

V2361

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212-TRC-96-003
301-TRC-96-003

Vehicle Safety Compliance Testing
for Occupant Crash Protection,
Windshield Mounting, Windshield Zone Intrusion,
and Fuel System Integrity

Fuji Heavy Industries
1996 Subaru Impreza
2-door coupe
NHTSA Number: CT5500
TRC Test Number: 951212

Transportation Research Center Inc.
10820 State Route 347
East Liberty, Ohio 43319



January 4, 1996

Final Report

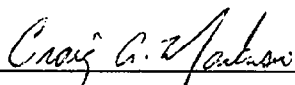
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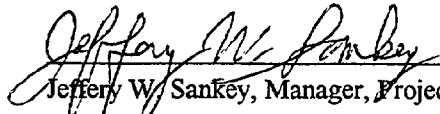


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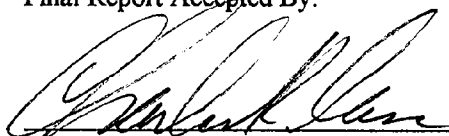


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Contracting Officer's Technical Representative (COTR),
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16. Abstract A 30 mph flat frontal barrier impact test was conducted on a 1996 Subaru Impreza 2-door coupe, NHTSA No. CT5500, at Transportation Research Center Inc. on December 12, 1995. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards: FMVSS 208, "Occupant Crash Protection"; 212, "Windshield Mounting"; 219 (partial), "Windshield Zone Intrusion"; and 301 "Fuel System Integrity." The barrier impact velocity was 29.6 mph. The vehicle's maximum static crush was 15.3 inches. The ambient temperature was 70° F. The driver's Head Injury Criteria (HIC) was 318. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.6 g. The driver's left and right femur maximum axial forces were 1678 pounds and 1608 pounds, respectively. The passenger's HIC was 303. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.2 g. The passenger's left and right femur maximum axial forces were 1992 pounds and 1330 pounds, respectively.			
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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 (exact). 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.

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
km	kilometers	1.1	yards	yd
		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

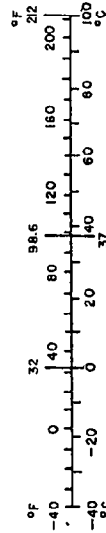


Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page</u>
1.0	Purpose and Test Procedure	1
2.0	Frontal Barrier Impact Test Summary	5
3.0	FMVSS 208, 212, 219 (Partial), and 301 Data	19
4.0	Vehicle, Occupant, and Camera Measurements	36
Appendix A	Photographs	A-1
Appendix B	Data Plots	B-1
Appendix C	Manufacturer's Vehicle Information	C-1

List of Tables

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Crash Test Summary	7
2	Test Vehicle Information	9
3	Post-Impact Data	12
4	Post-test Airbag Data	15
5	Vehicle Accelerometer Locations and Data Summary	18
6	Dummy Injury Criteria	20
7	FMVSS 208 Seat Belt Comfort and Convenience Test Summary Front Outboard Designated Seating Positions	22
8	FMVSS 208 Equipment Data	25
9	Fuel System Data	30
10	FMVSS 301 Post-Impact Test Data	31
11	Impacted Vehicle Measurements	38
12	Dummy Measurement Data for Front Seat Occupants	41
13	Motion Picture Camera Locations	44

List of Figures

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Impact Velocity Measurement System	13
2	Accident Investigation Division Data for 30 mph Frontal Barrier Impact	14
3	Vehicle Accelerometer Placement	17
4	FMVSS 212 Test Data	28
5	FMVSS 219 Test Data	29
6	FMVSS 301 Static Rollover Test Data	32
7	Pre-test and Post-test Measurement Points	37
8	Vehicle Target Locations	39
9	Dummy Measurement Locations for Front Seat Occupants	40
10	Camera Positions	42

List of Photographs

<u>Figure</u>	<u>Photograph Title</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 Right Side View	A-6
A-6.	Post-test Right Side View	A-7
A-7.	Pre-test Front Underbody View	A-8
A-8.	Post-test Front Underbody View	A-9
A-9.	Pre-test Driver's Knee Bolster View	A-10
A-10.	Pre-test Passenger's Knee Boster View	A-11
A-11.	Pre-test Driver's Seat Location View	A-12
A-12.	Pre-test Passenger's Seat Location View	A-13
A-13.	Pre-test Steering Column at Firewall View - Interior	A-14
A-14.	Pre-test Steering Column at Firewall View - Exterior	A-15
A-15.	Post-test Steering Column at Firewall View - Exterior	A-16
A-16.	Pre-test Driver Dummy & Vehicle Interior View	A-17
A-17.	Post-test Driver Dummy & Vehicle Interior View	A-18
A-18.	Pre-test Passenger Dummy & Vehicle Interior View	A-19
A-19.	Post-test Passenger Dummy & Vehicle Interior View	A-20
A-20.	Post-test Driver Dummy Head Contact - View 1	A-21
A-21.	Post-test Driver Dummy Head Contact - View 2	A-22
A-22.	Post-test Driver Dummy Head Contact - View 3	A-23
A-23.	Post-test Driver Dummy Knee Contact - View 1	A-24
A-24.	Post-test Driver Dummy Knee Contact - View 2	A-25
A-25.	Post-test Driver Dummy Knee Contact - View 3	A-26
A-26.	Post-test Passenger Dummy Head Contact - View 1	A-27
A-27.	Post-test Passenger Dummy Head Contact - View 2	A-28
A-28.	Post-test Passenger Dummy Knee Contact - View 1	A-29
A-29.	Post-test Passenger Dummy Knee Contact - View 2	A-30
A-30.	Pre-test Vehicle Certification Label and Recommended Tire Pressure Label View	A-31

Section 1.0

Purpose and Test Procedure

Purpose

This 30 mph flat frontal barrier impact test is part of the Federal Motor Vehicle Safety Standards (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. DTNH22-93-D-01089. The purpose of this test was to determine if the subject vehicle, a 1996 Subaru Impreza 2-door coupe, NHTSA No. CT5500, 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-208-09. 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 and one (1) accelerometer to measure vertical axis acceleration. 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 Appendix B 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-four (24) data channels were multiplexed and recorded on a 14-track tape drive. The data was digitally sampled at 12,500 samples per second and processed per Sections 11.13 through 11.15 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. Appendix C contains the manufacturer's vehicle information.

Section 2.0

Frontal Barrier Impact Test Summary

Test Results Summary

This flat frontal barrier test was conducted at TRC on December 12, 1995.

The test vehicle, a 1996 Subaru Impreza 2-door coupe, NHTSA No. CT5500, 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 compressive 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 airbags at the driver's and right front passenger's seating position. The vehicle's test weight was 2976 pounds. The vehicle's impact speed was 29.6 mph. The vehicle's maximum static crush was 15.3 inches.

The driver's HIC was 318. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.6 g. The driver's left and right femur maximum compressive forces were 1678 pounds and 1608 pounds, respectively.

The right front passenger's HIC was 303. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.2 g. The right front passenger's left and right femur maximum compressive forces were 1992 pounds and 1330 pounds, respectively.

There was no loss of windshield periphery retention and 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 number:	CT5500
Test type:	Frontal barrier impact
Test date:	12/12/95
Test time:	1648
Ambient temperature at impact area:	70° F
Vehicle year/make/ model/body style:	1996/Subaru/Impreza/2-door coupe
Vehicle test weight:	2976 lb
Impact angle ¹ :	0°
Impact velocity ² :	
Primary:	29.6 mph
Secondary:	29.6 mph
Maximum static crush:	15.3 in
Average rebound:	4.8 in
Number of cameras:	
Real-time:	2
High-speed:	14
Door opening data:	
Left-front:	Easy
Right-front:	Easy

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm$.05 mph accuracy)

Table 1 Crash Test Summary, Cont'd.

Dummies:	<u>Driver #354</u>	<u>Passenger #353</u>
Type:	Part 572 B	Part 572 B
Location:	Left front	Right front
Restraint:	Airbag	Airbag
Number of data channels:	8	8
Front seat data:		
Seat track failure:	None	None
Seat back failure:	None	None
Visible dummy contact points:		
Head:	Airbag, head restraint, and sun visor	Airbag and head restraint
Chest:	Airbag	Airbag
Abdomen:	None	None
Left knee:	Instrument panel	Instrument panel
Right knee:	Instrument panel	Instrument panel

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1996/Subaru/Impreza/2-door coupe

Color: Red

VIN: JF1GM2259TG410384

NHTSA number: CT5500

Engine data:

Placement: Longitudinal/inline

Cylinders: 4

Displacement: 1.8 liters

Transmission data: 5 speed, X manual, ___ automatic, ___ overdrive

Final drive: ___ fwd, ___ rwd, X 4wd

Date vehicle received: 11/09/95

Odometer reading: 52

Dealer's name
and address: Hatfield Automall
1400 Auto Mall Drive
Columbus, OH 43228

Accessories:

Power steering	Yes	Automatic transmission	No
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	No
Clock	Yes	Rear window defroster	Yes
Power door locks	No	Other:	None

Certification data from vehicle's label:

Vehicle manufactured by: Fuji Heavy Industries, Ltd. Japan

Date of manufacture: 07/95

VIN: JF1GM2259TG410384

GVWR: 3700 lb

GAWR: Front: 1900 lb

Rear: 1800 lb

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle: P175/70R14
Spare tire: Space saver
Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: P175/70R14

Recommended cold tire pressure:

Front: 32 psi

Rear: 29 psi

Designated Seating Capacity:

Front 2

Rear 3

Total 5

Vehicle Capacity Weight: 810 lbs.

Test vehicle attitudes:

Delivered attitude:	LF: 27.2 in.	RF: 27.2 in	LR: 26.6 in	RR: 26.7 in
Fully loaded attitude:	LF: 26.5 in	RF: 26.5 in	LR: 25.3 in	RR: 25.5 in
Pre-test attitude:	LF: 26.5 in	RF: 26.6 in	LR: 25.4 in	RR: 25.5 in

Table 2 Test Vehicle Information, Cont'd.

Weight of test vehicle as received (with maximum fluids):

Right front	751 lb	Right rear	530 lb
Left front	768 lb	Left rear	552 lb
Total front weight	1519 lb	(58.4% of total vehicle weight)	
Total rear weight	1082 lb	(41.6% of total vehicle weight)	
Total delivered weight	2601 lb		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (2601 lb)

VCW¹ = Vehicle Capacity Weight = 810

DSC = Designated Seating Capacity (5)

RCLW = VCW - 150 (DSC) = 810 - 150 (5) = 60 lb

Target test weight = UDW + RCLW¹ + (Number of Hybrid II dummies x 164 lb per dummy)

Target test weight = 2601 + 60 + 328 = 2989 lb

Weight of test vehicle with required dummies and 47 lb of cargo weight:

Right front	818 lb	Right rear	663 lb
Left front	847 lb	Left rear	648 lb
Total front weight	1665 lb	(56.0% of total vehicle weight)	
Total rear weight	1311 lb	(44.0% of total vehicle weight)	
Total test weight	2976 lb	(0.4% under target test weight)	

Weight of ballast secured in vehicle cargo area: 0 lb

Components removed to meet target test weight: Trunk lid, bumper, spare tire, jack, rear seat, tail lights

CG rearward of front wheel centerline: 43.5 in

Vehicle Wheelbase: 98.8 in

¹ From vehicle's tire load label.

Table 3 Post-Impact Data

Test number: 951212
NHTSA number: CT5500
Test date: 12/12/95
Test time: 1648
Test type: Frontal barrier impact
Impact angle: 0°
Ambient temperature
at impact area: 70° F
Temperature in
occupant compartment: 70° F
Impact velocity:
Primary: 29.6 mph
Secondary: 29.6 mph
Specified range: 28.9 to 29.9 mph

Distance from vehicle to barrier:

Entering velocity trap: 14.0 in
Exiting velocity trap: 2.0 in

Test vehicle static crush:

Overall length of test vehicle:

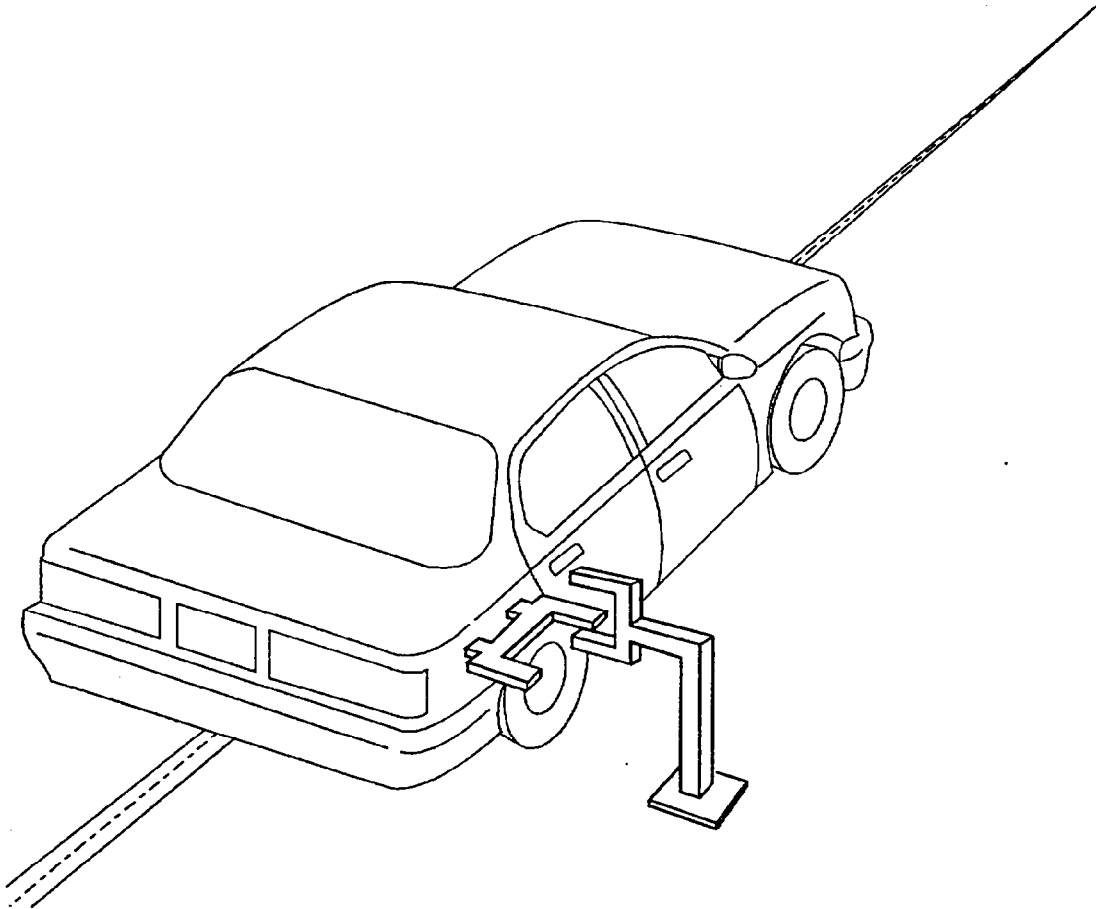
Pre-test:	L:	165.6 in	C:	171.1 in	R:	166.5 in
Post-test:	L:	152.2 in	C:	156.0 in	R:	151.4 in
Total crush:	L:	13.4 in	C:	15.1 in	R:	15.1 in
Average crush:		14.5 in				

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test:	L:	5.8 in	C:	2.2 in	R:	6.3 in
Average rebound:		4.8 in				

Figure 1 Impact Velocity Measurement System



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

The vanes have a one-foot spacing.

Figure 2 Accident Investigation Division Data for 30 mph Frontal Barrier Impact

NHTSA number: CT5500
 Test date: 12/12/95
 Vehicle year/make/model/body style: 1996/Subaru/Impreza/2-door coupe
 Vehicle size category: Subcompact
 VIN: JF1GM2259TG410384
 Build date: 07/95
 Test weight: 2976 lb
 Vehicle wheelbase: 98.8 in
 Maximum width: 67.2 in
 Front overhang: 35.2 in

Collision Deformation

Classification (CDC) Code: 12FDEW2

Crush depth measurements:

C1:	13.4 in
C2:	13.2 in
C3:	15.1 in
C4:	15.3 in
C5:	14.9 in
C6:	15.1 in

Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged region: L: 60.0 in

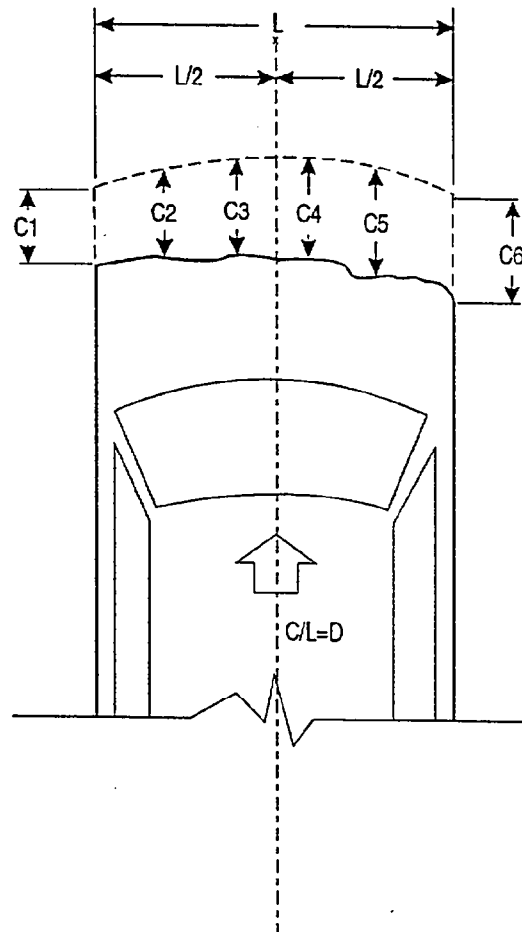


Table 4 Post-test Airbag Data

NHTSA number: CT5500
Test date: 12/12/95
Technician: Markusic
Vehicle year/make/
model/body style: 1996/Subaru/Impreza/2-door coupe

A. Number of airbag vent holes:

Driver: 2

Passenger: 2

B. Size of airbag vent holes:

Driver: 1.25 in dia.

Passenger: 2.0 in dia.

C. Total airbag vent area:

Driver: 1.2 in²

Passenger: 3.1 in²

D. Deflated airbag length and width dimensions or, if round, diameter

Driver: Length NA

Width NA

Diameter 27.0 in

Passenger: Length: 32.0 in

Width: 34.0 in

Diameter: NA

Table 4 Post-test Airbag Data, Cont'd.

E. Is the airbag tethered?

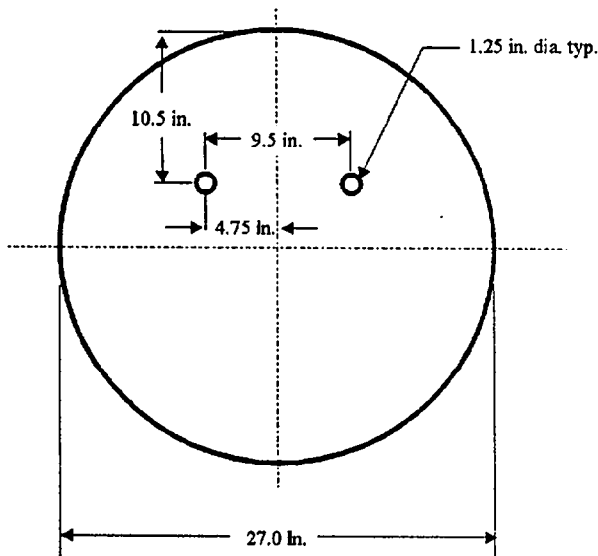
Driver: Yes

If yes, record length of tether: 4 tethers, 10 inches each

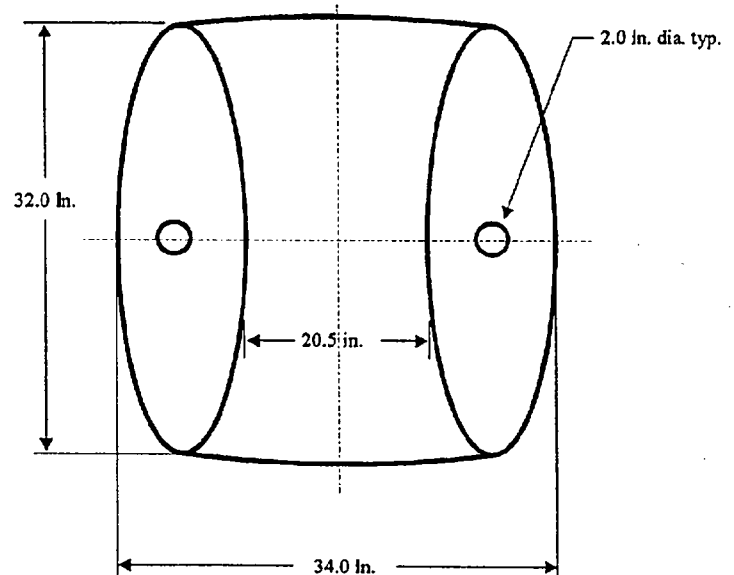
Passenger: No

If yes, record length of tether: NA

Driver's airbag:



Passenger's airbag:



F. Airbag and gas generator part numbers and manufacturer's names.

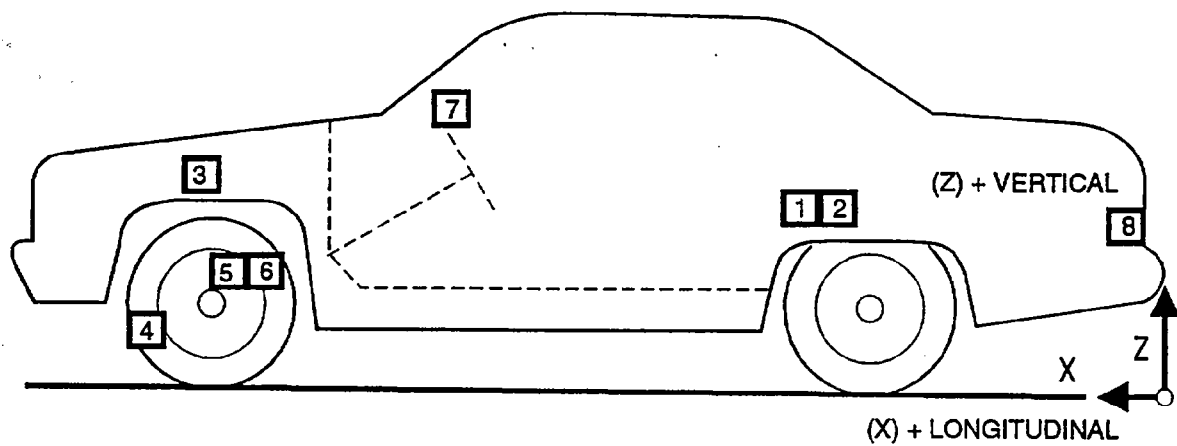
Driver: Airbag mfr.: Morton International; Part No.: 1GK05010235

Inflator mfr.: Morton Internaitonal; Part No.: UDAF1F3YASH

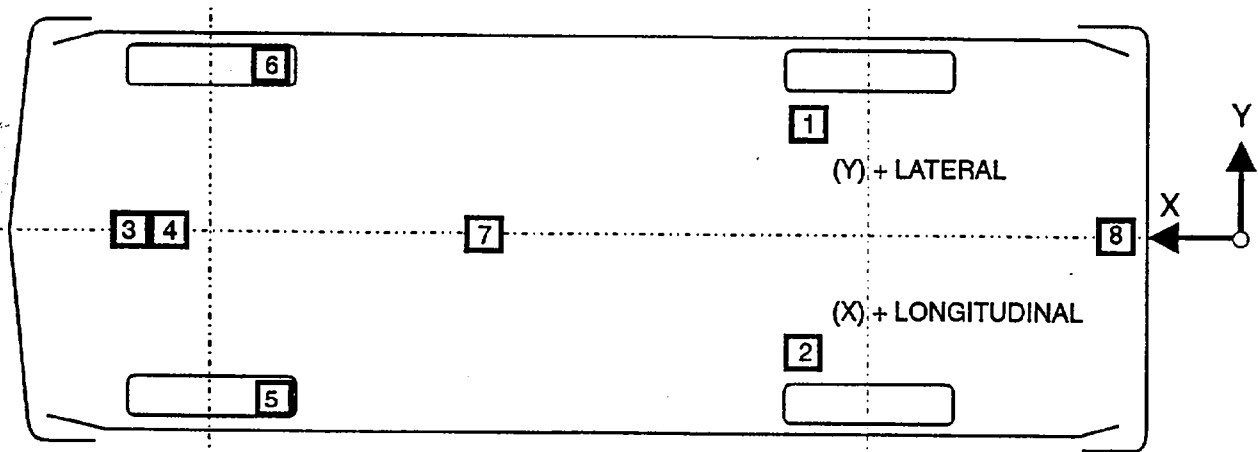
Passenger: Airbag mfr.: Morton International; Part No.: 98215FAD20

Inflator mfr.: Morton International; Part No.: UAZF1N2DAKY

Figure 3 Vehicle Accelerometer Placement



SIDE VIEW



BOTTOM VIEW

Table 5 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 951212 No. LOCATION	X		Y		Z		POSITIVE DIRECTION		NEGATIVE DIRECTION	
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	66.5 in	16.0 in	15.8 in						
	POST	66.5 in	16.0 in	16.7 in			1.7 g @ 88.6 ms	48.0 g	@ 39.4 ms	
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	66.5 in	-16.0 in	15.8 in						
	POST	66.5 in	-16.0 in	17.1 in			1.6 g @ 89.6 ms	41.3 g	@ 38.8 ms	
3 ENGINE TOP LONGITUDINAL	PRE	144.0 in	-7.2 in	31.7 in						
	POST	144.0 in	-7.2 in	32.7 in			19.7 g @ 40.7 ms	81.8 g	@ 19.7 ms	
4 ENGINE BOTTOM LONGITUDINAL	PRE	150.2 in	4.2 in	12.3 in						
	POST	145.2 in	4.2 in	14.5 in			6.6 g @ 54.6 ms	66.8 g	@ 21.0 ms	
5 RIGHT BRAKE CALIPER LONGITUDINAL	PRE	134.2 in	-25.1 in	12.0 in						
	POST	133.8 in	-24.6 in	11.6 in			7.5 g @ 76.4 ms	47.5 g	@ 40.4 ms	
6 LEFT BRAKE CALIPER LONGITUDINAL	PRE	134.2 in	24.2 in	11.7 in						
	POST	134.0 in	24.6 in	11.8 in			11.4 g @ 70.0 ms	57.8 g	@ 39.0 ms	
7 INSTRUMENT PANEL CENTER LONGITUDINAL	PRE	117.5 in	0.0 in	37.8 in						
	POST	117.7 in	0.0 in	40.2 in			46.4 g @ 20.0 ms	93.4 g	@ 23.9 ms	
8 VEHICLE REAR CENTER VERTICAL	PRE	8.3 in	1.0 in	17.8 in						
	POST	8.3 in	1.0 in	19.8 in			19.3 g @ 90.3 ms	14.6 g	@ 96.2 ms	

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

Section 3.0

FMVSS 208, 212, 219 (partial), and 301 Data

Table 6 Dummy Injury Criteria

<u>Maximum Acceleration</u>							
	Head				Chest		
	X	Y	Z	R	X	Y	Z
Driver	-41.2 g	-4.0 g	-27.4 g	48.1 g	-45.1 g	-6.0 g	7.9 g
Passenger	-39.2 g	21.3 g	-30.0 g	50.3 g	-41.8 g	7.2 g	-13.2 g

<u>Maximum Femur Compressive Force</u>		
	Left Femur	Right Femur
Driver	1678 lbf	1608 lbf
Passenger	1992 lbf	1330 lbf

<u>Head Injury Criteria¹</u>			
	HIC	Time t ₁	Time t ₂
Driver	318	67.040 ms	103.040 ms
Passenger	303	69.120 ms	105.120 ms

<u>Chest Maximum Resultant Acceleration²</u>			
	Acceleration	Time t ₁	Time t ₂
Driver	44.6 g	84.48 ms	87.52 ms
Passenger	42.2 g	86.40 ms	89.36 ms

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

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 and chest impacted the airbag with the dummy's head contacting the sunvisor and rotating slightly forward. The dummy was restrained by the airbag. The dummy rebounded rearward into the seat back with the dummy's head rotating slightly rearward contacting the head restraint. The driver dummy came to rest seated in the driver's seat.

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 and chest impacted the airbag as the dummy's head rotated slightly rearward and to the left. The dummy was restrained by the passenger's airbag. The dummy rebounded rearward into the seat back as the dummy's head rotated slightly forward and to the right then rearward contacting the head restraint. The right front passenger dummy came to rest seated in the right front passenger's seat.

Table 7 FMVSS 208 Seat Belt Comfort and Convenience Test Summary
Front Outboard Designated Seating Positions

NHTSA number: CT5500

Vehicle model year/make/model/body style: 1996/Subaru/Impreza/2-door coupe

Date of comfort/convenience check: 12/12/95

Technician performing check: Markusic

GVWR: 3700 lb

Automatic seat belts installed in any vehicle, other than a walk-in van-type vehicle which has a gross vehicle weight rating of 10,000 pounds or less, and is manufactured on or after September 1, 1986, shall meet the requirements for convenience hooks, webbing tension-relieving devices, and belt contact force.

Manual seat belts installed for compliance with this standard in front outboard designated seating positions of any vehicle, other than a walk-in van-type vehicle which has a gross vehicle rating of 10,000 pounds or less, and is manufactured after September 1, 1989, shall meet the requirements for belt contact force, plate access, retraction and seat belt guides, and hardware.

Vehicle Equipment:

The vehicle's front outboard seating positions were equipped with manual Type 2 seat belts which must comply with the dynamic test requirements of S5.1; requirements for webbing tension-relieving devices (S7.4.2), belt contact force (S7.4.3), latchplate access (S7.4.4), retraction (S7.4.5), and seat belt guides and hardware (S7.4.6) apply.

Convenience Hooks (S7.4.1):

Not applicable, the vehicle was not equipped with automatic seat belts.

Table 7 FMVSS 208 Seat Belt Comfort and Convenience Test Summary
Front Outboard Designated Seating Positions, Cont'd.

NHTSA number: CT5500

Vehicle model year/make/model/body style: 1996/Subaru/Impreza/2-door coupe

Date of comfort/convenience check: 12/12/95

Technician performing check: Markusic

GVWR: 3700 lb

Webbing Tension-Relieving Device (S7.4.2):

The front outboard seating position assemblies do not have webbing tension-relieving devices.

Belt Contact Force (S7.4.3):

The belt contact force on the chest of the test dummy is 0.2 pound.

Latchplate Access (S7.4.4):

The seat belt latchplates, in their normal stowed position, are within the reach envelope.

The clearance test block moves unhindered to the latchplate or buckle.

Retraction (S7.4.5):

The seat belt automatically retracts when the seat belt latchplate is released.

The stowed seat belt webbing and hardware are not pinched when the door is closed.

Table 7 FMVSS 208 Seat Belt Comfort and Convenience Test Summary
Front Outboard Designated Seating Positions, Cont'd.

NHTSA number: CT5500

Vehicle model year/make/model/body style: 1996/Subaru/Impreza/2-door coupe

Date of comfort/convenience check: 12/12/95

Technician performing check: Markusic

GVWR: 3700 lb

Seat Belt Guides and Hardware (S7.4.6):

The seat cushion is not removable.

The seat back does not serve a function other than seating.

The seat is not removable.

The seat is movable but the space formerly occupied by the seat cannot be used for a secondary function.

Note: If the seat or seat cushion is removable or if the seat is movable so the space formerly occupied by the seat can be used for a secondary function, the seat belt guides and hardware requirements do not apply.

The webbing is not designed to pass through the seat cushion or between the cushion and seat back.

The restraint system does not include webbing guides.

The seat belt receptacles were accessible without moving the center arm rest for access.

Table 8 FMVSS 208 Equipment Data

FMVSS 208 Seat Belt Warning System Data

With an occupant in the driver's position and the unbelt in stowed position and ignition switch placed in the "start/on" position, the duration of audible warning signal and the reminder light is 6 s.

With an occupant in the driver's position and the unbelt in use and the ignition switch placed in the "start/on" position the duration of audible warning signal is 0 s and the duration of the reminder light operation is 6 s.

NOTE: the audible warning should not operate.

The visual seat belt warning is the symbol from Table 2 of FMVSS 101.

Table 8 FMVSS 208 Equipment Data, Cont'd.

FMVSS 208 Labeling and Driver's Manual Data

The labels which describe the manufacturer's maintenance or replacement schedule for the crash-deployed occupant protection system were located on the driver's and passenger's sunvisors.

The manufacturer's recommended regular airbag maintenance is to inspect the airbag module ten years from date of manufacture.

Appropriate instructions concerning maintenance and/or replacement of this system were provided in the owner's manual on page 2-33 and on label.

A description of the functional operation of the system was provided in the owner's manual on pages 2-26 to 2-31.

A reference to the instructions and description of the system was included on the label.

An owner's manual was provided.

The owner's manual contained appropriate information concerning maintenance and/or replacement and a description of the functional operation of the systems on pages 2-26 to 2-31, 2-33.

Table 8 FMVSS 208 Equipment Data, Cont'd.

FMVSS 208 Readiness Indicator Data

The vehicle contained a crash-deployed occupant protection system which was not totally mechanical. The readiness indicator was located in the lower left side of the instrument cluster.

The readiness indicator was clearly visible to the driver.

A list of the elements in the occupant restraint system, being monitored by the readiness indicator was provided in the owner's manual on page 2-32.

FMVSS 208 Rear Outboard Seating Position Seat Belts

All rear outboard seating positions had Type 2 seat belts.

Figure 4 FMVSS 212 Test Data

Details of windshield mounting such as retention method, trim type, etc.:

Plastic trim around outer perimeter and adhesive around inner perimeter.

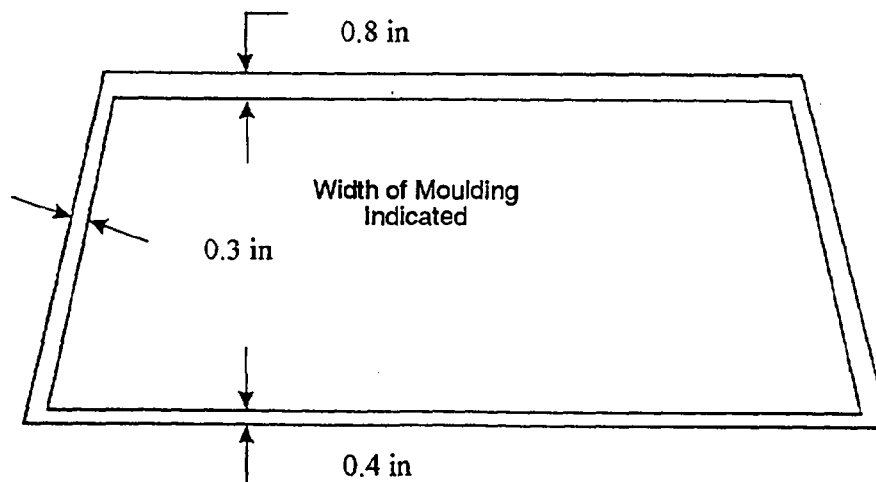
Clips or brackets used to retain windshield: None

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	81.2 in	81.2 in	100.0
Left side	81.2 in	81.2 in	100.0
Total	162.4 in	162.4 in	100.0

Pre-test windshield mounting material temperature: 70° F



Front view of windshield¹

Loss of windshield retention lengths: None

¹ 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: 43.0 in

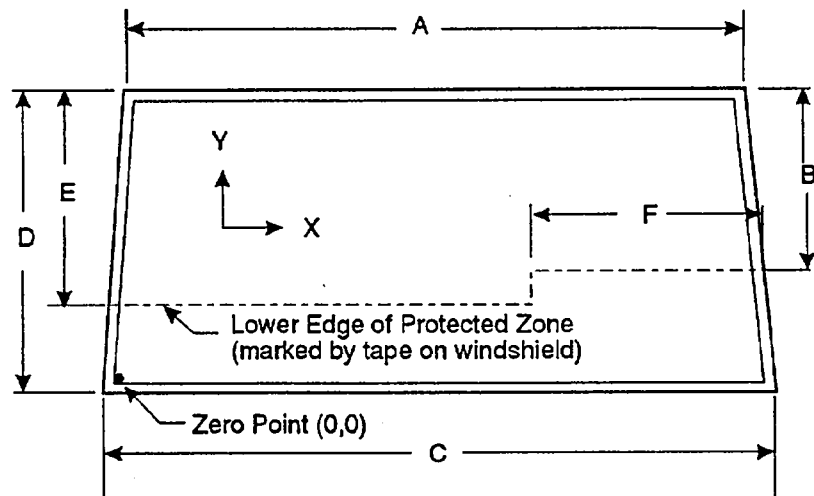
B: 21.0 in

C: 58.0 in

D: 32.9 in

E: 22.5 in

F: 22.6 in



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.	

1.
2.
3.

Areas of windshield penetration, below the protected zone, through the inner surface of the windshield:

None

1.
2.
3.

Table 9 Fuel System Data

Vehicle year/make/ model/body style:	1996/Subaru/Impreza/2-door coupe
NHTSA number:	CT5500
Fuel system capacity:	13.2 gal (from owner's manual)
Usable capacity:	13.2 gal (furnished by COTR)
Test volume range:	12.1 gal to 12.4 gal (92-94% of usable)
Actual test volume:	12.2 gal (with entire fuel system filled)
Test fluid type:	Stoddard solvent
Specific gravity:	0.764
Kinematic viscosity:	0.99 centistoke
Test fluid color:	purple
Type of fuel pump:	electric

The electric fuel pump did not operate with ignition switch "on" and the engine not operating.

Details of fuel system:	The fuel tank was located in front of the rear axle. The fuel filler neck was located on the right side. The fuel lines run along the right side to the front.
-------------------------	--

Table 10 FMVSS 301 Post-Impact Test Data

NHTSA number: CT5500
Test date: 12/12/95
Vehicle year/make/
model/body style: 1996/Subaru/Impreza/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:

- ☒ Frontal (30 mph)
☐ Oblique (30 mph) with ___° barrier face first contacting (driver's/passenger's) side
☐ Rear moving barrier (30 mph)
☐ Lateral moving barrier (20 mph)

Fuel system fluid spillage measurements:

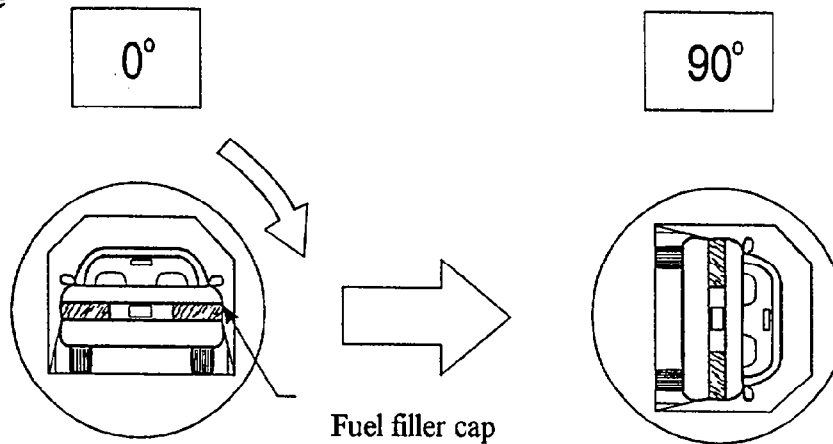
	Test <u>Results</u>	Maximum <u>Allowable</u>
1. From impact until vehicle motion ceases	0 oz	1 oz
2. 5-Minute period after vehicle motion ceases	0 oz	5 oz
3. Next 25 minutes after 5-minute period	0 oz	1 oz/1 min

Fuel system fluid spillage location(s): None

Figure 6 FMVSS 301 Static Rollover Test Data

NHTSA number: CT5500

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds

FMVSS 301 position hold time = 5 minutes, 0 seconds

Total = 7 minutes, 0 seconds

Next whole minute interval = 7 minutes

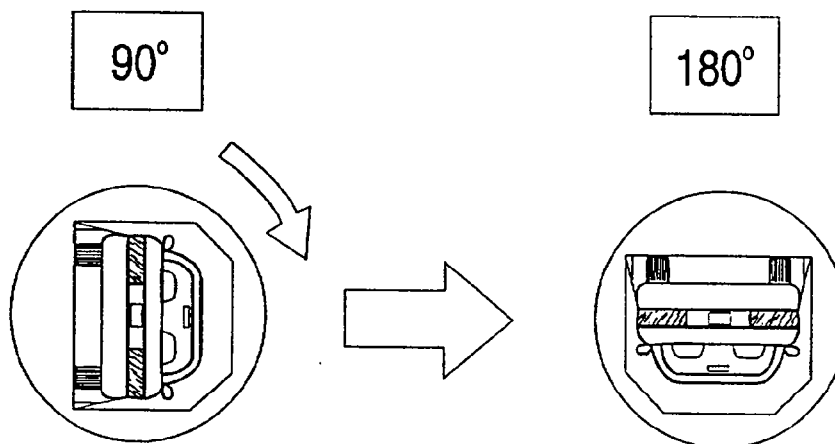
Fuel system fluid spillage measurements:

	Test Results	Maximum Allowable
<u>0° to 90° rotation (fuel filler cap down)</u>		
1. First five minutes from onset of rotation	0 oz	5 oz
2. Sixth minute from onset of rotation	0 oz	1 oz
3. Seventh 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.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90°	=	2	minutes,	0	seconds
FMVSS 301 position hold time	=	5	minutes,	0	seconds
Total	=	7	minutes,	0	seconds
Next whole minute interval	=	14	minutes		

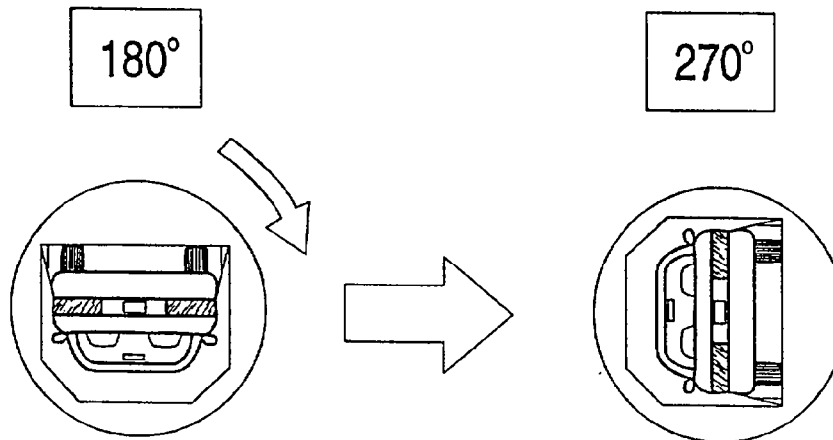
Fuel system fluid spillage measurements:

90° to 180° rotation	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 oz	5 oz
2. Sixth minute from onset of rotation	0 oz	1 oz
3. Seventh 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.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds
 FMVSS 301 position hold time = 5 minutes, 0 seconds
 Total = 7 minutes, 0 seconds
 Next whole minute interval = 21 minutes

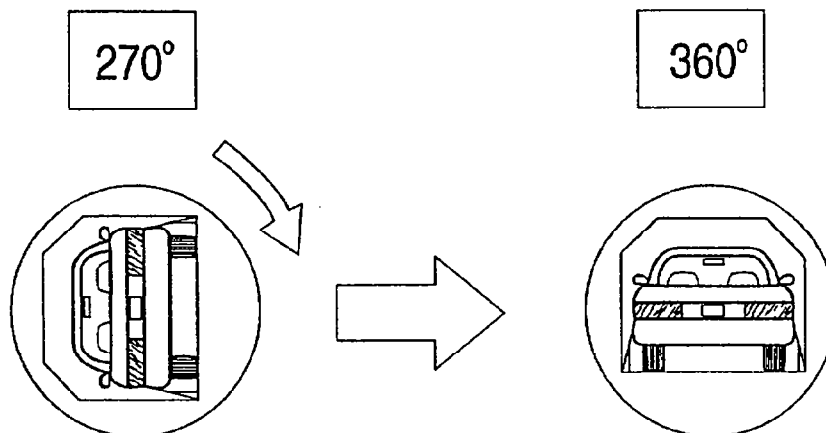
Fuel system fluid spillage measurements:

180 to 270° rotation	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 oz	5 oz
2. Sixth minute from onset of rotation	0 oz	1 oz
3. Seventh 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.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds

FMVSS 301 position hold time = 5 minutes, 0 seconds

Total = 7 minutes, 0 seconds

Next whole minute interval = 28 minutes

Fuel system fluid spillage measurements:

	Test Results	Maximum Allowable
<u>270° to 360° rotation</u>		
1. First five minutes from onset of rotation	0 oz	5 oz
2. Sixth minute from onset of rotation	0 oz	1 oz
3. Seventh 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

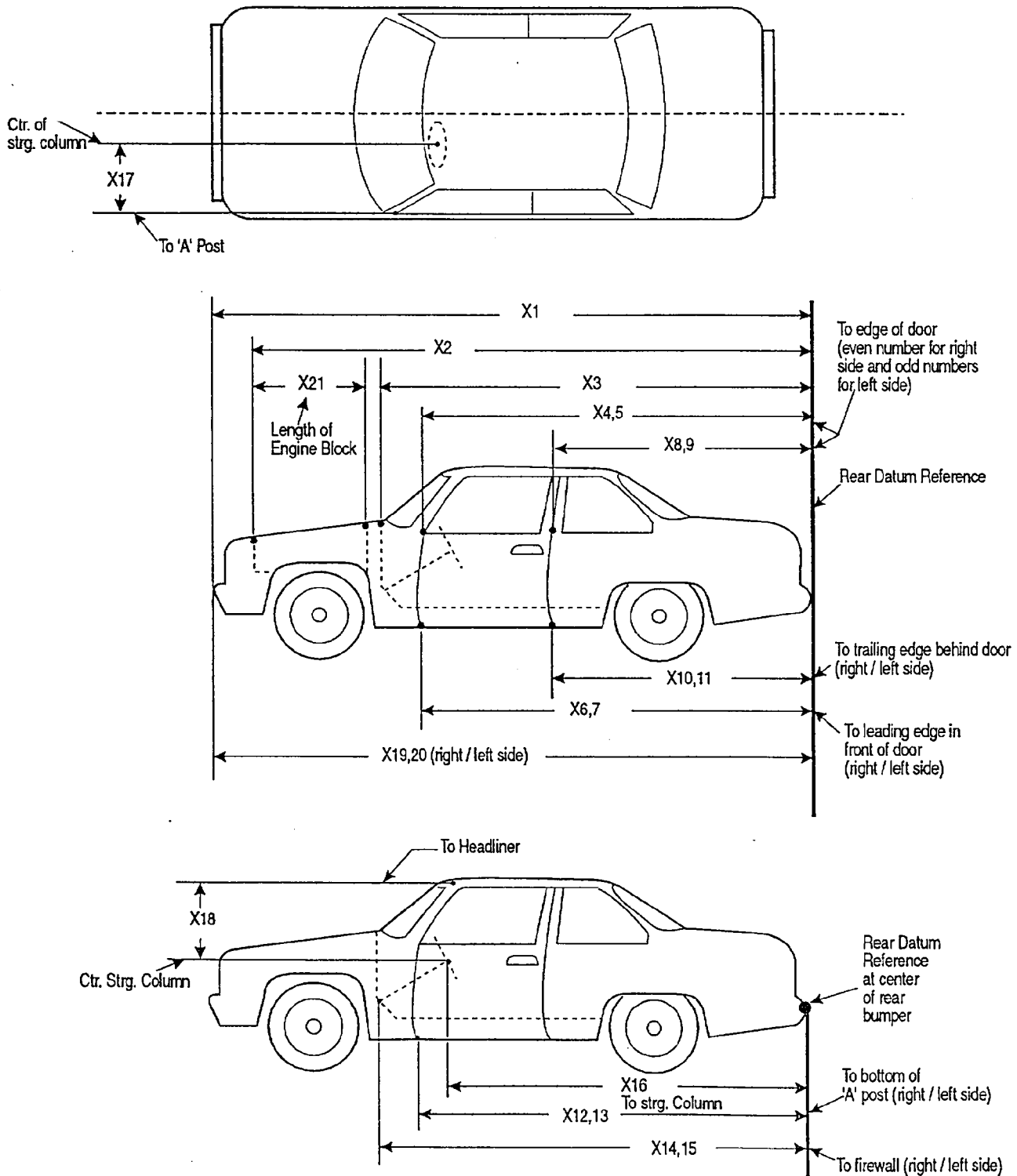


Table 11 Impacted Vehicle Measurements

Vehicle year/make/model/body style: 1996/Subaru/Impreza/2-door coupe

Test Number: 951212

No.	Type of measurement	Pre-test	Post-test	Diff.
X1	Total length of vehicle at centerline	171.1 in	156.0 in	15.1 in
X2	Rear surface of vehicle to front of engine block	147.6 in	141.2 in	6.4 in
X3	Rear surface of vehicle to firewall	129.1 in	129.5 in	-0.4 in
X4	Rear surface of vehicle to upper leading edge of right door	116.0 in	116.3 in	-0.3 in
X5	Rear surface of vehicle to upper leading edge of left door	115.9 in	116.1 in	-0.2 in
X6	Rear surface of vehicle to lower leading edge of right door	117.8 in	117.8 in	0.0 in
X7	Rear surface of vehicle to lower leading edge of left door	117.6 in	117.7 in	-0.1 in
X8	Rear surface of vehicle to upper trailing edge of right door	68.8 in	69.0 in	-0.2 in
X9	Rear surface of vehicle to upper trailing edge of left door	68.5 in	68.8 in	-0.3 in
X10	Rear surface of vehicle to lower trailing edge of right door	70.5 in	70.9 in	-0.4 in
X11	Rear surface of vehicle to lower trailing edge of left door	70.2 in	71.0 in	-0.8 in
X12	Rear surface of vehicle to bottom of "A" post on right side	117.4 in	117.4 in	0.0 in
X13	Rear surface of vehicle to bottom of "A" post on left side	117.5 in	117.4 in	0.1 in
X14	Rear surface of vehicle to firewall - right side	128.0 in	127.8 in	0.2 in
X15	Rear surface of vehicle to firewall - left side	127.2 in	128.5 in	-1.3 in
X16	Rear surface of vehicle to steering wheel center	99.0 in	102.9 in	-3.9 in
X17	Center of steering column to "A" post	12.0 in	11.9 in	0.1 in
X18	Center of steering column to headliner	17.3 in	18.2 in	-0.9 in
X19	Rear surface of vehicle to right side of front bumper	166.5 in	151.4 in	15.1 in
X20	Rear surface of vehicle to left side of front bumper	165.6 in	152.2 in	13.4 in
X21	Length of engine block	24.0 in	24.0 in	0.0 in

Figure 8 Vehicle Target Locations

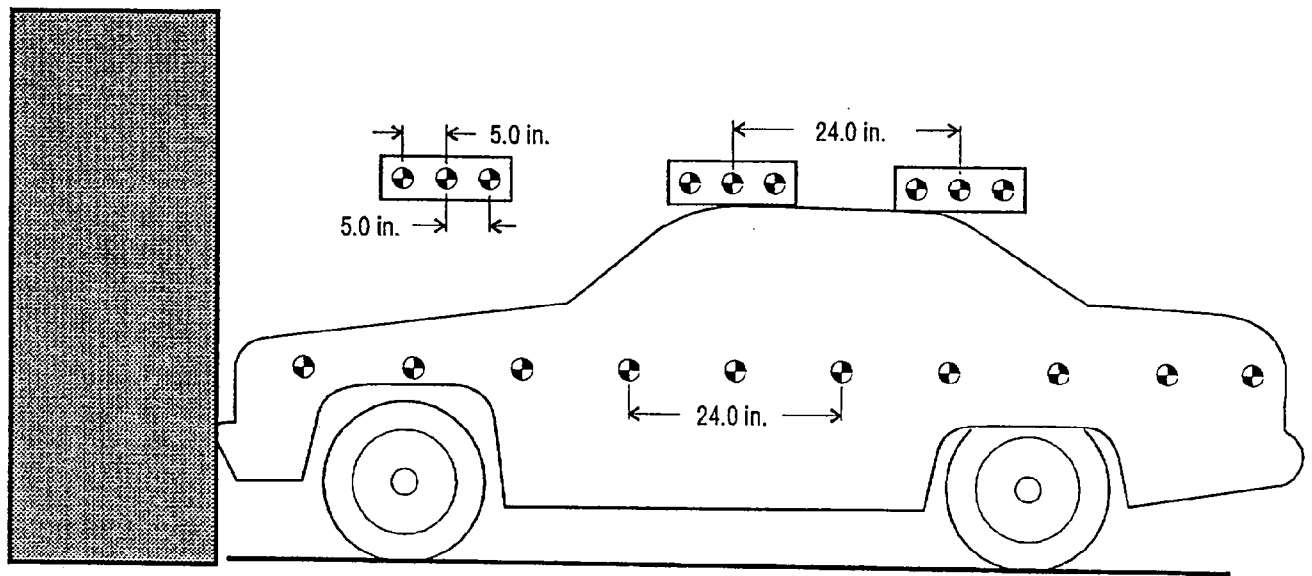


Figure 9 Dummy Measurement Locations for Front Seat Occupants

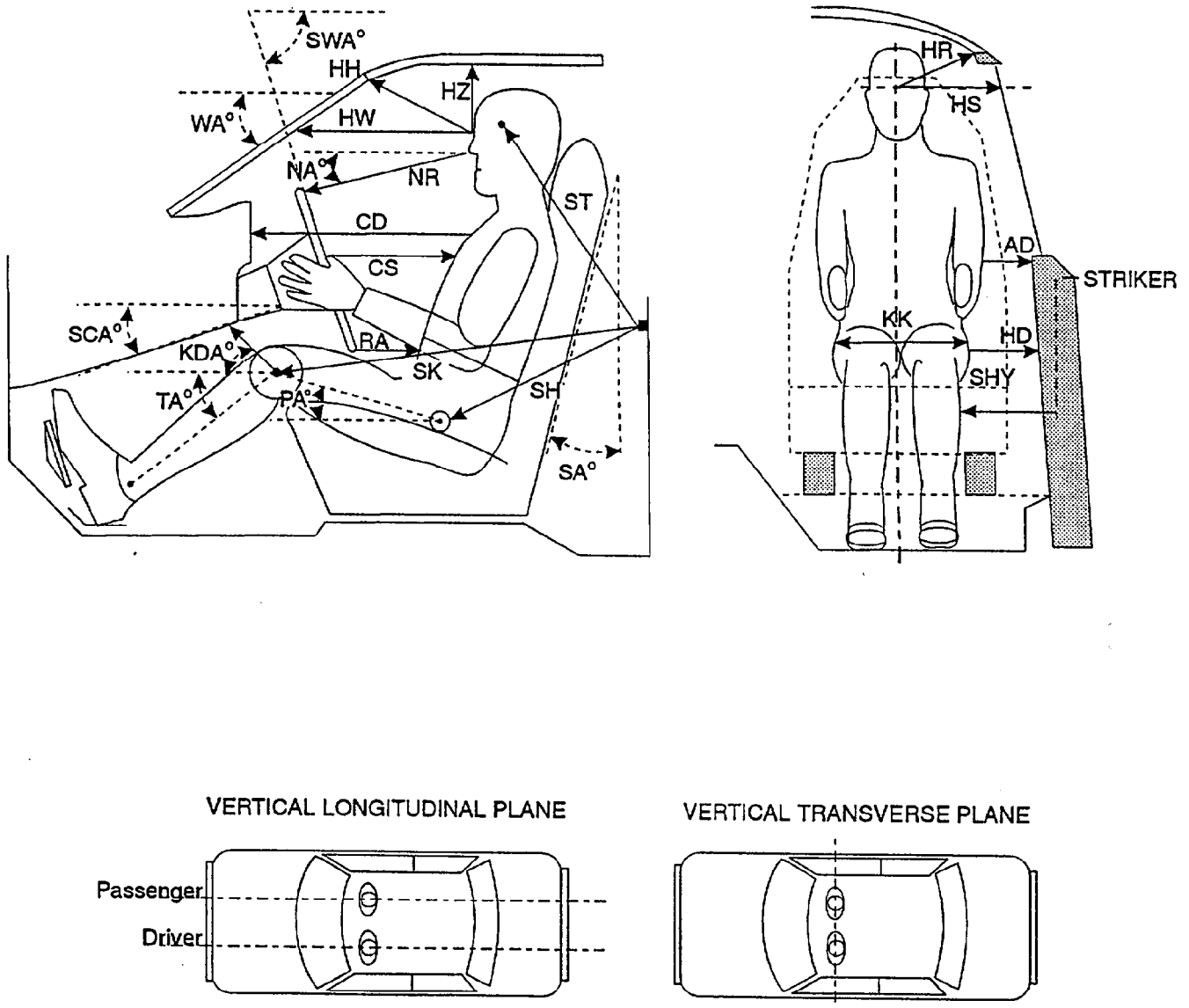


Table 12 Dummy Measurement Data for Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #354)	Passenger (Serial #353)
WA	Windshield angle	28°	NA
SWA	Steering wheel angle	67°	NA
SCA	Steering column angle	24°	NA
SA	Seat back angle	21°	21°
HZ	Head to roof	5.5 in	6.5 in
HH	Head to header	14.2 in	14.6 in
HW	Head to windshield	20.7 in	21.7 in
HR	Head to side header	6.5 in	7.2 in
NR	Nose to rim	19.1 in	NA
NA	Nose to rim angle	13°	NA
CD	Chest to dash	22.2 in	25.6 in
CS	Steering wheel to chest	15.1 in	NA
RA	Rim to abdomen	7.8 in	NA
KDL	Left knee to dash	8.2 in	7.2 in
KDR	Right knee to dash	7.5 in	8.0 in
KDA	Outboard knee to dash angle	26°	20°
PA	Pelvic angle	19°	16°
TA	Tibial angle	40°	40°
KK	Knee to knee	16.2 in	11.8 in
ST ¹	Striker to head	23.4 in	22.6 in
	Striker to head angle	-62°	-63°
SK ¹	Striker to knee	32.1 in	32.7 in
	Striker to knee angle	1°	2°
SH ¹	Striker to H-point	17.8 in	18.3 in
	Striker to H-point angle	15°	11°
SHY	Striker to H-point (Y dir.)	8.1 in	8.6 in
HS	Head to side window	8.7 in	8.7 in
HD	H-point to door	4.9 in	5.3 in
AD	Arm to door	3.3 in	4.0 in

The seat back angle (SA°) is measured relative to vertical, all other angles are measured relative to horizontal.

¹ A negative angle indicates the measurement point was located above the striker.

Figure 10 Camera Positions

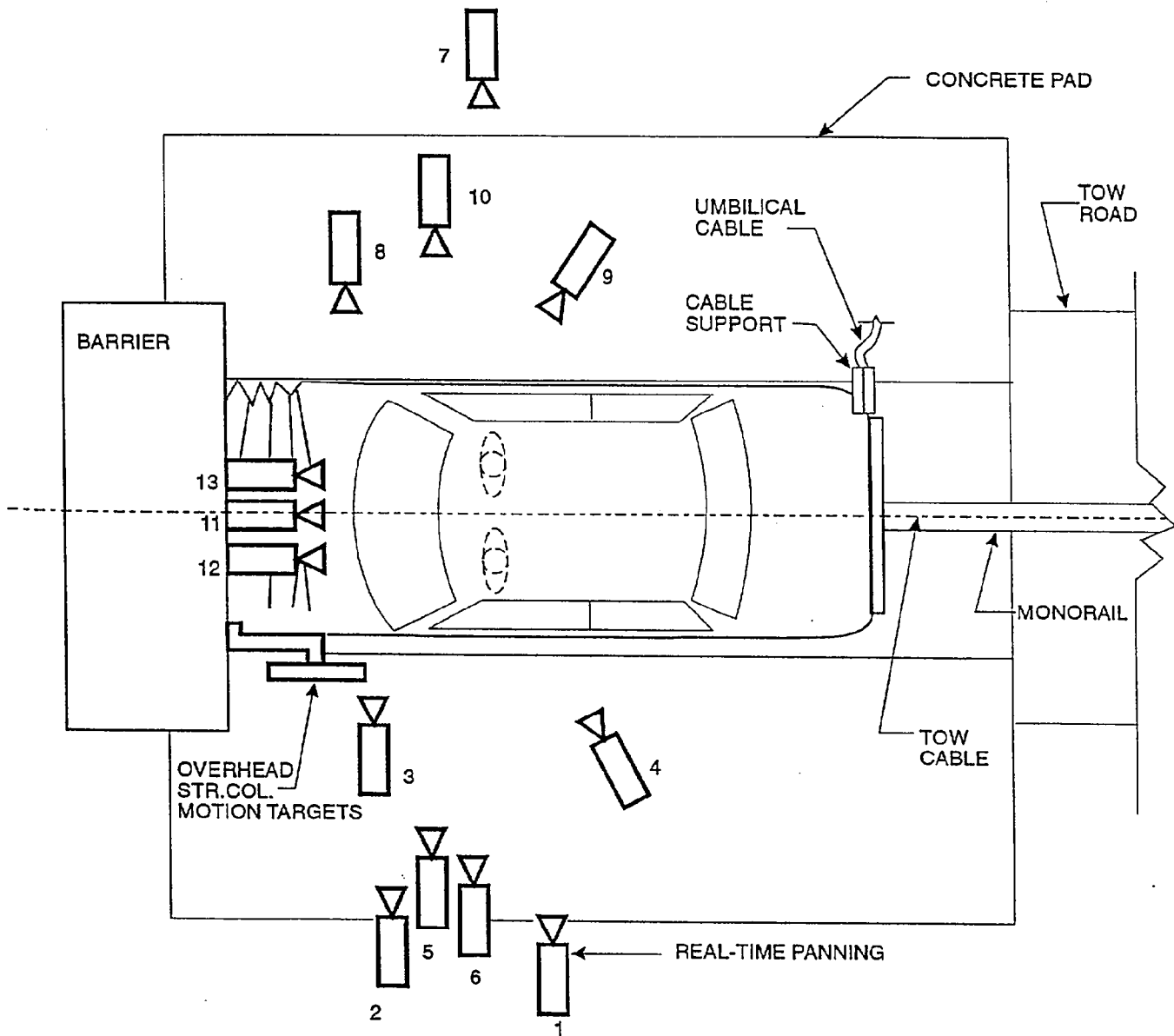


Figure 10 Camera Positions, Cont'd.

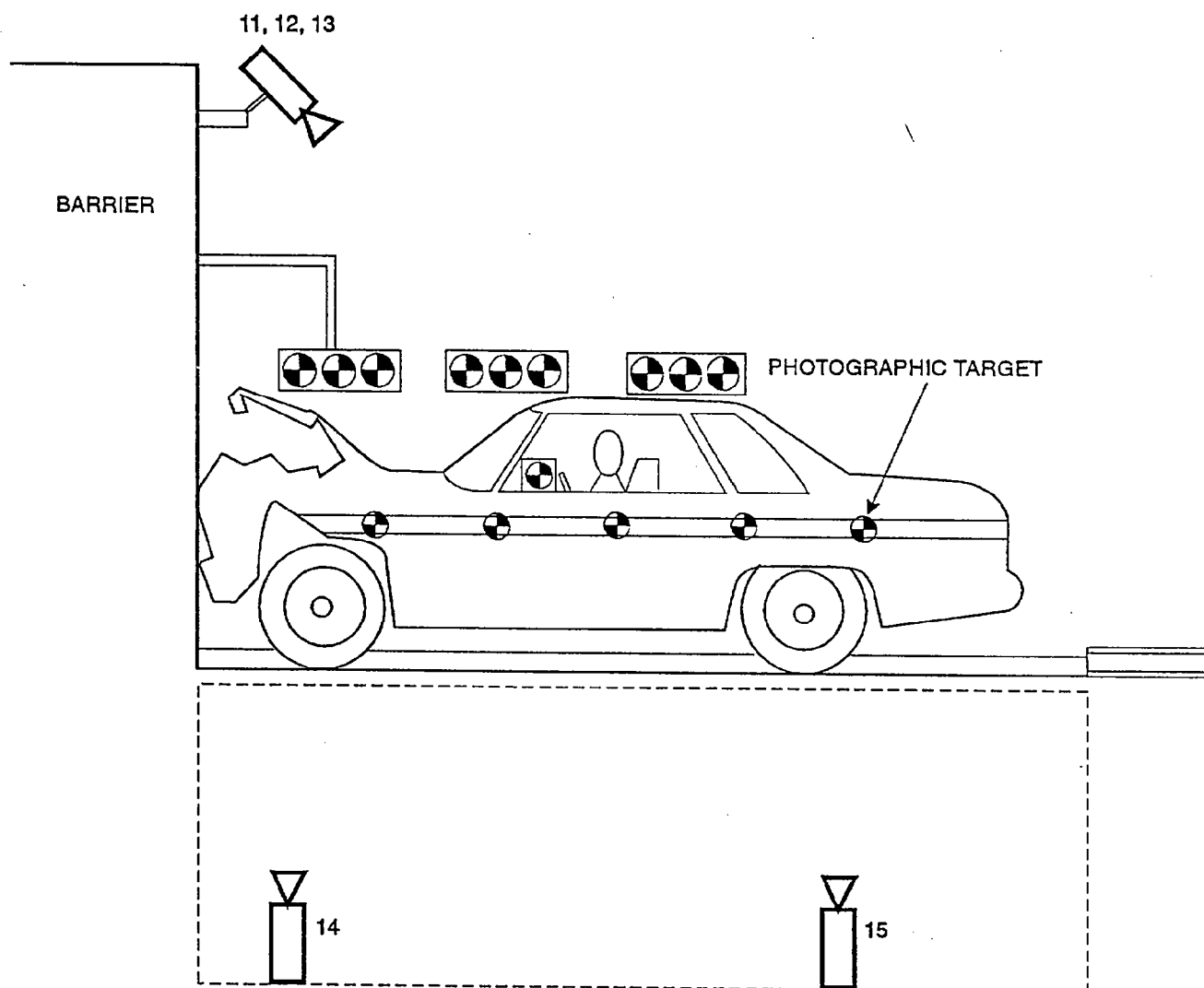


Table 13 Motion Picture Camera Locations

Vehicle year/make/model/body style: 1996/Subaru/Impreza/2-door coupe

Test number: 951212

Camera Number	View	Camera Positions ¹			Camera Angle ²	Film Plane to Head Target	Camera Lens	Film Speed
		X	Y	Z				
1	Real-time panning	-142.0 in	504.0 in	61.0 in	NA	NA	16 mm	24 frames/s
2	Left vehicle crush	-41.5 in	295.0 in	44.0 in	-4°	286.0 in	25 mm	995 frames/s
3	Left windshield intrusion	-53.0 in	309.4 in	42.3 in	0°	NA	50 mm	1005 frames/s
4	Driver kinematics	-157.3 in	116.0 in	87.0 in	-27°	101.0 in	25 mm	820 frames/s
5	Steering column motion	-79.0 in	286.0 in	103.0 in	-14°	NA	25 mm	1000 frames/s
6	Steering column motion	-79.0 in	286.0 in	75.1 in	-9°	NA	25 mm	1005 frames/s
7	Right overall	-81.3 in	-266.4 in	37.1 in	-2°	NA	13 mm	995 frames/s
8	Right windshield intrusion	-38.1 in	-306.1 in	44.0 in	0°	NA	50 mm	1008 frames/s
9	Passenger kinematics	-152.1 in	-116.0 in	87.0 in	-26°	267.0 in	25 mm	1000 frames/s
10	Passenger kinematics	-38.8 in	-293.0 in	45.3 in	-4°	89.0 in	25 mm	1020 frames/s
11	Windshield front view	-6.0 in	0.0 in	88.0 in	-40°	NA	13 mm	1000 frames/s
12	Driver - front view	-6.8 in	14.5 in	93.0 in	-50°	NA	17 mm	1000 frames/s
13	Passenger - front view	-4.5 in	-13.8 in	93.0 in	-50°	NA	17 mm	1005 frames/s
14	Pit - front position	-50.5 in	0.0 in	-92.4 in	90°	NA	13 mm	1012 frames/s
15	Pit - rear position	-99.3 in	0.0 in	-99.0 in	90°	NA	13 mm	990 frames/s
16	Real-time documentation	NA	NA	NA	NA	NA	12-120 mm	24 frames/s

¹ +X: Film plane forward of barrier face

+Y: Film plane to left of monorail centerline

+Z: Film plane above ground level

² +Angle: Film plane angled upward from horizontal plane

Appendix A

Photographs

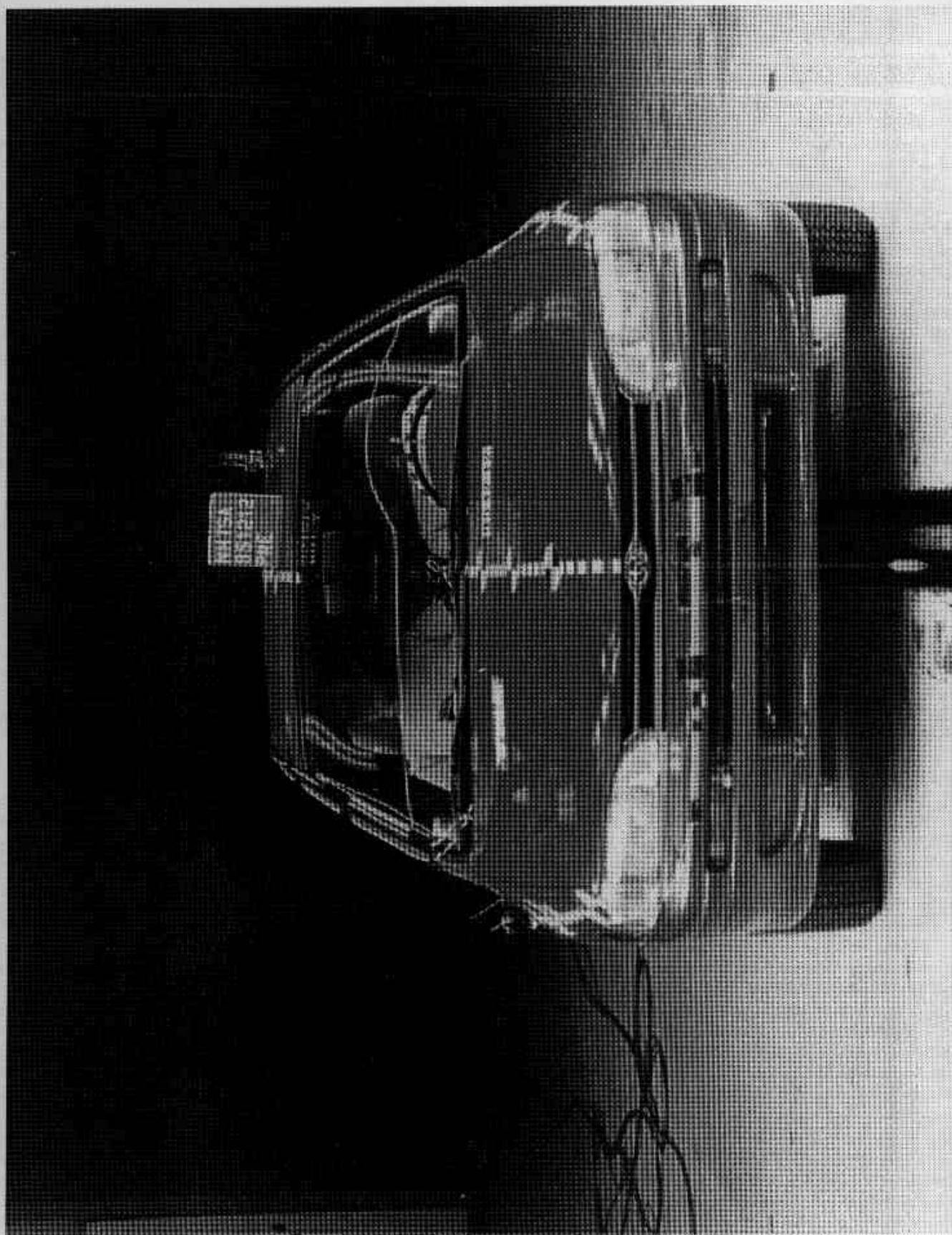


Figure A-1. Pre-Test Front View
A-2

951212

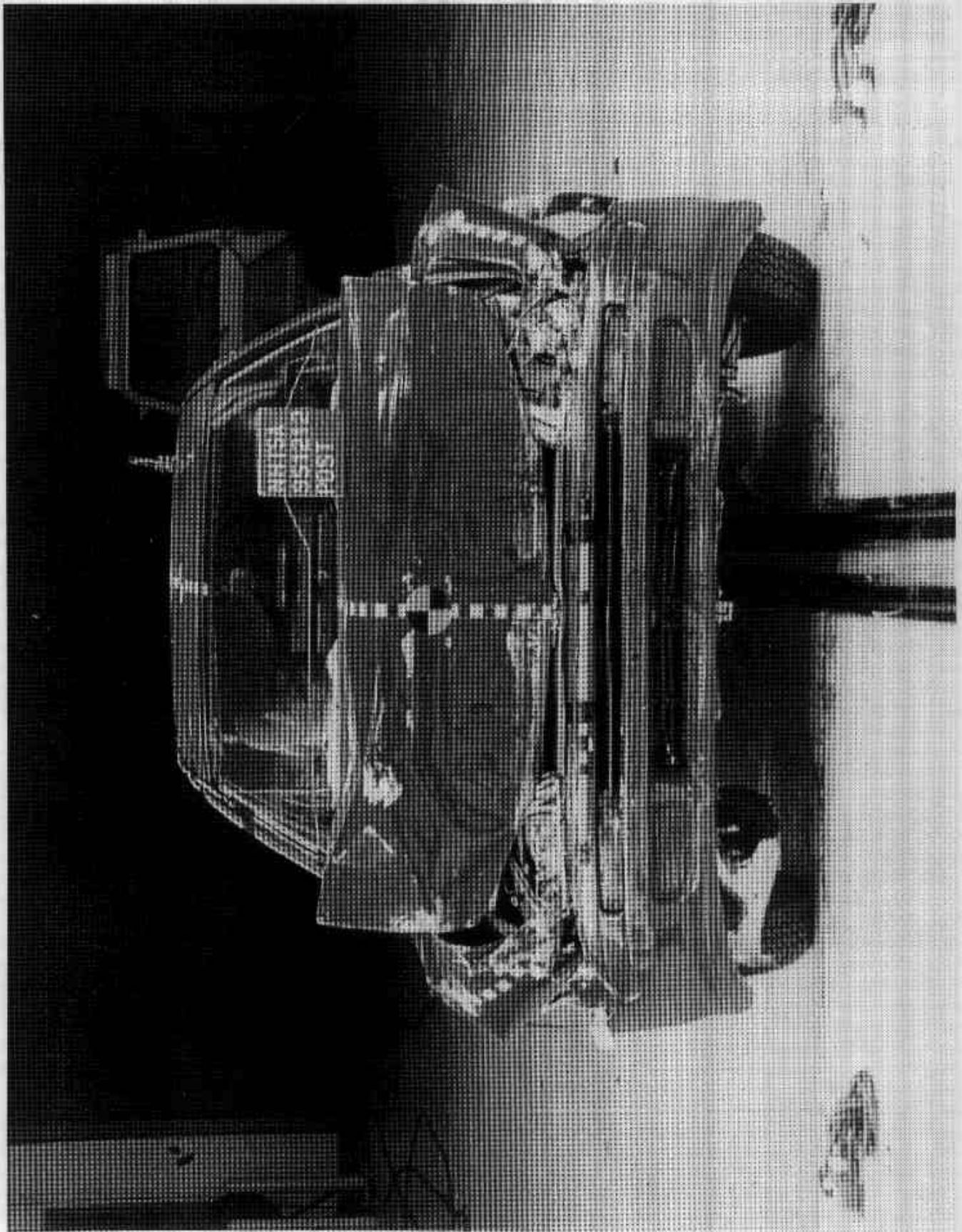


Figure A-2. Post-Test Front View

A-3

951212

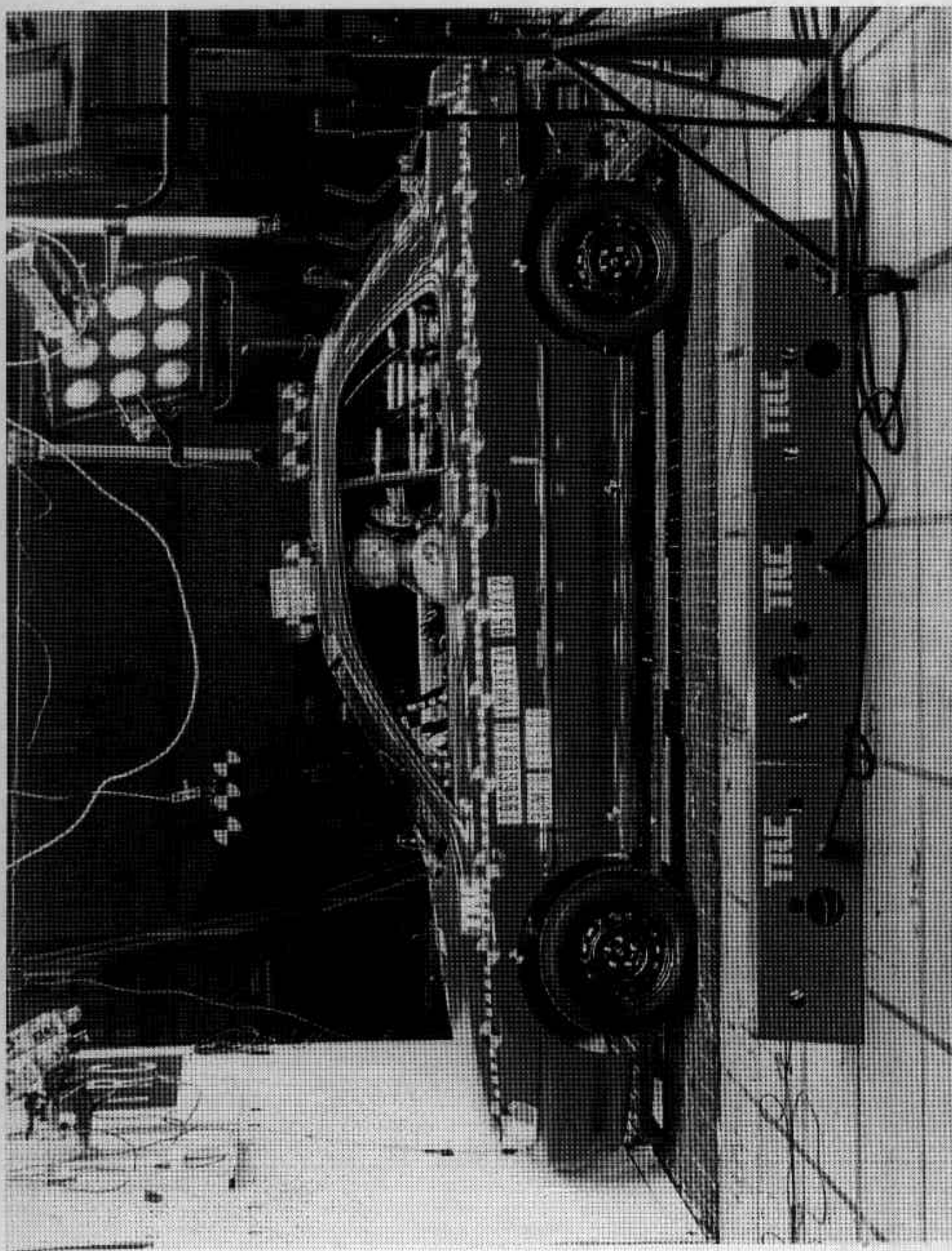


Figure A-3. Pre-Test Left Side View
A-4

951212

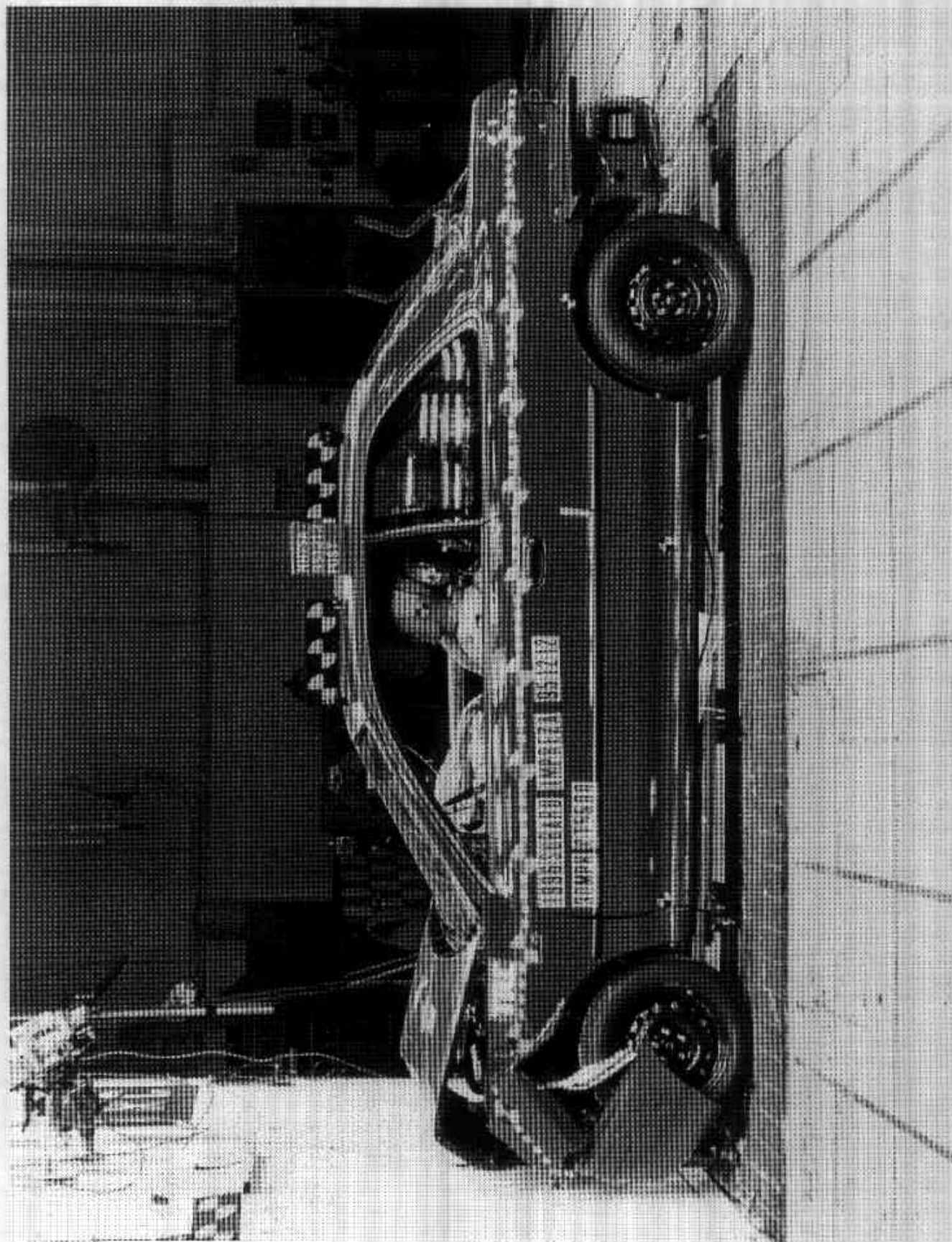


Figure A-4. Post-Test Left Side View
A-5

951212

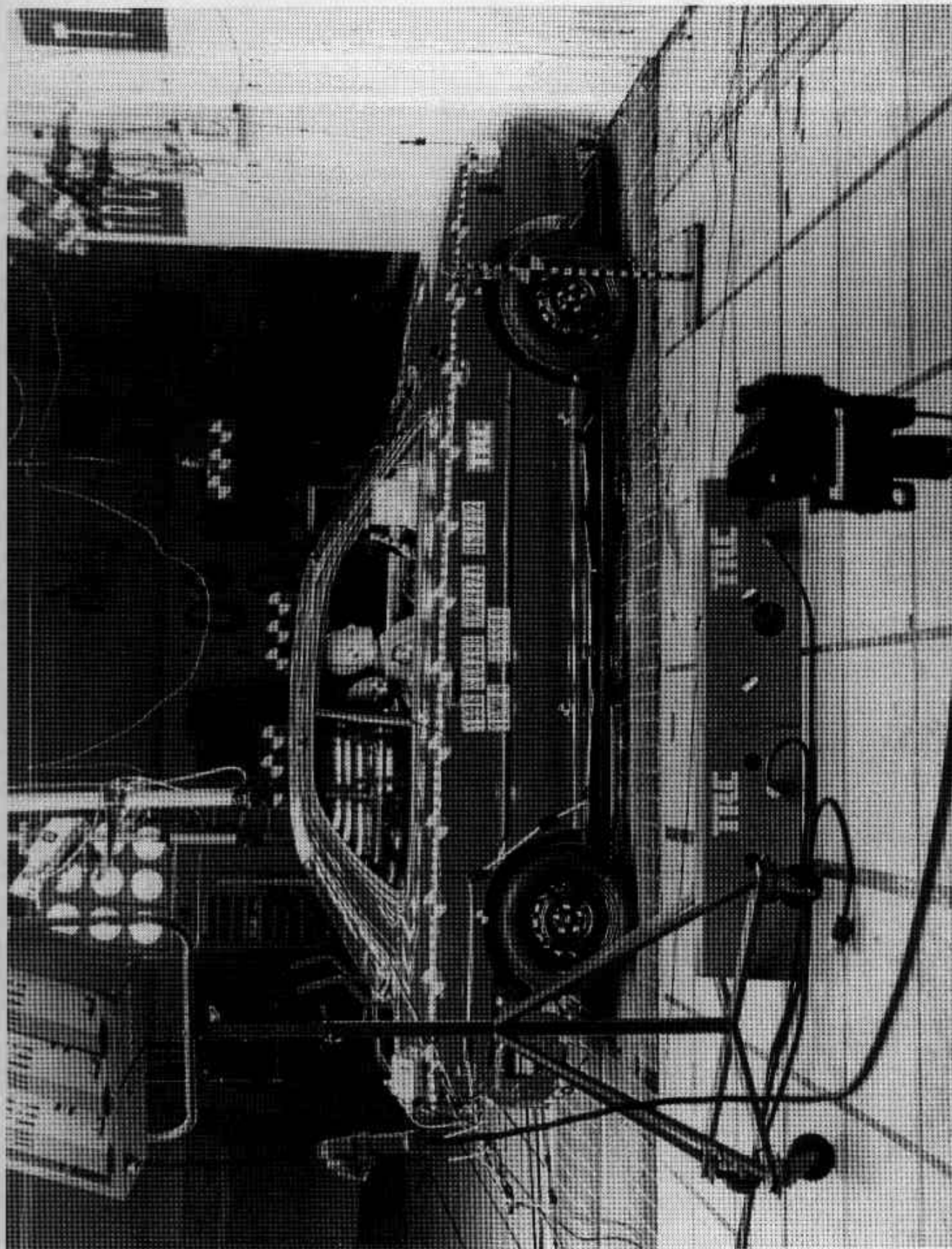


Figure A-5. Pre-Test Right Side View
A-6

951212

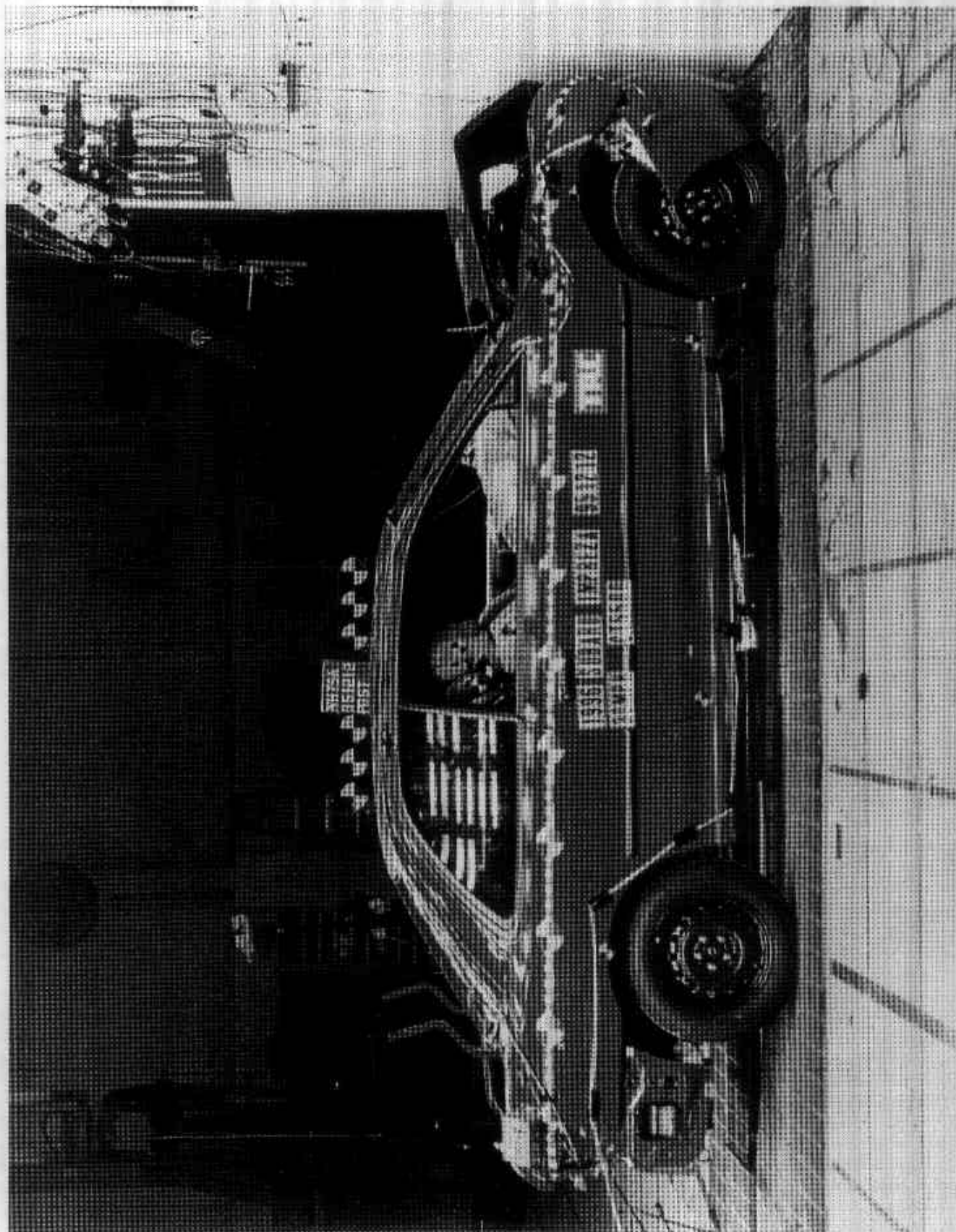


Figure A-6. Post-Test Right Side View
A-7

951212

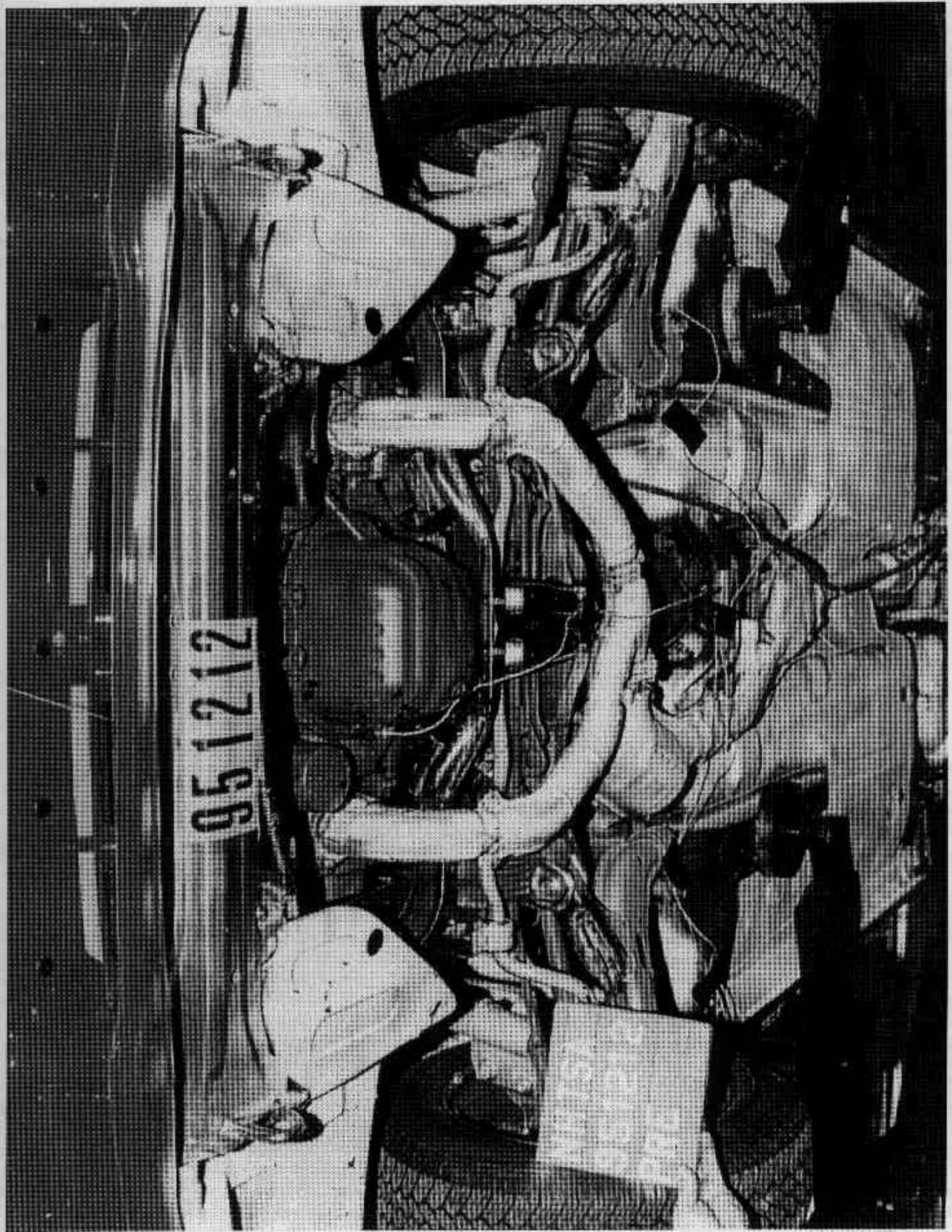


Figure A-7. Pre-Test Front Underbody View
A-8

951212

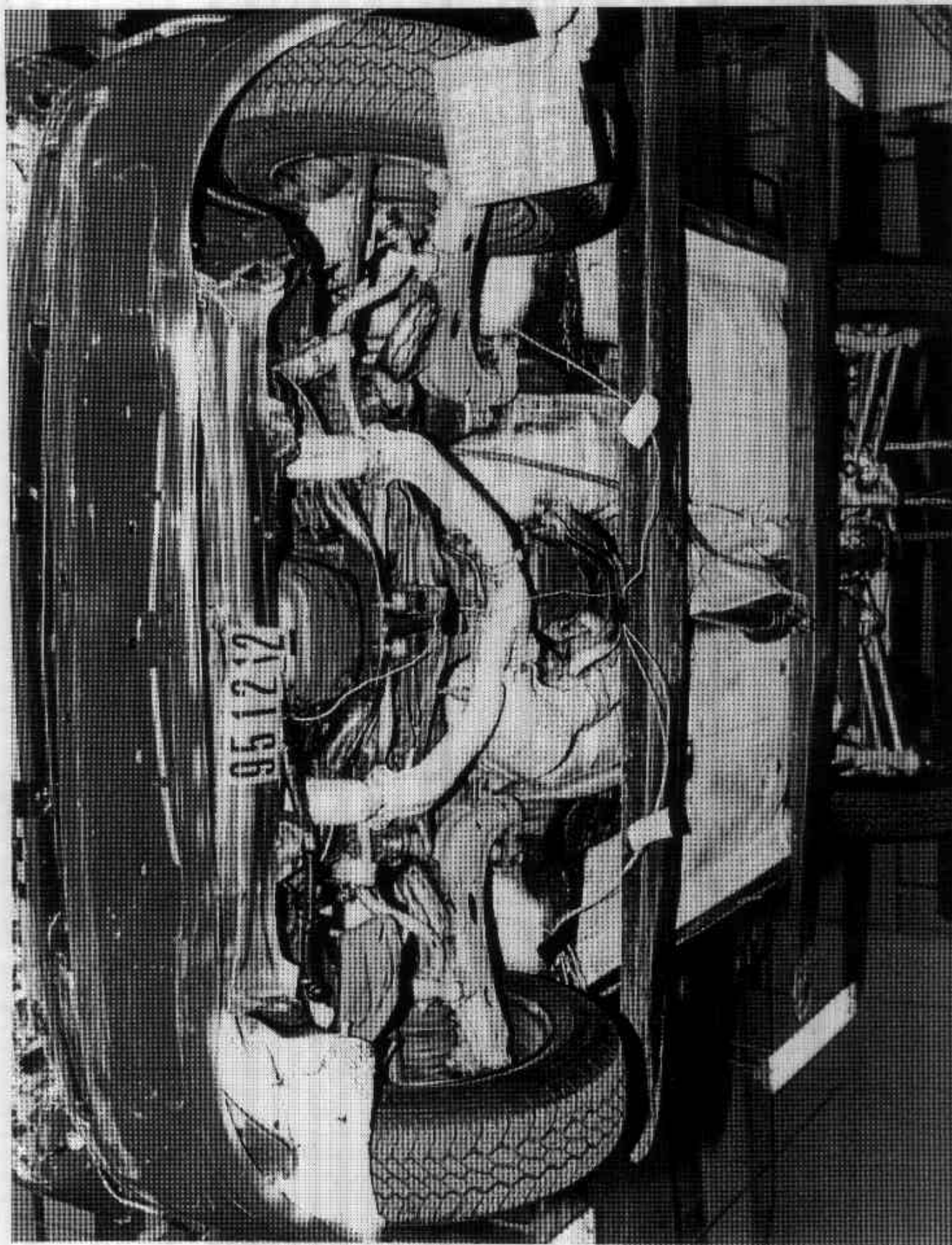


Figure A-8. Post-Test Front Underbody View
A-9

951212

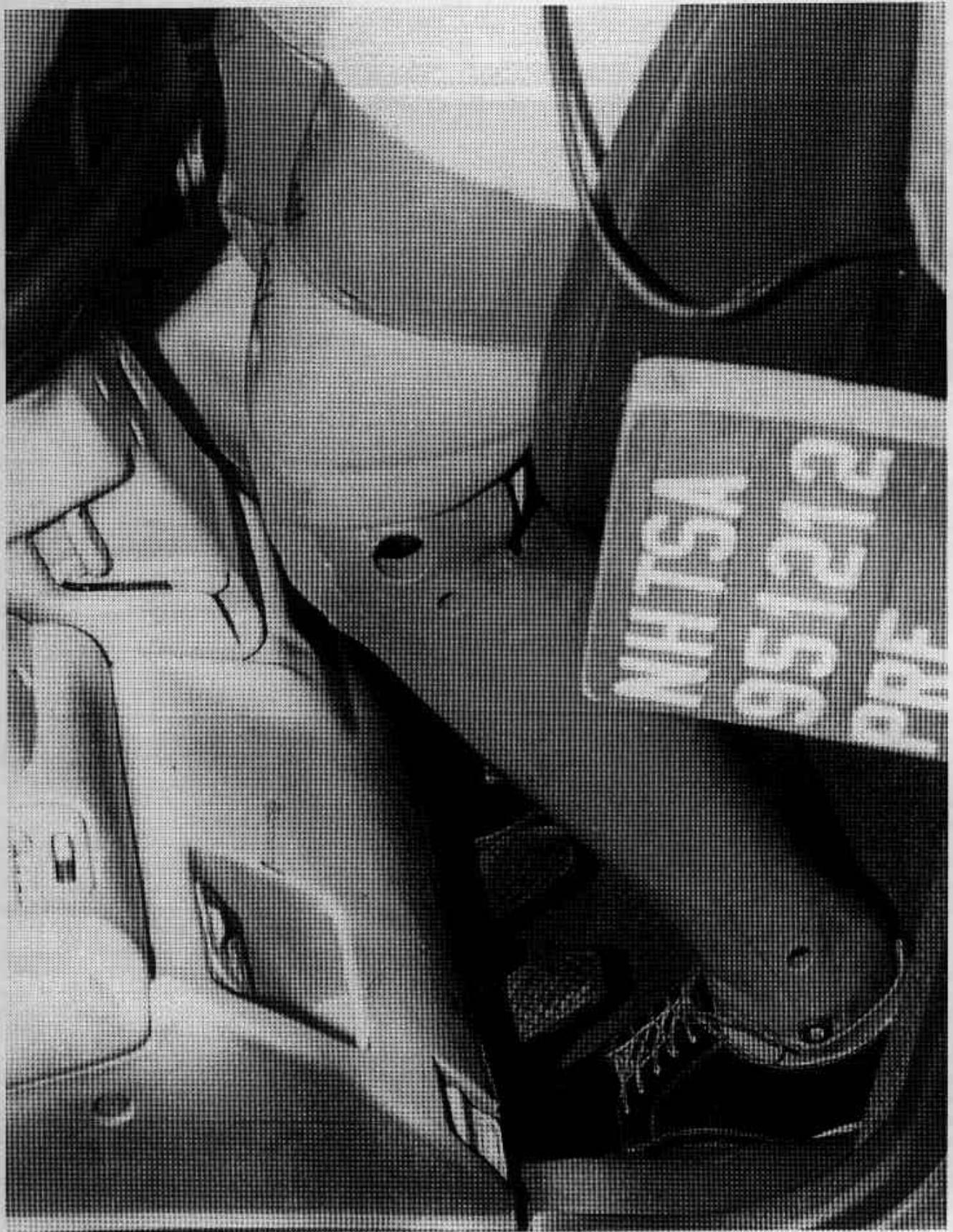


Figure A-9. Pre-Test Driver's Knee Bolster View
A-10

951212



Figure A-10. Pre-Test Passenger's Knee Bolster View
A-11

951212

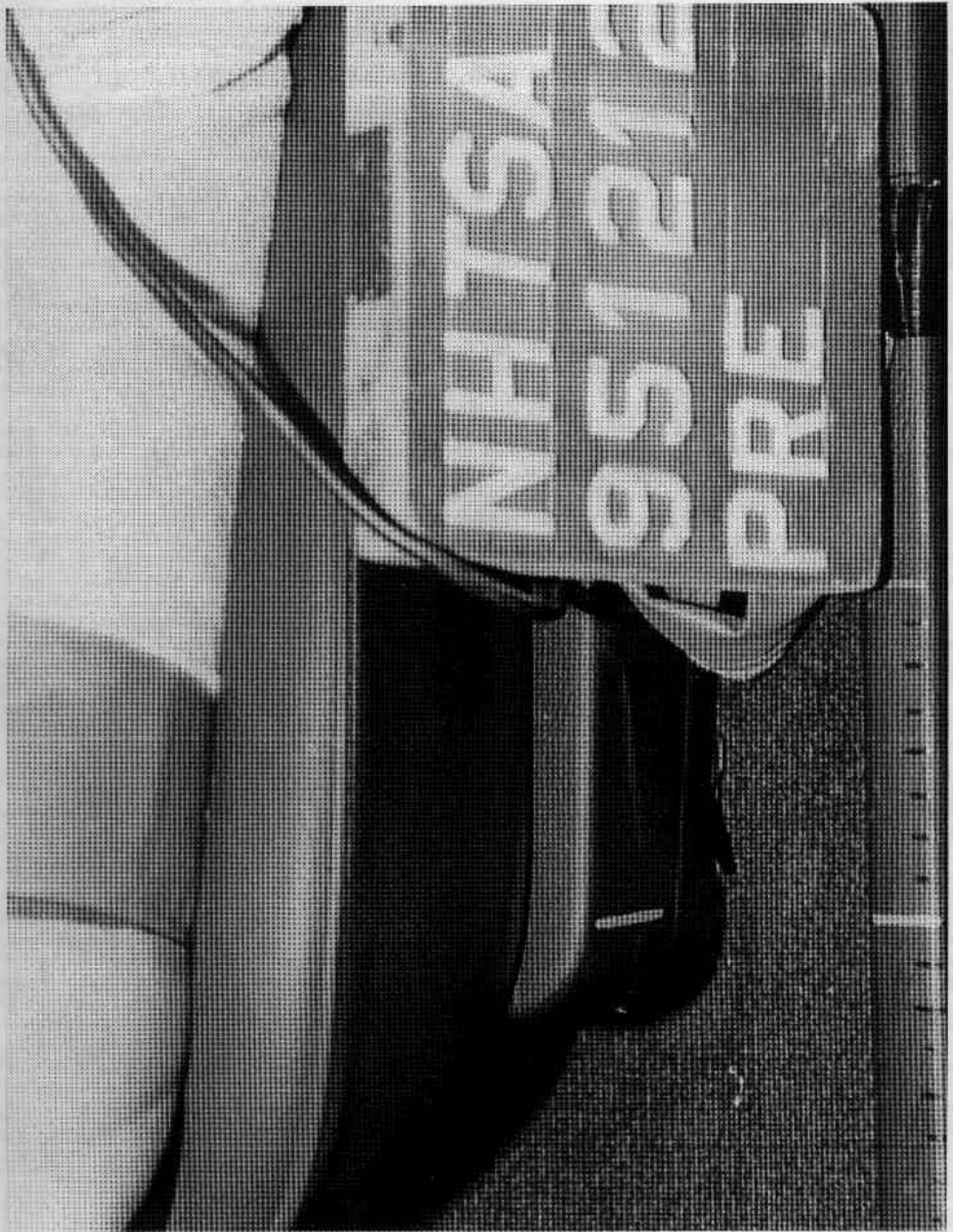


Figure A-11. Pre-Test Driver's Seat Location View
A-12

951212



Figure A-12. Pre-Test Passenger's Seat Location View
A-13

951212

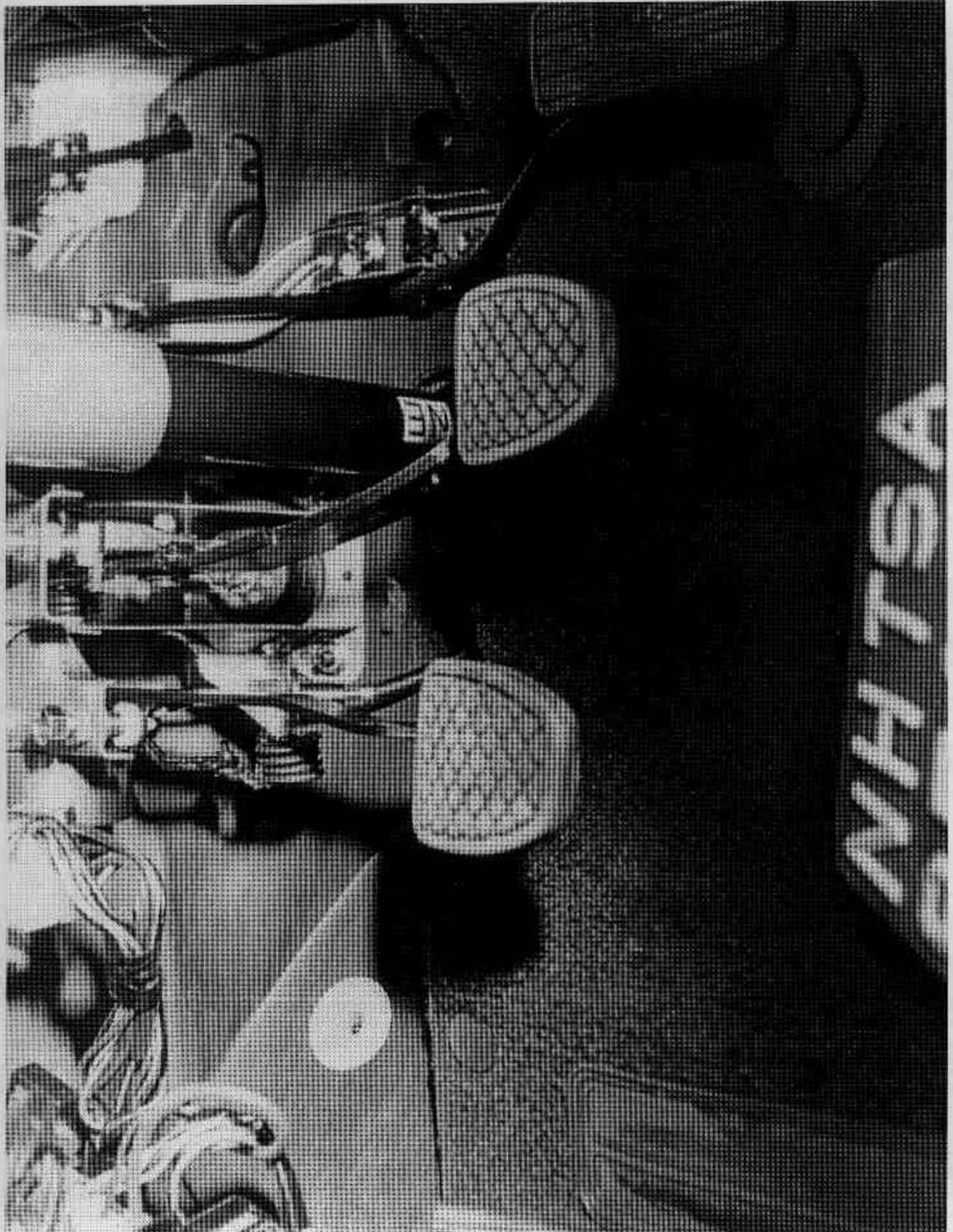


Figure A-13. Pre-Test Steering Column at Firewall View - Interior
A-14

951212

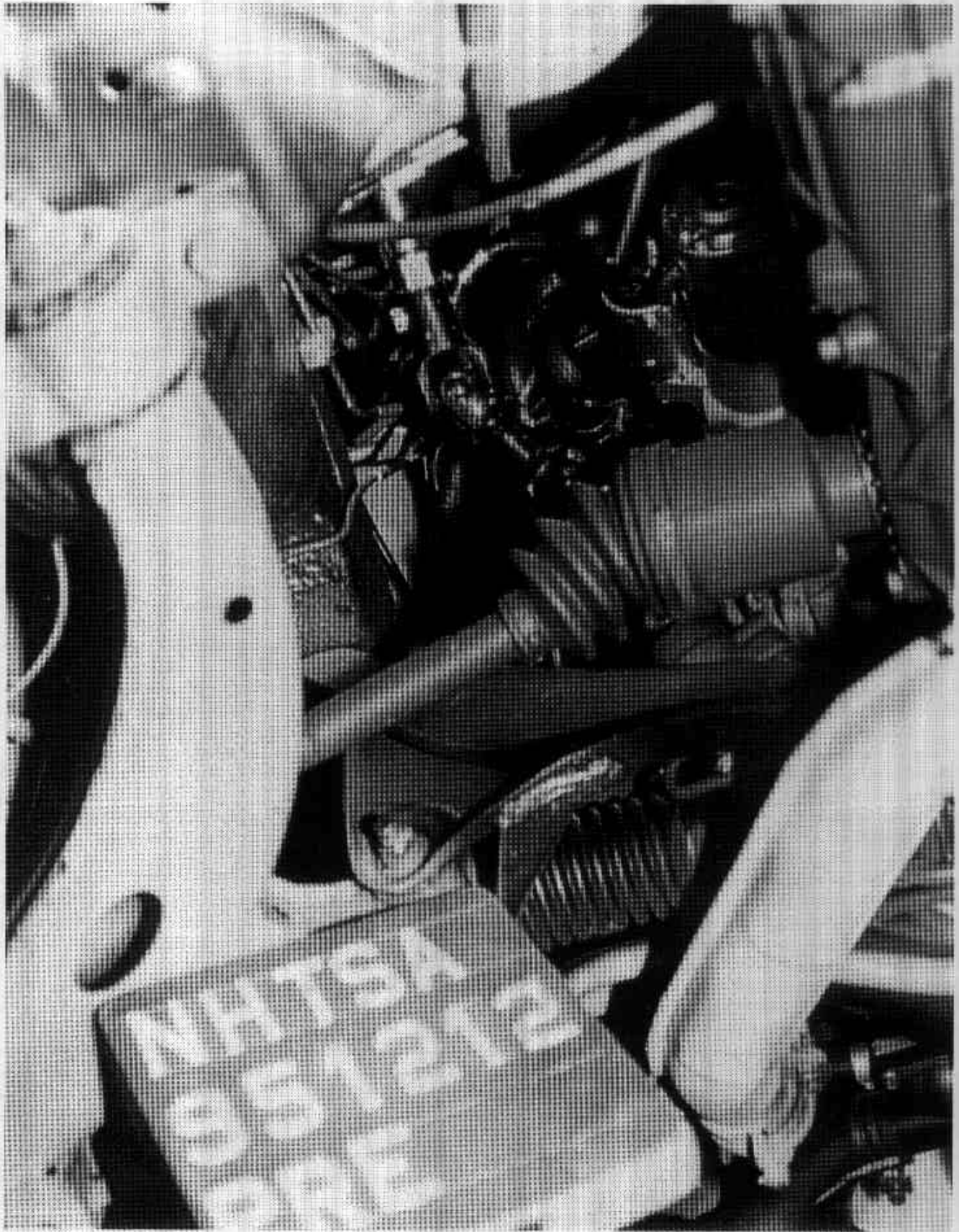


Figure A-14. Pre-Test Steering Column at Firewall View - Exterior
A-15

951212

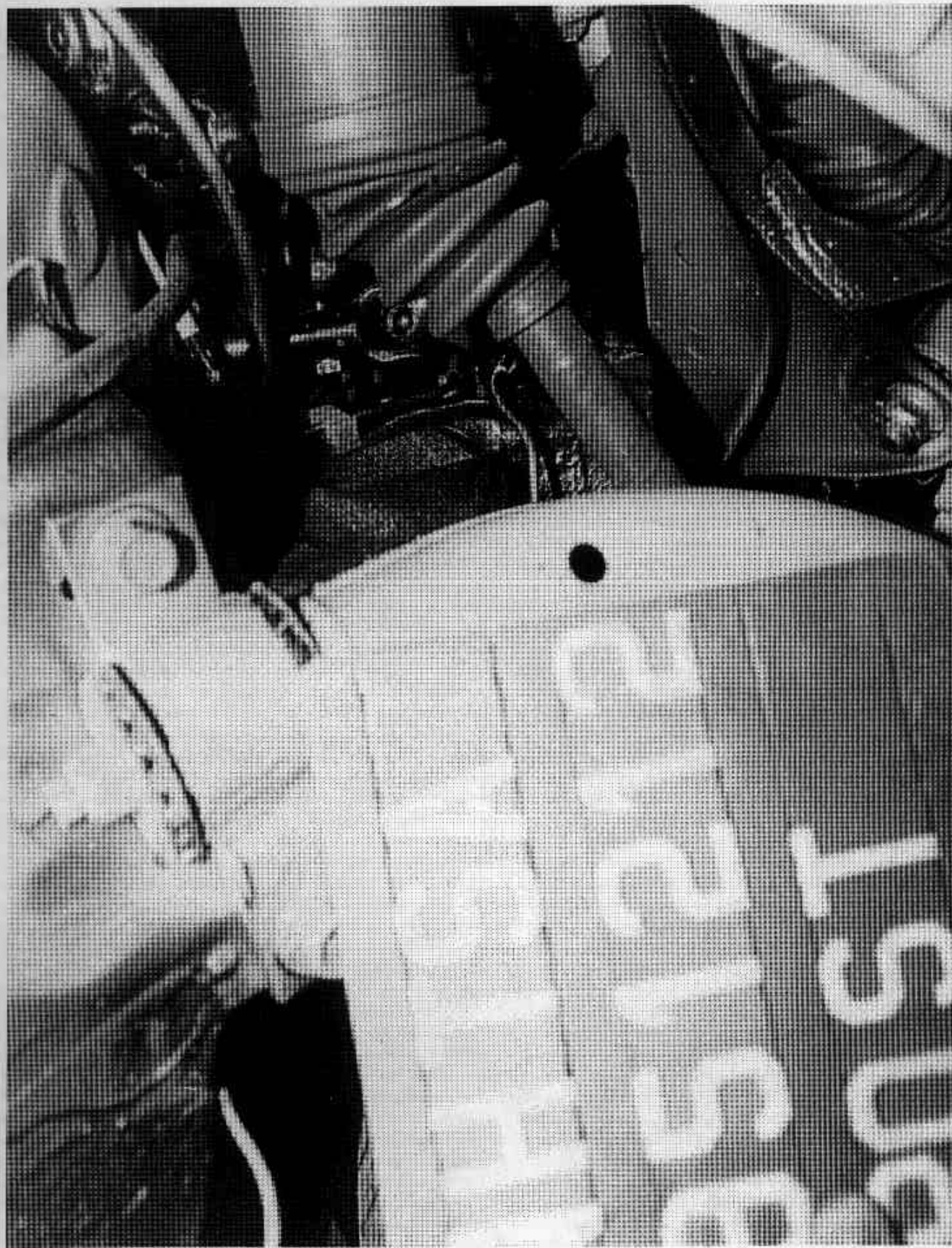


Figure A-15. Post-Test Steering Column at Firewall View - Exterior

A-16

951212



Figure A-16. Pre-Test Driver Dummy & Vehicle Interior View
A-17

951212



Figure A-17. Post-Test Driver Dummy & Vehicle Interior View
A-18

951212



Figure A-18. Pre-Test Passenger Dummy & Vehicle Interior View

A-19

951212

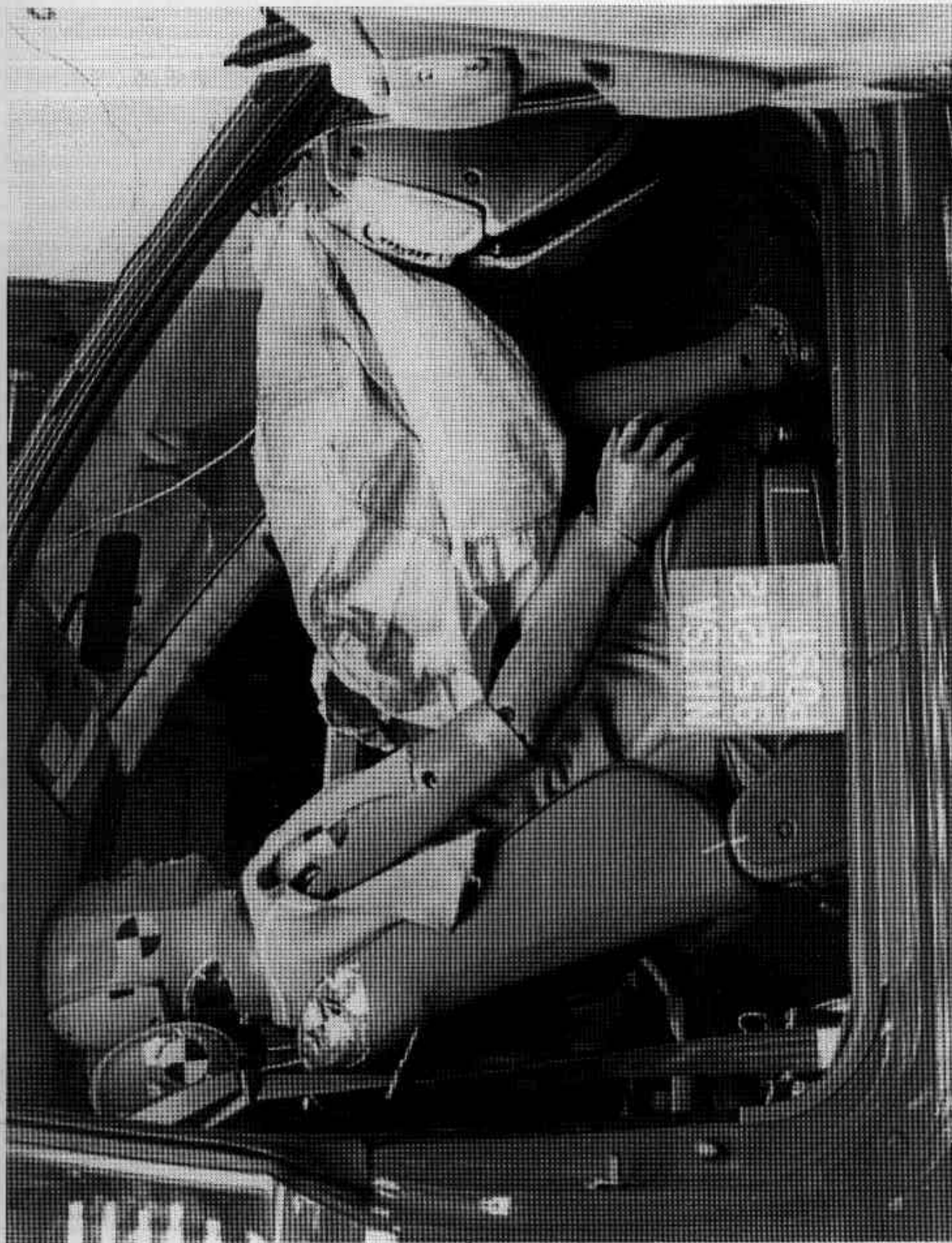


Figure A-19. Post-Test Passenger Dummy & Vehicle Interior View

A-20

951212

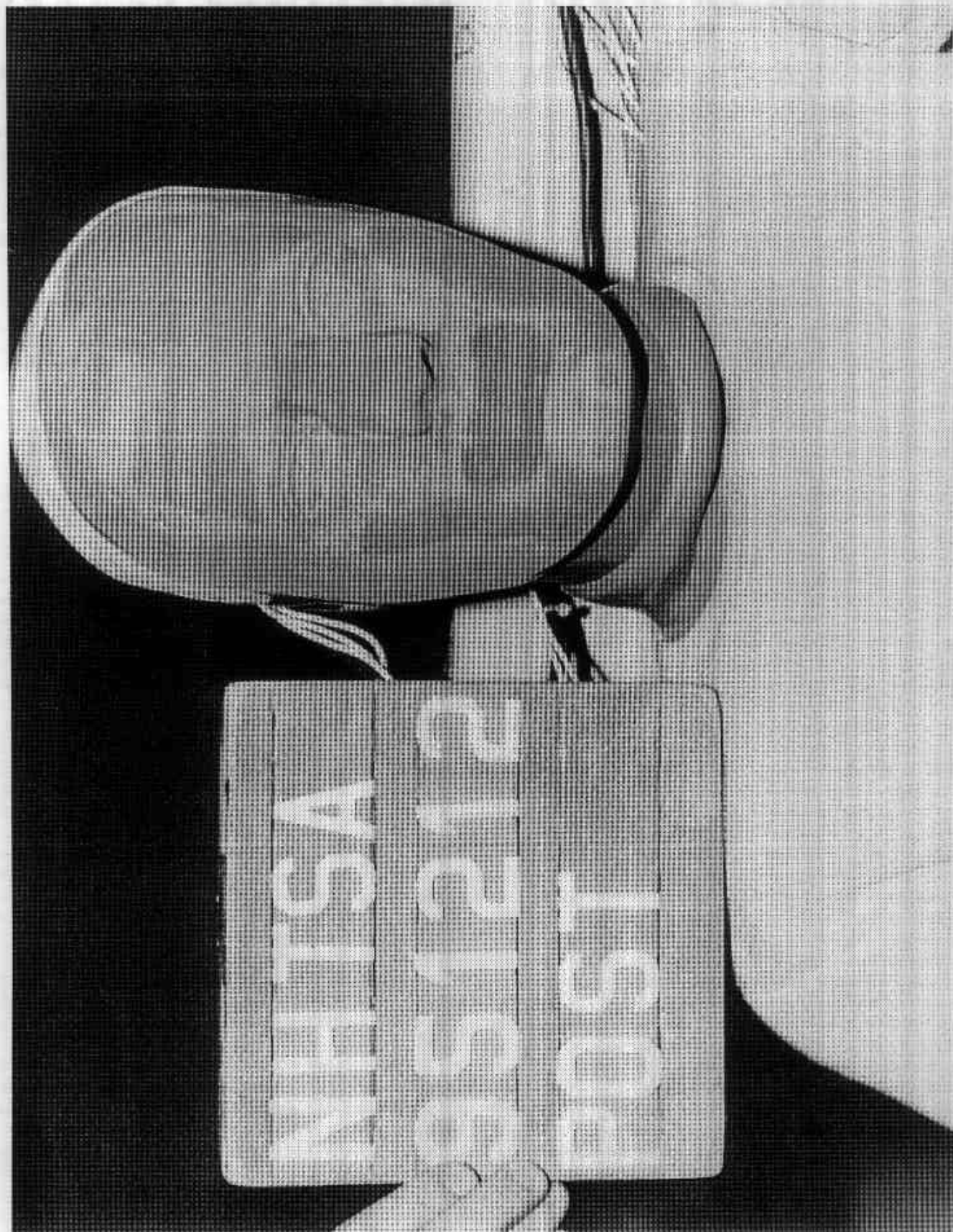


Figure A-20. Post-Test Driver Dummy Head Contact - View 1
A-21

951212



Figure A-21. Post-Test Driver Dummy Head Contact - View 2
A-22

951212



Figure A-22. Post-Test Driver Dummy Head Contact - View 3
A-23

951212

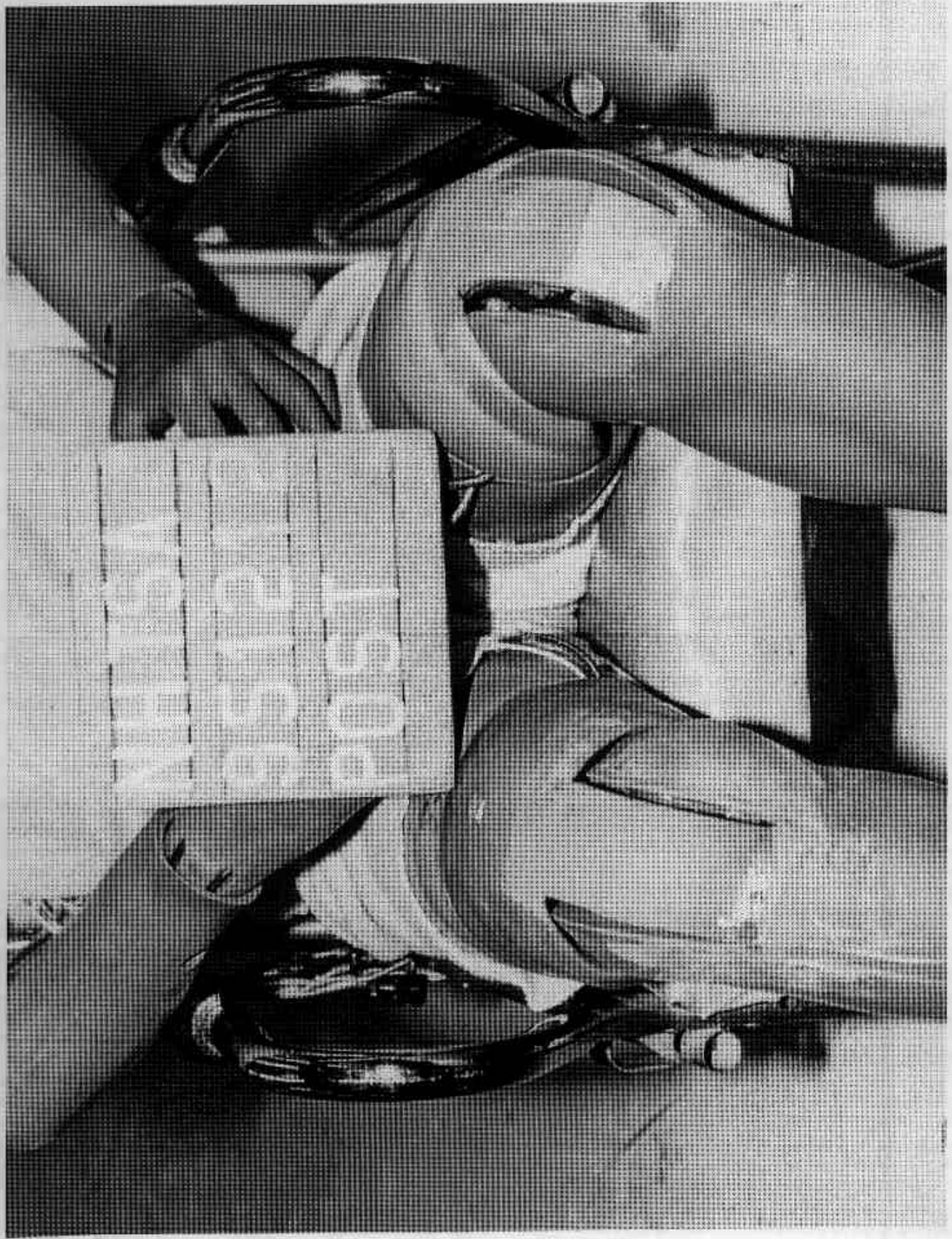


Figure A-23. Post-Test Driver Dummy Knee Contact - View 1

A-24

951212



Figure A-24. Post-Test Driver Dummy Knee Contact - View 2

A-25

951212



Figure A-25. Post-Test Driver Dummy Knee Contact - View 3

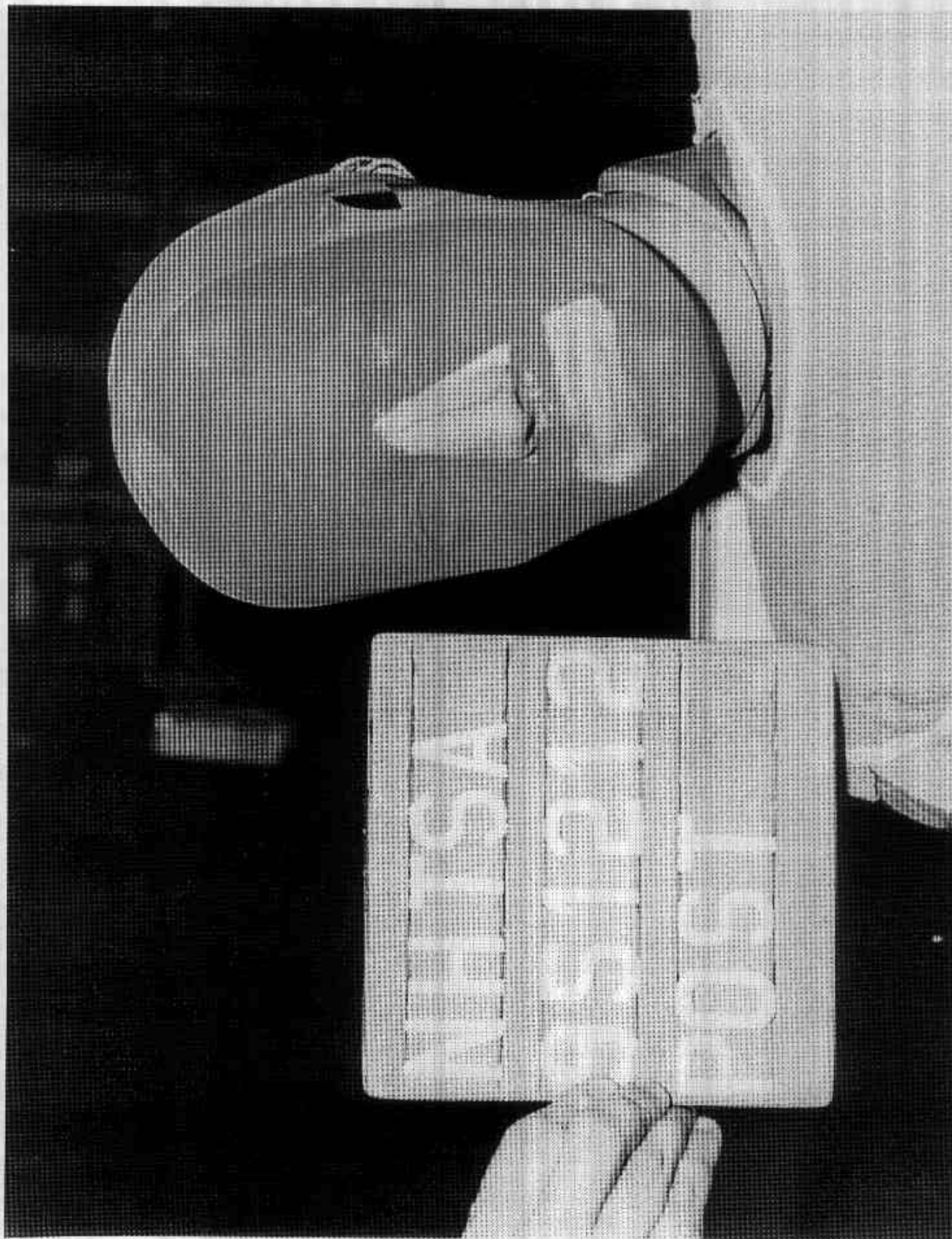


Figure A-26. Post-Test Passenger Dummy Head Contact - View 1

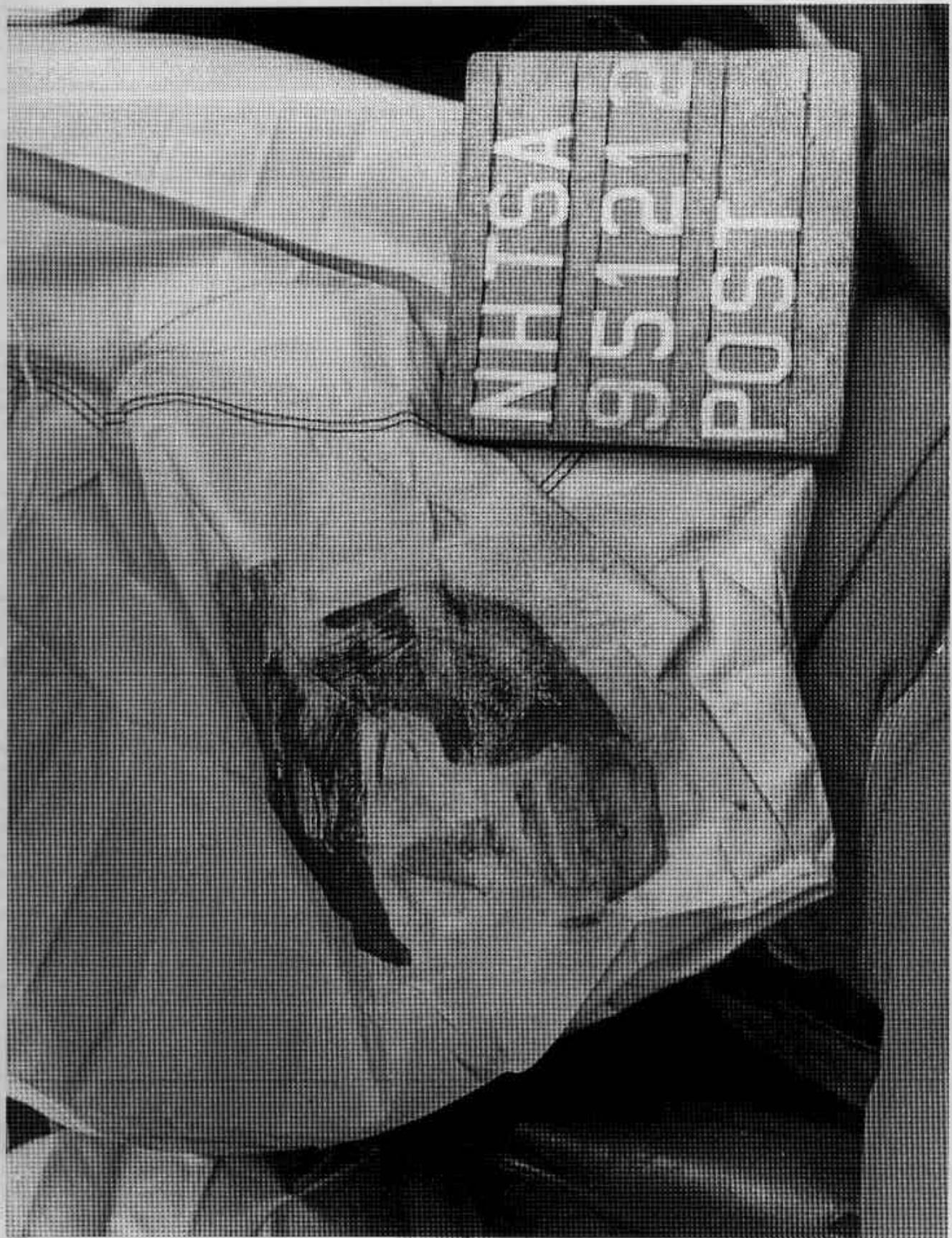


Figure A-27. Post-Test Passenger Dummy Head Contact - View 2

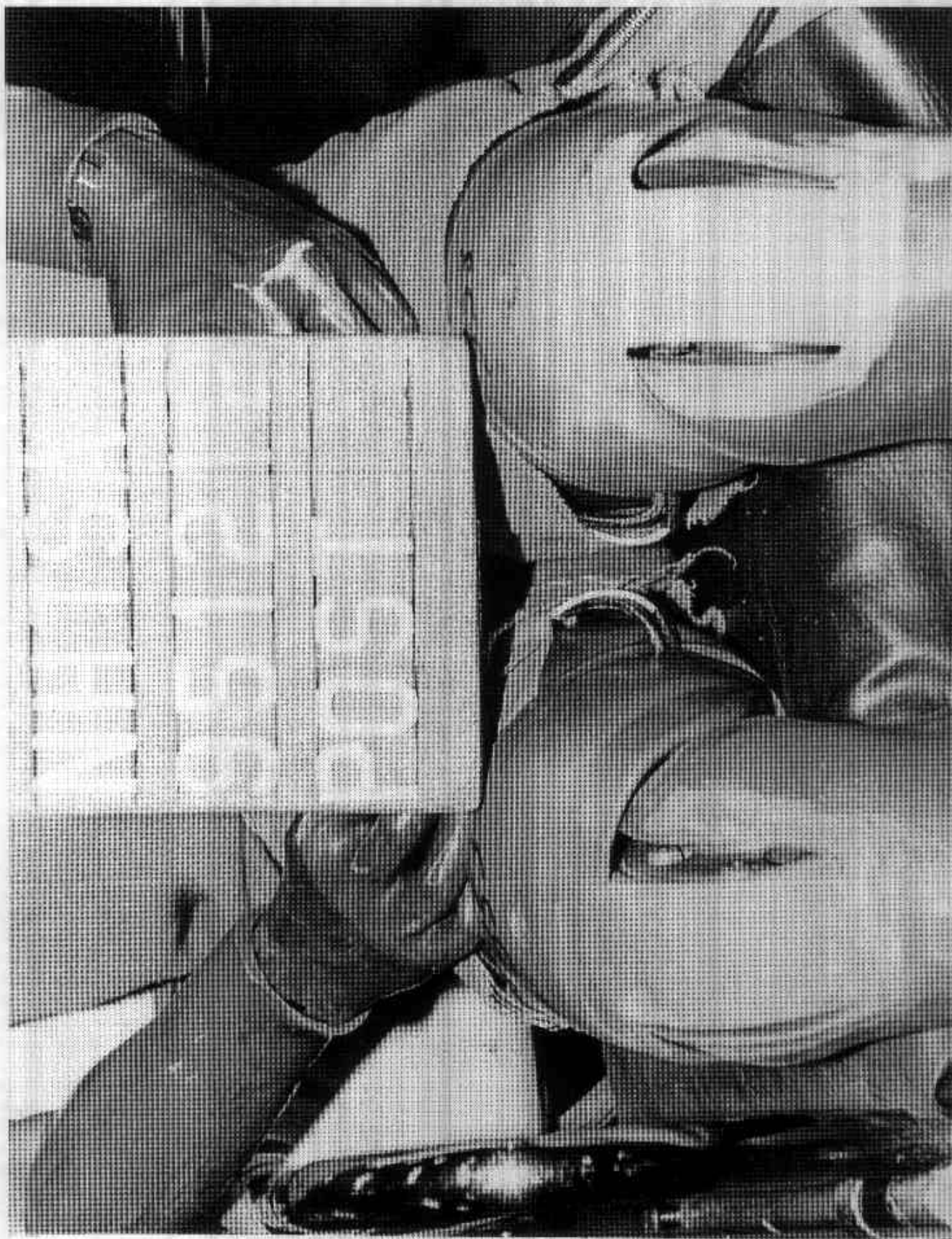


Figure A-28. Post-Test Passenger Dummy Knee Contact - View 1
A-29

951212

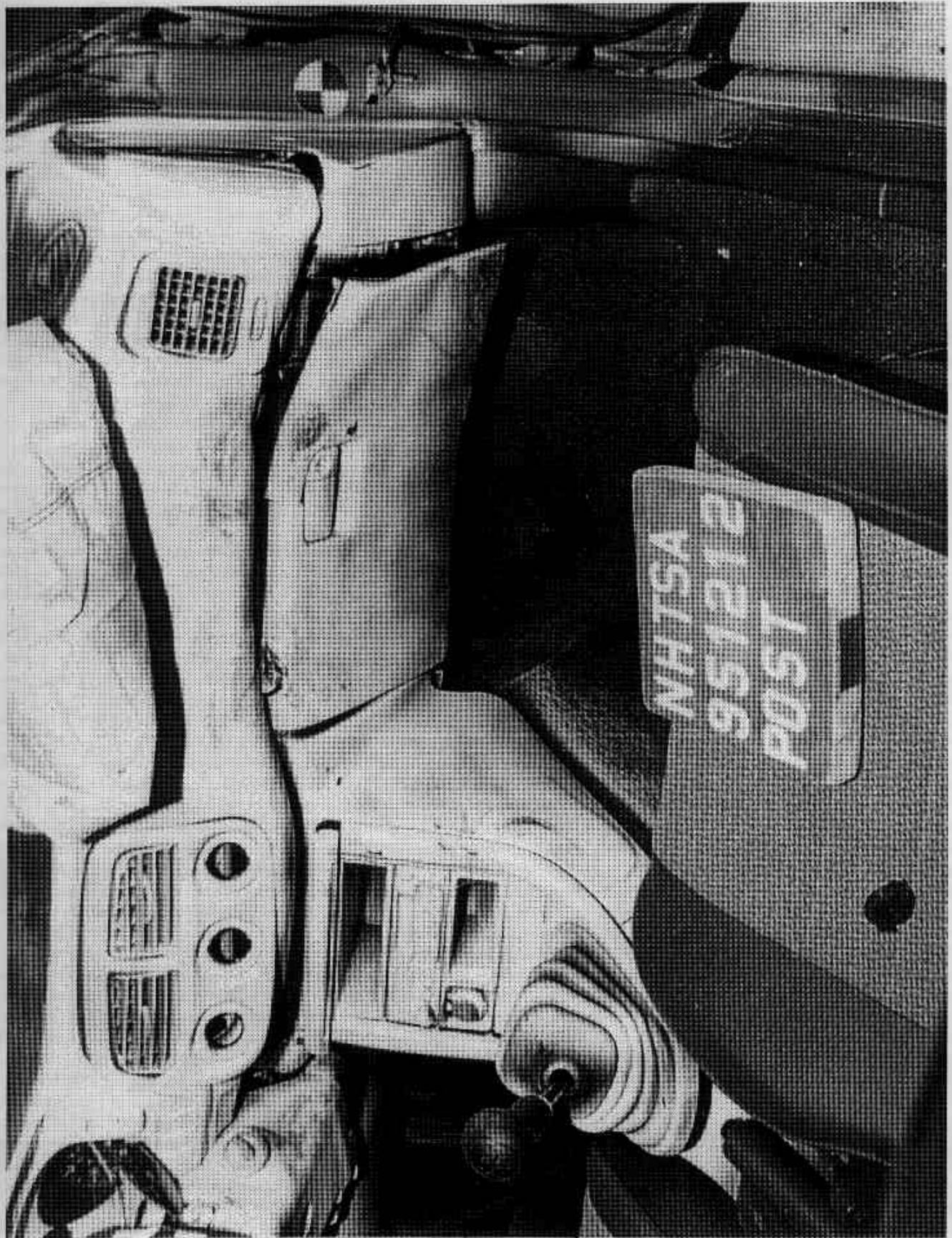


Figure A-29. Post-Test Passenger Dummy Knee Contact - View 2

A-30

951212

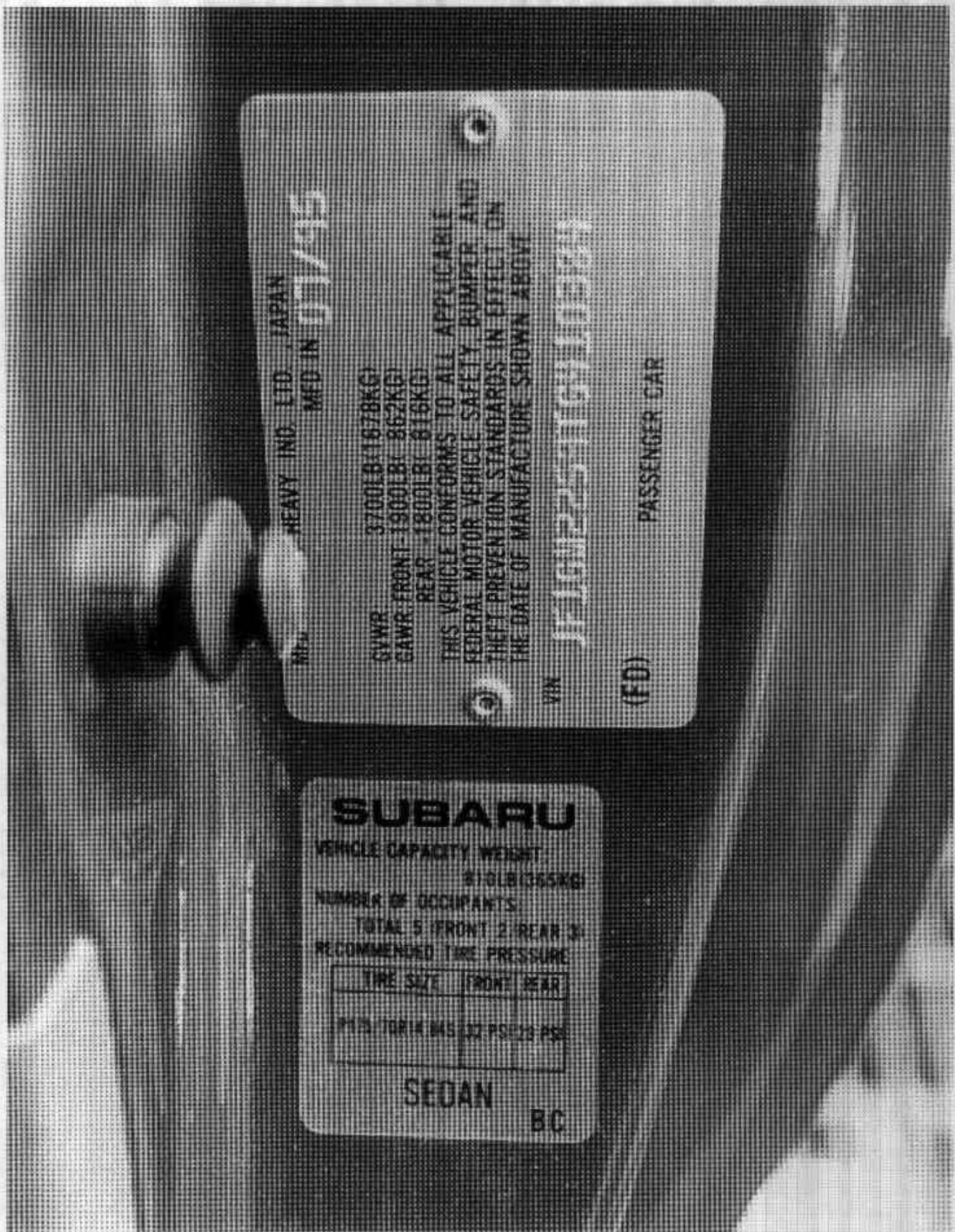


Figure A-30. Pre-Test Vehicle Certification Label and Recommended Tire Pressure Label Vic
 A-31 951212

Appendix B

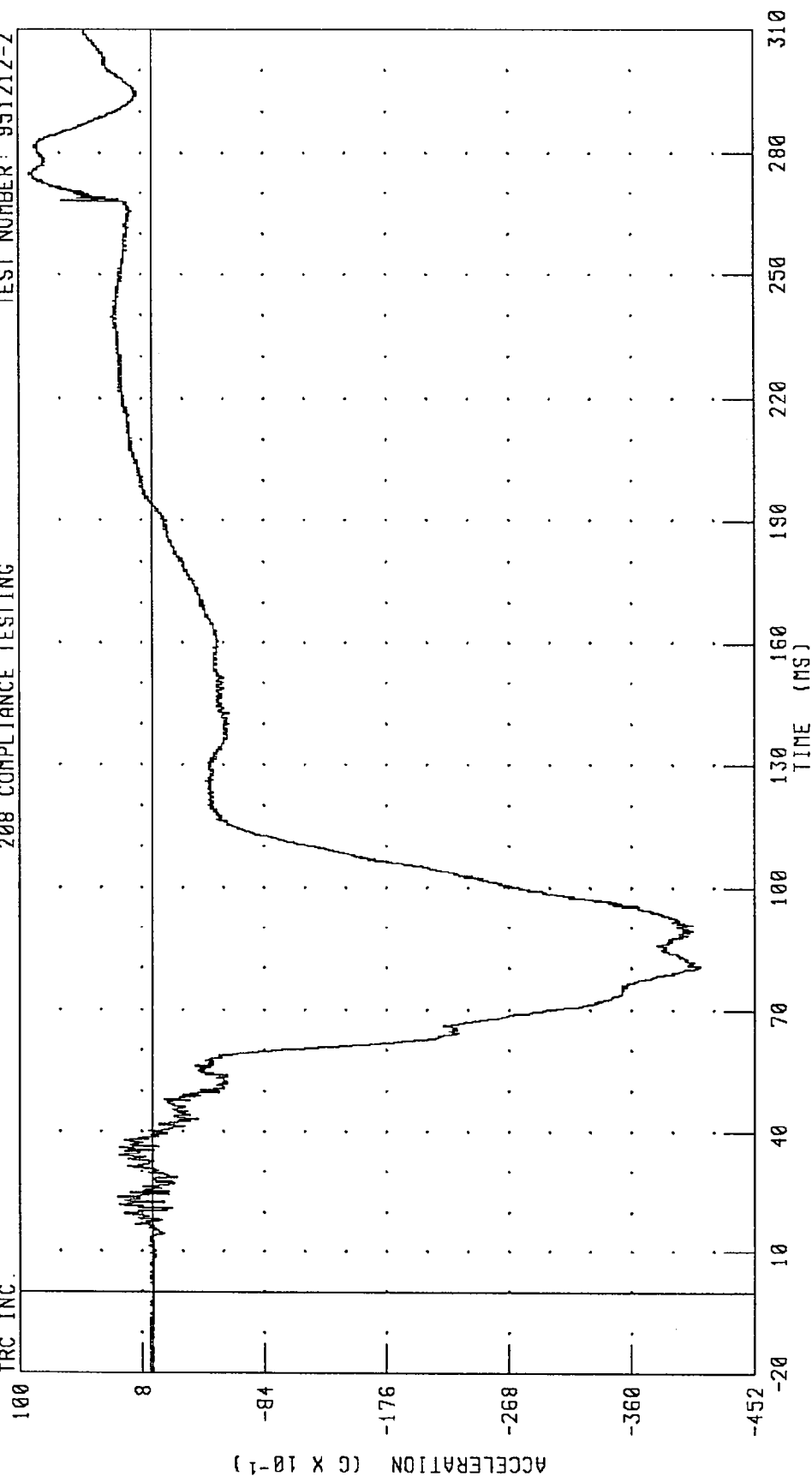
Data Plots

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER HEAD X-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



PEAK DATA: 9.18 G @ 274.80 MS; -41.15 G @ 80.40 MS

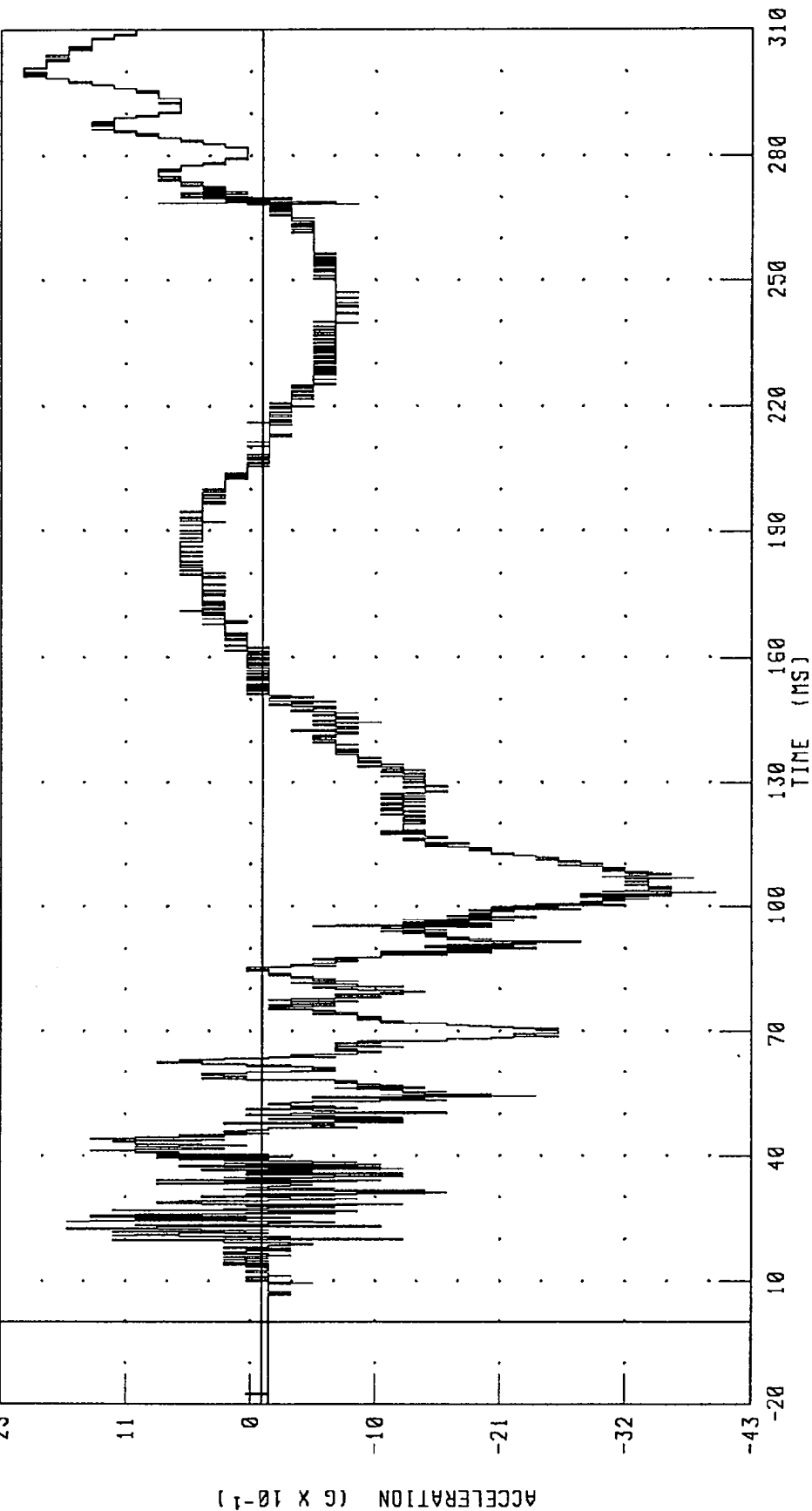
CHANNEL: HEDXG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



PEAK DATA: 2.10 G @ 299.20 MS; -3.99 G @ 103.28 MS

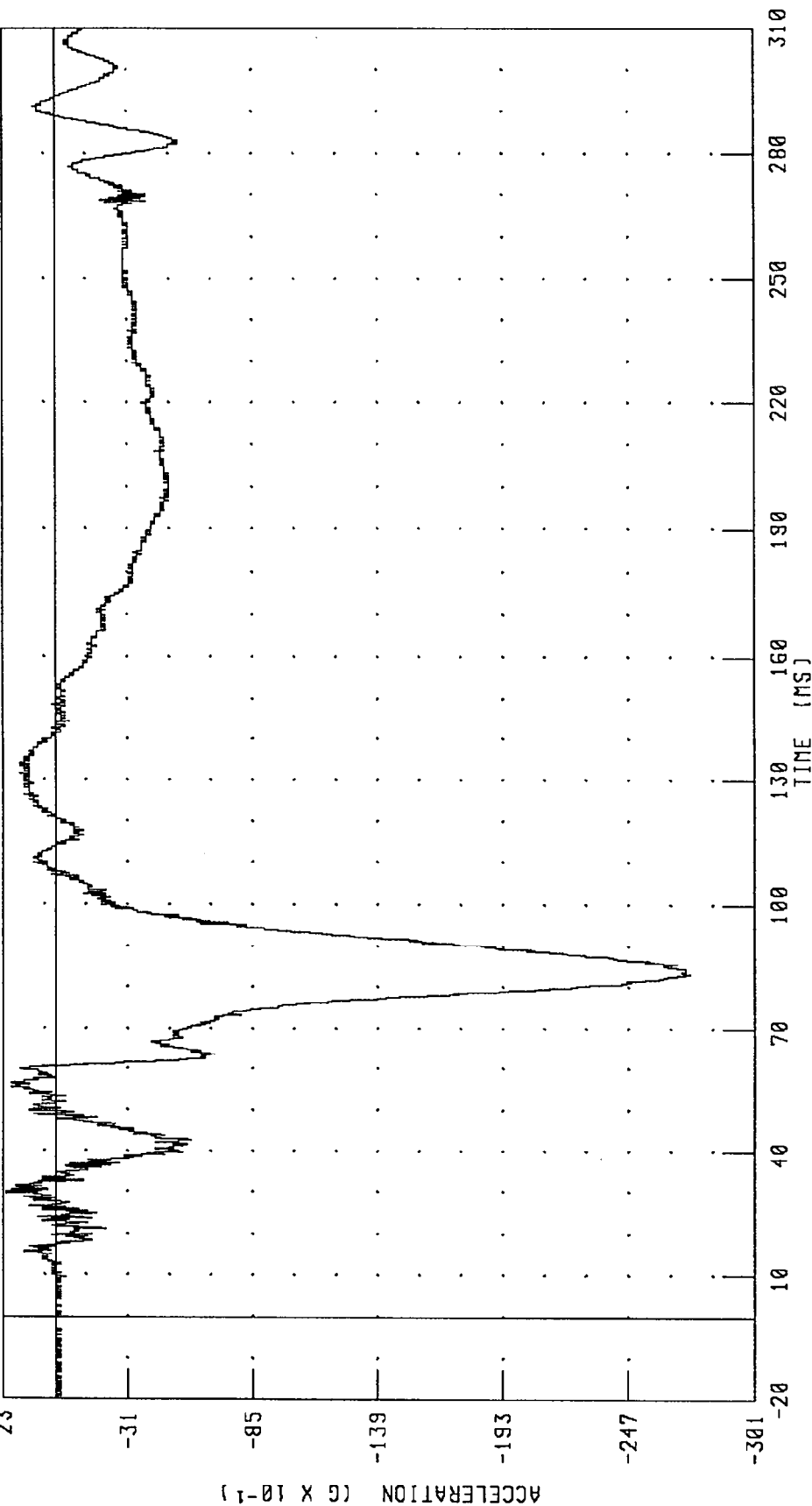
CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



PEAK DATA: 2.14 G @ 29.68 MS; -27.36 G @ 83.12 MS

CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.

528

440

ACCELERATION (G X 10⁻¹)

352

264

176

88

0

-20

10

40

70

100

130

160

190

220

250

280

310

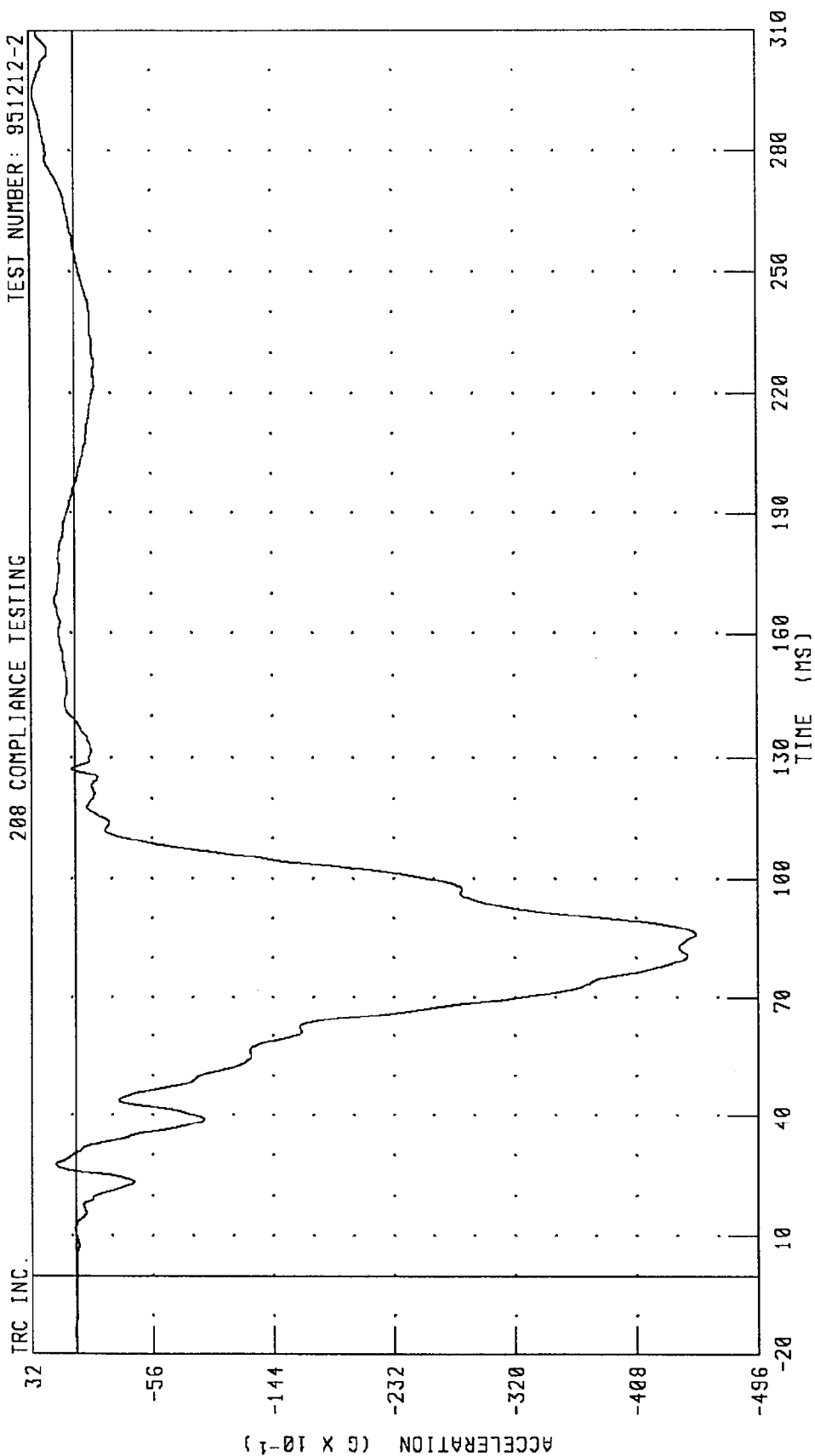
TIME (MS)

CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 48.06 G @ 82.88 MS; 0.09 G @ -19.44 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
 DRIVER CHEST X-AXIS ACCELERATION
 208 COMPLIANCE TESTING

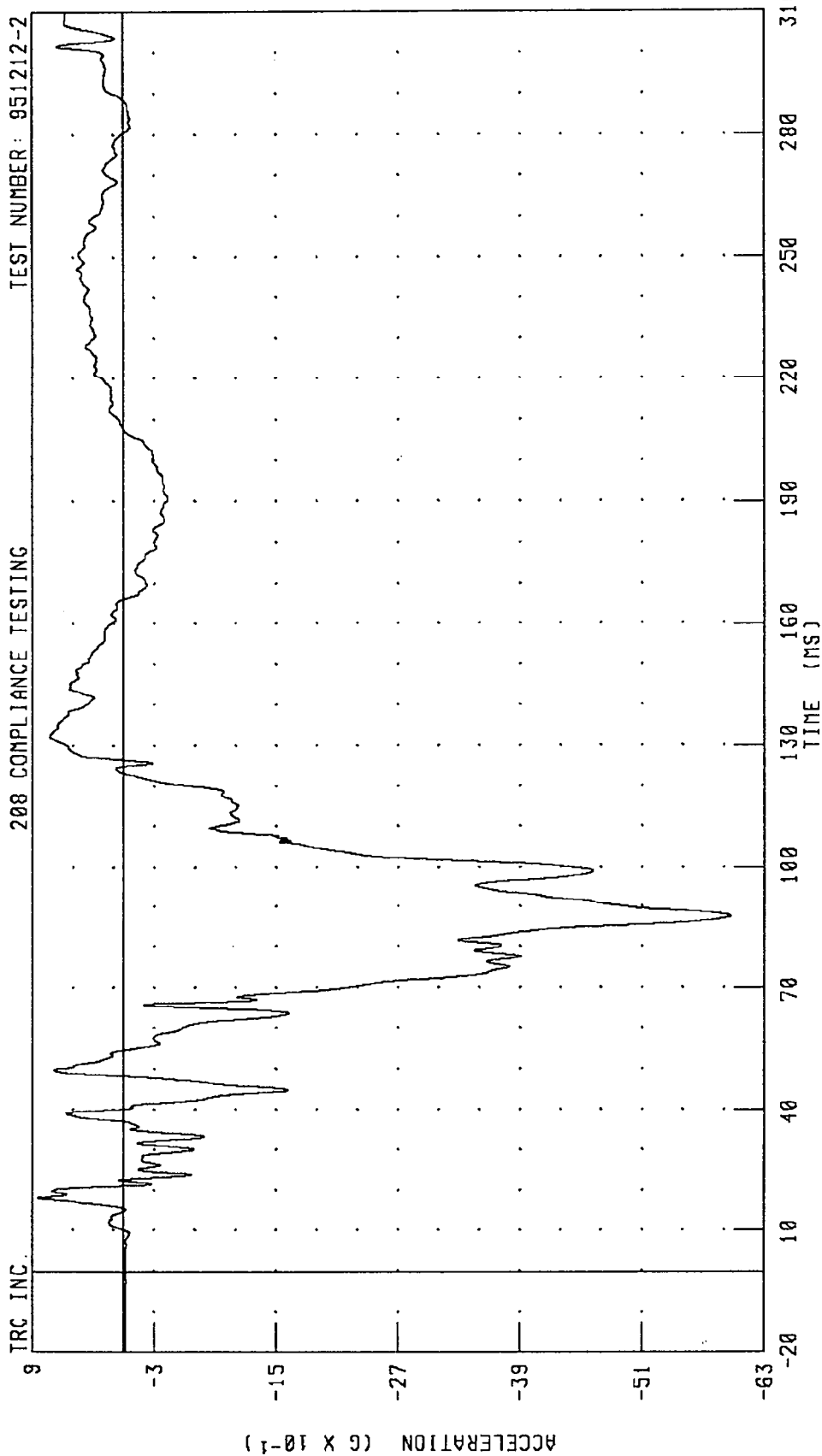
TEST NUMBER: 951212-2



CHANNEL: CSTXG1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION
208 COMPLIANCE TESTING

TEST NUMBER: 951212-2



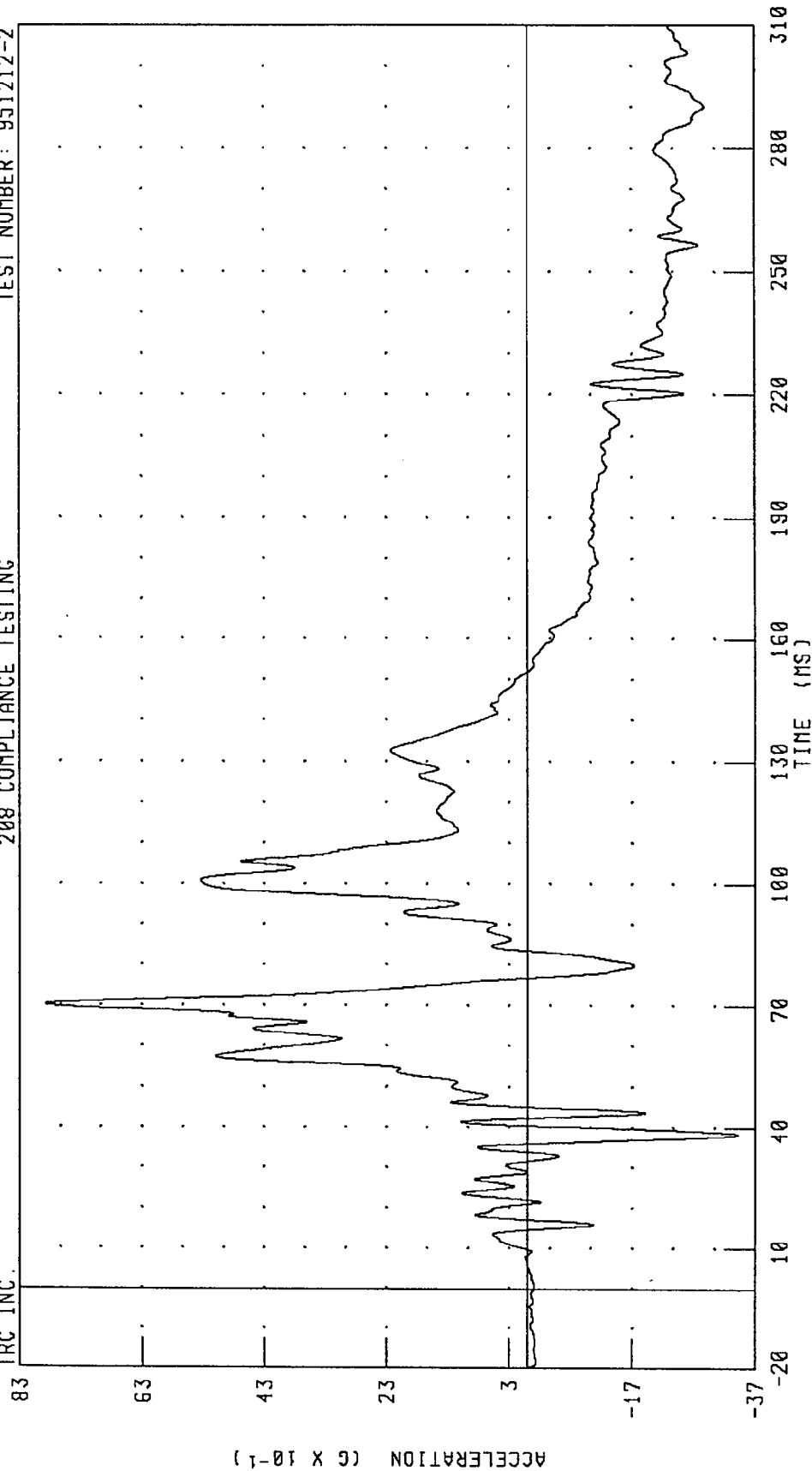
PEAK DATA: 0.84 G @ 18.24 MS; -5.97 G @ 87.52 MS

CHANNEL: CSTYG1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION
208 COMPLIANCE TESTING

TEST NUMBER: 951212-2

TRC INC.

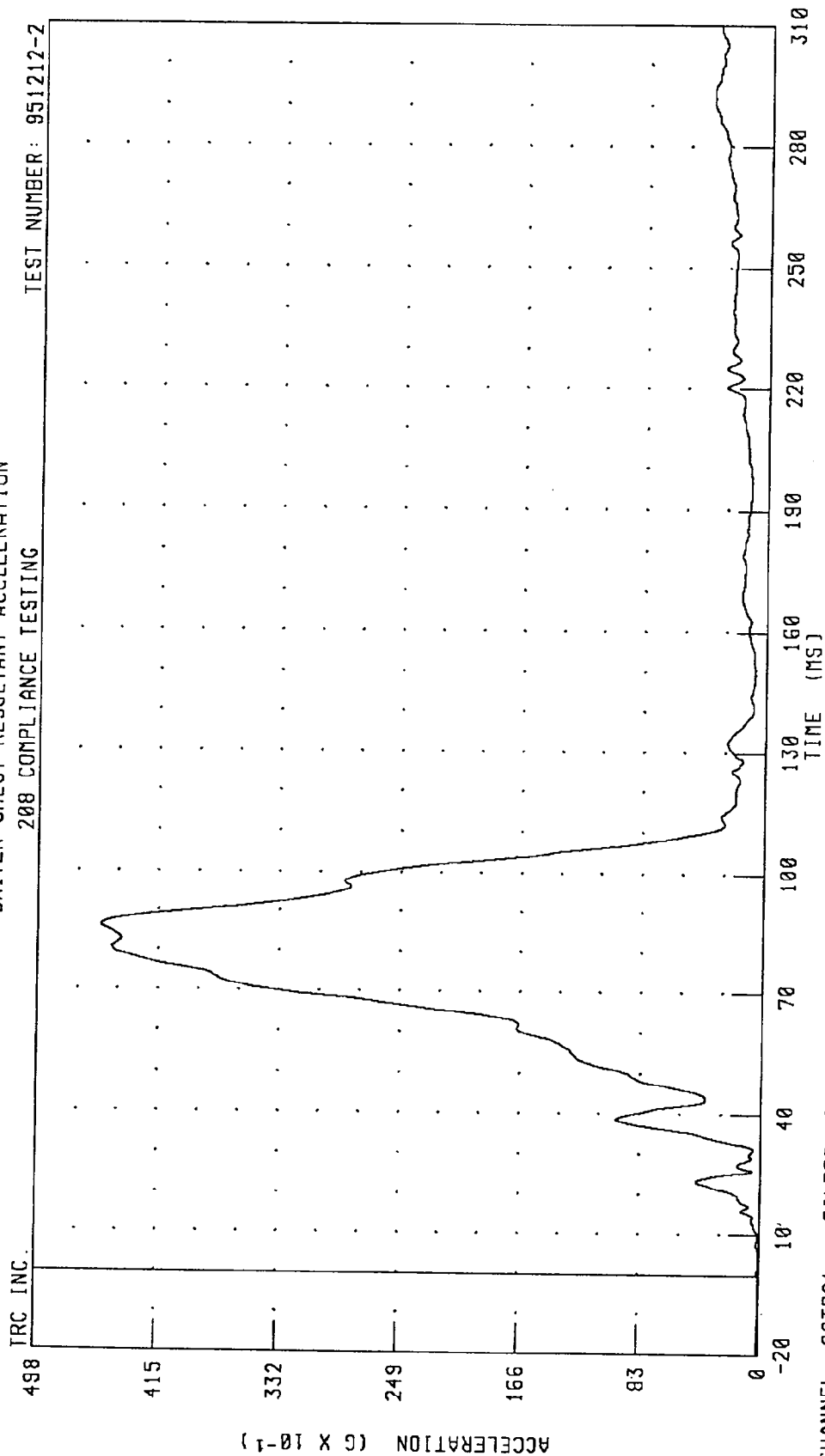


CHANNEL: CST7G1 FILTER: CH. CLASS 180

PEAK DATA: 7.88 G @ 70.16 MS; -3.42 G @ 38.32 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION
 200 COMPLIANCE TESTING

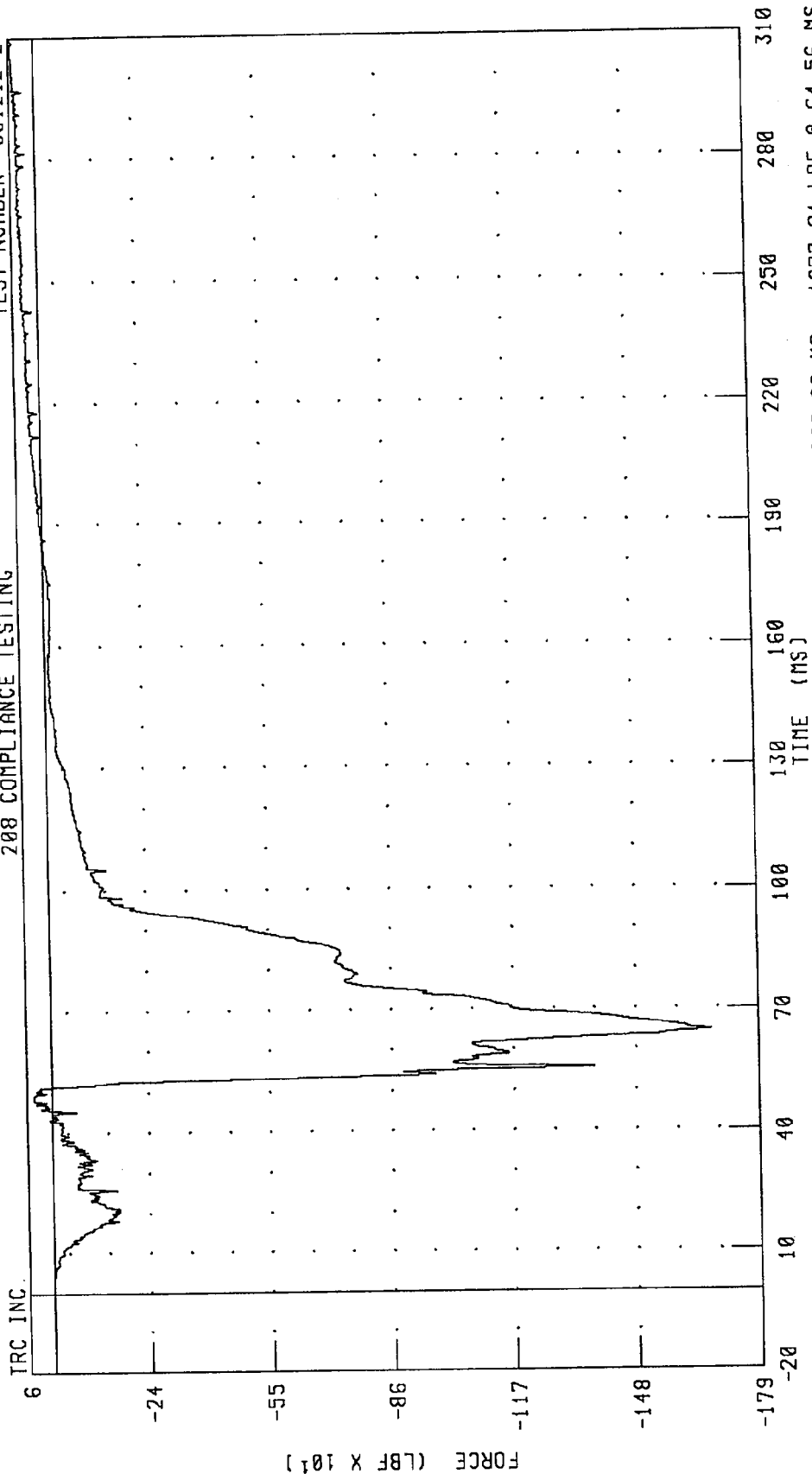
TEST NUMBER: 951212-2



CHANNEL: CSTRG1 FILTER: CH. CLASS 180 PEAK DATA: 45.46 G @ 86.16 MS, 0.01 G @ -20.00 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE
208 COMPLIANCE TESTING

TEST NUMBER: 951212-2

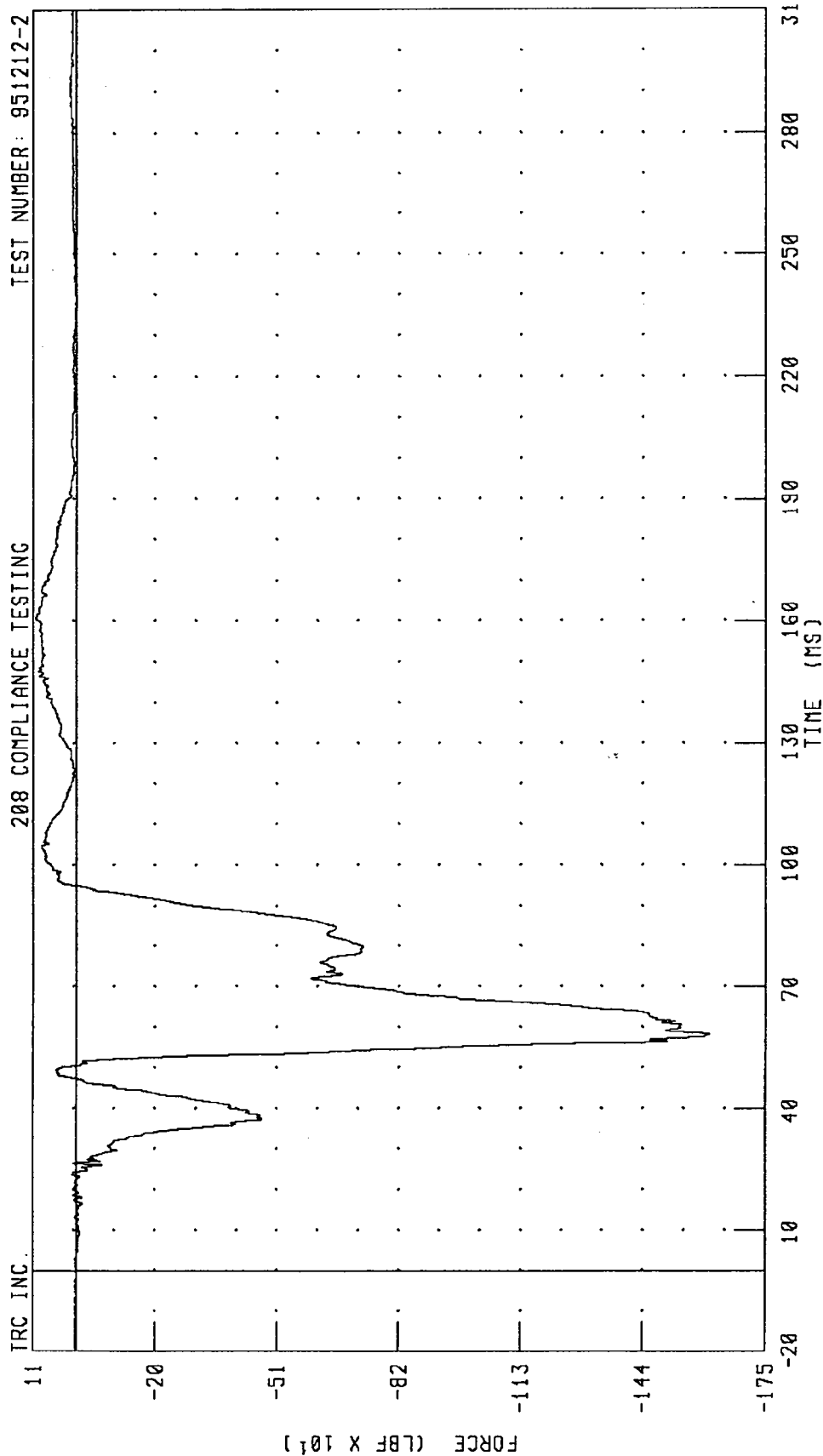


PEAK DATA: 58.85 LBF @ 309.20 MS; -1677.91 LBF @ 64.56 MS

CHANNEL: LFMF1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
 DRIVER RIGHT FEMUR FORCE
 208 COMPLIANCE TESTING

TEST NUMBER: 951212-2

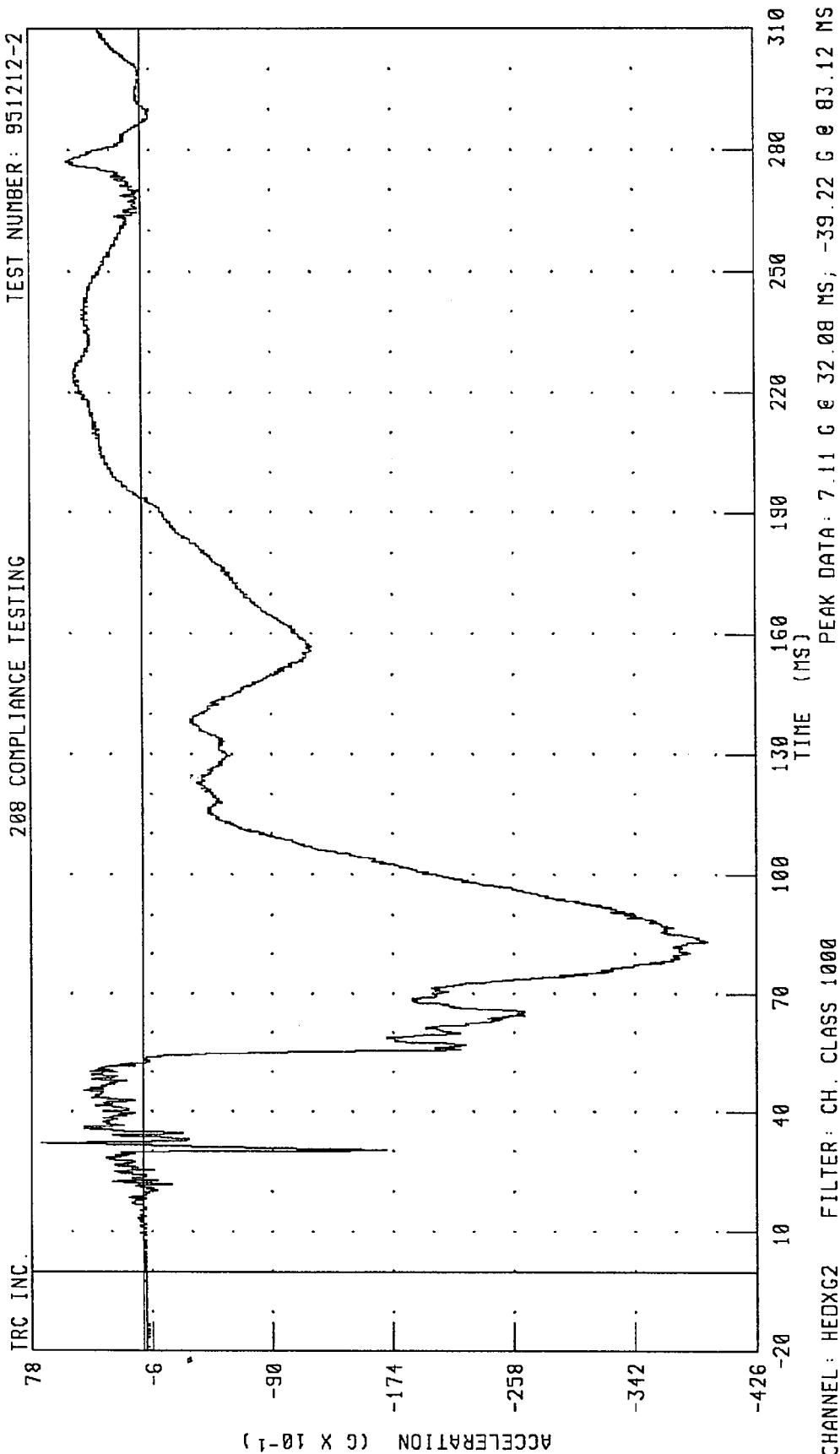


PEAK DATA: 102.58 LBF @ 160.88 MS; -1608.29 LBF @ 58.16 MS

CHANNEL: RFMF1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION
208 COMPLIANCE TESTING

TEST NUMBER: 951212-2

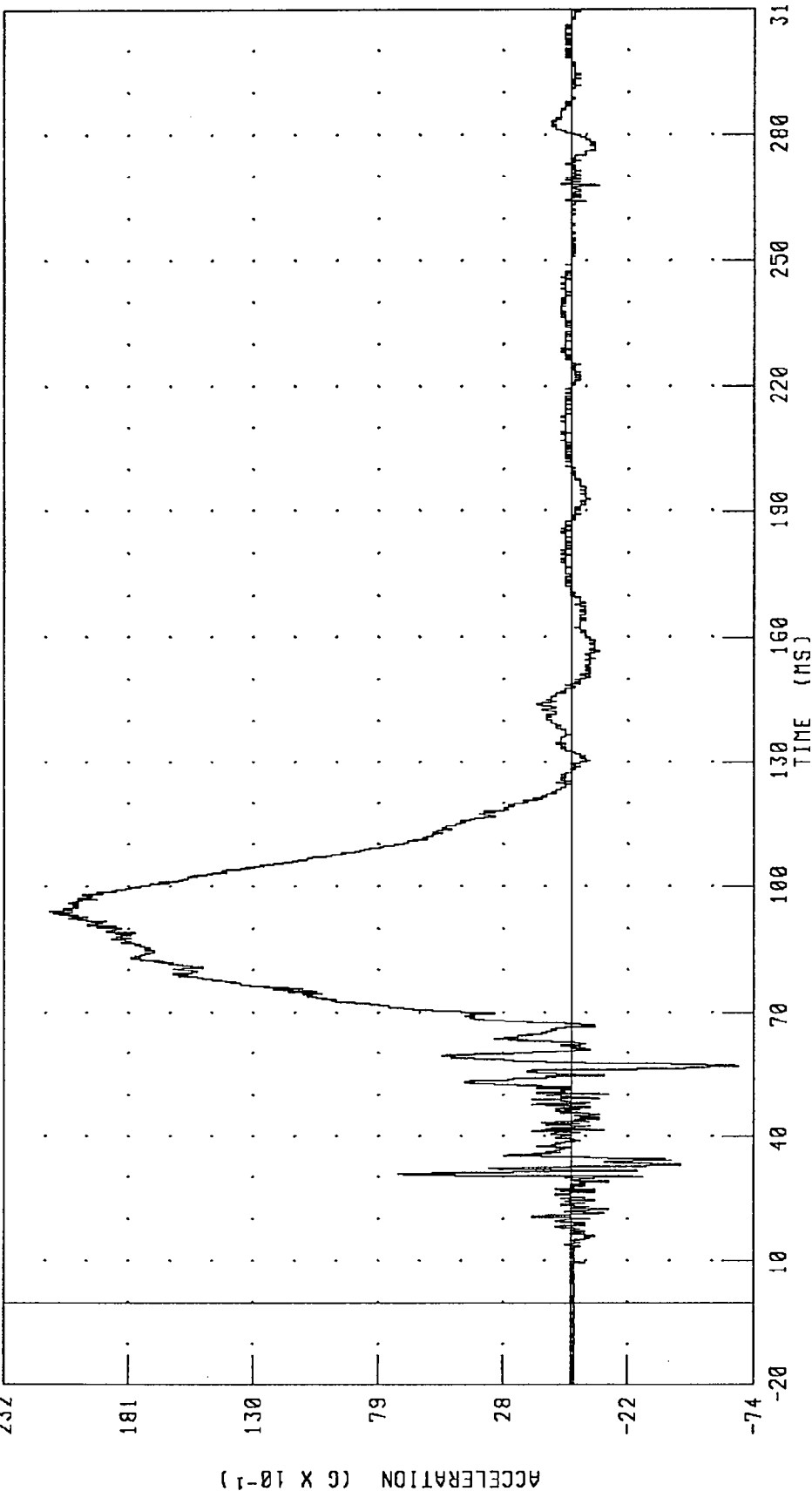


1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.

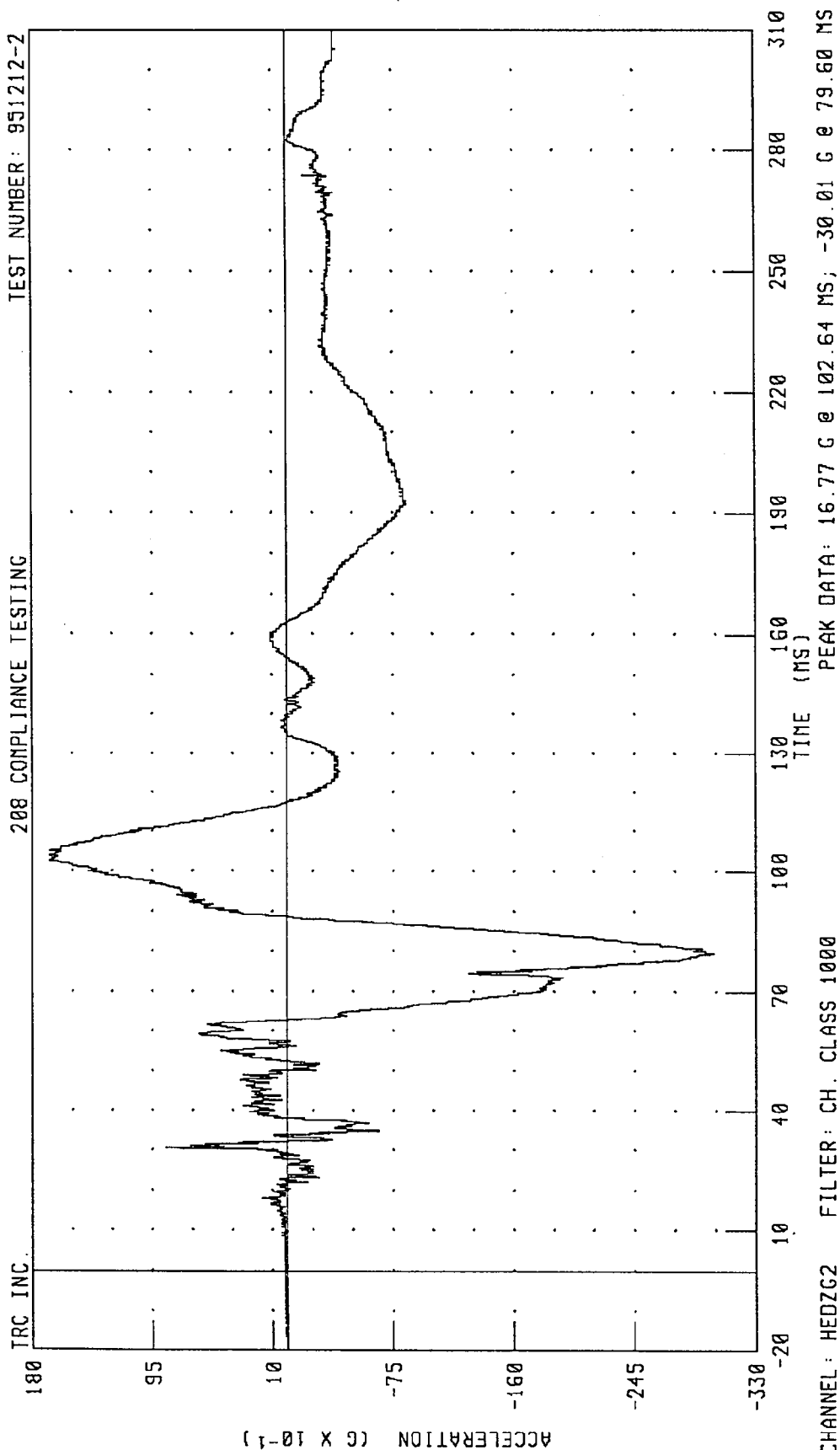


PEAK DATA: 21.34 G @ 94.08 MS; -6.79 G @ 56.80 MS

CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION
208 COMPLIANCE TESTING

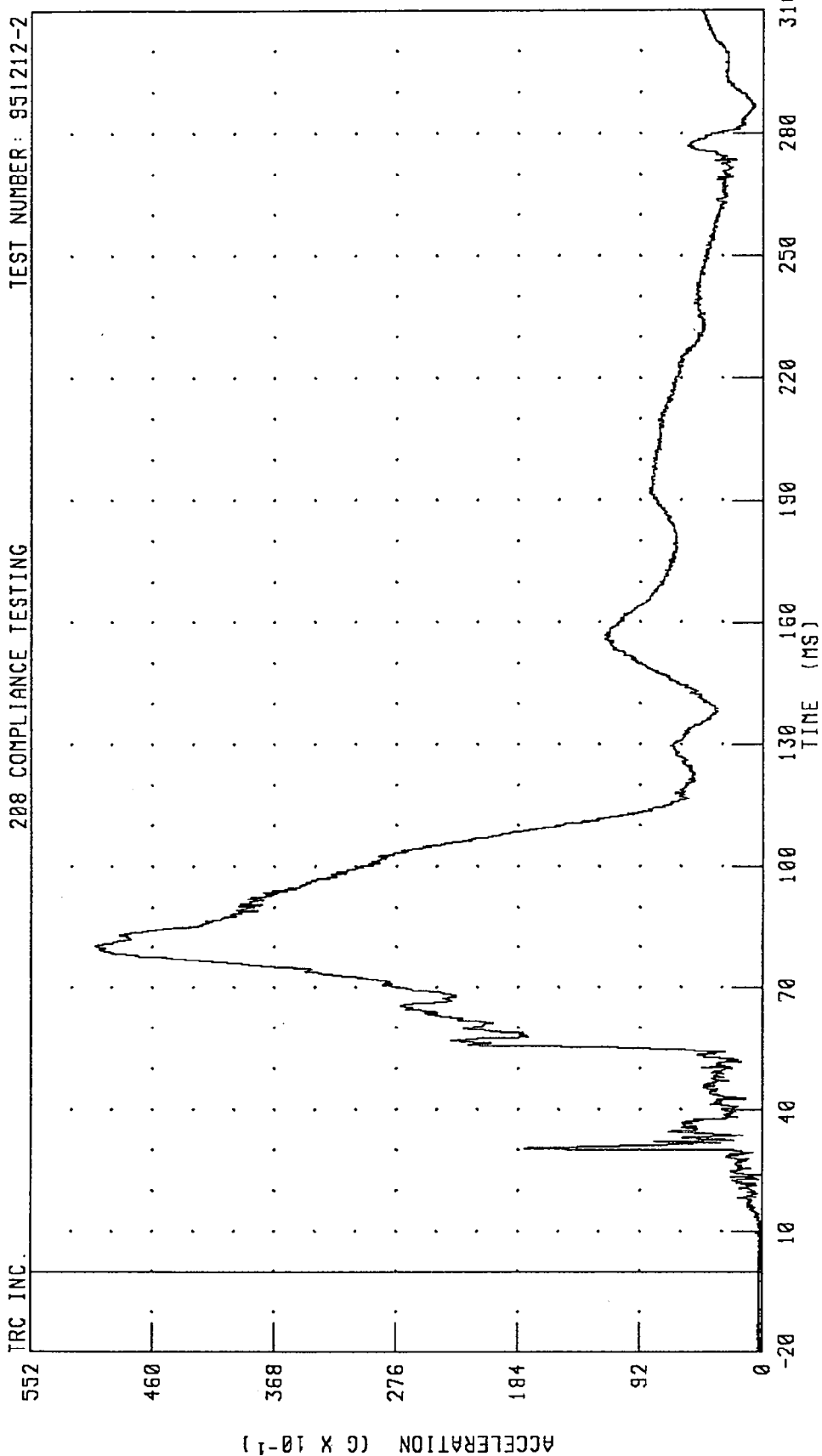
TEST NUMBER: 951212-2



1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING



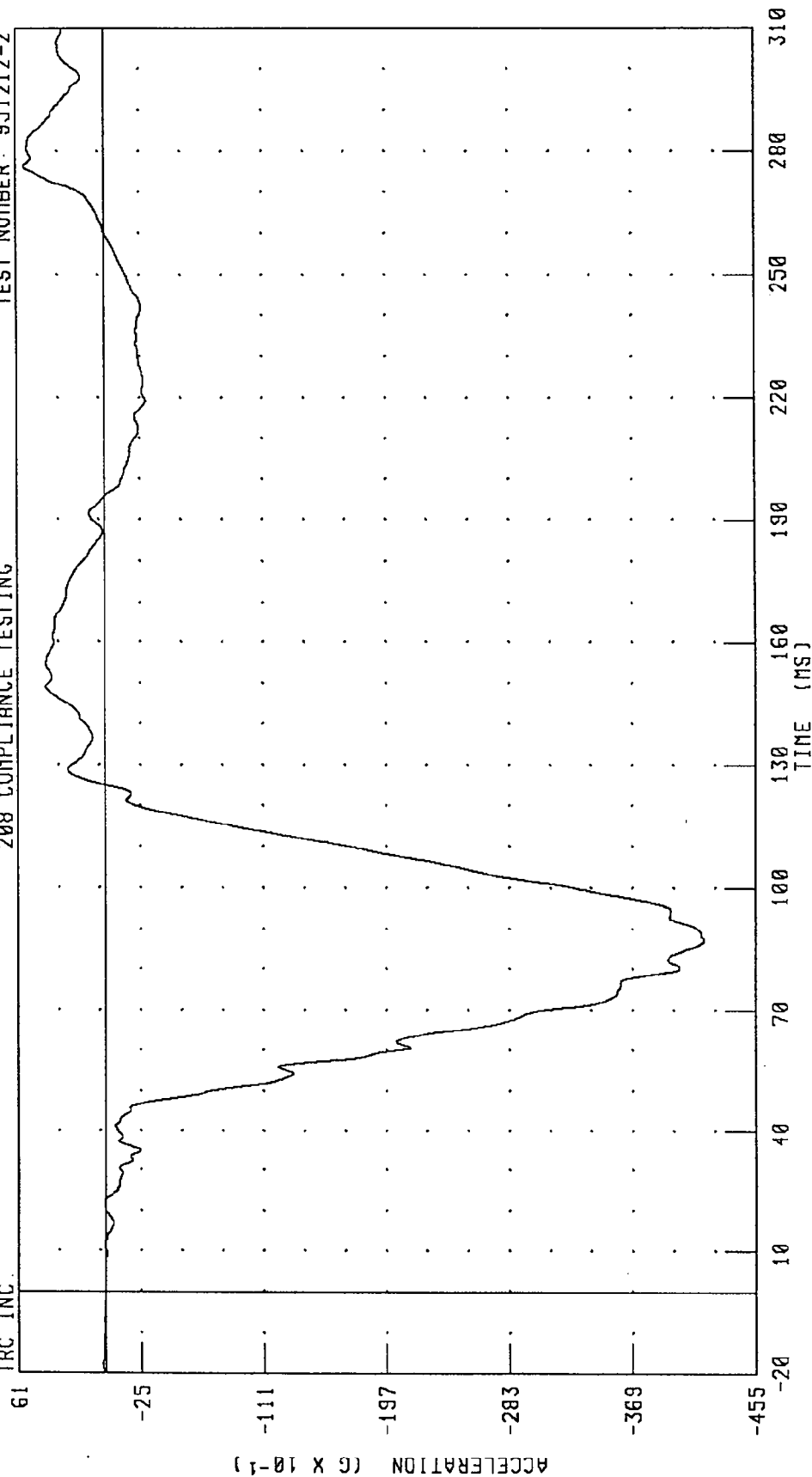
PEAK DATA: 50.31 G @ 80.32 MS; 0.14 G @ 4.48 MS

CHANNEL: HEDRC2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION
 208 COMPLIANCE TESTING

TEST NUMBER: 951212-2

TRC INC.



PEAK DATA: 5.58 G @ 276.40 MS; -41.85 G @ 87.20 MS

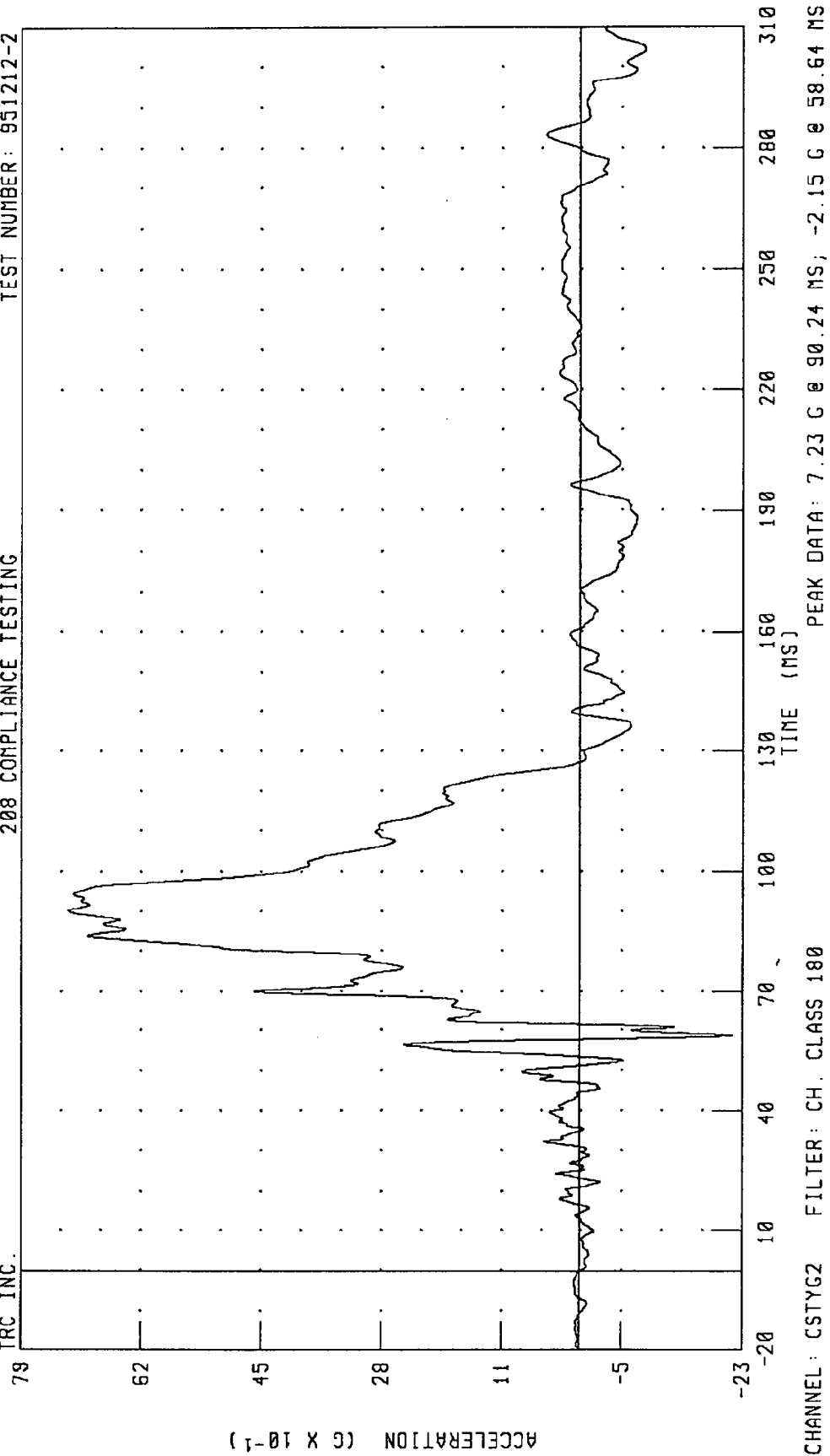
CHANNEL: CSTXC2 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.

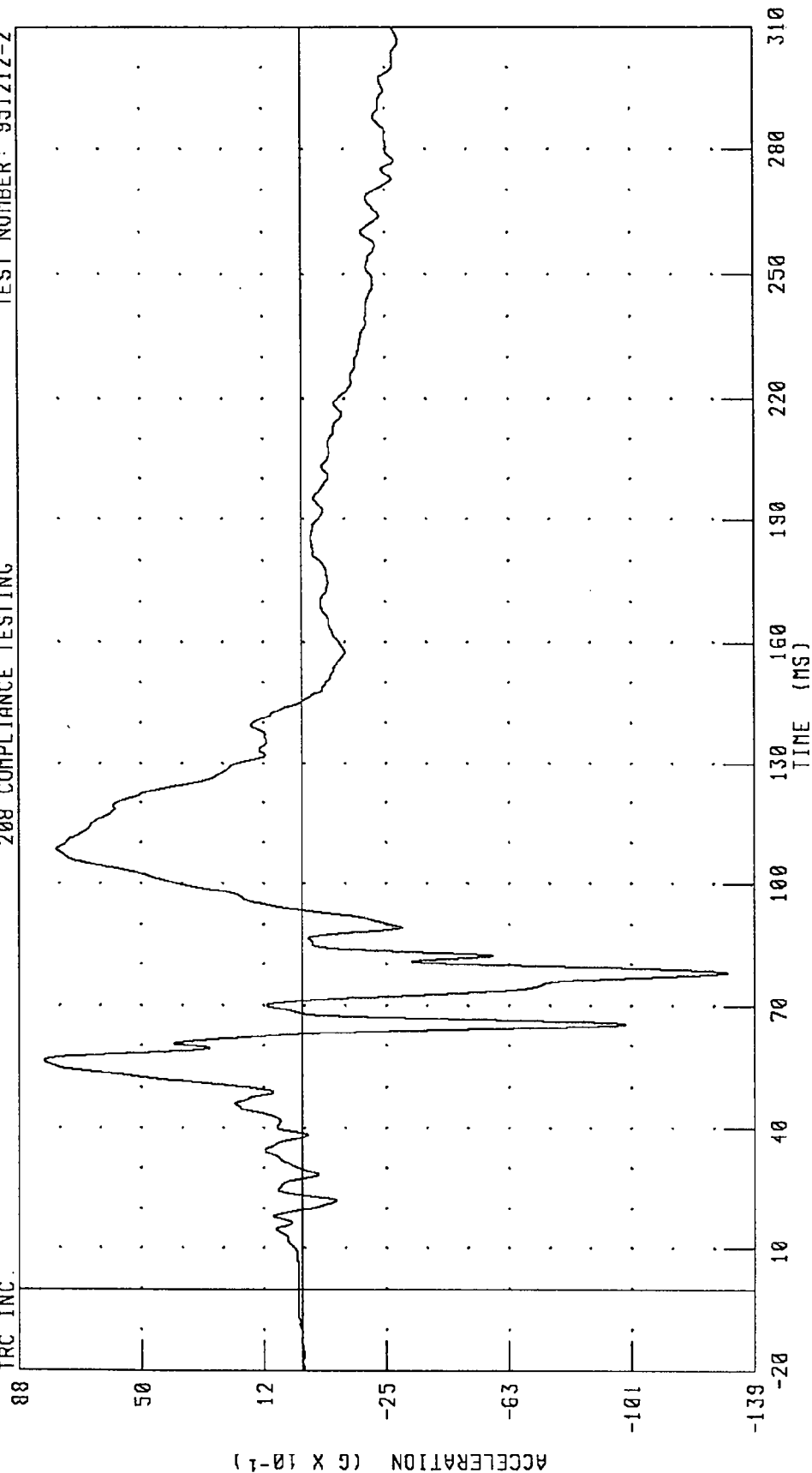


1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



CHANNEL: CSTG02 FILTER: CH. CLASS 180

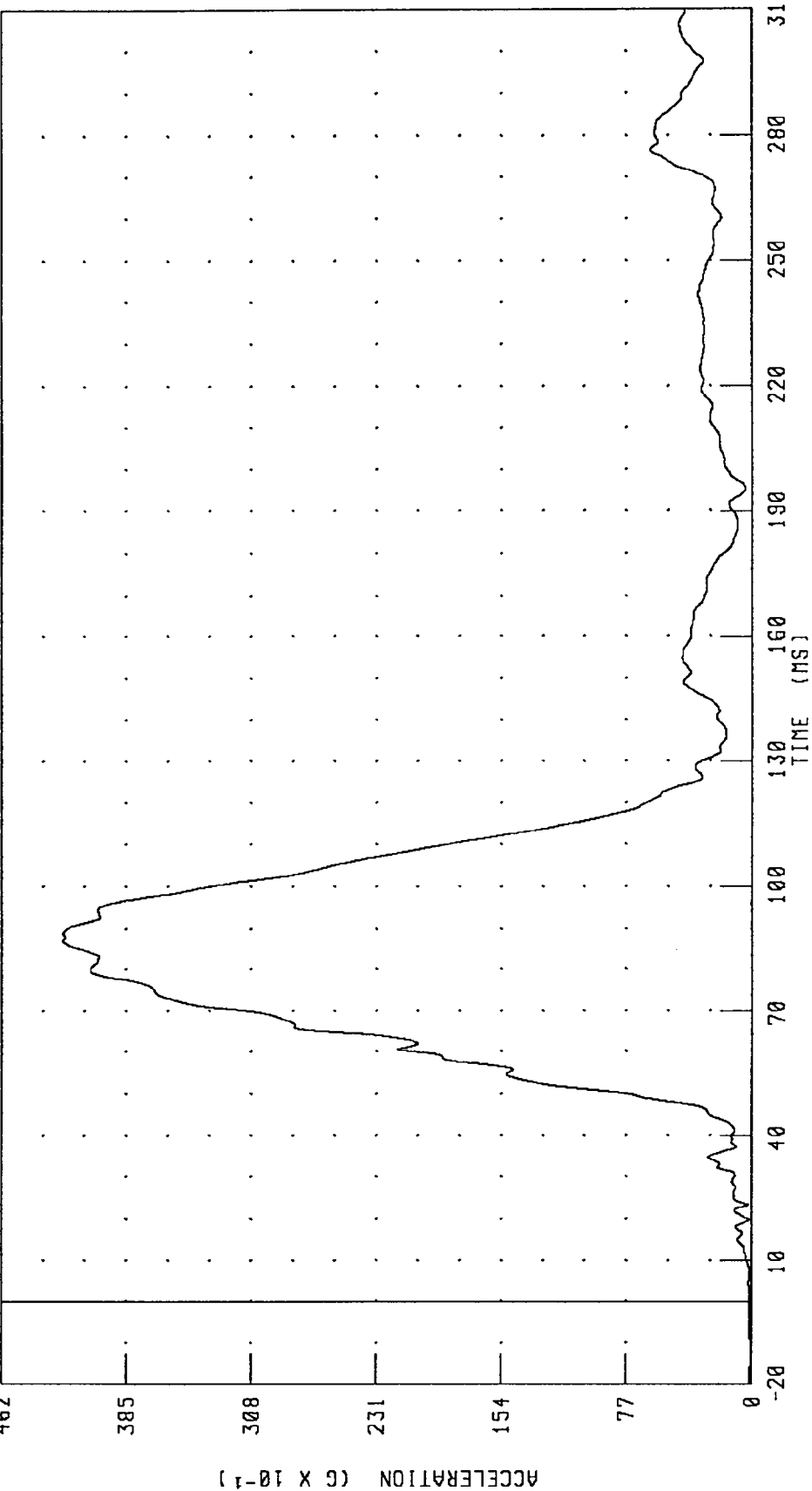
PEAK DATA: 8.02 G @ 56.48 MS; -13.19 G @ 78.08 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



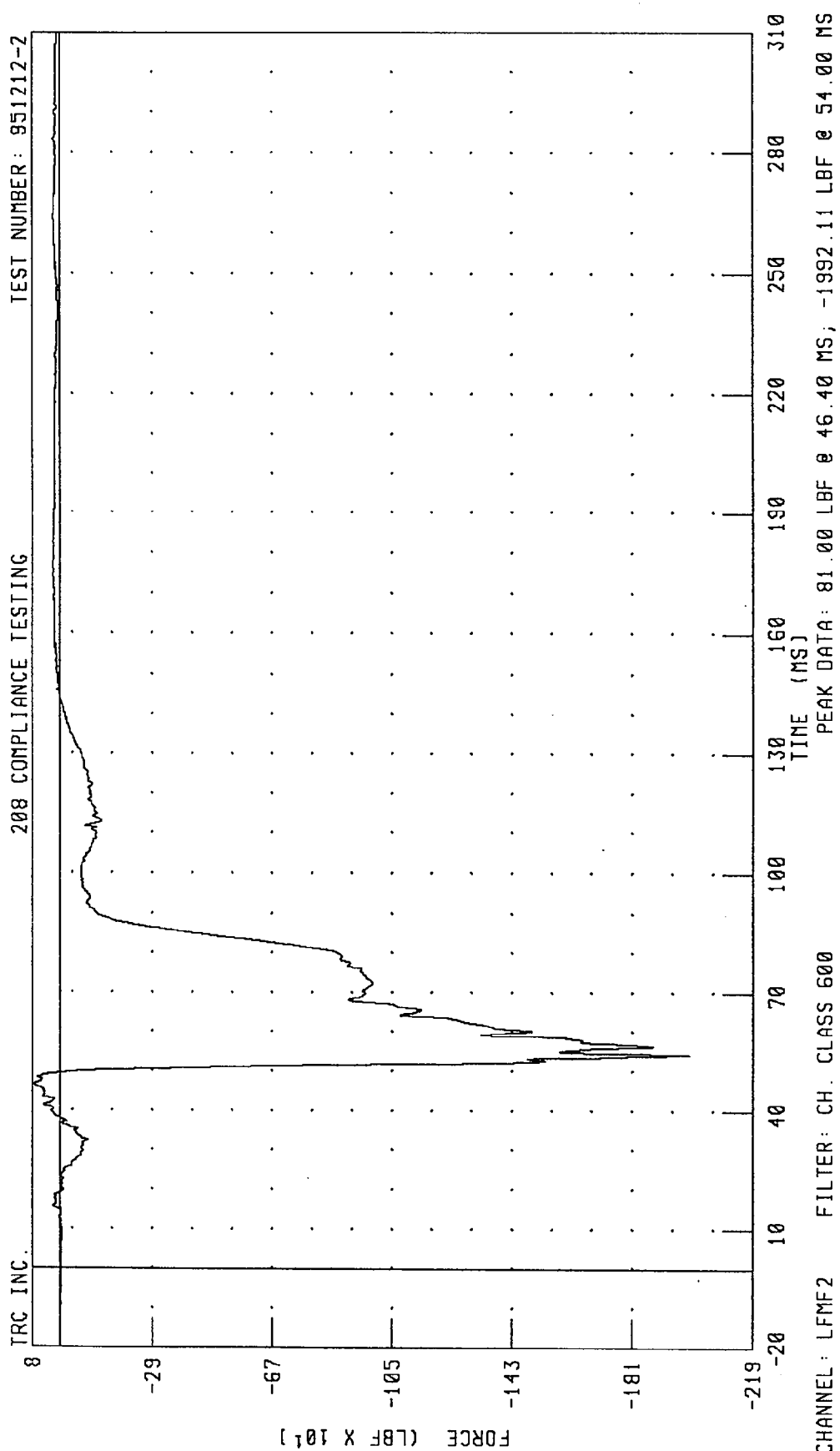
PEAK DATA: 42.39 G @ 87.12 MS; 0.01 G @ -20.00 MS

CHANNEL: CSTRG2. FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER LEFT FEMUR FORCE
 208 COMPLIANCE TESTING

TEST NUMBER: 951212-2

TRC INC.



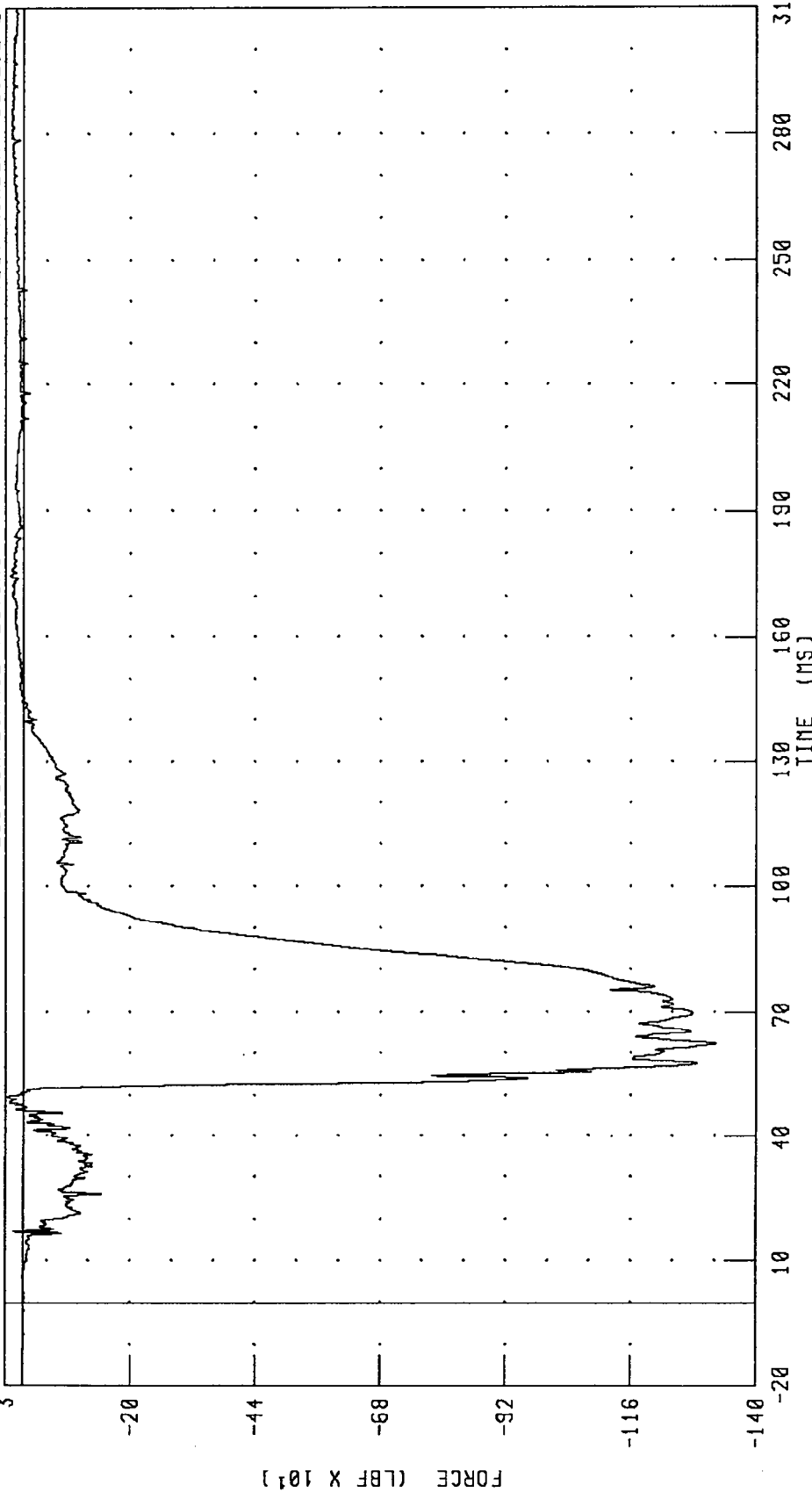
CHANNEL: LFMF2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

3 TRC INC.

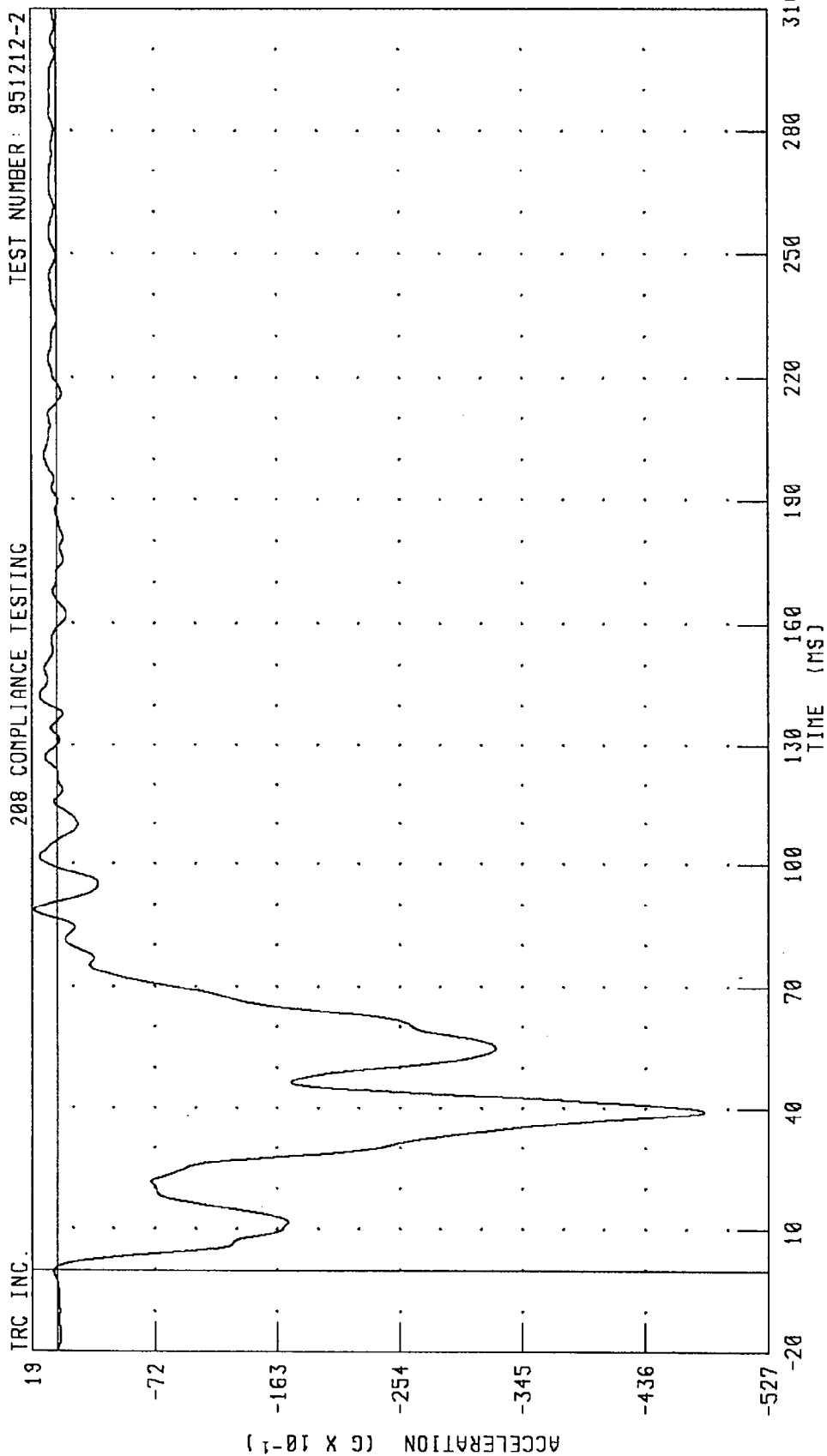


CHANNEL: RFMF2 FILTER: CH. CLASS 600

PEAK DATA: 31.91 LBF @ 49.52 MS; -1330.07 LBF @ 62.40 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION
208 COMPLIANCE TESTING

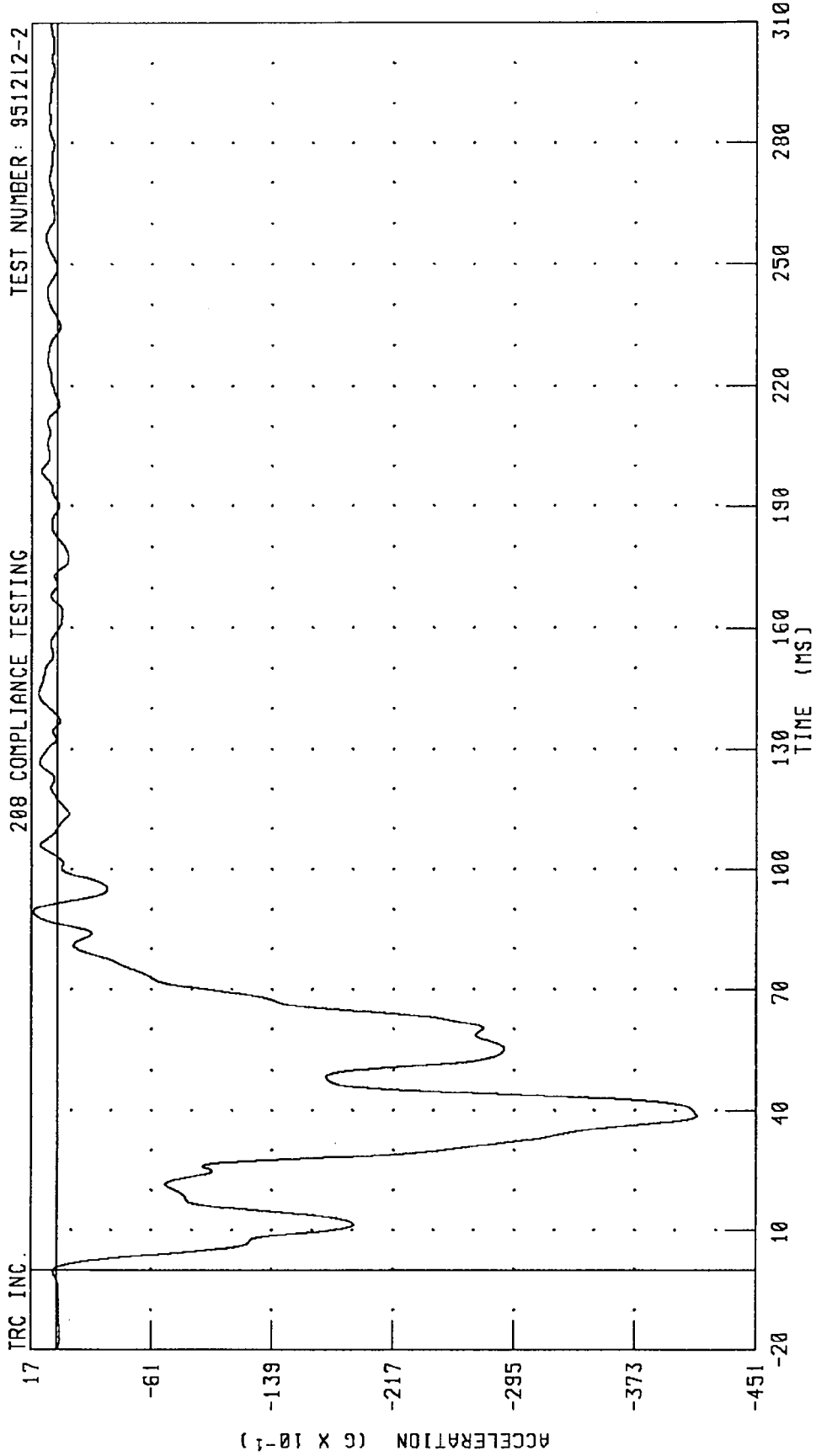
TEST NUMBER: 951212-2



PEAK DATA: 1.74 G @ 88.56 MS; -47.97 G @ 39.36 MS

CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION



PEAK DATA: 1.58 G @ 89.60 MS; -41.31 G @ 38.80 MS

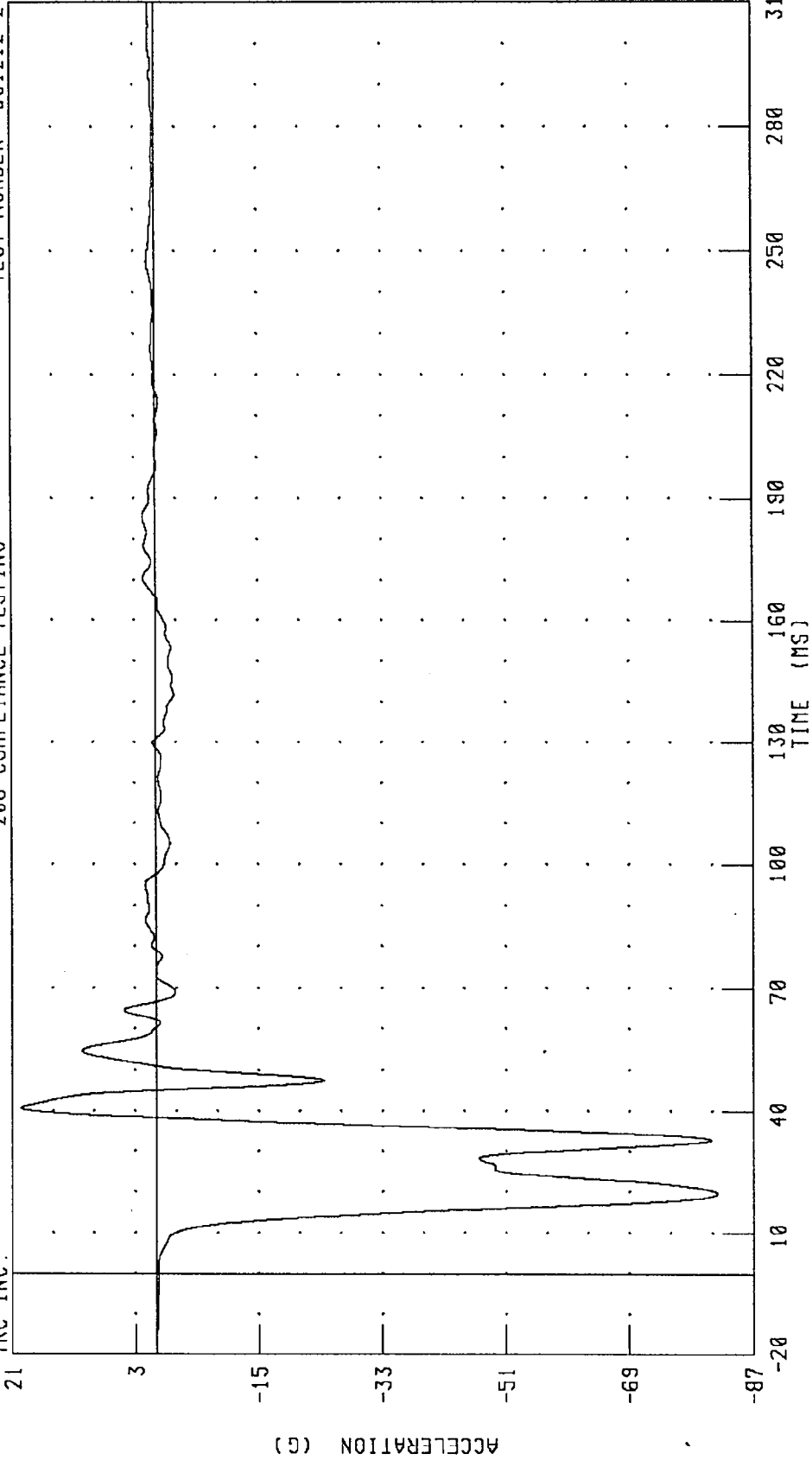
CHANNEL: TRRXG1 FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
ENGINE UPPER BLOCK X-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



CHANNEL: ENGCG1 FILTER: CH. CLASS 60

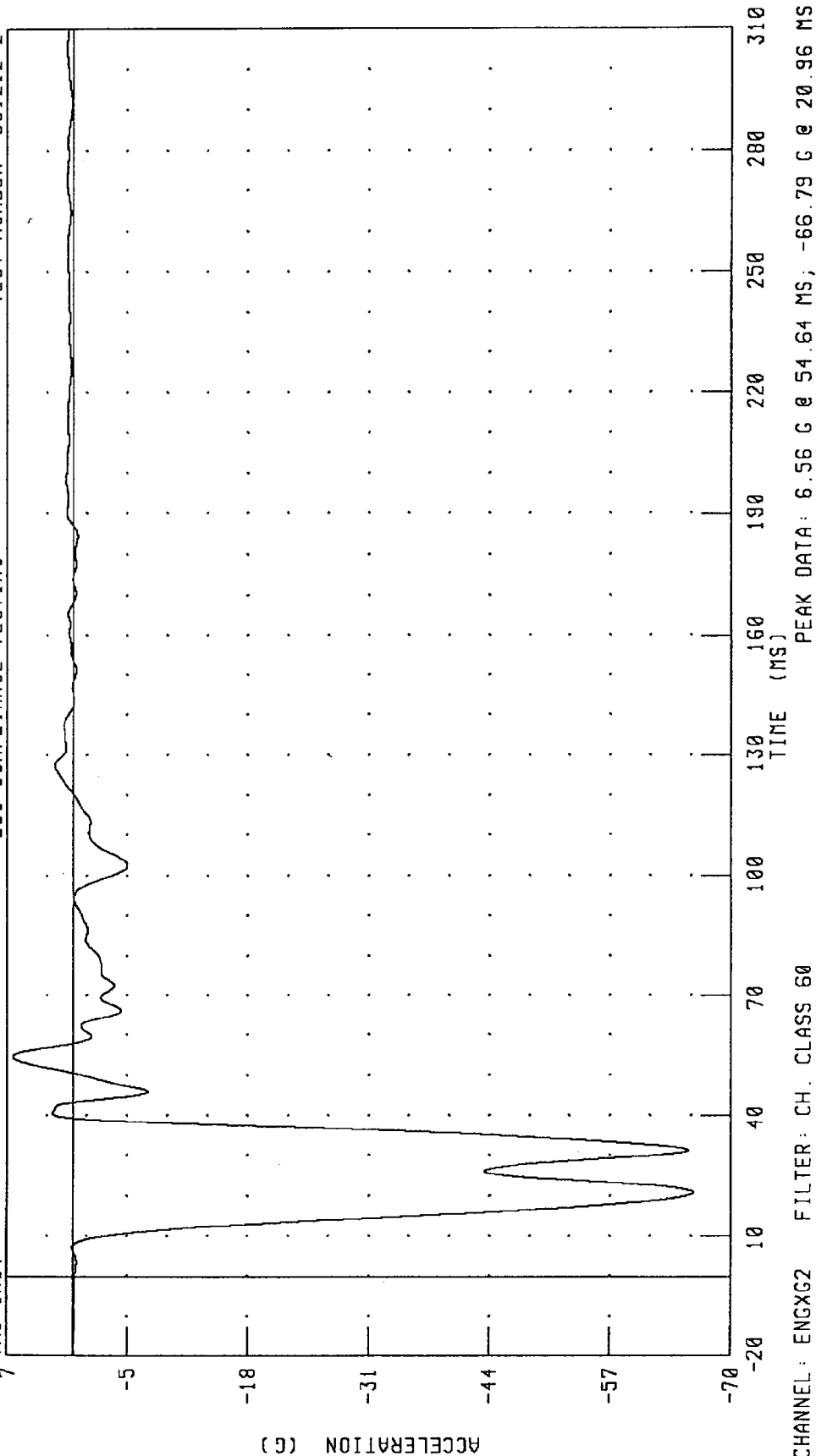
PEAK DATA: 19.66 G @ 40.72 MS; -81.80 G @ 19.68 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM BLOCK X-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



CHANNEL: ENGCG2 FILTER: CH. CLASS 60

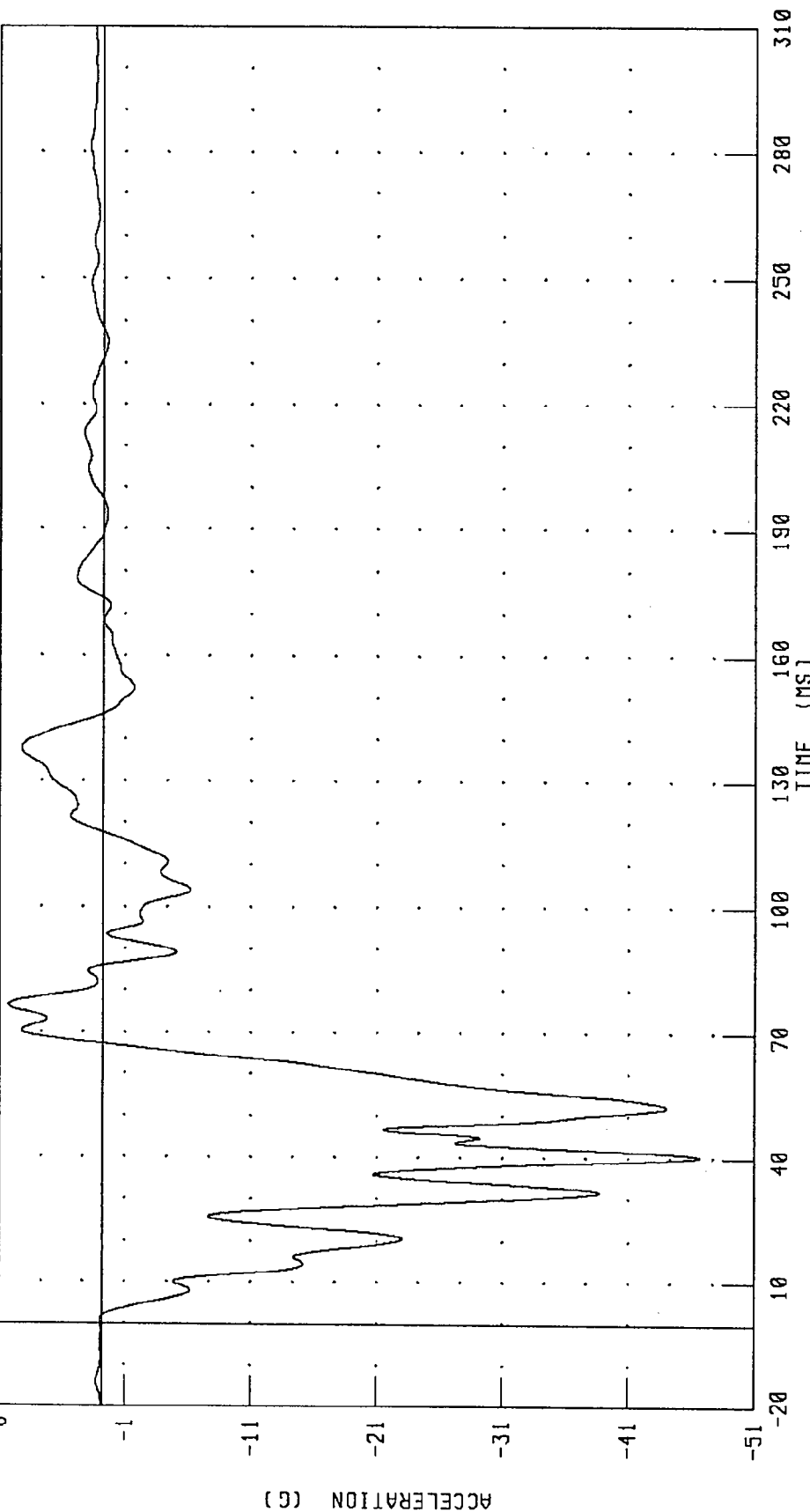
PEAK DATA: 6.56 G @ 54.64 MS; -66.79 G @ 20.96 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.



CHANNEL: BCRXG1 FILTER: CH. CLASS 60

PEAK DATA: 7.49 G @ 76.40 MS; -47.47 G @ 40.40 MS

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 951212-2

200 COMPLIANCE TESTING

TRC INC.

12

0

-12

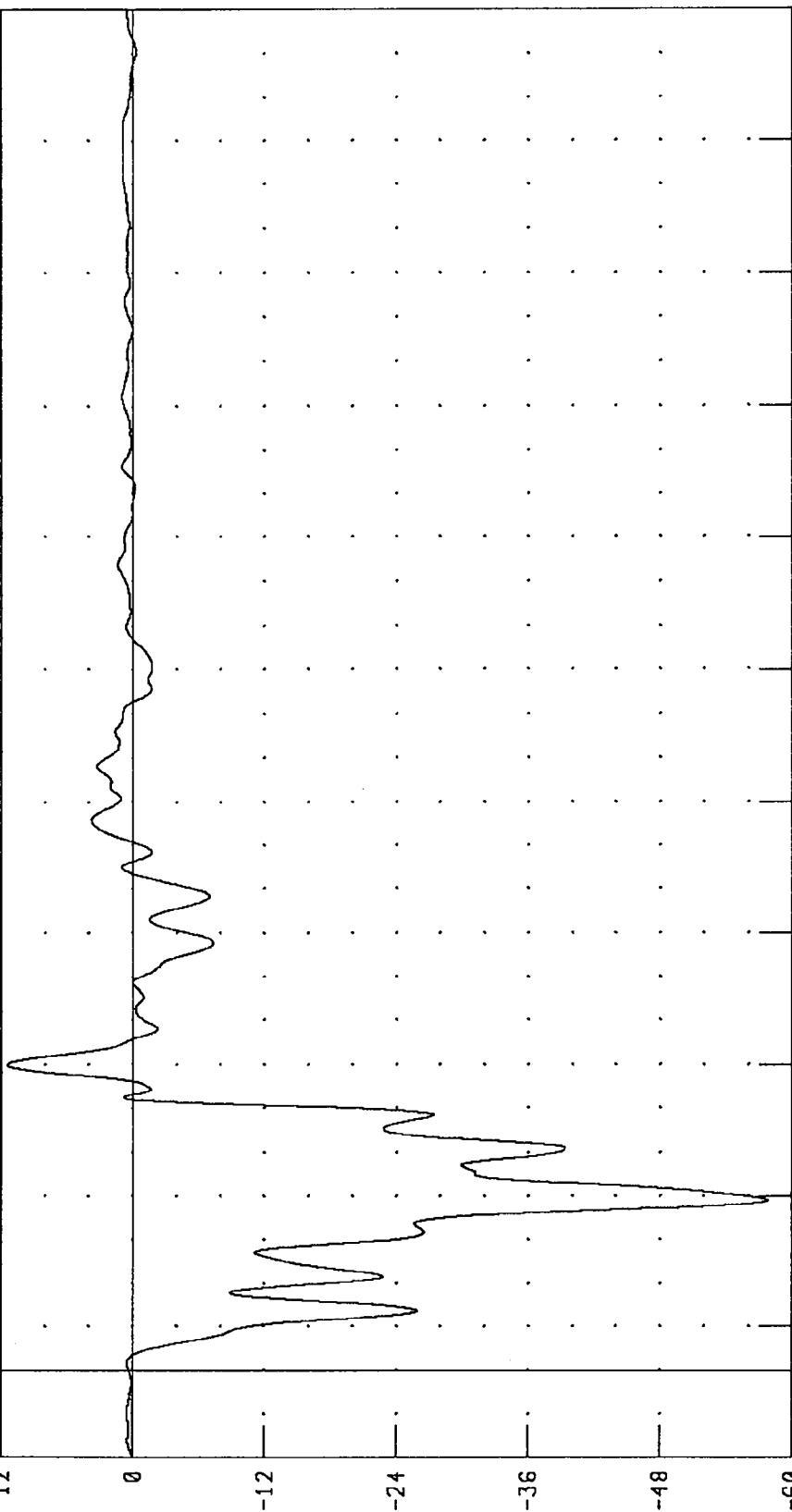
-24

-36

-48

-60

ACCELERATION (G)



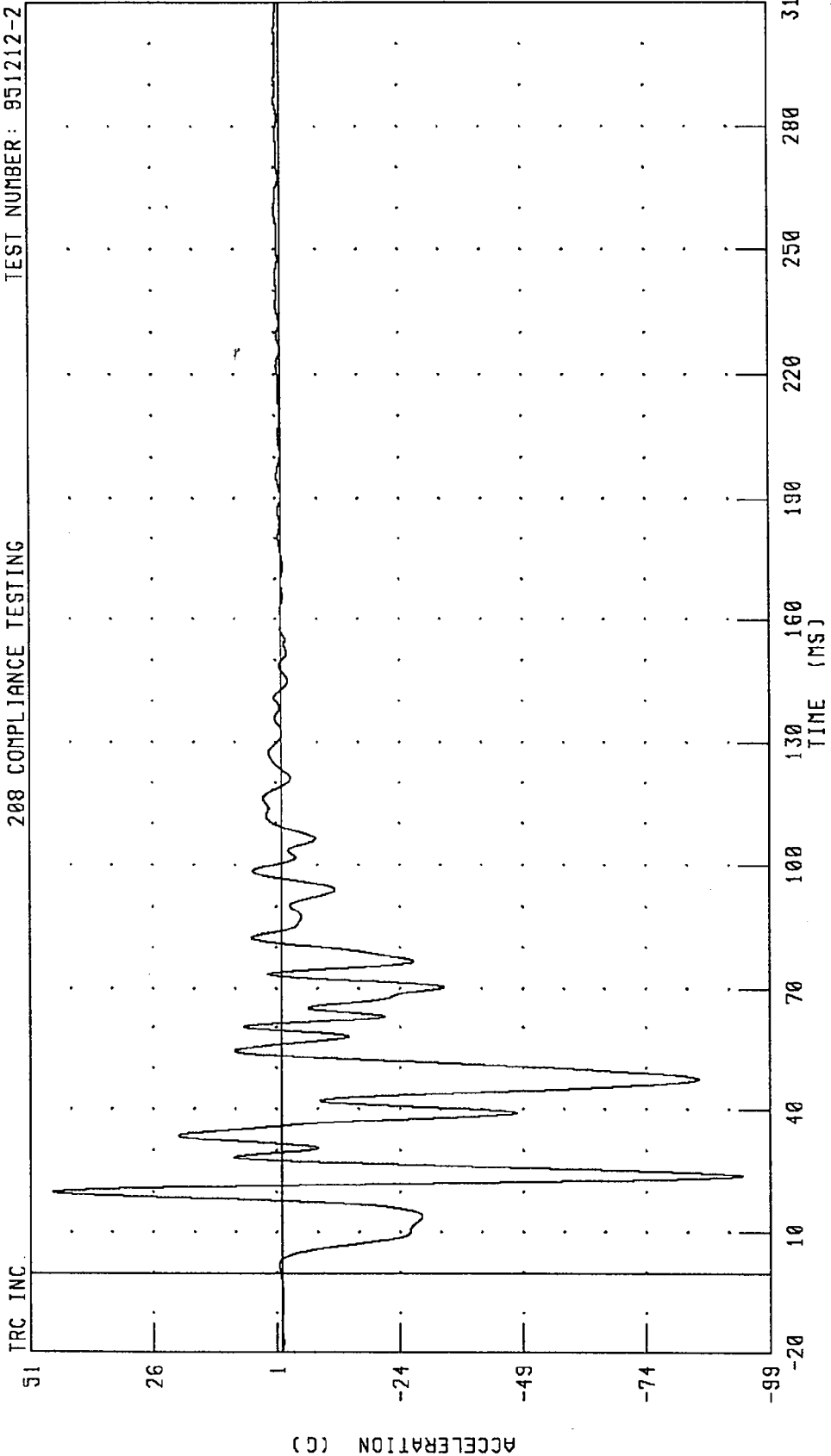
PEAK DATA: 11.40 G @ 70.00 MS, -57.78 G @ 38.96 MS

CHANNEL: BCLXG1 FILTER: CH. CLASS 60

951212

1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
DASH PANEL CENTER X-AXIS ACCELERATION
208 COMPLIANCE TESTING

TEST NUMBER: 951212-2



CHANNEL: DPCXG1 FILTER: CH. CLASS 60

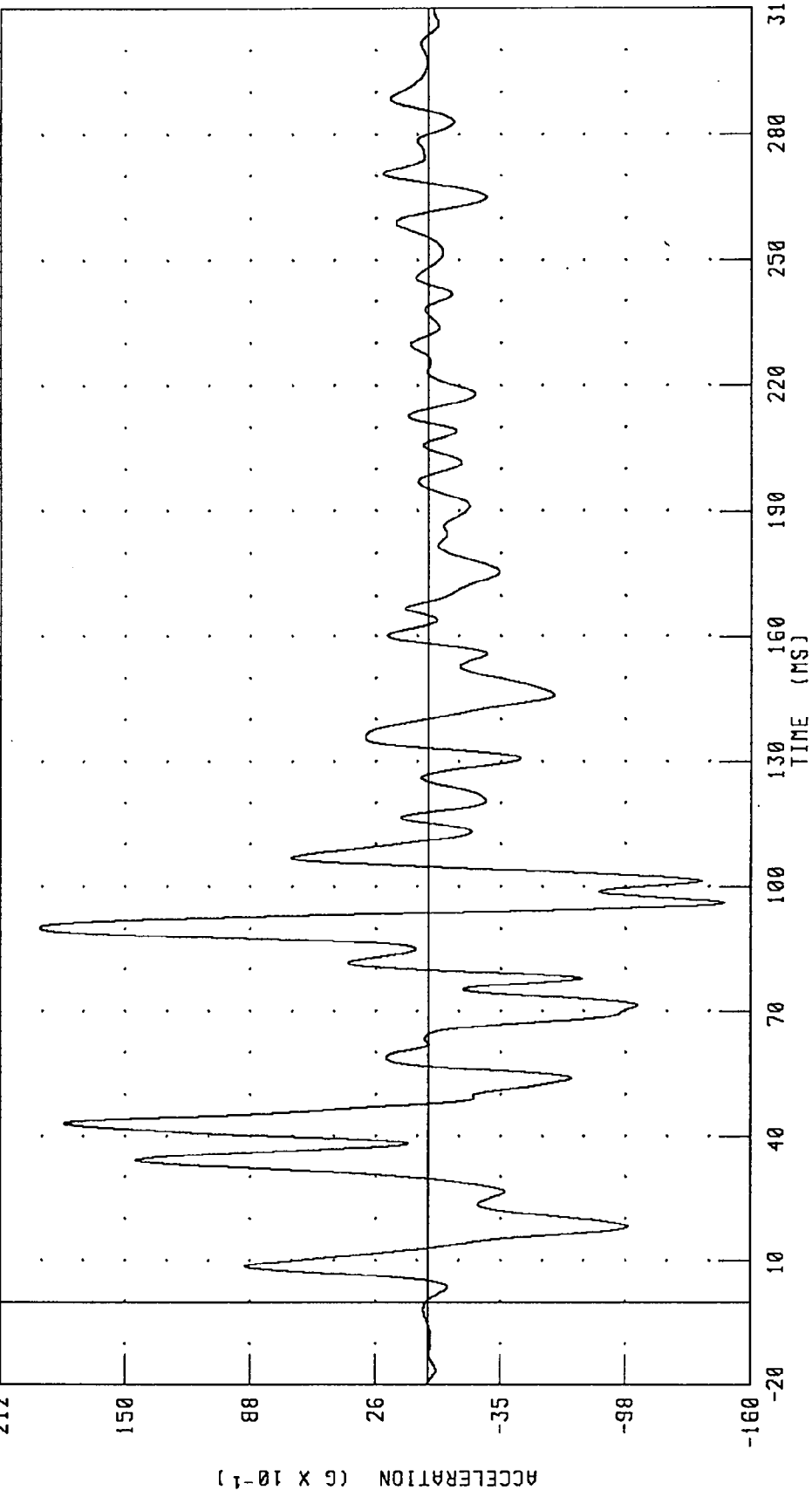
1996 SUBARU IMPREZA INTO FLAT FRONTAL BARRIER
VEHICLE REAR CENTER Z-AXIS ACCELERATION

TEST NUMBER: 951212-2

208 COMPLIANCE TESTING

TRC INC.

212



CHANNEL: TFCZG1 FILTER: CH. CLASS 60

PEAK DATA: 19.27 G @ 90.32 MS; -14.65 G @ 96.16 MS

Appendix C

Manufacturer's Vehicle Information

Information submitted to NHTSA
for conducting FMVSS 208 Compliance Test
on the 1996MY SUBARU Impreza
[NSA-31CCa/IR 1653]

1. Please inform OVSC whether the air bag automatic restraint system provided at the driver's and passenger's seating positions in your vehicle are certified to meet the requirements of S4.1.2.1(c)(1) or S4.1.2.1(c)(2) for FMVSS No. 208.

Answer: Automatic restraint system (air bag) is installed to meet the requirements of S4.1.2.1(c)(2)

2. If the automatic restraint system provided at the driver's and passenger's seating positions in the subject vehicle was installed to meet the requirements of S4.1.2.1(c)(1), please provide a copy of the certification test reports for each of the test configurations required by that section of the standard (i.e., moving barrier lateral impact and dynamic rollover) and a copy of the certification reports for the frontal/angular barrier impact test required by S4.1.2.1.

Answer: Not applicable

3. If a manual 3-point safety belt is provided with the driver's automatic restraint system in order to meet the requirements of S4.1.2.1(c)(2), please provide a copy of the certification test reports for each of the test configurations required by that section of the standard (i.e., one frontal/angular barrier impact test of the automatic restraint system with the manual safety belt unfastened and frontal/angular barrier impact test of the automatic restraint system with the manual safety belt fastened).

Answer: The following nine (9) test reports are attached.

Crash test		Restraint	2 Door	4Door & Sport Wagon
Frontal		A/B	RS94-1975	RS95-1118
		A/B+Belt	RS95-1117	RS95-1116
Angular	Left	A/B	→	RS94-1980
		A/B+Belt	→*2	RS94-1979 RS95-1574
	Right	A/B	→	RS94-1981
		A/B+Belt	→*2	RS94-1978*1

A/B: Air bag

Belt: Manual 3-point seat belt

Note: Front structure designs of 2 Door, 4 Door Sedan, and Sport Wagon models are identical. Air bag system is the same for all test cases listed in the above table. The position of B pillar of 2 Door model is different from those of 4 Door and Sport Wagon models.

*1: Since there are no performance difference between 96MY test (RS95-1574) and 95MY test (RS94-1979) in left angular test with A/B and belt, 95MY test (RS94-1978) can be carryovered for 96MY right angular test.

2. From our previous tests, since there are no performance difference between 2 Door model and 4 Door Sedan & Sport Wagon models in angular test, 96MY test of 2 Door model can be represented by 95MY tests of 4 Door Sedan and Sport Wagon models.

4. If the manual safety belt provided at the driver's and passenger's seating positions was not installed to meet the requirements of S4.1.2.1(c)(2), please provide a copy of a crash test report or engineering analysis showing that the use of the manual safety belt with the automatic restraint system does not affect the ability of the vehicle to meet the requirements of FMVSS No. 208.

Answer: Not applicable

5. If the vehicle uses a pressure vessel to inflate the air bag, provide a copy of the test reports or engineering analysis to demonstrate that it meets all the requirements of S9.1.

Answer: Not applicable

6. If the vehicle uses an explosive device to inflate the air bag, provide a copy of the test reports or engineering analysis to demonstrate that it meets all the requirements of S9.2.

Answer: Refer to certification letter No. 1520-FY94-044 and the test reports Nos. ER-0250, ER-0475, and ER-0630.(ATTACHMENT 1)

7. State, for any safety belt system in this vehicle, whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2, if the tension-relieving device is used.

Answer: Not applicable

8. FMVSS 208, S8.1.5 allows the manufacturer the option of having movable vehicle windows and vents placed in the closed position. State whether the vehicle's movable windows and vents were opened or closed for the certification tests.

Answer: For frontal test, front side door windows were opened and all other windows were closed. For angular test, all side windows were closed.

9. FMVSS No. 208, S5.1 provides a manufacturer with the option of using either a Part 572(B) or Part 572(E) test dummy. Please inform OVSC which test dummy was used in each seat for each certification tests.

Answer: Part 572(B) dummy was used in our certification tests.

Submit dummy placement measurements, including diagrams or photographs which show exactly where measurements were taken. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use the dimension shown in the diagram to provide the individual dummy placement measurements.

Answer: Refer to ATTACHMENT 2 for measurement locations.
Measurement data are included in individual test report.

State whether the vehicle has a foot rest for the driver.

Answer: Yes

If the vehicle can be equipped with a split front bench seat, state whether the driver dummy was located so that the midsagittal plane was centered on the steering wheel rim or the center of the seat cushion. Also, state whether the passenger dummy was located so that the midsagittal plane was centered the same distance from the longitudinal centerline of the vehicle as the driver dummy or in the center of the seat cushion.

Answer: Not applicable (bucket type)

10. Provide the seat positioning, steering column positioning, and fuel tank data on the enclosed form. If more than one front seating configuration, steering column or fuel tank are available on this vehicle, provide separate information for each.

Answer: Refer to ATTACHMENT 3.

11. If the vehicle is equipped with adjustable seat belt anchorages, provide the manufacturer's nominal design position for a 50th percentile adult male occupant.

Answer: Refer to ATTACHMENT 3.

12. Provide the speed at impact, vehicle test weight, and resulting injury criteria (i.e., HIC, chest acceleration, chest compression for the Part 572(E) dummy and femur loads) recorded for all certification tests conducted to meet the requirements of S4.1.2.1.

Answer: Refer to ATTACHMENT 4.

In addition, include each dummy's head and chest acceleration versus time plots and femur load versus time plots for the full frontal barrier impact tests.

Answer: Refer to each test report.

13. When vehicle components must be removed to obtain the proper test weight, what components do you recommend for removal and in what priority order do you recommend removal?

Answer:

1. Tonneau cover (Wagon)	5. Rear seat back & cushion
2. Jack	6. Rear quarter trim
3. Rear floor mat	7. Rear bumper
4. Rear floor & quarter insulator	8. Cover trunk

14. Please provide FMVSS No. 204, "Steering Control Rearward Displacement" certification data. Include a copy of the test report and any engineering analysis forming the basis of the certification. The report should document the vehicle test weight, impact velocity, and the horizontal and vertical displacements of the steering control. Pre and post test photographs are also requested.

Answer: Refer to engineering analysis No. SSJ23-002 (ATTACHMENT 5) and test reports Nos. RS92-2145 and RS92-2146.

Discuss the test procedure detailing the vehicle preparation and the measurement technique used to determine the steering control rearward displacement.

Answer: Refer to test procedure No. TS510-5-2-4 (ATTACHMENT 6)

Provide a diagram of the steering control system and describe how the components of the steering control system work to provide energy management in a frontal impact.

Answer: Refer to test report Nos. RS92-2145 and RS92-2146.

15. Inform OVSC if these vehicles have built-in child restraints either as standard equipment or optional equipment. If they do, identify the type of restraint (i.e., 5-point harness, T-shield, or other), and provide a copy of the certification test reports and any engineering analysis forming the basis for certification to FMVSS No. 213, "Child Restraint Systems."

Answer: Not applicable

LIST OF ATTACHMENTS

- ATTACHMENT 1 Test reports for the requirements of S9.2 (explosive device)
- ATTACHMENT 2 Dummy placement measurements
- ATTACHMENT 3 Seat positioning, steering column positioning, fuel tank data and adjustable seat belt anchorage positioning
- ATTACHMENT 4 Summary of certification test data
- ATTACHMENT 5 Engineering analysis of FMVSS 204 "Steering Control Rearward Displacement"
- ATTACHMENT 6 In-house Test Procedure for FMVSS 204

LIST OF CERTIFICATION TEST REPORTS

FMVSS 208 (Occupant crash protection)

Report No.	Test Configuration		Vehicle Specifications	Type of Restraint
RS94-1975	Frontal		2 Door Coupe FWD MT	Air bag
RS95-1118			Sport Wagon AWD MT	Air bag
RS95-1117			2 Door Coupe AWD AT	Air bag + Manual belt
RS95-1116			Sport Wagon AWD AT	Air bag + Manual belt
RS94-1980	Angular	Left	Sport Wagon AWD AT	Air bag
RS94-1979			Sport Wagon AWD AT	Air bag + Manual belt
RS95-1574			Sport Wagon AWD MT	Air bag + Manual belt
RS94-1981		Right	Sport Wagon AWD AT	Air bag
RS94-1978			Sport Wagon AWD AT	Air bag + Manual belt

FMVSS 204 (Steering control rearward displacement)

Report No.	Vehicle Specifications
RS92-2145	Sport Wagon AWD AT
RS92-2146	Sport Wagon FWD AT

ATTACHMENT 3

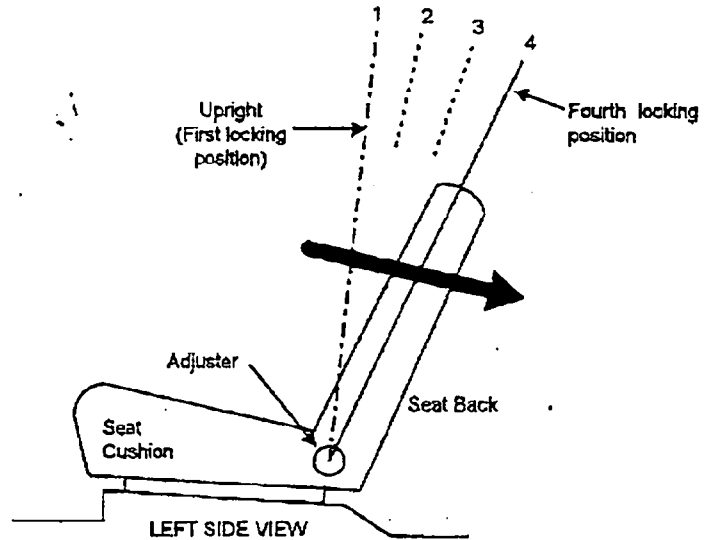
Seat positioning, steering column positioning, fuel tank data and adjustable seat belt anchorage positioning

VEHICLE MODEL YEAR: 1986VEHICLE MAKE: SUBARUVEHICLE MODEL AND BODY STYLE: IMPREZA 2 DOOR COUPE, 4 DOOR SEDAN AND SPORT WAGON**SEAT BACK POSITION**

Driver side: Seat back can be located by positioning seat back to the fourth locking position from upright as illustrated.

Passenger side: Same as driver data

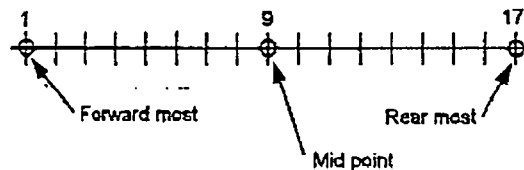
See Page 3-3.

**SEAT FORE & AFT POSITIONS**

Driver side: Position seat track to the 9th latch position from the forward most position.

Passenger side: Same as driver data

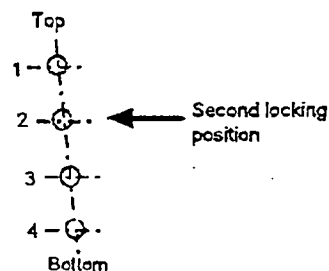
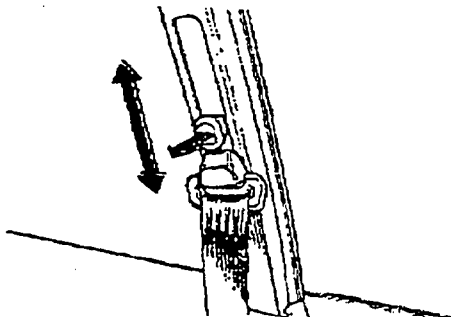
See Page 3-4.

**ADJUSTABLE UPPER ANCHORAGE POSITION**

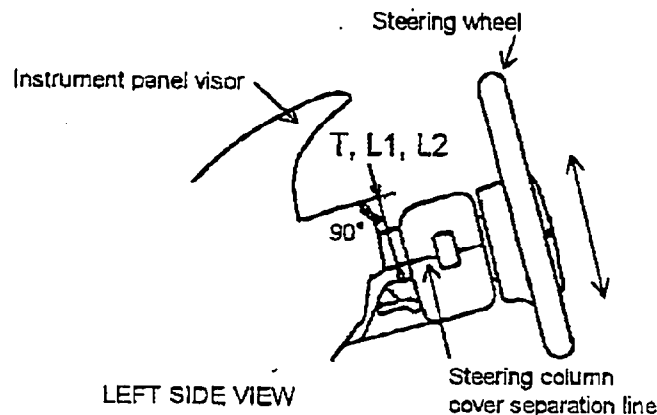
4 DOOR SEDAN AND SPORT WAGON

(NOT APPLICABLE TO 2 DOOR COUPE)

Locate adjustable upper anchorage to the second locking position from the top.



See Page 3-5.

TILT STEERING COLUMN POSITIONING DATA

Measure dimensions (between bottom of instrument panel and steering column cover) at highest position (L1) and lowest position (L2) of steering column. Calculate midpoint (T) and locate steering column to midpoint.

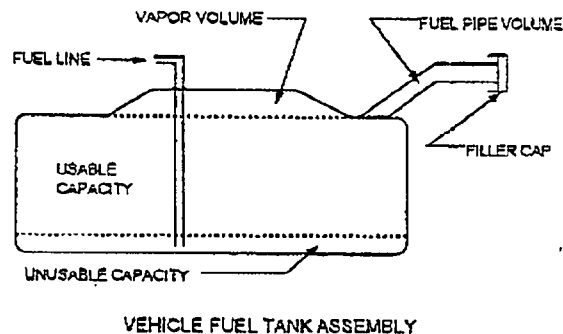
$$T = \frac{L1 + L2}{2}$$

L1: Dimension at highest position
L2: Dimension at lowest position

See Page 3-6.

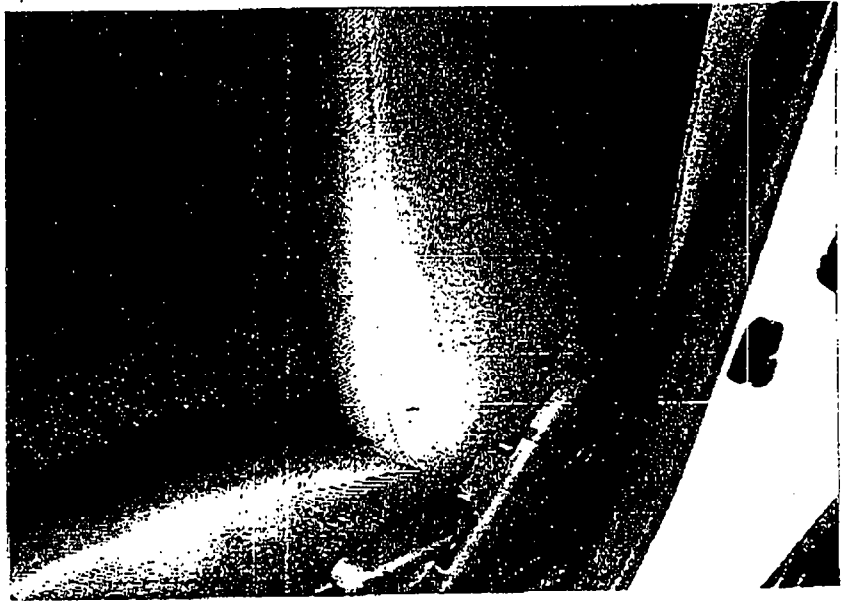
FUEL TANK CAPACITY DATA

- A. "Usable Capacity" of standard equipment fuel tank
 = 13.2 gallons (50 L) for 1.8L engine model.
 = 15.9 gallons (60 L) for 2.2L engine model.
- B. "Usable Capacity" of optional equipment fuel tank = (N.A.) gallons.
- C. "Usable Capacity" of vehicle(s) used for certification testing to requirements of FMVSS 301
 = 13.2 gallons (50 L) for 1.8L engine model.
 = 15.9 gallons (60 L) for 2.2L engine model.

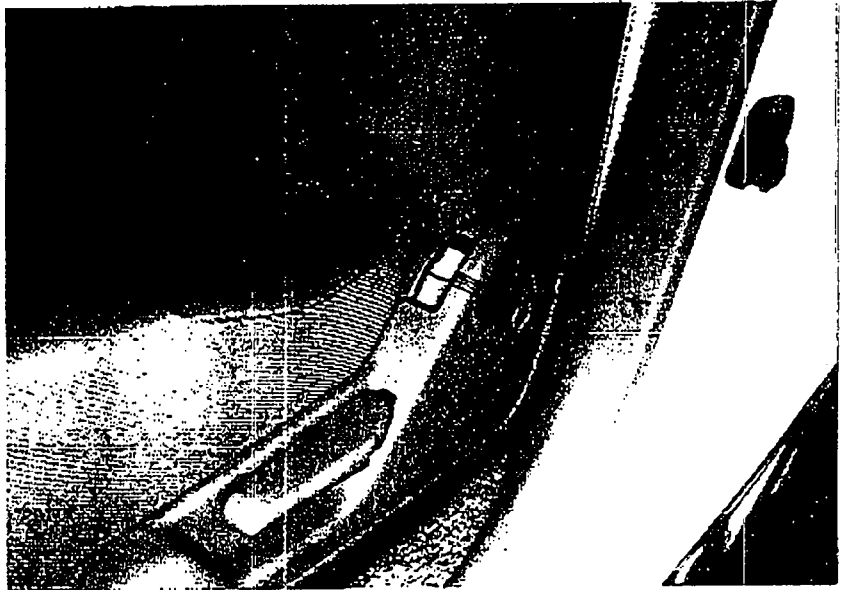


Seat back positioning procedure

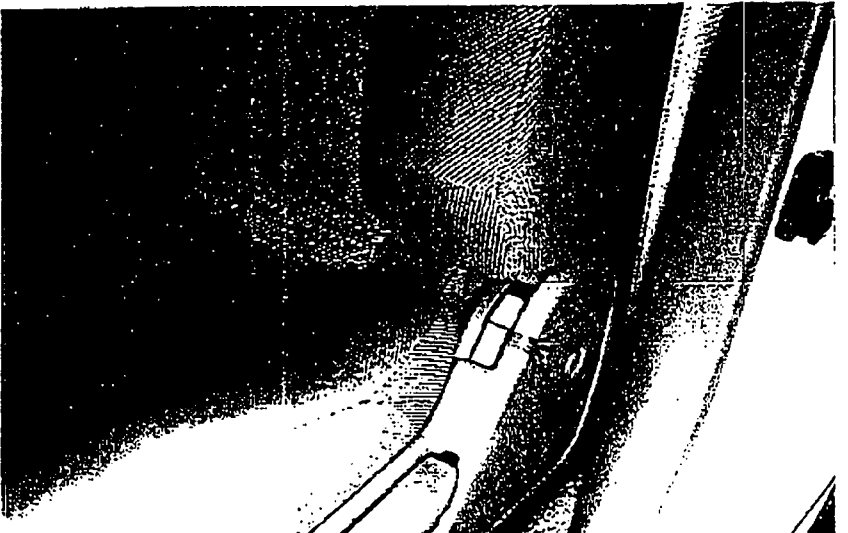
Seat back is not locked.



2
Raise seat back from
this condition until
it is first locked and
set as
first locking position.

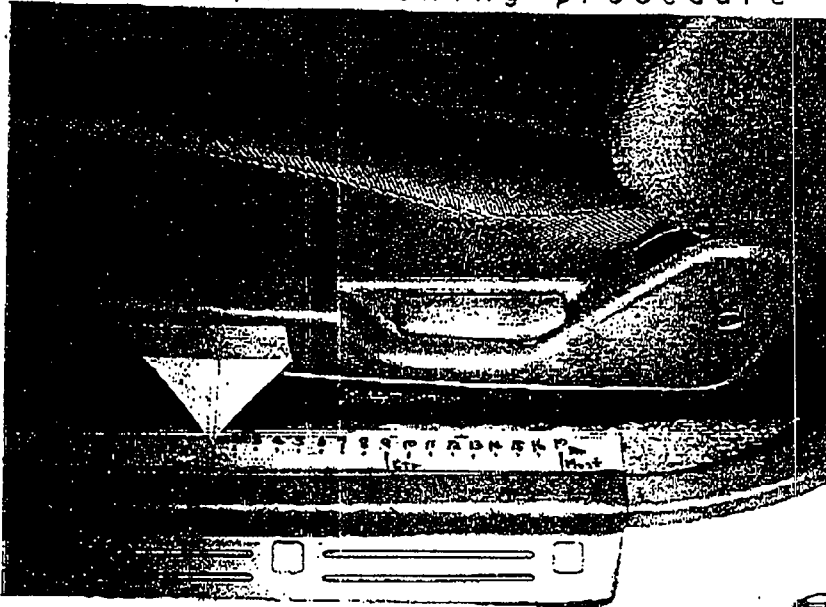


Adjust to the
fourth locking position.

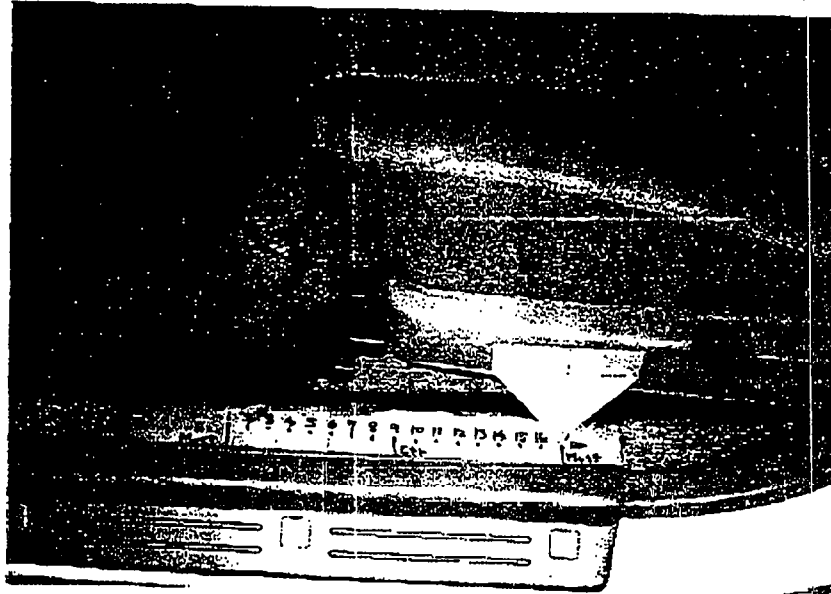


Seat track and aft positioning procedure

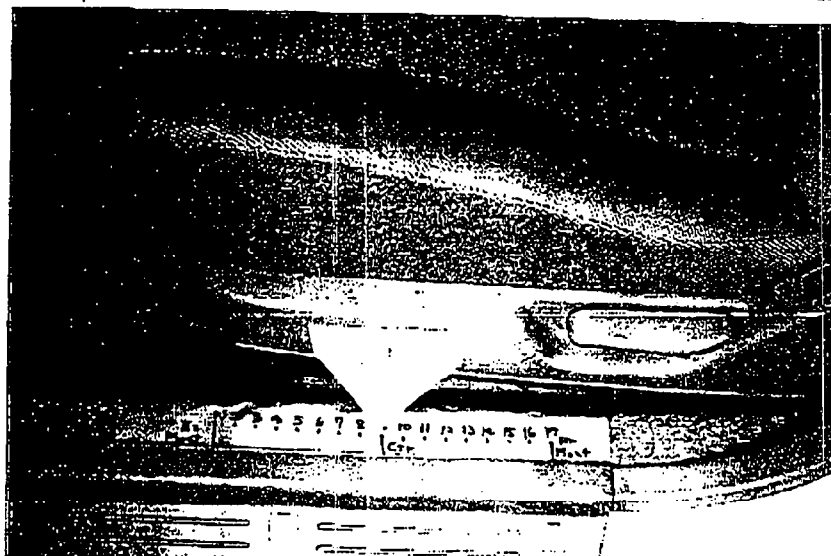
Front most



Rear most



Position seat track to
9th latch position
from forward most.



Adjustable upper anchorage
positioning procedure

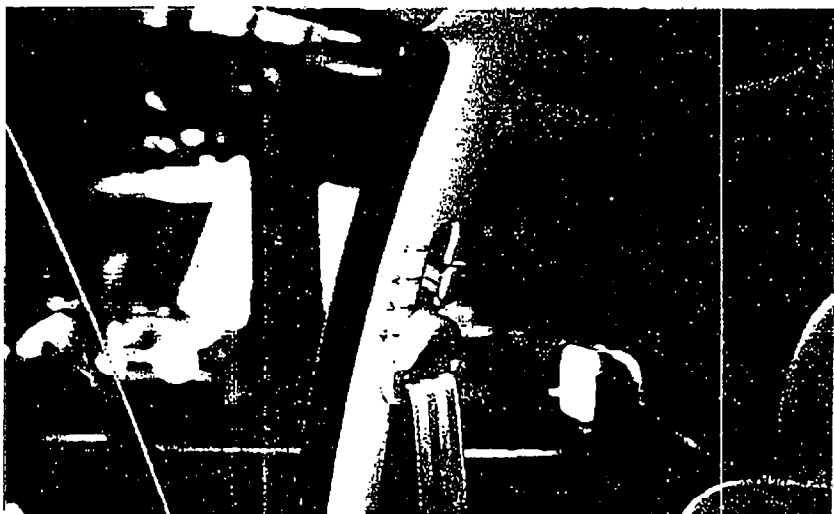
Upper most
(first)



Lower most
(fourth from upper most)

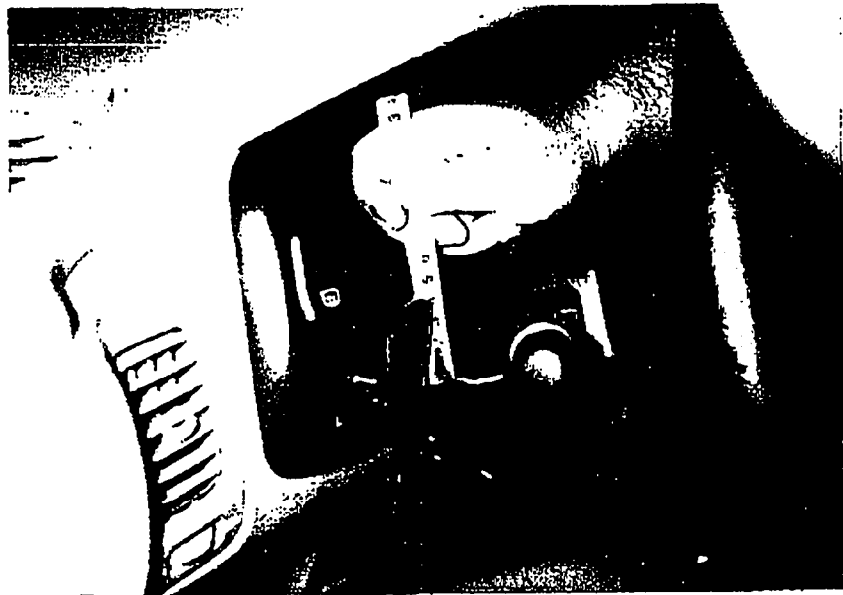


Position to the second
locking position from the top.

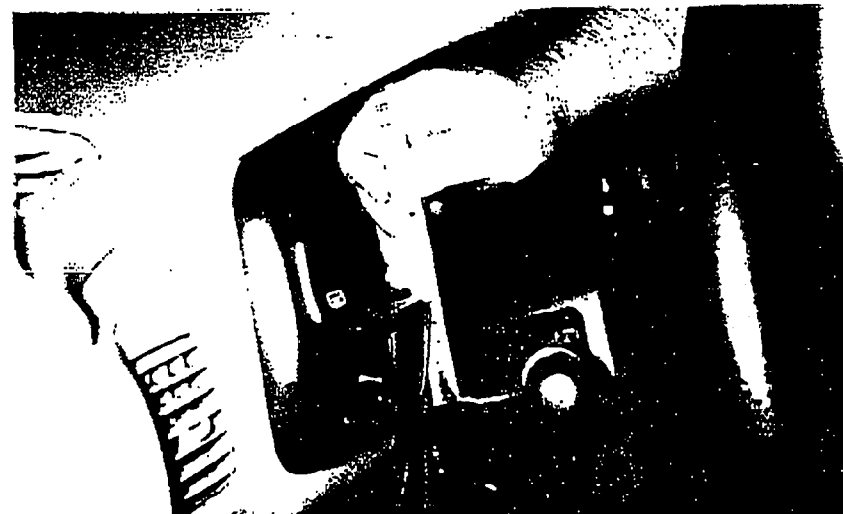


Tilt steering column adjustment procedure

Upper most



Lower most

Position to midway
between upper most
and lower most.

ATTACHMENT 2

Dummy placement measurements

2-1

HYBRID II DUMMY SET POSITION DATA

1. 4Door Sedan & Wagon Driver Dummy
Reference page 2, 6~10
2. 4Door Sedan & Wagon Passenger Dummy
Reference page 3, 6~10
3. 2Door Coupe Driver Dummy
Reference page 4, 6~10
4. 2Door Coupe Passenger Dummy
Reference page 5, 6~10

Hybrid II Dummy Set Position Data
(4 Door Sedan & Wagon)

PART	ITEM	REFERENCE	TOLERANCE
		mm	mm
DRIVER-HEAD	HH : HEAD TO HEADER	384	10
	HW : HEAD TO WINDSHIELD	567	15
	HZ : HEAD TO ROOF	160	10
	NR : NOSE TO RIM	498	10
	NA : NOSE TO RIM ANGLE	12°	5°
	HR : HEAD TO SIDE HEADER	188	10
	HS : HEAD TO SIDE WINDOW	273	10
DRIVER-CHEST	CS : CHEST TO STRG. CTR.	350	10
	CD : CHEST TO DASH	570	10
	RA : RIM TO ABDOMEN	195	10
	AD : ARM TO DOOR	—	—
	BD : CHEST TO DOOR	390	10
DRIVER-KNEE	KDL : KNEE TO DASH (LH)	213	10
	KDA : KNEE TO DASH ANGLE (LH)	28°	5°
	KDR : KNEE TO DASH (RH)	213	10
	KDA : KNEE TO DASH ANGLE (RH)	27°	5°
	KK : KNEE TO KNEE	370	5
	KDO : KNEE TO DOOR TRIM	210	5
	KDI : KNEE TO CTR CONSOL	133	5
	TA : TIBIAL ANGLE	—	—
DRIVER-ETC	SH : STRIKER TO H-POINT	—	—
	SH : STRIKER TO H-POINT ANGLE	—	—
	SK : STRIKER TO KNEE	511	10
	SK : STRIKER TO KNEE ANGLE	1°	5°
	ST : STRIKER TO HEAD	544	10
	ST : STRIKER TO HEAD ANGLE	92°	5°
	SHY : STRIKER TO H-POINT	—	—
	PA : PELVIC ANGLE	—	—
	HD : H-POINT TO DOOR	—	—
DRIVER-BELT	PBU : POSITION OF BELT UPPER	335	10
	PBL : POSITION OF BELT LWR	265	10
	TBI : DUMMY CENTER TO LAP BELT	—	—
VEHICLE	WA : WINDSHIELD ANGLE	—	—
STEERING	SWA : STEERING WHEEL ANGLE	23°	5°
	SCA : STEERING COLUMN ANGLE	29°	5°

Hybrid II Dummy Set Position Data
(4 Door Sedan & Wagon)

PART	ITEM	REFERENCE	TORERANCE
		mm	mm
PASSENGER-HEAD	HH : HEAD TO HEADER	384	10
	HW : HEAD TO WINDSHIELD	567	15
	HZ : HEAD TO ROOF	160	10
	HR : HEAD TO SIDE HEADER	188	10
	HS : HEAD TO SIDE WINDOW	273	10
	ND : NOSE TO DASH	762	10
PASSENGER-CHEST	CD : CHEST TO DASH	658	10
	AD : ARM TO DOOR	—	—
	BD : CHEST TO DOOR	390	10
PASSENGER-KNEE	KDL: KNEE TO DASH (LH)	210	10
	KDA: KNEE TO DASH ANGLE (LH)	23°	5°
	KDR: KNEE TO DASH (RH)	215	10
	KDA: KNEE TO DASH ANGLE (RH)	21°	5°
	KK : KNEE TO KNEE	300	5
	KDO: KNEE TO DOOR TORIM	236	5
	KDI: KNEE TO CTR CONSOL	176	5
	TA : TIBIAL ANGLE	—	—
PASSENGER-ETC	SH : STRIKER TO H-POINT	—	—
	SH : STRIKER TO H-POINT ANGLE	—	—
	SK : STRIKER TO KNEE	518	10
	SK : STRIKER TO KNEE ANGLE	2°	5°
	ST : STRIKER TO HEAD	544	10
	ST : STRIKER TO HEAD ANGLE	92°	5°
	SHY: STRIKER TO H-POINT	—	—
	PA : PELVIC ANGLE	—	—
	HD : H-POINT TO DOOR	—	—
PASSENGER-BELT	PBU: POSITION OF BELT UPPER	335	10
	PBL: POSITION OF BELT LWR	265	10
	TBI: DUMMY CENTER TO LAP BELT	—	—

Hybrid II Dummy Set Position-Data
(2Door Coupe)

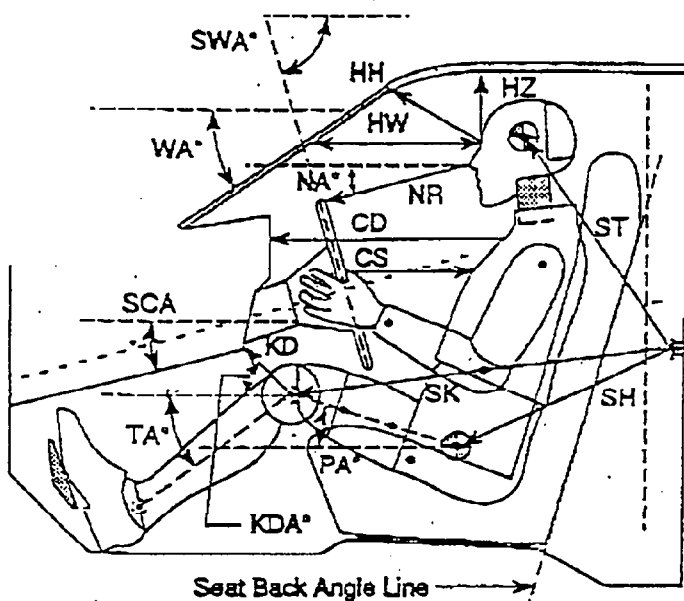
PART	ITEM	REFERENCE	TORERANCE
		mm	mm
DIRVER-HEAD	HH : HEAD TO HEADER	384	10
	HW : HEAD TO WINDSHIELD	567	15
	HZ : HEAD TO ROOF	160	10
	NR : NOSE TO RIM	498	10
	NA : NOSE TO RIM ANGLE	12°	5°
	HR : HEAD TO SIDE HEADER	188	10
	HS : HEAD TO SIDE WINDOW	273	10
DRIVER-CHEST	CS : CHEST TO STRG.CTR.	350	10
	CD : CHEST TO DASH	570	10
	RA : RIM TO ABDOMEN	195	10
	AD : ARM TO DOOR	—	—
	BD : CHEST TO DOOR	390	10
DRIVER-KNEE	KDL: KNEE TO DASH (LH)	213	10
	KDA: KNEE TO DASH ANGLE (LH)	28°	5°
	KDR: KNEE TO DASH (RH)	213	10
	KDA: KNEE TO DASH ANGLE (RH)	27°	5°
	KK : KNEE TO KNEE	370	5
	KDO: KNEE TO DOOR TRIM	210	5
	KDI: KNEE TO CTR CONSOL	133	5
	TA : TIBIAL ANGLE	—	—
DRIVER-ETC	SH : STRIKER TO H-POINT	—	—
	SH : STRIKER TO H-POINT ANGLE	—	—
	SK : STRIKER TO KNEE	818	10
	SK : STRIKER TO KNEE ANGLE	1°	5°
	ST : STRIKER TO HEAD	583	10
	ST : STRIKER TO HEAD ANGLE	70°	5°
	SHY: STRIKER TO H-POINT	—	—
	PA : PELVIC ANGLE	—	—
	HD : H-POINT TO DOOR	—	—
DRIVER-BELT	PBU: POSITION OF BELT UPPER	340	10
	PBL: POSITION OF BELT LWR	260	10
	TBI: DUMMY CENTER TO LAP BELT	—	—
VEHICLE	WA : WINDSHIELD ANGLE	—	—
STEERING	SWA: STEERING WHEEL ANGLE	23°	5°
	SCA: STEERING COLUMN ANGLE	29°	5°

2 - 5

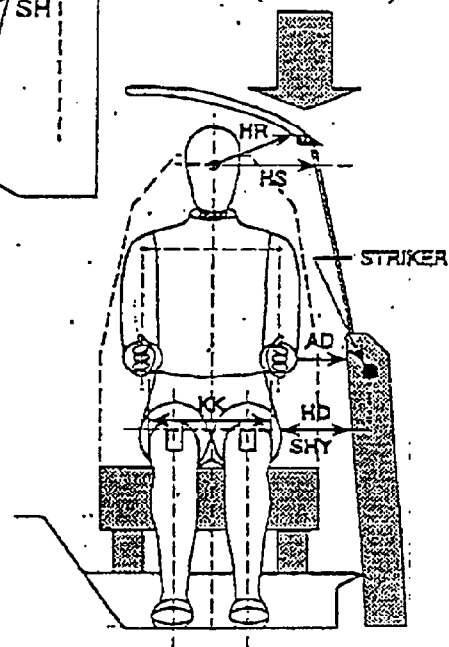
Hybrid II Dummy Set Position Data
(2 Door Coupe)

PART	ITEM	REFERENCE	TORERANCE
		mm	mm
PASSENGER-HEAD	HH : HEAD TO HEADER	384	10
	HW : HEAD TO WINDSHIELD	567	15
	HZ : HEAD TO ROOF	160	10
	HR : HEAD TO SIDE HEADER	188	10
	HS : HEAD TO SIDE WINDOW	273	10
	ND : NOSE TO DASH	762	10
PASSENGER-CHEST	CD : CHEST TO DASH	658	10
	AD : ARM TO DOOR	—	—
	BD : CHEST TO DOOR	390	10
PASSENGER-KNEE	KDL: KNEE TO DASH (LH)	210	10
	KDA: KNEE TO DASH ANGLE (LH)	23°	5°
	KDR: KNEE TO DASH (RH)	215	10
	KDA: KNEE TO DASH ANGLE (RH)	21°	5°
	KK : KNEE TO KNEE	300	5
	KDO: KNEE TO DOOR TORIM	236	5
	KDI: KNEE TO CTR CONSOL	176	5
	TA : TIBIAL ANGLE	—	—
PASSENGER-ETC	SH : STRIKER TO H-POINT	—	—
	SH : STRIKER TO H-POINT ANGLE	—	—
	SK : STRIKER TO KNEE	824	10
	SK : STRIKER TO KNEE ANGLE	2°	5°
	ST : STRIKER TO HEAD	583	10
	ST : STRIKER TO HEAD ANGLE	70°	5°
	SHY: STRIKER TO H-POINT	—	—
	PA : PELVIC ANGLE	—	—
PASSENGER-BELT	HD : H-POINT TO DOOR	—	—
	PBU: POSITION OF BELT UPPER	340	10
	PBL: POSITION OF BELT LWR	260	10
	TBI: DUMMY CENTER TO LAP BELT	—	—

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

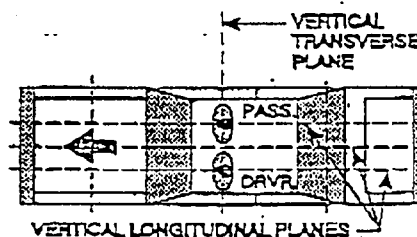


AD - Arm to Door
 HD - H-Point to Door
 HR - Head to Side Header
 HS - Head to Side Window
 KK - Knee to Knee
 SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
 CS - Steering Wheel to Chest
 HH - Head to Header
 HW - Head to Windshield
 HZ - Head to Roof
 KDA - Knee to Dash Angle
 KDL - Left Knee to Dash
 KDR - Right Knee to Dash
 NA - Nose to Rim Angle
 NR - Nose to Rim
 PA - Pelvic Angle
 RA - Rim to Abdomen

SCA - Steering Column Angle
 SH - Striker to H-Point
 SK - Striker to Knee
 ST - Striker to Head
 SWA - Steering Wheel Angle
 TA - Tibial Angle
 WA - Windshield Angle

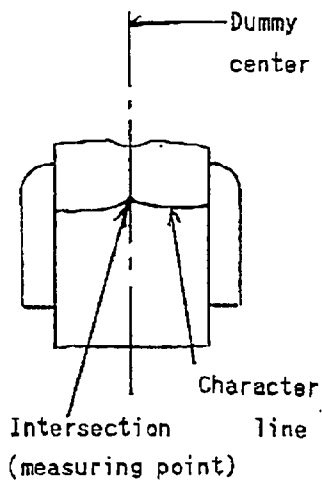


Details of FHI's dummy positioning measurement procedure

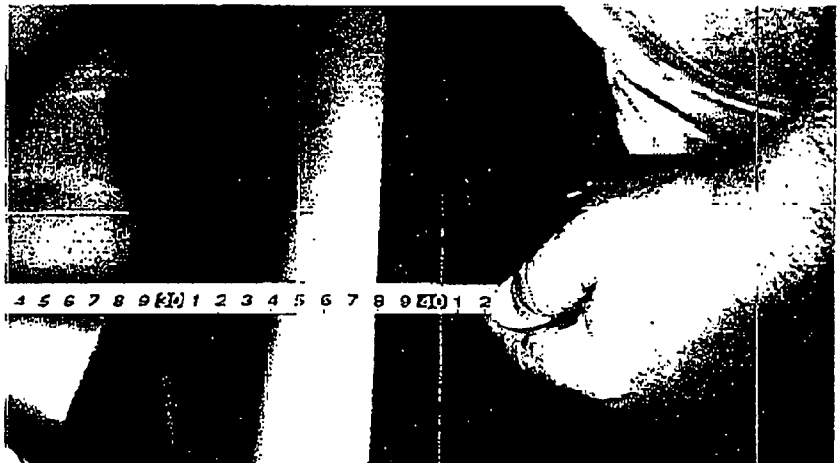
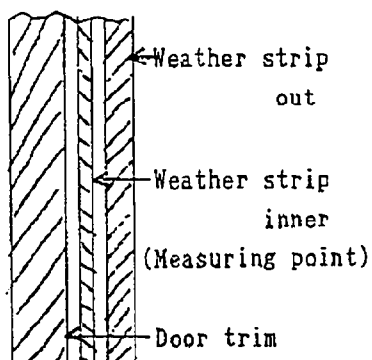
4. BD



Details of dummy



Details of door



Details of FHI's dummy positioning measurement procedure

3. ND

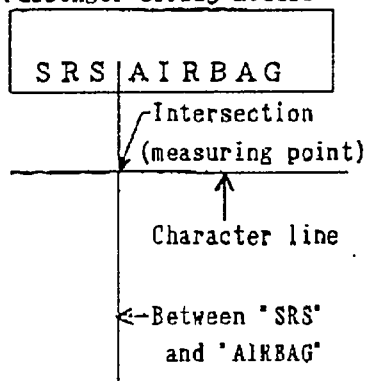


Top of nose



Details of dashboard

Passenger airbag module



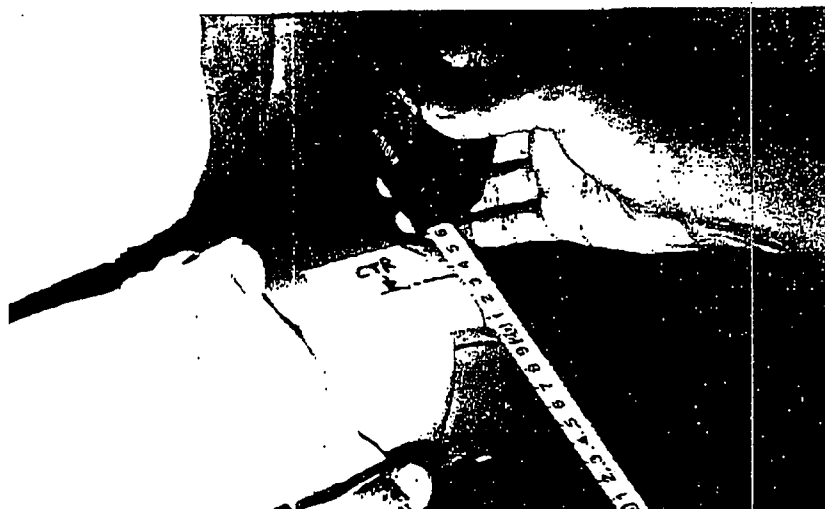
Details of FHI's dummy positioning
measurement procedure

2. KDO

Horizontally from center
of knee to door trim



Top and center of knee



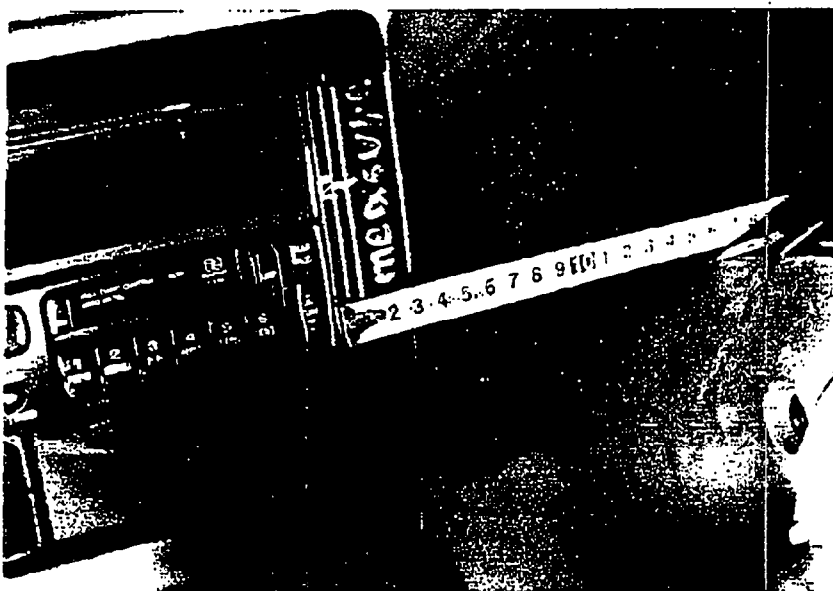
Details of FHI's dummy positioning measurement procedure

1. KDI

Measure at a point where
a line from center console
to leg is horizontal.



Center console



Center of leg

