

V1674

REPORT NOS. 208-TRC-92-005

212-TRC-92-005

301-TRC-92-005

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

GENERAL MOTORS CORPORATION

1992 CHEVROLET S10

PICKUP

NHTSA NO. CN0110

TRC TEST NO. 911212

THE TRANSPORTATION RESEARCH CENTER OF OHIO

10820 STATE ROUTE 347

EAST LIBERTY, OHIO 43319



JANUARY 2, 1991

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE (NEF-31)
400 SEVENTH STREET, S.W., ROOM NO. 6111
WASHINGTON, DC 20590

*Rec'd
1/8/91*

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-90-C-21003. 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.

REPORT PREPARED BY:

Craig A. Markusic
Craig A. Markusic, Project Engineer
Transportation Research Center of Ohio

Date 1/2/91

REPORT APPROVED BY:

C. Kay Latimer
C. Kay Latimer, Project Manager
Transportation Research Center of Ohio

Date 1-6-91

FINAL REPORT ACCEPTED BY:

Charles K. Case
Contracting Officer's Technical Representative (COTR),
NHTSA, Office of Vehicle Safety Compliance

Date 3/11/92

1. Report No. 208-TRC-92-005 212-TRC-92-005 301-TRC-92-005	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 A 1992 CHEVROLET S10 PICKUP, NHTSA NO. CN0110		5. Report Date JANUARY 2, 1991	6. Performing Organization Code
7. Author(s) C. A. Markusic, Project Engineer, TRC		8. Performing Organization Report No. 208-TRC-92-005 212-TRC-92-005 301-TRC-92-005	
9. Performing Organization Name and Address Transportation Research Center of Ohio 10820 State Route 347 East Liberty, Ohio 43319		10. Work Unit No. (TRAIS)	11. Contract or Grant No. DTNH22-90-C-21003
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., Washington, DC 20590		13. Type of Report and Period Covered FINAL REPORT DECEMBER 1991 - JANUARY 1992	
15. Supplementary Notes		14. Sponsoring Agency Code NEF-30	
16. Abstract A 30 mph flat frontal barrier impact test was conducted on a 1992 Chevrolet S10 Pickup, NHTSA No. CN0110, at the Transportation Research Center of Ohio on December 12, 1991. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards: FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; FMVSS 301, "Fuel System Integrity." The barrier impact velocity was 29.3 mph. The vehicle's maximum static crush was 20.6 inches. The ambient temperature was 65° F. The driver's head injury criteria (HIC) was 466. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41.3 g. The driver's chest maximum deflection was 1.6 inches. The driver's left and right femur maximum axial forces were 359 pounds and 1092 pounds, respectively. The passenger's head injury criteria (HIC) was 568. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41.2 g. The passenger's chest maximum deflection was 1.8 inches. The passenger's left and right femur maximum axial forces were 636 pounds and 742 pounds, respectively. The vehicle appears to comply with the applicable requirements of FMVSS 208, 212, 219 (partial), and 301.			
17. Key Words Frontal Impact 30 mph Vehicle Safety Compliance Testing: FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219P, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"		18. Distribution Statement Available from: NHTSA Technical Reference Division Room 5108, (NAD-52) 400 Seventh Street, SW Washington, DC 20590 Attn: Mr. Robert Hornickie	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 132	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

* 1 in. = 2.54 centimeters, for other exact conversions and more detailed tables, see NBS Spec. Publ. 296, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10-286.

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³

TEMPERATURE (exact)

°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F
-40	-40		-40	-40
-20	-20		-4	-40
0	0		32	-40
20	20		68	-40
32	32		90	-40
40	40		104	-40
60	60		140	-40
80	80		176	-40
98.6	98.6		200	-40
120	120		216	-40
160	160		272	-40
200	200		320	-40
220	220		368	-40

TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1.0	PURPOSE AND TEST PROCEDURE	1-1
2.0	FRONTAL BARRIER IMPACT TEST SUMMARY	2-1
3.0	FMVSS 208, 212, 219 (PARTIAL) & 301 DATA	3-1
4.0	VEHICLE, OCCUPANT, & CAMERA MEASUREMENTS	4-1
APPENDIX A	PHOTOGRAPHS	A-1
APPENDIX B	DATA PLOTS	B-1

LIST OF TABLES

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1	CRASH TEST SUMMARY	2-4
2	TEST VEHICLE INFORMATION	2-5
3	POST-IMPACT DATA	2-8
4	VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY	2-12
5	DUMMY INJURY CRITERIA	3-2
6	POST-IMPACT DUMMY/VEHICLE DATA	3-3
7	FMVSS 208 COMFORT AND CONVENIENCE DATA FOR MANUAL SEAT BELTS	3-5
8	FMVSS 208 SEAT BELT WARNING SYSTEM DATA	3-7
9	FMVSS 208 LABELING AND DRIVER'S MANUAL DATA	3-8
10	FMVSS 208 READINESS INDICATOR DATA	3-9
11	FUEL SYSTEM DATA	3-12
12	FMVSS 301 POST-IMPACT TEST DATA	3-13
13	IMPACTED VEHICLE MEASUREMENTS	4-3
14	MOTION PICTURE CAMERA LOCATIONS	4-11

LIST OF FIGURES

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1	IMPACT VELOCITY MEASUREMENT SYSTEM	2-9
2	ACCIDENT INVESTIGATION DIVISION DATA FOR 30 MPH FRONTAL BARRIER IMPACT	2-10
3	VEHICLE ACCELEROMETER PLACEMENT	2-11
4	FMVSS 212 TEST DATA	3-10
5	FMVSS 219 TEST DATA	3-11
6	FMVSS 301 STATIC ROLLOVER TEST DATA	3-14
7	PRE-TEST AND POST-TEST MEASUREMENT POINTS	4-2
8	VEHICLE TARGET LOCATIONS	4-4
9	DUMMY AND SEAT POSITIONING DATA	4-5
10	DUMMY IN-VEHICLE POSITIONING DATA	4-6
11	SEAT BELT POSITIONING DATA	4-7
12	DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA	4-8
13	CAMERA POSITIONS	4-9

LIST OF PHOTOGRAPHS

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
A-1.	PRE-TEST FRONT VIEW	A-2
A-2.	POST-TEST FRONT VIEW	A-3
A-3.	PRE-TEST LEFT SIDE VIEW	A-4
A-4.	POST-TEST LEFT SIDE VIEW	A-5
A-5.	PRE-TEST REAR VIEW	A-6
A-6.	POST-TEST REAR VIEW	A-7
A-7.	PRE-TEST RIGHT SIDE VIEW	A-8
A-8.	POST-TEST RIGHT SIDE VIEW	A-9
A-9.	PRE-TEST RIGHT FRONT THREE-QUARTER VIEW	A-10
A-10.	POST-TEST RIGHT FRONT THREE-QUARTER VIEW	A-11
A-11.	PRE-TEST LEFT REAR THREE-QUARTER VIEW	A-12
A-12.	POST-TEST LEFT REAR THREE-QUARTER VIEW	A-13
A-13.	PRE-TEST WINDSHIELD VIEW	A-14
A-14.	POST-TEST WINDSHIELD VIEW	A-15
A-15.	PRE-TEST ENGINE COMPARTMENT VIEW	A-16
A-16.	POST-TEST ENGINE COMPARTMENT VIEW	A-17
A-17.	PRE-TEST FUEL FILLER CAP VIEW	A-18
A-18.	POST-TEST FUEL FILLER CAP VIEW	A-19
A-19.	PRE-TEST FUEL FILLER NECK VIEW	A-20
A-20.	POST-TEST FUEL FILLER NECK VIEW	A-21
A-21.	PRE-TEST FUEL TANK VIEW	A-22
A-22.	POST-TEST FUEL TANK VIEW	A-23
A-23.	PRE-TEST FRONT UNDERBODY VIEW	A-24
A-24.	POST-TEST FRONT UNDERBODY VIEW	A-25
A-25.	PRE-TEST REAR UNDERBODY VIEW	A-26
A-26.	POST-TEST REAR UNDERBODY VIEW	A-27
A-27.	PRE-TEST DRIVER DUMMY POSITION VIEW	A-28
A-28.	POST-TEST DRIVER DUMMY POSITION VIEW	A-29
A-29.	PRE-TEST PASSENGER DUMMY POSITION VIEW	A-30
A-30.	POST-TEST PASSENGER DUMMY POSITION VIEW	A-31
A-31.	PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1	A-32
A-32.	POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1	A-33

LIST OF PHOTOGRAPHS, CONT'D.

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
A-33.	PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2	A-34
A-34.	POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2	A-35
A-35.	PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1	A-36
A-36.	POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1	A-37
A-37.	PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2	A-38
A-38.	POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2	A-39
A-39.	POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1	A-40
A-40.	POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2	A-41
A-41.	POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1	A-42
A-42.	POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2	A-43
A-43.	POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 1	A-44
A-44.	POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 2	A-45
A-45.	POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1	A-46
A-46.	POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2	A-47
A-47.	PRE-TEST VEHICLE CERTIFICATION AND RECOMMENDED TIRE PRESSURE LABEL VIEW	A-48
A-48.	POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW	A-49

SECTION 1.0

PURPOSE & TEST PROCEDURE

PURPOSE

This 30 mph flat 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 the Transportation Research Center of Ohio (TRC) under Contract No. DTNH22-90-C-21003. The purpose of this test was to determine if the subject vehicle, a 1992 Chevrolet S10 Pickup, NHTSA No. CN0110, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," in the flat frontal barrier impact mode.

TEST PROCEDURE

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208-08. Data was obtained relative to FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," performance.

The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal axis accelerations. The vehicle's specified impact velocity range was 28.9 to 29.9 mph. The vehicle impacted a flat frontal barrier.

The test vehicle contained two (2) Part 572 E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedure specified in Appendices B and Optional Appendix C of the Laboratory Test Procedure.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces. Each Part 572 E dummy's instrumentation also included a chest potentiometer to measure longitudinal deflection.

The twenty-five (25) data channels were multiplexed and recorded on a 14-track tape drive. The data was digitally sampled at 8000 samples per second and processed per sections 12.8 and 12.9 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and fourteen (14) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

The vehicle and occupant data are summarized in Section 2.0. The FMVSS 208, 212, 219 (partial) and 301 data are presented in Section 3.0. The vehicle, occupant, and camera measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots.

SECTION 2.0

FRONTAL BARRIER IMPACT TEST SUMMARY

TEST RESULTS SUMMARY

This flat frontal barrier test was conducted at TRC on December 12, 1991.

The test vehicle, a 1992 Chevrolet S10 Pickup, NHTSA No. CN0110, appeared to comply with the performance requirements of FMVSS 208, 212, 219 (partial), and 301 in the flat frontal barrier impact mode. The Head Injury Criteria (HIC) calculations were less than 1000, the chest resultant accelerations did not exceed 60 g's, and the axial forces transmitted through the upper legs did not exceed 2,250 pounds as measured by Part 572 E dummies seated in the front outboard designated seating positions. For each Part 572 E dummy, the chest deflection did not exceed 3.0 inches. The vehicle's restraint system met the applicable comfort and convenience requirements. The windshield periphery retention was 100 percent. There was no penetration into any portion of the windshield. No fluid spilled from the vehicle's fuel system following the impact or during the static rollover test.

The test vehicle was equipped with a 4.3 liter, longitudinal engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 3711 pounds. The vehicle's impact speed was 29.3 mph. The vehicle's maximum static crush was 20.6 inches.

The driver's head injury criteria (HIC) was 466. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41.3 g. The driver's chest maximum deflection was 1.6 inches. The driver's left and right femur maximum axial forces were 359 pounds and 1092 pounds, respectively.

The right front passenger's HIC was 568. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41.2 g. The right front passenger's chest maximum deflection was 1.8 inches. The right front passenger's left and right femur maximum axial forces were 636 pounds and 742 pounds, respectively.

There was no loss of windshield periphery retention.

There was no intrusion through the windshield.

No fluid spilled from the vehicle's fuel system following the crash test event or during the static rollover test.

DATA ACQUISITION EXPLANATIONS

The left rear seat X-axis accelerometer, TLRXG1, recorded data spikes which exceeded the accelerometer's full scale value at 17.5 and 18.0 milliseconds.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: CN0110 TEST TYPE: Frontal Barrier Impact

TEST DATE: 12/12/91 TEST TIME: 1220 AMBIENT TEMP. (°F): 65

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1992/Chevrolet/S10/Pickup

VEHICLE TEST WEIGHT (LBS): 3711

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (MPH)**: PRIMARY = 29.3 SECONDARY = 29.3

MAXIMUM STATIC CRUSH (IN): 20.6

AVERAGE REBOUND (IN): 6.8

DUMMIES:	Driver #230	Passenger #314
TYPE:	Part 572 E	Part 572 E
LOCATION:	Left front	Right front
RESTRAINT:	Three-point unbelt	Three-point unbelt
NUMBER OF DATA CHANNELS:	25	
NUMBER OF CAMERAS:	HIGH-SPEED 14	REAL-TIME 2

*With respect to tow track centerline.

**Speed trap measurement ($\pm$.05 mph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: General Motors Corporation

MAKE/MODEL: Chevrolet/S10

VIN: 1GCCS14Z7N2124316

BODY STYLE: Truck

MODEL YEAR: 1992

NHTSA NO.: CN0110

COLOR: Red

ENGINE DATA: TYPE: longitudinal CYLINDERS: 6 DISPLACEMENT: 4.3 liter

TRANSMISSION DATA: 4 SPEED, MANUAL, X AUTOMATIC, FWD, X RWD, 4WD

DATE VEHICLE RECEIVED: 12/05/91

ODOMETER READING: 84.0

DEALER'S NAME AND ADDRESS: Byer's Chevrolet, Inc.
P.O. Box 2037
Columbus, OH 43216

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	Yes
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	Yes
CLOCK	Yes	REAR WINDOW DEFROSTER	No
OTHER	None		

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: General Motors Corporation

DATE OF MANUFACTURE: 10/91

VIN: 1GCCS14Z7N2124316

GVWR: 4200 LBS

GAWR: FRONT: 2500 LBS., REAR: 2300 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): BF Goodrich, Comp T/A, P215/65R15

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 35 PSI
REAR: 35 PSI

SPARE TIRE (MFR., LINE, SIZE): BF Goodrich, Comp T/A, P215/65R15

TYPE OF SEATS: FRONT: Bench
REAR: NA

TYPE OF FRONT SEAT BACKS: Non-Adjustable

MAXIMUM WIDTH: 65.5 INCHES

WHEELBASE: 108.5 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA: THE LABEL WAS LOCATED ON
THE DRIVER'S DOOR.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P215/65R15

RECOMMENDED COLD TIRE PRESSURE: FRONT: 35 PSI; REAR: 35 PSI

DESIGNATED SEATING CAPACITY: NA FRONT NA REAR NA TOTAL

VEHICLE CAPACITY WEIGHT: NA LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE: LF 31.6; RF 31.6; LR 32.5; RR 32.2

FULLY LOADED ATTITUDE: LF 31.0; RF 30.9; LR 30.6; RR 30.4

PRE-TEST ATTITUDE: LF 30.8; RF 31.0; LR 30.2; RR 30.6

POST-TEST ATTITUDE: LF 29.7; RF 31.5; LR 30.4; RR 31.8

TABLE 2 TEST VEHICLE INFORMATION CONT'D

WEIGHT OF TEST VEHICLE AS RECEIVED (WITH MAXIMUM FLUIDS):

RIGHT FRONT	922 LBS.	RIGHT REAR	614 LBS.
LEFT FRONT	944 LBS.	LEFT REAR	610 LBS.
TOTAL FRONT WEIGHT	1866 LBS.	(60.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1224 LBS.	(39.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT 3090 LBS.			

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (3090 LBS)

VCW = VEHICLE CAPACITY WEIGHT (NA LBS)

DSC = DESIGNATED SEATING CAPACITY (NA)

RCLW* = VCW - 150 (DSC) = NA

TARGET TEST WEIGHT = UDW + RCLW* + (NO. OF HYBRID III DUMMIES X 167 LBS/DUMMY)

TARGET TEST WEIGHT = 3090 + 300 + 334

TARGET TEST WEIGHT = 3724 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 287 LBS. OF CARGO WEIGHT:

RIGHT FRONT	1020 LBS.	RIGHT REAR	855 LBS.
LEFT FRONT	998 LBS.	LEFT REAR	838 LBS.
TOTAL FRONT WEIGHT	2018 LBS.	(54.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1693 LBS.	(45.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	3711 LBS.	(0.3% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 200 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 49.5 INCHES REARWARD OF FRONT WHEEL CENTERLINE

*Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 300 pounds, whichever is less.

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 911212 NHTSA NO.: CN0110
TEST DATE: 12/12/91 TEST TIME: 1220
TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0
AMBIENT TEMPERATURE AT IMPACT AREA: 65° F
TEMPERATURE IN OCCUPANT COMPARTMENT: 70° F
IMPACT VELOCITY: PRIMARY = 29.3 MPH SECONDARY = 29.3 MPH
(SPECIFIED RANGE = 28.9 TO 29.9 MPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 26.0 IN.

EXITING VELOCITY TRAP = 2.0 IN.

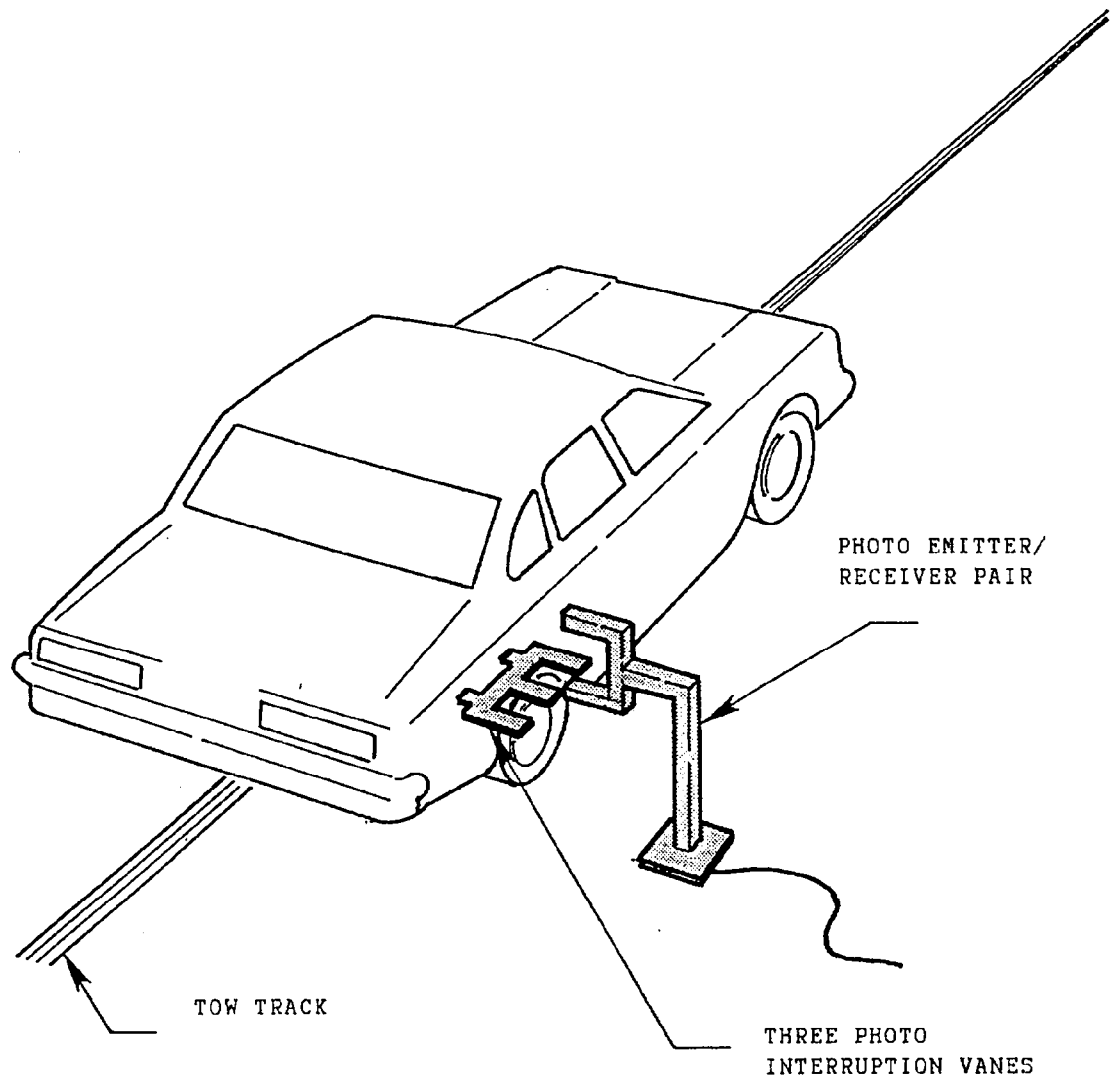
TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN INCHES):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 182.8; C 188.0; R 183.2
POST-TEST: L 167.4; C 167.4; R 166.6
TOTAL CRUSH: L 15.4; C 20.6; R 16.6
AVERAGE CRUSH: 17.5

TEST VEHICLE REBOUND FROM FLAT BARRIER (ALL MEASUREMENTS ARE IN INCHES):

DISTANCE FROM TEST VEHICLE TO BARRIER: L 6.8; C 6.5; R 7.2; AVG. 6.8

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA
FOR 30 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Chevrolet/S10/Pickup

VEHICLE NHTSA NO.: CN0110; VIN: 1GCCS14Z7N2124316

MODEL YEAR: 1992; BUILD DATE: 10/91; TEST DATE: 12/12/91

VEHICLE SIZE CATEGORY: Small pickup; TEST WEIGHT: 3711 LBS.

VEHICLE WHEELBASE: 108.5 INCHES

MAXIMUM WIDTH: 65.5 INCHES

FRONT OVERHANG: 30.9 INCHES

COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH
MEASUREMENTS:

C1 = 15.4 INCHES

C2 = 17.1 INCHES

C3 = 17.7 INCHES

C4 = 18.0 INCHES

C5 = 17.3 INCHES

C6 = 16.6 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE
(LONGITUDINAL)

LENGTH OF DAMAGED
REGION:

L = 57.5 INCHES

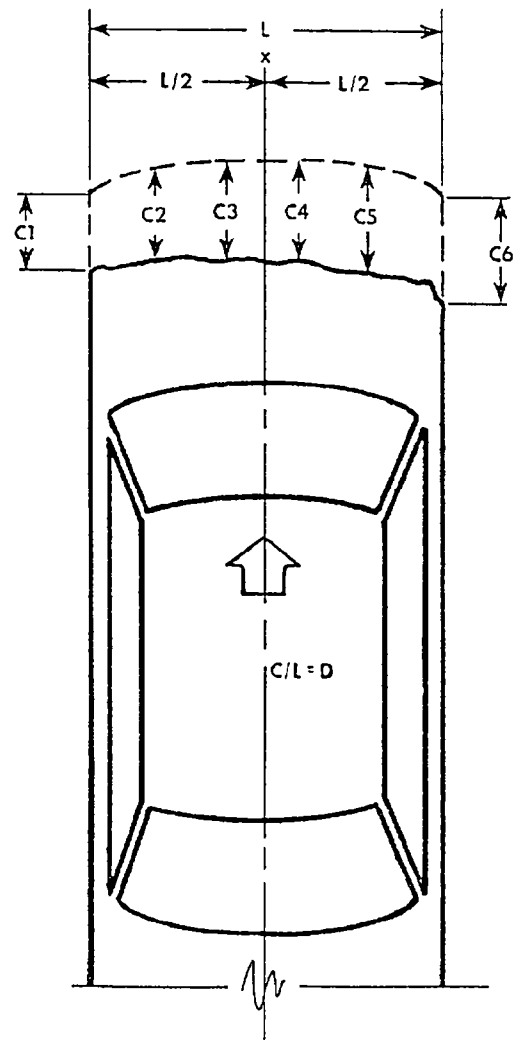
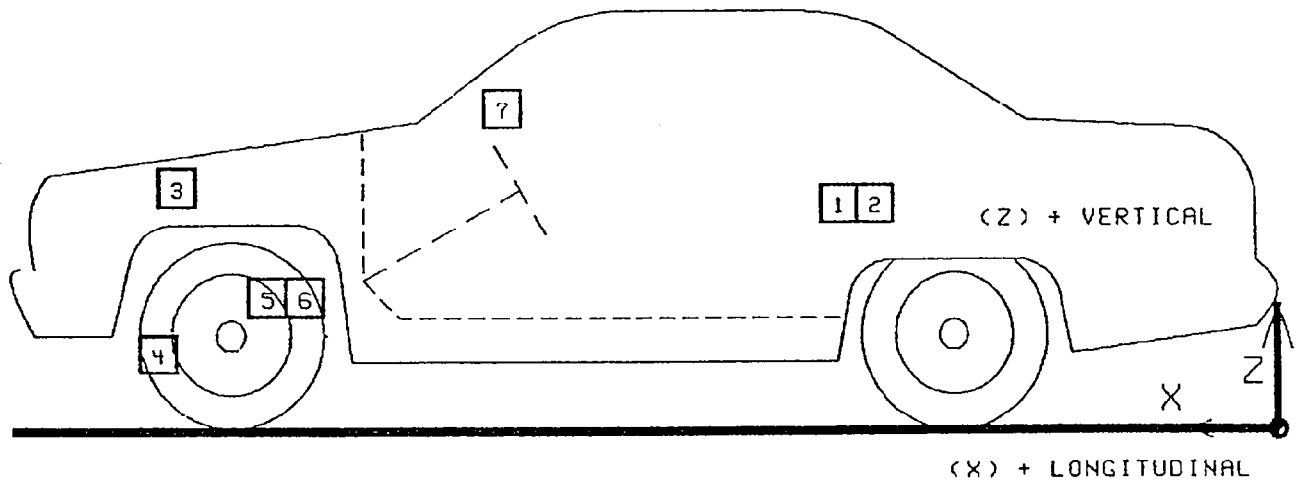
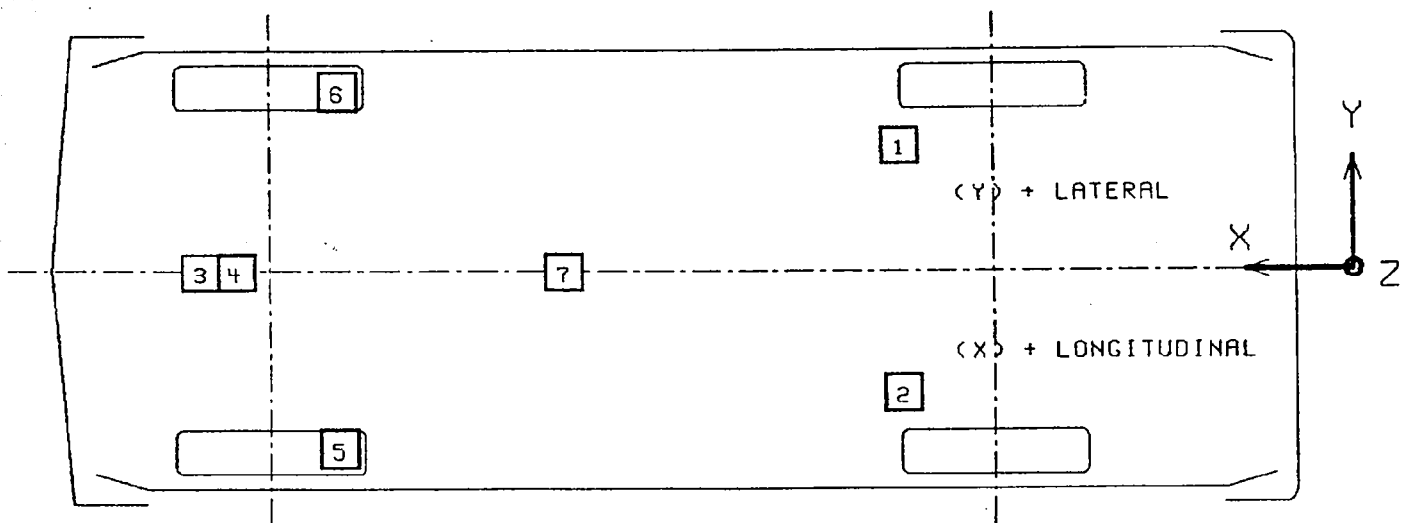


FIGURE 3
VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 911212

No.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
						MAX G	MSEC	MAX G	MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	87.4	23.4	20.0				
		POST	86.6	23.4	17.5				
						2.7	166.6Y	42.4	21.0Y
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	89.4	-23.6	19.9				
		POST	89.1	-23.6	18.2				
						4.0	107.9	37.9	20.9
3	ENGINE TOP LONGITUDINAL	PRE	157.6	-9.8	32.2				
		POST	149.8	-8.5	34.8				
						103.8	16.9	61.0	38.5
4	ENGINE BOTTOM LONGITUDINAL	PRE	149.2	-0.4	10.6				
		POST	149.1	-0.4	12.1				
						20.5	65.9	53.1	19.4
5	RIGHT BRAKE CALIPER LONGITUDINAL	PRE	150.8	-21.4	13.8				
		POST	148.2	-22.6	12.9				
						37.0	21.6	84.2	42.1
6	LEFT BRAKE CALIPER LONGITUDINAL	PRE	150.8	21.4	13.9				
		POST	147.8	22.6	12.5				
						14.9	23.1	62.4	41.1
7	INSTRUMENT PANEL CENTER LONGITUDINAL	PRE	133.0	1.1	43.4				
		POST	130.6	1.1	43.1				
						13.0	56.8	39.7	16.8

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

Y See DATA ACQUISITION EXPLANATION

REPORT OF VEHICLE CONDITION AT THE
COMPLETION OF TESTING

CONTRACT NO.: DTNH22-90-C-21003
FROM: The Transportation Research Center of Ohio
10820 State Route 347
East Liberty, OH 43319

TO: Mr. Charles Case
COTR
Office of Vehicle Safety Compliance

The following vehicle has been subjected to testing for FMVSS 208. The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager/NAD-30, with a carbon copy to the responsible testing office. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

NHTSA NO.: CN0110
MAKE/MODEL/BODY STYLE: Chevrolet/S10/Pickup
MODEL YEAR: 1992 BODY COLOR: Red
VIN: 1GCCS14Z7N2124316
ODOMETER (ARRIVAL): 84 DATE: 12/05/91
ODOMETER (COMPLETION): 88 DATE: 12/12/91
COST: \$11,004.00

☒ AIR CONDITIONER	☐ CONSOLE	BRAKES: ☒ POWER
☒ TINTED GLASS	☐ TACHOMETER	FRONT: Disc
☒ POWER STEERING	☐ SPEED CONTROL	REAR: Drum
☐ POWER WINDOWS	☐ REAR WINDOW DEF.	
☐ POWER DOOR LOCKS	☐ SUN/MOON ROOF	FRONT SEATS: ☐ POWER
☒ RADIO	☐ T-TOP	SEAT TYPE: Bench
☒ CLOCK	☒ TILT STEERING WHEEL	NO. OF SEATS: 3
☐ ROOF RACK	☐ OTHER OPTIONS: _____	

ENGINE: 6 CYLINDERS; 4.3 LITERS
TRANSMISSION: Automatic; DRIVE TYPE: Rear wheel
TIRE SIZE: P215/65R15
GASOLINE TYPE: Unleaded

EQUIPMENT THAT IS NO LONGER ON THE VEHICLE AS NOTED ABOVE: None

EXPLANATION: NA

VEHICLE CONDITION: Vehicle has been subjected to a 30 mph frontal
barrier crash test.

SECTION 3.0

FMVSS 208, 212, 219 (partial), & 301 DATA

TABLE 5 DUMMY INJURY CRITERIA

MAXIMUM ACCELERATION (G)

	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DRIVER	-93.3	-16.1	-40.1	95.4	-44.0	8.4	-15.8	41.3
PASSENGER	-45.1	-16.1	-46.7	59.9	-39.9	-18.4	-19.9	41.2

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	359	1092
PASSENGER	636	742

HEAD INJURY CRITERIA**

	HIC	TIME t_1 (MSEC) ¹	TIME t_2 (MSEC) ²
DRIVER	466	61.9	97.9
PASSENGER	568	77.9	113.9

MAXIMUM CHEST DEFLECTION

DRIVER	1.6
PASSENGER	1.8

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #230	PASSENGER #314
HEAD	<u>Steering wheel</u>	<u>None</u>
CHEST	<u>None</u>	<u>None</u>
ABDOMEN	<u>Steering wheel</u>	<u>None</u>
LEFT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>
RIGHT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>

DOOR OPENING:

	LEFT	RIGHT
FRONT	<u>Easy</u>	<u>Tools required</u>
REAR	<u>NA</u>	<u>NA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	<u>None</u>	<u>Slightly forward</u>
REAR	<u>NA</u>	<u>NA</u>

GLAZING DAMAGE:

The entire windshield cracked upon impact.

OTHER NOTABLE IMPACT EFFECTS:

None

DUMMY KINEMATIC SUMMARY

Driver Dummy

Upon impact, the driver dummy translated forward on the seat with both knees impacting the instrument panel. The dummy's abdomen then impacted the lower rim of the steering wheel followed by the dummy's head impacting the upper rim of the steering wheel and rotating downward slightly. The driver dummy was restrained by the three-point unbelt. The dummy rebounded rearward as the dummy's head rotated rearward into the head restraint. The driver dummy came to rest in the driver's seat restrained by the three-point unbelt.

Right Front Passenger Dummy

Upon impact, the right front passenger dummy translated forward on the seat with both knees impacting the instrument panel. The dummy's head then rotated downward. The right front passenger was restrained by the three-point unbelt. The dummy then rebounded rearward and slightly to the right as the dummy's head rotated rearward into the head restraint. The right front passenger dummy came to rest in the right front passenger's seat leaning slightly to the right and restrained by the three-point unbelt.

TABLE 7 FMVSS 208 COMFORT & CONVENIENCE DATA FOR MANUAL SEAT BELTS

MAKE/MODEL: Chevrolet/S10

VIN: 1GCCS14Z7N2124316

BODY STYLE: Pickup

NHTSA NO.: CN0110

DATE OF MANUFACTURE: 10/91

WEBBING TENSION - RELIEVING DEVICE:

DO OUTBOARD SEATING POSITION SEAT BELTS HAVE WEBBING TENSION - RELIEVING
DEVICES?(check one): NO

BELT CONTACT FORCE:

BELT CONTACT FORCE ON CHEST OF TEST DUMMY: .2 POUNDS

LATCHPLATE ACCESS:

ARE THE SEAT BELT LATCHPLATES, IN THEIR NORMAL STOWED POSITION, WITHIN
THE REACH ENVELOPE? YES

DOES THE CLEARANCE TEST BLOCK MOVE UNHINDERED TO THE LATCHPLATE OR
BUCKLE? YES

RETRACTION:

SEAT BELT AUTOMATICALLY RETRACTS WHEN

(check one): The adjacent vehicle door is open and the seat belt
latchplate is released.

 X The seat belt latchplate is released.

ARE THE STOWED SEAT BELT WEBBING AND HARDWARE PINCHED WHEN THE DOOR IS
CLOSED? NO

ACCESSIBILITY:

IS THE SEAT CUSHION REMOVABLE SO THE SEAT BACK SERVES A FUNCTION OTHER
THAN SEATING? NO

IS THE SEAT REMOVABLE? NO

TABLE 7 FMVSS 208 COMFORT & CONVENIENCE DATA FOR MANUAL SEAT BELTS, CONT'D

MAKE/MODEL: Chevrolet/S10

VIN: 1GCCS14Z7N2124316

BODY STYLE: Pickup

NHTSA NO.: CN0110

DATE OF MANUFACTURE: 10/91

ACCESSIBILITY, CONT'D:

IS THE SEAT MOVABLE SO THE SPACE FORMERLY OCCUPIED BY THE SEAT CAN BE USED FOR A SECONDARY FUNCTION? NO

NOTE: IF ANY OF THE ABOVE ANSWERS ARE "YES", THE ACCESSIBILITY REQUIREMENTS DO NOT APPLY.

IF WEBBING IS DESIGNED TO PASS THROUGH THE SEAT CUSHION OR BETWEEN THE CUSHION AND SEAT BACK ARE ONE OF THE FOLLOWING PARTS NORMALLY ON TOP OF OR ABOVE THE SEAT CUSHION: LATCHPLATE, BUCKLE, WEBBING?

Not Applicable, the webbing is not designed to pass through the seat cushion or between the cushion and seat back.

ARE THE REMAINING TWO PARTS ACCESSIBLE UNDER NORMAL CONDITIONS?

Not Applicable, the webbing is not designed to pass through the seat cushion or between the cushion and seat back.

DO THE LATCHPLATE AND BUCKLE PASS THROUGH THE GUIDES PROVIDED AND FALL BEHIND THE SEAT WHEN THE BELT IS COMPLETELY RETRACTED (OR DETACHED IF NOT RETRACTABLE); THE SEAT IS MOVED TO ANY POSITION; AND THE SEAT BACK, IF FOLDABLE, IS FOLDED FORWARD AS FAR AS POSSIBLE AND THEN MOVED BACKWARD INTO POSITION?

Not Applicable, the restraint system does not provide guides.

IS THE INBOARD RECEPTACLE END OF THE OUTBOARD SEATING POSITION'S SEAT BELT ACCESSIBLE WITH THE CENTER ARM REST IN ANY POSITION TO WHICH IT CAN BE ADJUSTED WITHOUT MOVING THE ARM REST FOR ACCESS? YES

TABLE 8 FMVSS 208 SEAT BELT WARNING SYSTEM DATA

WITH OCCUPANT IN DRIVER'S POSITION AND UNIBELT IN STOWED POSITION AND
IGNITION SWITCH PLACED IN "START/ON" POSITION:

Duration of audible warning signal = 6 sec.

Duration of reminder light operation = 6 sec.

WITH OCCUPANT IN DRIVER'S POSITION AND UNIBELT IN USE AND THE IGNITION
SWITCH PLACED IN "START/ON" POSITION:

Duration of audible warning signal = 0 sec.

(NOTE: audible warning should not operate)

Duration of reminder light operation = 6 sec.

WORDING OF VISUAL WARNING:

 Fasten Seat Belt

 Fasten Belt

 X Symbol 101-80

 Other: _____

TABLE 9 FMVSS 208 LABELING AND DRIVER'S MANUAL DATA

DESCRIBE LOCATION OF LABEL WHICH DESCRIBES MANUFACTURER'S MAINTENANCE OR
REPLACEMENT SCHEDULE FOR CRASH-DEPLOYED OCCUPANT PROTECTION SYSTEM:

Not applicable, vehicle did not contain a crash-deployed occupant protection
system.

TABLE 10 FMVSS 208 READINESS INDICATOR DATA

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.

Not applicable, vehicle did not contain a crash-deployed occupant protection system.

FIGURE 4 FMVSS 212 TEST DATA

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

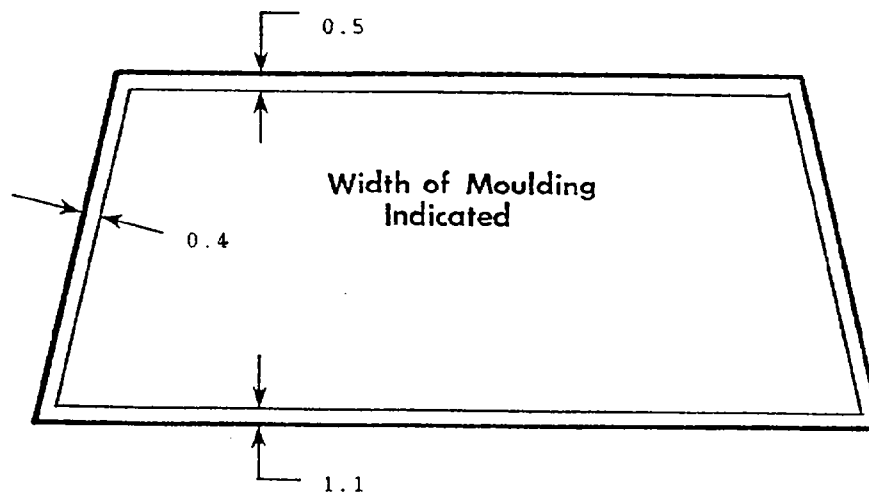
Plastic trim around outer perimeter, adhesive trim around inner perimeter.

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.

WINDSHIELD PERIPHERY MEASUREMENTS:

	PRE-TEST	POST-TEST	PERCENT RETENTION
RIGHT SIDE	77.2	77.2	100
LEFT SIDE	77.2	77.2	100
TOTAL	154.4	154.4	100

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 70° F



FRONT VIEW OF WINDSHIELD*

LOSS OF WINDSHIELD RETENTION LENGTHS: None

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

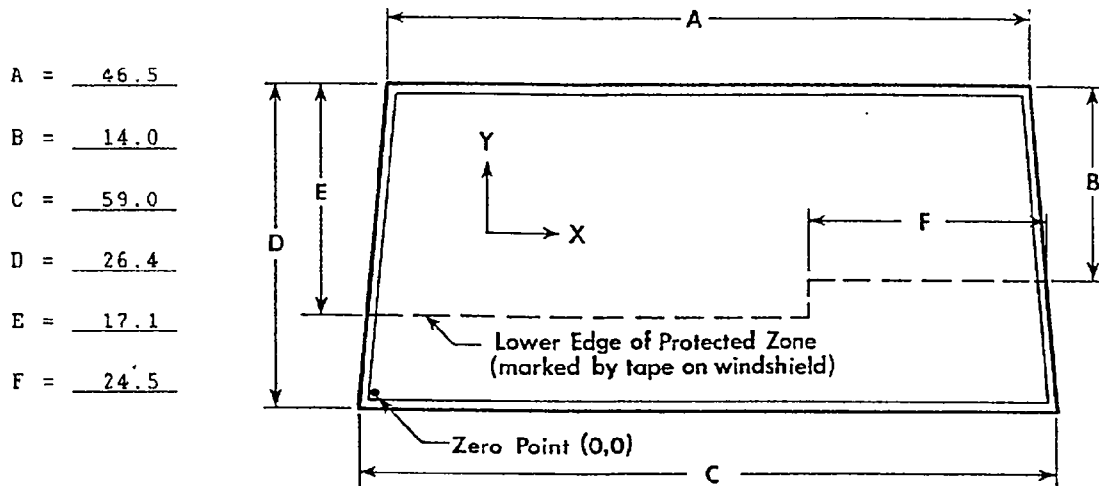
*INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

FIGURE 5 FMVSS 219 TEST DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5 inch diameter 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. Draw the locus of points on the inner surface of the windshield contactable 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 0.5 inch from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

WINDSHIELD MEASUREMENTS:



FRONT VIEW

METHOD OF ADHERING PROTECTED ZONE TEMPLATE TO WINDSHIELD: NA

AREAS OF WINDSHIELD TEMPLATE PENETRATION
 GREATER THAN 0.25 IN.: NA

COORDINATES
 X Y
 1.
 2.
 3.

AREAS OF WINDSHIELD PENETRATION, BELOW THE PROTECTED ZONE,
 THROUGH THE INNER SURFACE OF THE WINDSHIELD: None

1.
 2.
 3.

ALL MEASUREMENTS ARE IN INCHES.

TABLE 11 FUEL SYSTEM DATA

MAKE/MODEL: Chevrolet/S10

NHTSA NO.: CN0110

FUEL SYSTEM CAPACITY: 20.0 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 19.6 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 18.0 GALLONS TO 18.4 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 18.2 GALLONS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

TEST FLUID COLOR: PURPLE

DETAILS OF FUEL SYSTEM: The fuel tank is located in front of the rear
axle. The fuel lines run along the left frame rail to the front. The
fuel filler neck is located on the left side.

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT
OPERATING? No

TABLE 12 FMVSS 301 POST-IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: CN0110 ; TEST DATE: 12/12/91

VEHICLE MAKE/MODEL/BODY STYLE: Chevrolet/S10/Pickup

TEST REQUIREMENTS:

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

TEST VEHICLE IMPACT TYPE:

- X FRONTAL (30 MPH)
 OBLIQUE (30 MPH) WITH ° BARRIER FACE
FIRST CONTACTING (DRIVER/PASS.) SIDE.
 REAR MOVING BARRIER (30 MPH)
 LATERAL MOVING BARRIER (20 MPH)

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

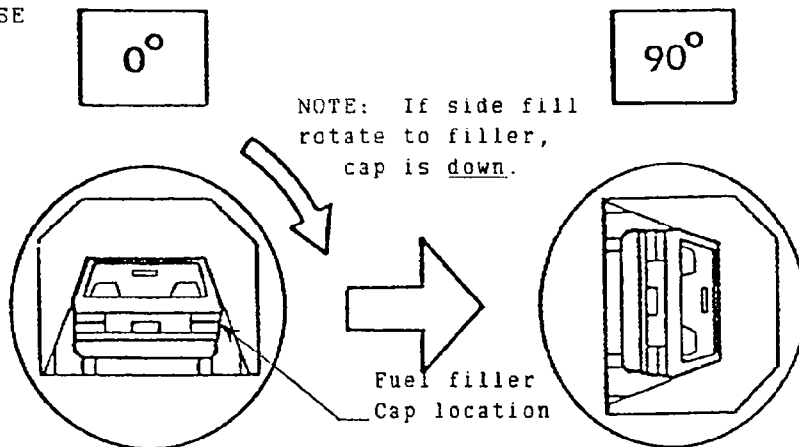
	<u>TEST</u> <u>RESULTS</u>	<u>MAXIMUM</u> <u>ALLOWABLE</u>
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 OZ.	1 OZ.
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 OZ.	5 OZ.
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 OZ.	1 OZ./1 MIN.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CN0110
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - - = 7 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

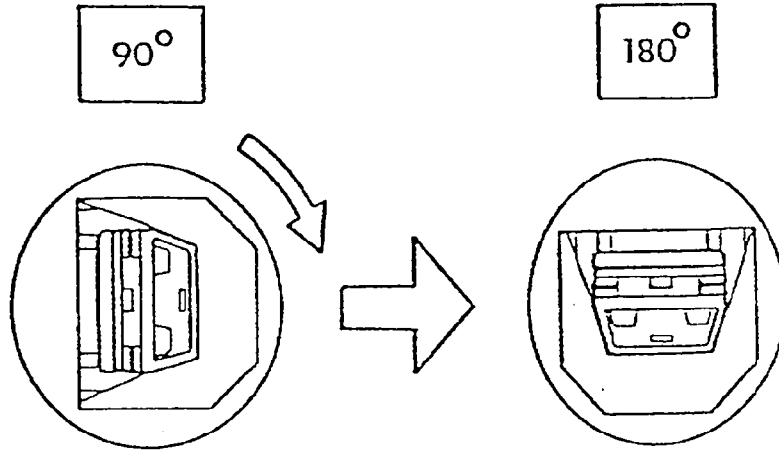
<u>0° TO 90° ROTATION (FUEL FILLER CAP DOWN)</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CN0110
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
TOTAL - - - - - = 7 minutes, 00 seconds
NEXT WHOLE MINUTE INTERVAL - - - - - = 14 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

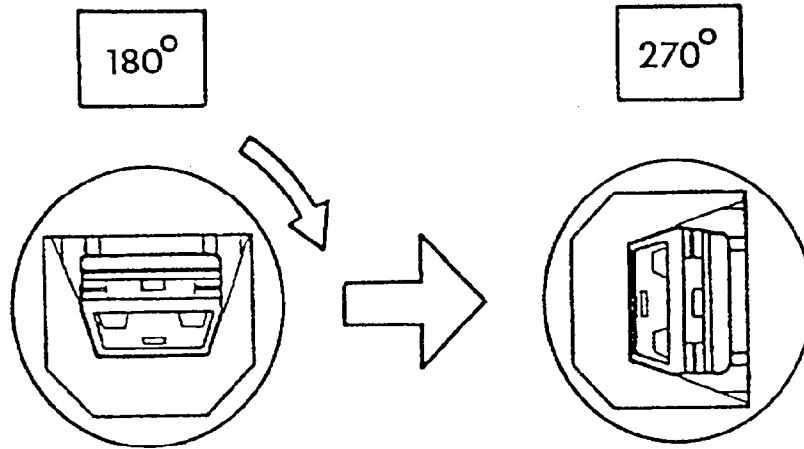
<u>90° TO 180° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CN0110
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - - = 21 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

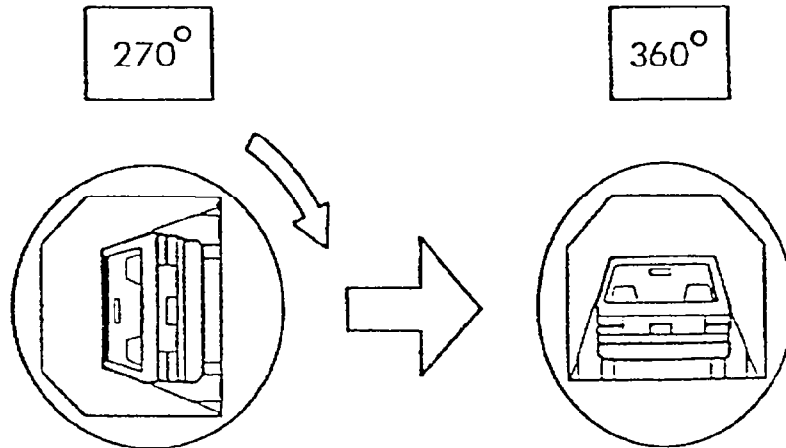
<u>180° TO 270° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CN0110
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - - = 28 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

<u>270° TO 360° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

SECTION 4.0

VEHICLE, OCCUPANT, AND CAMERA MEASUREMENTS

FIGURE 7

PRE-TEST AND POST-TEST MEASUREMENT POINTS

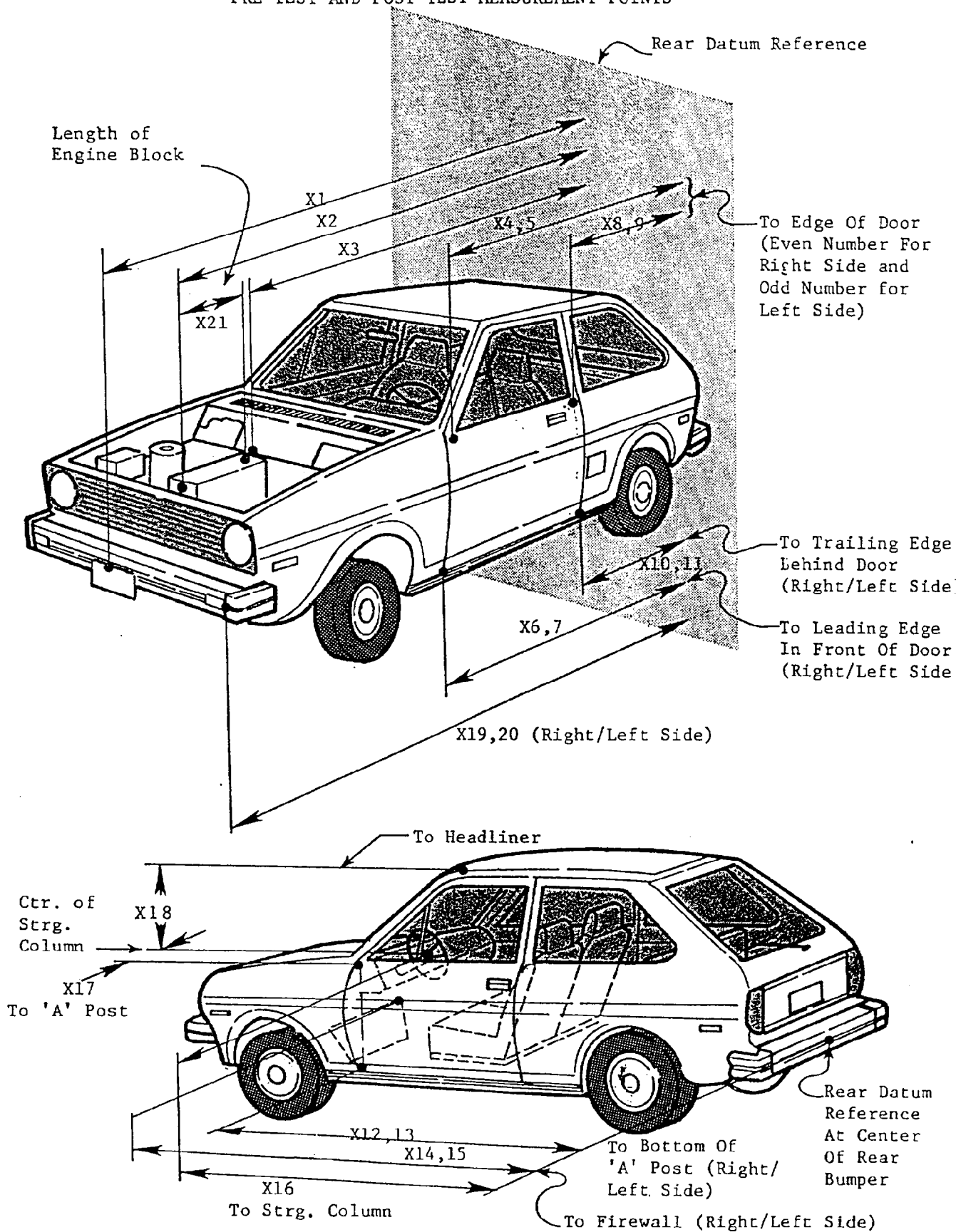
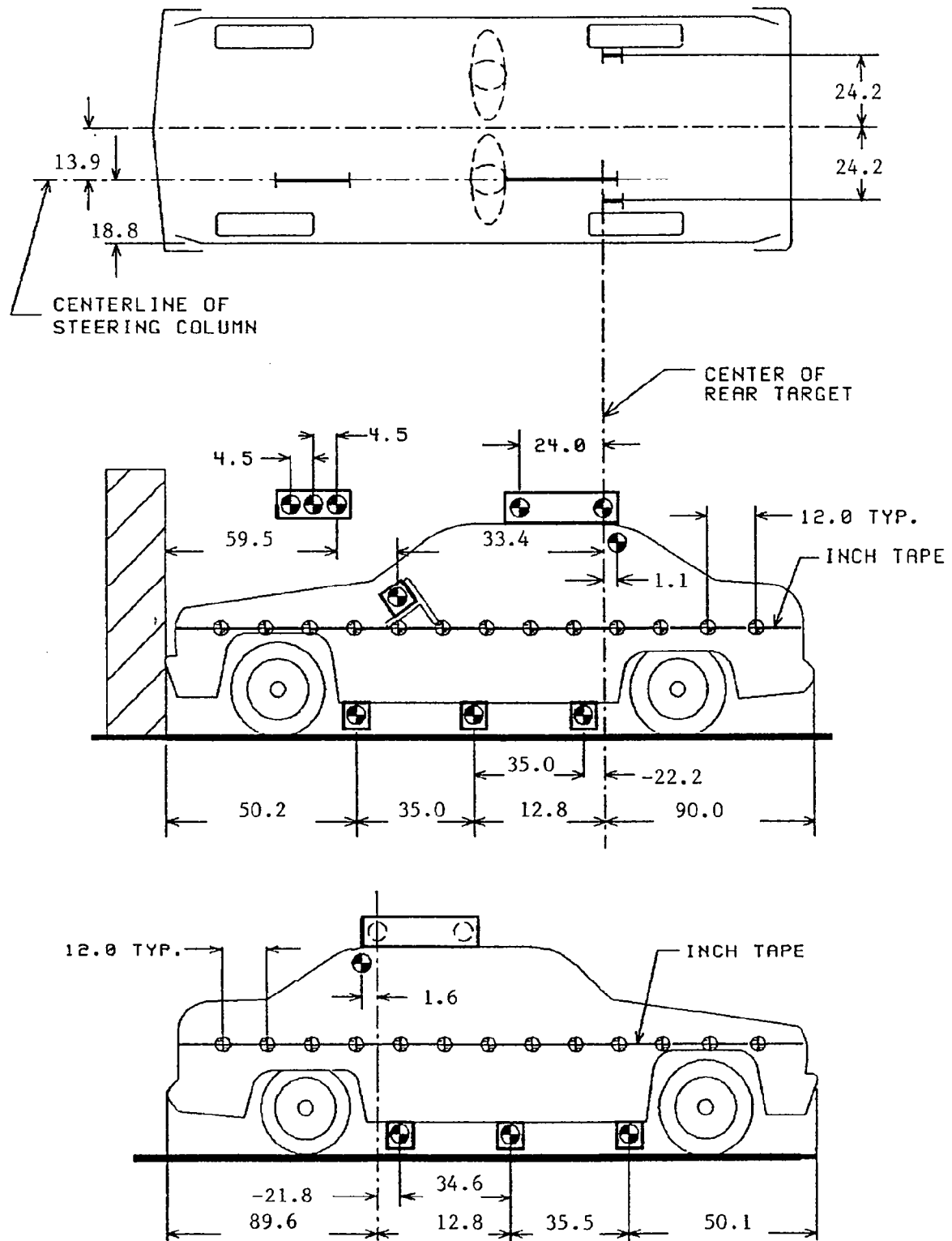


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Chevrolet/S10		TEST NUMBER: 911212	ALL MEASUREMENTS ARE IN INCHES		
NO.	TYPE OF MEASUREMENT		PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE		188.0	167.4	20.6
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK		162.2	152.7	9.5
X3	REAR SURFACE OF VEHICLE TO FIREWALL		145.0	139.3	5.7
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR		133.6	131.6	2.0
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR		133.2	131.8	1.7
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR		132.6	131.9	0.7
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR		132.2	131.9	0.3
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR		89.4	87.6	1.8
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR		89.1	88.1	1.0
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR		89.4	88.5	0.9
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR		89.2	88.4	0.8
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE		131.9	130.7	1.2
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE		131.9	130.5	1.4
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE		142.6	141.6	1.0
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE		142.0	141.9	0.1
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER		114.5	113.4	1.1
X17	CENTER OF STEERING COLUMN TO "A" POST		11.8	10.1	1.7
X18	CENTER OF STEERING COLUMN TO HEADLINER		17.8	19.4	-1.6
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER		183.2	167.6	15.6
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER		182.8	167.4	15.4
X21	LENGTH OF ENGINE BLOCK		17.5	17.5	0.0

FIGURE 8
VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 9 DUMMY AND SEAT POSITIONING DATA

PRE-IMPACT DATA:

MAKE/MODEL: Chevrolet/S10
 BODY STYLE: Pickup MODEL YEAR: 1992
 NHTSA NO.: CN0110 COLOR: Red

DATA FROM CERTIFICATION LABEL:

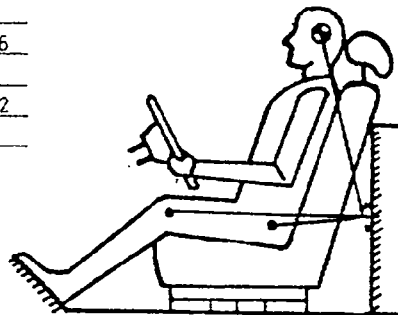
VEHICLE MANUFACTURER: General Motors Corporation
 DATE OF MANUFACTURE: 10/91 VIN: 1GCCS14Z7N2124316
 GVWR: 4200 LBS.; GAWR: FRONT = 2500 LBS.; REAR = 2300 LBS.

POST-IMPACT DATA:

DATE OF TEST: 12/12/91 TIME: 1220 TEMPERATURE: 65° F
 IMPACT VELOCITY: PRIMARY = 29.3 MPH SECONDARY = 29.3 MPH
 REQUIRED IMPACT VELOCITY RANGE: 28.9 TO 29.9 MPH
 SEAT TYPE: Bench ADJUSTER TYPE: Manual
 FRONT SEAT BACK TYPE: Non-adjustable
 TECHNICIANS: B. Crabtree, B. Fishbaugh

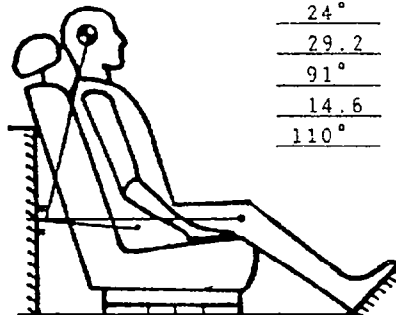
DRIVER DUMMY # 230 TYPE: IIII

HEAD 21.8
 TARGET 24°
 KNEE 12.6
 JOINT 115°
 APPROX-
 IMATE 29.2
95°
 "H"
 POINT

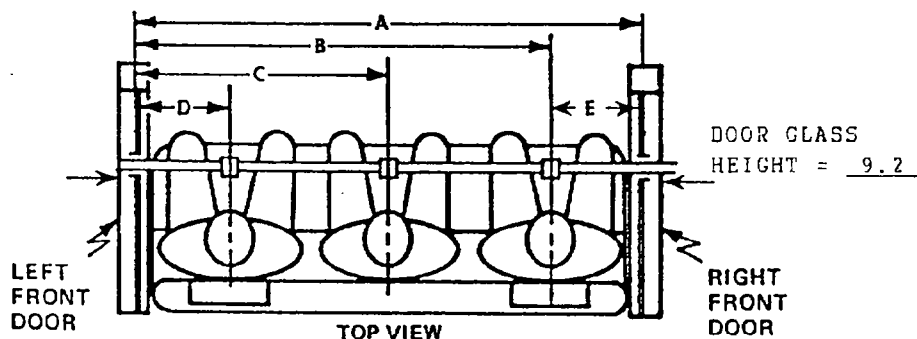


PASSENGER DUMMY # 314 TYPE: IIII

22.6 HEAD
24° TARGET
29.2 KNEE
91° JOINT
14.6 APPROX-
110° IMATE
 "H"
 POINT



A = 53.6
 B = 40.0
 C = NA
 D = 13.3
 E = 13.6
 DOOR GLASS
 HEIGHT = 9.2



ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.
 ALL DISTANCE MEASUREMENTS ARE IN INCHES/MILLIMETERS.

FIGURE 10 DUMMY IN VEHICLE POSITIONING DATA

	DRIVER	PASSENGER
HH	13.9	14.4
HW	15.6	19.1
CD	19.3	21.8
CS	9.6	NA
KDL	5.4	5.1
KDR	5.2	5.2
TA	15°	14°
SA	20°	20°
HSW	14.2	NA

	DRIVER	PASSENGER
HR	7.6	7.9
HS	10.2	11.2
AD	3.8	4.8
HD	5.4	5.2
KK	8.5	8.2
AA	9.0	7.6
HA	19.0	19.2

KNEE OUTER CLEVIS TO OUTER
CLEVIS SPACING:

DRIVER = 10.6
PASSENGER = 10.6

PELVIS ANGLE:

DRIVER = 23°
PASSENGER = 23°

HH = HEAD TO WINDSHIELD HEADER
HW = HEAD TO WINDSHIELD
CD = CHEST TO DASH
CS = CHEST TO STEERING WHEEL
KD = KNEE TO DASH
TA = TORSO ANGLE
SA = SEAT BACK ANGLE
HSW = HEAD TO STEERING WHEEL

HR = HEAD C.G. TARGET TO SIDE ROOF HEADER
HS = HEAD C.G. TARGET TO SIDE WINDOW
AD = ARM TO DOOR
HD = HIP TO DOOR
KK = KNEE TO KNEE
AA = ANKLE TO ANKLE
HA = HEAD C.G. TARGET TO A-PILLAR

TORSO AND SEAT BACK ANGLES ARE RELATIVE TO VERTICAL.
ALL DISTANCE MEASUREMENTS ARE IN INCHES.

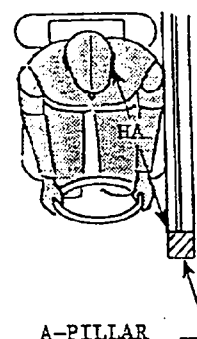
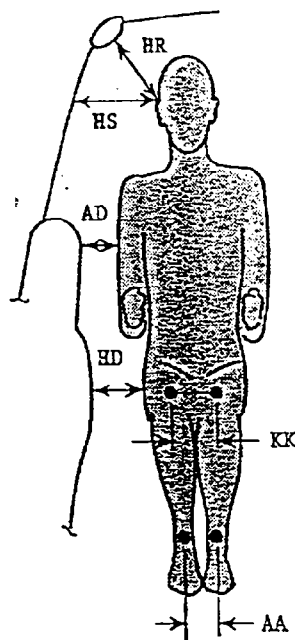
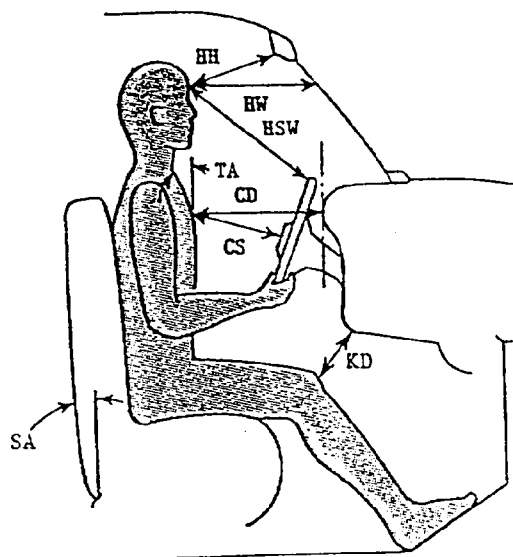
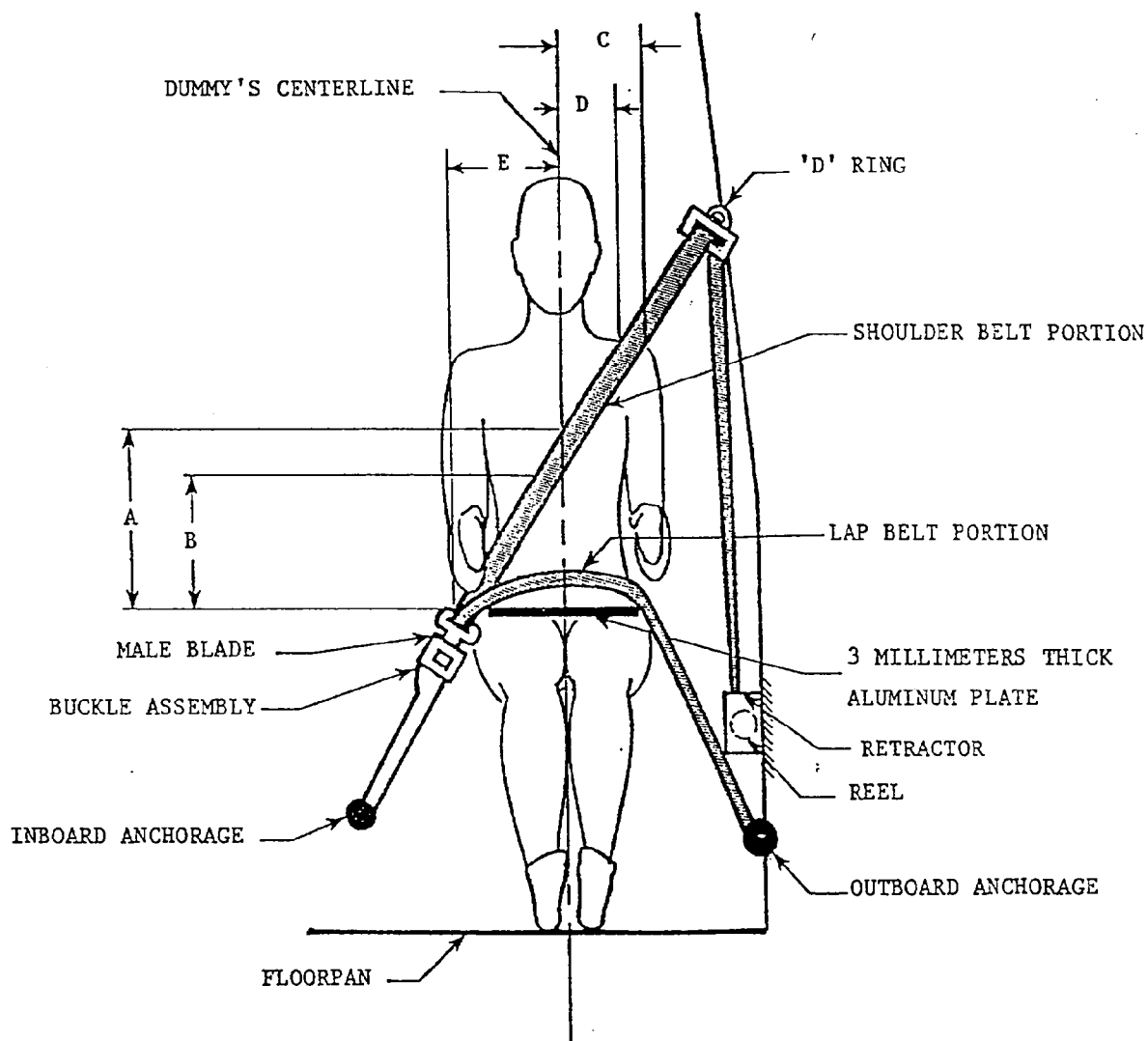


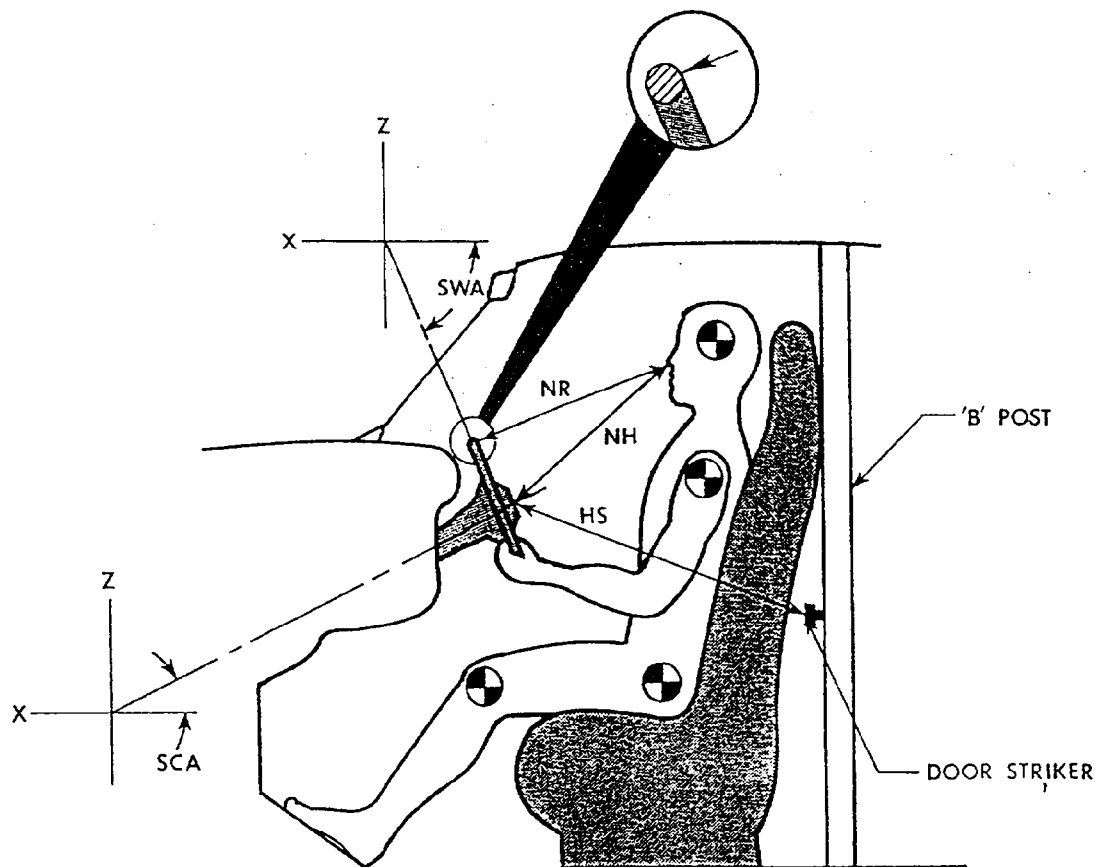
FIGURE 11 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUM. PLATE TO BELT UPPER EDGE	13.9	14.1
B - TOP SURFACE OF ALUM. PLATE TO BELT LOWER EDGE	10.8	10.9
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	4.4	4.6
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	2.1	1.8
E - DUMMY CENTERLINE TO INTERSECTION OF UPPER TORSO BELT AND LAP BELT	9.1	10.4

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 12 DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA



POSITION OF STEERING COLUMN TILTING AND TELESCOPING ADJUSTMENTS, IF ANY:
The steering column was located in the third position upwards from the lowest position.

MEASUREMENTS

NR	- DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	12.8
NH	- DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	14.3
HS	- DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	26.6
SCA	- ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS	20°
SWA	- ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS	70°

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 13
CAMERA POSITIONS

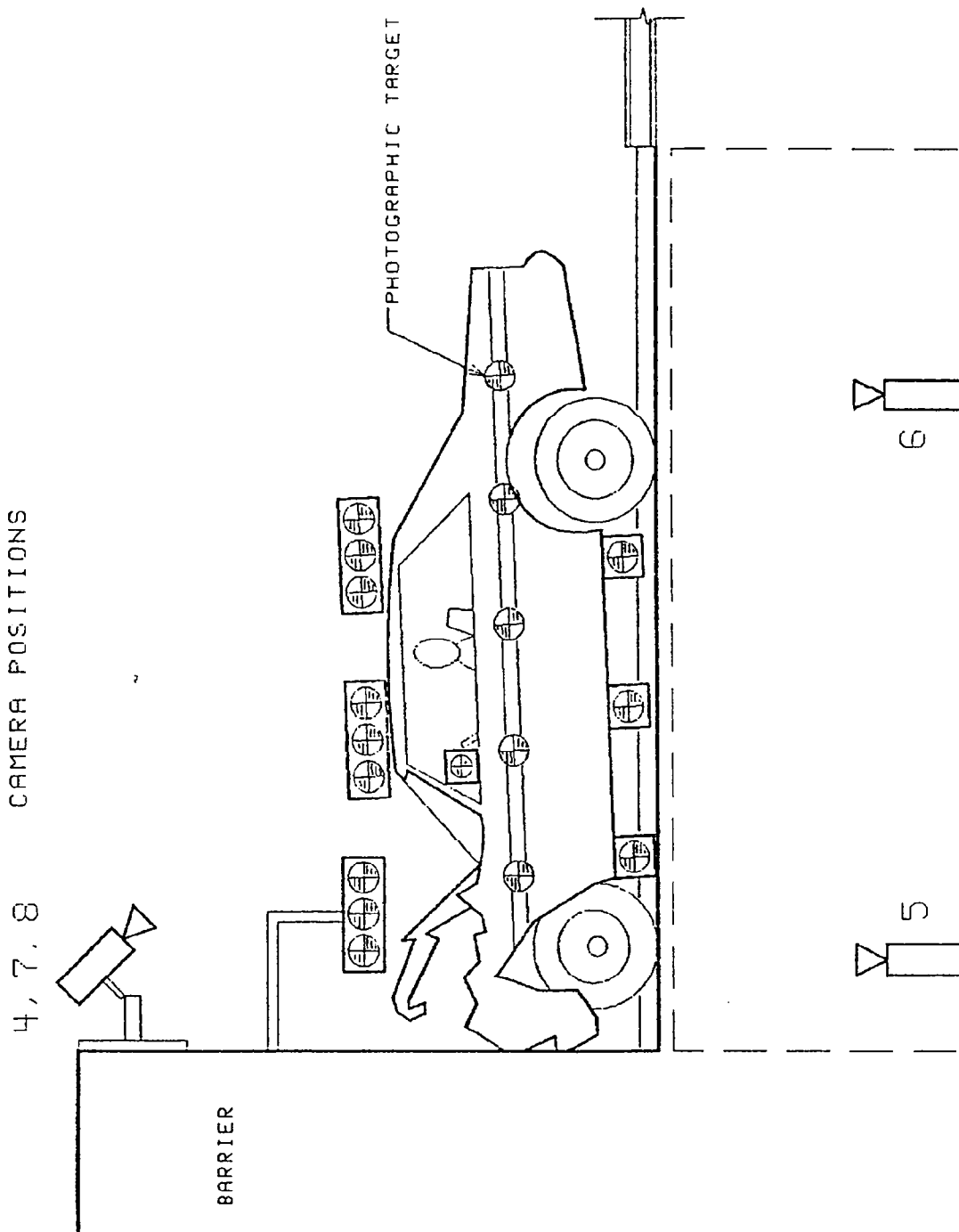


FIGURE 13
CAMERA POSITIONS, CONTINUED

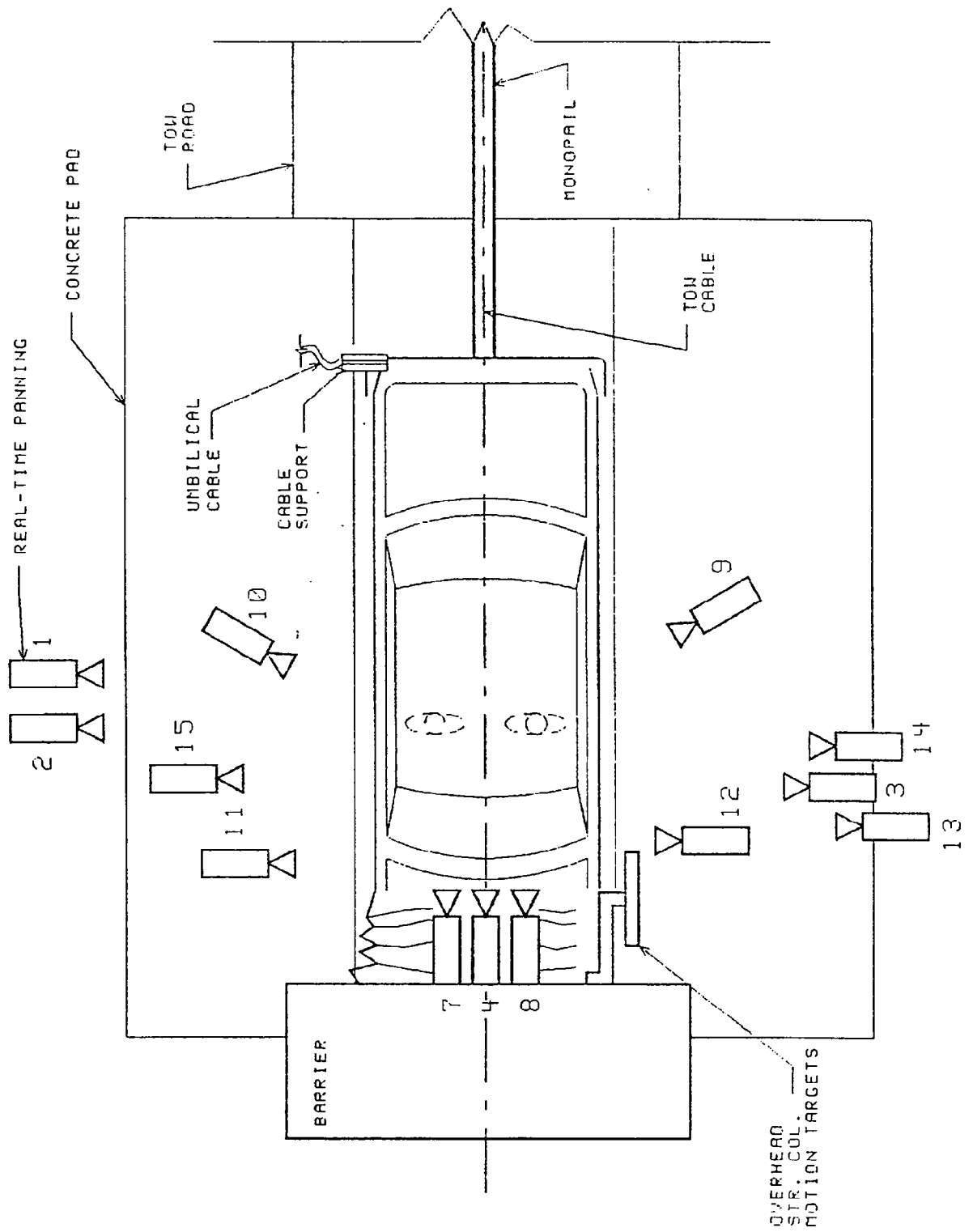


TABLE 14 MOTION PICTURE CAMERA LOCATIONS

TEST NO.:		911212		VEHICLE:		Chevrolet S10 Pickup				FILM PLANE		FILM SPEED	
CAMERA NO.	VIEW	CAMERA POSITIONS (IN)*			ANGLE** (DEG)	TO HEAD TARGET(IN)	LENS (MM)						
		X	Y	Z									
1	Real-time panning	-142.0	-504.0	61.0	NA	NA	16					24	
2	Right overall	-81.3	-266.4	37.1	-2	NA	13					485	
3	Left vehicle crush	-41.5	295.0	44.0	-4	228.0	25					495	
4	Windshield front view	-6.0	0.0	84.0	-40	NA	13					500	
5	Pit front position	-50.5	0.0	-92.4	90	NA	13					1000	
6	Pit rear position	-99.3	0.0	-99.0	90	NA	13					1000	
7	Passenger front view	-4.5	-13.8	93.0	-50	NA	17					500	
8	Driver front view	-6.8	14.5	93.0	-50	NA	17					498	
9	Driver kinematics	-157.3	116.0	87.0	-27	109.0	25					502	
10	Passenger kinematics	-152.1	-116.0	87.0	-26	114.0	25					502	
11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50					500	
12	Left windshield intrusion	-53.0	309.4	42.3	0	NA	50					500	
13	Steering column motion	-120.0	285.0	103.0	-14	NA	25					500	
14	Steering column motion	-120.0	285.0	75.1	-9	NA	25					500	
15	Passenger kinematics	-38.8	-293.0	45.3	-4	223.0	25					NA***	
16	Real-time documentation	NA	NA	NA	NA	NA	12-120					24	

* +X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

** +Angle = Film plane angled upward from horizontal plane

***No film taken due to camera malfunction.

APPENDIX A

PHOTOGRAPHS

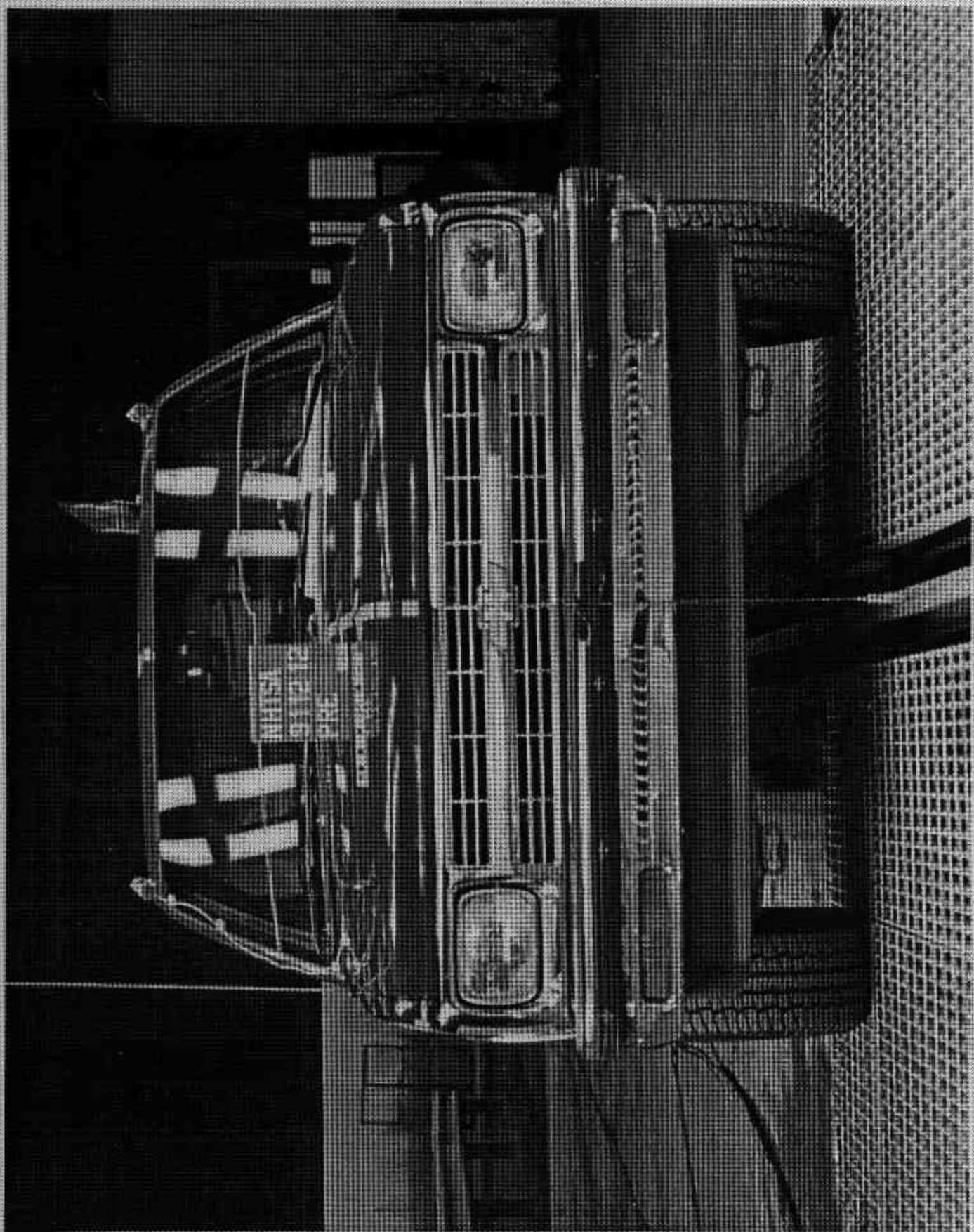


FIGURE A-1. PRE-TEST FRONT VIEW

A-2

911212

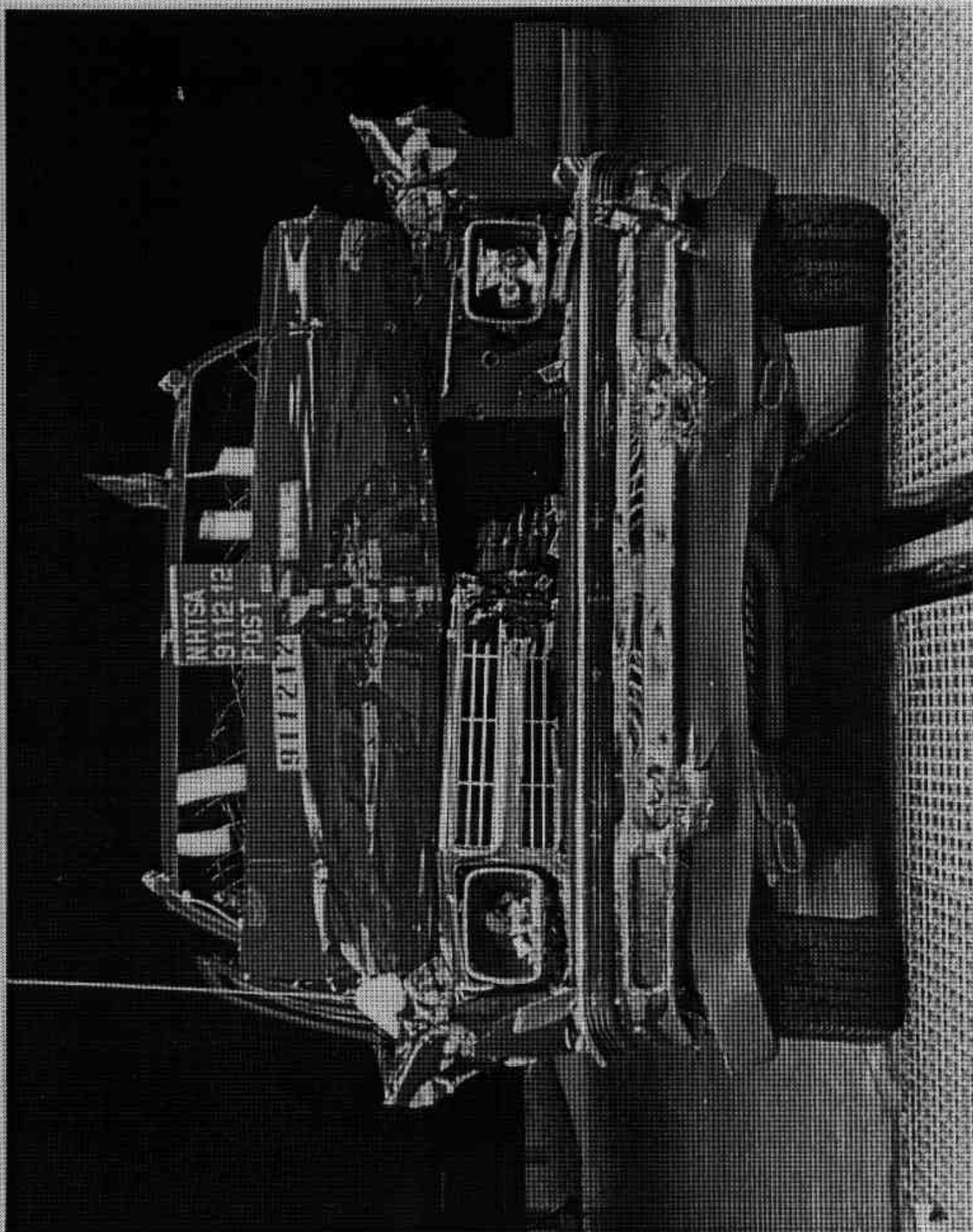


FIGURE A-2. POST-TEST FRONT VIEW

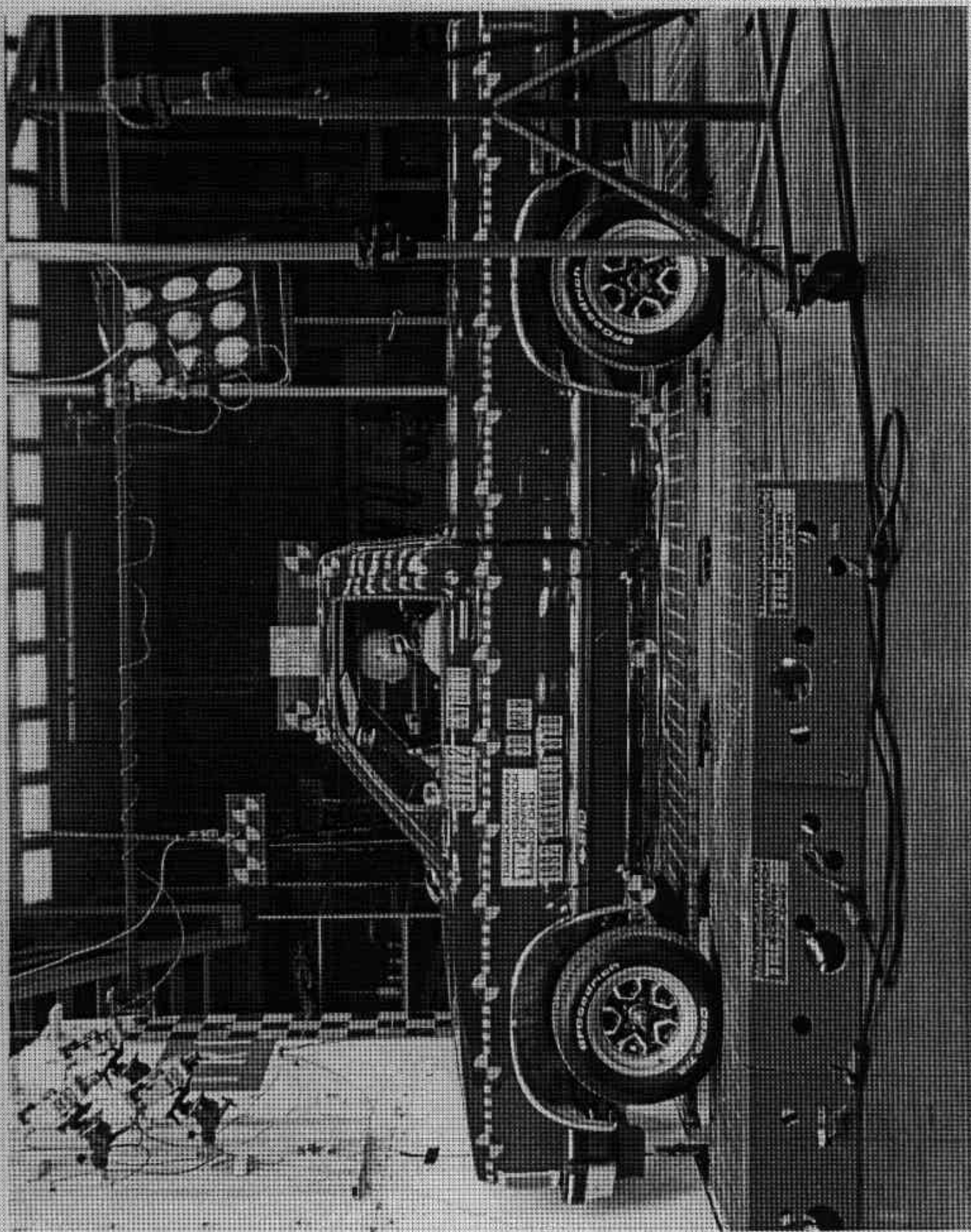


FIGURE A-3. PRE-TEST LEFT SIDE VIEW

A-4

911212

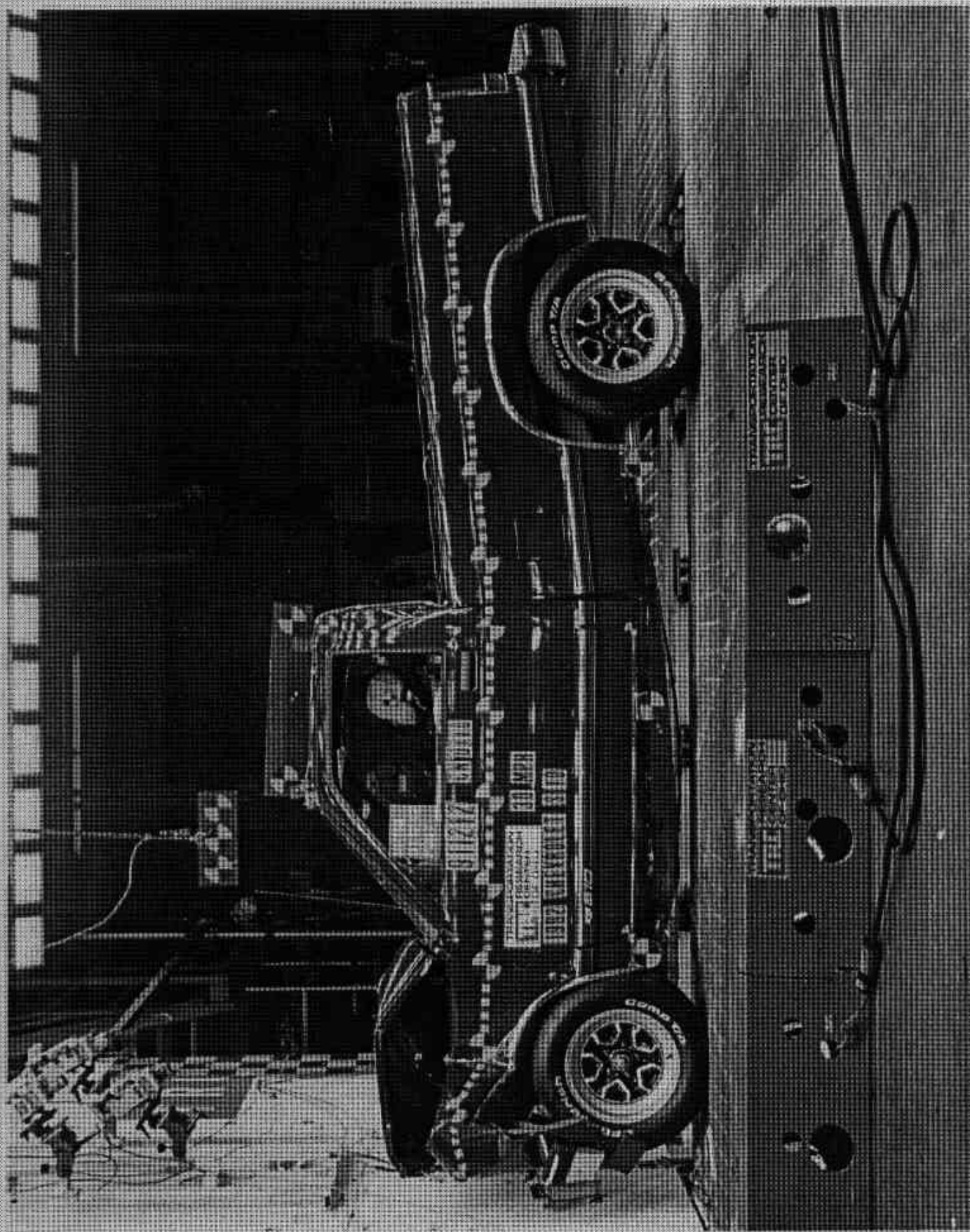


FIGURE A-4. POST-TEST LEFT SIDE VIEW

A-5

911212

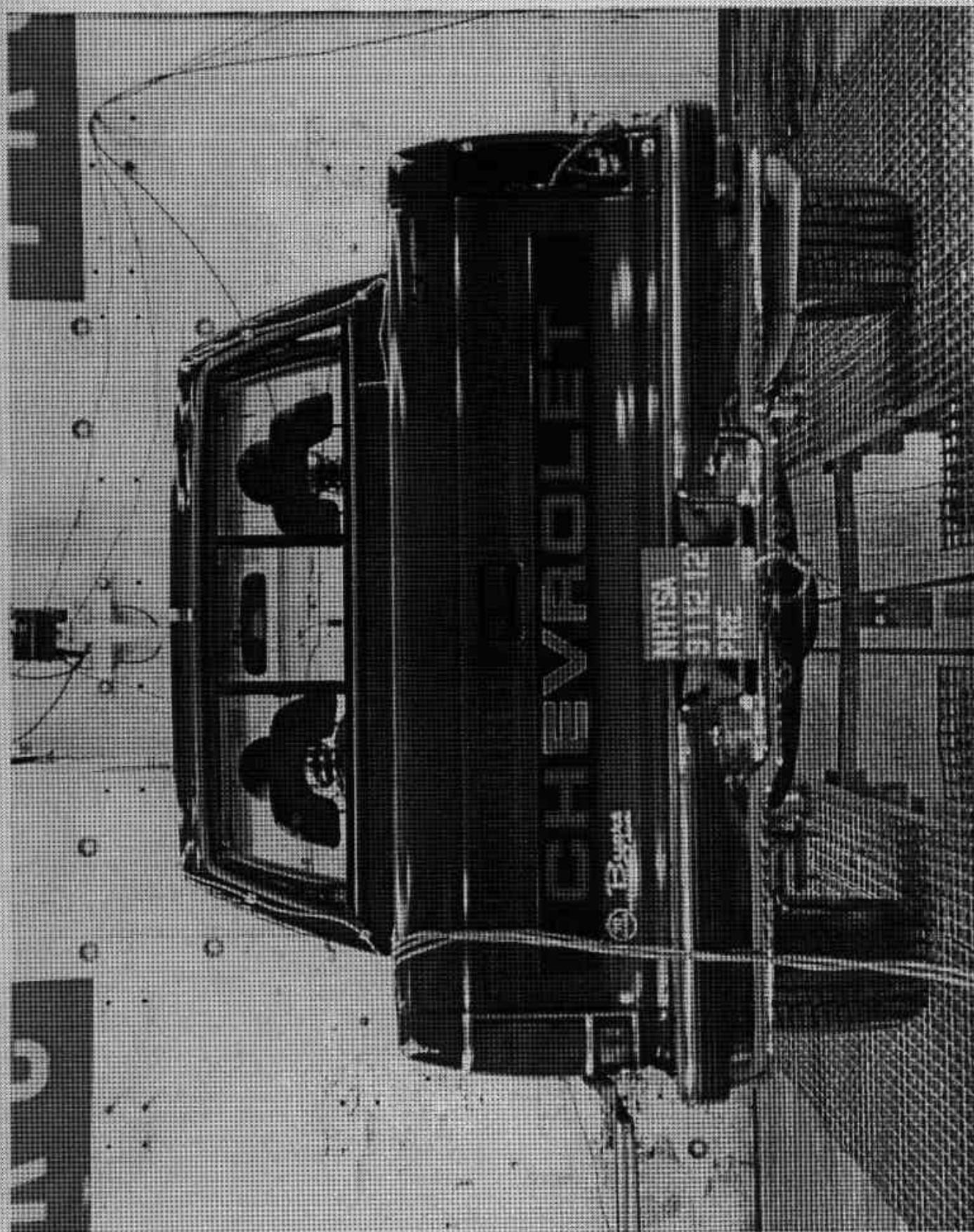


FIGURE A-5. PRE-TEST REAR VIEW

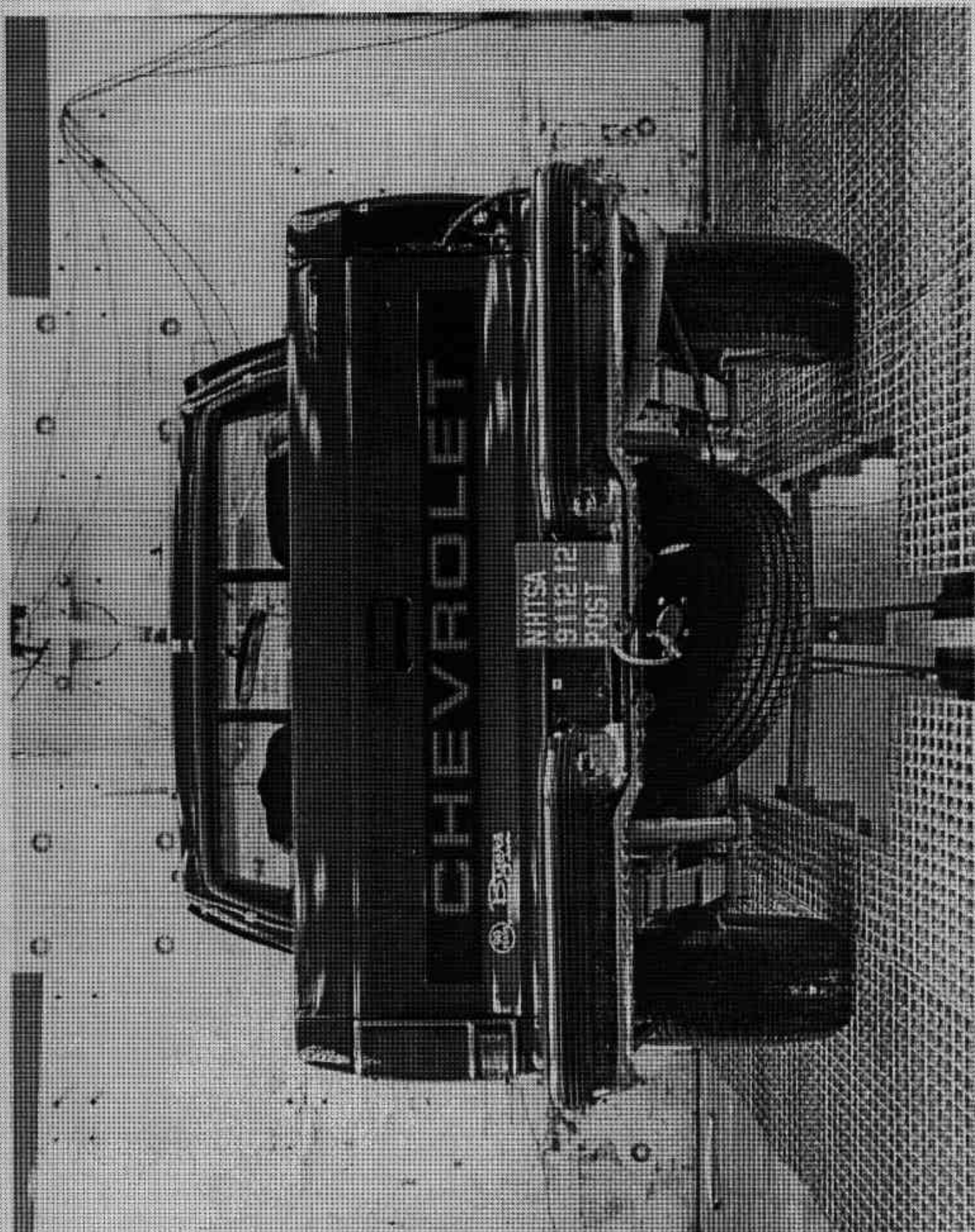


FIGURE A-6. POST-TEST REAR VIEW

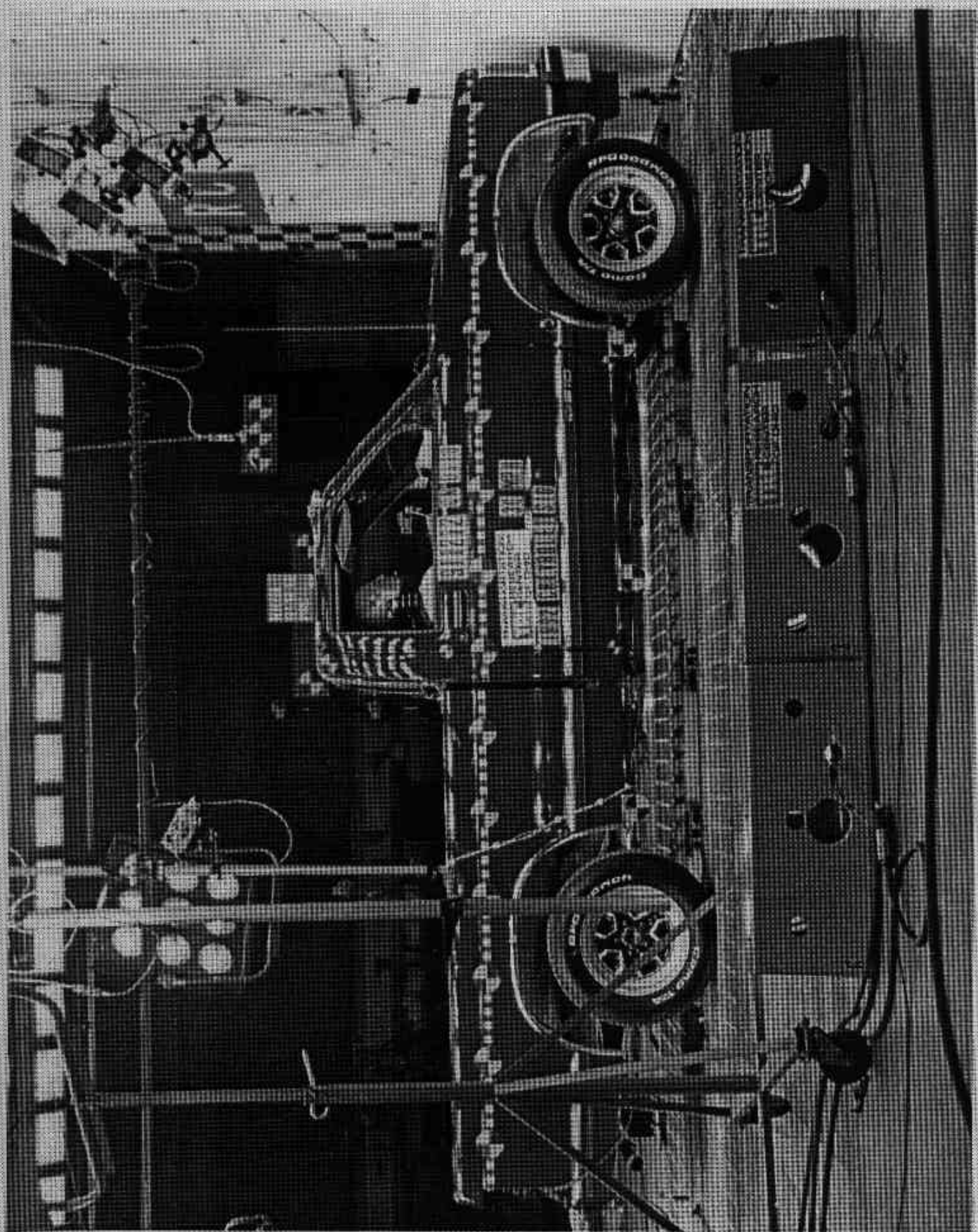


FIGURE A-7. PRE-TEST RIGHT SIDE VIEW

A-8

911212

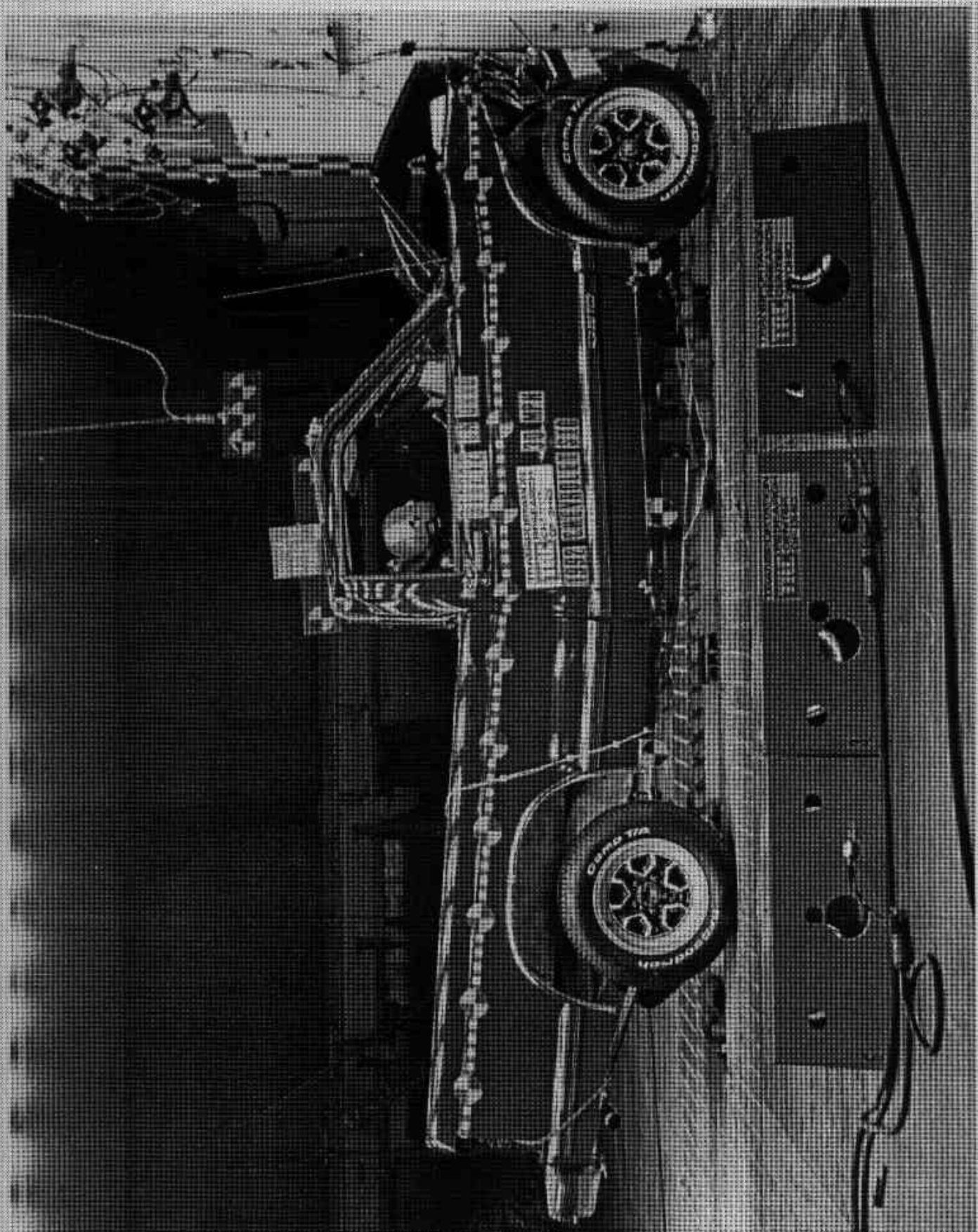


FIGURE A-8. POST-TEST RIGHT SIDE VIEW

A-9

911212



FIGURE A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW
A-10

911212

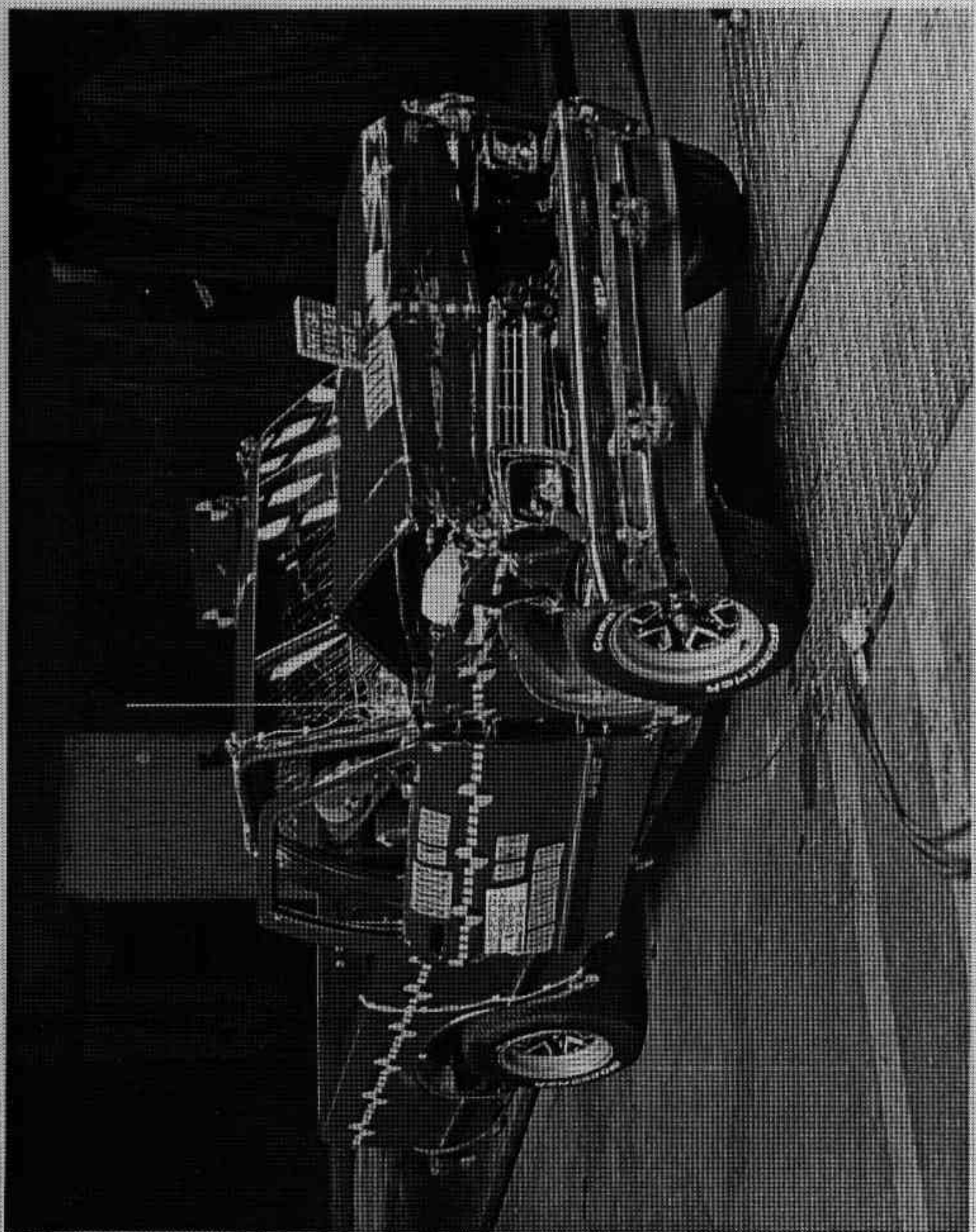


FIGURE A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

911212

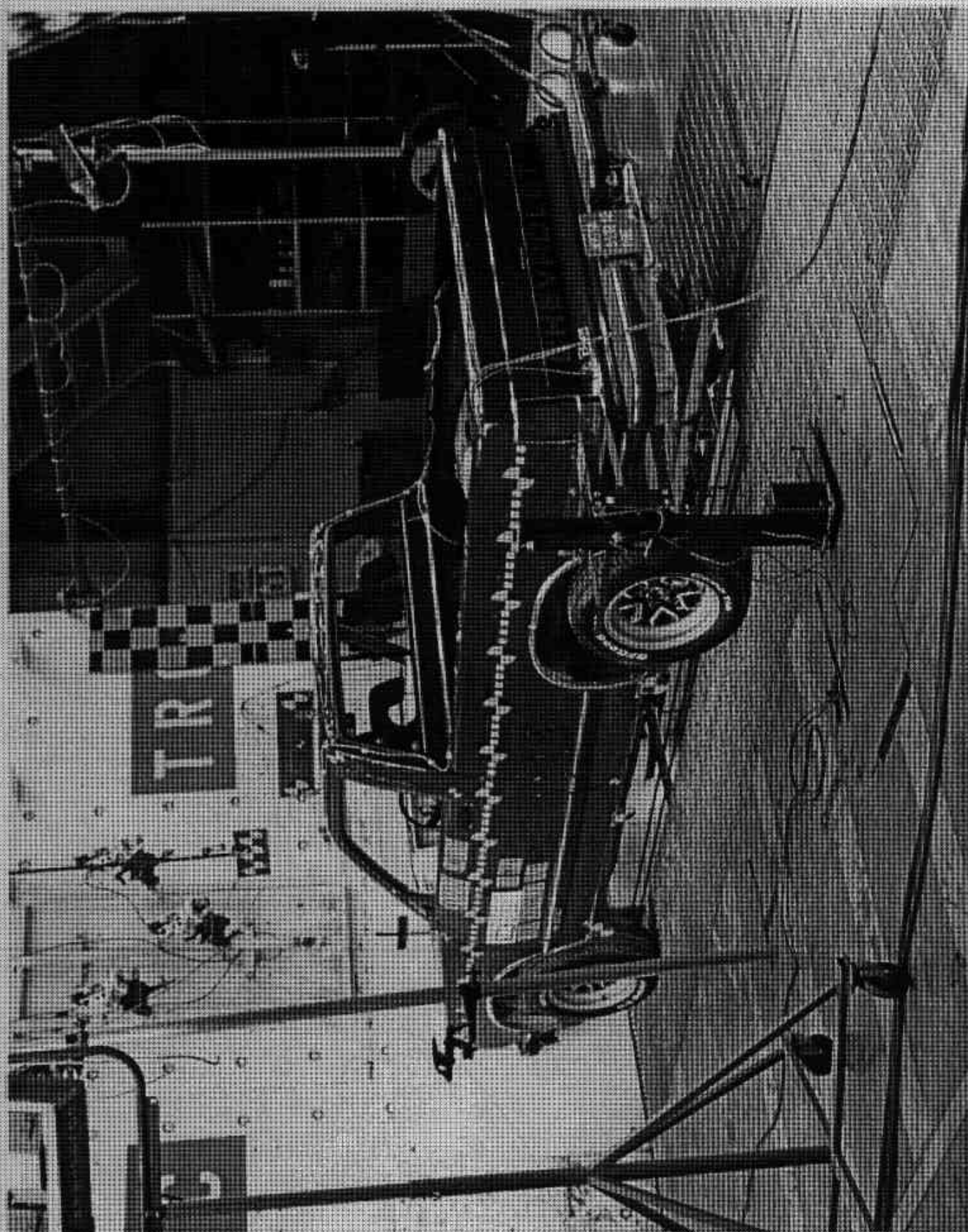


FIGURE A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-12

911212

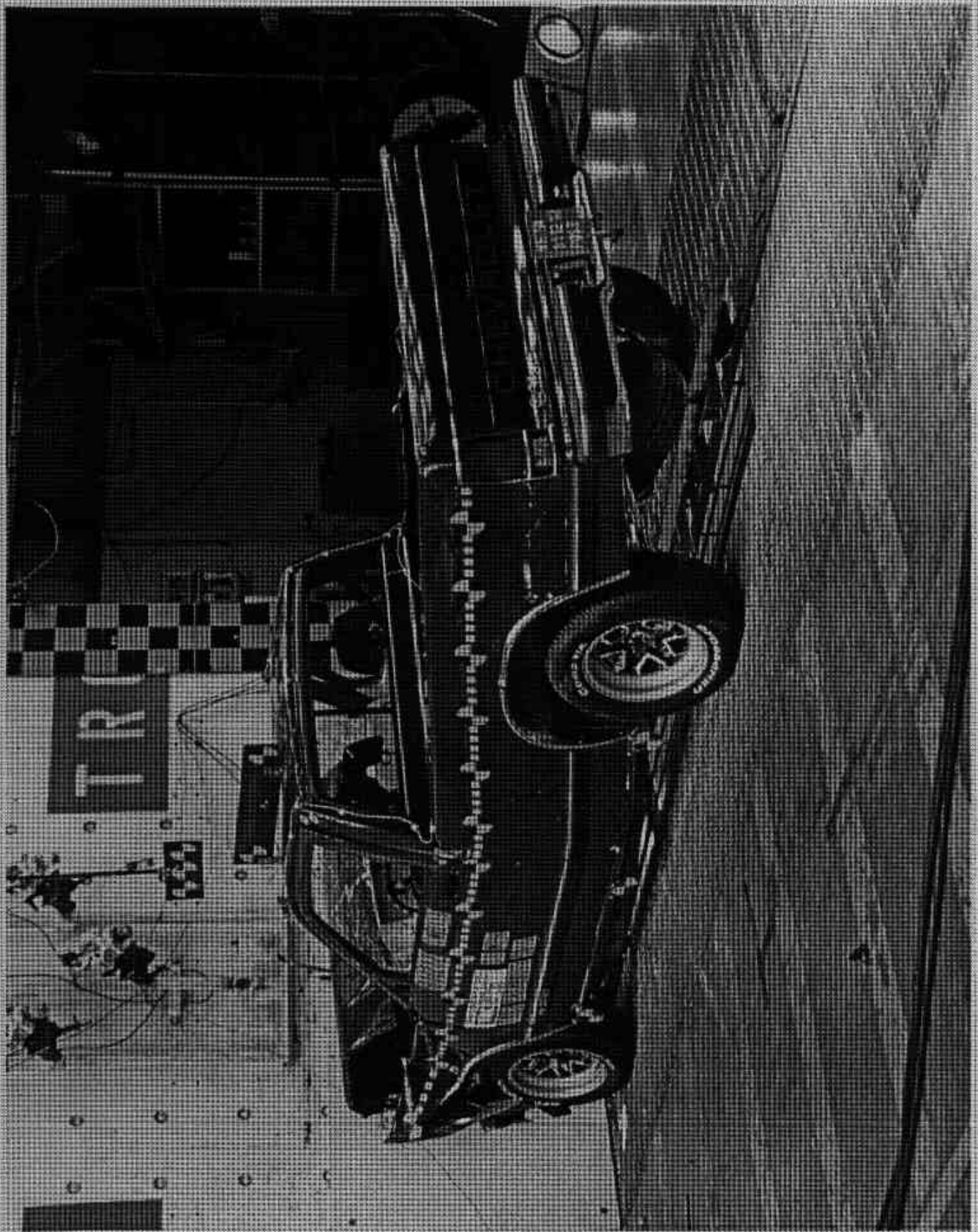


FIGURE A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW
A-13

911212

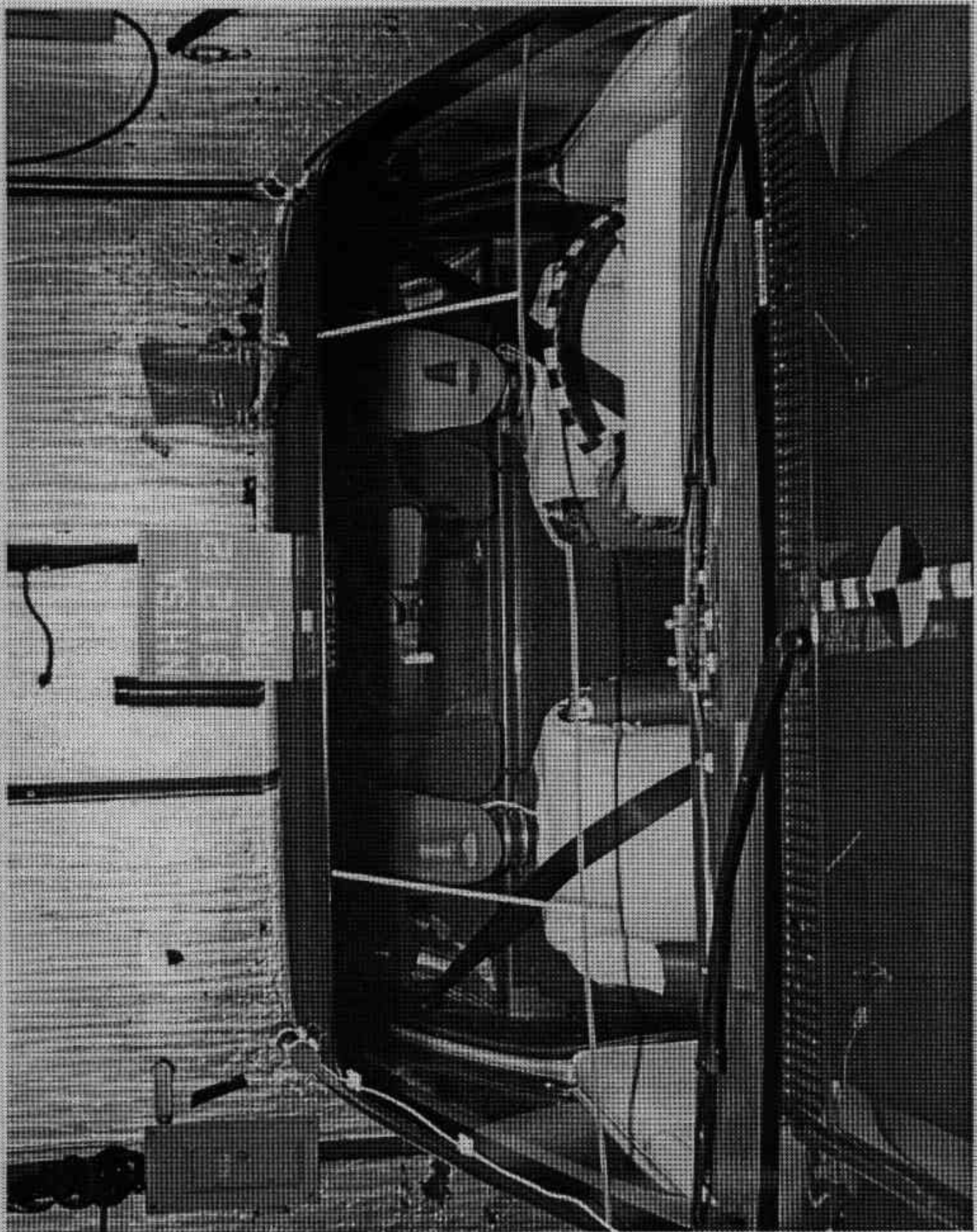


FIGURE A-13. PRE-TEST WINDSHIELD VIEW
A-14

911212

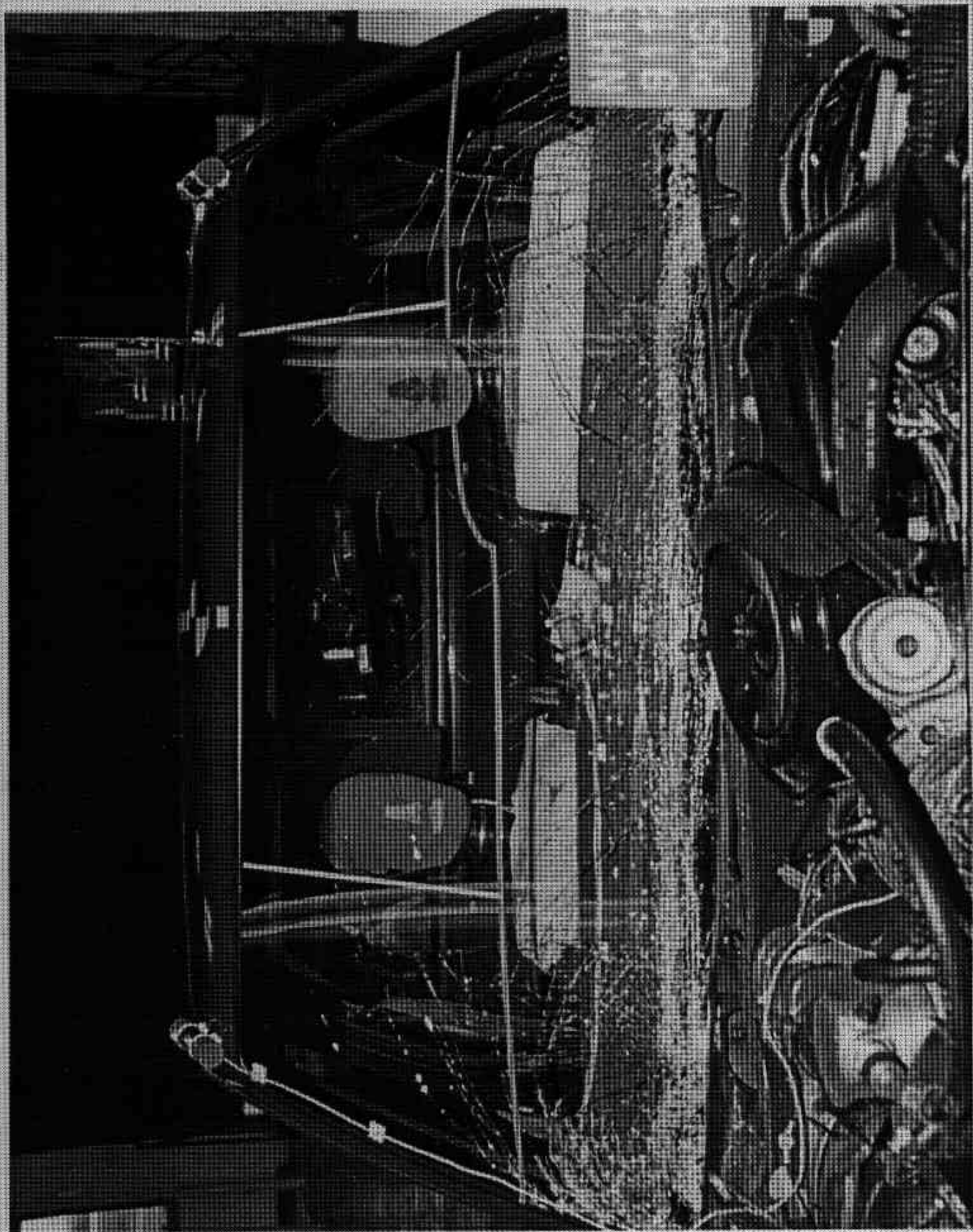


FIGURE A-14. POST-TEST WINDSHIELD VIEW
A-15

911212

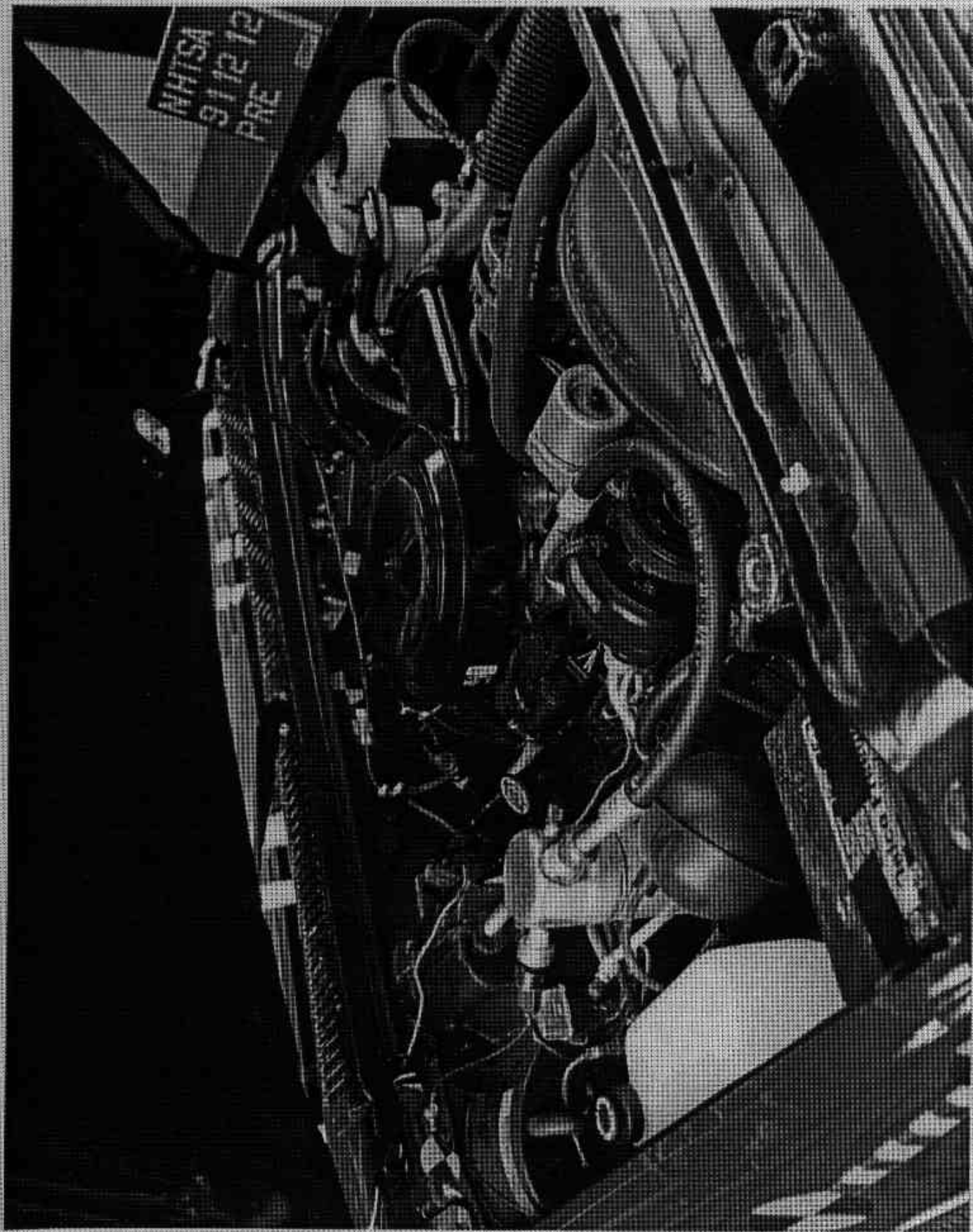


FIGURE A-15. PRE-TEST ENGINE COMPARTMENT VIEW

A-16

911212



FIGURE A-16. POST-TEST ENGINE COMPARTMENT VIEW

A-17

911212

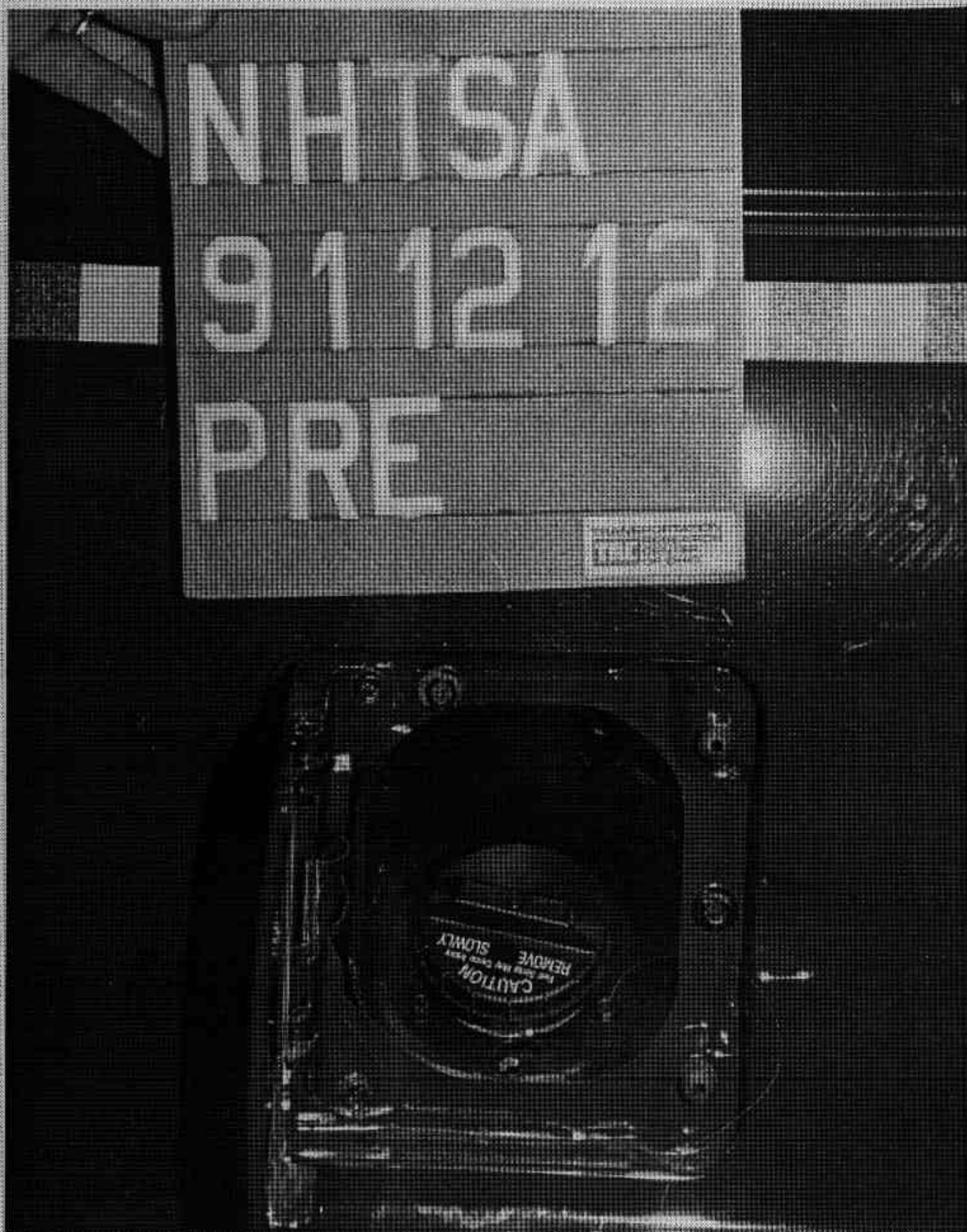


FIGURE A-17. PRE-TEST FUEL FILLER CAP VIEW
A-18

911212

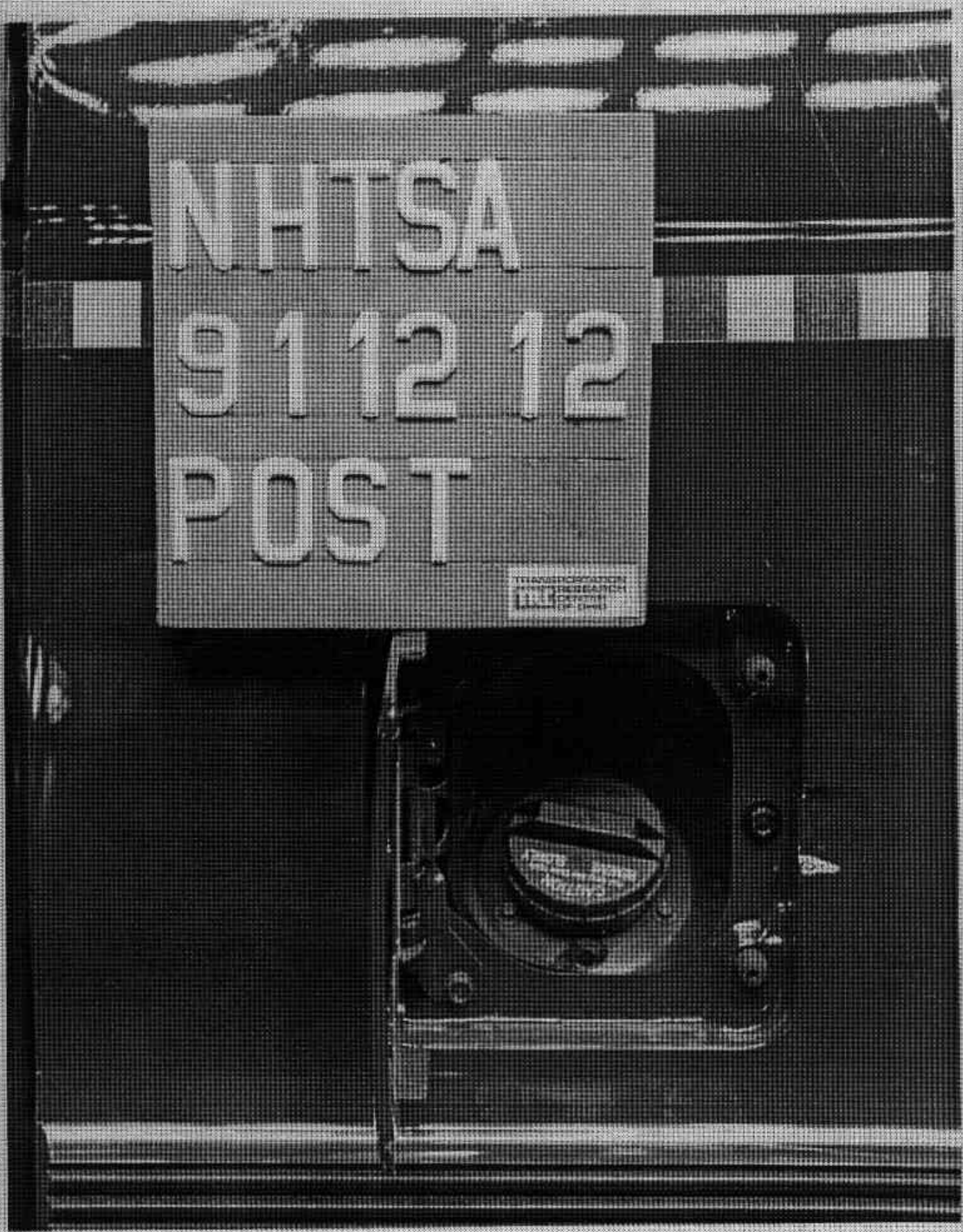


FIGURE A-18. POST-TEST FUEL FILLER CAP VIEW
A-19

911212



FIGURE A-19. PRE-TEST FUEL FILLER NECK VIEW
A-20

911212



FIGURE A-20. POST-TEST FUEL FILLER NECK VIEW

A-21

911212

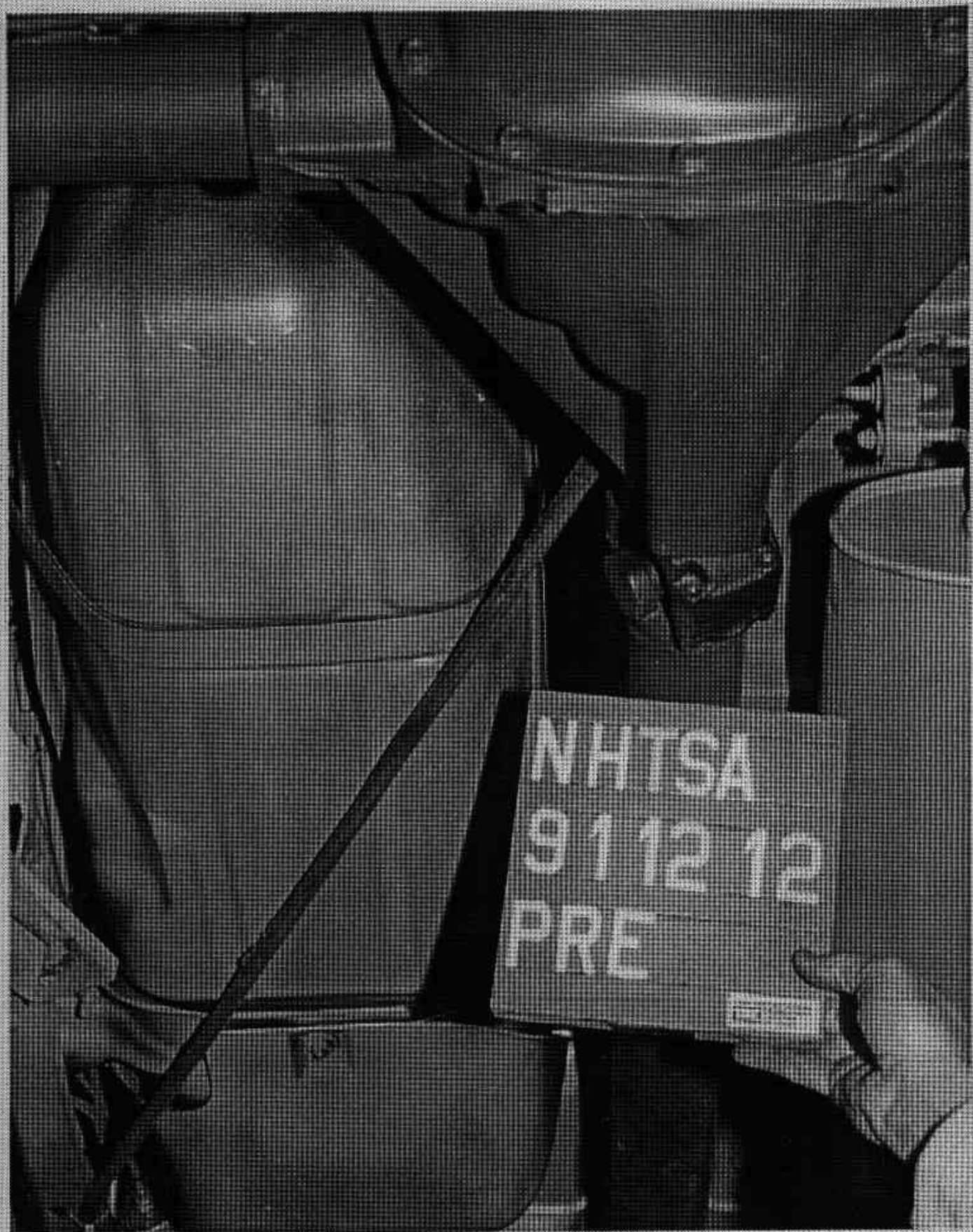


FIGURE A-21. PRE-TEST FUEL TANK VIEW
A-22

911212



FIGURE A-22. POST-TEST FUEL TANK VIEW
A-23

911212

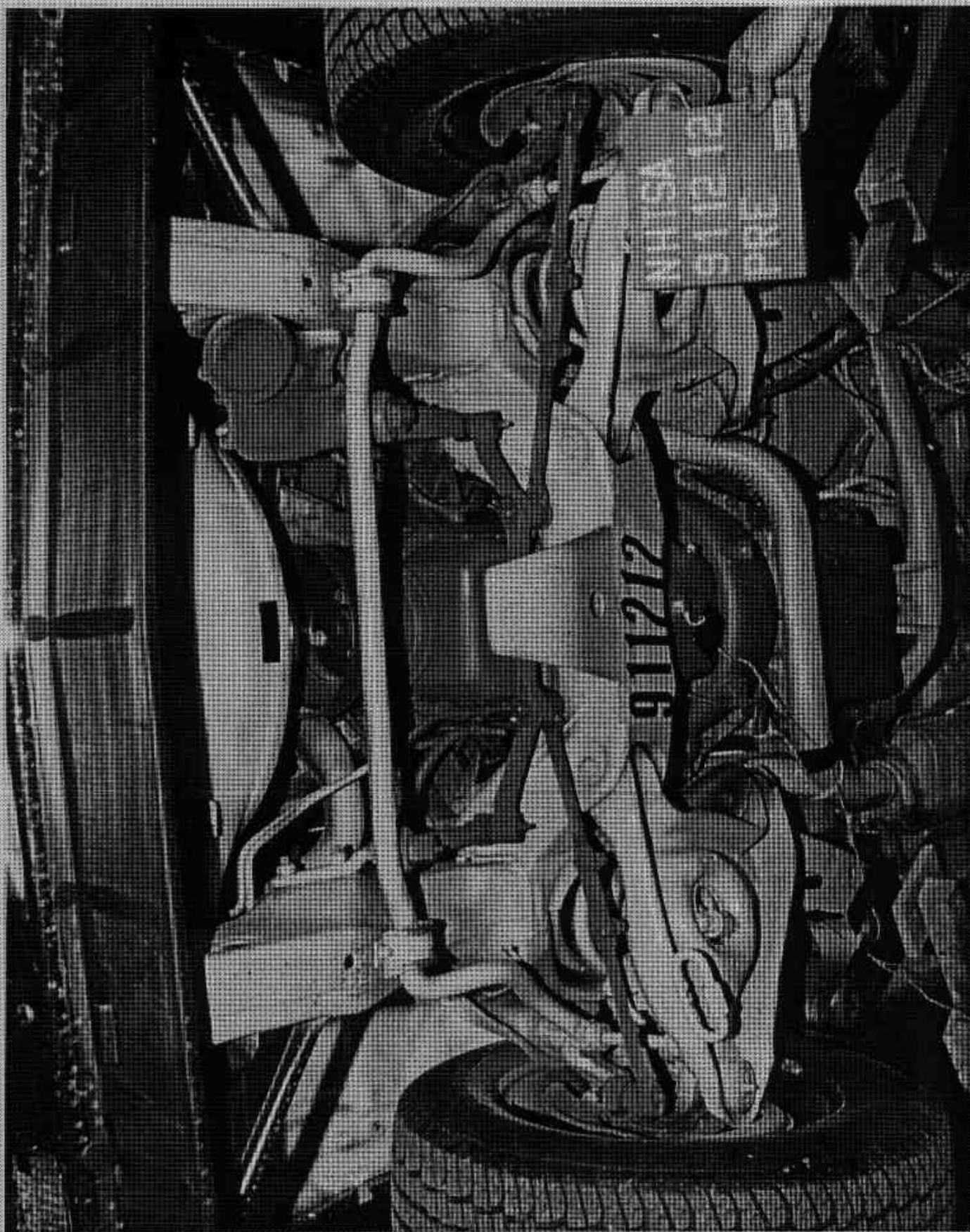


FIGURE A-23. PRE-TEST FRONT UNDERBODY VIEW
A-24

911212

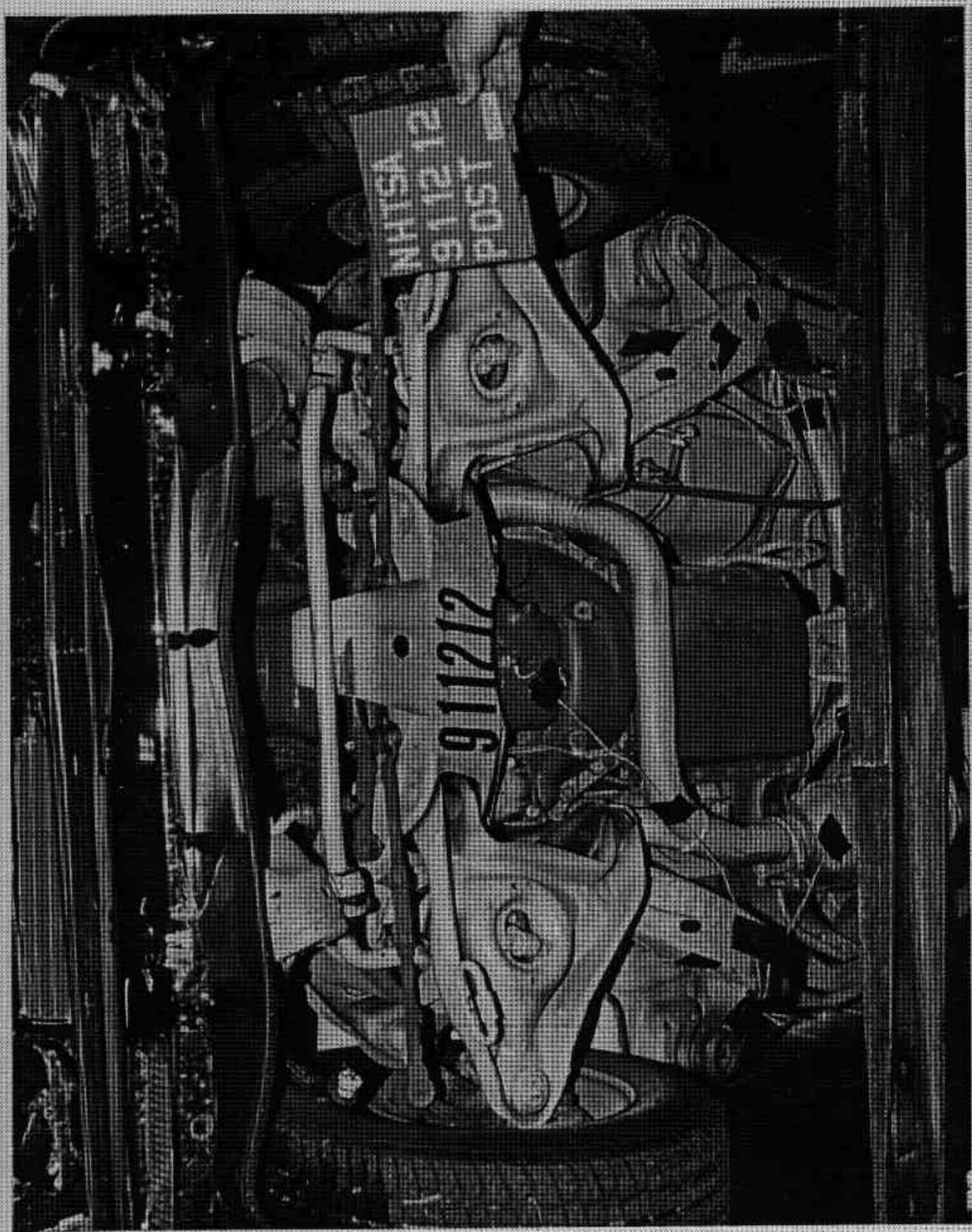


FIGURE A-24. POST-TEST FRONT UNDERBODY VIEW

A-25

911212

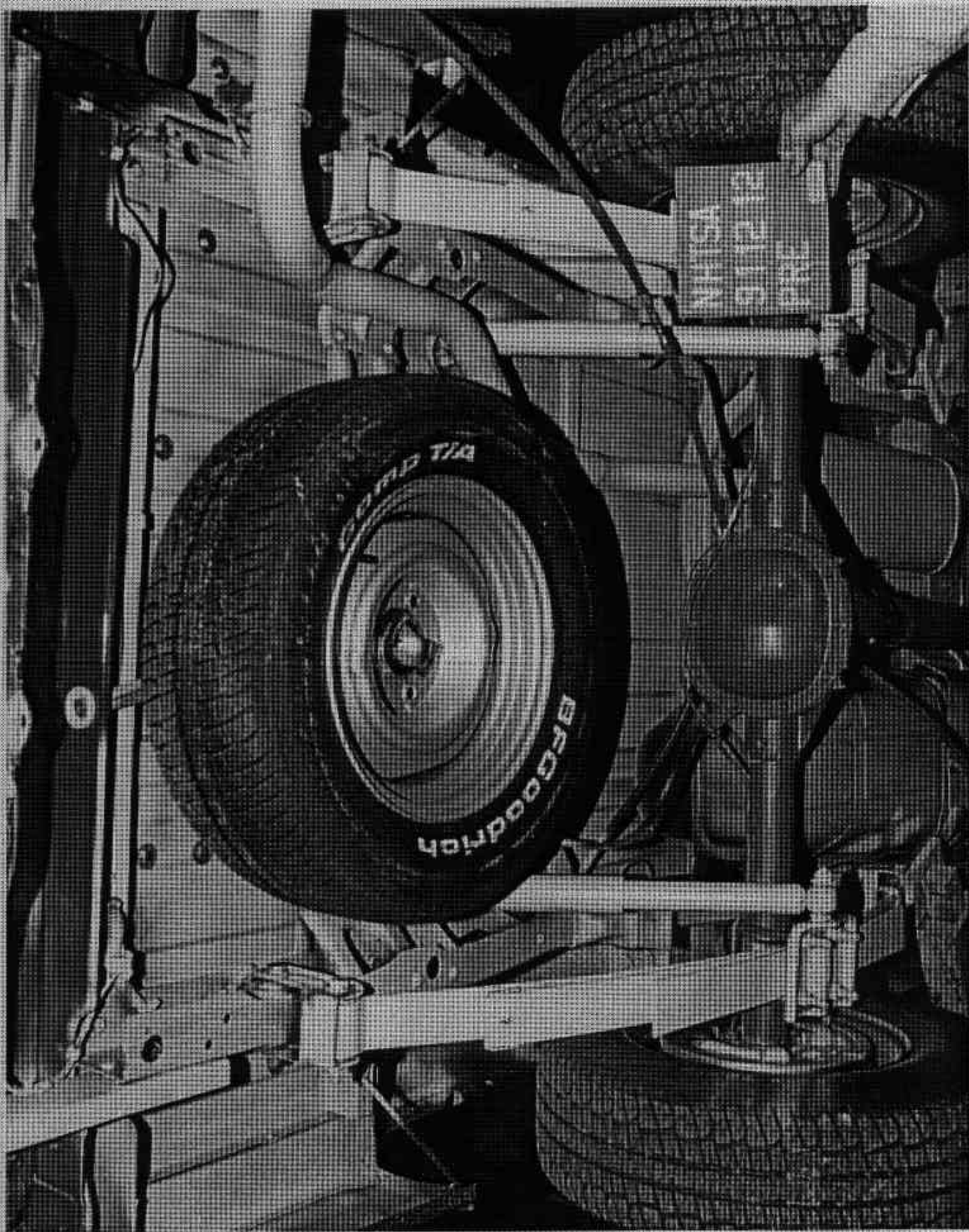


FIGURE A-25, PRE-TEST REAR UNDERBODY VIEW

A-26

911212

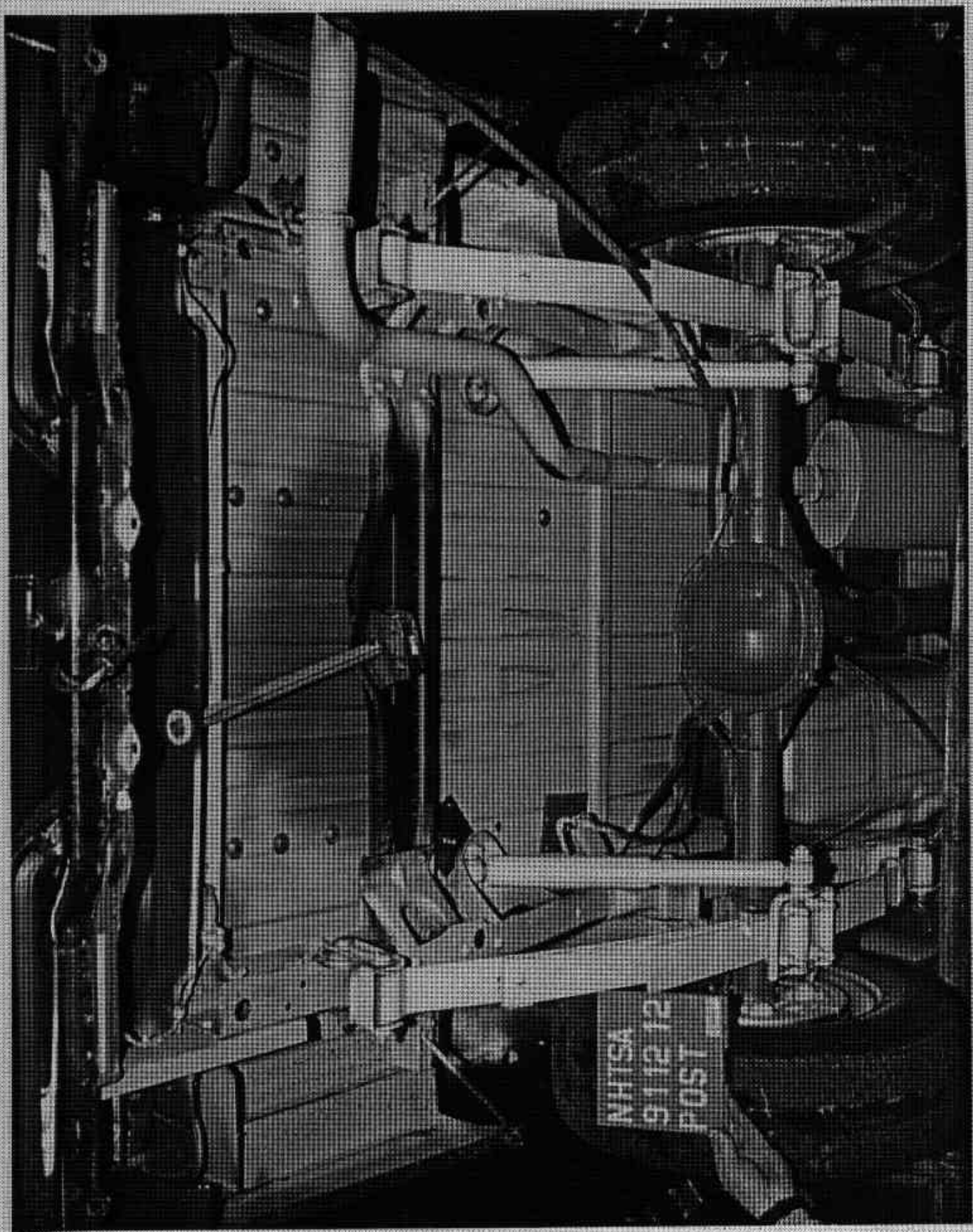


FIGURE A-26. POST-TEST REAR UNDERBODY VIEW
A-27

911212

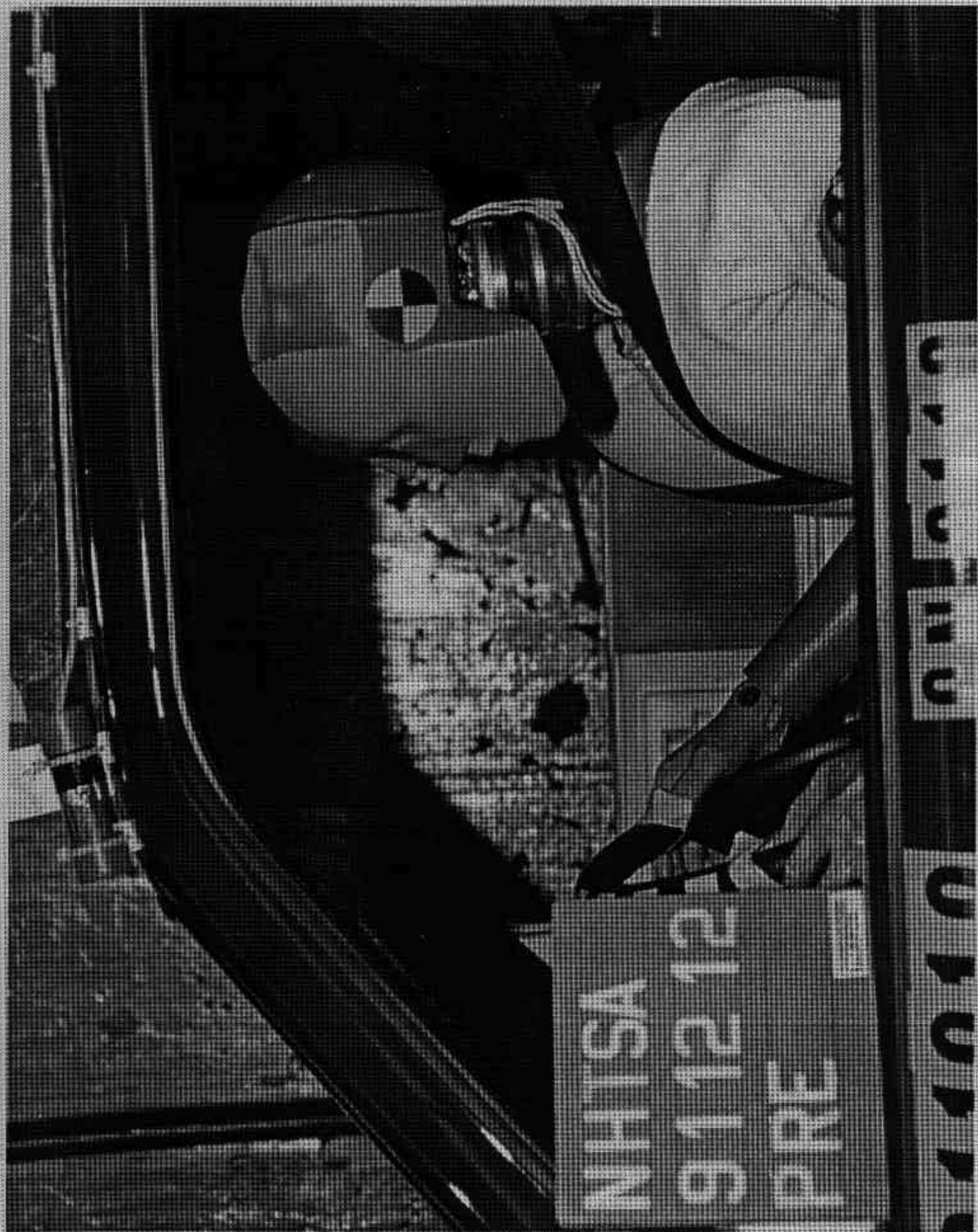


FIGURE A-27. PRE-TEST DRIVER DUMMY POSITION VIEW

A-28

911212



FIGURE A-28. POST-TEST DRIVER DUMMY POSITION VIEW

A-29

911212

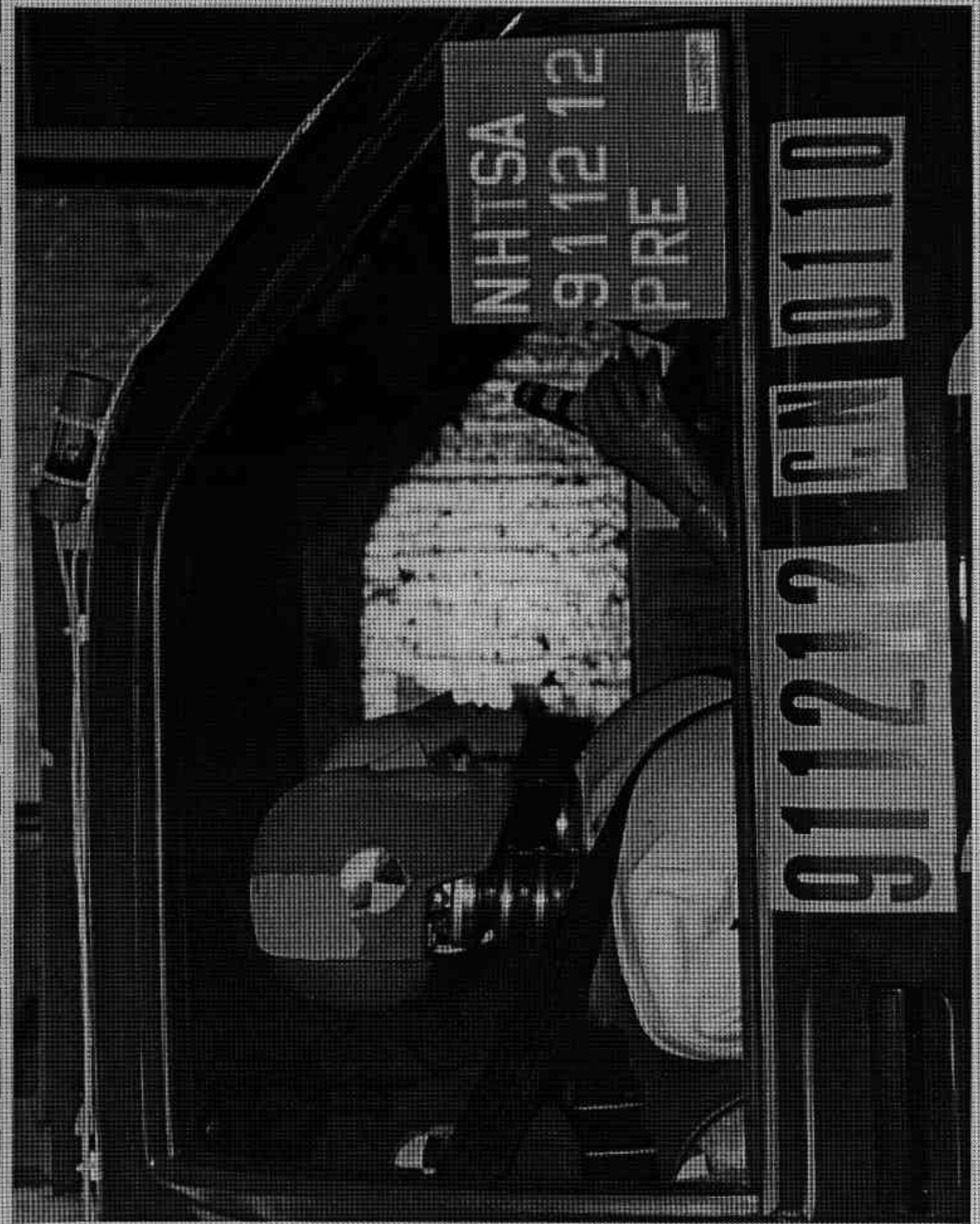


FIGURE A-29. PRE-TEST PASSENGER DUMMY POSITION VIEW

A-30

911212

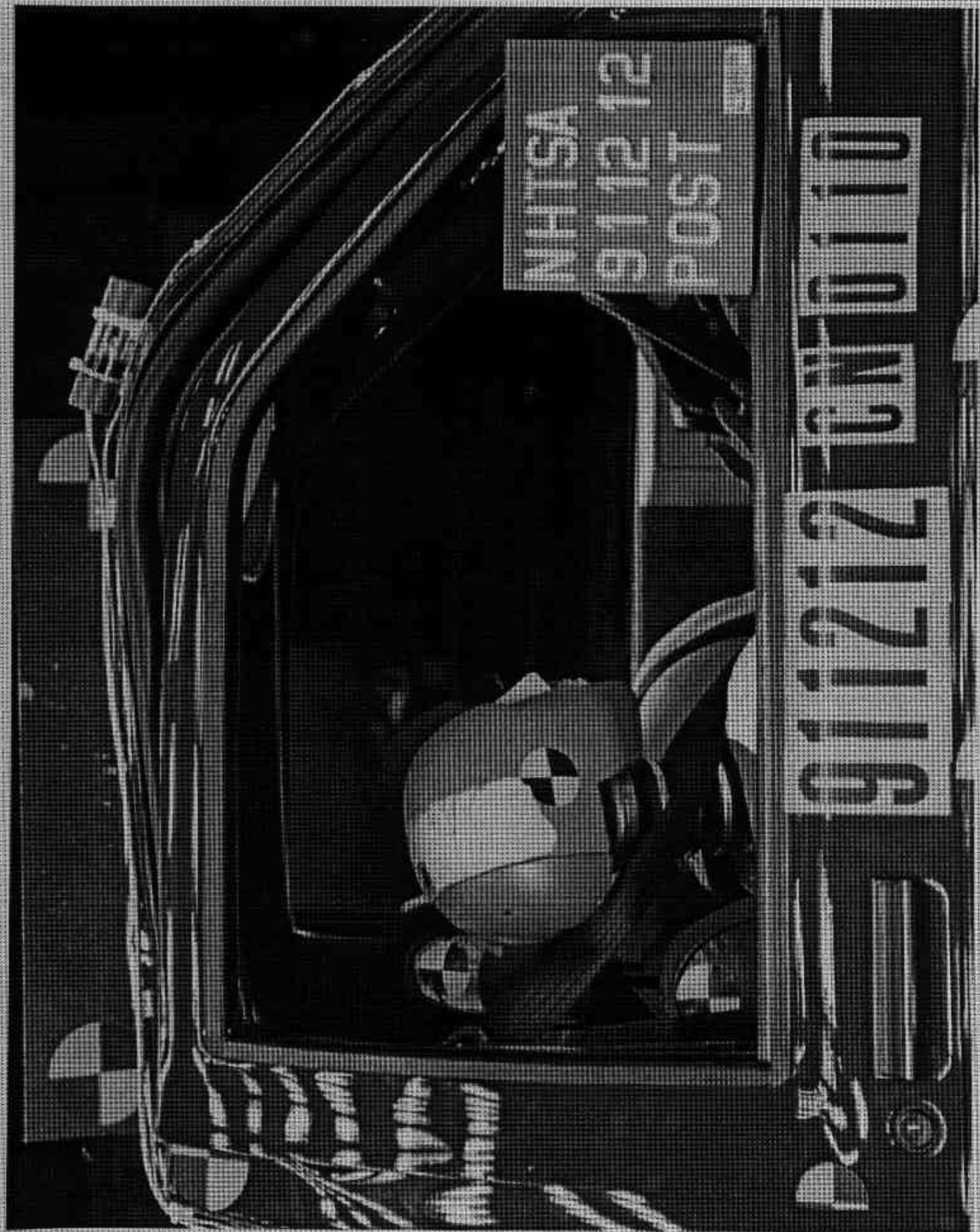


FIGURE A-30. POST-TEST PASSENGER DUMMY POSITION VIEW



FIGURE A-31. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-32

911212



FIGURE A-32. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-33

911212



FIGURE A-33. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-34

911212



FIGURE A-34. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-35

911212



FIGURE A-35. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-36 911212



FIGURE A-36. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-37 911212



FIGURE A-37. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

A-38

911212



FIGURE A-38. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2
A-39 911212



FIGURE A-39. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

A-40

911212

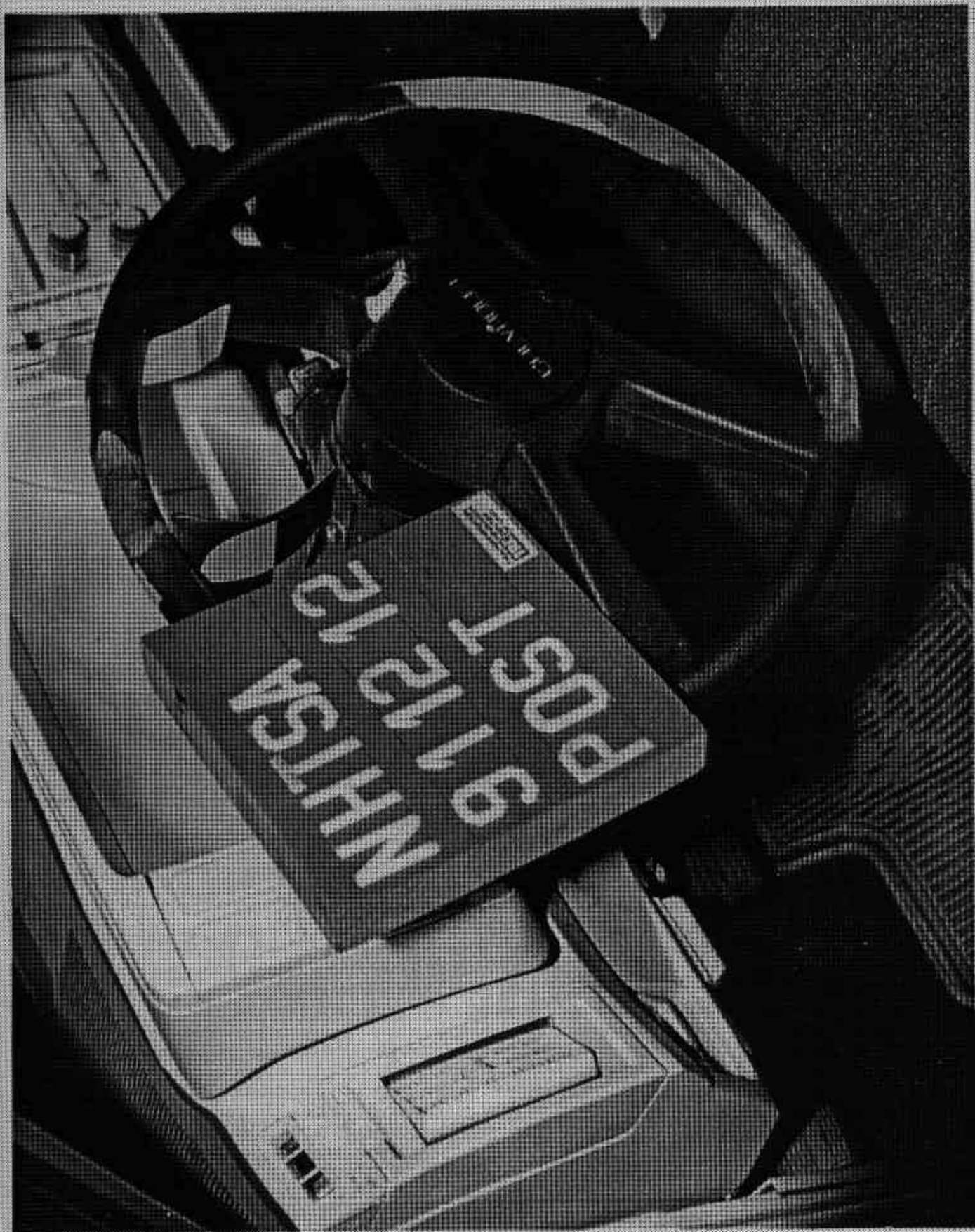


FIGURE A-40. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2

A-41

911212

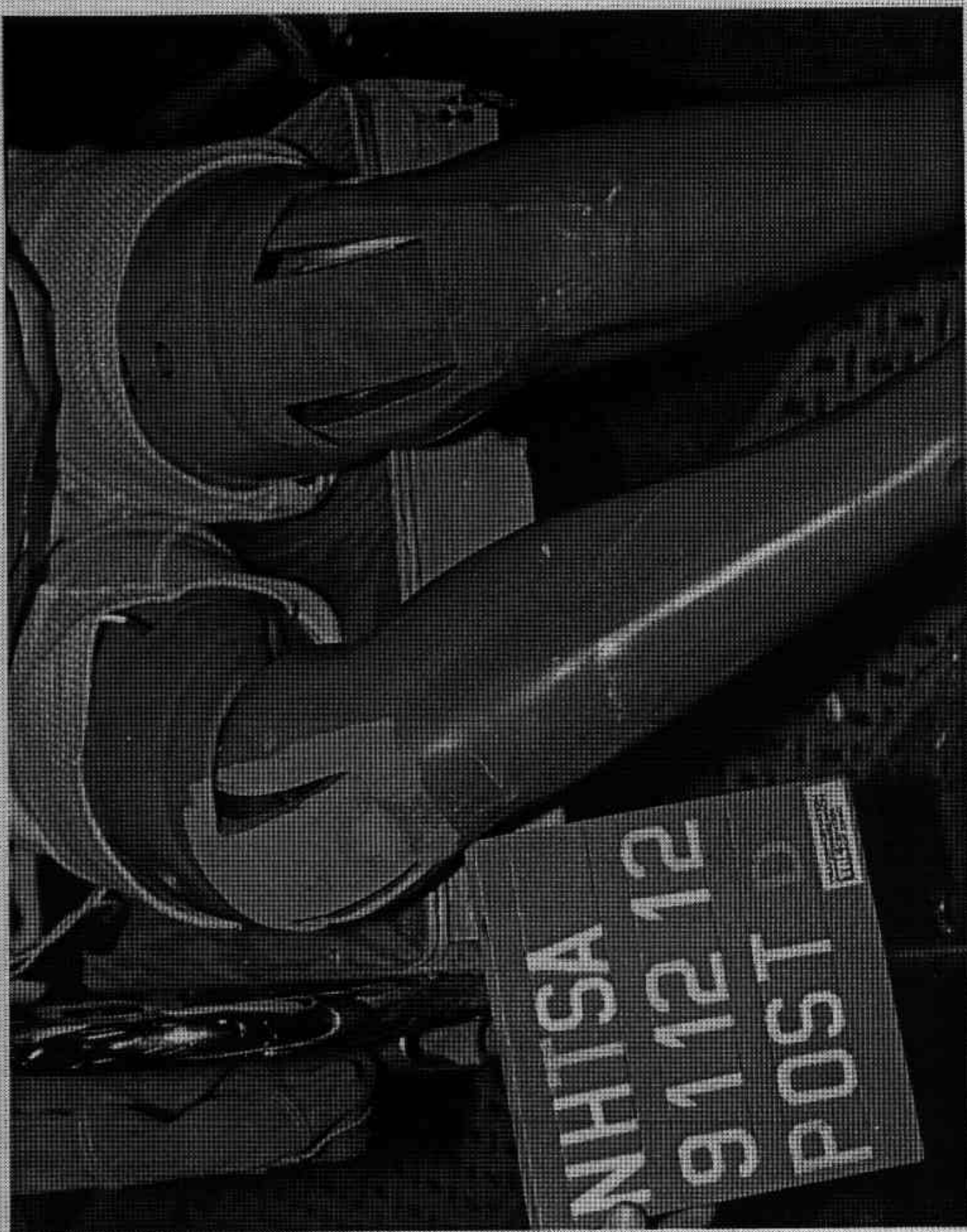


FIGURE A-41. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

A-42

911212

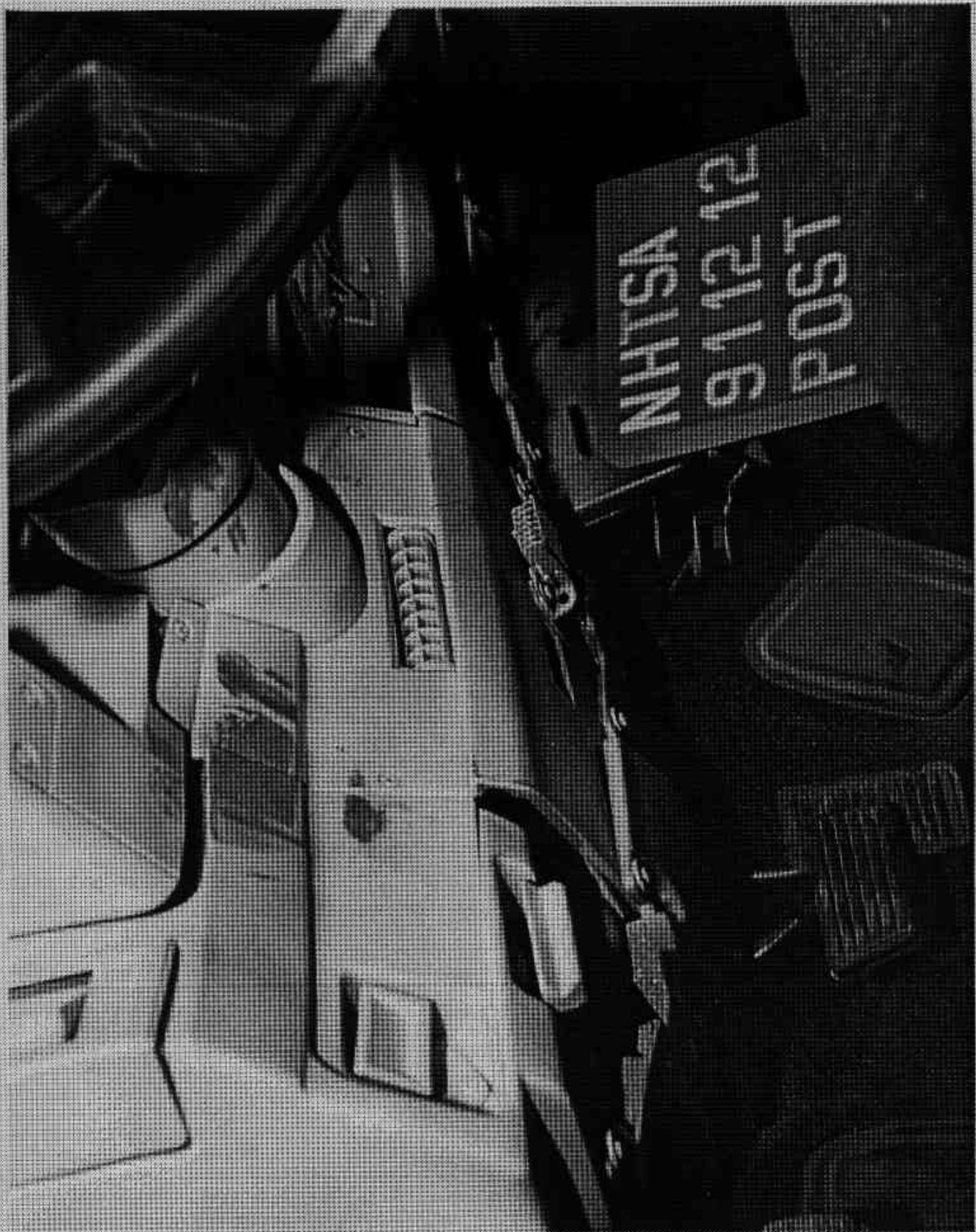


FIGURE A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

A-43

911212



FIGURE A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 1

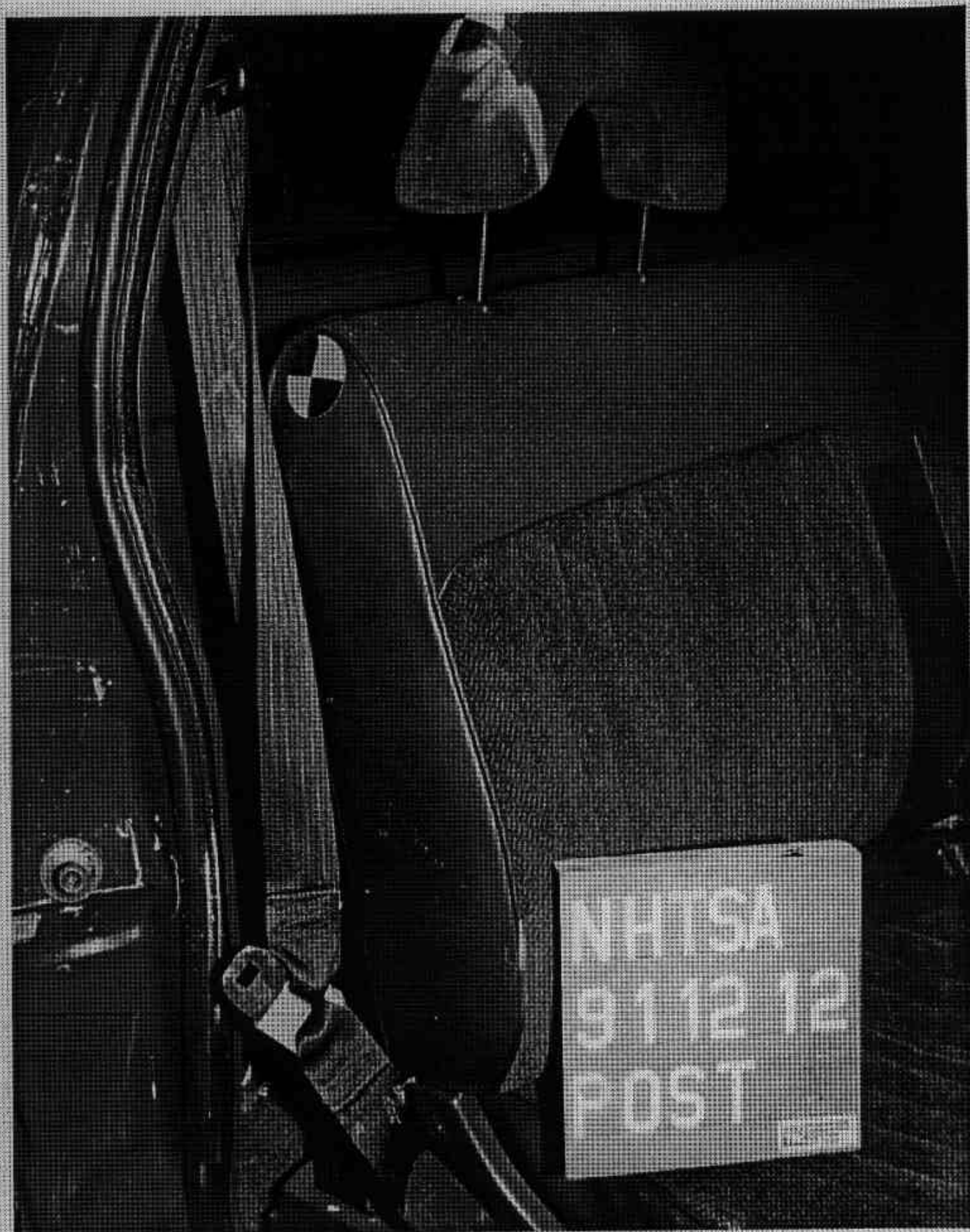


FIGURE A-44, POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 2

A-45

911212

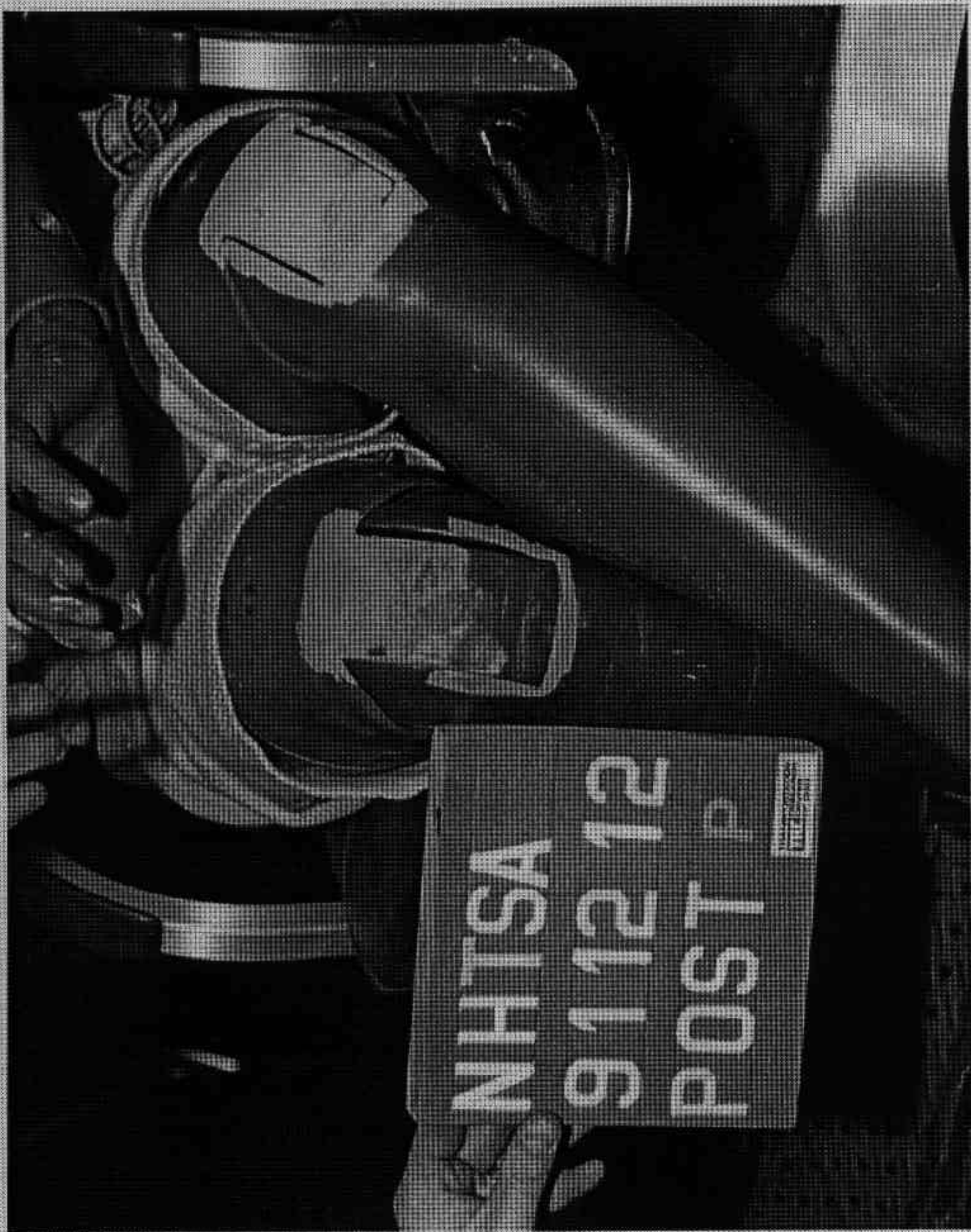


FIGURE A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

A-46

911212

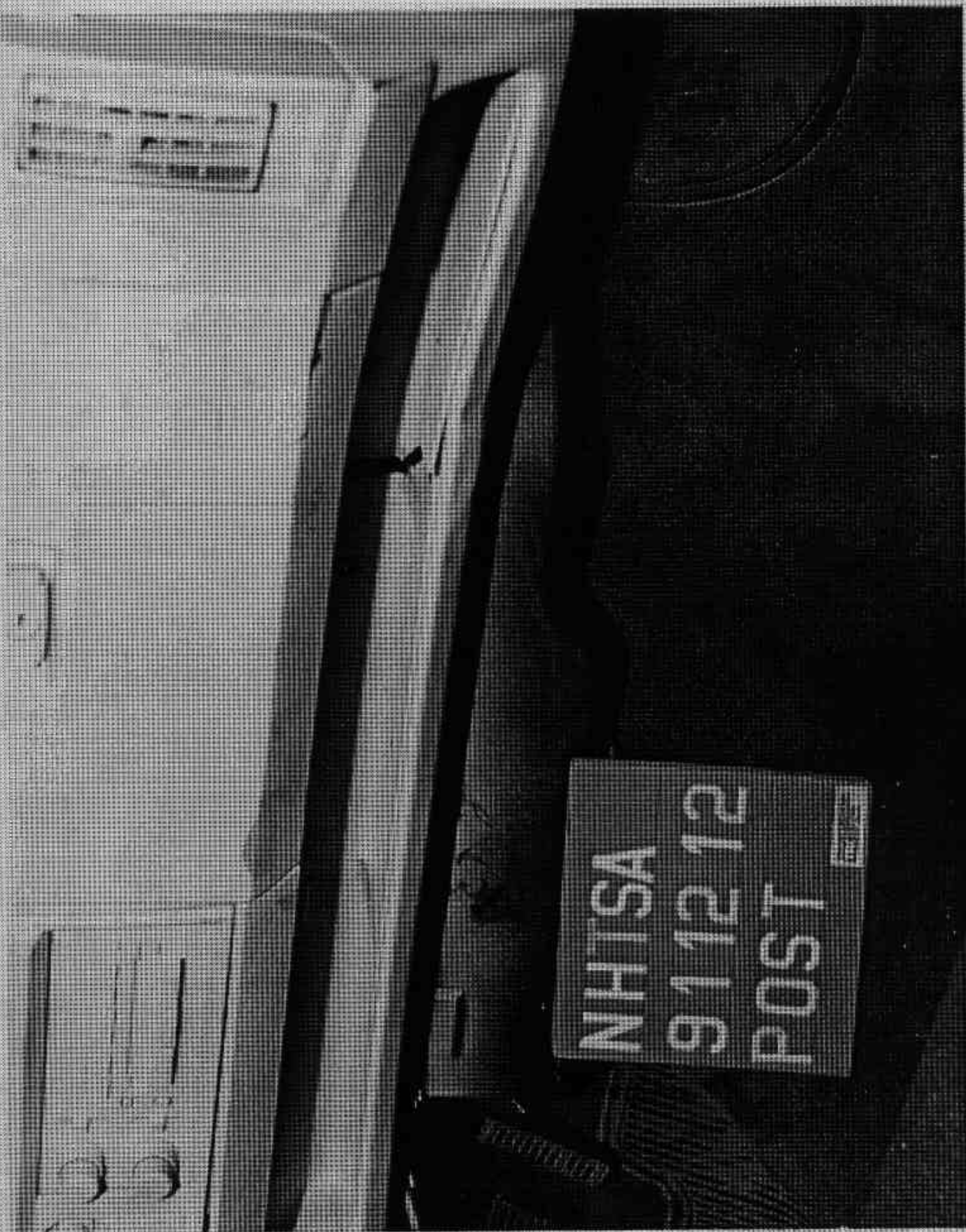


FIGURE A-46. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2


 MFD BY GENERAL MOTORS CORP 10/91
 GVWR GAWR FRT GAWR RR
 4200/1905 2500/1134 2300/1043 LB/KG
 THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.
 FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT
 ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 16CCS1427N2124316 TRUCK
 MODEL: S10603 SPEED PAYLOAD = 1075/483
 SPAN TIRE SIZE RTG RIM PSI/KPA (COLD)
 FRT P215/65R15 H 15X7JJ 35/240
 RR P215/65R15 H 15X7JJ 35/240
 SPA P215/65R15 H 15X5JJ 35/240
 SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

Fig. A-47. PRE-TEST VEHICLE CERT. & RECOMMENDED TIRE PRES. LABEL

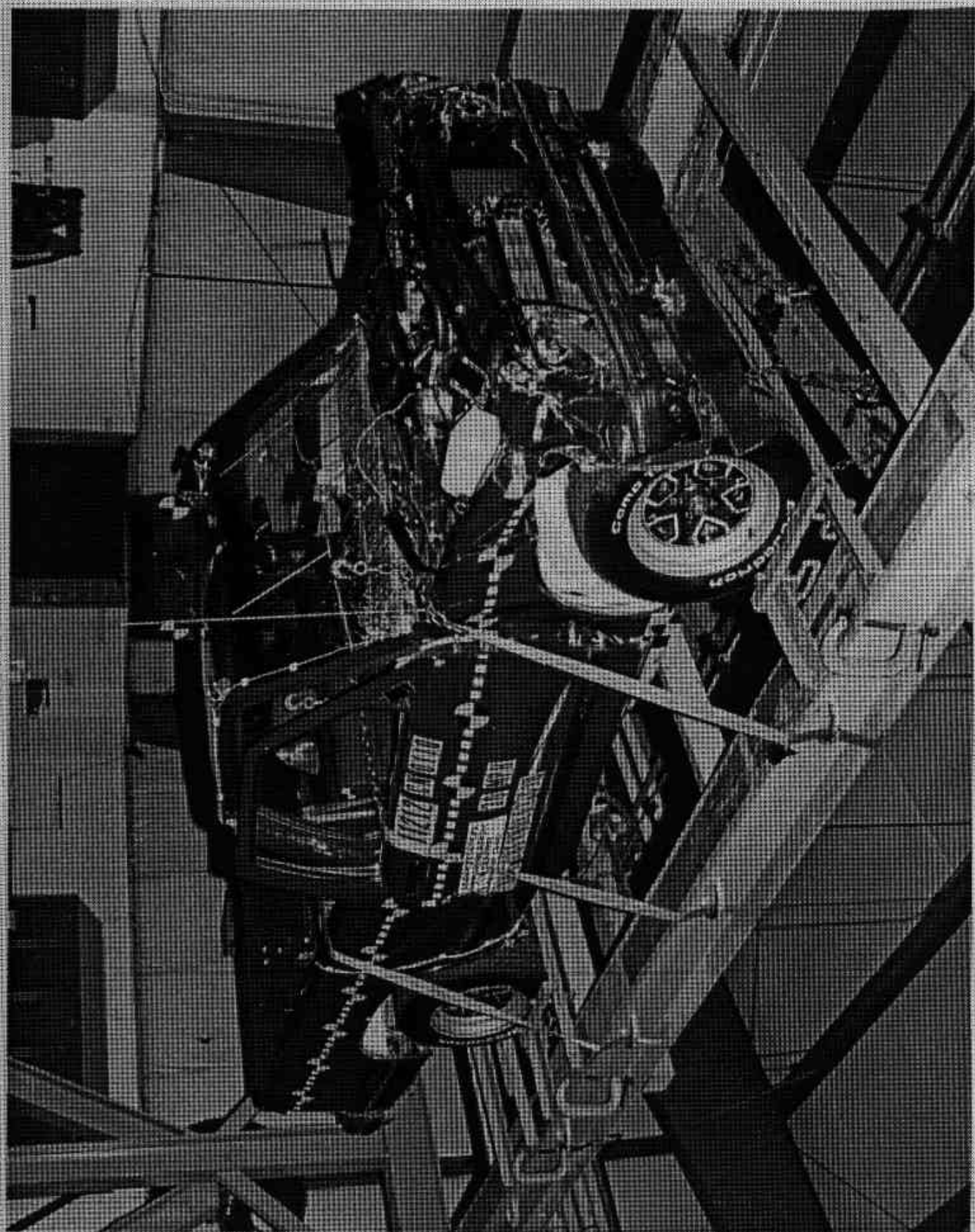


FIGURE A-48. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW

A-49

911212

APPENDIX B

DATA PLOTS

TRC

911212

208 COMPLIANCE TESTING

91346

HEOXG1

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -93.25B

62.63,

24.20 &

192.75

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

-90.00

-120.00

ACCELERATION (G)

B-2

911212

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

340.00

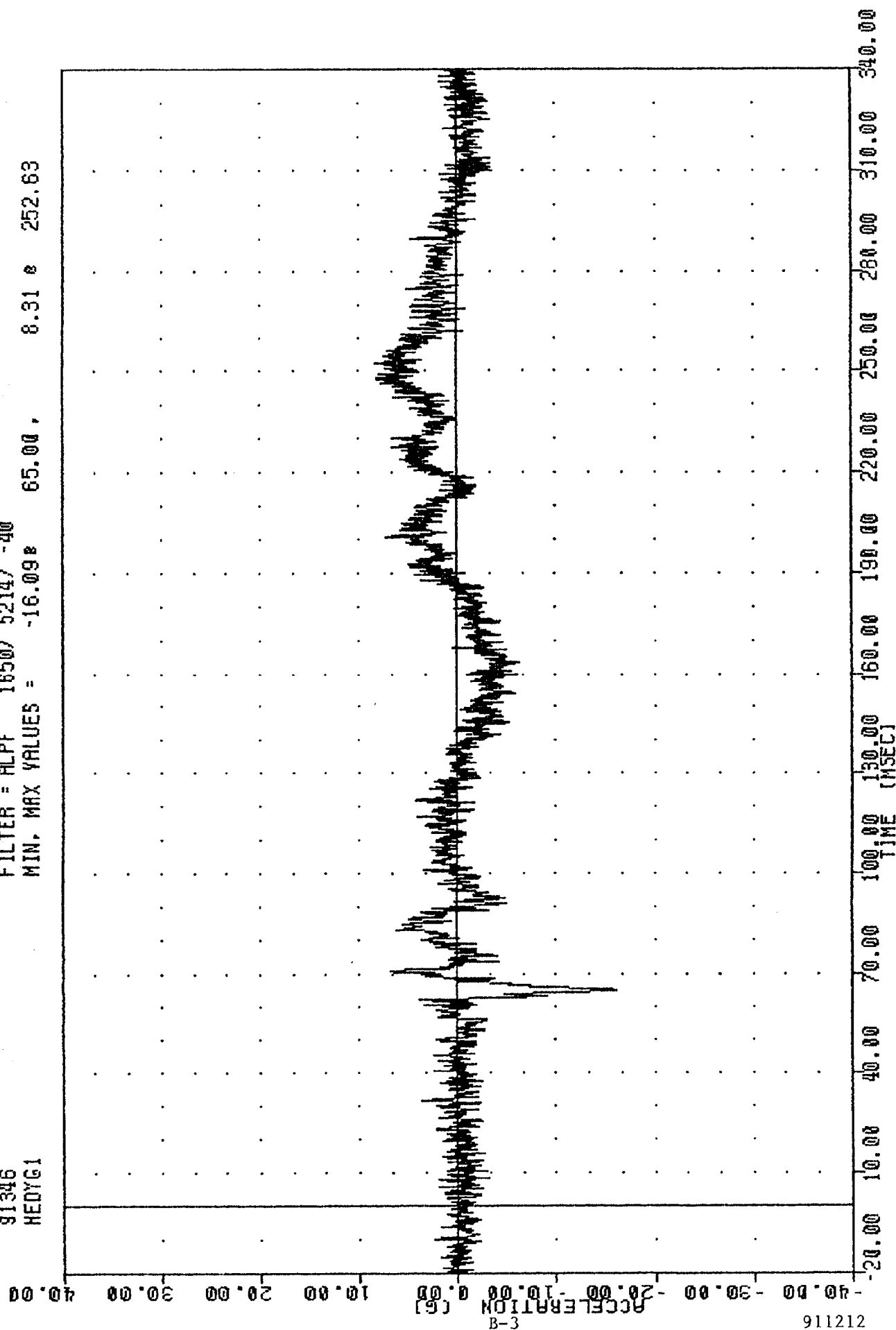
TIME (MSEC)

1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER

DRIVER HEAD X-AXIS ACCELERATION

TRC 911212
200 COMPLIANCE TESTING
91346
HEDYG1

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -16.09% 65.00, 8.31 @ 252.63



TRC 911212

208 COMPLIANCE TESTING

91346

HEADZG1

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -40.09#

66.13.

9.72 e

97.50

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

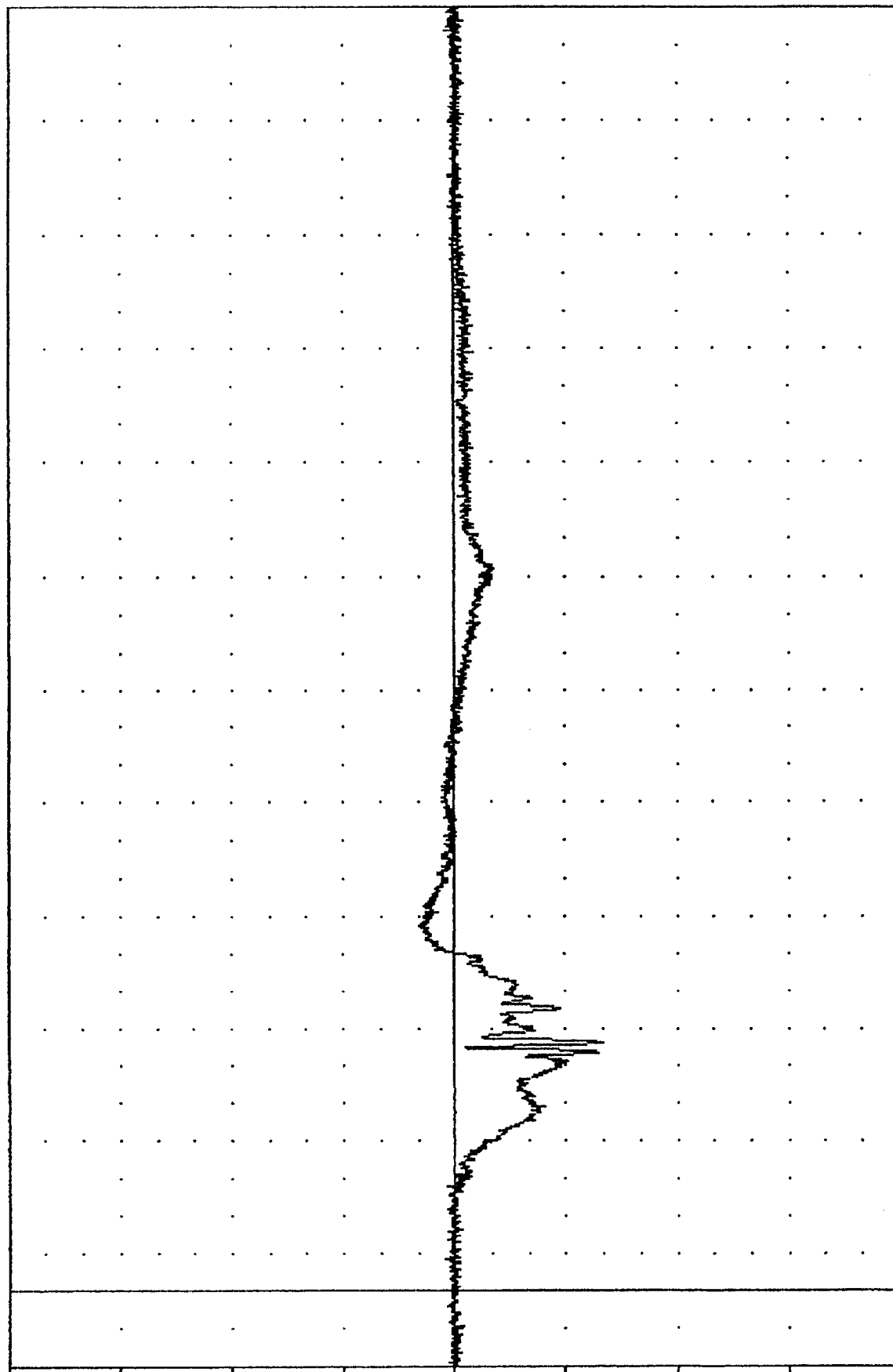
-90.00

-120.00

ACCELERATION (G)

B-4

911212



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER

DRIVER HEAD Z-AXIS ACCELERATION

TRC , 911212

208 COMPLIANCE TESTING

91346

HEADG1

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = 0.18 294.00 95.35 62.63

105.00

90.00

75.00

60.00

45.00

30.00

15.00

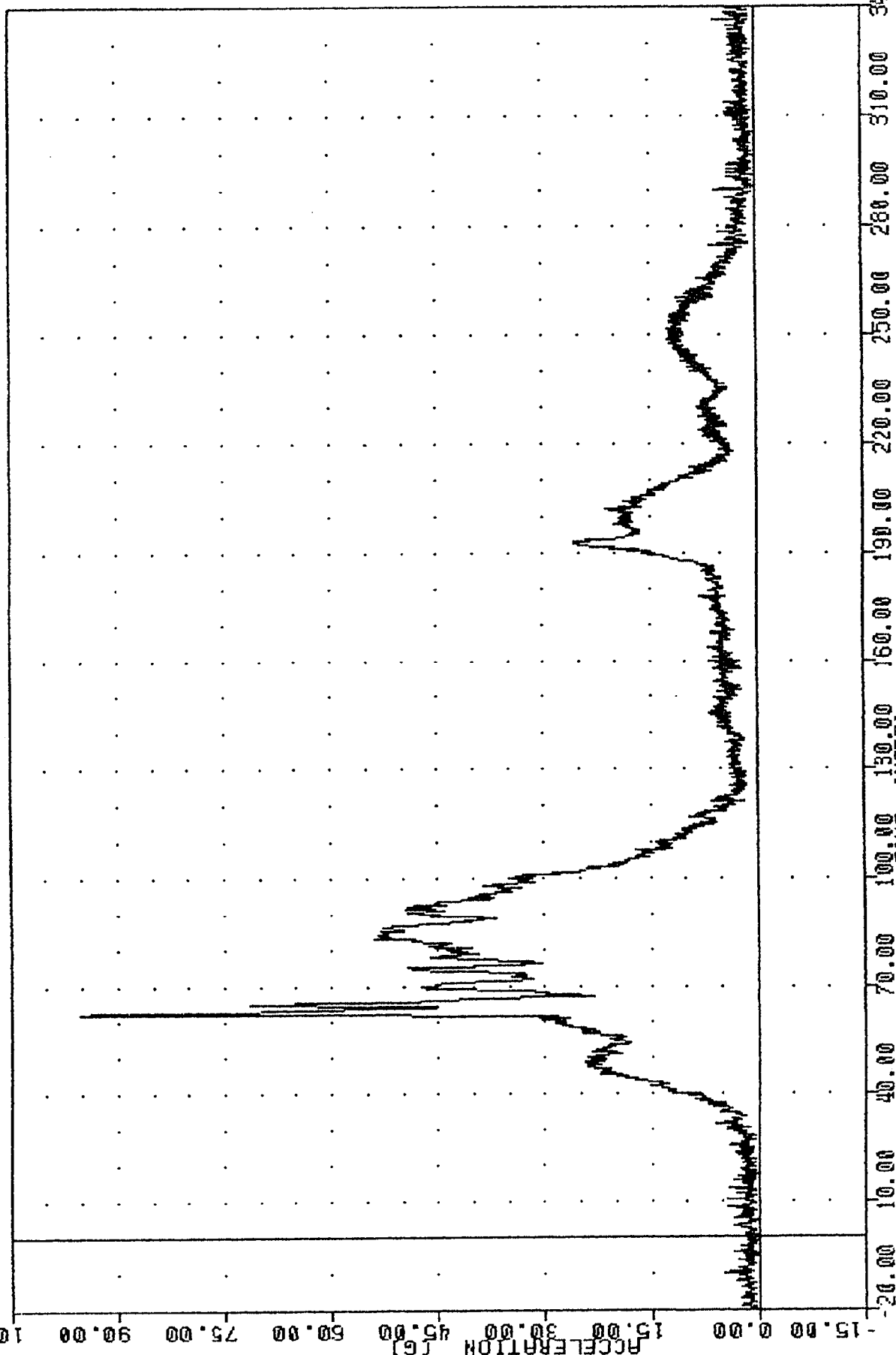
0.00

-15.00

-20.00

B-5

911212



1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TRC , 911212

200 COMPLIANCE TESTING

91346

CSTXG1

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -43.98 67.63 3.20 235.88

120.00

90.00

60.00

30.00

0.00

-30.00

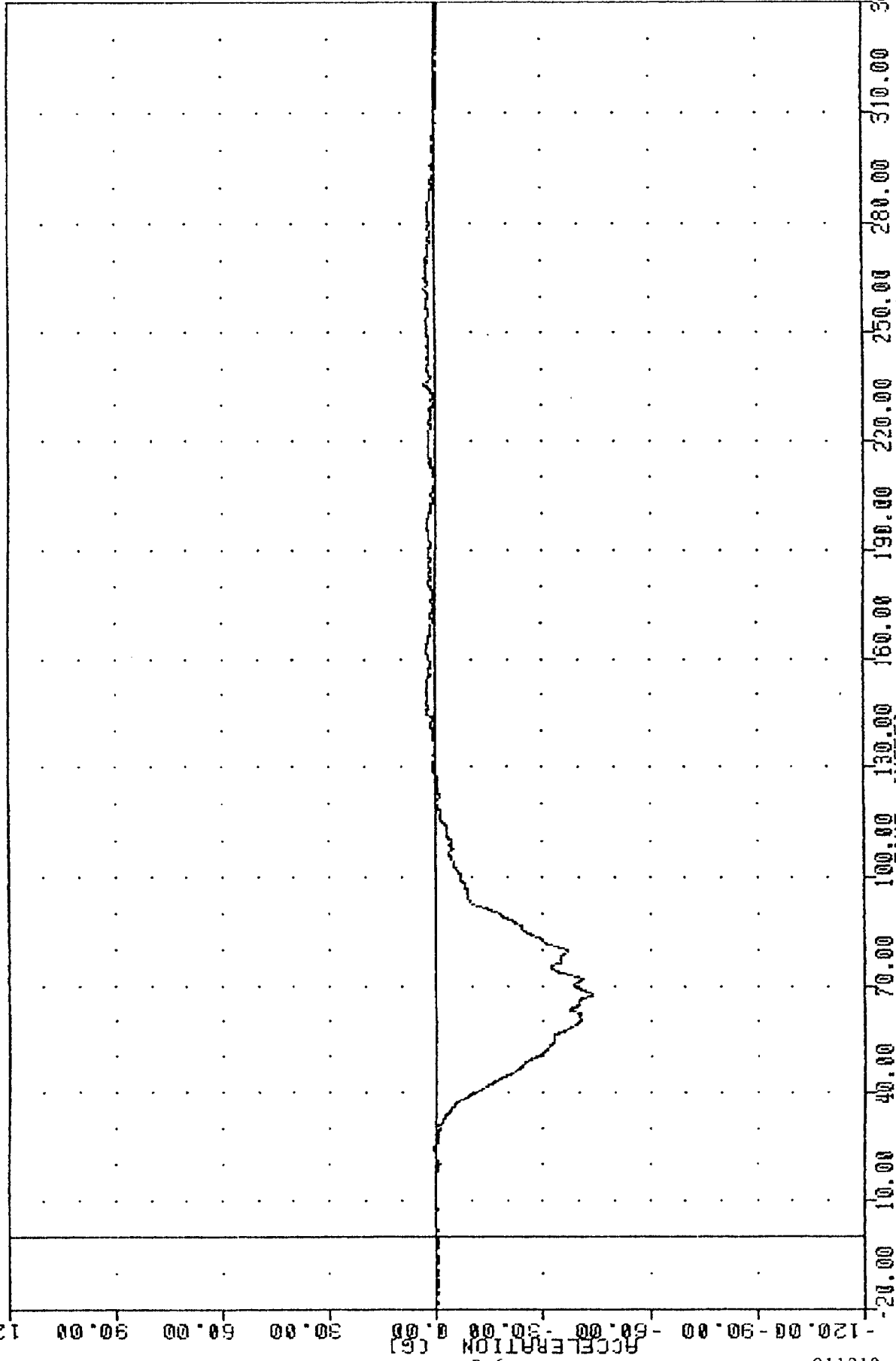
-60.00

-90.00

-120.00

B-6

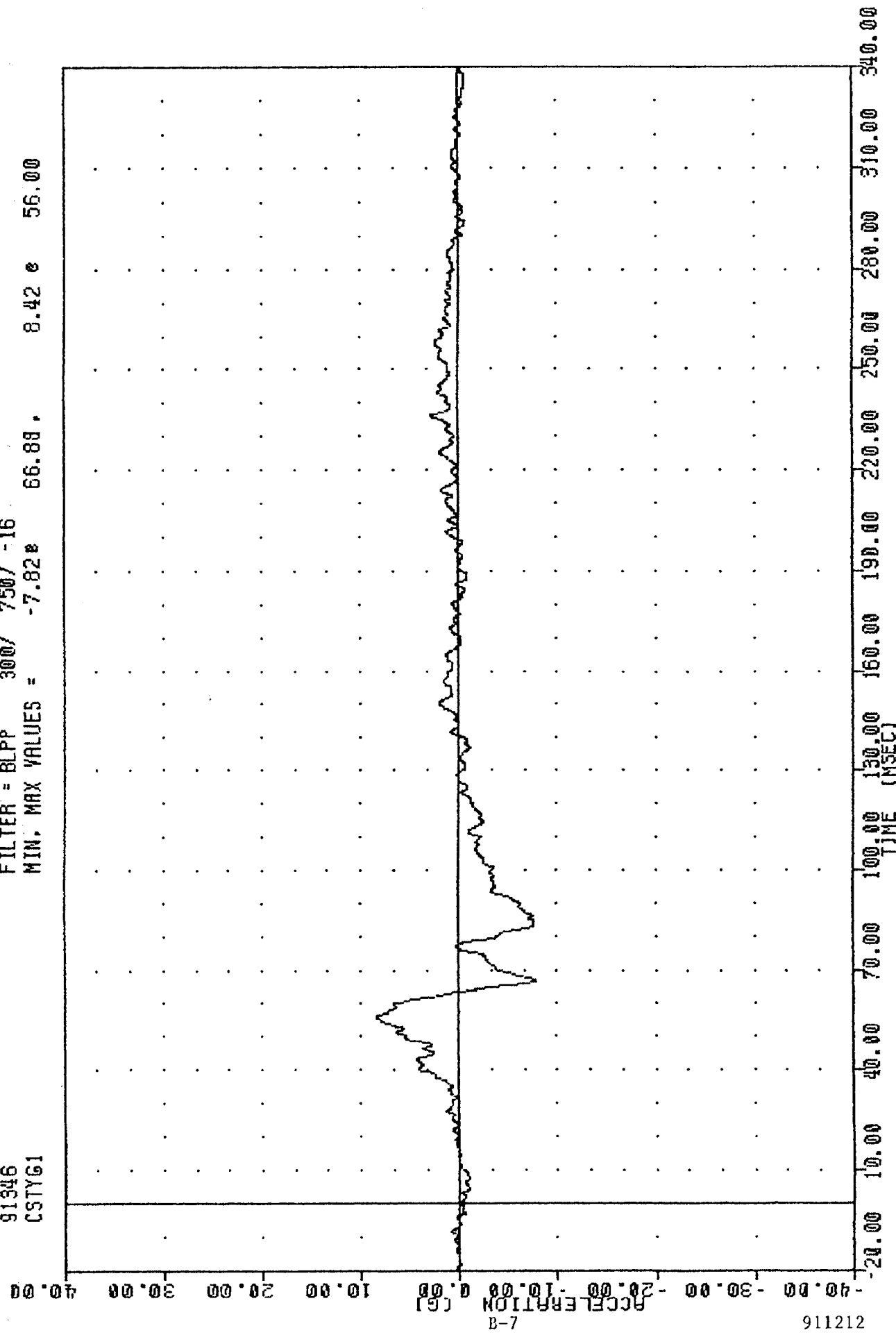
911212



1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

TRC 911212
 208 COMPLIANCE TESTING
 91346
 CSTYG1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -7.82e 8.42 e 56.00



911212

B-7

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION

TRC

911212

200 COMPLIANCE TESTING

91346

CST261

FILTER = BLPP 300/ 750/ -16

MIN, MAX VALUES = -15.76 47.75 , 9.31 111.13

40.00

30.00

20.00

10.00

0.00

-10.00

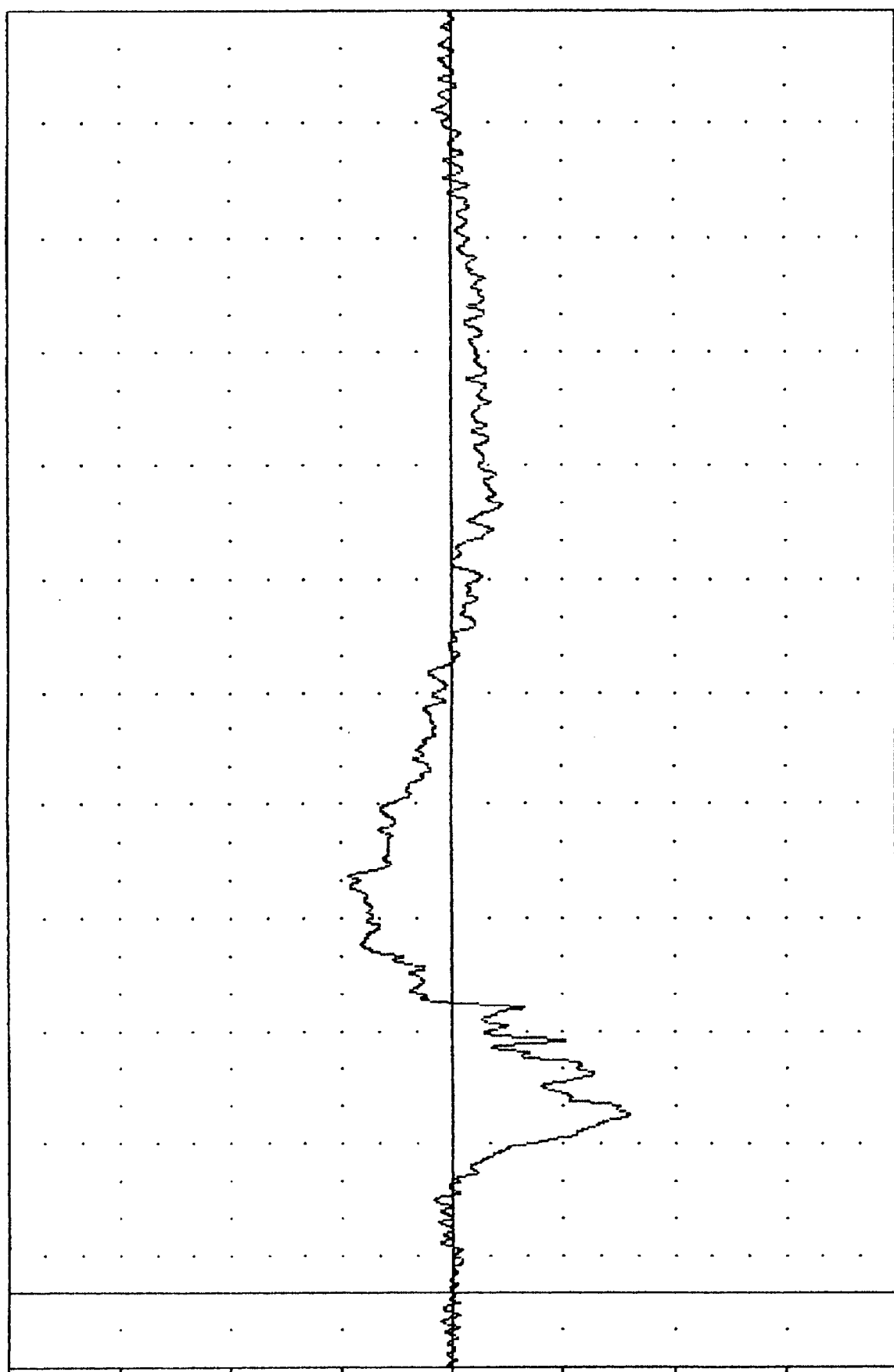
-20.00

-30.00

-40.00

ACCELERATION (G)

B-8



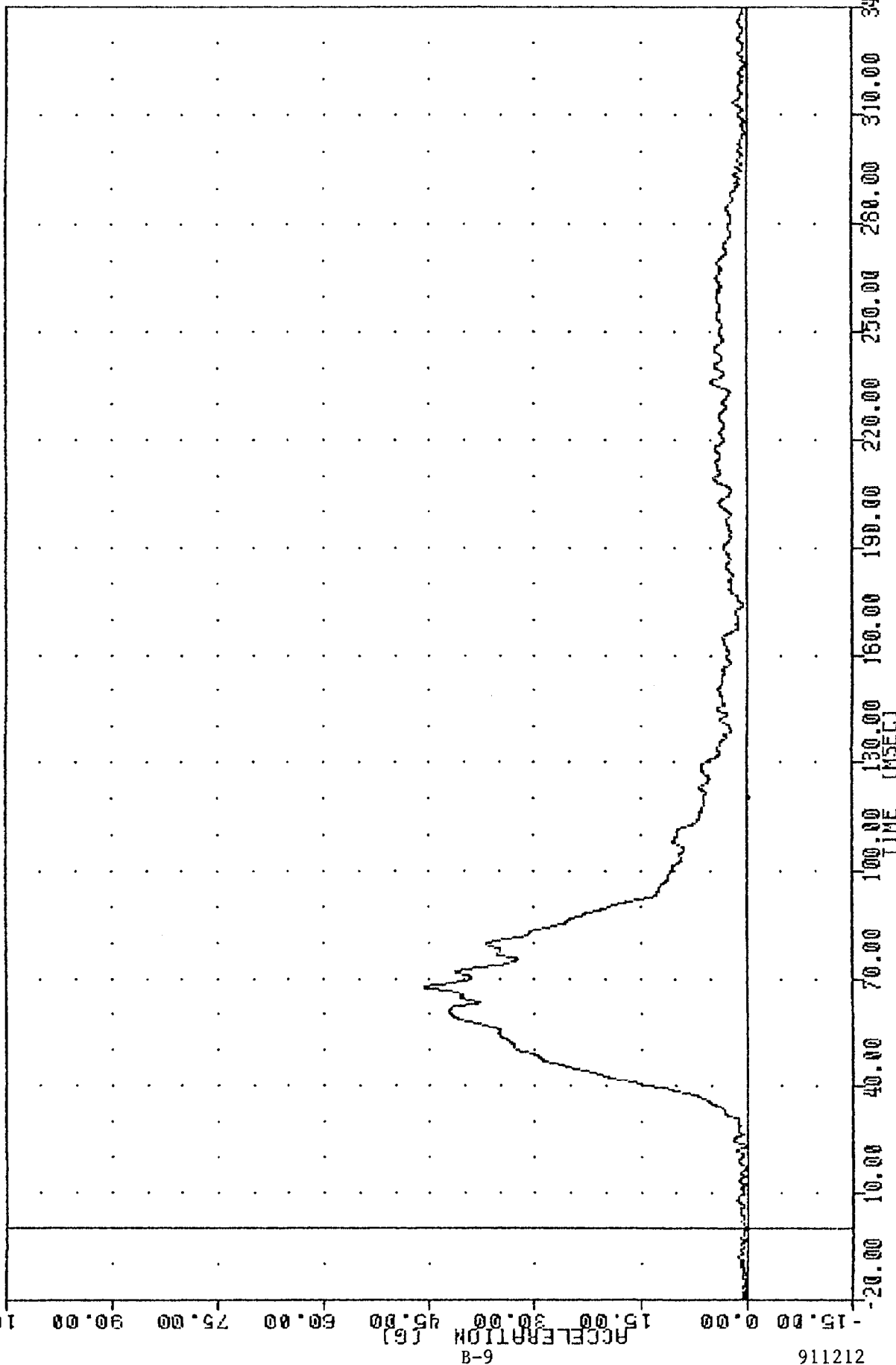
911212

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION

TAC , 911212
 208 COMPLIANCE TESTING
 91546
 CSTRG1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.04e -17.75 , 45.72 e 67.50

105.00

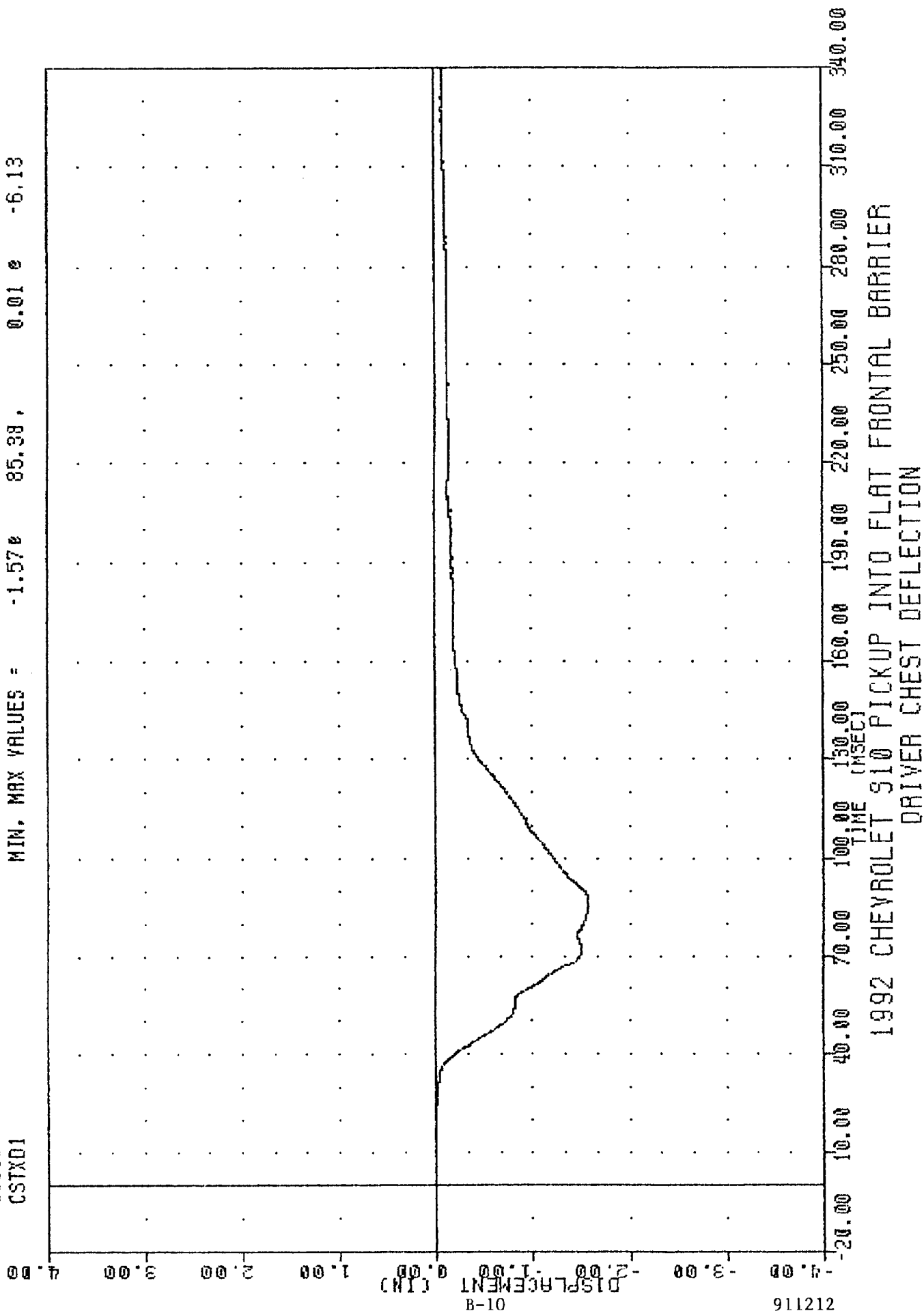


911212

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION

TRC 911212
 208 COMPLIANCE TESTING
 91346
 CSTXD1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -1.57e 85.38, 0.01 e -6.13



911212

B-10

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
 DRIVER CHEST DEFLECTION

TRC 911212

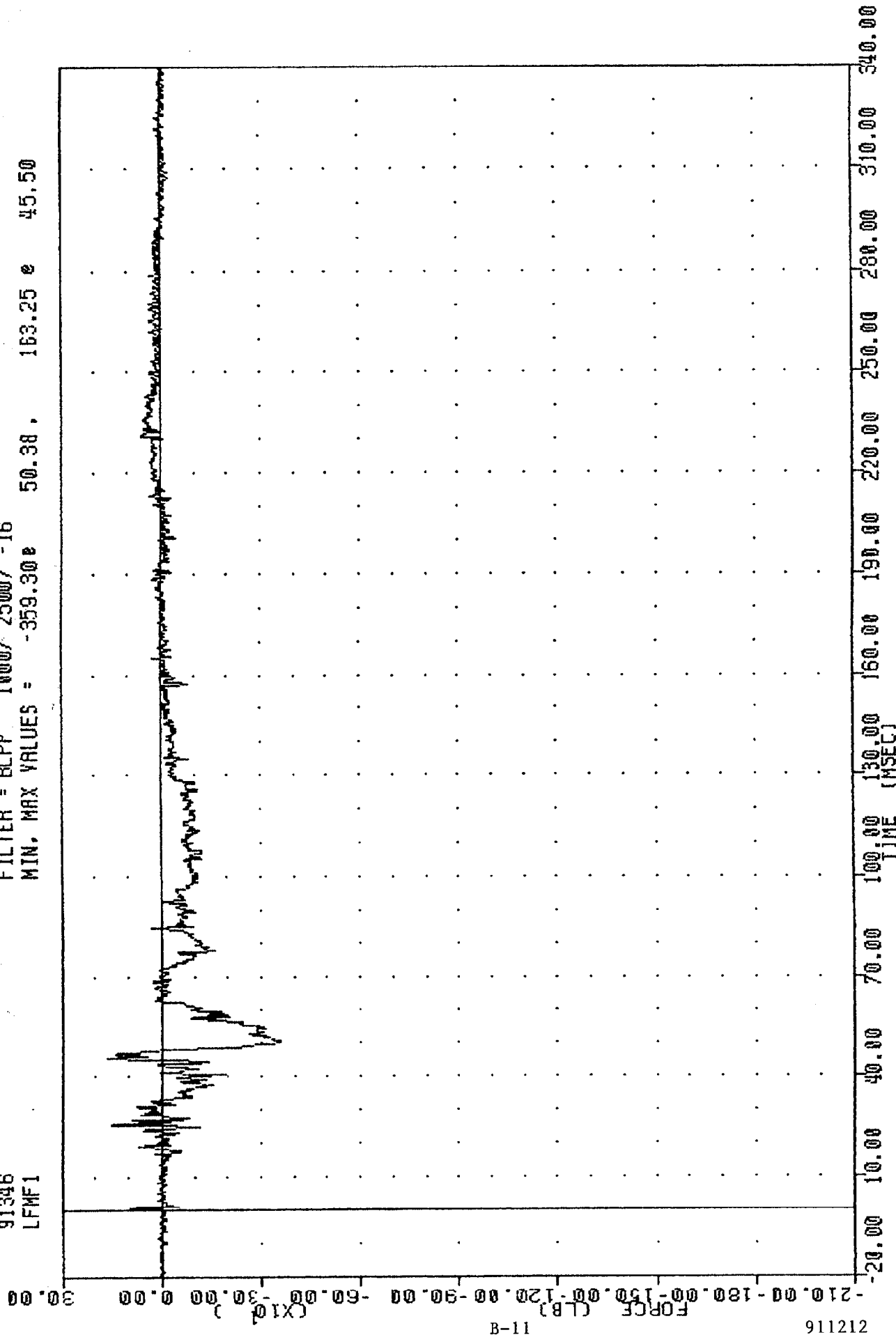
200 COMPLIANCE TESTING

91346

LFMF1

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -359.30e 50.38 . 163.25 e 45.50



1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE

TRC 911212

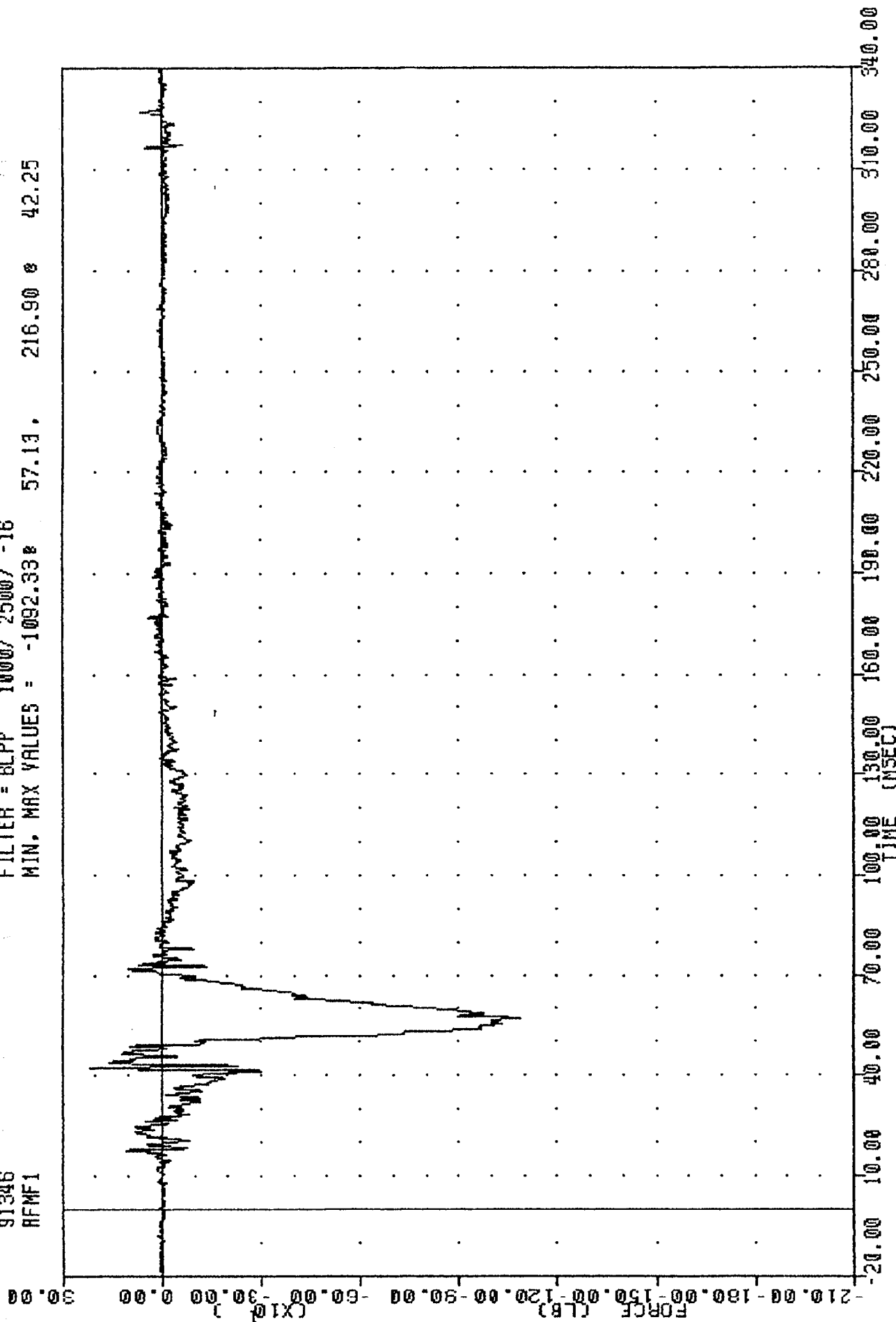
208 COMPLIANCE TESTING

91346

AFMF1

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -1092.33% 57.13. 216.90 @ 42.25



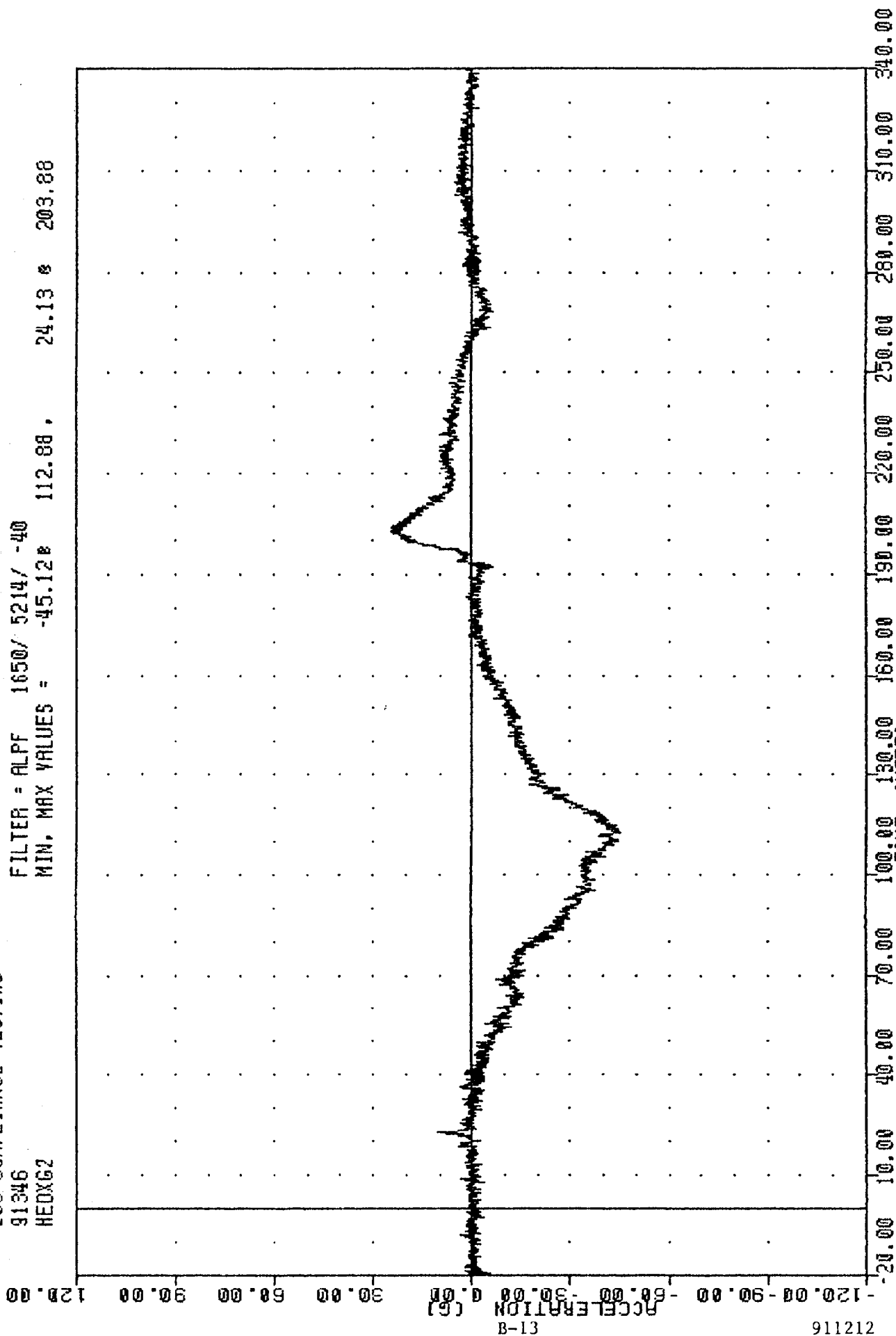
B-12

911212

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

TRC 911212
208 COMPLIANCE TESTING
91346
HEDXG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -45.128 112.88 24.13 203.88



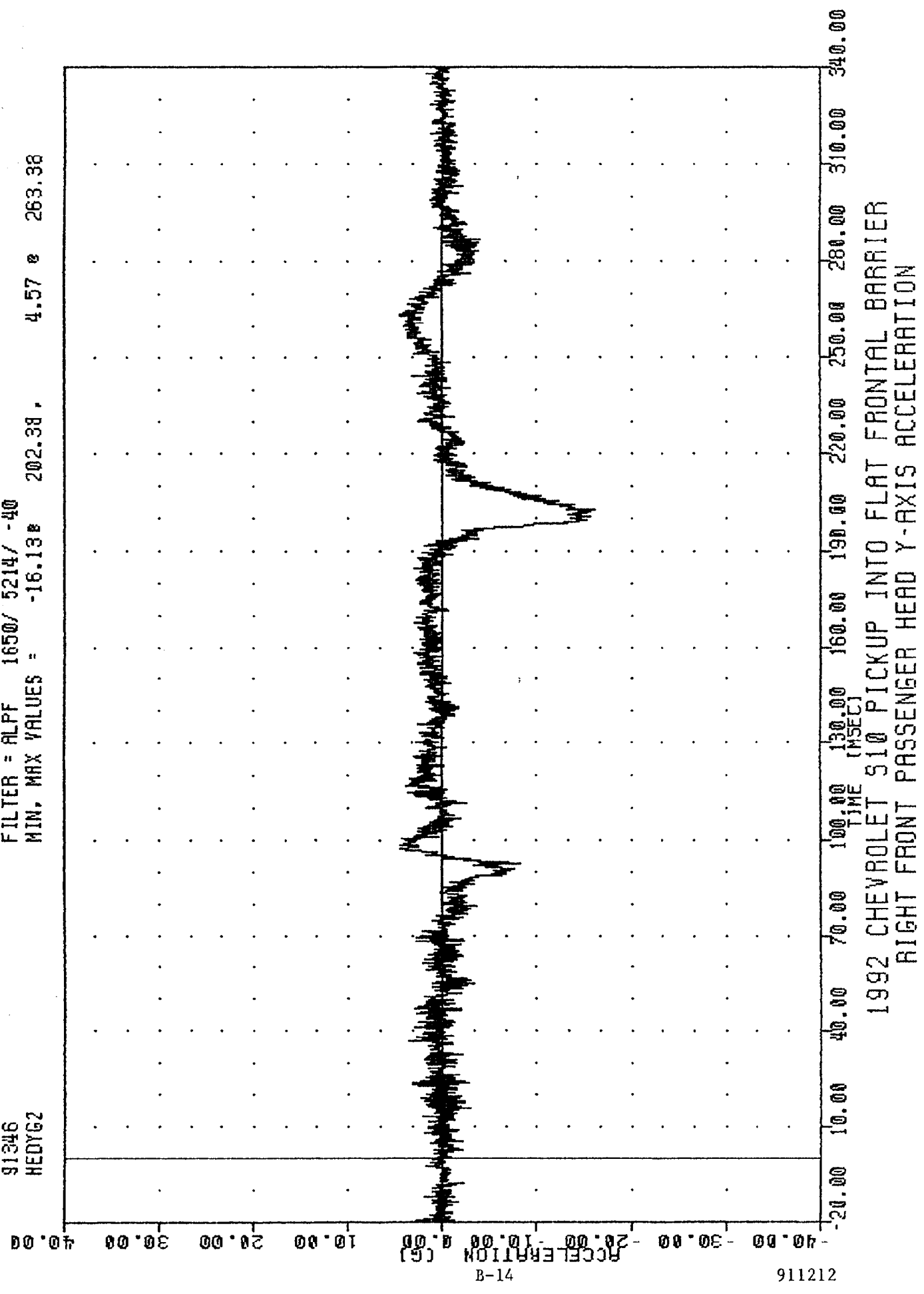
B-13

911212

1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TRC, 911212
208 COMPLIANCE TESTING
91346
HEDYG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -16.138 202.38 4.57 263.38



B-14

911212

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

IRC 911212

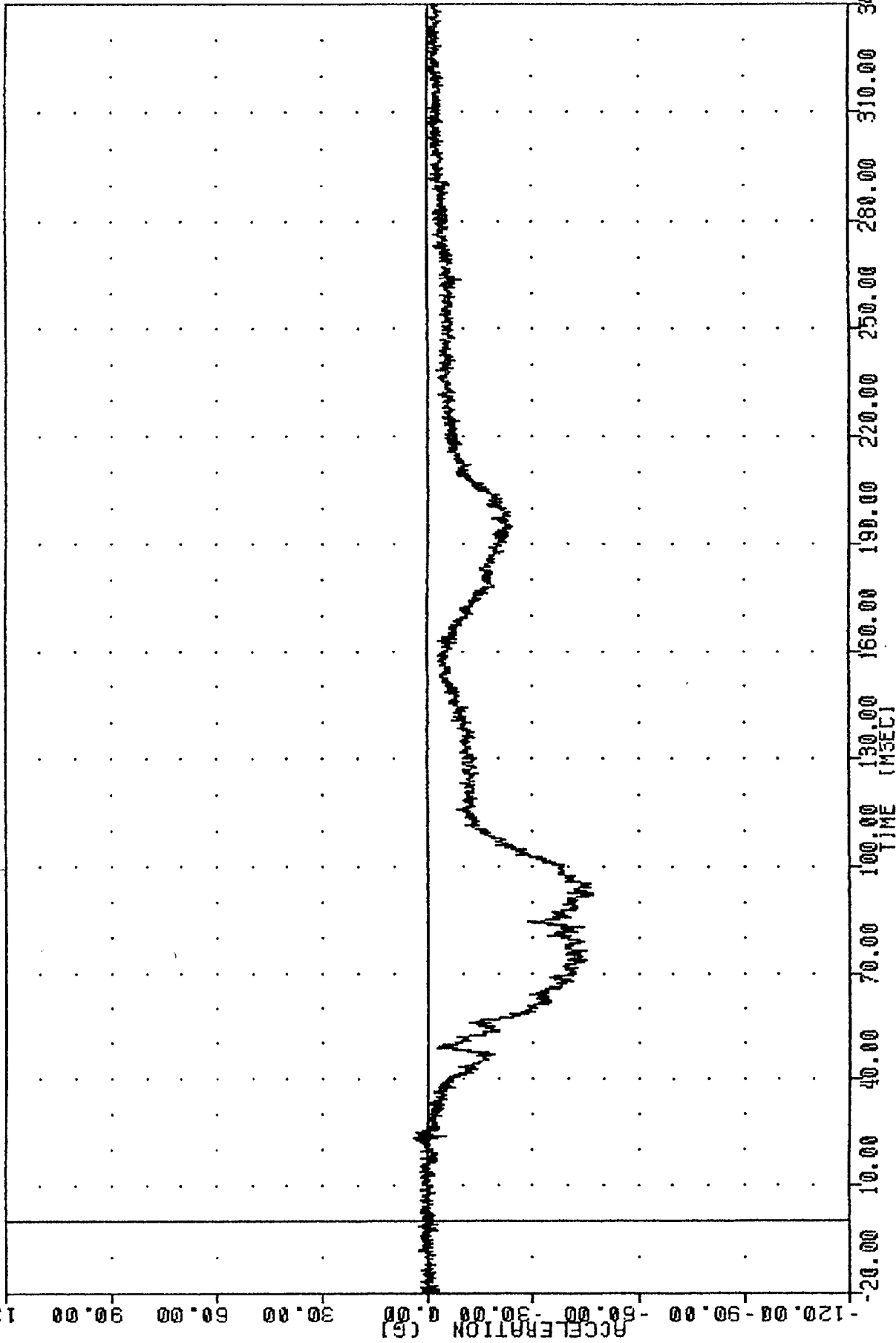
208 COMPLIANCE TESTING

91346

HEDIG2

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -46.66 92.25, 3.81 23.25



1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TRC 911212

208 COMPLIANCE TESTING

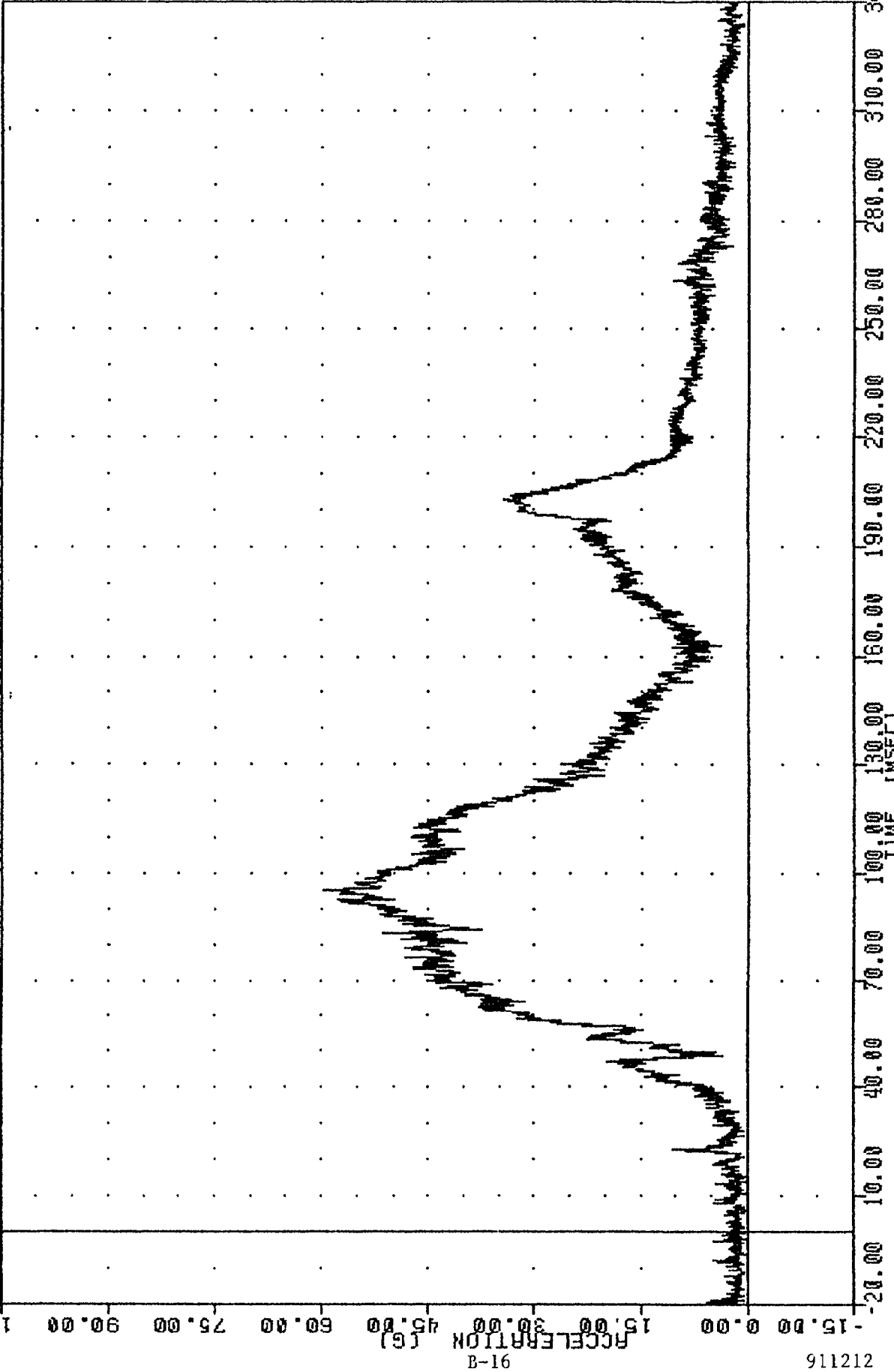
91346

HEDRG2

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = 0.208 15.13, 59.87 & 95.25

105.00



1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

TRC , 911212

208 COMPLIANCE TESTING

91346

CSTX62

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -39.928 75.00 , 5.26 153.13

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

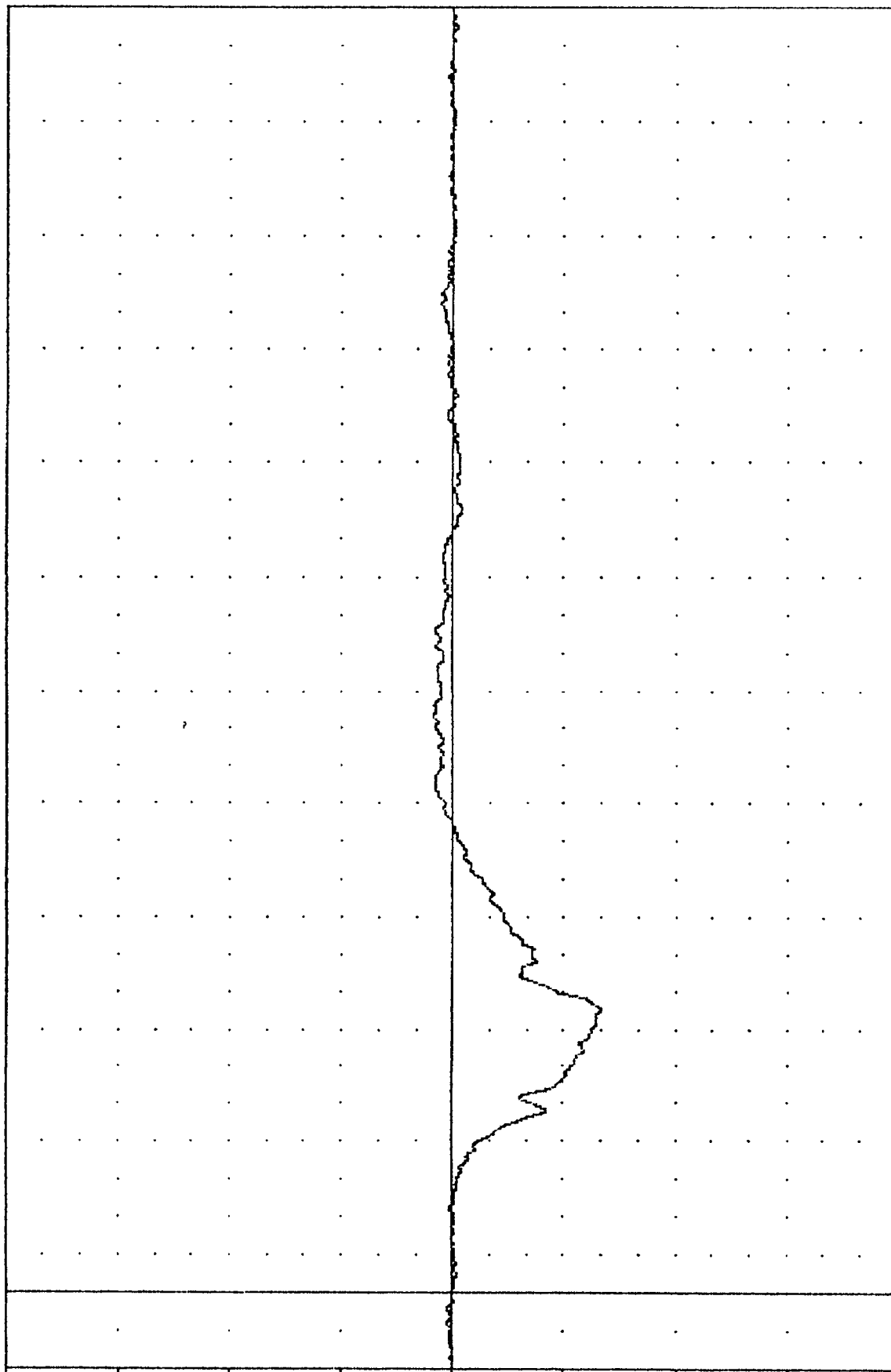
-90.00

-120.00

ACCELERATION (G)

B-17

911212

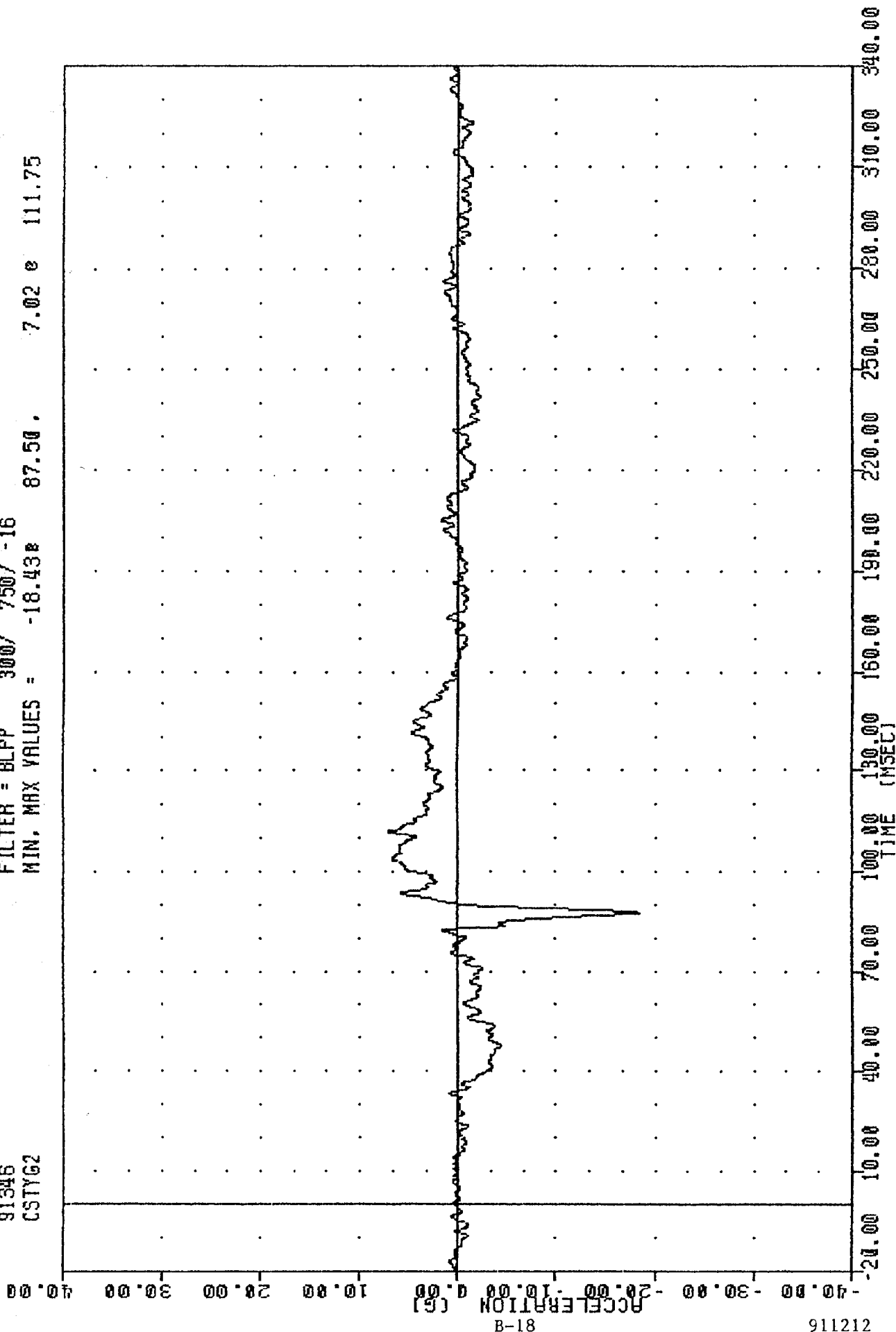


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

TRC 911212
208 COMPLIANCE TESTING
91346
CSTYG2

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -18.438 87.50 7.02 111.75



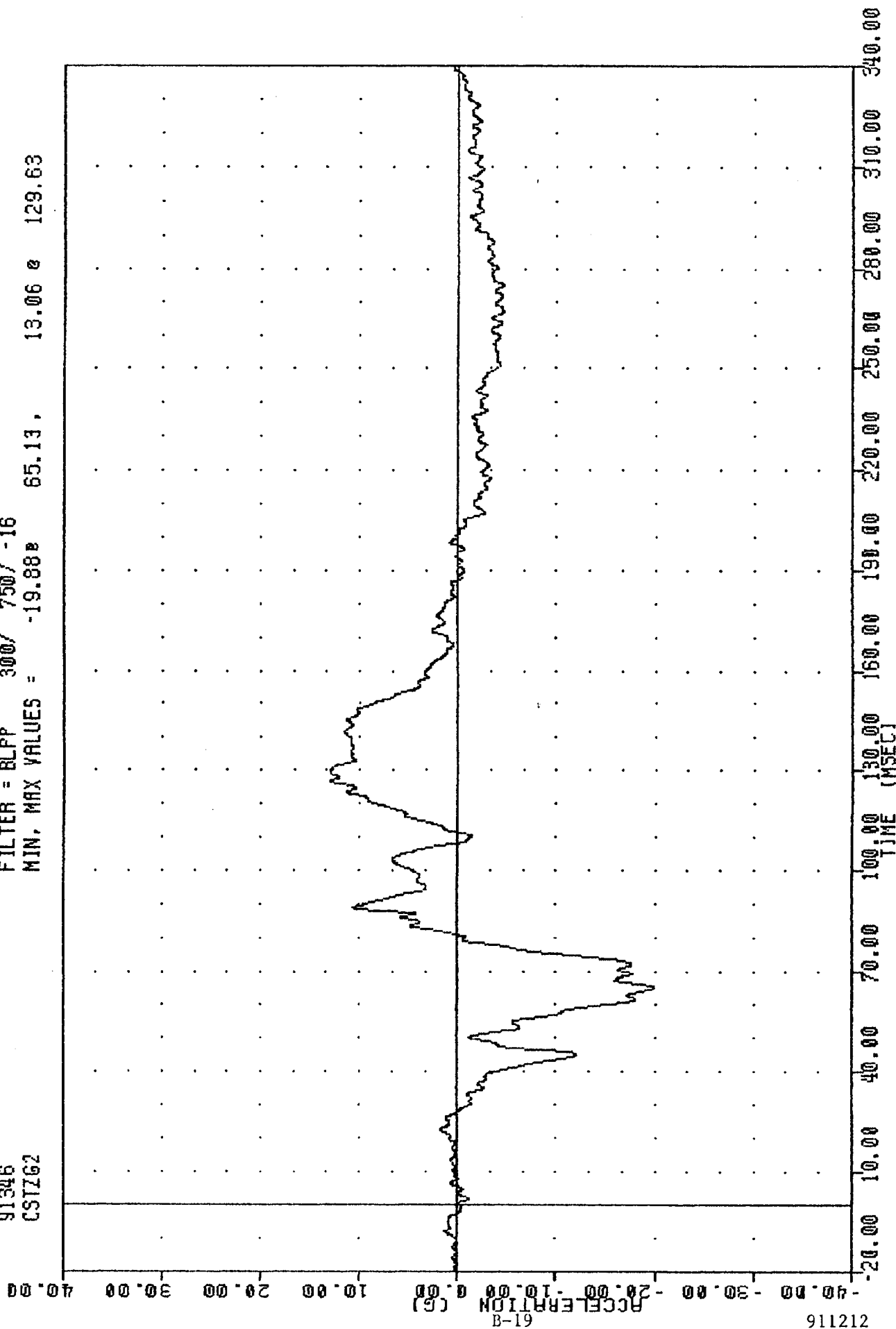
B-18

911212

1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TRC 31212
208 COMPLIANCE TESTING
91346
CSTZ62

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -19.88 65.13, 13.06 129.63



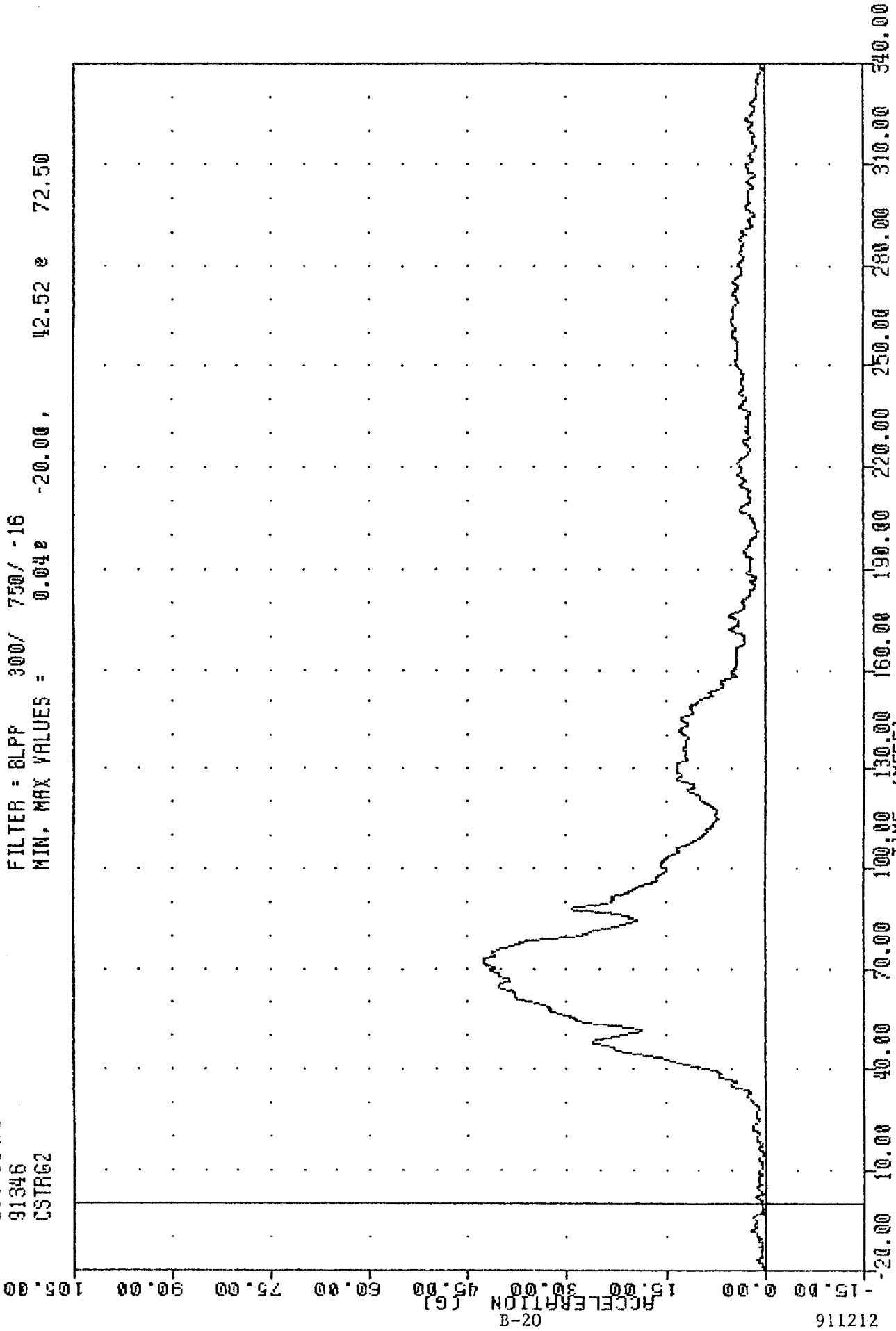
911212

B-19

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TRC 911212
 208 COMPLIANCE TESTING
 91346
 CSTRG2

FILTER = 6LPP 300/ 750/ -16
 MIN. MAX VALUES = 0.04e -20.00, 42.52 e 72.50

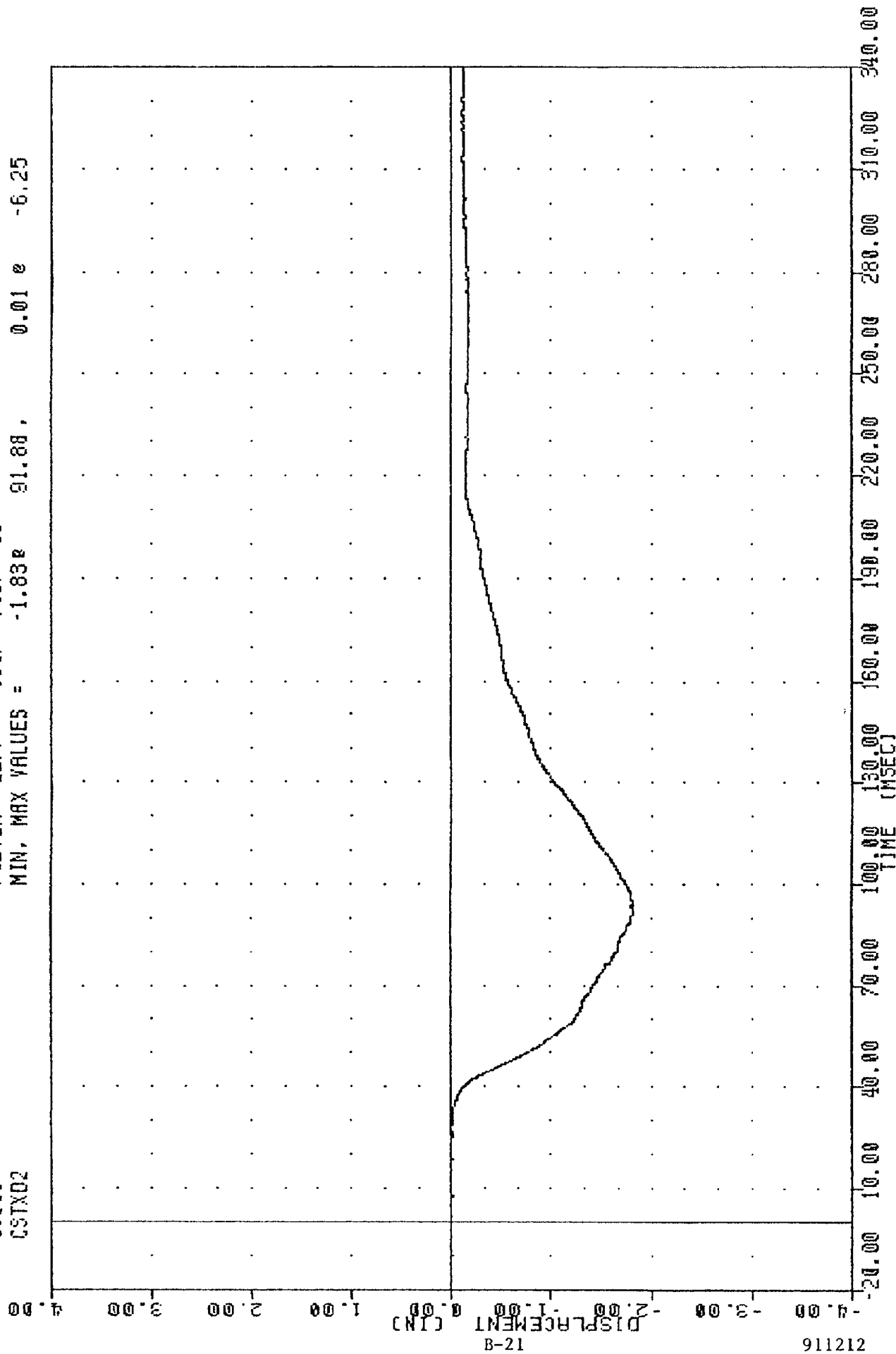


911212

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TRC , 911212
208 COMPLIANCE TESTING
81346
CSTXD2

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -1.83e 91.88, 0.01 e -6.25

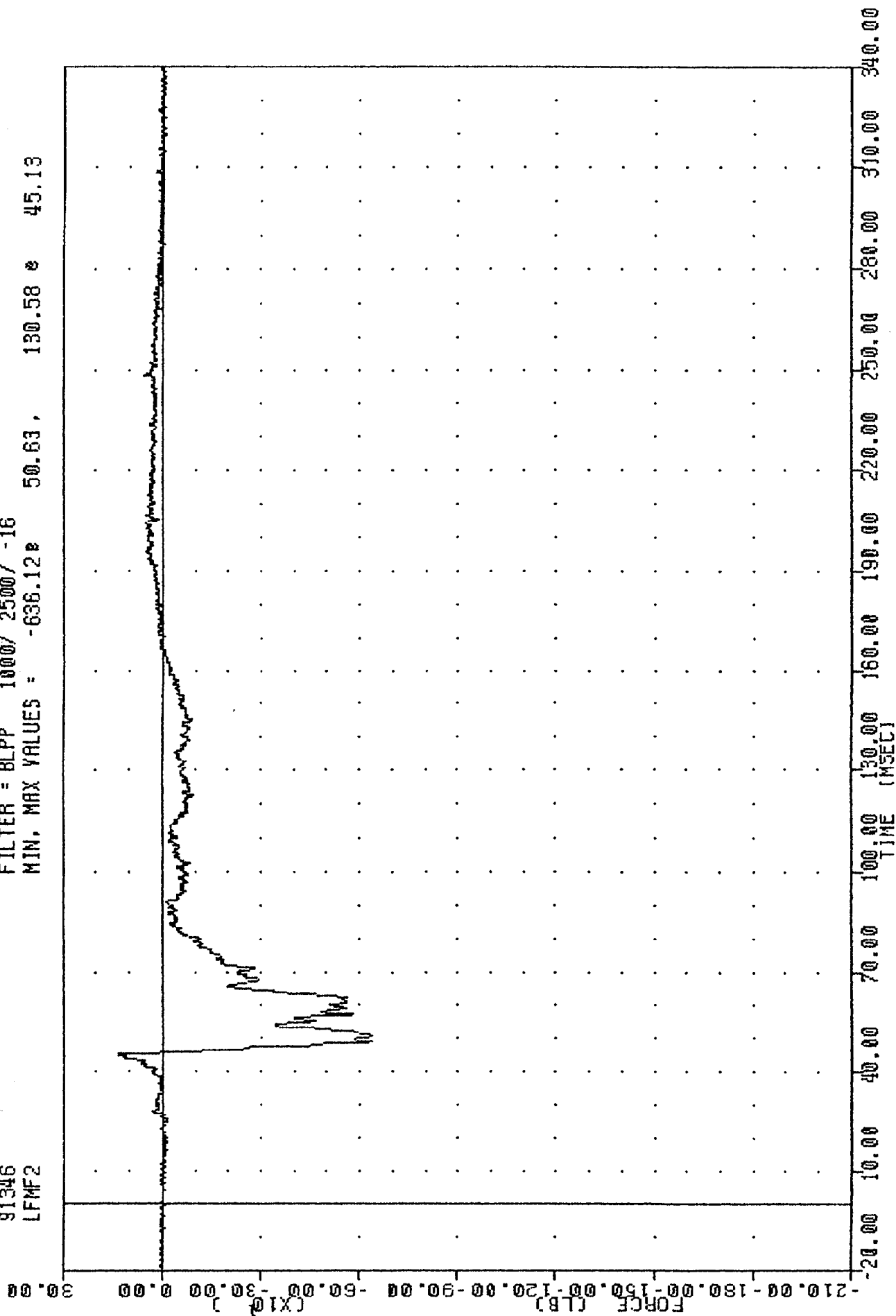


1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST DEFLECTION

TRC 911212
208 COMPLIANCE TESTING

91346
LFMF2

FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -636.128 50.63, 130.58 45.13



1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

TRC 911212

208 COMPLIANCE TESTING

91346

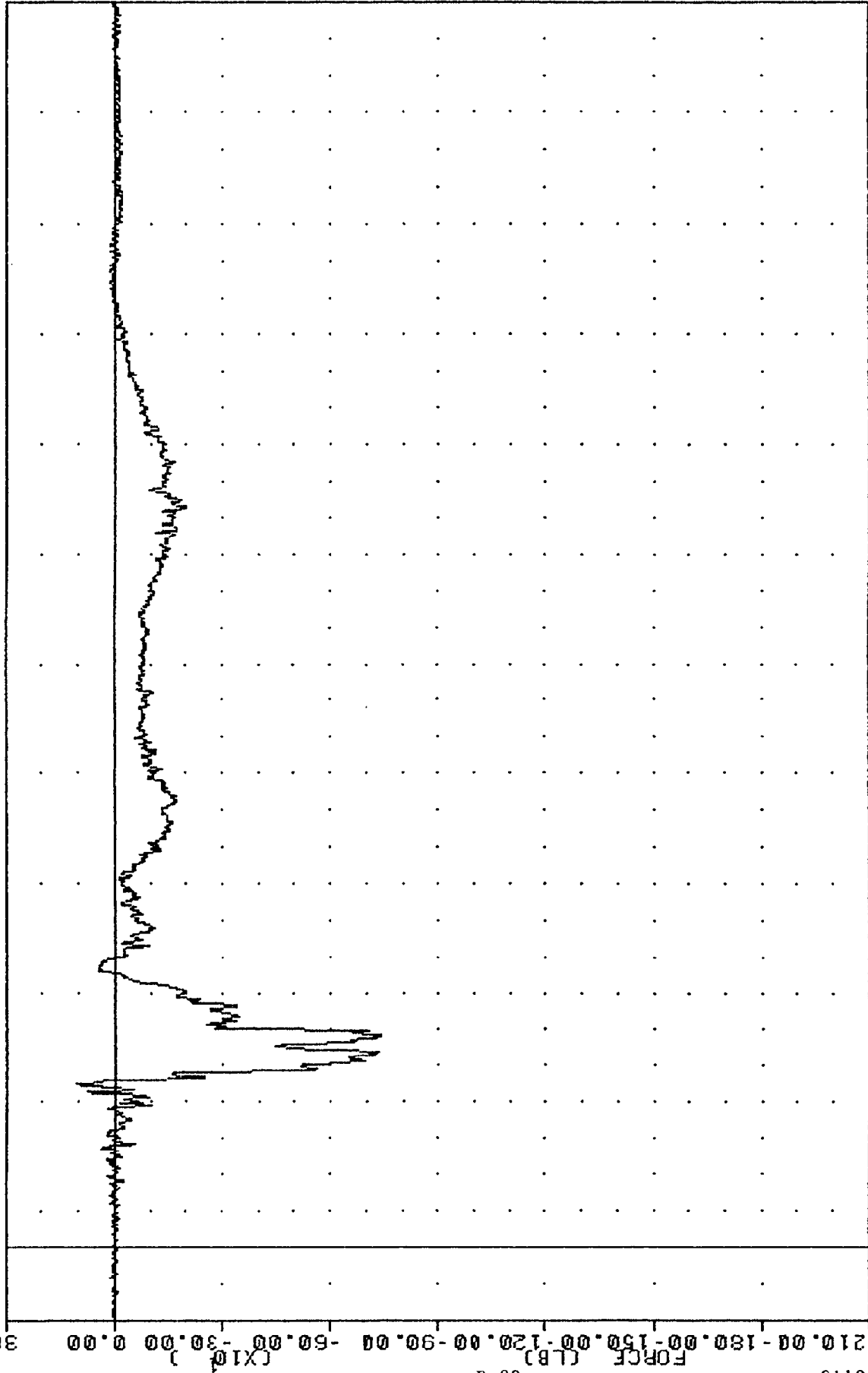
RFMF2

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -742.518 58.50

104.58 @ 44.75

30.00



B-23

911212

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

TRC
208 COMPLIANCE TESTING
91346
TLRX61

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -42.38 21.00 2.69 166.63

50.00

45.00

40.00

35.00

30.00

25.00

20.00

15.00

10.00

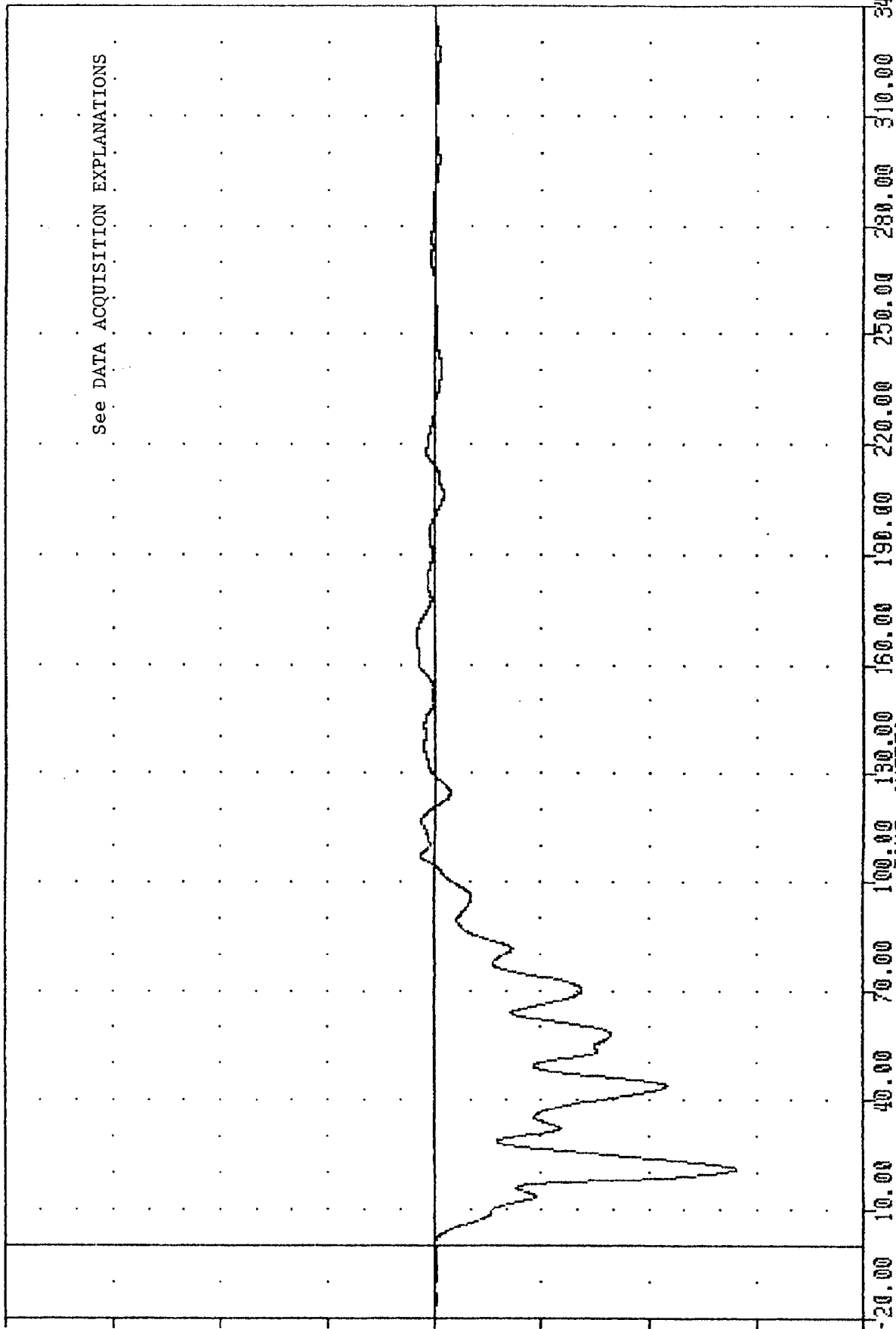
5.00

0.00

ACCELERATION (G)

B-24

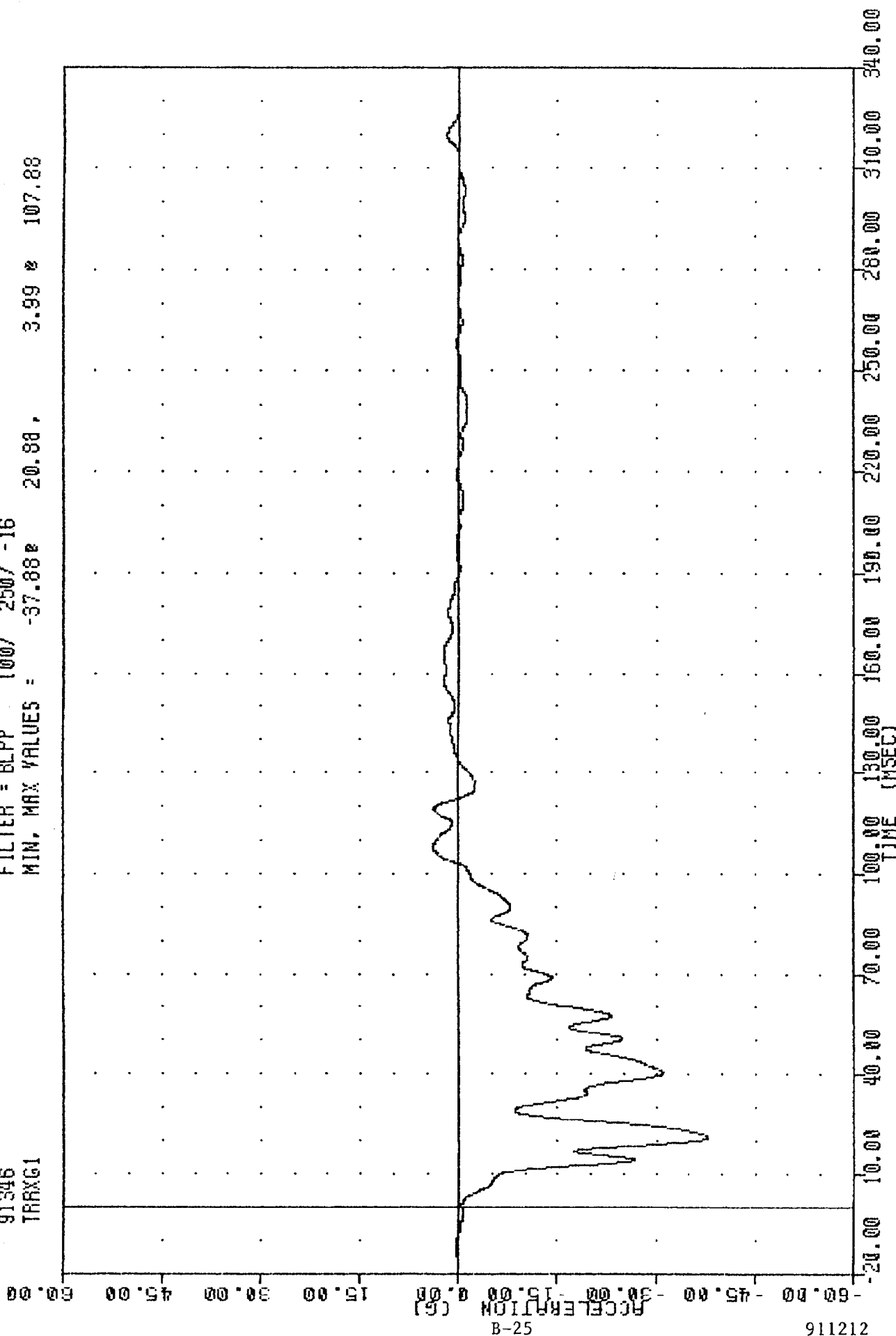
911212



1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

TRC 911212
208 COMPLIANCE TESTING
91346
TRRXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -37.88e 20.88e 3.99 e 107.88



1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TAL 911212

208 COMPLIANCE TESTING

91346

ENGXG1

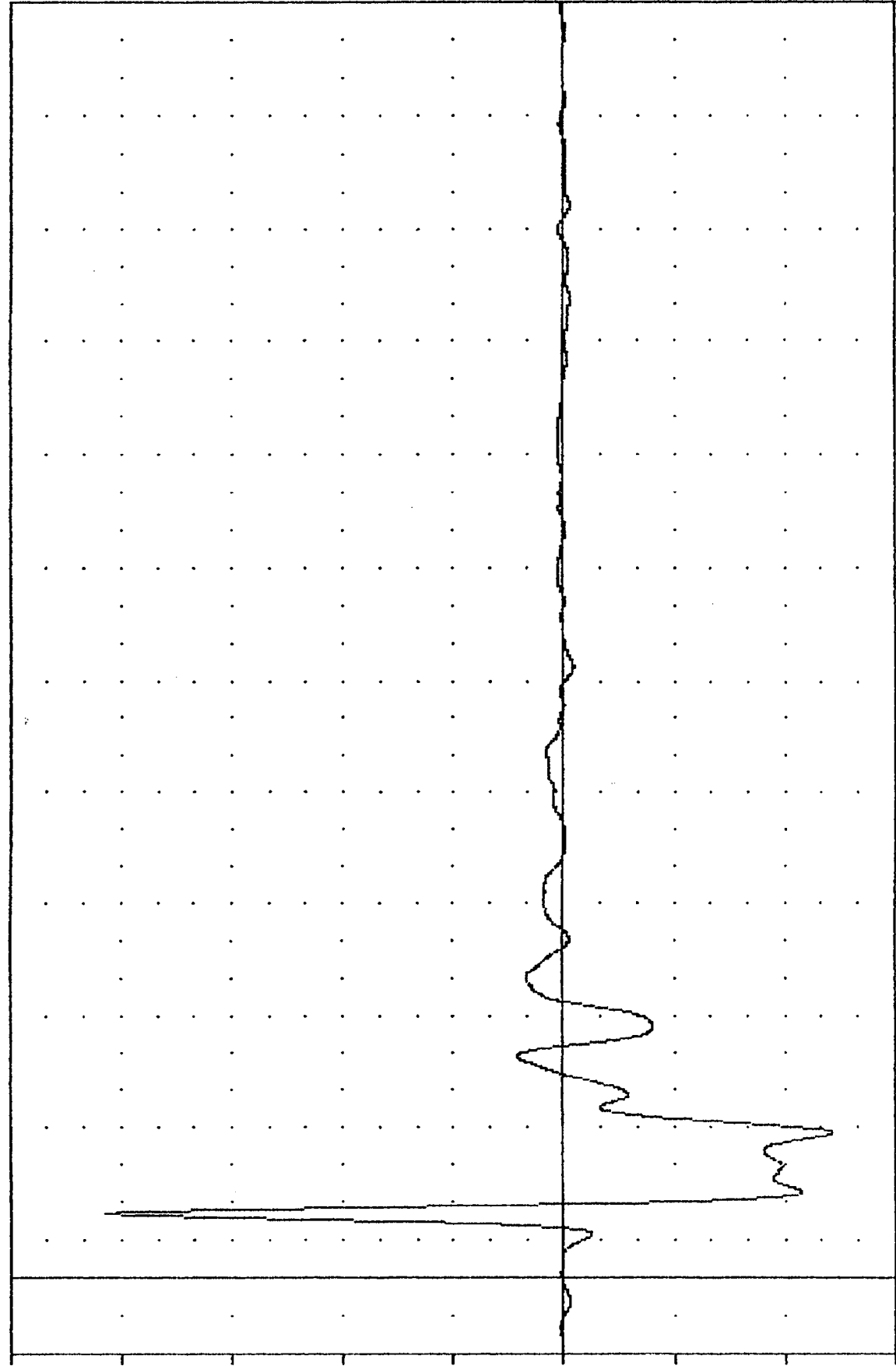
FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -60.97 38.50, 103.75 16.88

ACCELERATION [G]

B-26

911212

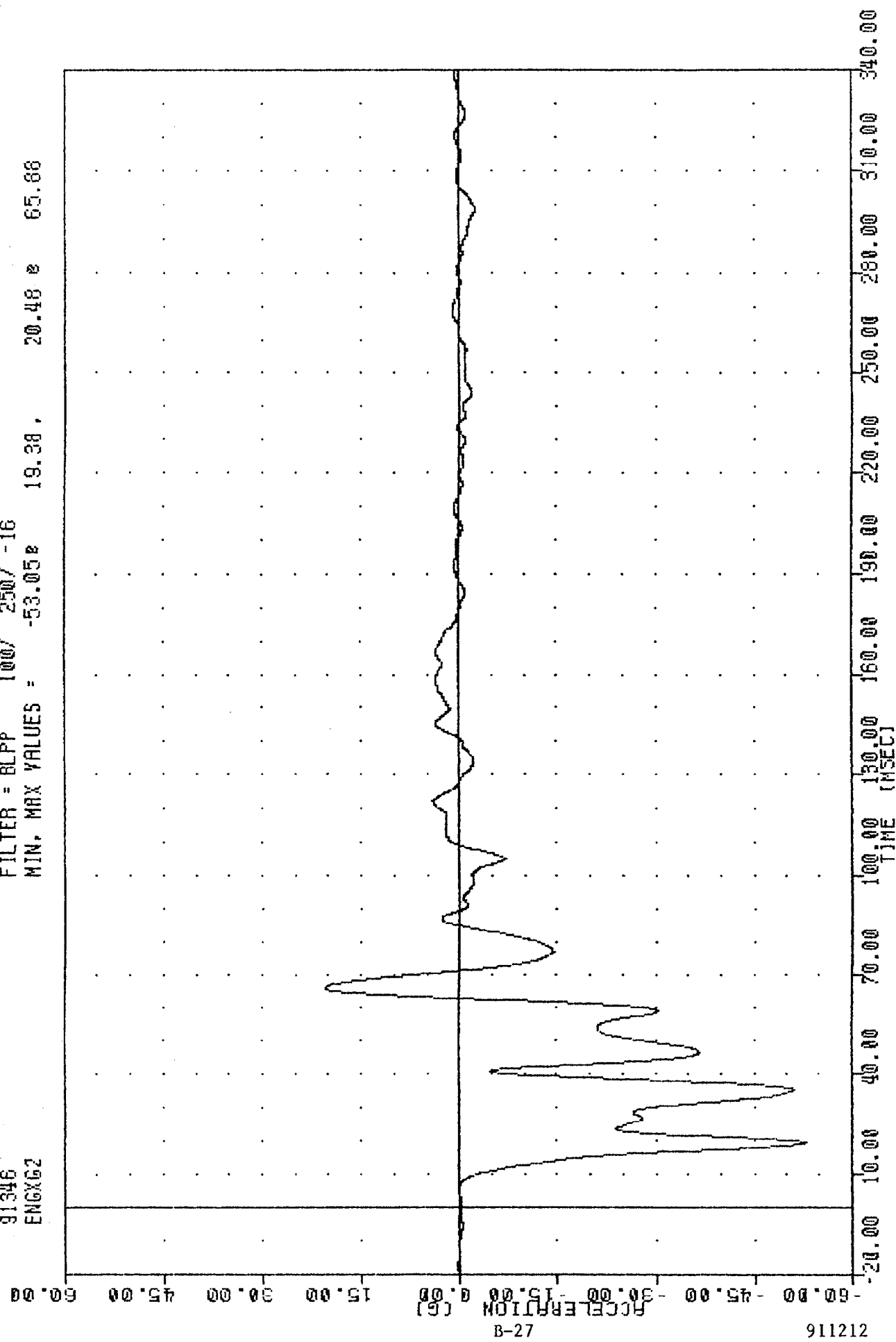


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
ENGINE TOP X-AXIS ACCELERATION

TRC 911212
200 COMPLIANCE TESTING
91346
ENGX62

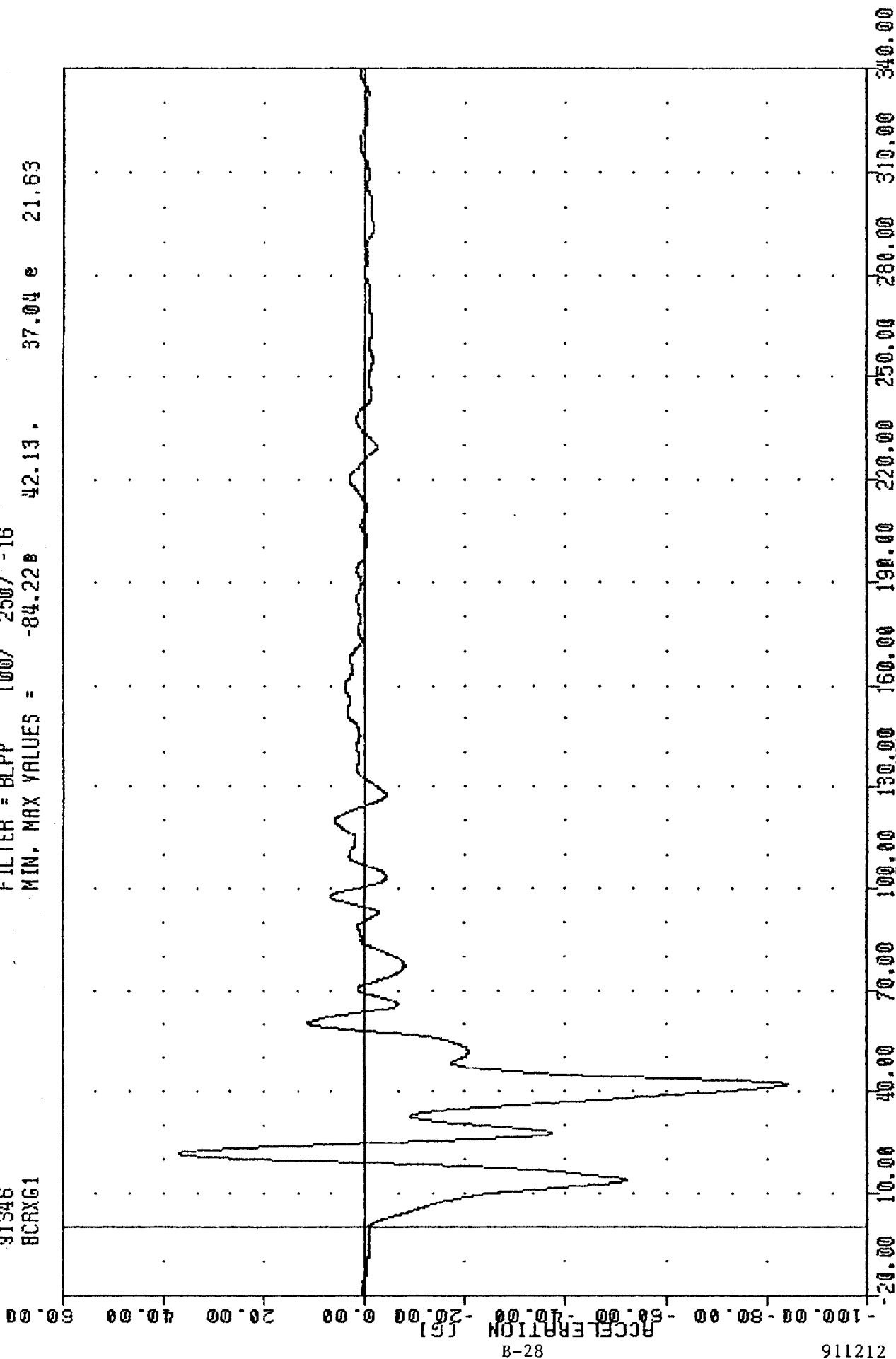
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -53.05 19.38, 20.48 65.68



1992 CHEVROLET 510 PICKUP INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION

TRC 911212, 911212
 200 COMPLIANCE TESTING
 91346
 BCRXG1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -84.22 42.13, 37.04 e 21.63



1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
 RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TRC 91212

200 COMPLIANCE TESTING

91346

BCLXG1

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -62.37 41.13, 14.85 23.13

45.00

30.12

15.25

3.7

-3.7

-14.50

-29.37

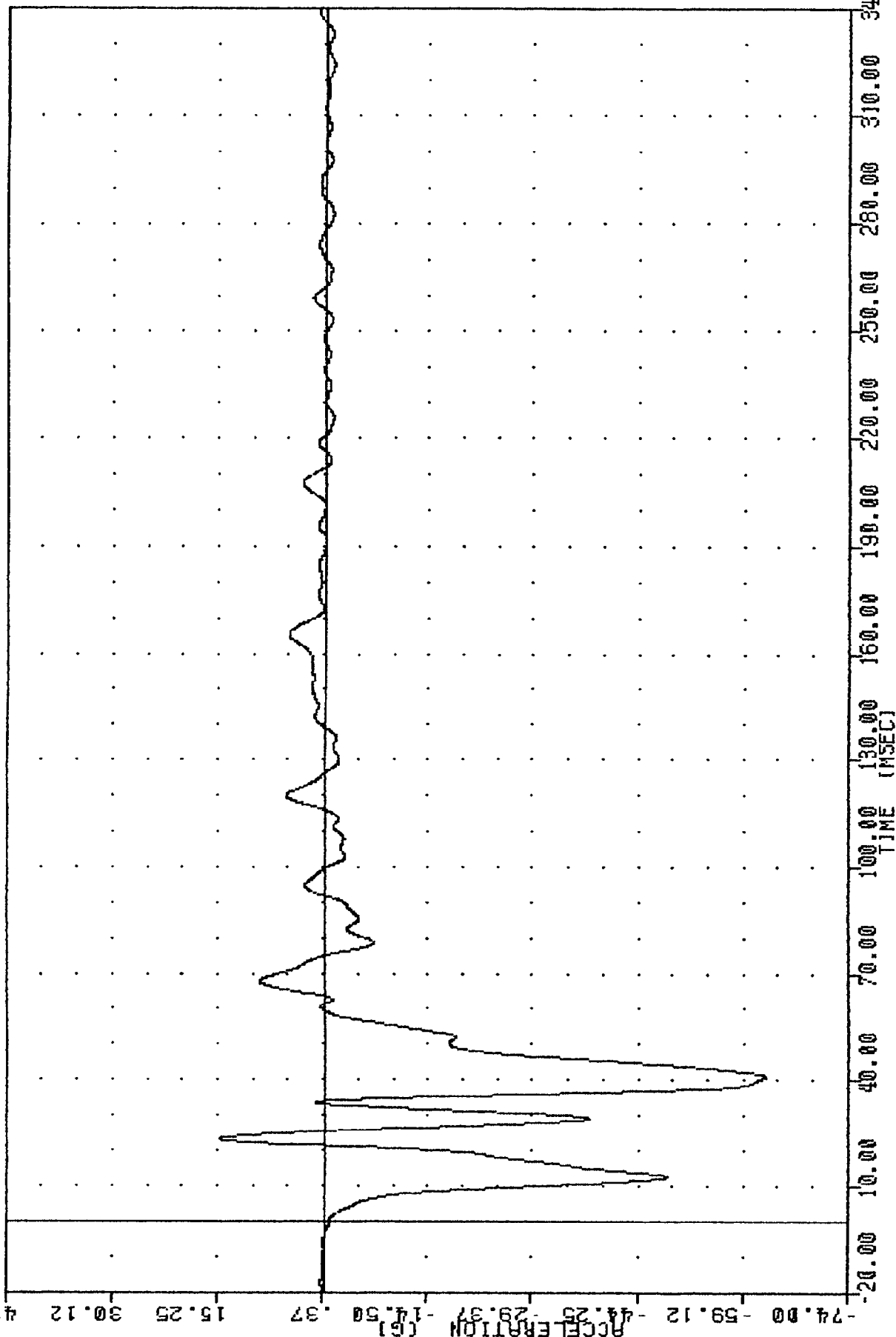
-44.25

-59.12

-74.00

B-29

911212



1992 CHEVROLET 310 PICKUP INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC 911212

208 COMPLIANCE TESTING

91346

OPCX61

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -39.67 16.75

12.97 56.75

60.00

45.00

30.00

15.00

0.00

-15.00

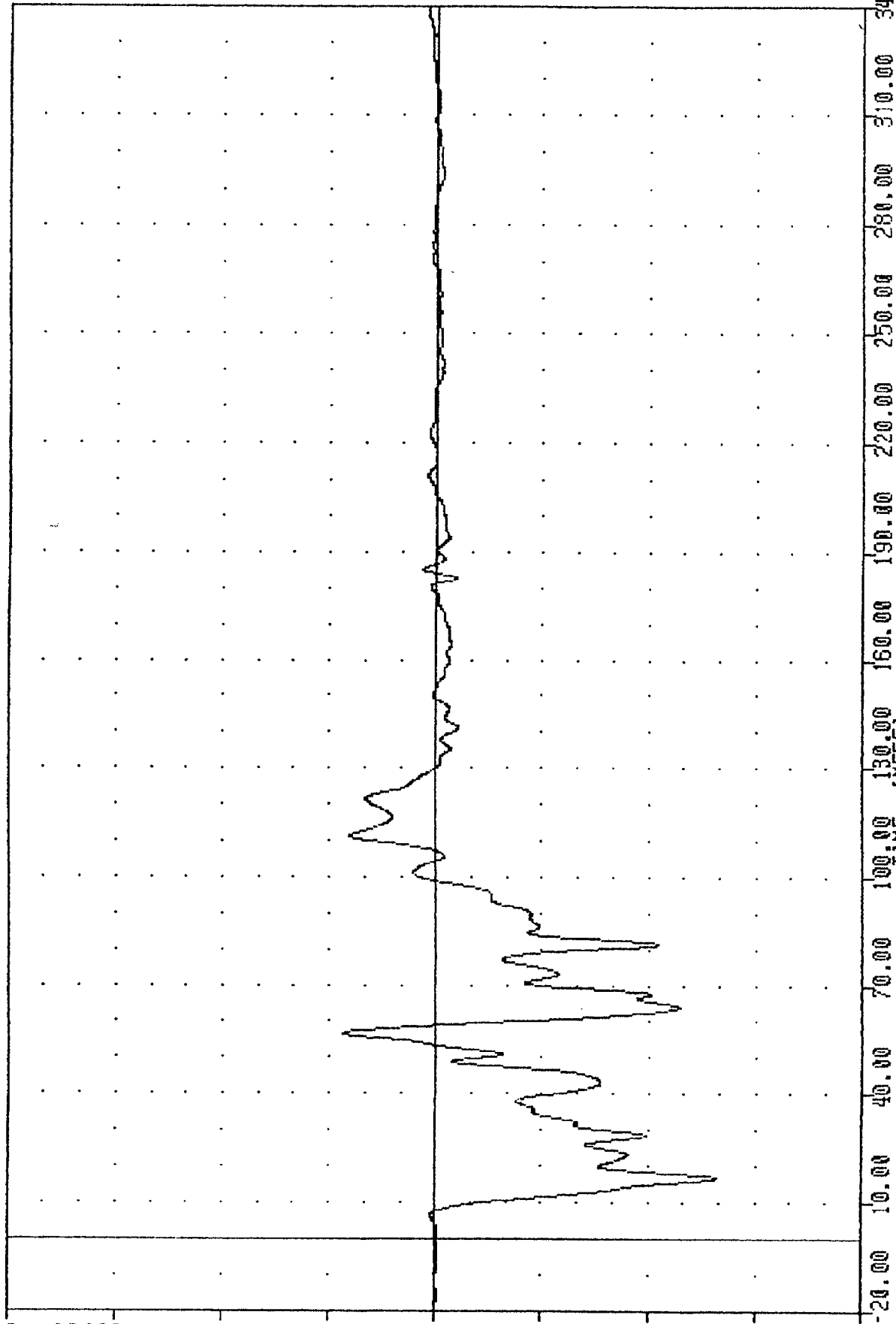
-30.00

-45.00

-60.00

B-30

911212



1992 CHEVROLET S10 PICKUP INTO FLAT FRONTAL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION