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REPORT NOS. 208-TRC-93-007
212-TRC-93-007
301-TRC-93-007

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

MAZDA MOTOR CORPORATION
1993 MAZDA MX3
2-DOOR COUPE
NHTSA NO. CP5400
TRC TEST NO. 921209

TRANSPORTATION RESEARCH CENTER INC.
10820 STATE ROUTE 347
EAST LIBERTY, OHIO 43319

DECEMBER 28, 1992
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 12/31/92

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15. Supplementary Notes

16. Abstract

A 30 mph flat frontal barrier impact test was conducted on a 1993 Mazda MX3 2-door coupe, NHTSA No. CP5400, at Transportation Research Center Inc. on December 9, 1992. 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 14.6 inches. The ambient temperature was 72° F.

The driver's head injury criteria (HIC) was 450. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.2 g. The driver's left and right femur maximum axial forces were 927 pounds and 1018 pounds, respectively.

The passenger's head injury criteria (HIC) was 504. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41.1 g. The passenger's left and right femur maximum axial forces were 937 pounds and 1039 pounds, respectively.

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

17. Key Words	18. Distribution Statement
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"	Available from: NHTSA Technical Reference Division Room 5108, (NAD-52) 400 Seventh Street, SW Washington, DC 20590 Attn: Mr. Robert Hornickle

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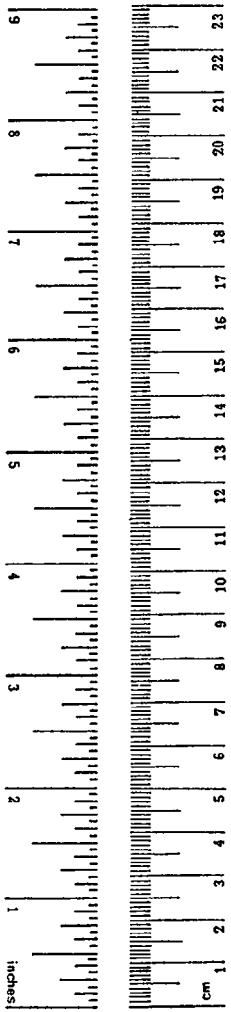
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

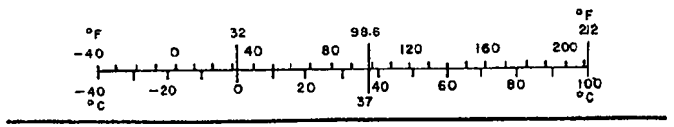
Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	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 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, 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



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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 Inc. (TRC) under Contract No. DTNH22-90-C-21003. The purpose of this test was to determine if the subject vehicle, a 1993 Mazda MX3 2-door coupe, NHTSA No. CP5400, 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 B 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 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.

The twenty-three (23) 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 9, 1992.

The test vehicle, a 1993 Mazda MX3 2-door coupe, NHTSA No. CP5400, 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 B dummies seated in the front outboard designated seating positions. 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 1.6 liter, transverse engine, manual transmission, power steering, and power brakes. The vehicle's test weight was 2735 pounds. The vehicle's impact speed was 29.3 mph. The vehicle's maximum static crush was 14.6 inches.

The driver's head injury criteria (HIC) was 450. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.2 g. The driver's left and right femur maximum axial forces were 927 pounds and 1018 pounds, respectively.

The right front passenger's HIC was 504. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41.1 g. The right front passenger's left and right femur maximum axial forces were 937 pounds and 1039 pounds, respectively.

There was no loss of windshield periphery retention.

There was no penetration through the windshield.

Following the impact, no fluid spilled from the vehicle's fuel system prior to the static rollover test or during any portion of the static rollover test.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: CP5400 TEST TYPE: Frontal Barrier Impact

TEST DATE: 12/09/92 TEST TIME: 1404 AMBIENT TEMP. (°F): 72

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1993/Mazda/MX3/2-door coupe

VEHICLE TEST WEIGHT (LBS): 2735

IMPACT ANGLE (DEG)*: 0

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

MAXIMUM STATIC CRUSH (IN): 14.6

AVERAGE REBOUND (IN): 11.4

DUMMIES:	Driver #354	Passenger #1173
TYPE:	Part 572 B	Part 572 B
LOCATION:	Left front	Right front
RESTRAINT:	Passive 2-point belt	Passive 2-point belt

NUMBER OF DATA CHANNELS: 23

NUMBER OF CAMERAS: HIGH-SPEED 14 REAL-TIME 2

*With respect to tow track centerline.
**Speed trap measurement (± .05 mph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Mazda Motor Corporation

MAKE/MODEL: Mazda/MX3 VIN: JM1EC431XP0204422

BODY STYLE: 2-door coupe MODEL YEAR: 1993

NHTSA NO.: CP5400 COLOR: White

ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 1.6 liter

TRANSMISSION DATA: _5_SPEED, _X_MANUAL, ___AUTOMATIC, _X_FWD, ___RWD,___4WD

DATE VEHICLE RECEIVED: 09/29/92 ODOMETER READING: 80

DEALER'S NAME AND ADDRESS: Mid-Ohio Mazda
4050 Morse Rd.
Columbus, OH 43230

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	No
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
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: Mazda Motor Corporation

DATE OF MANUFACTURE: 08/92 VIN: JM1EC431XP0204422

GVWR: 3141 LBS

GAWR: FRONT: 1768 LBS., REAR: 1387 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Yokahama, 372 All-season, P185/65R14

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

SPARE TIRE (MFR., LINE, SIZE): Bridgestone, T115/70D14

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually adjustable

MAXIMUM WIDTH: 67.1 INCHES

WHEELBASE: 96.5 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: P185/65R14

RECOMMENDED COLD TIRE PRESSURE: FRONT: 32 PSI; REAR: 32 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 2 REAR 4 TOTAL

VEHICLE CAPACITY WEIGHT: 680 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE:	LF	25.6;	RF	25.6;	LR	25.5;	RR	25.5
FULLY LOADED ATTITUDE:	LF	25.1;	RF	25.2;	LR	24.5;	RR	24.6
PRE-TEST ATTITUDE:	LF	24.4;	RF	25.1;	LR	24.4;	RR	24.1
POST-TEST ATTITUDE:	LF	26.9;	RF	26.9;	LR	24.5;	RR	24.1

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	723 LBS.	RIGHT REAR	445 LBS.
LEFT FRONT	736 LBS.	LEFT REAR	442 LBS.
TOTAL FRONT WEIGHT	1459 LBS.	(62.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	887 LBS.	(37.8% OF TOTAL VEHICLE WEIGHT)	

TOTAL DELIVERED WEIGHT 2346 LBS.

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (2346 LBS)

VCW = VEHICLE CAPACITY WEIGHT (680 LBS)

DSC = DESIGNATED SEATING CAPACITY (4)

RCLW*= VCW - 150 (DSC) = 80

TARGET TEST WEIGHT = UDW + RCLW*+ (NO. OF HYBRID II DUMMIES X 164 LBS/DUMMY)

TARGET TEST WEIGHT = 2346 + 80 + 328

TARGET TEST WEIGHT = 2754 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 61 LBS. OF CARGO WEIGHT:

RIGHT FRONT	801 LBS.	RIGHT REAR	565 LBS.
LEFT FRONT	815 LBS.	LEFT REAR	554 LBS.
TOTAL FRONT WEIGHT	1616 LBS.	(59.1% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1119 LBS.	(40.9% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	2735 LBS.	(0.7% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 12 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Rear bumper, rear interior trim, rear seat belts

CG = 39.5 INCHES REARWARD OF FRONT WHEEL CENTERLINE

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

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 921209 NHTSA NO.: CP5400

TEST DATE: 12/09/92 TEST TIME: 1404

TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0

AMBIENT TEMPERATURE AT IMPACT AREA: 72° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 73° 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 153.5; C 161.5; R 152.8

POST-TEST: L 141.2; C 147.1; R 140.8

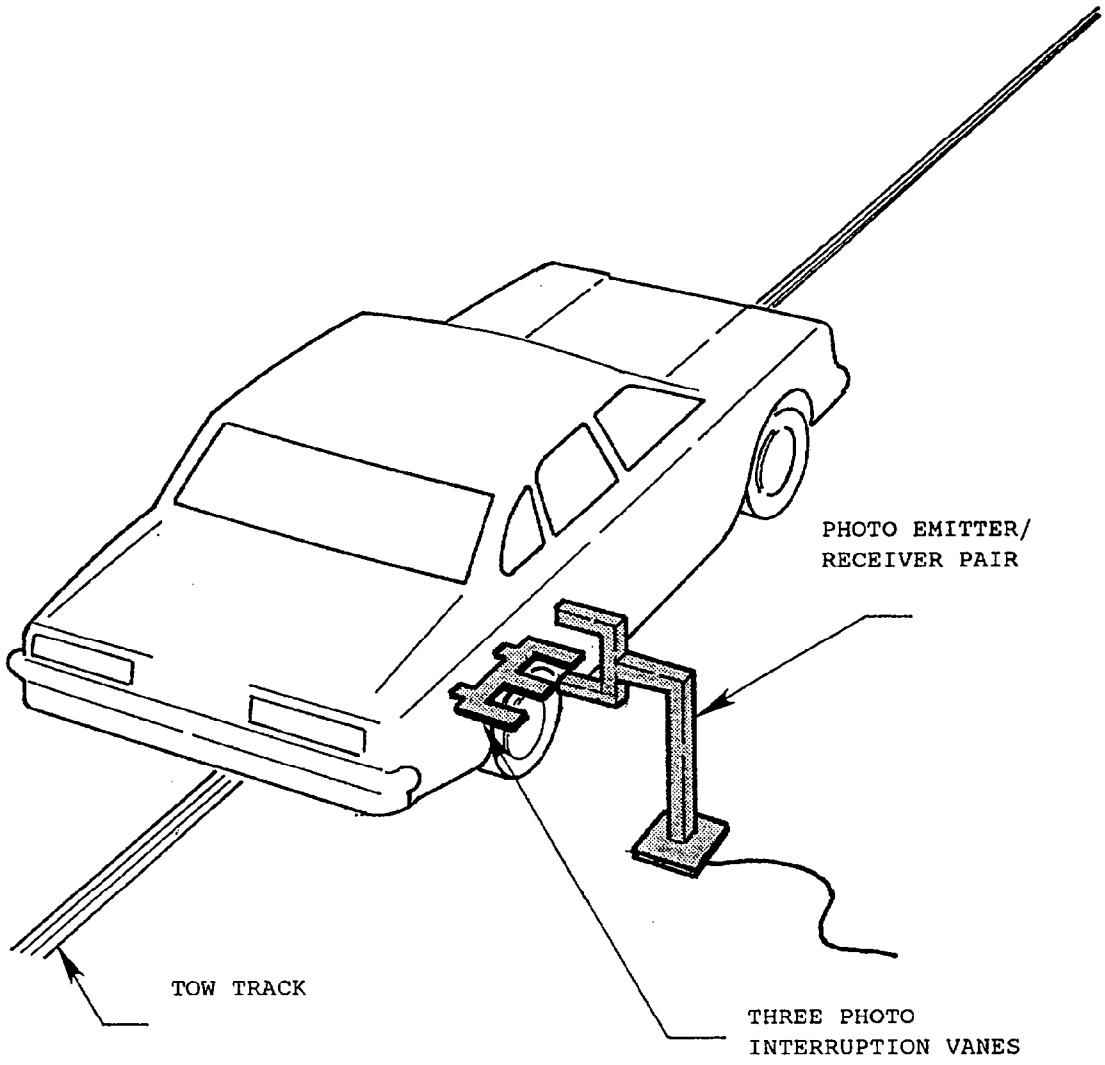
TOTAL CRUSH: L 12.3; C 14.4; R 12.0

AVERAGE CRUSH: 12.9

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 13.1; C 10.1; R 10.9; AVG. 11.4

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears the final emitter/receiver pair 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: Mazda/MX3/2-door coupe

VEHICLE NHTSA NO.: CP5400 ; VIN: JM1EC431XP0204422

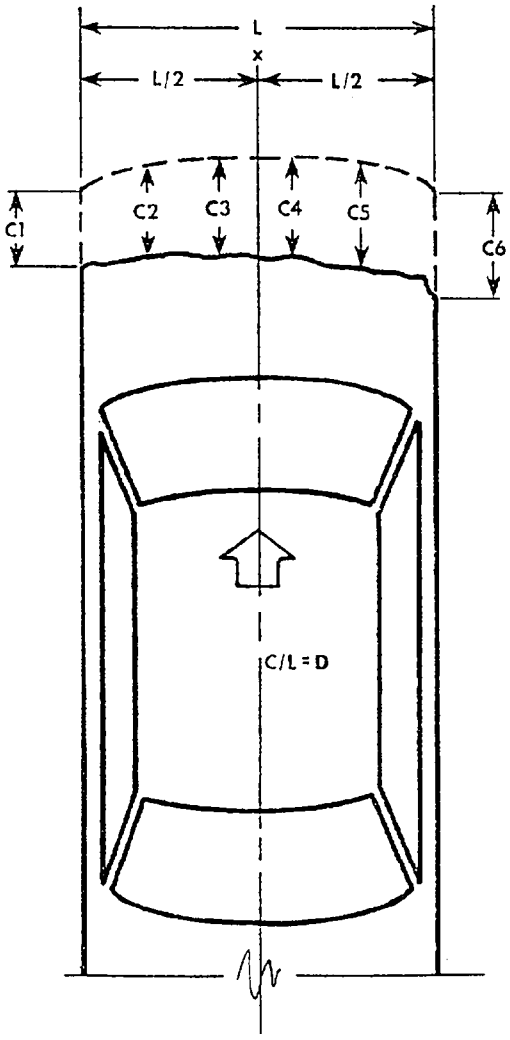
MODEL YEAR: 1993 ; BUILD DATE: 08/92 ; TEST DATE: 12/09/92

VEHICLE SIZE CATEGORY: Sub-compact ; TEST WEIGHT: 2735 LBS.

VEHICLE WHEELBASE: 96.5 INCHES

MAXIMUM WIDTH: 67.1 INCHES

FRONT OVERHANG: 36.4 INCHES



COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH MEASUREMENTS:

C1 = 12.3 INCHES

C2 = 14.2 INCHES

C3 = 14.5 INCHES

C4 = 14.6 INCHES

C5 = 13.9 INCHES

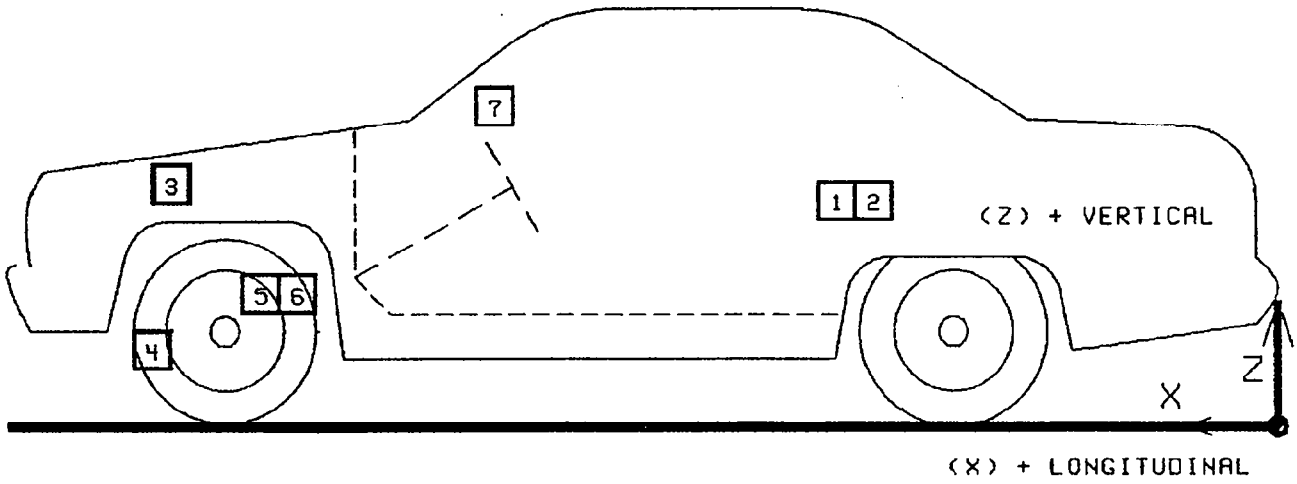
C6 = 12.0 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

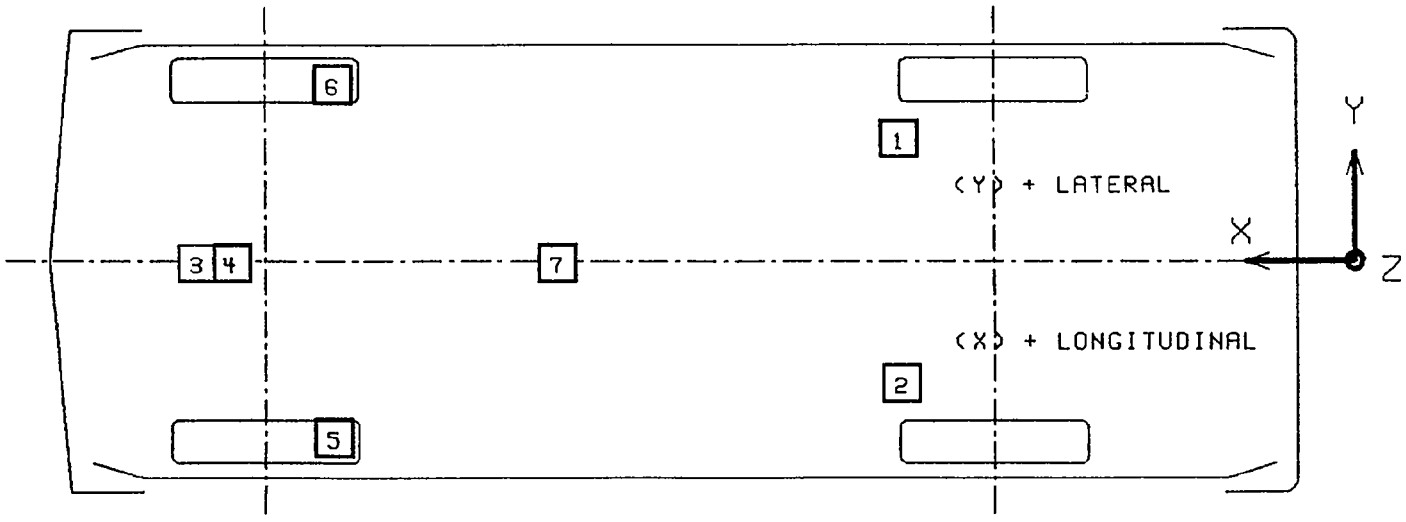
LENGTH OF DAMAGED REGION: L = 58.6 INCHES

FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 921209

No.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION MAX G	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION MAX G	NEGATIVE DIRECTION MSEC
1	LEFT REAR SEAT CROSSMEMBER	PRE	54.4	17.2	14.2				
		POST	54.4	17.2	16.1				
	LONGITUDINAL					1.9	131.9	36.4	60.3
2	RIGHT REAR SEAT CROSSMEMBER	PRE	54.5	-17.2	14.5				
		POST	54.5	-17.2	15.7				
	LONGITUDINAL					2.1	118.0	33.9	58.9
3	ENGINE TOP	PRE	125.6	-0.5	27.9				
		POST	130.5	-1.1	29.6				
	LONGITUDINAL					32.3	49.3	103.7	38.1
4	ENGINE BOTTOM	PRE	126.1	-8.6	8.6				
		POST	122.6	-9.1	9.2				
	LONGITUDINAL					23.6	41.4	99.4	33.0
5	RIGHT BRAKE CALIPER	PRE	126.2	-25.4	11.4				
		POST	125.5	-27.0	11.1				
	LONGITUDINAL					5.0	109.4	57.3	44.5
6	LEFT BRAKE CALIPER	PRE	126.5	25.4	11.0				
		POST	124.1	27.0	10.7				
	LONGITUDINAL					7.2	62.3	83.5	46.0
7	INSTRUMENT PANEL CENTER	PRE	103.0	-0.2	34.0				
		POST	104.4	-0.2	35.2				
	LONGITUDINAL					13.4	102.3	54.5	76.1

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

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

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

CONTRACT NO.: DTNH22-90-C-21003
FROM: Transporation Research Center Inc.
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.: CP5400
MAKE/MODEL/BODY STYLE: Mazda/MX3/2-door coupe
MODEL YEAR: 1993 BODY COLOR: White
VIN: JM1EC431XP0204422
ODOMETER (ARRIVAL): 80 DATE: 09/30/92
ODOMETER (COMPLETION): 86 DATE: 12/09/92
COST: $12,291.00

X AIR CONDITIONER	___ CONSOLE	BRAKES: X POWER
X TINTED GLASS	___ TACHOMETER	FRONT: Disc
X POWER STEERING	___ SPEED CONTROL	REAR: Drum
___ POWER WINDOWS	X REAR WINDOW DEF.	
___ POWER DOOR LOCKS	___ SUN/MOON ROOF	FRONT SEATS: ___ POWER
X RADIO	___ T-TOP	SEAT TYPE: Bucket
X CLOCK	___ TILT STEERING WHEEL	NO. OF SEATS: 4
___ ROOF RACK	___ OTHER OPTIONS: _____	

ENGINE: 4 CYLINDERS; 1.6 LITERS
TRANSMISSION: manual; DRIVE TYPE: Front wheel drive
TIRE SIZE: P185/65R14
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
DRIVER	69.7	36.0	-48.7	83.1	-40.3	10.7	30.3
PASSENGER	-40.3	16.4	-47.5	53.9	-37.8	23.2	27.5

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	927	1018
PASSENGER	937	1039

HEAD INJURY CRITERIA**

	HIC	TIME t_1 (MSEC)	TIME t_2 (MSEC)
DRIVER	450	64.9	100.9
PASSENGER	504	68.1	104.1

CHEST MAXIMUM RESULTANT ACCELERATION*

	ACCEL. (G)	TIME t_1 (MSEC)	TIME t_2 (MSEC)
DRIVER	45.2	72.5	75.6
PASSENGER	41.1	71.4	74.4

*Defined as equal to or exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #354	PASSENGER #1173
HEAD	Chest	Chest
CHEST	None	None
ABDOMEN	None	None
LEFT KNEE	Instrument panel	Instrument panel
RIGHT KNEE	Instrument panel	Instrument panel

DOOR OPENING:

	LEFT	RIGHT
FRONT	Easy	Easy
REAR	NA	NA

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	None	None
REAR	NA	NA

GLAZING DAMAGE:

None

OTHER NOTABLE IMPACT EFFECTS:

None

DUMMY KINEMATIC SUMMARY

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated downward impacting the dummy's chest. The driver dummy came to rest in the driver's seat restrained by the two-point passive shoulder belt. The dummy then rebounded rearward and slightly to the left, into the seat back as the dummy's head rotated rearward impacting the head restraint. The driver dummy came to rest in the driver's seat leaning slightly to the left, restrained by the two-point passive shoulder belt.

Right Front Passenger Dummy

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated downward impacting the dummy's chest. The right front passenger dummy was restrained by the two-point passive shoulder belt. The dummy rebounded rearward and slightly to the right, into the seat back as the dummy's head rotated rearward impacting the head restraint. The right front passenger dummy came to rest in the right front passenger seat rotated slightly to the left and leaning slightly to the right, restrained by the two-point passive shoulder belt.

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

MAKE/MODEL: Mazda/MX3 VIN: JM1EC431XP0204422

BODY STYLE: 2-door coupe NHTSA NO.: CP5400

DATE OF MANUFACTURE: 08/92

CONVENIENCE HOOKS:

DEVICE TO STOW SEAT BELT WEBBING TO FACILITATE ENTERING OR EXITING THE VEHICLE AUTOMATICALLY RELEASES THE WEBBING WHEN THE IGNITION IS TURNED TO THE "ON" OR "START" POSITION.

Not applicable, the vehicle's restraint system does not include convenience hooks or devices to stow seat belt webbing.

WEBBING TENSION - RELIEVING DEVICE:

DO OUTBOARD SEATING POSITION SEAT BELTS HAVE WEBBING TENSION - RELIEVING DEVICES?(check one): ___No___

IF YES:

MAXIMUM SLACK RECOMMENDED IN OWNER'S MANUAL: _____ INCHES

DOES OWNER'S MANUAL WARN THAT INTRODUCING SLACK BEYOND THE AMOUNT SPECIFIED CAN SIGNIFICANTLY REDUCE THE EFFECTIVENESS OF THE SHOULDER BELT? _____ YES _____ NO

IF NO, EXPLAIN:

IS THE WEBBING TENSION - RELIEVING DEVICE CANCELLED EACH TIME THE ADJACENT DOOR IS OPENED? _____ YES _____ NO

OPEN-BODY VEHICLE (without doors): DOES THE MANUAL MEANS TO CANCEL THE WEBBING TENSION - RELIEVING DEVICE OPERATE PROPERLY? _____ YES _____ NO

IF NO, EXPLAIN:

BELT CONTACT FORCE:

BELT CONTACT FORCE ON CHEST OF TEST DUMMY: 0.1 POUNDS

_____ NOT APPLICABLE, THE VEHICLE'S SEAT BELT SYSTEM INCLUDED A WEBBING TENSION-RELIEVING DEVICE.

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 = continuous 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

__X__ Other: The word "BELTS" appears directly below the symbol 101-80.

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 PROTECTON 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

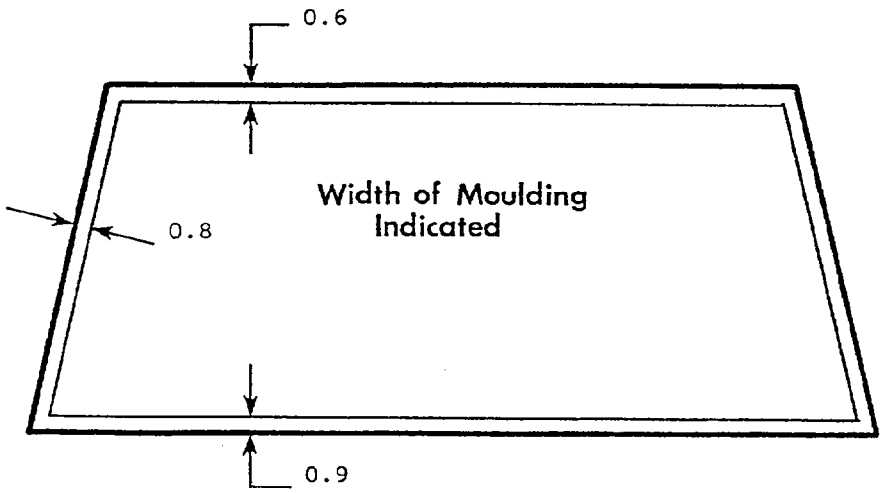
DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:
Plastic trim around outer perimeter, adhesive around inner perimeter.

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	77.6	77.6	100
LEFT SIDE	77.6	77.6	100
TOTAL	155.2	155.2	100

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 73° 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:

A = 43.8

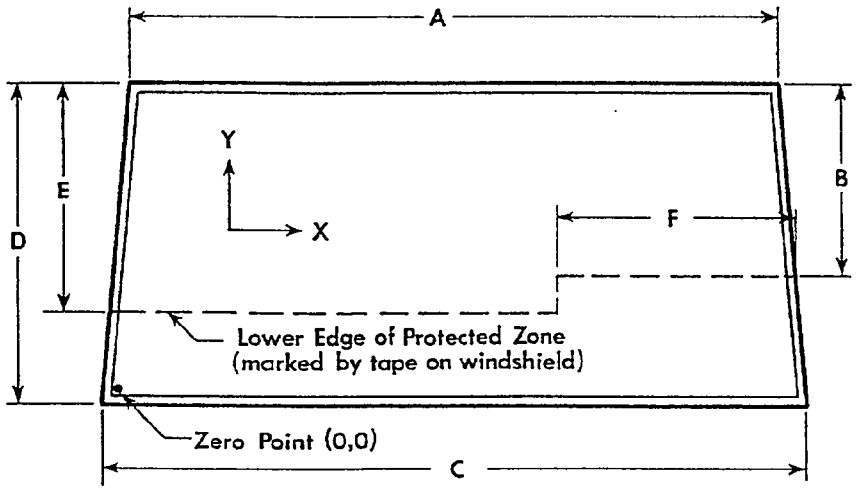
B = 14.8

C = 61.5

D = 28.5

E = 19.6

F = 23.0



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:	Mazda/MX3
NHTSA NO.:	CP5400
FUEL SYSTEM CAPACITY:	13.2 GALLONS (FROM OWNER'S MANUAL)
USABLE CAPACITY:	12.7 GALLONS (FURNISHED BY COTR)
TEST VOLUME RANGE:	11.7 GALLONS TO 11.9 GALLONS (92-94% OF USABLE)
ACTUAL TEST VOLUME:	11.8 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 in front of the rear axle. The fuel lines run along the left side to the front. The fuel filler 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.: CP5400 ; TEST DATE: 12/09/92

VEHICLE MAKE/MODEL/BODY STYLE: Mazda/MX3/2-door coupe

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:

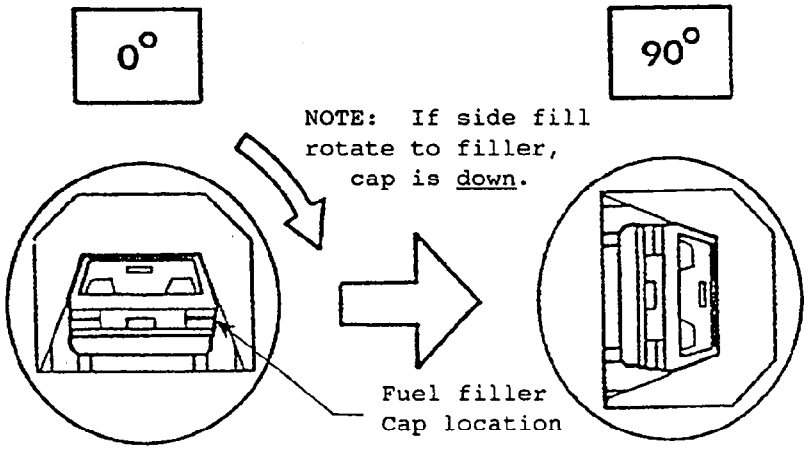
	TEST RESULTS	MAXIMUM ALLOWABLE
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 OZ.	1 OZ.
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 OZ.	5 OZ.
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 OZ.	1 OZ./1 MIN.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CP5400
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:

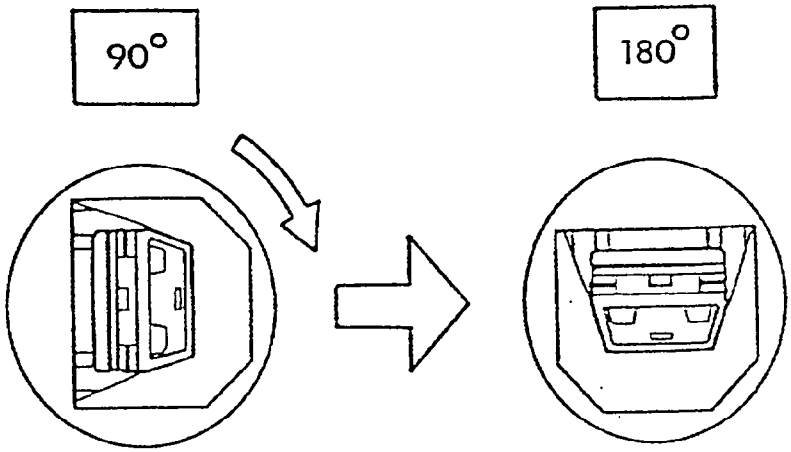
0° TO 90° ROTATION (FUEL FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CP5400
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:

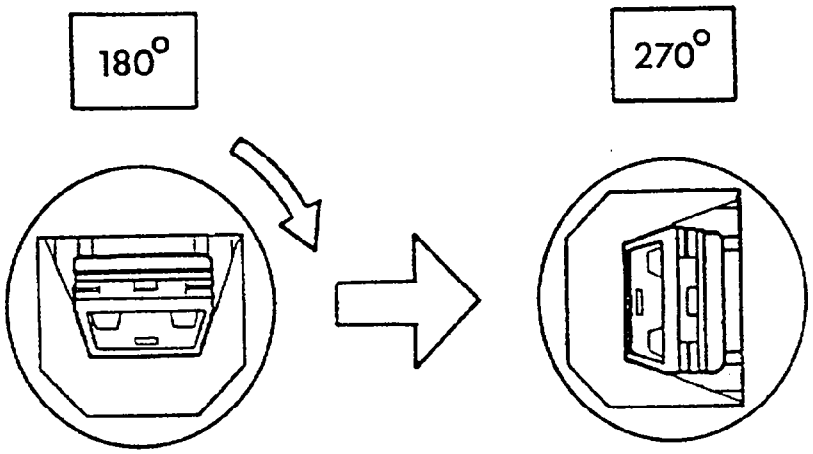
90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CP5400
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:

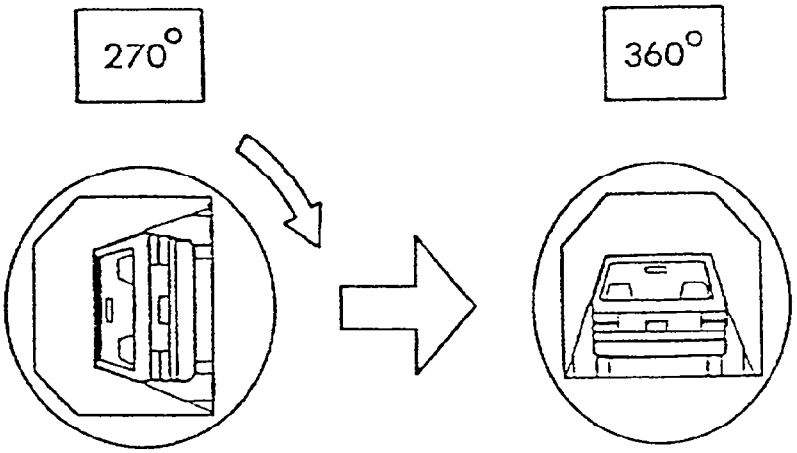
180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CP5400
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:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
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

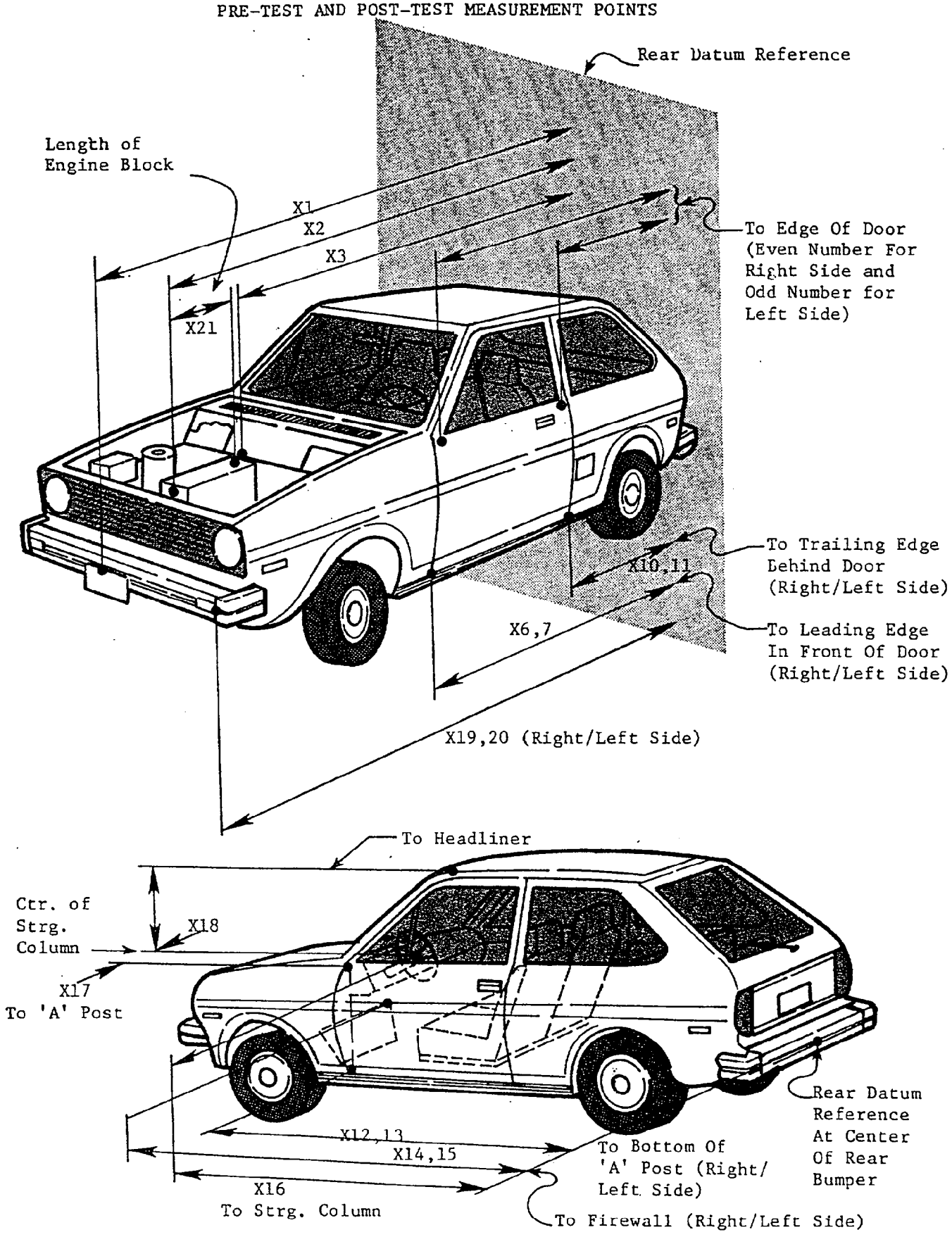


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

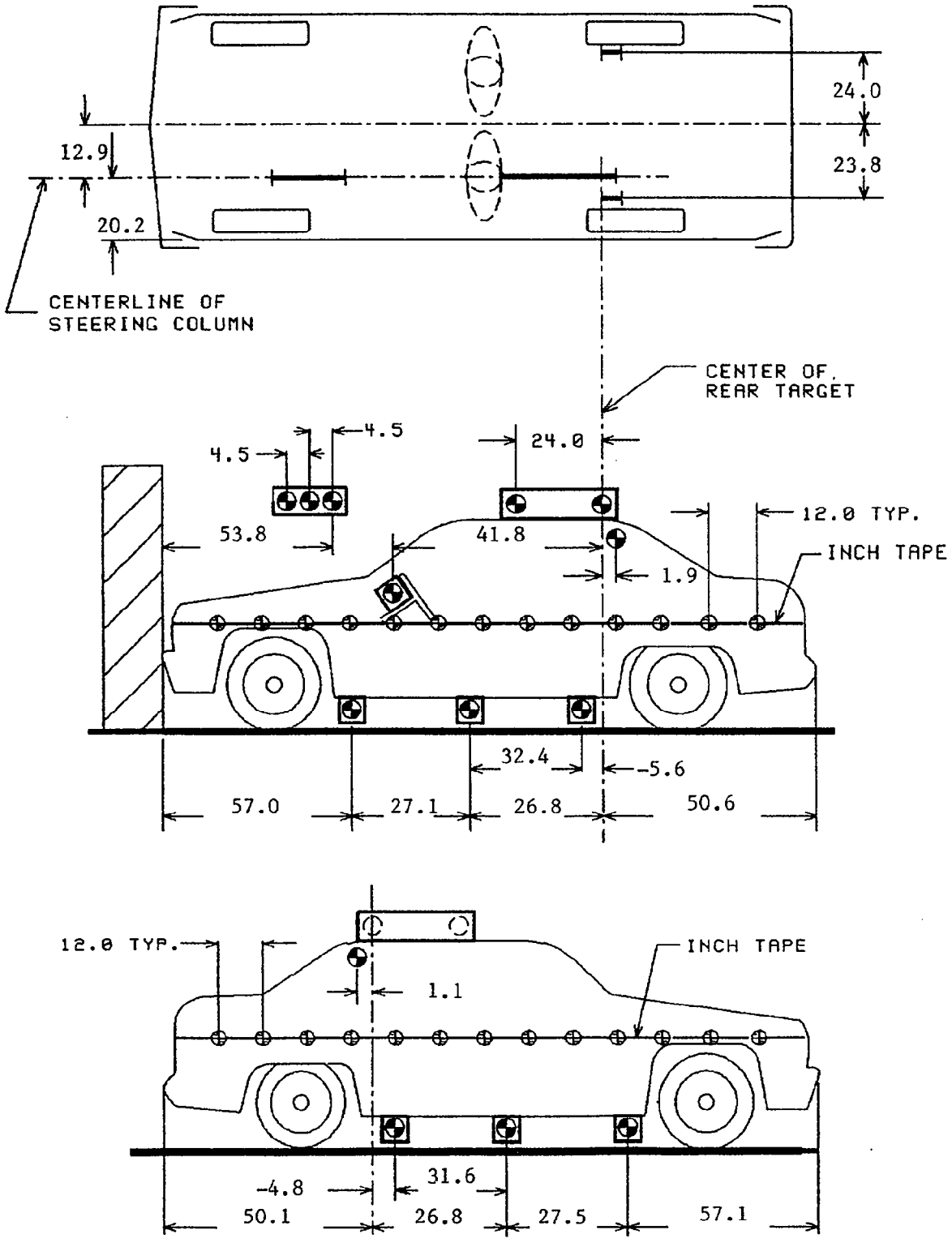
VEHICLE MAKE/MODEL: Mazda/MX3 TEST NUMBER: 921209

ALL MEASUREMENTS ARE IN INCHES

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	161.5	147.1	14.4
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	137.9	132.1	5.8
X3	REAR SURFACE OF VEHICLE TO FIREWALL	117.6	116.2	1.4
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	104.6	103.6	1.0
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	104.2	104.4	-0.2
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	104.8	103.6	1.2
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	104.2	104.7	-0.5
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	53.2	52.3	0.9
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	52.6	53.0	-0.4
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	59.9	58.8	1.1
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	59.4	59.9	-0.5
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	105.1	103.2	1.9
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	104.4	104.2	0.2
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	115.9	115.6	0.3
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	116.5	114.2	2.3
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	87.0	87.8	-0.8
X17	CENTER OF STEERING COLUMN TO "A" POST	12.5	11.6	0.9
X18	CENTER OF STEERING COLUMN TO HEADLINER	16.1	16.5	-0.4
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	152.8	140.8	12.0
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	153.5	141.2	12.3
X21	LENGTH OF ENGINE BLOCK	19.0	19.0	0.0

FIGURE 8

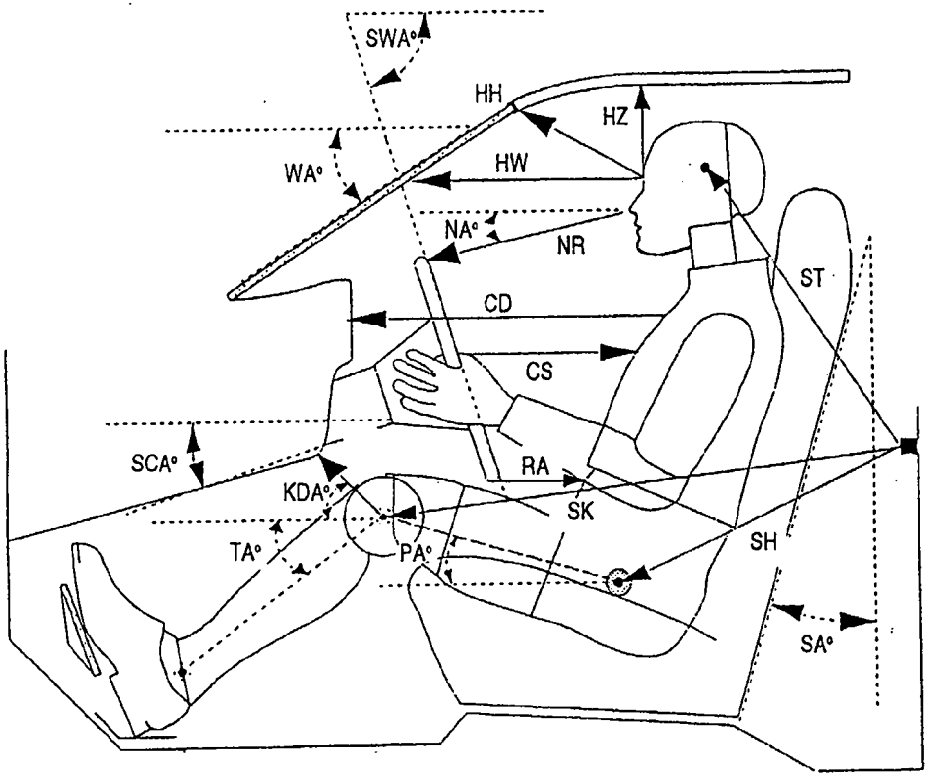
VEHICLE TARGET LOCATIONS

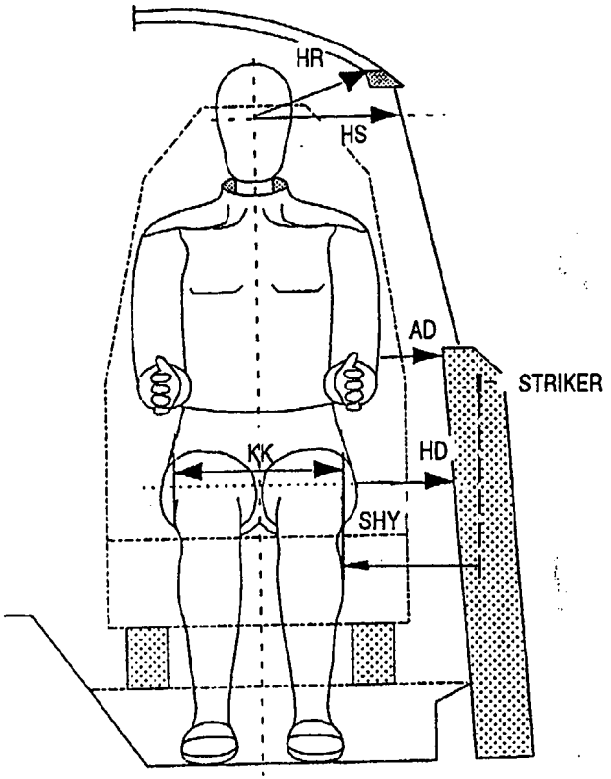


ALL DISTANCE MEASUREMENTS ARE IN INCHES.

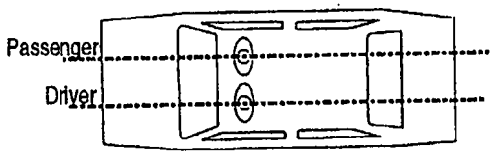
FIGURE 9

DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS





VERTICAL LONGITUDINAL PLANE



VERTICAL TRANSVERSE PLANE

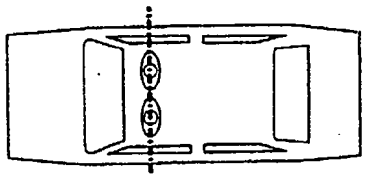


TABLE 14 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

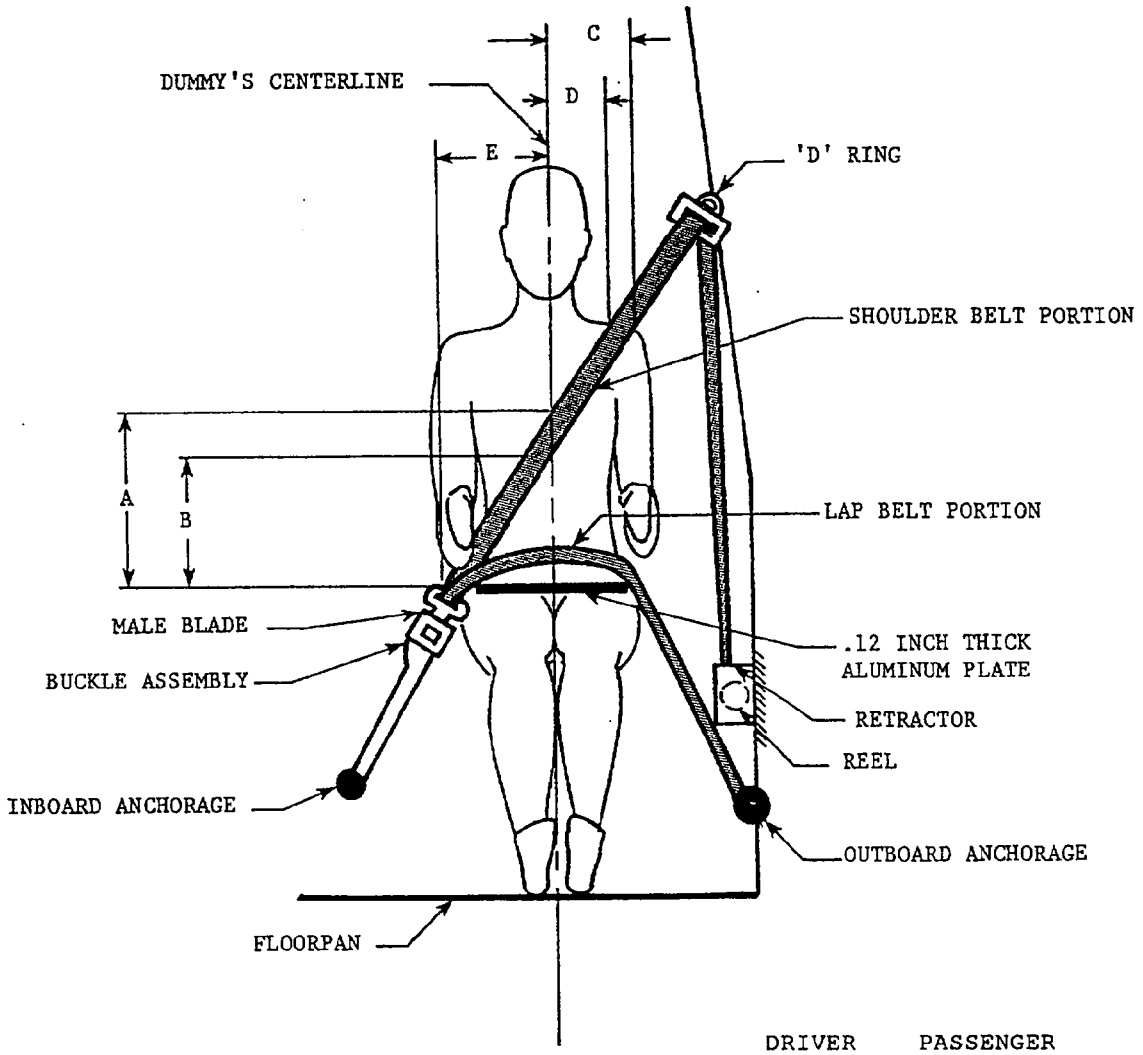
DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #354)	PASSENGER (SERIAL #1173)
WA°	WINDSHIELD ANGLE	26°	26°
SWA°	STEERING WHEEL ANGLE	19°	NA
SCA°	STEERING COLUMN ANGLE	14°	NA
SA°	SEAT BACK ANGLE	20°	19°
HZ	HEAD TO ROOF	5.6	5.9
HH	HEAD TO HEADER	14.5	13.2
HW	HEAD TO WINDSHIELD	21.1	22.3
HR	HEAD TO SIDE HEADER	6.2	6.1
NR	NOSE TO RIM	17.0	NA
NA	NOSE TO RIM ANGLE	13°	NA
CD	CHEST TO DASH	21.5	21.8
CS	STEERING WHEEL TO CHEST	14.6	NA
RA	RIM TO ABDOMEN	8.0	NA
KDL	LEFT KNEE TO DASH	7.4	7.5
KDR	RIGHT KNEE TO DASH	7.9	7.2
KDA	OUTBOARD KNEE TO DASH ANGLE	40°	42°
PA°	PELVIC ANGLE	25°	23°
TA°	TIBIAL ANGLE	36°	35°
KK	KNEE TO KNEE	12.6	9.8
ST*	STRIKER TO HEAD	21.0	20.2
	STRIKER TO HEAD ANGLE	-29°	-27°
SK*	STRIKER TO KNEE	33.1	34.8
	STRIKER TO KNEE ANGLE	4°	3°
SH*	STRIKER TO H-POINT	20.1	22.1
	STRIKER TO H-POINT ANGLE	20°	20°
SHY	STRIKER TO H-POINT (Y DIR.)	8.2	8.5
HS	HEAD TO SIDE WINDOW	10.5	11.2
HD	H-POINT TO DOOR	6.6	7.0
AD	ARM TO DOOR	4.2	4.2

THE SEAT BACK ANGLE (SA°) IS MEASURED RELATIVE TO VERTICAL, ALL OTHER ANGLES ARE MEASURED RELATIVE TO HORIZONTAL.

*A negative angle indicates the measurement point was located above the striker.

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 10 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUM. PLATE TO BELT UPPER EDGE	15.1	14.8
B - TOP SURFACE OF ALUM. PLATE TO BELT LOWER EDGE	12.0	11.5
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	4.9	4.8
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	2.2	2.0

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 11

CAMERA POSITIONS

4, 7, 8

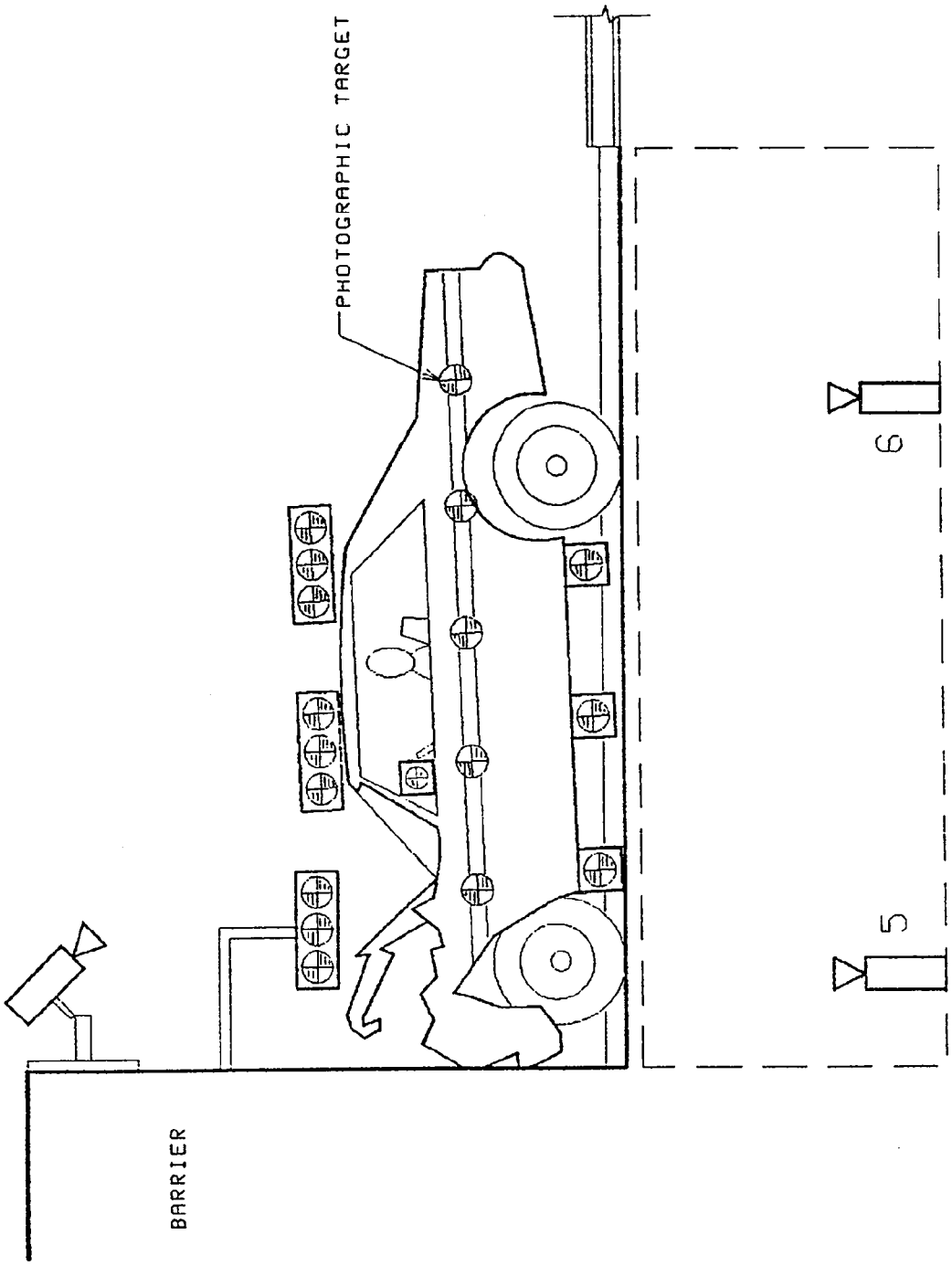


FIGURE 11

CAMERA POSITIONS, CONTINUED

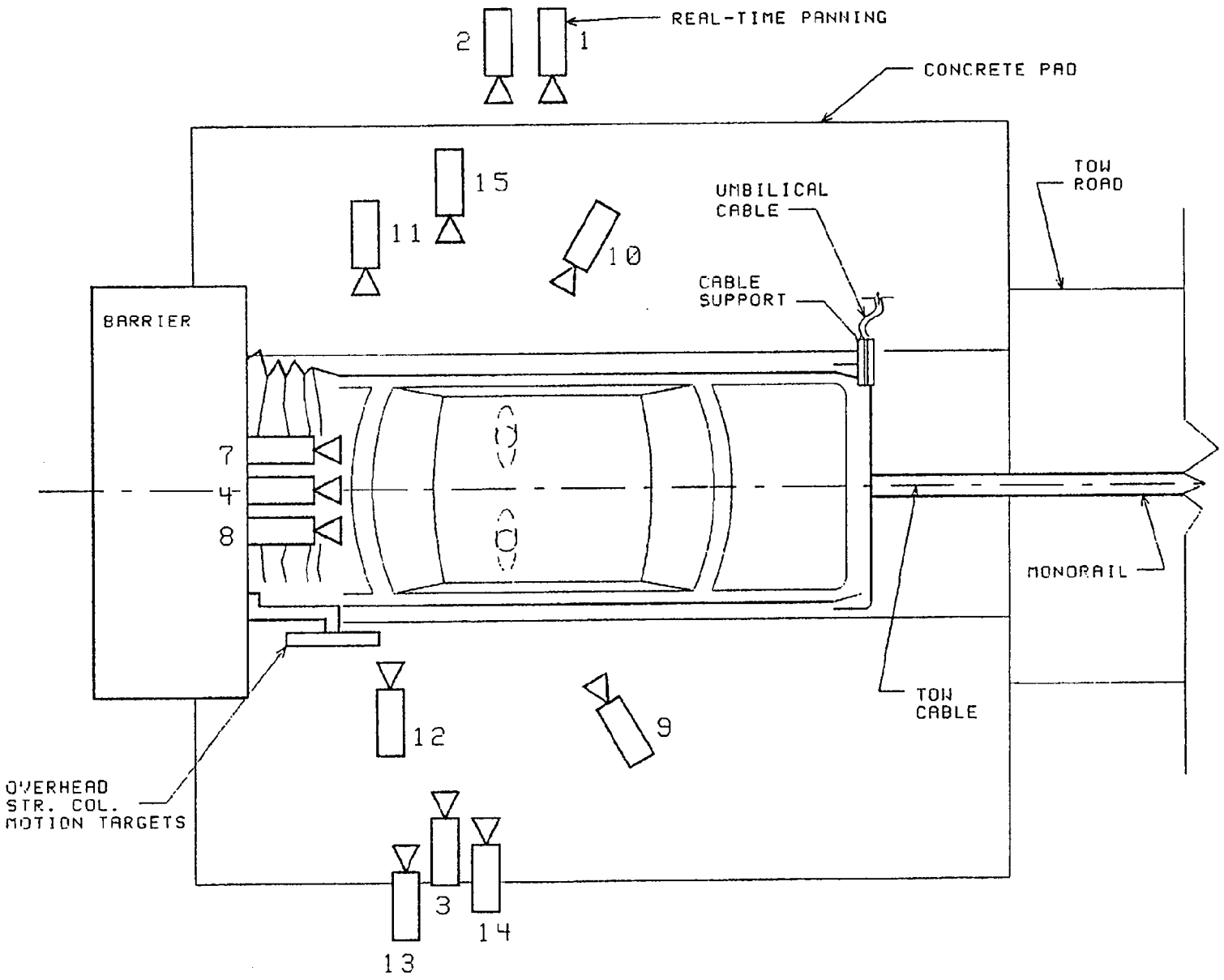


TABLE 15 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 921209 VEHICLE: Mazda/MX3/2-door coupe

CAMERA NO.	VIEW	CAMERA POSITIONS (IN)* X	Y	Z	ANGLE** (DEG)	FILM PLANE TO HEAD TARGET(IN)	LENS (MM)	FILM SPEED (FPS)
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	498
3	Left vehicle crush	-41.5	295.0	44.0	-4	201.0	25	985
4	Windshield front view	-6.0	0.0	88.0	-40	NA	13	500
5	Pit-left subframe sidemember	-8.0	29.0	-16.0	90	NA	13	1002
6	Pit-right subframe sidemember	-7.0	30.0	-12.0	90	NA	13	995
7	Passenger front view	-4.5	-13.8	93.0	-50	NA	17	510
8	Driver front view	-6.8	14.5	93.0	-50	NA	17	498
9	Driver kinematics	-157.3	116.0	87.0	-27	105.0	25	500
10	Passenger kinematics	-152.1	-116.0	87.0	-26	103.0	25	500
11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50	488
12	Left windshield instrusion	-53.0	309.4	42.3	0	NA	50	490
13	Steering column motion	-116.0	285.0	103.0	-14	NA	25	500
14	Steering column motion	-116.0	285.0	75.1	-9	NA	25	495
15	Passenger kinematics	-38.8	-293.0	45.3	-4	246.0	25	990
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

APPENDIX A

PHOTOGRAPHS

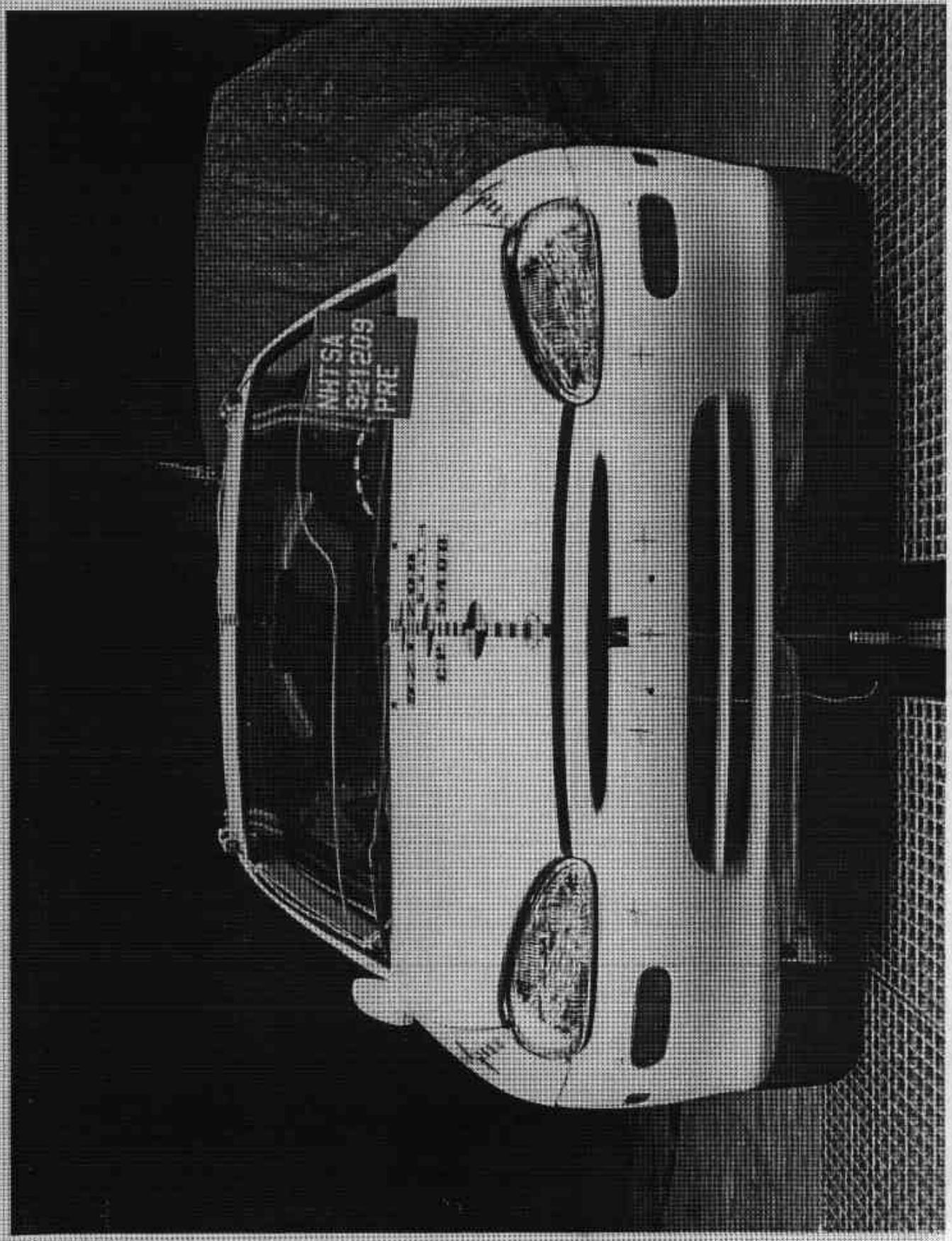


FIGURE A-1. PRE-TEST FRONT VIEW

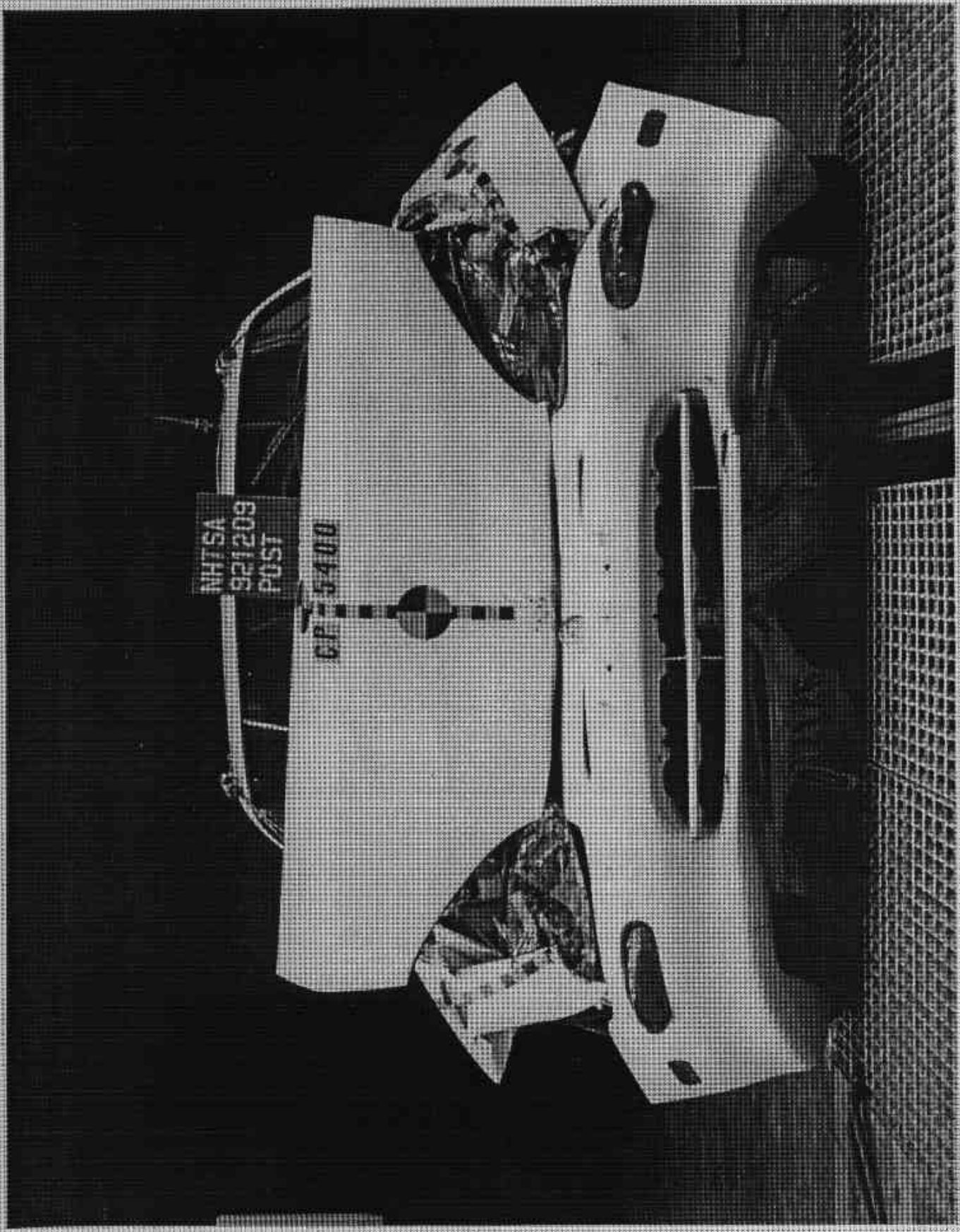


FIGURE A-2. POST-TEST FRONT VIEW

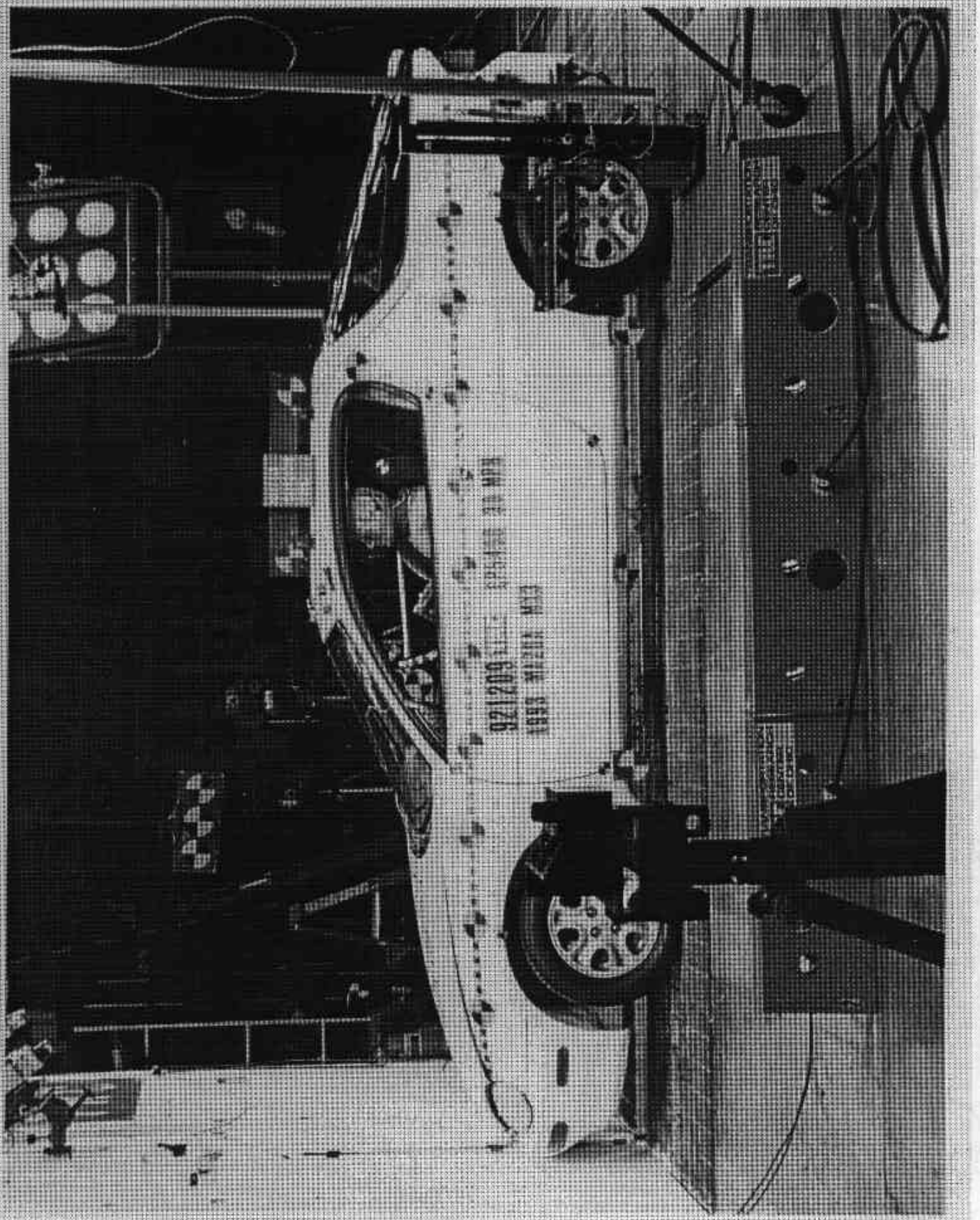


FIGURE A-3. PRE-TEST LEFT SIDE VIEW

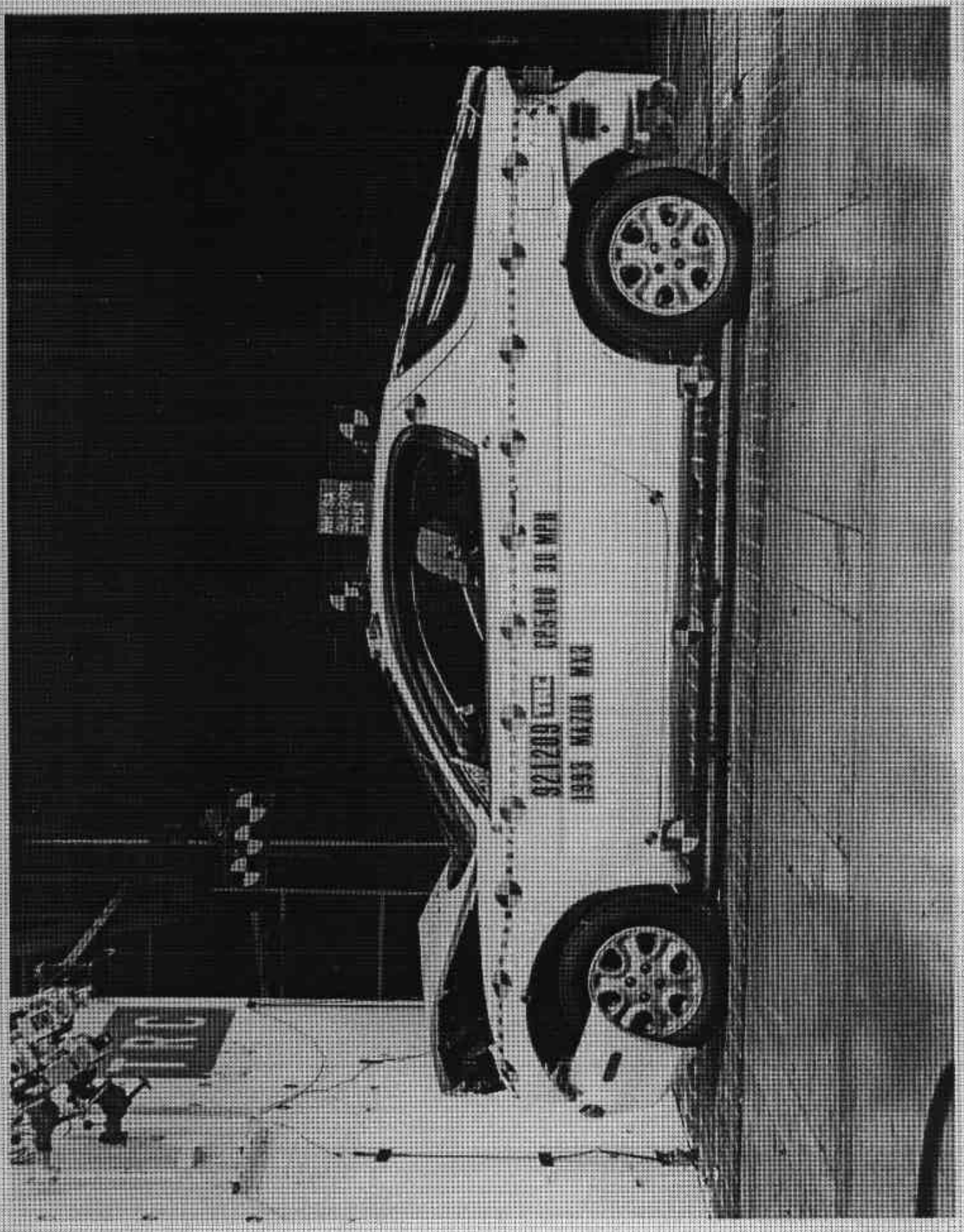


FIGURE A-4. POST-TEST LEFT SIDE VIEW

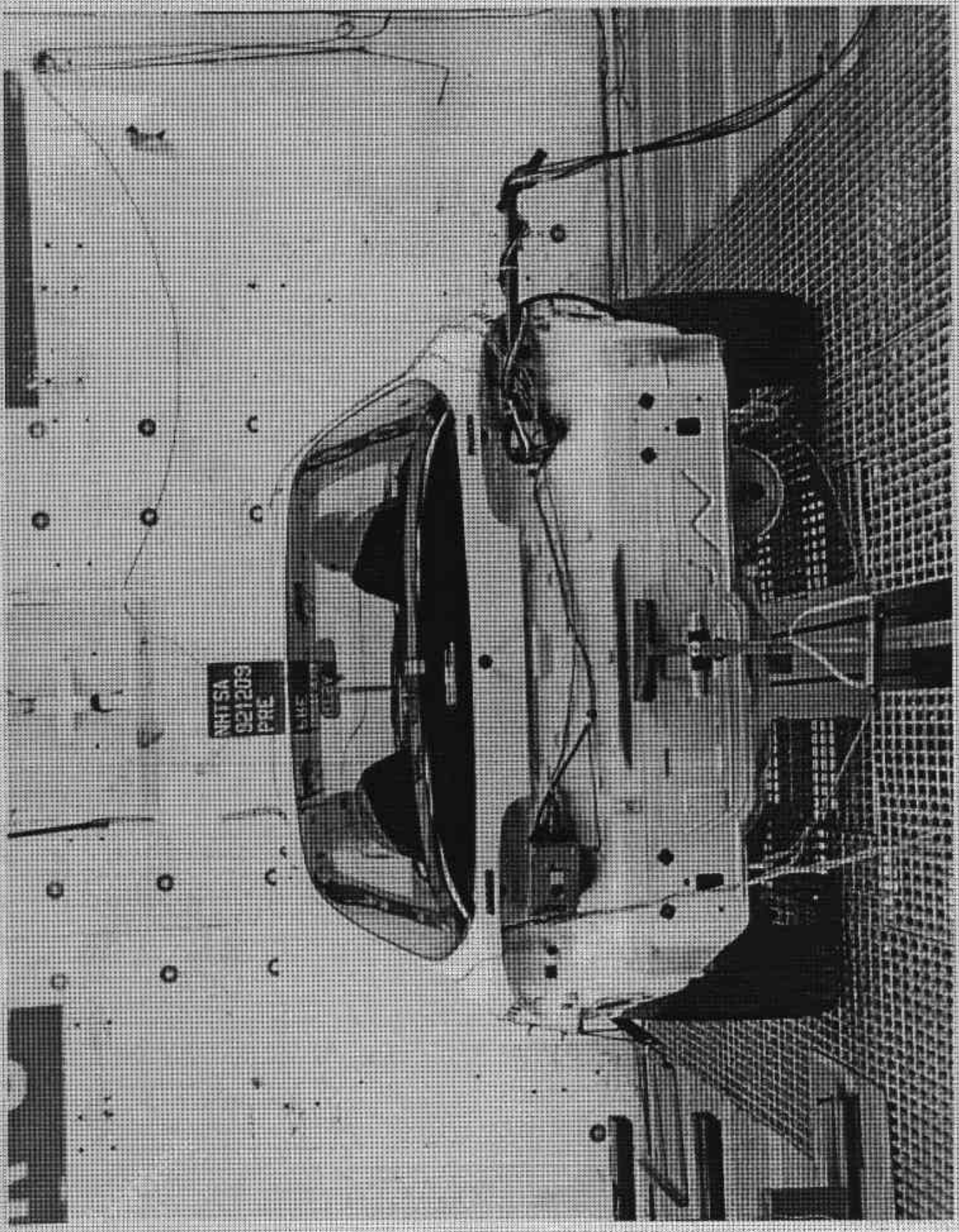


FIGURE A-5. PRE-TEST REAR VIEW

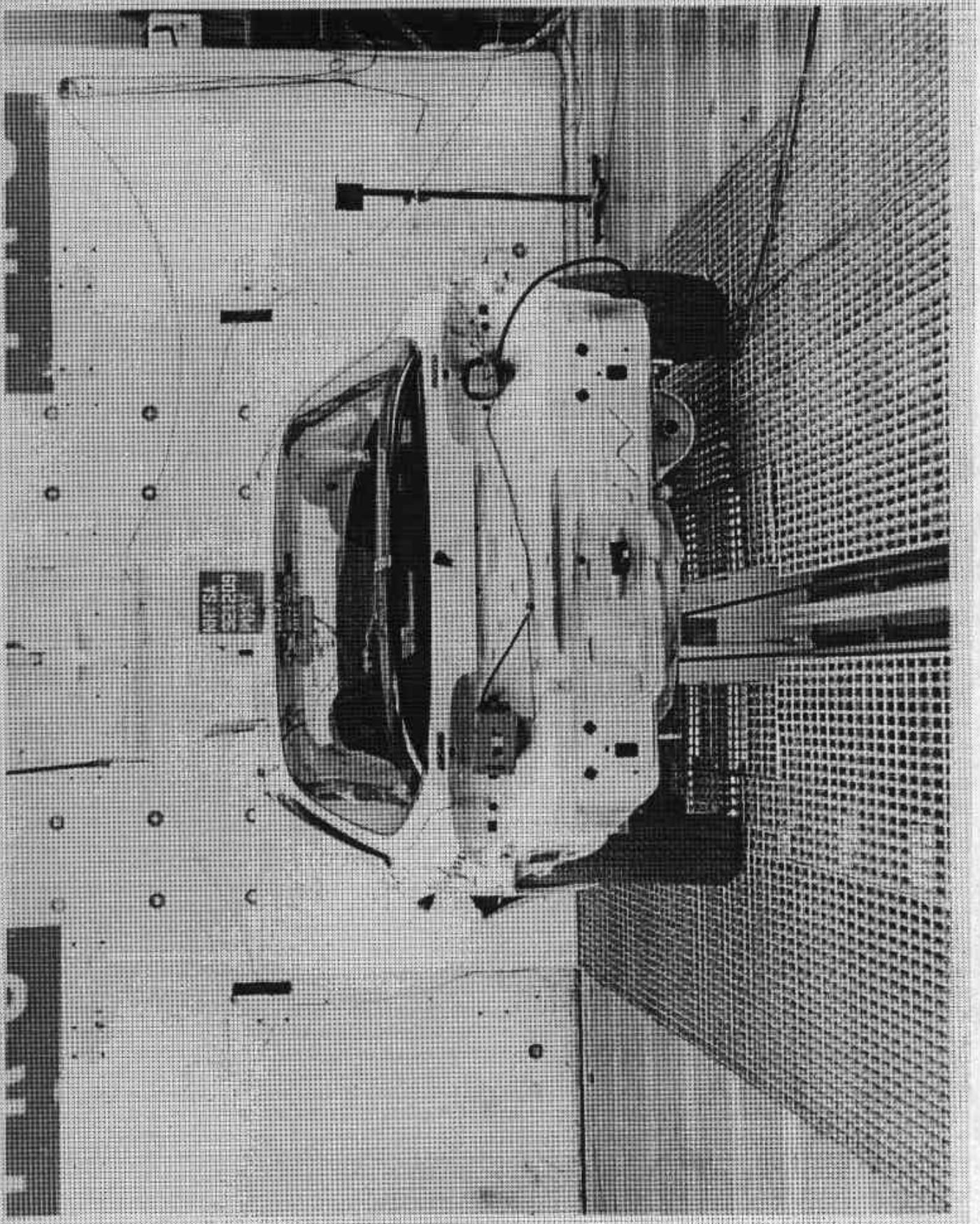


FIGURE A-6. POST-TEST REAR VIEW

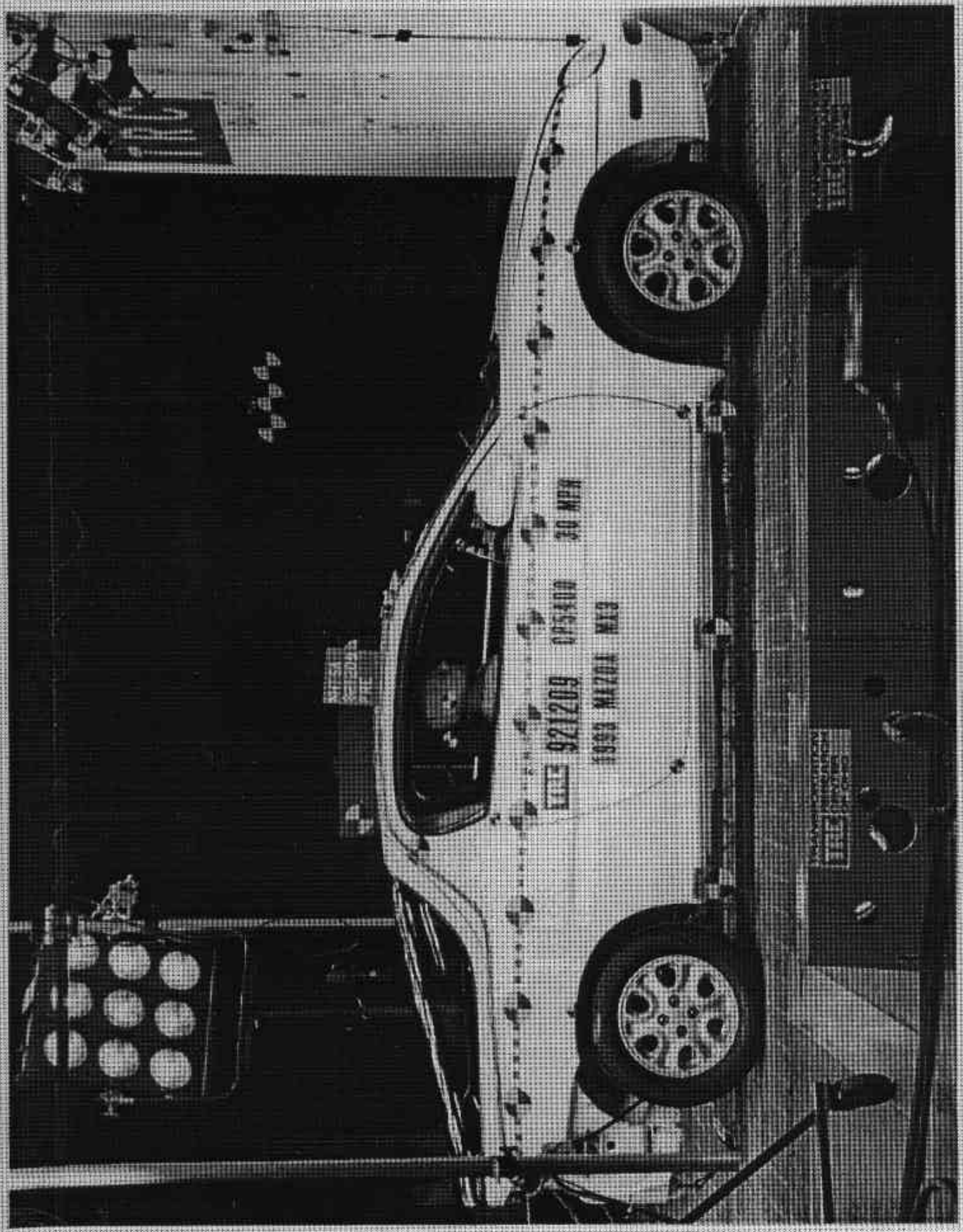


FIGURE A-7. PRE-TEST RIGHT SIDE VIEW

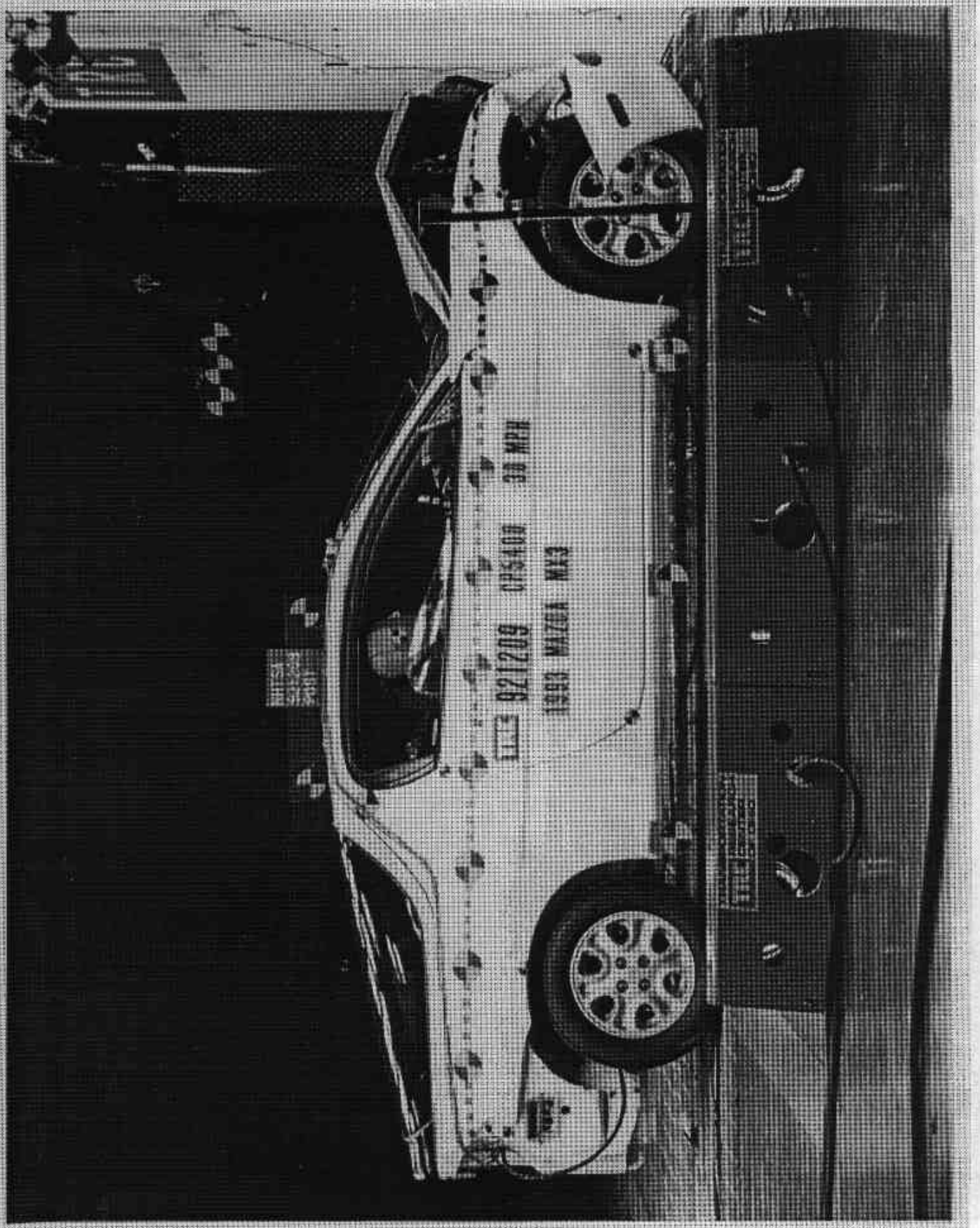


FIGURE A-8. POST-TEST RIGHT SIDE VIEW

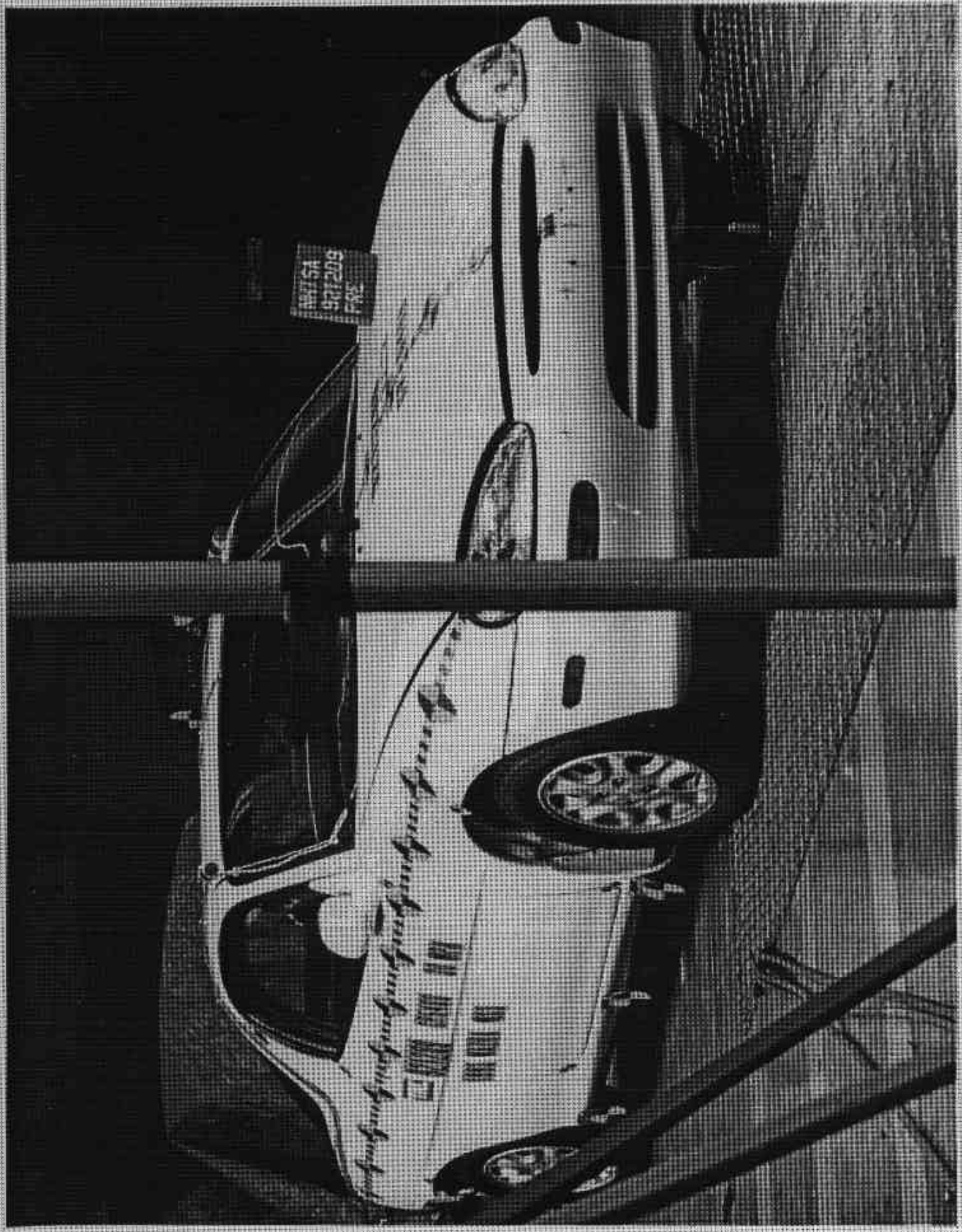


FIGURE A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

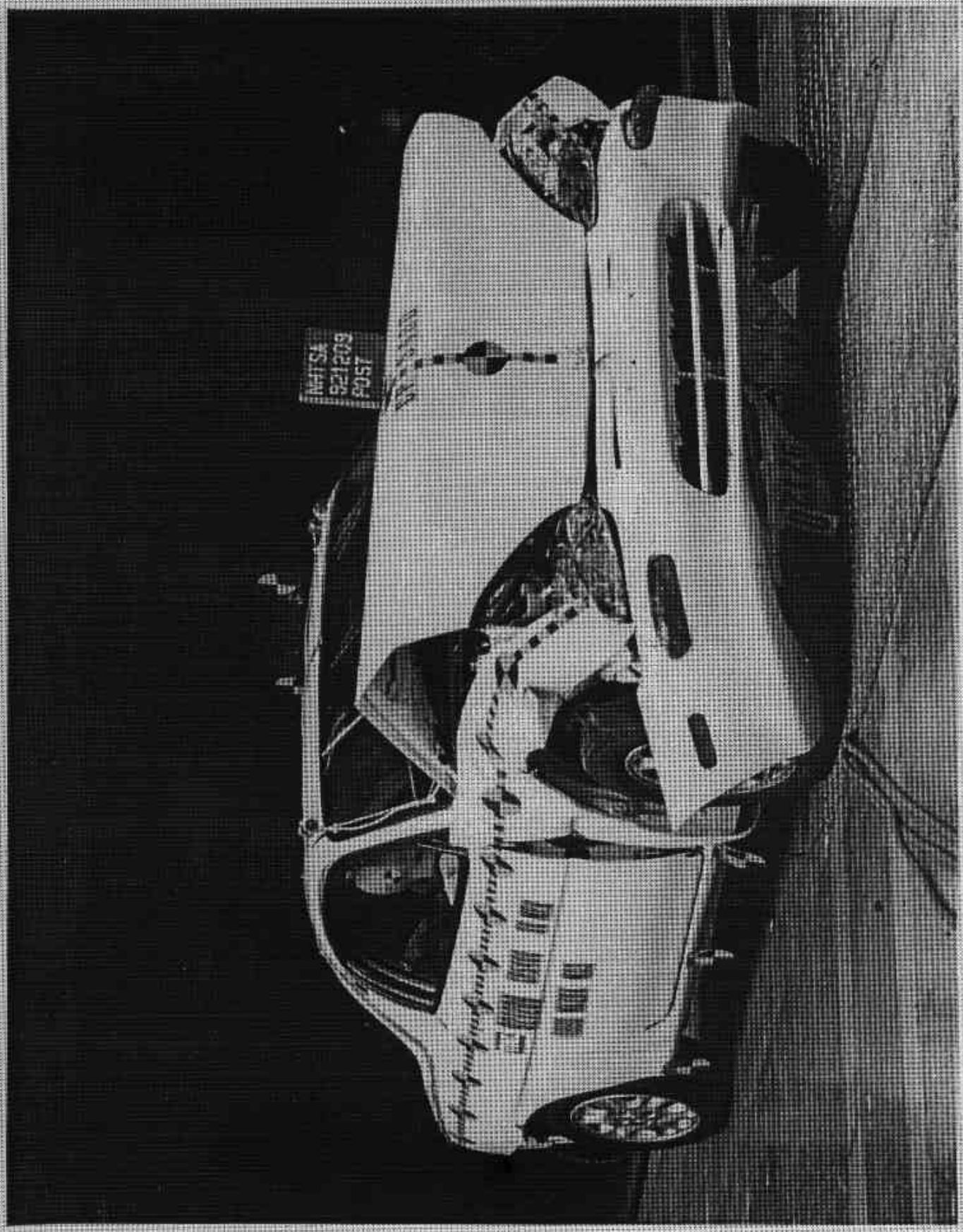


FIGURE A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

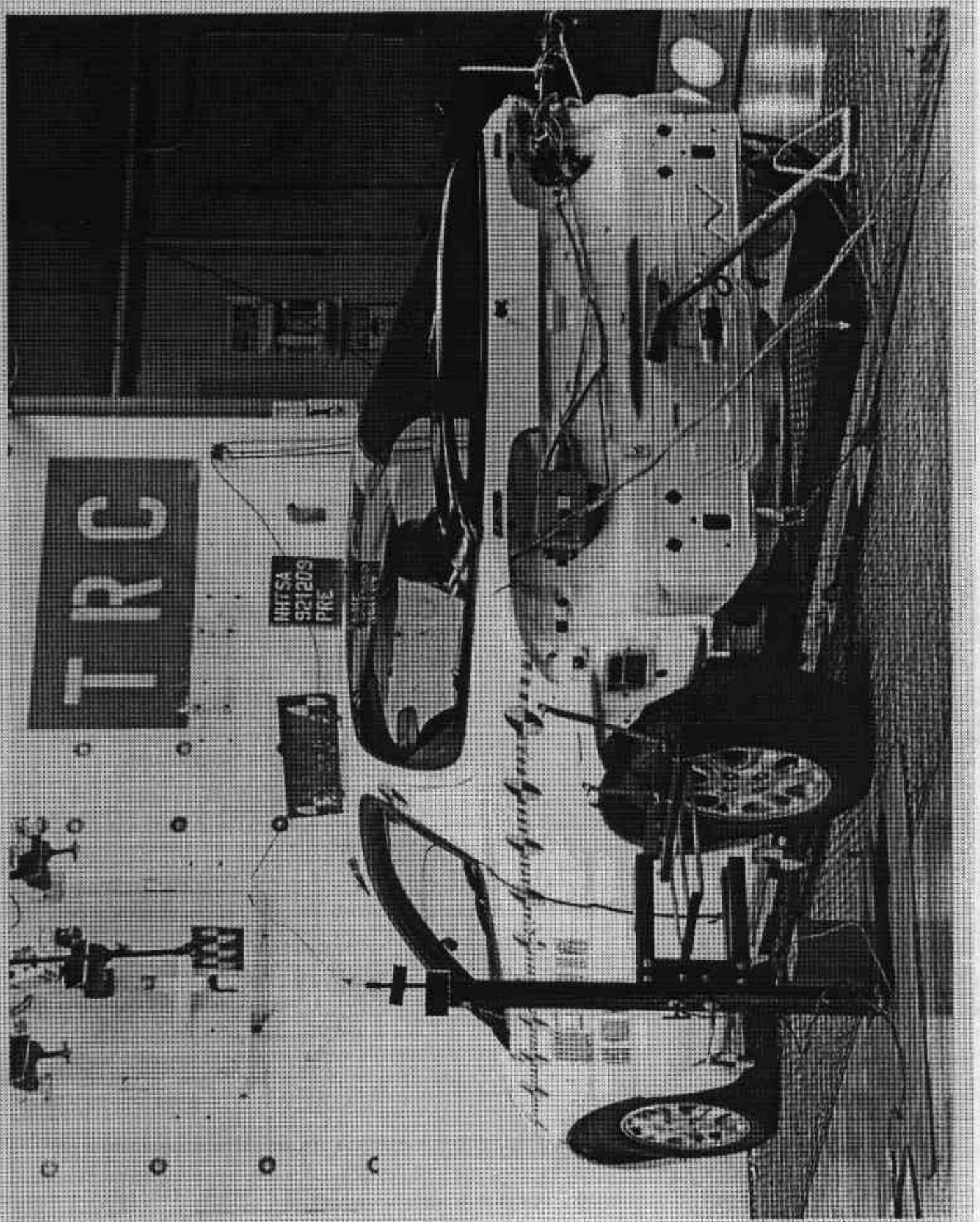


FIGURE A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

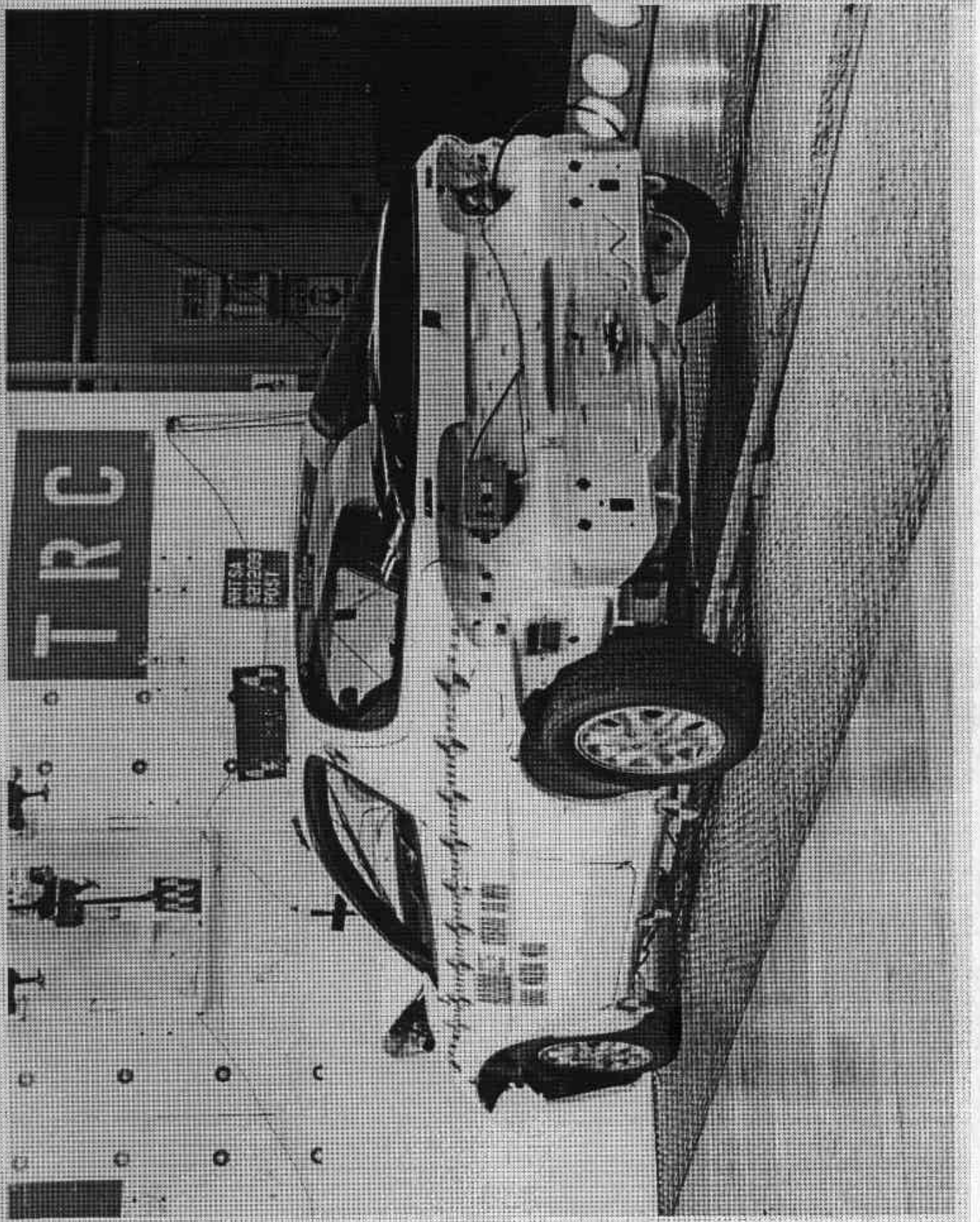


FIGURE A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW

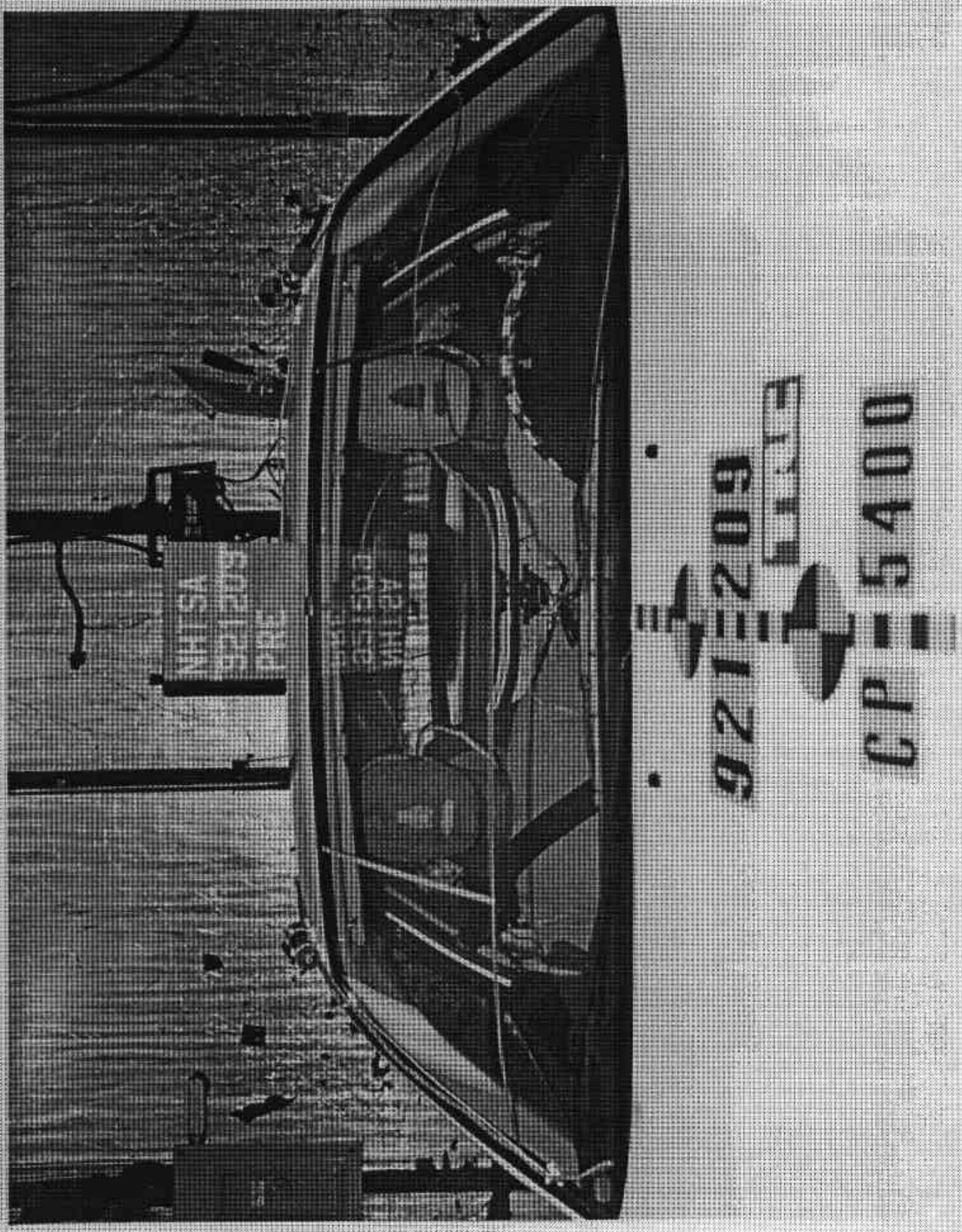


FIGURE A-13. PRE-TEST WINDSHIELD VIEW

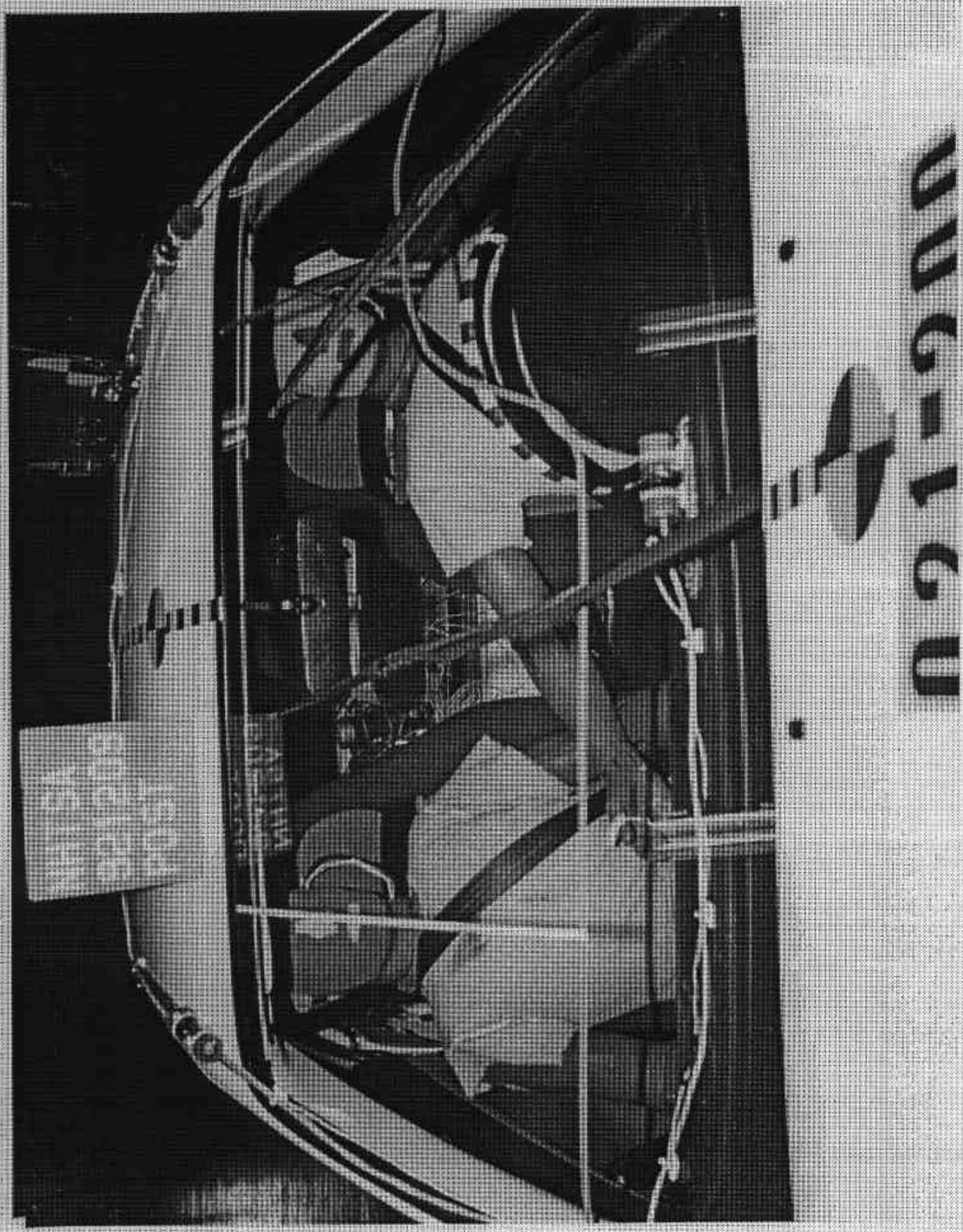


FIGURE A-14. POST-TEST WINDSHIELD VIEW

921209

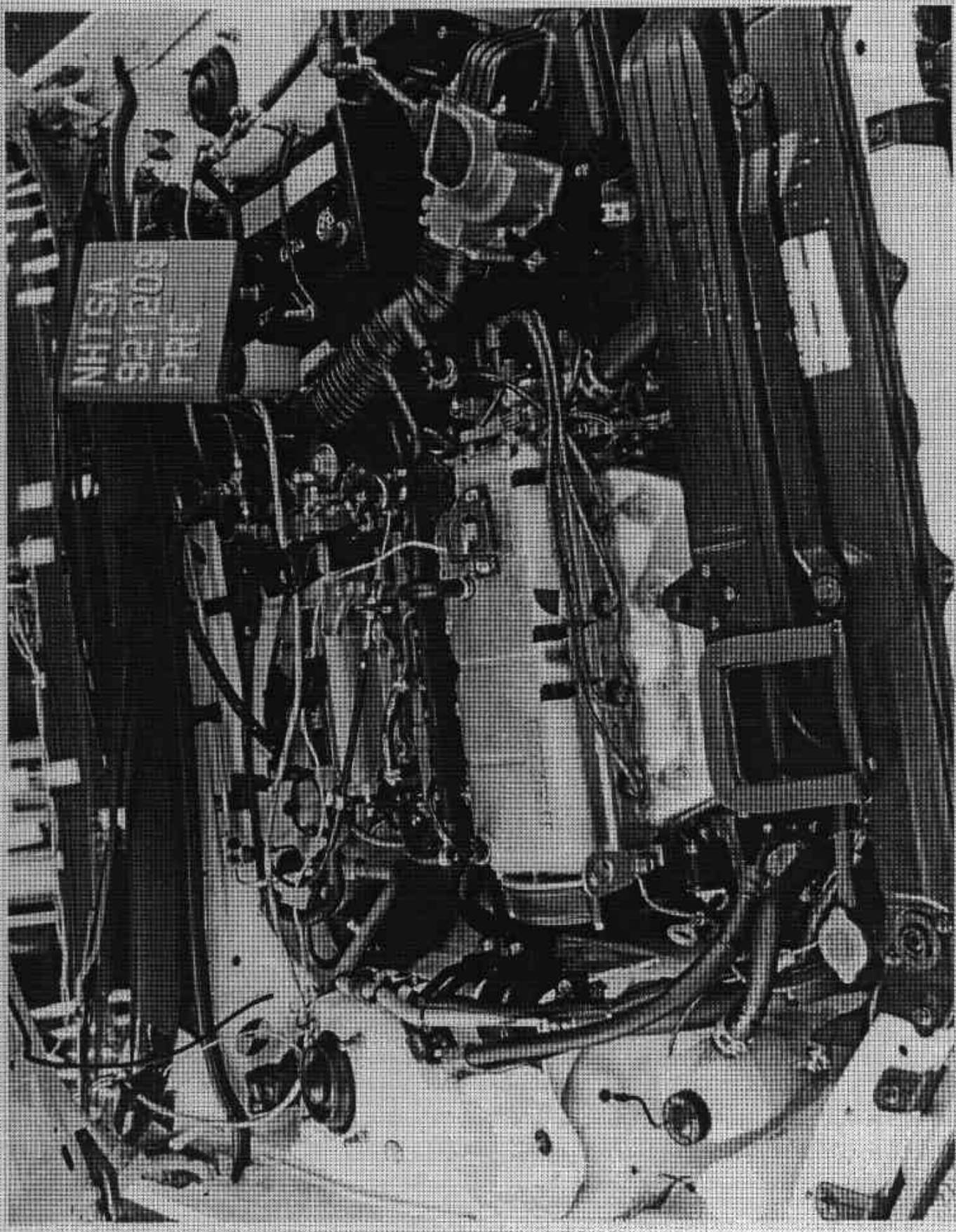


FIGURE A-15. PRE-TEST ENGINE COMPARTMENT VIEW

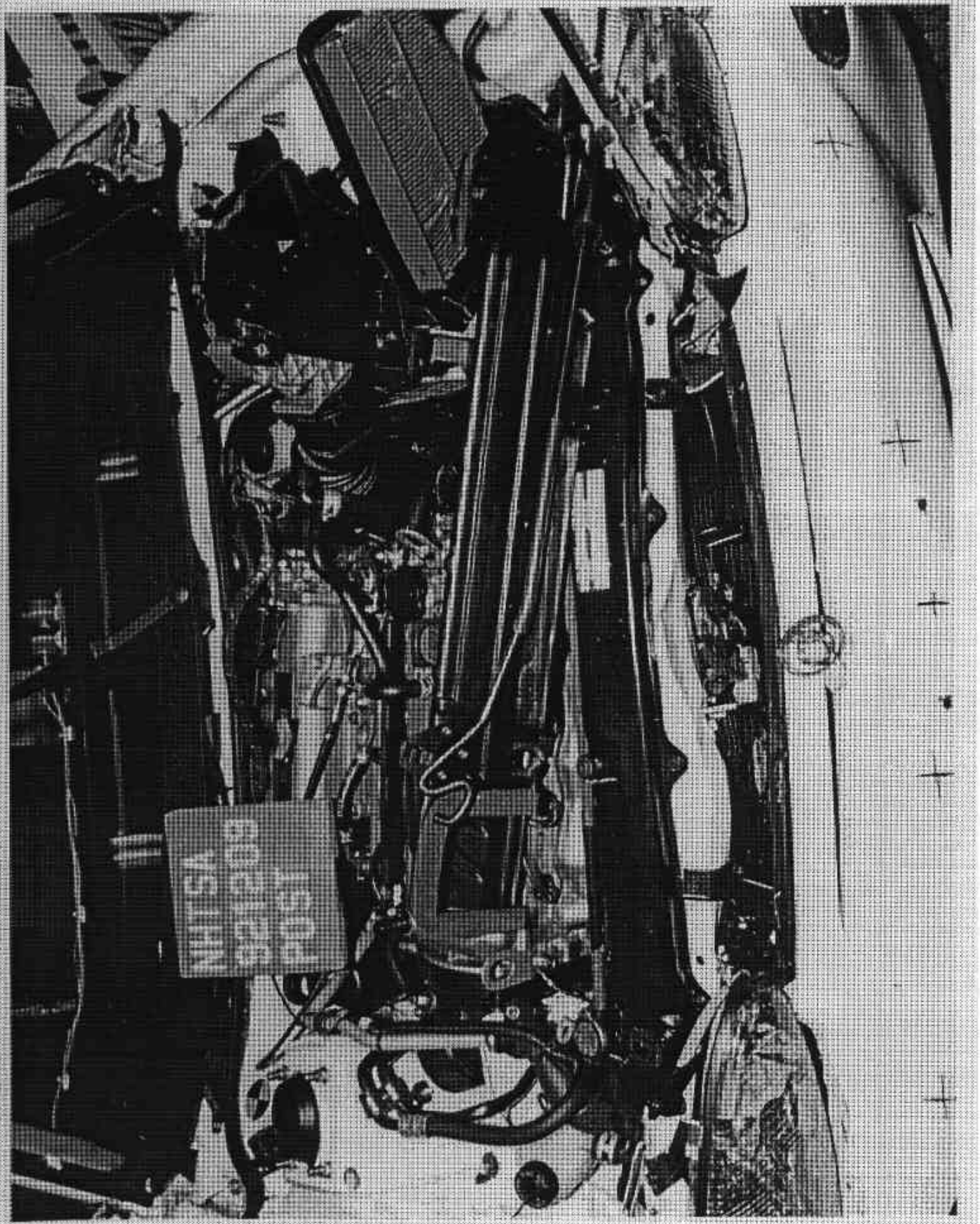


FIGURE A-16. POST-TEST ENGINE COMPARTMENT VIEW

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

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

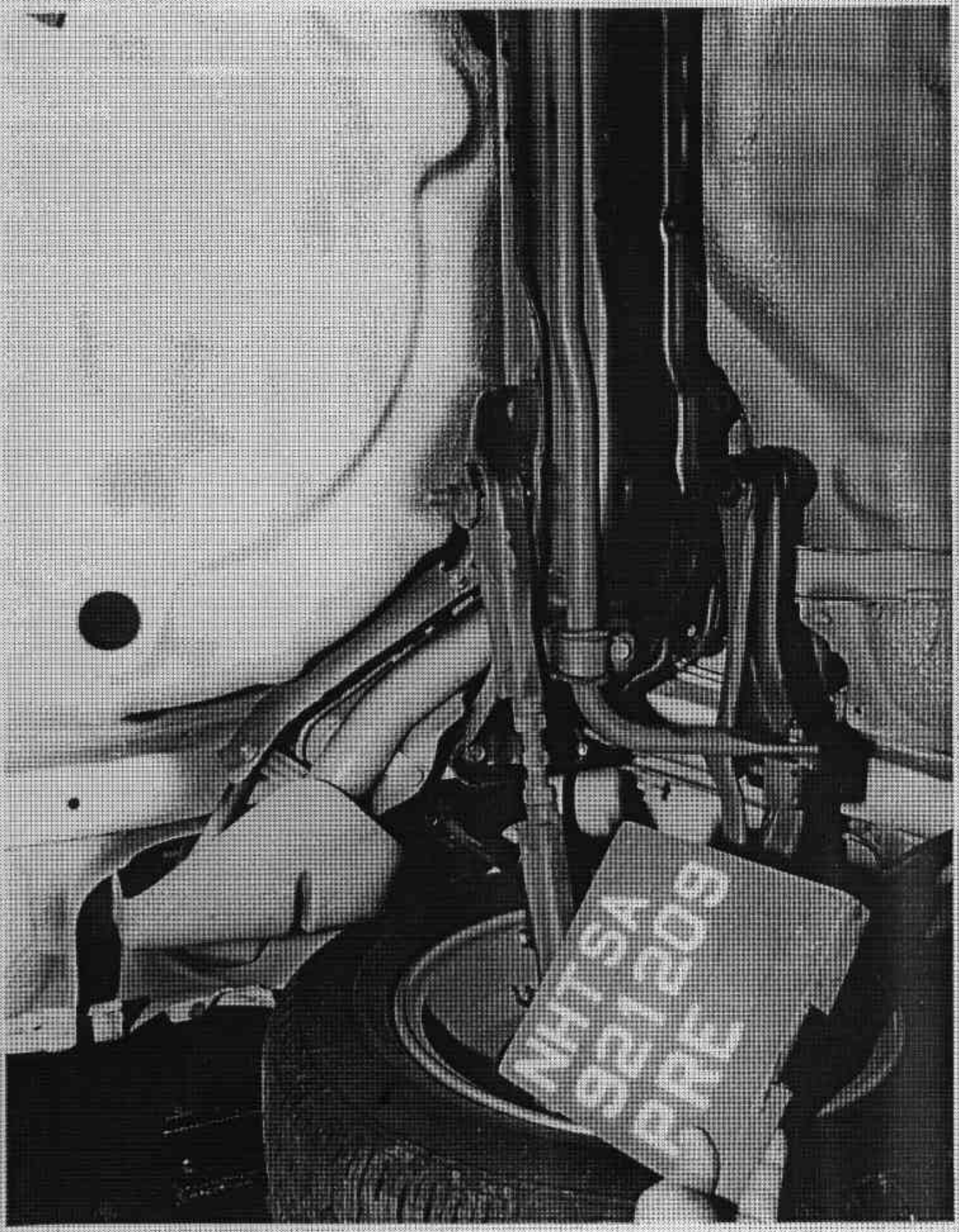


FIGURE A-19. PRE-TEST FUEL FILLER NECK VIEW

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

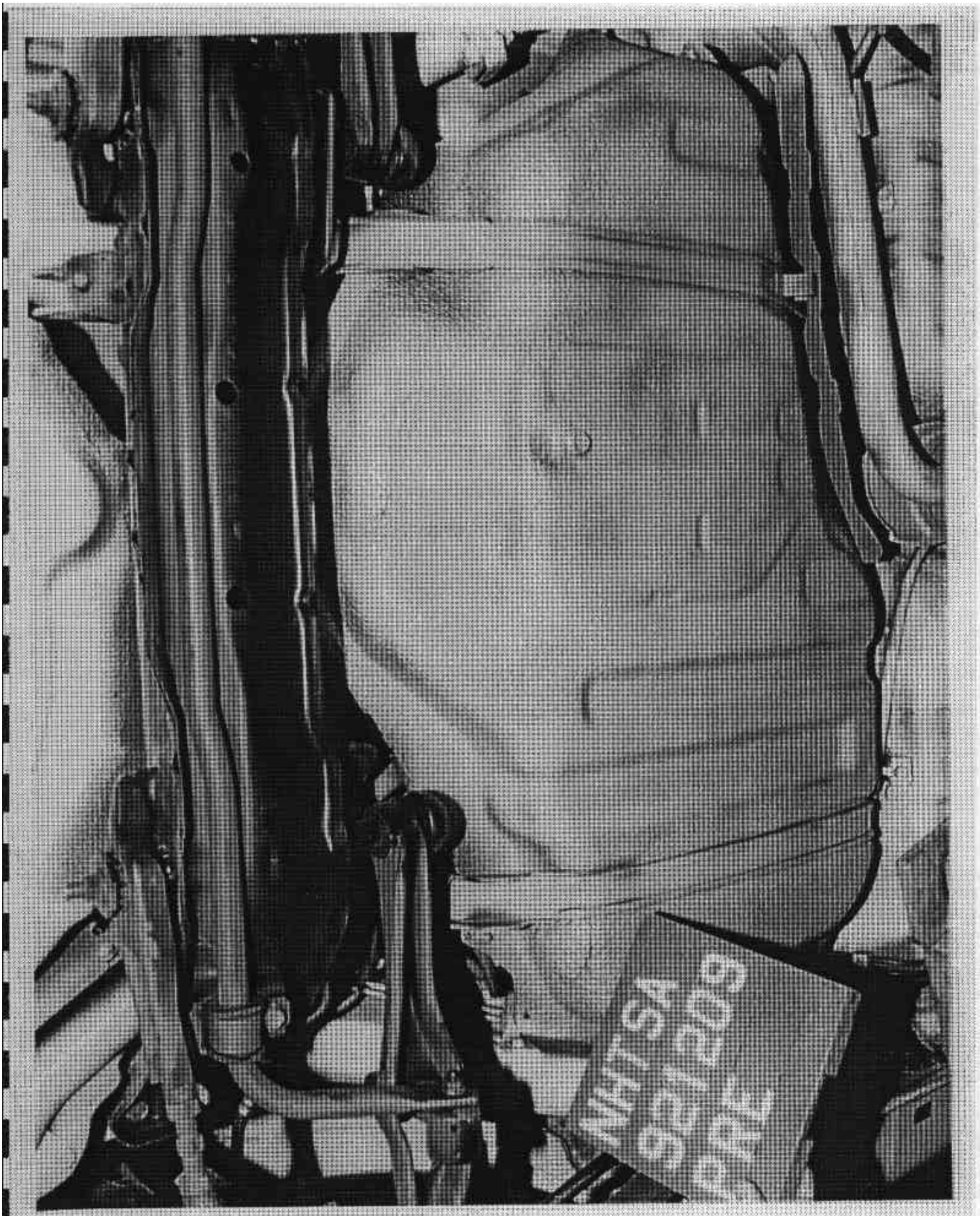


FIGURE A-21. PRE-TEST FUEL TANK VIEW

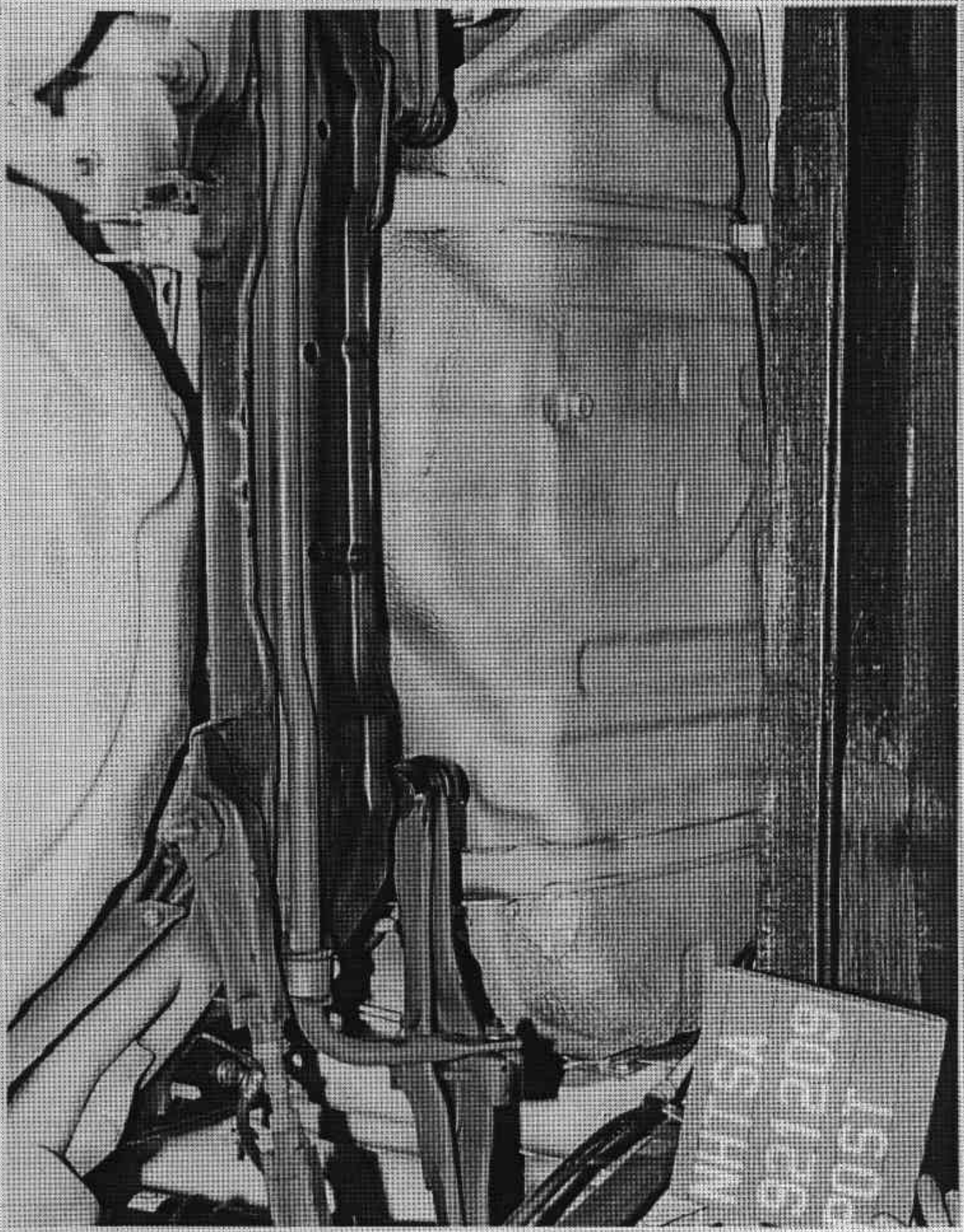


FIGURE A-22. POST-TEST FUEL TANK VIEW

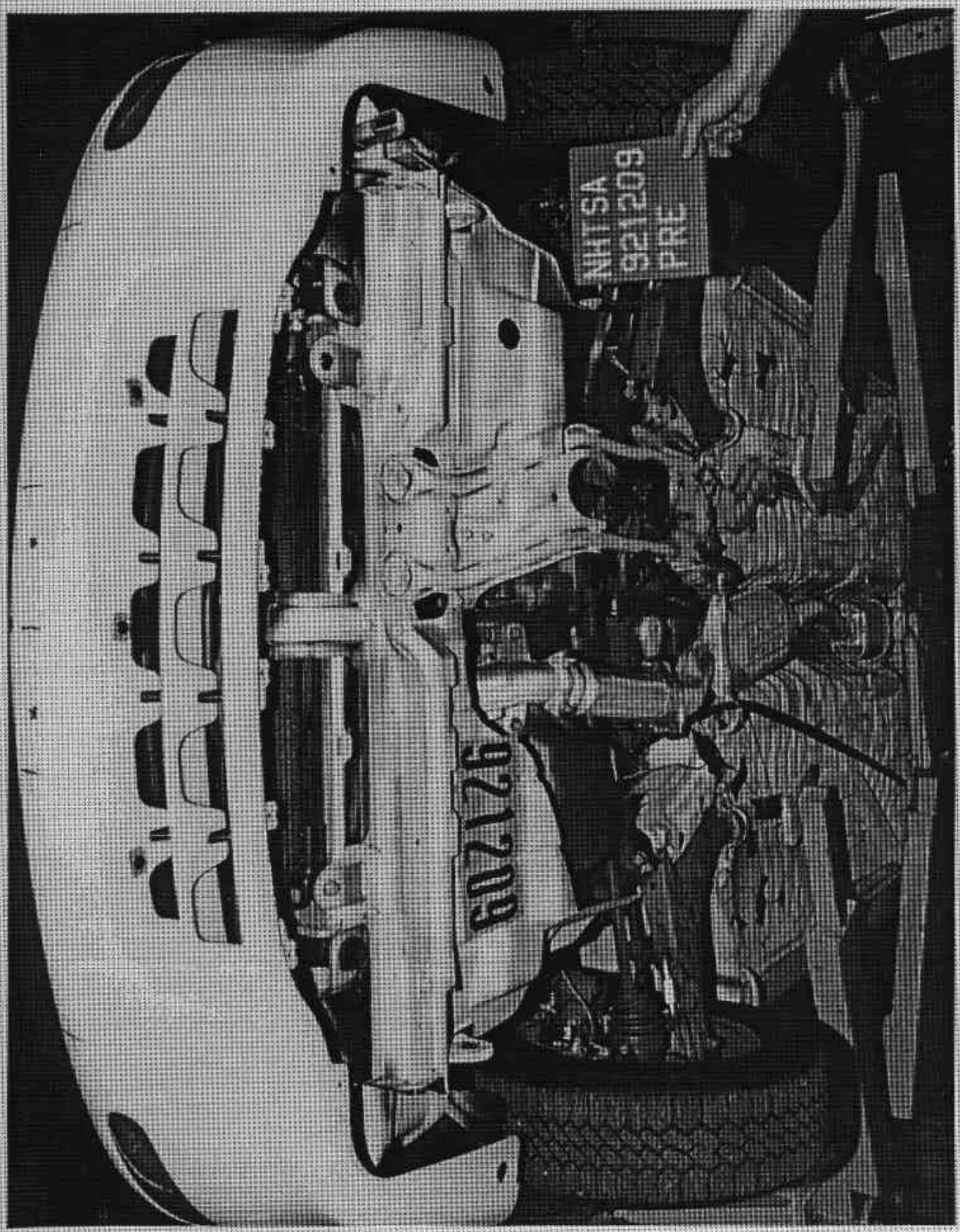


FIGURE A-23. PRE-TEST FRONT UNDERBODY VIEW

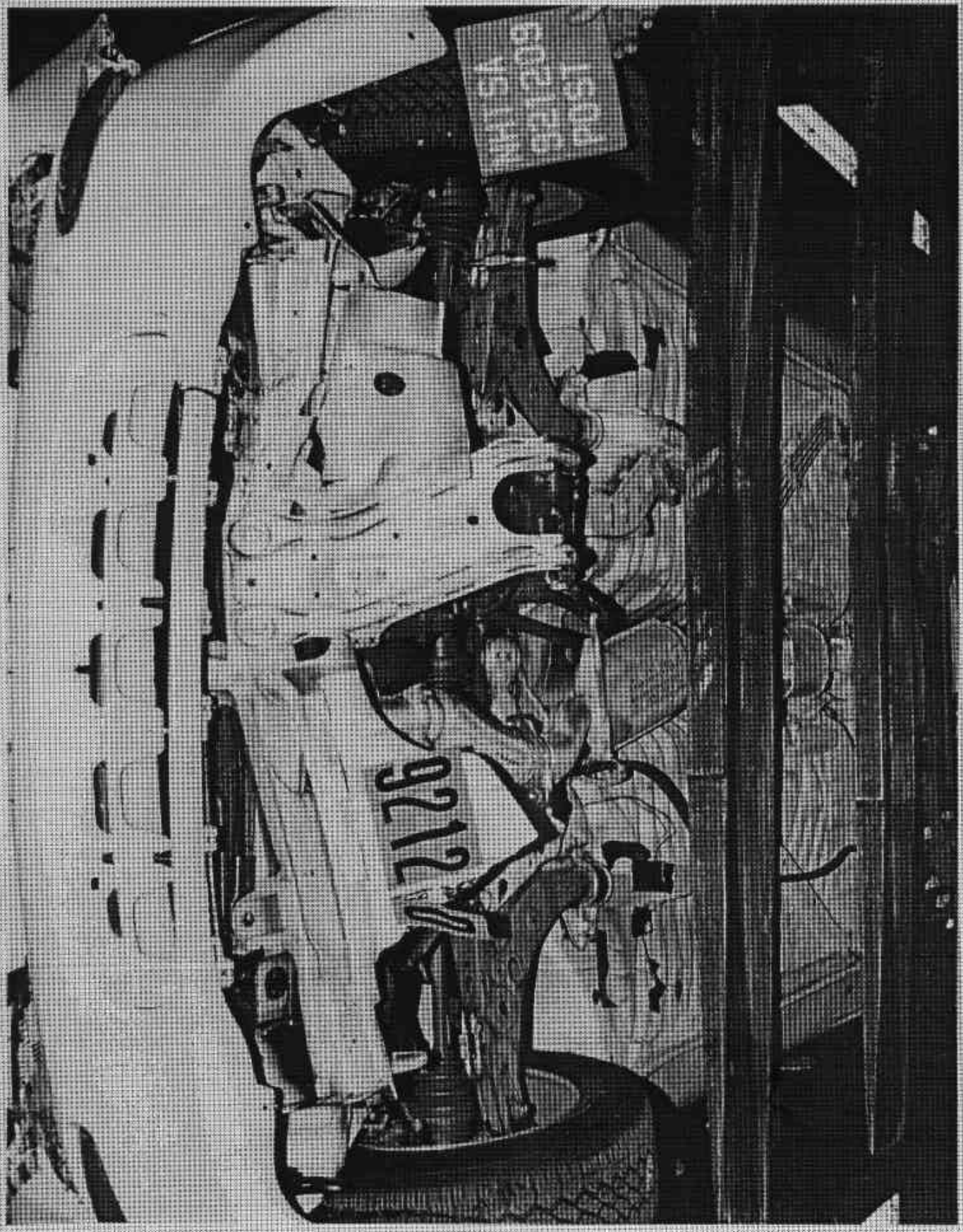


FIGURE A-24. POST-TEST FRONT UNDERBODY VIEW

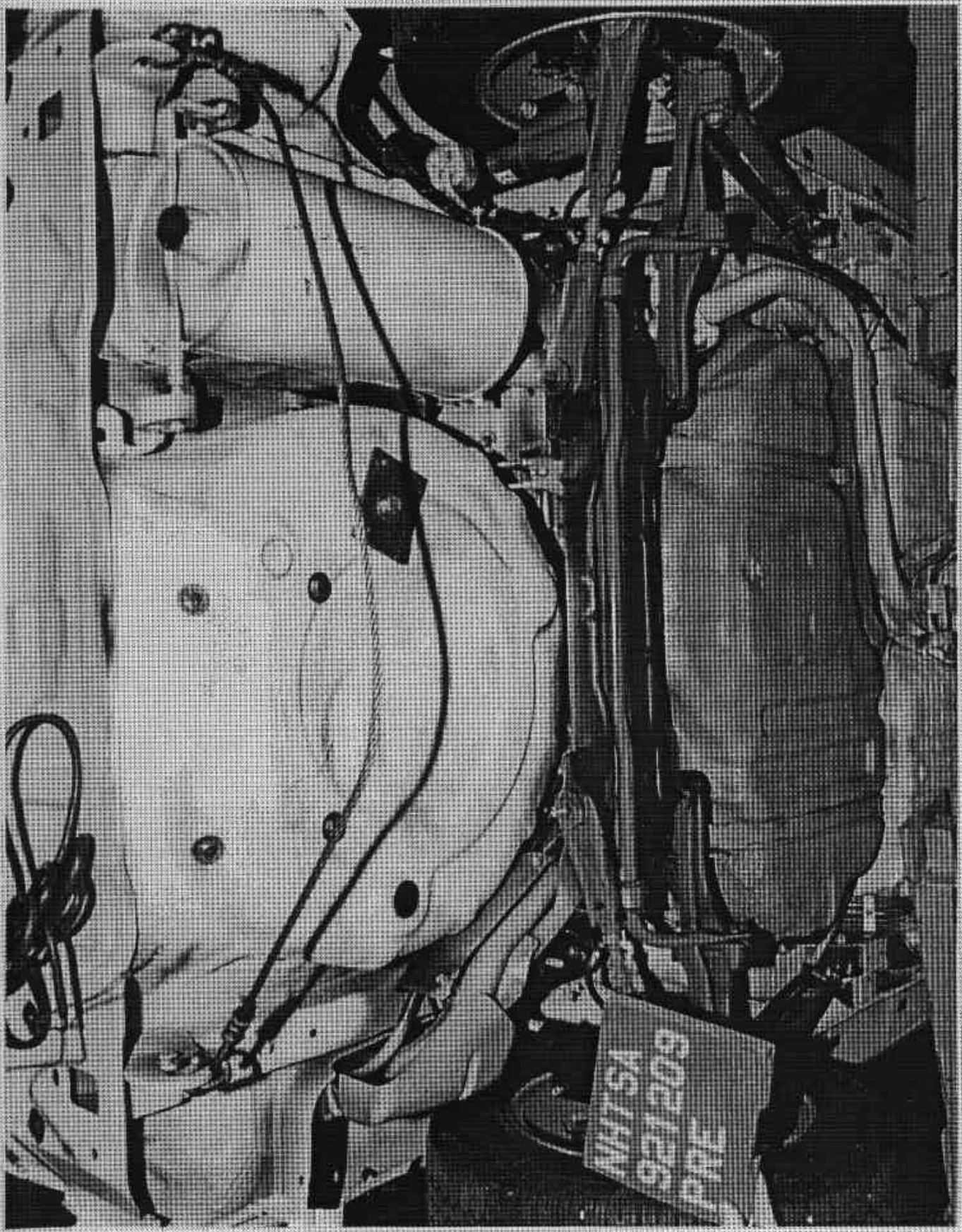


FIGURE A-25. PRE-TEST REAR UNDERBODY VIEW

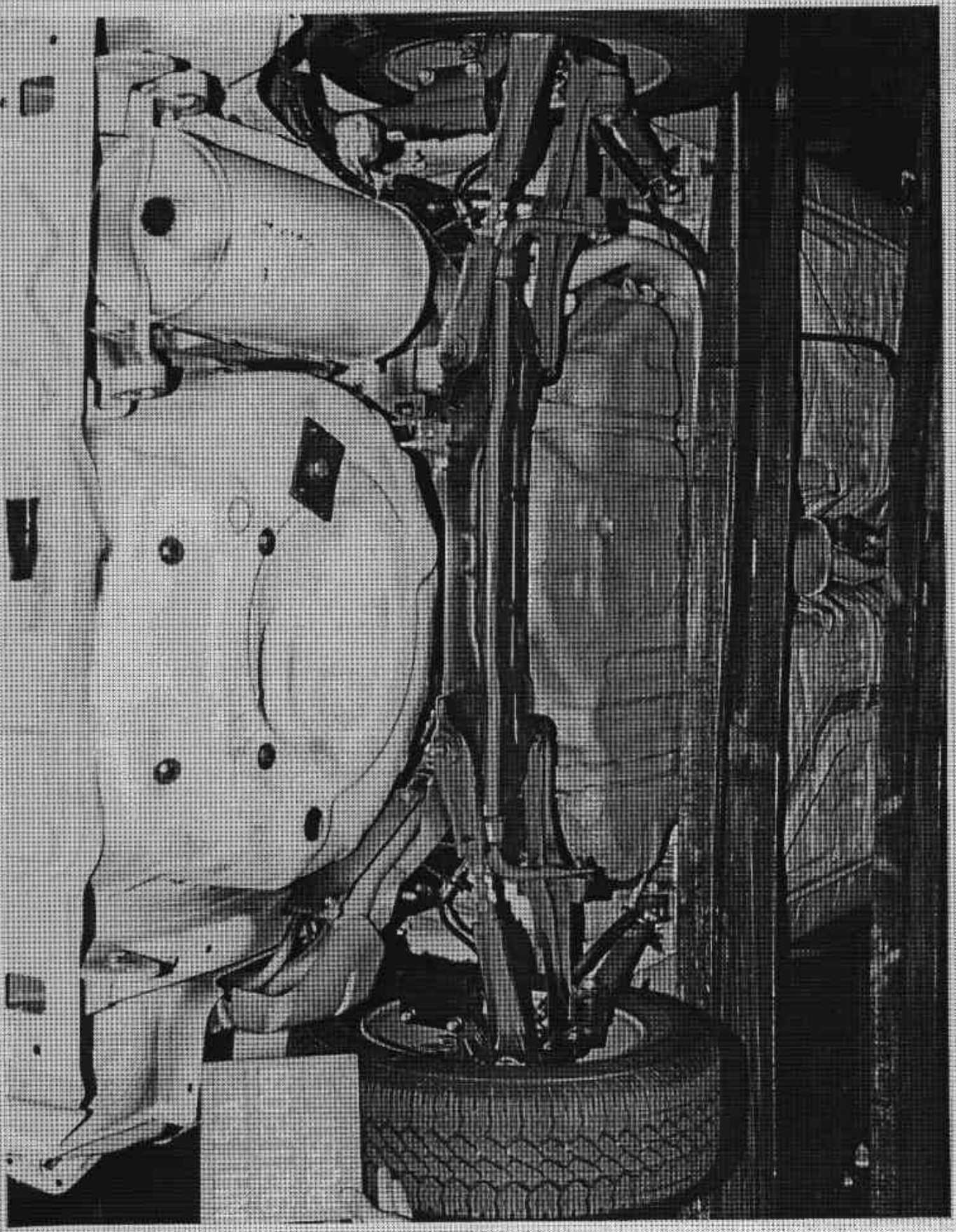


FIGURE A-26. POST-TEST REAR UNDERBODY VIEW

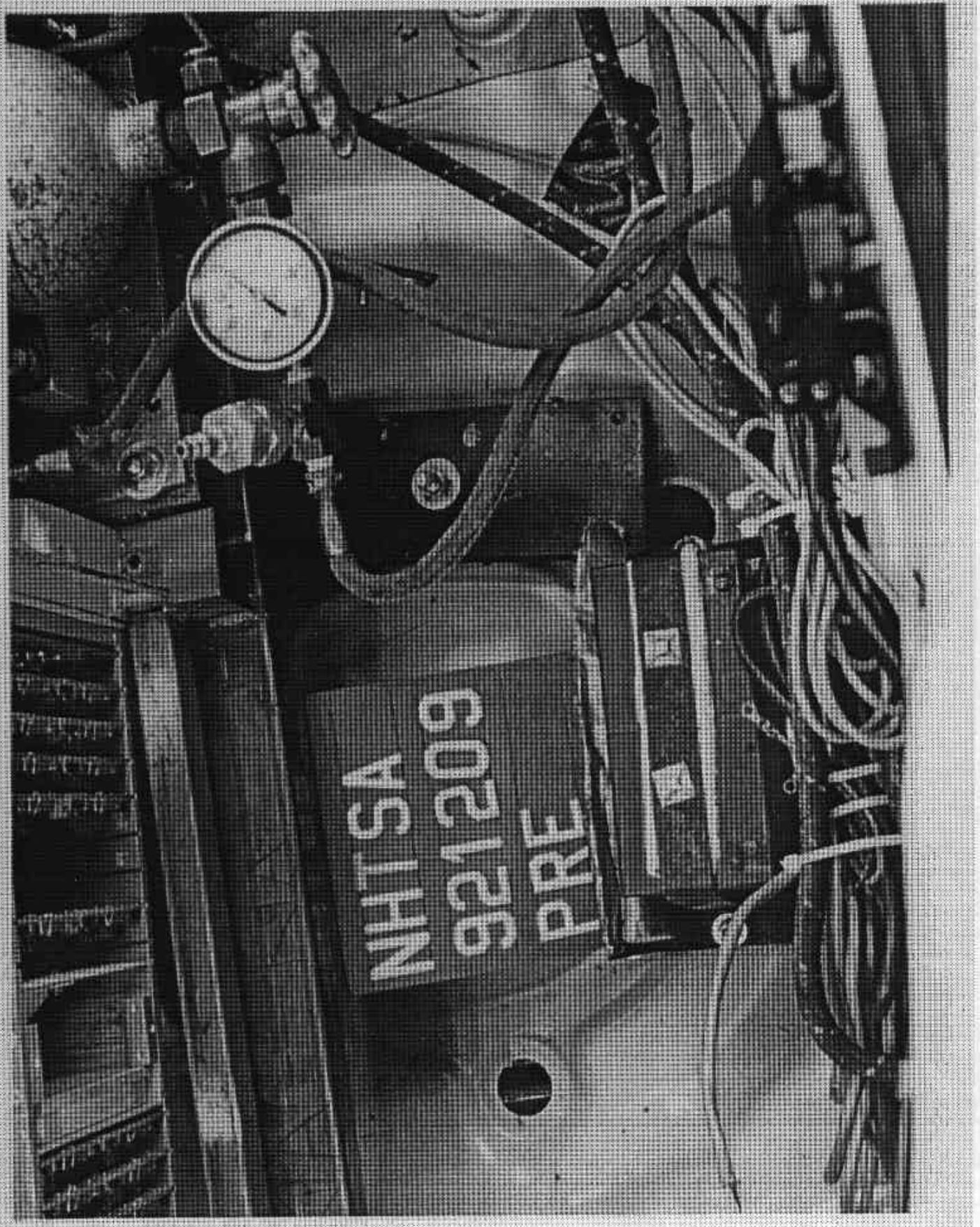


FIGURE A-27. PRE-TEST BALLAST LOCATION VIEW

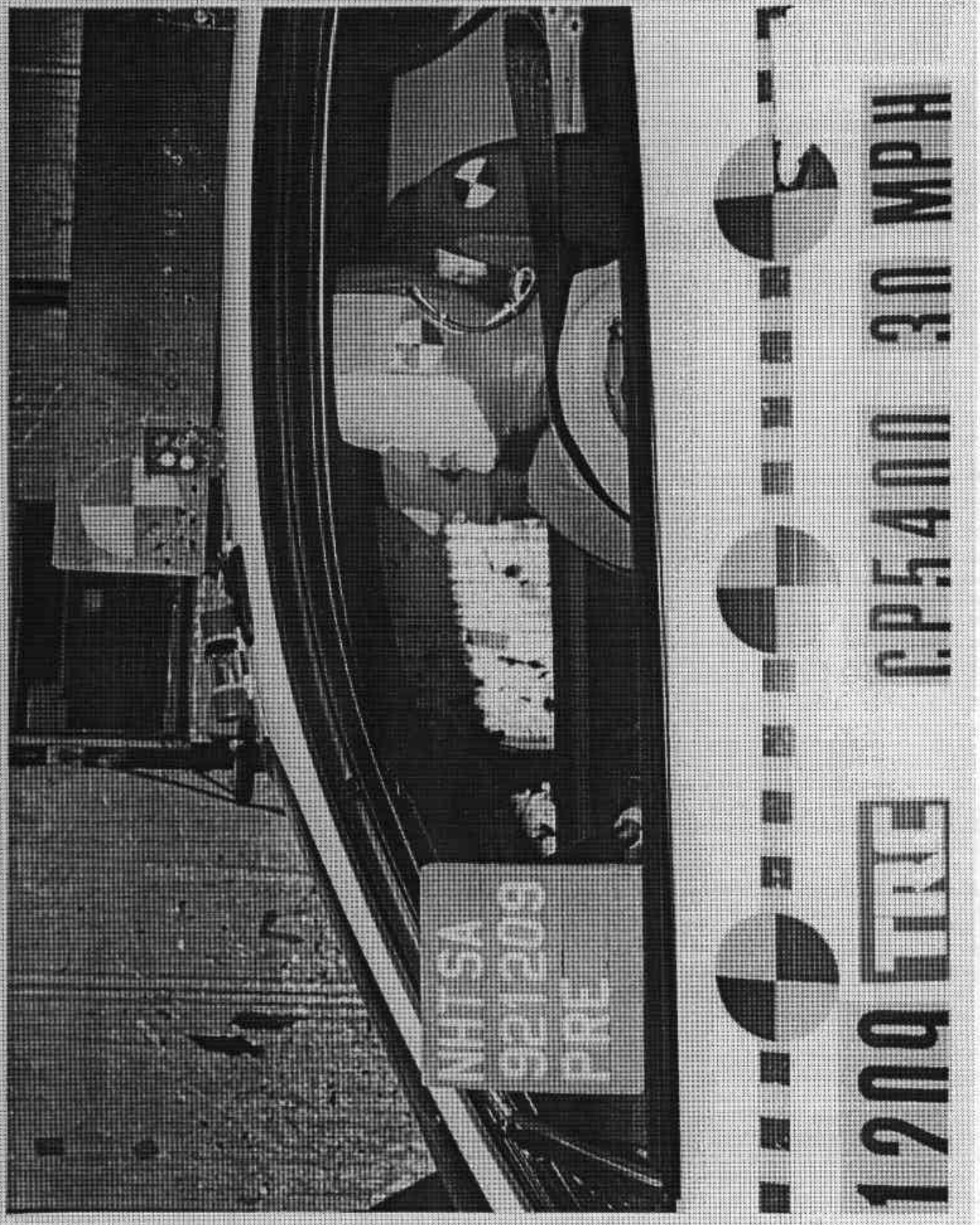


FIGURE A-28. PRE-TEST DRIVER DUMMY POSITION VIEW

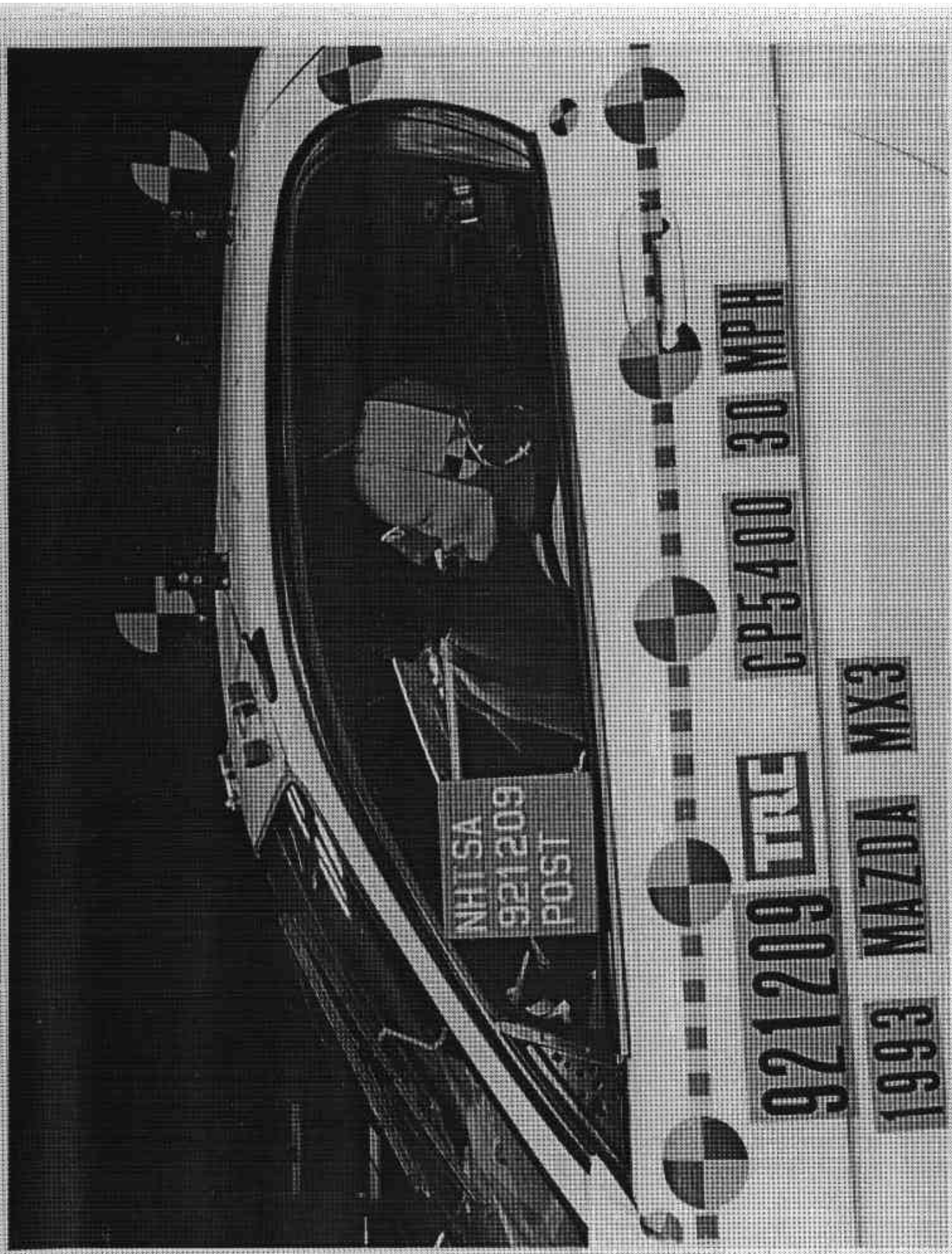


FIGURE A-29. POST-TEST DRIVER DUMMY POSITION VIEW

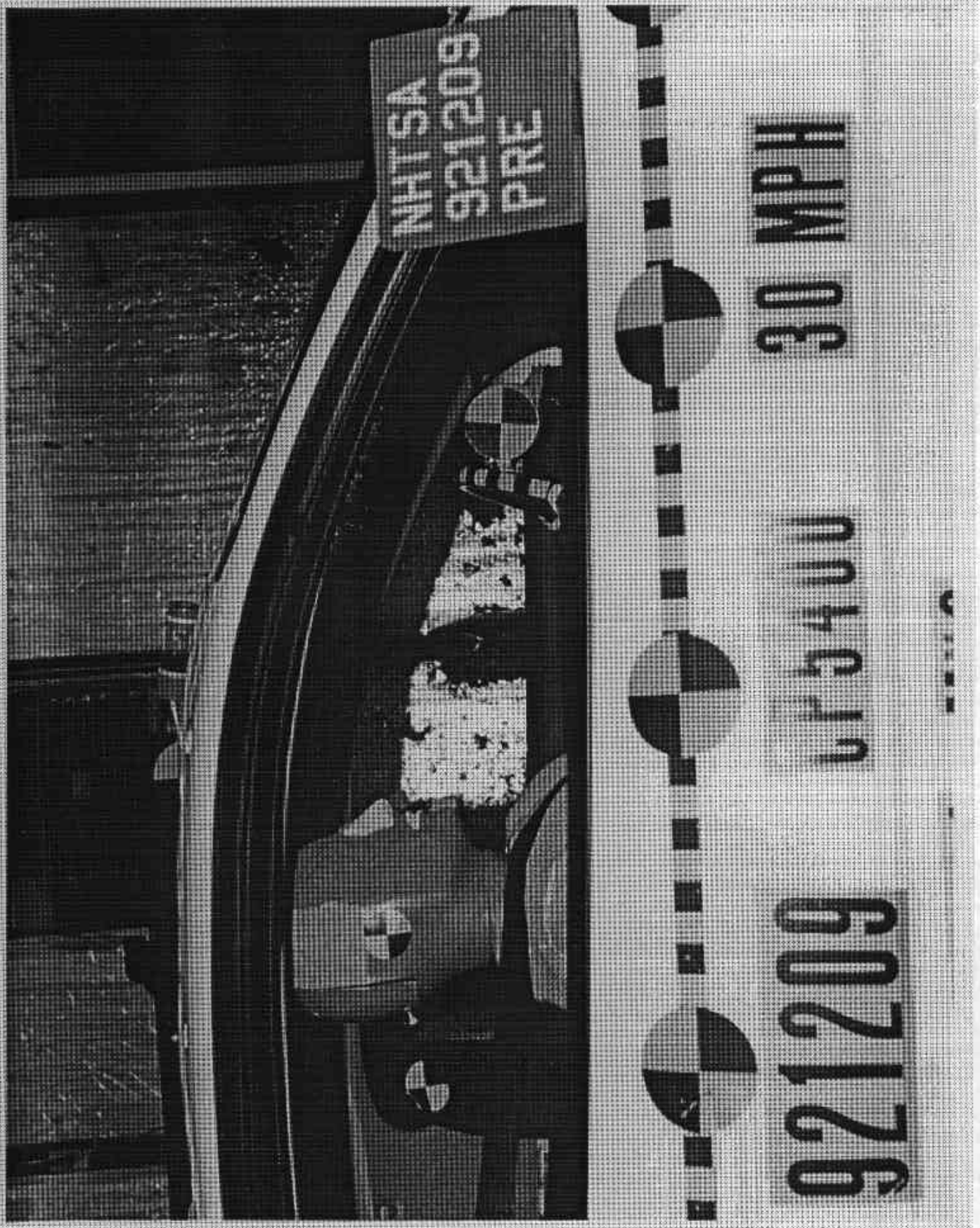


FIGURE A-30. PRE-TEST PASSENGER DUMMY POSITION VIEW

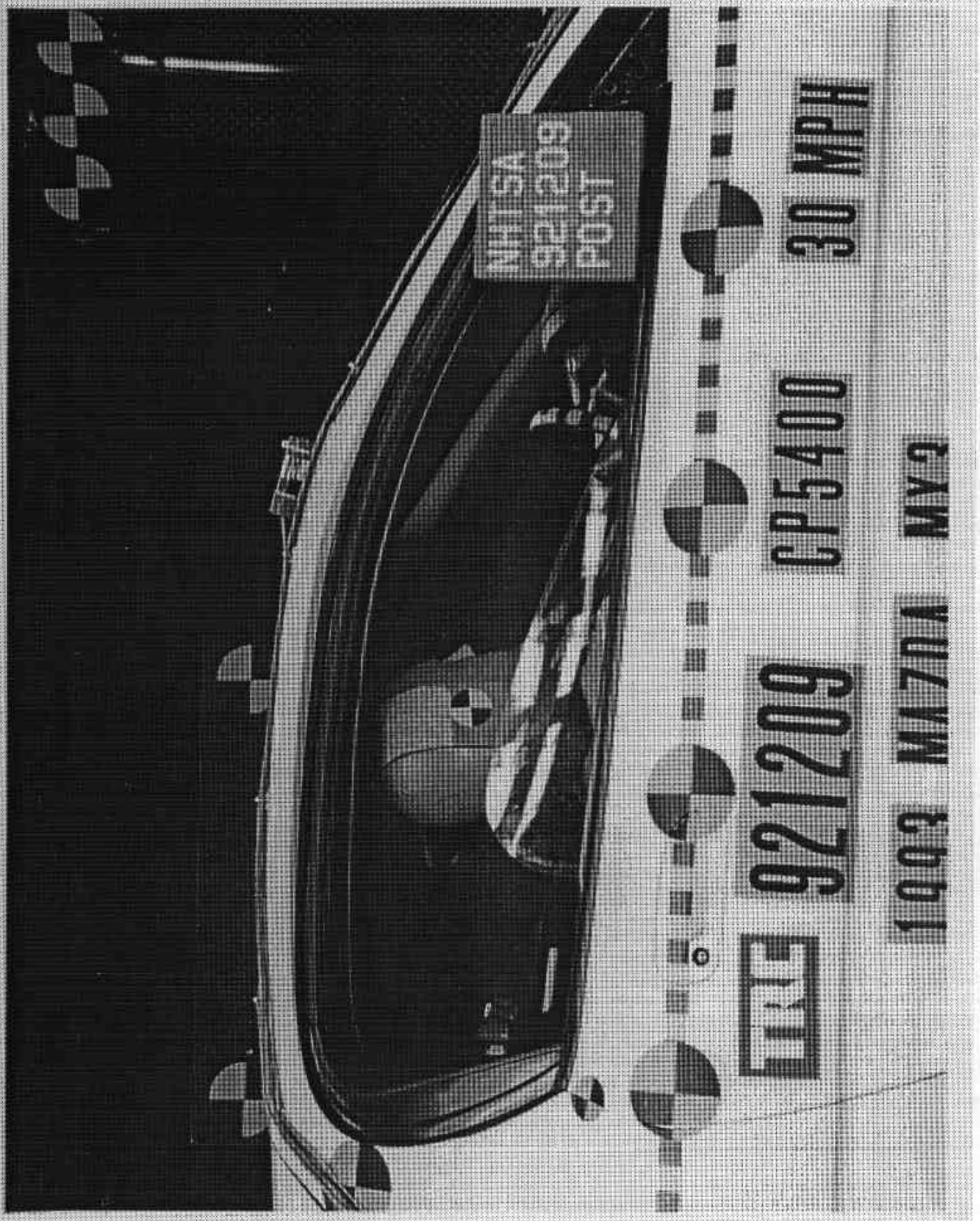


FIGURE A-31. POST-TEST PASSENGER DUMMY POSITION VIEW

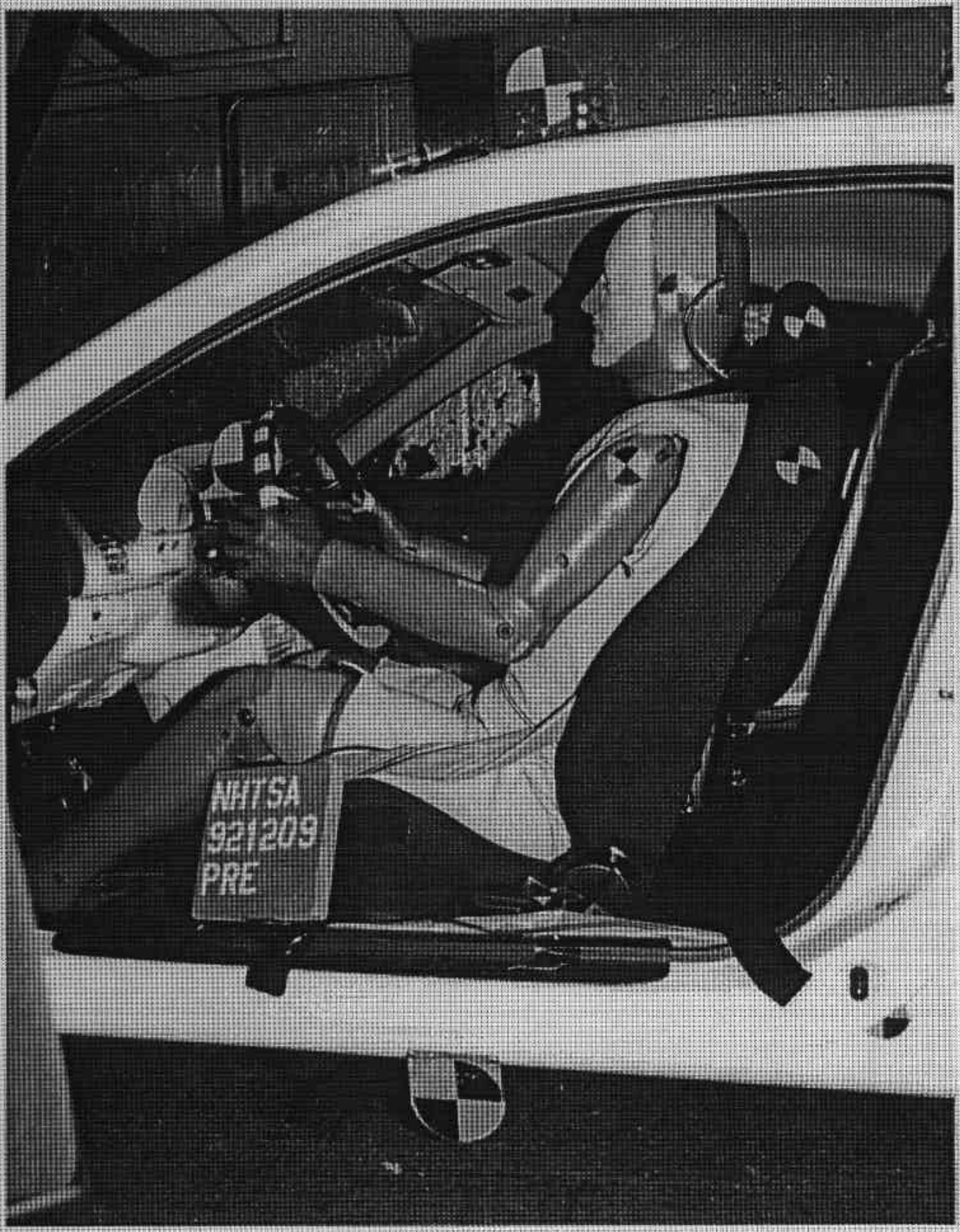


FIGURE A-32. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

FIGURE A-33. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

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

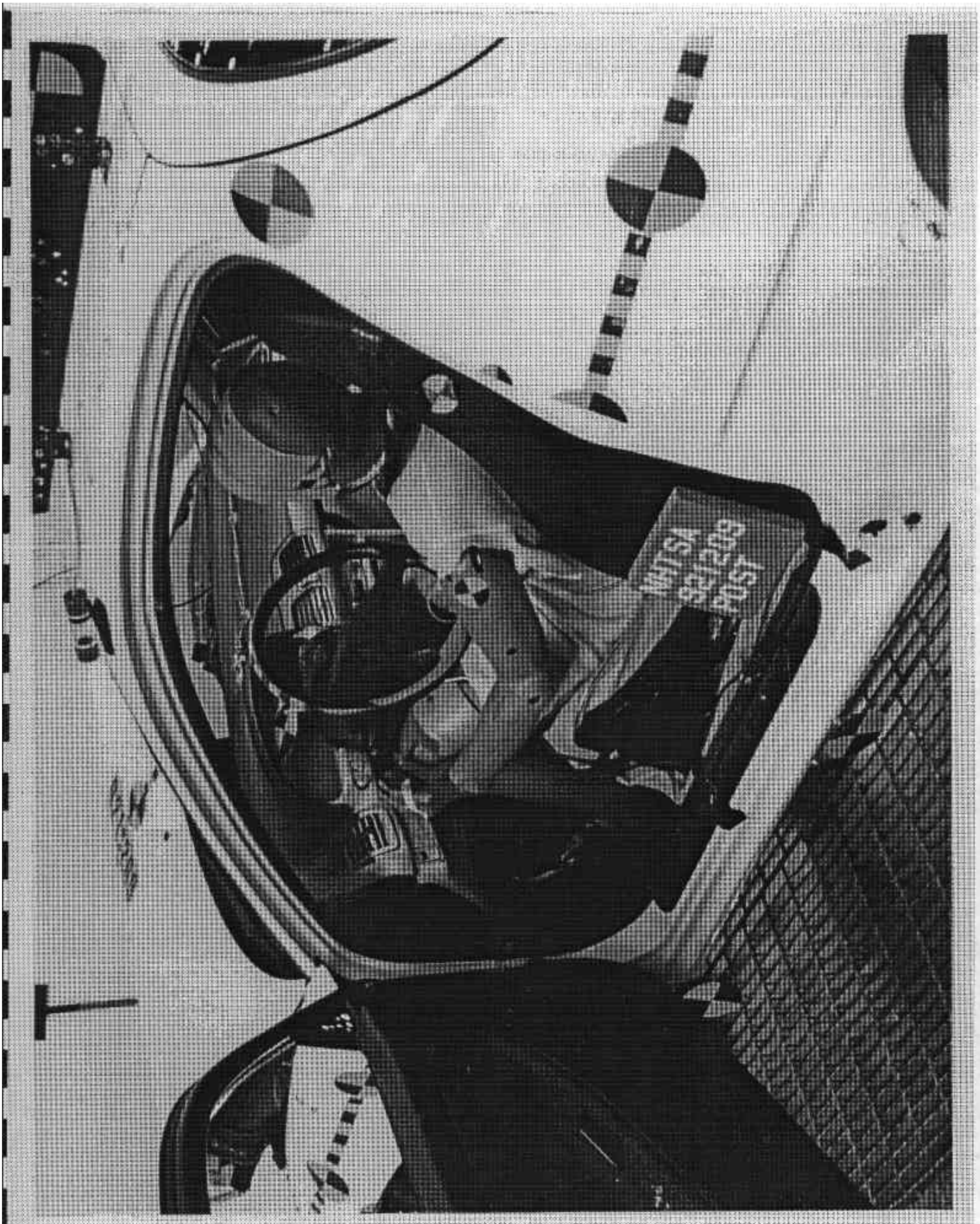


FIGURE A-35. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

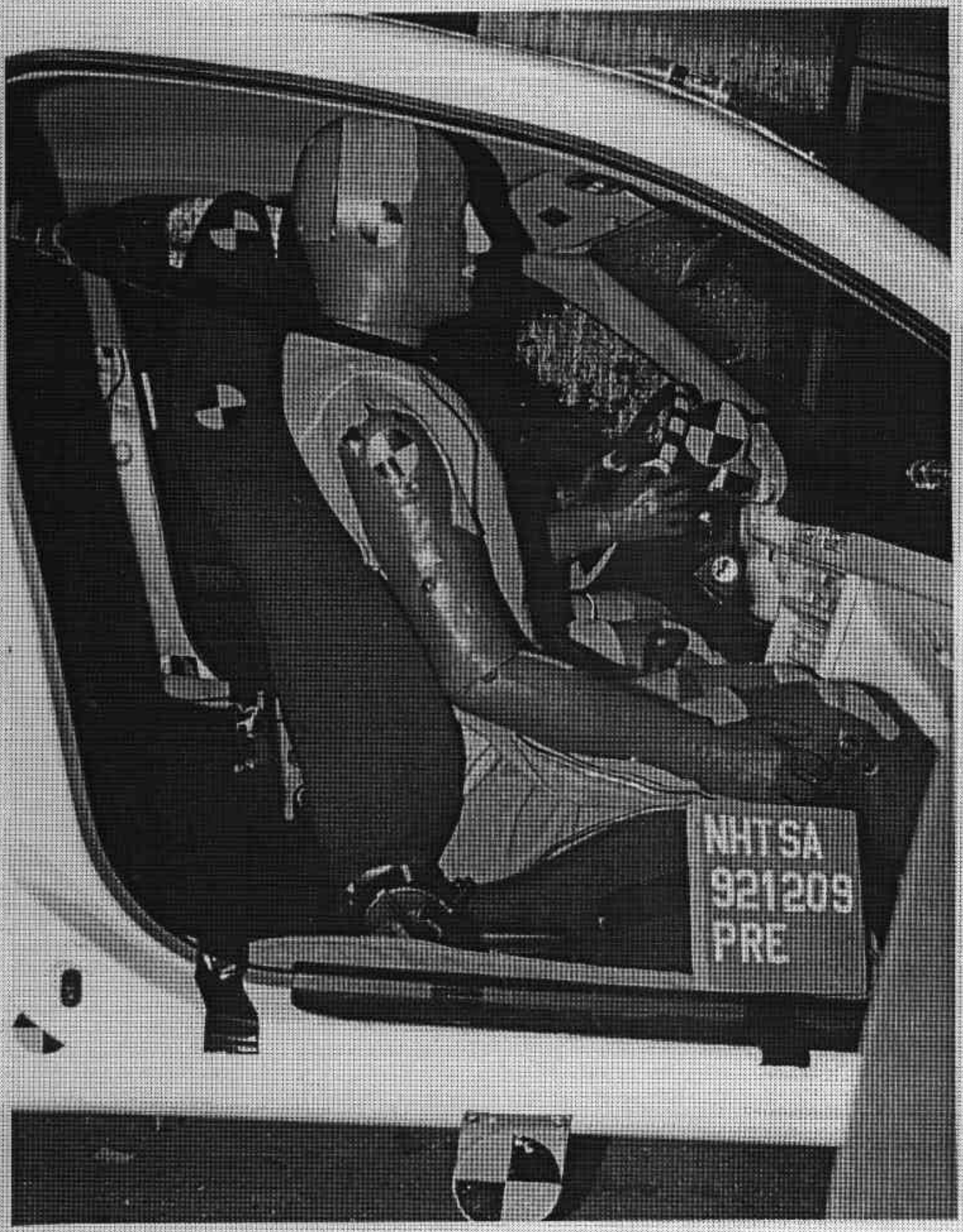


FIGURE A-36. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

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

FIGURE A-38. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

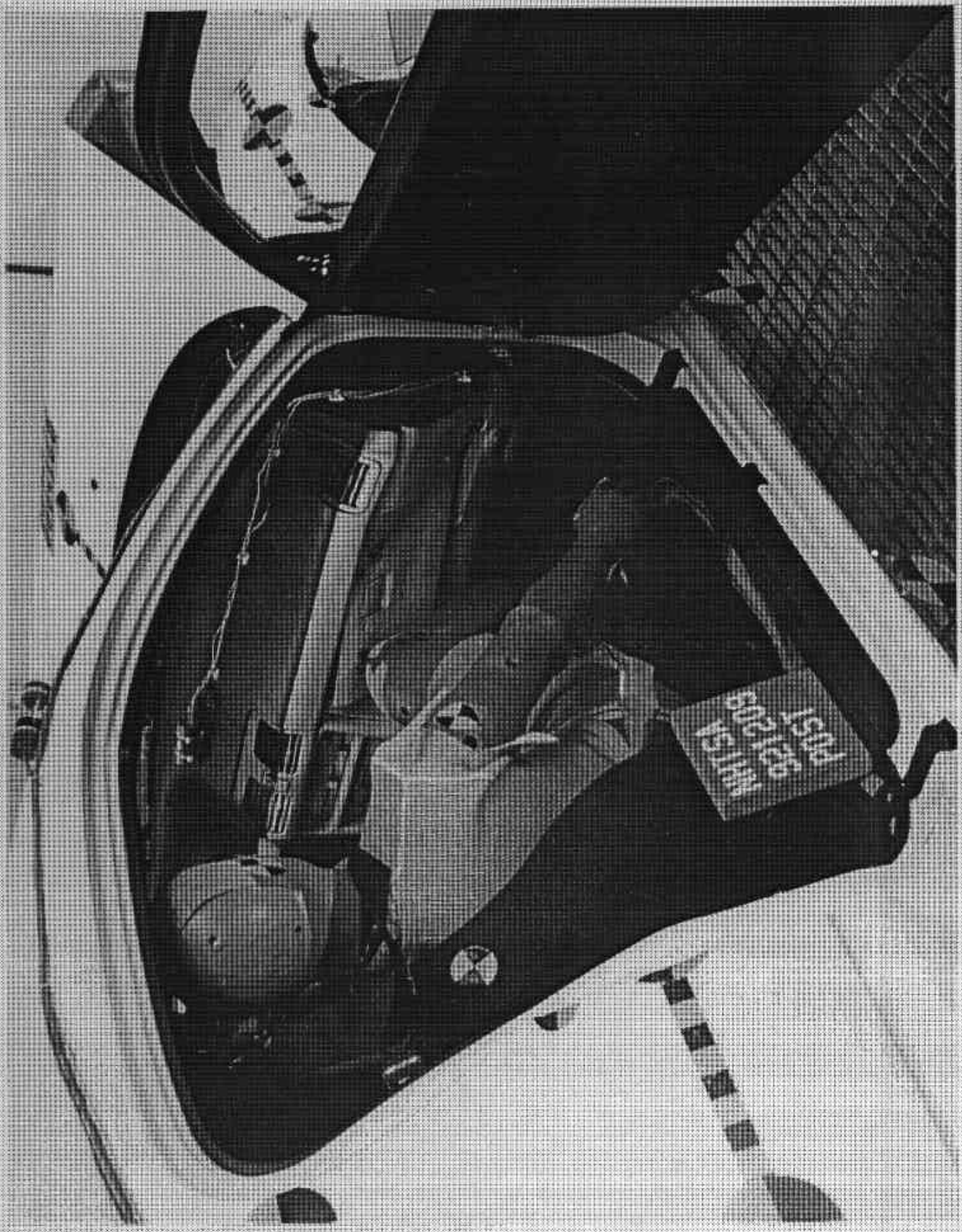


FIGURE A-39. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

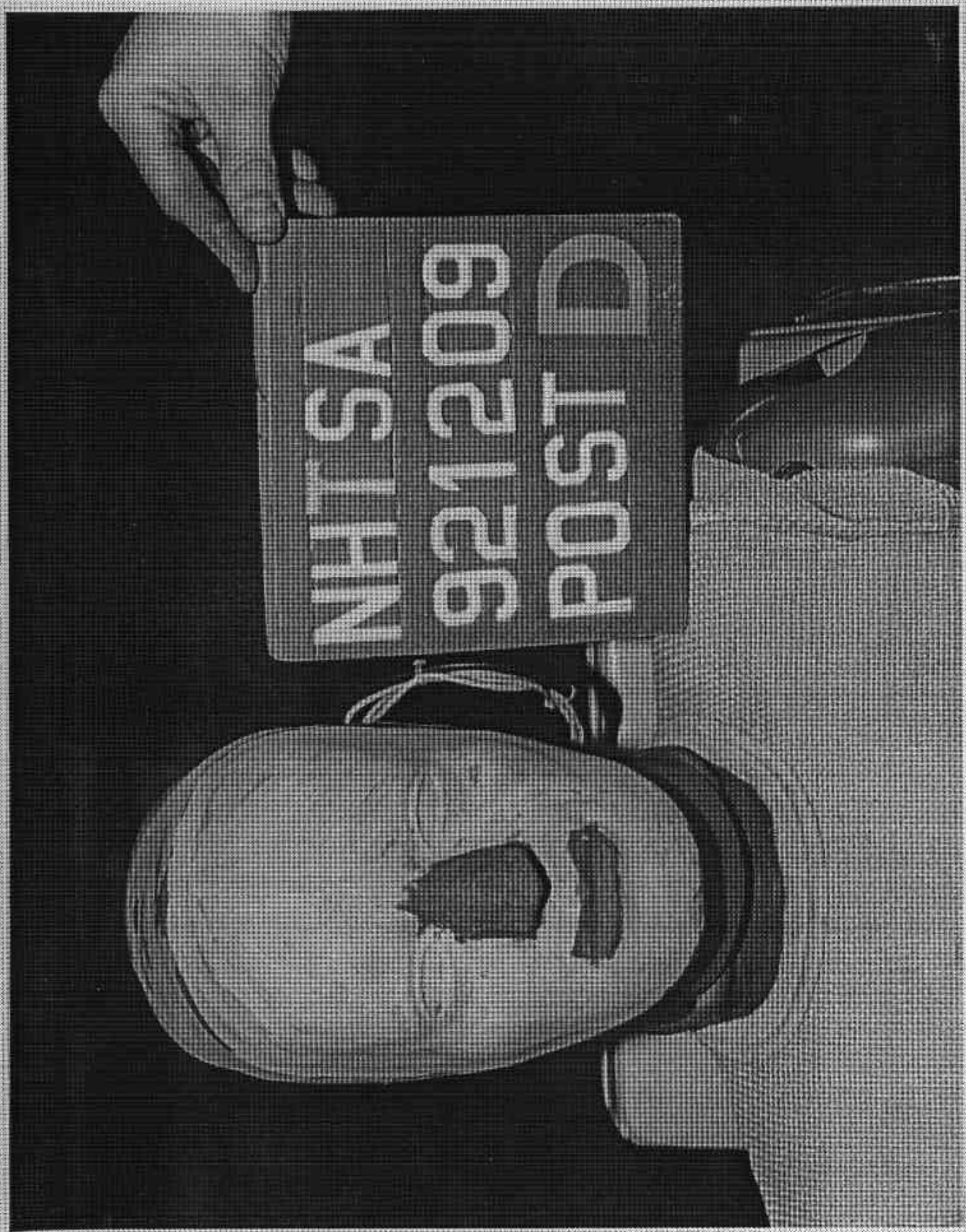


FIGURE A-40. POST-TEST DRIVER DUMMY HEAD CONTACT VIEW

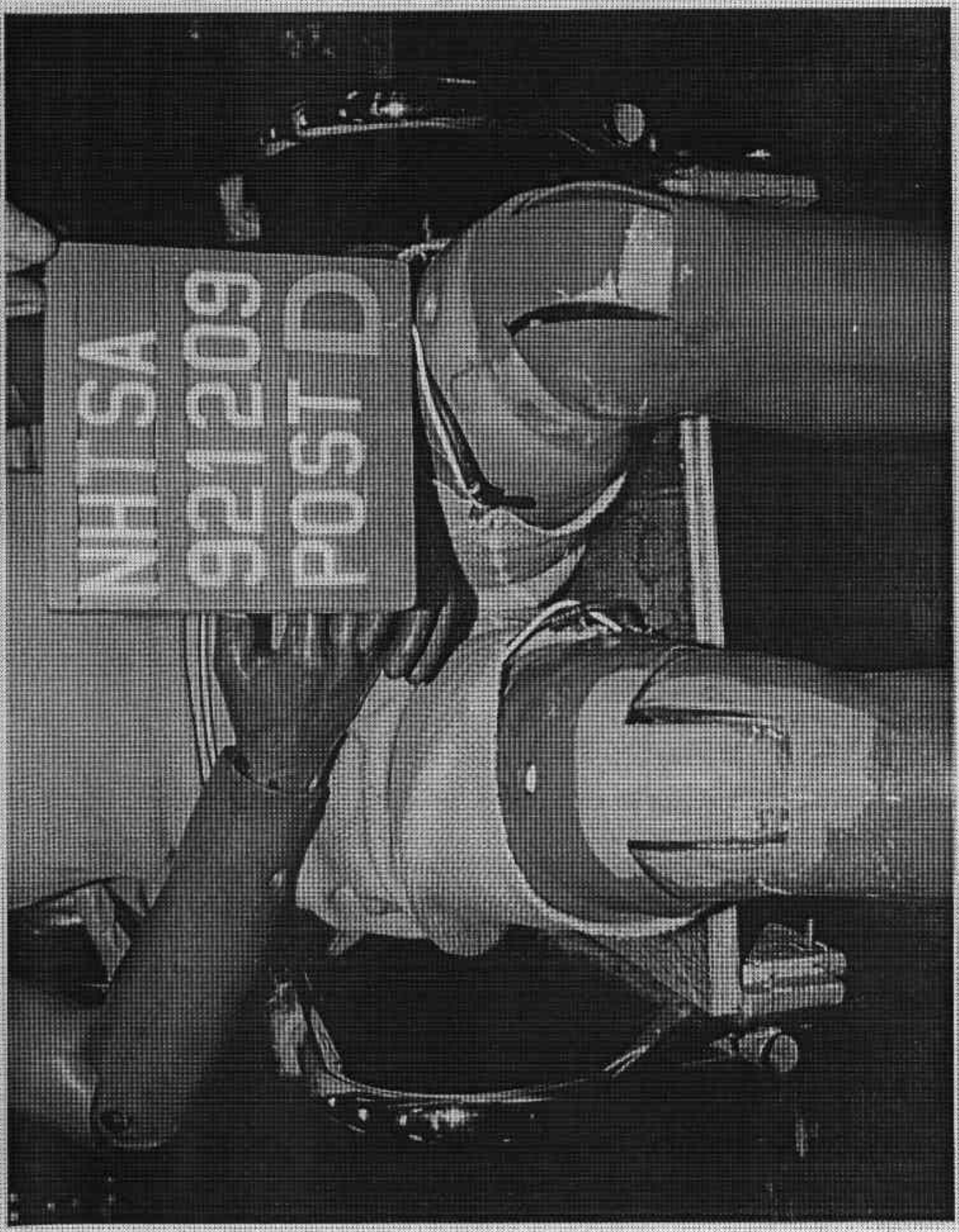


FIGURE A-41. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

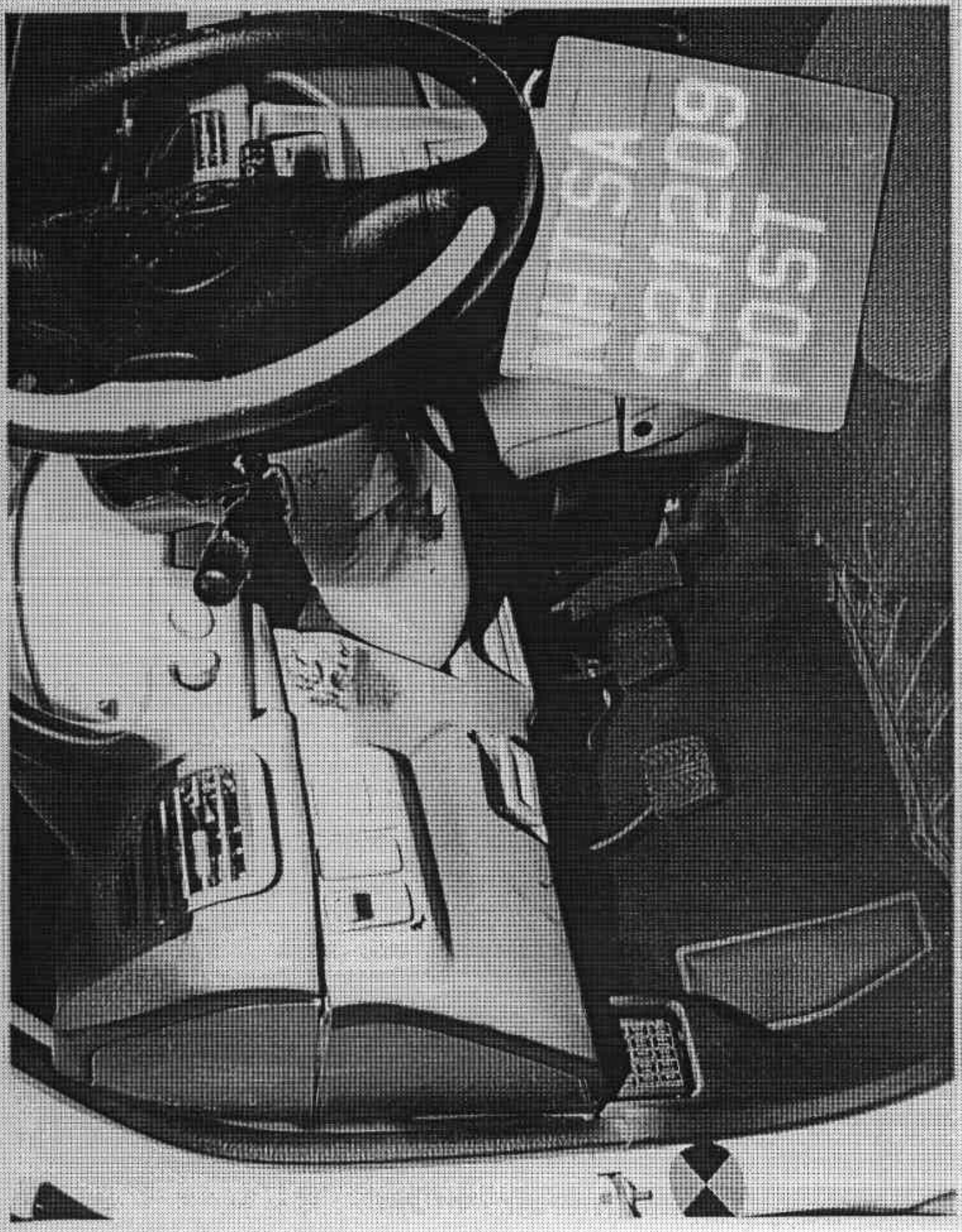


FIGURE A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

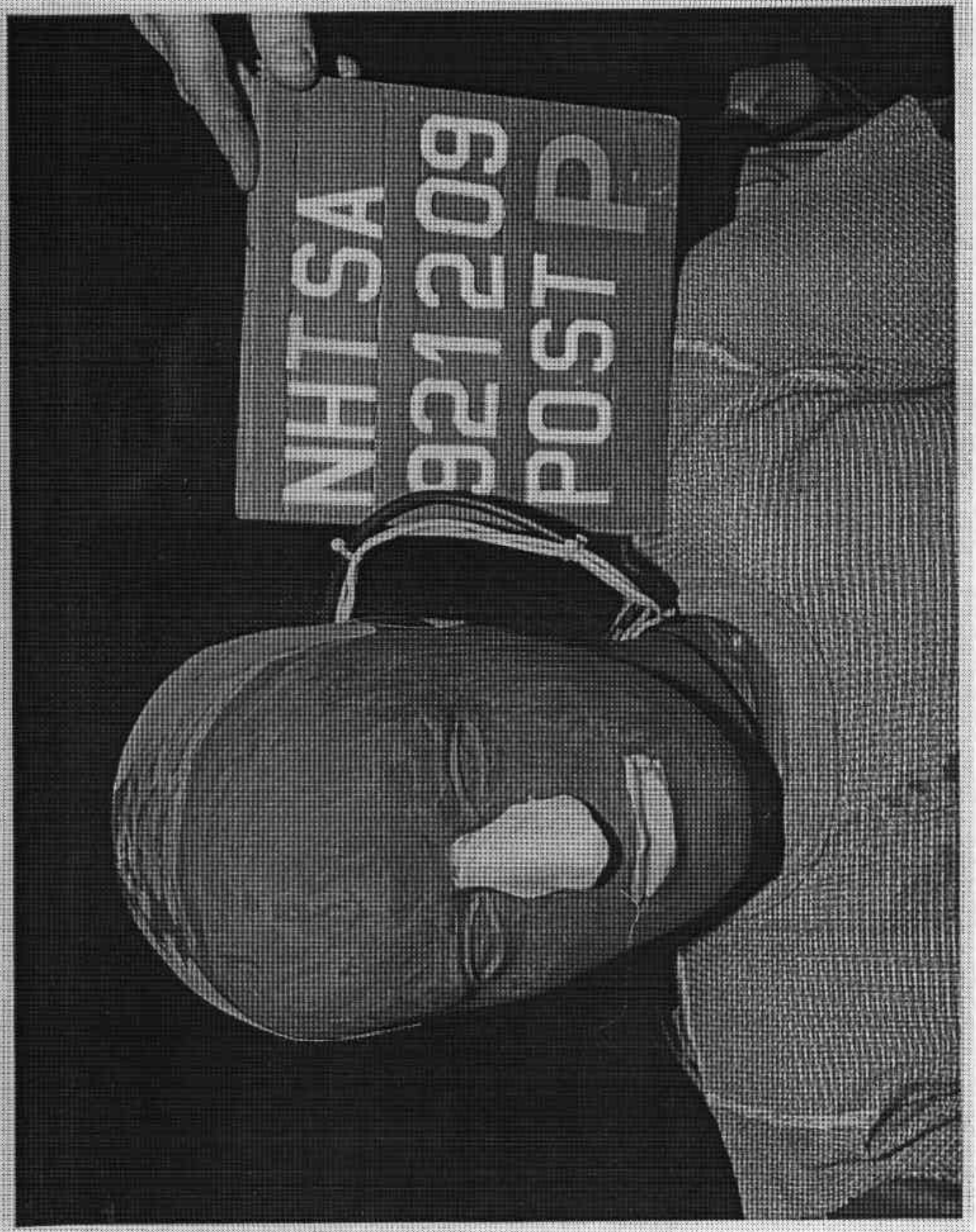


FIGURE A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

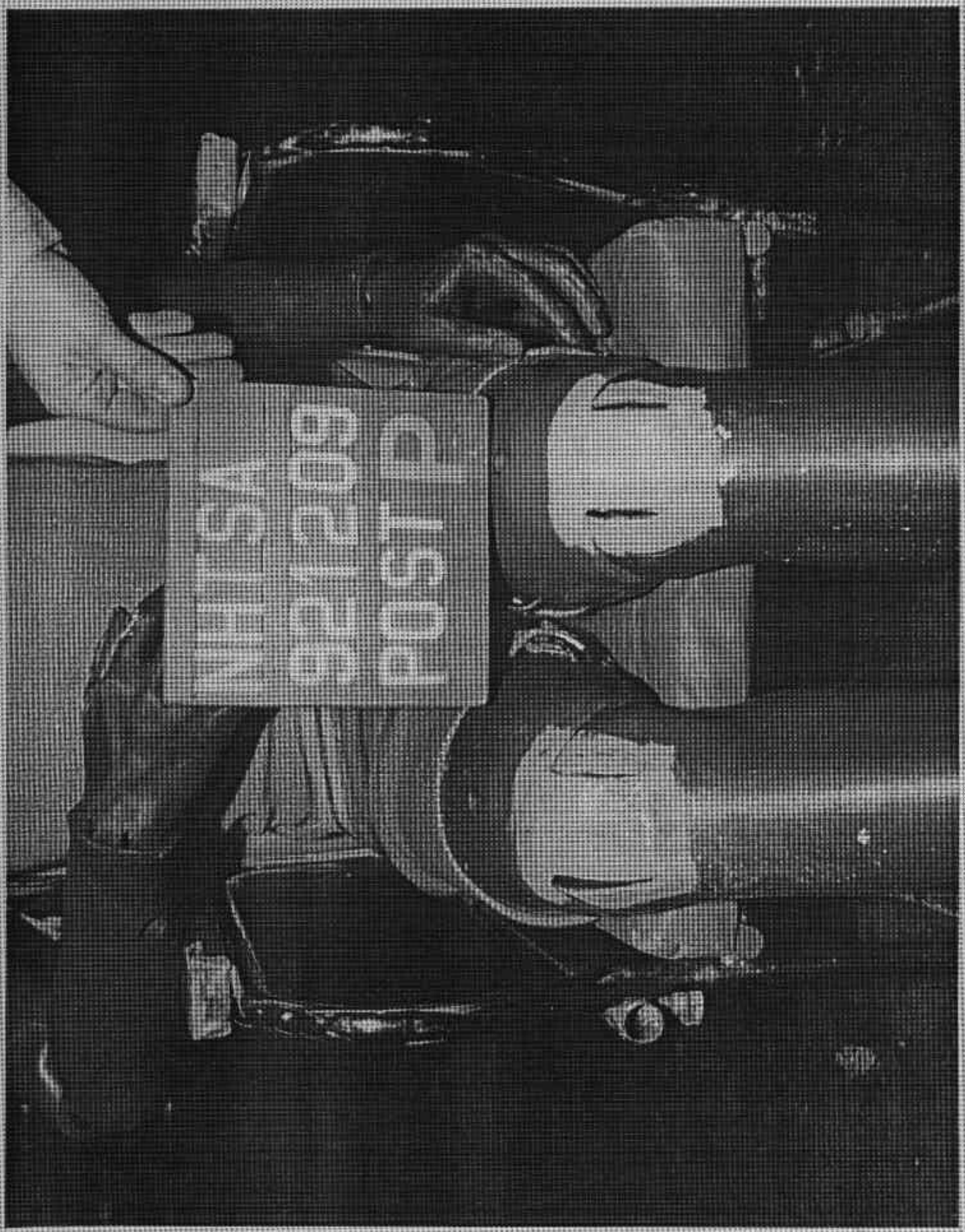


FIGURE A-44. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

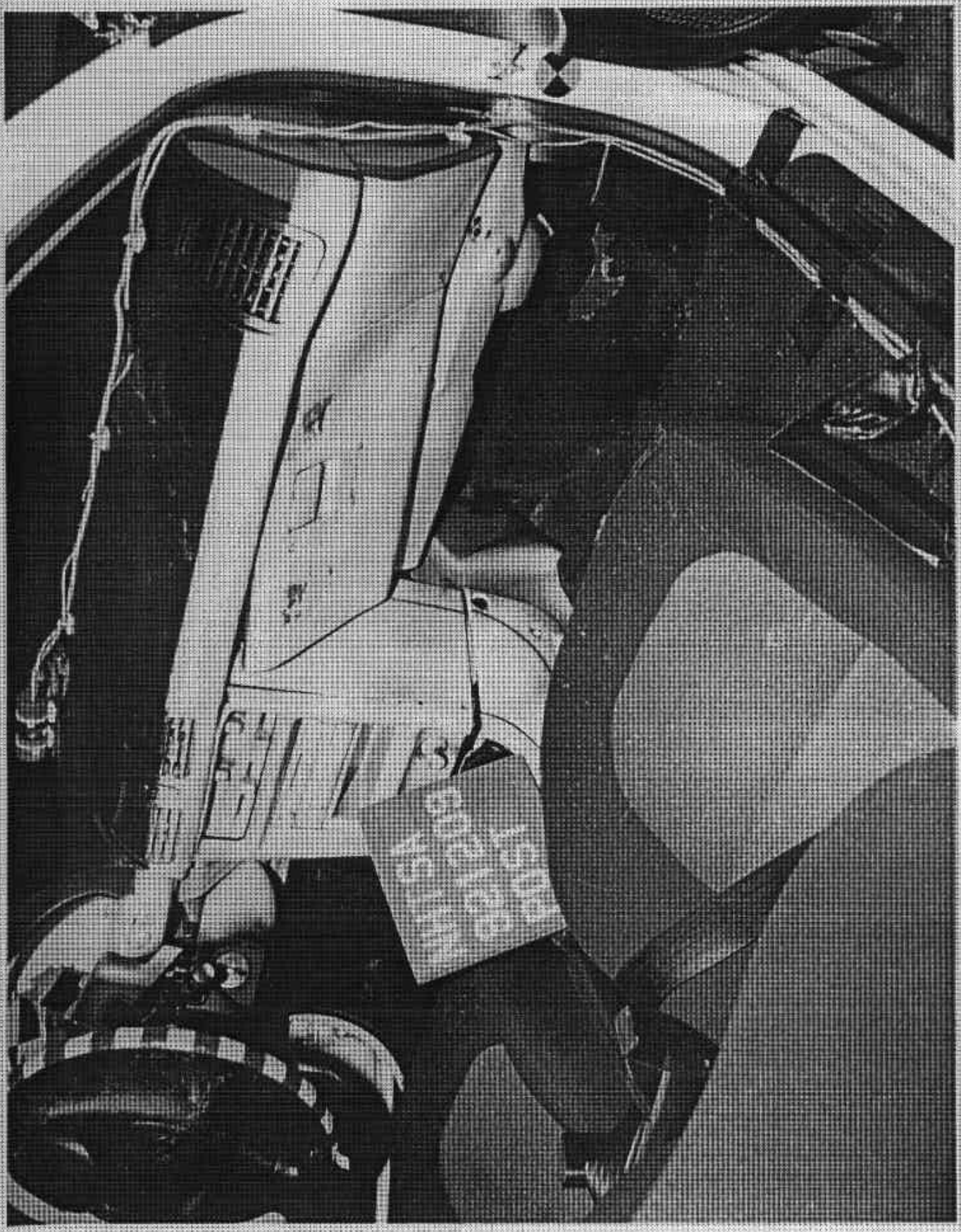


FIGURE A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

FIGURE A-46. PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

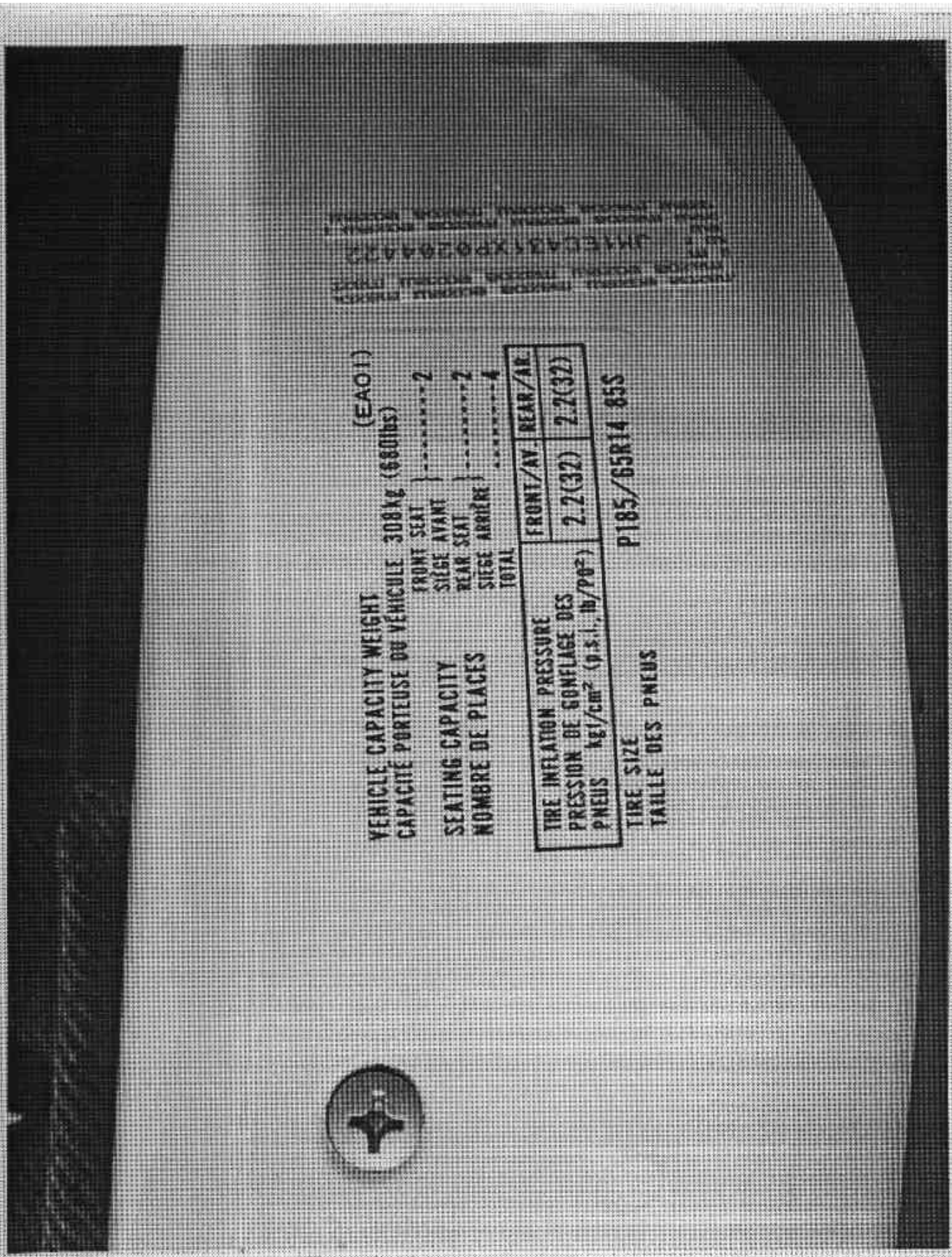


FIGURE A-47. PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL VIEW

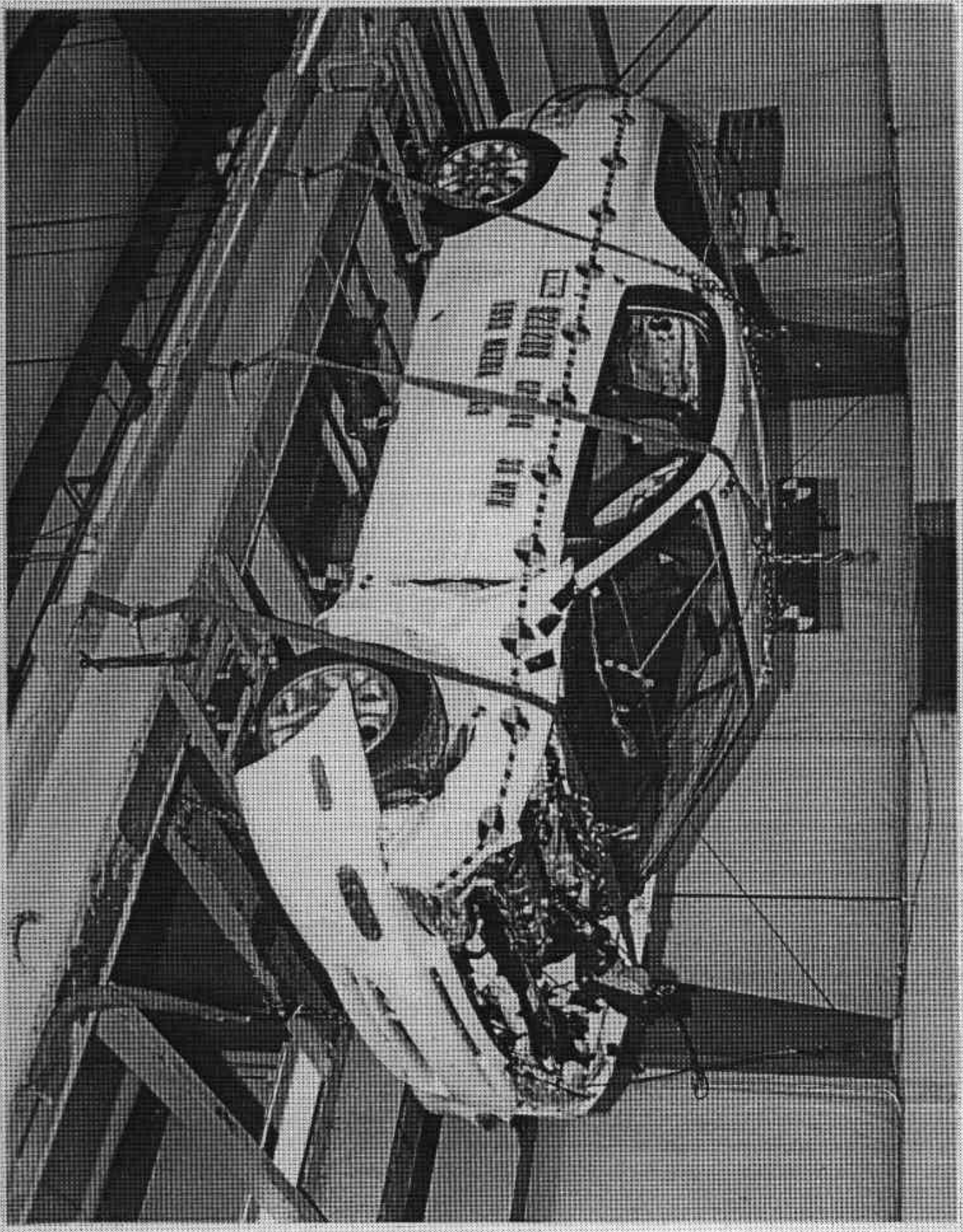
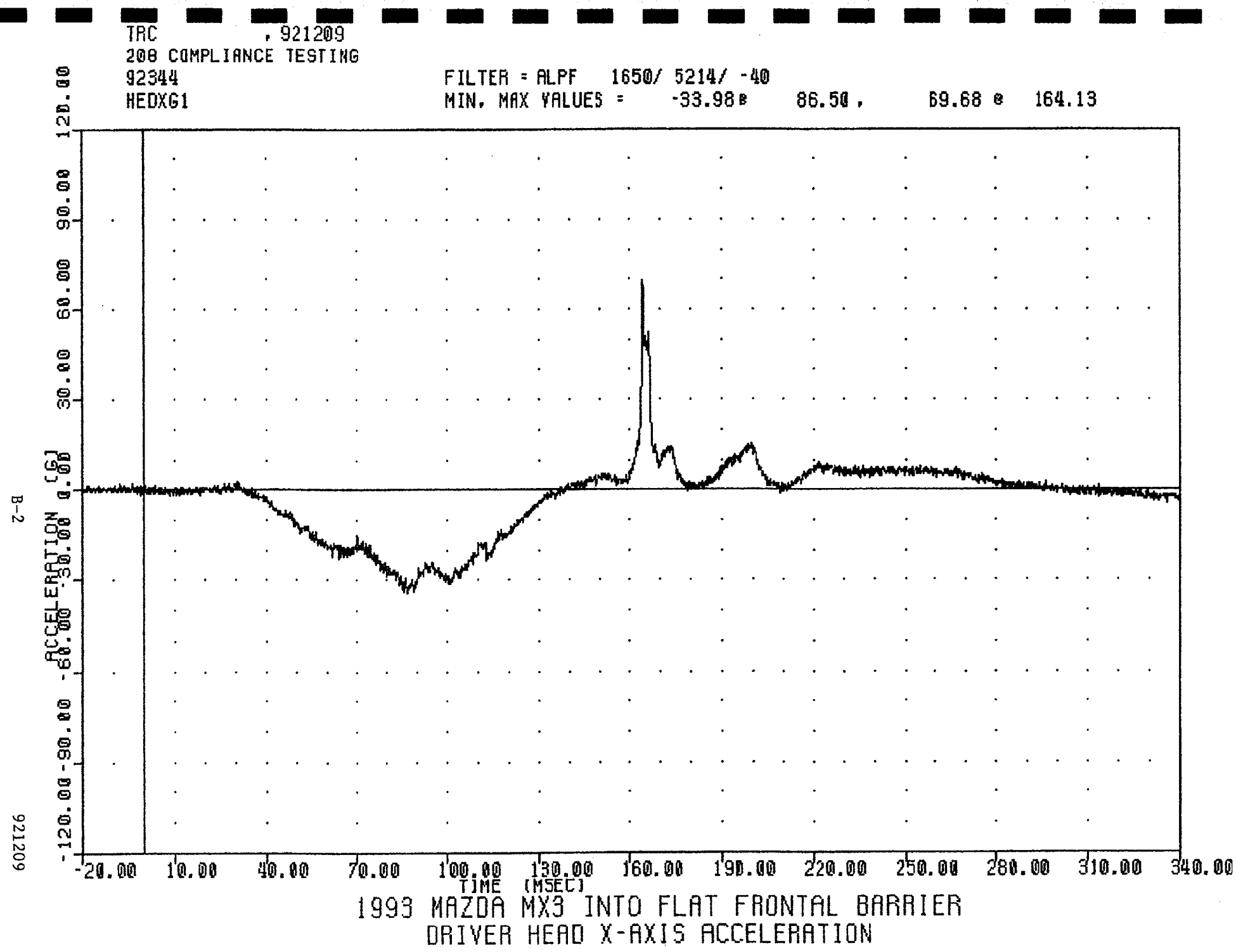


FIGURE A-48. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW

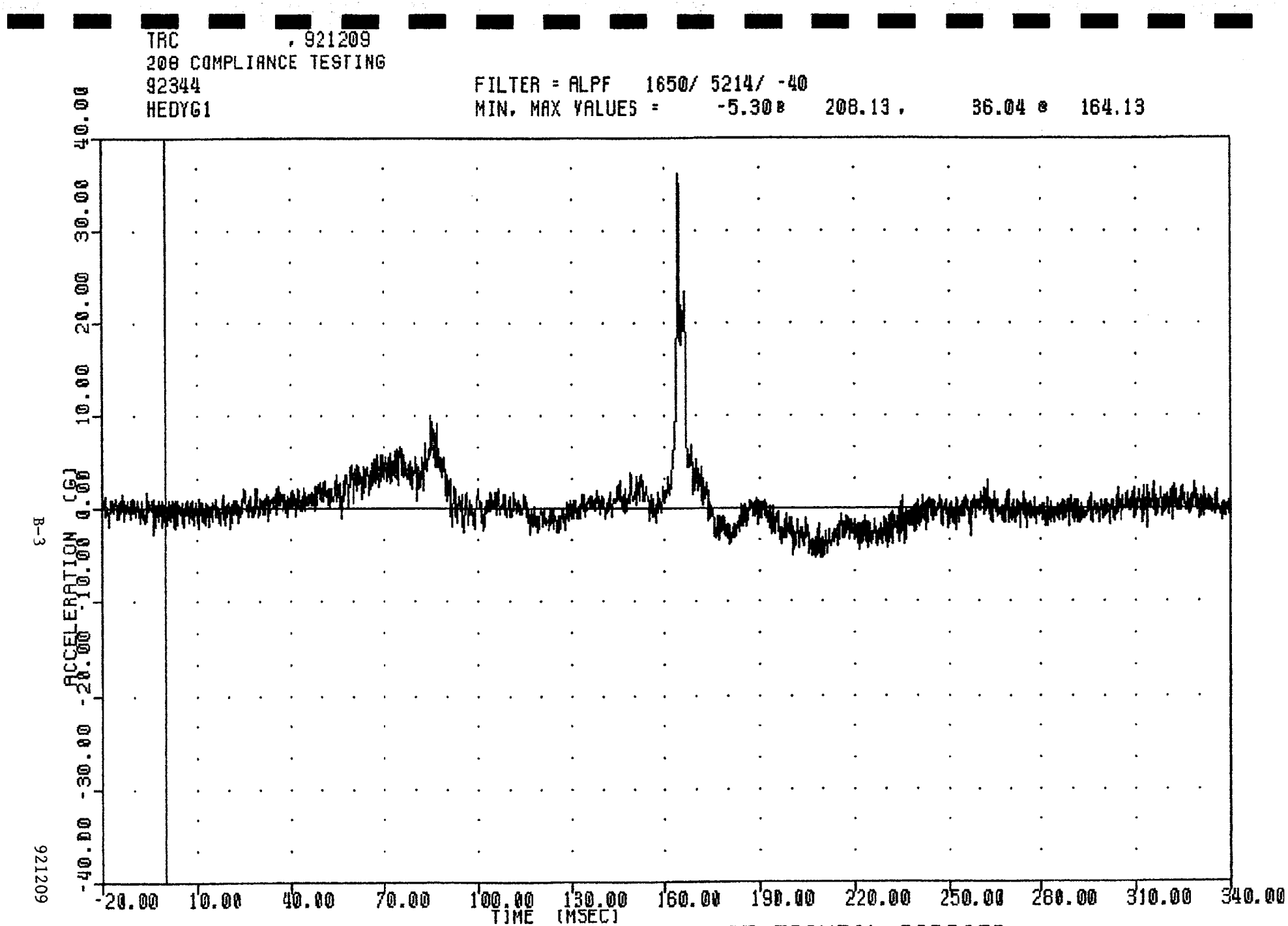
APPENDIX B

DATA PLOTS



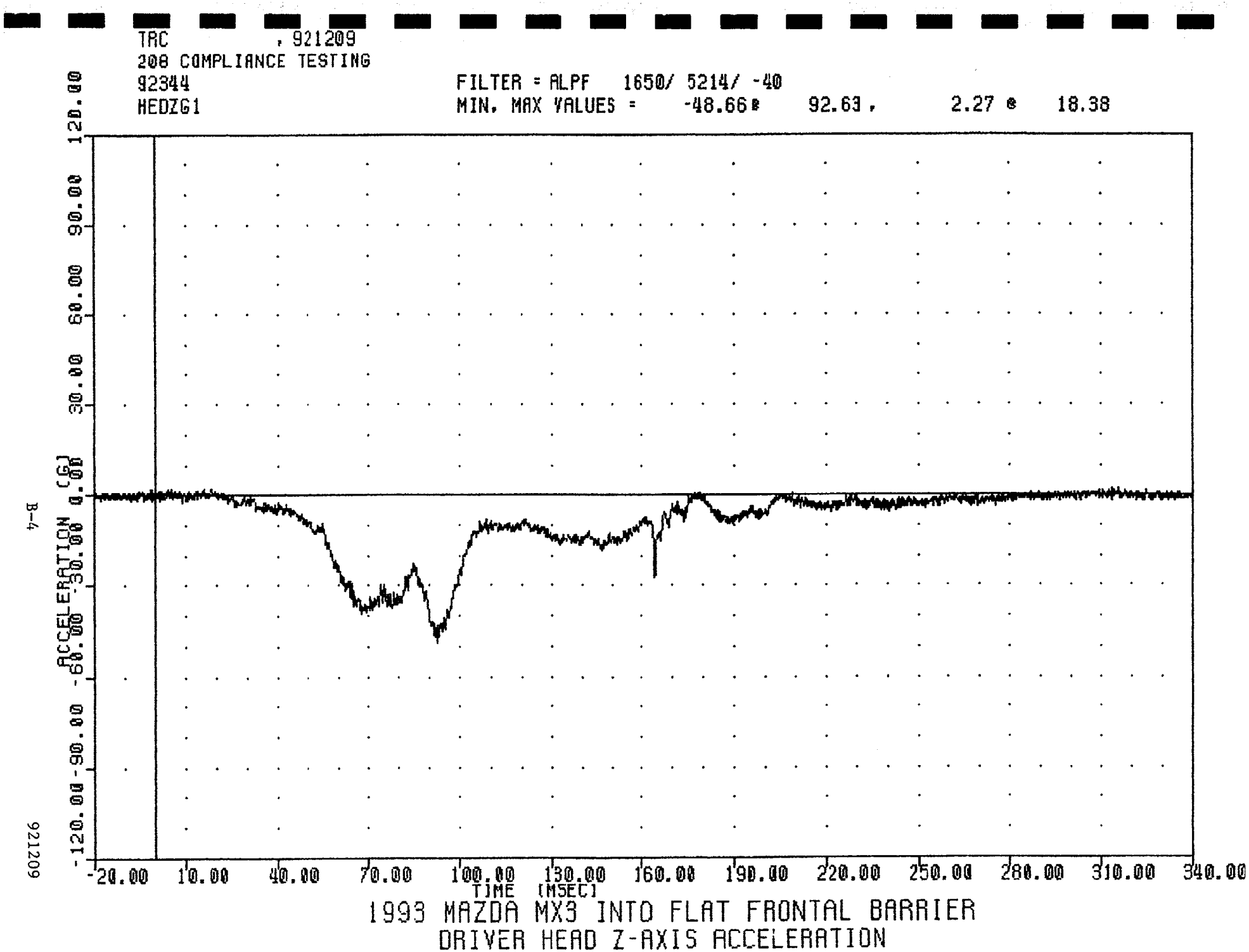
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER HEAD X-AXIS ACCELERATION

921209



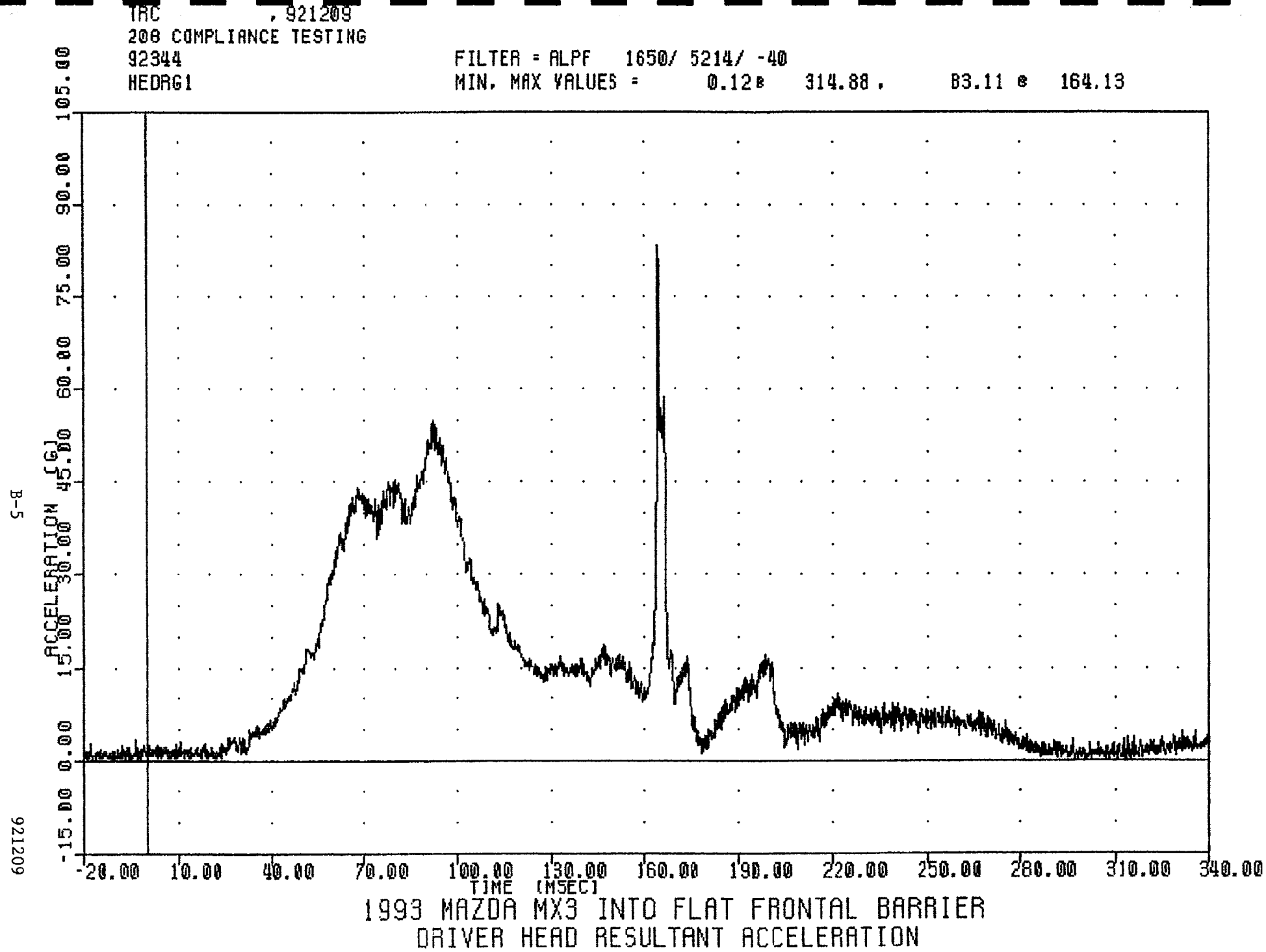
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

921209

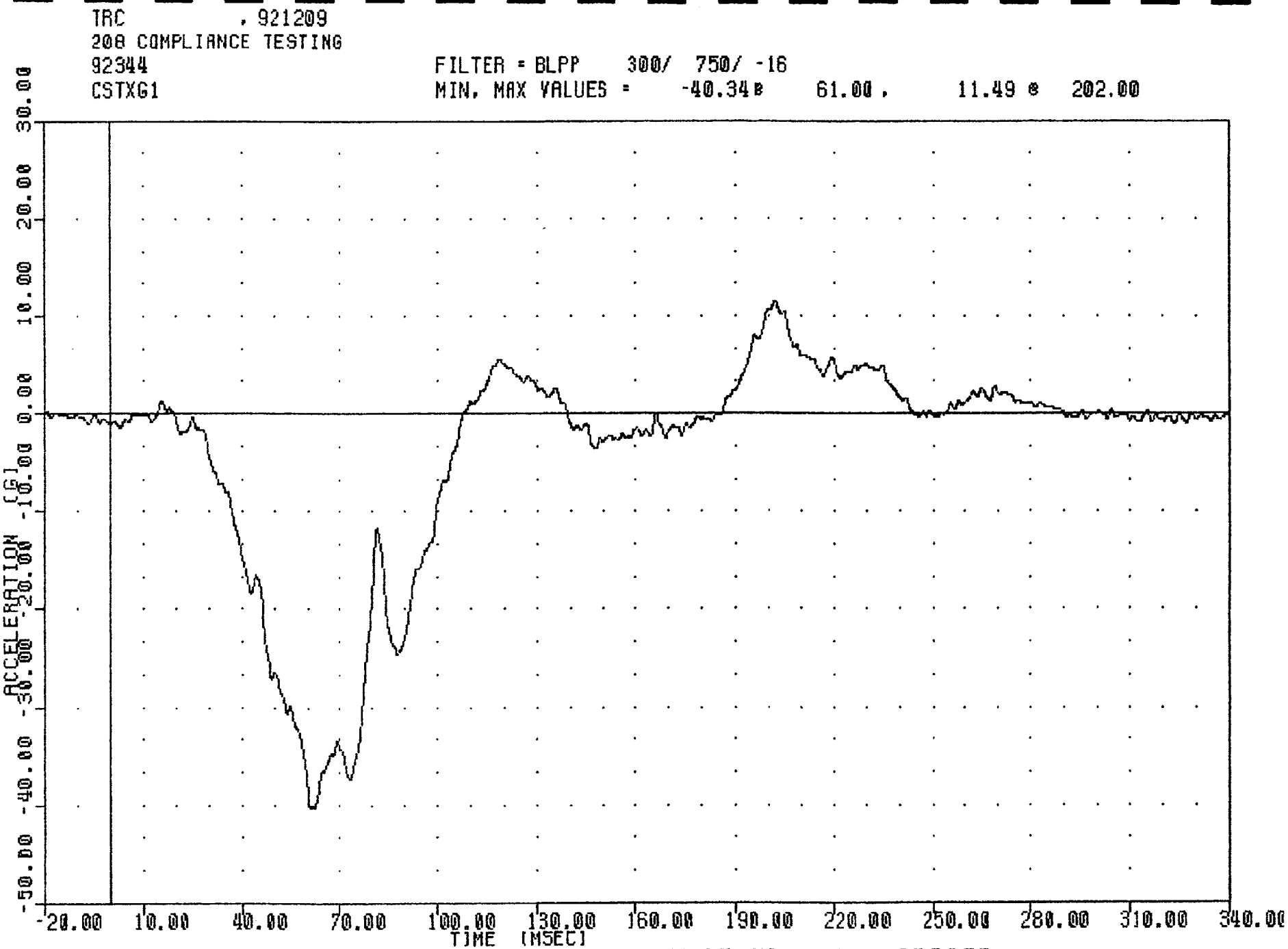


1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

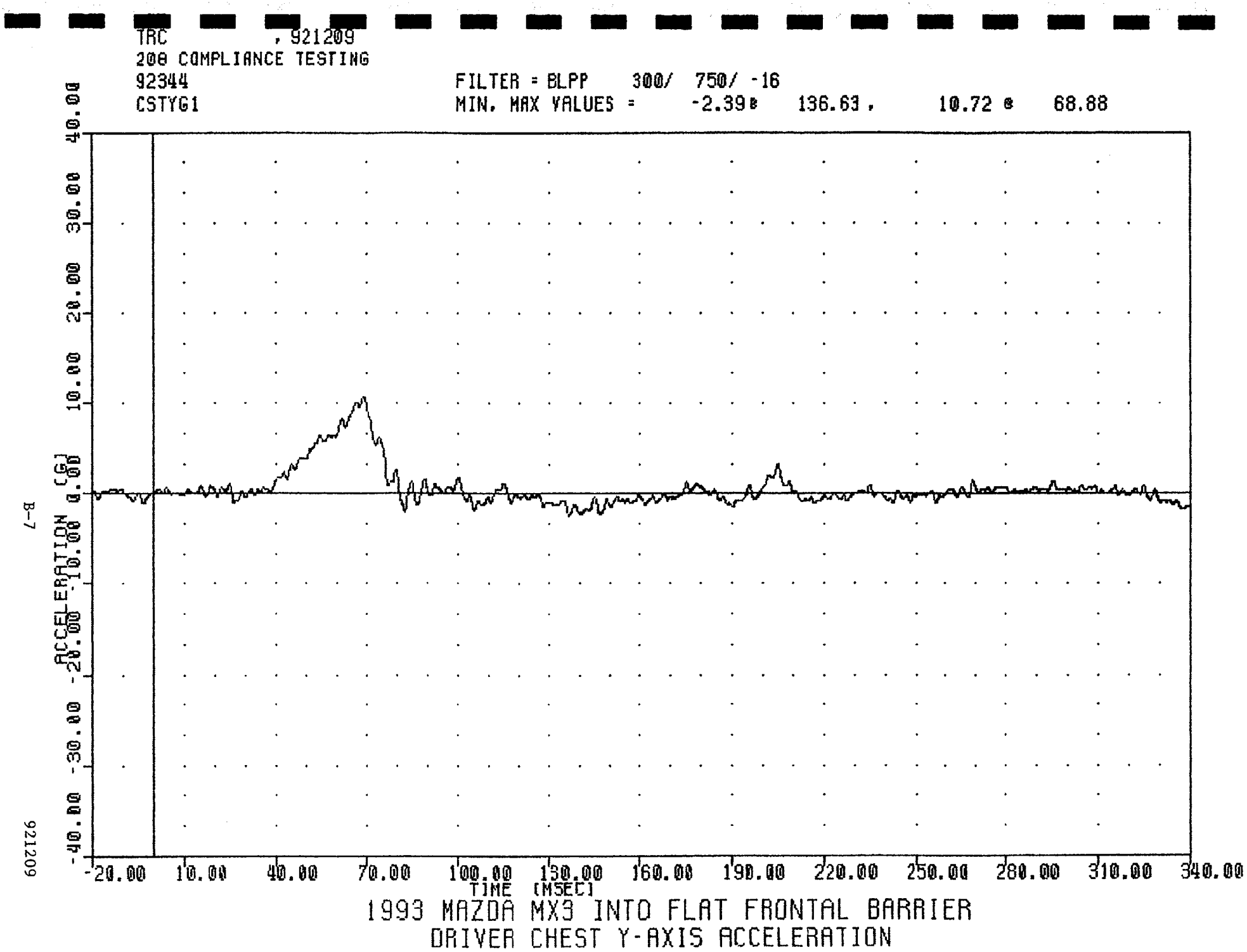
921209



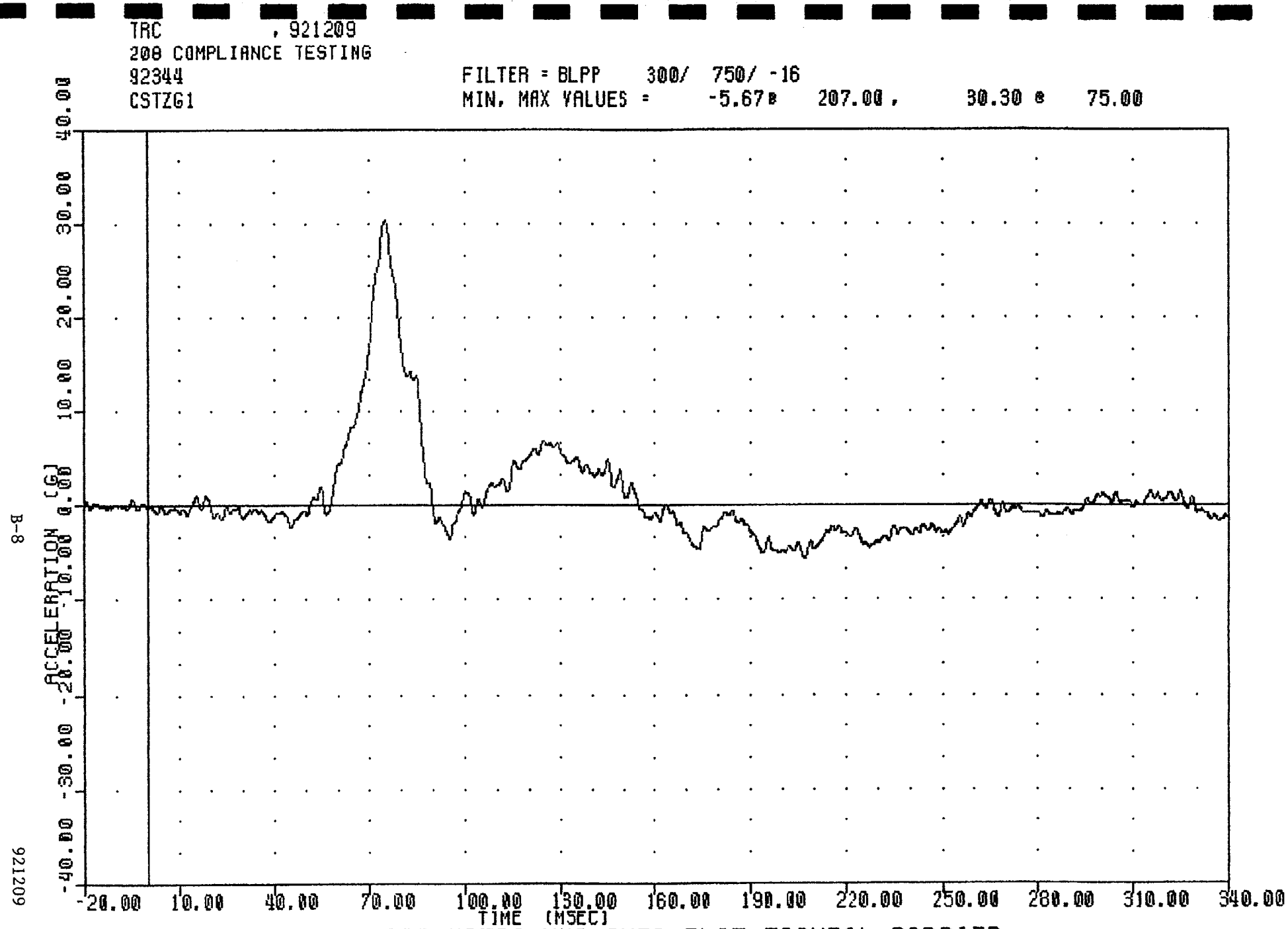
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION



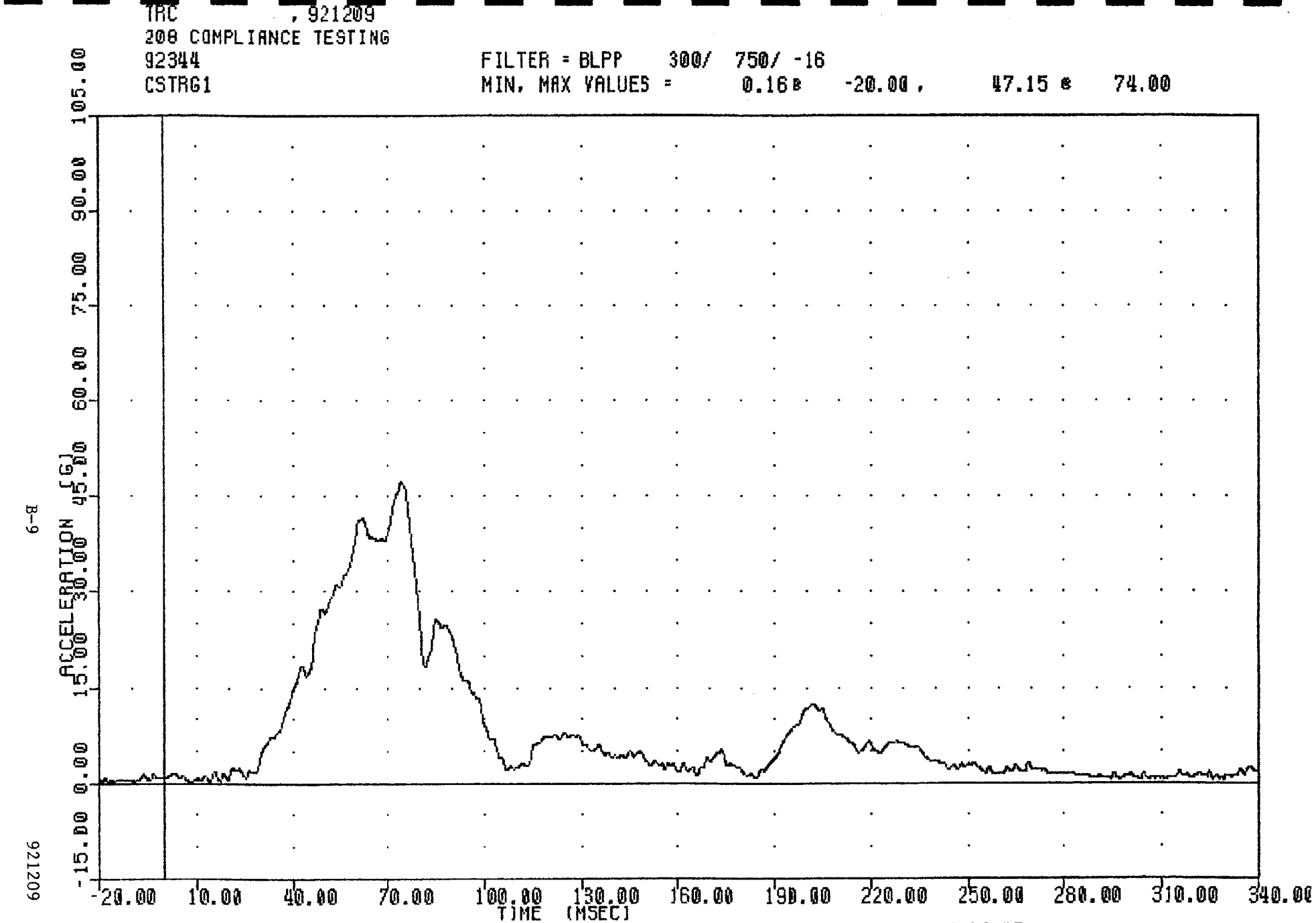
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION

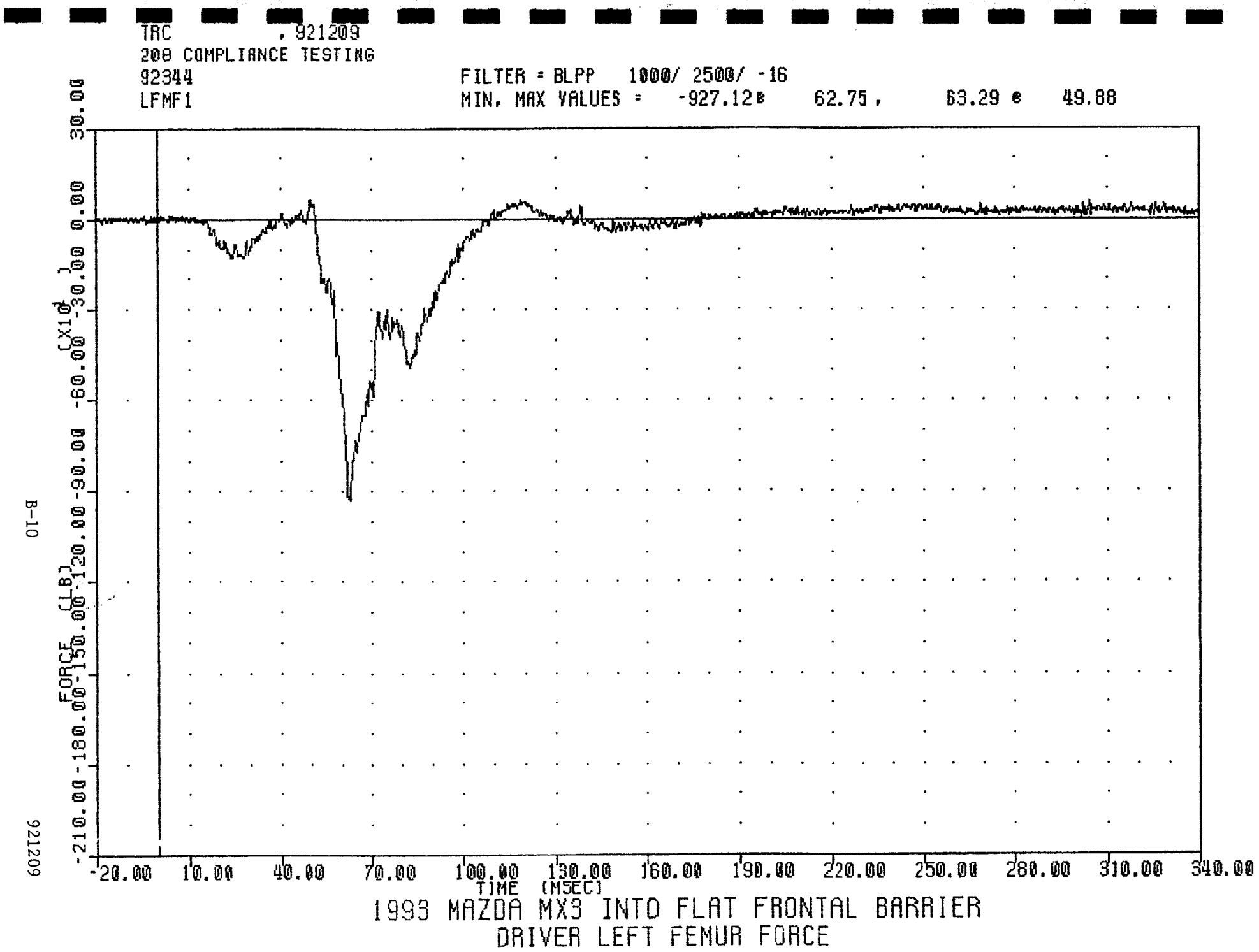


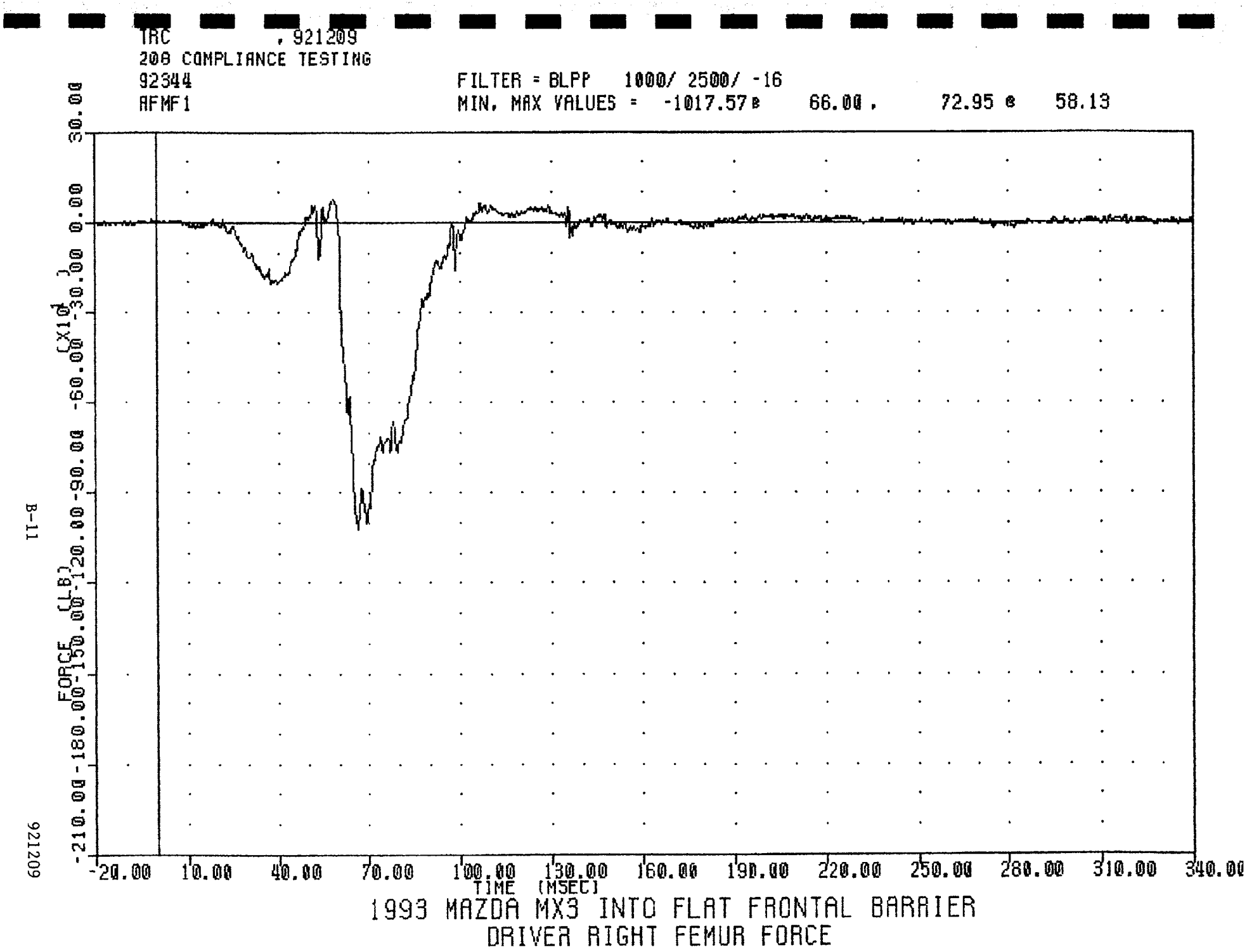
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

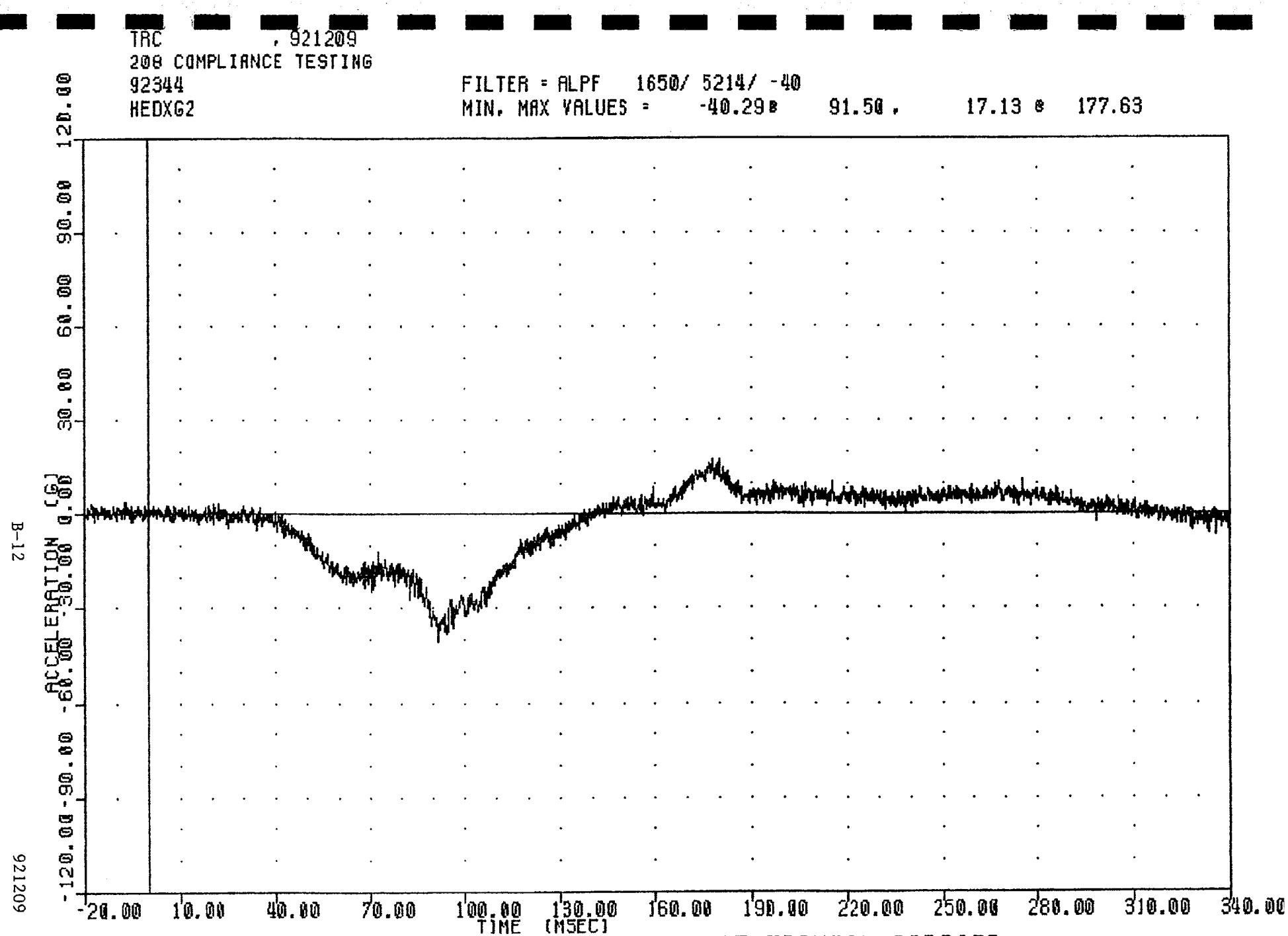
921209


TRC , 921209
208 COMPLIANCE TESTING
92344
LFMF1
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -927.12 @ 62.75 , 63.29 @ 49.88
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
-180.00
-210.00
FORCE (LB) (X10^4)
-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)
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER LEFT FENUR FORCE

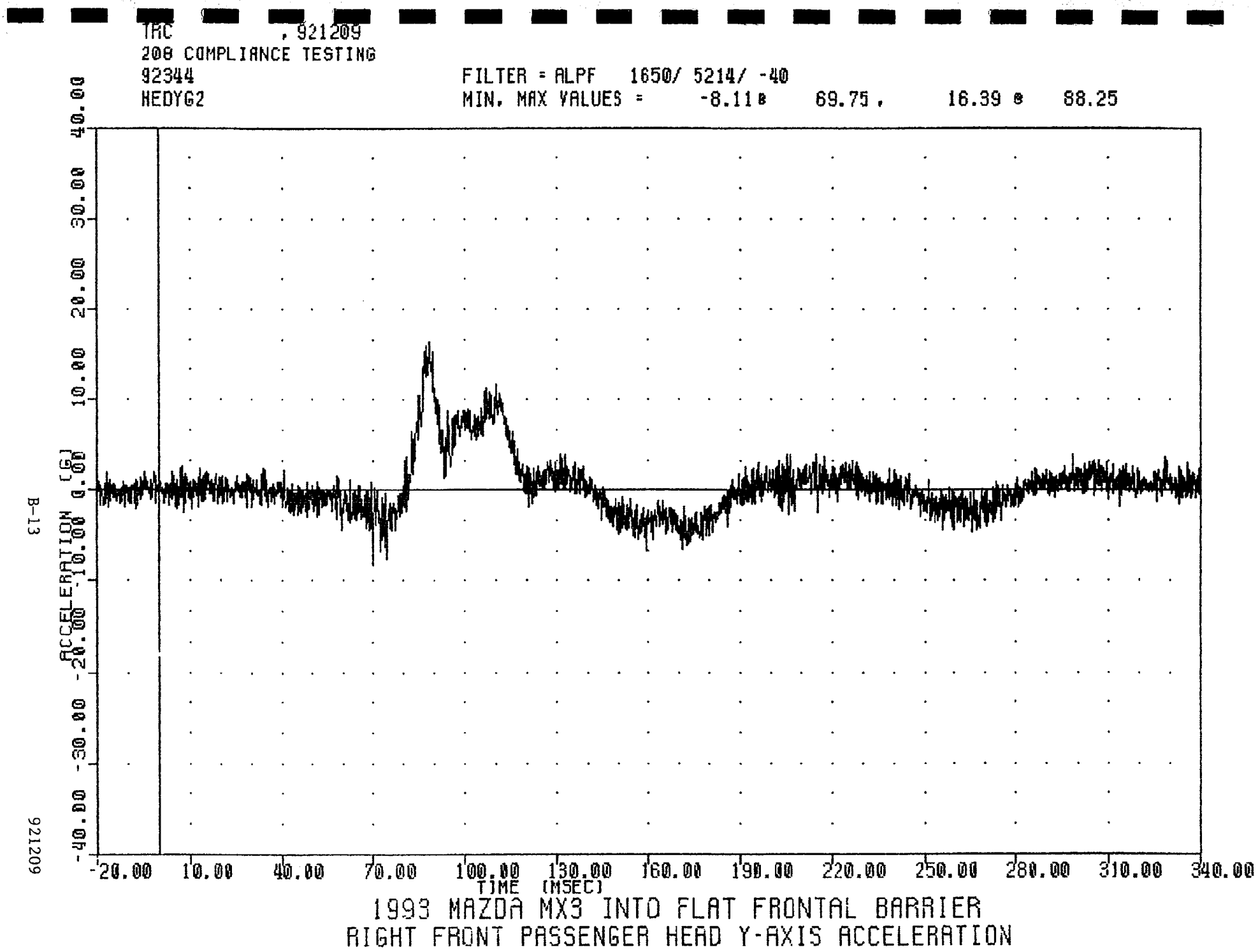


1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

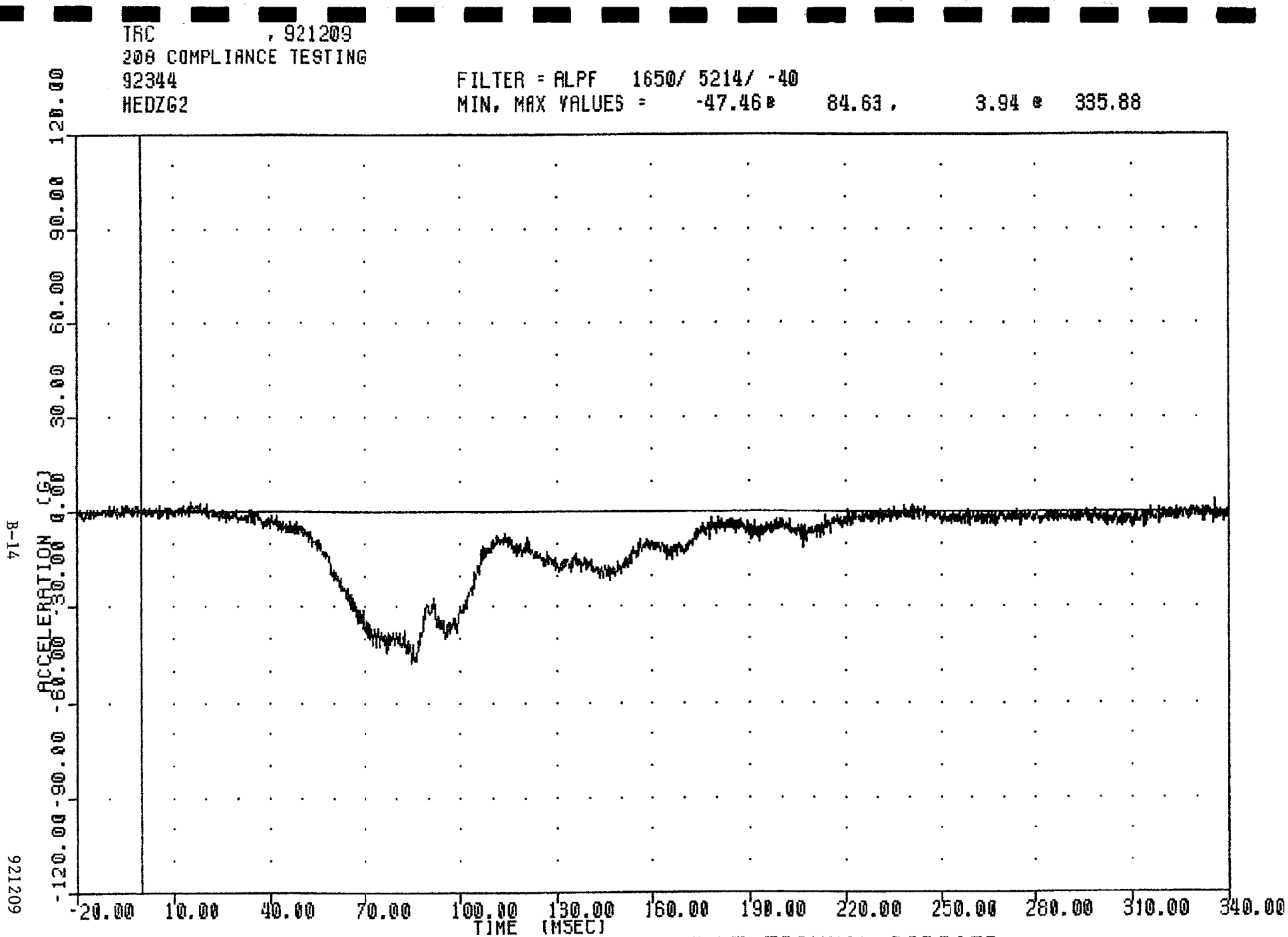
921209



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

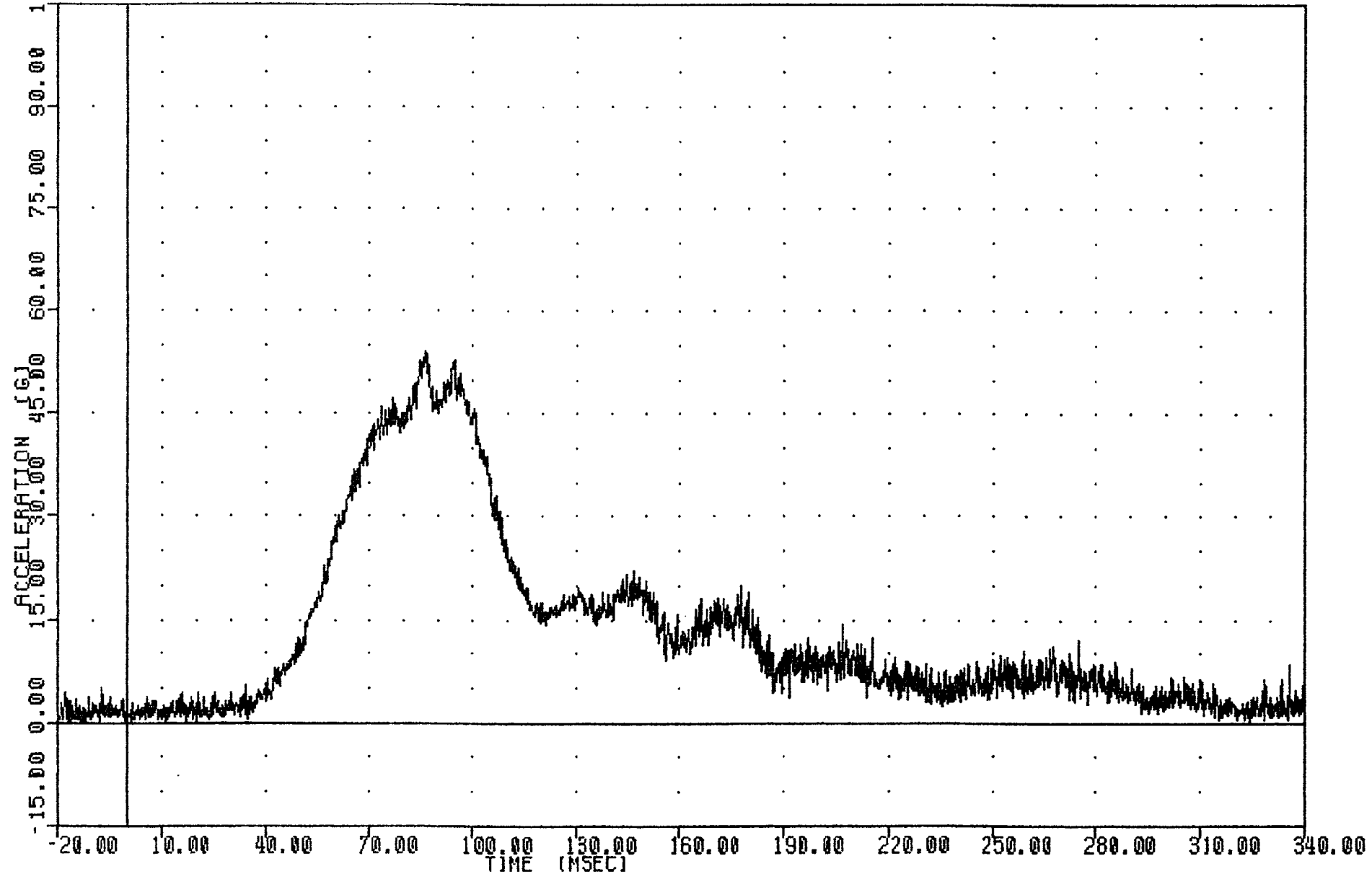


1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

921209

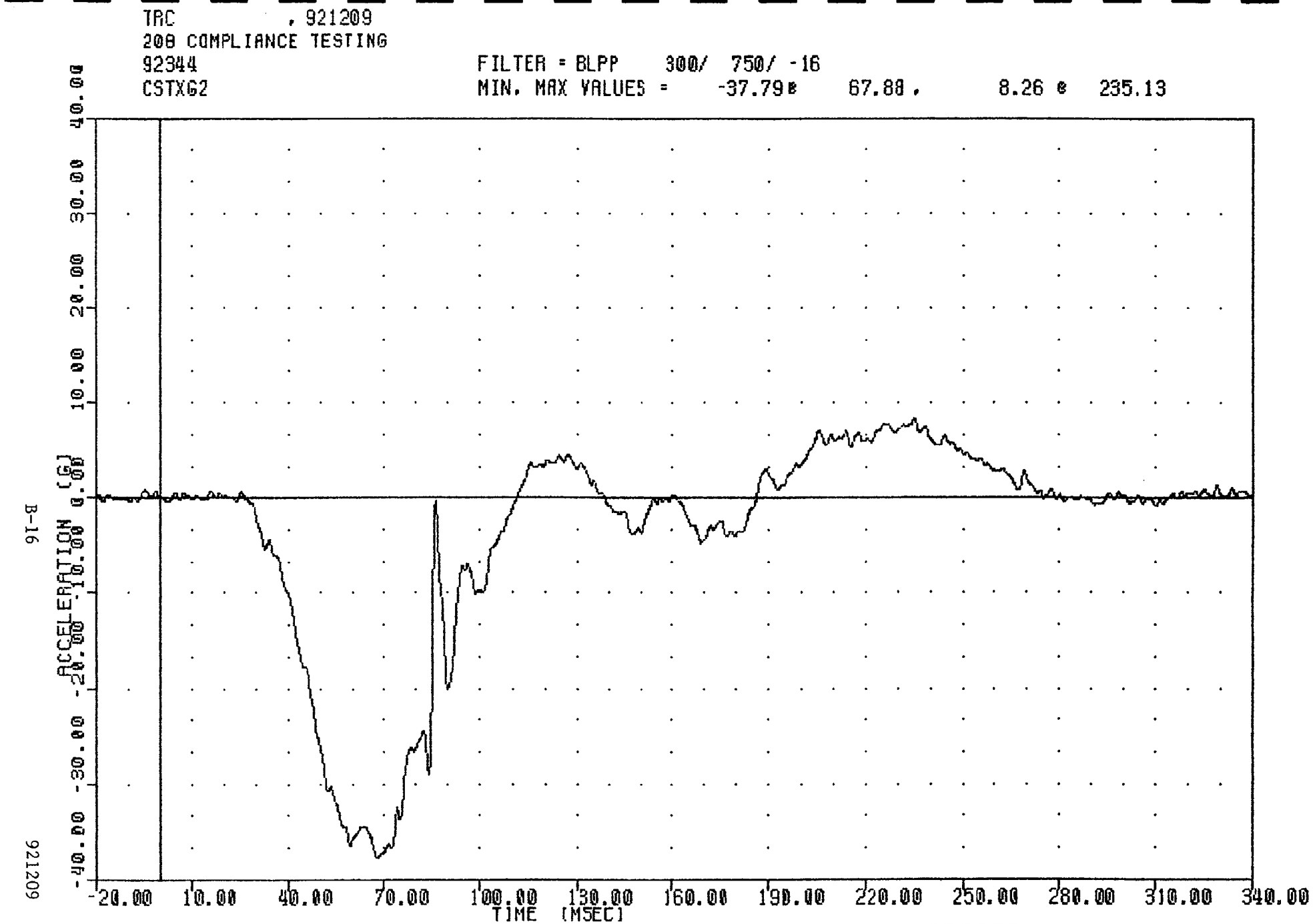
TRC , 921209
208 COMPLIANCE TESTING
92344
HEDRG2

FILTER = CLPF 1650/ 5214/ -40
MIN, MAX VALUES = 0.15 @ -17.00 , 53.89 @ 86.13



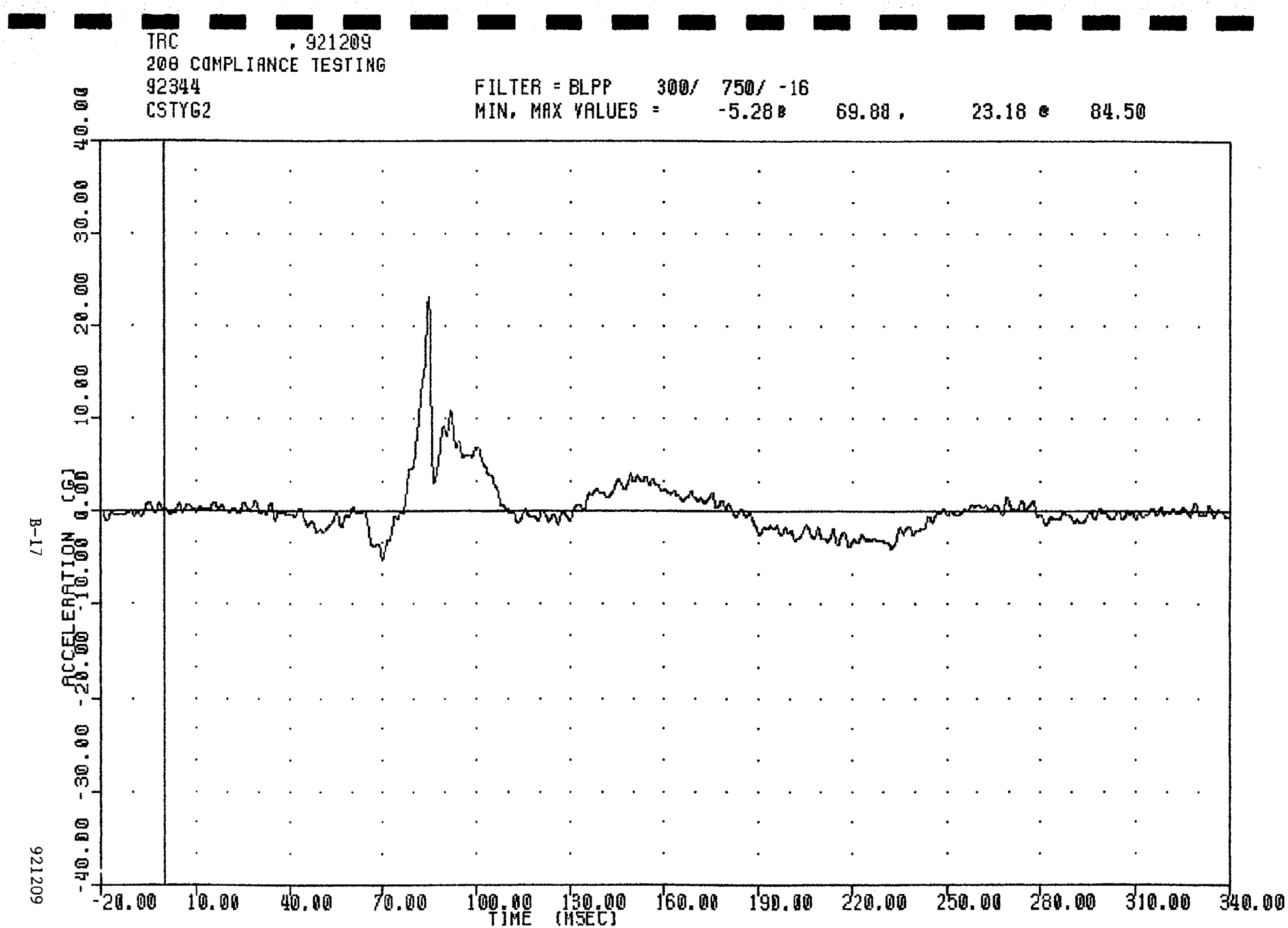
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

921209

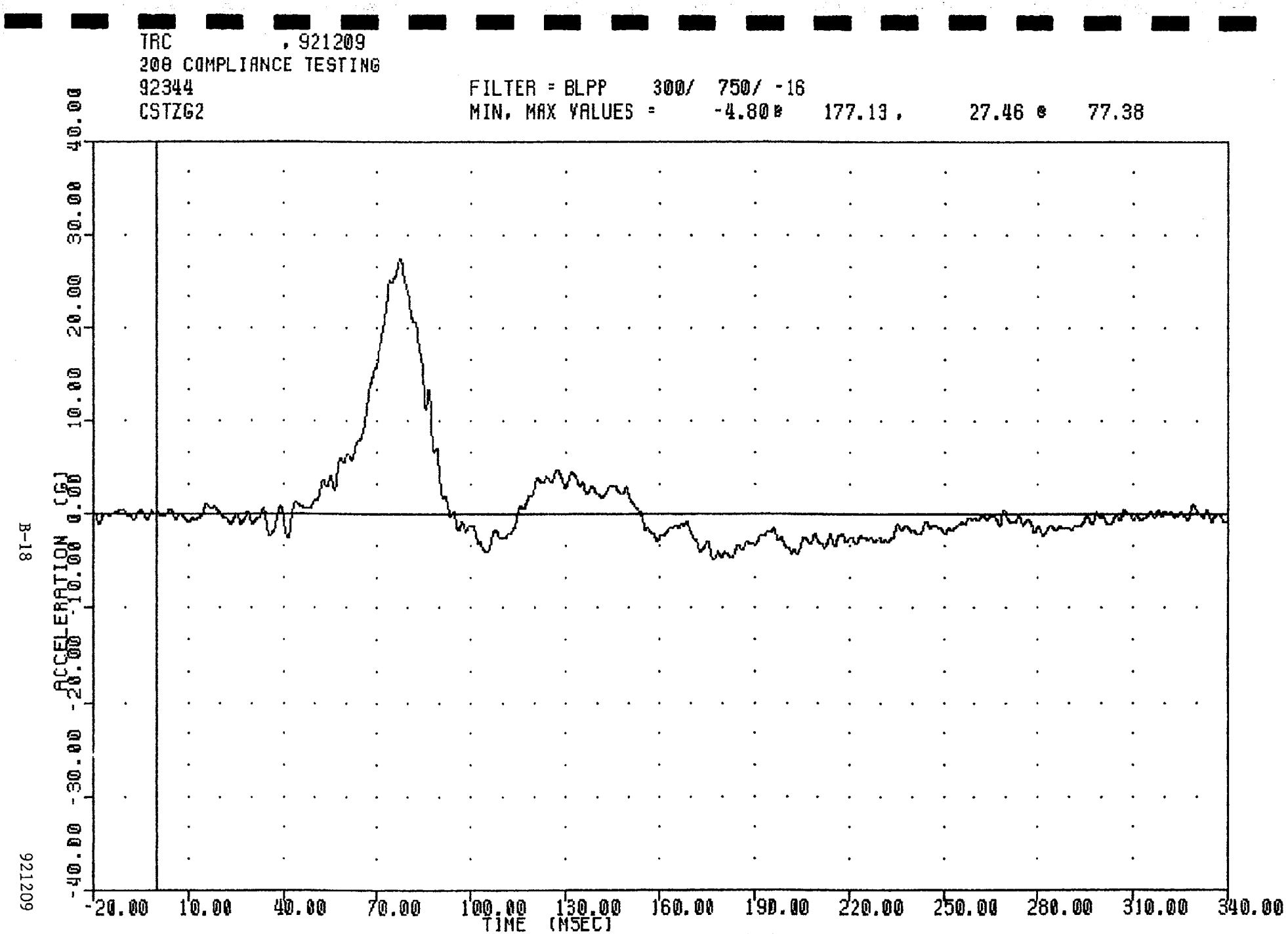


1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

921209

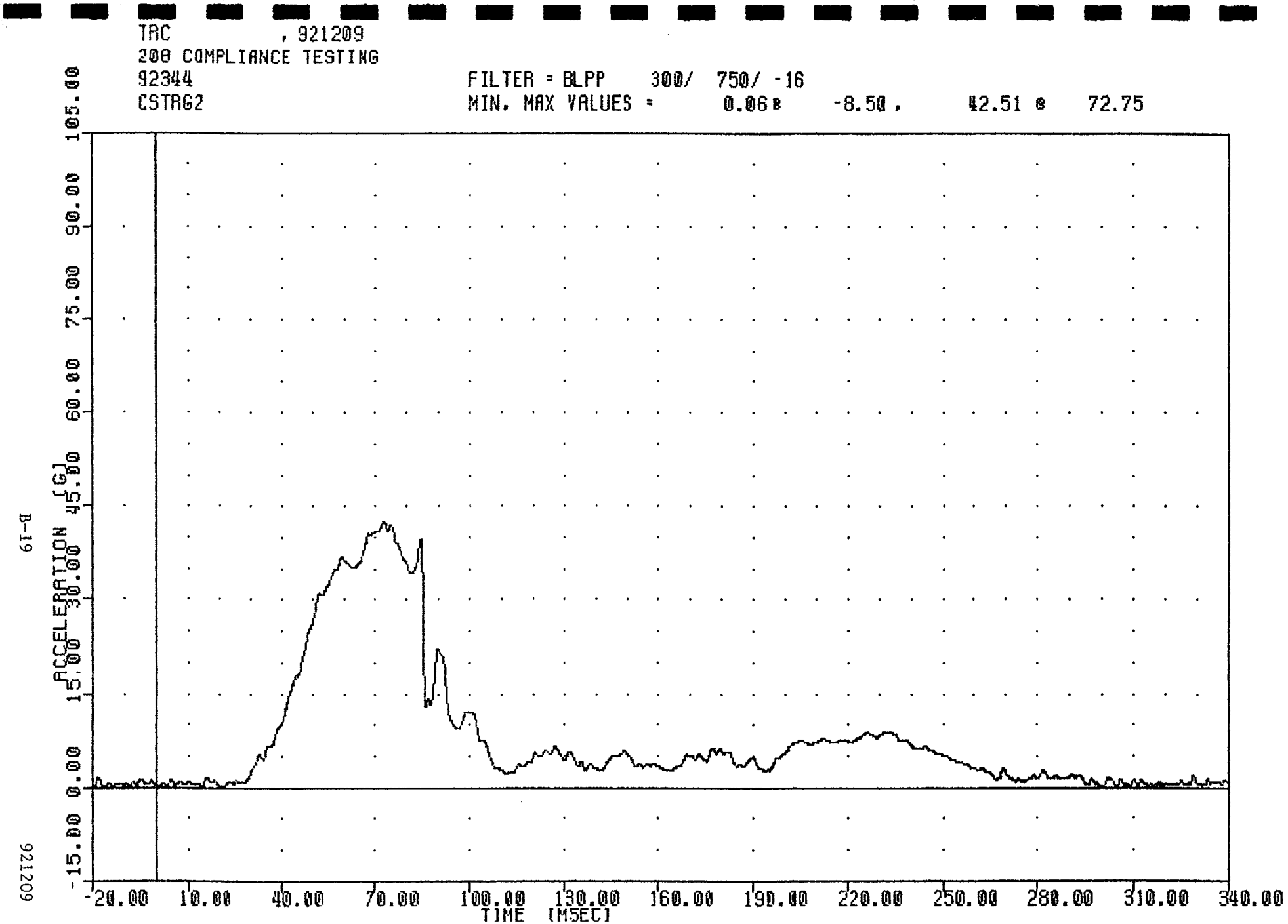


1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION



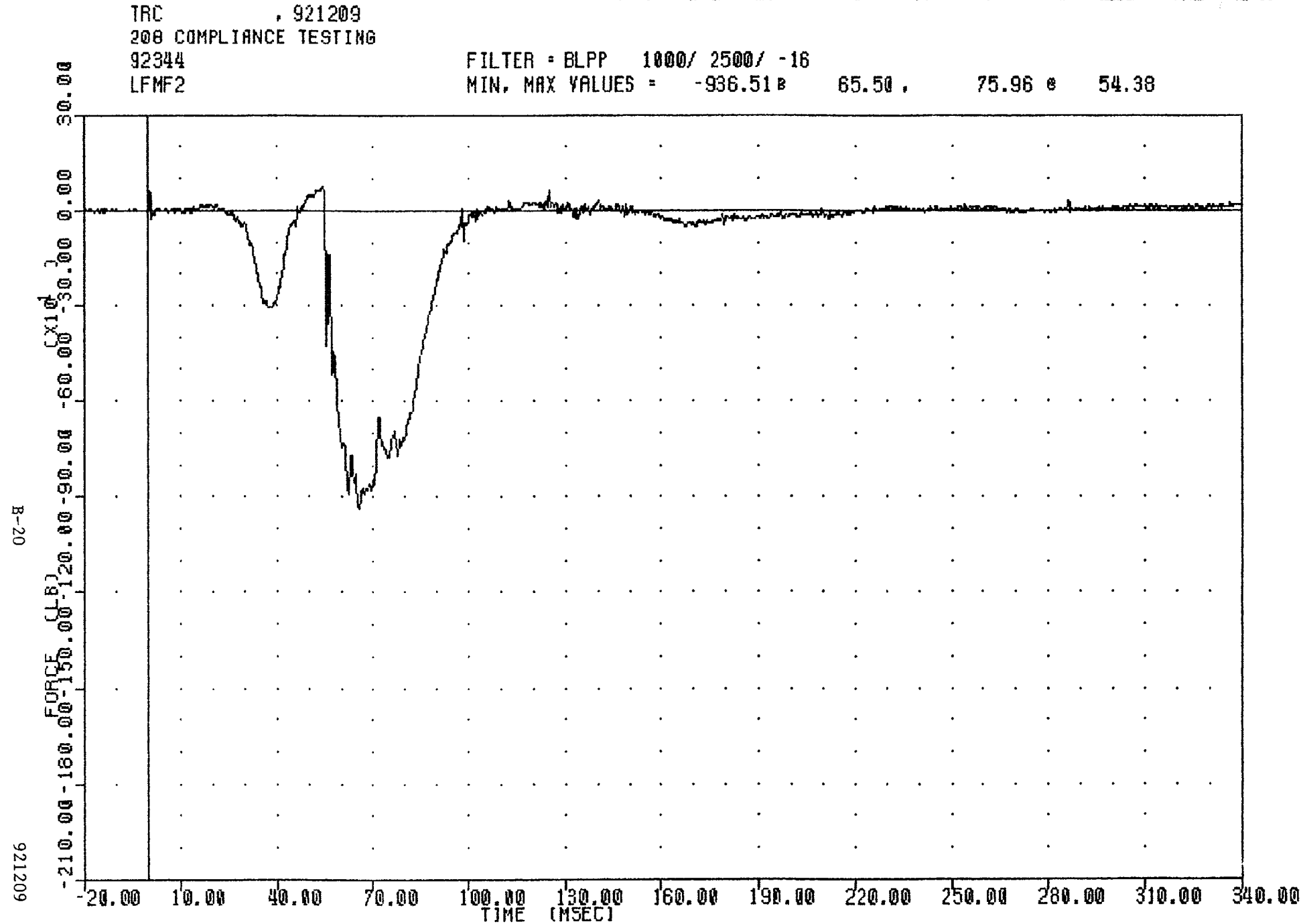
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

921209



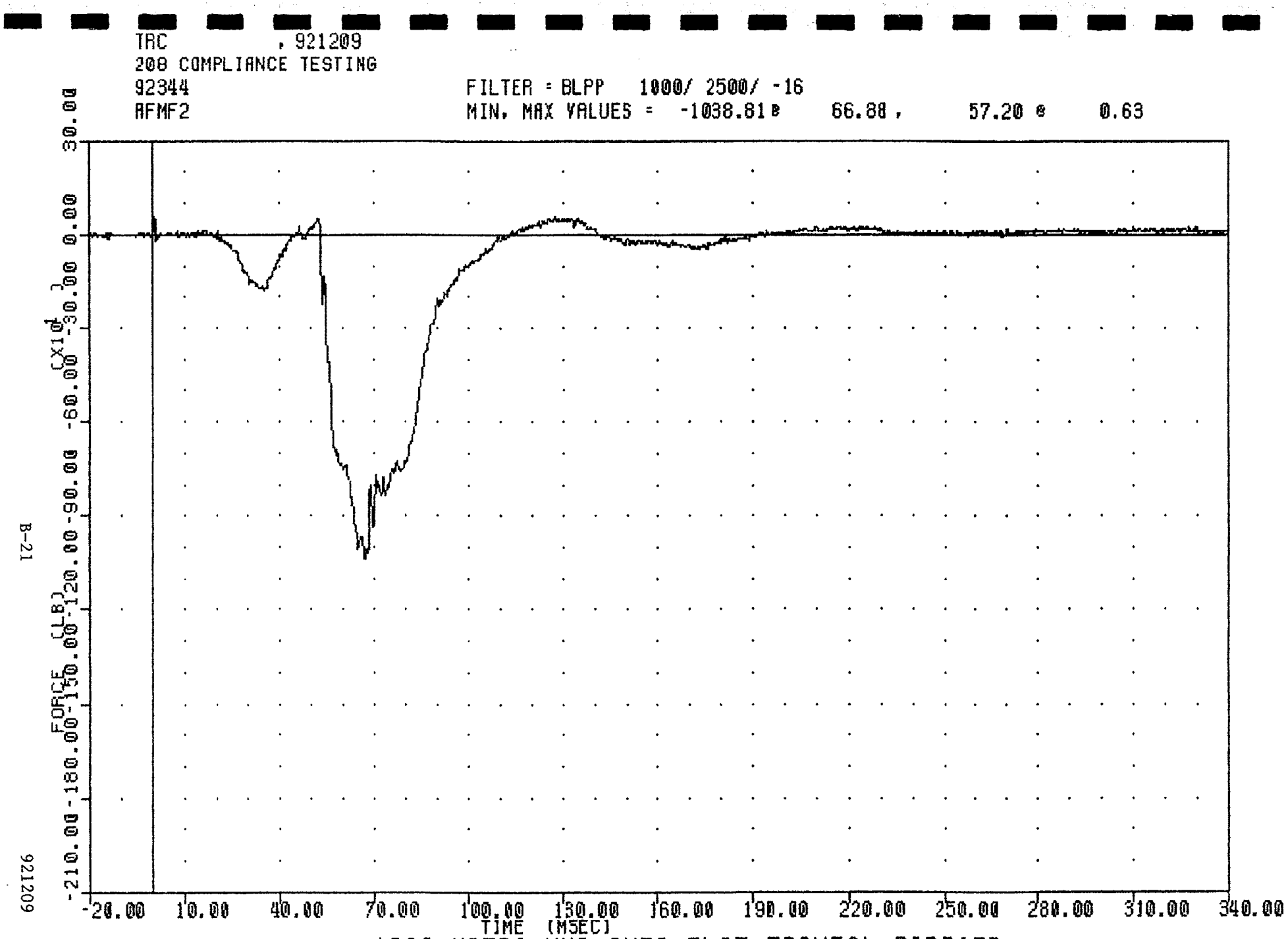
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

921209



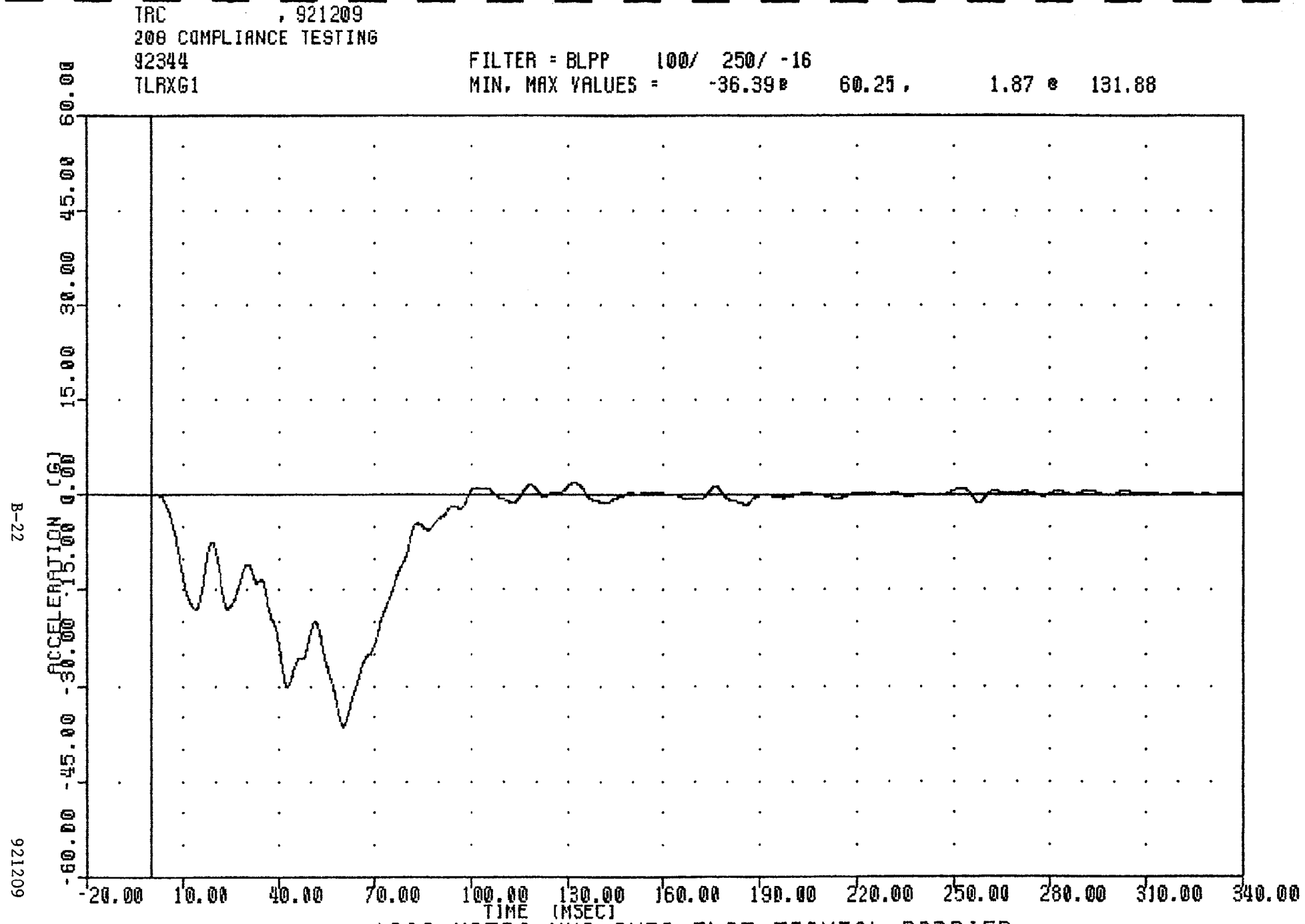
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

921209



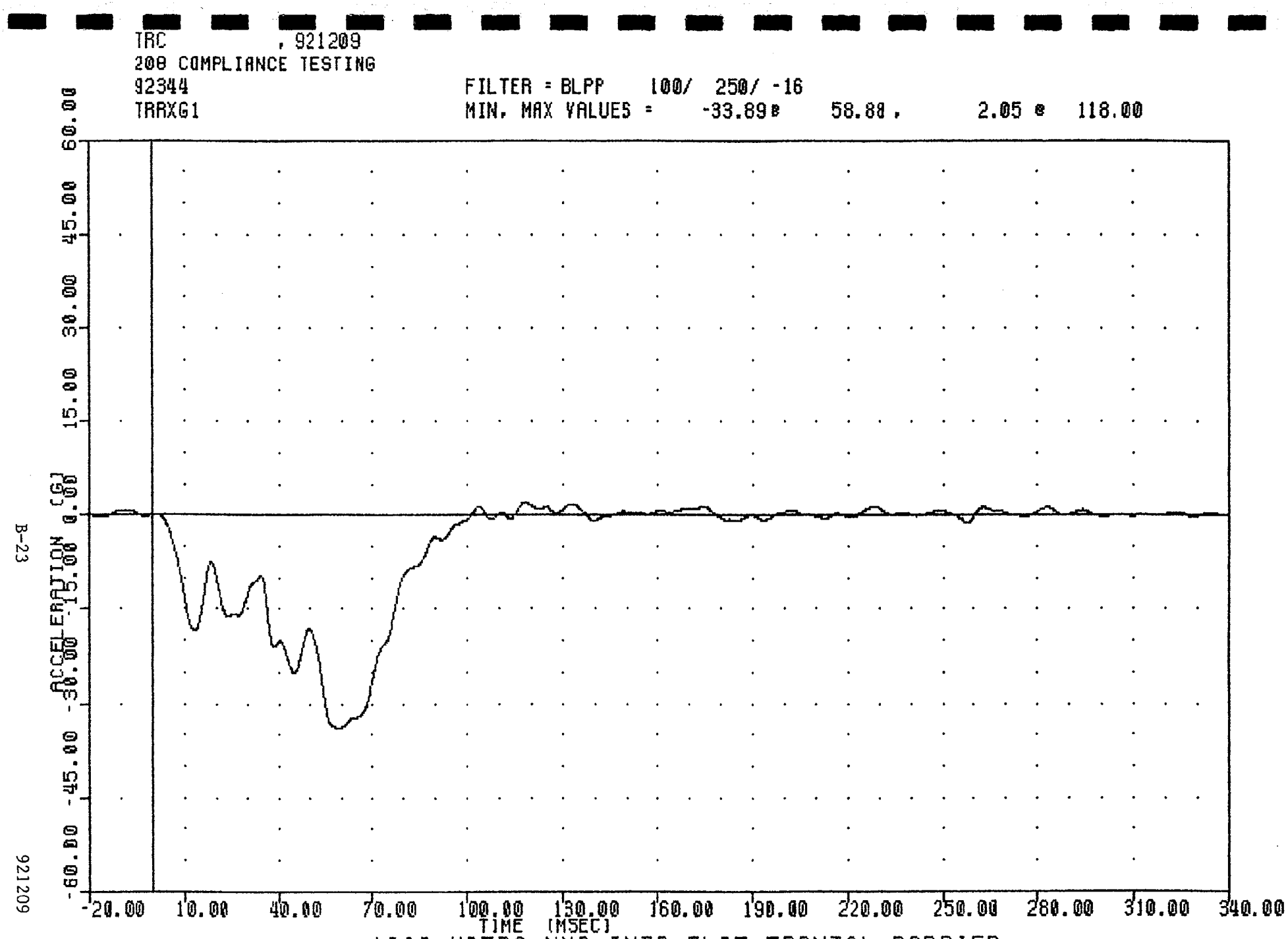
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

921209



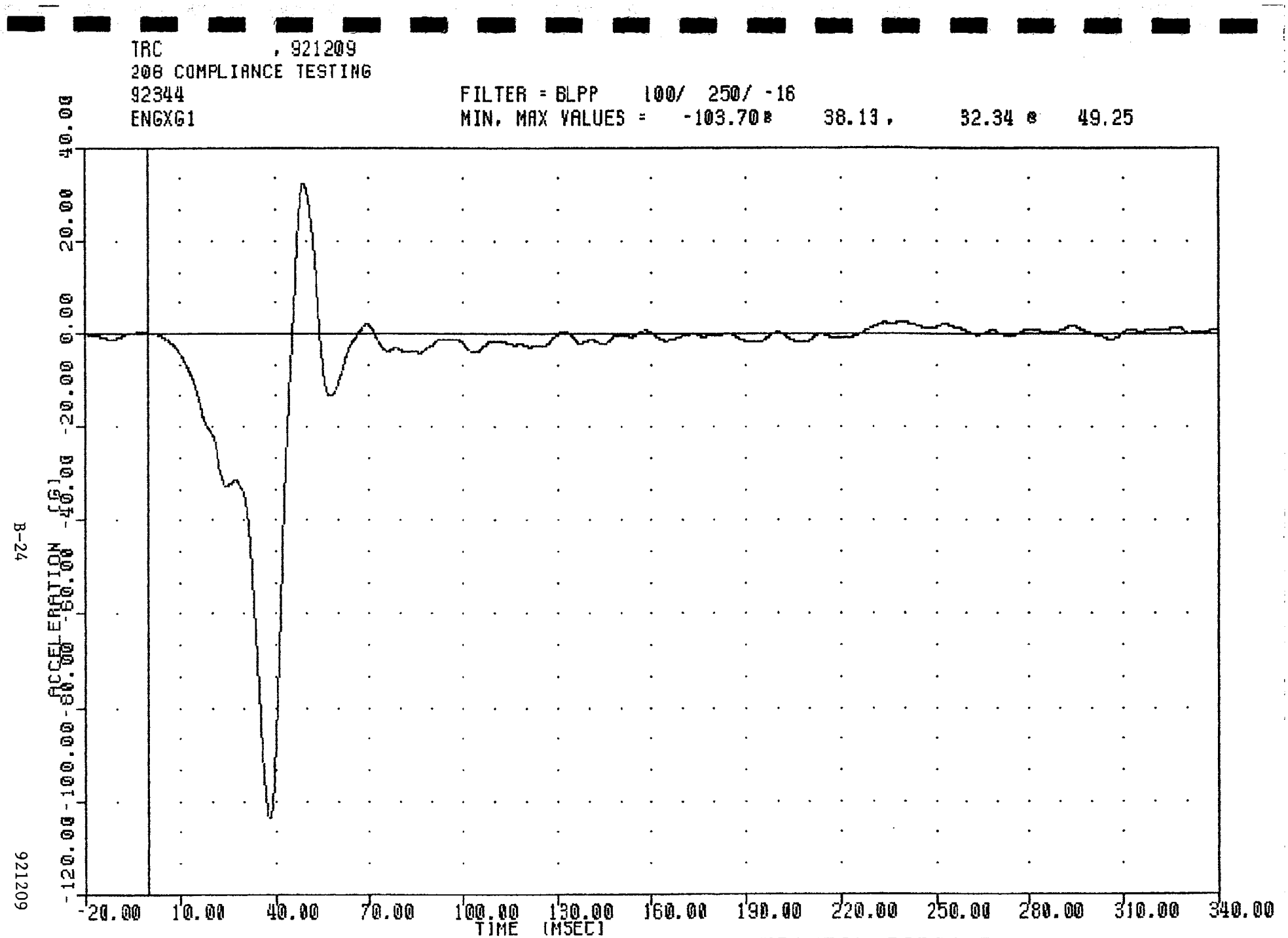
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

921209

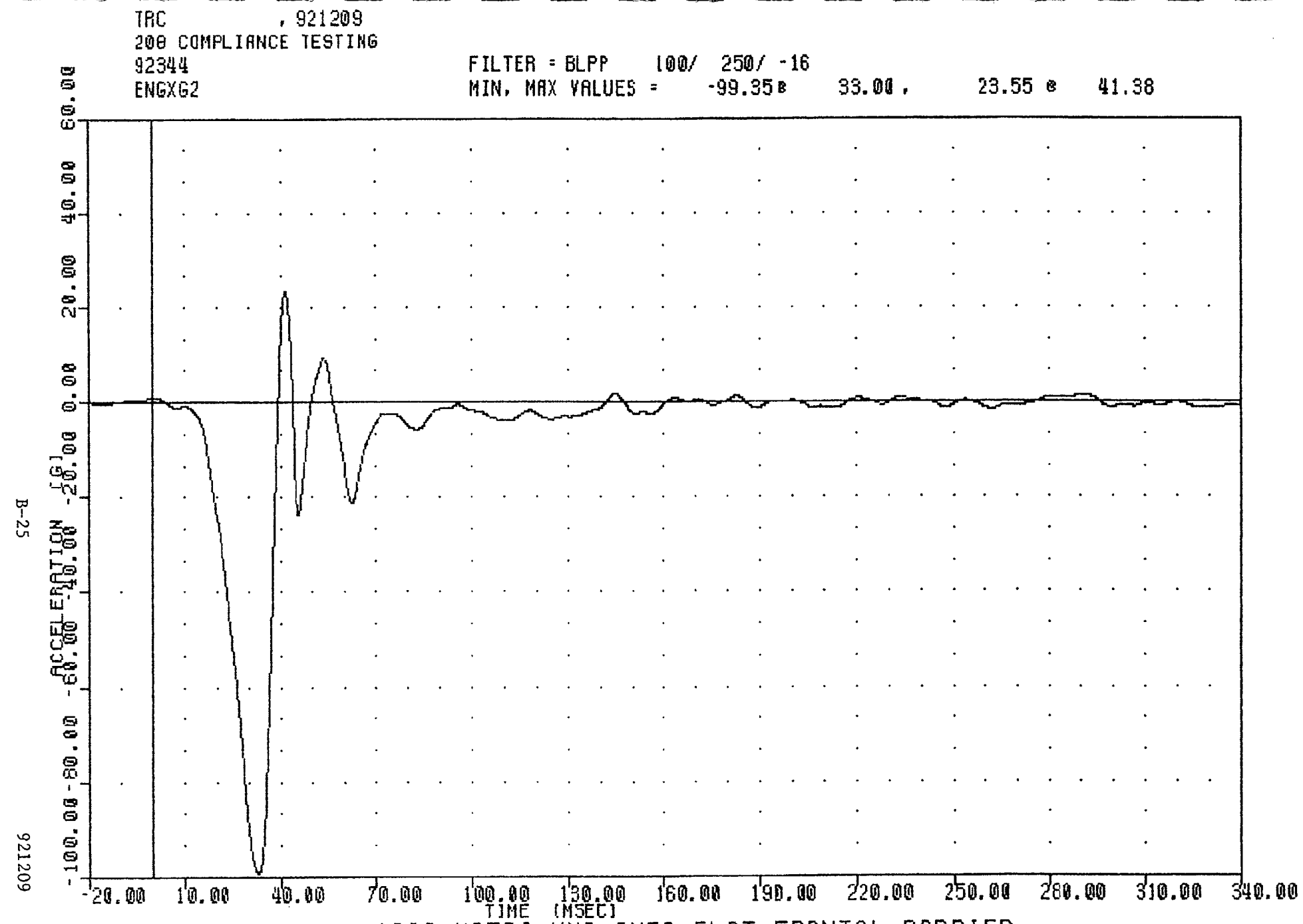


1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

921209



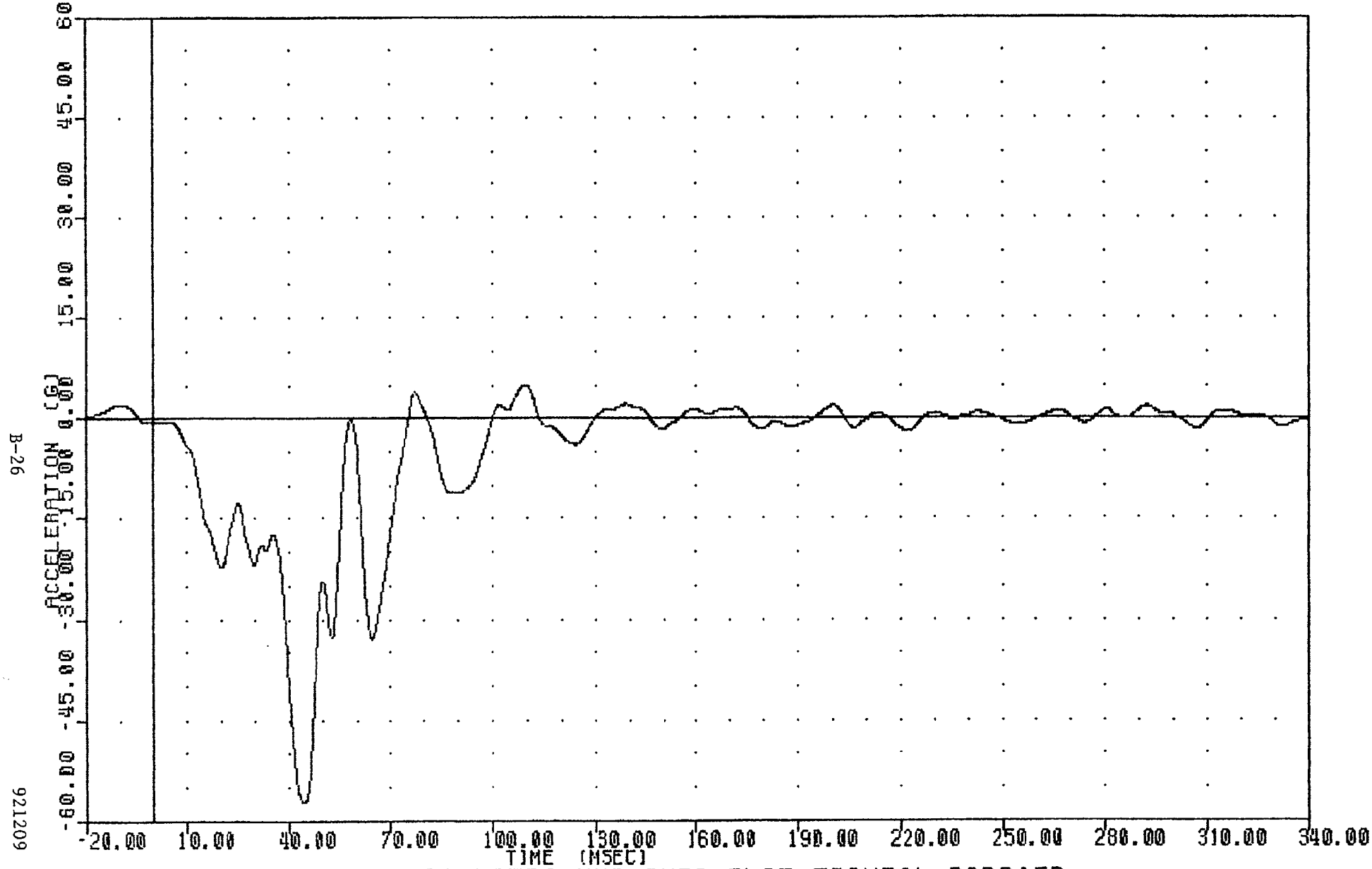
1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
ENGINE TOP X-AXIS ACCELERATION



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION

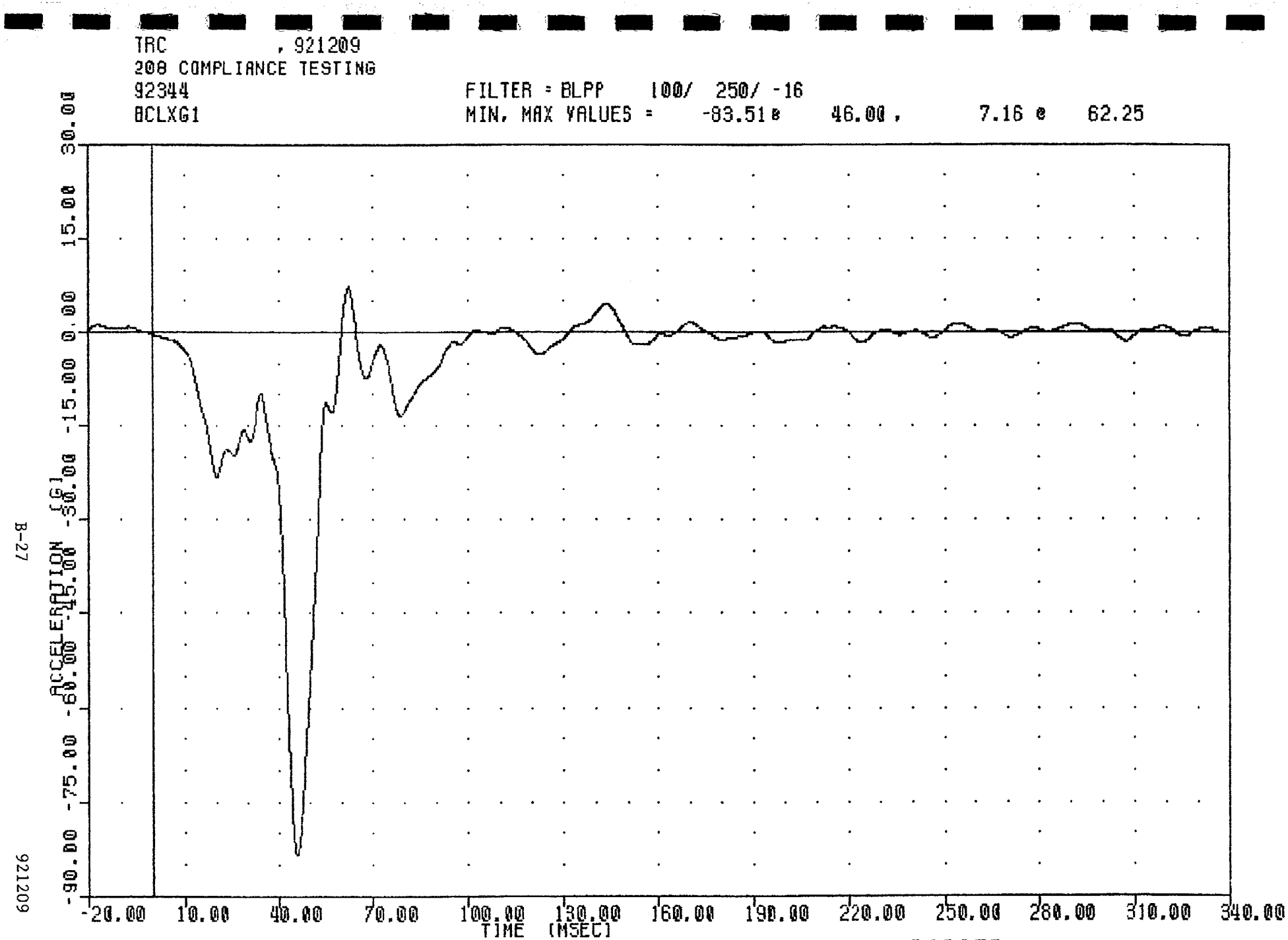
TRC , 921209
208 COMPLIANCE TESTING
92344
BCRXG1

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -57.28 @ 44.50 , 5.01 @ 109.38



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

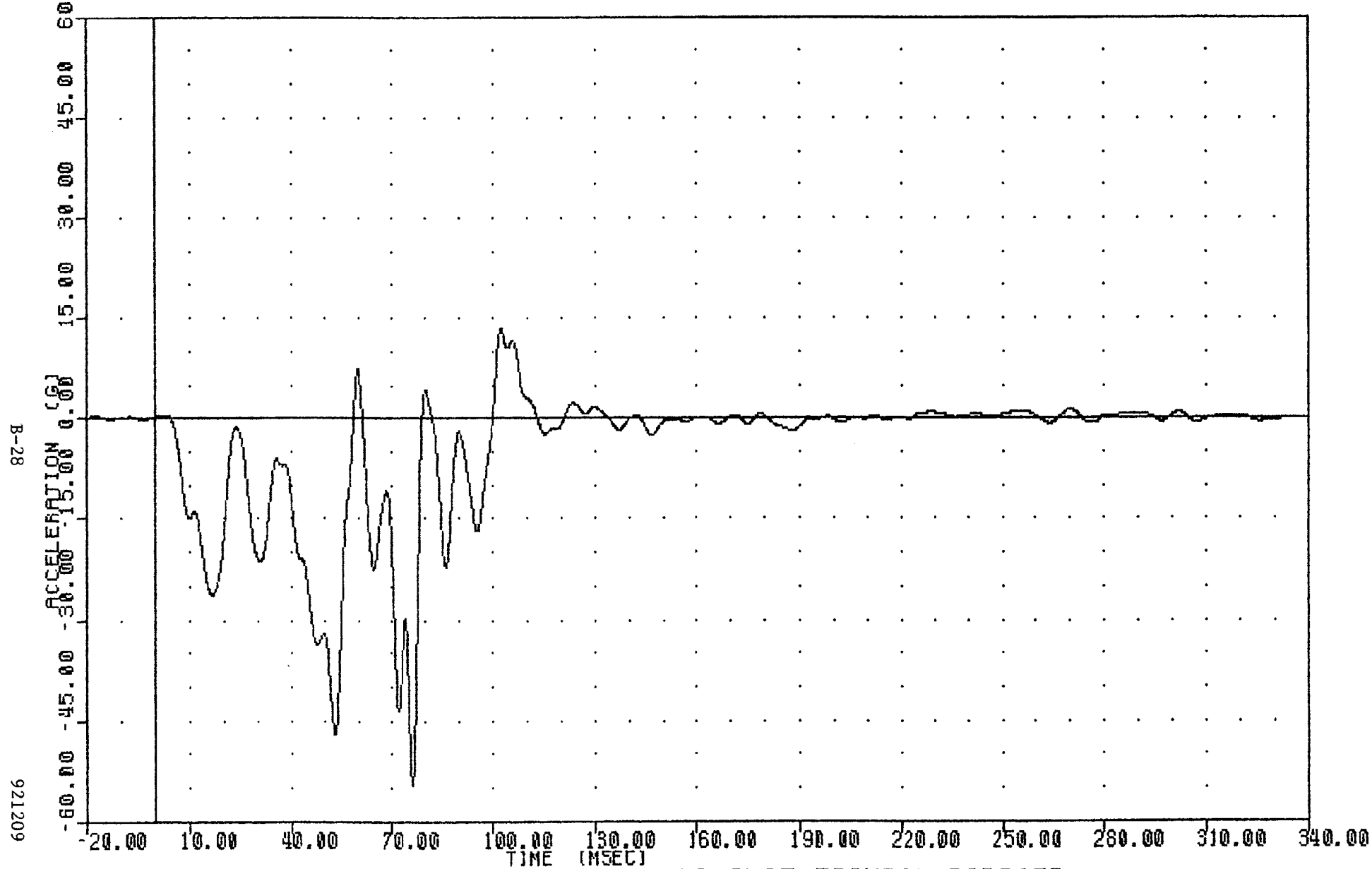
921209



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC , 921209
200 COMPLIANCE TESTING
92344
DPCXG1

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -54.54 @ 76.13 , 13.35 @ 102.25



1993 MAZDA MX3 INTO FLAT FRONTAL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION