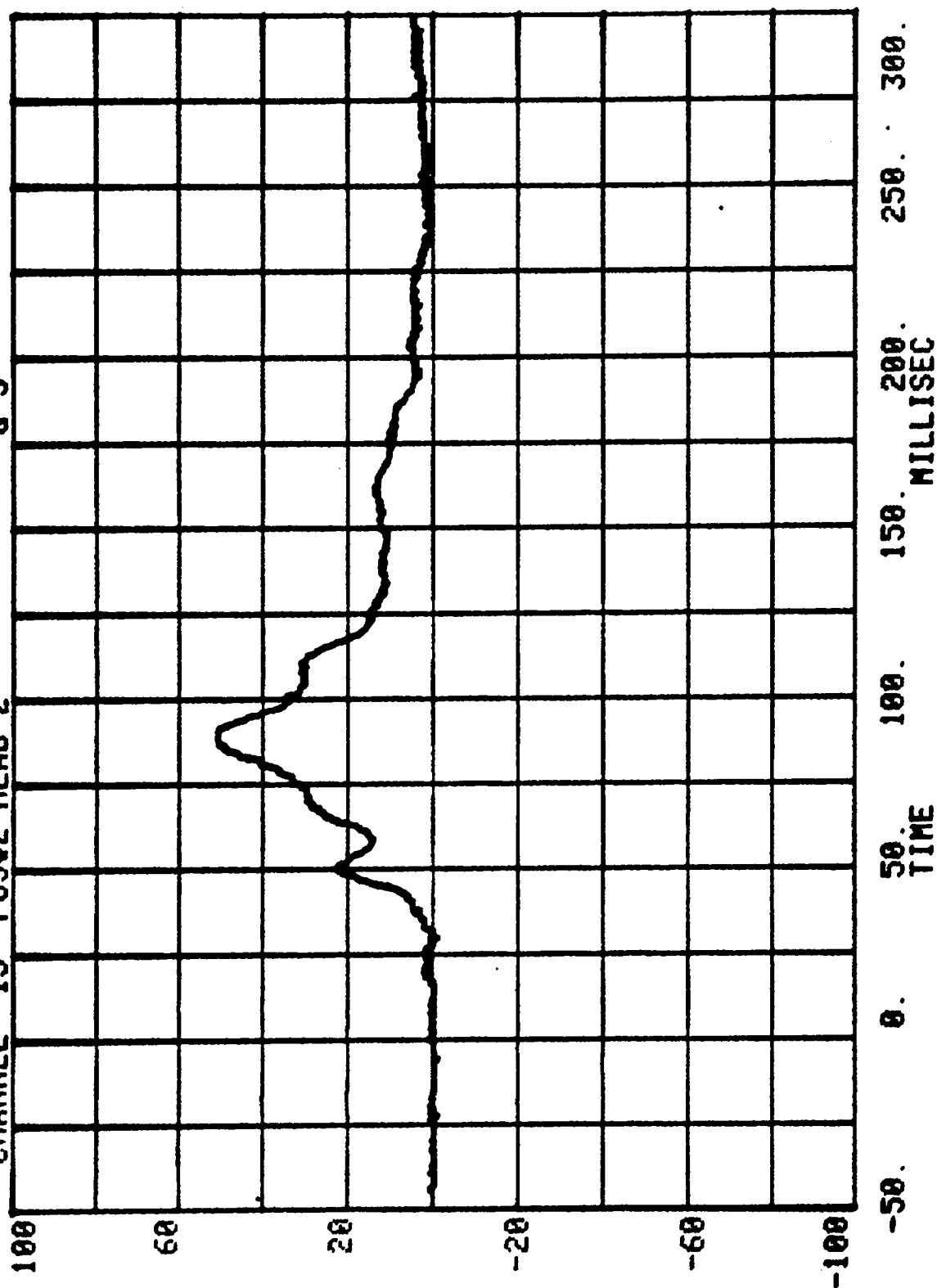
CHANNEL 11 RUN= 845 SERIES= 5304 G'S
POS#2 HEAD X



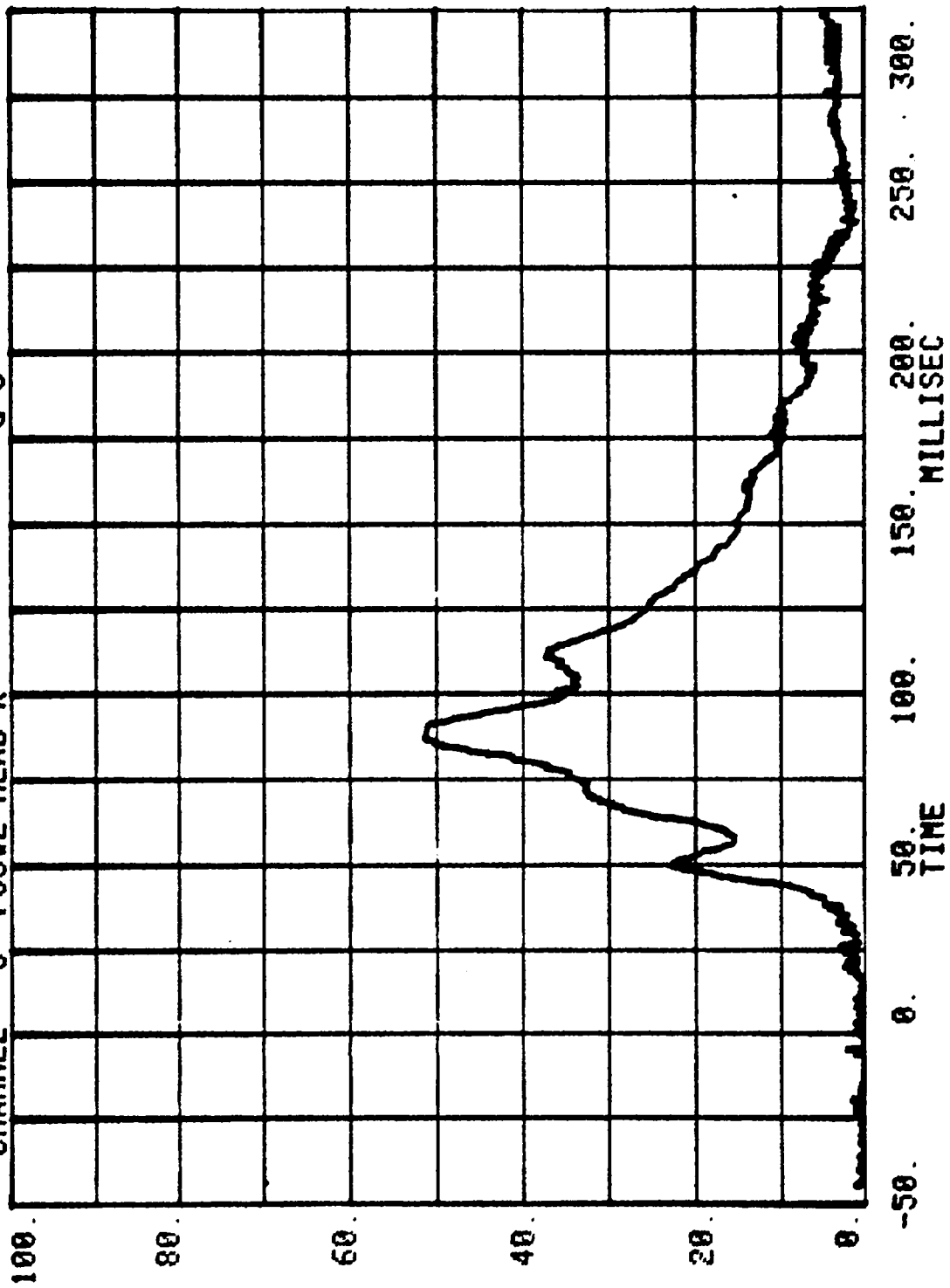
RUN= 845 SERIES= 5304
CHANNEL 12 POS#2 HEAD Y G'S



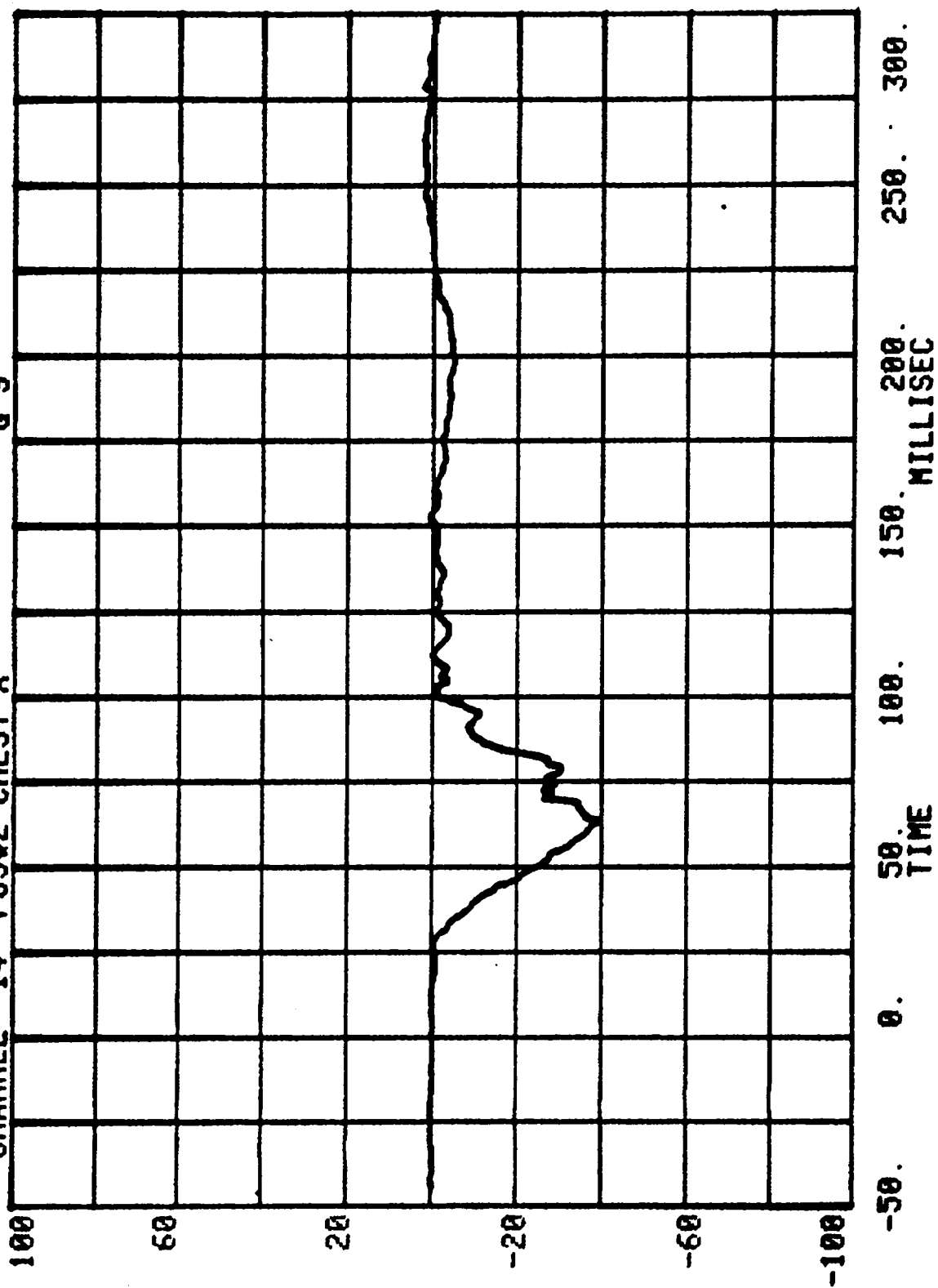
RUN= 845 SERIES= 5304 G'S
CHANNEL 13 POS#2 HEAD Z



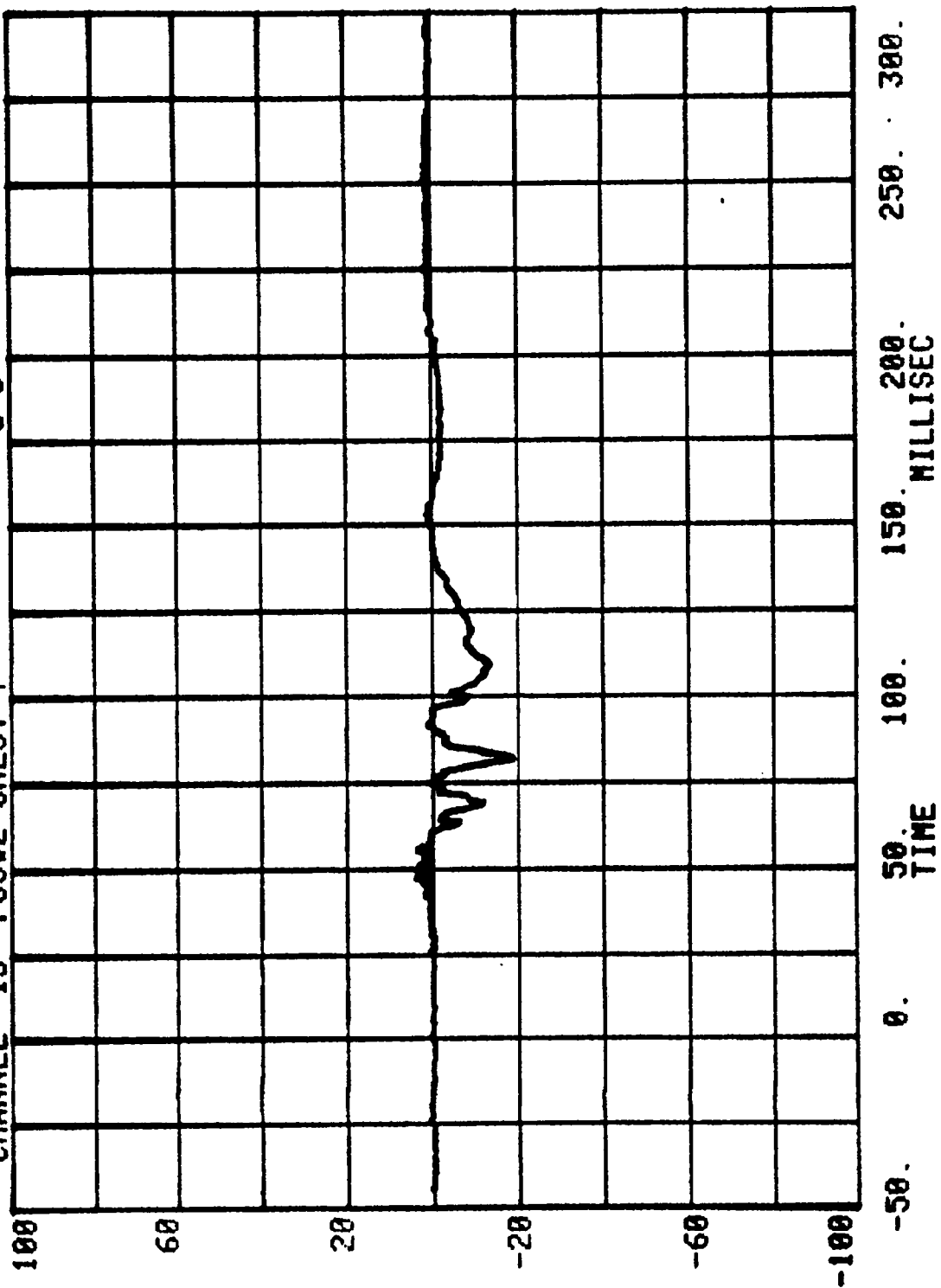
CHANNEL 3 POS#2 HEAD R RUN= 845 SERIES= 5304 G'S



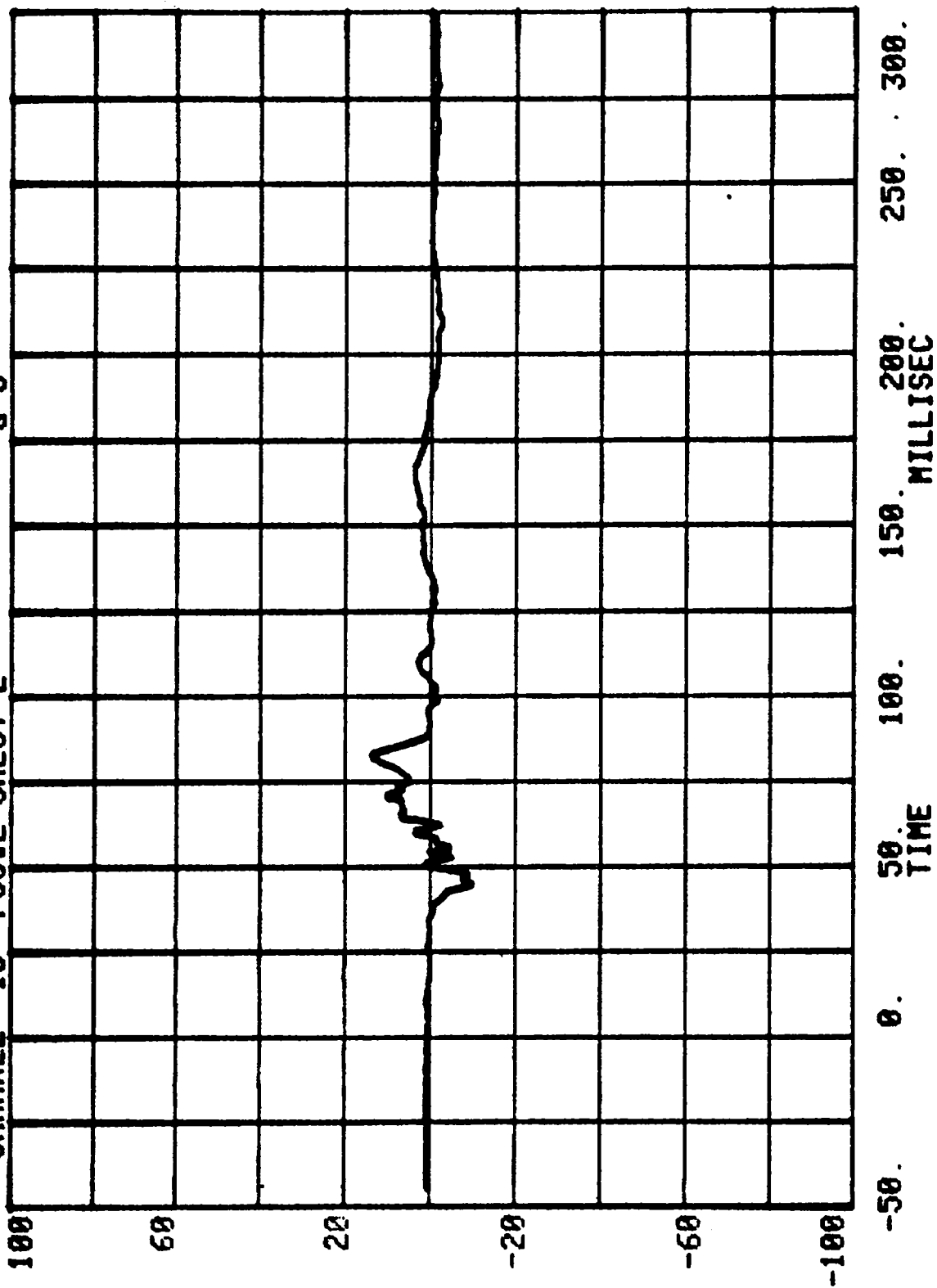
CHANNEL 14 RUN= 845 SERIES= 5304
POS#2 CHEST X G'S



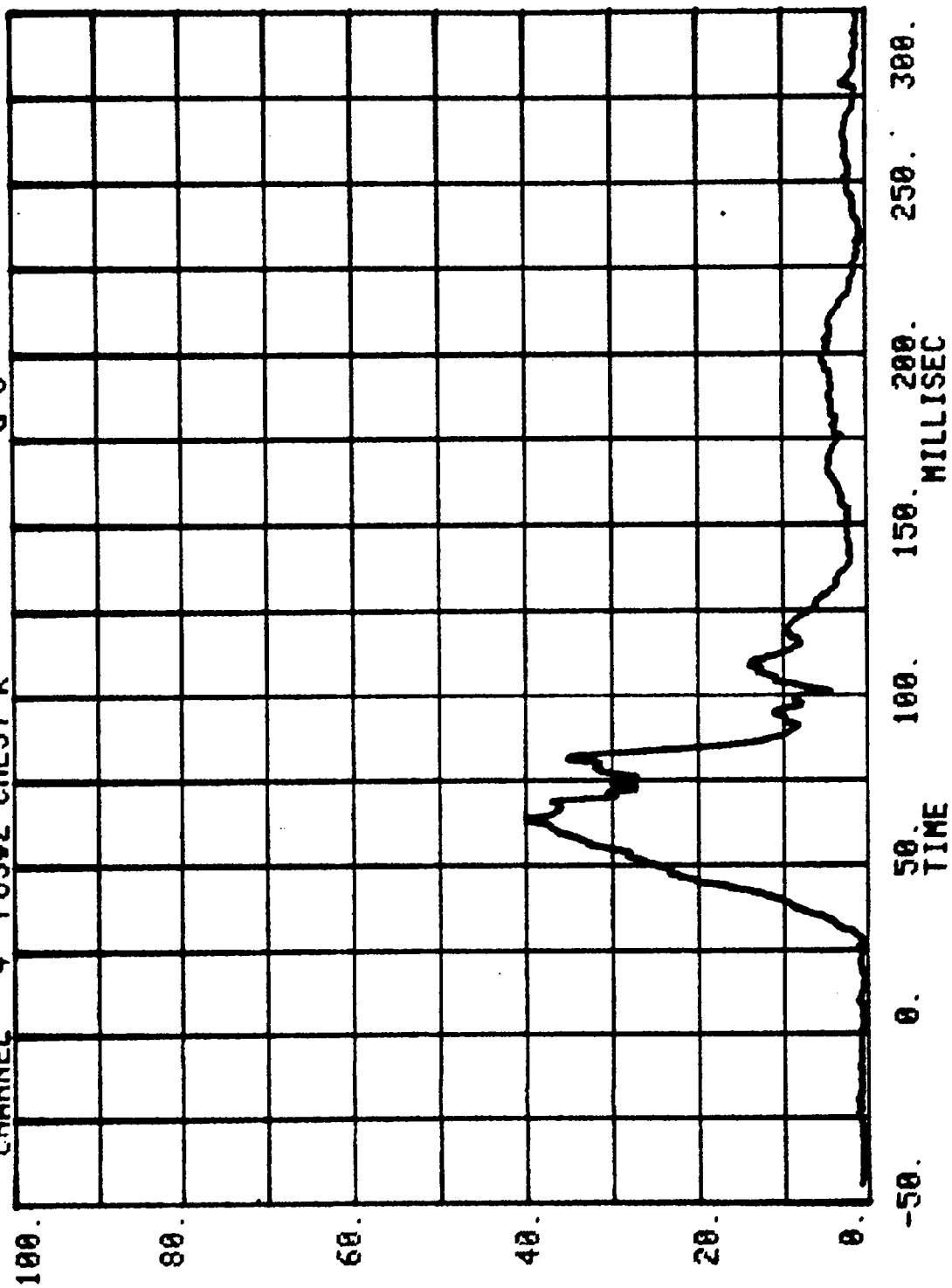
RUN= 845 SERIES= 5304
CHANNEL 15 POS#2 CHEST Y G'S



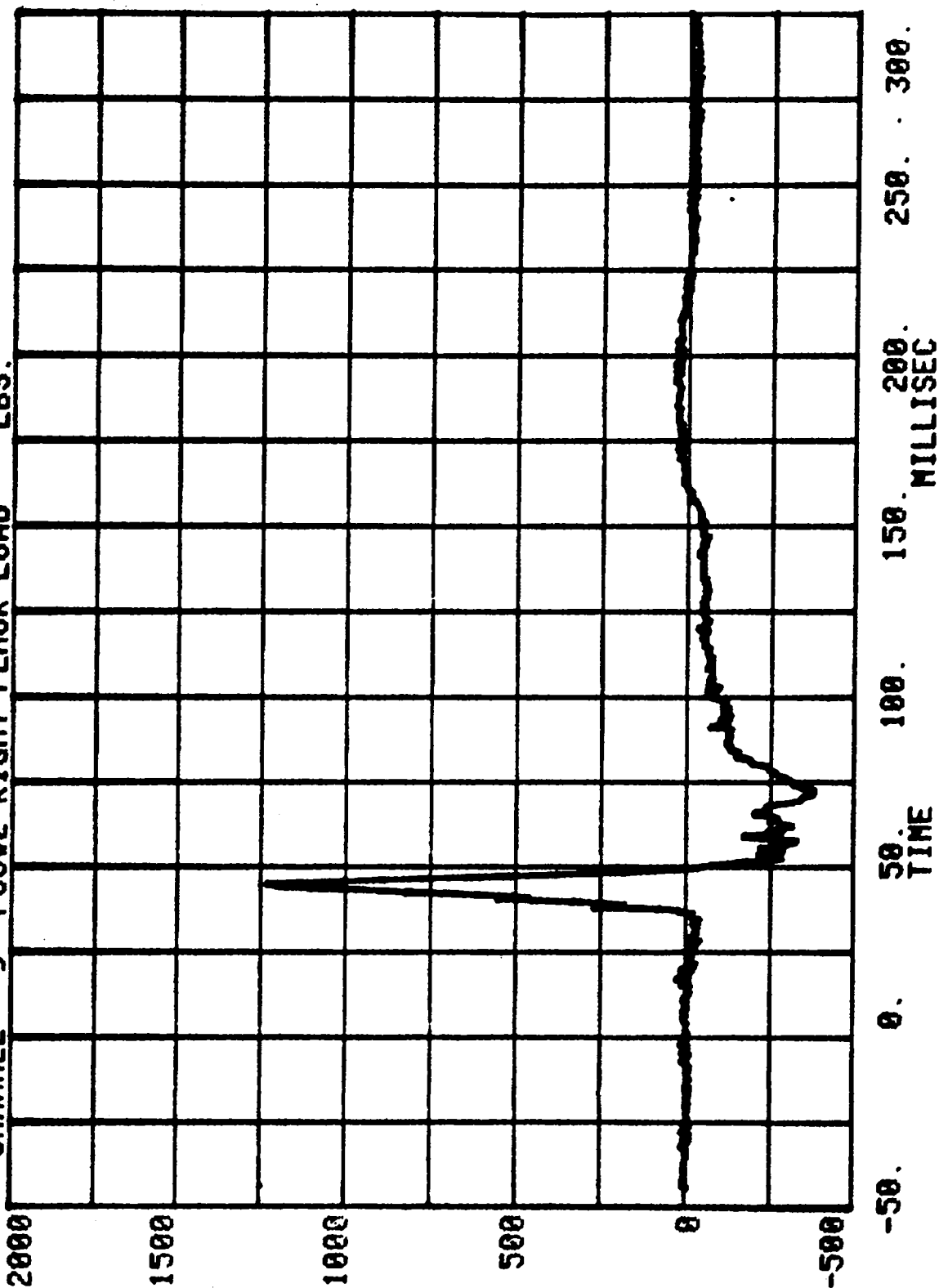
RUN= 845 SERIES= 5304
CHANNEL 16 POS#2 CHEST Z G'S



CHANNEL 4 POS#2 CHEST R
RUN= 845 SERIES= 5304 G'S

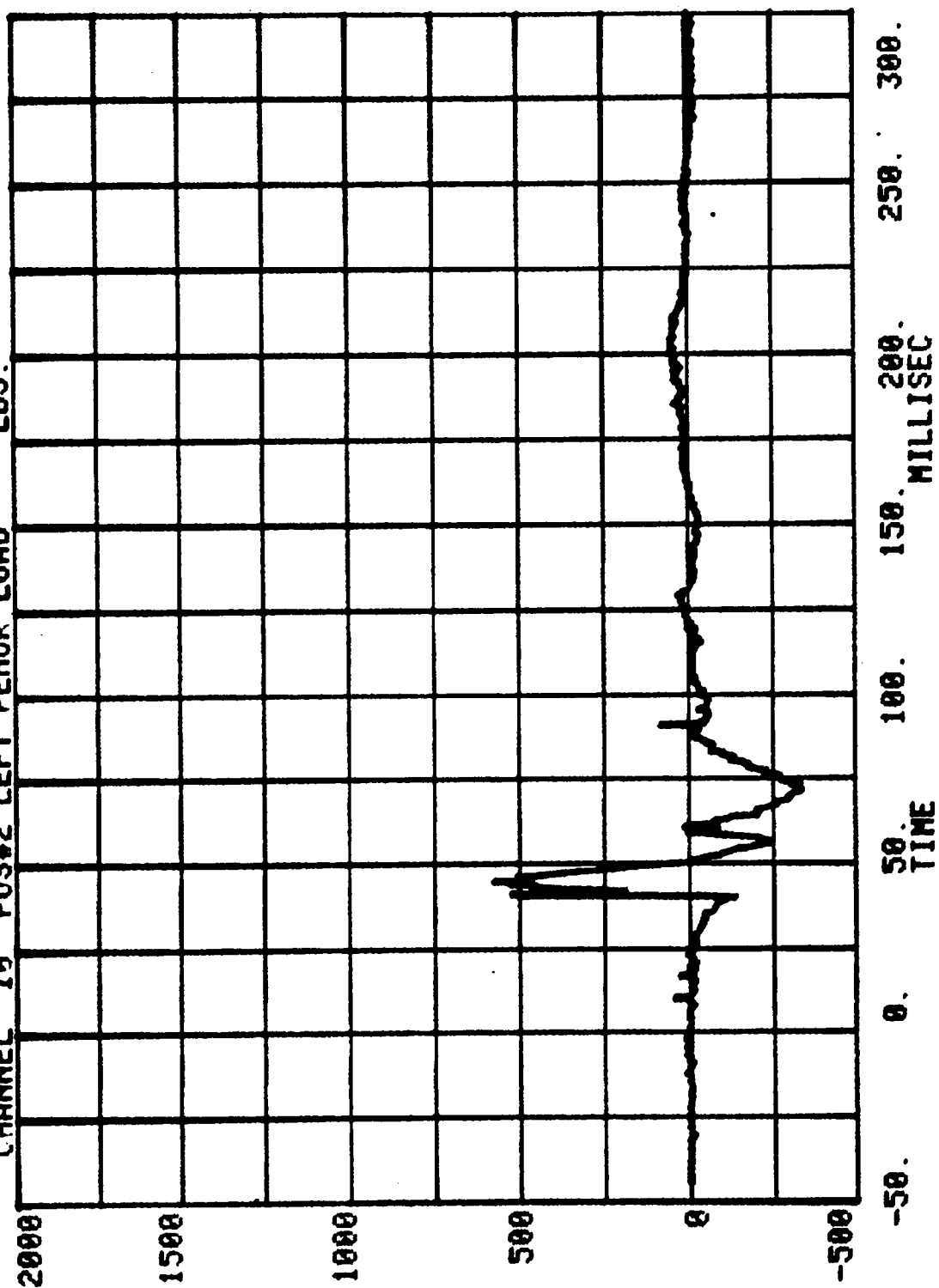


RUN= 845 SERIES= 5304
CHANNEL 9 POS#2 RIGHT FEMUR LOAD LBS.



CHANNEL 19 POS#2 LEFT FEMUR LOAD LBS.

RUN= 845 SERIES= 5304



Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

Seat Belts

Your Acura automobile is provided with seat belts to minimize the chance of injury to yourself and your passengers in a sudden stop or accident.

The lap/shoulder belts are designed to be worn by adults and children over 140 cm (4 ft 7 in) tall. See pages 14 and 15 for precautions on using seat belts for children under 140 cm (4 ft 7 in) tall, babies, and pregnant women. Seat belts are most effective when the driver and passengers are sitting up straight and well back in each seat.

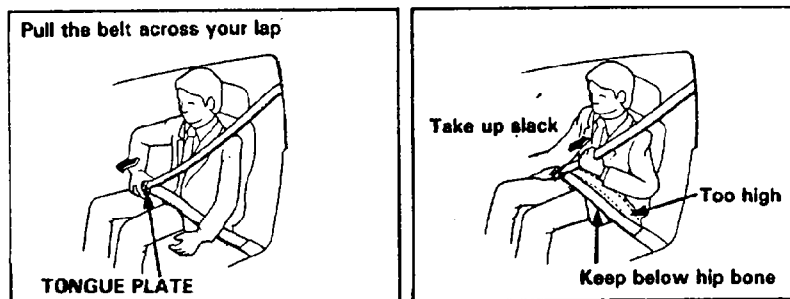
WARNING Make sure you and your passengers **ALWAYS** put on your seat belts before driving away.

CAUTION: Do not let the belts become damaged by a door or seat.

Buckling the Front Seat Belts

The front seat belts are one-piece combination lap/shoulder belts with an emergency locking retractor designed to lock only during a sudden stop or impact. Otherwise, they allow you some freedom of movement in the seat.

1. Before buckling your belt, move the seat to a comfortable position; sit erect and well back in the seat.
2. Take hold of the tongue plate and pull the belt across your lap. Be sure the belt is not twisted or caught on anything.



3. Push the tongue plate into the buckle until it clicks locked. Position the belt across your lap as low on your hips as possible.

(cont'd)

Seat Belts (cont'd)



WARNING Avoid placing the lap belt across your abdomen.

In the event of a collision, the pressure of the belt on the abdomen may increase the extent of injury.

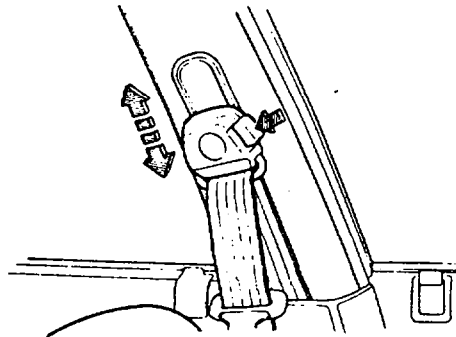
4. To release the seat belt, push the "PRESS" button in the buckle; the belt should retract automatically when released. If the belt does not fully retract, pull it out and check for kinks or twists.



- Comfort clips sold on the open market are not recommended since they could impair the function and safety of the belts.
- Do not wear the shoulder portion of the belt under your arm or out of position. Such use could increase the chance and amount of injury in an accident.
- Never use one belt for more than one person, child or adult.

Shoulder Anchor Height Adjusting Mechanism

The height of the shoulder anchor can be adjusted in four stages. Use the shoulder belt at the highest adjustment position. If the belt is too near your neck, causing discomfort, lower the anchor one stage at a time.



Buckling the Rear Seat Belts

In the rear seat, there are two one-piece lap/shoulder belts and a center lap belt. The seat-backs and seat belts provide best restraint when the occupant is sitting well back and straight up in the seat.

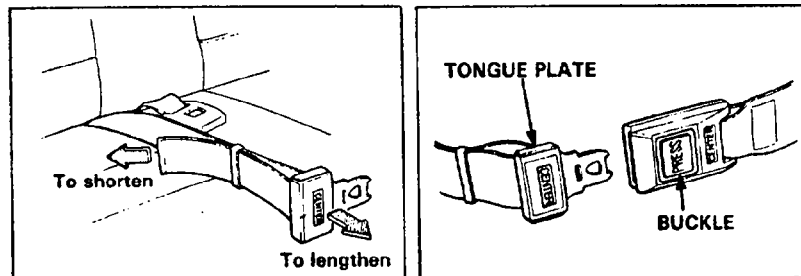
The lap/shoulder belts work the same as the two front seat belts. Adjust the center lap belt length to fit snugly but comfortably when buckled.

A slack belt will greatly reduce the protection afforded to the wearer. Hold the tongue plate perpendicular to the belt as shown.

- To shorten, pull the end of the belt away from the tongue plate.
- To lengthen, pull the tongue plate.

Push the tongue plate into the buckle until it clicks locked. Position the belt across your lap as low on your hips as possible.

WARNING Avoid placing the lap belt across your abdomen. In the event of a collision, the pressure on the abdomen may increase the extent of injury.

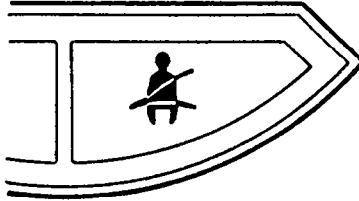


(cont'd)

Seat Belts (cont'd)

Fasten Seat Belt Warning Light and Warning Beeper

Both the  warning light and the warning beeper will go on for about six seconds when the ignition switch is turned on if the driver's belt is not fastened. The beeper will not go on if the driver's seat belt is fastened before the ignition switch is turned on, but the light will come on for about six seconds each time, to remind the driver to have passengers put their belts on. If the light and beeper do not work as described, have your dealer check the system.



Child Restraint

Children riding in the car should be restrained to minimize the risk of injury in an accident, sudden stop or sudden maneuver. According to accident statistics provided to the National Highway Traffic Safety Administration (NHTSA), children are safer when properly restrained in the rear seating positions than in the front seat. Larger children should use one of the seat belts provided. For smaller children, we strongly recommend the use of a commercially available child restraint system that meets the Federal Motor Vehicle Safety Standard (FMVSS) because it offers the most protection against injury. All states now have laws which require that small children must be seated in a child passenger seat restraint system. Check local laws.

All child restraint systems are designed to be secured by lap belts or the lap belt portion of a lap-shoulder belt. Children could be endangered in a crash if their restraints are not properly secured. Before buying a particular child restraint system, make sure it fits your car seat and seat belts, and fits your child. Follow all the instructions that come with the system.

WARNING

- Children should never ride unrestrained in an automobile.
- Never use an infant carrier or child safety seat that "hooks" over a seat-back; it may not provide adequate security in an accident.
- Never allow a child to be held in a person's arms while they are in the moving vehicle. Holding a child in a moving vehicle does not provide the child with any means of protection during an accident, even if the person holding the child is wearing a seat belt.