

V2536

REPORT NO.: 214-MGA-97-20
SAFETY COMPLIANCE TESTING FOR
FMVSS 214 "SIDE IMPACT PROTECTION -
PASSENGER CARS"

HYUNDAI MOTOR COMPANY
1997 HYUNDAI ACCENT 3 DOOR
NHTSA NO: CV0501

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: January 9, 1997

Report Date: January 24, 1997

FINAL REPORT

Prepared For:

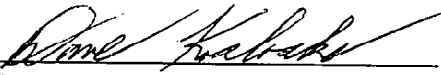
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NSA-30
400 SEVENTH STREET, SW ROOM 6115
WASHINGTON, D.C. 20590

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 214-MGA-97-20		2. Government Accession No.		3. Recipient's Catalog No.																			
4. Title and Subtitle Final Report of FMVSS No.214 Compliance Side Impact Protection Testing of a 1997 Hyundai Accent 3 Door NHTSA No. CV0501				5. Report Date January 24, 1996																			
				6. Performing Organization Code MGA																			
7. Author(s) Dave Kosloske, Project Engineer				8. Performing Organization Report No. MGA-DOT-214-20																			
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105				10. Work Unit No.																			
				11. Contract or Grant No. DTNH22-93-C-02047																			
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (Mail Code: NSA-30) 400 Seventh St., S.W., Room 6115 Washington, D.C. 20590				13. Type of Report and Period Covered Final Test Report January 9, 1997 to January 24, 1997																			
				14. Sponsoring Agency Code NSA-30																			
15. Supplementary Notes																							
16. Abstract A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 1997 Hyundai Accent 3 Door in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP- 214D-04 for the determination of FMVSS No. 214 Side Impact Protection compliance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on January 9, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 53.1 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 22°C. The target vehicle post test maximum crush was 305 mm at level 2. The test vehicle's performance follows: <table border="0"> <thead> <tr> <th></th> <th><u>RIGHT FRONT PASS.</u></th> <th><u>RIGHT REAR PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Right Upper Rib (RUR) Accel., g</td> <td>55</td> <td>50</td> </tr> <tr> <td>Right Lower Rib (RLR) Accel., g</td> <td>55</td> <td>61</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>72</td> <td>63</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>63</td> <td>62</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>89</td> <td>91</td> </tr> </tbody> </table> The door on the struck side of the vehicle did not separate from the body at the hinges or latch and the opposite door did not open during the side impact event.							<u>RIGHT FRONT PASS.</u>	<u>RIGHT REAR PASS.</u>	Right Upper Rib (RUR) Accel., g	55	50	Right Lower Rib (RLR) Accel., g	55	61	Lower Spine (T ₁₂) Accel., g	72	63	Thoracic Trauma Index (TTI)	63	62	Pelvis (PEV) Accel., g	89	91
	<u>RIGHT FRONT PASS.</u>	<u>RIGHT REAR PASS.</u>																					
Right Upper Rib (RUR) Accel., g	55	50																					
Right Lower Rib (RLR) Accel., g	55	61																					
Lower Spine (T ₁₂) Accel., g	72	63																					
Thoracic Trauma Index (TTI)	63	62																					
Pelvis (PEV) Accel., g	89	91																					
17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID)				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590 Telephone No. 202-366-4946 Attn: Robert Hornickle																			
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages																			
				22. Price																			

This Final Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-93-C-02047.

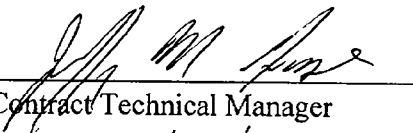
This document is disseminated under the sponsorship of the U. S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its content or use thereof.

Prepared By: 
Dave Kosloske, Project Engineer

Approved By: 
John Fleck, Facility Director

Approval Date: 1-28-97

FINAL REPORT ACCEPTED BY (OVSC):

Accepted By: 
Contract Technical Manager

Acceptance Date: 4/17/97

37 APR 14 P2: 46

RECEIVED NSA-30

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	PURPOSE AND TEST PROCEDURE	1-1
2	SUMMARY OF SIDE IMPACT TEST	2-1
3	SIDE IMPACT DUMMY (SID) AND VEHICLE TEST DATA	3-1
4	OCCUPANT AND VEHICLE INFORMATION	4-1
APPENDIX A	PHOTOGRAPHS	
APPENDIX B	VEHICLE AND SID RESPONSE DATA	
APPENDIX C	SID CONFIGURATION AND PERFORMANCE VERIFICATION	
APPENDIX D	TEST EQUIPMENT LIST AND CALIBRATION INFORMATION	

SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 96 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-93-C-02047. The purpose of this test was to evaluate side impact protection of a 1997 Hyundai Accent 3 Door.

This side impact test was conducted in accordance with the Vehicle Safety Compliance's FMVSS 214 test procedure (TP-214D-04, dated September 1, 1995).

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes only.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1997 Hyundai Accent 3 Door was impacted on the right side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 33.0 mph (53.1 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on January 9, 1997. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummies (SIDs) are included in Appendix A.

Two Side Impact Dummies (SIDs) were placed in the right front and rear right designated seating positions according to instructions specified in the OVSC Side Impact Laboratory Test Procedure which is dated September 1, 1995. The side impact event was documented by nine high speed cameras. Camera locations and other pertinent camera information can be found in this report.

The SIDs were instrumented with the following accelerometers.

1. Right Upper Rib (RUR) uniaxial accelerometer (Y-direction)
2. Right Lower Rib (RLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

Appendix B contains the vehicle and dummy response data traces. A summary of the side impact dummy (SID) configuration and performance verification test data is shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

The following table summarizes the results of the FMVSS 214 Right Side Impact test:

Injury Criteria	Front SID	Rear SID
TTI (g)	63	62
Pelvis (g)	89	91

TEST NOTES

1. The following accelerometers were not used for this test:

Right Front Door on Centerline

Midrear of Right Front Door

Right Front Door Upper Centerline

Midrear of Right Rear Door

Right Rear Door Upper Centerline

Rear Seat Track

2. It was noted that both frontal airbags deployed during the impact test.

SECTION 3
SIDE IMPACT DUMMY (SID) AND
VEHICLE TEST DATA

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 VIN: KMHVD14N6VU218350

Vehicle Body Color: Violet Gray Build Date: 9/20/96

Engine Data: 4 Cylinders; CID; 1.5 Liter; cc

Placement Longitudinal; X Lateral

Transmission: 5 speed; X Manual; Automatic; Overdrive

Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 78 miles

Options: X A/C; X Pwr. Steering; X Pwr. Brakes; Pwr. Windows;

 Cruise Control; Tilt Wheel; Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 32 Psi FRONT

32 Psi REAR

Recommended Tire Size: P155/80R13, P175/70R13, and P175/65R14

Tires on Test Vehicle: P155/80R13 Manufacturer: General

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; 3rd Seat 5 Total

Type of Front Seats: X Bucket; Bench; Split Bench

Type of Front Seat Back: Fixed; X Adjustable with X Lever

Vehicle Maximum Capacity Loading = 385.6 kg (A)

No. of Occupants x 68.04 kg. = 340.2 kg (B)

Cargo Capacity (A-B) = 45.4 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front = 286.7 kg

Right Rear = 196.7 kg

Left Front = 302.5 kg

Left Rear = 193.7 kg

TOTAL FRONT = 589.2 kg

TOTAL REAR = 390.6 kg

% of Total Vehicle Weight = 60.1 %;

% of Total Weight = 39.9 %

TOTAL WEIGHT = 979.8 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= <u>979.8</u> kg
Cargo Carrying Capacity of Test Vehicle	= <u>45.4</u> kg
Weight of 2 Side Impact Dummies (2 x <u>80.7</u> kg.)	= <u>161.4</u> kg
TEST VEHICLE TARGET WEIGHT	= <u>1186.6</u> kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front	= <u>341.1</u> kg	Right Rear	= <u>286.7</u> kg
Left Front	= <u>311.6</u> kg	Left Rear	= <u>247.2</u> kg
TOTAL FRONT	= <u>652.7</u> kg	TOTAL REAR	= <u>533.9</u> kg
% of Total Weight	= <u>55.0</u> %	% of Total Weight	= <u>45.0</u> %
TOTAL TEST WEIGHT	= <u>1186.6</u> kg		

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 643 mm Left Front 633 mm Right Rear 625 mm Left Rear 627 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 622 mm Left Front 630 mm Right Rear 581 mm Left Rear 598 mm

TEST ATTITUDE:

Right Front 629 mm Left Front 626 mm Right Rear 590 mm Left Rear 597 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2397 mm

C.G. = 1035 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 3862 mm

Centerline = 4077 mm

Left Side = 3862 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 200 mm

Test Position: 8th position rearward out of 14 total

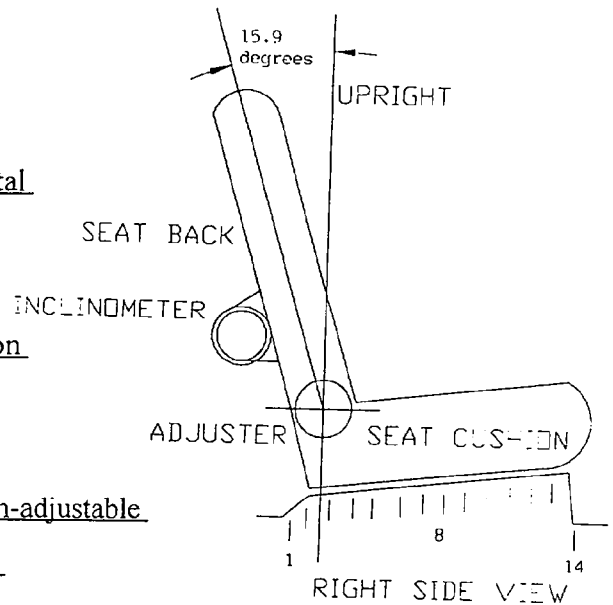
FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 15.9° from the vertical position

REAR POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Non-adjustable

Seat Back Adjustment Position: Non-adjustable



ADJUSTABLE STEERING COLUMN POSITION: Non-adjustable

WINDOW POSITIONS: Left Front Open Left Rear removed
Right Front Closed Right Rear fixed

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 45.0 liters

Test Volume: 41.9 liters 93 % of capacity

LOCATIONS OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase: = 2397 mm

Impact Point is 259 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

Overall Length = 4077 mm; Overall Width = 1620 mm

TEST WEIGHT:

Right Front = 341.1 kg

Right Rear = 263.1 kg

Left Front = 330.2 kg

Left Rear = 246.7 kg

TOTAL FRONT = 671.3 kg

TOTAL REAR = 509.8 kg

% of Total Weight = 56.8 %

% of Total Weight = 43.2 %

TOTAL VEHICLE WEIGHT = 1181.1 kg

Wheelbase = 2397 mm

Longitudinal C.G. from Center of Front Axle = 1035 mm

Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (250 mm above ground) = 155 mm

2. LEVEL 2 (467 mm above ground) = 305 mm

3. LEVEL 3 (593 mm above ground) = 274 mm

4. LEVEL 4 (868 mm above ground) = 223 mm

5. LEVEL 5 (1291 mm above ground) = 33 mm

Maximum Post-Test Intrusion = 305 mm

OCCUPANTS:

Right Front Passenger

Right Rear Passenger

Type of Dummy

SID

SID

Restraints Used

type II belt

type II belt

with frontal airbag

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels: = 20

Number of Cameras: Onboard Vehicle = 3

Offboard Vehicle = 4

Deformable Barrier = 2

TOTAL = 9

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to right

MDB DETAILS:

Overall Width of Framework Carriage	= <u>1252 mm</u>
Overall Length of MDB (incl. honeycomb impact face)	= <u>4115 mm</u>
Wheelbase of Framework Carriage	= <u>2591 mm</u>
Tread of Framework Carriage (Front & Rear)	= <u>1880 mm</u>
C.G. Location Rearward of Front Axle	= <u>1107 mm</u>
C.G. Location From Center Line	= <u>4 mm</u>
C.G. Location Above Ground Level	= <u>506 mm</u>

MDB WEIGHT:

Left Front	= <u>399.0 kg</u>	Left Rear	= <u>276.3 kg</u>
Right Front	= <u>378.8 kg</u>	Right Rear	= <u>304.3 kg</u>
TOTAL FRONT	= <u>777.8 kg</u>	TOTAL REAR	= <u>580.6 kg</u>
TOTAL MDB WEIGHT = <u>1358.4 kg</u>			

Impact Angle (MDB C/L to Target Vehicle C/L) = 90° degrees

Impact Speed = Primary: 33.0 mph (53.1 kph) Secondary: 33.0 mph (53.1 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

- | | | |
|----|---------------------------------|-----------------|
| 1. | Row A Top of Stack (813 mm) | = <u>142</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>108</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>60</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>97</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>RIGHT FRONT SID</u>	<u>RIGHT REAR SID</u>
Head	<u>to headrest, window sill and shoulder</u>	<u>to C Post</u>
Arm	<u>to door panel</u>	<u>to side panel</u>
Pelvis	<u>to door panel</u>	<u>to side panel</u>
Left Knee	<u>to right knee</u>	<u>to right knee</u>
Right Knee	<u>to door panel</u>	<u>to side panel</u>

DOOR OPENING:

	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
Front	<u>remained closed</u>	<u>remained closed</u>
Rear	<u>N/A</u>	<u>N/A</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 8 mm forward Vertical: 8 mm high

ARM REST LOCATIONS:

Front: 240 mm from bottom of window
Rear: 280 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: -2 mm Front Seat Cushion: 111 mm

Left Rear Seat Back: 114 mm Rear Seat Cushion: 190 mm

GLAZING DAMAGE:

Windshield cracked, right side door glass broken, right side rear quarter glass broken

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

None noted

OTHER NOTABLE IMPACT EFFECTS:

Both frontal airbags deployed

SECTION 4
OCCUPANT AND VEHICLE INFORMATION .

DATA SHEET NO. 5
SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

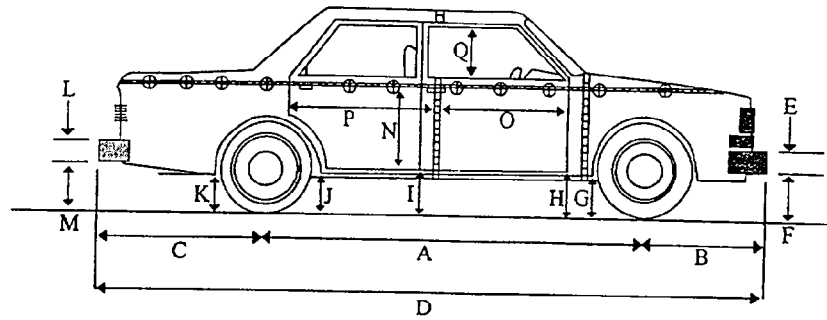
Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

	Front SID ID #269				Rear SID ID #270			
	Pos. Direct.		Neg. Direct		Pos. Direct.		Neg. Direct	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS								
Right Upper Rib (RUR) Y	10.8	87	-54.5	41	8.9	88	-49.6	41
Right Lower Rib (RLR) Y	10.5	70	-54.6	41	9.6	66	-61.4	42
SPINE ACCELERATIONS								
Lower Lateral Y	30.2	64	-71.9	36	24.5	69	-63.1	52
PELVIS ACCELERATIONS								
Lateral Y	19.0	48	-88.9	29	6.0	92	-91.4	40

REFERENCE: Positive Direction- Longitudinal (X) = forward
Lateral (Y) = to right
Vertical (Z) = down

DATA SHEET NO. 6
VEHICLE PRE AND POST-TEST MEASUREMENTS



D = Length at Centerline
R = Right Side Length
S = Left Side Length
T = Width at B Post
E & L = Bumper Thickness

J1 = To Pinch Weld
J2 = To Sill

ALL MEASUREMENTS IN (mm)

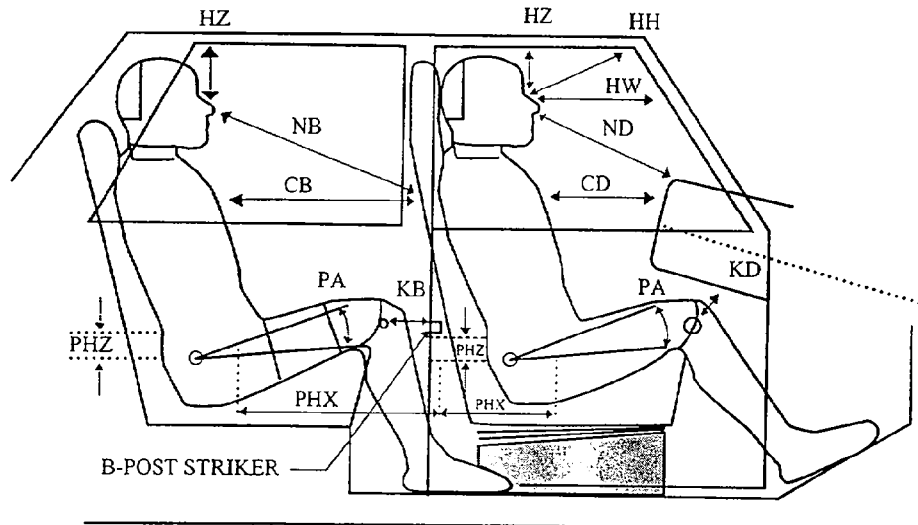
	PRE-TEST	POST-TEST	Δ CHANGE
A	2397	2380	17
B	770	710	60
C	910	820	90
D	4077	3910	167
E	138	138	0
F	404	405	1
G	213	210	3
H	180	208	28
I	180	190	10
J1/J2	183/187	174/174	9/13
K	243	178	65
L	235	310	75
M	347	361	14
N	640	545	95
O	640	628	12
P	610	606	4
Q	390	379	11
R	3862	3838	24
S	3862	3862	0
T	1620	1539	81

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

NHTSA NO.: CV0501 Test Date: January 9, 1997



NOTE: All dimensions are in mm with tolerance of ± 3 mm

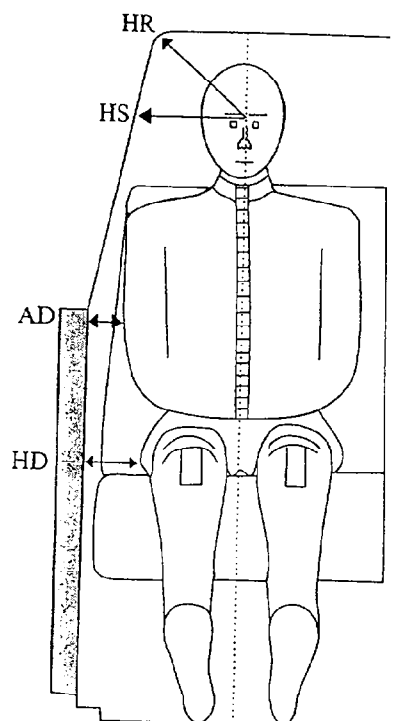
	FRONT PASSENGER ID #269		REAR PASSENGER SID ID #270
HH	420	HZ	141
HW	596	NB	547
HZ	152	CB	448
ND	755	KBL (KBA)	132 (0°)
CD	658	KBR (KBA)	142 (0°)
CS	N/A	PA°	24.7°
KDL(KDA°)	218 (0°)	PHX	400
KDR(KDA°)	240 (0°)	PHZ	169
PA°	23.5°		
PHX	406		
PHZ	161		

NOTE: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as reference point.

DATA SHEET NO. 8
SIDE IMPACT DUMMY (SID) LATERAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

NHTSA NO.: CV0501 Test Date: January 9, 1997



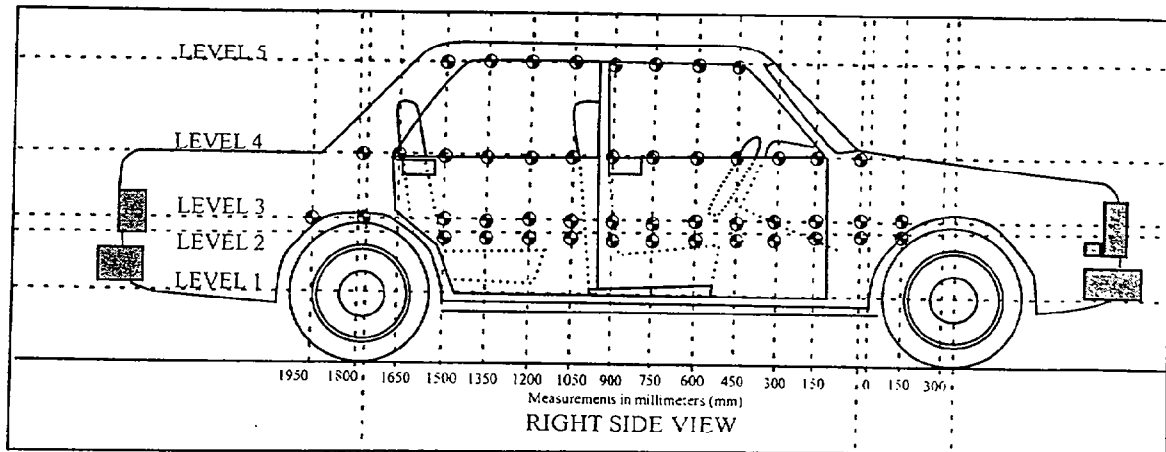
NOTE: All dimensions are in mm

	FRONT PASSENGER ID #269	REAR PASSENGER ID #270
HR	184	180
HS	267	283
AD	115	127
HD	126	162

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

NHTSA NO.: CV0501 Test Date: January 9, 1997



MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED"
CONFIGURATION

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

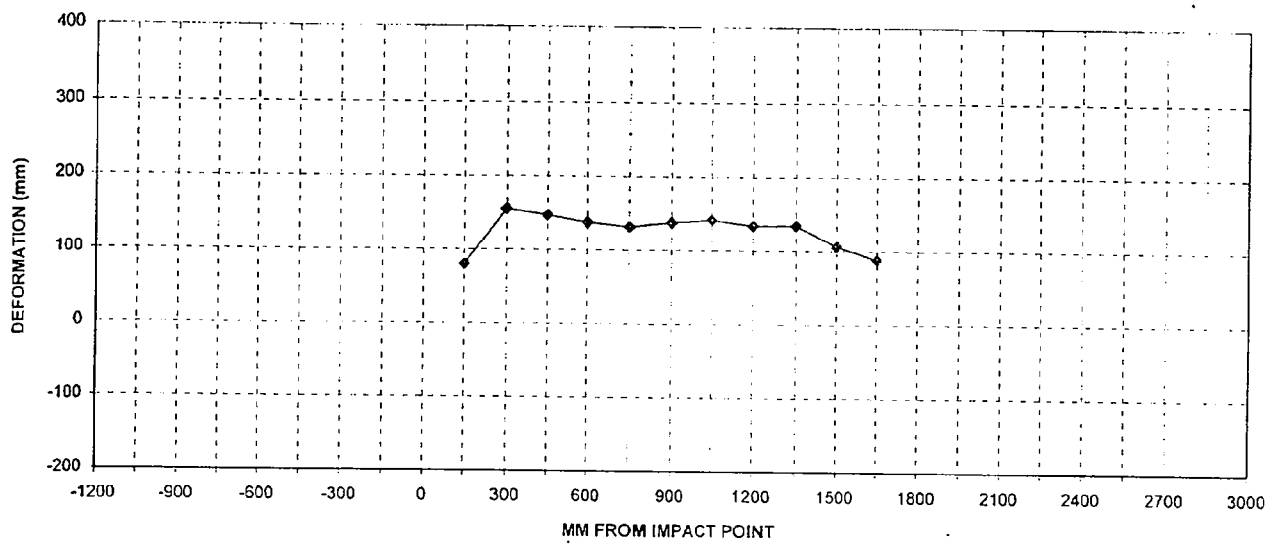
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>250</u> mm
Level 2 @ Occupant H-Point	= <u>467</u> mm
Level 3 @ Mid Door	= <u>593</u> mm
Level 4 @ Window Sill	= <u>868</u> mm
Level 5 @ Window Top	= <u>1291</u> mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 1 - Axle Centerline		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	843	922	79
300	845	1000	155
450	844	991	147
600	844	982	138
750	845	977	132
900	844	982	138
1050	843	985	142
1200	842	976	134
1350	841	976	135
1500	840	946	106
1650	838	926	88
1800			
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			

Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



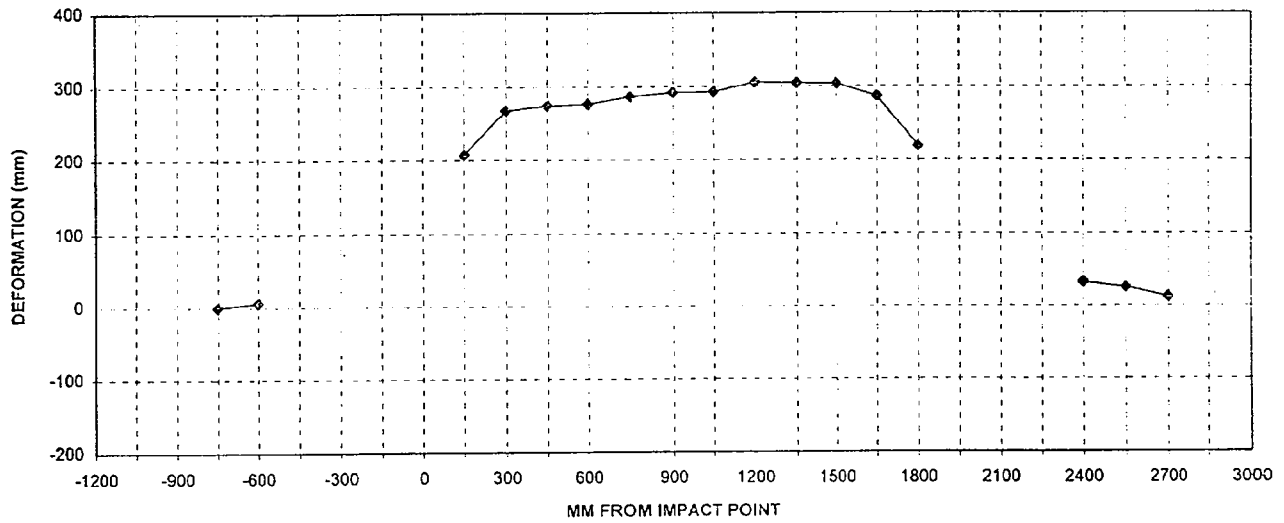
LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750	849	849	0
-600	816	822	6
-450			
-300			
-150			
0 (impact point)			
150	803	1010	207
300	804	1072	268
450	802	1077	275
600	805	1082	277
750	805	1092	287
900	805	1097	292
1050	805	1098	293
1200	805	1110	305
1350	804	1108	304
1500	804	1101	303
1650	802	1089	287
1800	802	1020	218
1950			
2100			
2250			
2400	810	842	32
2550	823	848	25
2700	848	860	12
2850			
3000			

Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



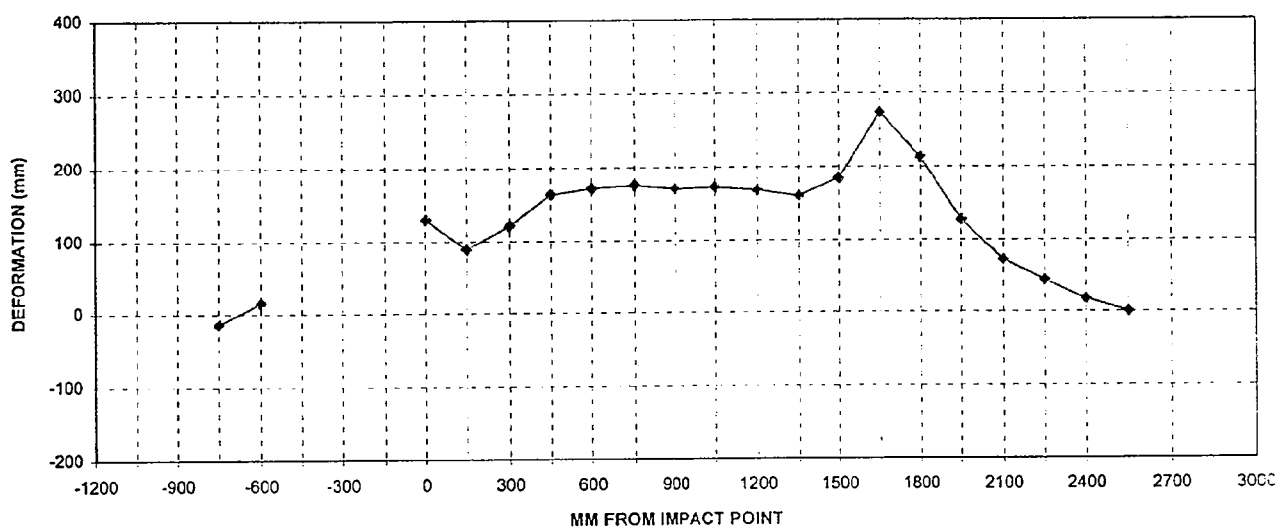
LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Mid Door		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750	863	849	-14
-600	831	846	15
-450			
-300			
-150			
0 (impact point)	801	931	130
150	802	891	89
300	804	925	121
450	803	966	163
600	806	977	171
750	808	983	175
900	809	979	170
1050	808	980	172
1200	807	975	168
1350	805	965	160
1500	803	987	184
1650	802	1076	274
1800	799	1012	213
1950	798	925	127
2100	798	870	72
2250	807	851	44
2400	821	839	18
2550	836	836	0
2700			
2850			
3000			

Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



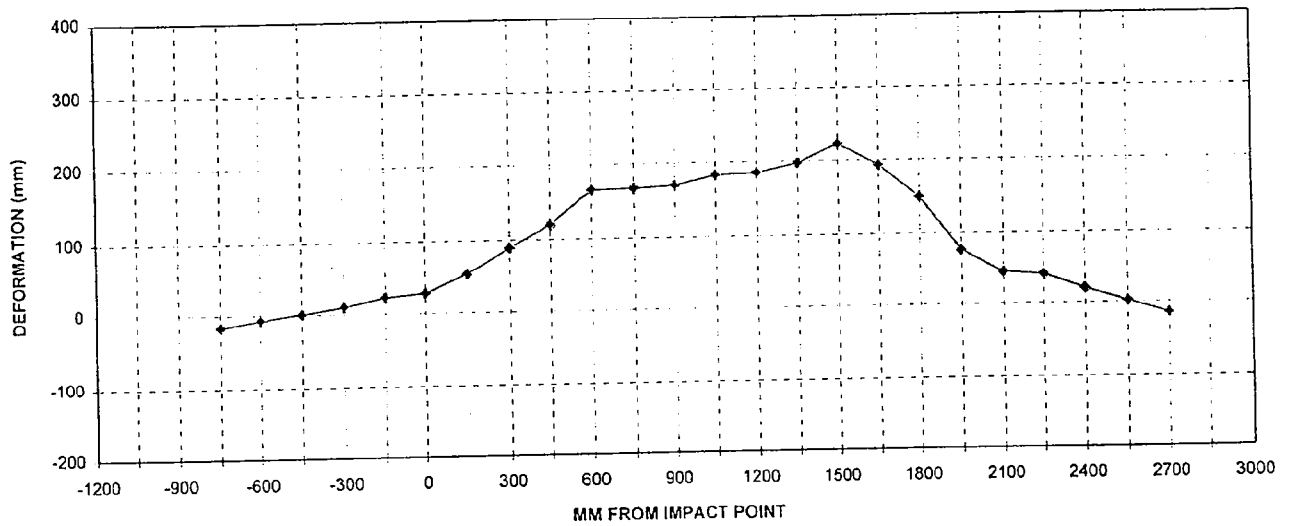
LEVEL 3 - MID DOOR

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 4 - Window Sill		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750	923	907	-16
-600	909	902	-7
-450	898	899	1
-300	890	900	10
-150	885	907	22
0 (impact point)	878	905	27
150	869	922	53
300	865	954	89
450	864	984	120
600	862	1028	166
750	865	1032	167
900	865	1035	170
1050	865	1048	183
1200	865	1050	185
1350	866	1063	197
1500	866	1089	223
1650	867	1060	193
1800	872	1022	150
1950	877	953	76
2100	884	928	44
2250	892	932	40
2400	906	926	20
2550	924	926	2
2700	942	928	-14
2850			
3000			

Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



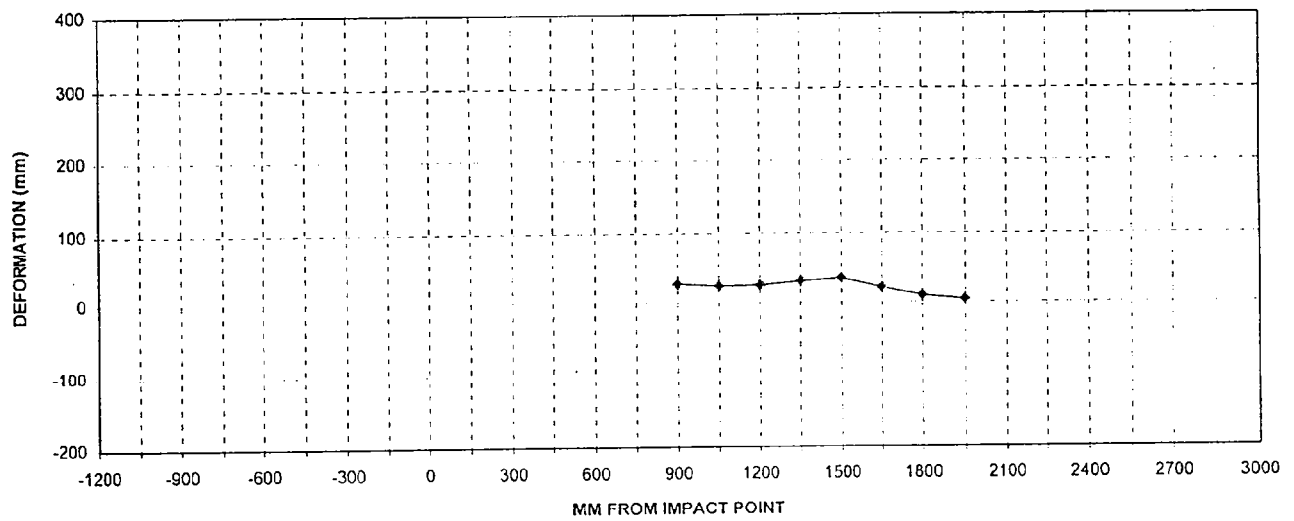
LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750			
900	1100	1126	26
1050	1100	1123	23
1200	1104	1128	24
1350	1106	1135	29
1500	1105	1138	33
1650	1106	1126	20
1800	1111	1120	9
1950	1118	1122	4
2100			
2250			
2400			
2550			
2700			
2850			
3000			

Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES
 Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door
 NHTSA NO.: CV0501 Test Date: January 9, 1997

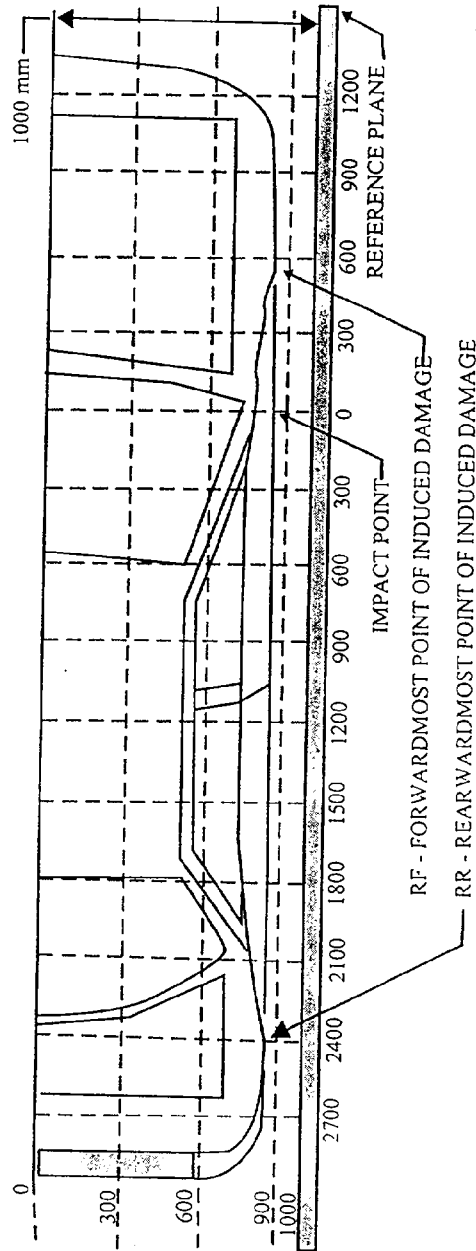


Figure is not representative of the actual test configuration

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (RF = <u>450</u> mm)	899	898	1
2. <u>135</u> mm	1045	803	242
3. <u>744</u> mm	1112	807	305
4. <u>1347</u> mm	1109	804	305
5. <u>1952</u> mm	933	798	135
6. (RR = <u>2550</u> mm)	926	924	2

DATA SHEET NO. 12

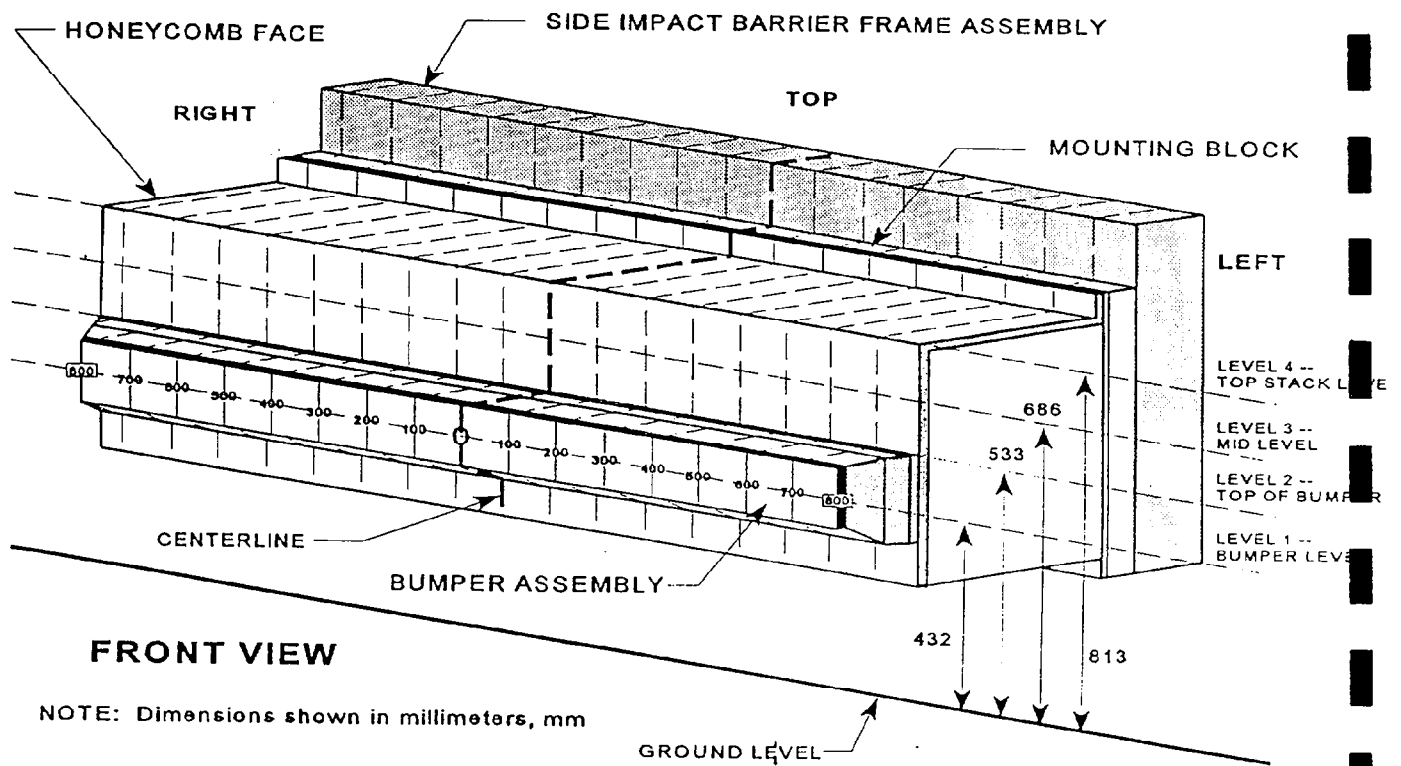
EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

		Distance Right of Center (mm)									Distance Left of Center (mm)							
Location	Height at CL*	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	142	101	87	61	31	8	4	2	1	0	-1	-2	-2	-4	-4	1	38
Mid Level Level 3	686 mm	108	75	27	5	4	3	2	2	3	0	0	-1	-1	-1	-2	-2	24
Top Bumper Level 2	533 mm	60	44	21	10	5	3	2	2	1	3	3	5	7	11	13	16	18
Mid Bumper Level 1	432 mm	71	66	52	43	37	34	36	37	40	44	49	58	67	77	82	86	97

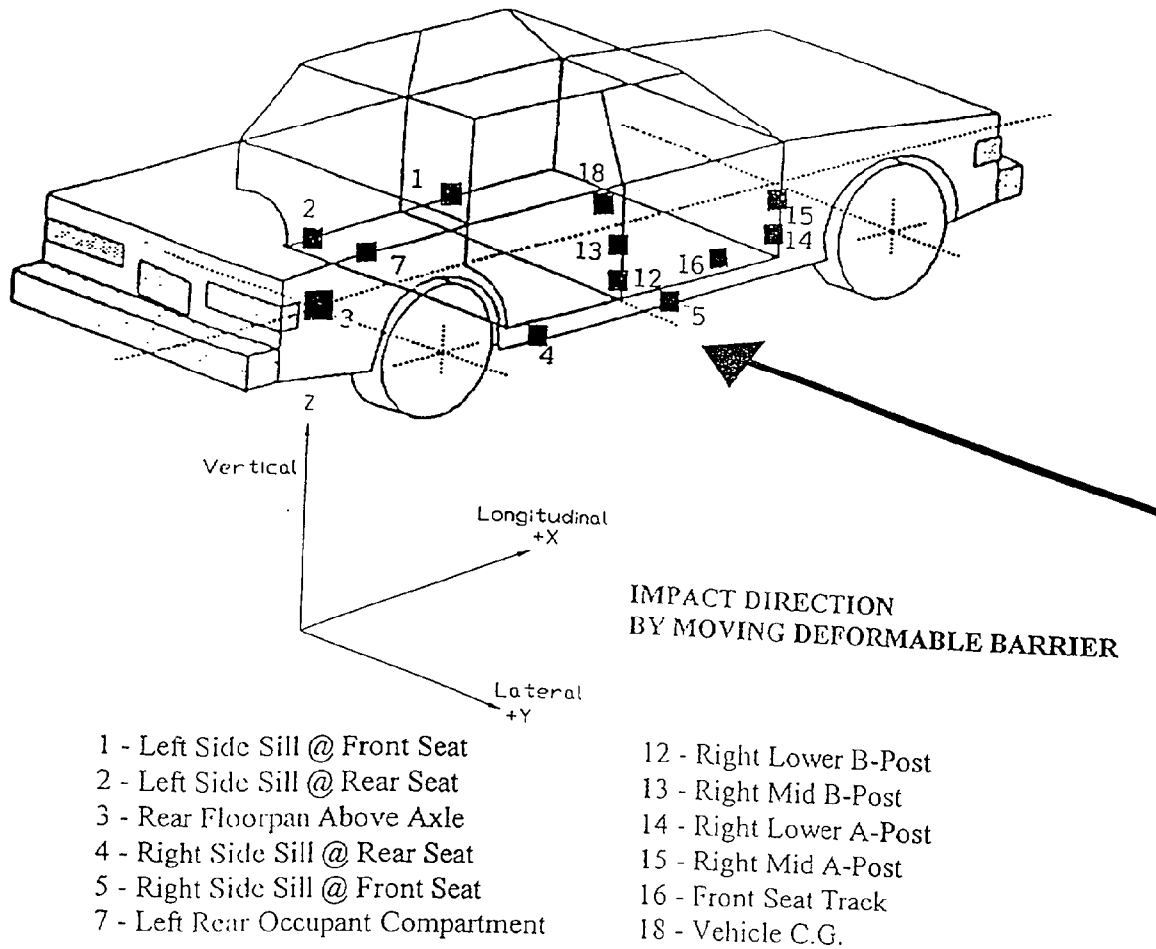
See next page for Barrier Face Graphic

[illegible]

DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997



DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Left Side Sill @ Front Seat	2325	-634	170	2.2	-3.9	2.4	-19.5	4.1	-8.9	19.8
2	Left Side Sill @ Rear Seat	1248	-637	172	2.8	-4.3	3.0	-25.7	7.5	-4.7	26.3
3	Rr. Floorpan Above Axle	872	0	395	2.9	-7.6	3.6	-23.7	7.8	-10.5	24.7
4	Right Side Sill @ Rr. Seat	1251	637	180	---	---	16.3	-42.5	---	---	---
5	Right Side Sill @ Frt. Seat	2328	634	178	---	---	3.9	-22.0	---	---	---
7	Left Rear Occupant Compartment	1557	-328	348	---	---	2.2	-24.4	---	---	---
12	Right Lower B-Post	1604	629	281	---	---	9.9	-68.2	---	---	---
13	Right Mid B-Post	1594	634	921	---	---	101.8	-151.4	---	---	---
14	Right Lower A-Post	2719	634	278	---	---	39.3	-99.2	---	---	---
15	Right Mid A-Post	2778	677	830	---	---	8.0	-39.3	---	---	---
16	Right Front Passenger Seat Track	1920	545	255	---	---	6.0	-32.6	---	---	---
18	Vehicle CG	2202	0	355	2.1	-14.1	3.2	-23.0	9.3	-13.6	28.2

*Reference: X - Rear Bumper (+ Forward)

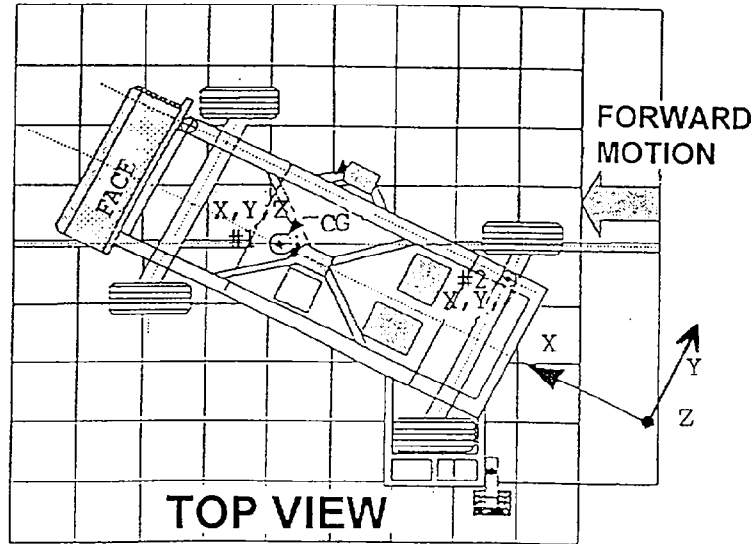
Y - Vehicle Centerline (+ To right)

Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door
 Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997



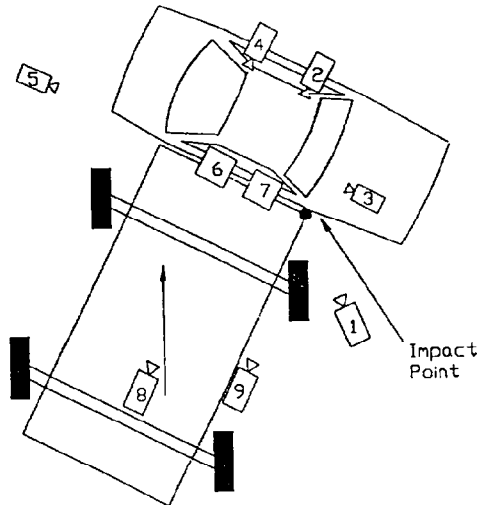
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	1.1	124	-15.3	33
	Lateral (Y)	---	---	---	5.2	20	-1.4	69
	Vertical (Z)	---	---	---	10.2	105	-10.0	109
	Resultant (R)	---	---	---	17.1	30	---	---
2	Rear Frame Member	-2591	625	622				
	Longitudinal (X)	---	---	---	1.7	90	-19.6	31
	Lateral (Y)	---	---	---	2.0	68	-5.1	20

*Reference: X - Front Axle (+ Forward)
 Y - Vehicle Centerline (+ To right)
 Z - Ground Level (+ Up)

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time					13	24
1	Right Impact	-1130	2230	1630	90°	13	769
2	Onboard Front Passenger					8	901
3	Onboard Rear Passenger					8	952
4	Onboard Hood					13	1020
5	Left Impact	-170	9530	1740	90°	25	1000
6	Top Overall	-100	-1190	5000	90°	8	1020
7	Top Impact	180	80	5000	90°	13	862
8	Cart Wide					13	962
9	Cart Impact					35	1010

* Reference: (from impact point)
 +X = Forward
 +Y = To Right
 +Z = Upward from floor level

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

TEST REQUIREMENTS:

Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

TEST VEHICLE IMPACT TYPE: X Side Impact MDB 33.0 mph (53.1 kph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0	1 oz
2. For 5 minute period after vehicle motion ceases	0	5 oz
3. For next 25 minutes	0	1 oz./1 min

FUEL SPILLAGE LOCATION(S): None

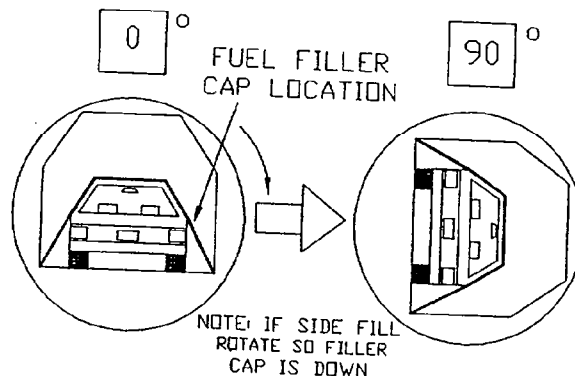
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 55 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 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
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

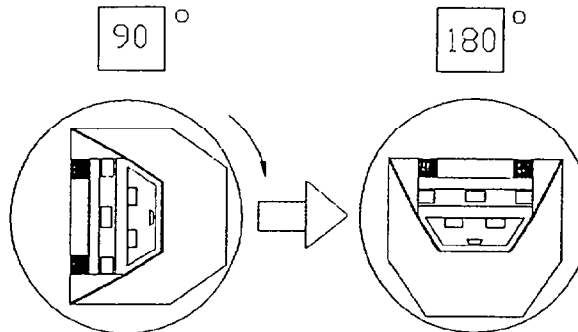
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 34 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 34 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 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
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

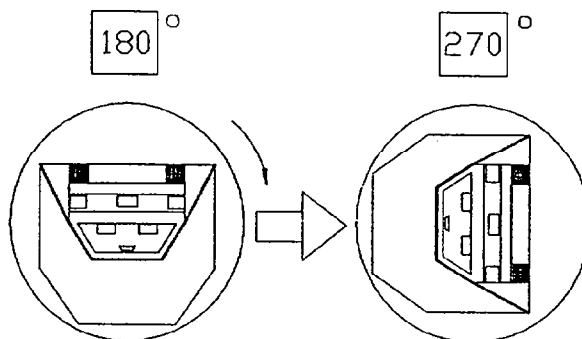
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 16 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 16 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 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
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

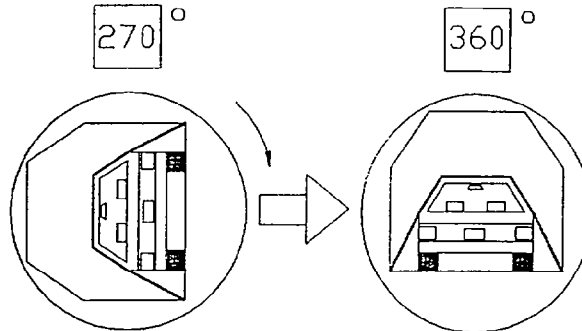
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Hyundai/Accent/3 Door

Vehicle NHTSA No.: CV0501 Test Date: January 9, 1997

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 37 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 37 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 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
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-1 - Pre-Test Front View of Test Vehicle	A-1
Photo No. A-2 - Post-Test Front View of Test Vehicle	A-2
Photo No. A-3 - Pre-Test Rear View of Test Vehicle	A-3
Photo No. A-4 - Post-Test Rear View of Test Vehicle	A-4
Photo No. A-5 - Pre-Test Right Side View of Test Vehicle	A-5
Photo No. A-6 - Post-Test Right Side View of Test Vehicle	A-6
Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (right side)	A-7
Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (left side)	A-8
Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View	A-9
Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (right side)	A-10
Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (left side)	A-11
Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View	A-12
Photo No. A-13 - Pre-Test MDB Top View	A-13
Photo No. A-14 - Post-Test MDB Top View	A-14
Photo No. A-15 - Pre-Test MDB Front View	A-15
Photo No. A-16 - Post-Test MDB Front View	A-16
Photo No. A-17 - Pre-Test MDB Left Side View	A-17
Photo No. A-18 - Post-Test MDB Left Side View	A-18
Photo No. A-19 - Pre-Test MDB Right Side View	A-19
Photo No. A-20 - Post-Test MDB Right Side View	A-20
Photo No. A-21 - Pre-Test Right Front Seat Position View	A-21
Photo No. A-22 - Pre-Test Front Passenger Dummy Left Side View	A-22
Photo No. A-23 - Post-Test Front Passenger Dummy Left Side View	A-23
Photo No. A-24 - Pre-Test Front Passenger Dummy Right Side View	A-24
Photo No. A-25 - Post-Test Front Passenger Dummy Right Side View	A-25
Photo No. A-26 - Pre-Test Front Passenger Dummy Right Side View (Door Open)	A-26
Photo No. A-27 - Pre-Test Front Passenger Shoulder and Door Top View	A-27
Photo No. A-28 - Post-Test Front Passenger Shoulder and Door Top View	A-28
Photo No. A-29 - Post-Test Front Passenger Dummy Contact	A-29

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-30 - Post-Test Front Passenger Dummy Contact	A-30
Photo No. A-31 - Post-Test Front Passenger Head Contact	A-31
Photo No. A-32 - Pre-Test Rear Passenger Dummy Left Side View	A-32
Photo No. A-33 - Post-Test Rear Passenger Dummy Left Side View	A-33
Photo No. A-34 - Pre-Test Rear Passenger Dummy Right Side View	A-34
Photo No. A-35 - Post-Test Rear Passenger Dummy Right Side View	A-35
Photo No. A-36 - Pre-Test Rear Passenger Dummy Shoulder View	A-36
Photo No. A-37 - Post-Test Rear Passenger Dummy Shoulder View	A-37
Photo No. A-38 - Post-Test Rear Passenger Dummy Contact	A-38
Photo No. A-39 - Post-Test Rear Passenger Dummy Head Contact	A-39
Photo No. A-40 - Pre-Test Right Front Impact Point on Vehicle	A-40
Photo No. A-41 - Post-Test Right Front Impact Point on Vehicle	A-41
Photo No. A-42 - Impact	A-42
Photo No. A-43 - Vehicle Certification Label	A-43
Photo No. A-44 - Tire Placard	A-44
Photo No. A-45 - Rollover 90°	A-45
Photo No. A-46 - Rollover 180°	A-46
Photo No. A-47 - Rollover 270°	A-47
Photo No. A-48 - Rollover 360°	A-48
Photo No. A-49 - Right Front Attitude Point	A-49
Photo No. A-50 - Left Front Attitude Point	A-50
Photo No. A-51 - Right Rear Attitude Point	A-51
Photo No. A-52 - Left Rear Attitude Point	A-52

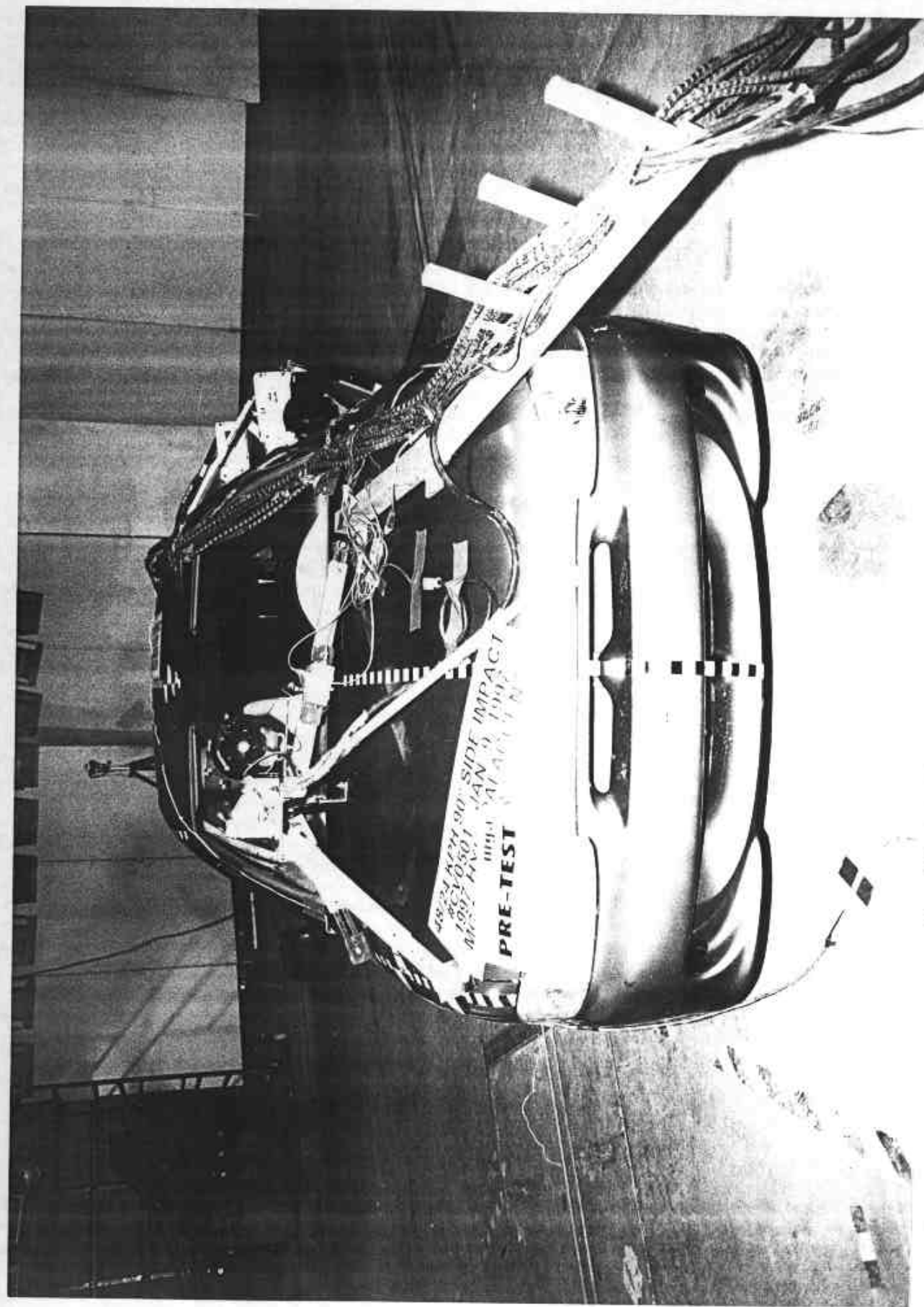


Photo No. A-1 - Pre-Test Front View of Test Vehicle

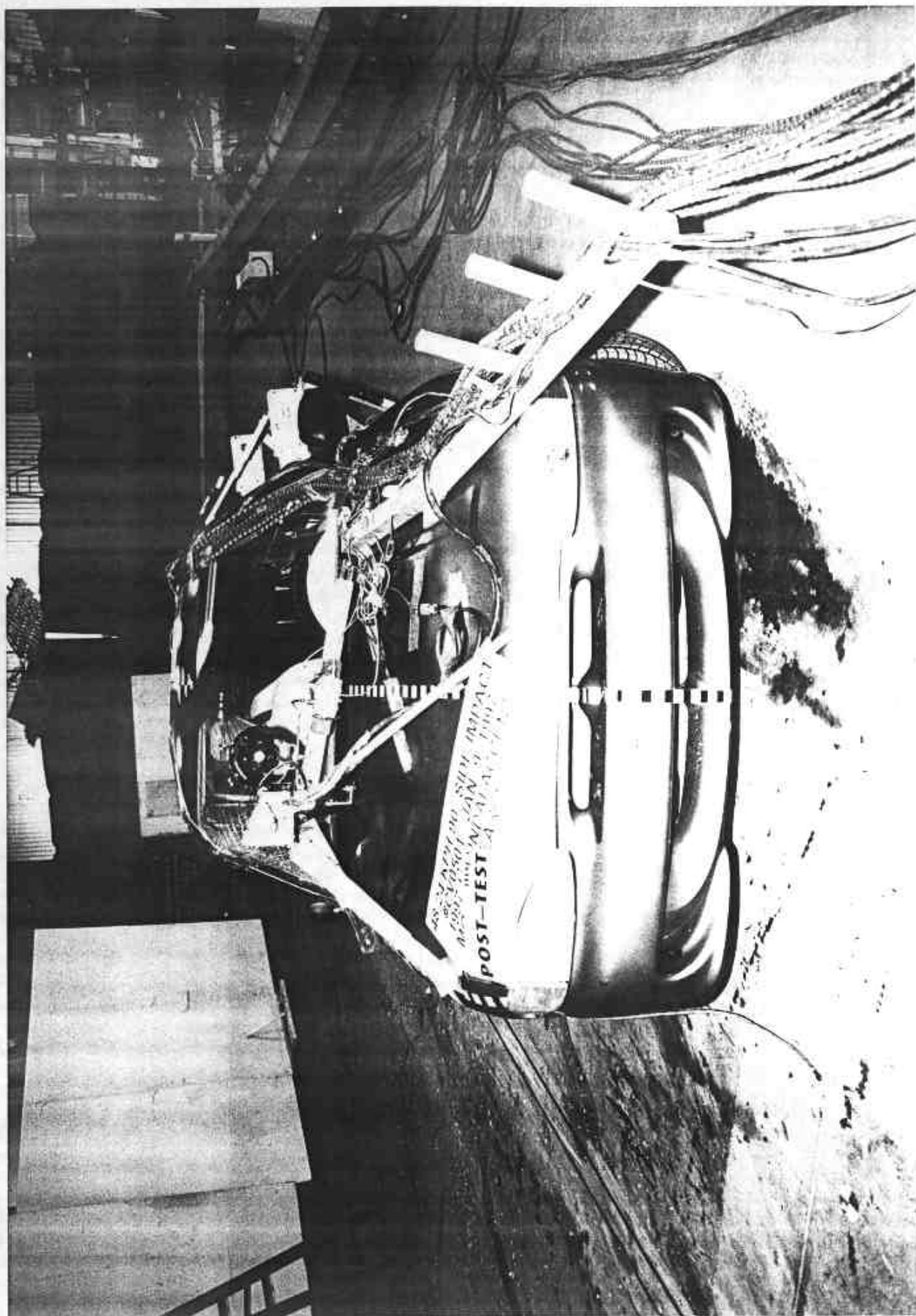


Photo No. A-2 - Post-Test Front View of Test Vehicle

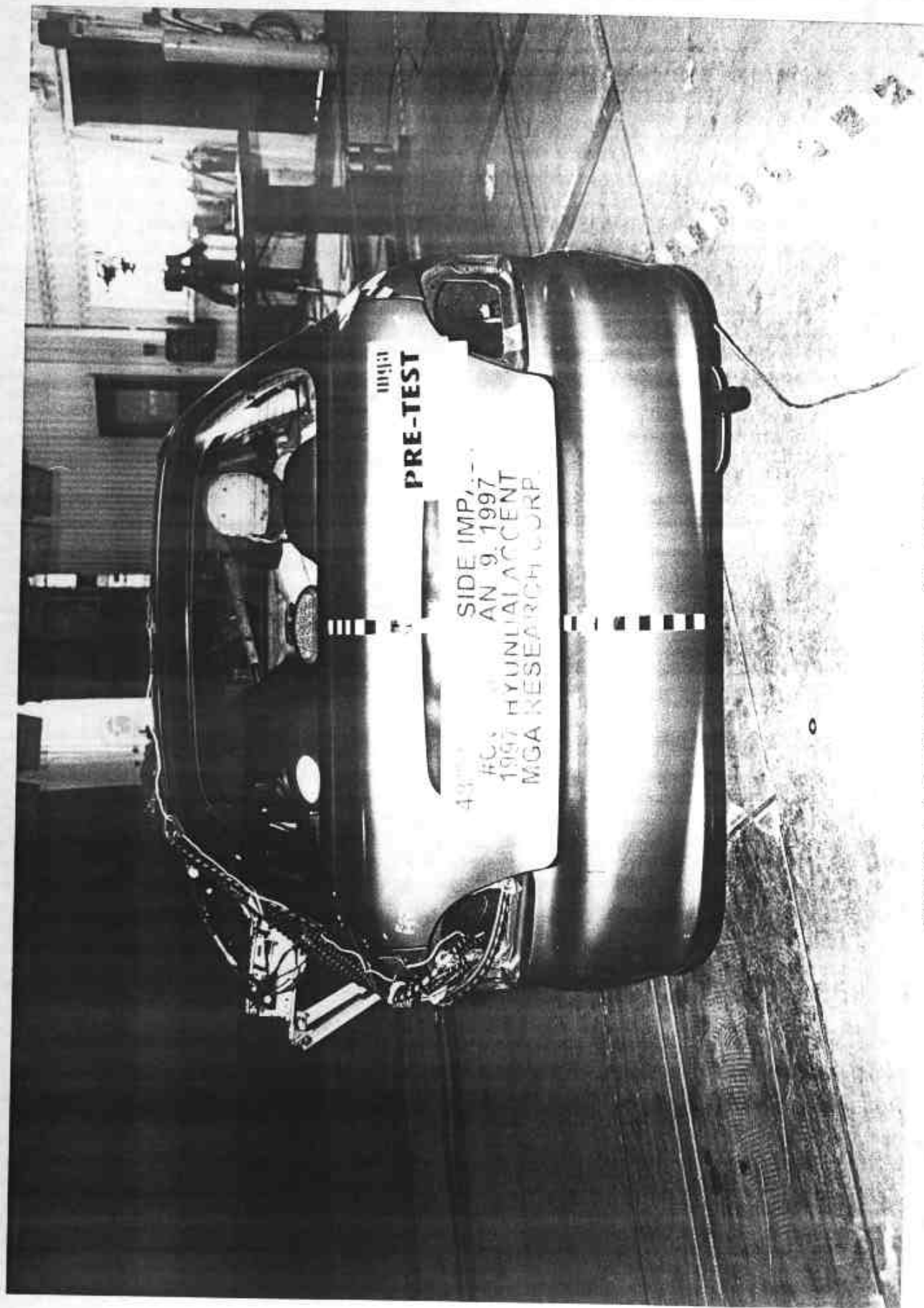


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

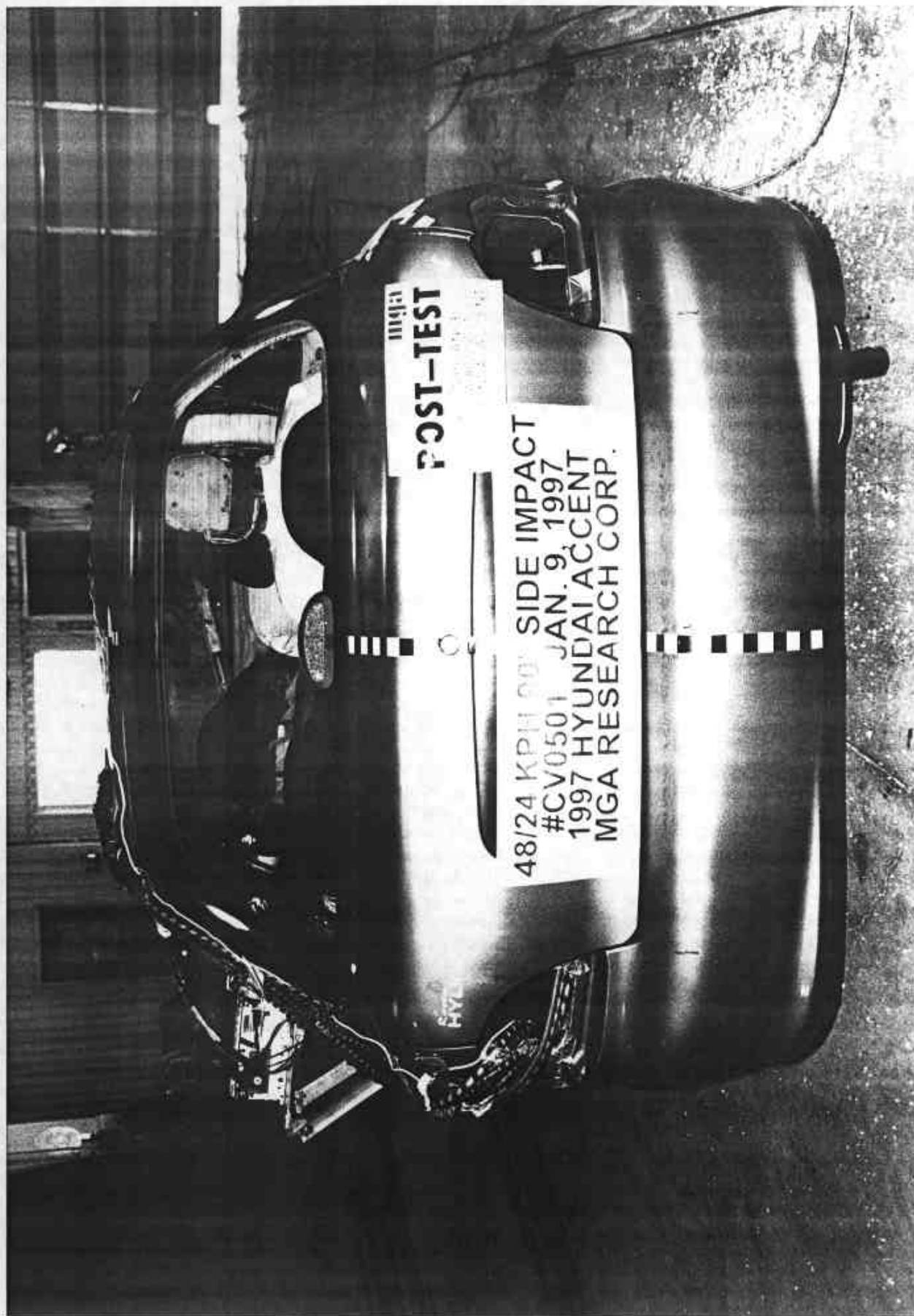


Photo No. A-4 - Post-Test Rear View of Test Vehicle

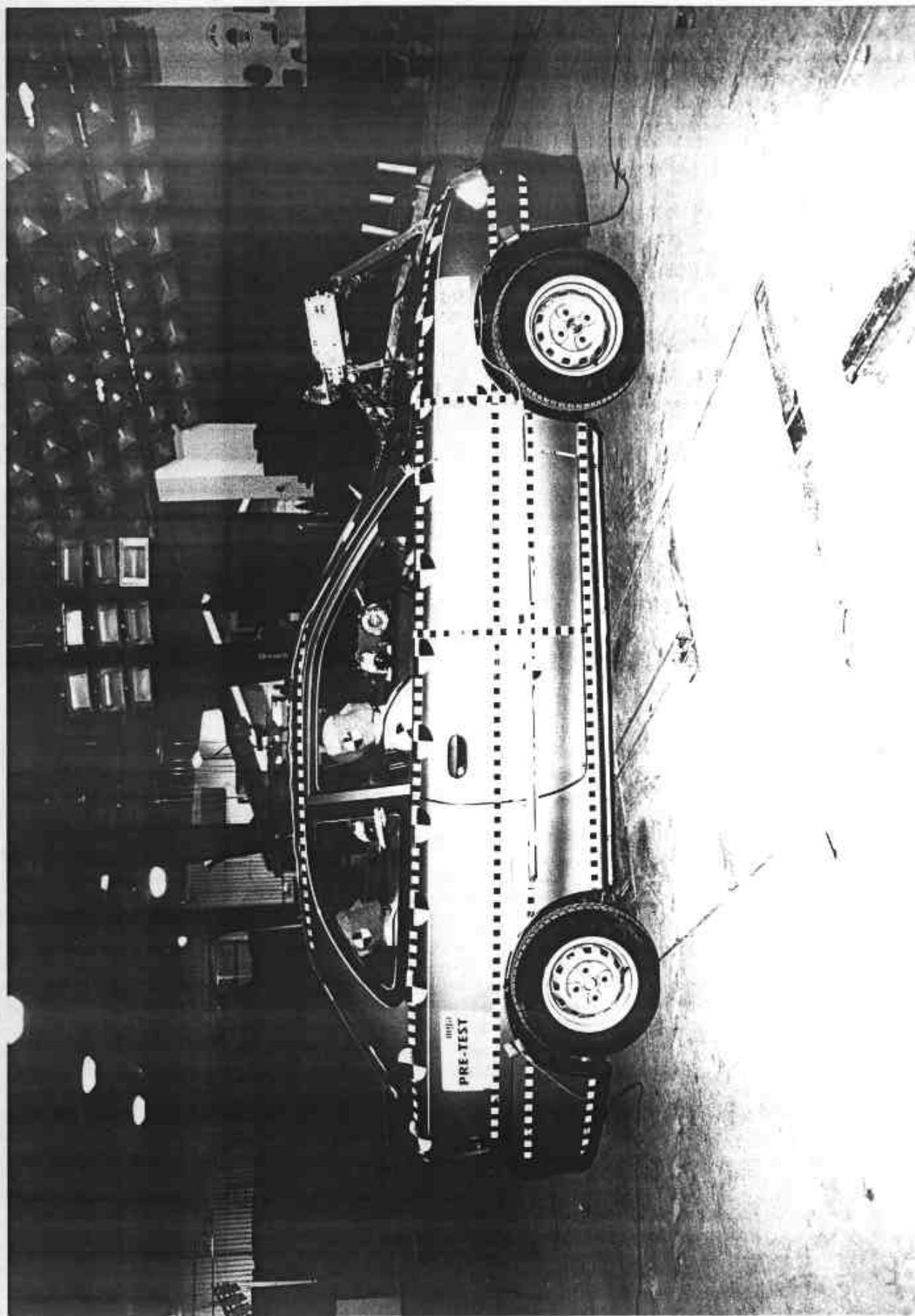


Photo No. A-5 - Pre-Test Right Side View of Test Vehicle

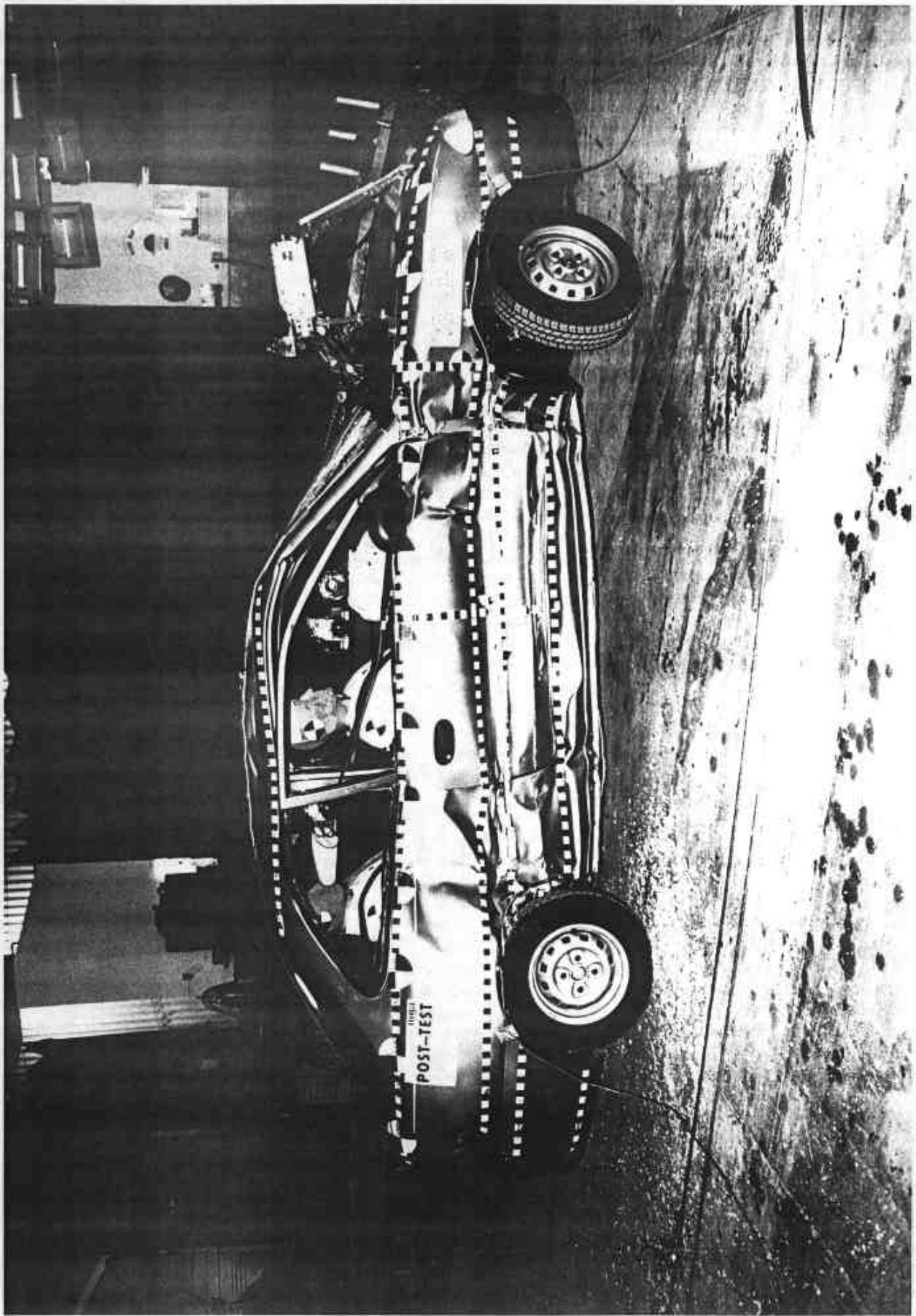


Photo No. A-6 - Post-Test Right Side View of Test Vehicle



Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (right side)

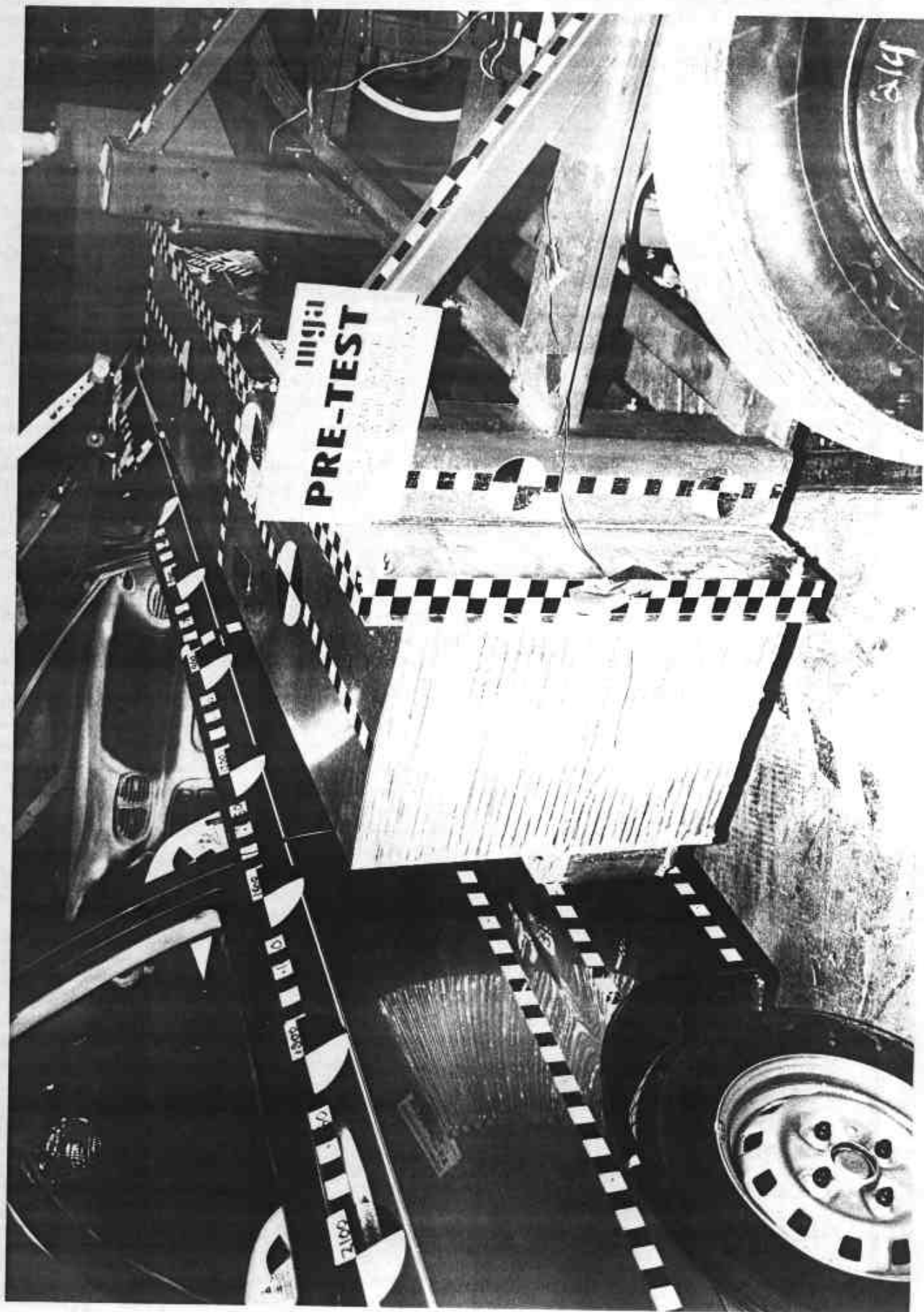


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (left side)

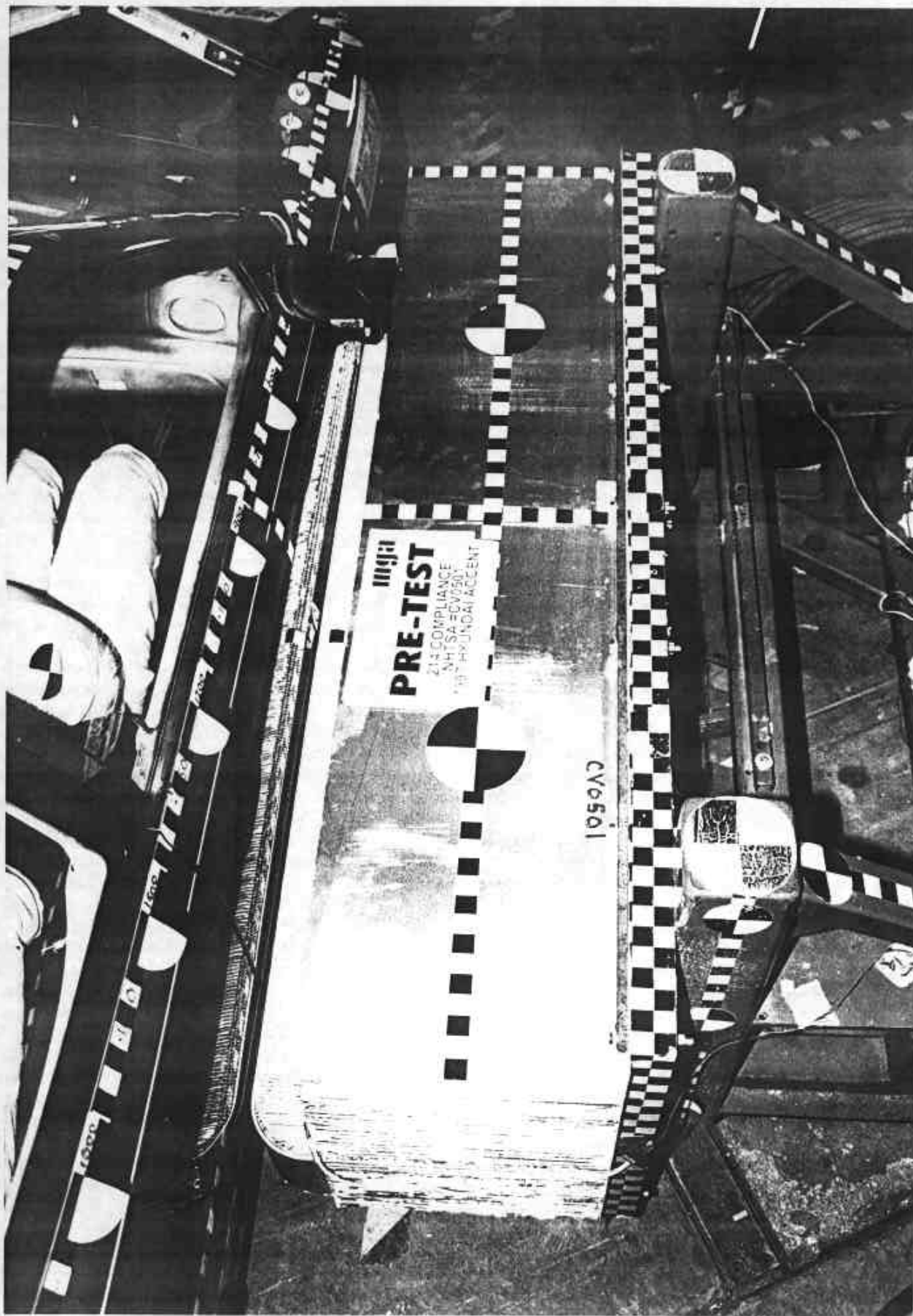


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

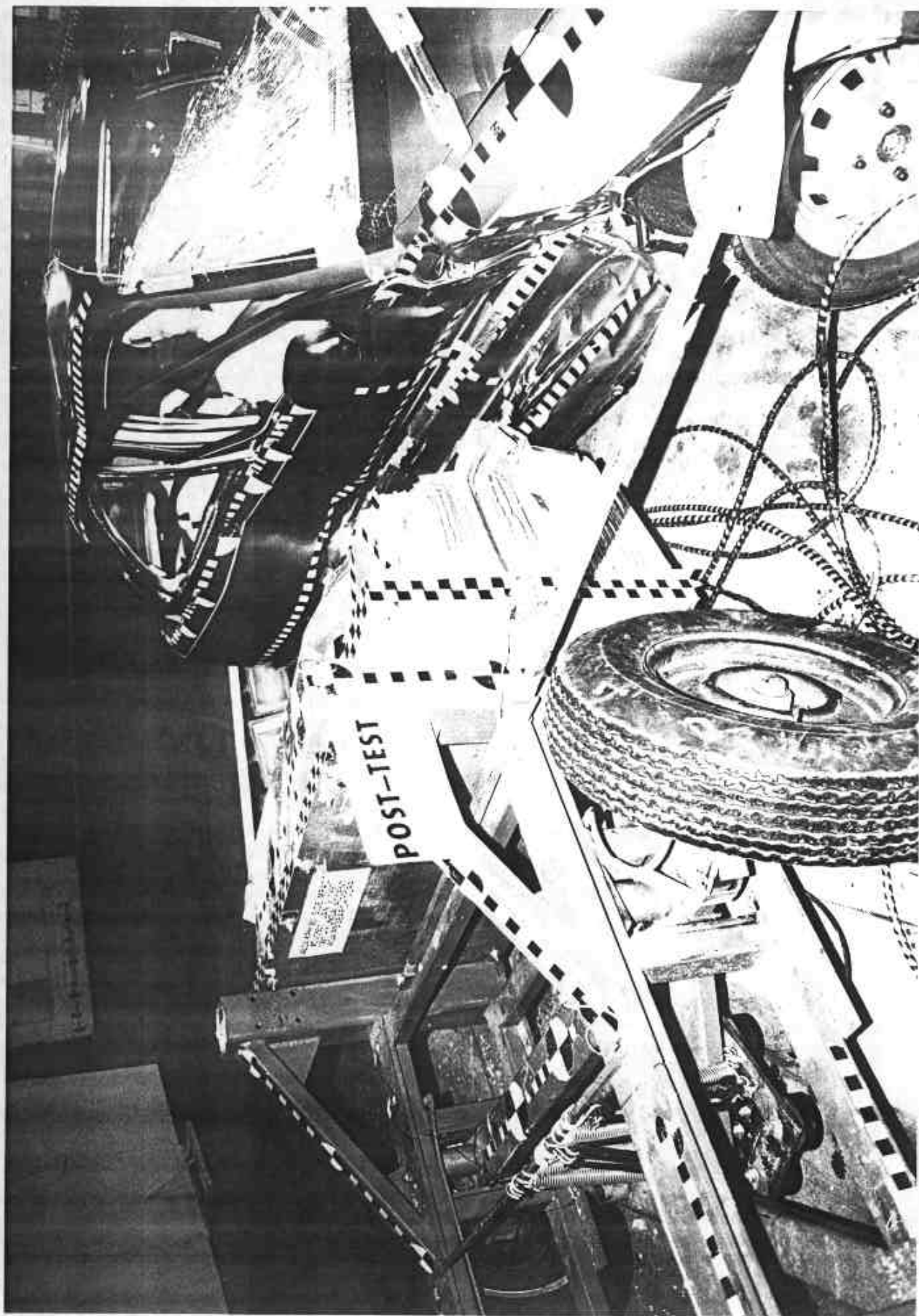


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (right side)

A-10

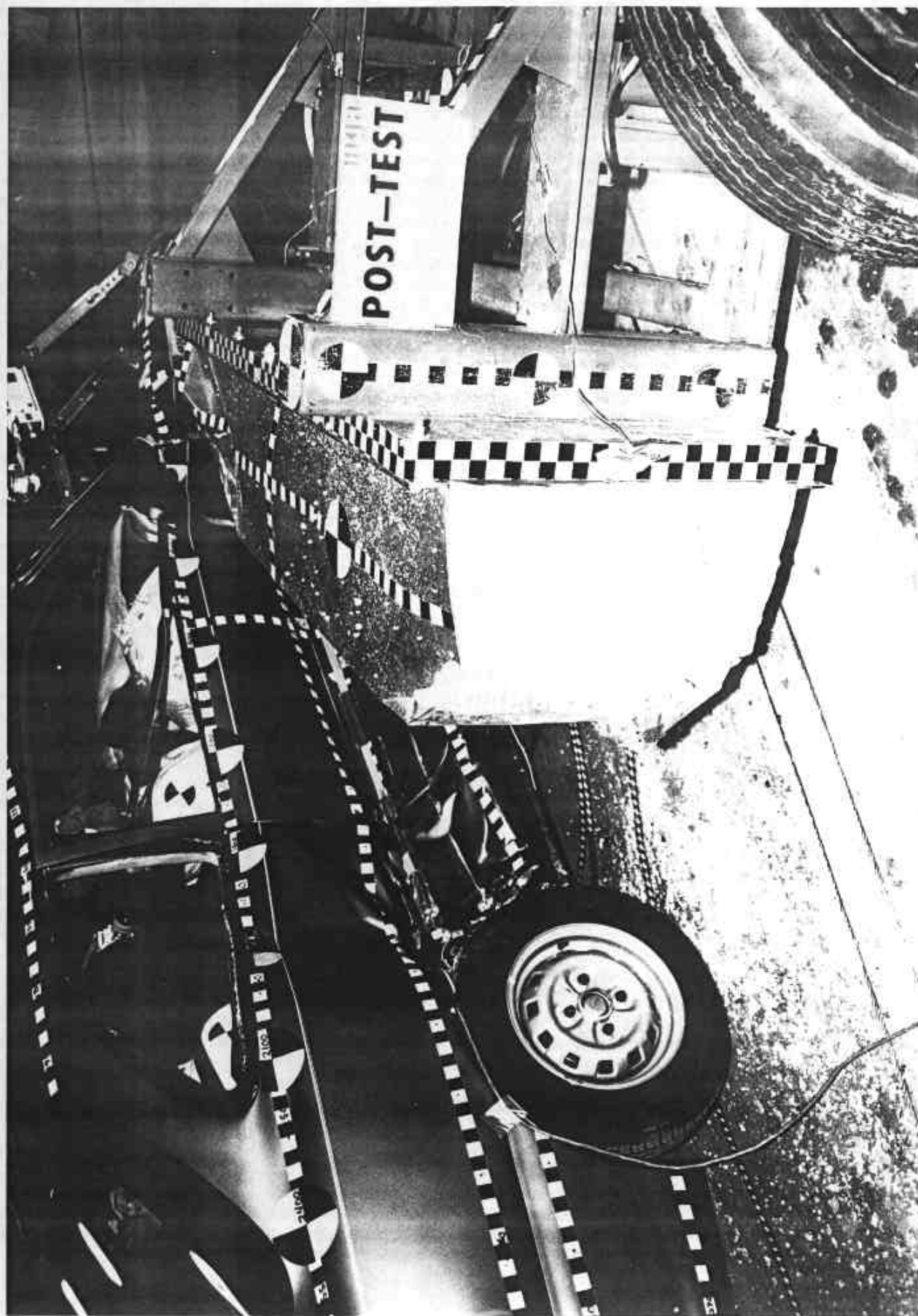


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (left side)

A-11

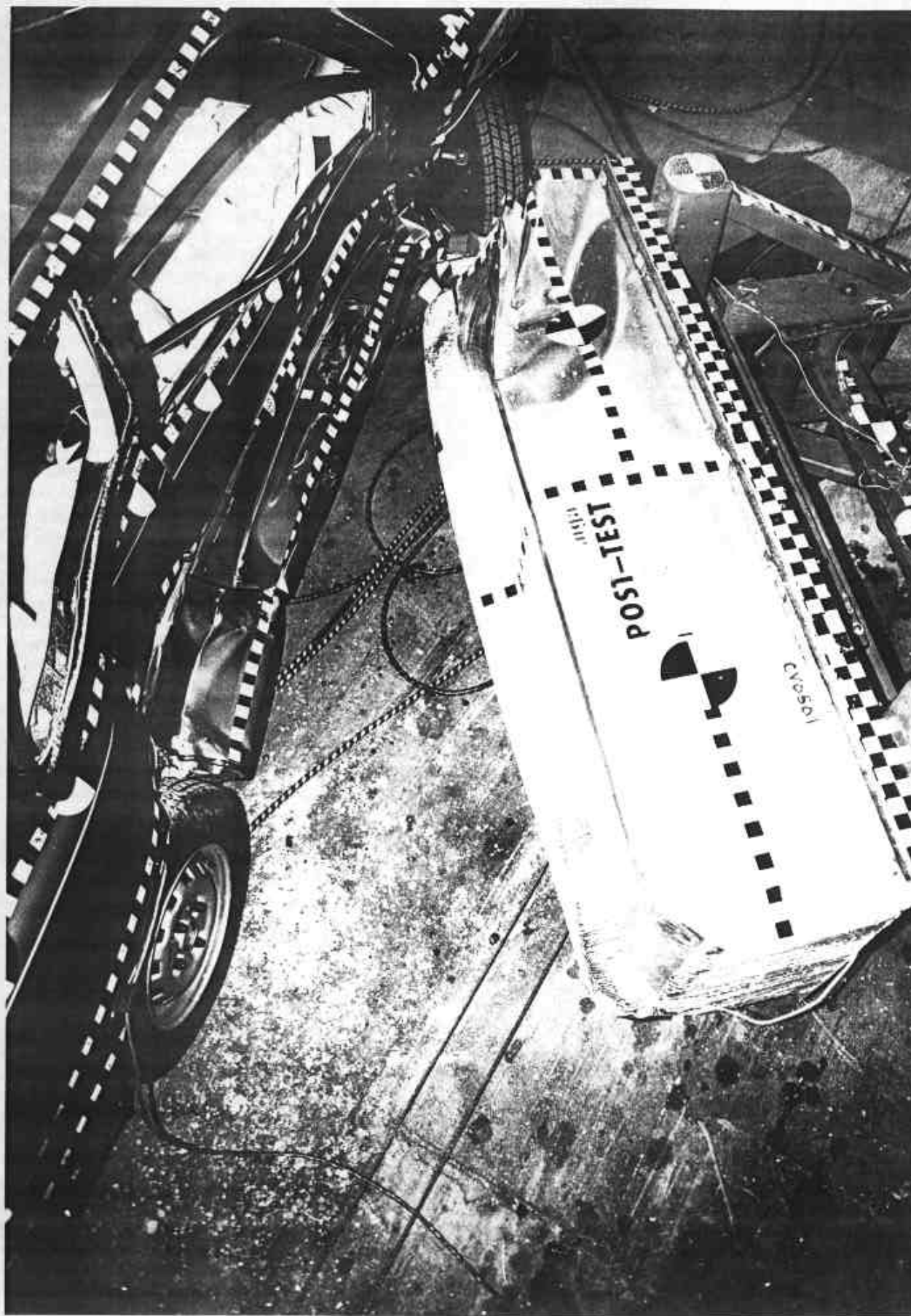


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

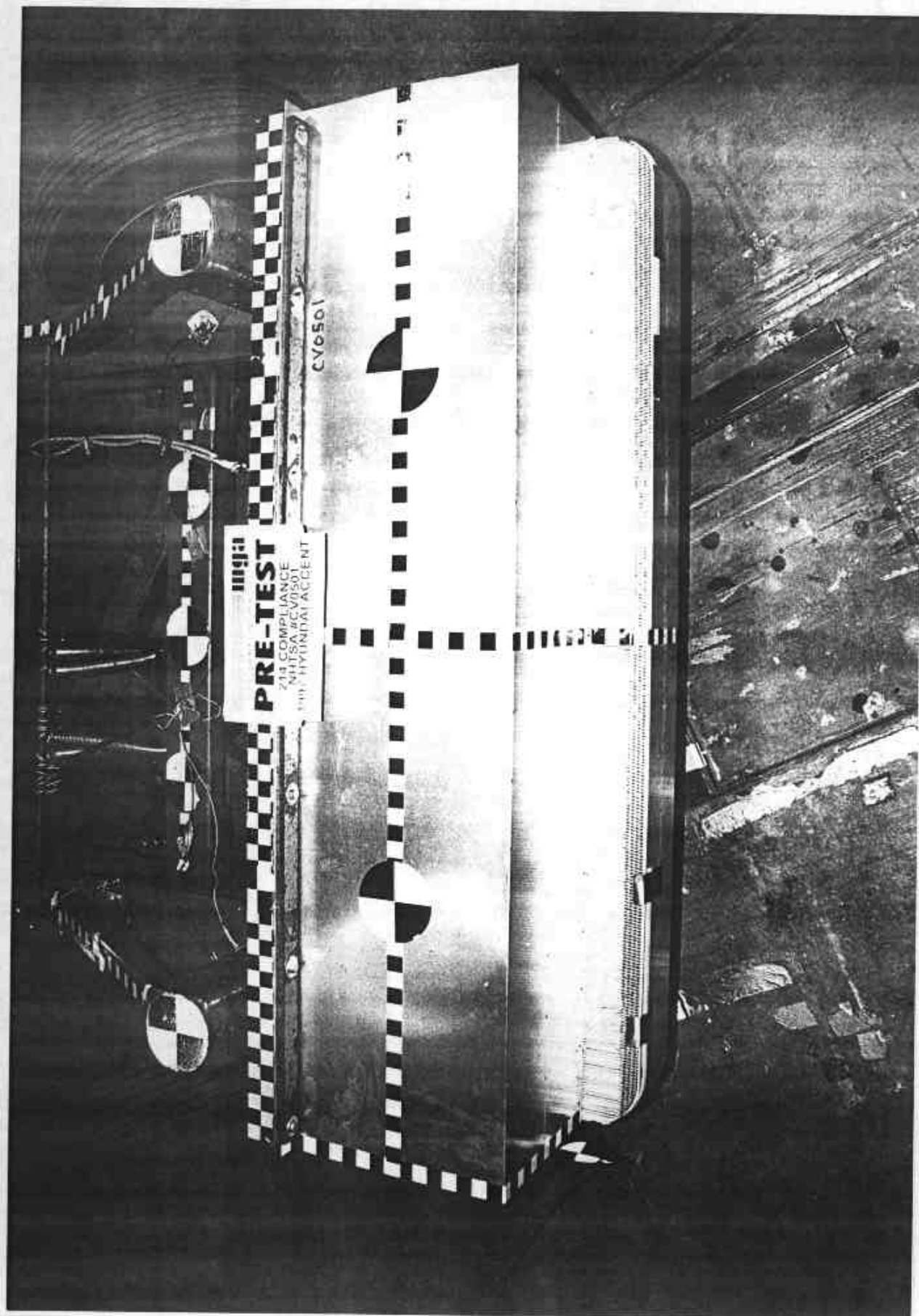


Photo No. A-13 - Pre-Test MDB Top View

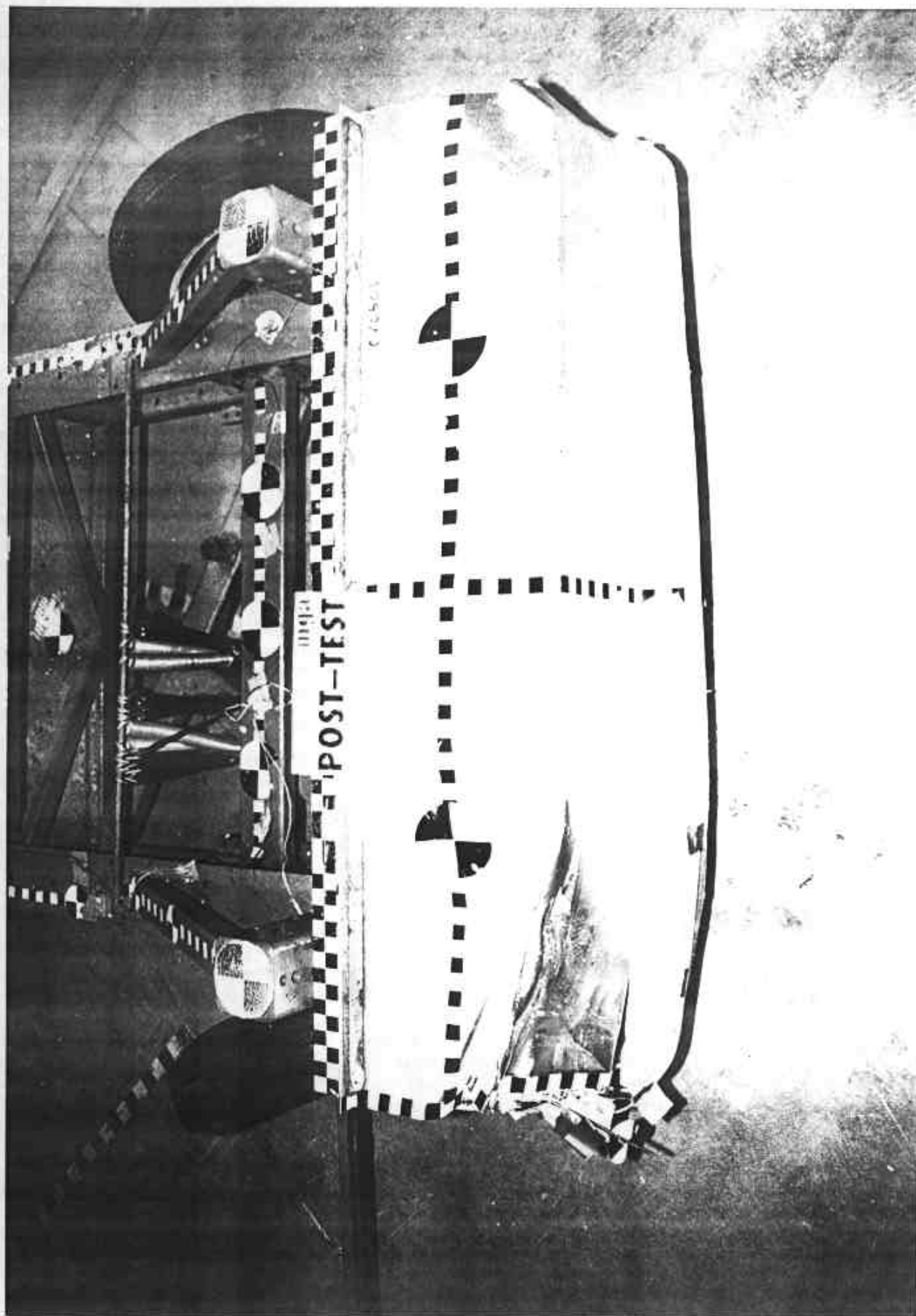


Photo No. A-14 - Post-Test MDB Top View

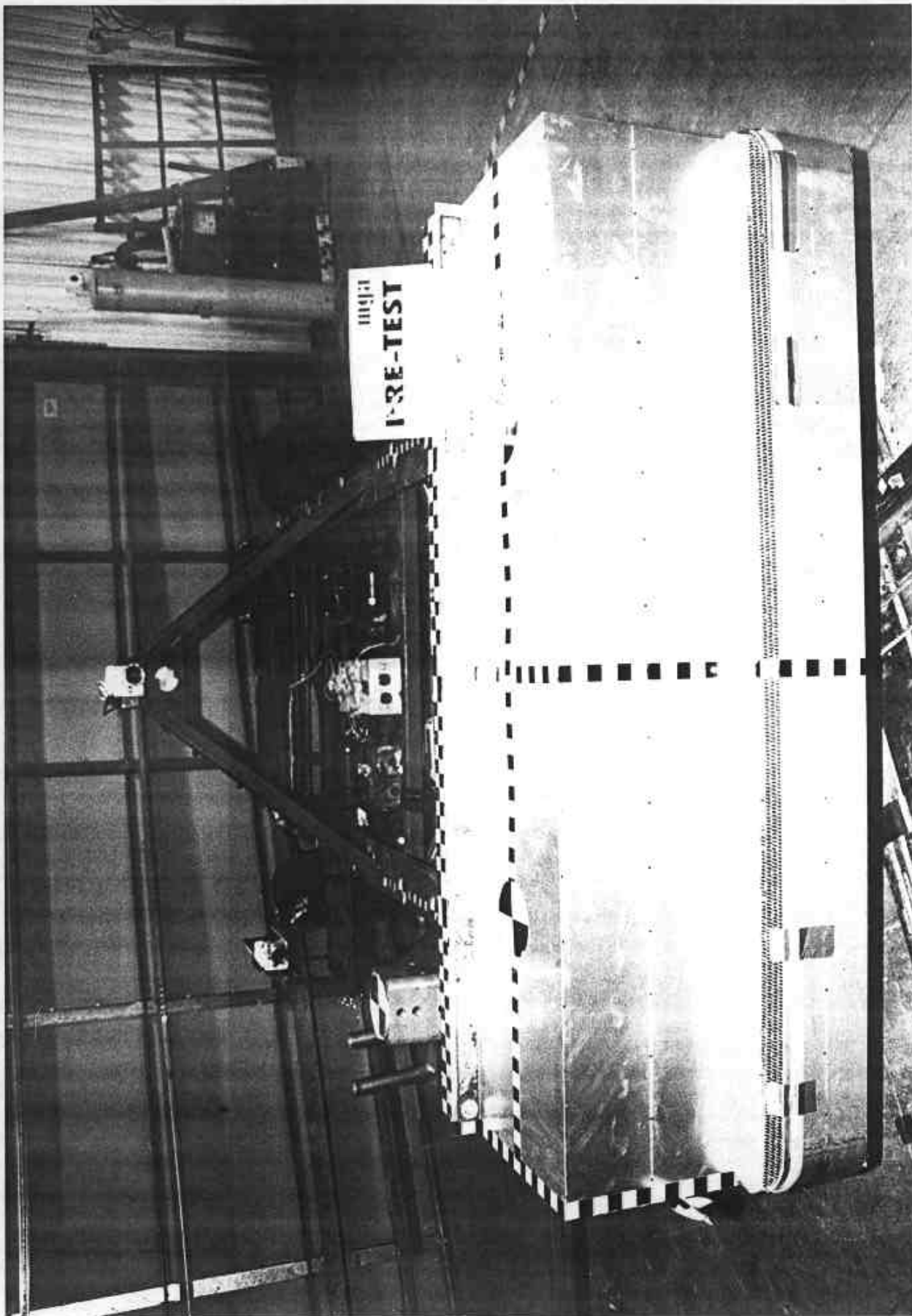


Photo No. A-15 - Pre-Test MDB Front View

A-15

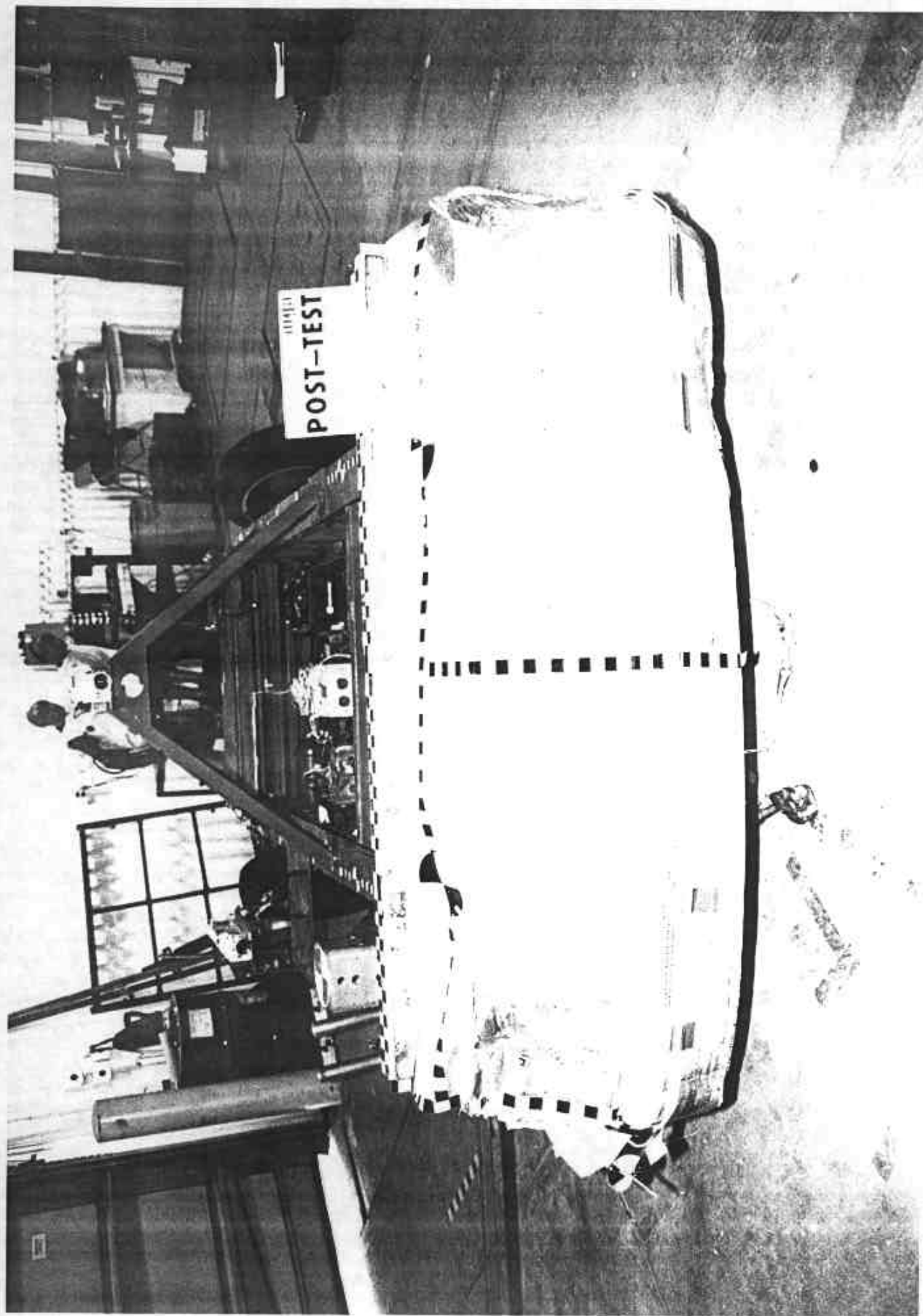


Photo No. A-16 - Post-Test MDB Front View

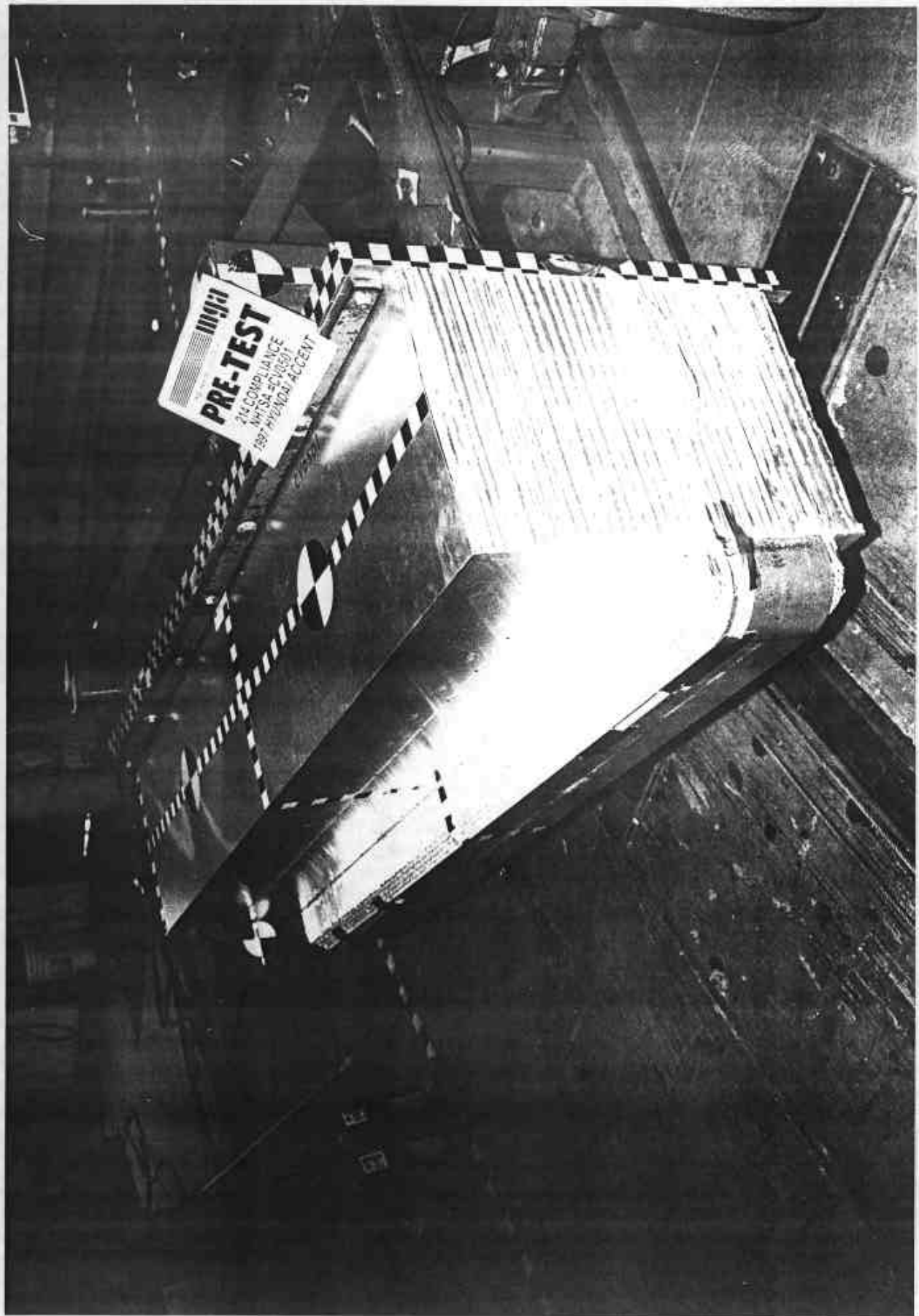


Photo No. A-17 - Pre-Test MDB Left Side View

A-17

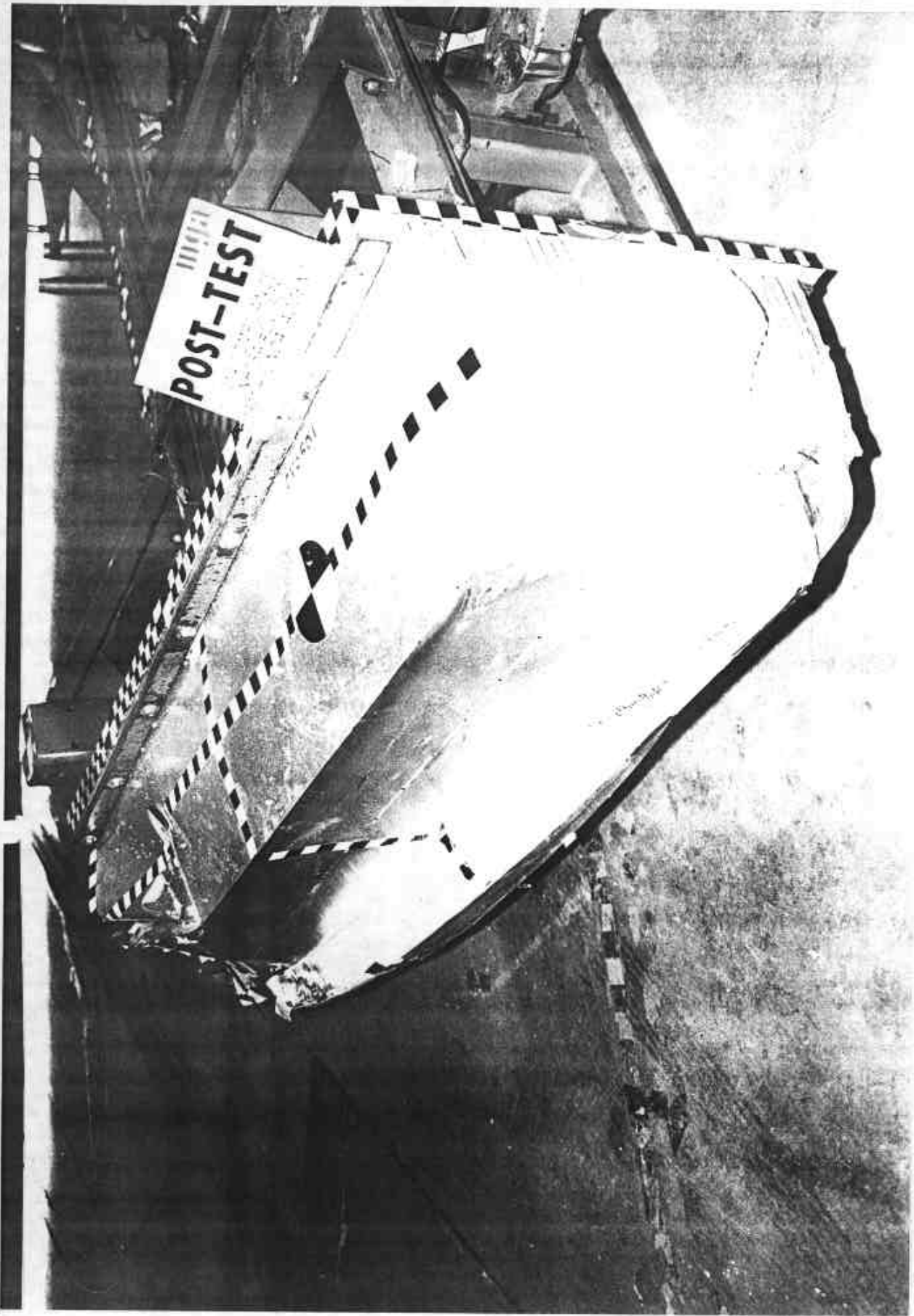


Photo No. A-18 - Post-Test MDB Left Side View

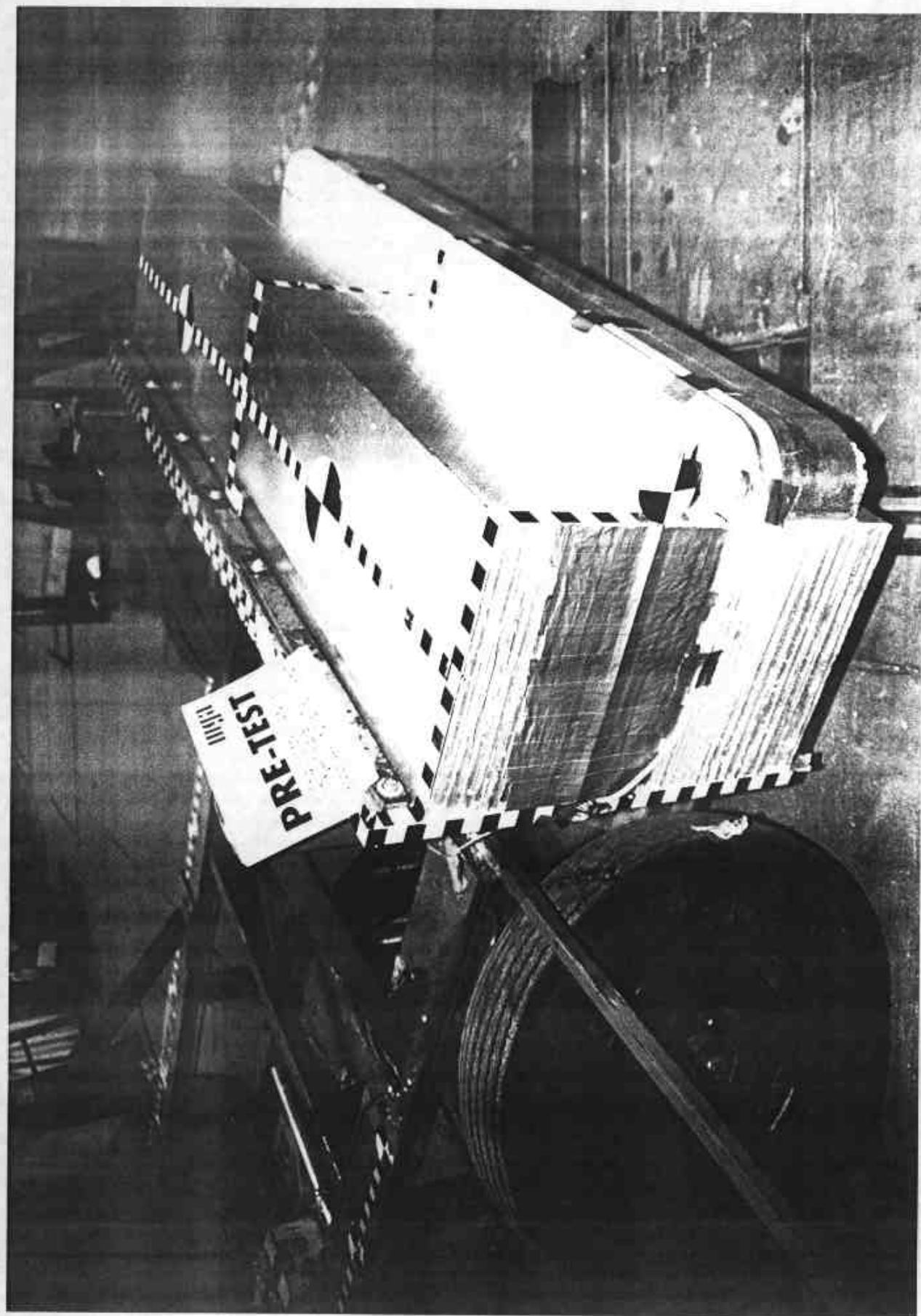


Photo No. A-19 - Pre-Test MDB Right Side View

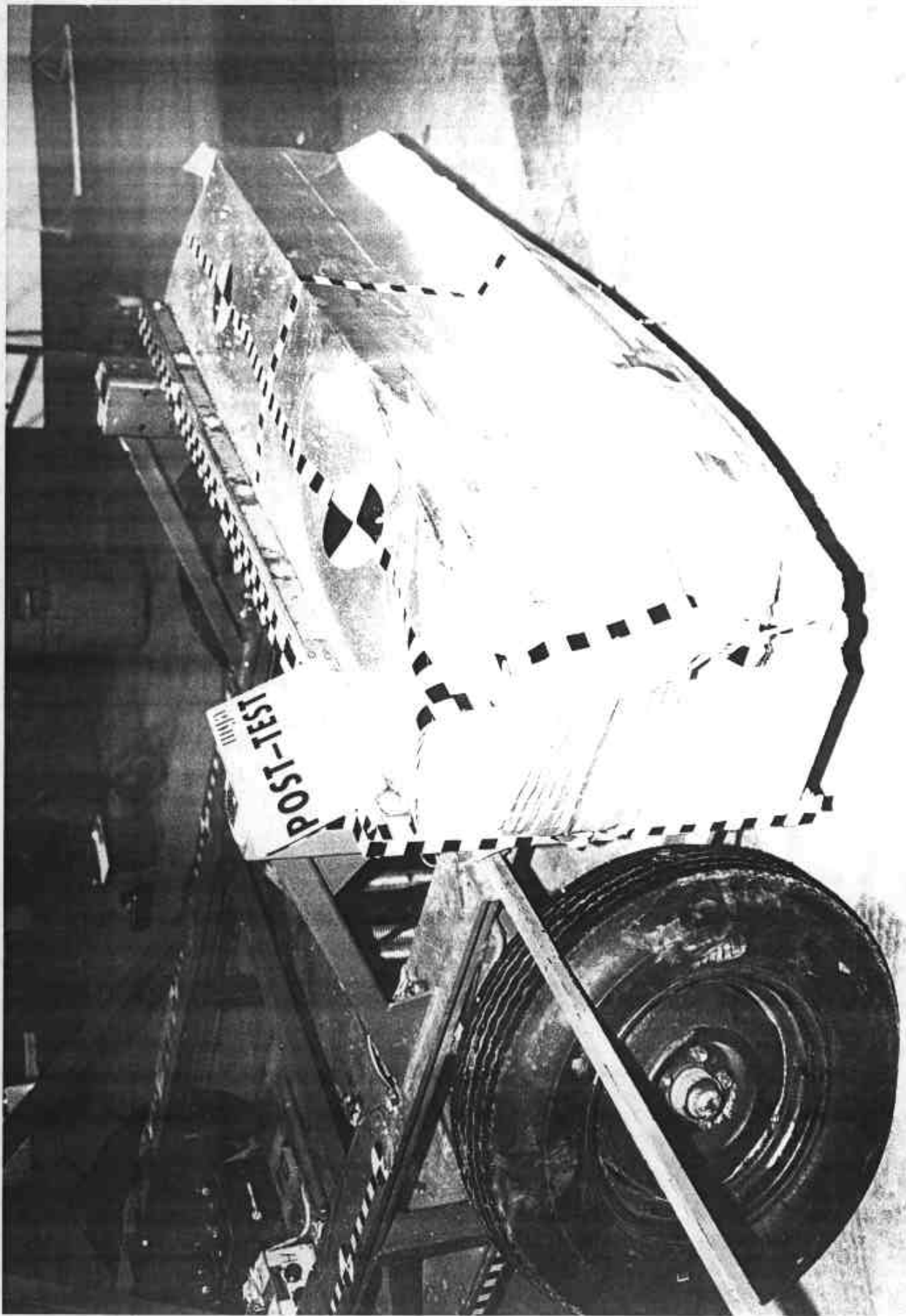
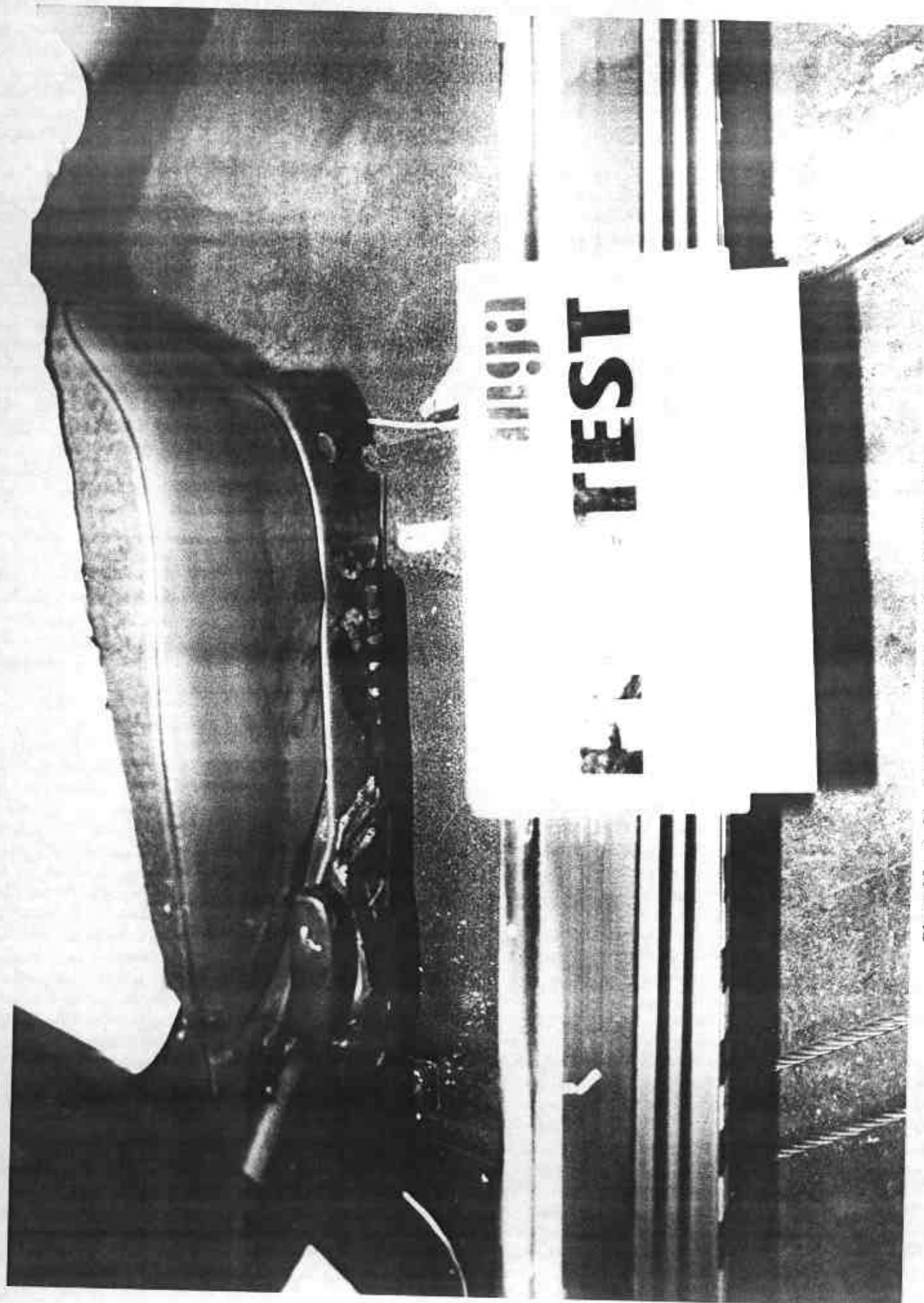


Photo No. A-20 - Post-Test MDB Right Side View

A-20



A-21

Photo No. A-21 - Pre-Test Right Front Seat Position View

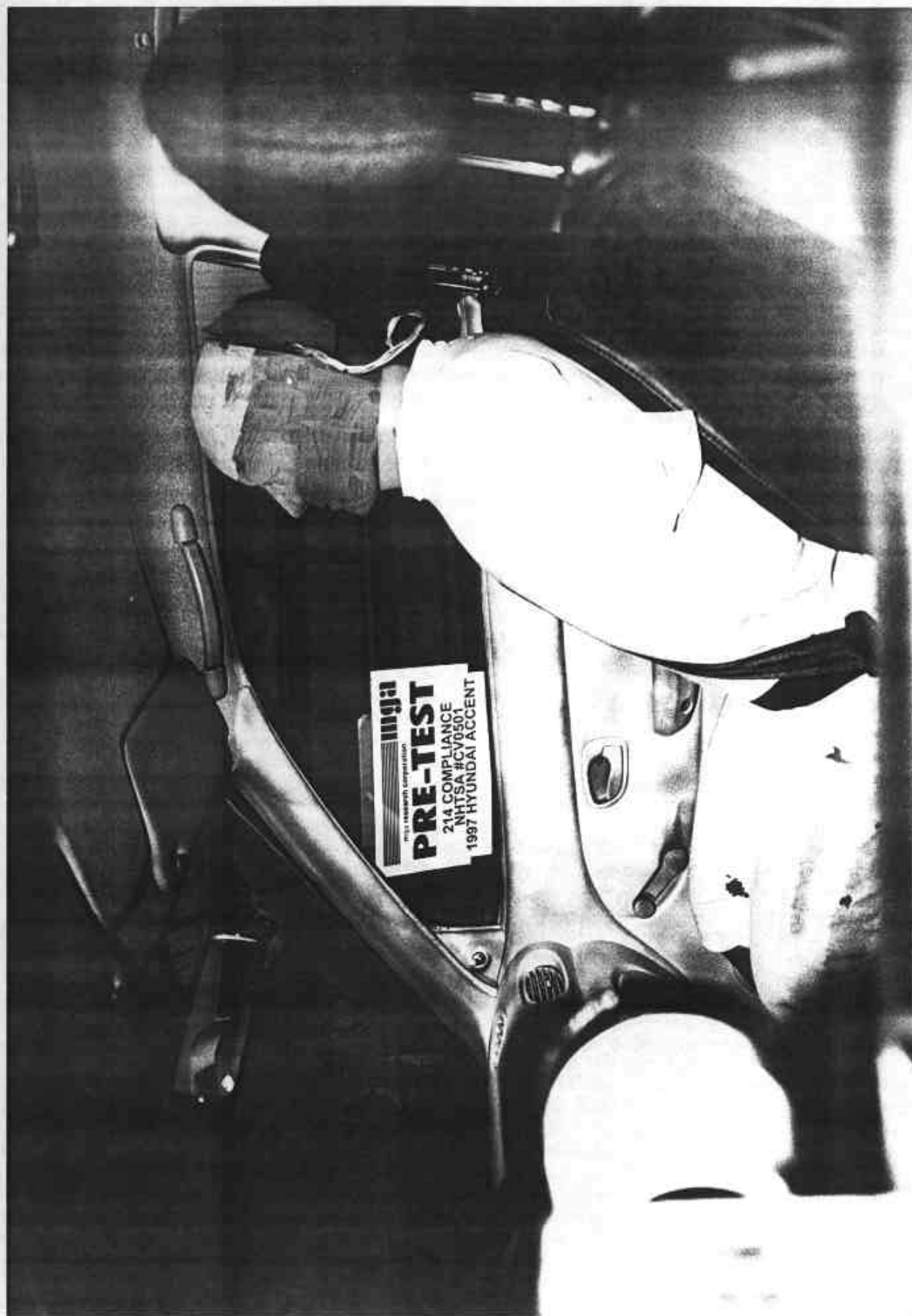


Photo No. A-22 - Pre-Test Front Passenger Dummy Left Side View



Photo No. A-23 - Post-Test Front Passenger Dummy Left Side View

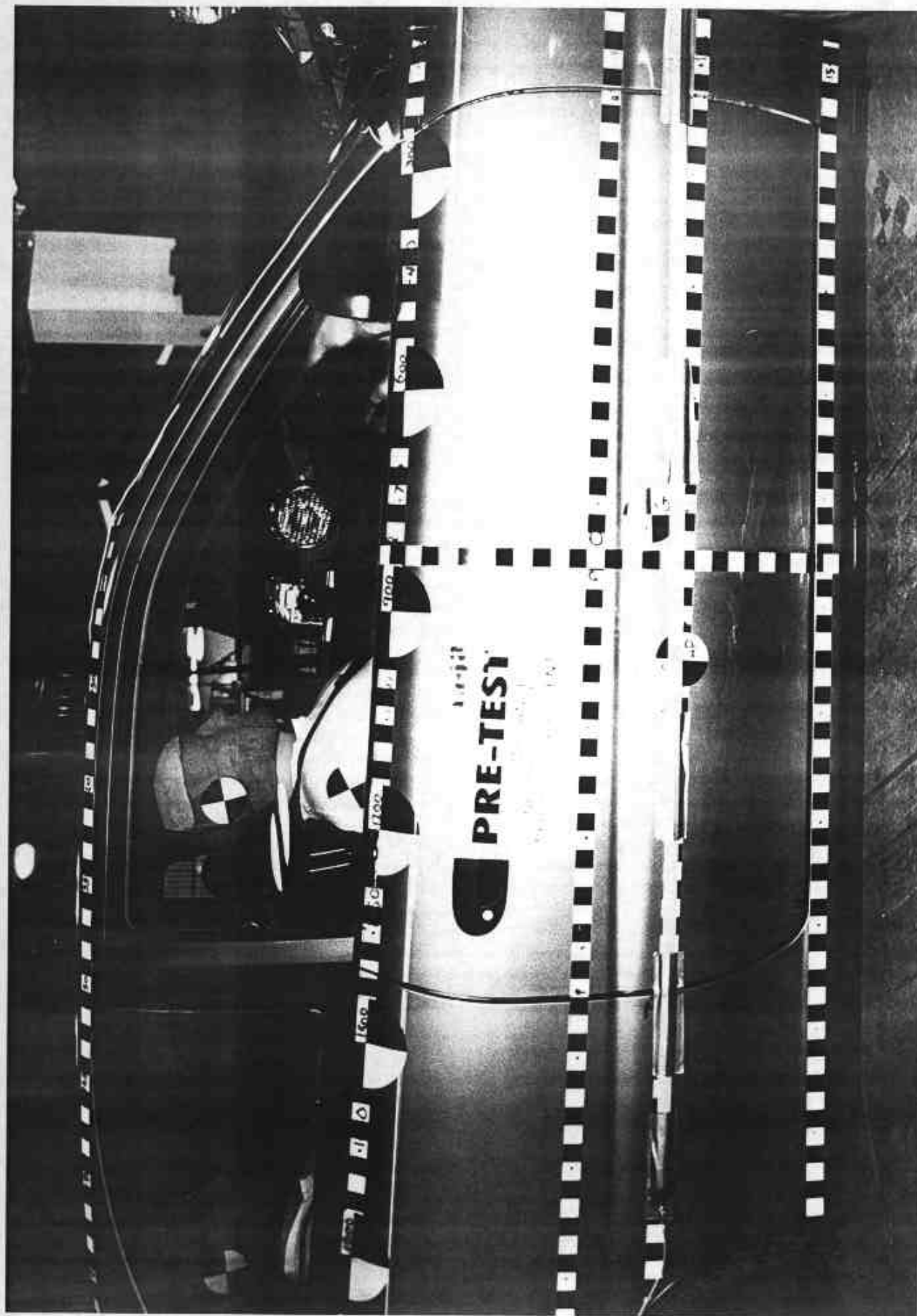


Photo No. A-24 - Pre-Test Front Passenger Dummy Right Side View

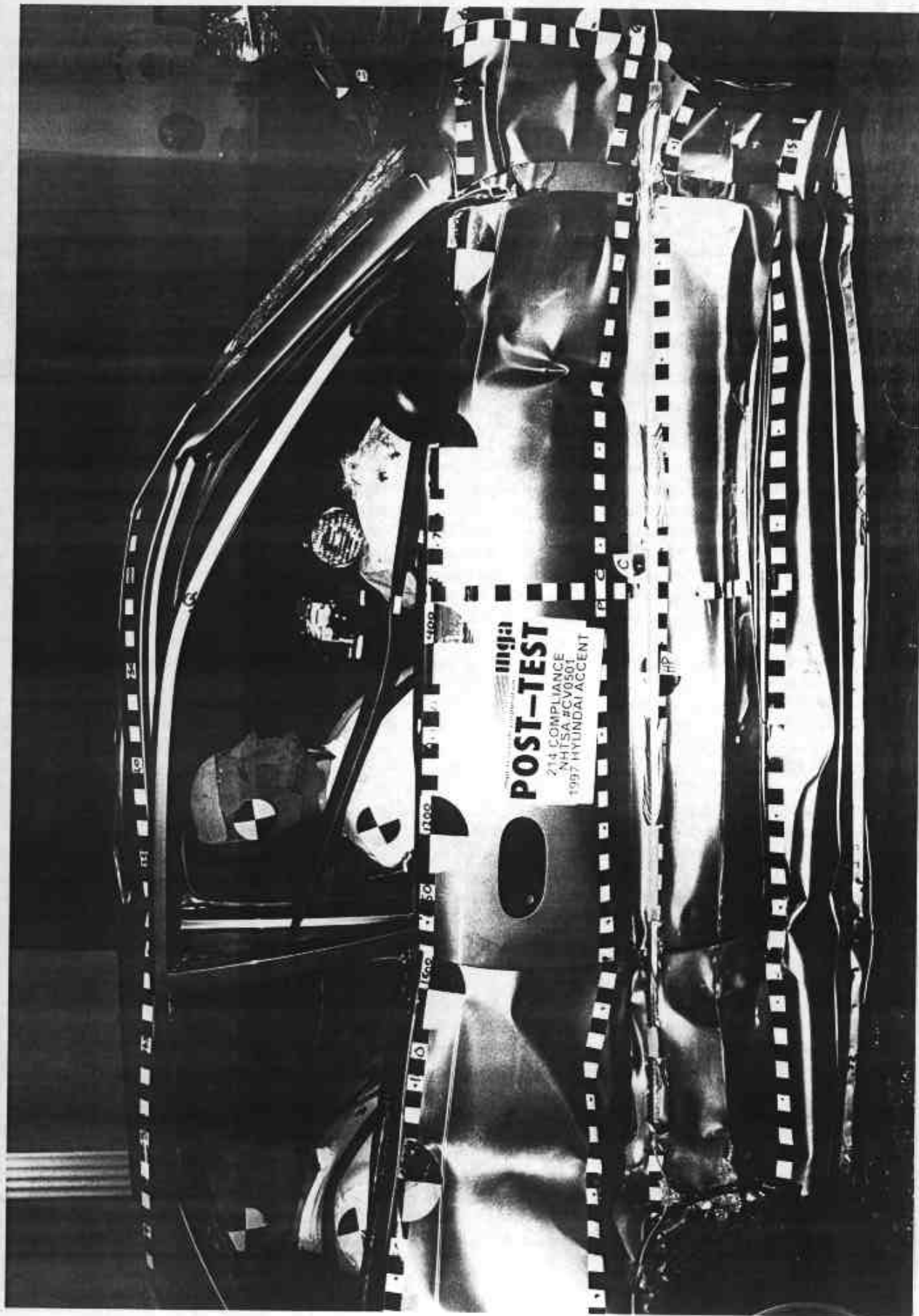


Photo No. A-25 - Post-Test Front Passenger Dummy Right Side View

A-25



Photo No. A-26 - Pre-Test Front Passenger Dummy Right Side View (Door Open)

A-26



Photo No. A-27 - Pre-Test Front Passenger Shoulder and Door Top View

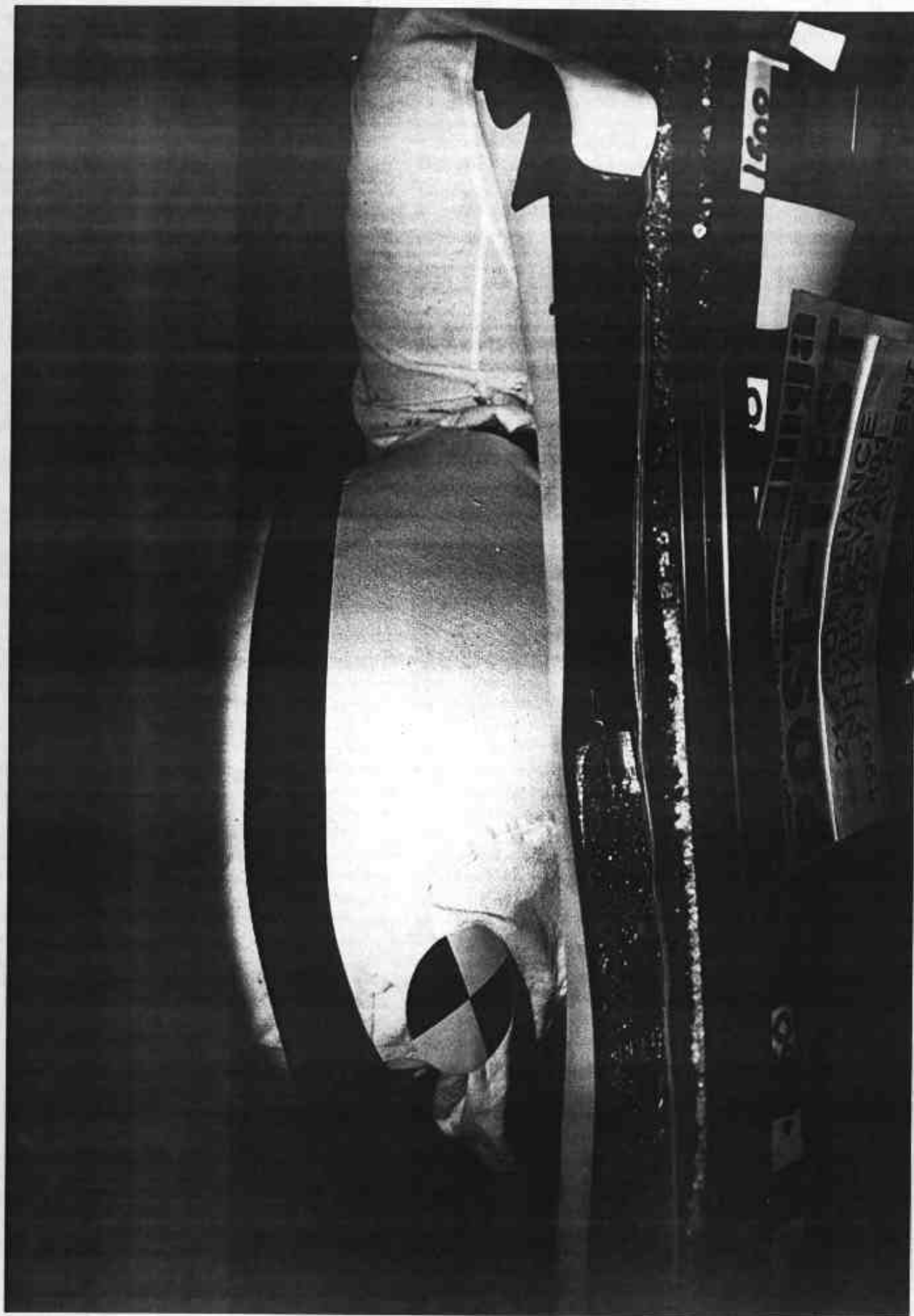


Photo No. A-28 - Post-Test Front Passenger Shoulder and Door Top View

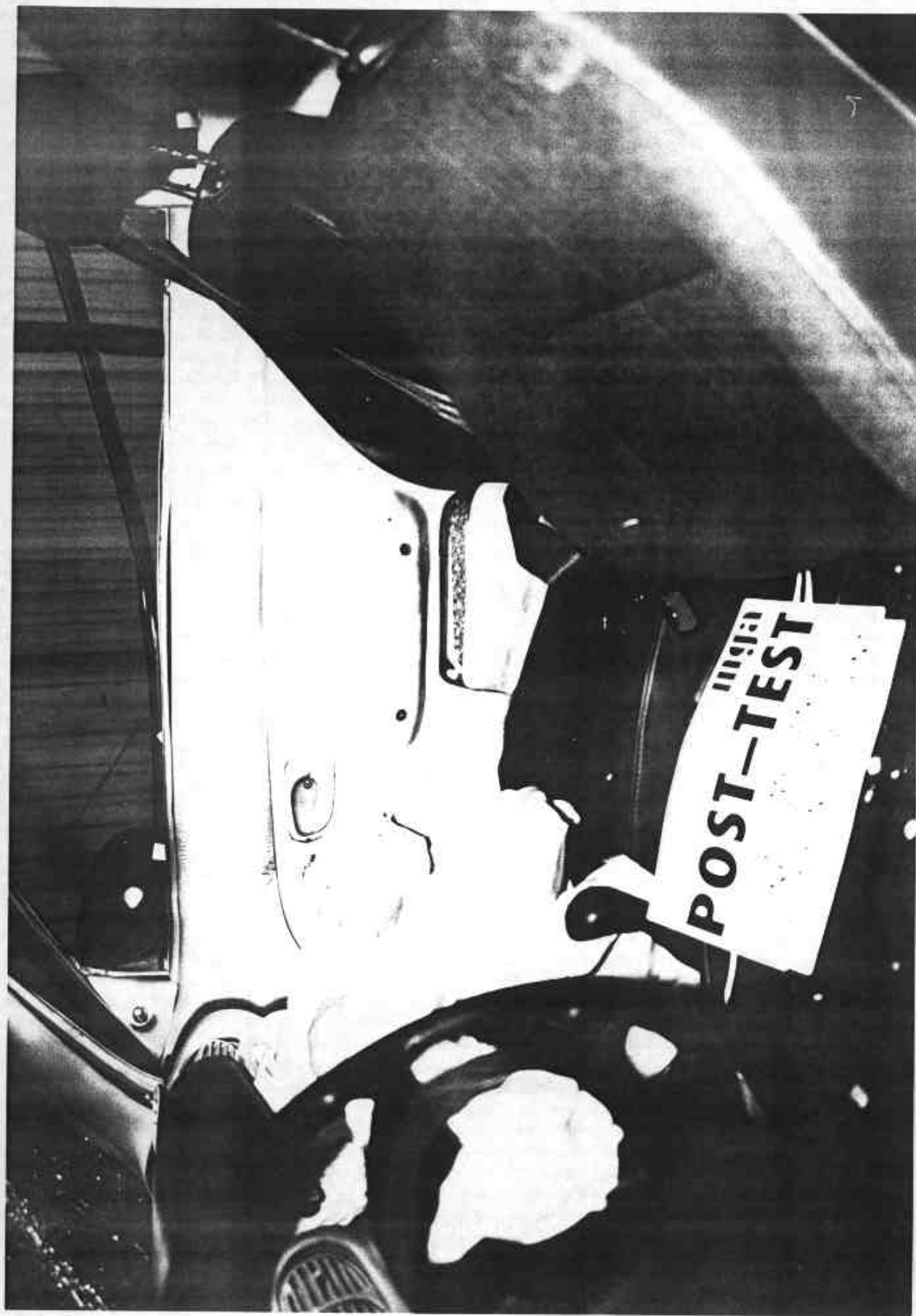


Photo No. A-29 - Post-Test Front Passenger Dummy Contact



Photo No. A-30 - Post-Test Front Passenger Dummy Contact



A-31

Photo No. A-31 - Post-Test Front Passenger Head Contact



Photo No. A-32 - Pre-Test Rear Passenger Dummy Left Side View

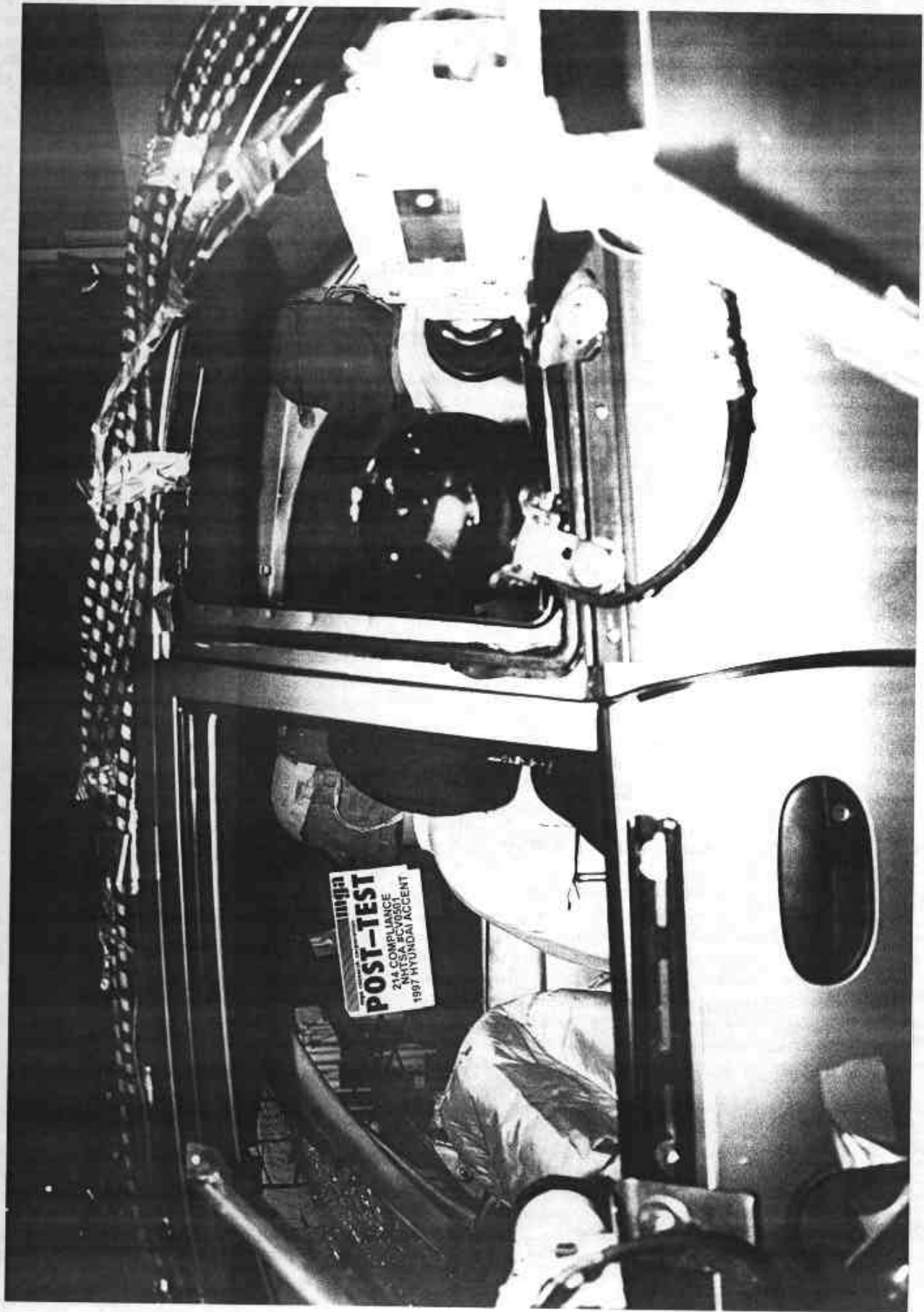


Photo No. A-33 - Post-Test Rear Passenger Dummy Left Side View

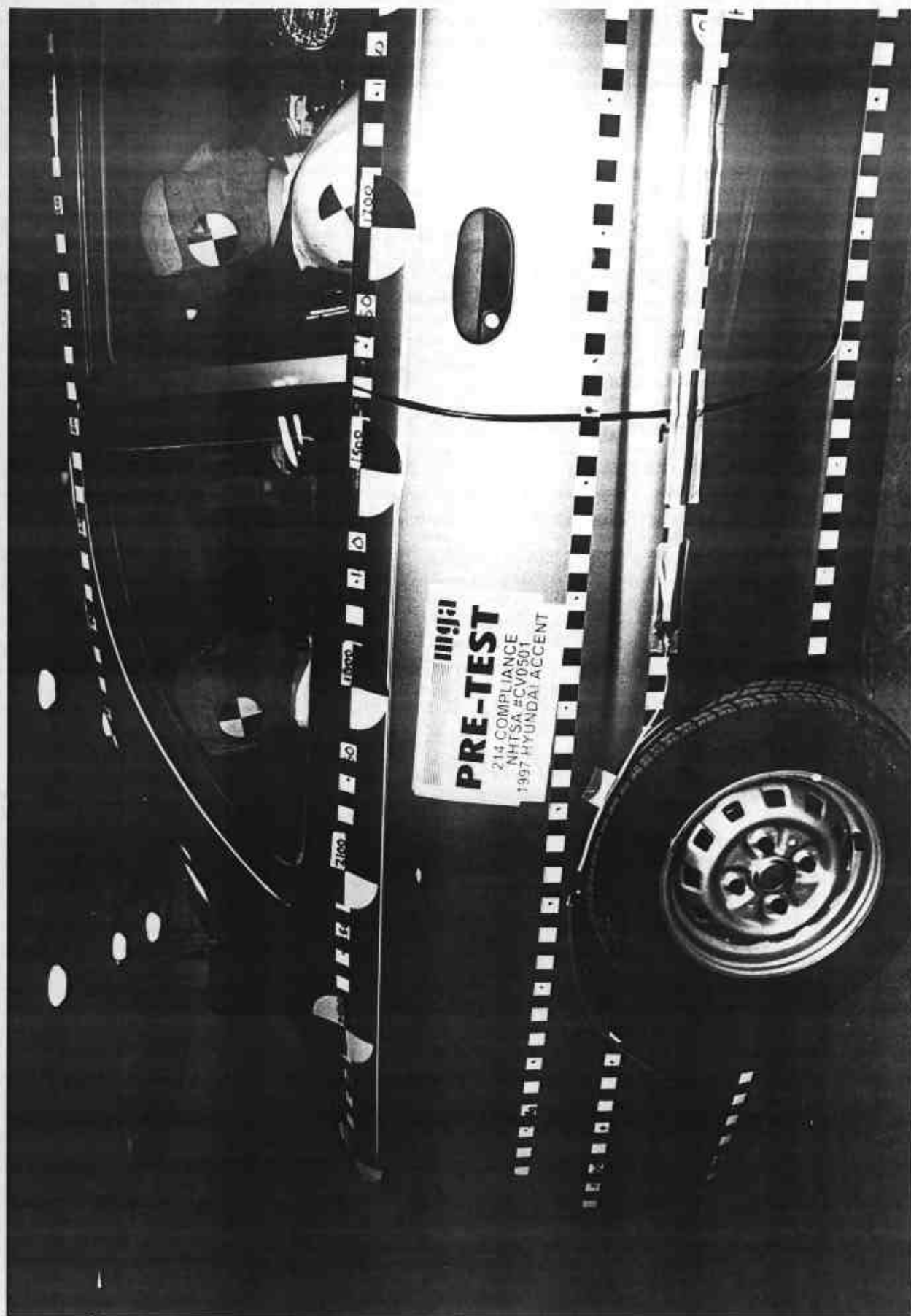


Photo No. A-34 - Pre-Test Rear Passenger Dummy Right Side View

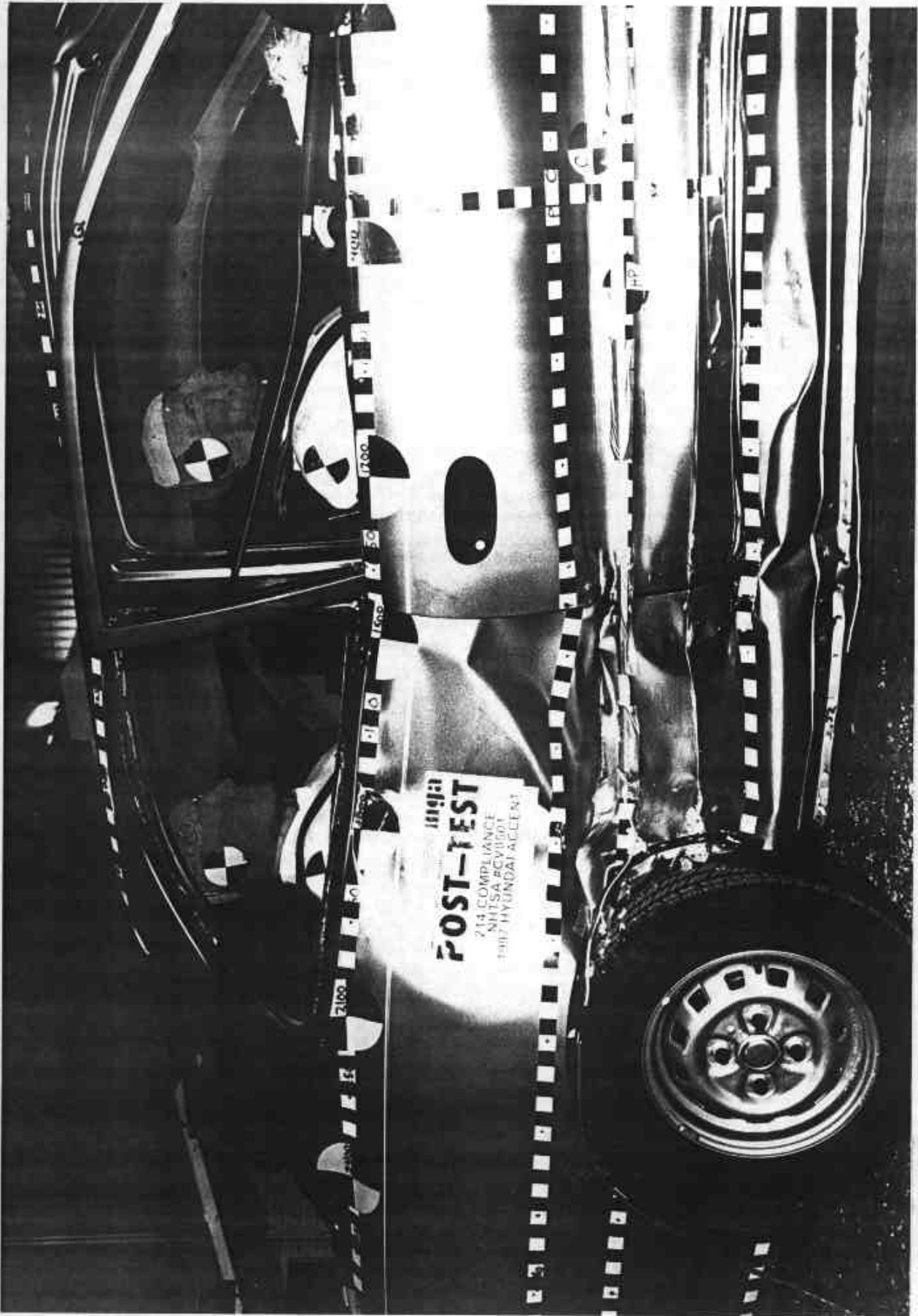


Photo No. A-35 - Post-Test Rear Passenger Dummy Right Side View



Photo No. A-36 - Pre-Test Rear Passenger Dummy Shoulder View

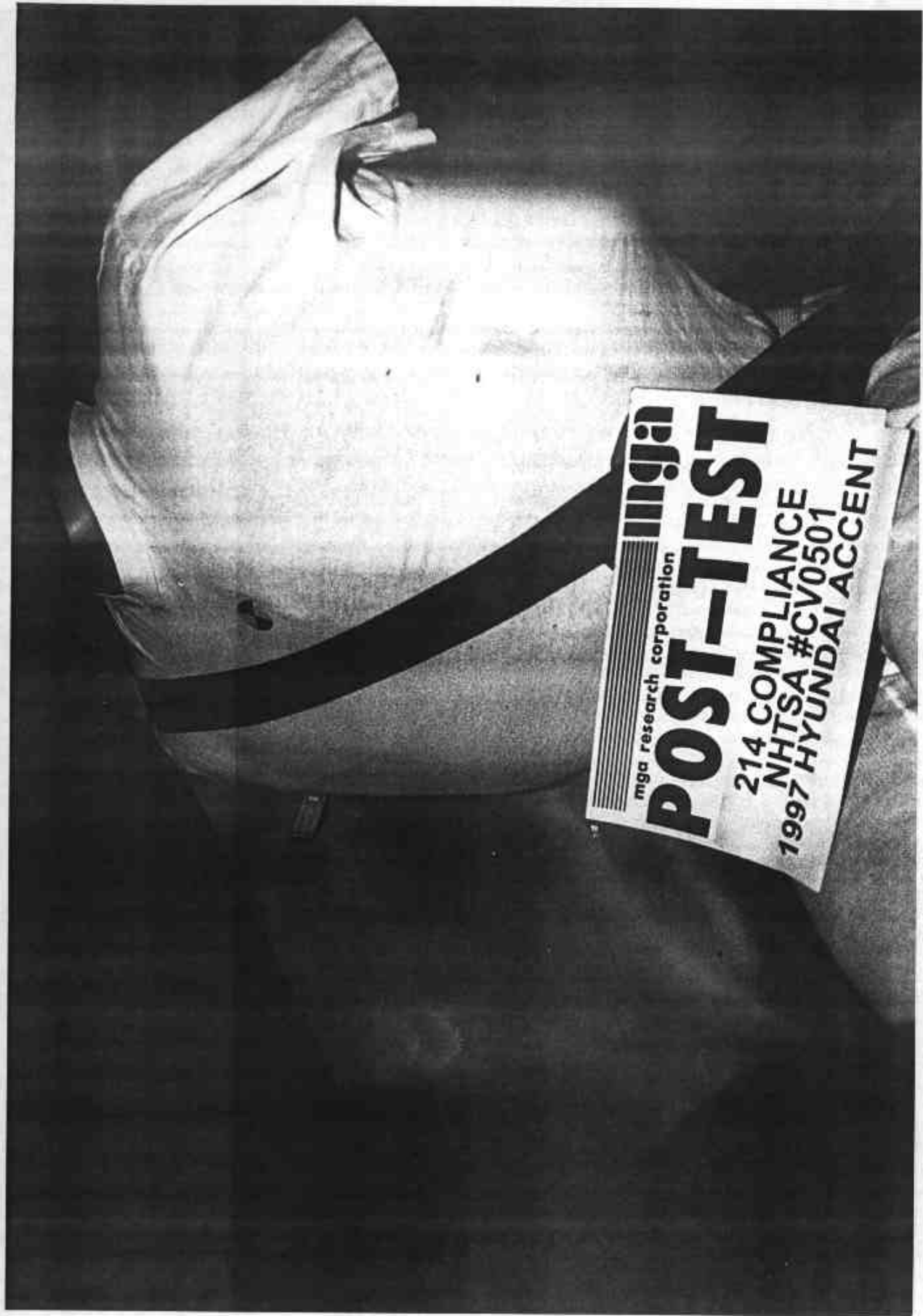


Photo No. A-37 - Post-Test Rear Passenger Dummy Shoulder View

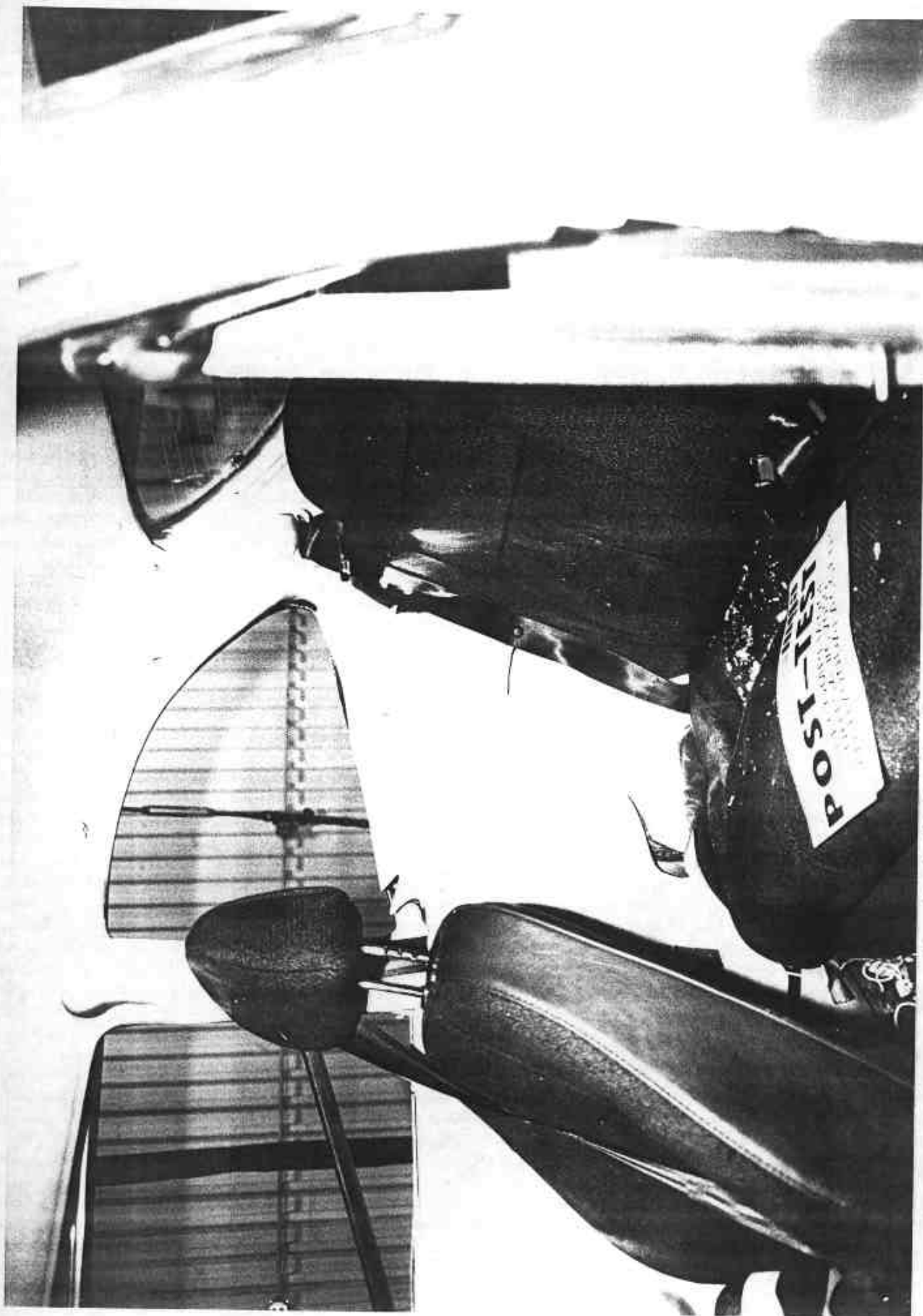


Photo No. A-38 - Post-Test Rear Passenger Dummy Contact

A-38



mga
mga research corporation
POST-TEST
214 COMPLIANCE
NHTSA #CV0501
1997 HYUNDAI ACCENT

Photo No. A-39 - Post-Test Rear Passenger Dummy Head Contact

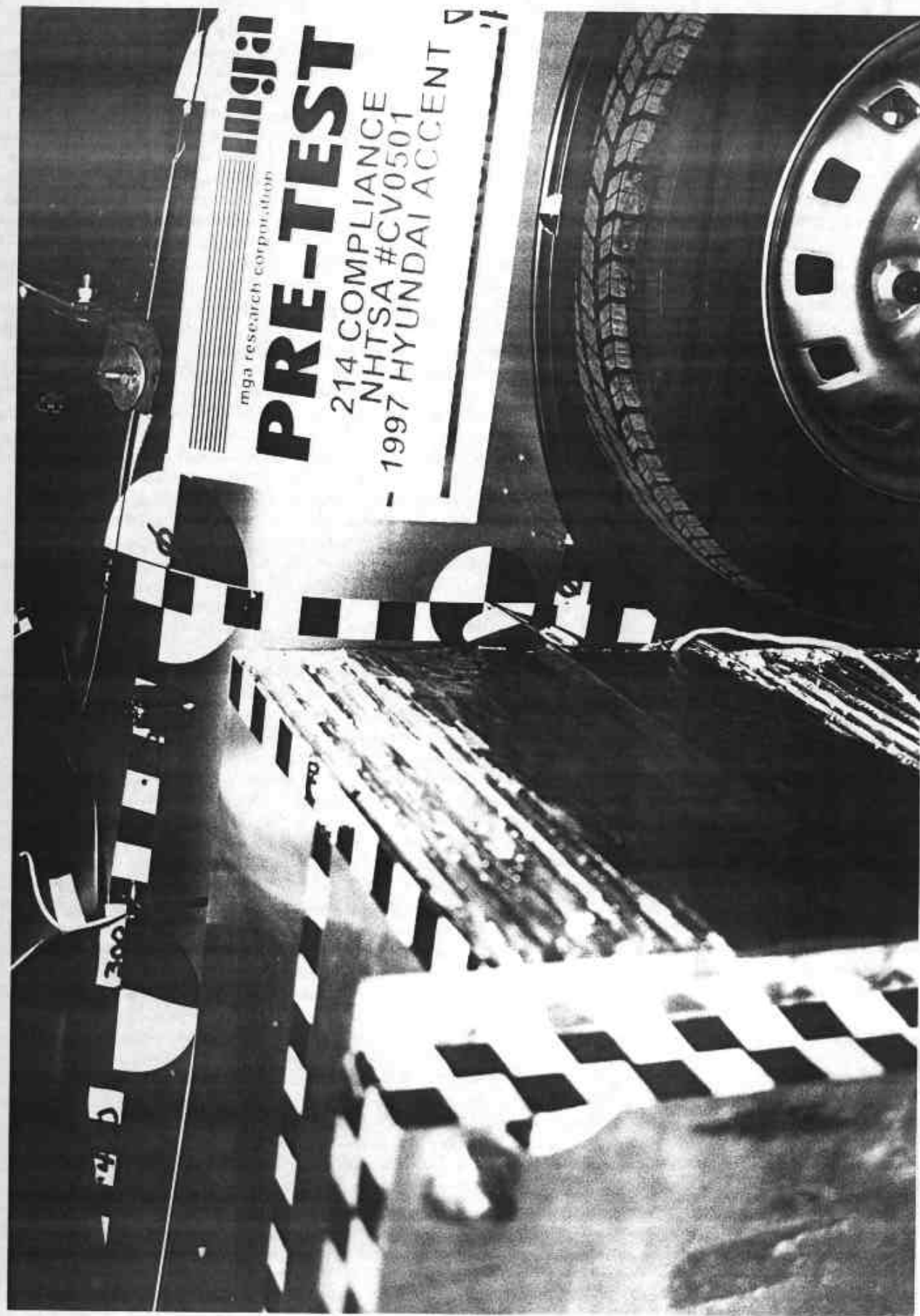


Photo No. A-40 - Pre-Test Right Front Impact Point on Vehicle

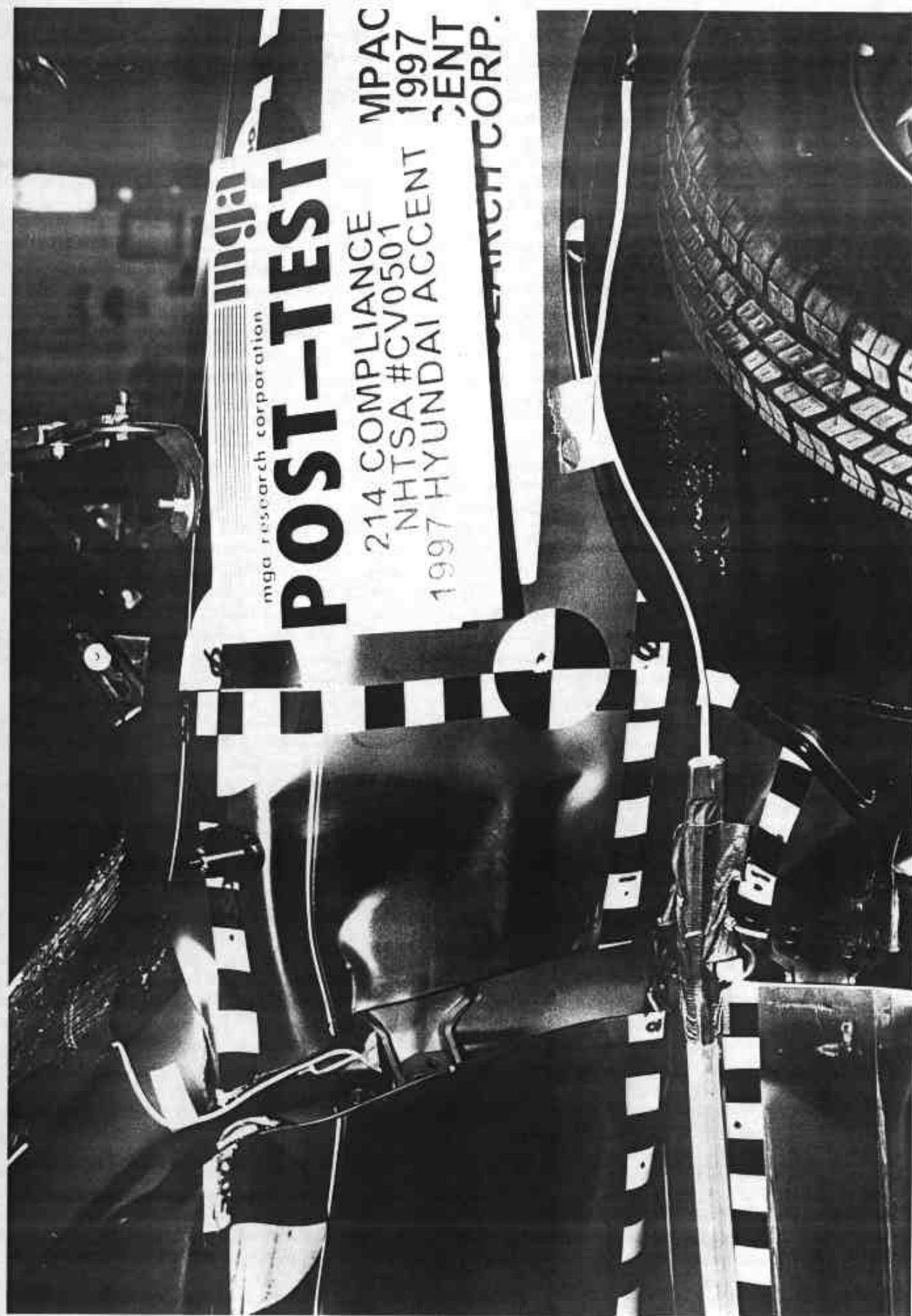


Photo No. A-41 - Post-Test Right Front Impact Point on Vehicle

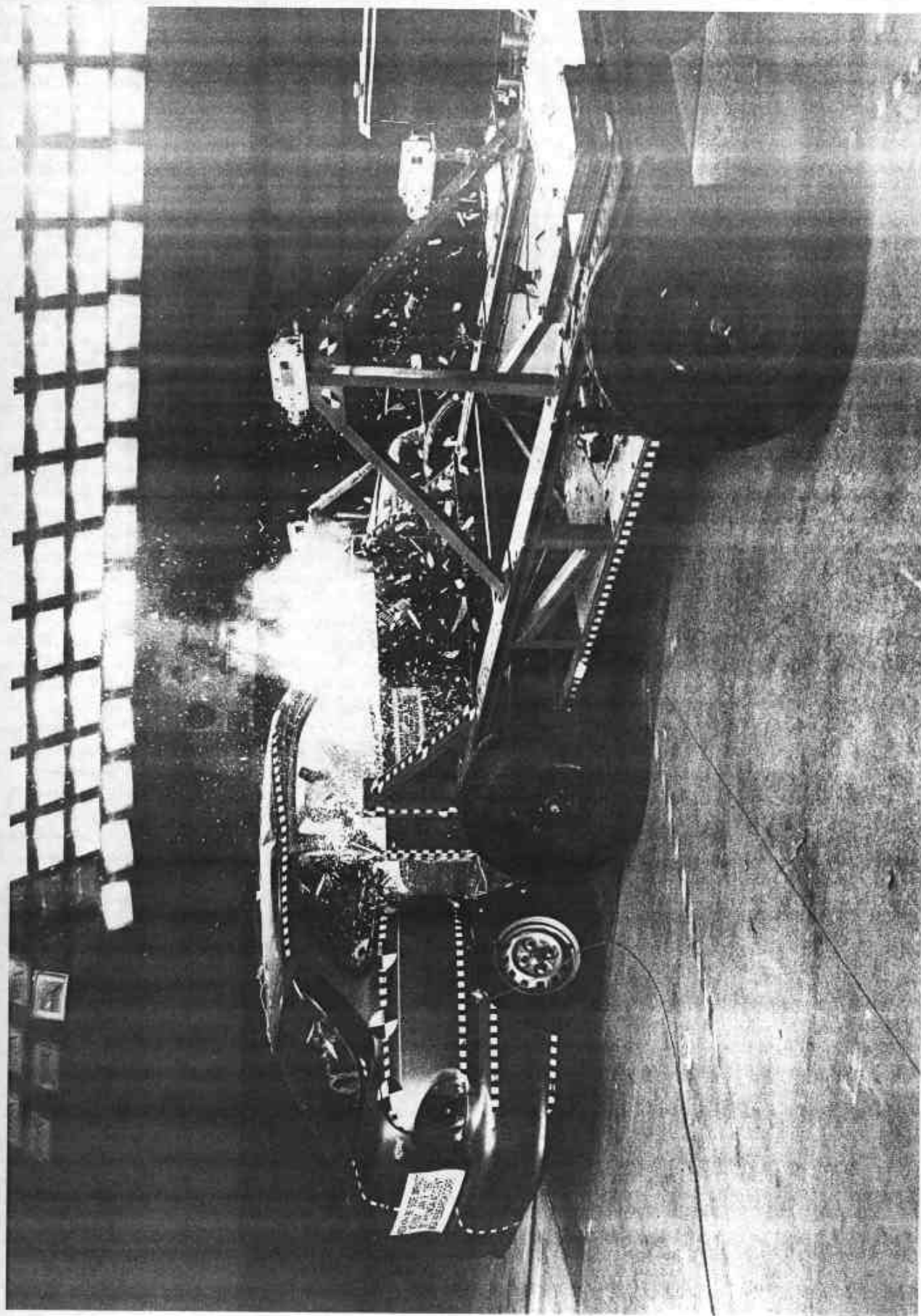


Photo No. A-42 - Impact

A-42

MANUFACTURED IN KOREA BY
HYUNDAI MOTOR COMPANY
SEP/20/96 GVWR 3164 LBS PAINT RQ

GAWR
FRONT

1742

LBS

GAWR
REAR

1610

LBS

TRIM

LG

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

V.I.N. KMHVD14N6VU218350
PASSENGER CAR

Photo No. A-43 - Vehicle Certification Label

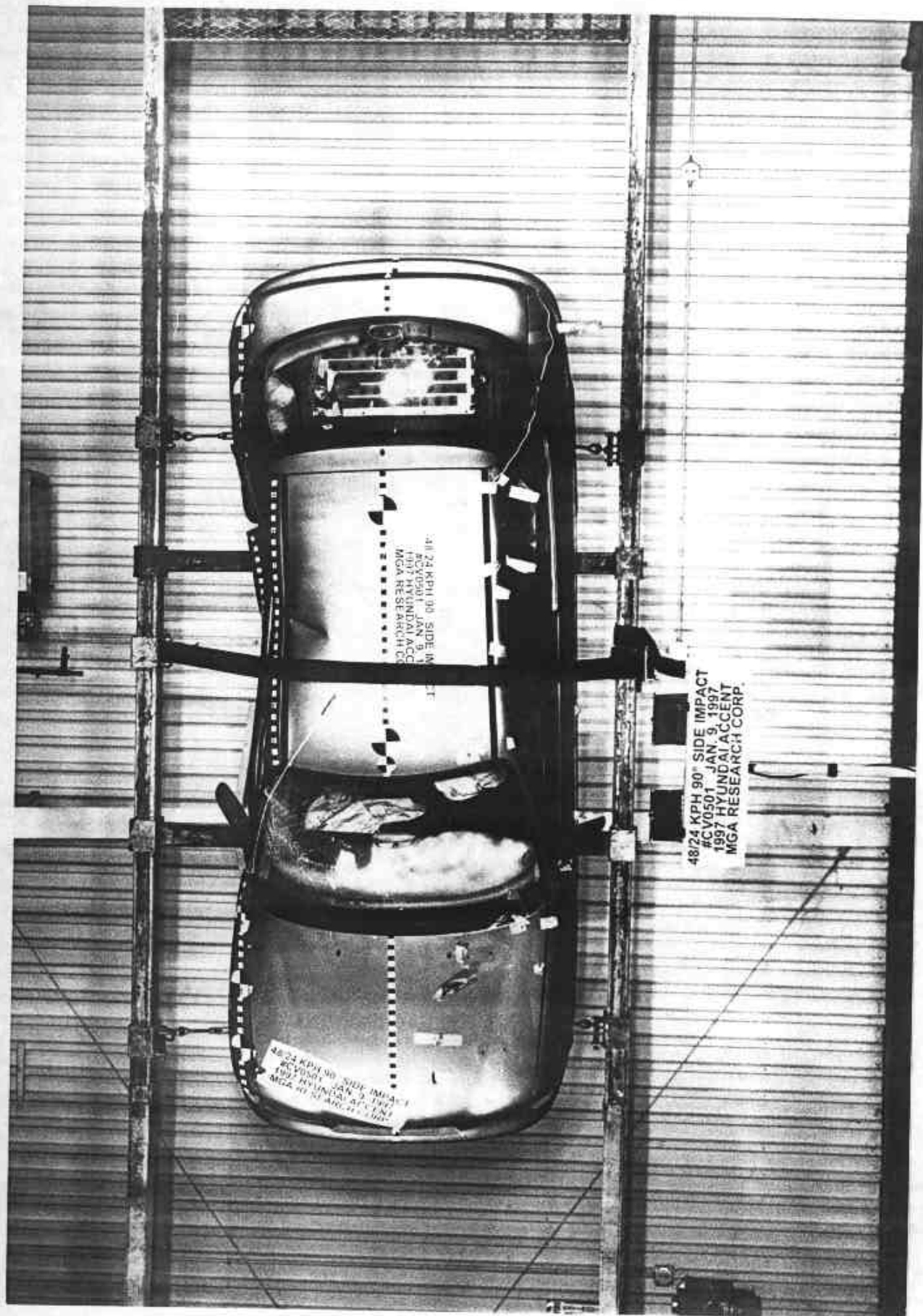
TIRE INFLATION PRESSURE
Pression De Gonflage Des Pneus

VEHICLE CAPACITY WEIGHT, LBS : 850
Poids en lb de la capacité du véhicule, 850

SEATING CAPACITY : TOTAL 5 FRONT 2 REAR 3
Capacité de transport : total 5 : 2 à l' avant
3 à l' arriere

TIRE PRESSURES-COLD, KPA (PSI) :
Pression de gonflage à froid kPa (lb/po2)

TIRE SIZE Dimension du pneu	UP TO 2 PERSONS Jusqu' a 2 Personnes		UP TO MAX. LOAD Pour charge maximum	
	FRONT Avant	REAR Arrière	FRONT Avant	REAR Arrière
P155/80 R13	207 (30)	207 (30)	221 (32)	221 (32)
P175/70 R13	207 (30)	207 (30)	221 (32)	221 (32)
P175/65 R14	207 (30)	207 (30)	221 (32)	221 (32)
T105/70 D14	414 (60)	414 (60)	414 (60)	414 (60)



48/24 KPH 90° SIDE IMPACT
#CV0501 JAN 9, 1997
1997 HYUNDAI ACCENT
MGA RESEARCH CORP.

48/24 KPH 90° SIDE IMPACT
#CV0501 JAN 9, 1997
1997 HYUNDAI ACCENT
MGA RESEARCH CORP.

Photo No. A-45 - Rollover 90°

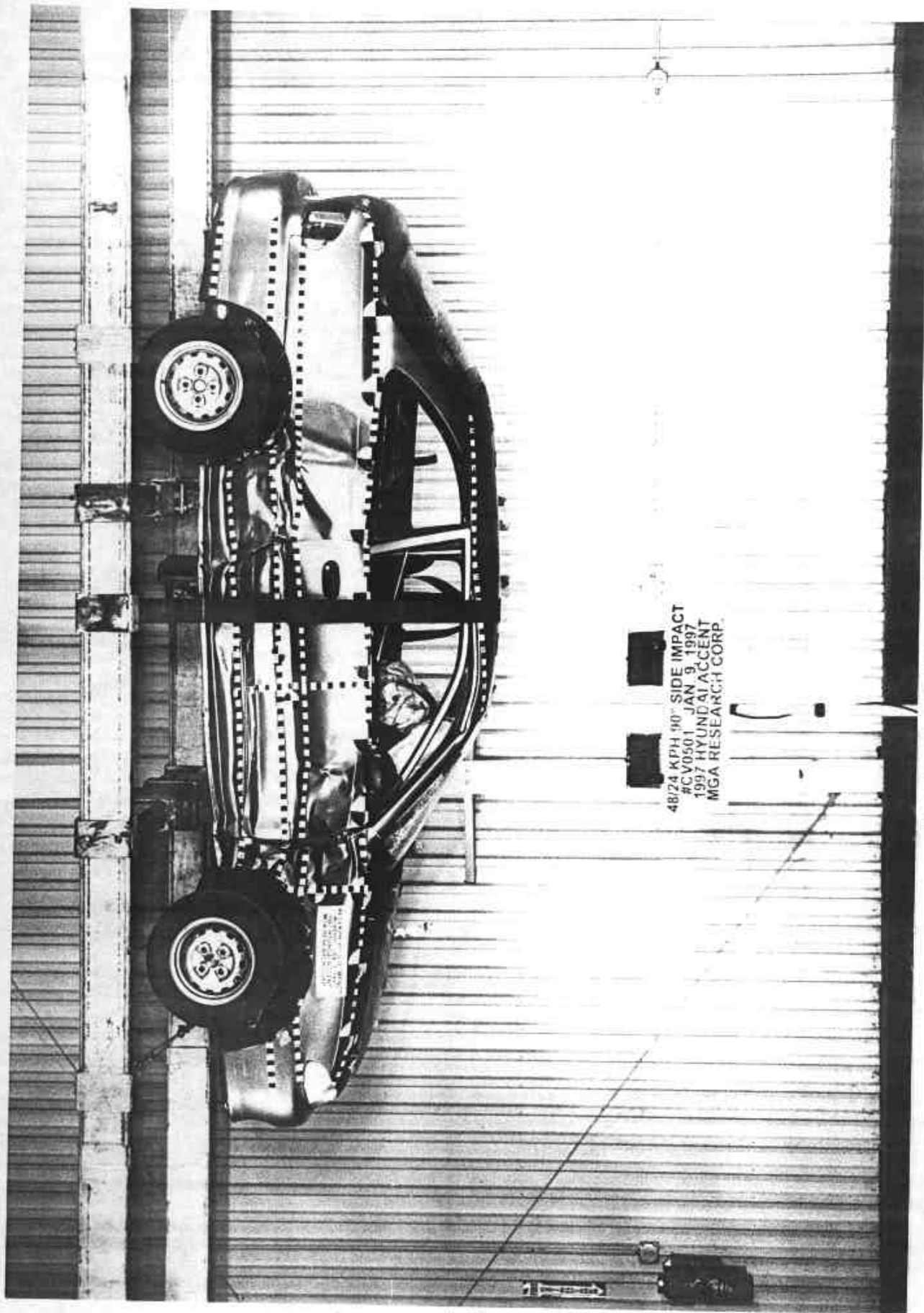
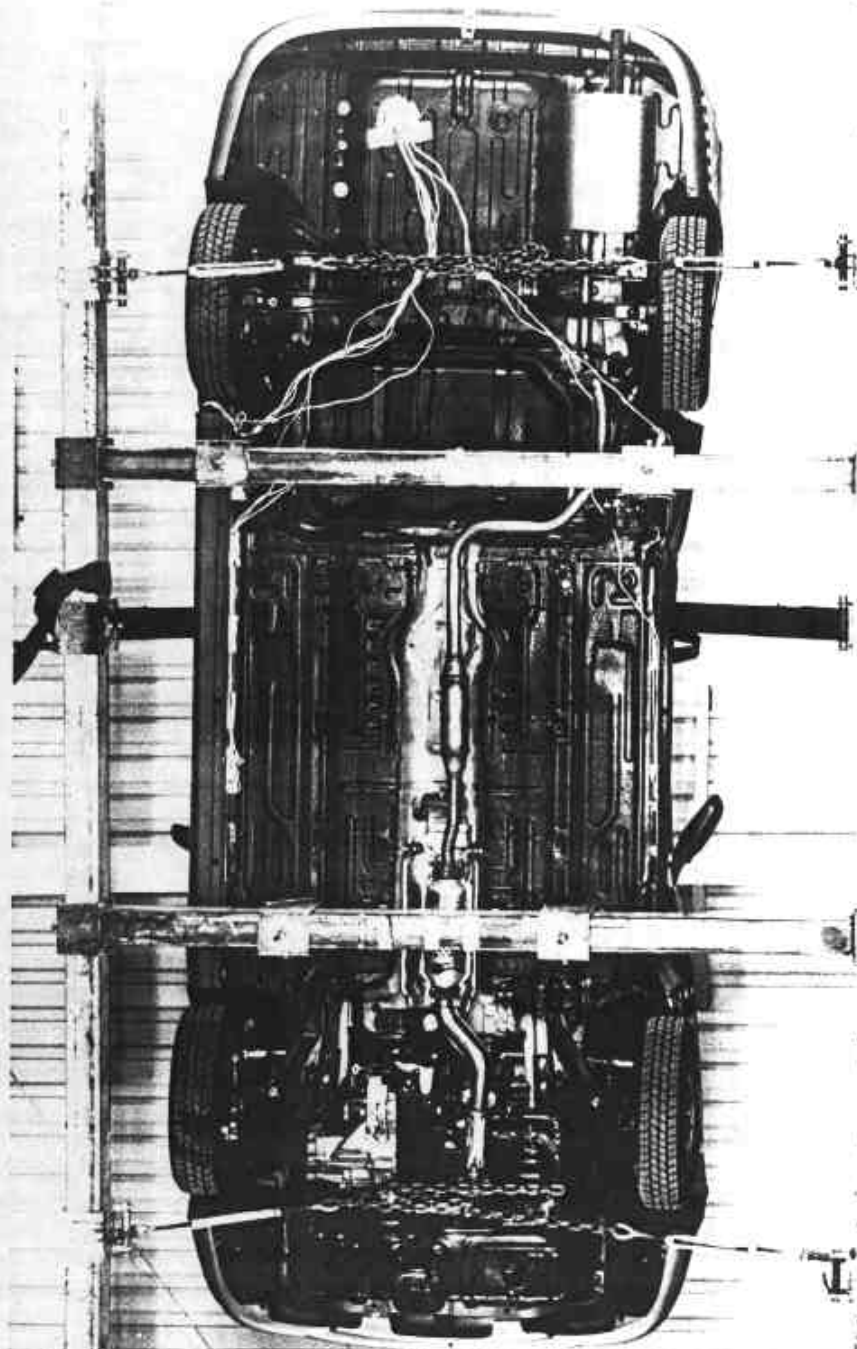


Photo No. A-46 - Rollover 180°



48.1 LADDER SIDE IMPACT
REAR OF VAN 9, 1967
FORD HYDRA-VAN 3500 LINT
Model No. 9000-1-67

Photo No. A-47 - Rollover 270°

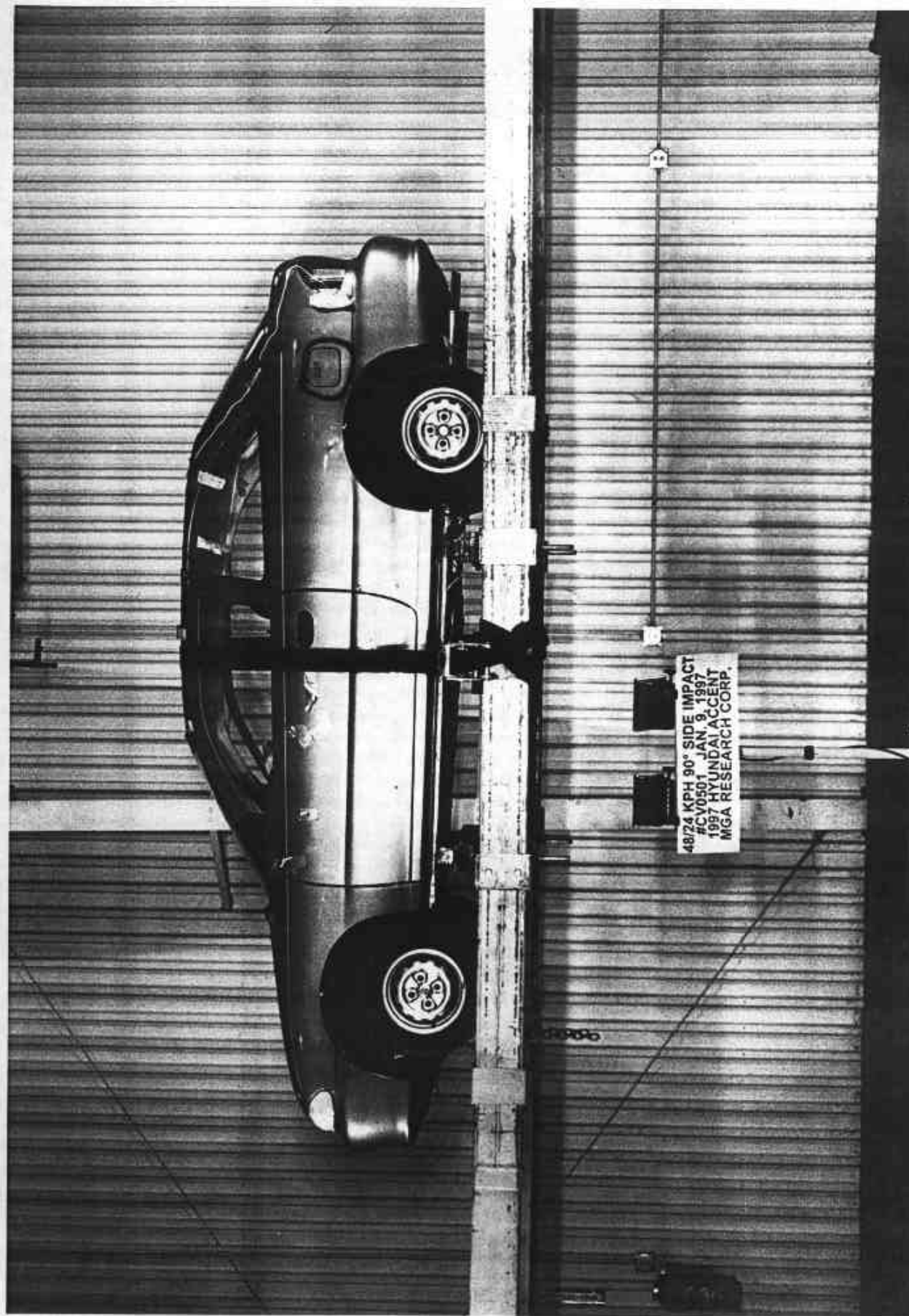


Photo No. A-48 - Rollover 360°

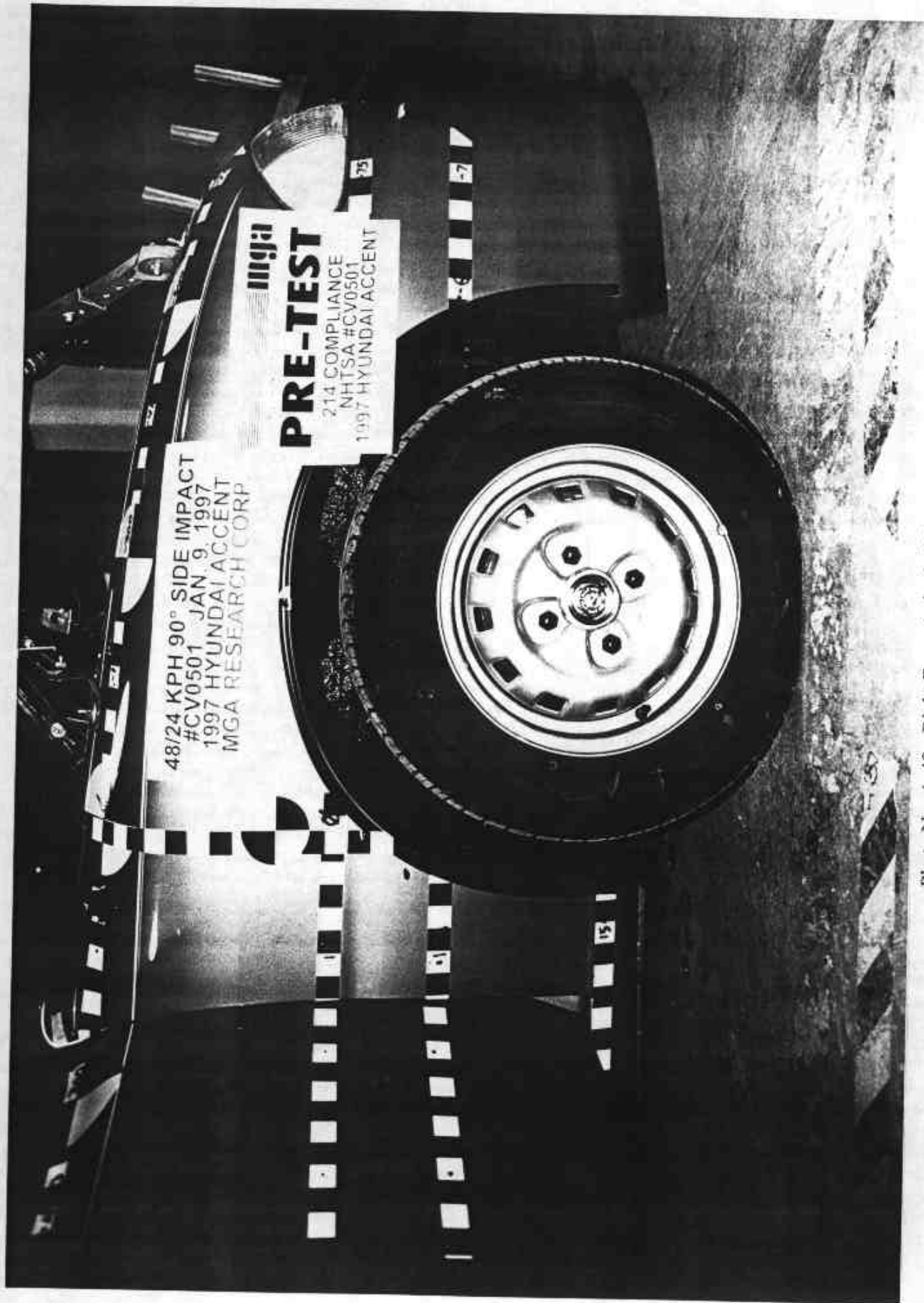


Photo No. A-49 - Right Front Attitude Point



Photo No. A-50 - Left Front Attitude Point

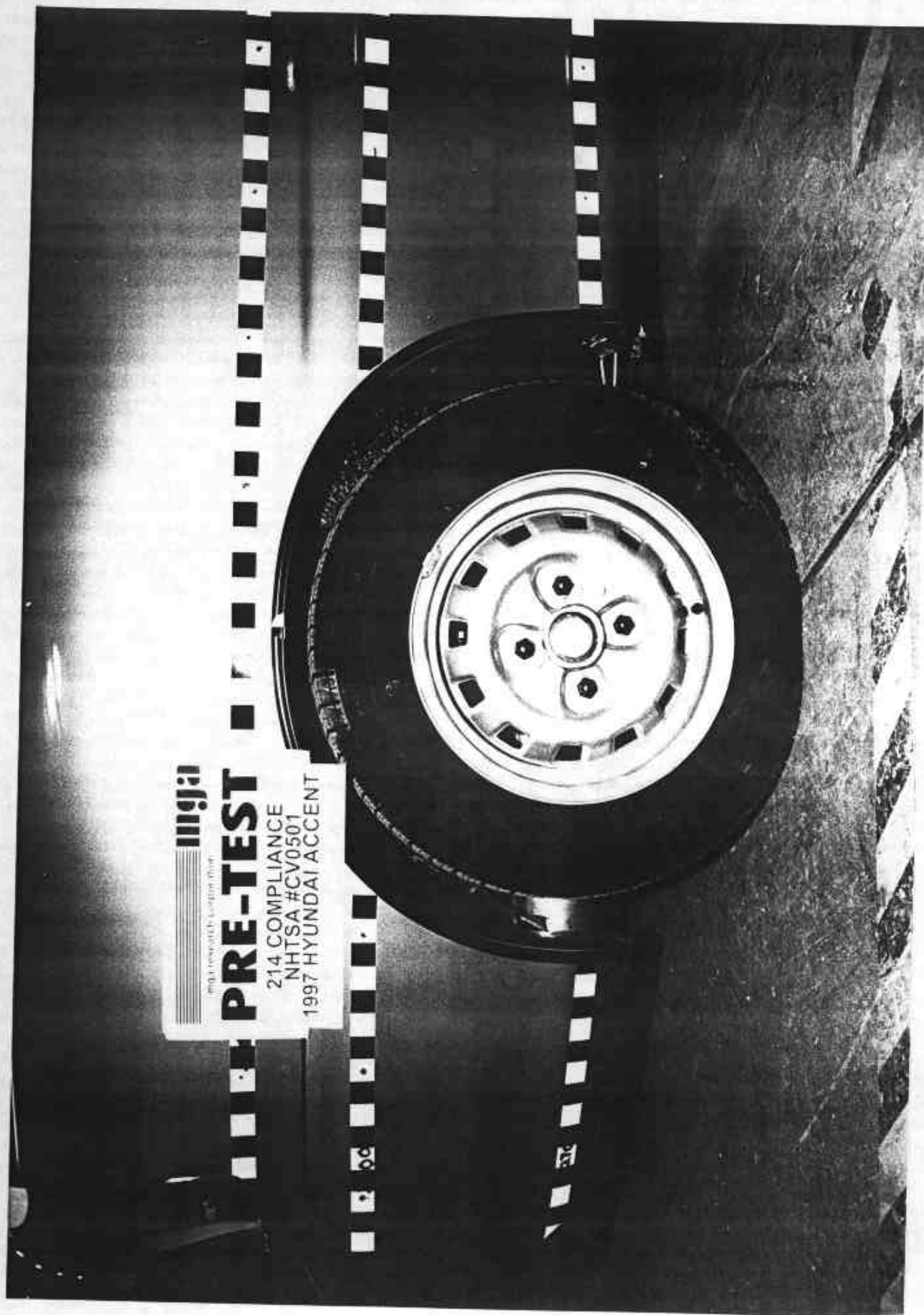


Photo No. A-51 - Right Rear Attitude Point



Photo No. A-52 - Left Rear Attitude Point

APPENDIX B - VEHICLE AND SID RESPONSE DATA

Table of Data Plots

<u>Occupant:</u>	<u>Page No.</u>
Figure B-1 - Front Passenger Upper Rib Y Acceleration vs. Time	B-1
Figure B-2 - Front Passenger Upper Rib Y Velocity vs. Time	B-2
Figure B-3 - Front Passenger Lower Rib Y Acceleration vs. Time	B-3
Figure B-4 - Front Passenger Lower Rib Y Velocity vs. Time	B-4
Figure B-5 - Front Passenger Lower Spine Y Acceleration vs. Time	B-5
Figure B-6 - Front Passenger Lower Spine Y Velocity vs. Time	B-6
Figure B-7 - Front Passenger Pelvis Y Acceleration vs. Time	B-7
Figure B-8 - Front Passenger Pelvis Y Velocity vs. Time	B-8
Figure B-9 - Rear Passenger Upper Rib Y Acceleration vs. Time	B-9
Figure B-10 - Rear Passenger Upper Rib Y Velocity vs. Time	B-10
Figure B-11 - Rear Passenger Lower Rib Y Acceleration vs. Time	B-11
Figure B-12 - Rear Passenger Lower Rib Y Velocity vs. Time	B-12
Figure B-13 - Rear Passenger Lower Spine Y Acceleration vs. Time	B-13
Figure B-14 - Rear Passenger Lower Spine Y Velocity vs. Time	B-14
Figure B-15 - Rear Passenger Pelvis Y Acceleration vs. Time	B-15
Figure B-16 - Rear Passenger Pelvis Y Velocity vs. Time	B-16
 <u>Vehicle:</u>	
Figure B-17 - Right Side Sill at Front Seat Y Acceleration vs. Time	B-17
Figure B-18 - Right Side Sill at Front Seat Y Velocity vs. Time	B-18
Figure B-19 - Right Side Sill at Rear Seat Y Acceleration vs. Time	B-19
Figure B-20 - Right Side Sill at Rear Seat Y Velocity vs. Time	B-20
Figure B-21 - Left Side Sill at Front Seat X Acceleration vs. Time	B-21
Figure B-22 - Left Side Sill at Front Seat X Velocity vs. Time	B-22
Figure B-23 - Left Side Sill at Front Seat Y Acceleration vs. Time	B-23
Figure B-24 - Left Side Sill at Front Seat Y Velocity vs. Time	B-24
Figure B-25 - Left Side Sill at Front Seat Z Acceleration vs. Time	B-25
Figure B-26 - Left Side Sill at Front Seat Z Velocity vs. Time	B-26
Figure B-27 - Left Side Sill at Front Seat Resultant Acceleration vs. Time	B-27
Figure B-28 - Left Side Sill at Rear Seat X Acceleration vs. Time	B-28

Table of Data Plots

<u>Vehicle (Cont'd):</u>	<u>Page No.</u>
Figure B-29 - Left Side Sill at Rear Seat X Velocity vs. Time	B-29
Figure B-30 - Left Side Sill at Rear Seat Y Acceleration vs. Time	B-30
Figure B-31 - Left Side Sill at Rear Seat Y Velocity vs. Time	B-31
Figure B-32 - Left Side Sill at Rear Seat Z Acceleration vs. Time	B-32
Figure B-33 - Left Side Sill at Rear Seat Z Velocity vs. Time	B-33
Figure B-34 - Left Side Sill at Rear Seat Resultant Acceleration vs. Time	B-34
Figure B-35 - Right Front Passenger Seat Track Y Acceleration vs. Time	B-35
Figure B-36 - Right Front Passenger Seat Track Y Velocity vs. Time	B-36
Figure B-37 - Rear Floorpan above Axle X Acceleration vs. Time	B-37
Figure B-38 - Rear Floorpan above Axle X Velocity vs. Time	B-38
Figure B-39 - Rear Floorpan above Axle Y Acceleration vs. Time	B-39
Figure B-40 - Rear Floorpan above Axle Y Velocity vs. Time	B-40
Figure B-41 - Rear Floorpan above Axle Z Acceleration vs. Time	B-41
Figure B-42 - Rear Floorpan above Axle Z Velocity vs. Time	B-42
Figure B-43 - Rear Floorpan above Axle Resultant Acceleration vs. Time	B-43
Figure B-44 - Left Rear Occupant Compartment Y Acceleration vs. Time	B-44
Figure B-45 - Left Rear Occupant Compartment Y Velocity vs. Time	B-45
Figure B-46 - Right Lower A Post Y Acceleration vs. Time	B-46
Figure B-47 - Right Lower A Post Y Velocity vs. Time	B-47
Figure B-48 - Right Mid A Post Y Acceleration vs. Time	B-48
Figure B-49 - Right Mid A Post Y Velocity vs. Time	B-49
Figure B-50 - Right Lower B Post Y Acceleration vs. Time	B-50
Figure B-51 - Right Lower B Post Y Velocity vs. Time	B-51
Figure B-52 - Right Mid B Post Y Acceleration vs. Time	B-52
Figure B-53 - Right Mid B Post Y Velocity vs. Time	B-53
Figure B-54 - Vehicle Center of Gravity X Acceleration vs. Time	B-54
Figure B-55 - Vehicle Center of Gravity X Velocity vs. Time	B-55
Figure B-56 - Vehicle Center of Gravity Y Acceleration vs. Time	B-56
Figure B-57 - Vehicle Center of Gravity Y Velocity vs. Time	B-57

Table of Data Plots

<u>Vehicle (Cont'd):</u>	<u>Page No.</u>
Figure B-58 - Vehicle Center of Gravity Z Acceleration vs. Time	B-58
Figure B-59 - Vehicle Center of Gravity Z Velocity vs. Time	B-59
Figure B-60 - Vehicle Center of Gravity Resultant Acceleration vs. Time	B-60
 <u>Barrier:</u>	
Figure B-61 - Moving Barrier Center of Gravity X Acceleration vs. Time	B-63
Figure B-62 - Moving Barrier Center of Gravity X Velocity vs. Time	B-64
Figure B-63 - Moving Barrier Center of Gravity Y Acceleration vs. Time	B-65
Figure B-64 - Moving Barrier Center of Gravity Y Velocity vs. Time	B-66
Figure B-65 - Moving Barrier Center of Gravity Z Acceleration vs. Time	B-67
Figure B-66 - Moving Barrier Center of Gravity Z Velocity vs. Time	B-68
Figure B-67 - Moving Barrier Center of Gravity Resultant Acceleration vs. Time	B-69
Figure B-68 - Moving Barrier Rear Axle X Acceleration vs. Time	B-70
Figure B-69 - Moving Barrier Rear Axle X Velocity vs. Time	B-71
Figure B-70 - Moving Barrier Rear Axle Y Acceleration vs. Time	B-72
Figure B-71 - Moving Barrier Rear Axle Y Velocity vs. Time	B-73
Figure B-72 - Left Barrier Contact	B-74
Figure B-73 - Right Barrier Contact	B-73
 <u>Redundant:</u>	
Figure B-74 - Front Passenger Upper Rib Y Redundant Acceleration vs. Time	B-74
Figure B-75 - Front Passenger Upper Rib Y Redundant Velocity vs. Time	B-75
Figure B-76 - Front Passenger Lower Rib Y Redundant Acceleration vs. Time	B-76
Figure B-77 - Front Passenger Lower Rib Y Redundant Velocity vs. Time	B-77
Figure B-78 - Front Passenger Lower Spine Y Redundant Acceleration vs. Time	B-78
Figure B-79 - Front Passenger Lower Spine Y Redundant Velocity vs. Time	B-79
Figure B-80 - Front Passenger Pelvis Y Redundant Acceleration vs. Time	B-80
Figure B-81 - Front Passenger Pelvis Y Redundant Velocity vs. Time	B-81
Figure B-82 - Rear Passenger Upper Rib Y Redundant Acceleration vs. Time	B-82
Figure B-83 - Rear Passenger Upper Rib Y Redundant Velocity vs. Time	B-83

Table of Data Plots

Redundant (Cont'd):

Page No.

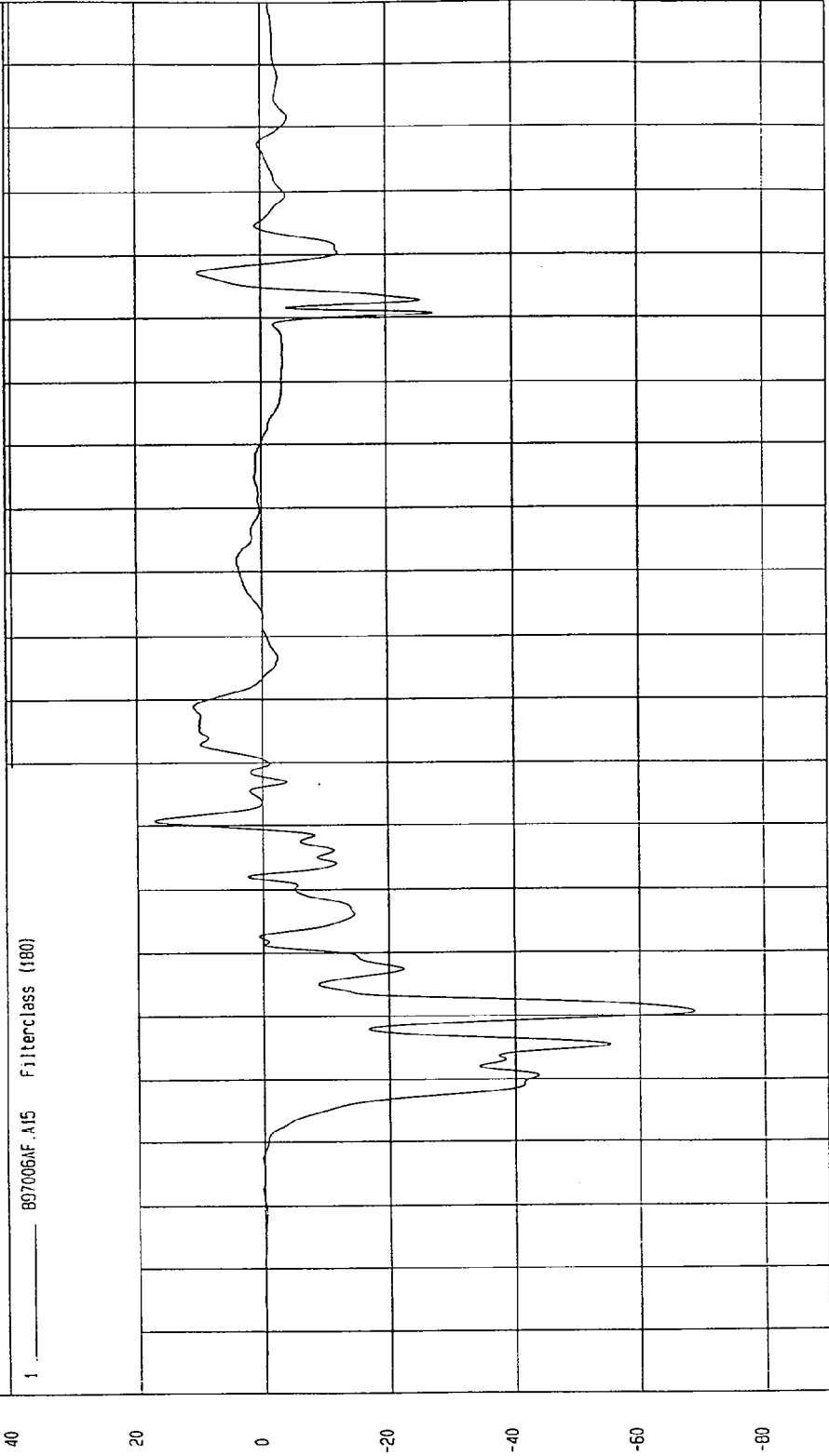
Figure B-84 - Rear Passenger Lower Rib Y Redundant Acceleration vs. Time	B-84
Figure B-85 - Rear Passenger Lower Rib Y Redundant Velocity vs. Time	B-85
Figure B-86 - Rear Passenger Lower Spine Y Redundant Acceleration vs. Time	B-86
Figure B-87 - Rear Passenger Lower Spine Y Redundant Velocity vs. Time	B-87
Figure B-88 - Rear Passenger Pelvis Y Redundant Acceleration vs. Time	B-88
Figure B-89 - Rear Passenger Pelvis Y Redundant Velocity vs. Time	B-89

FIR Filter

Figure B-90 - Front Passenger Upper Rib Y Acceleration vs. Time	B-90
Figure B-91 - Front Passenger Upper Rib Y Redundant Acceleration vs. Time	B-91
Figure B-92 - Front Passenger Lower Rib Y Acceleration vs. Time	B-92
Figure B-93 - Front Passenger Lower Rib Y Redundant Acceleration vs. Time	B-93
Figure B-94 - Front Passenger Lower Spine Y Acceleration vs. Time	B-94
Figure B-95 - Front Passenger Lower Spine Y Redundant Acceleration vs. Time	B-95
Figure B-96 - Front Passenger Pelvis Y Acceleration vs. Time	B-96
Figure B-97 - Front Passenger Pelvis Y Redundant Acceleration vs. Time	B-97
Figure B-98 - Rear Passenger Upper Rib Y Acceleration vs. Time	B-98
Figure B-99 - Rear Passenger Upper Rib Y Redundant Acceleration vs. Time	B-99
Figure B-100 - Rear Passenger Lower Rib Y Acceleration vs. Time	B-100
Figure B-101 - Rear Passenger Lower Rib Y Redundant Acceleration vs. Time	B-101
Figure B-102 - Rear Passenger Lower Spine Y Acceleration vs. Time	B-102
Figure B-103 - Rear Passenger Lower Spine Y Redundant Acceleration vs. Time	B-103
Figure B-104 - Rear Passenger Pelvis Y Acceleration vs. Time	B-104
Figure B-105 - Rear Passenger Pelvis Y Redundant Acceleration vs. Time	B-105

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -68.77 G'S at 41 msec	Maximum = 17.30 G'S at 71 msec

FRONT PASSENGER UPPER RIB Y ACCELERATION



TIME (SECONDS)

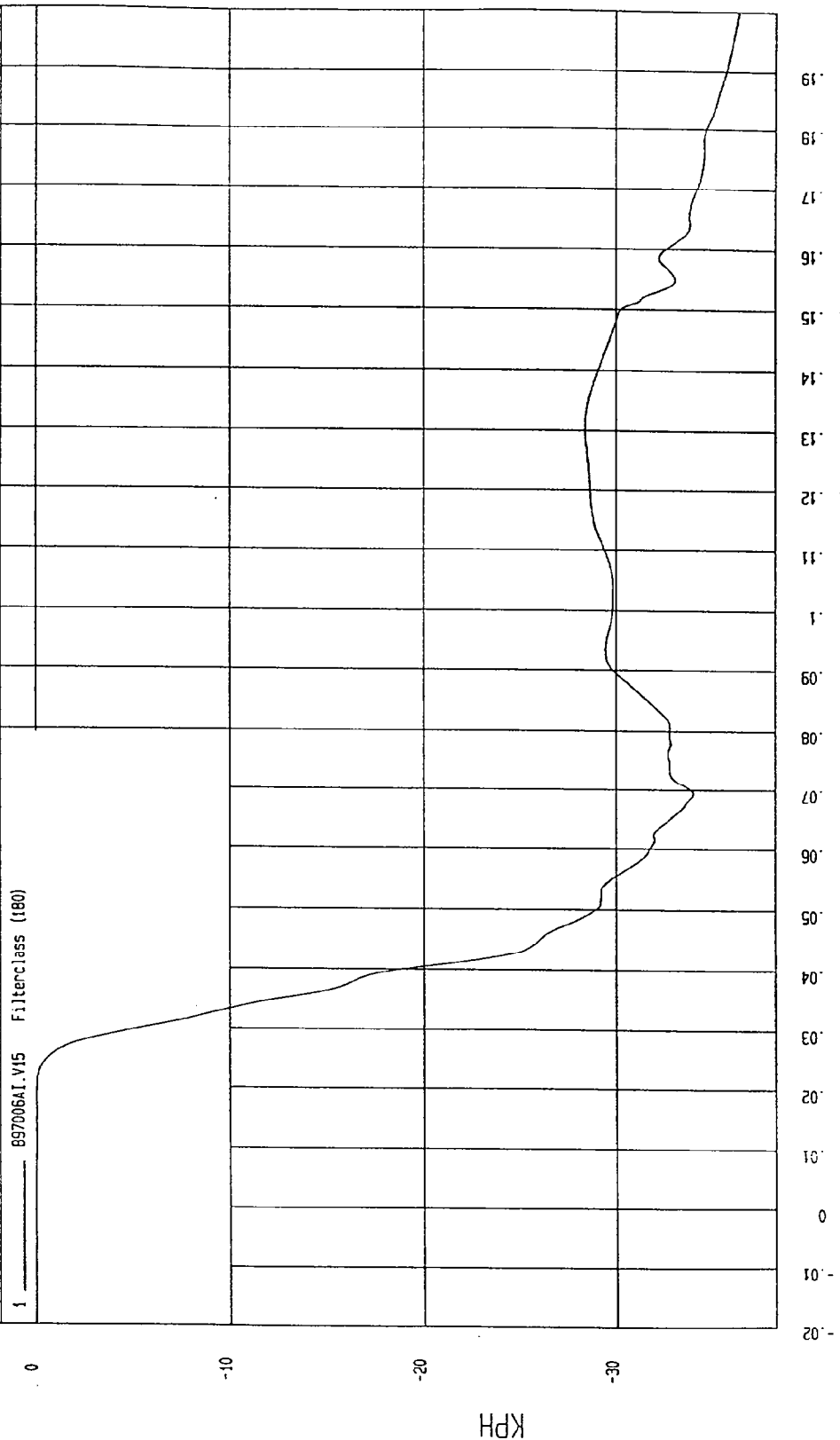
WCA Research
01-21-1997 15:09

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -36.21 KPH at 200 msec Maximum = 8.33E-03 KPH at -14 msec

FRONT PASSENGER UPPER RIB Y VELOCITY

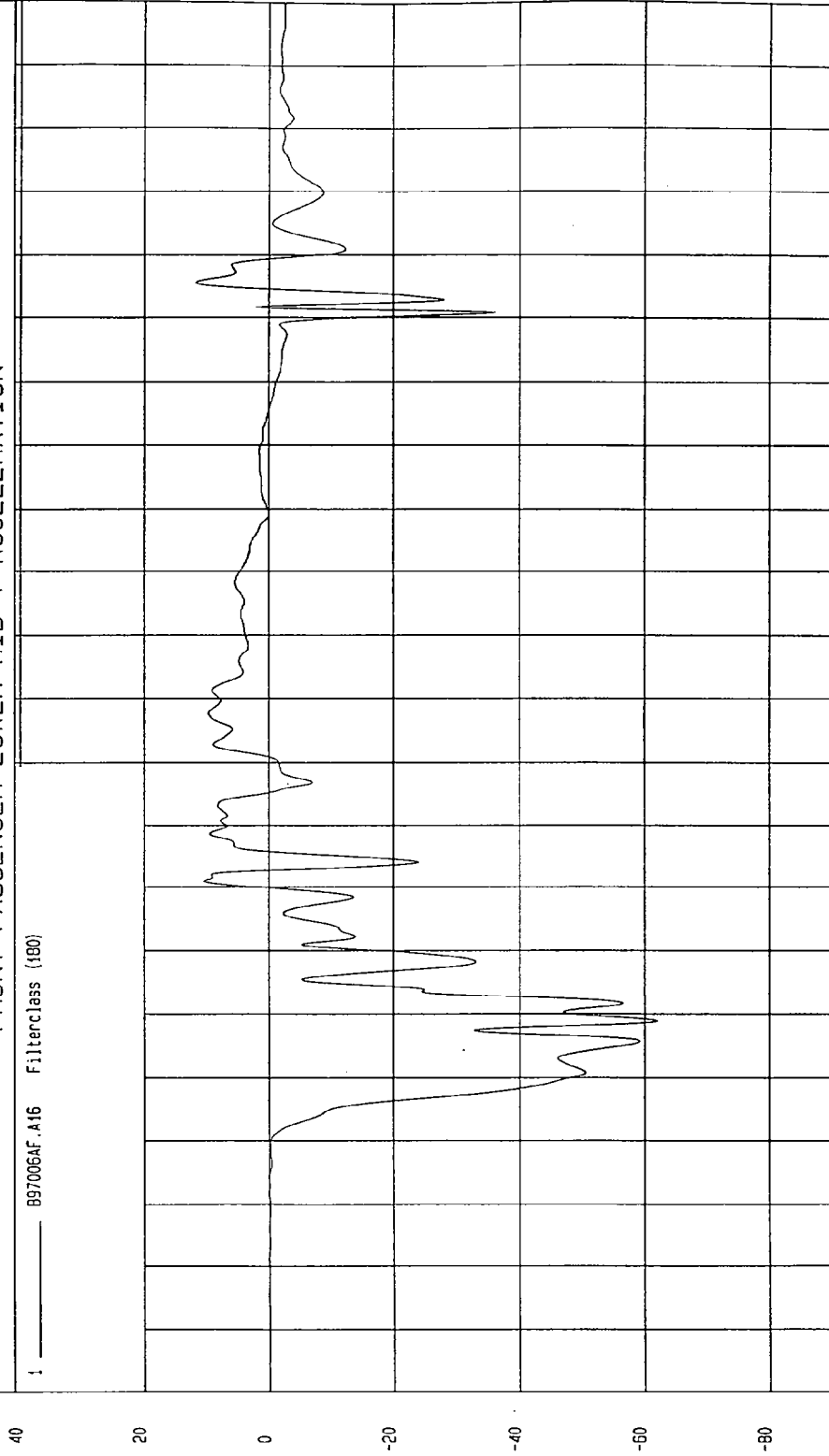


NCA Research
01-21-1997 15:16

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -62.08 G'S at .39 msec	
Maximum = 11.80 G'S at .156 msec	

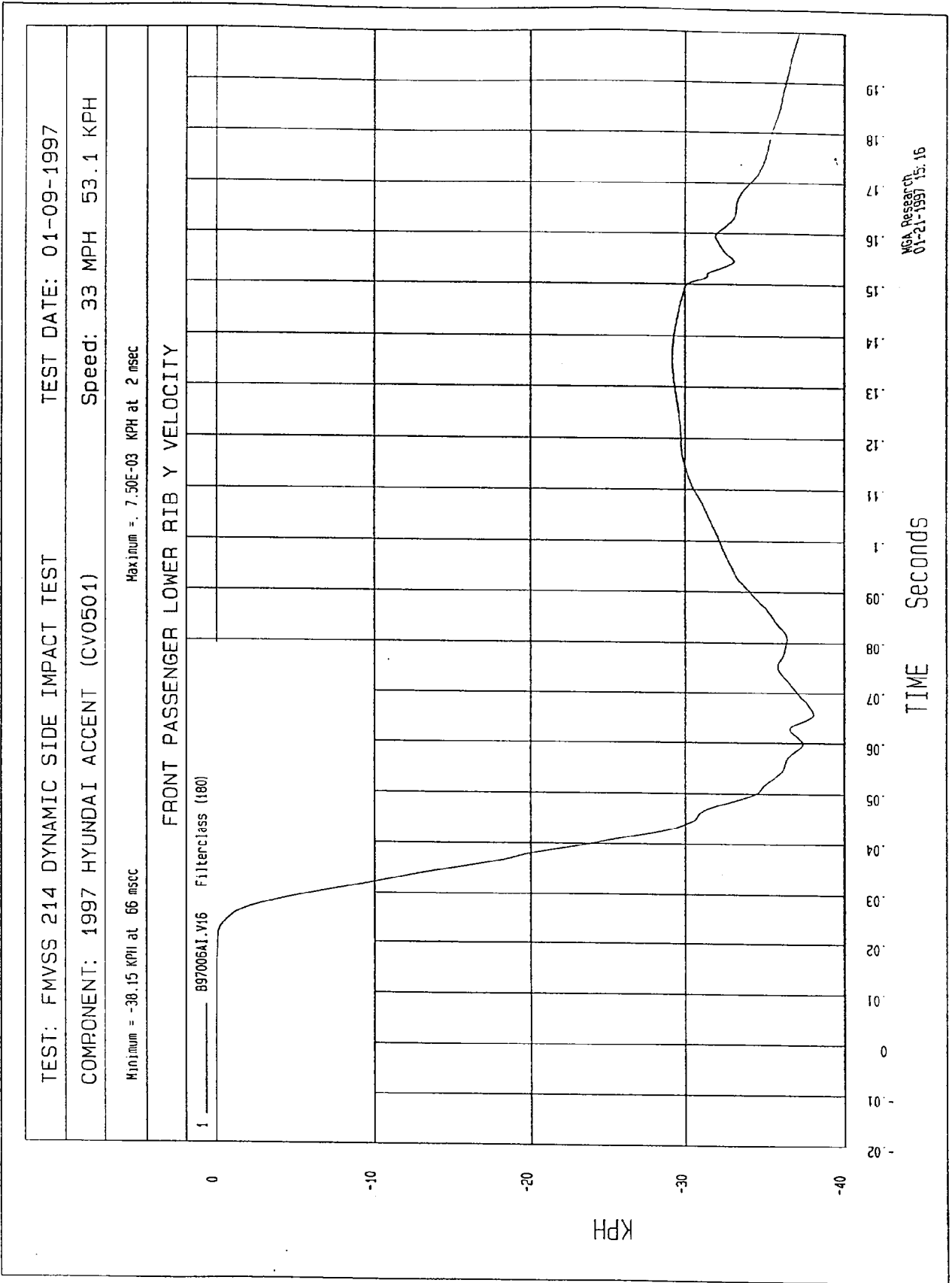
FRONT PASSENGER LOWER RIB Y ACCELERATION

1 _____ 897006AF.A16 Filterclass (180)



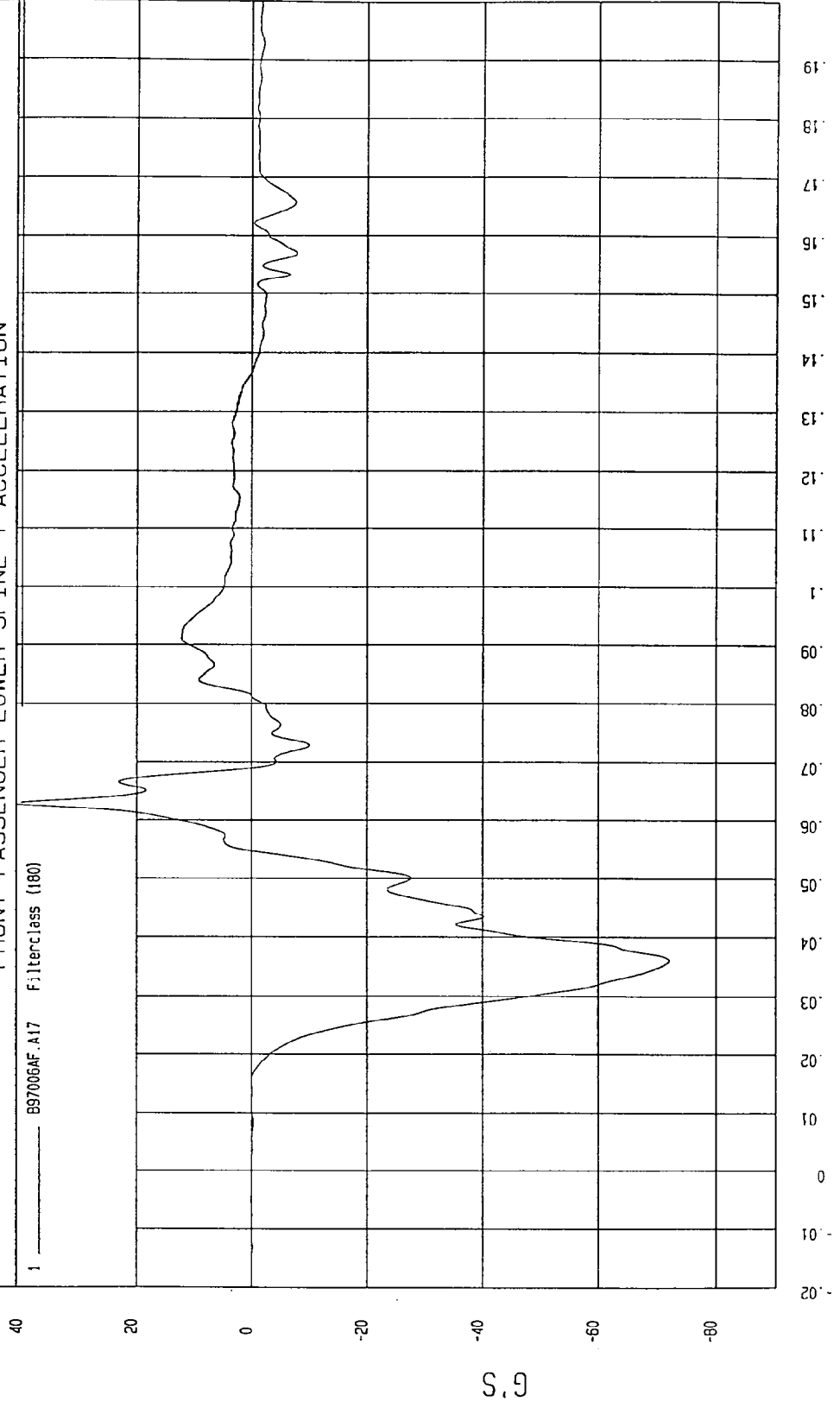
TIME (SECONDS)

WCA Research
01-21-1997 15.09



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH
Minimum = -72.02 G'S at 36 msec Maximum = 41.22 G'S at 63 msec

FRONT PASSENGER LOWER SPINE Y ACCELERATION



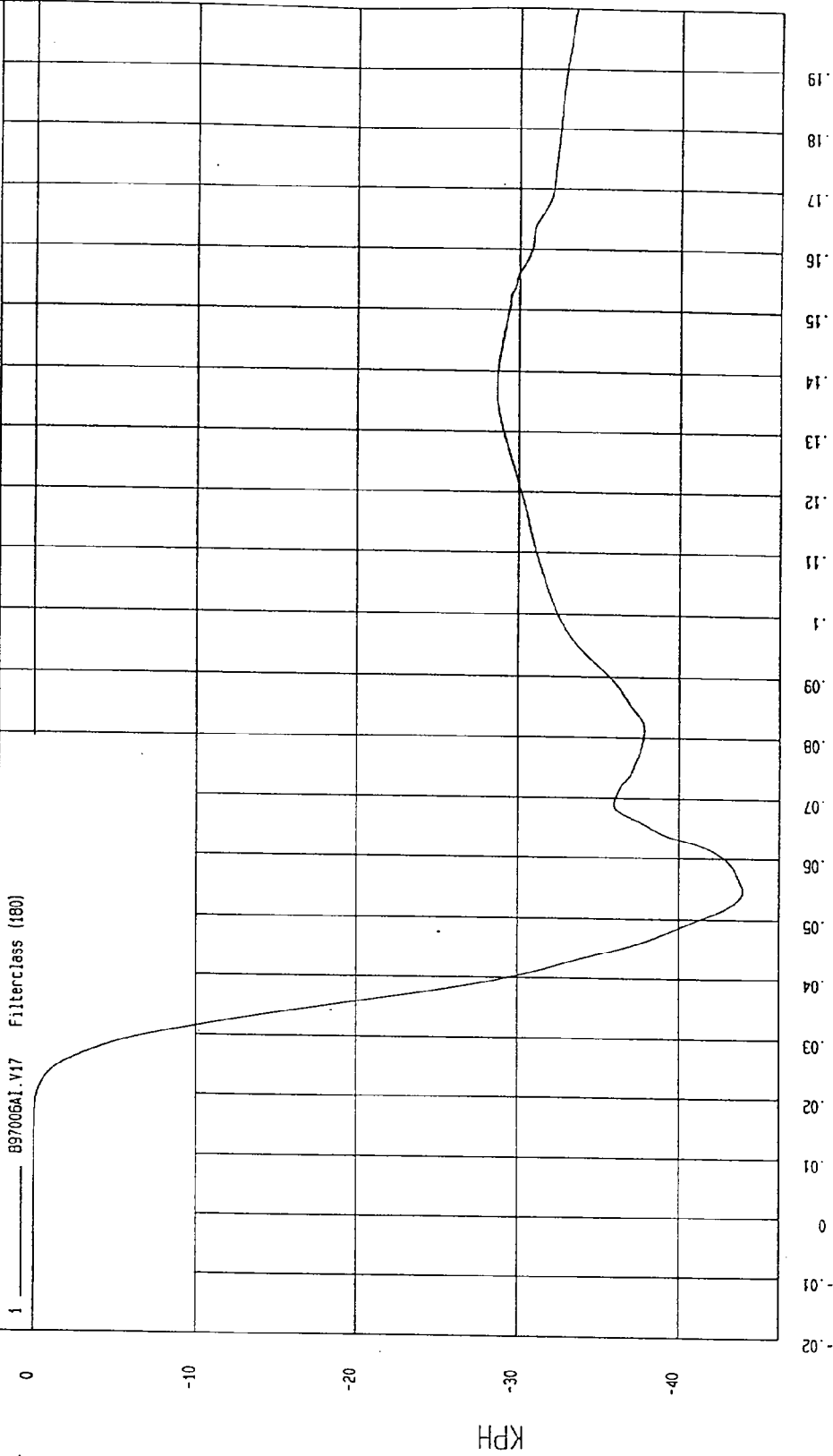
MSA Research
01-21-1997 13:09

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -43.85 KPH at 55 msec Maximum = 4.60E-03 KPH at -15 msec

FRONT PASSENGER LOWER SPINE Y VELOCITY



MCA Research
01-21-1997 15:15

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

Speed: 33 MPH 53.1 KPH

COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = 19.33 G'S at 49 msec

Minimum = -95.93 G'S at 28 msec

FRONT PASSENGER PELVIS Y ACCELERATION

1 897006AF.A18 Filterclass (180)

40

20

0

-20

-40

-60

-80

G'S

51

41

31

21

11

01

-09

-19

-29

-39

-49

-59

-69

-79

-89

-99

-109

-119

-129

-139

-149

-159

-169

-179

-189

-199

-209

-219

-229

WCA Research
01-21-1997 15:09

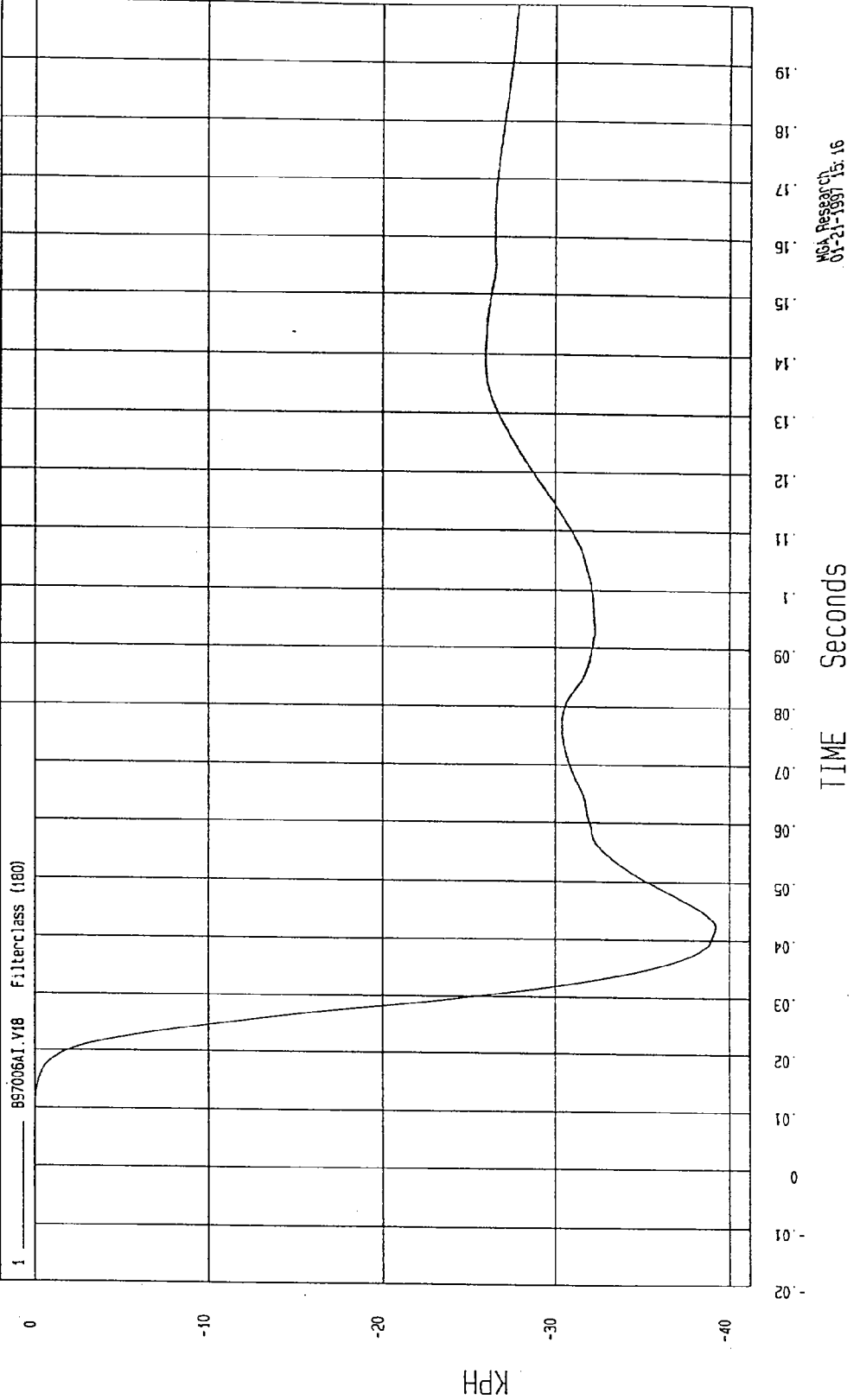
TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -39.21 KPH at .42 msec Maximum = 5.12E-02 KPH at 3 msec

FRONT PASSENGER PELVIS Y VELOCITY



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

Speed: 33 MPH 53.1 KPH

COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = 10.00 G'S at 88 msec

Minimum = -54.19 G'S at 42 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 897006AF.A25 Filterclass (180)

40

20

0

-20

-40

-60

-80

G.S

-0.02

-0.01

0

0.01

0.02

0.03

0.04

0.05

0.06

0.07

0.08

0.09

0.1

0.11

0.12

0.13

0.14

0.15

0.16

0.17

0.18

0.19

TIME (SECONDS)

MSA Research
01-21-1997 15:09

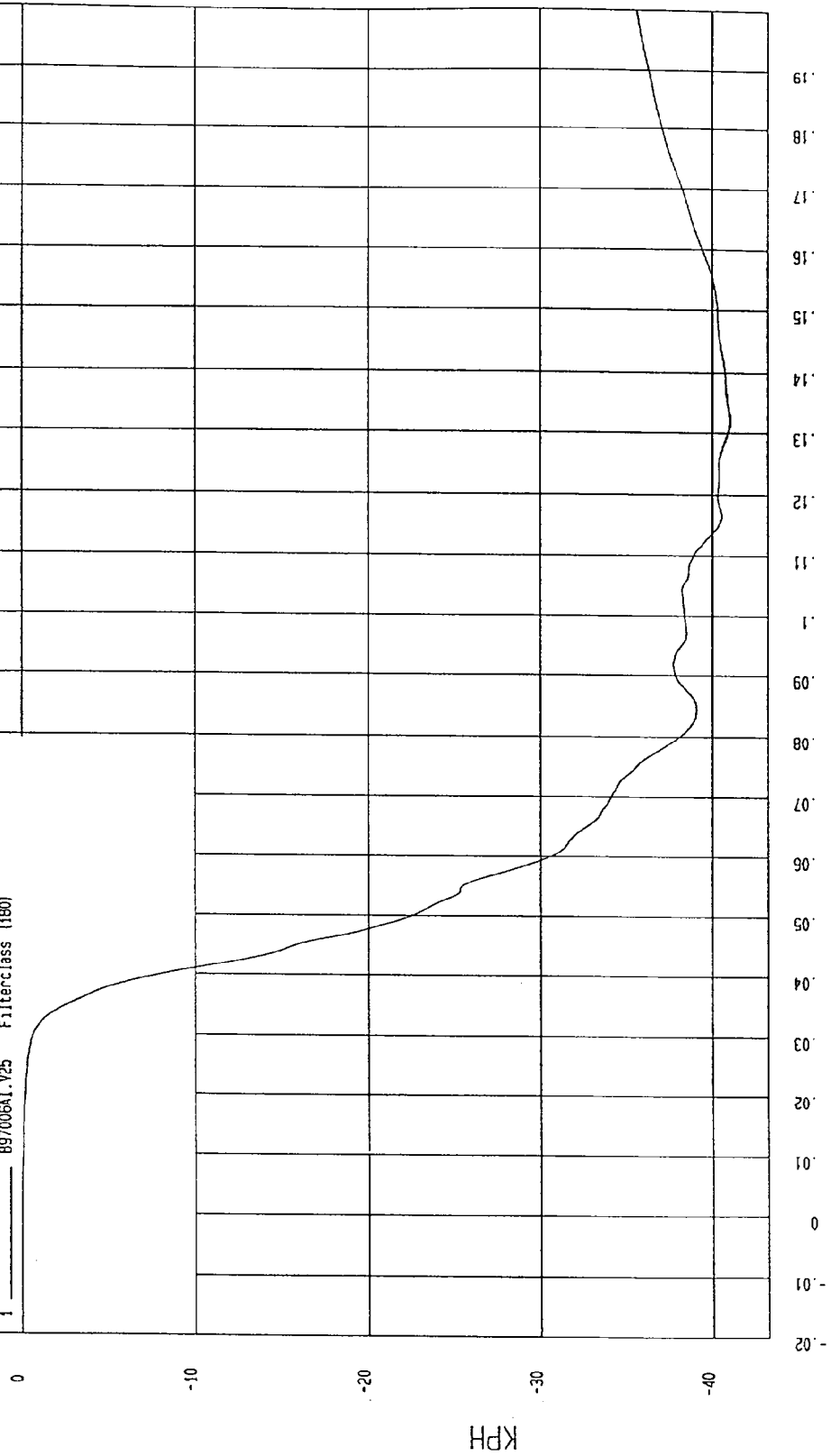
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -41.01 KPH at 132 msec Maximum = 3.43E-03 KPH at -14 msec

REAR PASSENGER UPPER RIB Y VELOCITY

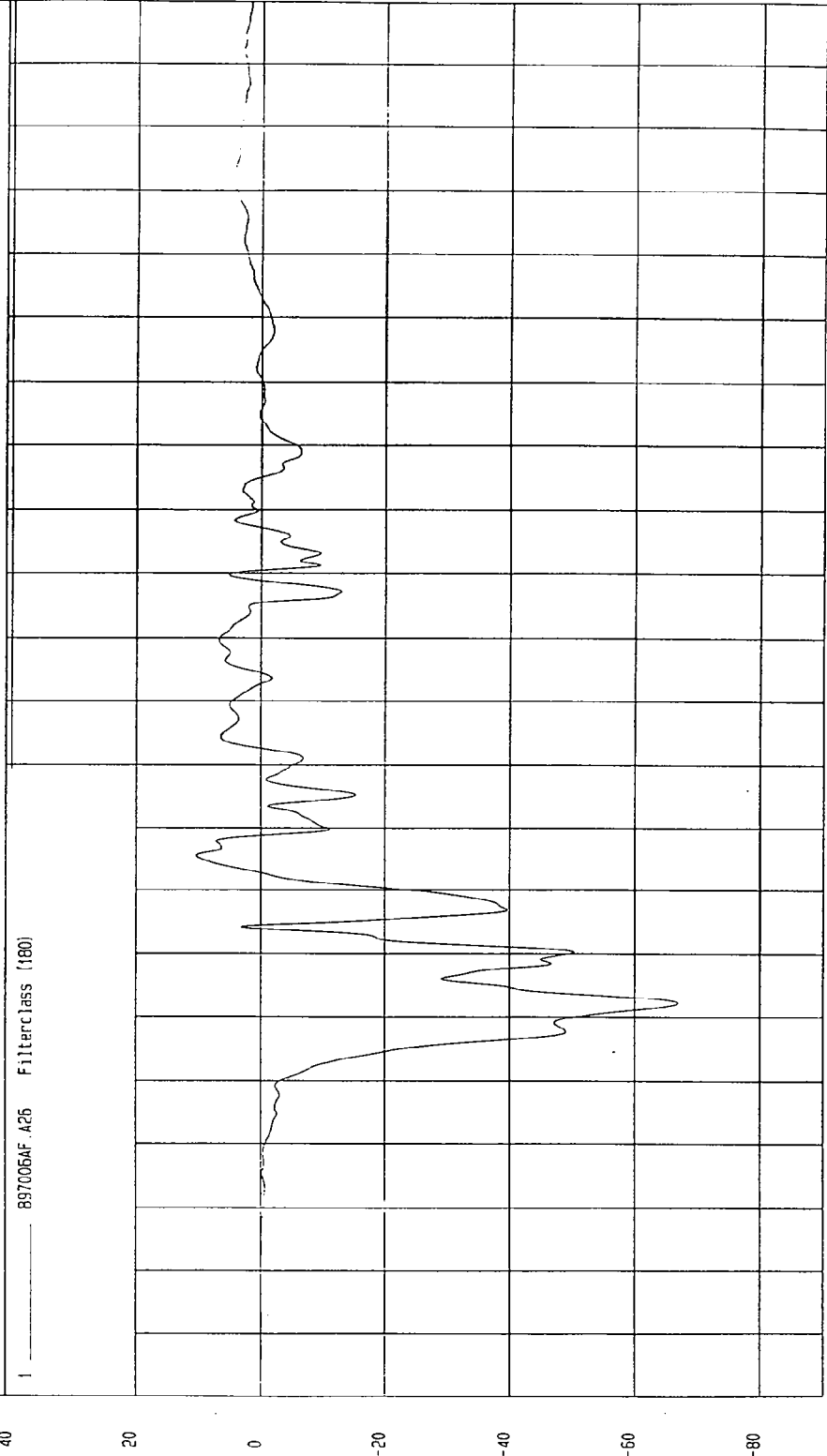
1 ——— 897006A1.V25 Filterclass (180)



NGA Research
01-21-1997 15:17

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -67.04 G's at 42 msec Maximum = 10.62 G's at 66 msec	

REAR PASSENGER LOWER RIB Y ACCELERATION



TIME (SECONDS)

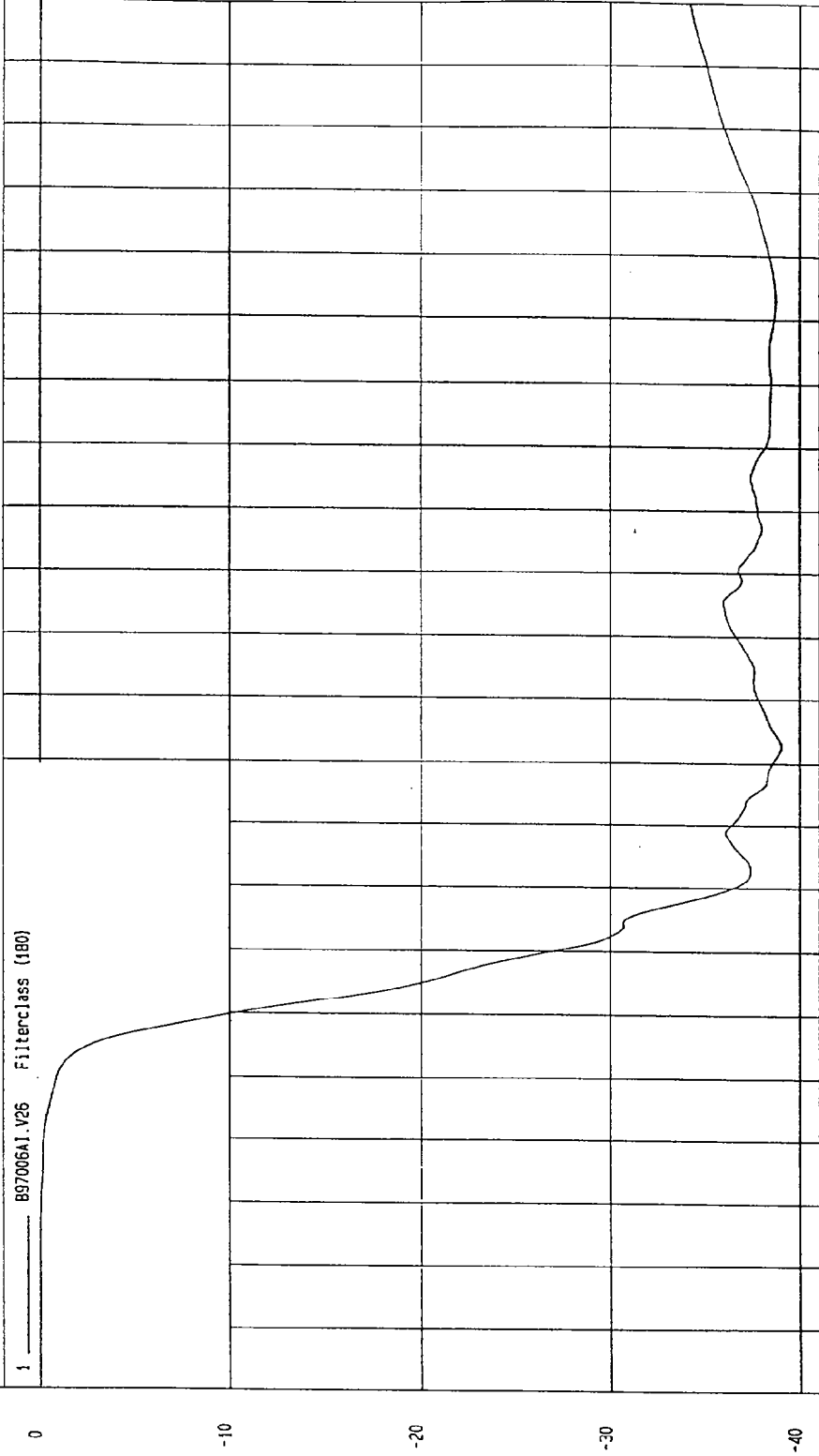
WCA Research
01-21-1997 15:09

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -39.08 KPH at 83 msec Maximum = 6.12E-03 KPH at -15 msec

REAR PASSENGER LOWER RIB Y VELOCITY

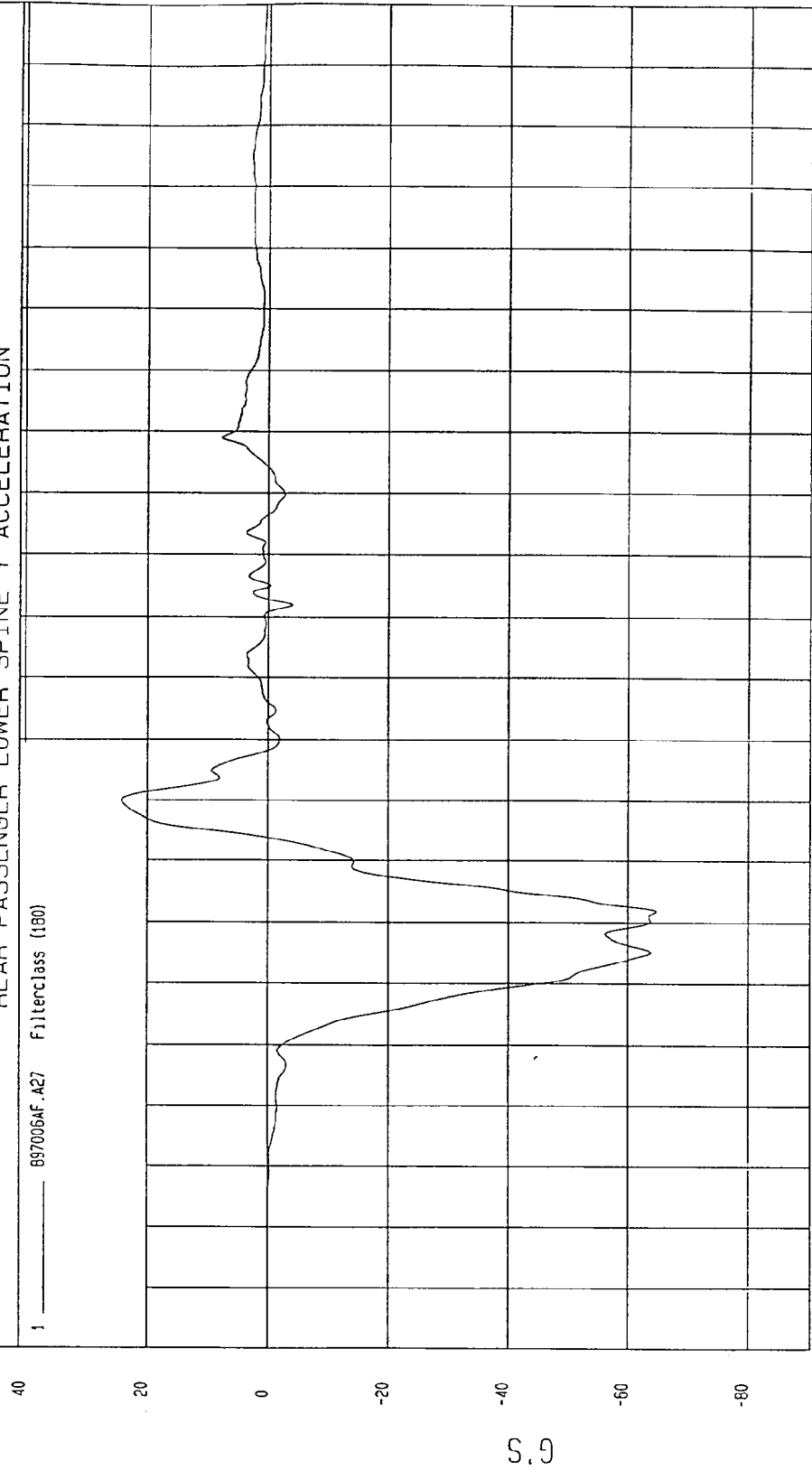


MCA Research
01-21-1997 15:17

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -64.59 G'S at 52 msec	Maximum = 24.30 G'S at 70 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 _____ 897005AF.A27 Filterclass (180)



MGA Research
01-21-1997 15:09

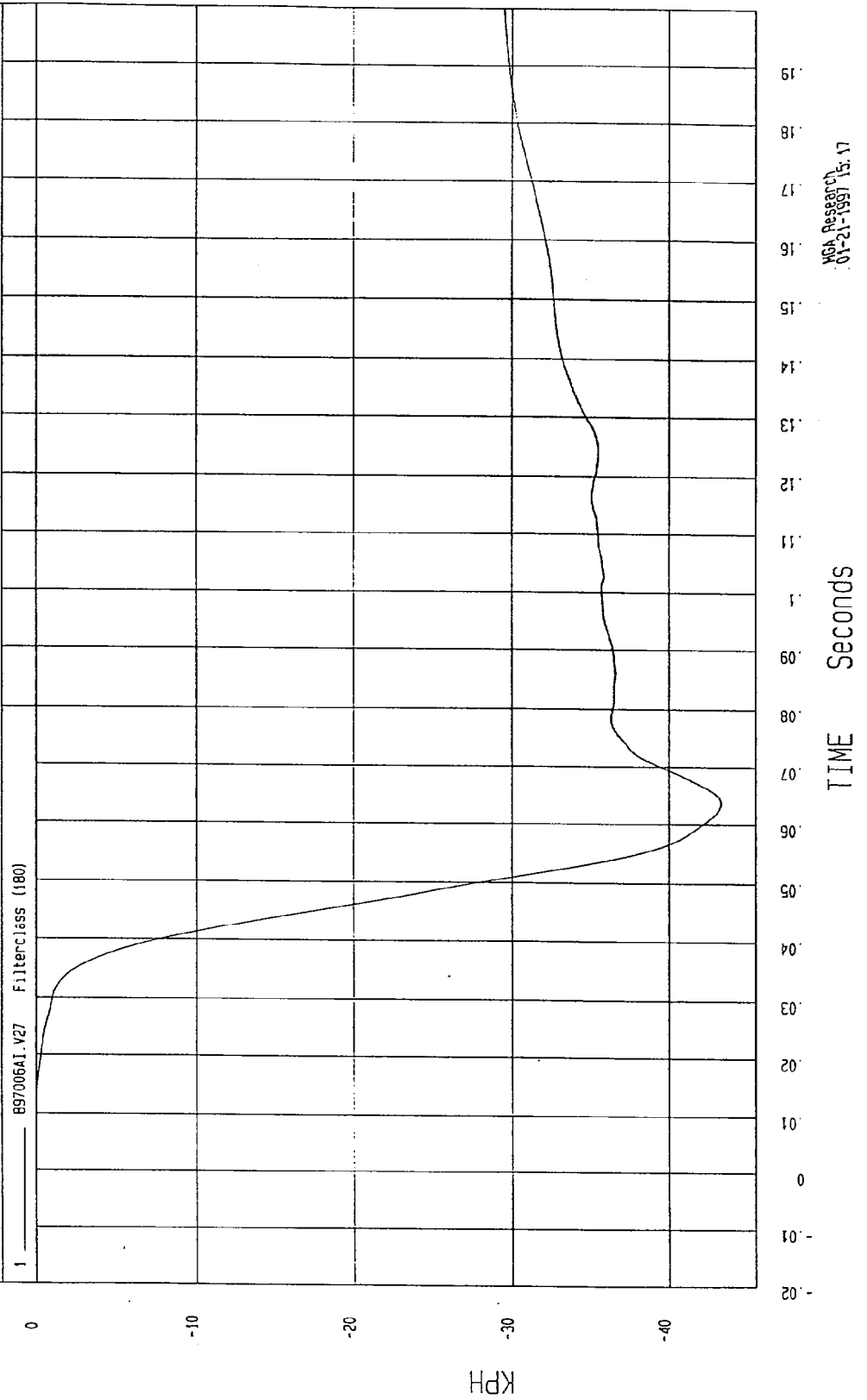
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -43.25 KPH at 64 msec

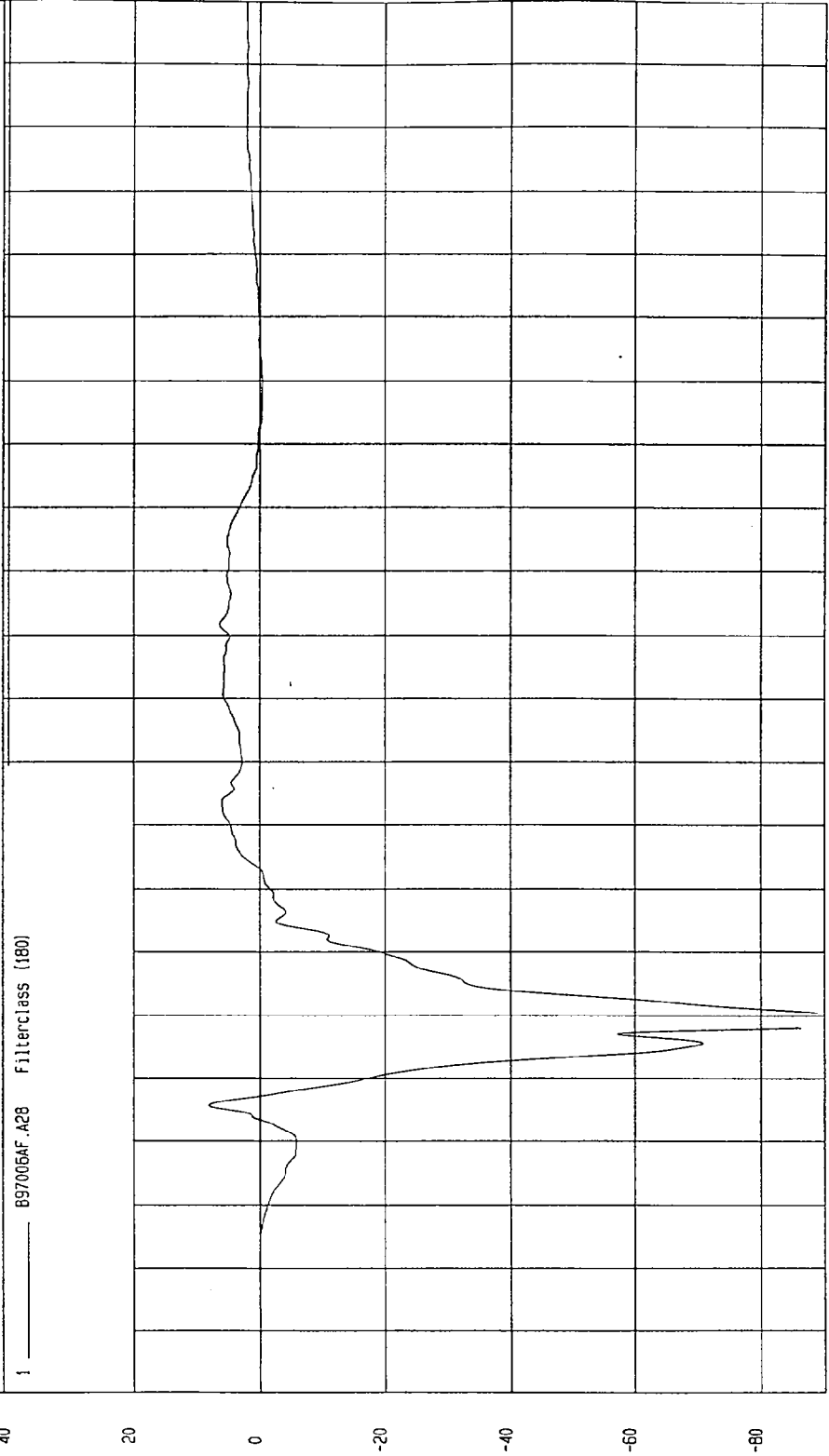
Maximum = 1.92E-02 KPH at 5 msec

REAR PASSENGER LOWER SPINE Y VELOCITY



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -104.11 G'S at 39 msec Maximum = 0.33 G'S at 26 msec	

REAR PASSENGER PELVIS Y ACCELERATION



TIME (SECONDS)

MGA Research
01-21-1997 15:09

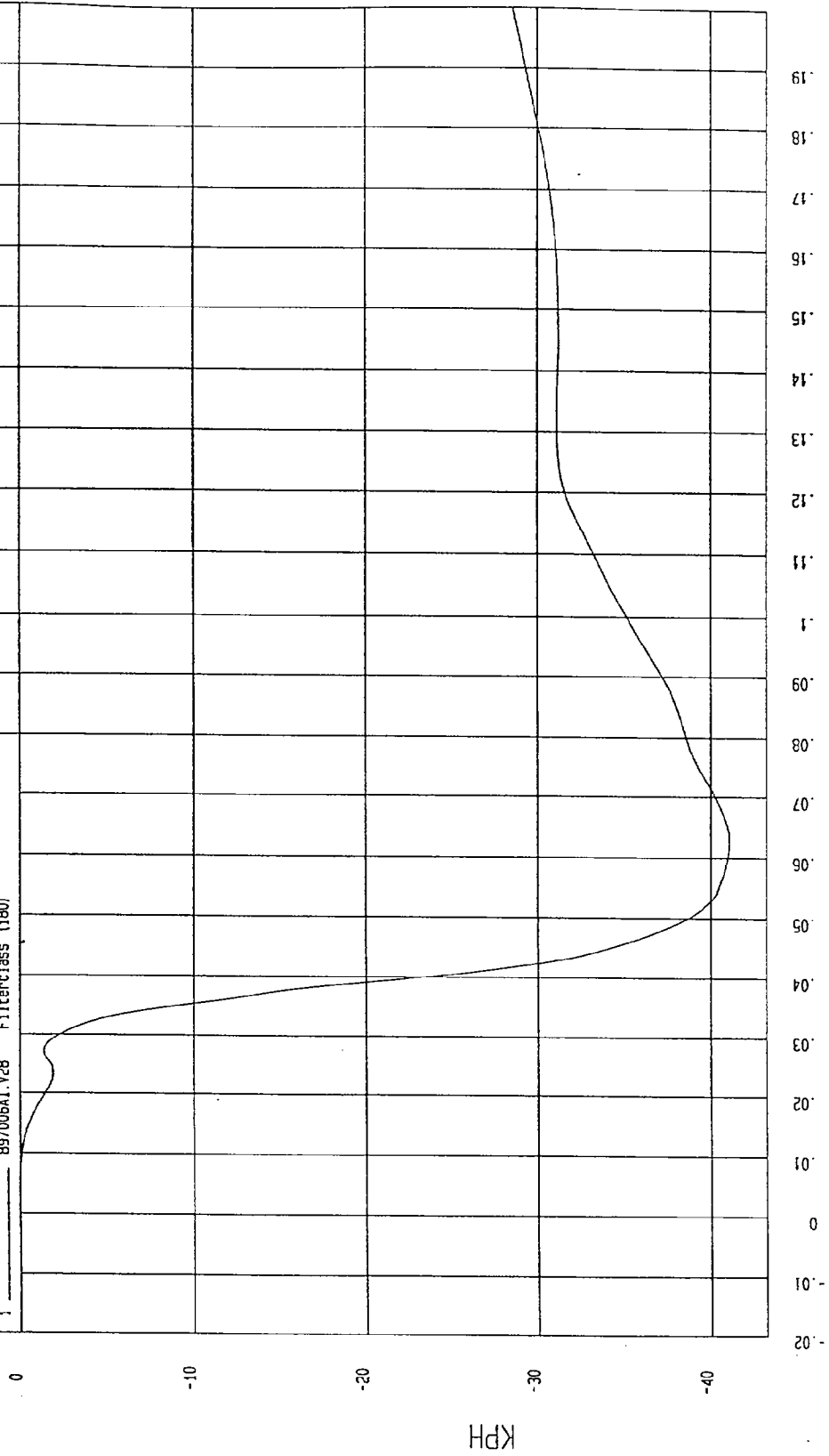
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -41.05 KPH at 63 msec Maximum = 1.98E-02 KPH at 3 msec

REAR PASSENGER PELVIS Y VELOCITY

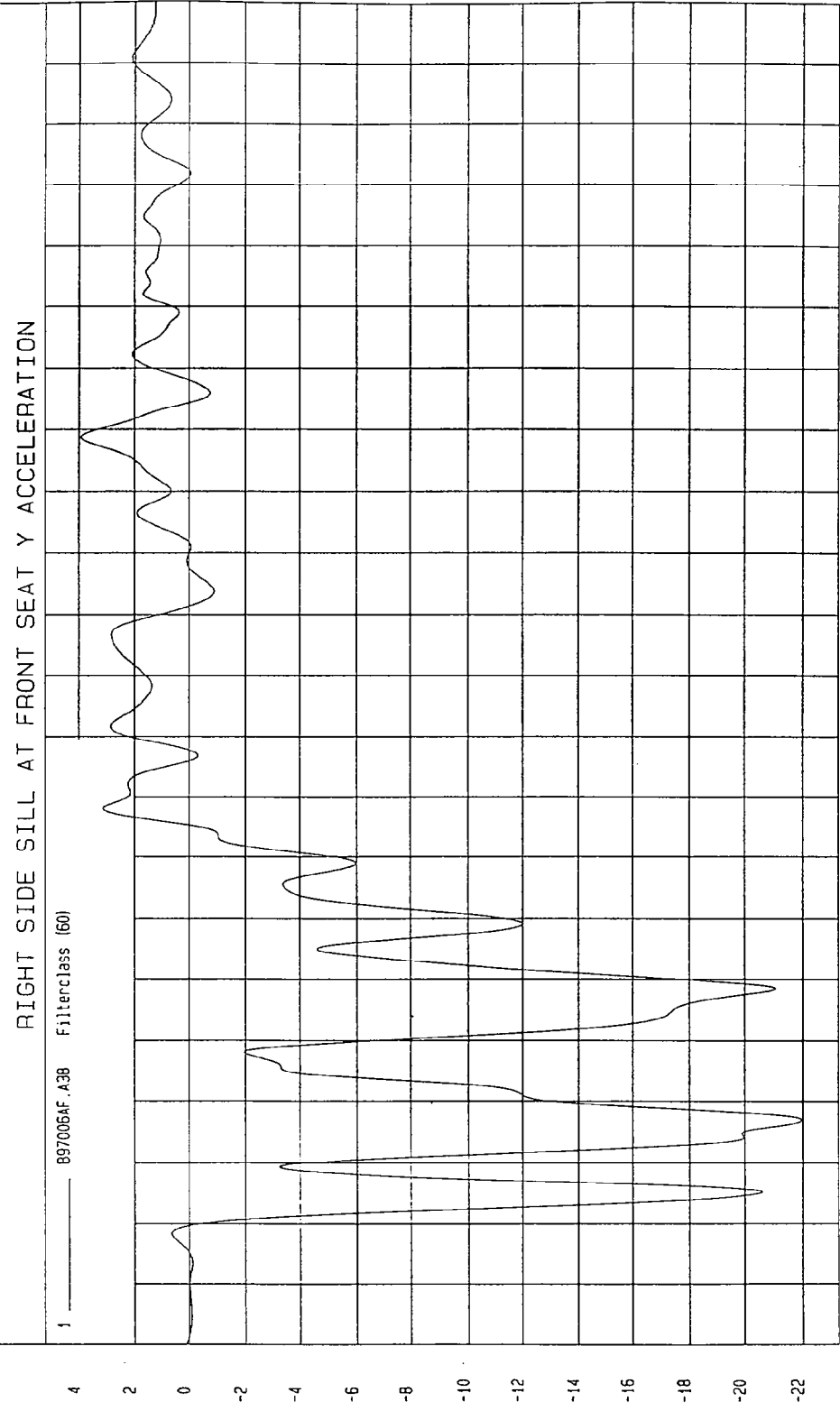
1 897006A1.V28 Filterclass (180)



NCA Research
01-21-1997 15:17

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -21.95 G's at 17 msec Maximum = 3.93 G's at 129 msec	



TIME (SECONDS)

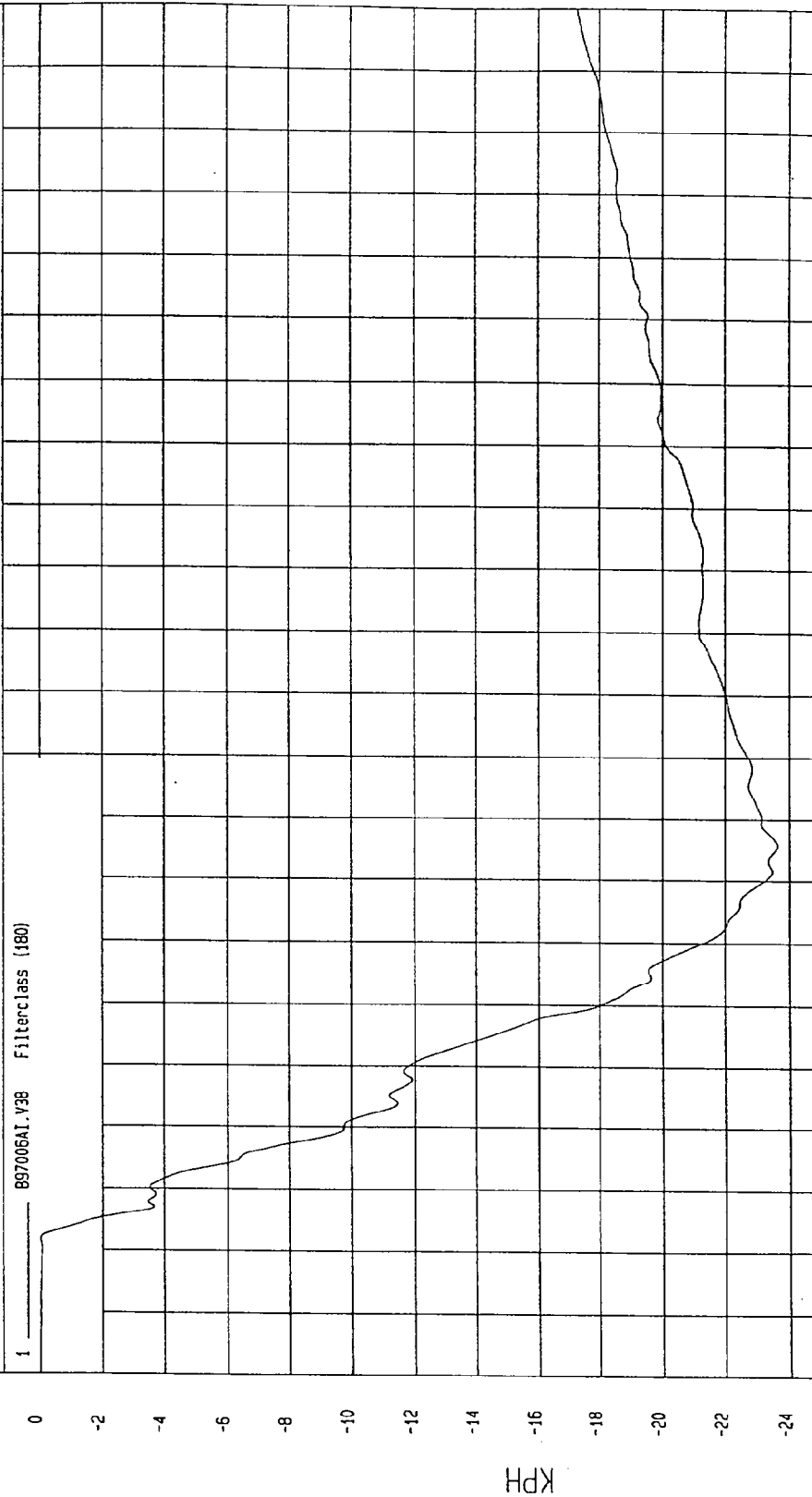
WCA Research
01-21-1997 15:30

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -23.63 KPH at 66 msec Maximum = 1.97E-03 KPH at -19 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY



MGA Research
01-21-1997 15:28

TIME Seconds

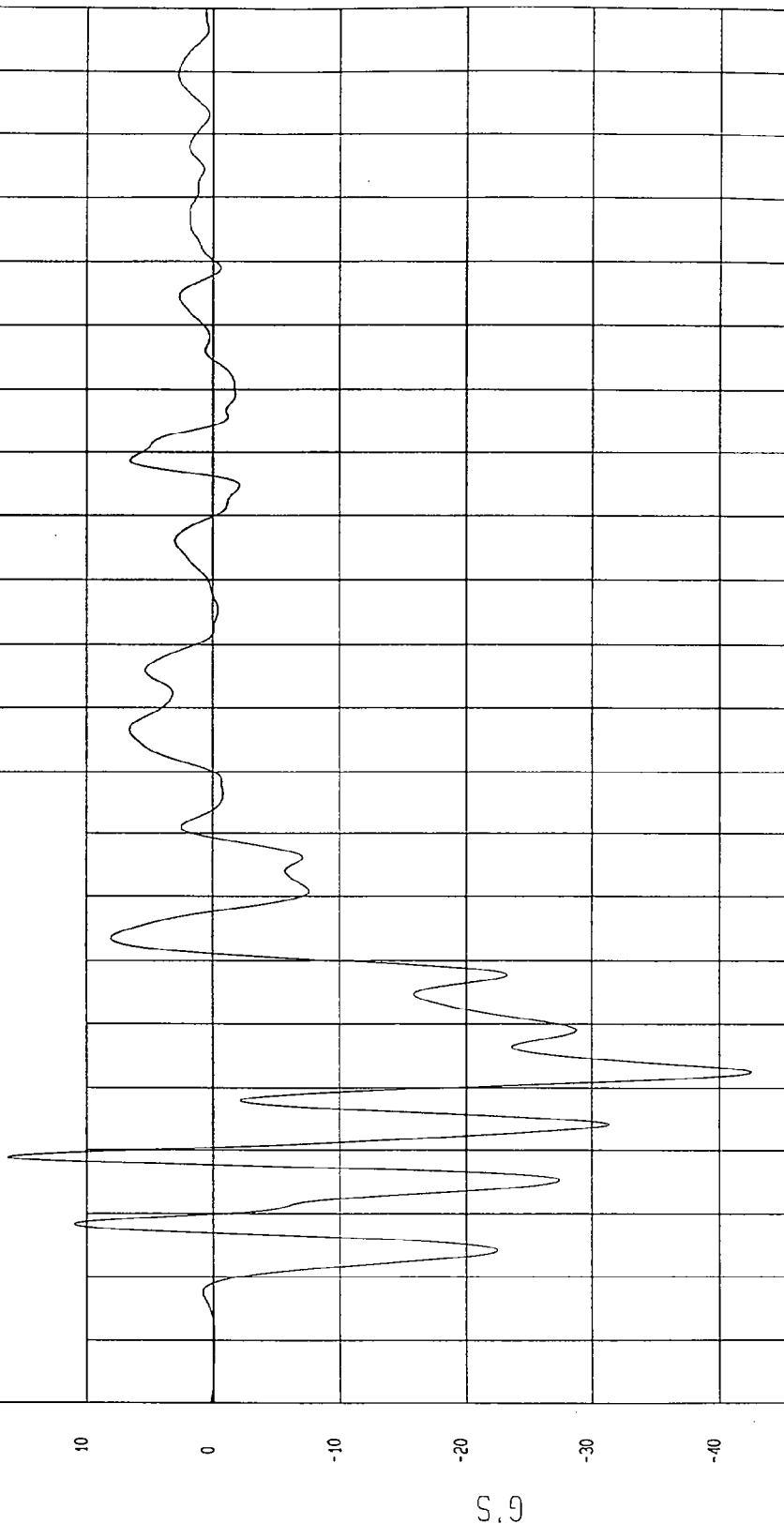
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -42.49 G'S at 32 msec Maximum = 16.28 G'S at 19 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

1 897005AF.A39 Filterclass (60)



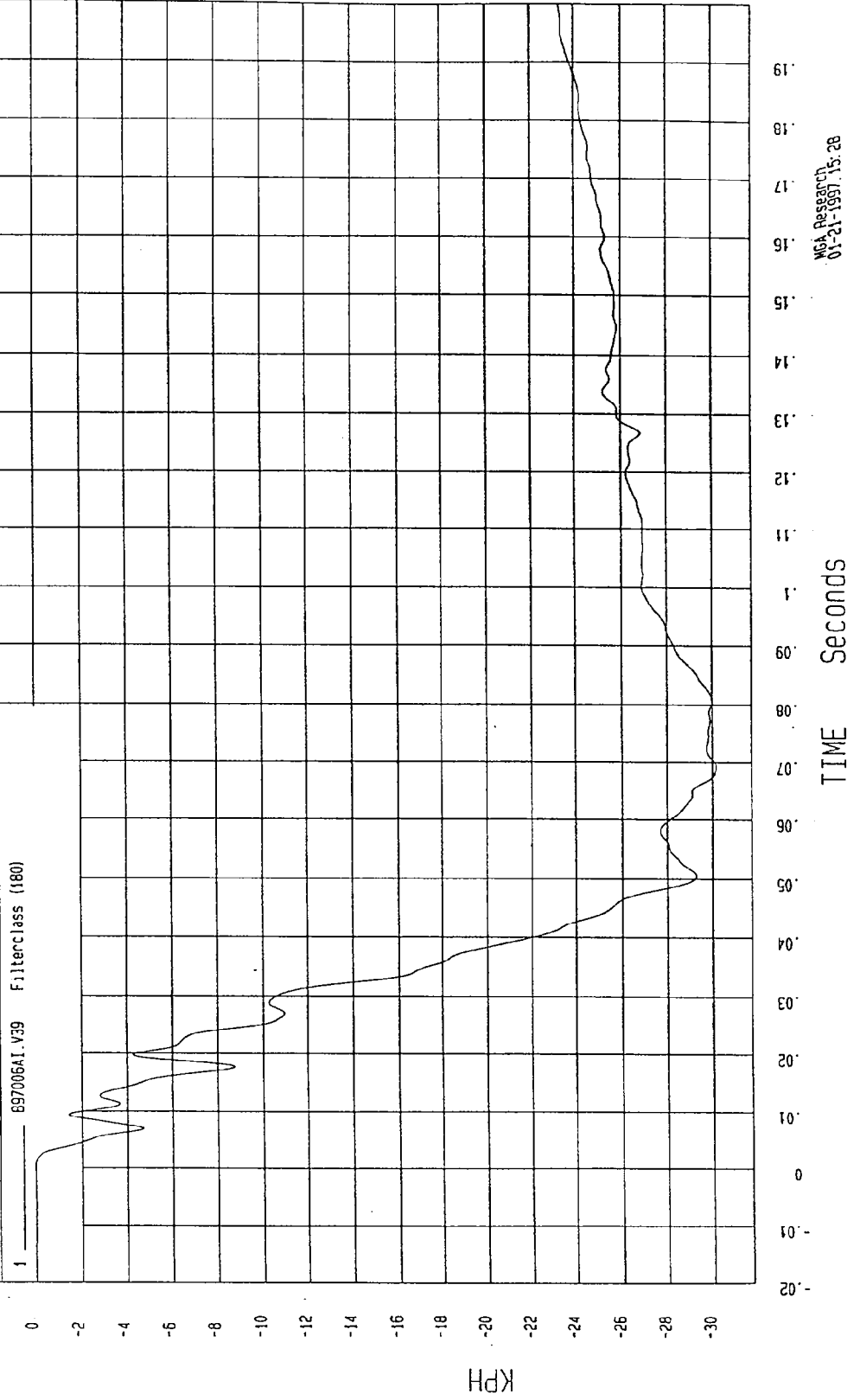
MCA Research
01-21-1997 15:31

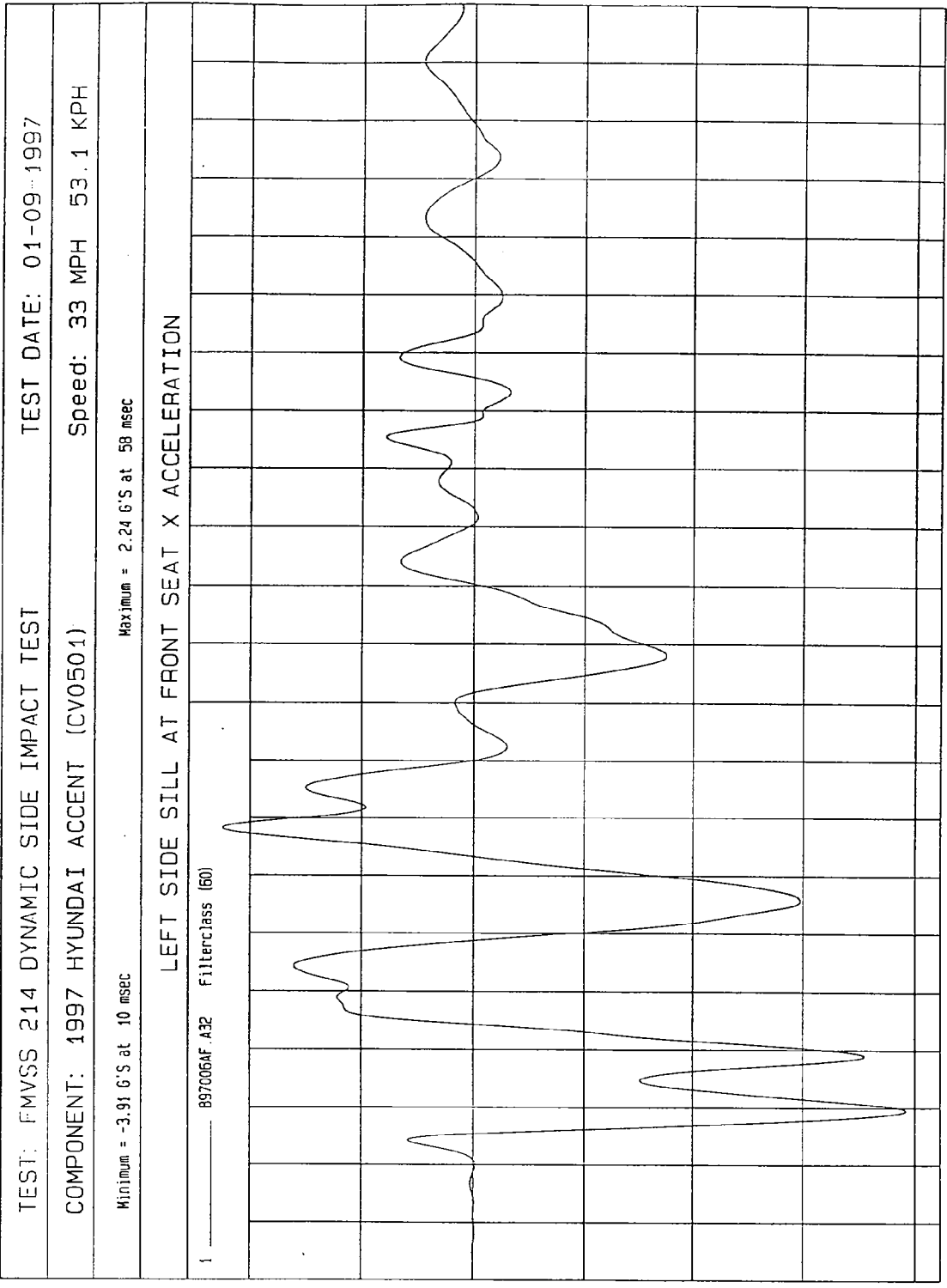
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -30.15 KPH at 69 msec Maximum = 1.05E-02 KPH at 0 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY





TIME (SECONDS)

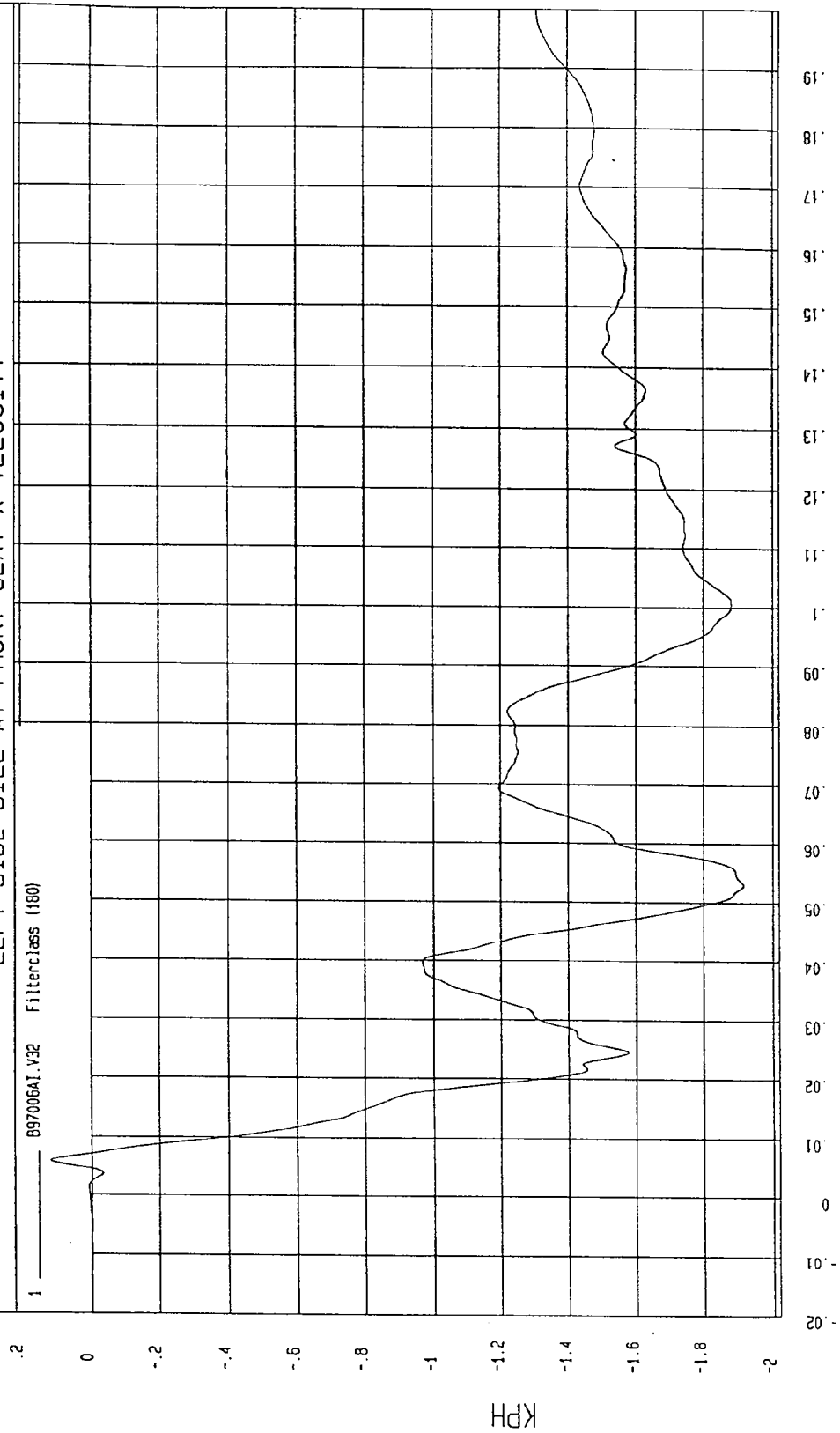
WCA Research
01-21-1997 15:31

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

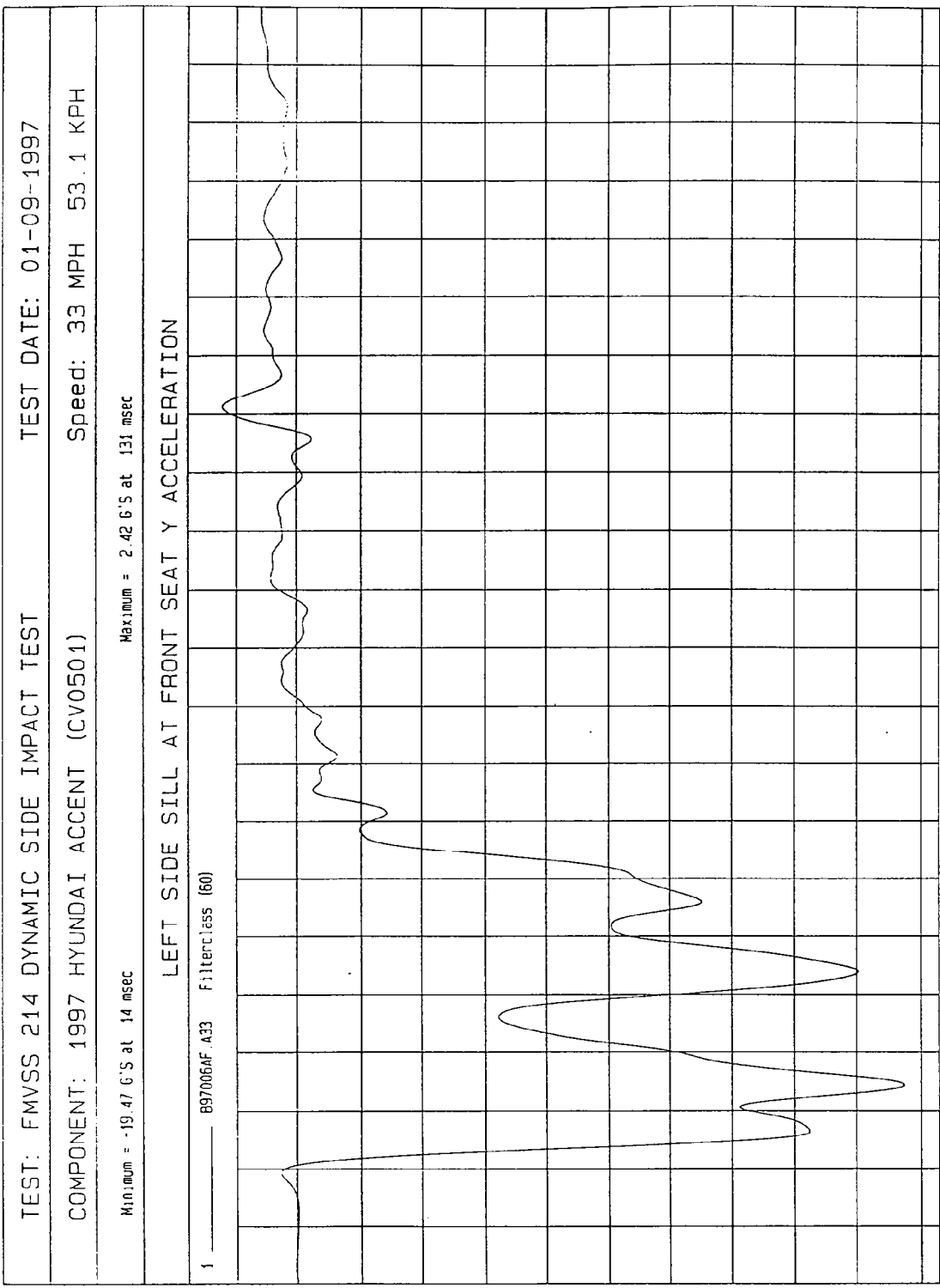
Minimum = -1.91 KPH at 53 msec Maximum = .11 KPH at 6 msec

LEFT SIDE SILL AT FRONT SEAT X VELOCITY



NCA Research
01-21-1997 15:28

TIME Seconds



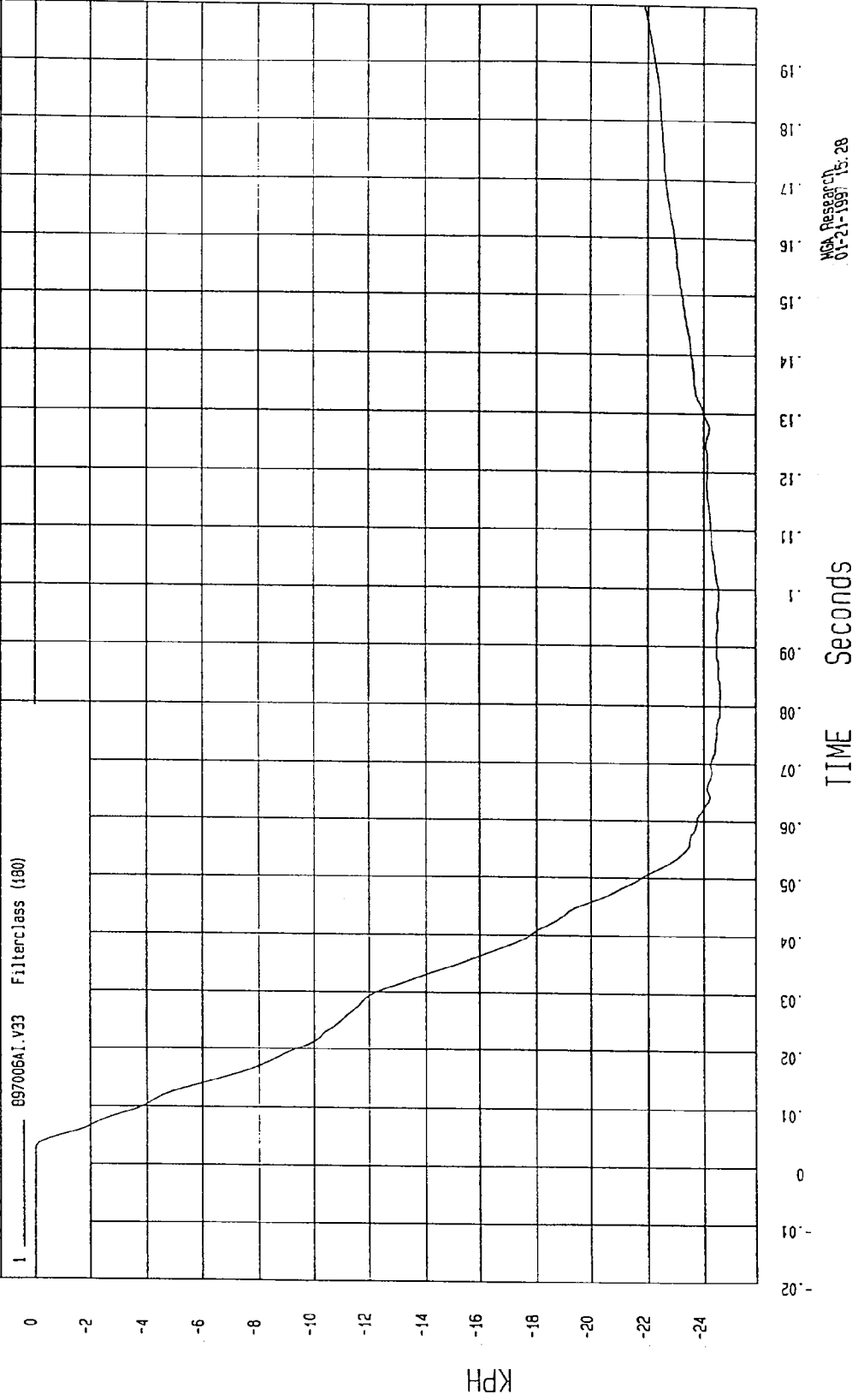
MGA Research
01-21-1997 15:31

TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -24.58 KPH at 82 msec Maximum = 2.49E-03 KPH at -15 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

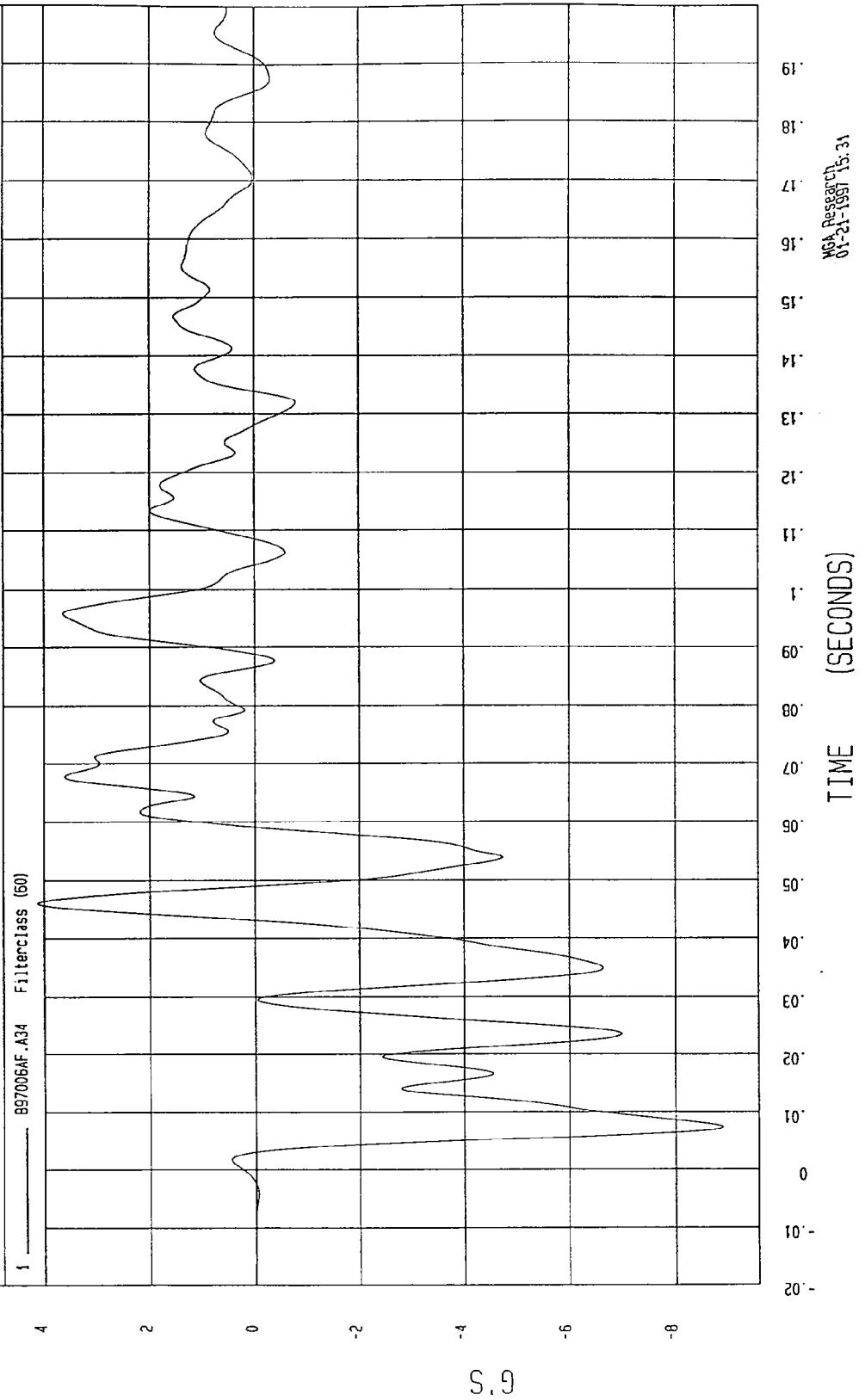


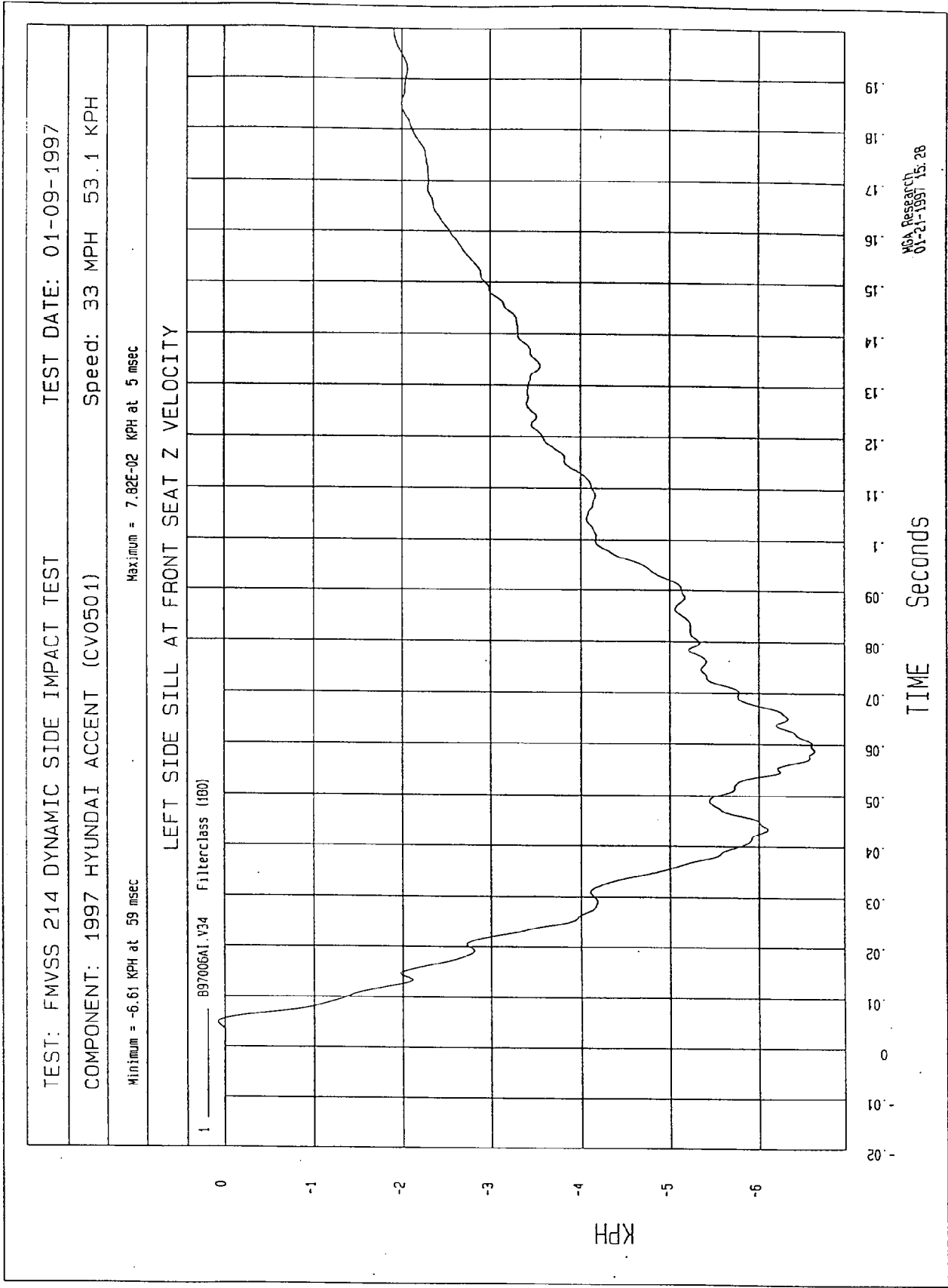
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

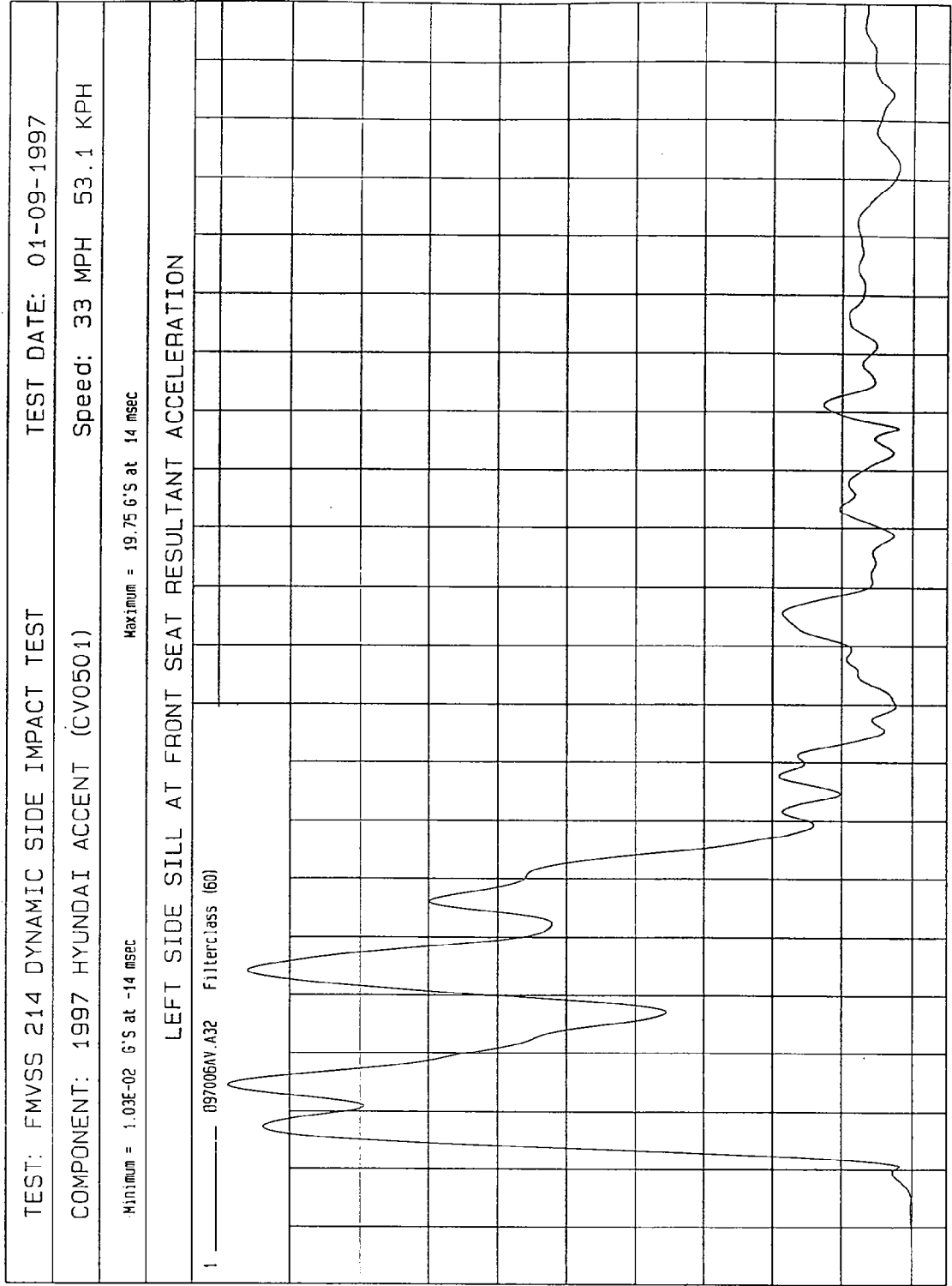
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -8.87 G'S at 7 msec Maximum = 4.12 G'S at 46 msec

LEFT SIDE SILL AT FRONT SEAT Z ACCELERATION







MGA Research
01-21-1997 15:34

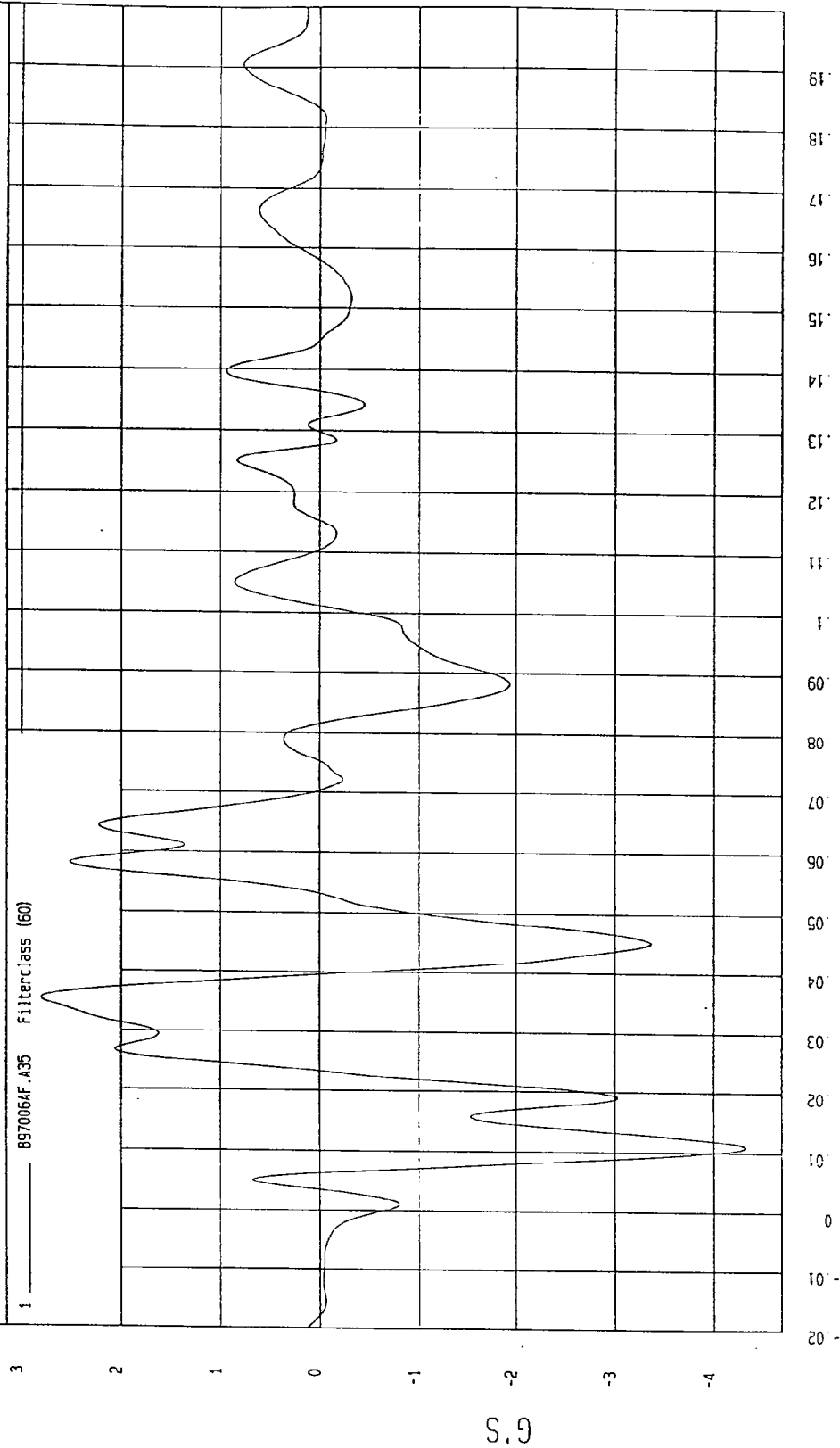
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -4.31 G'S at 11 msec Maximum = 2.80 G'S at 35 msec

LEFT SIDE SILL AT REAR SEAT X ACCELERATION

1 ——— B97006AF.A35 Filterclass (60)



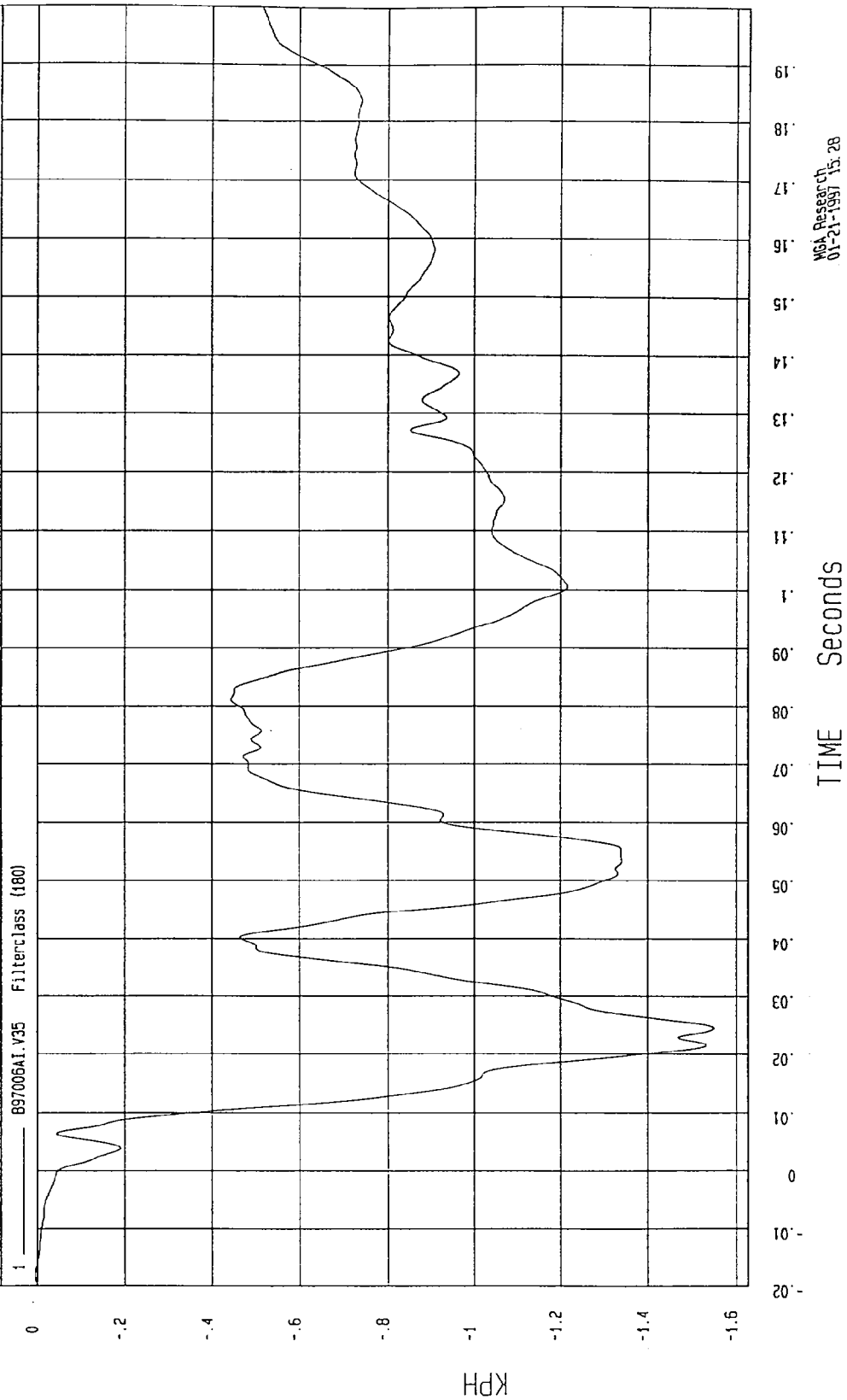
MGA Research
01-21-1997 15.31

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -1.54 KPH at 25 msec Maximum = 5.59E-03 KPH at -18 msec

LEFT SIDE SILL AT REAR SEAT X VELOCITY



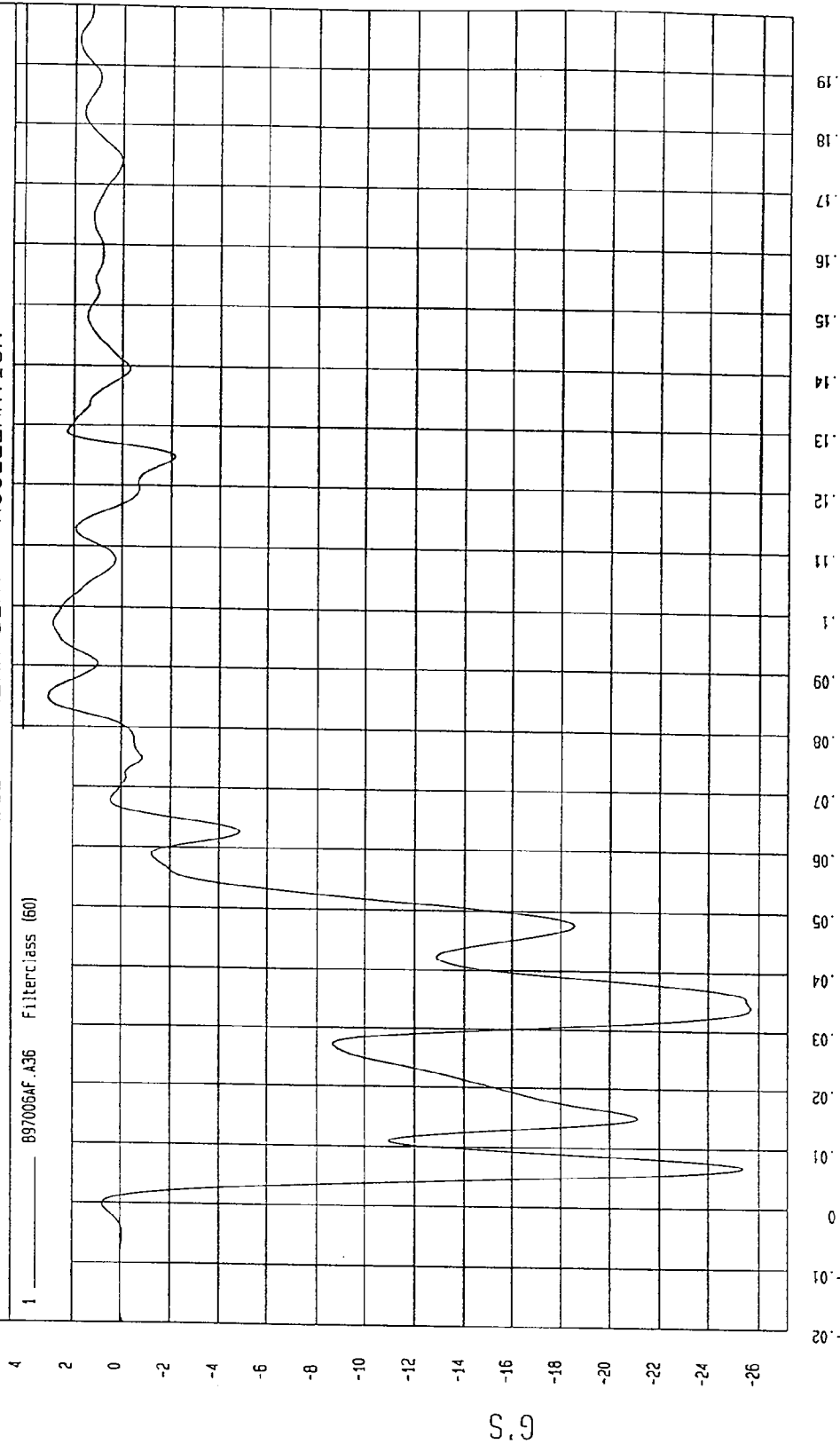
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -25.69 G'S at 34 msec Maximum = 3.01 G'S at 85 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 897006AF.A36 Filterclass (60)



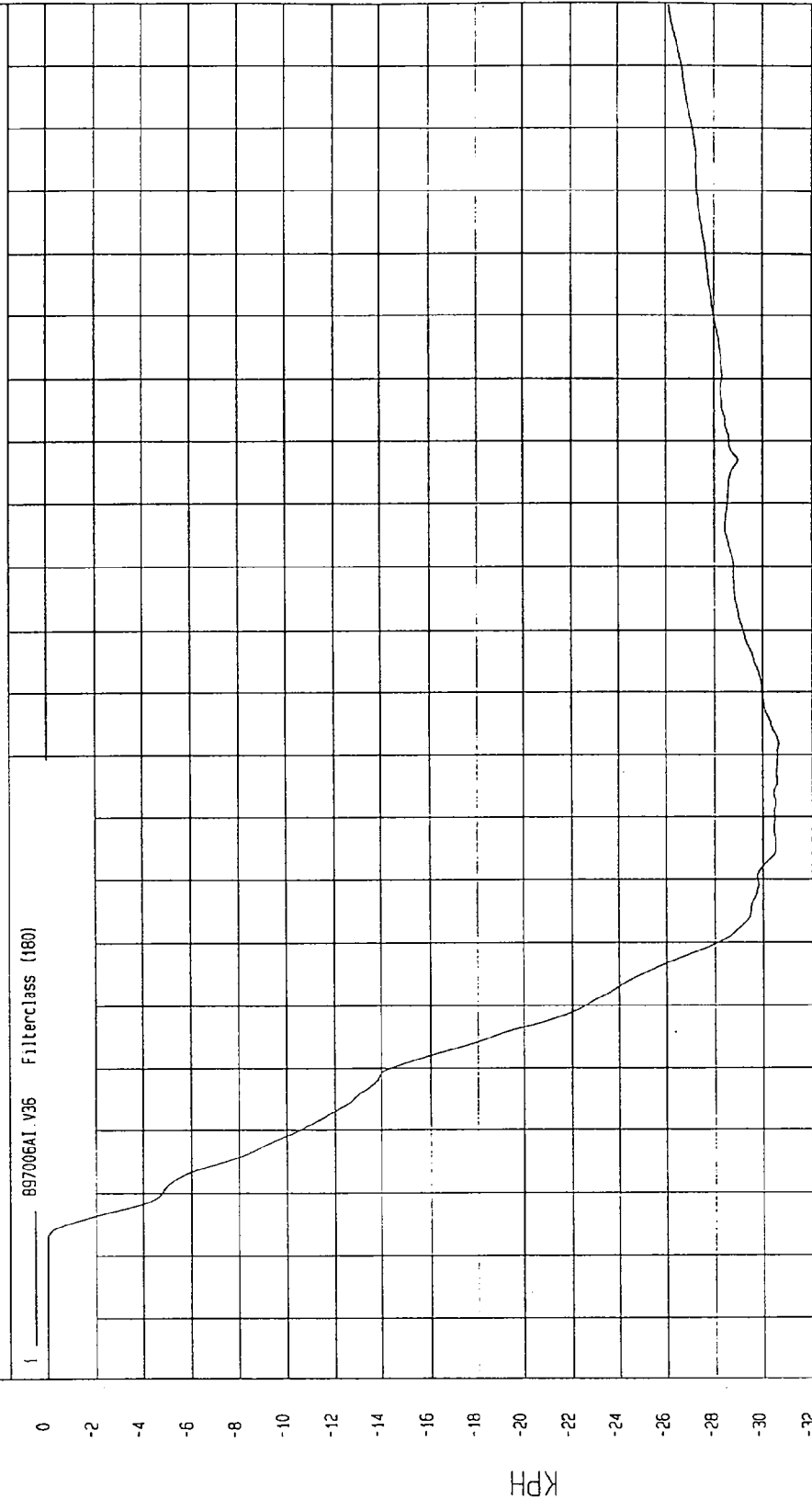
WCA Research
01-21-1997 15:31

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -30.56 KPH at 82 msec Maximum = 7.37E-03 KPH at -7 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY

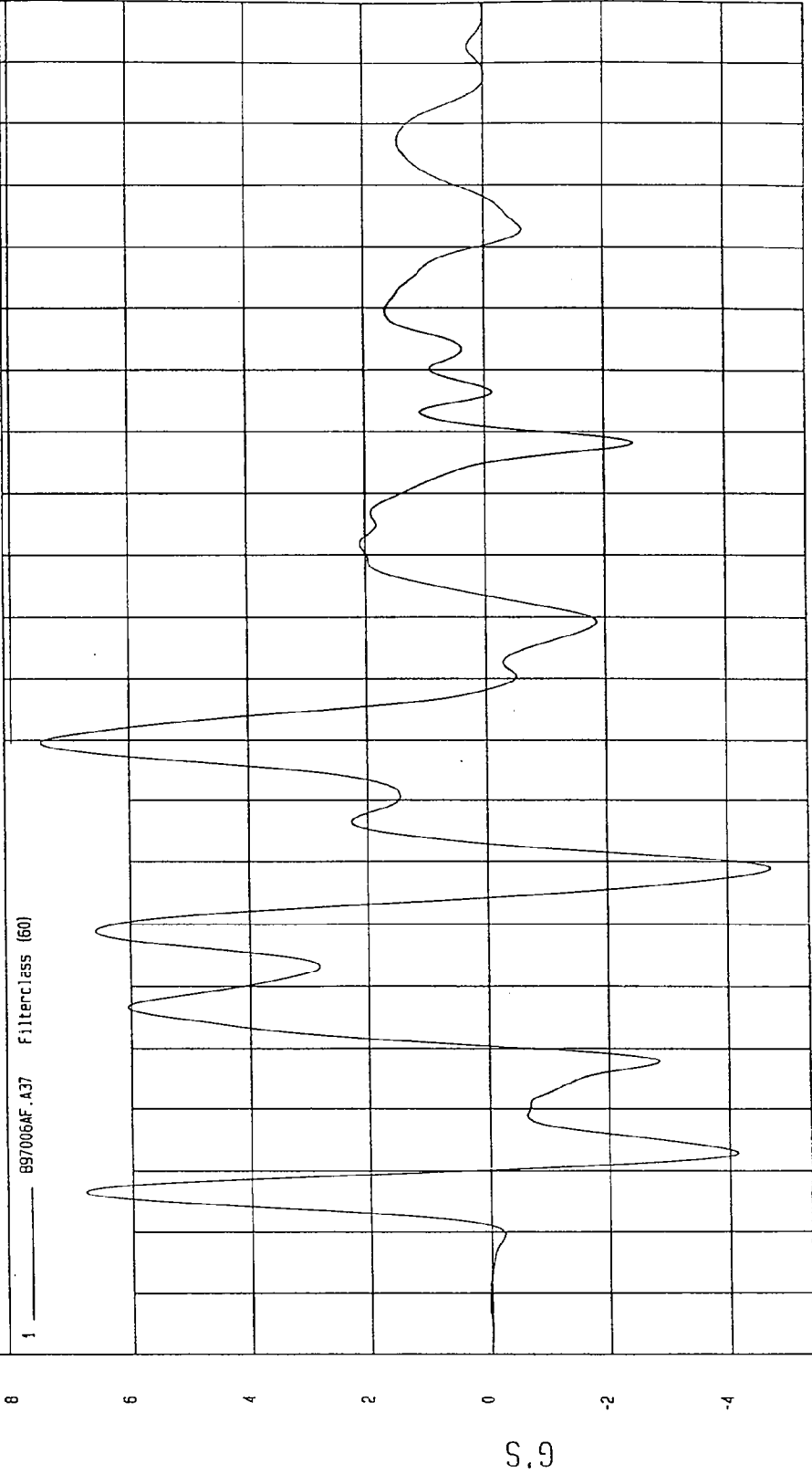


TIME Seconds

NGA Research
01-21-1997 15:28

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -4.70 G'S at 59 msec	
Maximum = 7.50 G'S at 80 msec	

LEFT SIDE SILL AT REAR SEAT Z ACCELERATION



TIME (SECONDS)

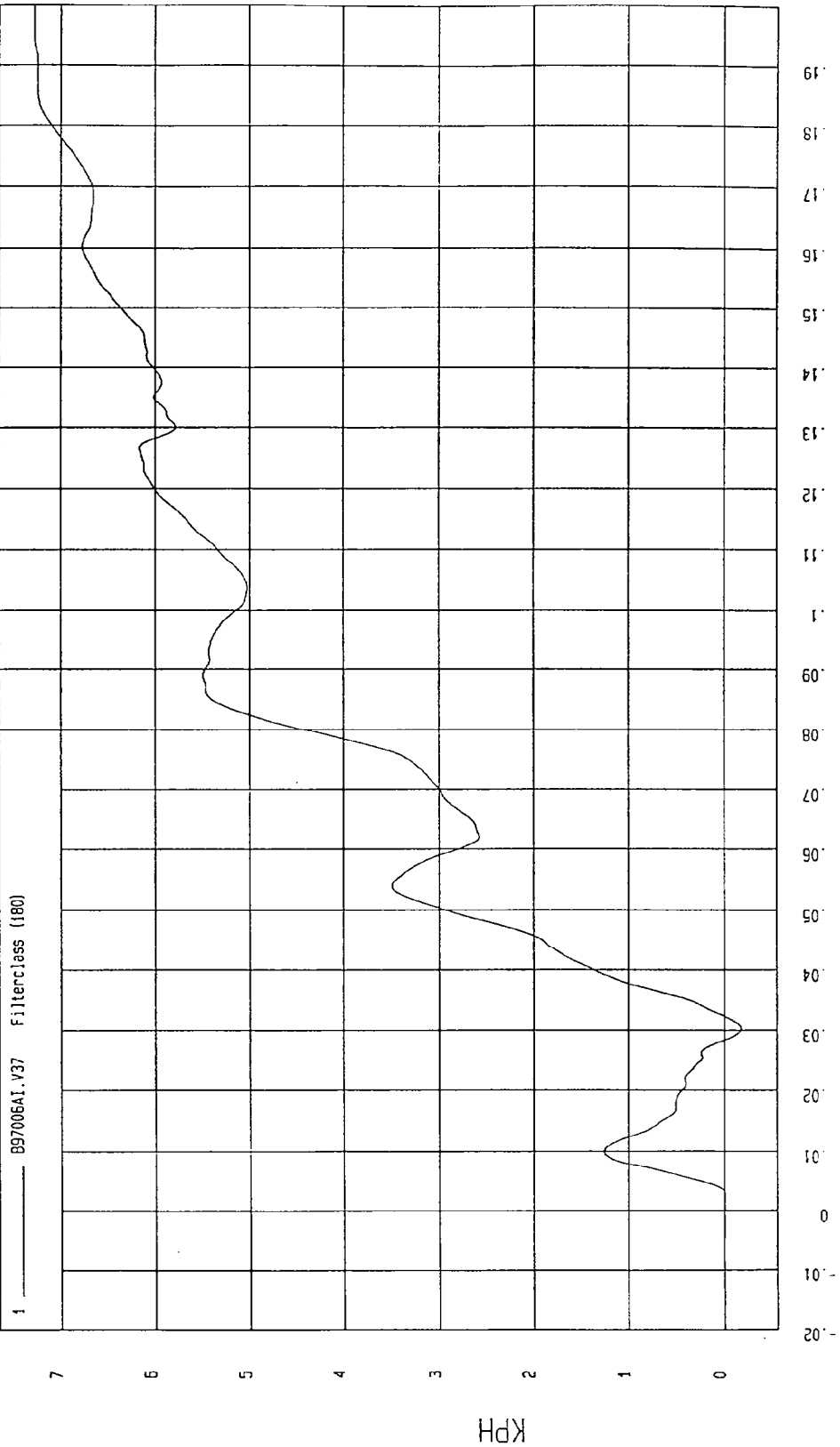
WGA Research
01-21-1997 15:31

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -17 KPH at 30 msec Maximum = 7.20 KPH at 200 msec

LEFT SIDE SILL AT REAR SEAT Z VELOCITY



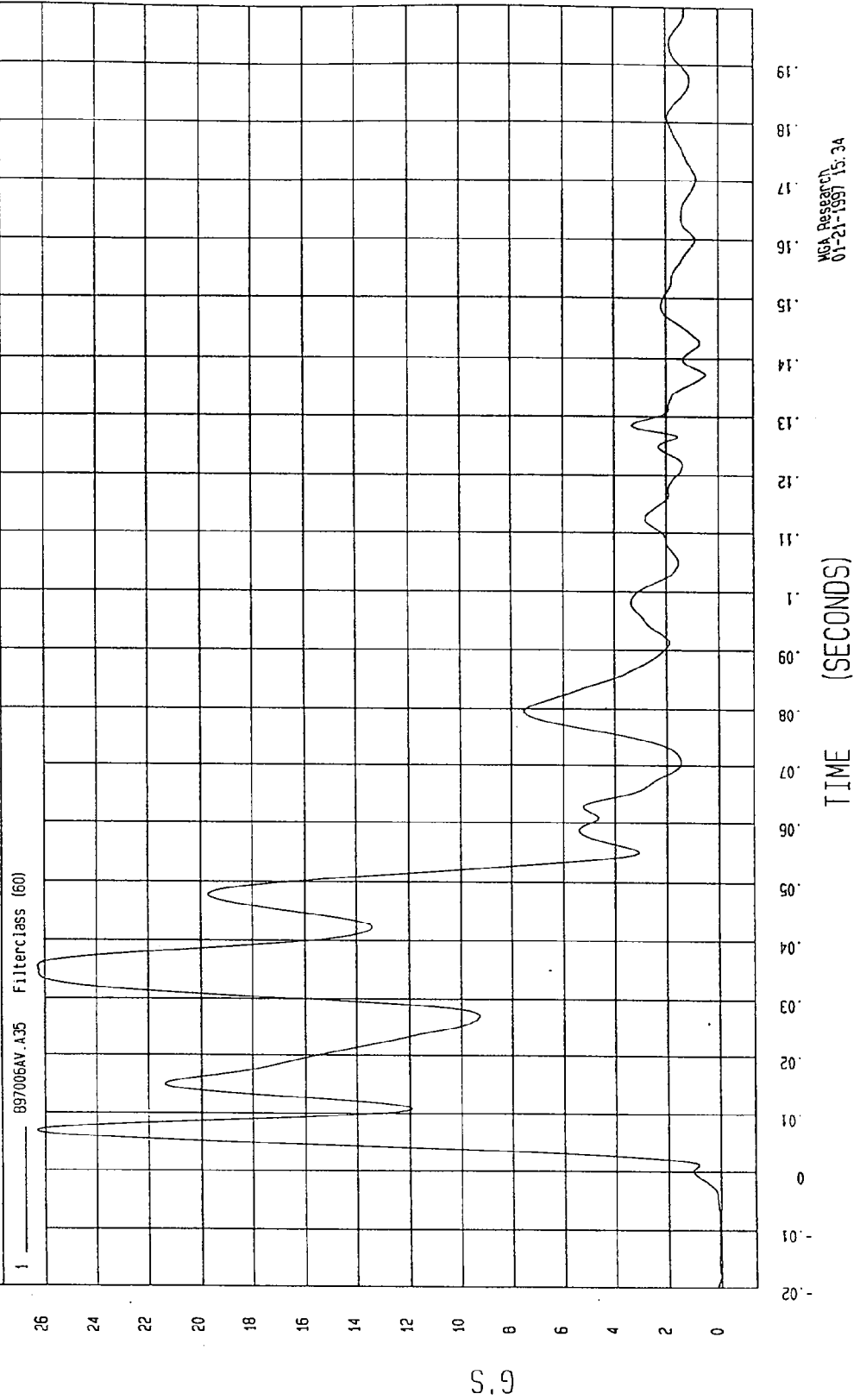
MSA Research
01-21-1997 13:29

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = 9.36E-03 G'S at -18 msec Maximum = 26.30 G'S at 7 msec

LEFT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION



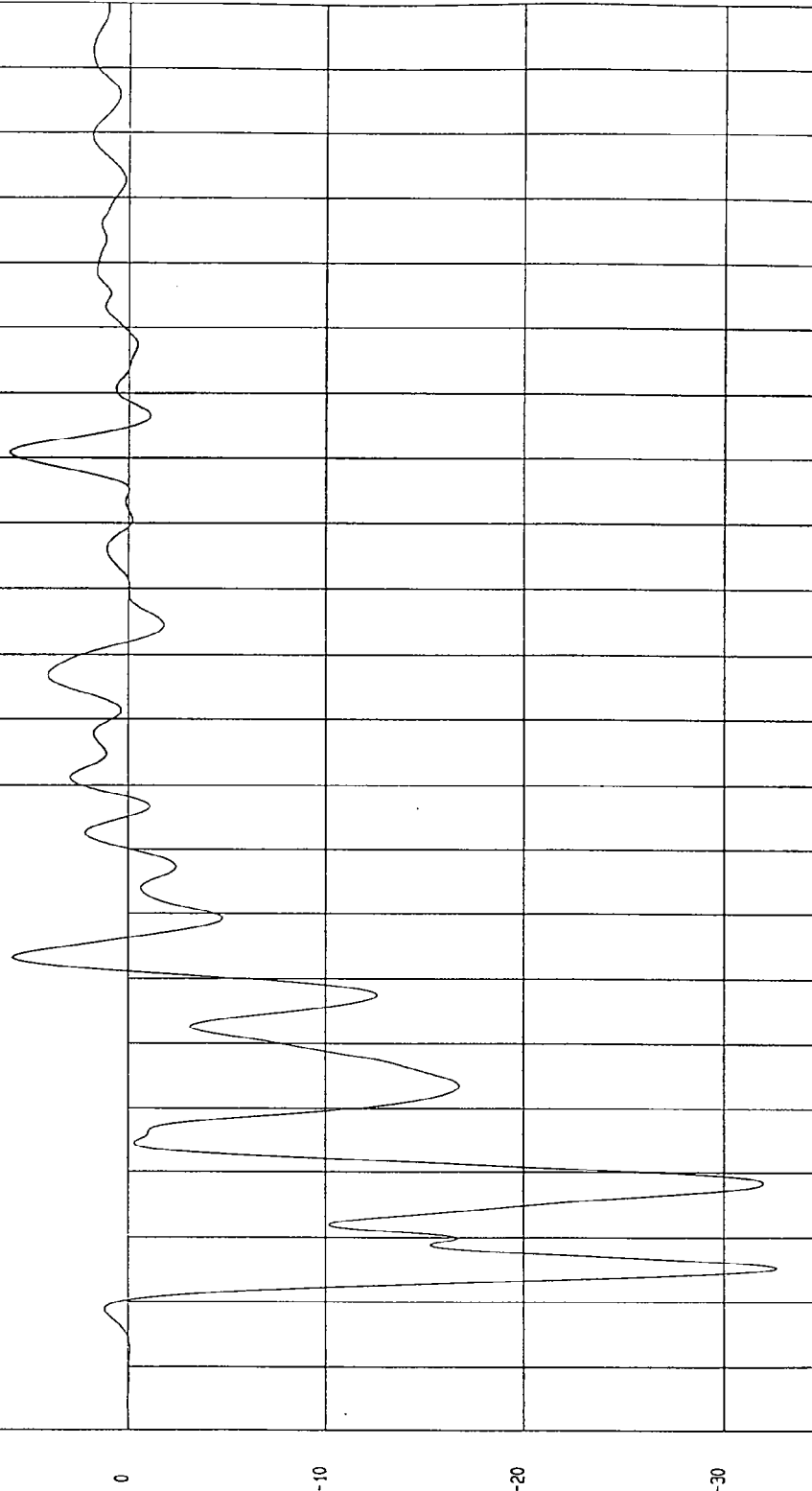
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -32.60 G'S at 5 msec Maximum = 6.03 G'S at 131 msec

RIGHT FRONT PASSENGER SEAT TRACK Y ACCELERATION

1 ——— B97006AF.A40 Filterclass (60)

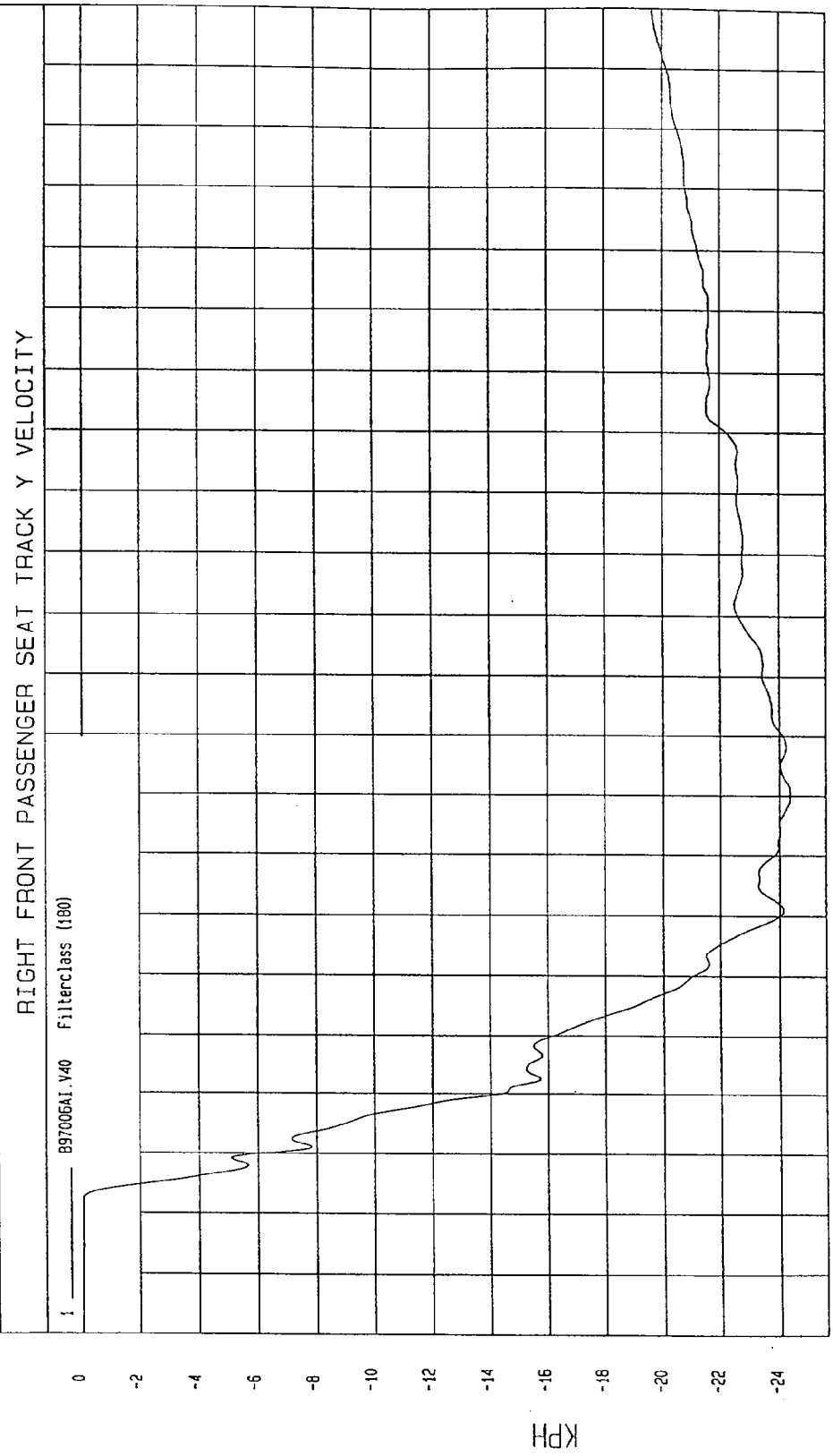


WGA Research
01-21-1997 15:31

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -24.37 KPH at 70 msec Maximum = 6.69E-03 KPH at -14 msec



TIME Seconds

MCA Research
01-21-1997 15:29

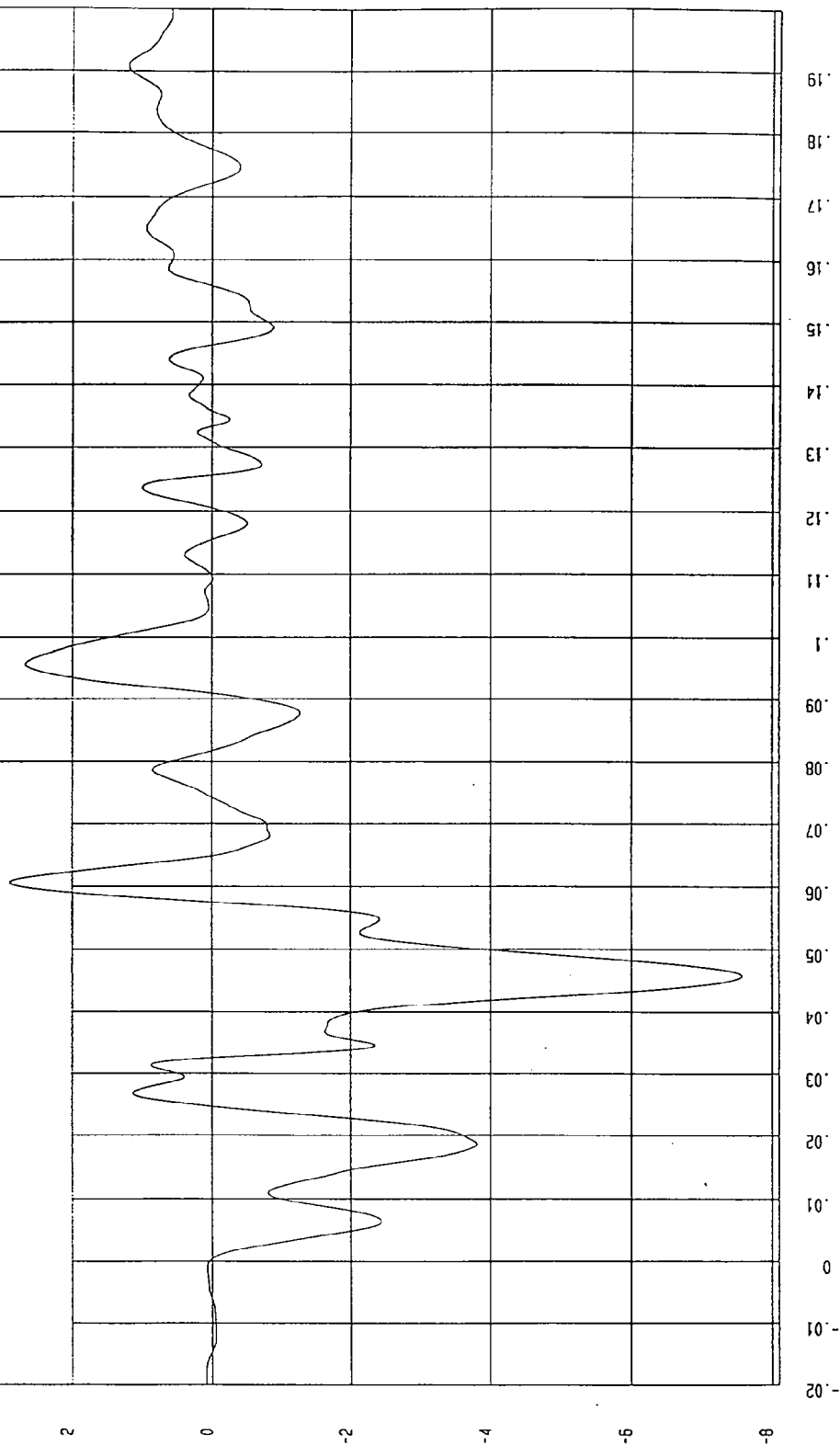
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -7.5/ G'S at 46 msec Maximum = 2.89 G'S at 61 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 B97006AF A08 Filterclass (60)



MGA Research
01-21-1997 15:32

TIME (SECONDS)

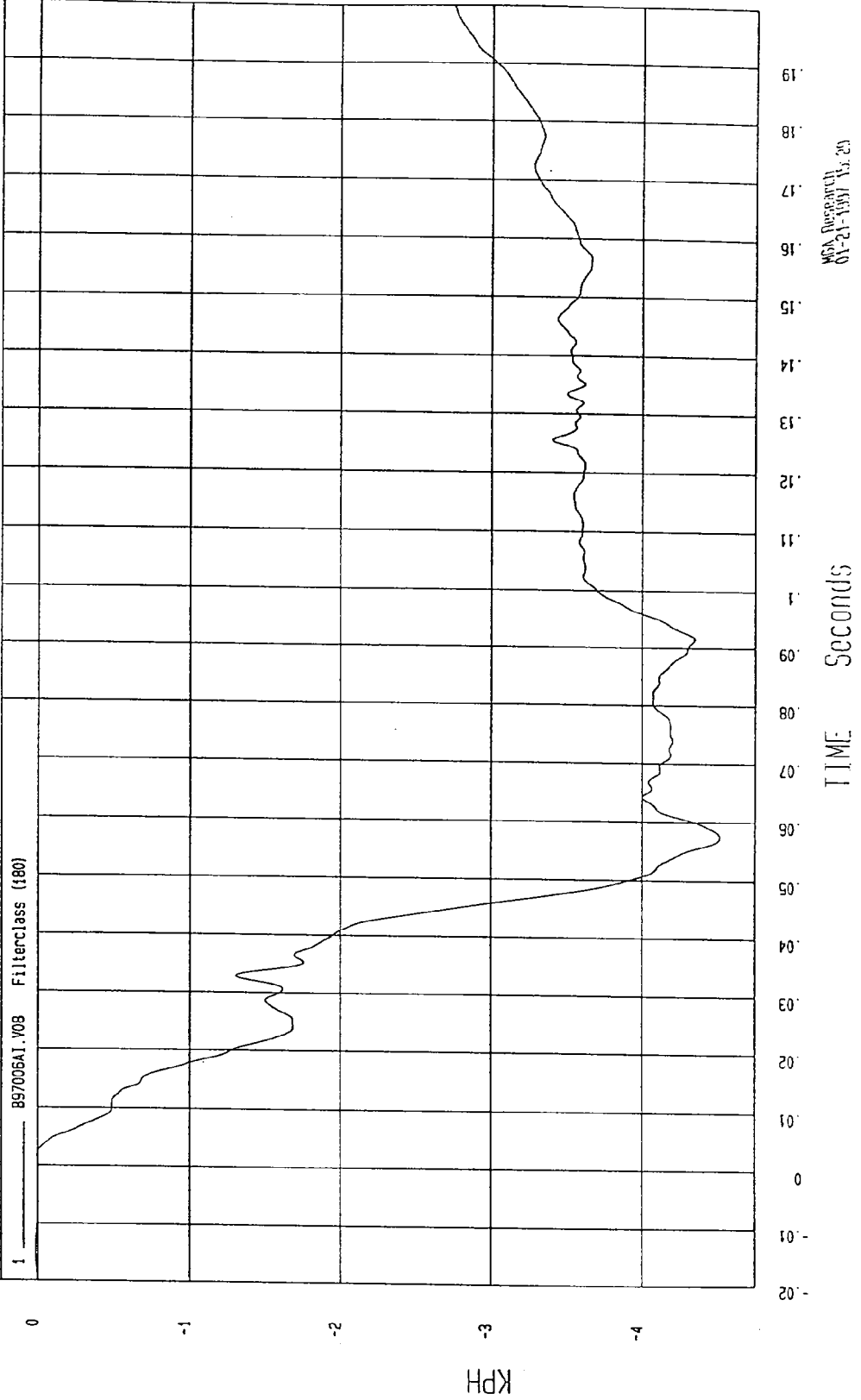
S.G

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -4.51 KPH at 57 msec Maximum = 1.41E-02 KPH at -14 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

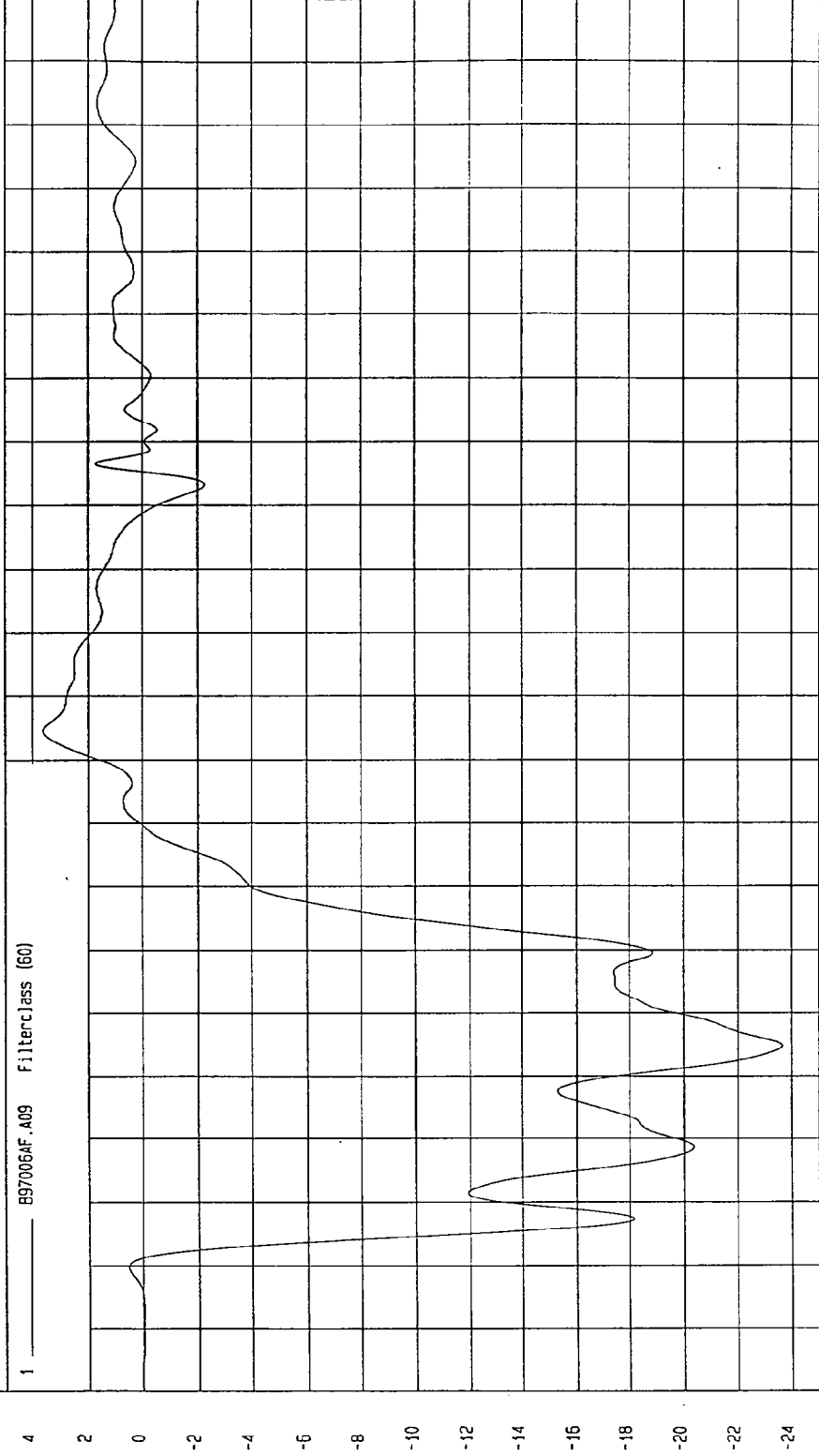


TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -23.65 G'S at 35 msec Maximum = 3.62 G'S at 84 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION



MOA Research
01-21-1997 15:32

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

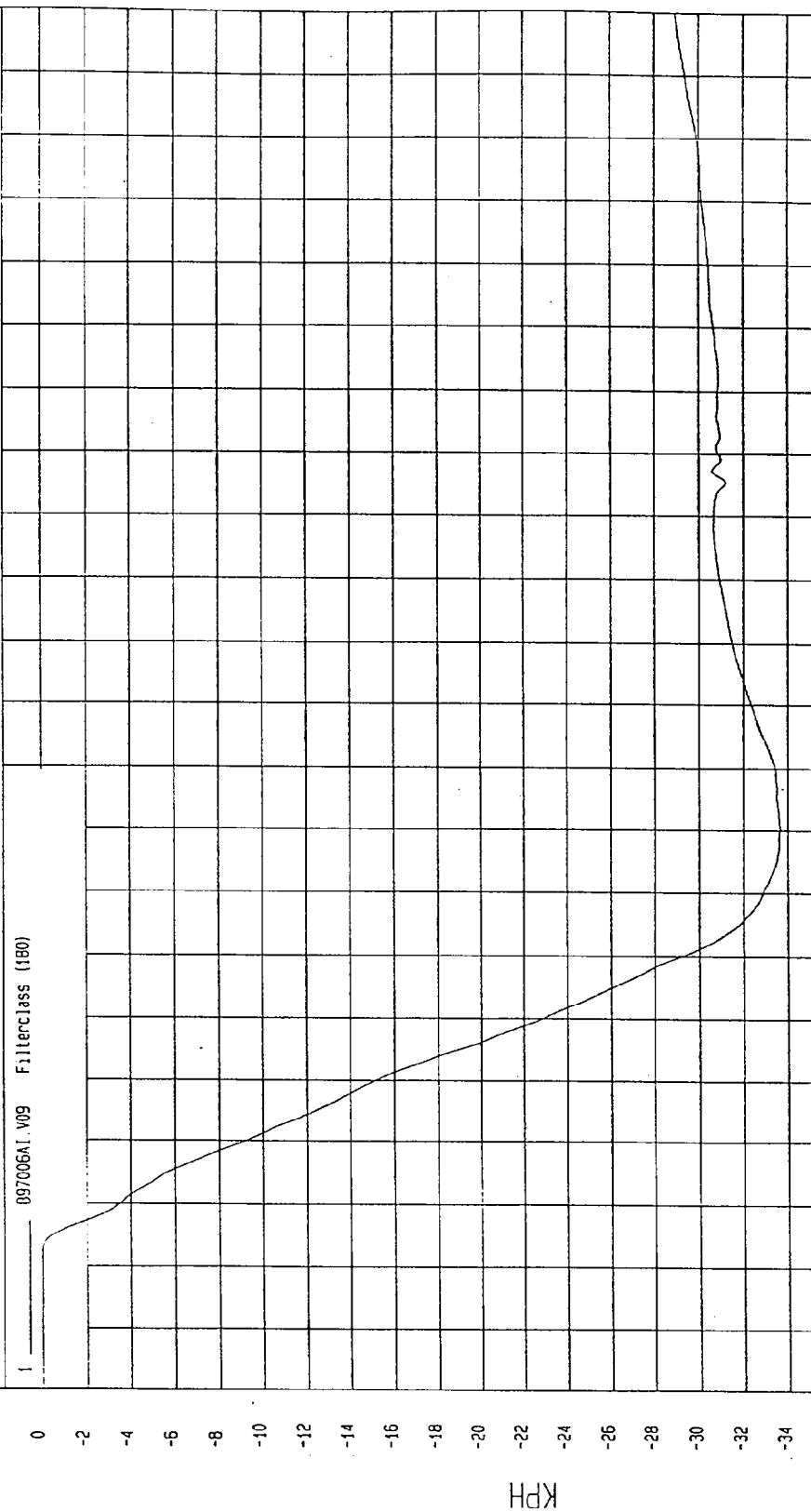
Speed: 33 MPH 53.1 KPH

COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum 9.60E-03 KPH at -15 msec

Minimum 33.63 KPH at 70 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY



MOA Research
01-21-1997 15:29

TIME Seconds

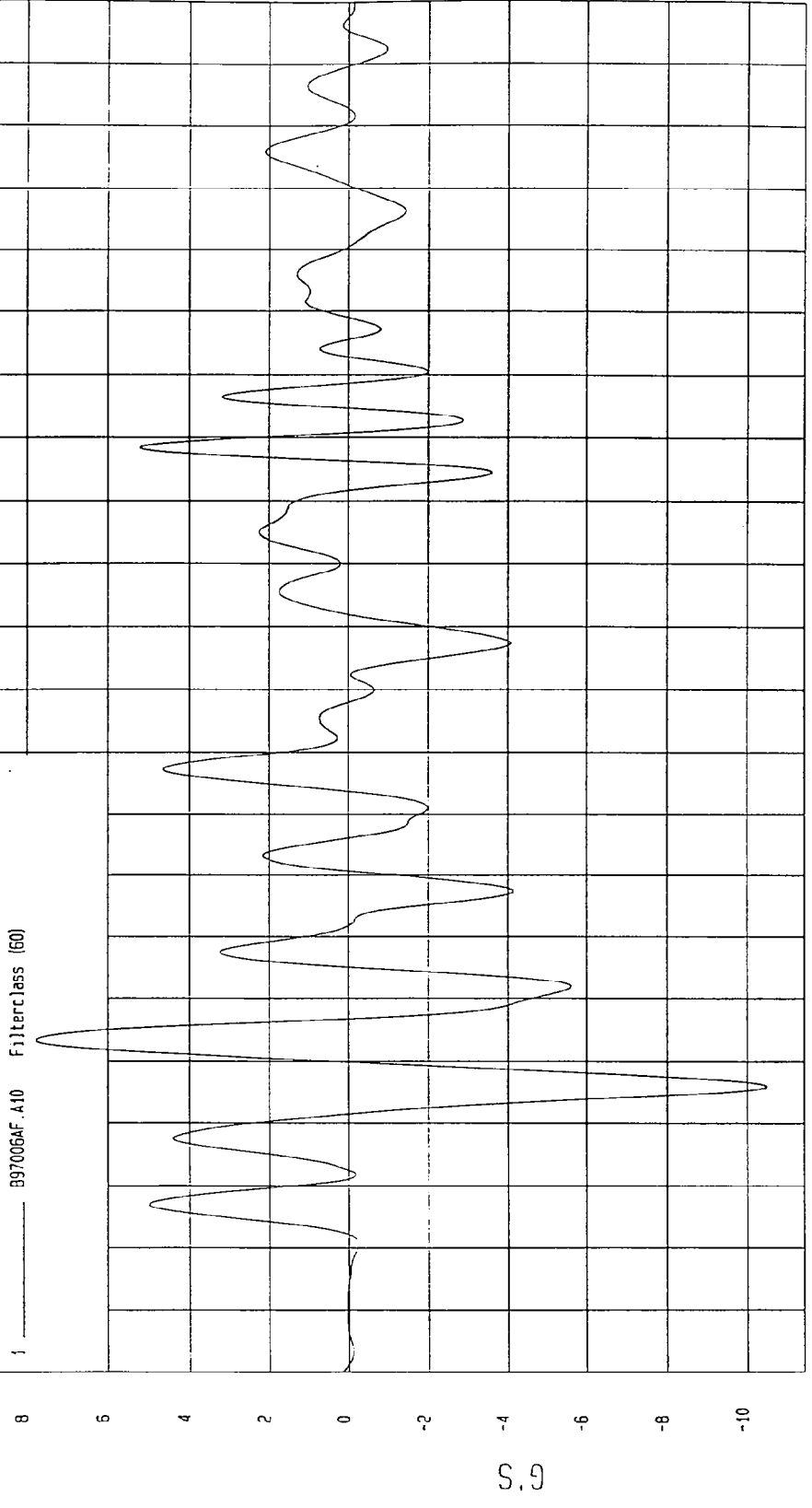
KPH

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -10.47 G'S at 26 msec Maximum = 7.79 G'S at 33 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION



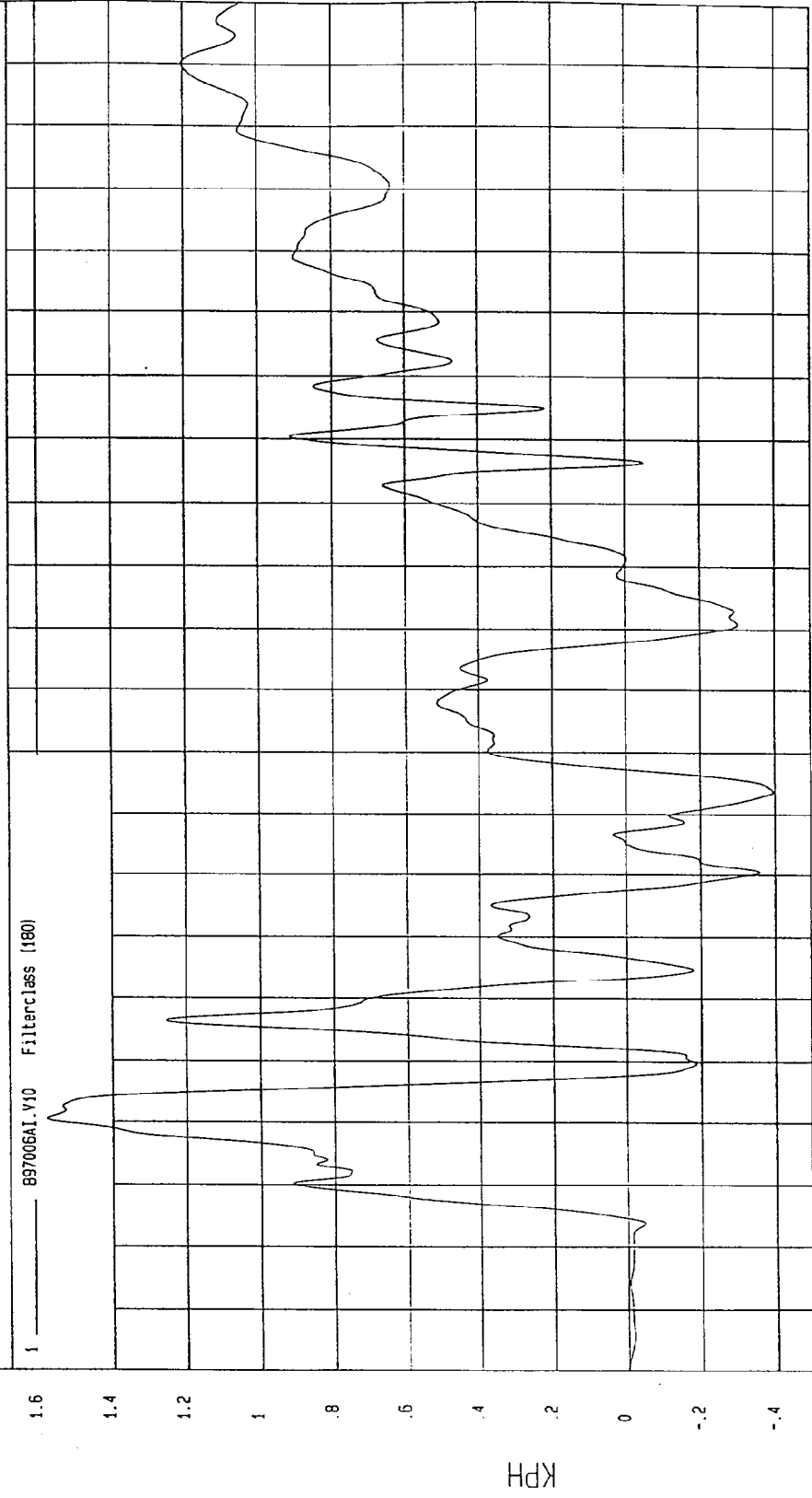
TIME (SECONDS)

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

MCA Research
01-21-1997 15.32

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -.39 KPH at .74 msec Maximum = 1.57 KPH at .20 msec	

REAR FLOORPAN ABOVE AXLE Z VELOCITY



NCA Research
01-21-1997 13:29

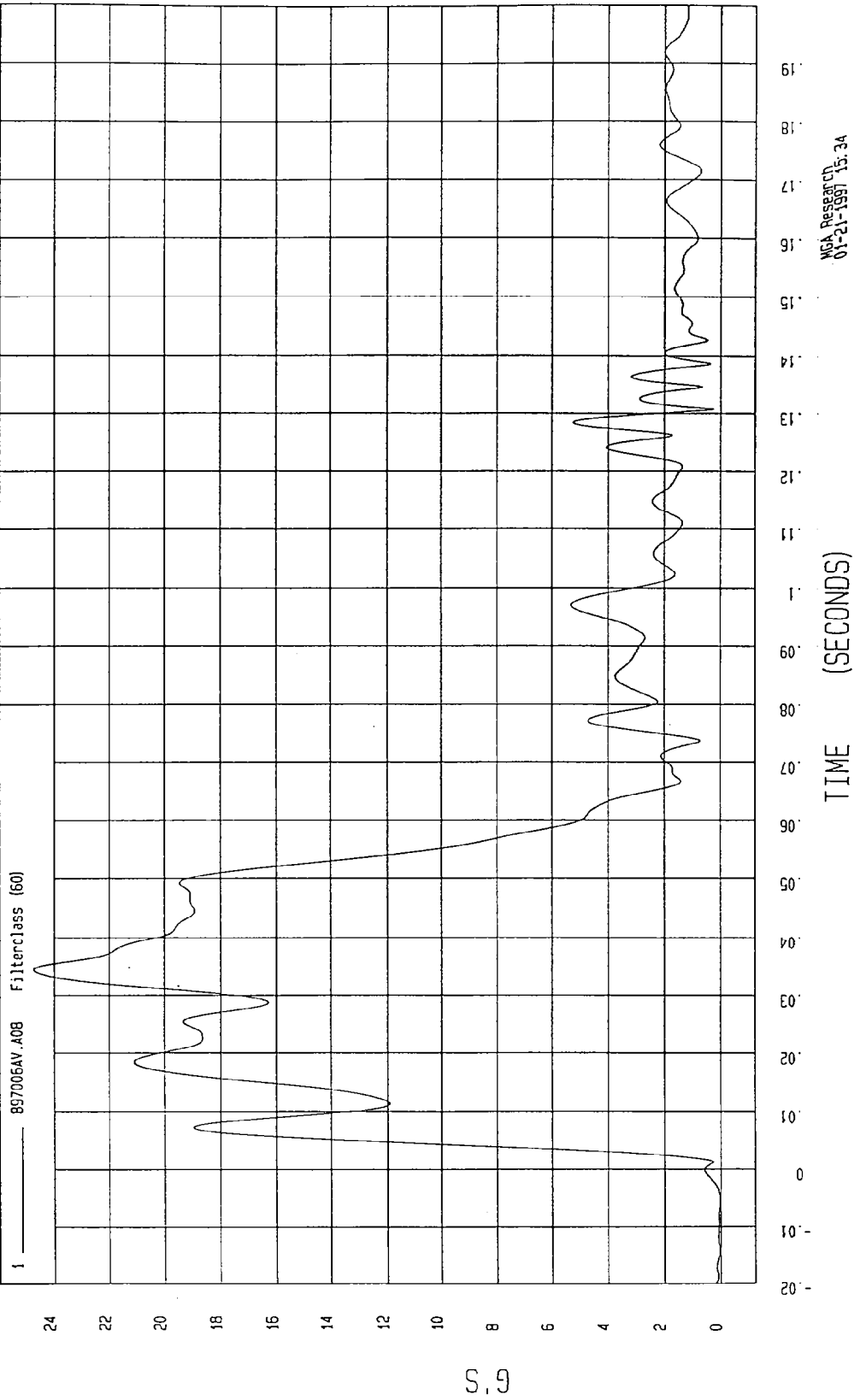
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

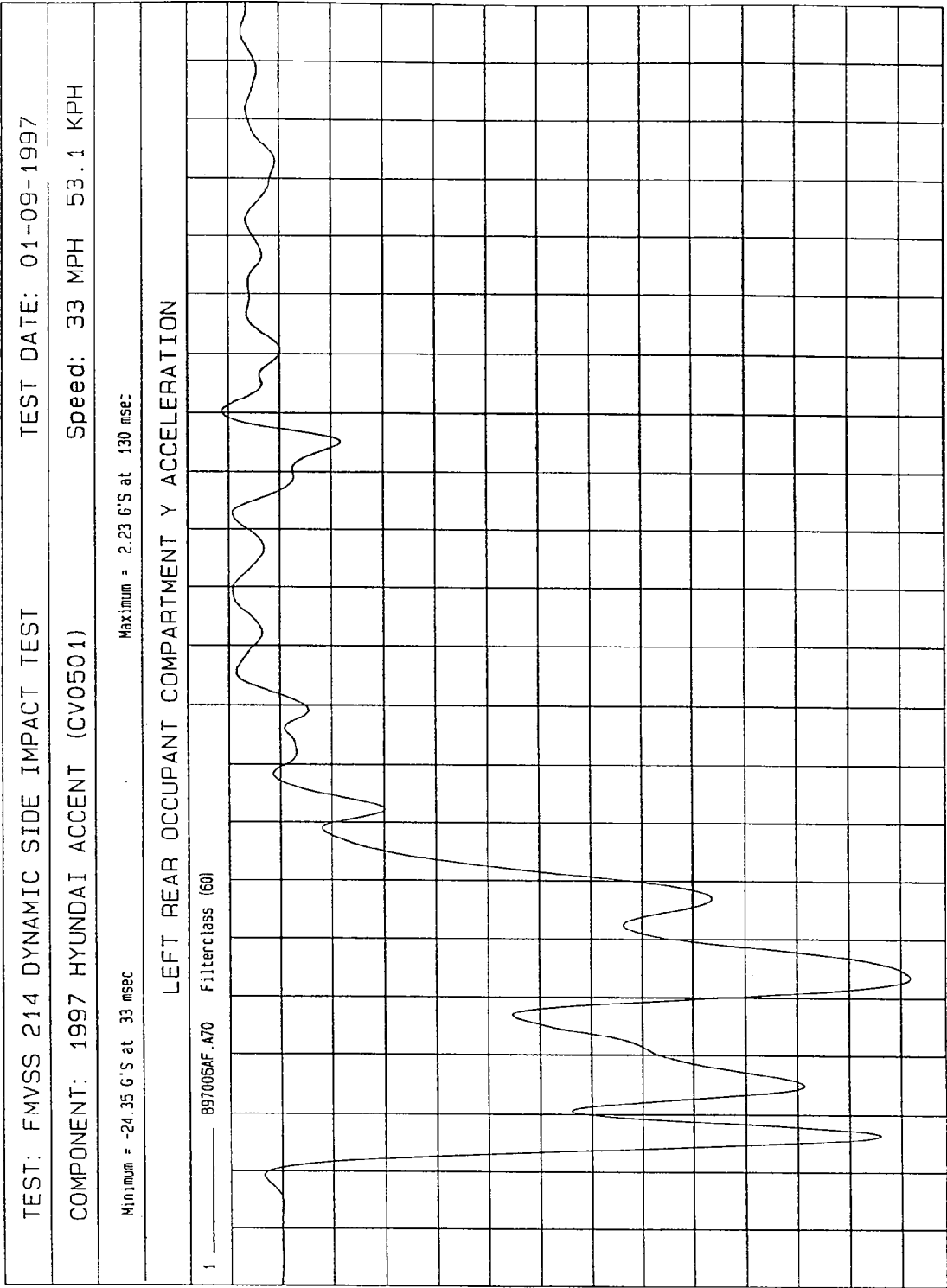
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = .03 G'S at -14 msec

Maximum = 24.74 G'S at 34 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION





TIME (SECONDS)

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

NGA Research
01-21-1997 15.32

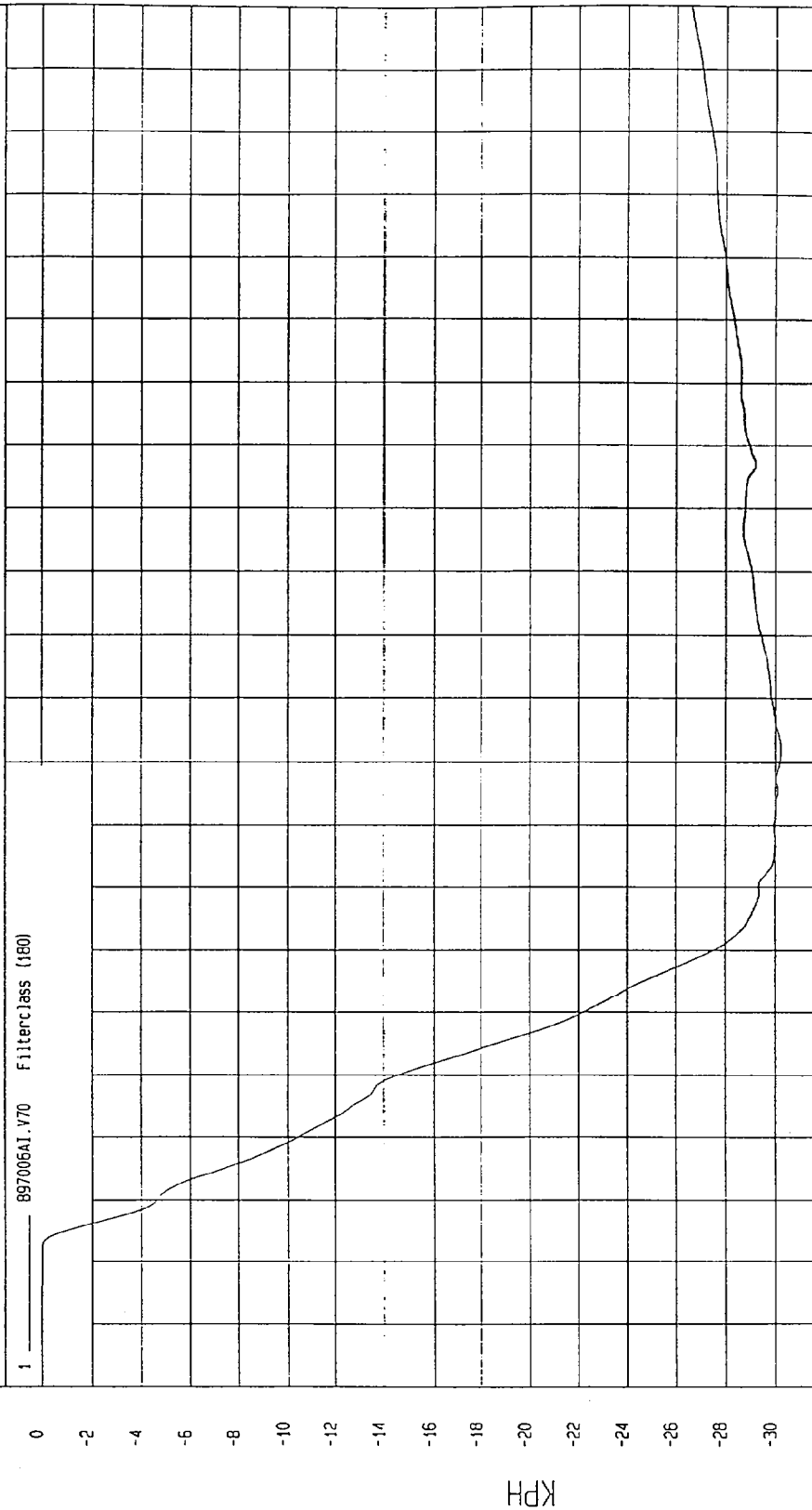
S.G

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

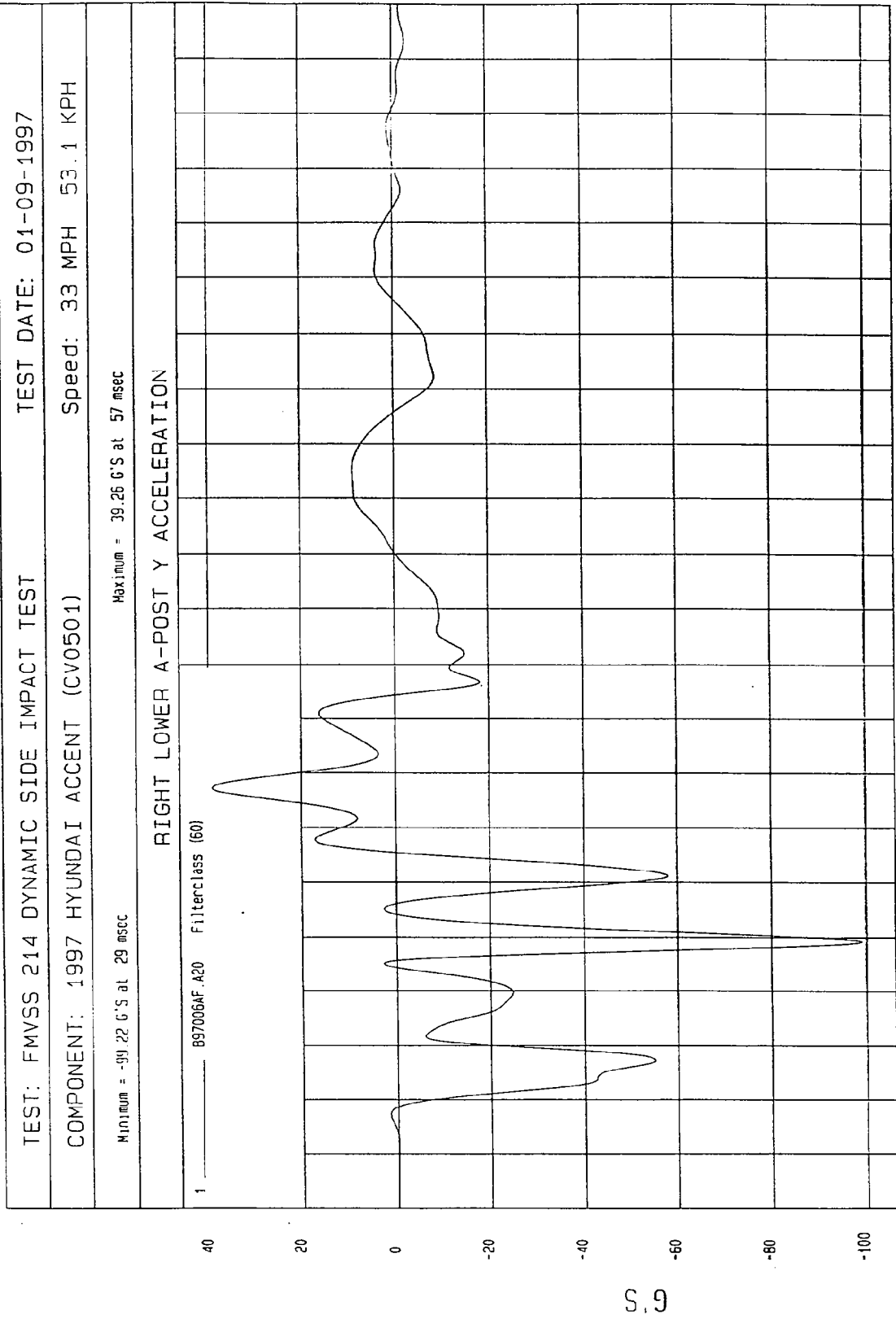
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -30.22 KPH at 01 msec Maximum = 3.20E-03 KPH at -18 msec

LEFT REAR OCCUPANT COMPARTMENT Y VELOCITY



MGA Research
01-21-1997 15:29



MCA Research
01-21-1997 15:32

TIME (SECONDS)

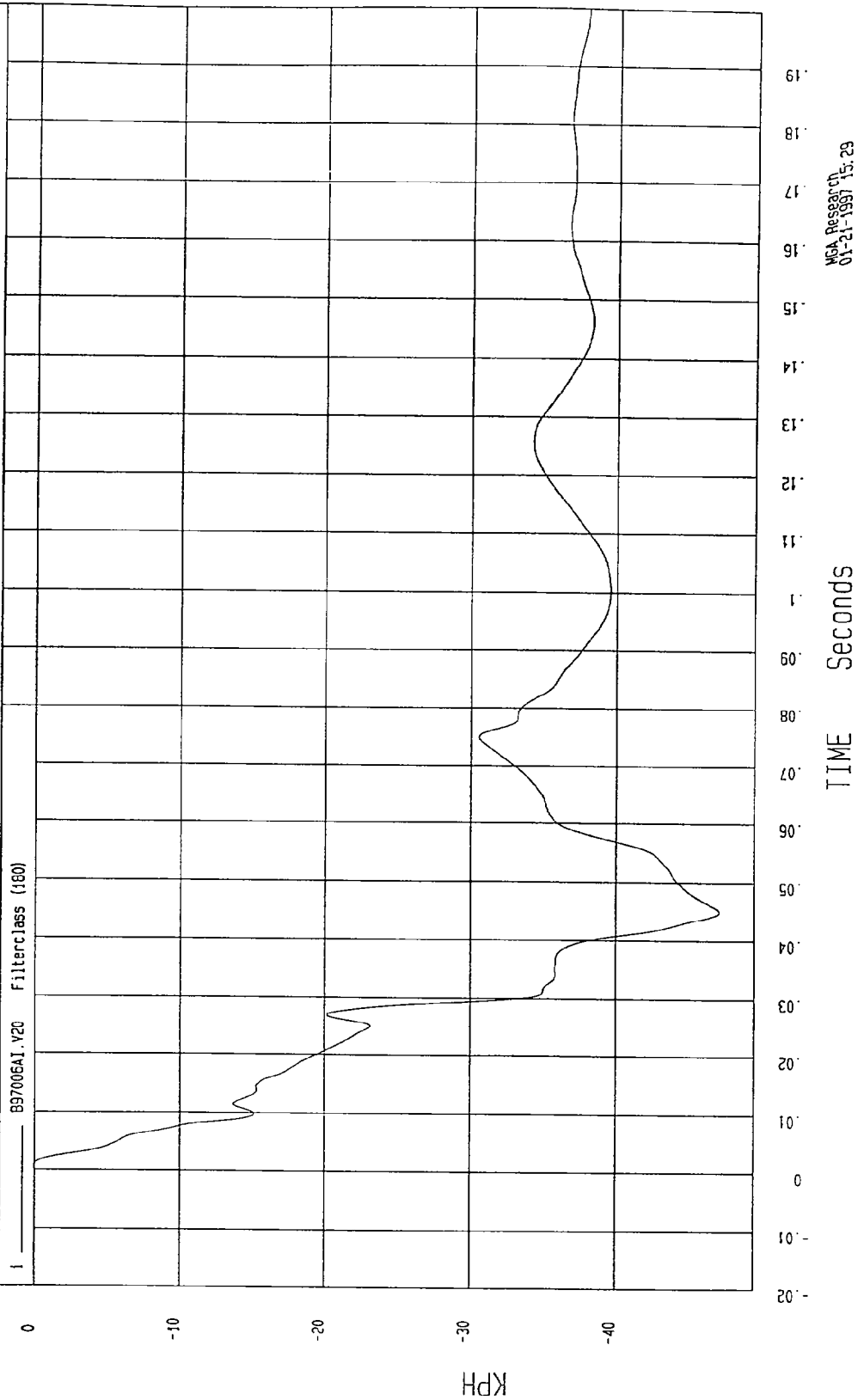
G.S

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -46.96 KPH at 45 msec Maximum = 3.23E-02 KPH at 1 msec

RIGHT LOWER A-POST Y VELOCITY



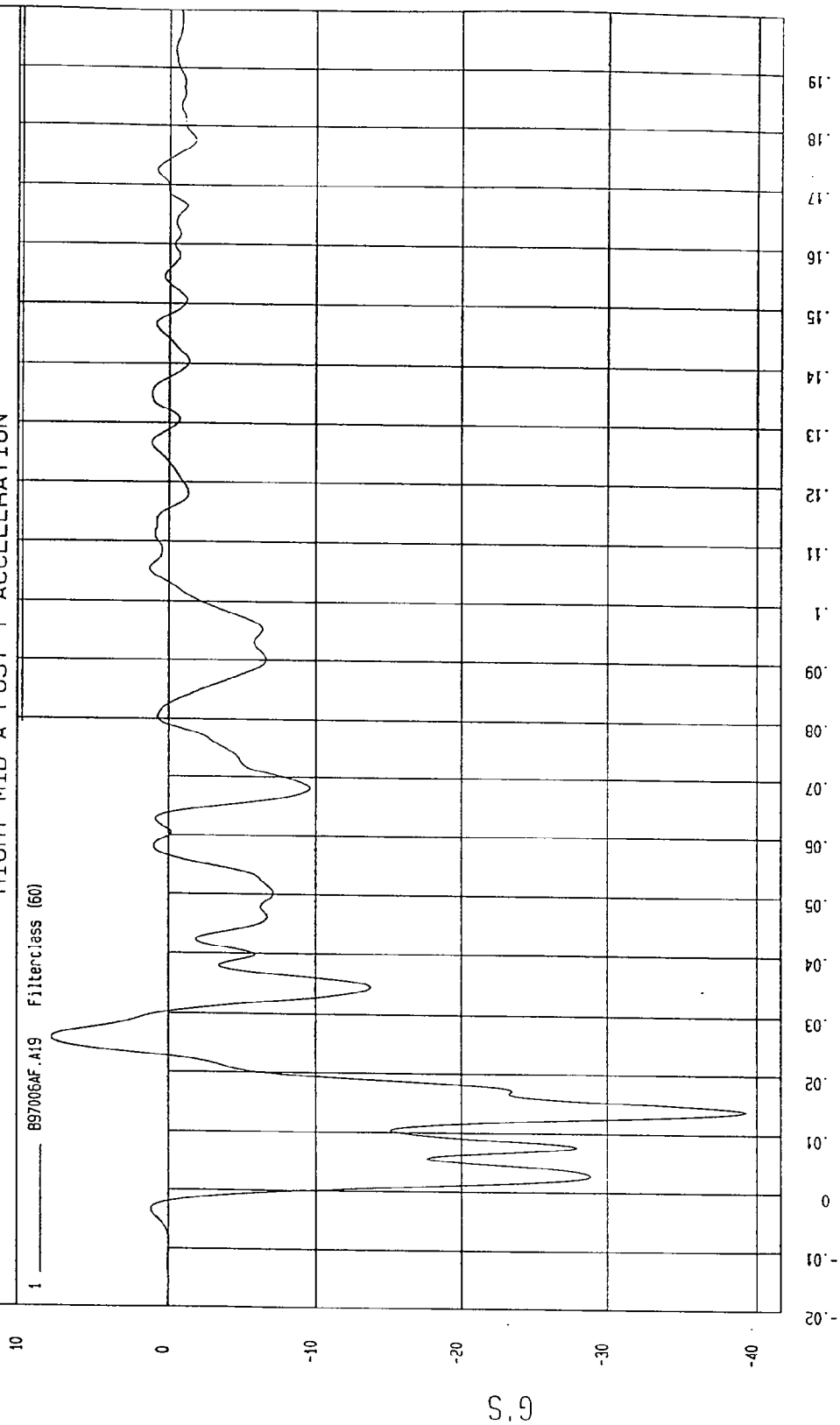
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -39.27 G'S at 14 msec Maximum = 7.96 G'S at 26 msec

RIGHT MID A-POST Y ACCELERATION

1 897005AF.A19 Filterclass (60)



WCA Research
01-21-1997 15:32

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

SPEED: 33 MPH 53.1 KPH

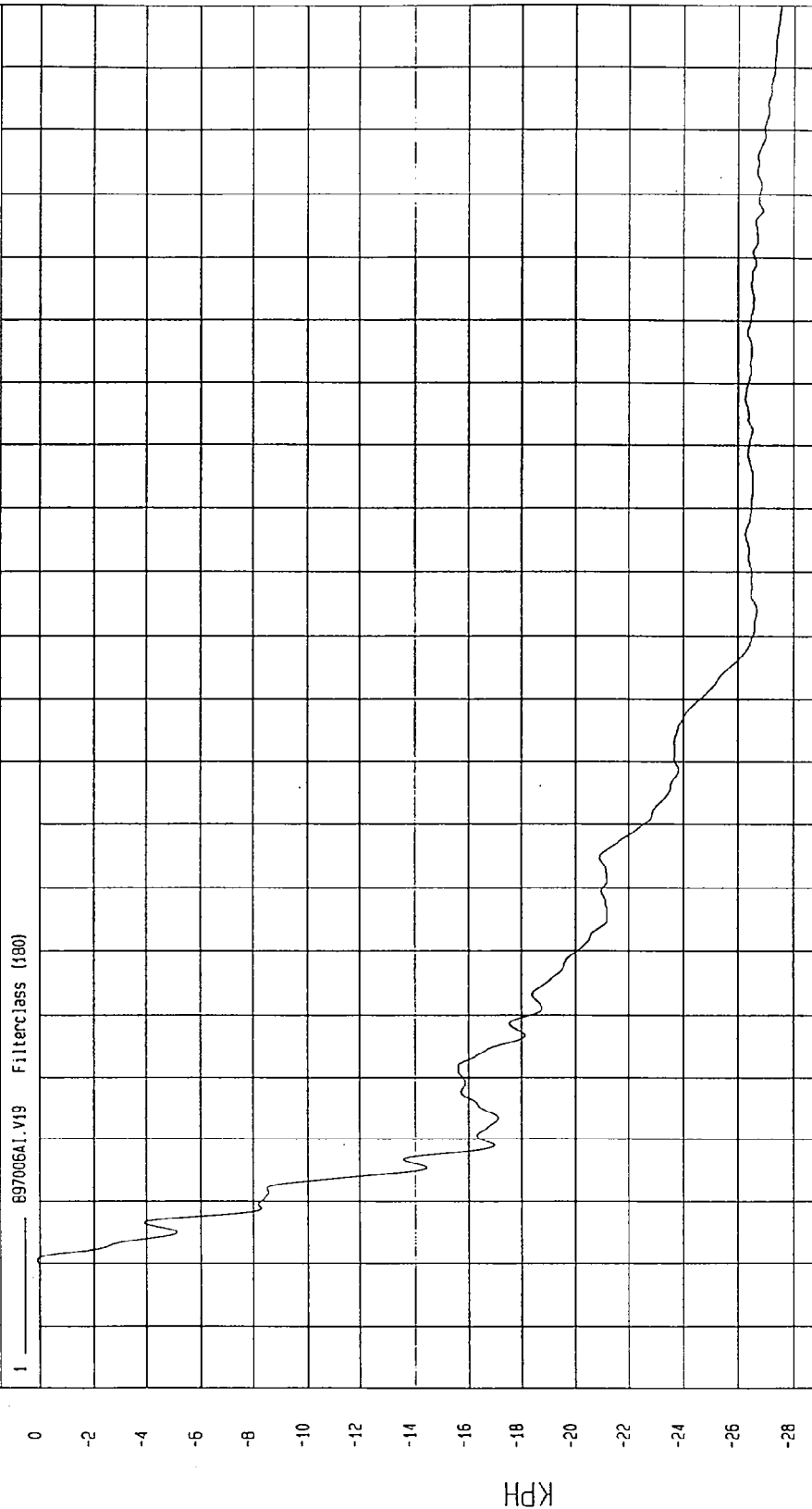
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = .09 KPH at 1 msec

Minimum = -27.51 KPH at 200 msec

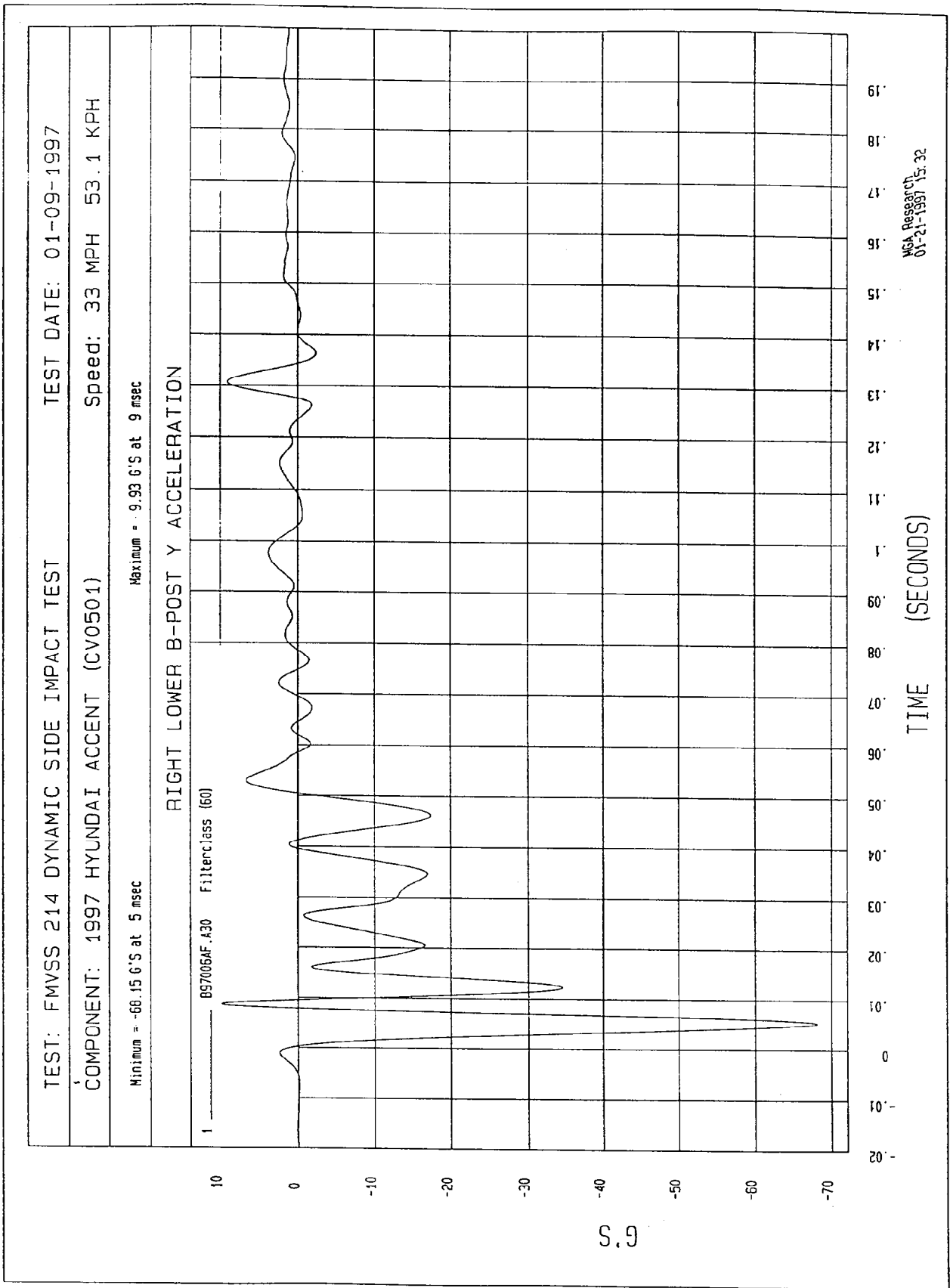
RIGHT MID A-POST Y VELOCITY

1 897006A1.V19 Filterclass (180)



MGA Research
01-21-1997 15:29

TIME Seconds



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

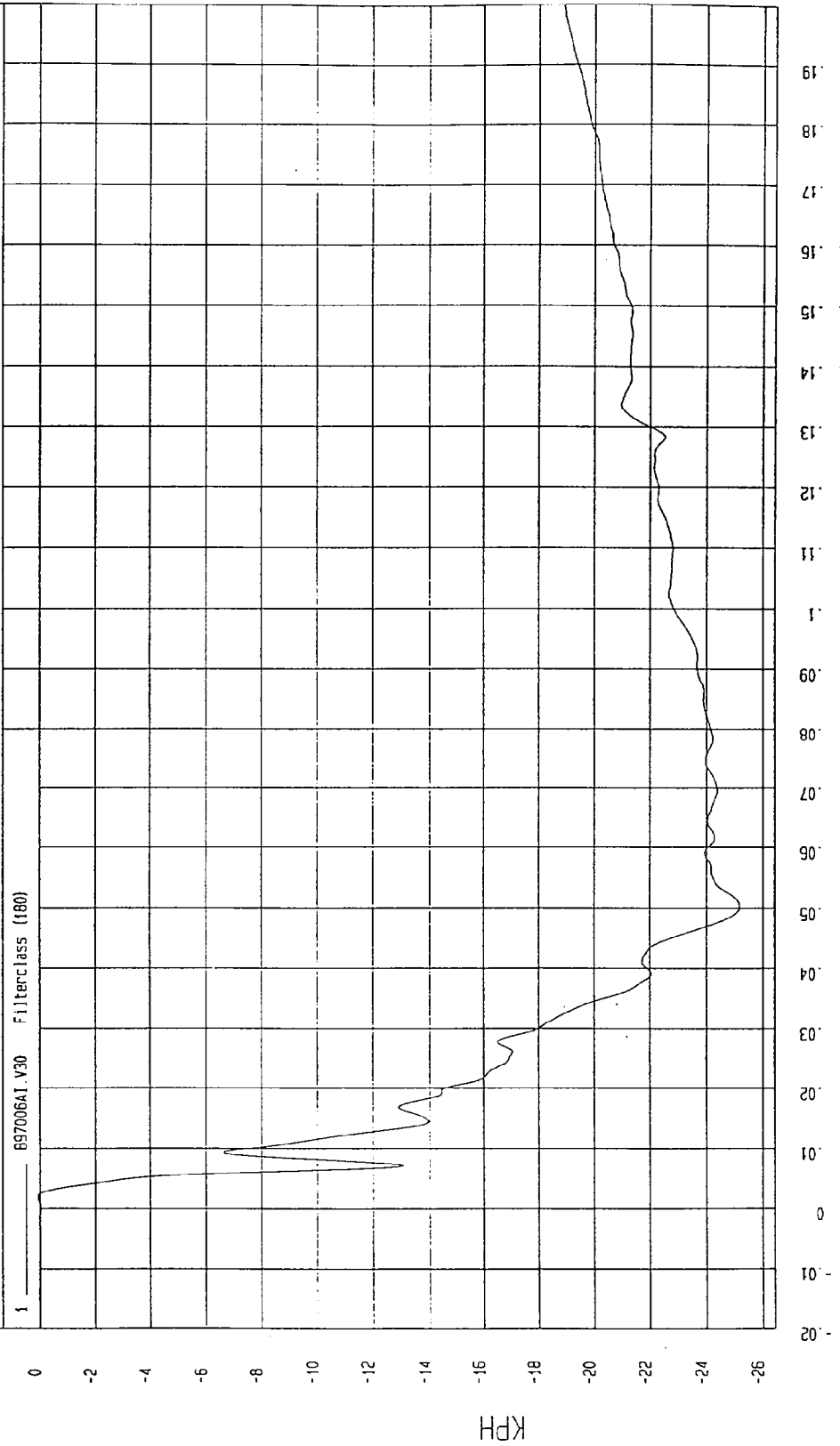
TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -25.15 KPH at 50 msec

Maximum = 6.72E-02 KPH at 2 msec

RIGHT LOWER B-POST Y VELOCITY

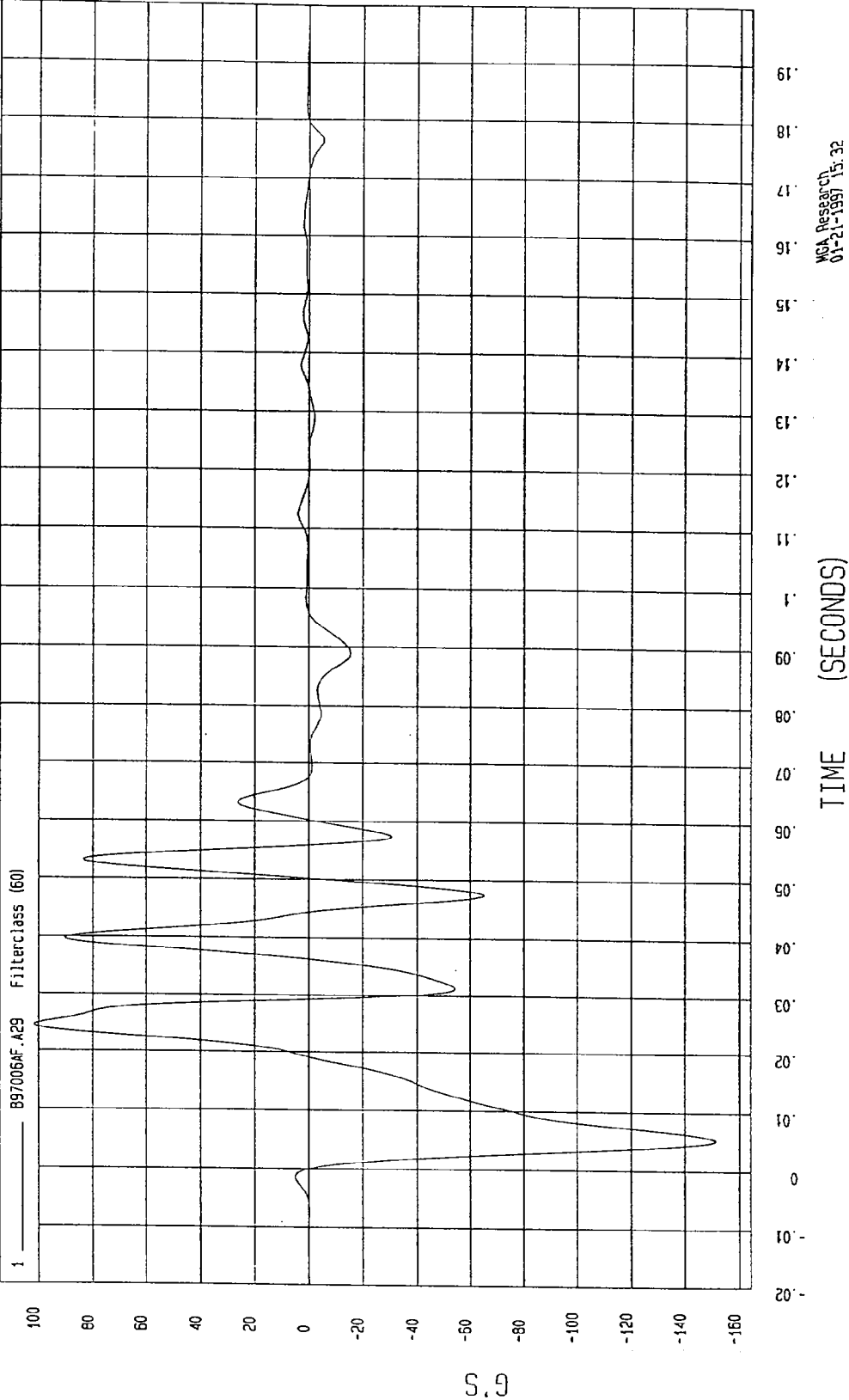


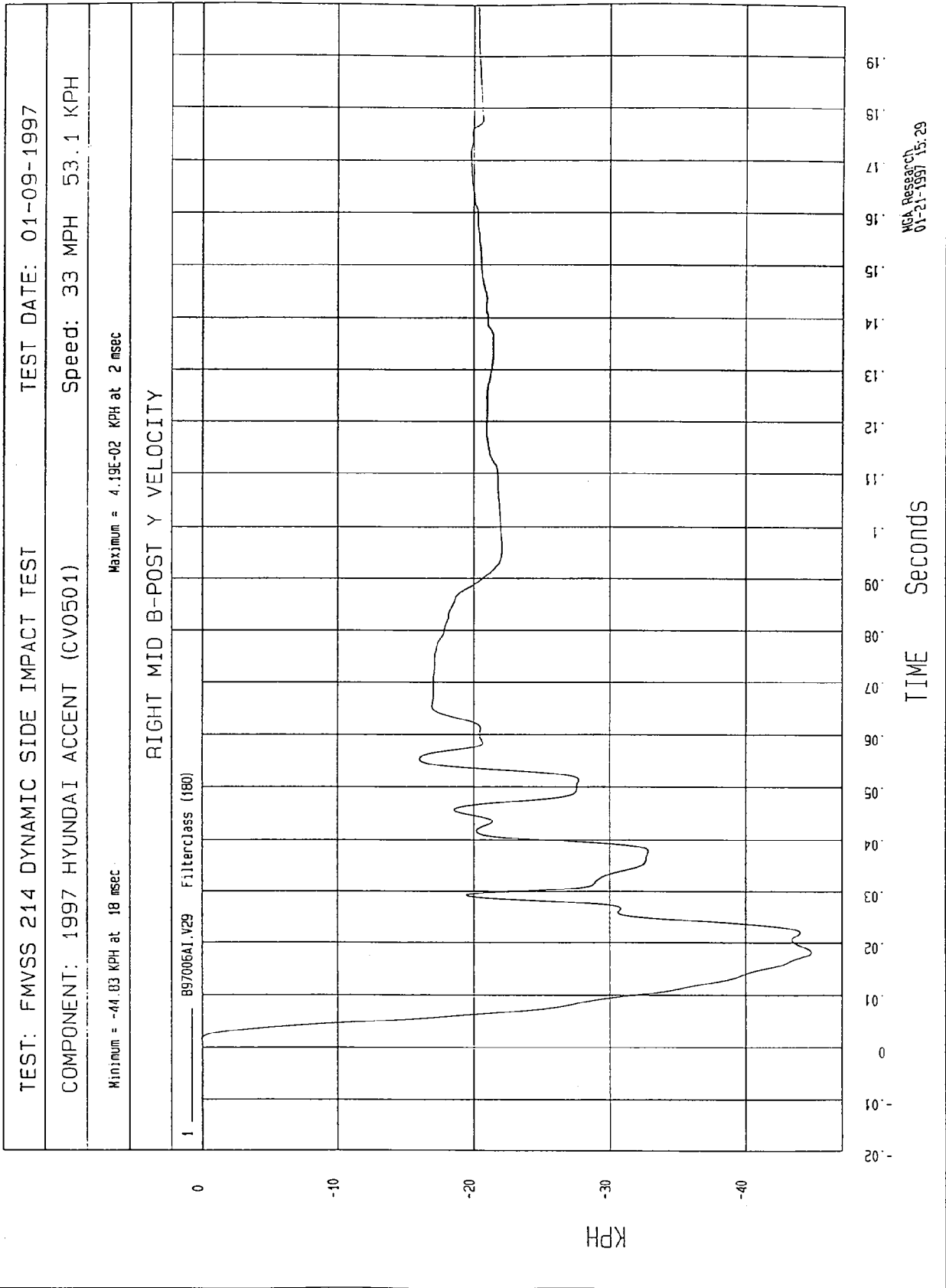
MCA Research
01-21-1997 15:29

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -151.43 G's at 5 msec Maximum = 101.76 G's at 25 msec

RIGHT MID B-POST Y ACCELERATION



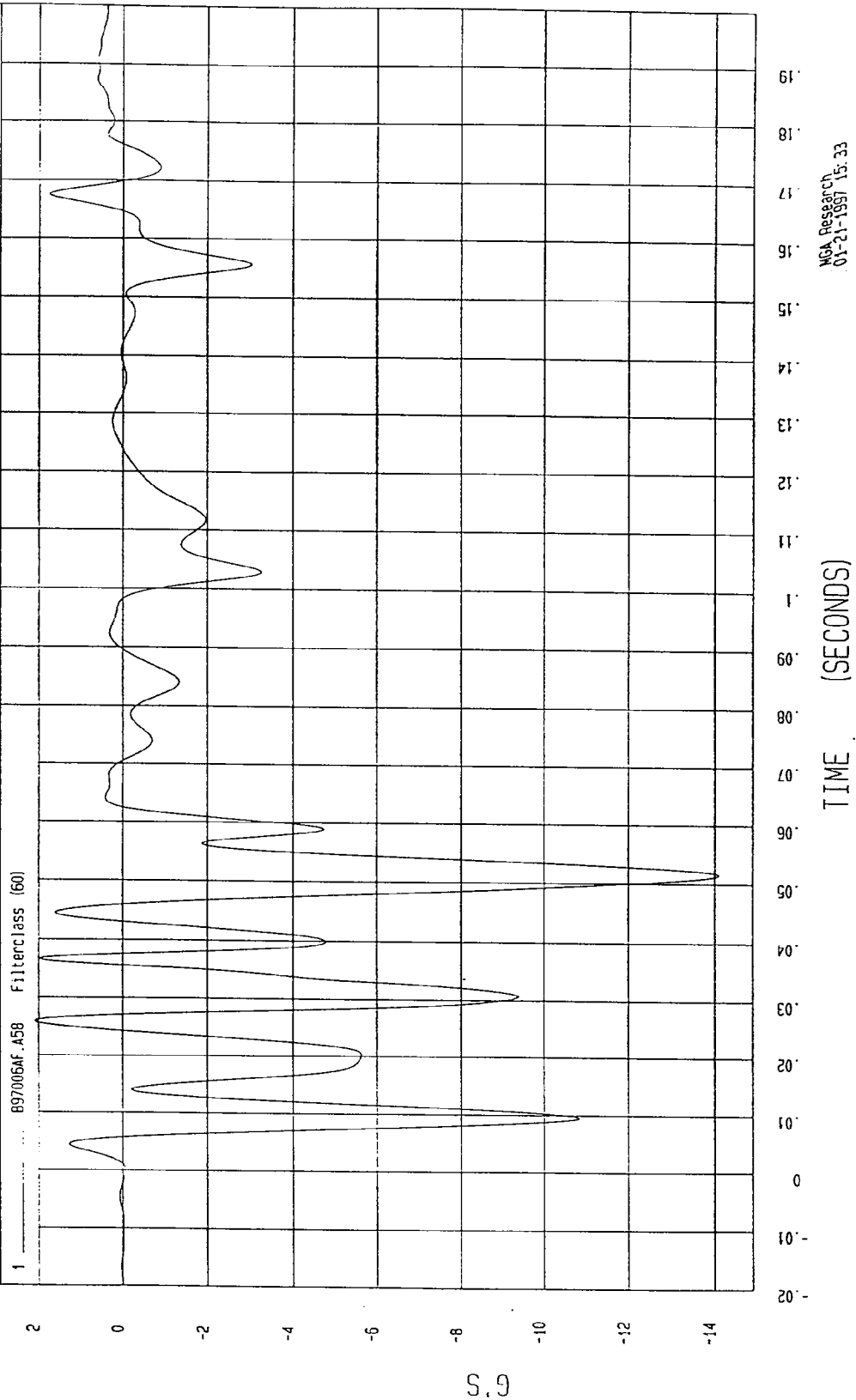


TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -14.10 G'S at 52 msec Maximum = 2.07 G'S at 26 msec

VEHICLE CG X ACCELERATION



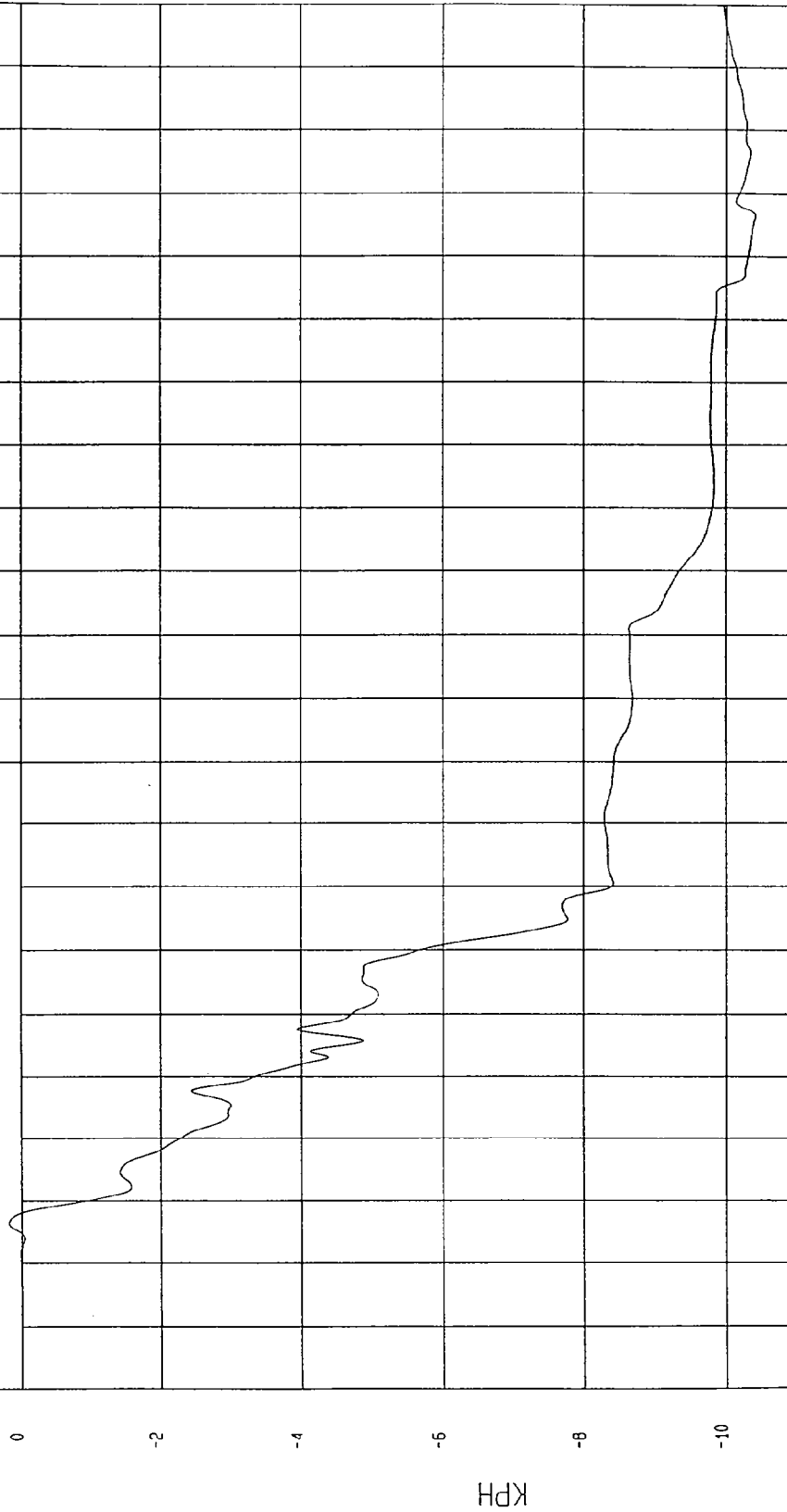
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -10.41 KPH at .166 msec Maximum = .18 KPH at 6 msec

VEHICLE CG X VELOCITY

1 897006A1.V56 Filterclass (180)



MCA Research
01-21-1997 15:29

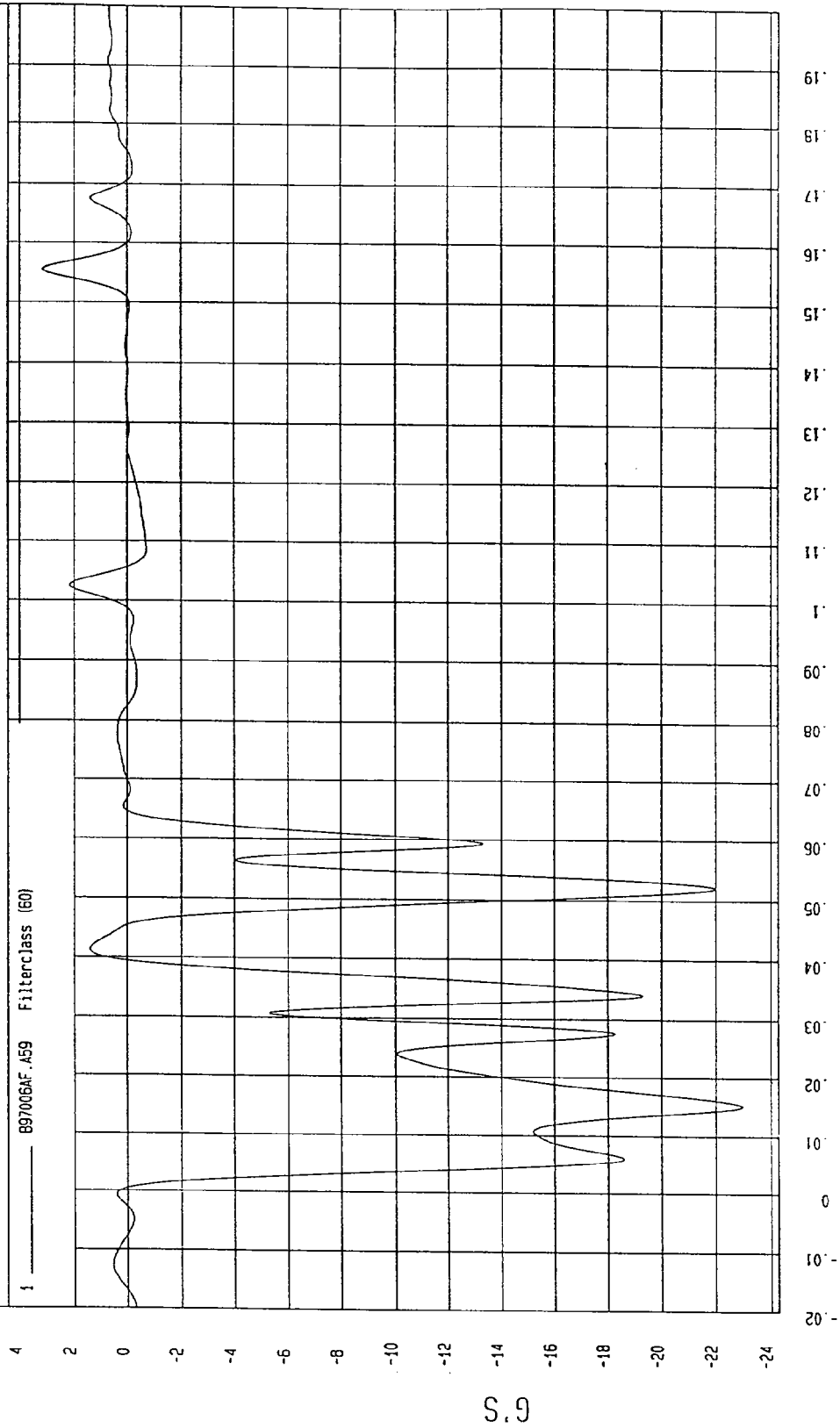
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -22.95 G's at 15 msec Maximum = 3.15 G's at 155 msec

VEHICLE CG Y ACCELERATION

1 897006AF.A59 Filterclass (60)



MGA Research
01-21-1997 15:33

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

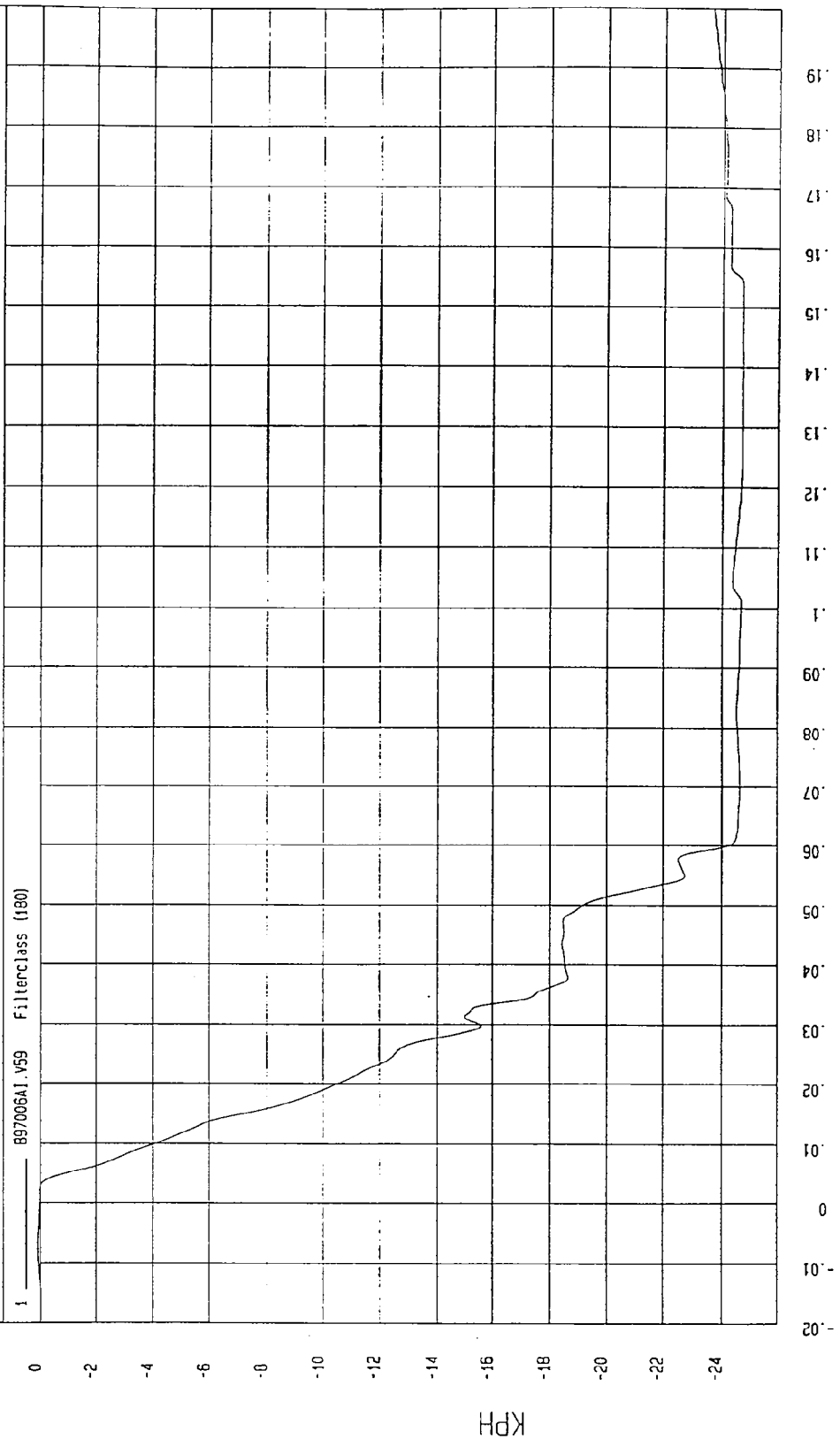
Speed: 33 MPH 53.1 KPH

COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = 8.95E-02 KPH at -7 msec

Minimum = -24.70 KPH at 141 msec

VEHICLE CG Y VELOCITY



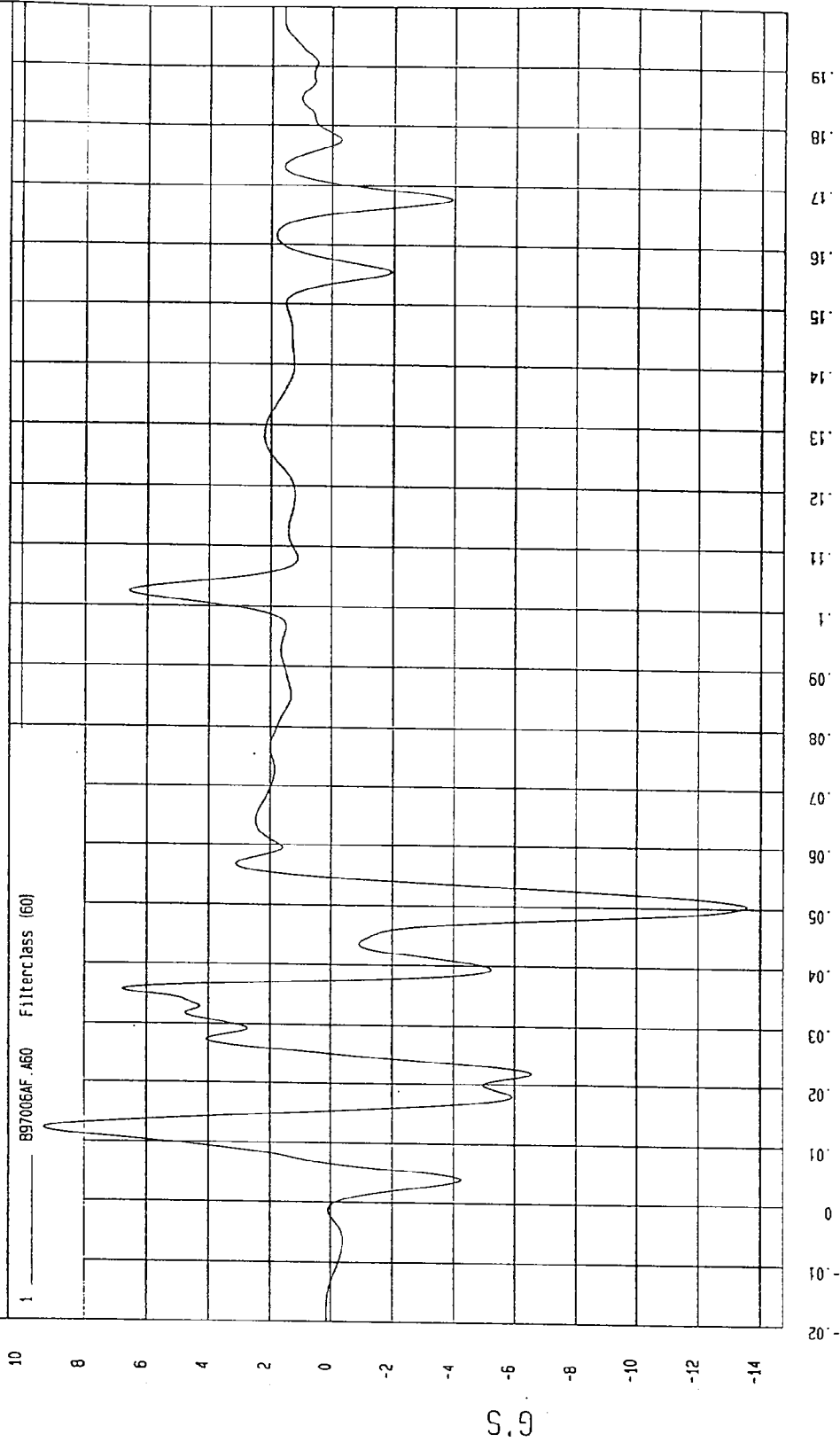
MSA Research
01-21-1997 15:30

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -13.58 G'S at 50 msec Maximum = 9.27 G'S at 12 msec

VEHICLE CG Z ACCELERATION



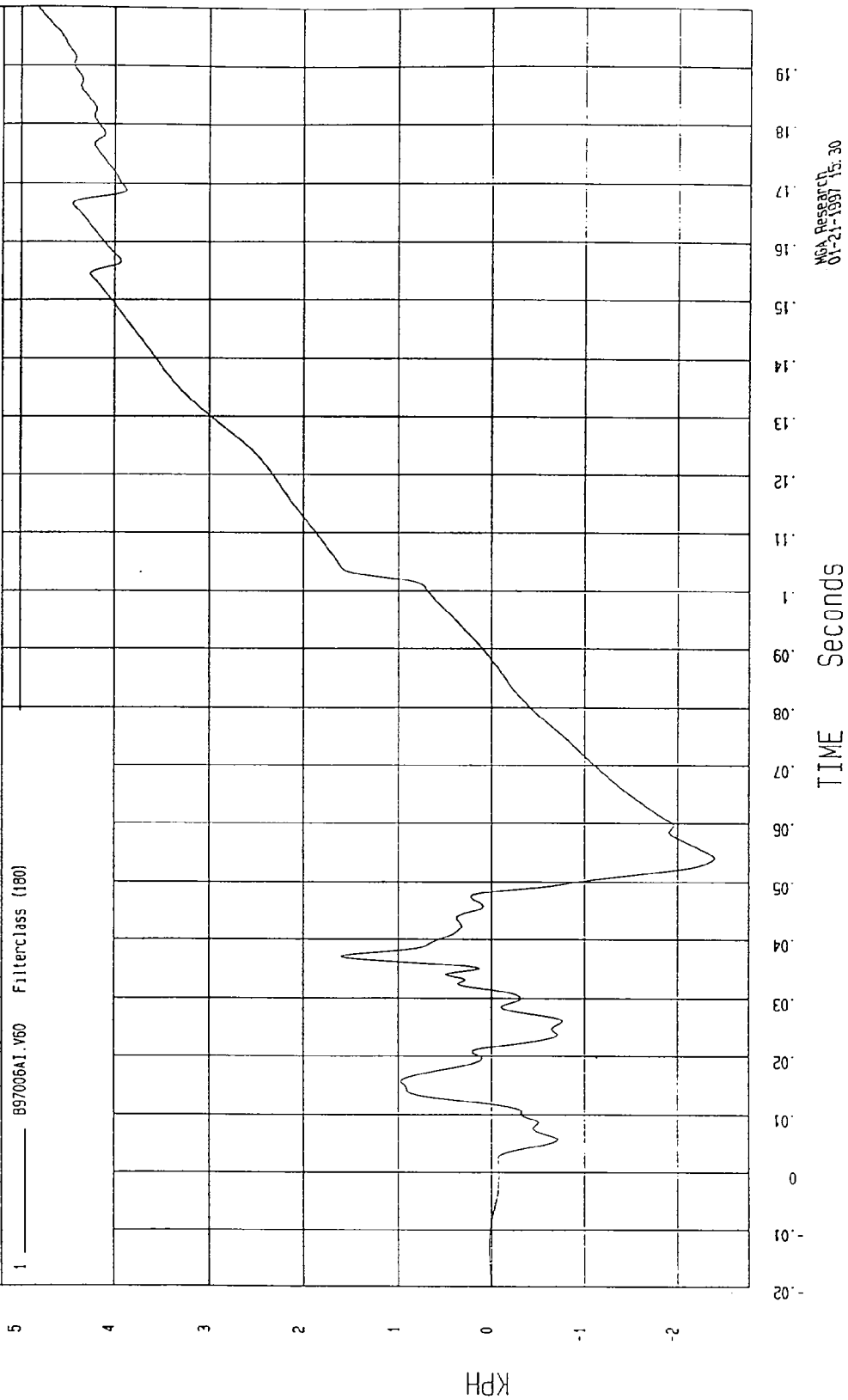
WGA Research
01-21-1997 15:33

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -2.39 KPH at 54 msec Maximum = 4.83 KPH at 200 msec

VEHICLE CG Z VELOCITY



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

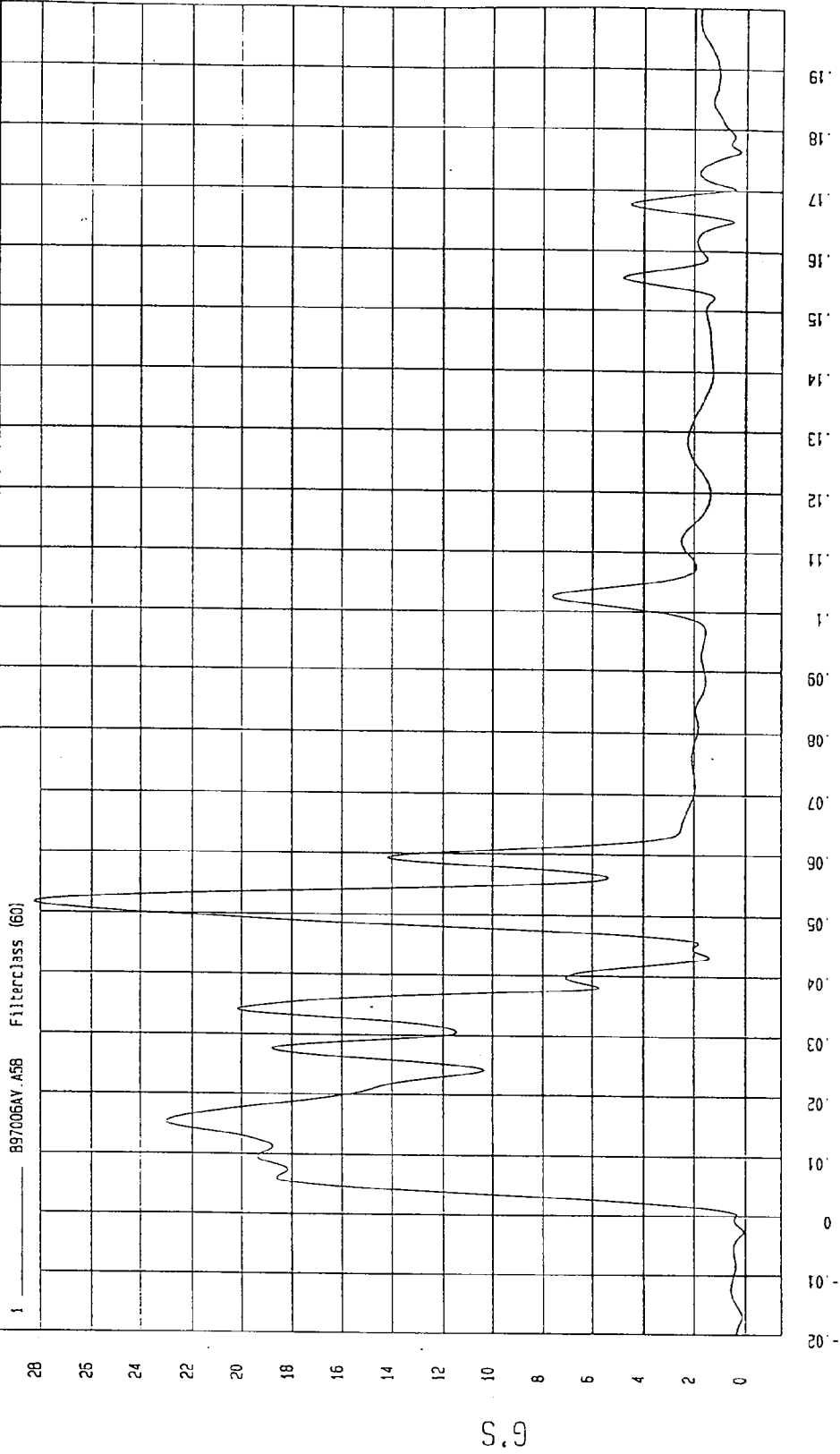
Speed: 33 MPH 53.1 KPH

COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = 28.23 G'S at 52 msec

Minimum = 5.17E-02 G'S at -3 msec

VEHICLE CG RESULTANT ACCELERATION



NCA Research
01-21-1997 15:34

TIME (SECONDS)

G.S

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

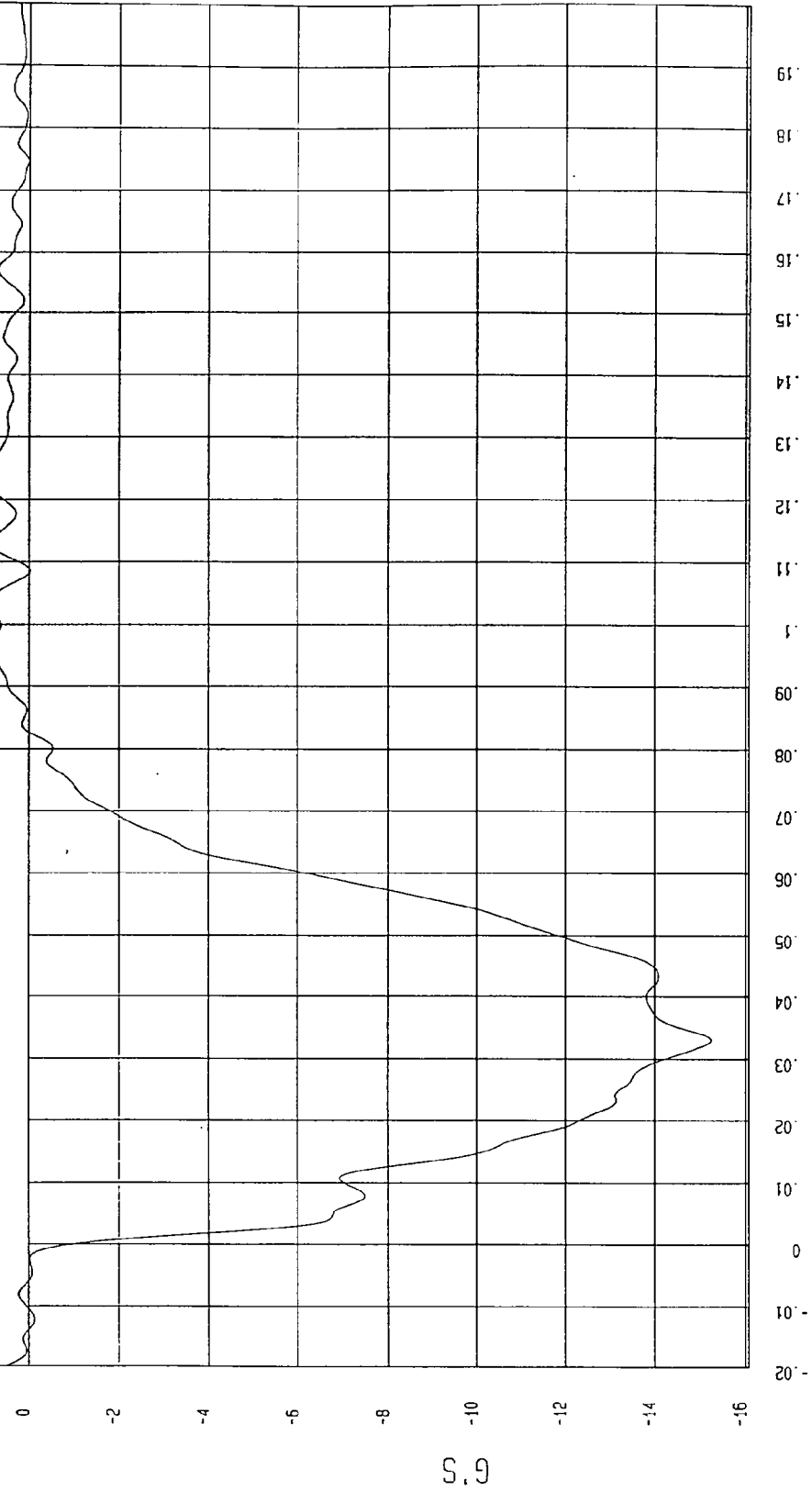
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -15.25 G'S at 33 msec

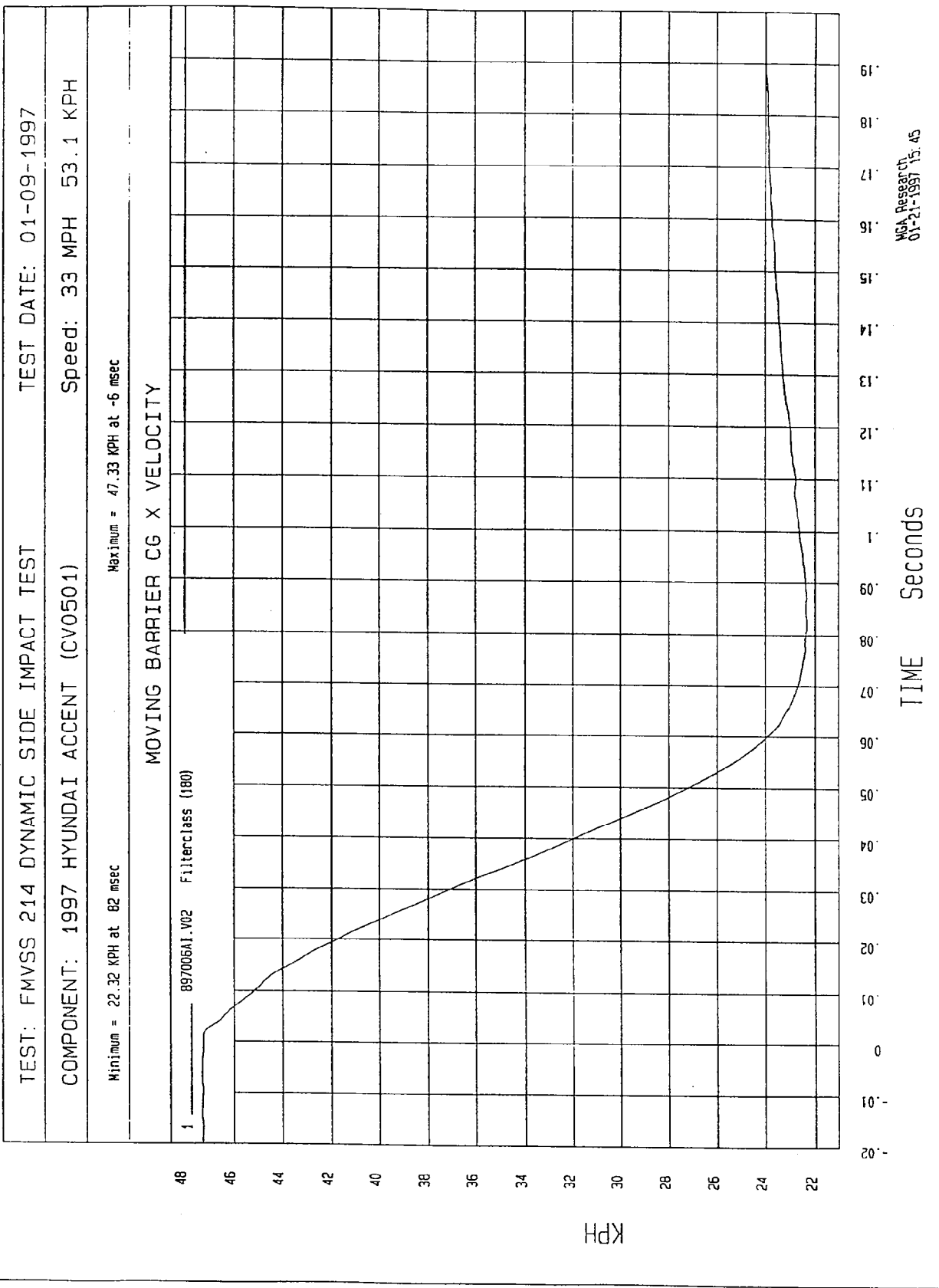
Maximum = 1.05 G'S at 124 msec

MOVING BARRIER CG X ACCELERATION

1 ——— 897005AF.A02 Filterclass (50)



MGA Research
01-21-1997 15.33



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

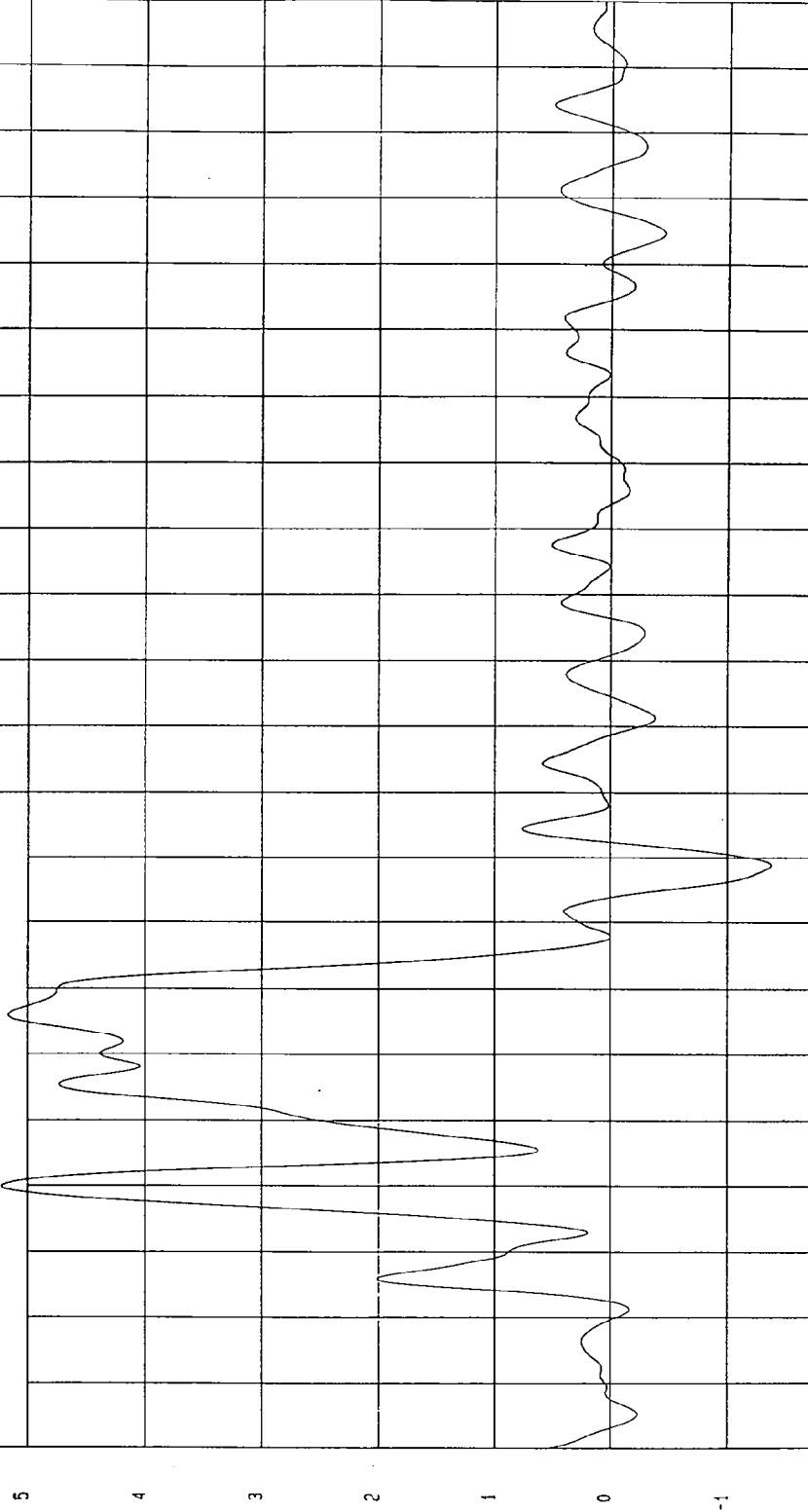
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -1.36 G'S at 69 msec

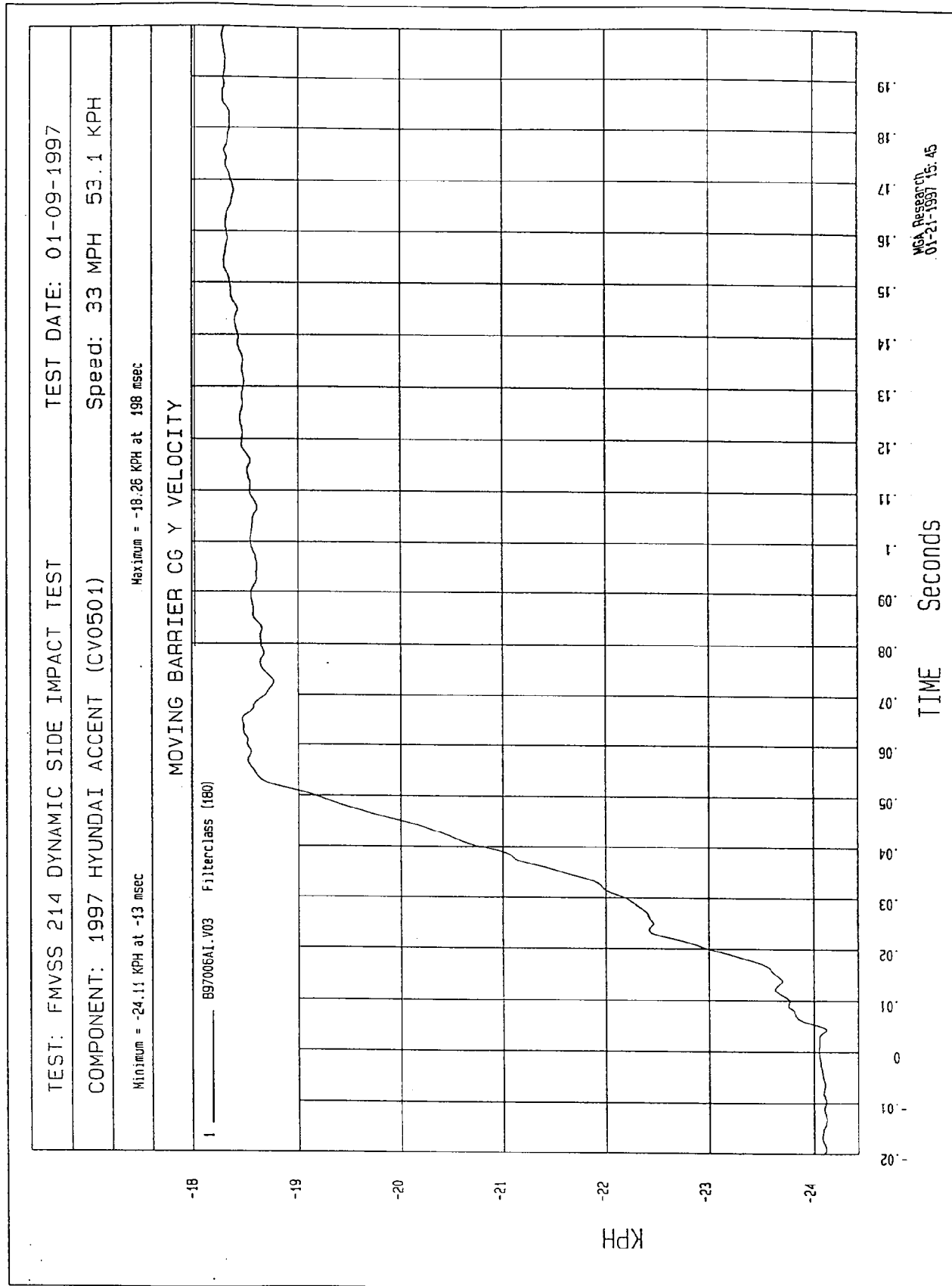
Maximum = 5.22 G'S at 20 msec

MOVING BARRIER CG Y ACCELERATION

1 B97005AF.A03 Filterclass (60)



MCA Research
01-21-1997 13:33



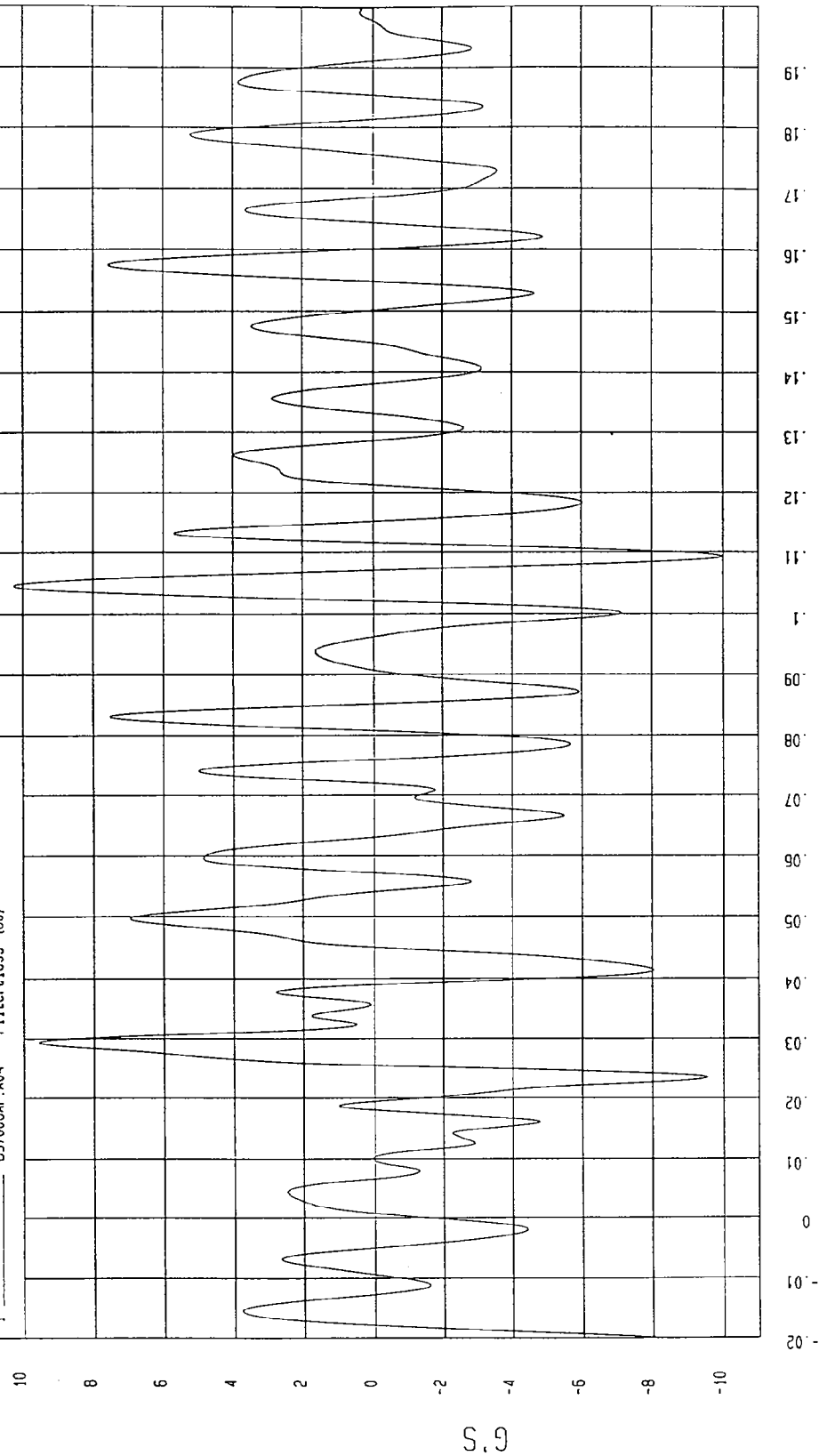
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -9.97 G'S at 109 msec Maximum = 10.24 G'S at 105 msec

MOVING BARRIER CG Z ACCELERATION

1 B97006AF.A04 Filterclass (60)



MGA Research
01-21-1997 15:33

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

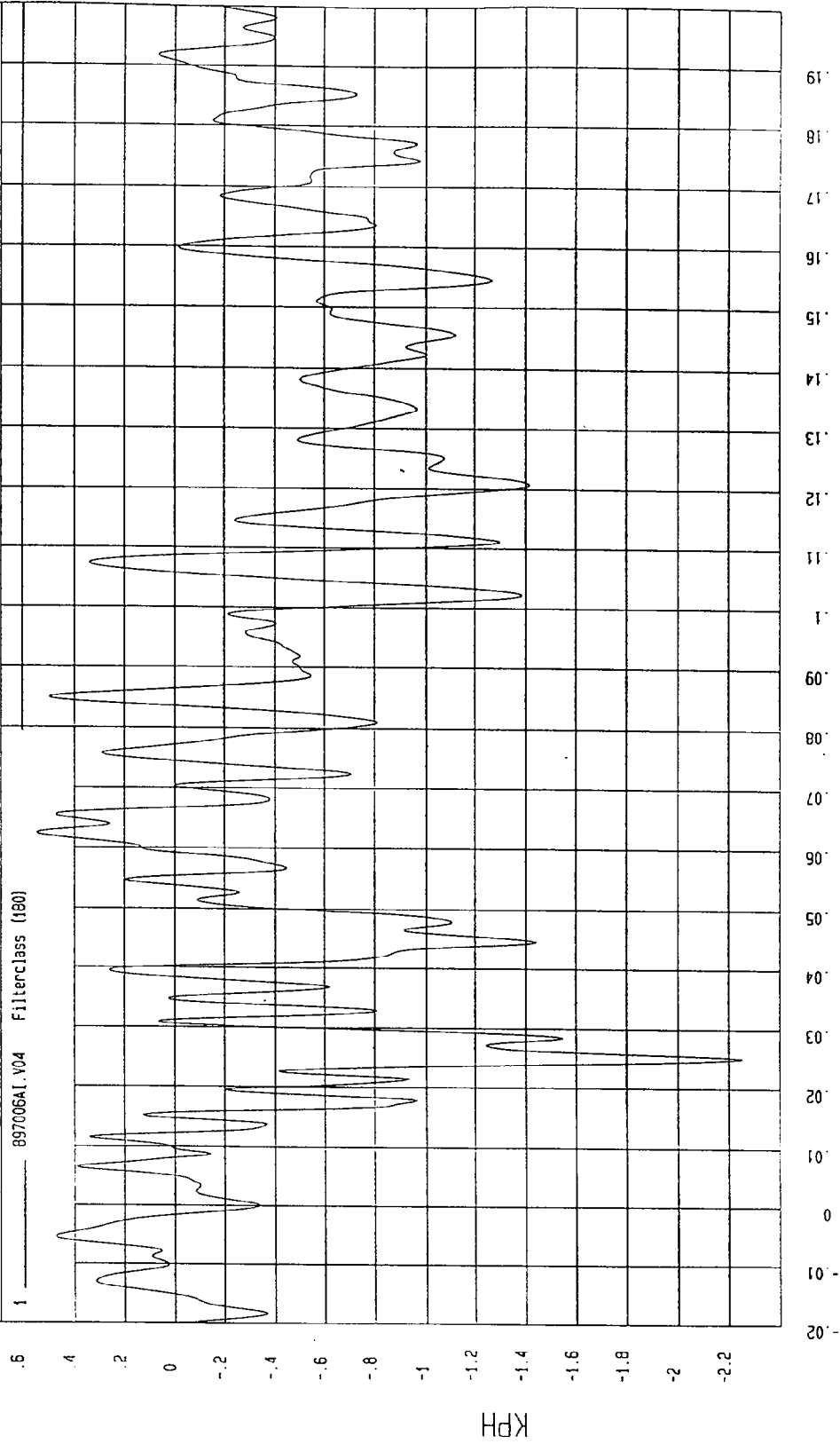
Speed: 33 MPH 53.1 KPH

COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = .54 KPH at 62 msec

Minimum = -2.25 KPH at 25 msec

MOVING BARRIER CG Z VELOCITY



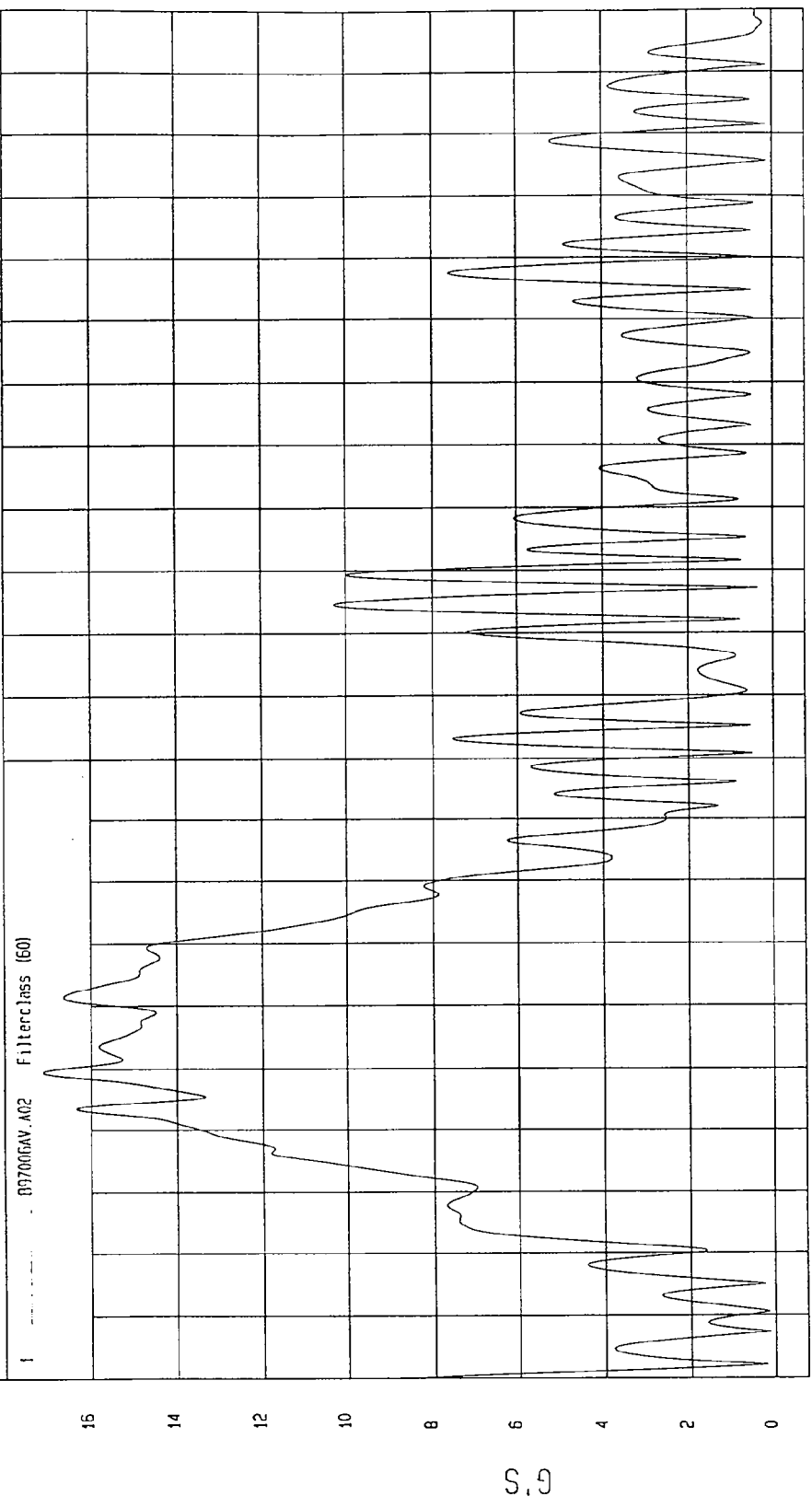
WCA Research
01-21-1997 15:45

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = .12 G'S at .13 msec Maximum = 17.11 G'S at 30 msec

MOVING BARRIER CG RESULTANT ACCELERATION



TIME (SECONDS)

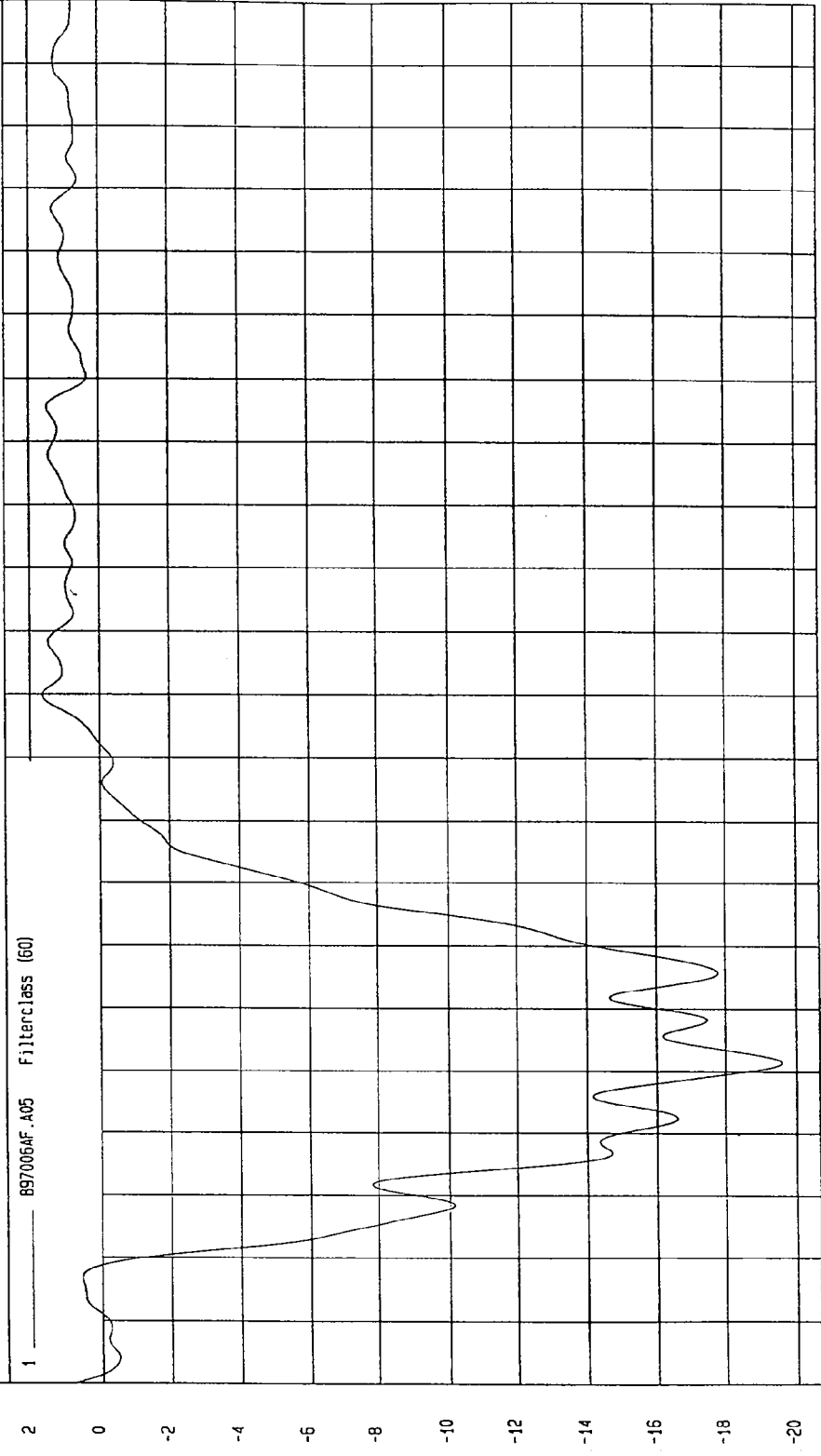
NSA Research
01-21-1997 15:35

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -19.59 G'S at 31 msec Maximum = 1.65 G'S at 90 msec

MOVING BARRIER REAR AXLE X ACCELERATION



TIME (SECONDS)

19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

MGA Research
01-21-1997 15:34

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

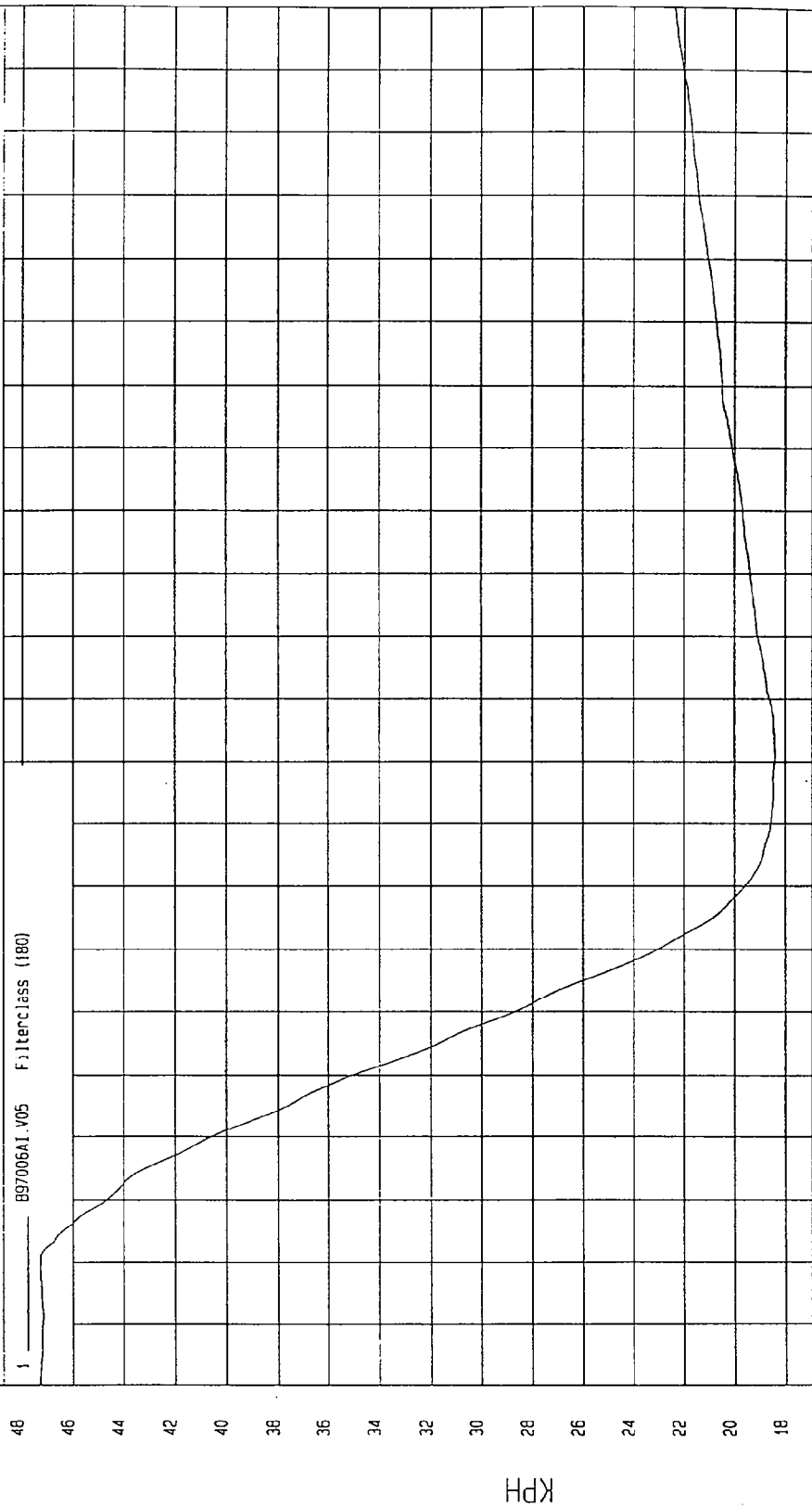
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = 18.40 KPH at 81 msec

Maximum = 47.30 KPH at -20 msec

MOVING BARRIER REAR AXLE X VELOCITY

1 B97006A1.V05 Filterclass (180)



WGA Research
01-21-1997 15:45

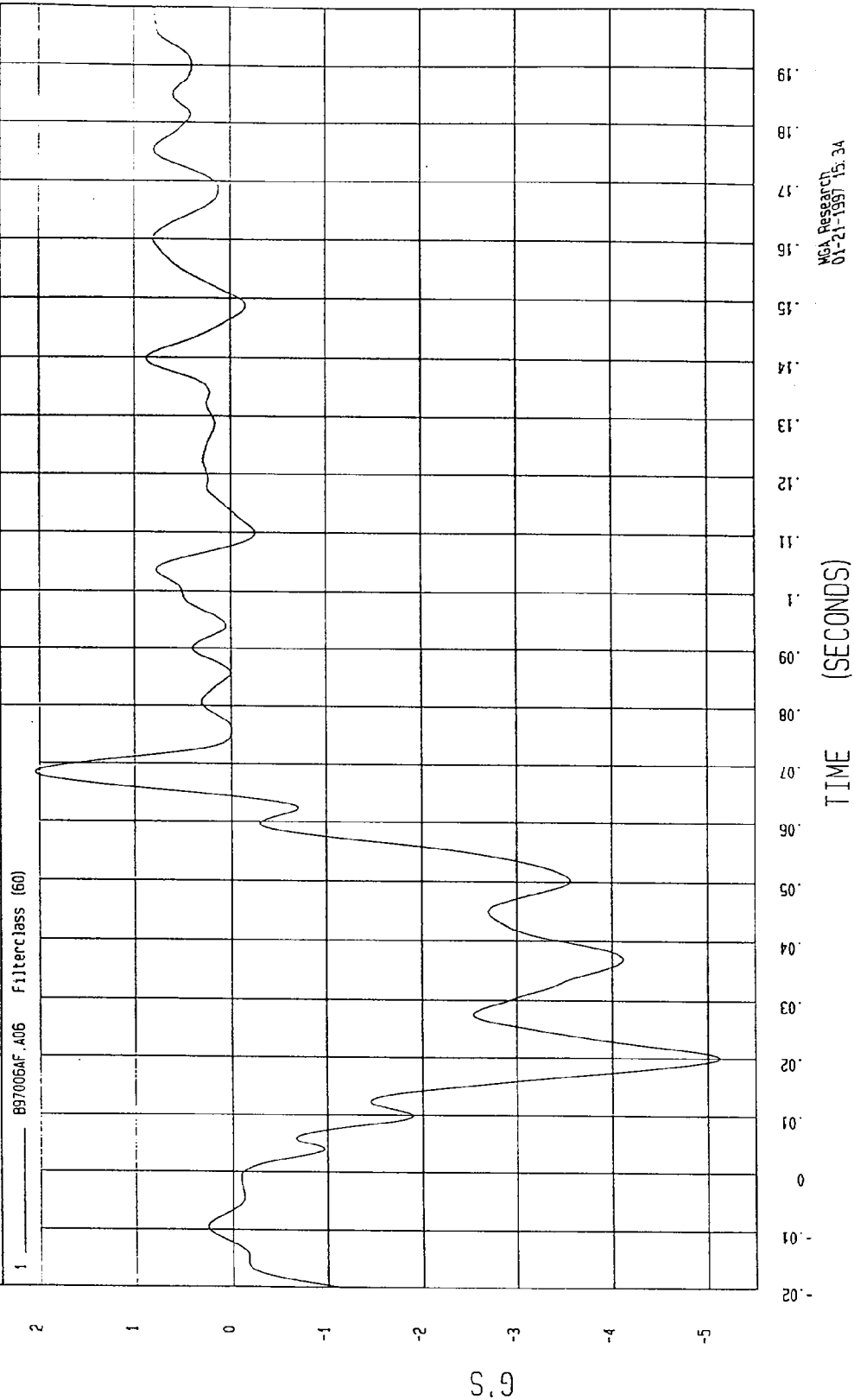
TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -5.13 G'S at 20 msec Maximum = 2.04 G'S at 68 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

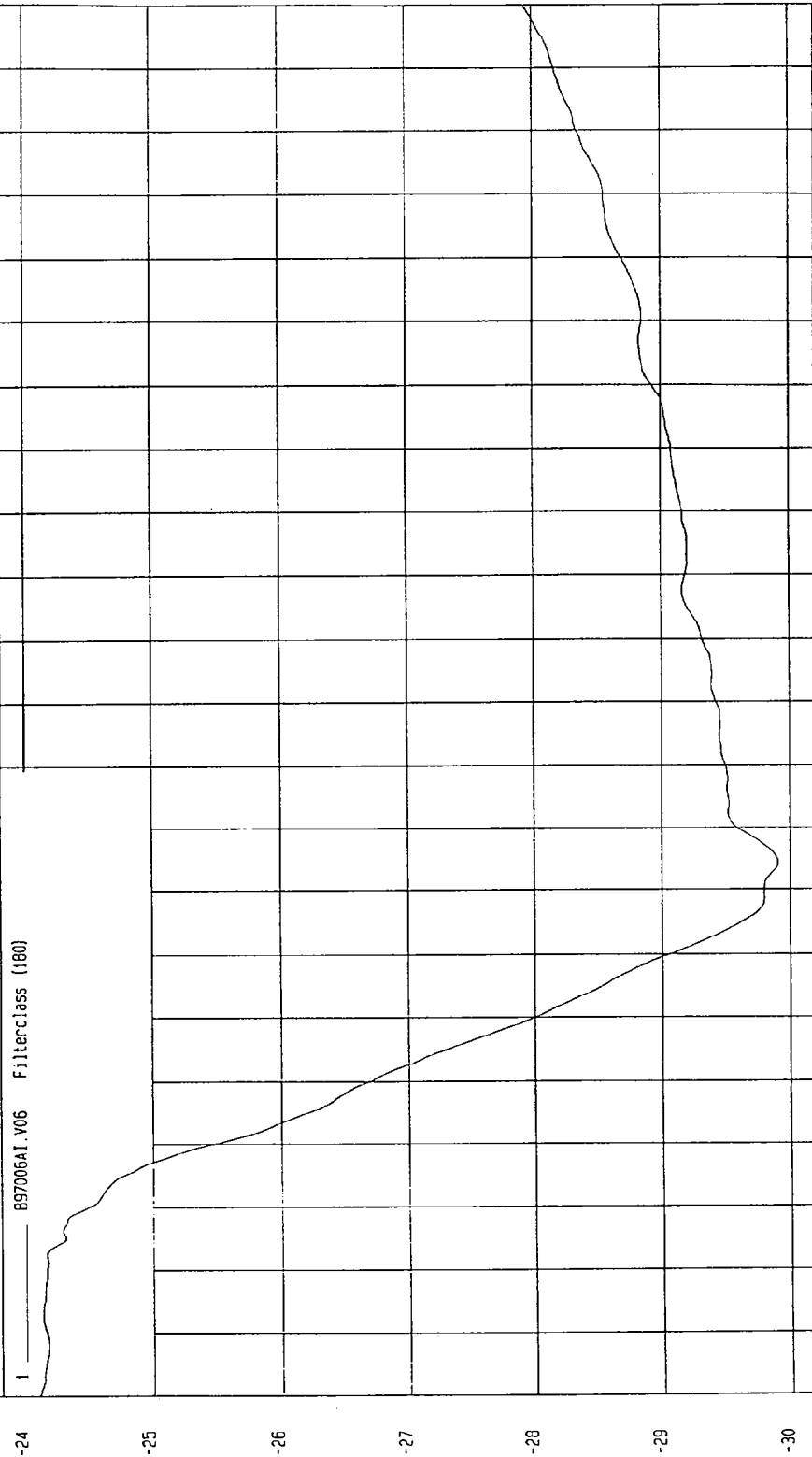


TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -29.90 KPH at 64 msec Maximum = -24.1 KPH at -20 msec

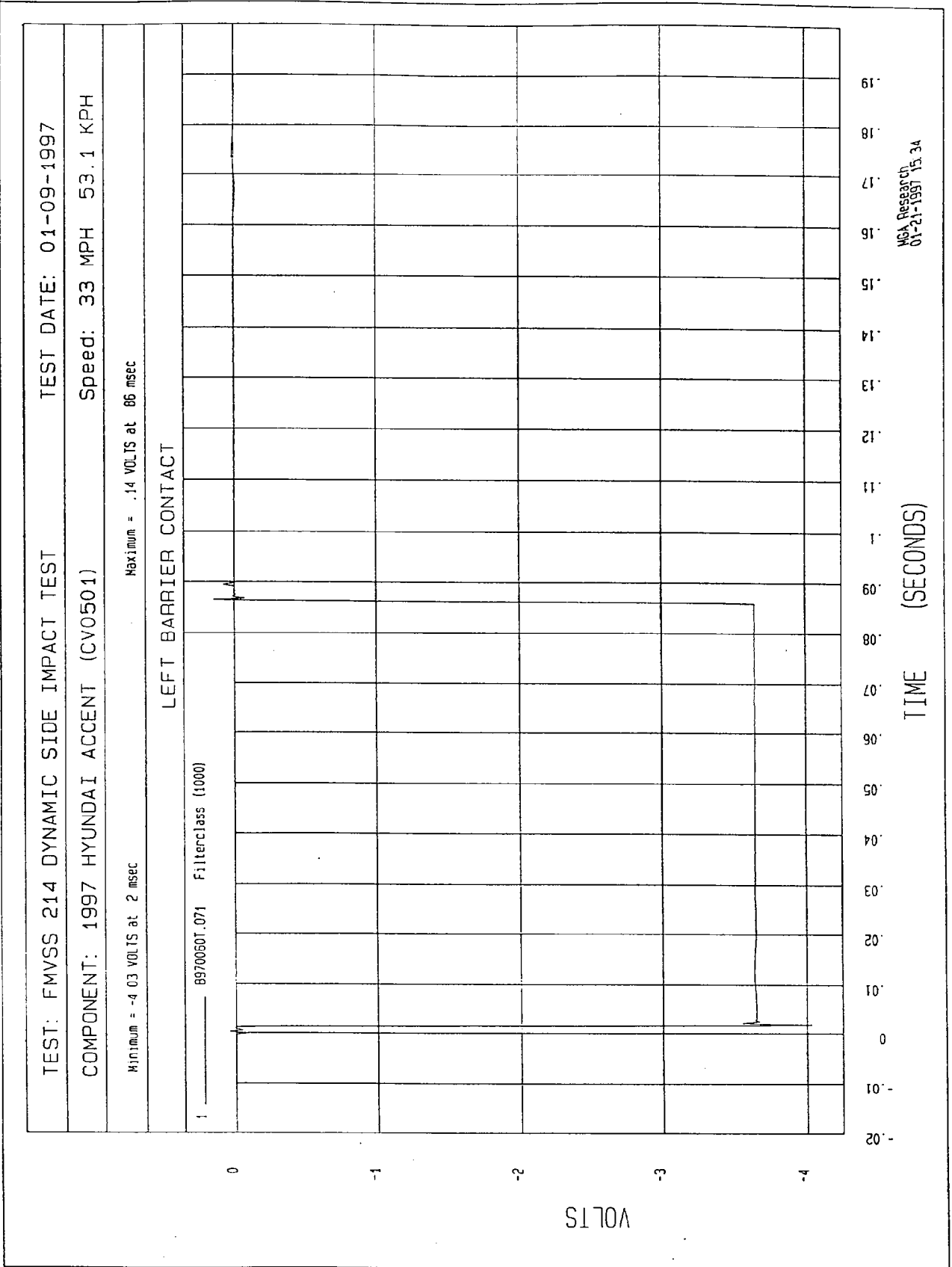
MOVING BARRIER REAR AXLE Y VELOCITY



MSA Research
01-21-1997 15:45

TIME Seconds

KPH

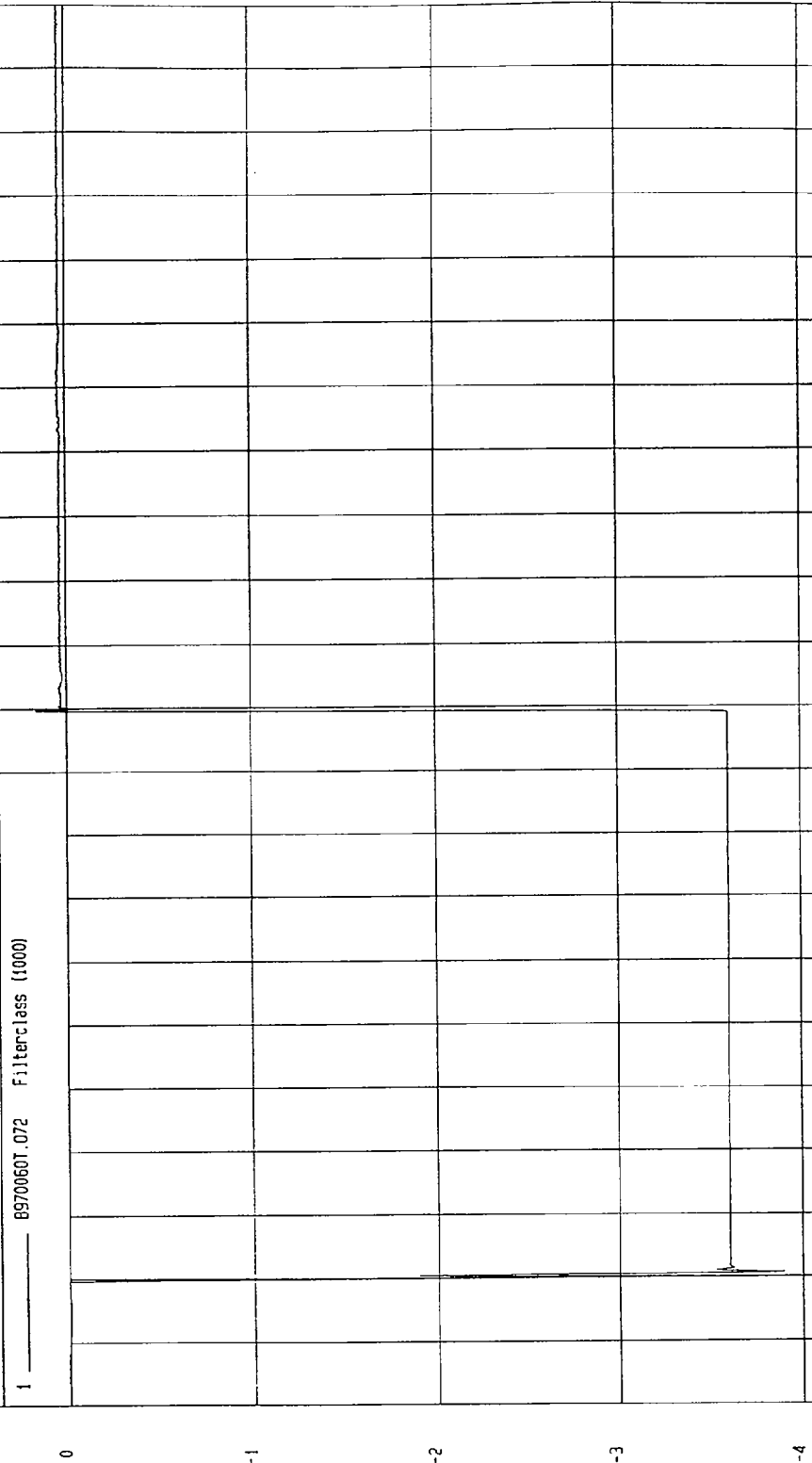


TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -3.89 VOLTS at 1 msec Maximum = .16 VOLTS at 90 msec

RIGHT BARRIER CONTACT



NSA Research
01-21-1997 15:34

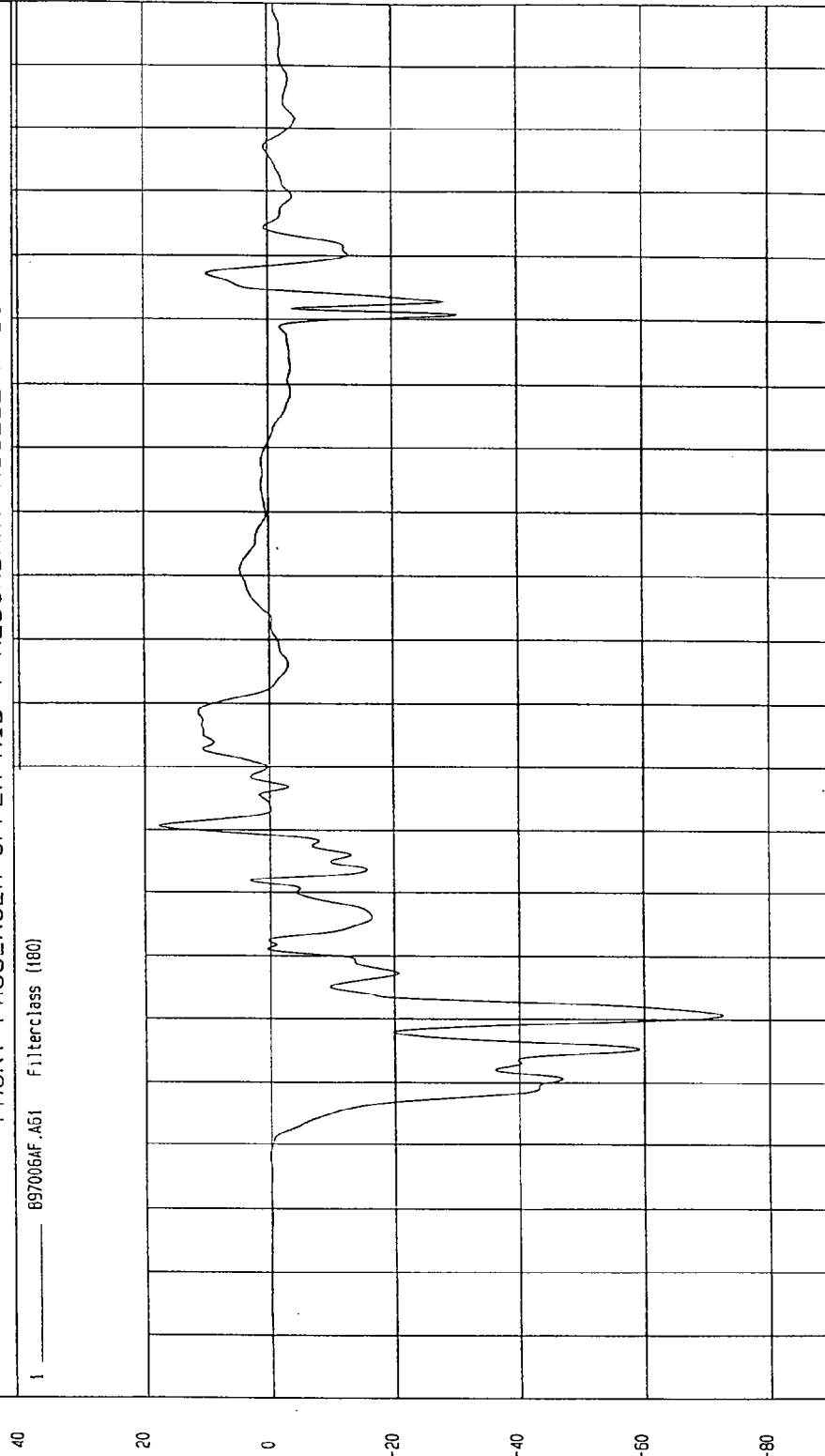
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -72.70 G'S at 41 msec Maximum = 17.77 G'S at 71 msec

FRONT PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

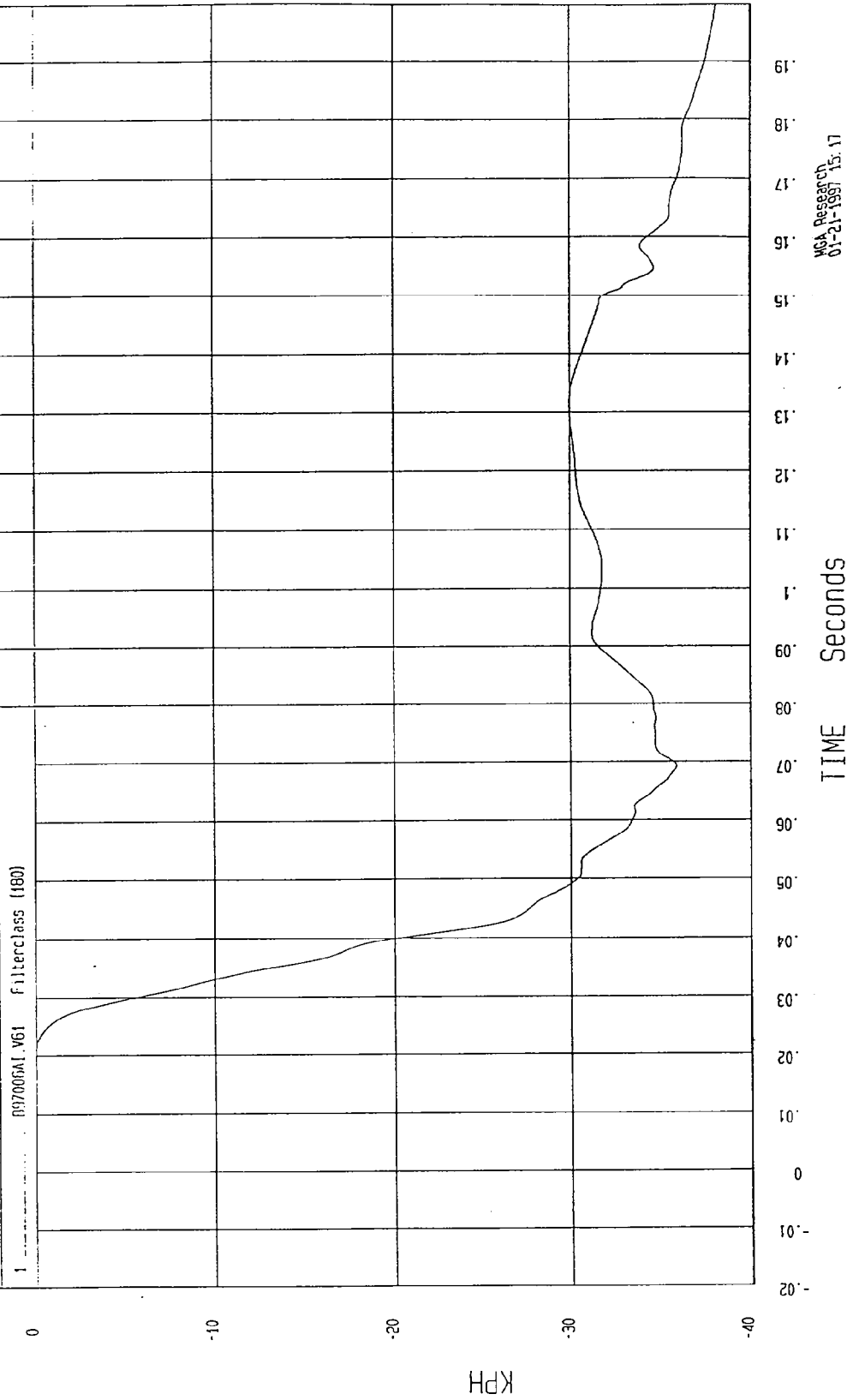
1 897006AF.A51 Filterclass (180)



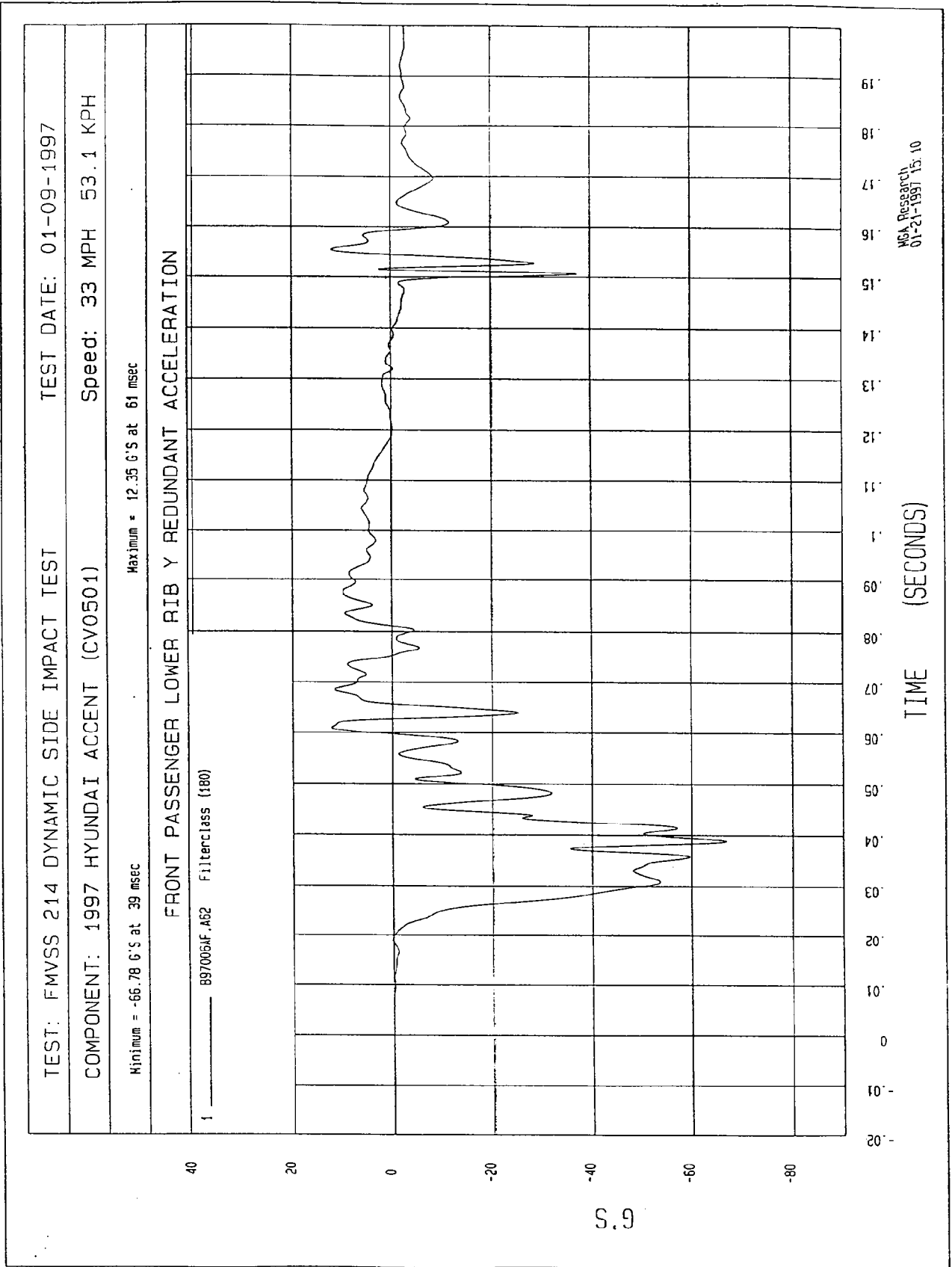
MGA Research
01-21-1997 15:10

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -38.14 KPH at 200 msec	Maximum = 3.26E-02 KPH at 2 msec

FRONT PASSENGER UPPER RIB Y REDUNDANT VELOCITY



MCA Research
01-21-1997 15.17



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

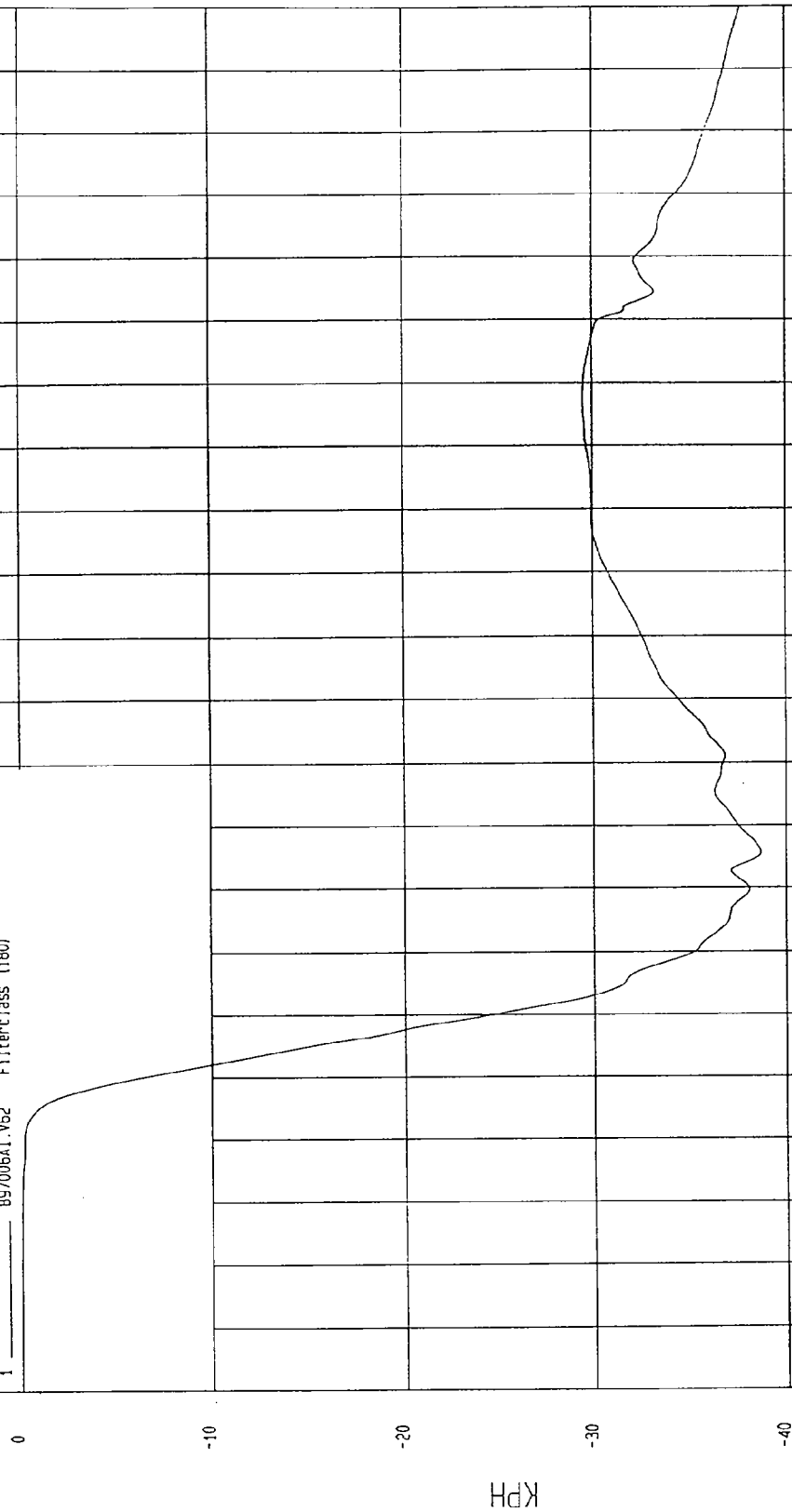
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -38.65 KPH at 66 msec

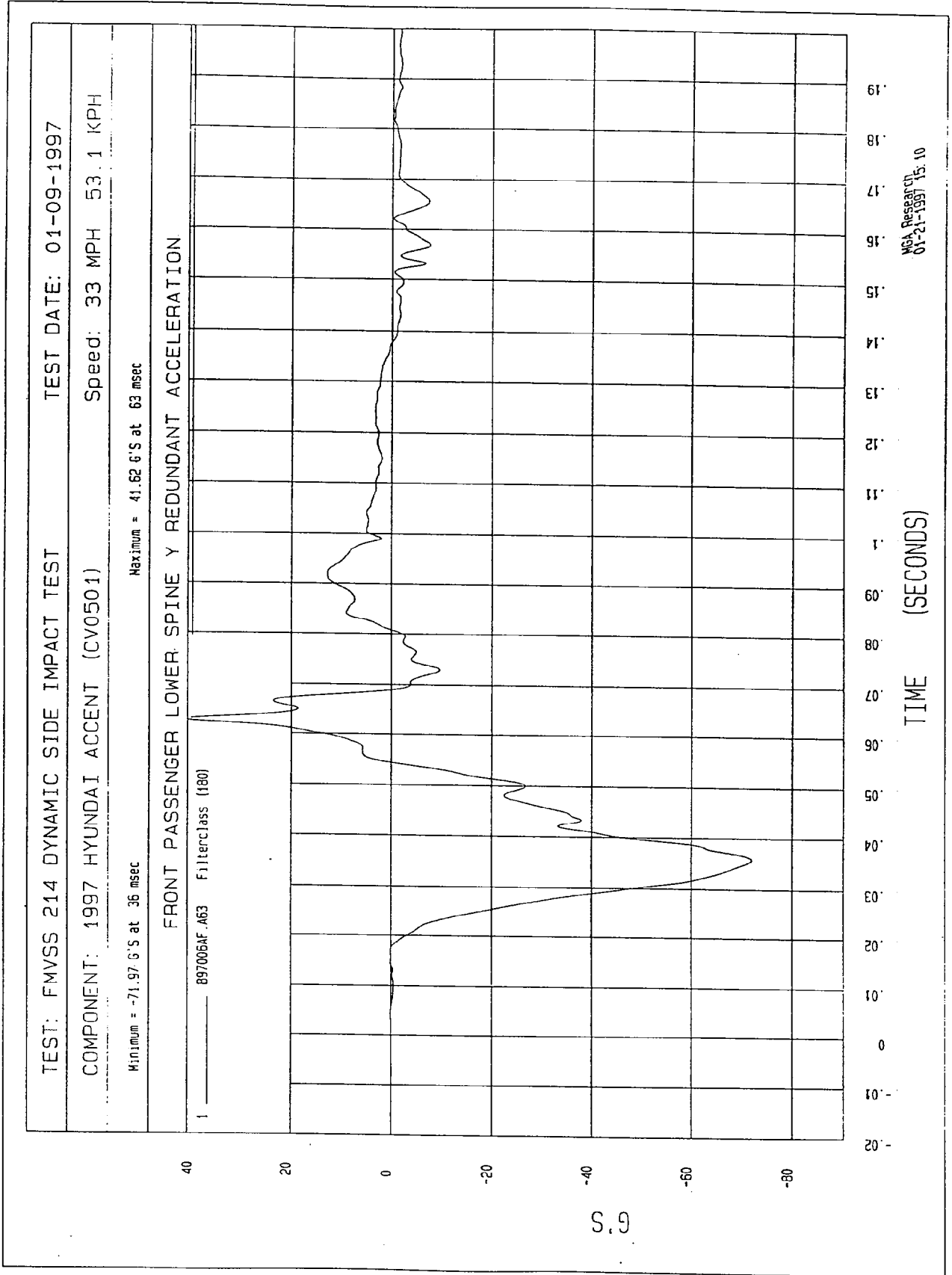
Maximum = 1.51E-03 KPH at -18 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 897006A1.V62 Filterclass (180)



MSA Research
01-21-1997 15:17

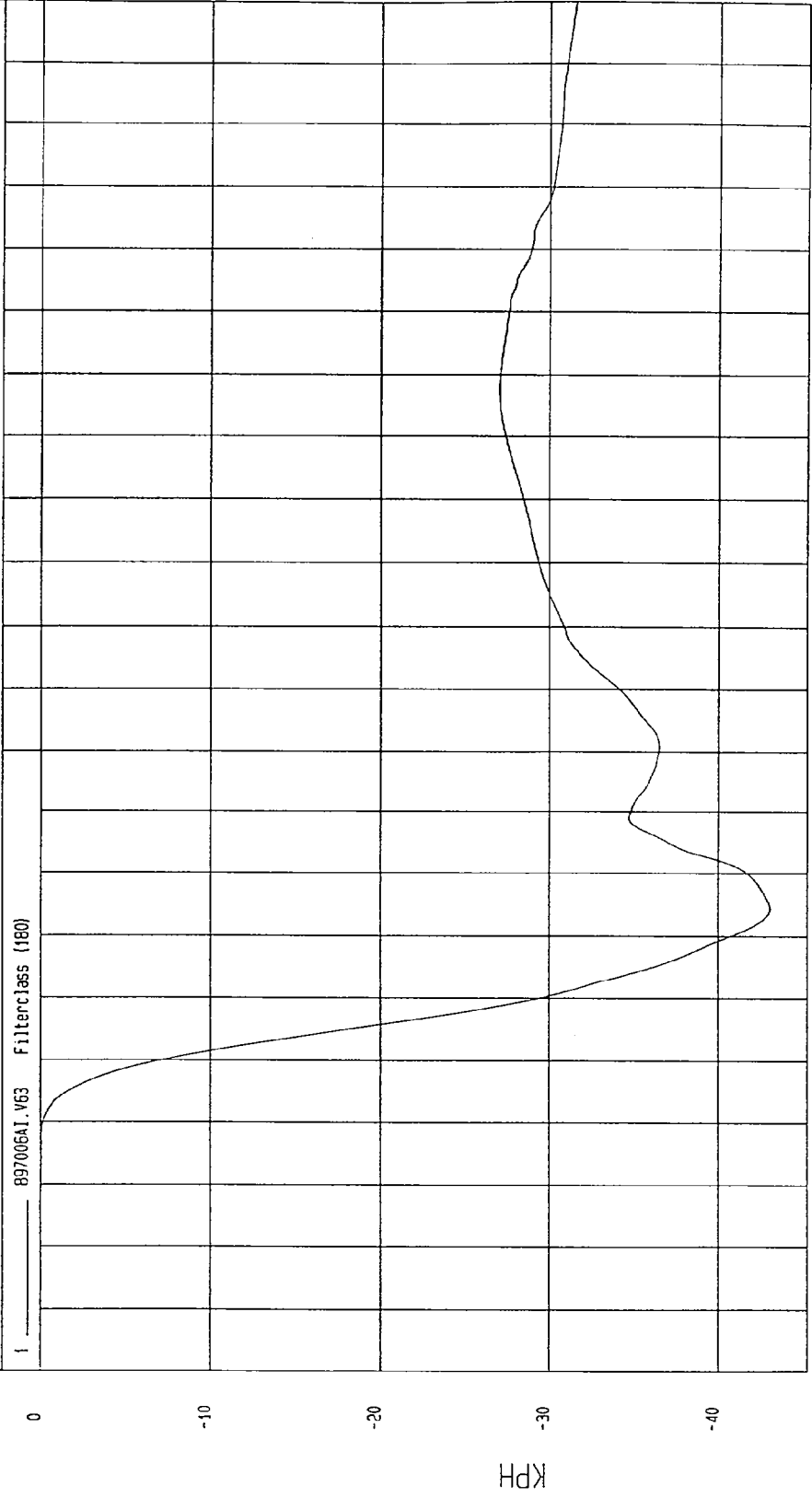


TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

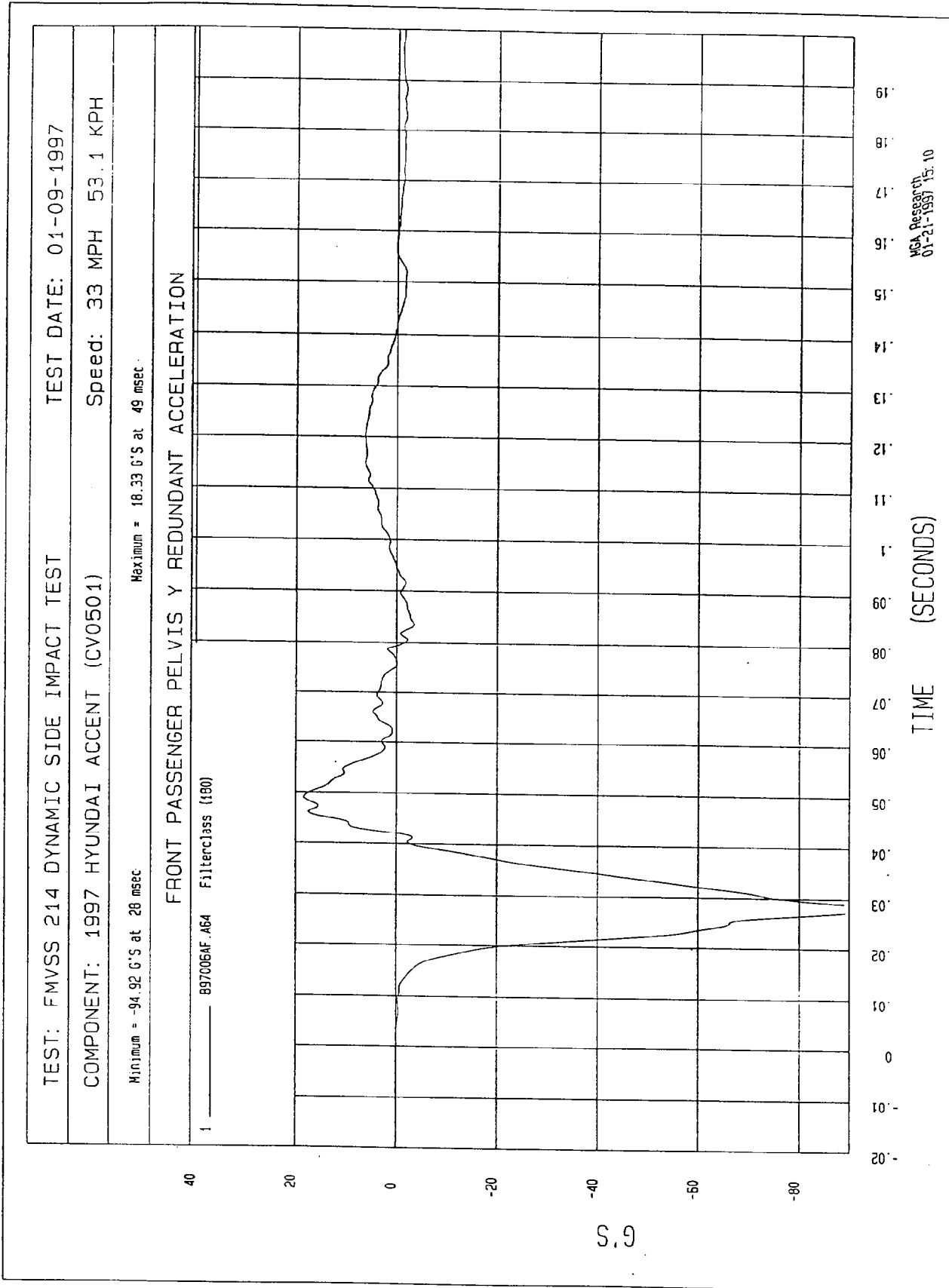
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -42.95 KPH at 54 msec Maximum = 2.64E-02 KPH at 6 msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT VELOCITY



MCA Research
01-21-1997 15:17



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

Speed: 33 MPH 53.1 KPH

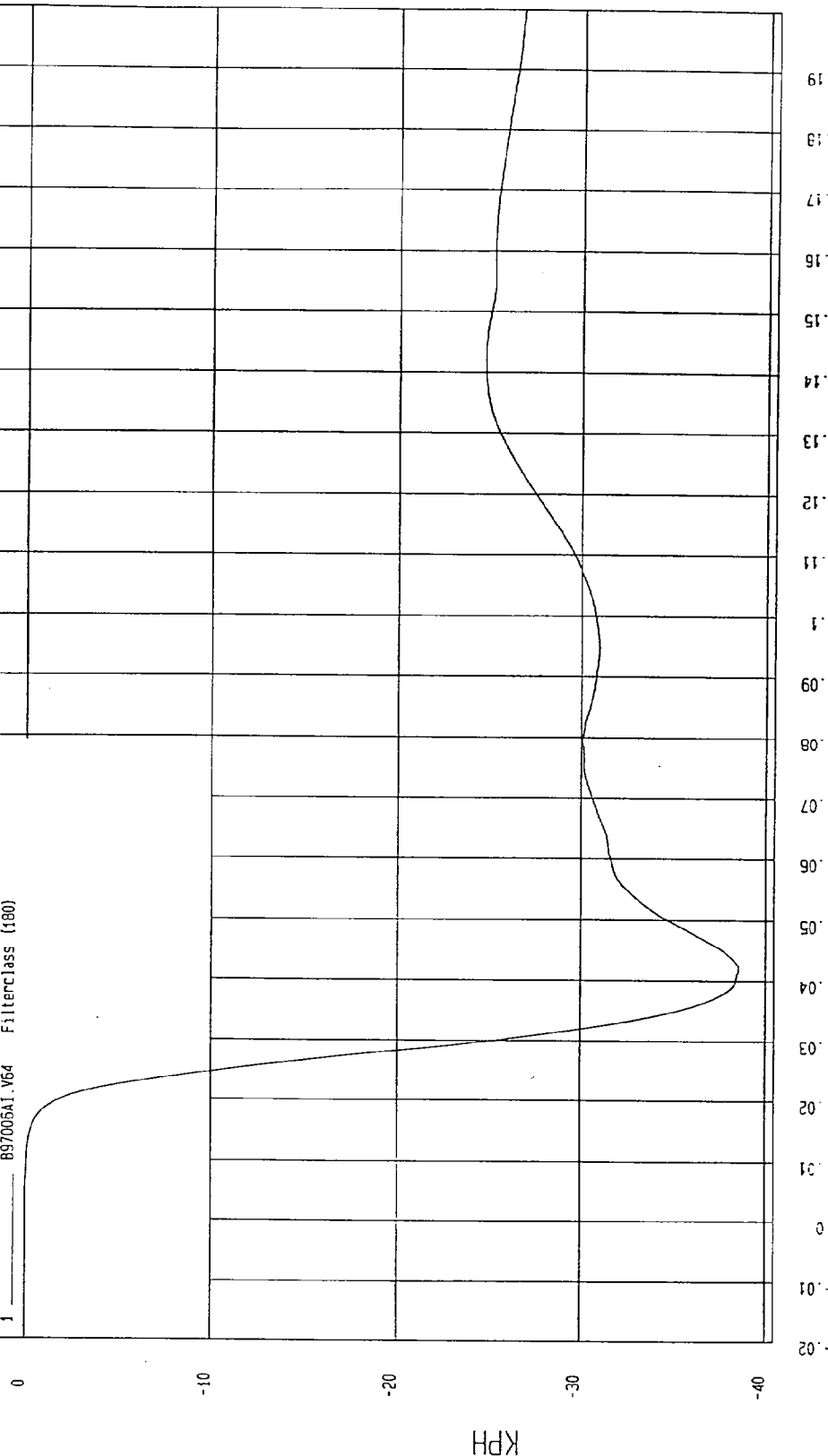
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Maximum = 2.49E-03 KPH at -18 msec

Minimum = -38.54 KPH at 42 msec

FRONT PASSENGER PELVIS Y REDUNDANT VELOCITY

1 B97005A1.V64 FilterClass (180)



WCA Research
01-21-1997 15:17

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

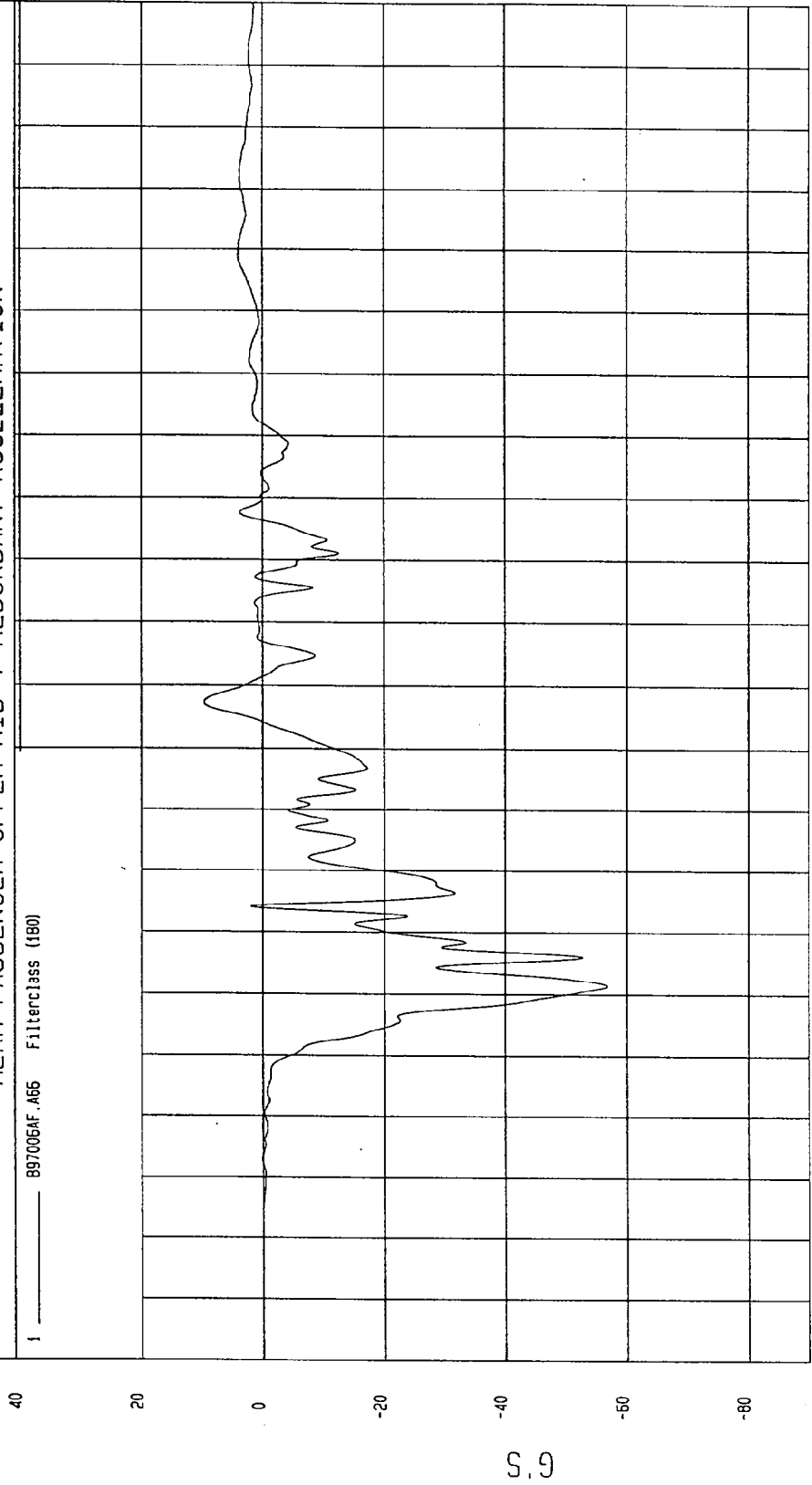
TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -56.84 G'S at 41 msec Maximum = 9.72 G'S at 87 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 B97006AF.A65 Filterclass (100)



MCA Research
01-21-1997 15:10

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

Speed: 33 MPH 53.1 KPH

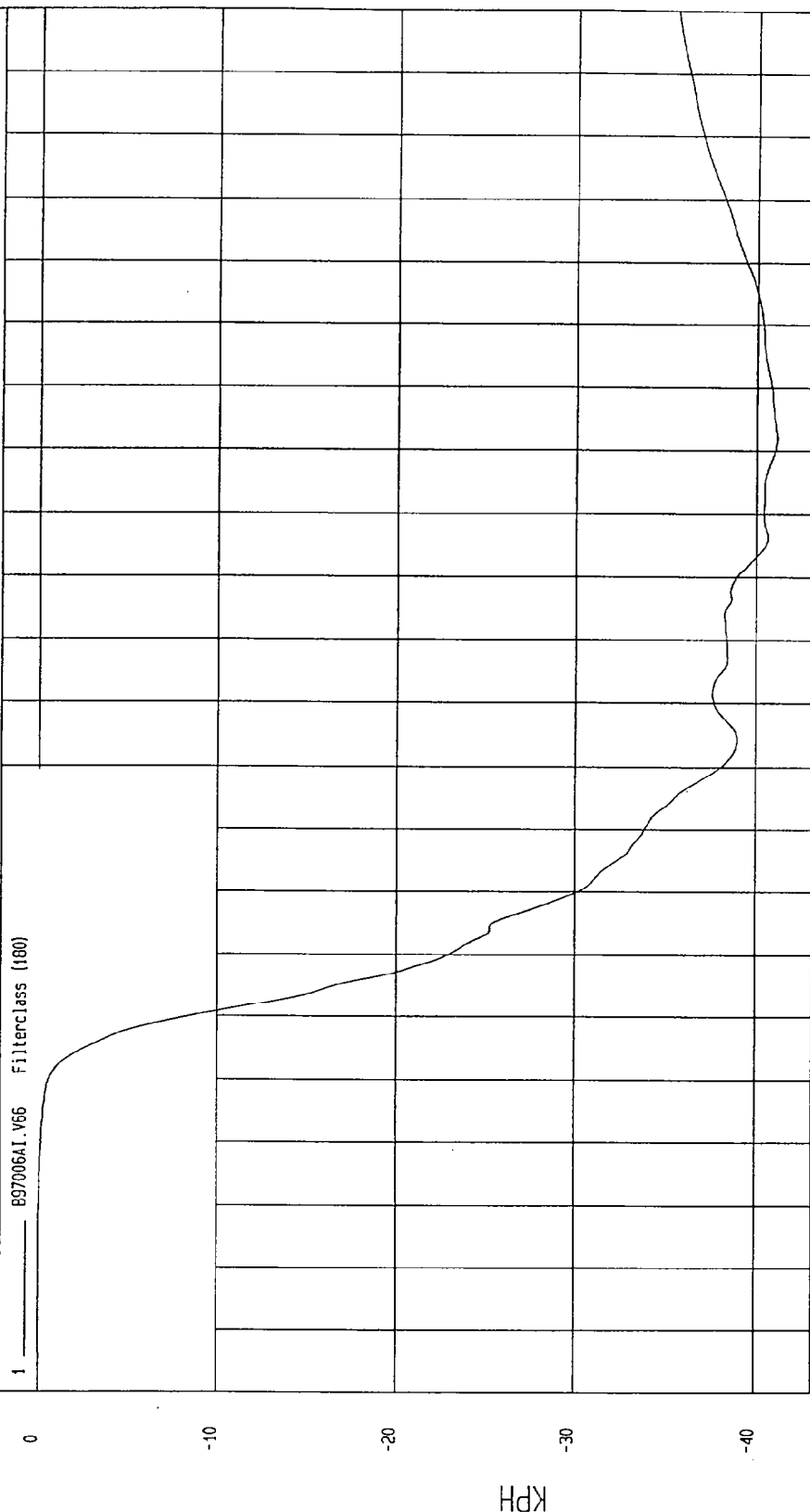
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Minimum = -41.13 KPH at 132 msec

Maximum = 1.32E-02 KPH at 5 msec

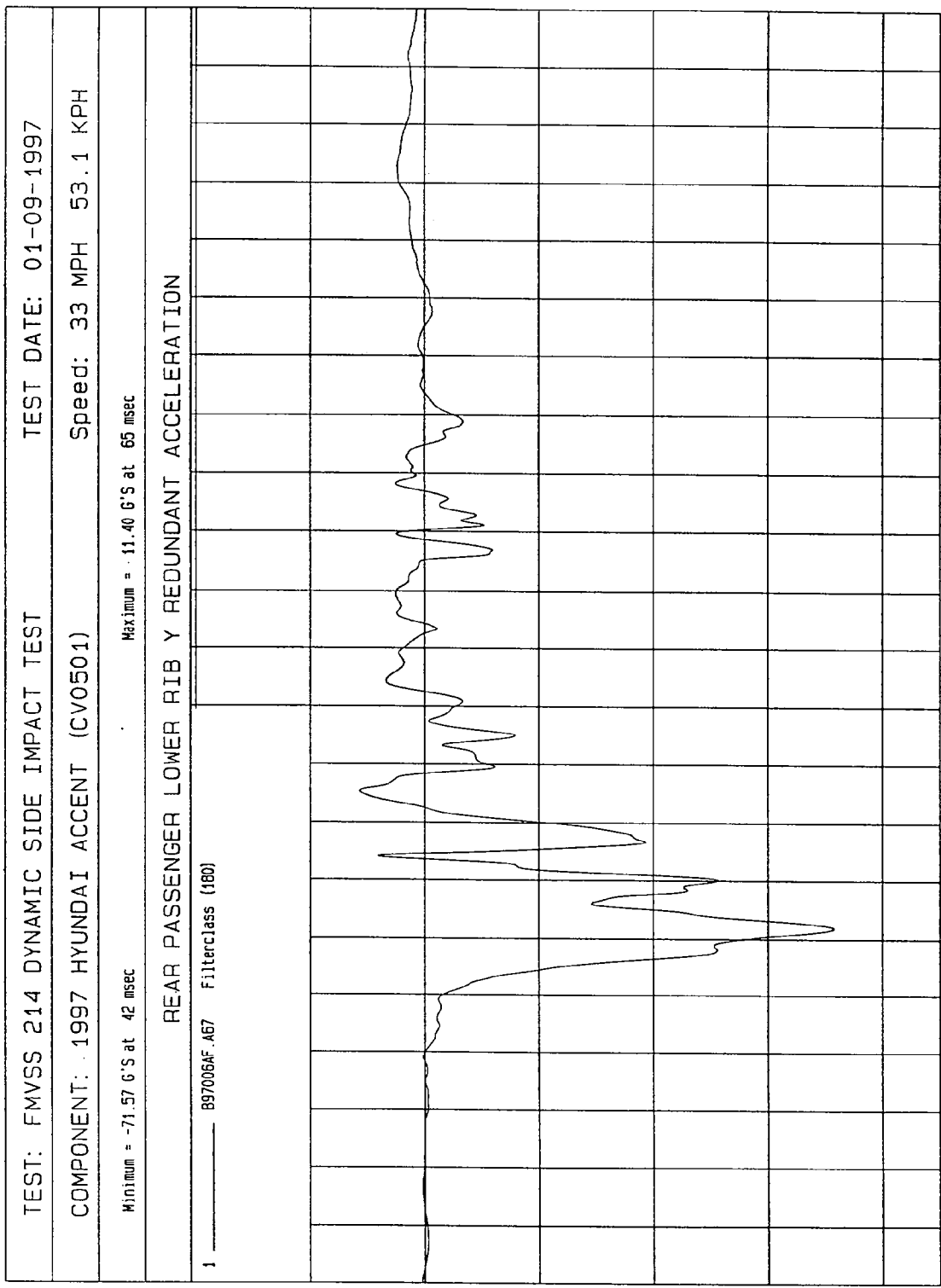
REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 ——— B97006A1.V66 Filterclass (180)



TIME Seconds

MGA Research
01-21-1997 15:17



TIME (SECONDS)

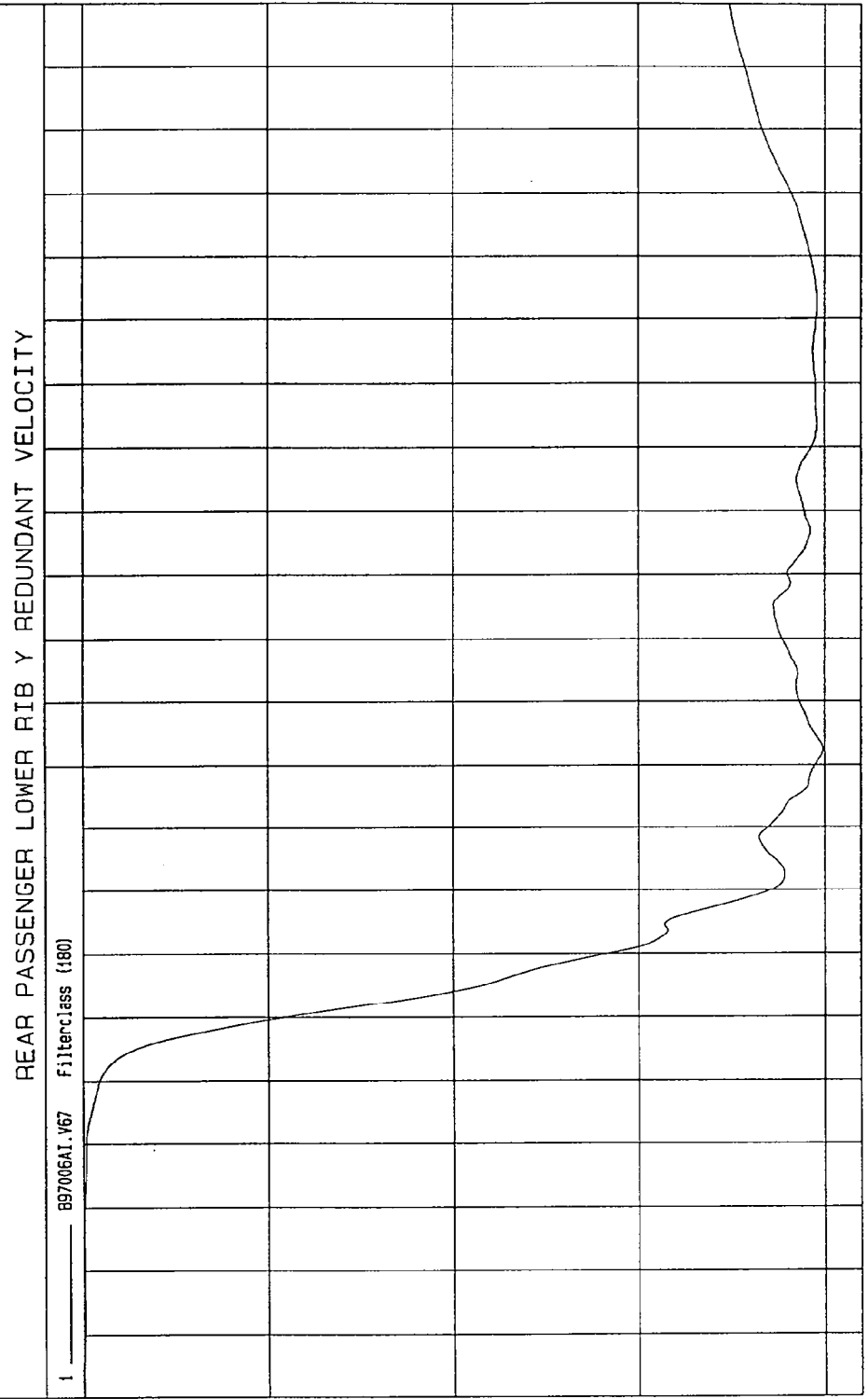
61
51
41
31
21
16
15
14
13
12
11
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20

NGA Research
01-21-1997 15:10

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -39.91 KPH at 62 msec Maximum = 2.99E-02 KPH at -17 msec



TIME Seconds

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

MCA Research
01-21-1997 15:18

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

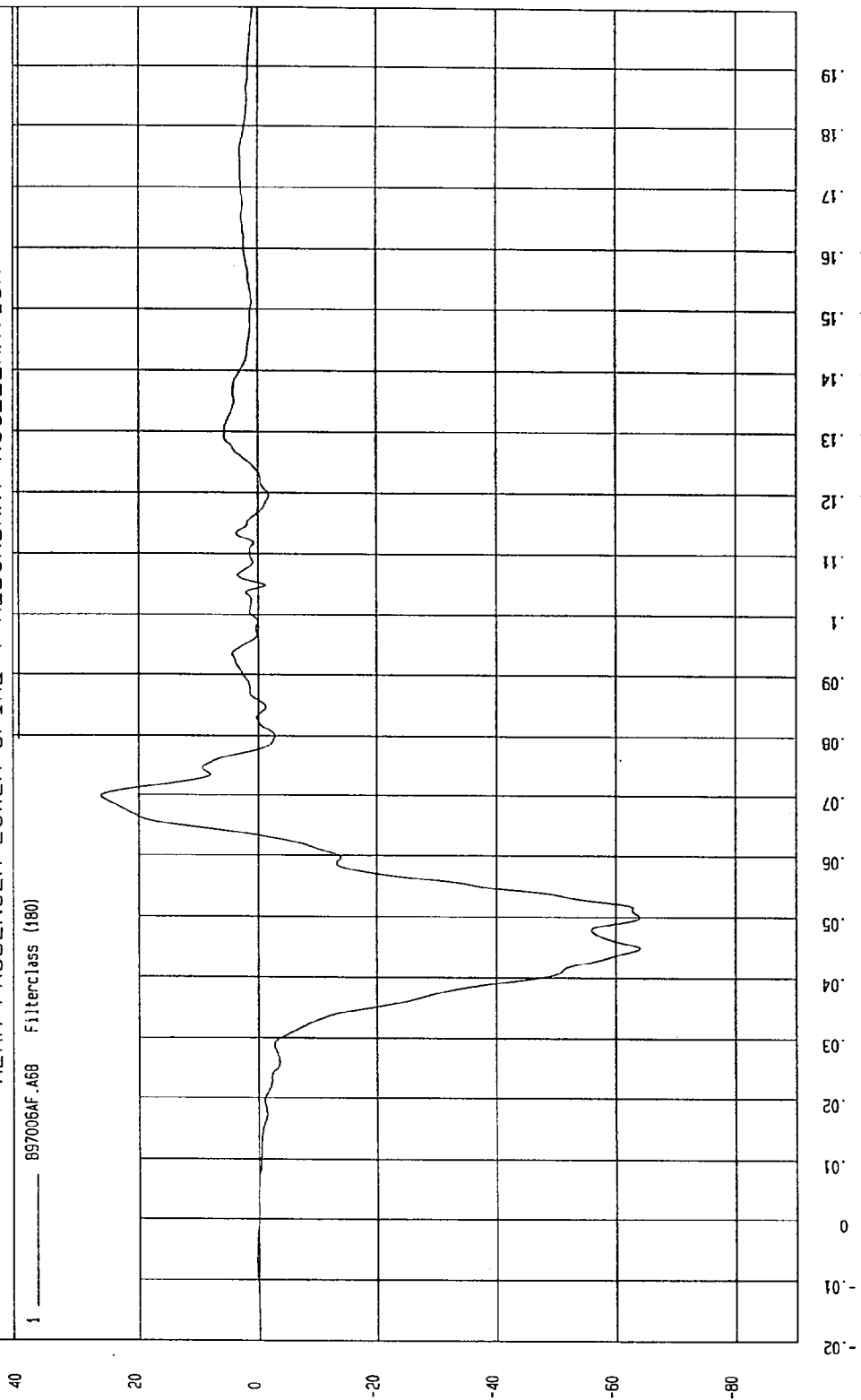
TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -63.98 G's at 45 msec Maximum = 26.42 G's at 70 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 897006AF.A68 Filterclass (180)



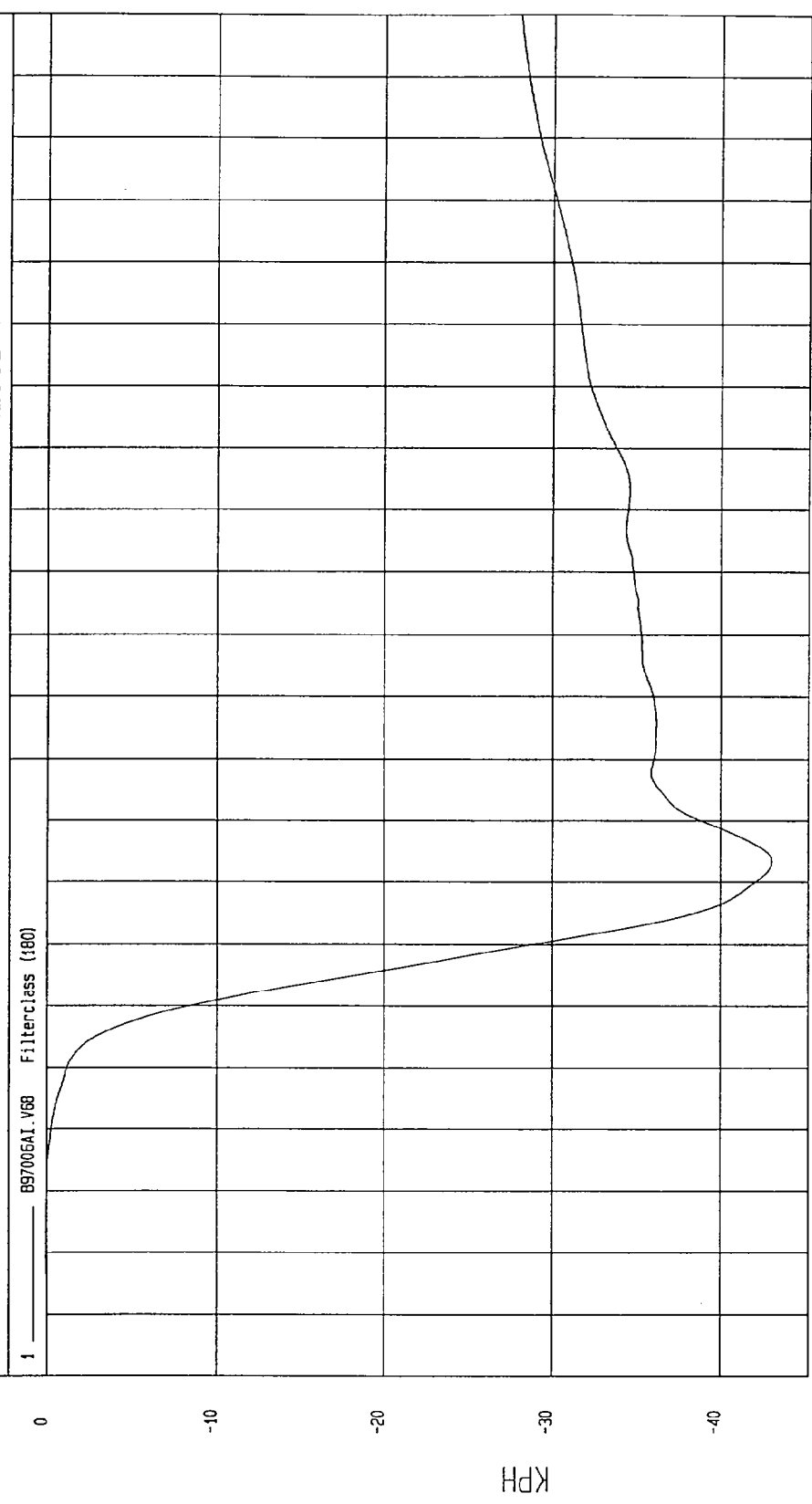
WCA Research
01-21-1997 15:10

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -42.99 KPH at 63 msec Maximum = 8.43E-02 KPH at 5 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY



TIME Seconds

MCA Research
01-21-1997 15.18

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -104.10 G'S at 39 msec Maximum = 8.78 G'S at 100 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 B97006AF.A69 Filterclass (180)

40

20

0

-20

-40

-60

-80

G'S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

NCA Research
01-21-1997 15:10

TIME (SECONDS)

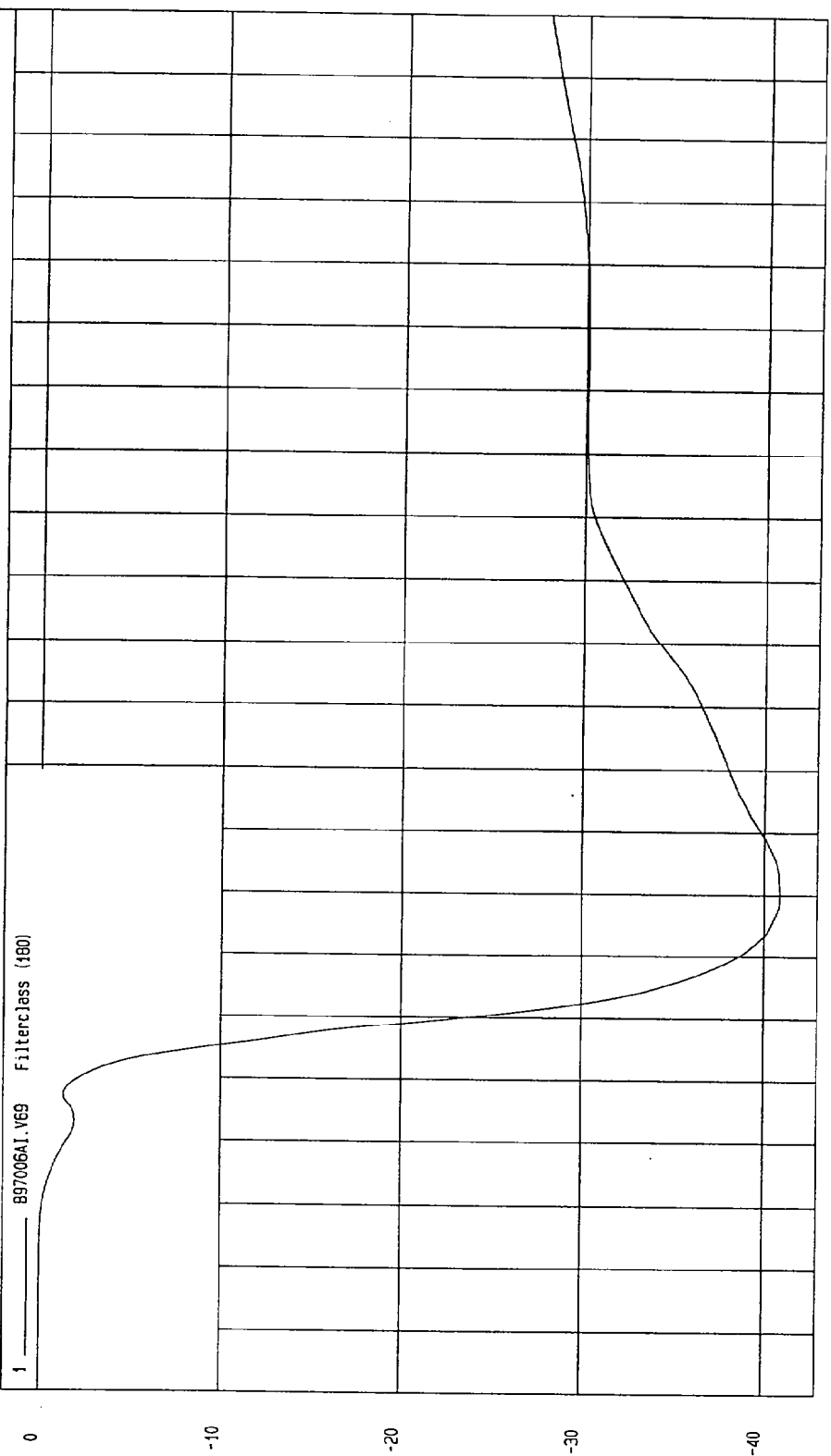
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -40.86 KPH at 60 msec Maximum = 3.5E-03 KPH at -14 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 ——— B97006A1.V69 FilterClass (180)



NCA Research
01-21-1997 15:18

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

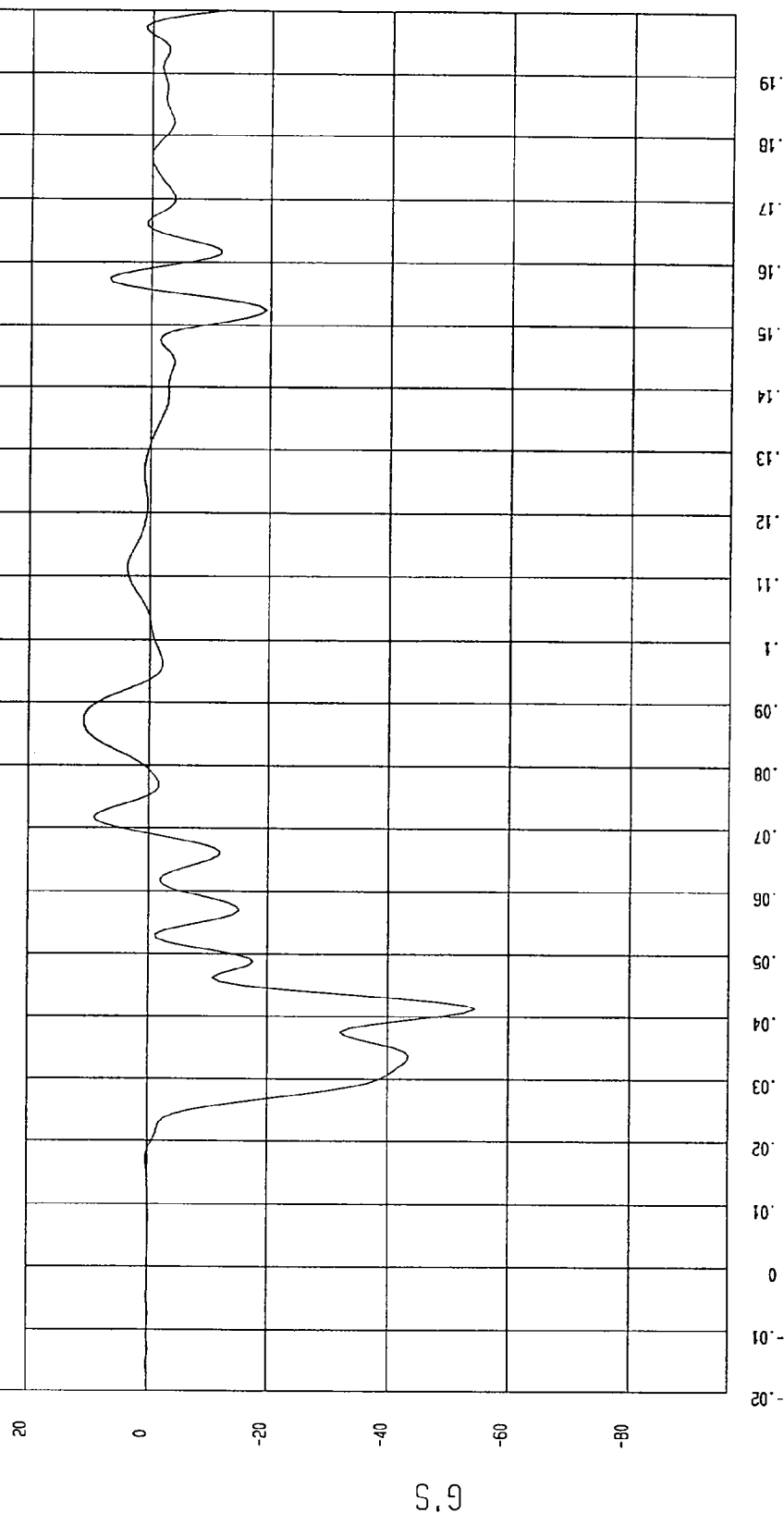
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

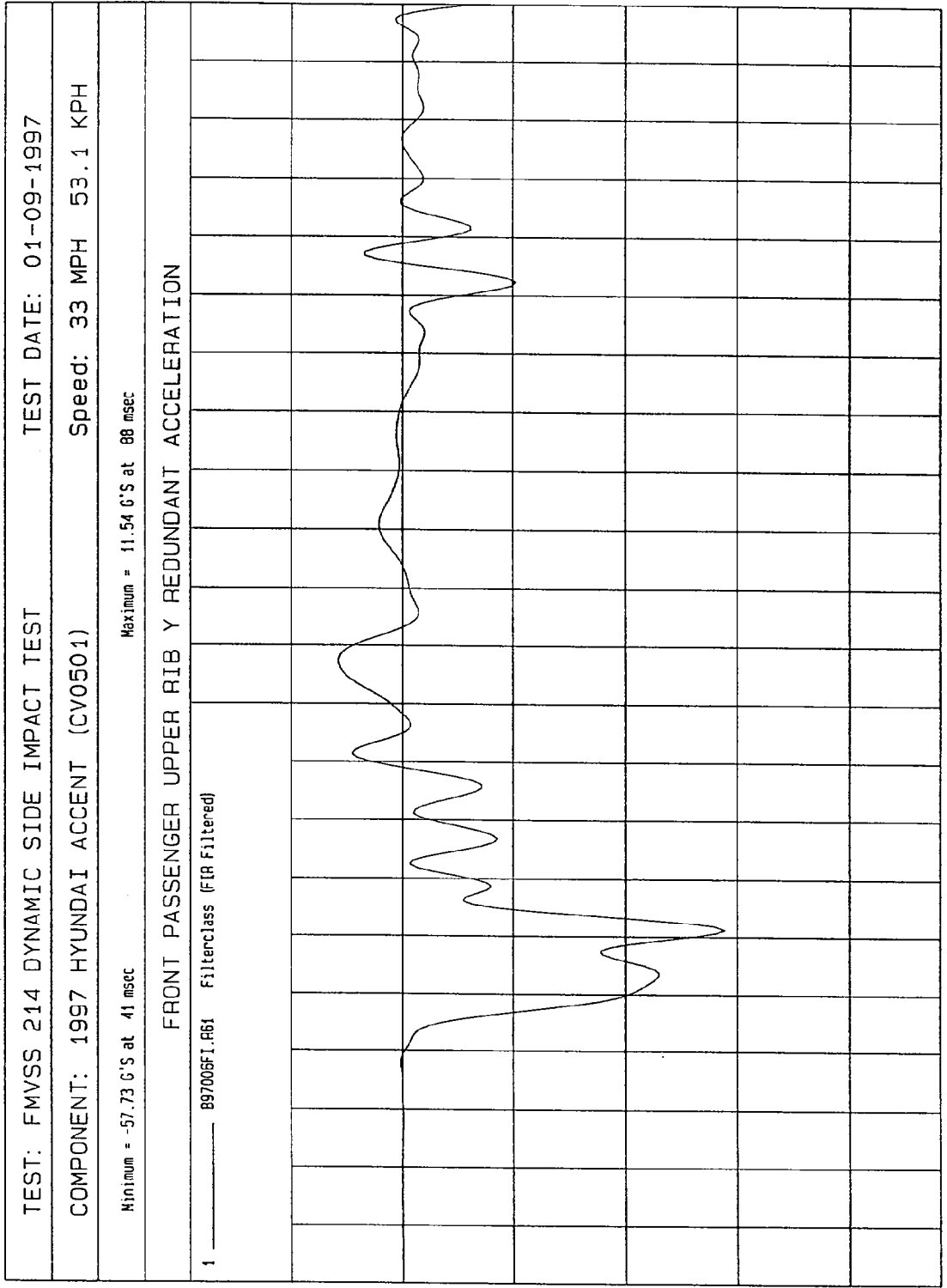
Minimum = -54.53 G'S at 41 msec Maximum = 10.81 G'S at 87 msec

FRONT PASSENGER UPPER RIB Y ACCELERATION

1 897006FI.R15 Filterclass (FIR Filtered)



MGA Research
01-21-1997 15:07



TIME (SECONDS)

MSA Research
01-21-1997 15:07

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

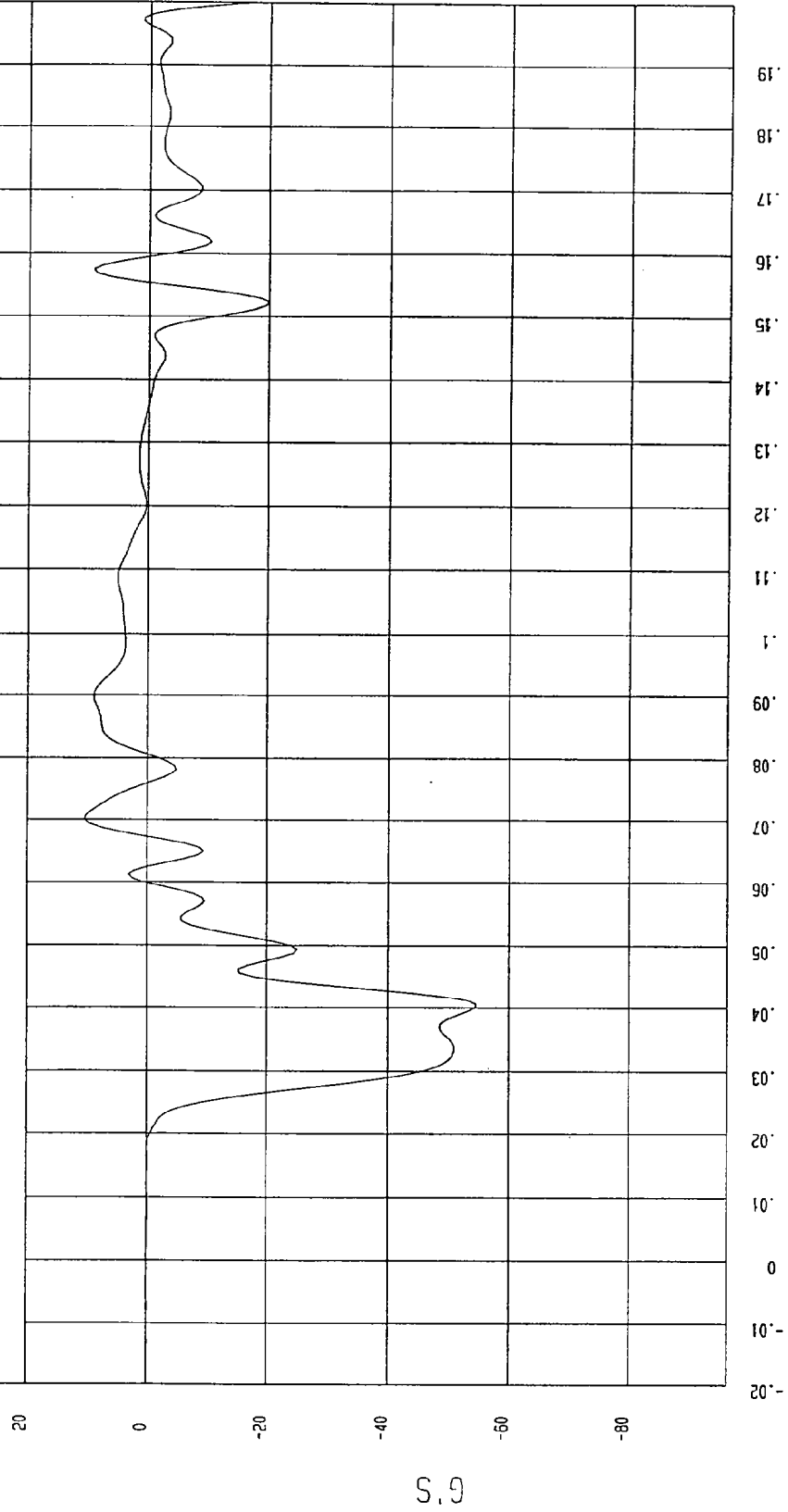
COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -54.55 G'S at 41 msec

Maximum = 10.53 G'S at 70 msec

FRONT PASSENGER LOWER RIB Y ACCELERATION

1 B97006F1.R16 Filterclass (FIR Filtered)



NCA Research
01-21-1997 15:07

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -57.82 G'S at 40 msec Maximum = 11.11 G'S at 70 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 897006F1.062 filterclass (FIR Filtered)

20

0

-20

-40

-60

-80

G

-20

-10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

TIME (SECONDS)

HCA Research
01-21-1997 15:07

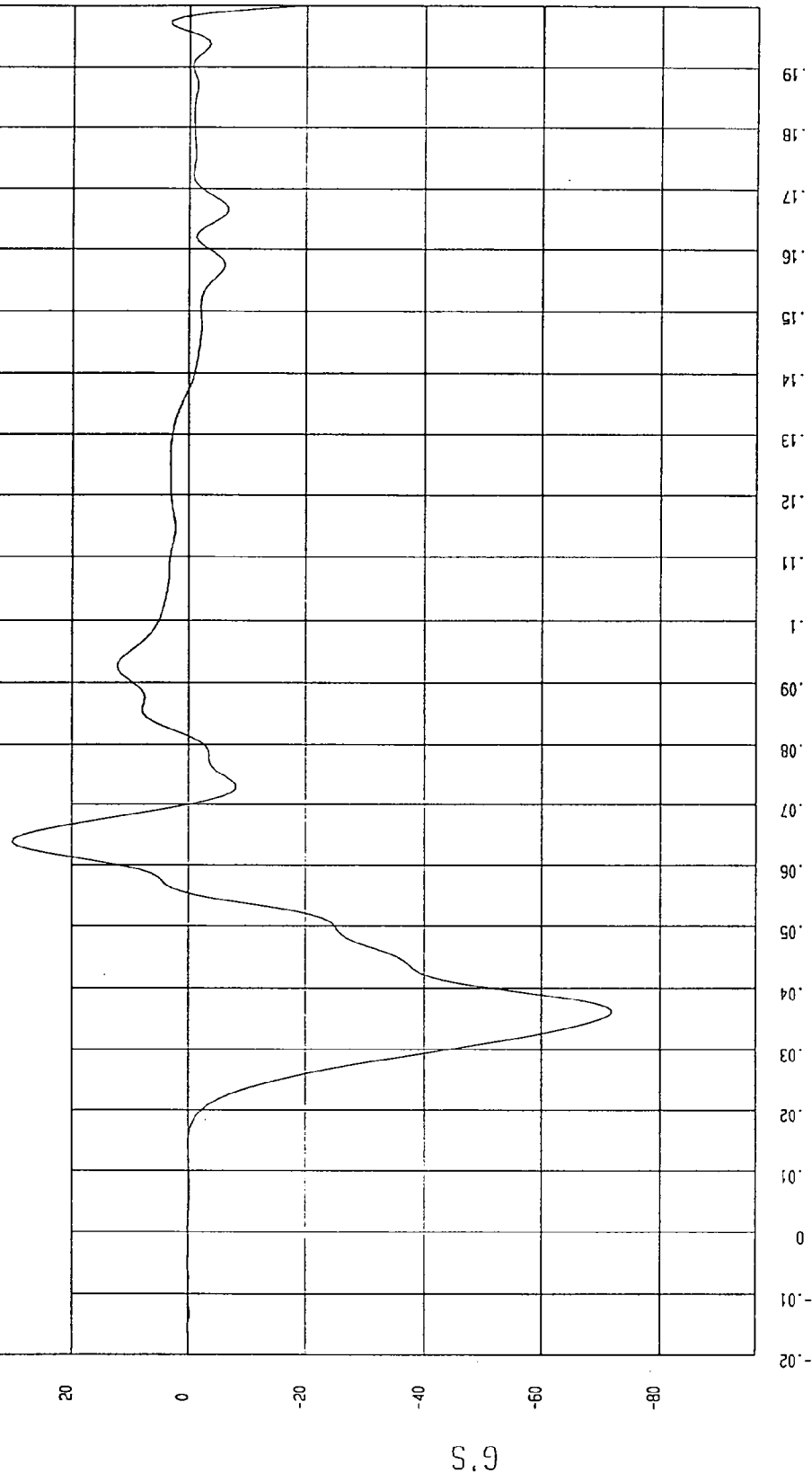
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -71.85 G'S at 36 msec Maximum = 30.20 G'S at 64 msec

FRONT PASSENGER LOWER SPINE Y ACCELERATION

1 897006F1.R17 FilterClass (FIR Filtered)



MCA Research
01-21-1997 15:08

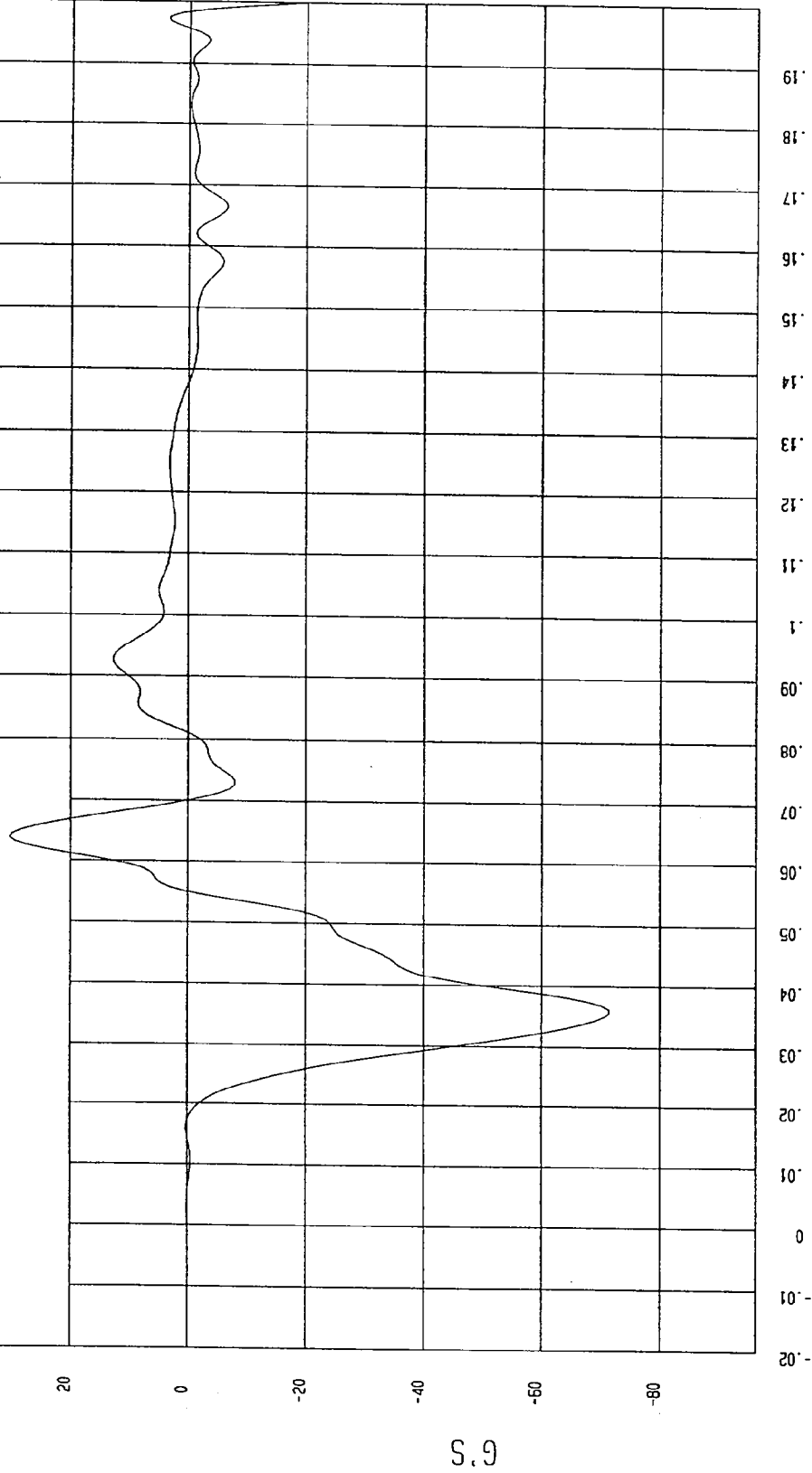
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -71.52 G'S at 36 msec Maximum = 30.44 G'S at 64 msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 ——— B97006F1.R63 FilterClass (FIR Filtered)



MCA Research
01-21-1997 15:08

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST

TEST DATE: 01-09-1997

Speed: 33 MPH 53.1 KPH

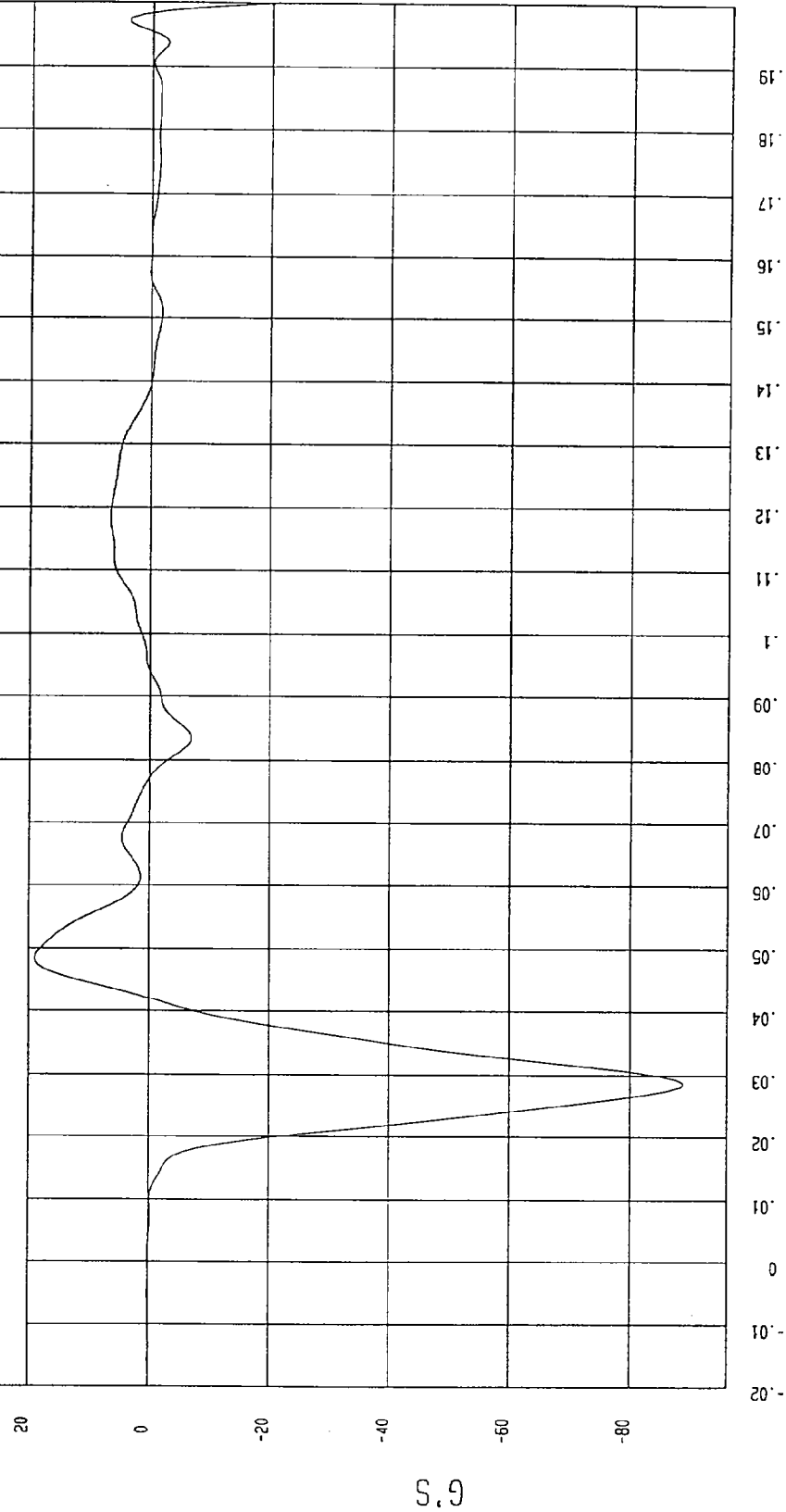
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)

Minimum = -88.65 G'S at 29 msec

Maximum = 18.98 G'S at 48 msec

FRONT PASSENGER PELVIS Y ACCELERATION

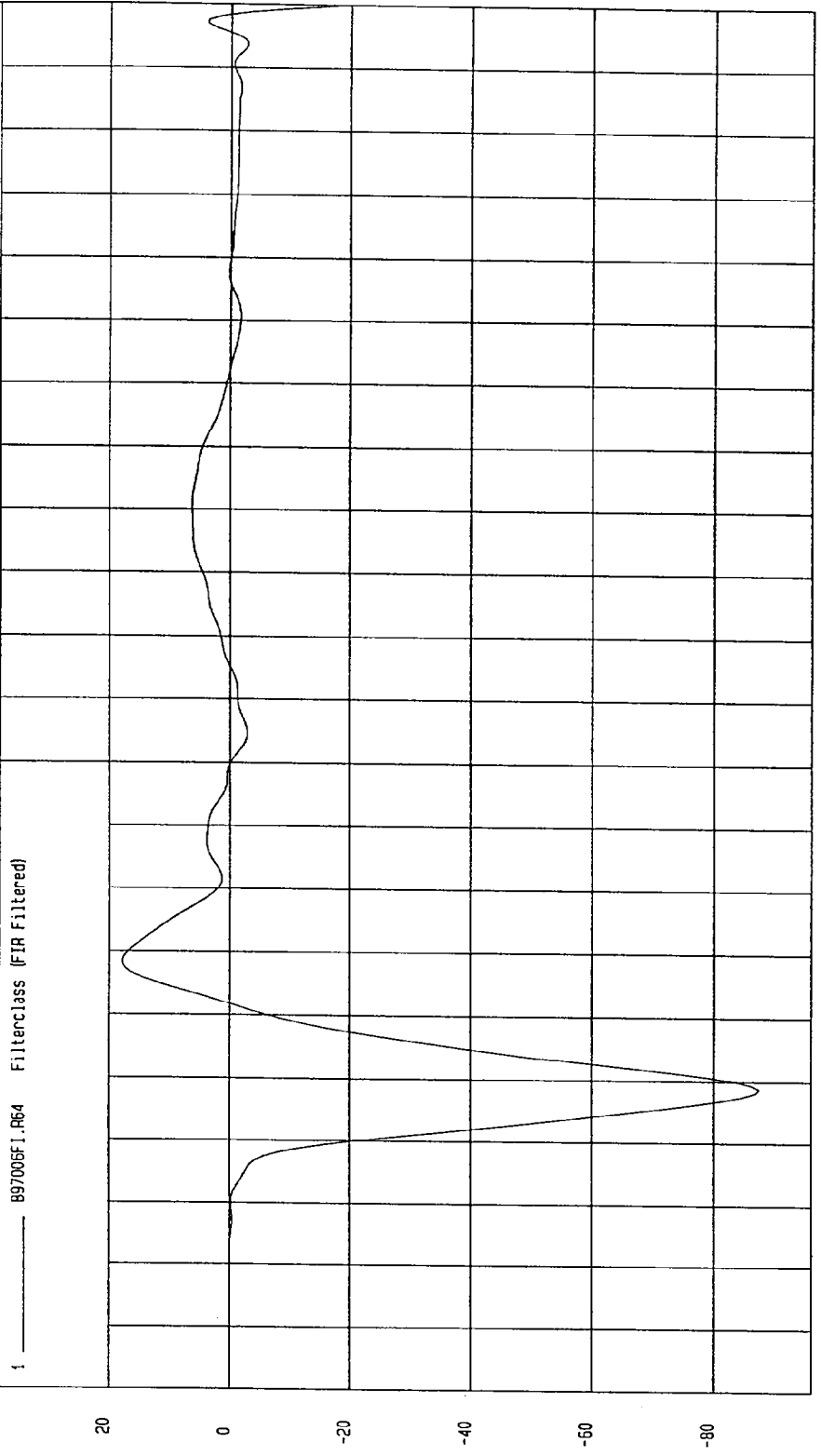
1 ——— 897006F1.R18 Filterclass (FIR Filtered)



MCA Research
01-21-1997 15.08

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST	TEST DATE: 01-09-1997
COMPONENT: 1997 HYUNDAI ACCENT (CV0501)	Speed: 33 MPH 53.1 KPH
Minimum = -87.45 G'S at 29 msec	Maximum = 17.80 G'S at 48 msec

FRONT PASSENGER PELVIS Y REDUNDANT ACCELERATION



TIME (SECONDS)

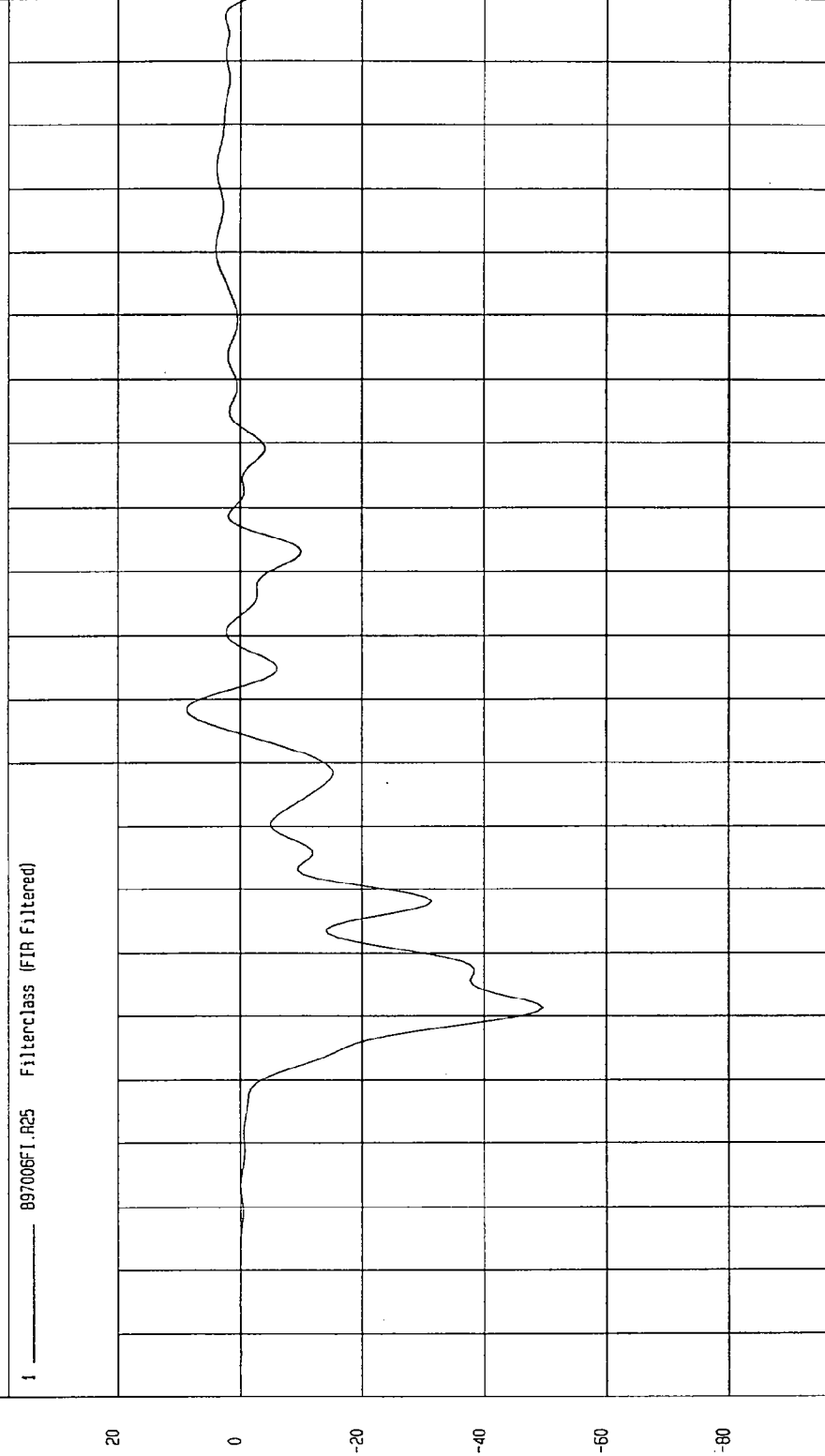
MCA Research
01-21-1997 15:08

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -49.62 G'S at 41 msec Maximum = 8.87 G'S at 88 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

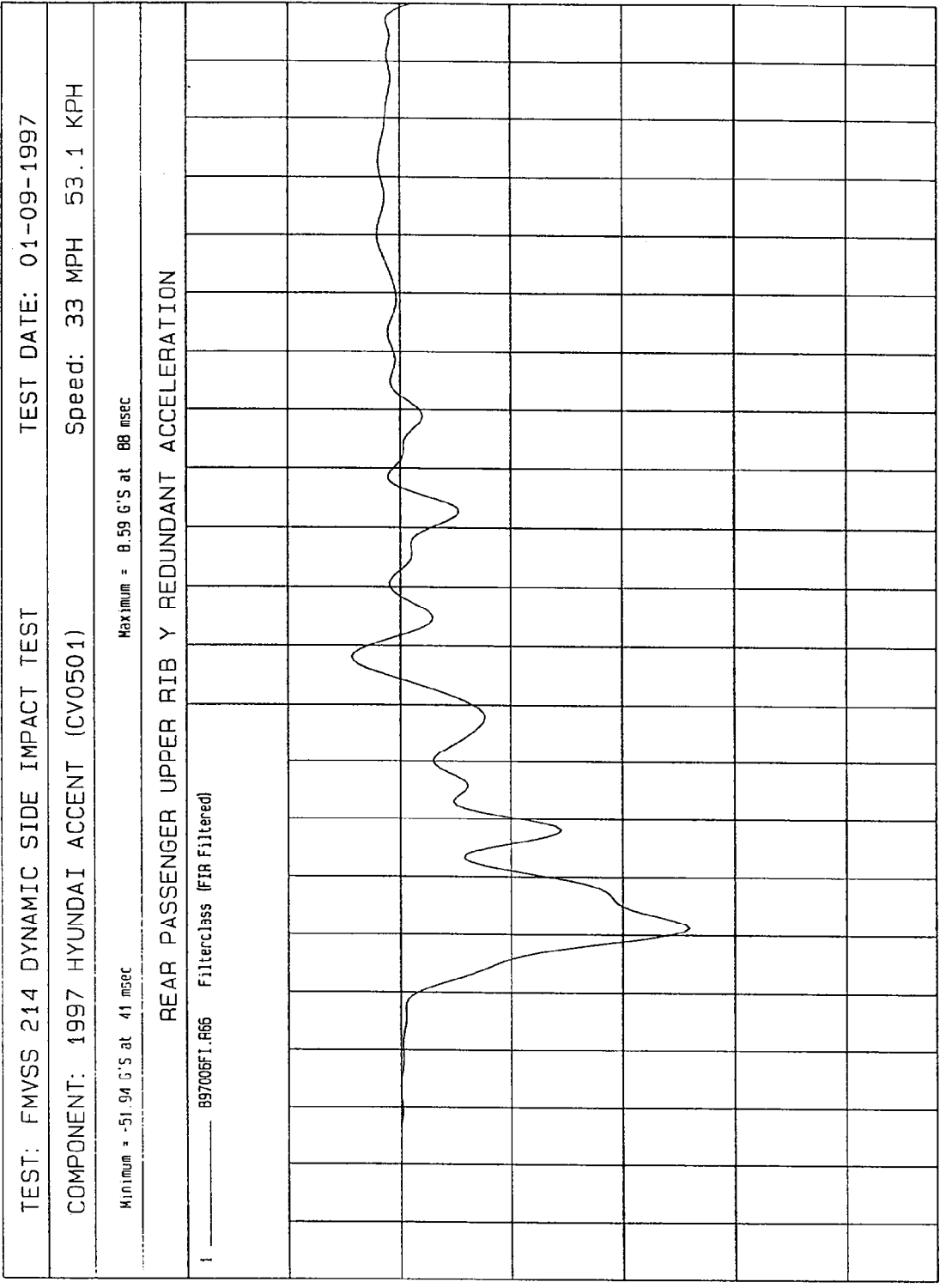


TIME (SECONDS)

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

WCA Research
01-21-1997 15:08

G.S



TIME (SECONDS)

NCA Research
01-21-1997 15:08

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -61.37 G'S at 42 msec Maximum = 9.57 G'S at 66 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 B97006F1.R26 Filterclass (FIR Filtered)

20

0

-20

-40

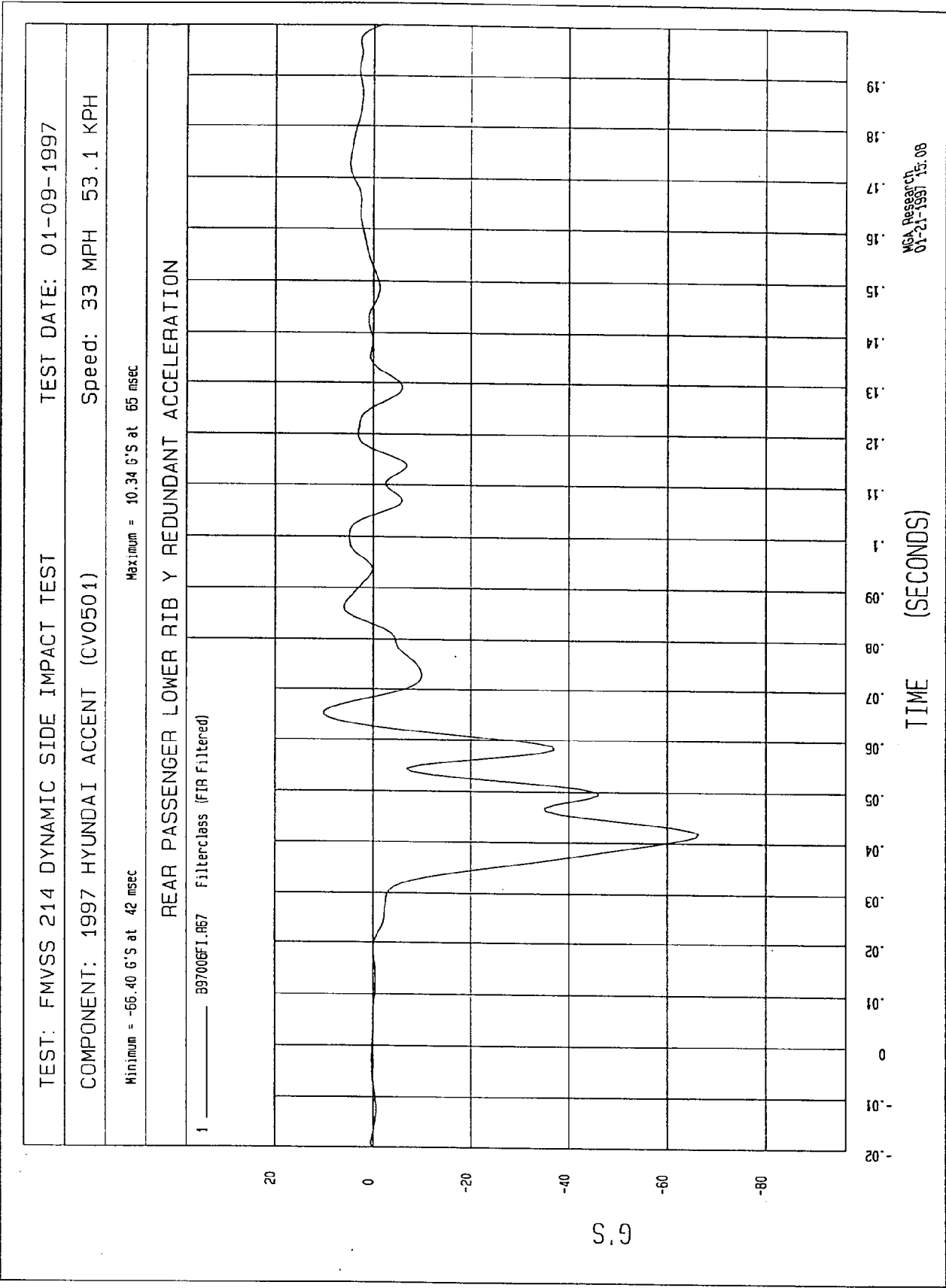
-60

-80

G.S

TIME (SECONDS)

WCA Research
01-21-1997 15:08



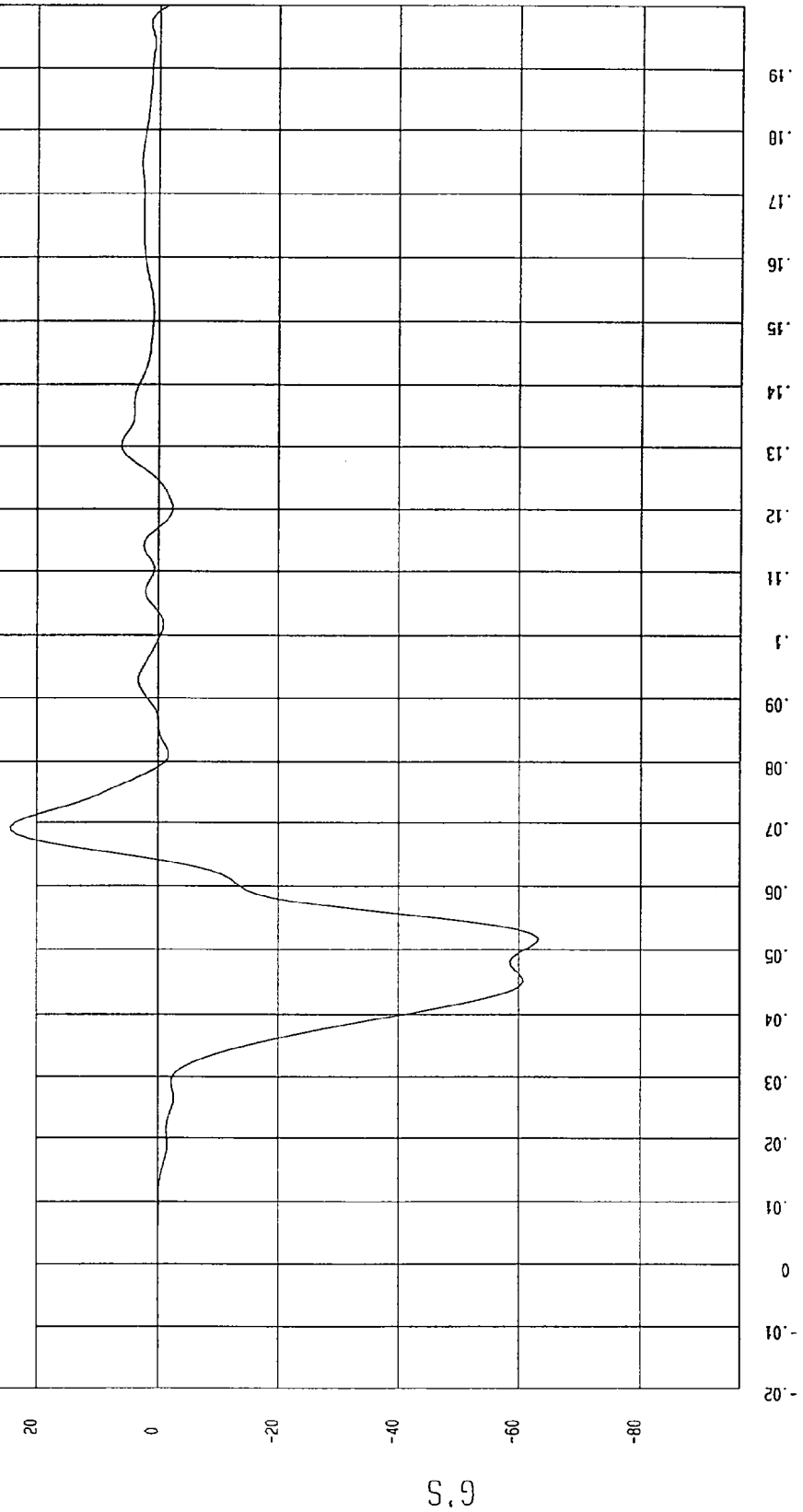
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -63.14 G'S at 52 msec Maximum = 24.47 G'S at 69 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 997006F1.R27 Filterclass (FIR Filtered)



MGA Research
01-21-1997 15:08

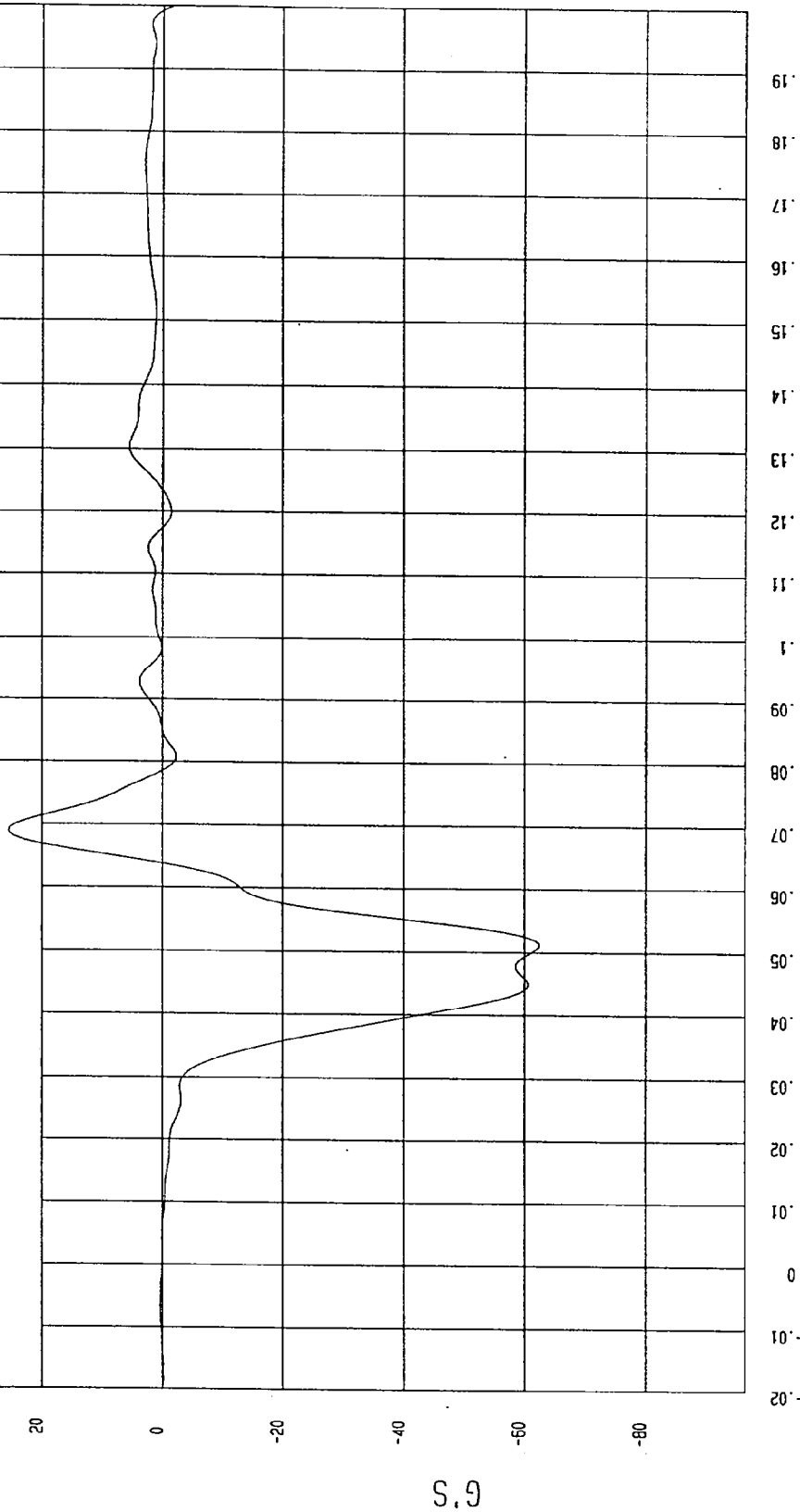
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -62.45 G'S at 51 msec Maximum = 25.62 G'S at 69 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 897006F1.R68 Filterclass (FIR Filtered)



MCA Research
01-21-1997 15:08

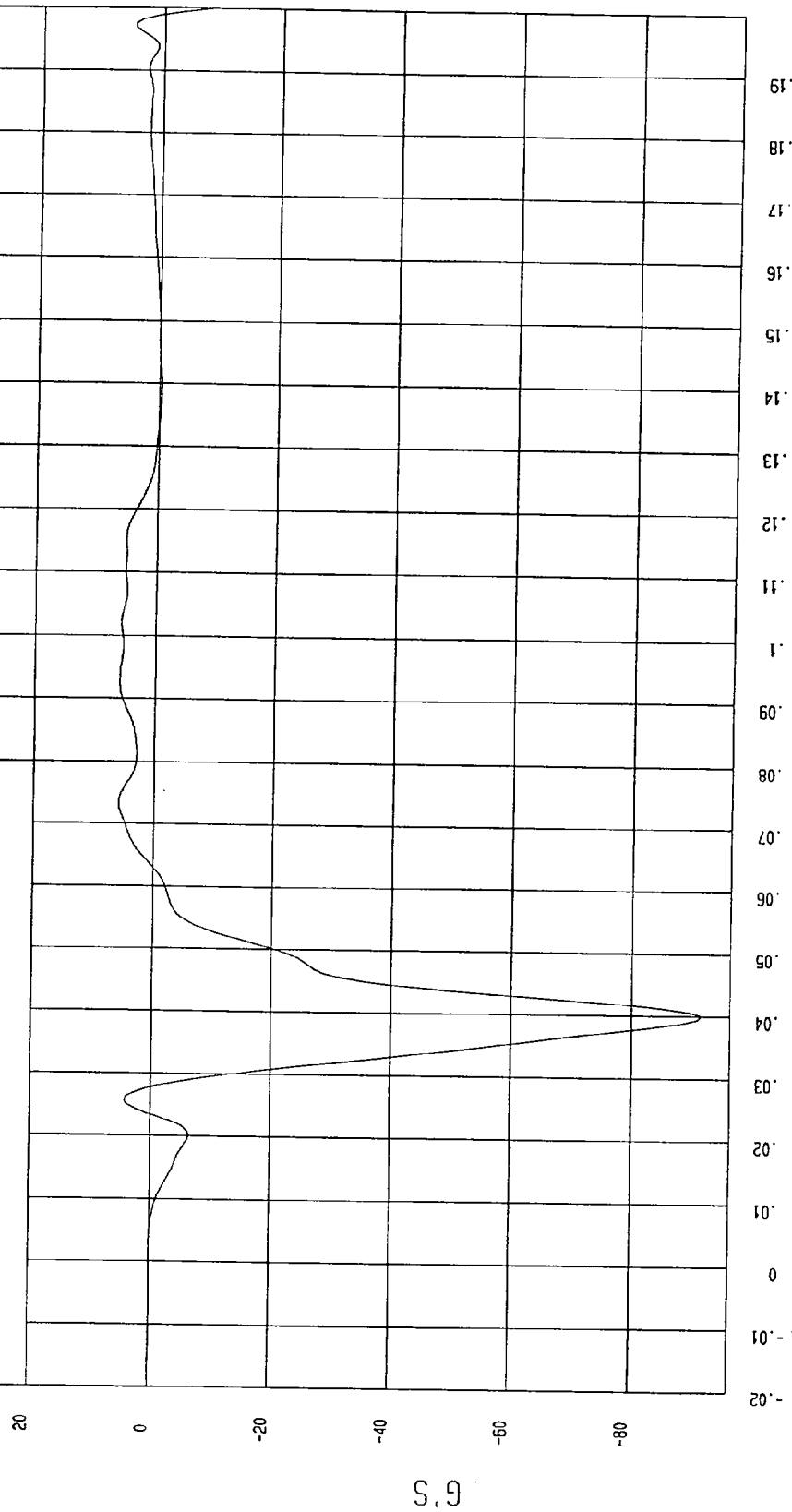
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -91.40 G'S at 40 msec Maximum = 5.98 G'S at 92 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 897006F1.R28 Filterclass (FIR Filtered)



MCA Research
01-21-1997 15:08

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST , TEST DATE: 01-09-1997

COMPONENT: 1997 HYUNDAI ACCENT (CV0501) Speed: 33 MPH 53.1 KPH

Minimum = -91.50 G'S at 40 msec

Maximum = 8.18 G'S at 99 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 ——— B97006F1.R69 Filterclass (FIR Filtered)

20

0

-20

-40

-60

-80

G.S

-0.02 -0.01 0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .1 .11 .12 .13 .14 .15 .16 .17 .18 .19

TIME (SECONDS)

WCA Research
01-21-1997 15:08

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-96-DC20

DUMMY PERFORMANCE CALIBRATIONS

FMVSS 214 - SIDE IMPACT TEST

GENERAL MOTORS CORPORATION
1997 CHEVROLET CAVALIER 2 DOOR
NHTSA NO. CV0501

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: January 9, 1997

Report Date: January 24, 1997

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NEF-30
400 SEVENTH STREET, S.W., ROOM 6115
Washington, D.C. 20590

TABLE OF CONTENTS

		<u>Page No.</u>
DUMMY S/N: 269	PRE-TEST CERTIFICATION DATA	1-1
DUMMY S/N: 270	PRE-TEST CERTIFICATION DATA	2-1
DUMMY S/N: 269	POST-TEST CERTIFICATION DATA	3-1
DUMMY S/N: 270	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 269	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 270	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 269

Calibration Test Results Summary

Dummy Serial Number: 269

Pre-Test Calibration

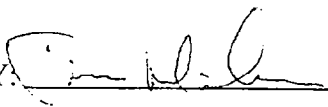
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

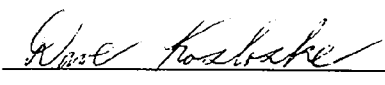
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

DATE OF VERIFICATION: January 8, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.1
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97052

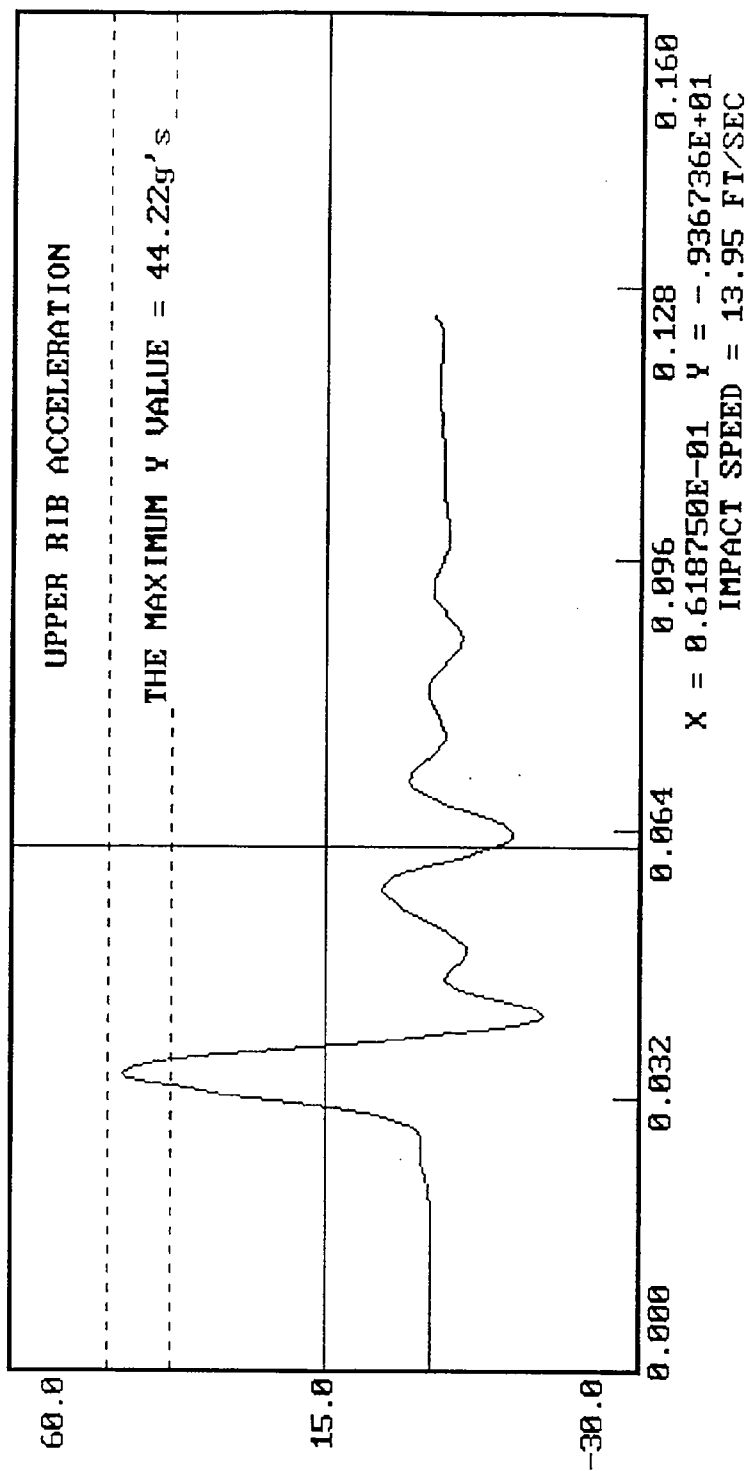
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	44
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN Tom White

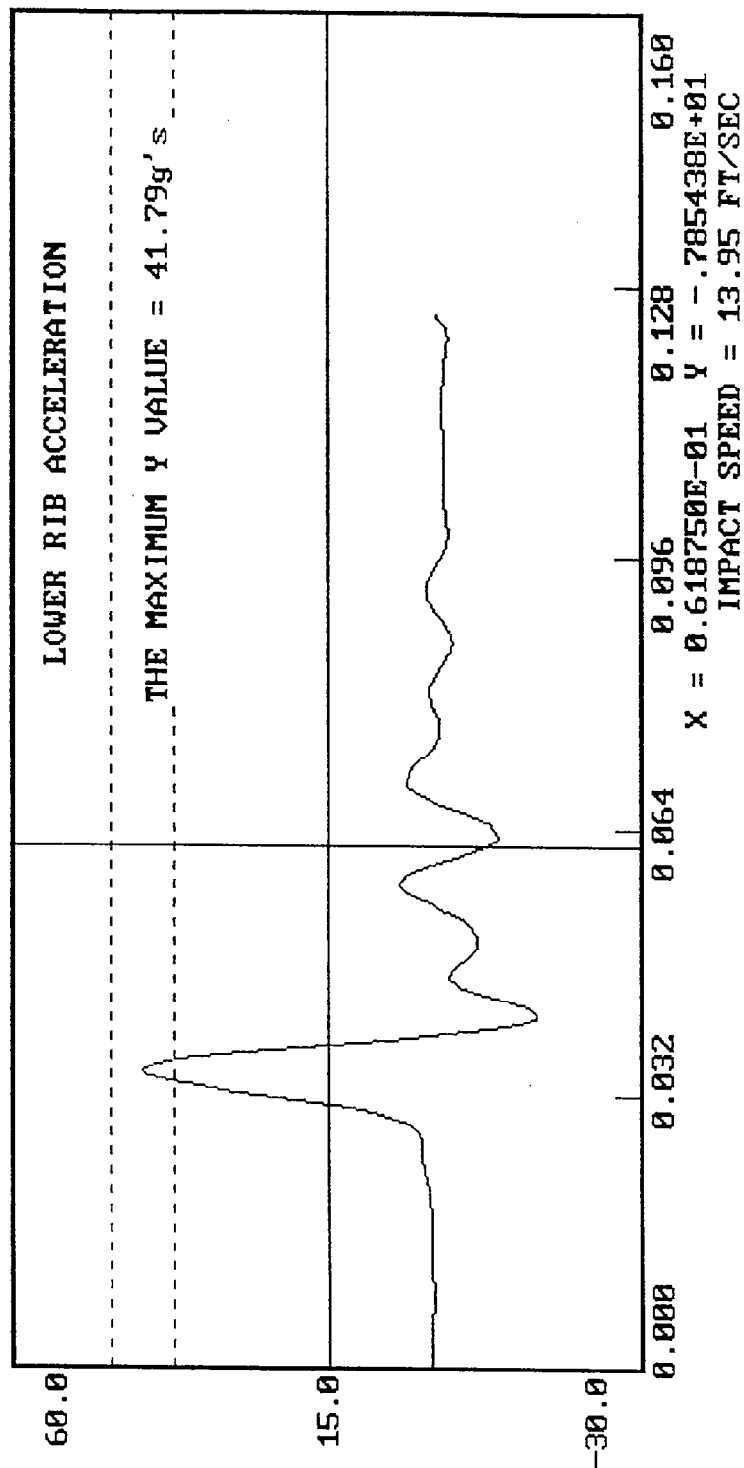
APPROVED BY Mark Kibbe

DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 269
 01-08-1997 14:33
 ACCELERATION (G'S) VS. TIME ((SECONDS))



01-08-1997 14:33

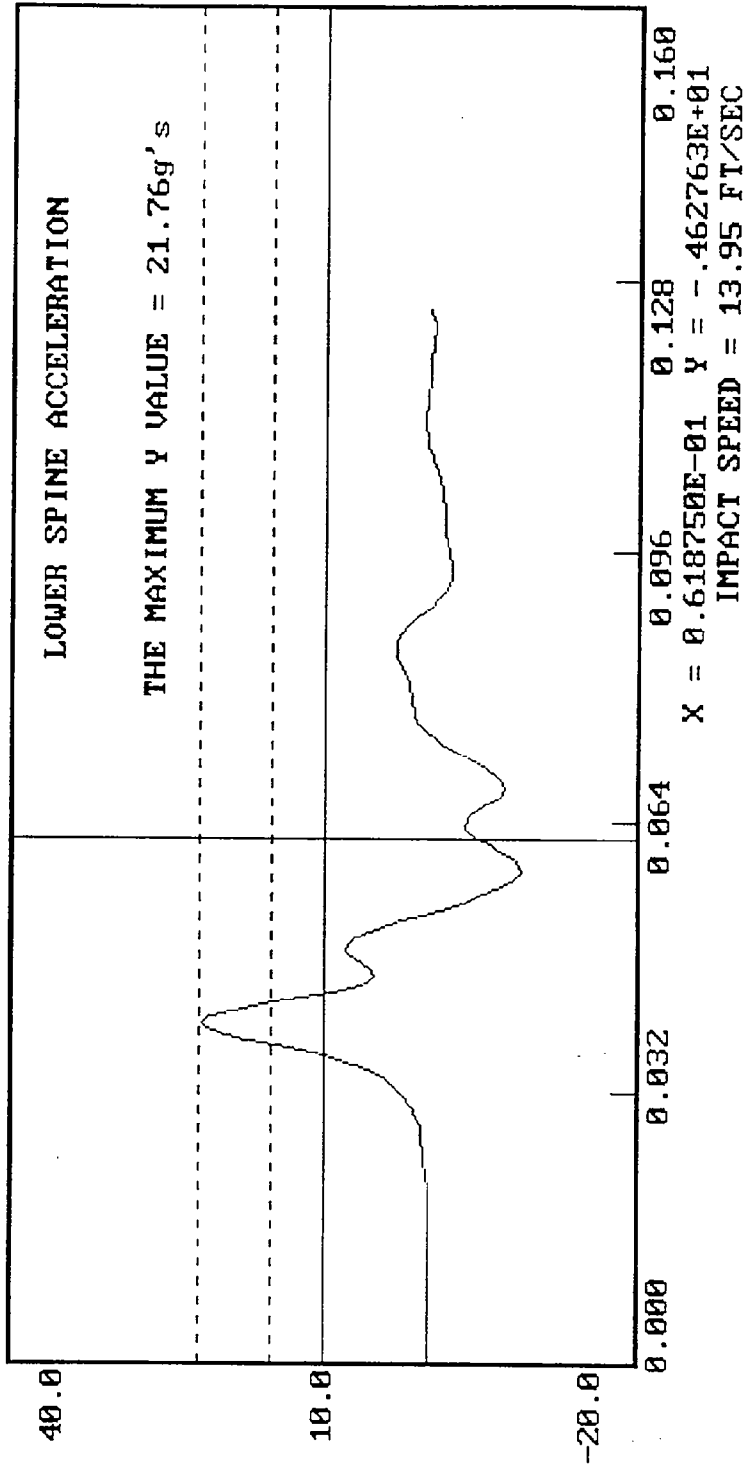
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269

01-08-1997 14:33

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97053

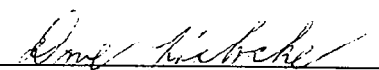
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	53

TEST MEETS SPECIFICATIONS

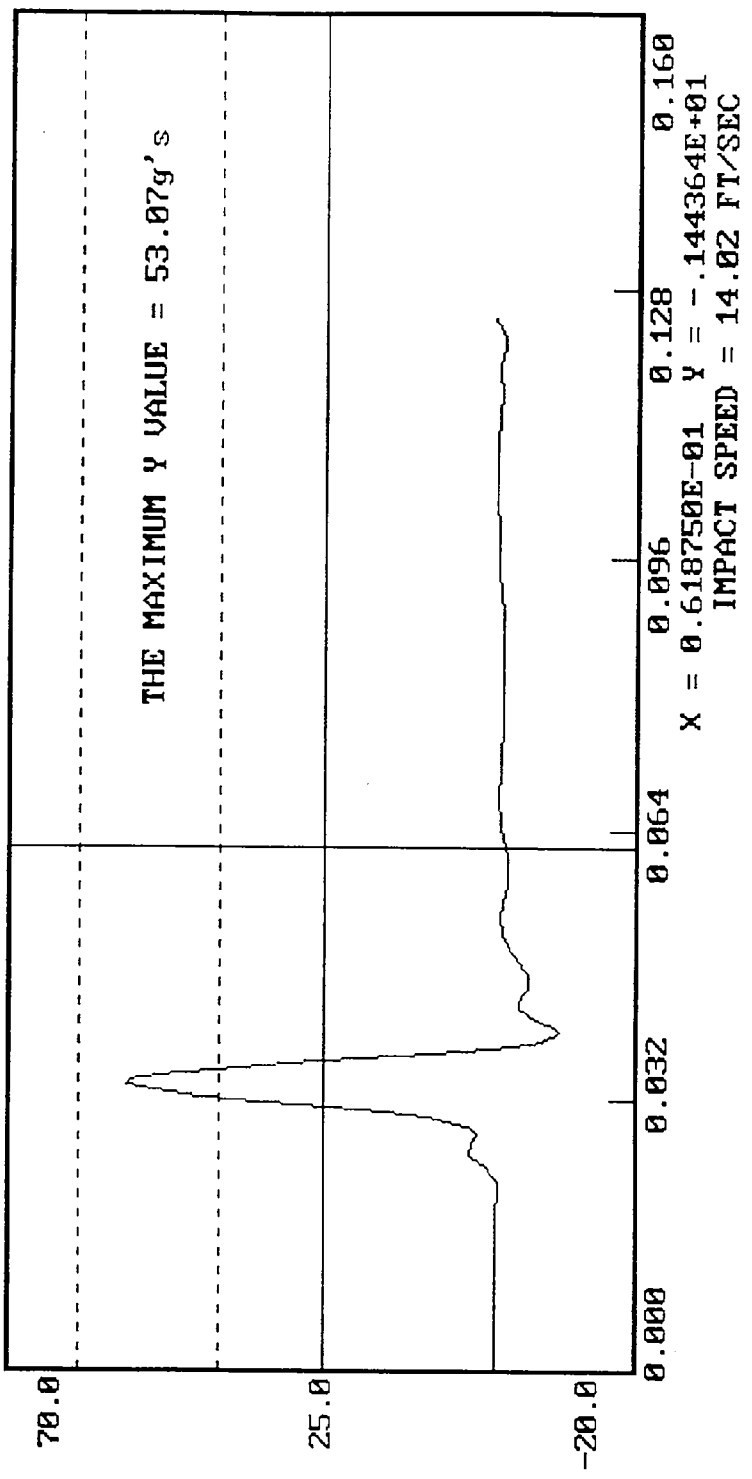
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - PELVIS IMPACT
 DUMMY # 269
 01-08-1997 14:43
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

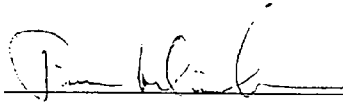
DATE: January 8, 1997

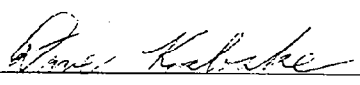
DUMMY NUMBER: 269

TEST NUMBER: D97054

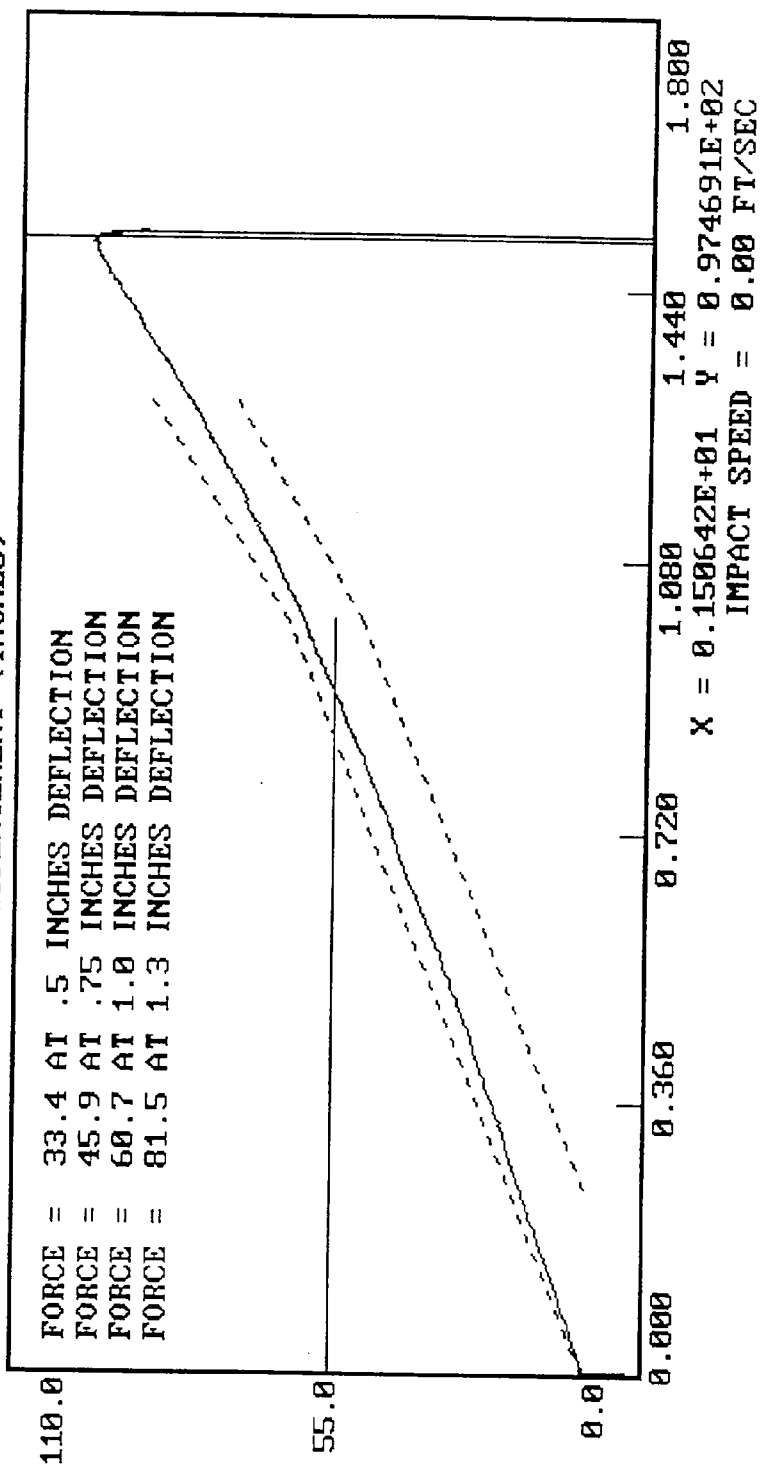
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.4
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.9
FORCE @ 1.0 in	50 - 63 lbs	61
FORCE @ 1.3 in	73 - 88 lbs	82

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 269
 01-08-1997 10:01
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

DUMMY NUMBER: 269

TEST NUMBER: D96055

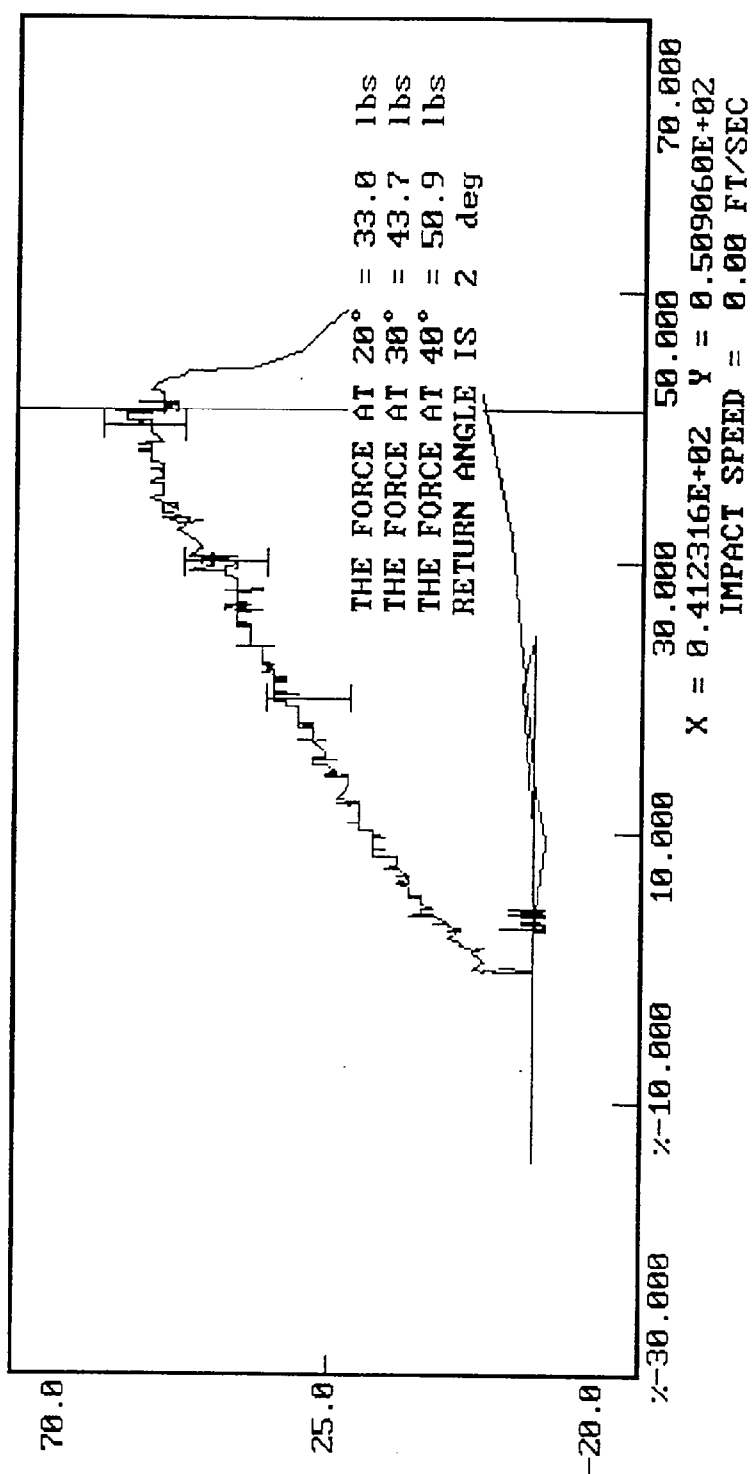
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	33
FORCE @ 30°	34 - 46 lbs	44
FORCE @ 40°	46 - 58 lbs	51
RETURN ANGLE	12° maximum	2°

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Wilson

APPROVED BY David Kuebel

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 269
 01-08-1997 11:27
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: January 8, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.50
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.5
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: Jim H. L.

APPROVED BY: Steve Kachake

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

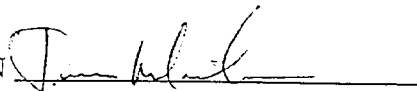
DUMMY NUMBER: 270

TEST NUMBER: D97062

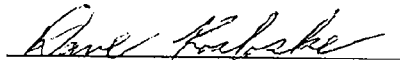
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	22%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	40
LOWER RIB	37 - 46 g's	37
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN

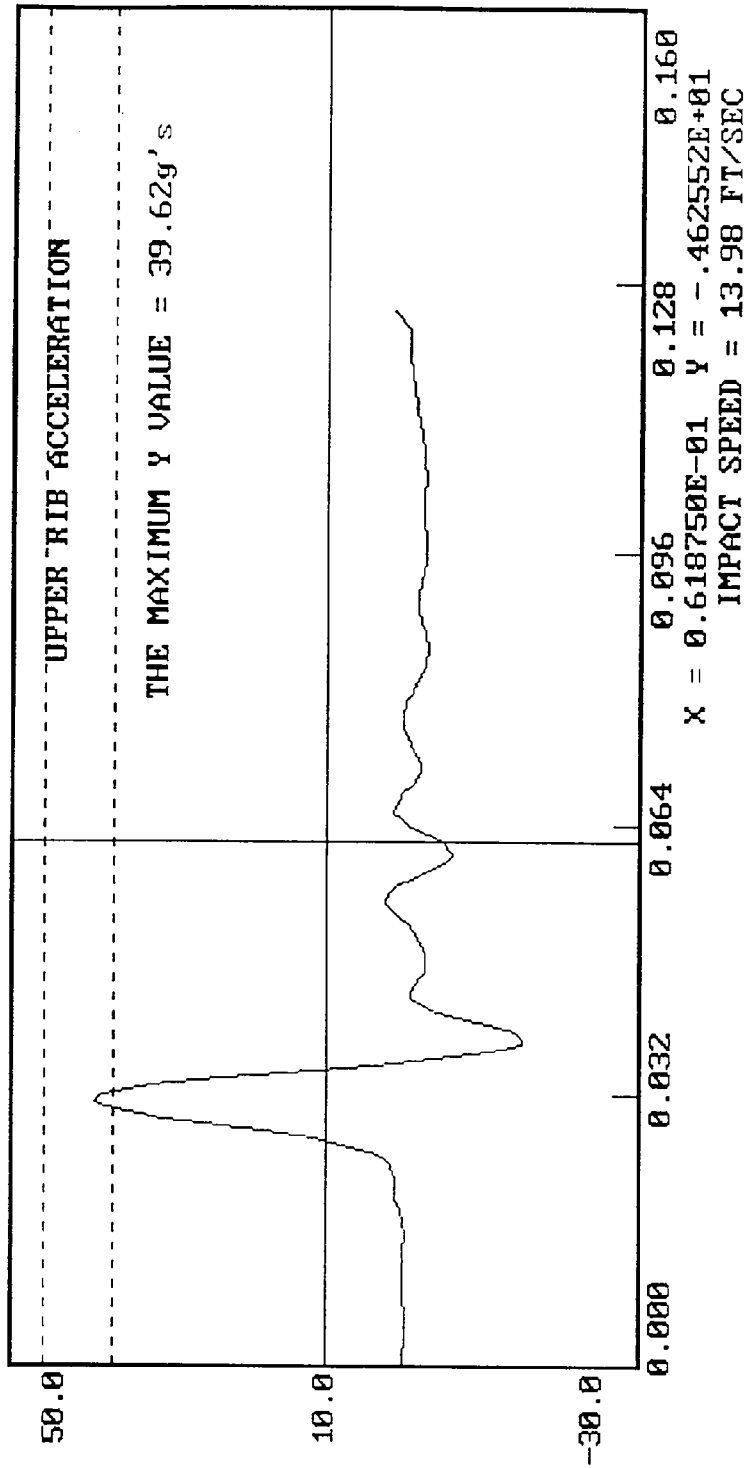


APPROVED BY

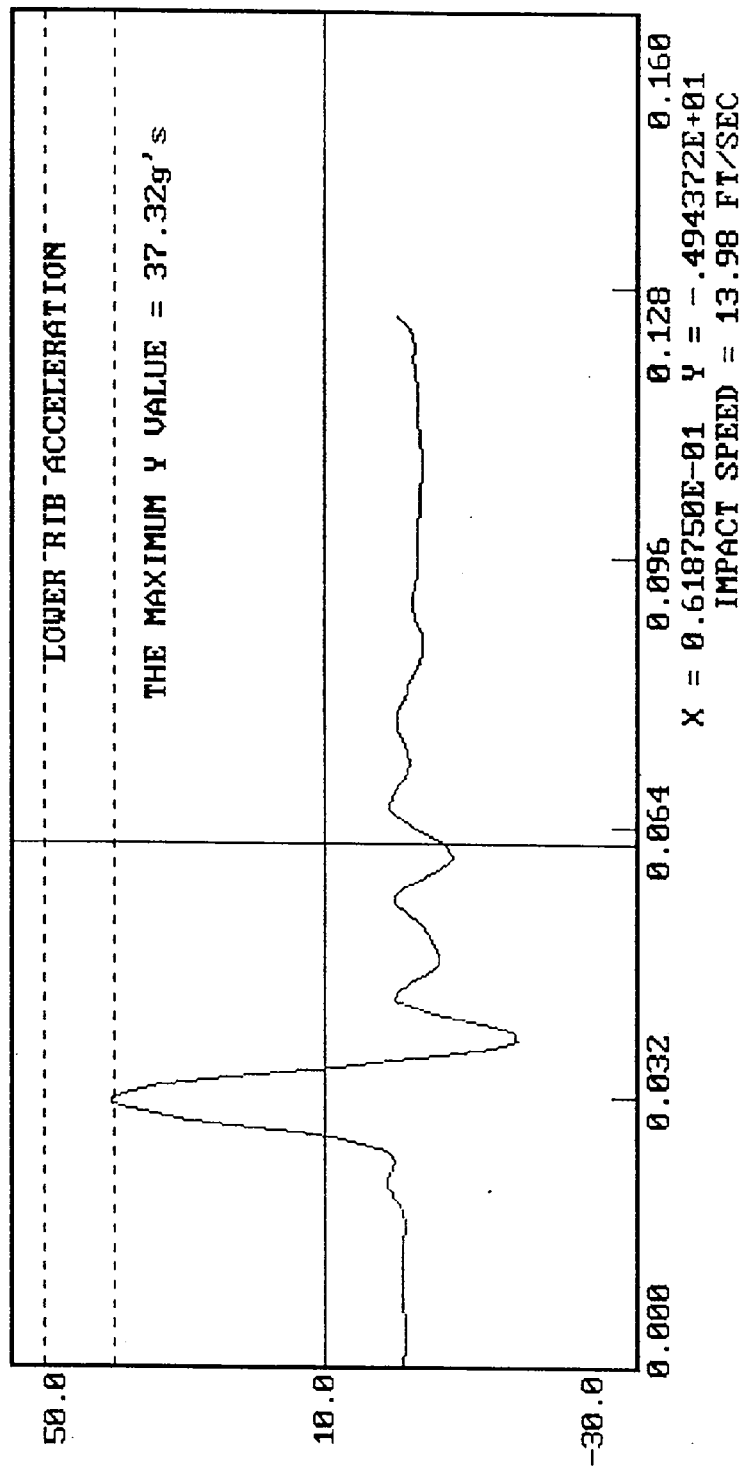


DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))

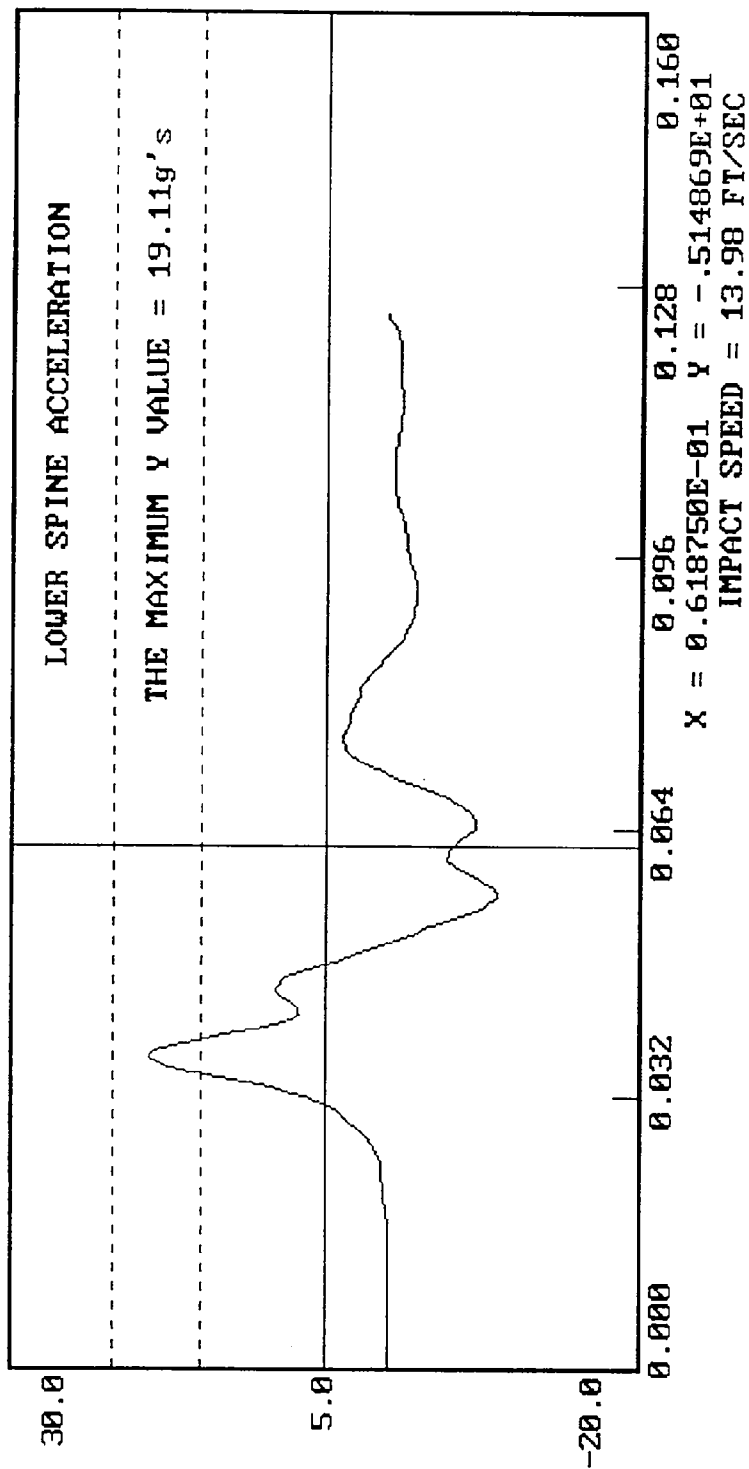
01-08-1997 15:02



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 270
 01-08-1997 15:02
 ACCELERATION (G'S) VS. TIME ((SECONDS))



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 270
 01-08-1997 15:31
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97063

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	22%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	60

TEST MEETS SPECIFICATIONS

TECHNICIAN

Timothy L. L.

APPROVED BY

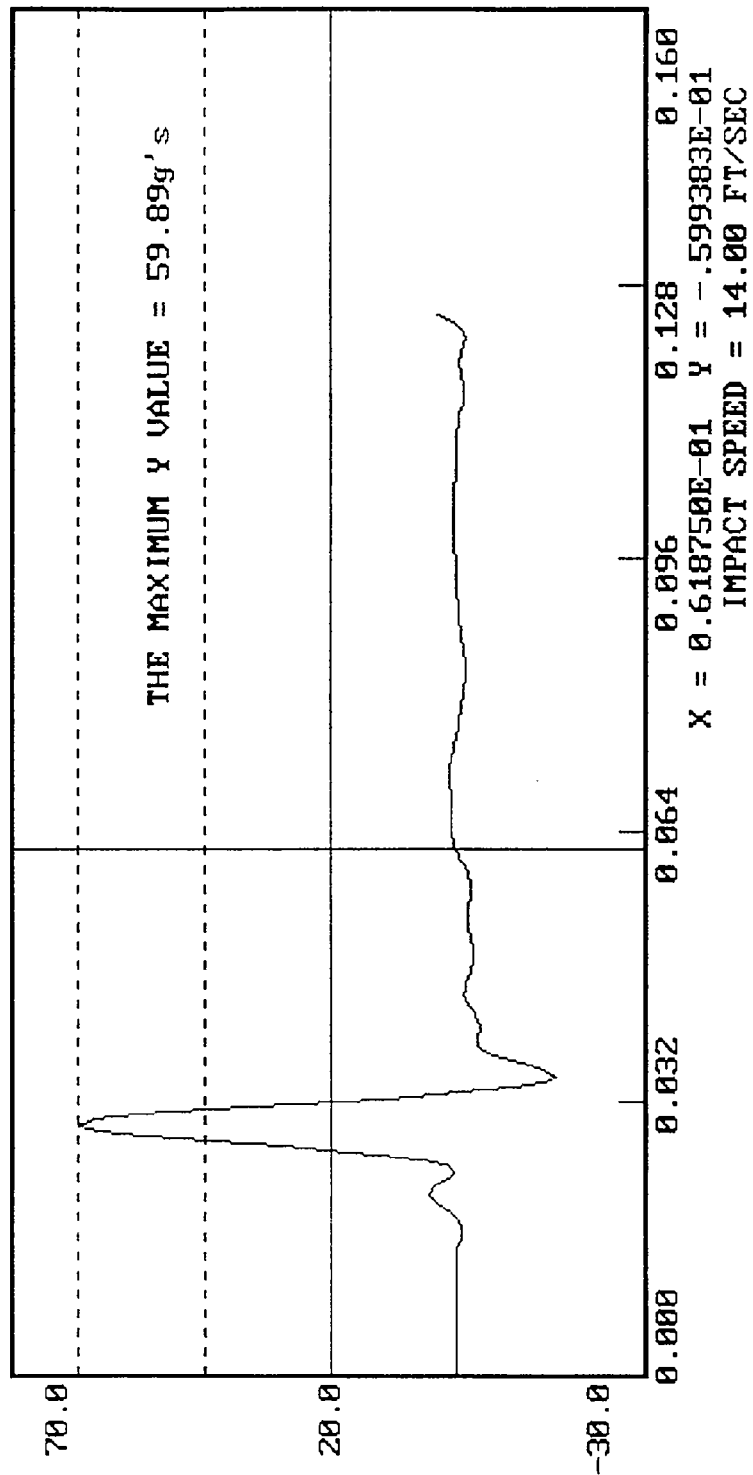
Gene Kosloski

01-08-1997 15:40

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

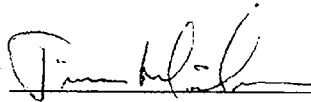
DUMMY NUMBER: 270

TEST NUMBER: D97064

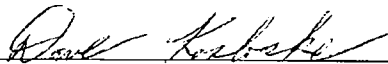
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0.5 in	23.3 - 36.5 lbs	29.9
FORCE @ 0.75 in	36.7 - 49.8 lbs	41.5
FORCE @ 1.0 in	50 - 63 lbs	55
FORCE @ 1.3 in	73 - 88 lbs	76

TEST MEETS SPECIFICATIONS

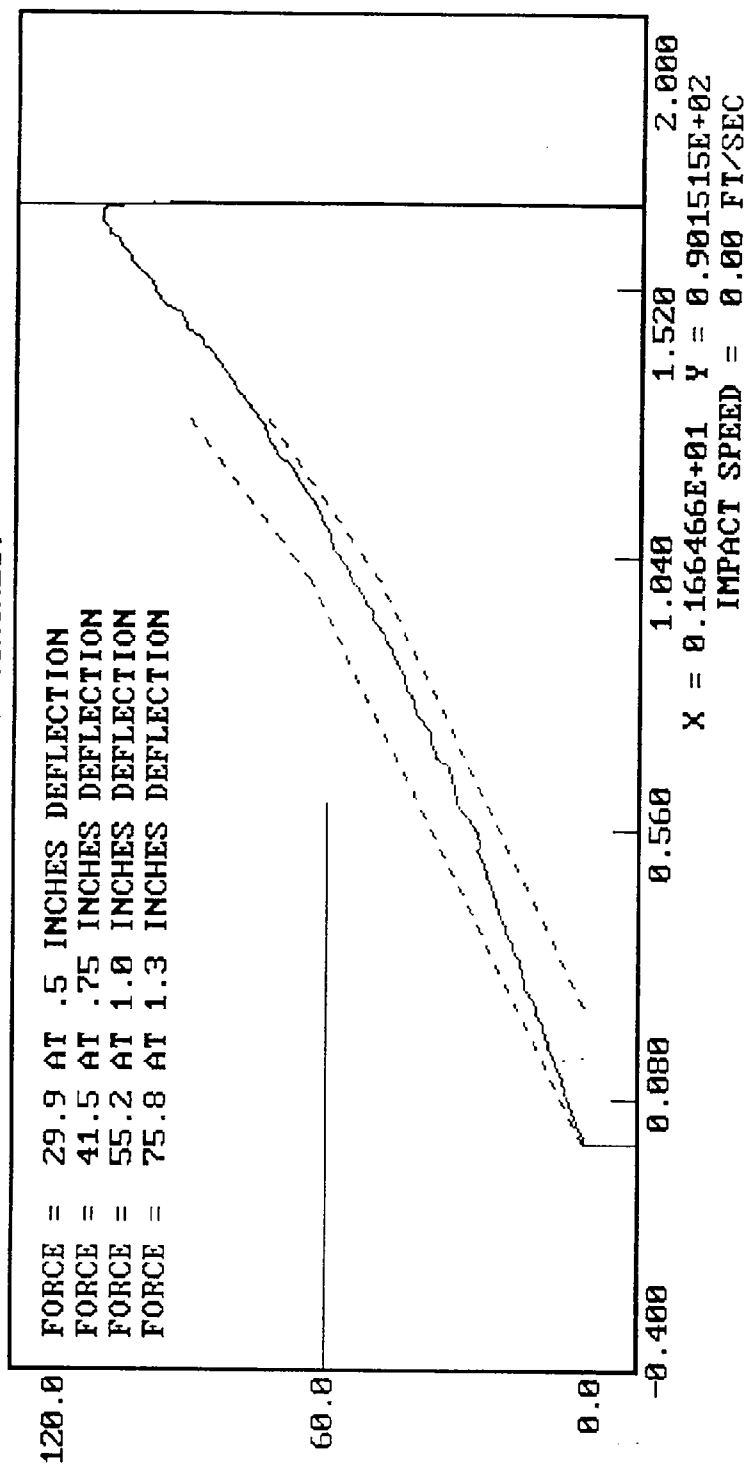
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 270
 01-08-1997 10:27
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 8, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97065

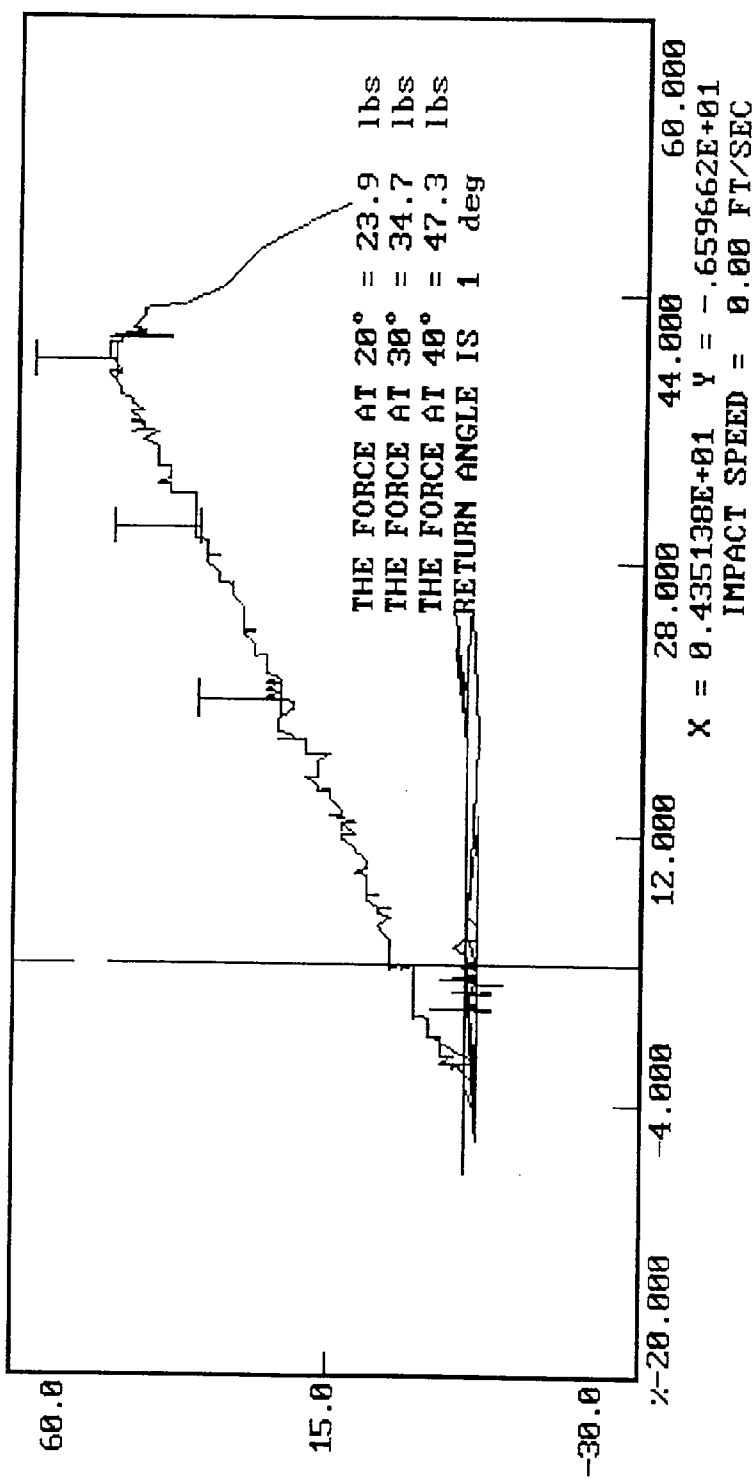
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	35
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Wilson

APPROVED BY Gene Kozlowski

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 270
 01-08-1997 11:13
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 269

Calibration Test Results Summary

Dummy Serial Number: 269

Post-Test Calibration

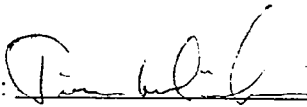
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

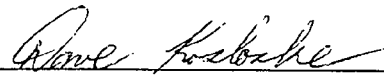
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

DATE OF VERIFICATION: January 14, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.1
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97112

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	44
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	22

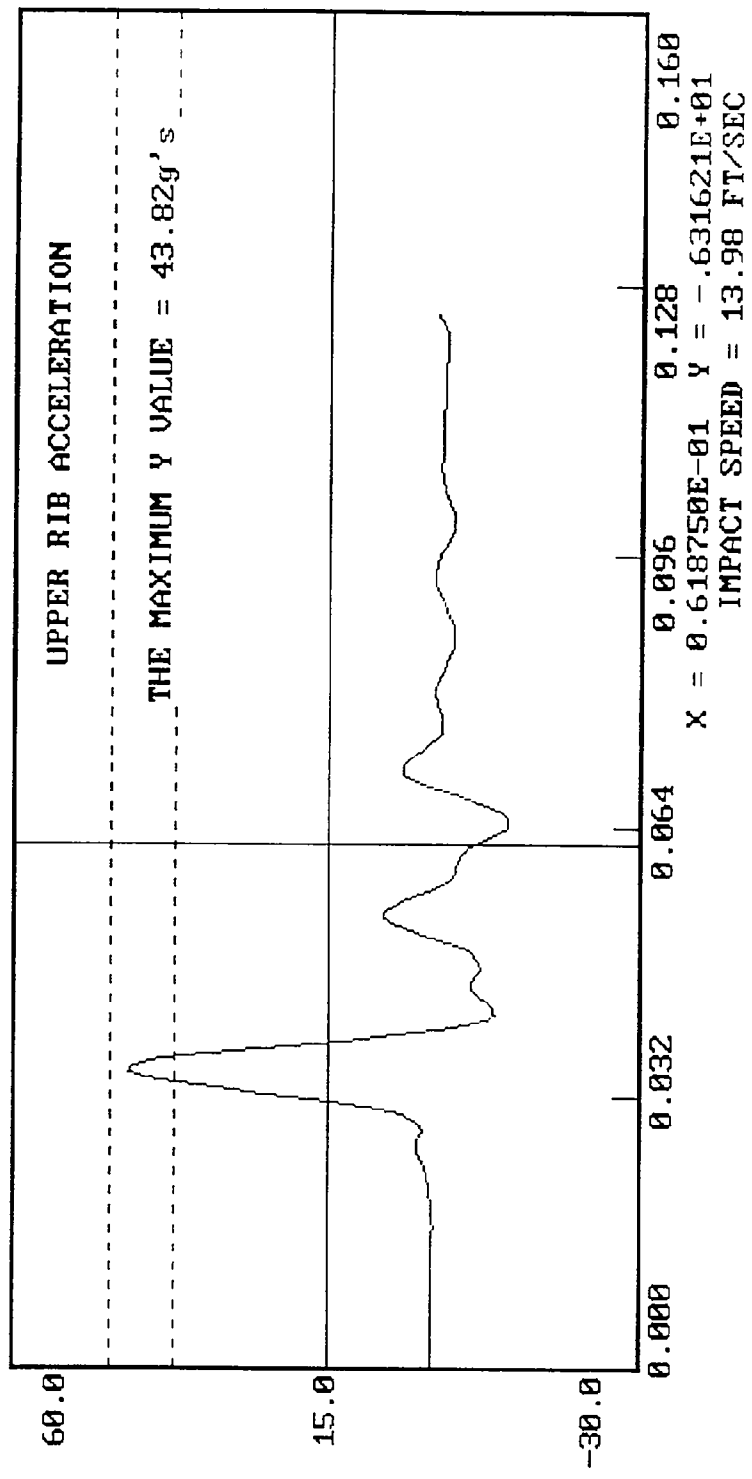
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim H. H. H.

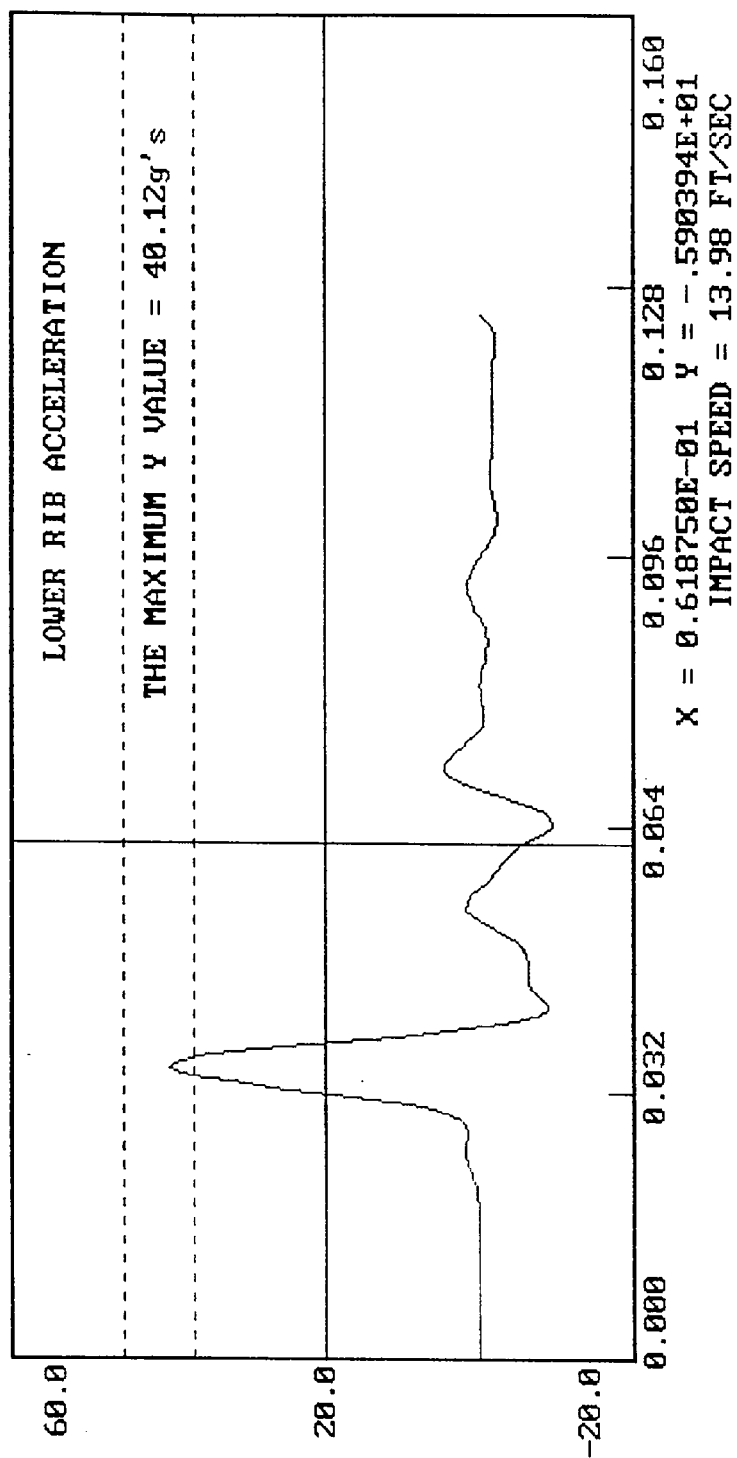
APPROVED BY Dave K. K.

DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 269
 01-14-1997 11:07

ACCELERATION (G'S) VS. TIME ((SECONDS))



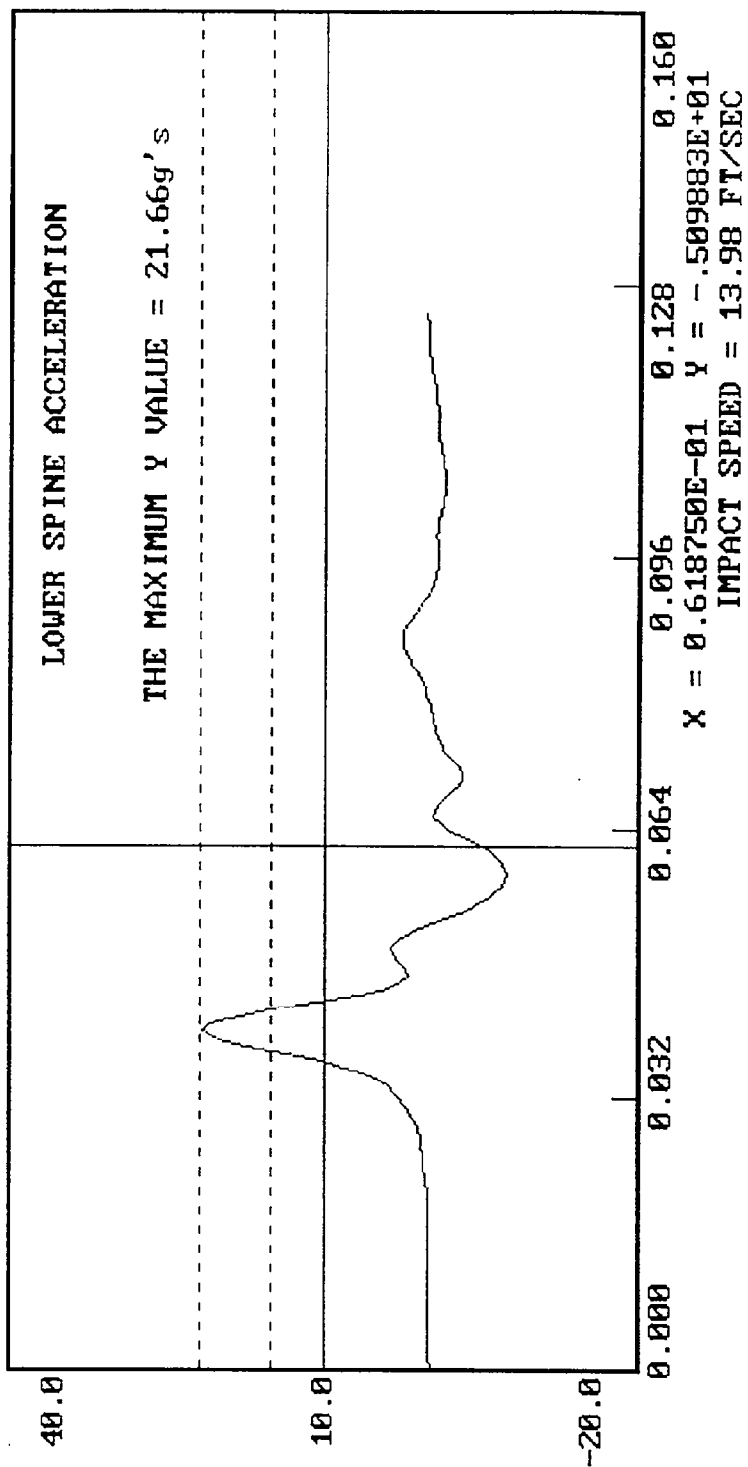
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))
01-14-1997 11:07



01-14-1997 11:07

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97113

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	57

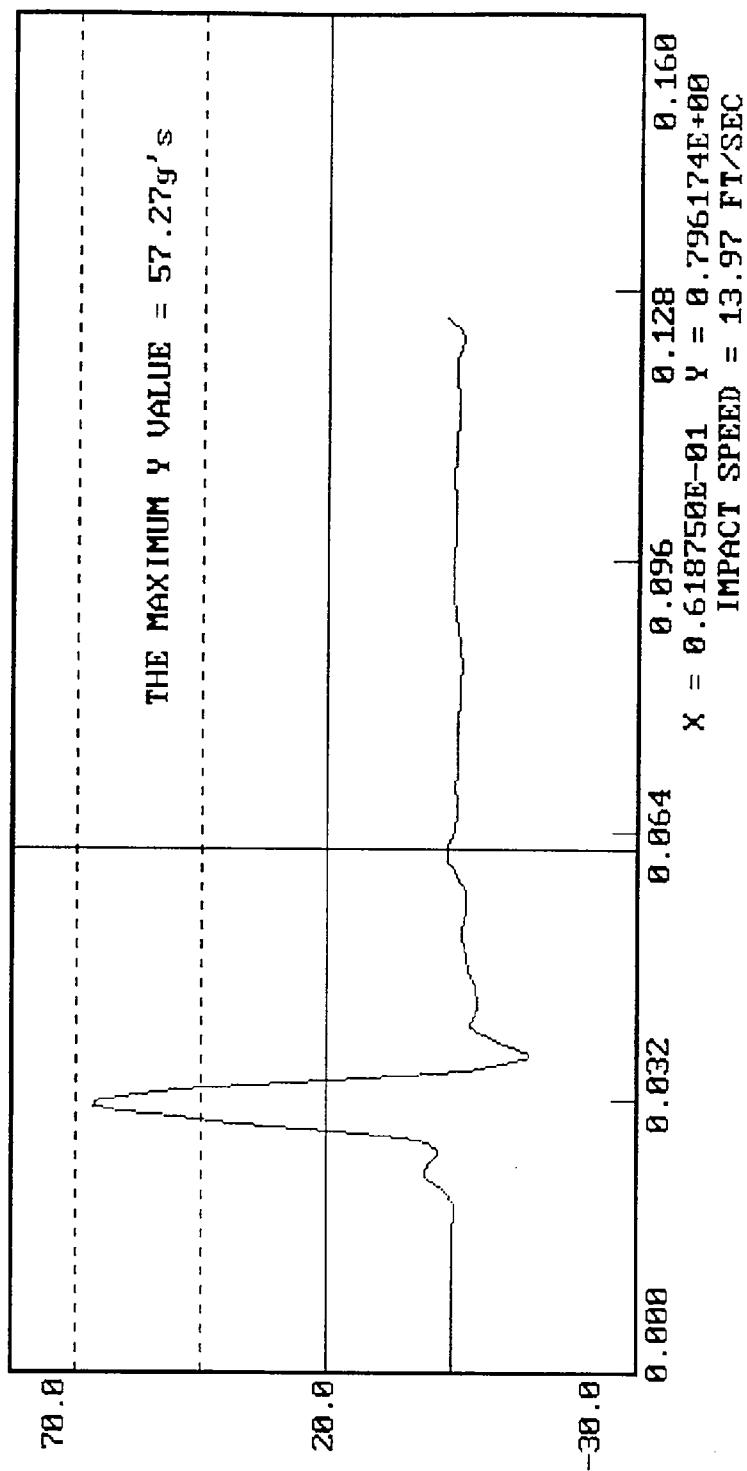
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Walsh

APPROVED BY Rose Korbake

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 269
01-14-1997 11:14

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97114

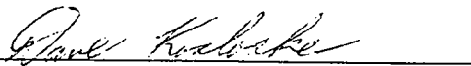
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.1
FORCE @ 0.75 in	36.7 - 49.8 lbs	46.2
FORCE @ 1.0 in	50 - 63 lbs	60
FORCE @ 1.3 in	73 - 88 lbs	81

TEST MEETS SPECIFICATIONS

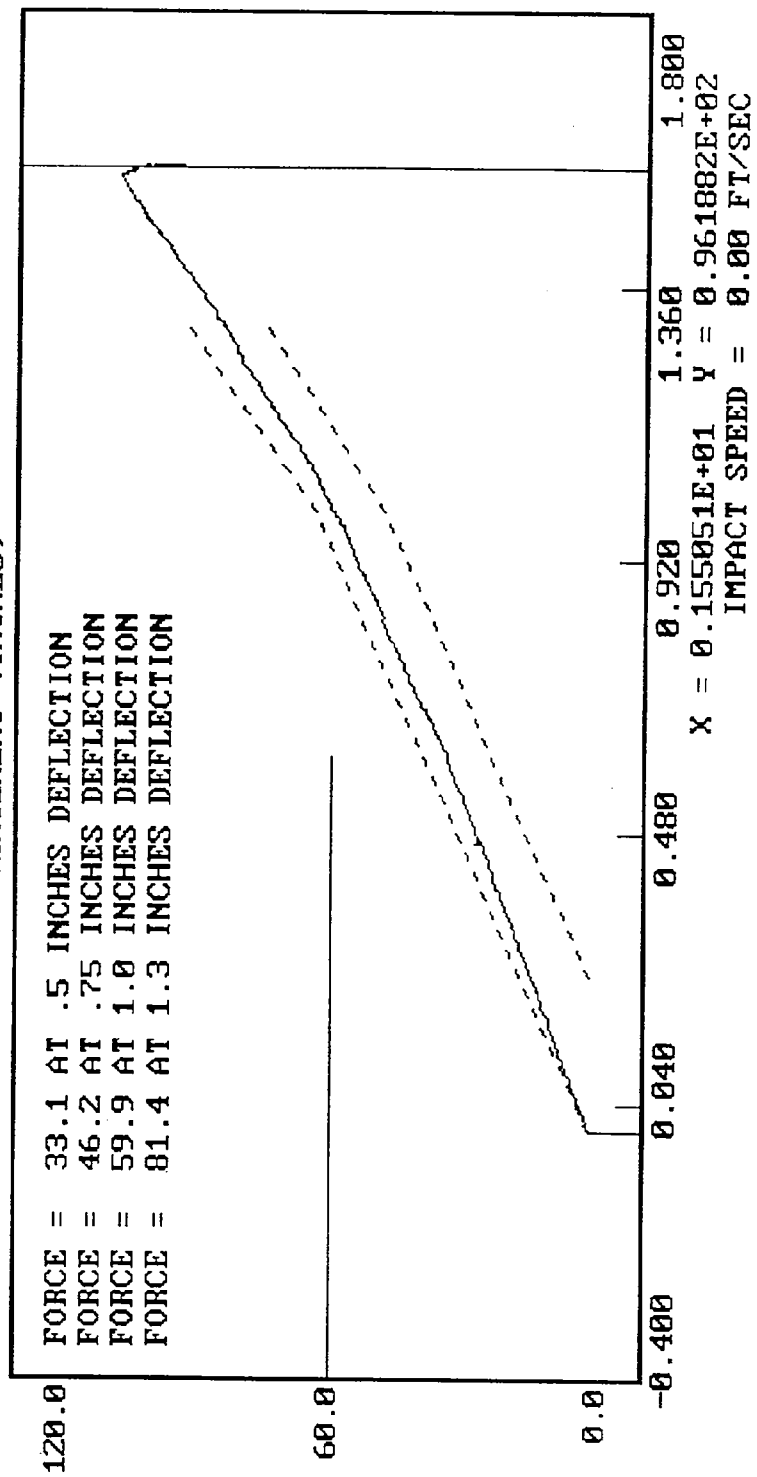
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 269
 01-14-1997 14:57
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

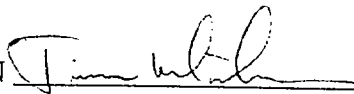
DUMMY NUMBER: 269

TEST NUMBER: D97115

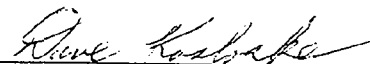
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	50
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

TECHNICIAN



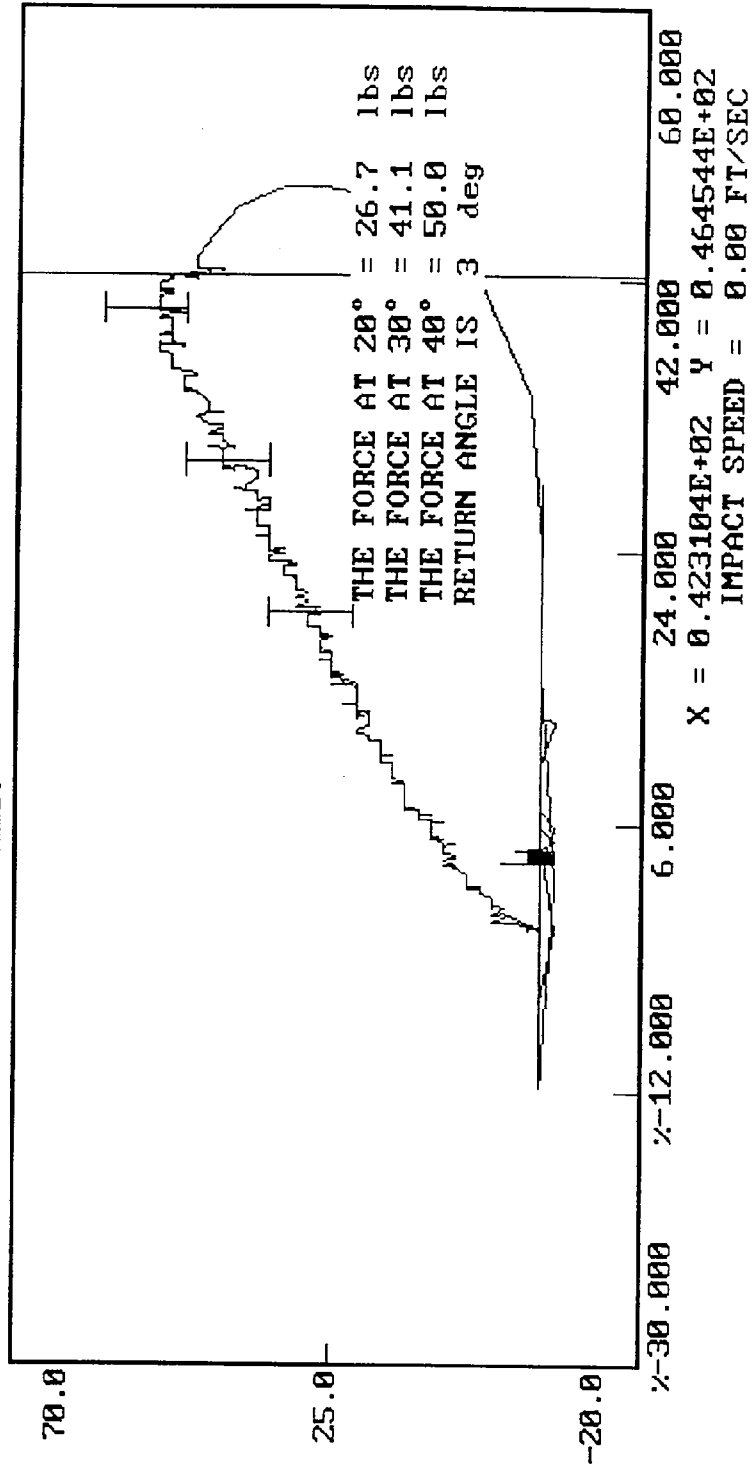
APPROVED BY



DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 269

01-14-1997 15:17

FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: January 14, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.50
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.5
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: Jim White

APPROVED BY: Steve Kosloske

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97132

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	13.8 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	39
LOWER RIB	37 - 46 g's	37
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim White

APPROVED BY

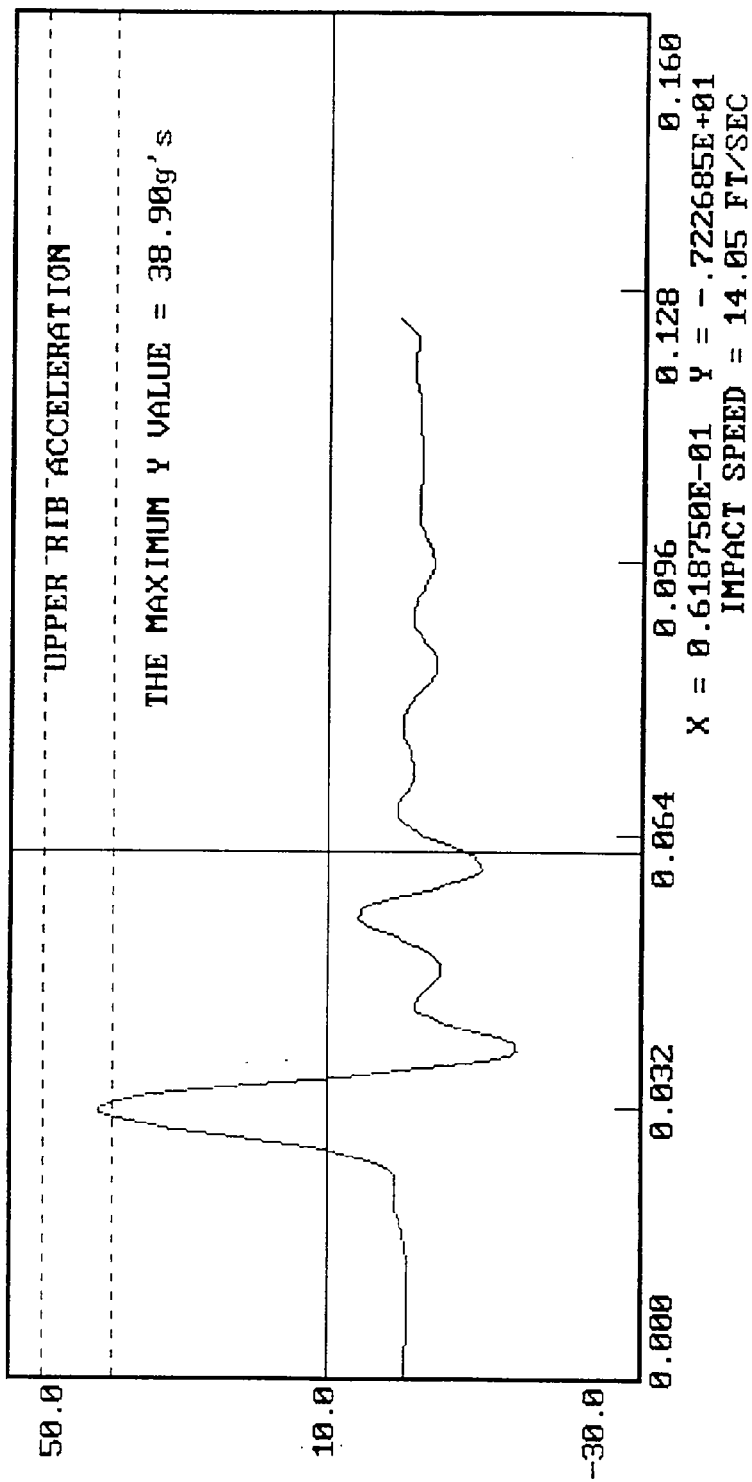
Dave Kabake

01-14-1997 12:20

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))

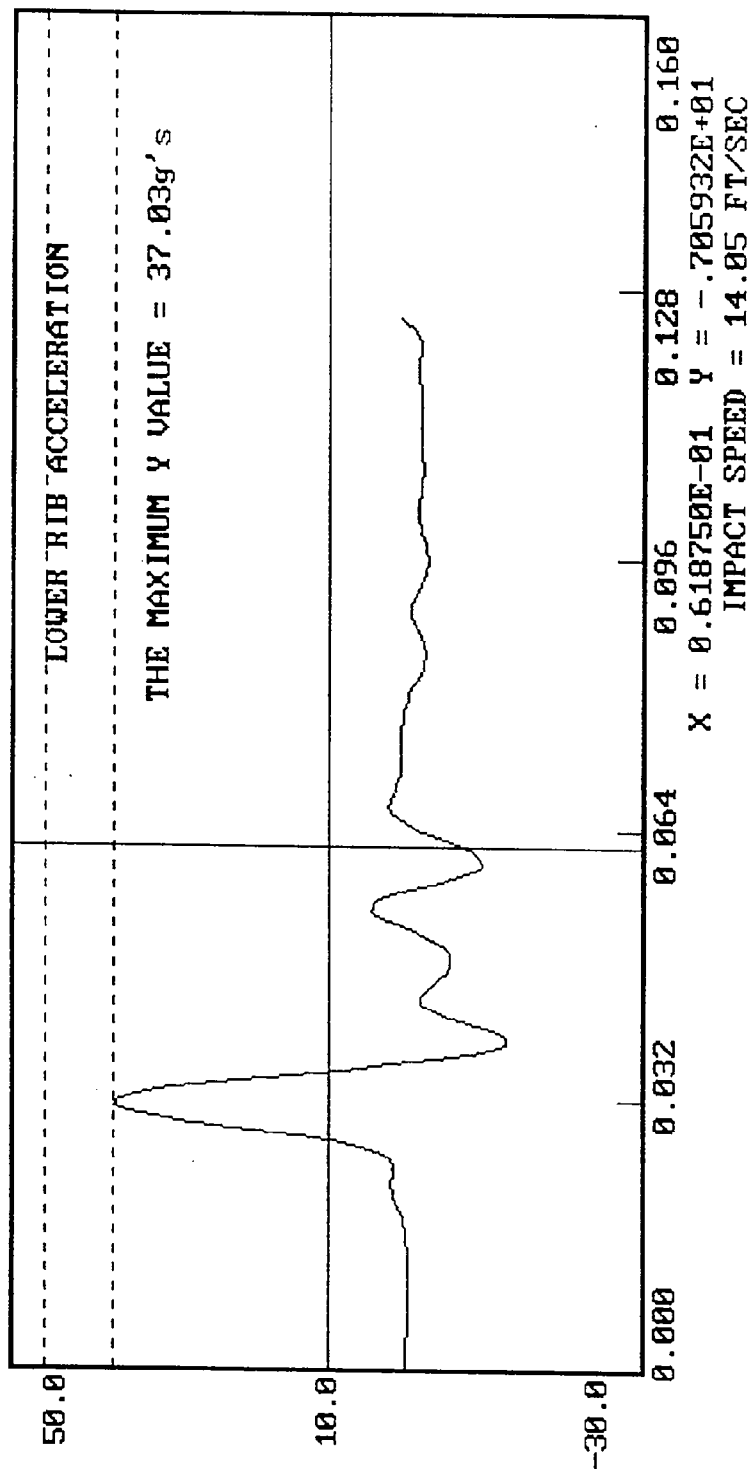


01-14-1997 12:20

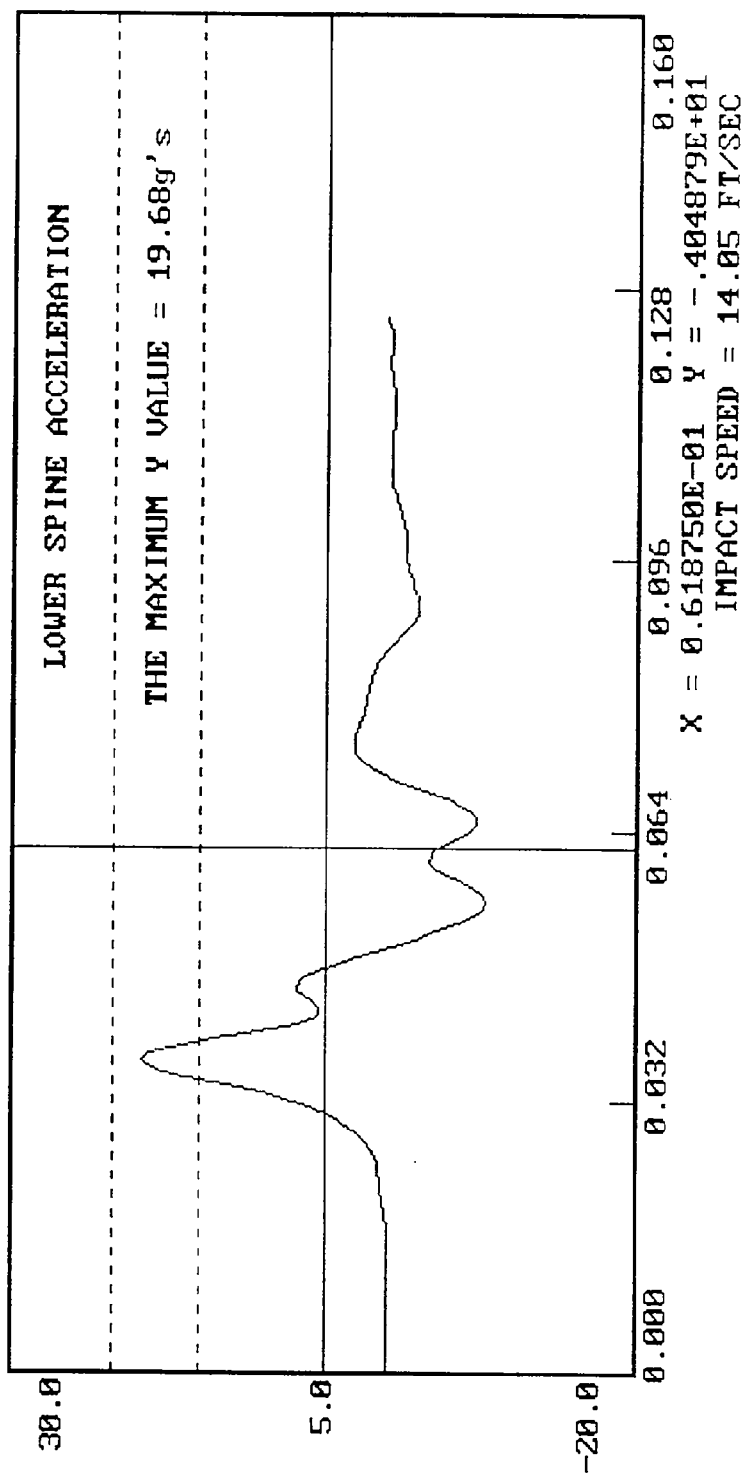
DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 270
 01-14-1997 12:23
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97133

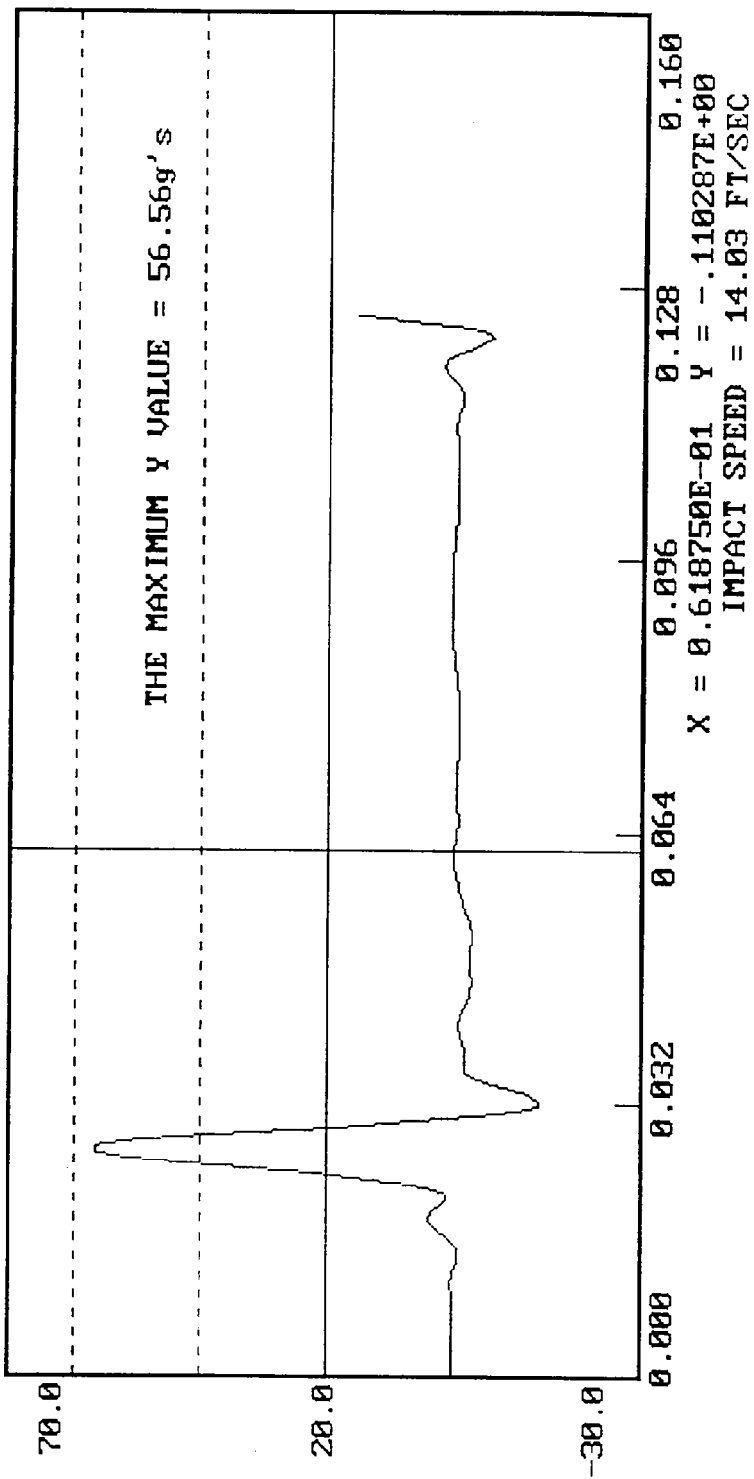
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim White

APPROVED BY Steve Kurbake

DUMMY CALIBRATION - PELVIS IMPACT
 DUMMY # 270
 01-14-1997 13:36
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97134

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.6
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.9
FORCE @ 1.0 in	50 - 63 lbs	60
FORCE @ 1.3 in	73 - 88 lbs	82

TEST MEETS SPECIFICATIONS

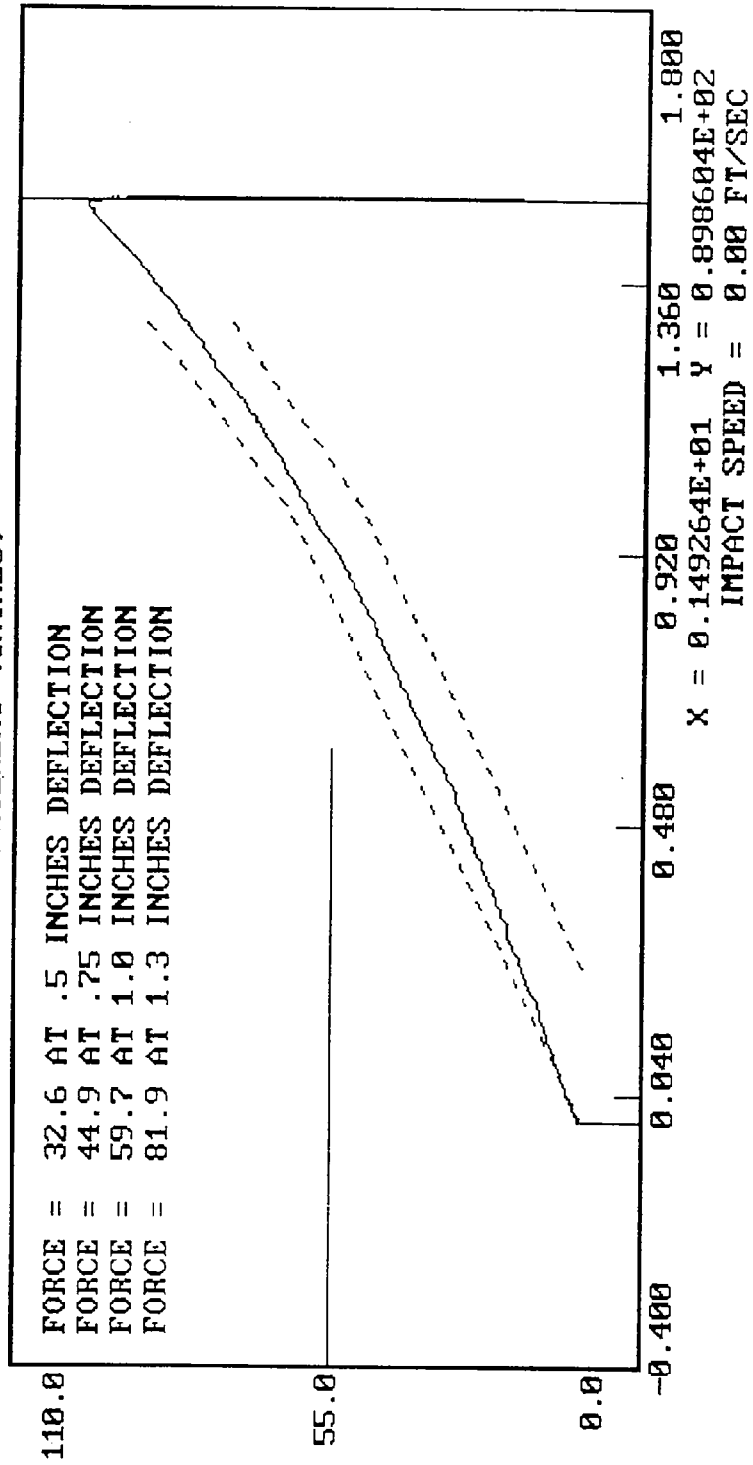
TECHNICIAN

Tim White

APPROVED BY

Dave Kosloski

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 270
 01-14-1997 15:05
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97135

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	25
FORCE @ 30°	34 - 46 lbs	36
FORCE @ 40°	46 - 58 lbs	48
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

TECHNICIAN

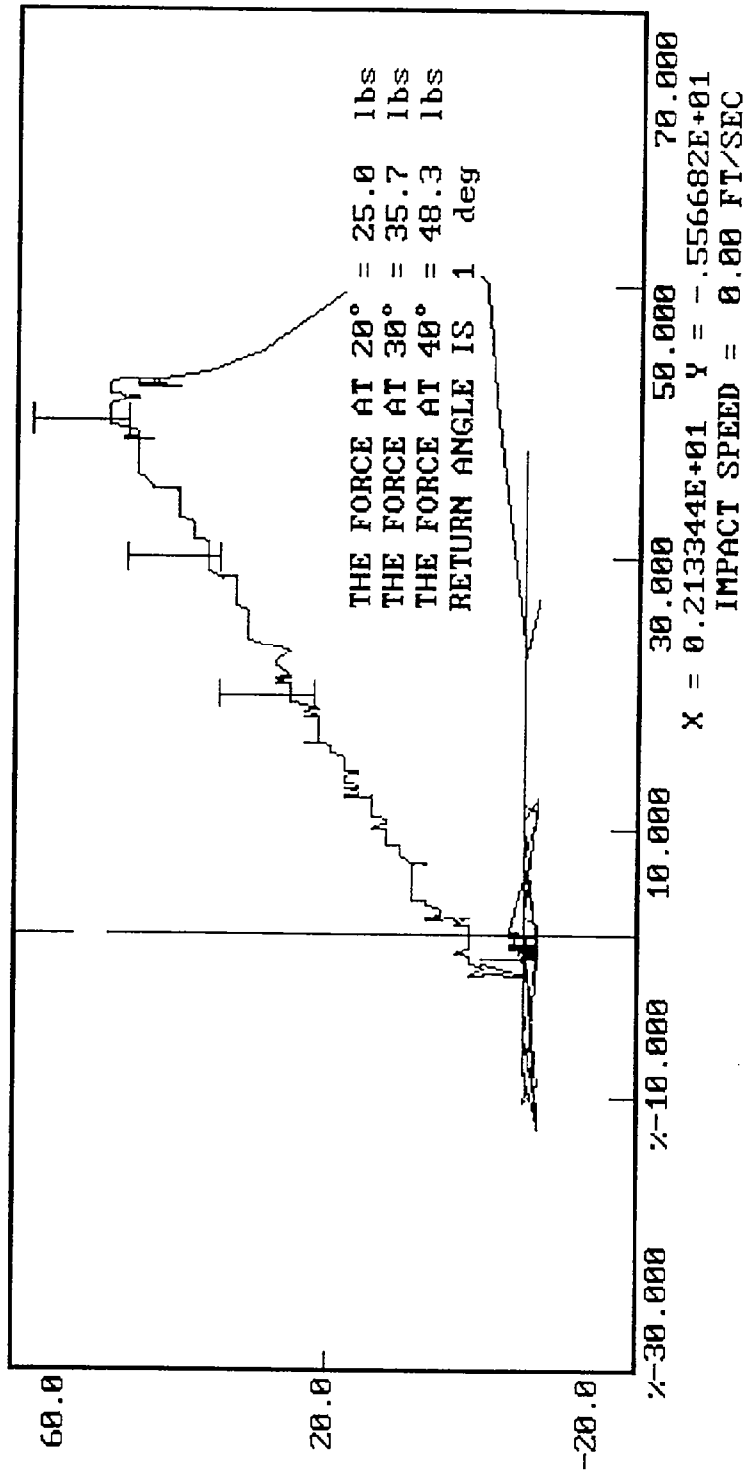
Jim White

APPROVED BY

Steve Kraloske

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 270
01-14-1997 15:37

FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 269

Inspected By: Tim Michnay

Date: January 14, 1997

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

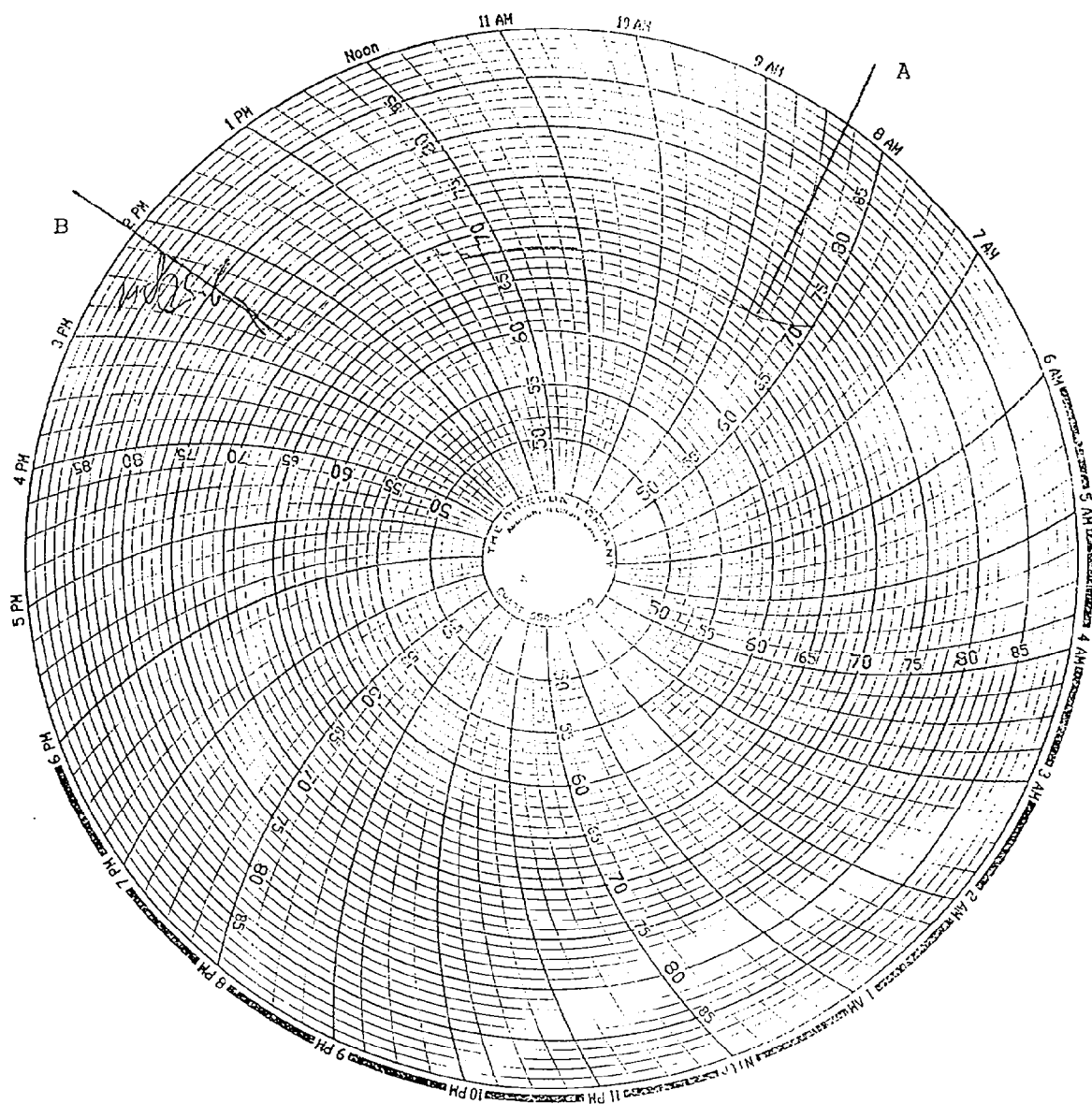
Inspected By: Tim Michnay

Date: January 14, 1997

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

VEHICLE AND DUMMY TEMPERATURE



A = Dummies installed in vehicle
B = Test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR RIGHT FRONT PASSENGER DUMMY NO. 269

	RIGHT FRONT PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AGMT2	Endevco	January 2, 1997
Lower Rib Y	ALEC1	Endevco	September 16, 1996
Lower Spine Y	AH1G2	Endevco	September 11, 1996
Pelvis Y	ALCN9	Endevco	September 10, 1996
Upper Rib Redundant Y	AGTB5	Endevco	September 10, 1996
Lower Rib Redundant Y	J10411	Endevco	September 16, 1996
Lower Spine Redundant Y	AM751	Endevco	September 11, 1996
Pelvis Redundant Y	AKAF3	Endevco	September 10, 1996

INSTRUMENTS FOR RIGHT REAR PASSENGER DUMMY NO. 270

	RIGHT REAR PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AP1H2	Endevco	September 10, 1996
Lower Rib Y	AJ9C2	Endevco	September 9, 1996
Lower Spine Y	AP2D7	Endevco	September 10, 1996
Pelvis Y	ALCH7	Endevco	September 9, 1996
Upper Rib Redundant Y	AH0B0	Endevco	September 10, 1996
Lower Rib Redundant Y	AHTT2	Endevco	September 9, 1996
Lower Spine Redundant Y	AP1T8	Endevco	September 10, 1996
Pelvis Redundant Y	AJ420	Endevco	September 9, 1996

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	C14-Z10	Entran	July 12, 1996
Moving Barrier CG Y	B14-R01	Entran	July 15, 1996
Moving Barrier CG Z	B13-Z05	Entran	July 11, 1996
Moving Barrier Rear Axle X	B14-R03	Entran	July 11, 1996
Moving Barrier Rear Axle Y	B14-R13	Entran	July 15, 1996
Right Mid A-Post Y	A09-G07	Entran	January 2, 1997
Right Lower A-Post Y	L14-D05	Entran	January 3, 1997
Right Mid B-Post Y	B14-R02	Entran	January 3, 1997
Right Lower B-Post Y	E13-D01	Entran	January 3, 1997
Rear Floorpan Above Axle X	D05-R12	Entran	January 3, 1997
Rear Floorpan Above Axle Y	J06-D17	Entran	January 3, 1997
Rear Floorpan Above Axle Z	J10-E14	Entran	January 3, 1997
Right Front Passenger Seat Track Y	J23-E08	Entran	January 2, 1997
Left Side Sill at Front Seat X	B14-R15	Entran	January 3, 1997
Left Side Sill at Front Seat Y	E24-G04	Entran	January 3, 1997
Left Side Sill at Front Seat Z	J23-E06	Entran	January 3, 1997
Left Side Sill at Rear Seat X	L14-D20	Entran	January 3, 1997
Left Side Sill at Rear Seat Y	A10-G07	Entran	January 3, 1997
Left Side Sill at Rear Seat Z	C25-A17	Entran	January 2, 1997
Right Side Sill at Front Seat Y	E13-D02	Entran	January 3, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Right Side Sill at Rear Seat Y	B14-R07	Entran	January 3, 1997
Right Rear Occupant Compartment Y	L18-G02	Entran	January 2, 1997
Vehicle CG X	L14-D19	Entran	December 4, 1996
Vehicle CG Y	D05-R09	Entran	January 2, 1997
Vehicle CG Z	L14-D17	Entran	December 3, 1996

Note: All Endevco accelerometers are Model No. 7264-2000. All Entran accelerometers are Model No. EGE-72